2015 Bicycle and Pedestrian Master Plan Update

Charlottesville, Virginia

Adopted September 8, 2015

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Table of Contents

Introduction 1

Update to the 2003 Bicycle and Pedestrian Master Plan

Plan Update Organization

Plan Update Vision and Goals 9

Plan Update Development 13

Inventory of Existing Facilities

Public and Stakeholder Input

Bicycle and Pedestrian Demand Analysis

Bicyclist Level of Traffic Stress Analysis

Network and Facility Recommendations 29

Bicycle Vision Network

Bikeway Facilities

Other Bicycling Improvements

Pedestrian Facilities

Intersection Improvements

Representative Intersections

Policy and Program Recommendations 62

Policy Recommendations

Program Recommendations

Implementation 72

Bicycle Facility Projects and Prioritization

Sidewalk Projects and Prioritization

Project Costing

Implementation Phasing

Funding Strategies and Sources

Performance Measures 90

Performance Measures

Plan Update Summary

Appendices 94

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Chapter 1: Introduction

Downtown Mall

Chapter 1: Introduction

Walking and Bicycling in Charlottesville

Charlottesville is known as a progressive community whose residents enjoy a high quality of life. Residents and visitors alike have easy access to all of the amenities of an urban setting as well as nearby scenic natural resources and recreation opportunities. The City's compact ten square miles make many desirable destinations accessible via multiple modes of transportation, including walking and biking. This is evidenced by the crowds found most evenings on one of the nation's few thriving pedestrian-only malls, busy sidewalks along West Main Street during lunch hours, and the many people walking and bicycling on the Rivanna Trails throughout the week.

The high walking and bicycling rates are indicative of Charlottesville's understanding of and support for active transportation's triple bottom line. Evidence and data from around the United States indicates that walking and biking have economic, environmental, and social benefits for the community at large – not just for those who walk and bike. See Table 1.1 on page 4 for more details.

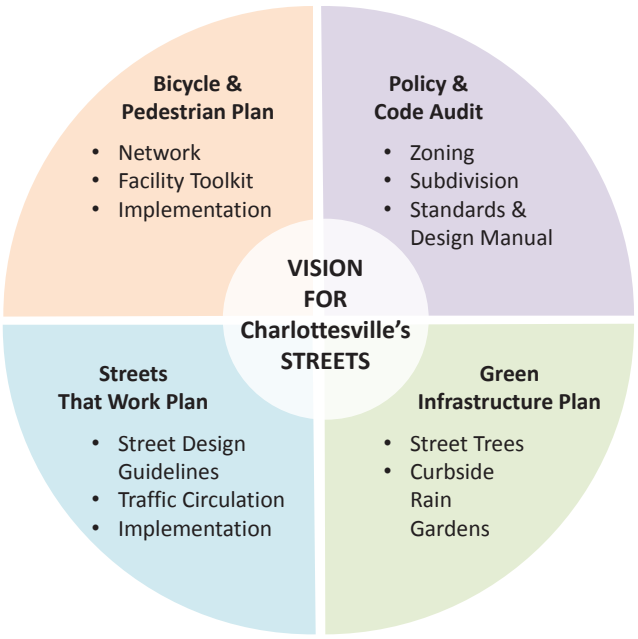
The City of Charlottesville highlights walking and biking in multiple guiding documents and many of its planning initiatives. Charlottesville's 2013 Comprehensive Plan and City Council's Vision 2025 emphasize the essential links between walking and biking and many of the City's goals beyond transportation including economic development, the environment, and affordable housing. In fact, this Plan Update achieves Goal 1.1 in the Transportation Chapter of the 2013 Comprehensive Plan.

Another major policy decision related to walking and biking is the 2014 Complete Streets Resolution which calls for a comprehensive look at the functions and design of streets within the City of Charlottesville. Its adoption kicked-off a series of concurrent planning efforts, including a code audit performed by City staff, a green infrastructure component as part of the Water Resources Master Plan, and the creation of street design guidelines focused on the safety and comfort of people using all transportation modes. Additionally, Charlottesville is in the process of integrating the 2012 Healthy Eating Active Living (HEAL) Resolution to promote healthy food access, workplace wellness and active lifestyles in community policy decisions.

The Corner

Update to the 2003 Bicycle and Pedestrian Master Plan

This document is an update to the Bicycle and Pedestrian Master Plan completed in 2003. The 2003 Plan laid the foundation for the off-street trail network, increased bicycle and pedestrian awareness and education, and sought to reduce motor vehicle trips by connecting residential neighborhoods to important destinations.



Concurrent planning processes that are part of the Streets that Work initiative.

The 2003 Bicycle and Pedestrian Master Plan led to improved conditions for active transportation in Charlottesville. In the past decade, the City has added two related staff positions- a Bicycle and Pedestrian Coordinator and a Trails Planner - and formed a Bicycle and Pedestrian Advisory Committee. The City has also added new facilities for walking and bicycling. In total, the City's off-road paved trail system is nearly 9.6 miles, and there are over 30 miles of on-street bicycle facilities and 175 miles of sidewalks. Charlottesville has also advanced from Bronze to Silver Bike Friendly Community status and from a Silver to Gold Walk Friendly Community rating (see details below).

Over the past decade however, there have been significant changes in the field of bicycle and pedestrian planning. These changes include a greater awareness of the different types of bicyclists, and an effort to design facilities that can be used by people of all ages and abilities. The 2015 Bicycle and Pedestrian Master Plan Update aims to fill in the gaps left by the 2003 Plan and provide the City of Charlottesville with a series of implementable actions that will result in complete walking and bicycling networks. This Plan Update also addresses the needs of pedestrians using sidewalks on the street, and includes a variety of new bicycle facility types that improve comfort for all and appeal to those who are interested in riding a bicycle, but concerned about safety.

The **Bicycle Friendly** and **Walk Friendly Communities** programs are a way to provide municipalities across the country a method to assess their infrastructure, policies, and programs in regards to walking and bicycling. These assessments include measuring the number and quality of on-road bicycle facilities and sidewalk networks, and participation in events such as Bike to Work and International Walk to School Day. In addition to evaluating and ranking a community, the programs also help to identify specific actions that can improve the community walking and bicycling environment, as well as encourage people to choose active transportation. The Bicycle and Walk Friendly Community assessments for Charlottesville are included in Appendix A.

Table 1.1: Multiple Benefits of Walking and Bicycling

Economic	Environmental	Social
A walking and bicycling-friendly community attracts residents and businesses. When San Francisco made its Valencia Street better for bicyclists and pedestrians, nearly 40% of merchants reported increased sales and 60% reported more area residents shopping locally due to reduced travel time and convenience. Two-thirds of merchants said the increased levels of bicycling and walking improved business.[1]	**Increasing walking and bicycling can reduce single occupancy vehicle trips and greenhouse gas emissions.** A 5% increase in the walkability of a neighborhood is associated with a per capita 32.1% increase in active travel, 6.5% fewer miles driven, and 5.5% fewer grams of volatile organic compounds (VOCs) emitted.[4]	**Walking and bicycling are affordable transportation options.** The average annual operating cost of a bicycle is $308, less than 4% that of an average car ($8,220).[6]
Walking and bicycling support tourism. The Virginia Creeper Trail generates $1.59 million in annual spending, supporting 27 new full-time jobs.[2]	**Replacing car trips with walking and biking improves air quality.** When car travel restrictions reduced morning traffic by 23% during the 1996 Olympics in Atlanta, ozone concentrations decreased 28% and acute care visits for asthma decreased 41%.[5]	**Walking and bicycling improve personal and community health.** The annual individual medical cost of inactivity ($622) is more than 2.5 times the annual cost per user of bike and pedestrian trails ($235).[7]
Pedestrian and bicycle improvements are relatively low-cost investments. The entire 2,250-mile East Coast Greenway bike route network could be upgraded for one-fifth the cost of a highway bridge.[3]		**Walking and bicycling increase quality of life and create vibrant communities.** The benefits of investments in cycle networks are estimated to be at least 4-5 times the costs, making such investments more beneficial to society than other transport alternatives.[8]

1. Drennan, E., 2003- in "The Benefits of Complete Streets 7: Complete streets spark economical revitilization"
2. United States Department of Agriculture, 2004- in Trails and Economic Development, 2007, Rails-to-Trails Conservancy
3. LaHood, R., 2010- "DOT bicycle-pedestrian policy gets 'thumbs up'," Welcome to the FastLane: The official blog of the U.S. Secretary of Transportation, 1 June 2010
4. Frank, L., et al., 2006- Many pathways from land use to health: Associations between neighborhood walkability and active transportation, body mass index, and air quality, Journal of the American Planning Association, 72, 75-8
5. Friedman, M., et al., 2001- Impact of Changes in Transportation and Commuting Behaviors During the 1996 Summer Olympic Games in Atlanta on Air Quality and Childhood Asthma, Journal of the American Medical Association, 285(7):897
6. Bike cost from Moritz, W., 1997. Automobile cost from U.S. Bureau of Transportation Statistics, 2009- Pocket Guide to Transportation
7. Wang, G., et al., 2004- Cost analysis of the built environment: The case of bike and pedestrian trails in Lincoln, Neb, American Journal of Public Health, 94, 549-53
8. Saelensminde, K. 2004- Cost benefit analyses of walking and cycling track networks taking into account insecurity, health effects, and external costs of motorized traffic, Transportation Research Part A, 38, 593-606

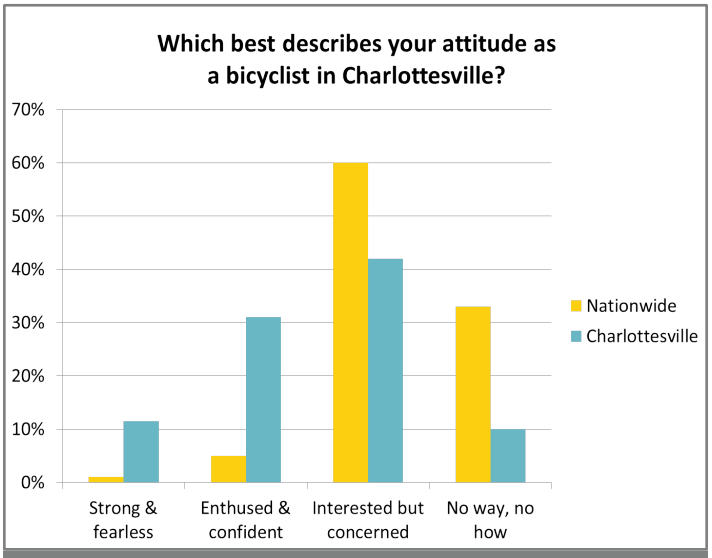
The four types of bicyclists. In 2006, the Portland Bureau of Transportation conducted a study and published a paper suggesting a new method to categorize bicyclists.[1] The categorization classifies people by their relationship to bicycling for transportation. The categories are:

- **No Way No How** – These individuals are considered non-riders and are very unlikely to ever ride a bicycle for various reasons including ability, effort required, and lack of interest.
- **Interested but Concerned** – These individuals tend to enjoy bicycle riding and want to take advantage of the benefits of bicycle riding. However, they choose not ride a bicycle for transportation because riding alongside motor vehicle traffic is not comfortable. These cyclists are unlikely to use any bicycle route which is shared with motor vehicles.
- **Enthusiastic and Confident** – These individuals may regularly ride bicycles for transportation. They prefer to use facilities that separate bicycle and motor vehicle traffic, but can still comfortable riding a bicycle alongside motor vehicle traffic.
- **Strong and Fearless** – These individuals will choose to ride bicycles regardless of the roadway conditions or levels of motor vehicle traffic.

In Charlottesville, approximately 70 percent of residents participating in the Neighborhood Leadership Institute survey identified themselves as "Enthusiastic and Confident" or "Interested but Concerned."

1. Geller, Roger. "Four Types of Cyclists," Portland Bureau of Transportation, Portland, OR, 2006. https://www.portlandoregon.gov/transportation/44597?a=237507

In 2013, the Neighborhood Leadership Institute (NLI) drafted a survey to assess resident attitudes about walking and bicycling in the City. Survey respondents identified poor quality sidewalks and bicycle lanes as the top barrier to active transportation. Other identified barriers included, complex intersections and street crossings, lack of off-street walking and bicycling trails and environmental conditions such as topography or weather. The survey also explored how confident residents feel about their own bicycling ability. Over 40 percent of survey respondents indicated that they were interested in bicycling more but concerned about their safety when riding with vehicular traffic. This Plan Update aims to address the barriers to walking and bicycling and encourage walking and bicycling among those who are "interested but concerned."



Compared with similar national surveys, residents in Charlottesville are more confident about bicycling for transportation.

Plan Update Organization

The 2015 Bicycle and Pedestrian Master Plan Update presents a summary of key recommendations designed to increase safety, connectivity and comfort for people

of all ages and abilities as they walk and bike around the City. The recommendations were informed by technical analysis, best practices research, community input and local policy guidance. The 2015 Plan Update is organized around recommendations for walking and bicycling in three key areas: facilities and network, programs and policies, and implementation. Comprehensive details on the public engagement process, level of traffic stress analysis, cost estimate methodology and policy review can be found in the Appendices. The chapters of the 2015 Plan Update include:

People often walk around the Downtown Mall area along Market St.

Chapter 2: Plan Update Vision and Goals

Chapter 2 sets forth a citywide vision for improved walking and bicycling. This aspirational vision aligns with the City's 2013 Comprehensive Plan, Americans with Disabilities Act (ADA) Transition Plan, HEAL Resolution, Climate Action Plan and Complete Streets Resolution. The goals of the 2015 Plan Update provide detail on achieving the vision and served as a litmus test during the planning process as recommendations were developed and prioritized.

Chapter 3: Plan Update Development

This chapter provides an overview of the public engagement process and existing conditions analysis. In addition to more traditional public meetings and stakeholder focus groups, an interactive online map facilitated the collection of location-based input regarding key destinations and existing barriers to walking and biking.

Chapter 4: Network and Facility Recommendations

The focal point of the 2015 Plan Update, Chapter 4 contains a bicycle network vision map, sidewalk and trail priorities, a glossary of bicycle and pedestrian facility types, and intersection improvements to enhance the walking and biking environment in Charlottesville.

Chapter 5: Policy and Program Recommendations

The Policy and Program Recommendations move beyond the physical environment and support the development of a walking and biking-friendly culture in Charlottesville. The recommendations in this chapter fall into several different categories; five focused on policy changes and five focused on education, encouragement, and evaluation programs.

Chapter 6: Implementation

This chapter presents a prioritized list of the bicycle, pedestrian and trail network recommendations, and discusses funding strategies that will help the City implement the 2015 Plan Update recommendations in a targeted, data-driven and strategic manner.

Chapter 7:Performance Measures

The final chapter contains performance measures that can be used to track the implementation of the Plan Update over time.

Appendices

Appendix A	Walk Friendly Community Report Bike Friendly Community Report
Appendix B	Plan Update Vision and Goals (Full Text)
Appendix C	Public Engagement Memorandum Level of Traffic Stress Memorandum Demand Analysis Methodology
Appendix D	Maps
Appendix E	Policy Review (Full Text)
Appendix F	Project Prioritization Methodology Complete Ranked Projects List Sidewalk Project Ranking Criteria

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West Main Street

Chapter 2:
Plan Update Vision and Goals

Chapter 2: Plan Update Vision and Goals

The City of Charlottesville and the Bicycle and Pedestrian Master Plan Steering Committee collaborated to create this vision, which guided the planning process and the development of recommendations (presented in Chapters 4 and 5). The vision statement aligns with the City's 2013 Comprehensive Plan, ADA Transition Plan, Complete Streets Resolution, HEAL Resolution and Climate Action Plan.

Vision

Walking and biking will be practical, convenient, safe, and pleasant ways to travel to destinations within and adjacent to the City.

Bicycle and Pedestrian Master Plan Steering Committee

To guide the planning process, a Bicycle and Pedestrian Master Plan Steering Committee was convened. In addition to serving as "ambassadors" for the Plan Update process by sharing information with their constituents, this committee met with City staff at key intervals during the planning process to provide input, ask questions, and suggest recommendations to improve the 2015 Plan Update.

These goals, developed by the City's pedestrian and bicycle steering committee, build upon many of the goals of the previous 2003 Bicycle and Pedestrian Facilities Master Plan, including:

- Connect important destinations and neighborhoods.
- Reduce reliance on vehicles and expensive parking lots.
- Integrate plan with education opportunities.
- Support economic development.

Steering Committee meeting September 2014.

Table 2.1: 2015 Plan Update Goals		
Look for similar tables throughout the Plan Update to see how the recommendations help acheive each goal.		
Network		Expand and improve the transportation network such that walking and bicycling are practical and appealing to both dependent and choice users within the City and to the adjacent County.
Safety		Prioritize safety for the most vulnerable road users when designing roadways, trails and intersections throughout the City.
Culture		Foster a culture that encourages and incentivizes walking and biking for transportation, health, recreation and fitness.
Educate		Educate all users on their responsibilities and rights.
Evaluate		Evaluate the progress of the Plan Update on a bi-annual basis.
Health		Create an attractive, comfortable environment for biking and walking that promotes and supports a healthy community and a vibrant economy.

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Steering Committee Bike Ride, June 2014

Chapter 3: Plan Update Development

Chapter 3: Plan Update Development

In Charlottesville, there is strong, existing community support and enthusiasm for walking and bicycling. This Plan Update aims to build upon that existing culture. The Plan Update was developed over a 12 month period in 2014/15 and was overseen by City staff as well as the Bicycle and Pedestrian Master Plan Update Steering Committee.

The City and the Bicycle and Pedestrian Steering Committee used a multi-faceted approach to gather the baseline data and input needed to develop the recommendations presented in subsequent chapters. That approach included four key steps:

1. Inventory of existing bicycle and pedestrian facilities
2. Public and stakeholder input
3. Bicycle and pedestrian demand analysis
4. Bicyclist level of traffic stress analysis

This chapter includes a section on each of the above steps and summarizes the findings that were used to develop the Plan Update recommendations.

A person rides a bicycle across the Dairy Road Bridge.

Inventory of Existing Bicycle and Pedestrian Facilities

The City of Charlottesville, a Silver-level Bicycle Friendly Community, has increased the number of bicycling facilities throughout the City since the 2003 Bicycle and Pedestrian Master Plan. Table 3.1 below shows the total miles of each bicycle facility type in Charlottesville.[9]

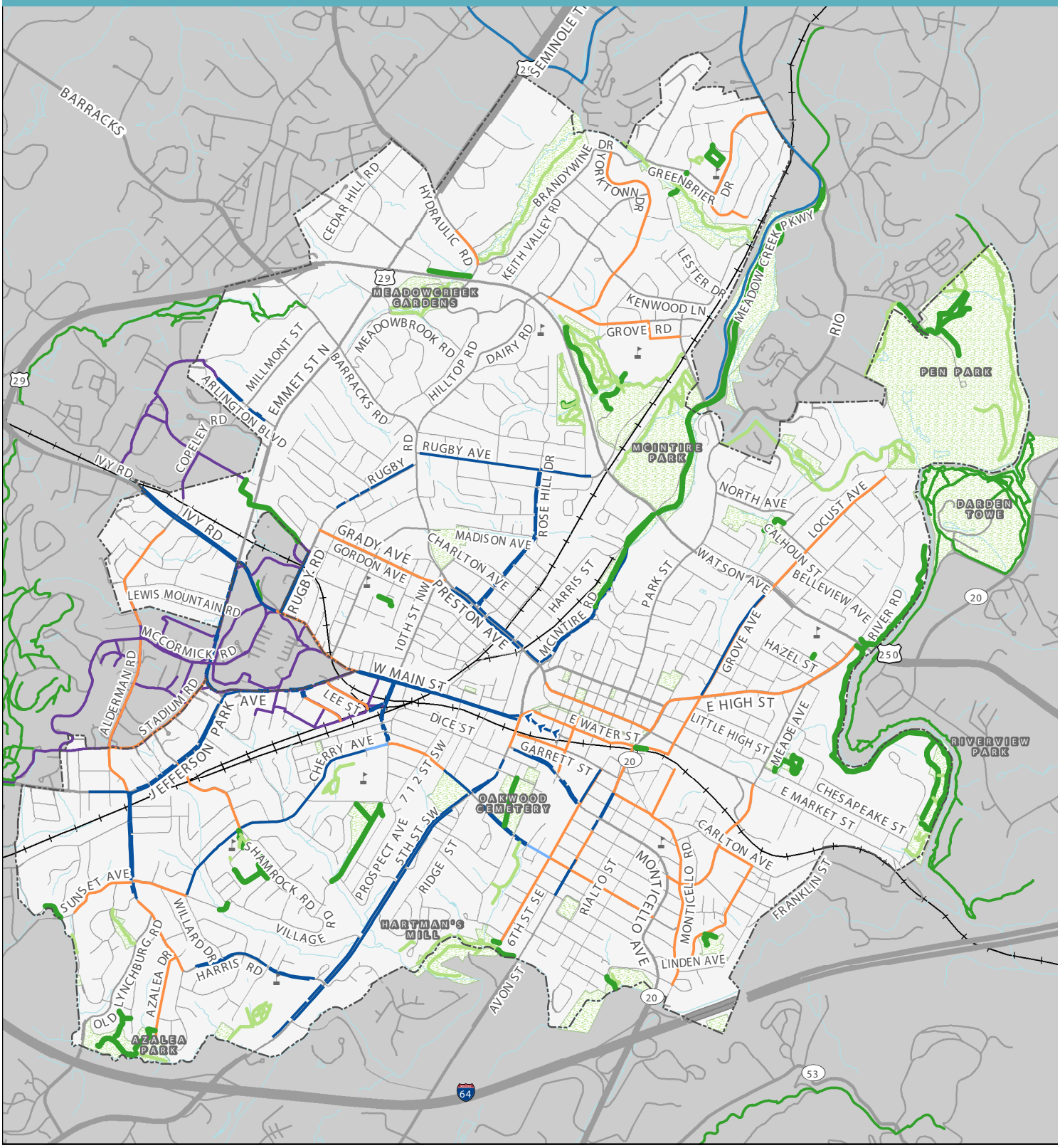
Table 3.1: Inventory of Existing Bicycle Facilities in Charlottesville

Bicycle Facility Type	Miles of Facility in Charlottesville
Signed Bicycle Routes	13.6
Shared Lane Markings	3.3
Bicycle Lanes	13.1
Contraflow Bicycle Lanes	0.4
Shared Use Paths	9.6

9 City of Charlottesville GIS data, as of February 2015.

Map 3.1: Existing Bicycle Facilities

The majority of existing bicycle facilities in Charlottesville are signed bicycle routes or shared lane markings. Facilities with dedicated space for bicycling, such as separated bicycle lanes or contraflow lanes, can increase a person's sense of comfort while riding a bicycle.



Charlottesville, Virginia

Bike Walk Charlottesville

Bicycle and Pedestrian Master Plan Update 2014

Toole Design Group

Bicycle and Pedestrian Plan

Existing Facilities

Existing Facilities
- Multi-Use
- RTF; Soft Surface

Albemarle County Greenways

Type
- Existing Bike Lane
- Existing Multi-Use Path
- Albemarle County Trails

UVA Bikeway*s

Bike_Route
- Existing
- Schools
- Streams
- Rail Lines
- City Park
- City Limits

0 0.25 0.5 Miles

N

Date: 4/30/201

In total the City has 30.4 miles of on-road bicycle facilities and 9.6 miles of paved trails. These facilities are an excellent step towards building a comprehensive bicycling network in the City; however, the existing facilities do not yet achieve the following goals of the 2015 Plan Update:

Plan Update Goals		
Network		Existing facilities can be expanded to further link residents with key destinations in the City.
Safety		Intersections and other conflict points between active transportation users and motorists can be improved to increase pedestrian and bicyclist safety.
Health		An improved and expanded walking and bicycling environment can encourage active transportation for everyday trips.

The City of Charlottesville, a Gold-Level Walk Friendly Community, currently has approximately 175 miles of sidewalk, 20.6 miles of multi-use and soft surface trails and 825 marked crosswalks.[10] There are pedestrian signals and crosswalks at the vast majority of the City's 74 signalized intersections, and marked crosswalks at many other stop-controlled and mid-block locations. The City assessed all of its curb ramps in the summer of 2012, and used the findings to inform the 2013 ADA Transition Plan. The ADA Transition Plan includes priority locations for the construction of new curb ramps where none currently exist as well as locations where reconstruction is required to make existing curb ramps and adjacent sidewalks meet ADA standards . The Transition Plan also addresses the need for additional accommodations at intersections including accessible push buttons, audible pedestrian signals and adequate crossing time. In conjunction with the City's Sidewalk Priority List, the ADA Transition Plan forms the basis for prioritizing improvements to the pedestrian network.

Missing sidewalk segments, such as this one in southwest Charlottesville, can discourage people from choosing to walk.

Charlottesville's network of sidewalks is most robust in the center of the City. Here, the streets are laid out in a traditional grid pattern and the mix of land uses makes walking from home to work and other destinations not only possible, but often more convenient than driving. There are fewer sidewalks and mixed use areas in the neighborhoods further from the center. These characteristics make walking less appealing as a mode of transportation, which is reflected in the demand maps in the following section.

10. City of Charlottesville GIS data as of February 2015. Total sidewalk distance includes sidewalks on both sides of the street where applicable. Each marked crosswalk was counted individually.

Charlottesville Bicycle and Pedestrian Plan

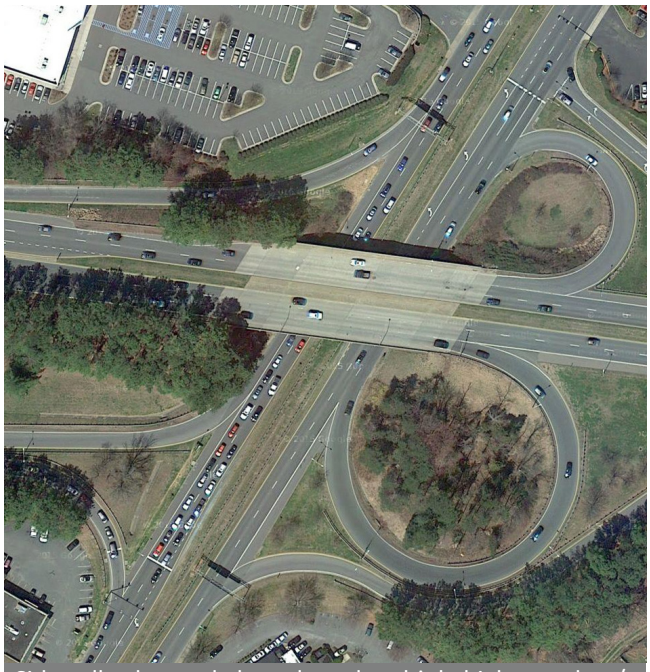
Connectivity of the On-Road Pedestrian Network

September 2014

Map 3.2: Existing Pedestrian Facilities

Although some areas of Charlottesville, such as downtown, have a complete sidewalk network, many neighborhoods only have sidewalks on one side of the street or do not have any sidewalks.

There are many places along West Main Street where the sidewalk is not wide enough for two people to pass.



Sidewalks that end abruptly and multiple high speed on/off ramps create an inhospitable pedestrian environment on Emmet Street N.

The presence of sidewalks alone is not enough to achieve the vision for the 2015 Plan Update, which states that walking will be a practical, convenient, safe and pleasant way to travel in Charlottesville. Many sidewalks in Charlottesville are not wide enough to accommodate utility poles, sign posts, parking meters, trees and pedestrians. Many sidewalks lack buffers, which are particularly important for pedestrian comfort on streets with higher speed traffic.

These conditions factored heavily into the Steering Committee's selection of five priority corridors for pedestrian improvements in September 2014. All of the corridors selected have existing sidewalks, but the conditions of the sidewalks, the volume and speed of traffic and busy intersections create an unfriendly environment for people traveling on foot. Because there are existing sidewalks along these corridors, they are not included in the new sidewalk prioritization list in Chapter 6. However, pedestrian improvements should be made in conjunction with other road projects along these corridors.

Table 3.2: Pedestrian Priority Corridors Identified by the Steering Committee

Emmet Street N	University Avenue to Hydraulic Road
Roosevelt Brown Boulevard	Cherry Avenue to West Main Street
10th Street NW	West Main Street to Preston Avenue
West Main Street	Jefferson Park Avenue to Ridge Street
5th Street SW	South of West Main Street

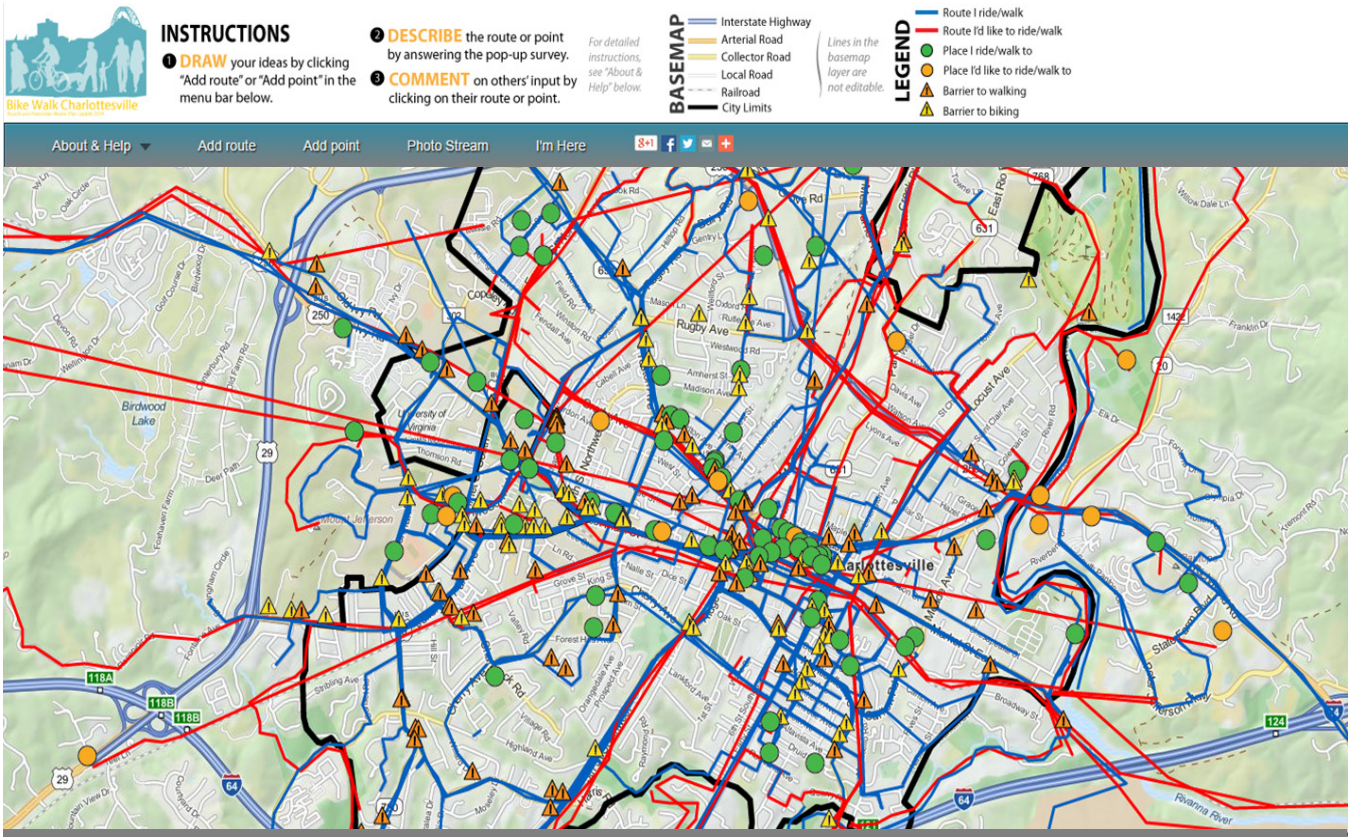
Public and Stakeholder Input

Comments regarding the City's bicycle and pedestrian existing conditions were collected from public meetings, the Plan Update Steering Committee, the City staff, and a public wikimap. These comments guide the direction and type of recommendations in this Plan Update. Although many of the public comments point out specific opportunities for improvement, three general trends emerged:

- **Safety** – Plan and design a network that prioritizes safety for all transportation modes.
- **Connectivity** – Link the pedestrian and bicycle networks in Charlottesville and Albemarle County to ensure a seamless transition between the County and City and within Charlottesville for those on foot or bike.
- **Multimodal** – Focus on raising the profile (and priority) of walking and bicycling to balance the transportation system.

The public comments are reflected not only in the Plan Update vision and goals, but also in the recommended improvements. Appendix C presents a complete and detailed account of the public engagement process.

One component of the public engagement process was an interactive online map that allowed residents of Charlottesville to provide general comments and identify specific locations where improvements may be needed. For the Plan Update, the online wikimap was open from May to September 2014. There were 205 individual users who contributed to the public wikimap, creating a total of 472 distinct comments.



The public wikimap allowed Charlottesville residents to identify opportunities and concerns related to walking and bicycling, indicate existing active transportation routes, and mark popular destinations reached by walking and bicycling.

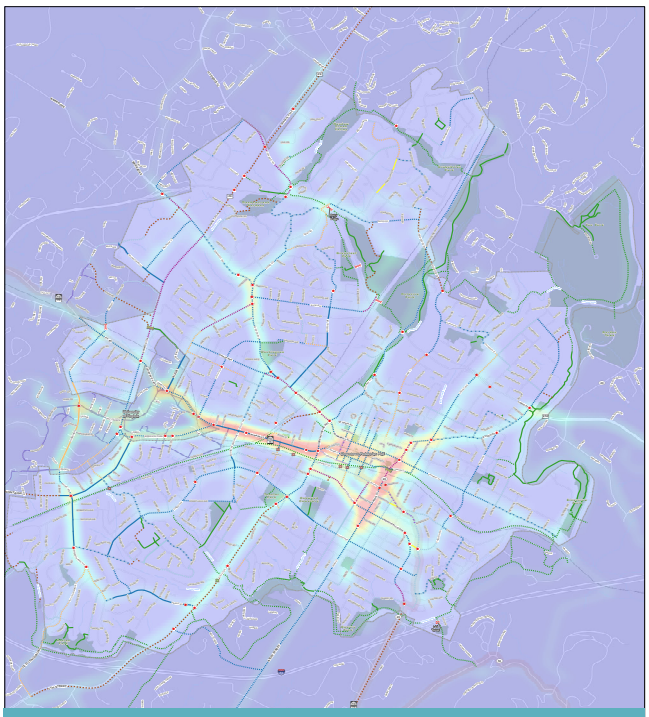
In addition to soliciting general comments, the wikimap specifically prompted participants to identify:

- Routes they currently use to walk and bike
- Routes they would like to use to walk and bike
- Destinations they currently walk and bike to
- Destinations they would like to walk and bike to

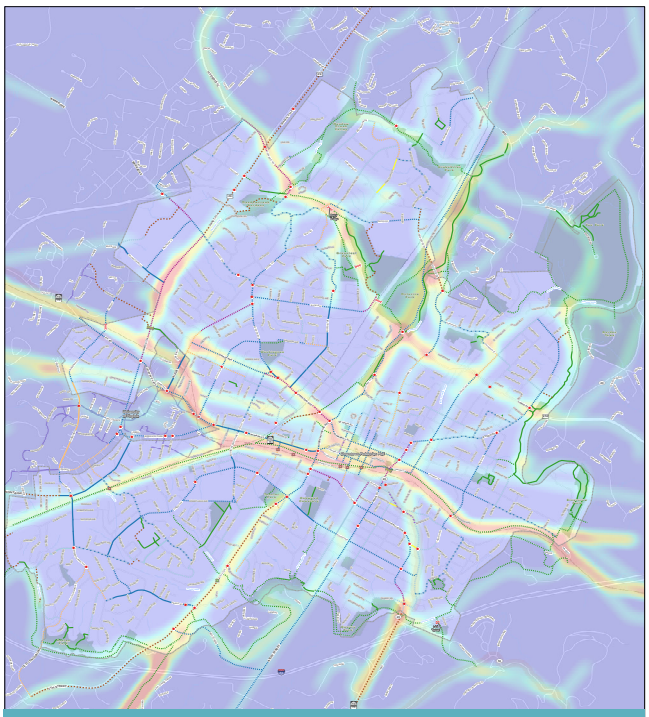
Once the wikimap was closed, all of the results were compiled and analyzed to identify areas that received a concentration of similar responses. The results are summarized below for each of the questions asked on the map. More information about the wikimap process can be found in Appendix C.

Routes that are currently used by wikimap contributors are shown in Map 3.3. The most popular walking and bicycling routes identified by the public wikimap contributors are along West Main Street between the Downtown Mall and the University and along Avon Street from the Ridge Street and Belmont neighborhoods to the Downtown Mall. Other popular routes include 5th Street SW, Alderman Road, Barracks Road, Jefferson Park Avenue, Locust Avenue, and Preston Avenue. These routes also represent many of the most direct routes to specific destinations or across Charlottesville.

Routes that public wikimap contributors would like to walk or bike are shown in Map 3.4 and include routes such as North Emmet Street, McIntire Road, and West Main Street, as well as potential new connections near the rail tracks that parallel Market Street, along the Route 250 Bypass, and connecting the City's parks and routes that link the County and the City, such as 5th Street SW. Similar to the map of



Map 3.3: Routes I Walk or Bike
Wikimap contributors added 159 comments identifying *Routes I Walk or Bike*. This heat map below shows the routes that are currently popular for walking and biking in the City.



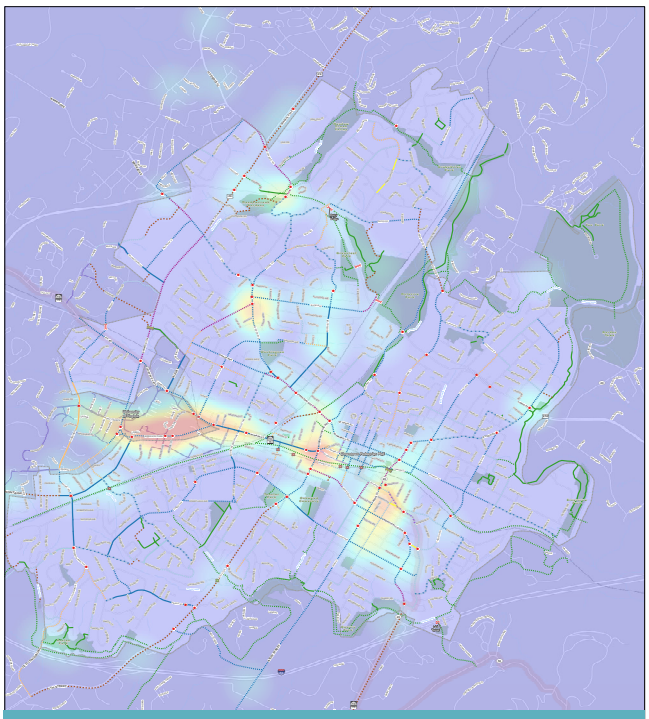
Map 3.4: Routes I Would Like to Walk or Bike
Wikimap contributors added 125 comments identifying *Routes I Would Like to Walk or Bike.* This heat map shows the routes that would likely be popular if sufficient bicycle and pedestrian facilities were provided.

routes that people currently use, this map shows a desire for direct routes to key destinations located throughout the City.

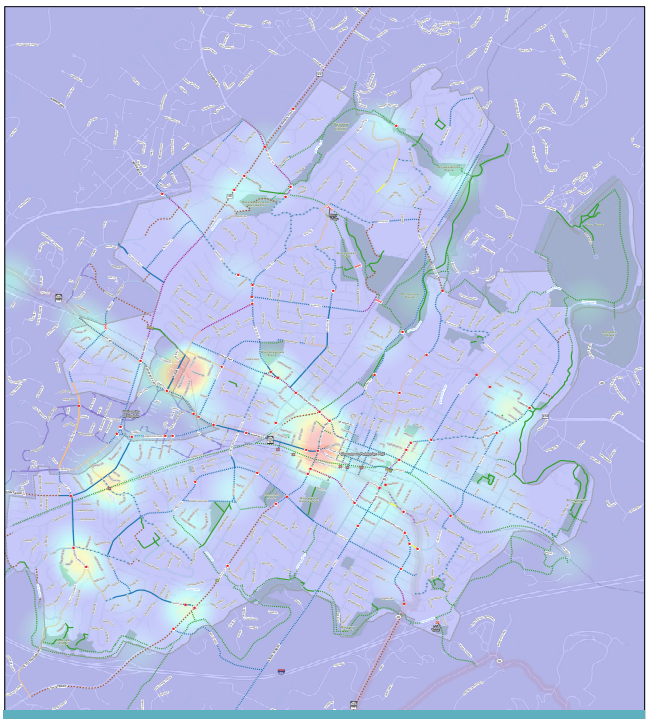
Barriers to bicycling are shown in Map 3.5 and are concentrated along Jefferson Park Avenue; the intersection of Jefferson Park Avenue and West Main Street; the intersection of West Main Street and Ridge-McIntire Road; near the intersection of Monticello Road and Avon Street; and at the intersection of Preston Avenue and Rugby Road. Wikimap contributors noted that poor road conditions, poor interaction between people bicycling and driving and lack of space at intersections for people bicycling to safely wait presented challenges.

Barriers to walking are shown in Map 3.6 and are concentrated along Ridge-McIntire Road near West Main Street; near the rail tracks between 17th Street NW and Chancellor Street where the roads are close, but do not connect; near the intersection of Grady Avenue and Preston Avenue; at the intersection of the rail tracks and Shamrock Road; and on Jefferson Park Avenue near Old Lynchburg Road. When given the opportunity to expand on why specific areas and intersections were barriers to walking, wikimap contributors commented that there were non-existent sidewalks or that facilities for crossing the street were inadequate, such as signal timing being too short for pedestrians, or crosswalks and sidewalks being in poor condition.

By highlighting the barriers to walking and bicycling as well as locating routes that are and would be used, the wikimap offers insight on both the existing conditions and future opportunities for walking and bicycling in Charlottesville.



Map 3.5: Barriers to Bicycling
Wikimap contributors added 108 barriers to bicycling. This heat map shows where inadequate infrastructure or conflicts with other road users can create challenges for people bicycling.



Map 3.6: Barriers to Walking
Wikimap contributors added 97 barriers to walking. This heat map shows where missing infrastructure and difficult crossings can create obstacles for people walking.

Bicycle and Pedestrian Demand Analysis

To help identify where bicycle and pedestrian facilities are most needed, the City measured demand for walking and biking. This analysis helps locate the roads where the greatest number of people are expected to walk and bike, which influences where active transportation infrastructure will be most needed. The demand analysis shows how various neighborhood and road characteristics will impact the level of biking and walking along a specific street segment.

Students and parents walk to Jackson Via Elementary School on Walking Wednesdays. Image credit: Inessa Telefuss

For this analysis, City staff and the Steering Committee identified a set of characteristics that influence the likelihood of people walking or bicycling on a particular corridor and used these characteristics to run a data-driven demand analysis. The characteristics include:

- Density of population
- Density of employment
- Proximity to commercial and mixed-use land uses
- Proximity to tourist attractions, including University of Virginia and the Downtown Mall
- Proximity to transit stops
- Proximity to existing bicycle and pedestrian infrastructure
- Proximity to recreation areas
- Density of zero-car households
- Proximity to elementary, middle, and high schools

More information regarding the demand methodology can be found in Appendix C.

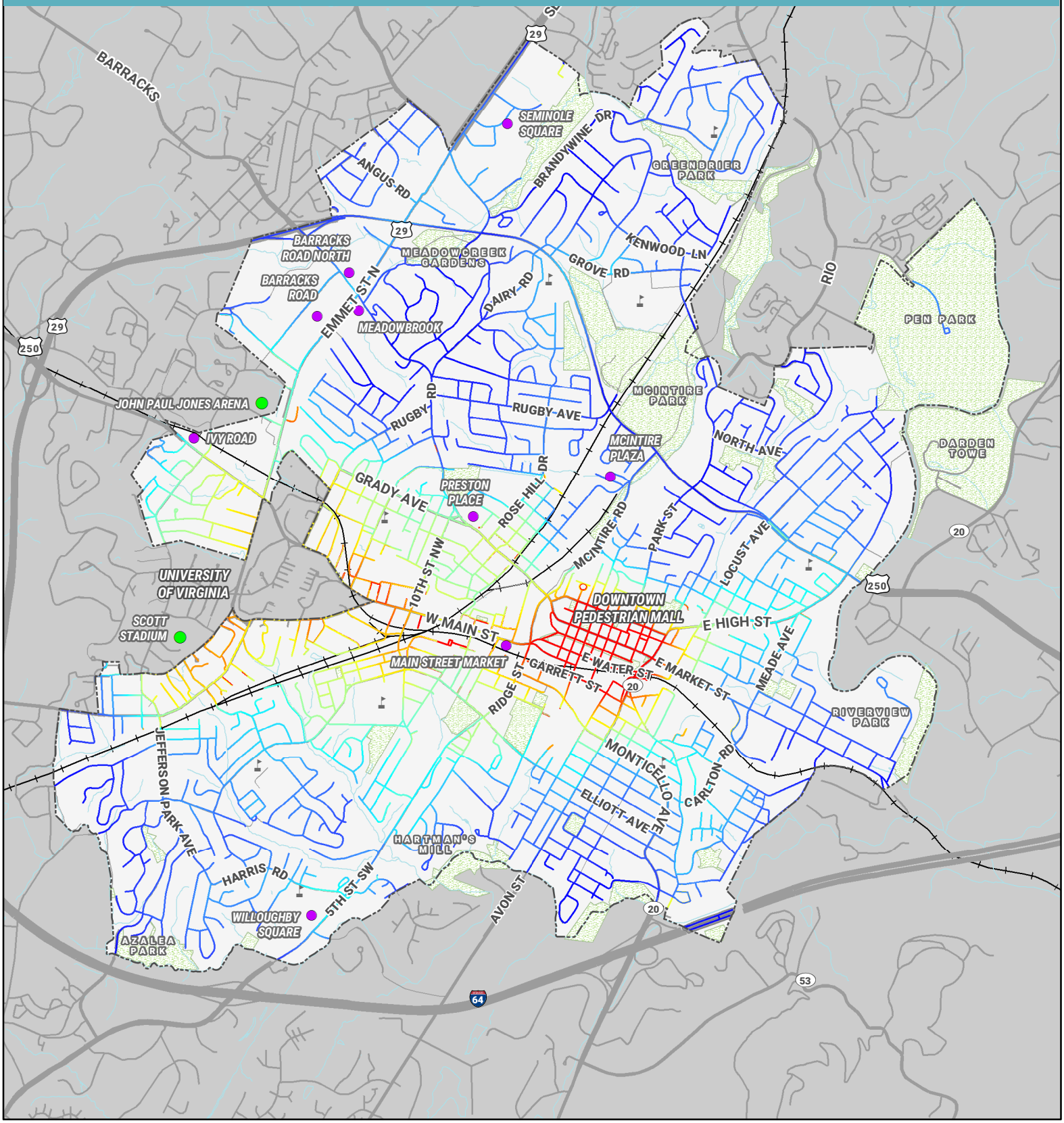
The demand map (Map 3.7) shows two clear areas of the City where bicycle and pedestrian demand are highest:

- The Downtown Mall
- The University of Virginia

These results may be intuitive as both the Downtown Mall and the University of Virginia are areas with higher densities of housing and businesses, as well as better proximity to existing bicycle, pedestrian and transit facilities. The demand map also shows that streets connecting to these locations have a higher demand for active transportation than streets in other parts of the City. This reinforces the need to

Map 3.7: Bicycle and Pedestrian Demand Analysis

The bicycle and pedestrian demand map uses various factors to measure the expected demand for walking and bicycling along specific street segments across the City.



Charlottesville, Virginia

Bike Walk Charlottesville

Bicycle and Pedestrian Master Plan Update 2014

Toole Design Group

Bicycle and Pedestrian Plan

Demand Analysis

Generalized Bicycling and Pedestrian Demand

High

Low

Points of Interest

- Sports Venues
- Shopping Centers
- Schools
- Streams
- Rail Lines
- City Park
- City Limits

0 0.25 0.5 Miles

N

Date: 4/29/2015

Father helps daugther prepare bike for Books on Bikes Parade about to leave Clark Elementary School

provide a connected network of facilities. Finally, the map shows a slight increase of demand on streets adjacent to elementary and middle schools, such as:

- Dairy Road, near Walker Upper Elementary
- Cherry Avenue, near Buford Middle and Johnson Elementary
- East High Street, near Burnley-Moran Elementary

The results of the bicycle and pedestrian demand analysis were taken into account when developing and prioritizing the specific recommendations presented in this Plan Update.

Bicyclist Level of Traffic Stress Analysis

This planning process included a Bicyclist Level of Traffic Stress (LTS) Analysis, which measures the amount of stress, or discomfort, a bicyclist is expected to feel while riding on a particular street. Understanding the level of stress a person may feel while bicycling is an important measure because a person's stress will often directly relate to their perceived safety or likelihood of riding on a specific road.

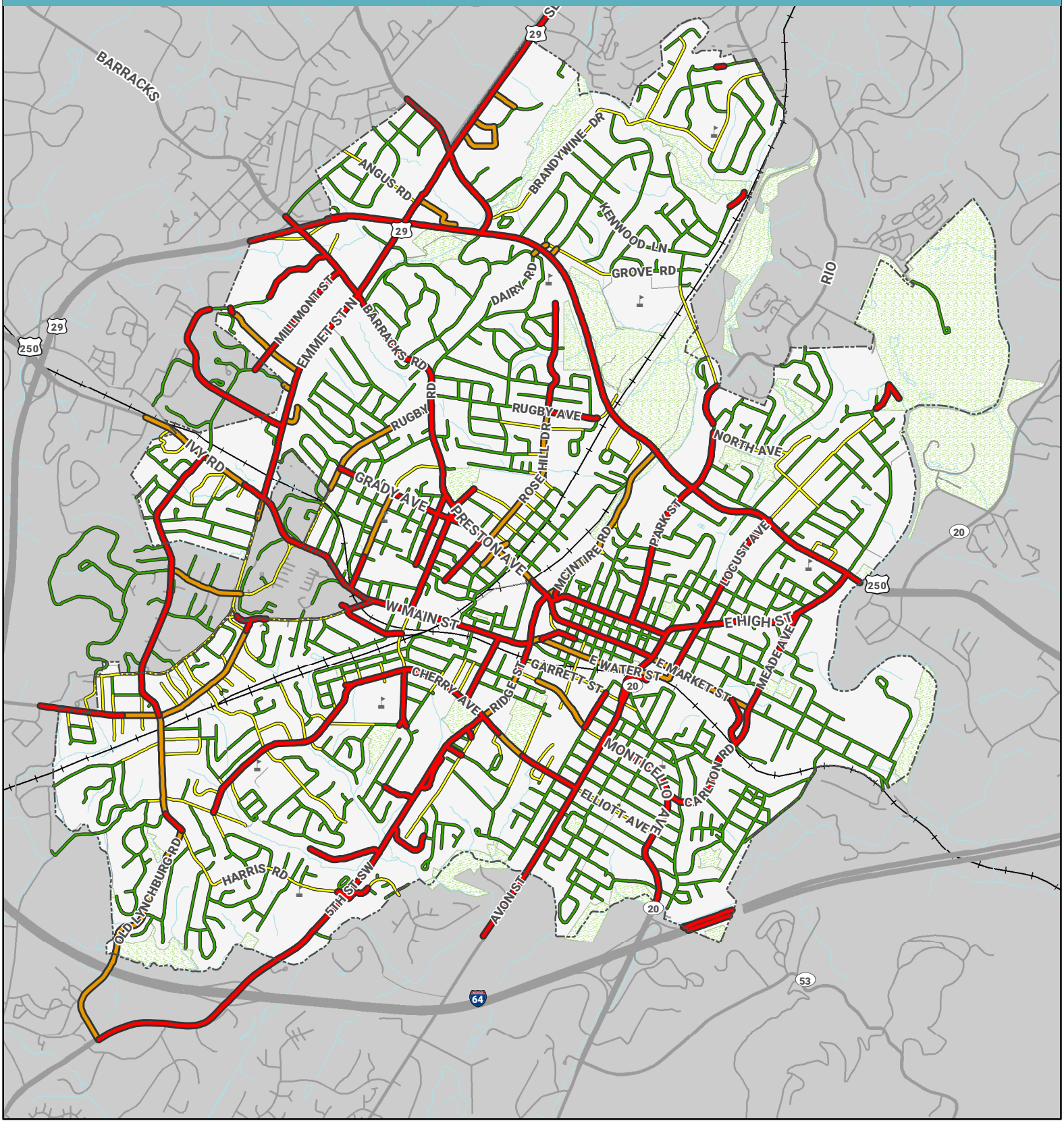
The bicycle LTS analysis uses specific roadway characteristics (i.e. variables) to calculate an LTS score for each road segment. The LTS analysis for this Plan Update uses the following variables:

- Posted motor vehicle speed limit
- Annual average daily traffic
- Number of motor vehicle travel lanes
- Presence and width of a bicycle lane
- Traffic signals at intersections

The LTS analysis uses a weakest link principle to score road segments, recognizing that a bicycle route is only as appealing as its least comfortable, or highest stress, feature. For example, if your bike ride from home to work followed a calm neighborhood street with a bike lane for most of the trip, but also included one major intersection crossing or a block with heavy vehicle traffic, you may not choose to ride that route. With this principle in mind, the LTS analysis scores each road segment based on the variable (above) that receives the highest stress score. Each road segment is scored between LTS-1, the least stressful, and LTS-4, the most stressful.

Map 3.8: Bicycle Level of Traffic Stress

The Charlottesville Bicycle Level of Traffic Stress analysis shows the level of stress a person bicycling may experience while riding along specific street segments in the City.



Charlottesville, Virginia

Bike Walk Charlottesville
Bicycle and Pedestrian Master Plan Update 2014

Toole Design Group

Bicycle and Pedestrian Plan

Level of Traffic Stress

Level of Traffic Stress

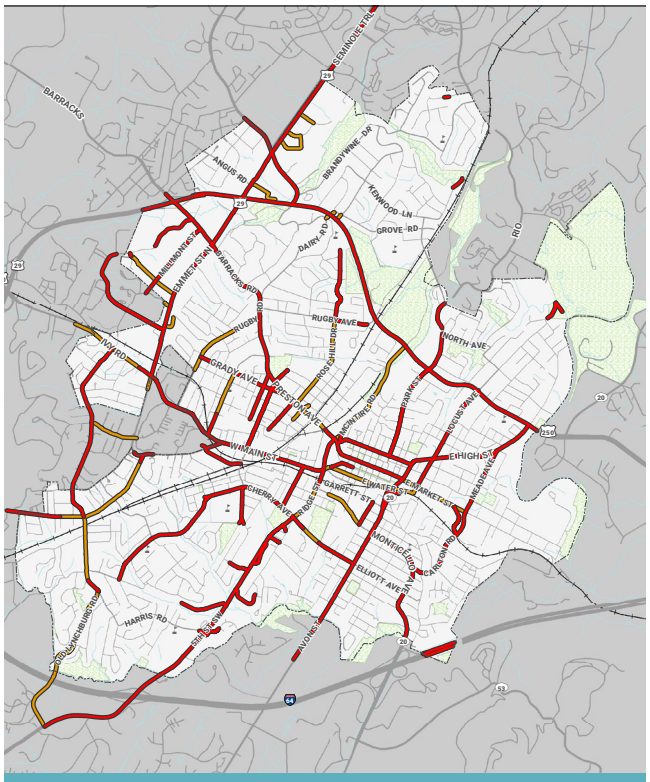
- 1
- 2
- 3
- 4

- Schools
- Streams
- Rail Lines
- City Park
- City Limits

0 0.25 0.5 Miles

N

Date: *4/29/2015*



Map 3.9: LTS 3 and LTS 4
Although a minority of streets have a higher level of stress, these routes divide the city and can create significant barriers for all but the most confident bicyclists.

The LTS scores correspond to the different types of potential bicyclists:

- A LTS-1 road is generally comfortable for children to ride their bicycles
- A LTS-2 road is generally comfortable for adults who are interested in bicycling but concerned about safety
- A LTS-3 road is generally comfortable for adults who are enthusiastic and confident in their bicycling ability
- A LTS-4 road is generally comfortable for adults who consider themselves strong and fearless bicyclists

The results of the bicyclist LTS analysis are shown in Map 3.8. Nearly two-thirds of streets in Charlottesville are LTS-1 and of these, the majority (84.5 percent) are local roads in residential neighborhoods. The map shows that people are able to bicycle within many of the individual neighborhoods while staying on a low stress bicycling route. However, these low-stress areas are often disconnected, meaning that people will have to ride along or across a higher stress route to visit another part of the City.

Low Stress Islands. The LTS 3 and 4 streets in Charlottesville separate residential neighborhoods from each other and limit the access for residents traveling by bicycle from reaching many destinations. This creates a number of low-stress *islands* in the City, where streets within a neighborhood are connected, but there is no way to reach an adjacent neighborhood without crossing a high stress street.

The map on the left shows a section of the Martha Jefferson neighborhood in northeast Charlottesville. Most streets within the neighborhood are low stress, but it is not possible to visit another area in the city without crossing a high stress street.

Bicyclists using the multi-use bridge over Emmet Street.

An additional twenty miles of streets in Charlottesville (12.2 percent of all streets) are LTS-2, meaning that the existing network might appeal to "interested but concerned" bicyclists. Map 3.8 shows that the LTS-2 streets provide additional routes for people to bike within individual neighborhoods and provide some connections between neighborhoods. However, bicycle connections between northern and southern neighborhoods or eastern and western neighborhoods remain indirect and inconvenient. For many people, direct routes between neighborhoods and the Downtown Mall or the University still require travel along or across higher stress routes.

Although streets evaluated as LTS-3 and LTS-4, shown in Map 3.9, make up less than a quarter of all the roads in Charlottesville, they are often streets that provide the most direct routes through the City, and do not have alternative routes that are comparable in regards to topography and travel distance. The higher stress streets create barriers between different neighborhoods as well as barriers to many shopping and recreation destinations. Streets like Avon Street, Barracks Road, Emmet Street, East High Street and West Main Street present opportunities to improve the bicycling facilities and to reduce the level of stress that a person bicycling may experience. Building bicycle facilities along these corridors is an opportunity to connect these different parts of the City together.

The bicycle level of stress shows not only where bicycling is more stressful in the City, but also where bicycle facility improvements can have the biggest impact to make a practical, safe, and appealing bicycle network. More information about the Level of Traffic Stress analysis process is included in Appendix C.

The development of the Bicycle and Pedestrian Master Plan Update was guided and shaped by the existing conditions in Charlottesville's bicycle and pedestrian environment. Existing conditions include both current bicycle and pedestrian facilities which are well-used by Charlottesville residents as well as areas that lack bicycle and pedestrian facilities and may keep people from choosing active transportation. The following chapters take into account these existing conditions, and make recommendations for improving pedestrian and bicycle access throughout the City.

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Downtown Pedestrian Mall

Chapter 4: Network and Facility Recommendations

Chapter 4: Network and Facility Recommendations

This chapter presents the recommended bicycle and pedestrian infrastructure projects for the City to build as part of its active transportation vision. The chapter is divided into bicycle recommendations, pedestrian recommendations, intersection recommendations, and bridge and tunnel recommendations.

The walking and bicycling network and infrastructure improvements provide Charlottesville the opportunity to achieve many of the stated goals in the Plan Update, including:

Plan Update Goals		
Network		A comprehensive network built using well-designed facilities will create a practical transportation choice for people to walk and bicycle.
Safety		Pedestrian infrastructure such as clearly marked crosswalks and pedestrian activated signals, along with consistent bicycle facilities such as separated bicycle lanes and bicycle signals placed throughout the City will address typical safety issues and reduce conflict points between people walking, bicycling and driving.
Health		A comprehensive pedestrian and bicycle network provides an opportunity for people of all ages and abilities to integrate regular physical activity into their daily lifestyle.

Other Plan Update goals, such as those related to educating residents on their roles and responsibilities and changing the culture to encourage walking and bicycling, will be addressed primarily by the program and policy recommendations. Bicycle network recommendations are presented below and pedestrian recommendations begin on page 42.

The infrastructure recommendations listed in the Plan Update provide a guide for improving Charlottesville's walking and bicycling environment, and for achieving the City's walking and bicycling vision. Infrastructure recommendations are one aspect of Charlottesville's Bicycle and Pedestrian Master Plan Update. These recommendations are designed to work in conjunction with the program and policy recommendations in the next chapter to ensure walking and biking is safe and convenient for everyone.

A bike lane sign on Jefferson Park Avenue

I. Bicycle Network and Facility Recommendations

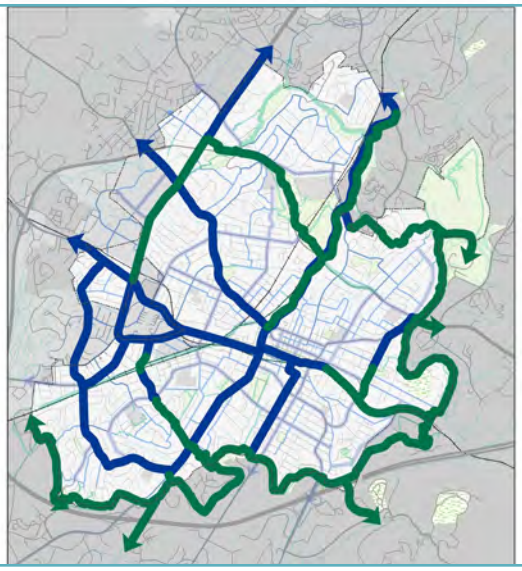
An expanded bicycle network, built with facilities that reflect the dynamic nature of Charlottesville's urban area, is a key component of a practical, convenient, safe, and pleasant active transportation system. A comprehensive network of trails and on-road facilities will create convenient routes between neighborhoods and destinations. By designating space on and off road, specifically for people bicycling, will nurture an environment where people can safely and confidently ride while also raising the profile and awareness of bicycling in the City.

The recommendations presented in the bicycle section of this chapter are comprised of three components: a Bicycle Vision Network, proposed bikeway facilities, and additional bicycling improvements.

Bicycle Vision Network

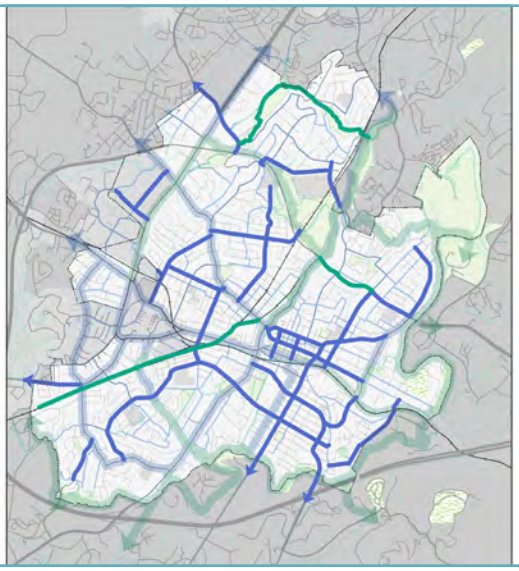
The Bicycle Vision Network represents the trail and on-road routes that are and will be important for bicycling in the City and this Vision Network is a guide for building a bicycle transportation system that connects the City together and links to the surrounding County to create seamless bicycle transportation. It is expected that developing this system will be dependent on available resources and will be accomplished over the long term. The Vision Network is comprised of three types of on-road bicycle transportation corridors: arterial routes, collector routes and local routes. Each of these is described on the next page.

Children share where they like to walk or ride their bicycles at outreach events during the summer of 2014.



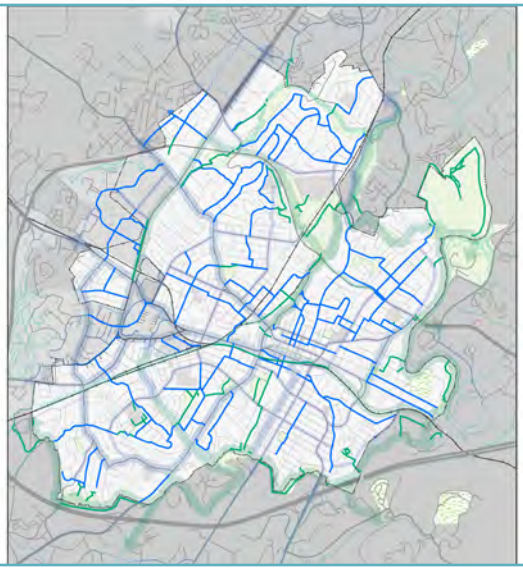
Bicycle Arterial Routes

These routes will carry the highest number of bicyclists and provide direct routes across the City. These routes will become the spine of the network. In many cases, separated bicycle facilities will be needed to ensure these routes are low-stress. The blue lines represent the important on-street bicycling routes and the green lines represent the important trail routes.



Bicycle Collector Routes

These routes will connect neighborhoods to bicycle arterials and increase access to local destinations such as parks or schools. Along bicycle collector routes, on-road bicycle facilities will provide dedicated space to people bicycling to create a low-stress environment.

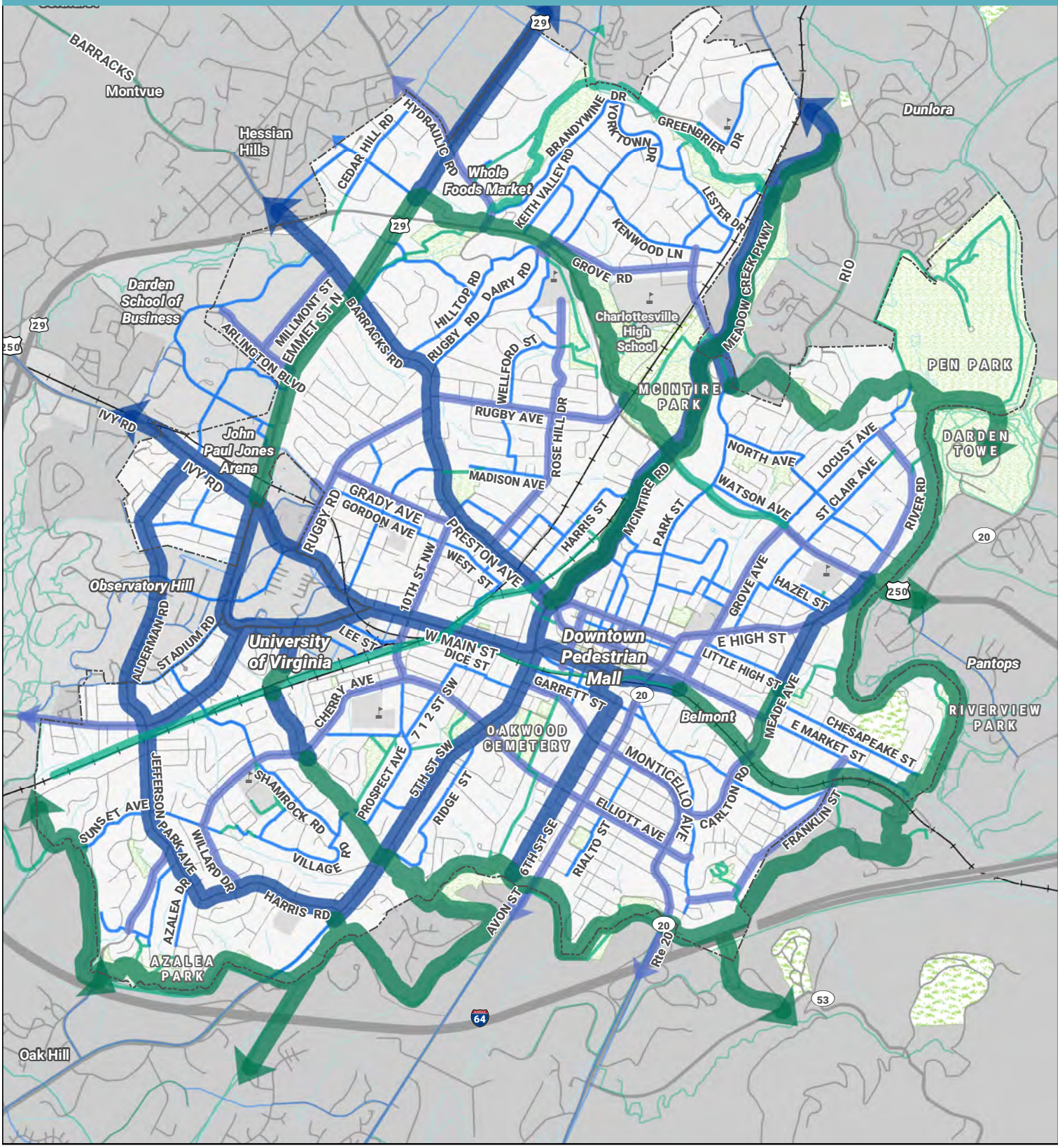


Bicycle Local Routes

These routes will provide bicycle connections within an individual neighborhood and build on the existing low-stress routes. The use of traffic calming measures, signage, and pavement markings to reinforce safe driving speeds and community ownership of neighborhood streets will make these routes more bicycle friendly.

Map 4.1: The Charlottesville Bicycle Vision Network

This map shows the streets in the City that are and will be important for bicycling in the City.



Charlottesville, Virginia

Bike Walk Charlottesville

Toole Design Group

Bicycle and Pedestrian Plan

Bicycle Vision Network

Trail Corridors
- Arterial
- Collector
- Local

On-Road Corridors
- Arterial
- Collector
- Local

External Connections
- On-Road Facility
- Trail

- Schools
- Streams
- Rail Lines
- City Park
- City Limits

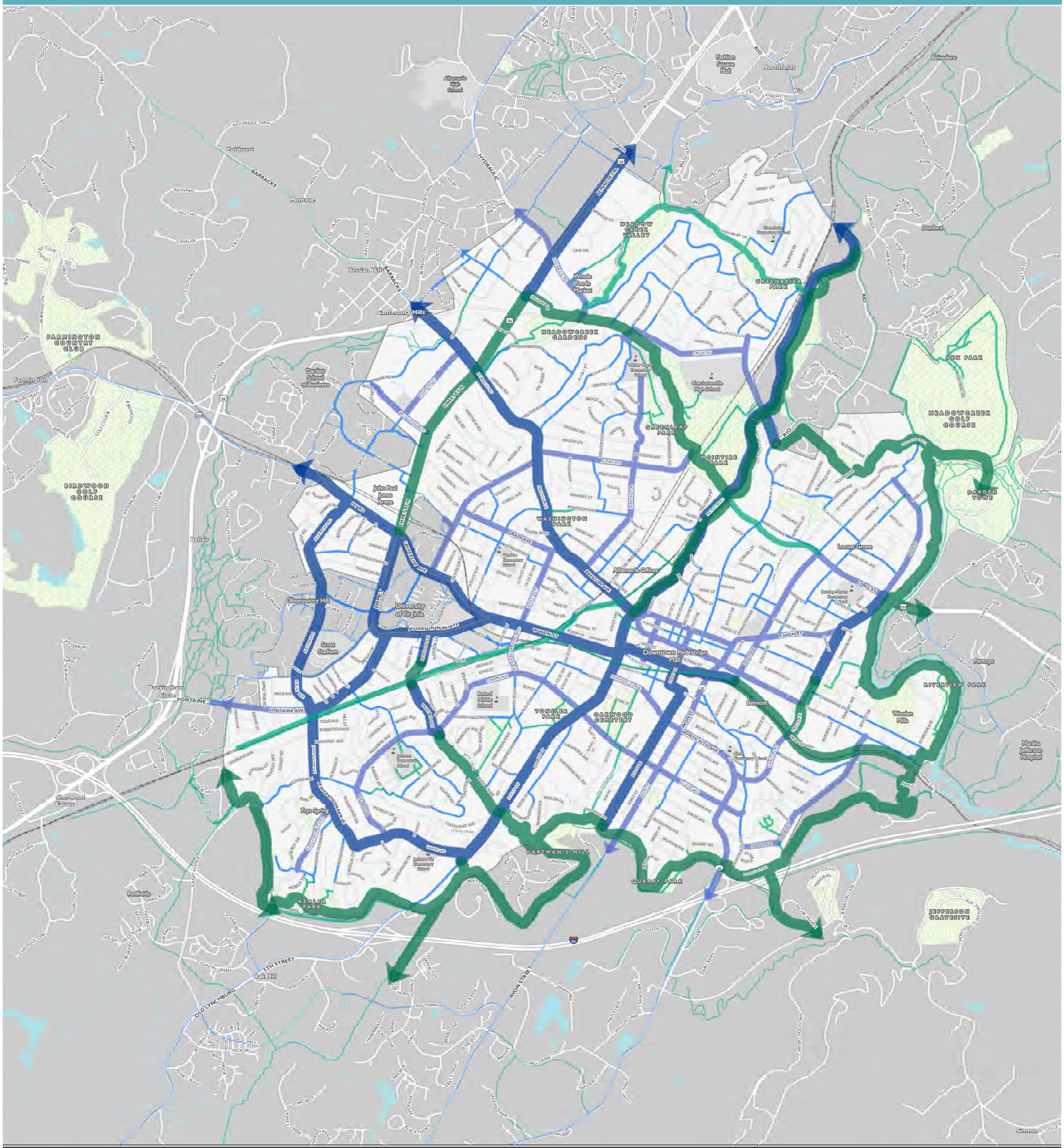
N

0 0.25 0.5 Miles

Date: *6/3/2015*

Map 4.2: The City-County Long Range Bicycle Vision Network

This map shows the long range bicycle vision for the City and the County.



Charlottesville, Virginia

Neighborhood Development Services

Bicycle and Pedestrian Plan

Bicycle Vision Network

On-Road Corridors
- Arterial
- Collector
- Local

Trail Corridors
- Arterial
- Collector
- Local

External Connections
- On-Road Facility
- Trail

Other
- Schools
- Streams
- Rail Lines
- City Limits
- City Park

0 0.35 0.7 1.4 Miles

The Bicycle Vision Network can help guide the development of Charlottesville's bicycle transportation by ensuring that the entire City is reachable and all have access to a low-stress bicycle route, such as an off-road trail or protected bike lane. This access can come in the form of a direct connection to a bicycle collector or arterial route or through a local route that connects to a bicycle collector or arterial route. This Vision Network proposes bicycle routes in each quadrant of the City that can connect adjacent neighborhoods to each other as well as connect communities with key destinations. Using this network, residents and visitors will be able to access individual neighborhoods, commercial areas or other destinations, and recreational areas throughout the City and urban areas of the County.

Bikeway Facilities

The second component of the bicycle network recommendations relates to bikeway facility types. The bikeway facility recommendations are specific infrastructure improvements that will create a better environment for bicycling by emphasizing safety and connectivity.

The City anticipates using six different bikeway facility types to build the Bicycle Vision Network over time. The facility types are described below and should be applied in Charlottesville using best practice standards and the City's approved design guidelines. A map of the recommended facilities is shown on page 37. There are a range of important local conditions that influence the recommended facility type for each street, including existing street design, public input, right-of-way, and cost. The recommendations in Map 4.2 reflect these factors and, in some cases, may not represent the degree of change needed to fully achieve the Plan Update Vision. The recommendations also represent an achievable and significant step toward a citywide, low-stress bicycle network that serves a broad cross-section of bicycle riders and should be viewed as flexible so that facilities can change to accommodate evolving land uses and activity patterns.

Shared Use Paths or Side Paths

Shared Use Paths or Side Paths are bi-directional paved routes used by people bicycling, walking, and other non-motorized modes of transportation. Shared use paths are often used as active transportation routes through parks or other recreational areas, while side paths are often built parallel to existing streets. Both types can be used for recreation or commute transportation. These paths generally require a minimum width of 10-12 feet.

Separated Bicycle Lanes

Separated bicycle lanes are on-road facilities that have separation from motor vehicle traffic. Vertical separation can provide visual separation or provide physical protection from motor vehicles, using features such as curbs, planters or parked vehicles. The separation increases the perceived sense of safety and can make bicycle routes less stressful. These bicycle lanes can be one-directional on each side of the road, or bi-directional on one side of the road. Separated bicycle lanes require a minimum width of 8-12 feet for a two-way configuration and 5-7 feet for a one-way configuration.

Bicycle Lanes

Bicycle lanes are one-way, on-road bike facilities that provide a dedicated space for people bicycling parallel to motor vehicle traffic. Bicycle lanes are often delineated with pavement marking stripes and, in some cases, may be fully colored for higher visibility, especially at intersections. Additional striping or hatching between a bicycle lane and vehicular travel lane is recommended to provide a buffer between the person bicycling and the person driving, where roadway widths allow. Bicycle lanes without a buffer require a minimum width of 5-6 feet and bicycle lanes with a buffer require 7-8 feet.

Contraflow Bicycle Lanes

Contraflow bicycle lanes are on-road bicycle facilities built on one-way streets that provide dedicated space for bicycling in the opposite direction of motor vehicle travel. These facilities help provide more direct connections for bicycling by transforming a one-way street for motorists into a two-way street for bicyclists. Contraflow bicycle lanes require a minimum width of 5-6 feet and the ability to add shared lane markings in the direction of travel.

Climbing Lanes

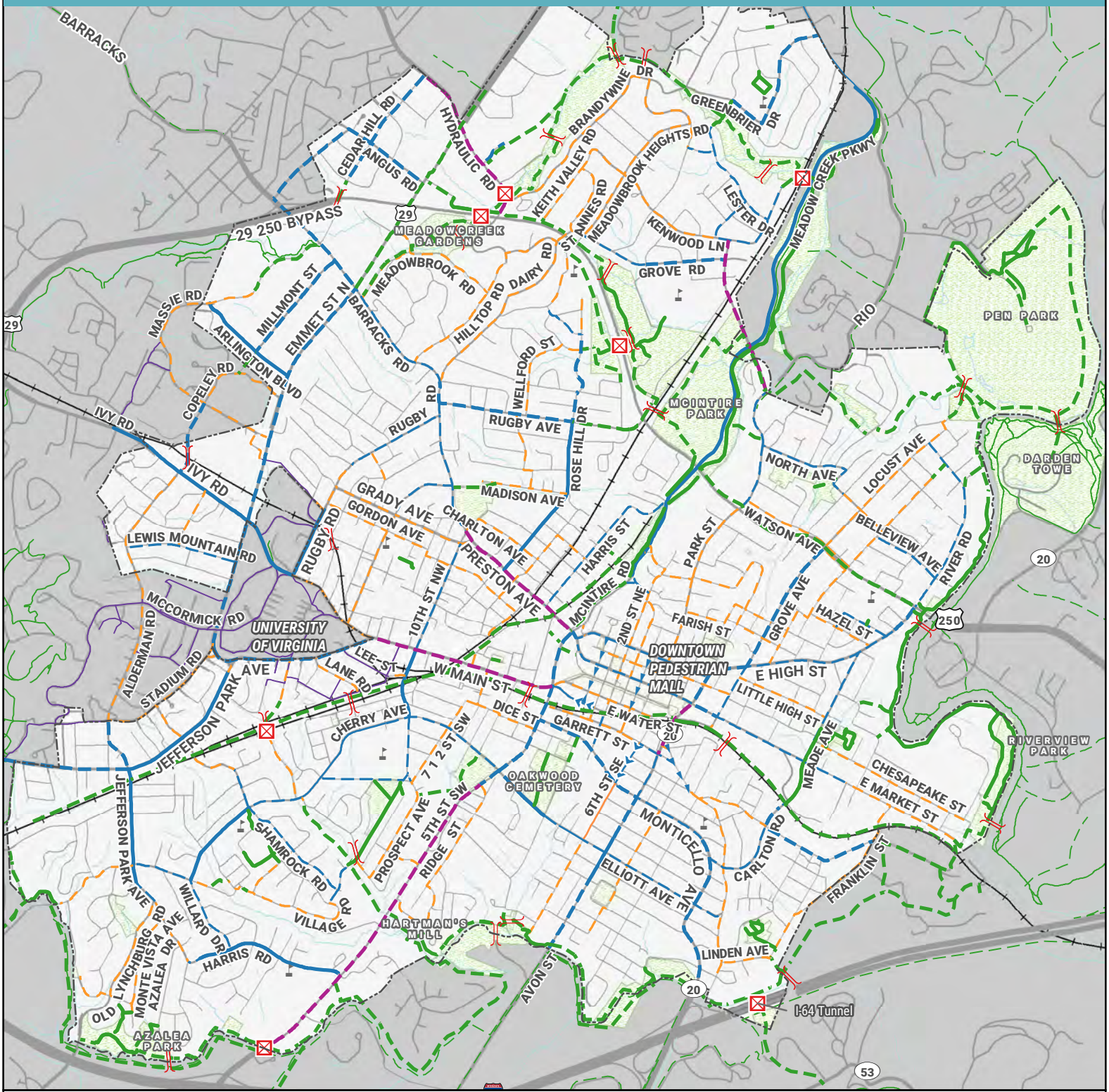
Climbing lanes are on-road bicycle facilities that provide a bicycle lane as dedicated space for people to bicycle in an uphill direction. Climbing lanes are often accompanied with shared lane markings in the downhill direction. Climbing lanes can also be used on flat road segments where the roadway is too constrained to build bicycle lanes in each direction. Climbing lanes require a minimum width 5-6 feet and the ability to add shared lane markings in the opposite direction of travel.

Shared Roadways

Shared Roadways are bicycle facilities that designate a vehicular travel lane as a shared space for people to drive and bicycle. This designation is demonstrated to all users through on-road pavement markings, known as “sharrows” or street signage indicating that people bicycling may use the full lane. These facilities do not provide any separation between people driving and bicycling and are best used on neighborhood streets or streets with a low level of bicyclist traffic stress.

Map 4.3: Bikeway Facility Recommendations

The Charlottesville Bikeway Facility recommendations can improve the bicycling environment and emphasize safety and connectivity.



Bridges and Tunnels
- Proposed Greenway Underpass
- Proposed Greenway Bridge

Recommended Facilities
- Shared Use Path
- Protected Bike Lane
- Bike Lane; Buffered Bike Lane
- Contraflow Bike Lane
- Climbing Lane
- Shared Roadway

Existing Facilities
- Protected Bike Lane
- Bike Lane; Buffered Bike Lane
- Contra-Flow Bike Lane
- Climbing Lane
- Shared Roadway
- Shared Use Path

Albemarle County Greenways
- Existing Bike Lane
- Existing Multi-Use Path
- Proposed Multi-Use Path

UVA Bikeways
- Existing
- Proposed

- Schools
- Streams
- Rail Lines
- City Park
- City Limits

Bike Walk Charlottesville

Toole Design Group

Charlottesville, Virginia

Bicycle and Pedestrian Plan

Bikeway Facility Recommendations

0 0.5 1 Miles

N

Date: *5/3/2015*

Other Bicycling Improvements

To further support a practical, safe, and pleasant bicycling environment, it is important that Charlottesville also provide bicycle support features that consider the "complete trip" from start to finish. These improvements will let residents know that bicycling is an encouraged mode of transportation and recreational activity. These improvements should be considered as redevelopment opportunities arise and as bikeway facilities are built. Additional bicycling improvements that are specific to intersections are provided in the Intersection Improvements section below.

Bicycle Parking

Similar to motor vehicle parking, bicycle parking is a crucial aspect of a convenient bicycle trip. There are various types of bicycle parking that are designed to meet different needs of people. An ideal bicycle rack provides two points of support for the bicycle (the City standard is a 'U' with a flat top), is conveniently located near the entrance of the destination, and is covered to protect bicycles from the elements.

A more secure option for bicycle parking is the use of bicycle lockers, which can better protect bicycles from theft or damage. Traditional lockers using a key can be rented out monthly or seasonally and electronic on-demand lockers can be rented by the hour.

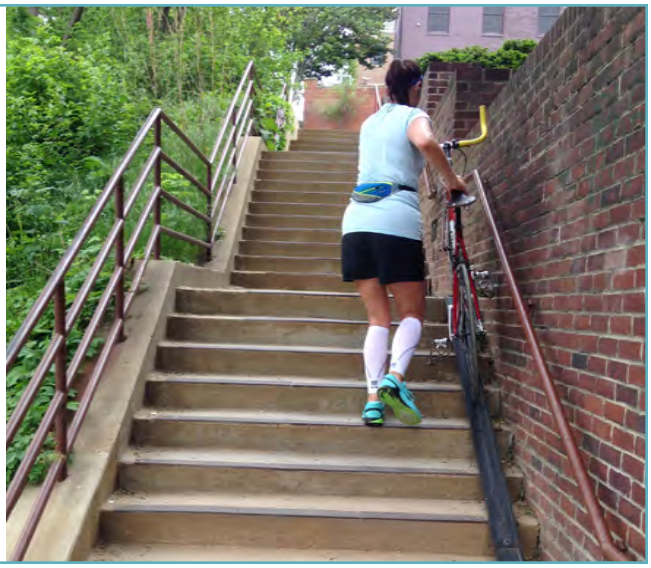
Further discussion of bicycle parking policies are included in Chapter 5 and Appendix E.

Maps and Wayfinding

Maps and wayfinding signage designed specifically for bicyclists can direct people who bike to use less stressful routes as well as provide direction towards certain destinations. These signs should be at a scale appropriate for people bicycling to easily read them and should measure distances in shorter increments than wayfinding for motorists.

Stair Channels

A stair channel is a ramp placed on a staircase that facilitates a person bicycling to walk their bicycle up or down stairs. Stair channels may take a variety of forms and can be built as part of the staircase or as a retrofit improvement to an existing staircase. It is recommended that stair channels are built to not interfere with using the staircase handrail, or to prevent others from using the staircase.



Fix-it Stations

A fix-it station is a temporary or permanent fixture installed near shared use paths, popular bicycle routes, or local shops. The fixture is designed to hold a bicycle by the seat or frame, and has permanently attached bicycle tools. This allows people bicycling to make small repairs, such as change a flat tire, adjust the seat height or realign a bike chain.

Bike Corrals

Bike corrals replace one parking space at the request of a local business or property owner. This type of bicycle parking can accommodate 10-12 bikes. Bike corrals function best at street corners, where they shorten pedestrian crossing and improve visibility for drivers turning into traffic from side streets.

Covered Bike Parking

Covered Bike Parking provides a location to lock bicycles while sheltering them from weather elements, typically rain and snow, without requiring a full bike locker. Providing a covered outdoor location for bicycle parking can encourage individuals to ride in a larger weather variety during a longer part of the year.

Bike Lockers

Bike Lockers are enclosed spaces for locking bicycles which provide optimal security while protecting bikes from rain and snow. They are typically at sites that require long-term parking for a variety of potential users. An individual with their bike may bike up to the locker, roll the bicycle in, leave their helmet and gear inside, and lock the door. This type of bicycle parking is considered the best protection against bicycle theft, but many design options exist.

II. Pedestrian Facilities

Walking is a fundamental form of transportation that is an integral part of the health and livability of our city. All travelers are pedestrians at some point during their trip. Some travellers move their entire trip on foot, while others walk to catch the bus or walk between their parking spaces and front doors of their destination. Many people also walk for recreation and exercise.

Pedestrians are generally considered the most vulnerable road user and as such need dedicated facilities to meet their needs. Pedestrian facilities should not only meet the basic needs of people walking (by connecting from place to place) but also help define the character of a street. Pedestrian facilities should also respond to the surrounding land uses, and in some instances, sidewalks may need to be wider than the standard 5 foot width, and pedestrian signals may need to provide additional time for people to cross the street.

Chapter 3 showed that Charlottesville's pedestrian network is more complete than its bicycle network based on the number of streets with dedicated pedestrian facilities. This is also reinforced by the City's gold status as a Walk Friendly Community. To enhance the existing pedestrian network, Charlottesville should first focus on gaps in facilities in areas where the street network and land uses are most conducive to walking. Second, the City can improve routes to popular destinations including schools, large employers, parks and recreation facilities, transit, social services, and shopping centers. Whether added through new construction or as retrofits to existing sidewalks and intersections, the recommendations featured below will improve safety and convenience for pedestrians in the City of Charlottesville.

Pedestrian Facilities

The pedestrian environment in any neighborhood is a result of the facilities provided. Some facilities, such as sidewalks, provide dedicated space for pedestrian use and can increase their sense of safety. Other facilities, such as curb ramps, street trees, or pedestrian scale lighting, increase the functionality of the network for more users and may increase the comfort level of pedestrians, making walking a more attractive option.

Sidewalks, ADA ramps, and other improvements are vital for people of all ages and abilities to access transit. Sidewalks and pathways to bus stops and shelters are also important to make bus service more convenient, safe, and desirable for people who take transit.

Most people use multiple travel modes as part of each trip, and everyone is a pedestrian at some point in their day.

Sidewalks

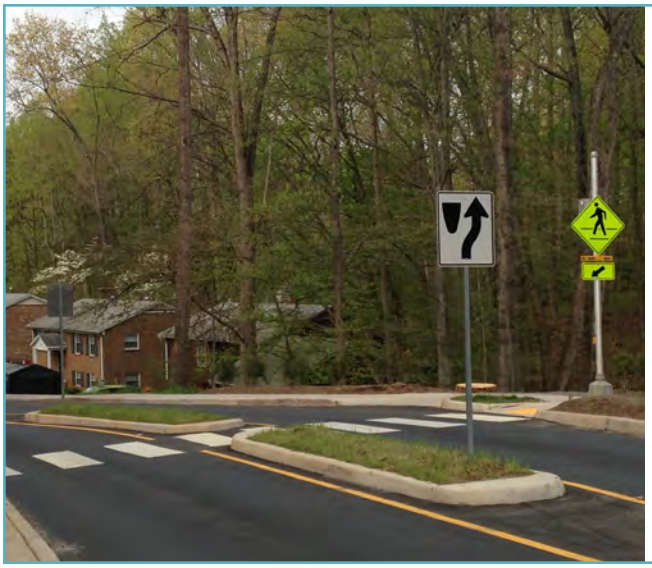
Sidewalks are separated, paved pedestrian routes that make up the spine of the pedestrian network. New sidewalks are required to meet ADA guidelines for width and cross slope. The sidewalk minimum in a residential area is 5 feet and in commerial areas, sidewalks can range from 10 to 20 feet. Optimum sidewalk width will vary depending on pedestrian volumes, land use and desired streetscape elements.

Sidewalk Buffers

Sidewalk buffers ranging two to six feet are desirable to separate pedestrians from the street. The buffer zone will vary according to the street type. In commercial areas, street trees and street furniture such as benches and transit shelters can be accommodated in the buffer zone, while in a residential area landscaped buffers with grass or trees are more appropriate. Street trees have numerous benefits for both pedestrian comfort and environmental health and should be considered wherever space allows. Trees should be planted in appropriate boxes that can accommodate tree growth and provide an even surface for pedestrians.

Curb Ramps

ADA compliant curb ramps are necessary at corners and crosswalks to provide a smooth transition from the sidewalk to the roadway. Ramps should be made as wide as the approaching sidewalk or path to accommodate more than one user at a time. Two perpendicular ramps on each corner are preferred over one diagonal ramp where physical conditions permit.

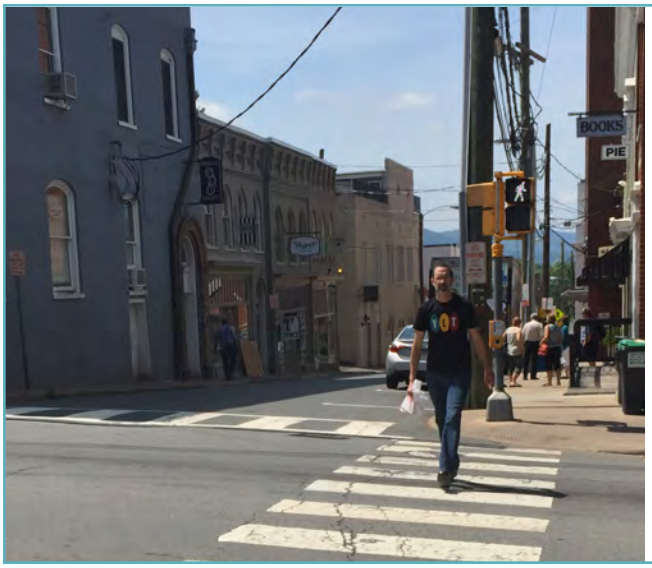


Marked Crosswalks

Marked crosswalks indicate optimal or preferred locations for pedestrians to cross and help designate right-of-way for motorists to yield to pedestrians. Reasonable accommodations should be made to ensure pedestrians do not have to travel too far out of their way to use a marked crosswalk. Crosswalks should be marked with high visibility, use patterns, retro-reflective pavement markings and may require additional signage or pedestrian activated signals depending on their context. The Virginia Department of Transportation provides specific guidelines for making crosswalks.

On-street Parking

On-street parking forms a physical buffer between pedestrians and moving vehicles. By visually narrowing the travel way, on-street parking encourages drivers to slow down. Parallel and front-in angled parking can create a hazard for bicyclists, so where sufficient right of way exists, back-in angled parking is generally preferred.



Pedestrian Signals

Pedestrian signals provide important information for pedestrians crossing the street. The signals must be clearly visible to pedestrians in the crosswalk or those waiting on the opposite side of the street. The Manual on Uniform Traffic Control Devices (MUTCD) requires signals with countdown timers to discourage pedestrian crossings toward the end of the cycle when only a few seconds remain. In general, shorter overall cycle lengths and longer walk intervals concurrent with the flow of parallel traffic provide the highest level of pedestrian service.

Pedestrian Pushbuttons

Pedestrian pushbuttons must be located where they are accessible to all pedestrians. Buttons placed on existing signal poles may require relocation or extensions to be accessible for pedestrians with mobility impairments. Audible pedestrian pushbuttons emit sounds and instructions for pedestrians with vision impairments and can help simplify crossings in locations with limited non-visual clues or complex intersection geometry. The MUTCD provides guidance on the placement of pushbuttons to ensure access for people of all ages and abilities.

Street Lighting

Street lighting improves the visibility of pedestrians and the pedestrian environment. Lighting should be provided evenly along a corridor and in advance of crosswalks, transit stops and intersections where pedestrians are frequently present. Lighting along sidewalks and shared use paths should also be built at a pedestrian scale.

Pavement Materials

Use of different pavement materials can delineate space for different users and communicate where different users have priority. Pervious paving materials allow stormwater infiltration, and different colors and patterns can be used for placemaking and enhancing the pedestrian experience. The sidewalk surface treatment can have an impact on the overall accessibility and comfort level of the facility. Sidewalk surfaces shoul be smooth and continuous. It is desireable that the sidewalk surface be stable, firm, and slip resistant.

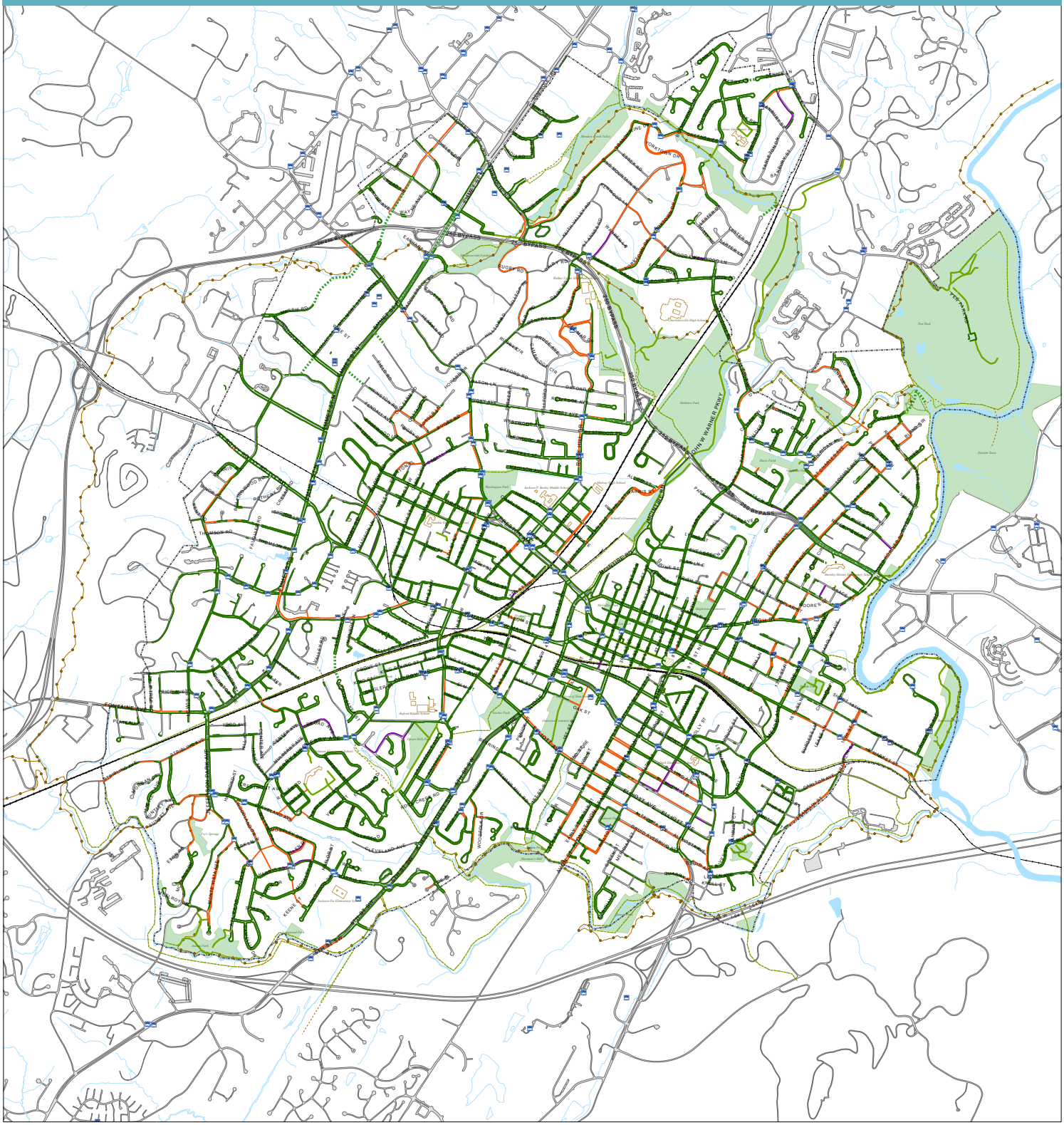
Level Driveway Aprons

At locations where driveways cross the sidewalk, every effort should be made to maintain a straight and level pedestrian path.

In addition, to maintain accessibility for pedestrians with disabilities, width, cross-slope, and grade must meet ADA requirements. The number and width of driveways crossing the sidewalk should be limited whenever possible to reduce the number of potential conflict points. Further, the length of a driveway can be reduced or limited using flexible posts to better manage the access to a destination.

Map 4.4: Proposed Pedestrian Network

The proposed pedestrian network in Charlottesville uses sidewalks and paved and soft surface trails to provide routes within the City and connections to transit.



III. Trails

The existing trail network serves as a backbone for a low stress city-wide bicycle and pedestrian network. Trails create space away from motor vehicle traffic for bicyclists, joggers, and walkers to experience increased safety and serenity while traveling. Trails range from wandering nature trails to paved multi-use paths for commuting. A well-planned trail network complements and connects to on-street facilities such as bike lanes and sidewalks to create seamless transportation corridors.

A bicyclist using the Riverview Trail.

The trail system in Charlottesville was initially created by the Rivanna Trails Foundation (RTF), a non-profit group focused on creating places to enjoy nature in the urban area by building a circle of footpaths around the city generally following the waterways that make up the City limits. The RTF made agreements with landowners and used volunteer labor to establish the system of nature trails that has existed for nearly two decades.

The City decided to support development of the trail system in 2003 with creation of the first Bicycle, Pedestrian and Greenways Plan, including both commuter and nature trail systems. Since the adoption of that plan, the City has been working to protect the RTF trails and to create a complementary system of commuter paths that follow the major streams and connect the park system, as well as into and through downtown, schools, and in the University area. The City has a full time staff person dedicated to implementing trail plans and an annual capital budget that is supplemented with state and federal grants.

Much effort has gone into acquisition of permanent trail easements and parkland to support trail development, and the next phase will be construction of many new trails and associated facilities such as bridges, signage, and comfort stations. City staff works regularly with Albemarle County and the University to plan and construct the urban trail system, including the Three Notched Trail and connections to Monticello, Piedmont Community College, and Biscuit Run State Park.

Trail Facilities

There are a range of trail types in Charlottesville providing a variety of experiences. Photos and descriptions of trail types are listed on the next page.

With more transportation trails coming on line, the City will soon need to develop policies related to lighting, debris sweeping and snow removal for the primary trail network. With major connections being completed, there is also a desire to improve trailheads with more maps and signage, to provide better road crossings and grade separation where possible and to further improve the trail experience and safety for users.

Nature Trails

These are the narrow, winding, natural or dirt surfaced paths that wind through the forested and undeveloped areas of parks, including the greenbelt around the City.

Stone Dust Trails

Stone dust trails are ADA accessible and provide a more garden-like setting for trails that are not intended for heavy daily use, but do require a better surface than nature trails.

Paved Trails

Paved trails are typically installed along major transportation and commuting routes, parallel to primary streets and in dense bicycle/pedestrian settings such as around the University. The City standard is for 10 foot wide trails where possible, with the option of 8 foot width in locations where 10 feet is not possible or desirable, with a hard surface typically of asphalt pavement.

IV. Intersection Improvements

Intersections can create a barrier for bicyclists and pedestrians traveling throughout the City. Although they can be key points of activity, intersections can also be areas with the most potential conflict between people walking, bicycling, and driving. Intersection improvements are critical to ensuring continuity throughout the bicycle and pedestrian networks. It is recommended that the City improve intersections to create a safe and convenient walking and bicycling environment.

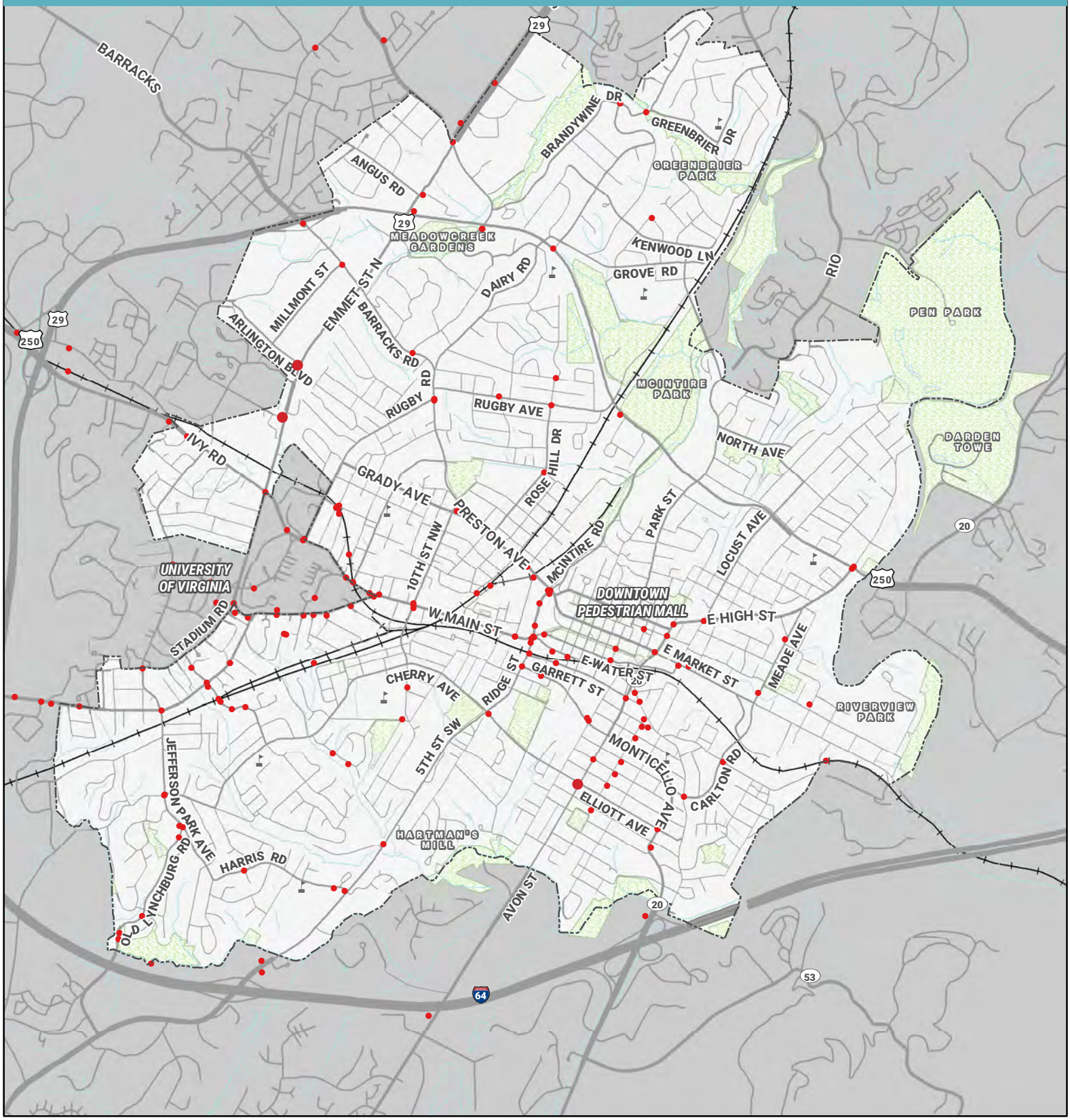
The intersections map (Map 4.5) shows intersections that Charlottesville wikimap contributors and Steering Committee Members identified as needing improvements to achieve the City's Vision for walking and bicycling. While the intersections identified on the map do not represent a survey of all the intersections in Charlottesville, they provide a valuable starting point for the City to improve road crossings for bicyclists and pedestrians. It is recommended that the City evaluate bicycle and pedestrian conditions at all intersections as part of new pedestrian and bicycle facilities as well as road reconstruction, redevelopment or repaving projects. When evaluating the intersection, the City should assess:

- potential conflict points between motorists, bicyclists, and pedestrians
- motor vehicle, pedestrian, and bicyclist volumes during the peak travel periods as well as throughout the day
- existing conditions of marked crosswalks, driveway entrances, curb ramps, and signal pushbuttons
- continuity of bicycle facilities through the intersection
- presence of pedestrian waiting space and bicyclist queueing space

There are many intersection improvements that are possible for Preston Avenue and McIntire Road, including accessible pedestrian pushbuttons and refuge space.

Map 4.5: Intersections

Public wikimap users identified barriers to walking and bicycling and many of their contributions highlighted intersections that can be improved for active transportation. This map highlights the barriers that are located at intersections.



Charlottesville, Virginia

Bike Walk Charlottesville

Toole Design Group

Bicycle and Pedestrian Plan

Intersection Improvements

- Intersection Improvements
- Schools
- Streams
- Rail Lines
- City Park
- City Limits

0 0.25 0.5 Miles

N

Date: *4/29/2015*

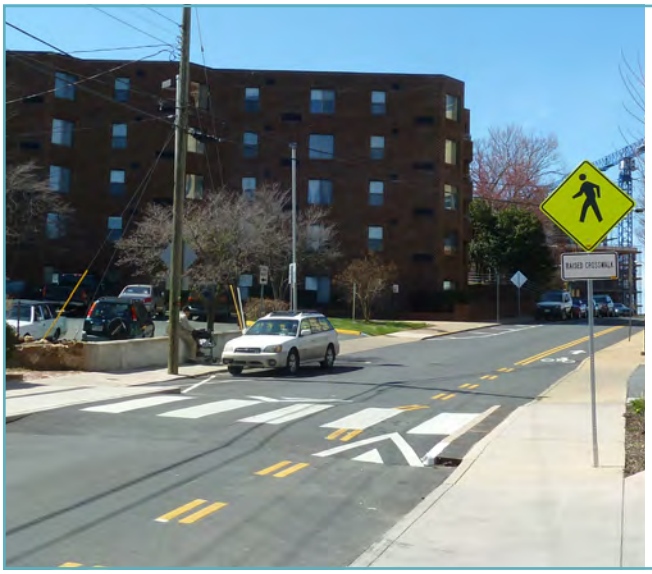
Intersection Toolkit

When the City chooses to improve an intersection, there are many designs or treatments that can be considered. Intersection improvements must take people walking and bicycling into account in order to improve the active transportation experience. Decisions to apply improvements to specific intersections are made based on the Manual on Uniform Traffic Control Devices and the Virginia Department of Transportation's guidelines. Some intersection improvements include:

Right Turn on Red Restrictions

Right turn on red restrictions prohibit motorists from turning right until the signal is green. This can reduce the potential conflict between people walking and bicycling on the crosswalk and motorists turning.

Right turn on red restrictions are often used in areas where right-turning vehicles are involved in rearend or angle crashes with cross-street vehicles approaching from the left or vehicles turning left from the opposing approach, and crashes involving pedestrians.



Raised Crosswalks

A raised crosswalk is a crosswalk on top of a speed hump or speed table. This improvement can make the crosswalk more visible to people driving and it requires them to travel at a slower speed when traveling over the crosswalk.

Rapid Flashing Beacon

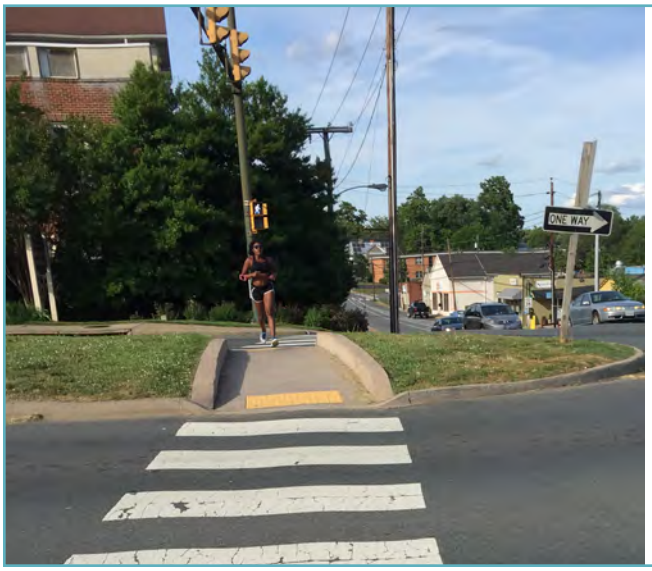
A rapid flashing beacon is a flashing signal directing motorists to be aware of pedestrians crossing the street and is often used at intersections which are not signalized. The beacon is activated by pedestrians prior to crossing the street and serve as a warning for drivers that there is a need to yield to a pedestrian.

Leading Pedestrian Intervals

A leading pedestrian interval is programed into the intersection signalization to provide pedestrians a few seconds of additional crossing time prior to the green signal for motor vehicles. This provides a head start for pedestrians to enter the crosswalk and be more visible to a motorist.

In-street Pedestrian Warning Signs

In-street pedestrian warning signs are placed in the crosswalk and warn motorists of potential pedestrians.

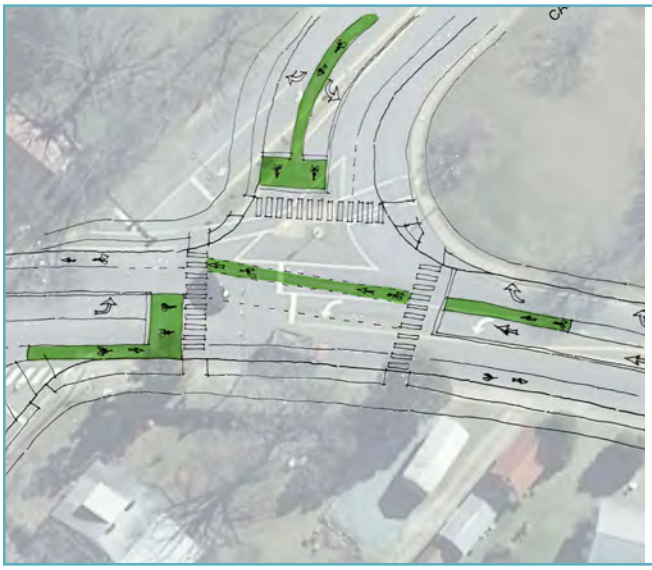


Pedestrian Refuge

A pedestrian refuge is an area in the crosswalk designated for pedestrians and uses a curb to create separation between people and motor vehicles and facilitate two-stage crossings. The minimum width is 6 feet. These can also be called *median refuge islands*.

Curb Extensions

Curb extensions are curb lines that extend into the roadway, shorten crossing distances, and improve visibility for both drivers and pedestrians. A curb extension creates additional space for curb ramps and landings where existing sidewalk space is narrow. These are most effective when on-street parking is present and well-utilized.



Intersection Geometry

The angles and shape of an intersection impact pedestrian crossing distances as well as sight-lines for people driving, walking and bicycling. By tightening turning radii and changing pavement edges so that intersections become more perpendicular, motor vehicles are unable to coast through intersections or turn at speeds that are perceived unsafe by pedestrians.

Bicycle Boxes*

Bicycle boxes are pavement markings in front of the stop line at the intersection and provide space for people bicycling to queue and wait for the signal in front of motor vehicles. These boxes also provide a safe, visible space for people biking to perform a two-stage turn.

Bicycle Signals*

A bicycle signal is a traffic signal designed to control safe bicycle movements at an intersection. These signals can be incorporated into the motor vehicle signalization and can often be set to provide bicyclists a head start to cross the intersection.

Bicycle Detection

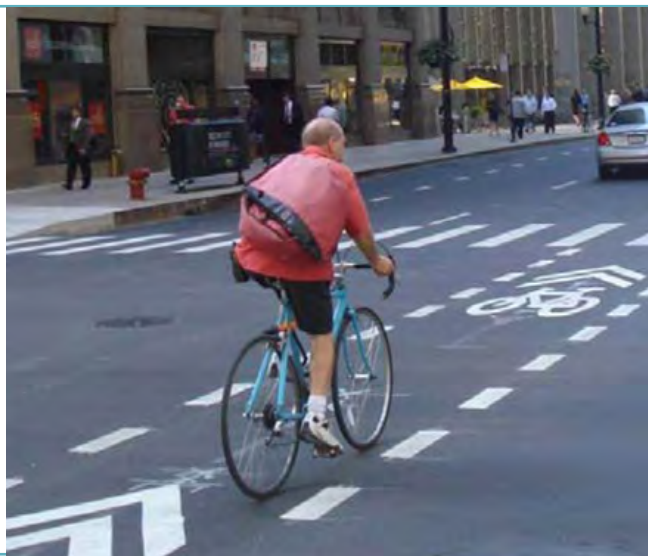
Sensors can be installed in the pavement that detect when a bicyclist is at the intersection. These sensors are connected to the intersection signalization and will change the signal so that the person bicycling may cross the intersection even when there are no motor vehicles present to trigger the signal. Cameras can also be utilized to detect people biking.

Left Turn Pockets/Bays

Left Turn Pockets or Bays give left-turning bicyclists their own lane at an intersection and allow them to be able to decelerate without interfering with through traffic. They also allow for bicyclists to have a protected space to wait for a gap in the opposing directions. These are typically used on streets with one travel lane in each direction or where volumes are low enough on the cross street for sufficient gaps. Bicycle left-turn lanes are required to be at least 4 feet wide and preferred to be 6 feet wide.

Advisory Intersection Crossing*

Advisory Intersection Crossings are intersection crossing markings that indicate bicyclists intended path. These markings provide guidance through complex intersections and clear a boundary between the paths of through bicyclists and crossing motor vehicles in the adjacent lanes. Advisory intersection crossings make bicyclists movements more predictable. They are indicated with dotted lines surrounding the bicycle crossing space with a striping width minimum of 6 inches adjacent to motor vehicle travel lanes.



Two Stage Left Turn Box*

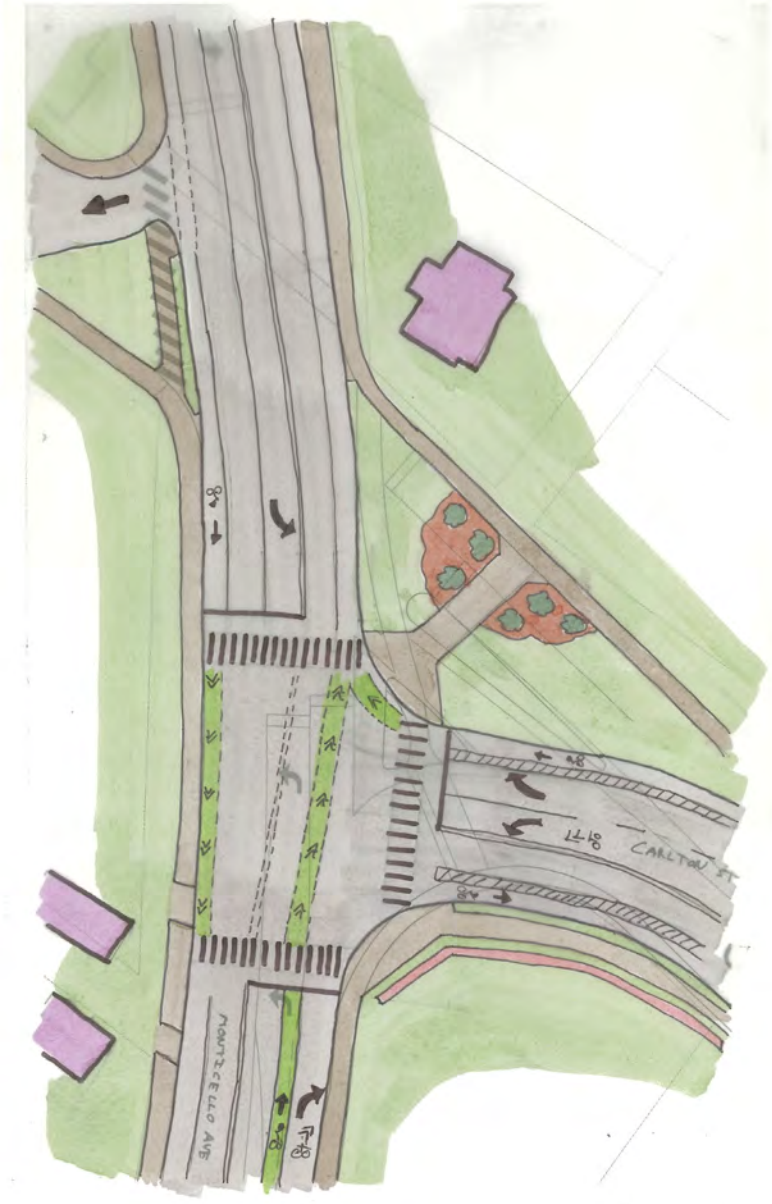
Two Stage Left Turn Boxes offer bicyclists a safe way to make left turns at multi-lane signalized intersections. They are used to orient bicyclists properly for safe crossings and to simplify turns. Sometimes their addition can cause additional wait time for bicyclists waiting for signals or waiting for appropriate gaps in crossing motor vehicle traffic. Two stage left turn boxes are indicated through a bicycle symbol, a turning arrow and two green colored pavement boxes or areas outlined in white solid lines.

*Note: Indicates MUTCD status of experimental or interim approval

Example Intersection Improvements

It is likely that intersections will require a combination of the above improvements in order to create an environment that is amenable to walking, and bicycling. While the Plan Update does not evaluate each of the intersections in Charlottesville, the following illustrations show how to incorporate multiple treatments to create an intersection design that meets the needs of people walking and biking.

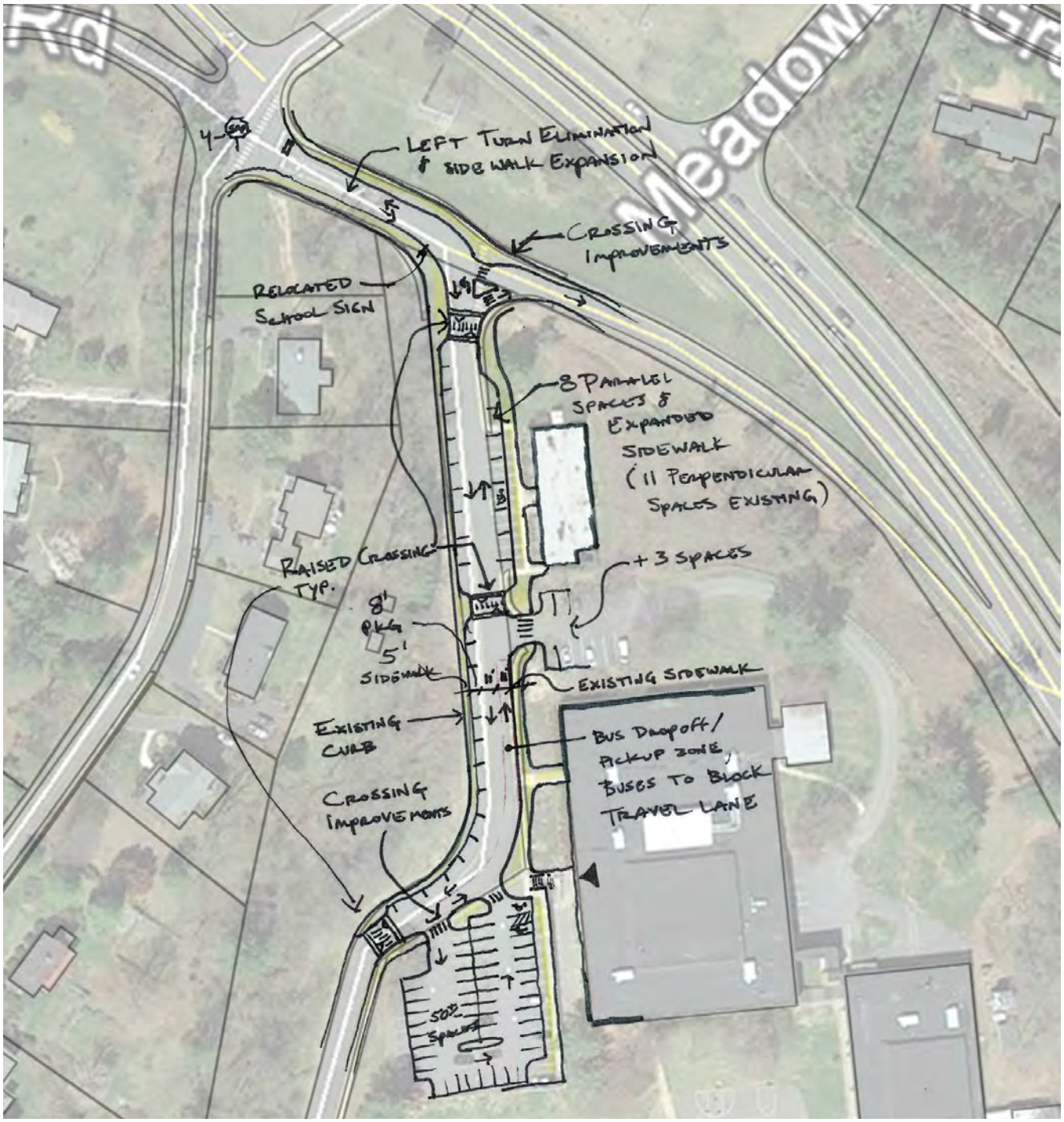
>> **These images and proposed improvements are for illustrative purposes only**. They are demonstrative examples of how multiple improvements can be used at single intersections throughout the City and were developed as part of previous planning projects. Prior to implementing any improvement, additional review and study of the intersection is needed to determine the most beneficial and feasible improvements.



Monticello Avenue and Carlton Road[11]

The existing intersection geometry of Monticello Avenue and Carlton Road leads to long crossing distances, limited visibility between people driving and walking and large curb radii that create an opportunity for people driving to travel through the intersection at speeds perceived to be unsafe by pedestrians. Improvements at this intersection could include altering the intersection geometry to shorten crossing distances, building new sidewalks and crosswalks, and installing bicycle lanes through the intersection.

11. Illustration developed for the Monticello Avenue Public Meeting, May 2014.



Gentry Lane and Dairy Road[12]

The intersection at Gentry Lane and Dairy Road, near Walker Upper Elementary School has wide crossings, few stop signs, and only partial sidewalks. These characteristics do not encourage students, parents, or school staff to walk and bike. However several improvements can make the street and intersections more comfortable for walking and bicycling. These improvements include building a pedestrian refuge island, curb extensions, and raised crossings.

12. Illustration developed for the Walker Upper Elementary School Safe Routes to School Walkabout, September 2014.

Monticello Avenue and Rialto Street[13]

Although the intersection of Monticello Avenue and Rialto Street is in a residential area, it can be difficult for people walking and bicycling to cross Monticello Avenue because there are no stop signs or signals on Monticello Avenue at this location. This intersection can be improved for pedestrians and bicyclists by installing curb extensions to shorten the crossing distance and improve visibility. Curb extensions can also help calm motor vehicle speeds on Monticello Avenue.

V. Bridges and Tunnels

The bikeway facilities, pedestrian facilities, trails, and intersection improvements will all contribute to creating a comprehensive active transportation network throughout the City. However, there are points where topography, the existing road network, or high motor vehicle traffic volumes create a barrier to walking and bicycling that cannot be addressed by an on-street improvement. In these instances, the City can build pedestrian and bicyclist tunnels or bridges to help overcome these barriers.

Pedestrian and bicyclist tunnels and bridges do not only make a critical connection to the active transportation network when no other opportunity exists, but they can also be walking and bicycling amenities and attractions in their own right. Table 4.1 shows potential pedestrian and bicycle tunnels and bridges that would further improve the active transportation network, presented in order from north to south.

The proposed pedestrian and bicyclist tunnels and bridges can also be seen on Map 4.3, Bikeway Facility Recommendations (page 38).

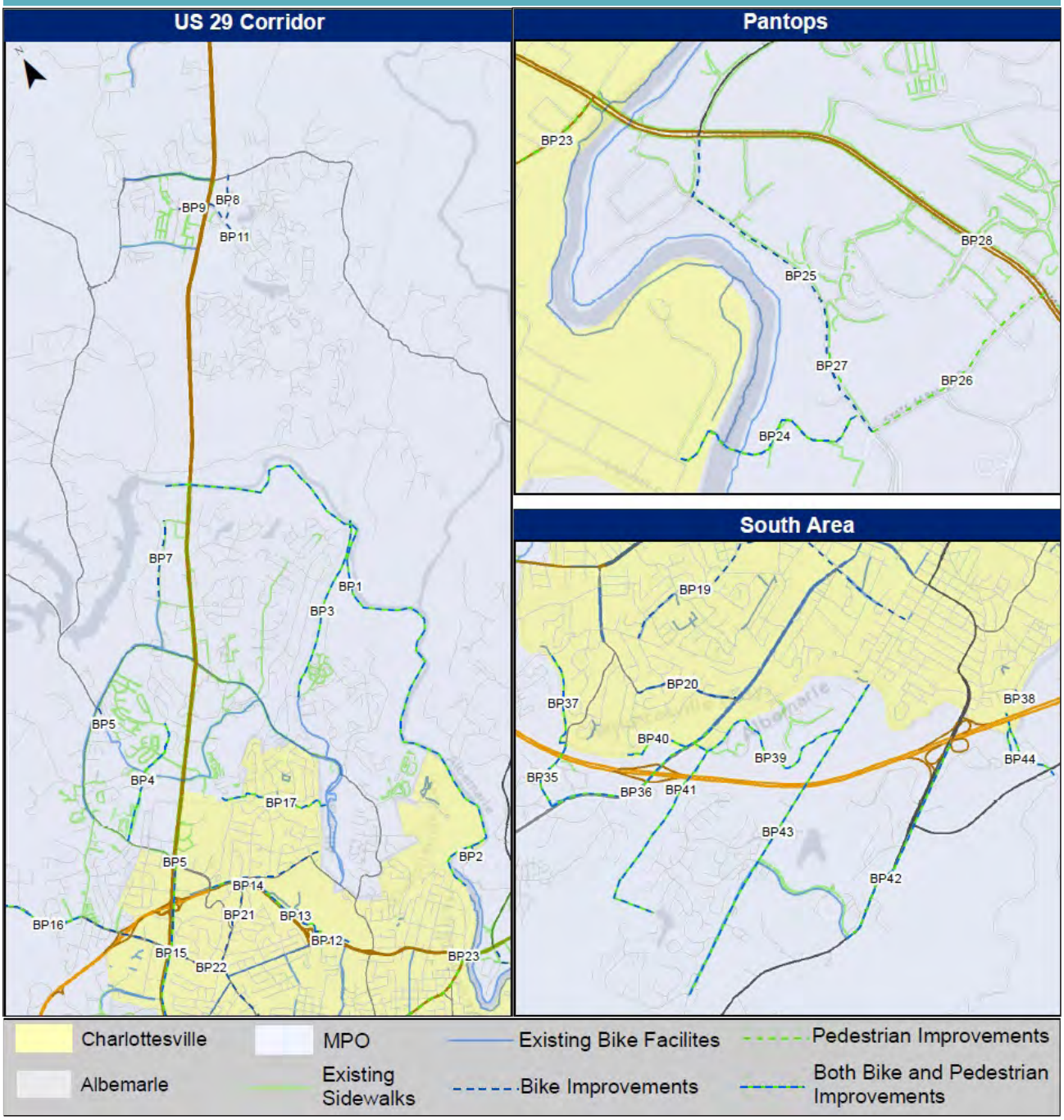
13. Illustration developed for the Monticello Avenue Public Meeting, May 2014.

Table 4.2: Potential Pedestrian and Bicyclist Tunnels and Bridges in Charlottesville	
Facility	**Location**
Tunnel	Under rail tracks connecting Meadow Creek Parkway and Greenbrier Park
Bridge	Over river in Greenbrier Park
Bridge	Over river connect proposed trails north of Brandywine Drive, east of Meadow Creek Valley
Bridge	Over stream at north end of Meadow Creek Valley, connecting proposed trails
Bridge	Over stream in Meadow Creek Valley connecting proposed trails
Tunnel	Under Hydraulic Road, north of Brandywine Drive-Hydraulic Road intersection, connecting proposed trails
Tunnel	Under Route-250 bypass, connecting Meadow Creek Gardens and Meadow Creek Valley
Bridge	Over stream in center of Meadow Creek Gardens
Bridge	Over stream at north end of McIntire Park, connecting to an existing trail
Bridge	Over stream in McIntire Park connecting an existing trail with a proposed trail
Tunnel	Under Route-250 bypass connecting Greenleaf Park and McIntire Park
Bridge	Over Meadow Creek at the southwestern end of Pen Park, connecting two proposed trails
Bridge	Over river connecting Pen Park and Darden Towe Park
Bridge	Over rail tracks connecting proposed trail in McIntire Park with proposed trail on Rugby Avenue
Bridge	Over rail tracks on Copley Street, north of Ivy Road
Bridge	Over rail tracks connecting 17th Street NW and Chancellor Street
Bridge	Over river connecting existing Riverview Trail with County trail south of Long Street
Bridge	Over river connecting to proposed trail south of Riverview Trail
Bridge	Over rail tracks connecting 4th Street NW and 4th Street SW
Bridge	Over rail tracks connecting proposed trail to Douglas Avenue
Bridge	Over rail tracks connecting Jones Street with proposed trail south of Crispell Drive
Tunnel	Under rail tracks connecting Valley Road Extension and a proposed trail south of Brandon Avenue
Bridge	Under rail tracks connecting Valley Road Extension and a proposed trail south of Brandon Avenue
Bridge	Over river connecting Rock Creek Road near Orangedale Avenue
Bridge	Over river connecting to a proposed trail north of I-64
Tunnel	Under I-64 connecting a proposed trail
Bridge	Over river connecting two proposed trails in Hartman's Mill Park
Bridge	Over river in Hartmans's Mill Park connecting Avon Street and a proposed trail

VI. City-County Connections

From the fall of 2011 to the spring of 2014, the Charlottesville-Albemarle Metropolitan Planning Organization (CAMPO) focused most of its planning efforts on the updating of its Long Range Transportation Plan (LRTP). The Charlottesville-Albemarle MPO's 2040 Long Range Transportation Plan is a fundamental document for the City of Charlottesville and the urbanized area of Albemarle County immediately surrounding the City. The LRTP outlines a transportation vision for the next 20 to 30 years and establishes priority projects that will achieve the vision. As part of the plan, $51 million in sidewalk, bike lane, and multi-use trail projects are prioritized in the region. The following maps are excerpted from the plan to demonstrate those projects that will help realize seamless transportation corridors across the City and County borders. A complete list of City-County projects from the LRTP can be found in Appendix F.

Map 4.6: 2040 LRTP Bike and Pedestrian Projects
A selection of bike and pedestrian projects outlined in the LRTP.



Chapter 5: Policy and Program Recommendations

Bike Walk Play JPA Open Streets Event

Chapter 5: Policy and Program Recommendations

Policy Recommendations

As a central element of both the analysis of existing conditions and the recommendations in this Plan Update, the team performed a thorough analysis of Charlottesville's policy documents. The following documents were reviewed with special attention towards sections related to walking and bicycling:

- 2003 Bicycle and Pedestrian Plan
- 2013 ADA Transition Plan
- 2013 Comprehensive Plan
- 2014 Context Sensitive Streets Resolution
- FY 2015-2019 CIP Project Evaluation Criteria
- FY 2015 City Council Approved Budget
- Sidewalk Priority Lists
- Site Plan Review Process
- Charlottesville City Code
  - Chapter 28: Streets and Sidewalks
  - Chapter 29: Subdivision of Land
  - Chapter 34, Article VI: Mixed Use Corridor Districts

Throughout the documents listed above, Charlottesville has reiterated time and again its formal, strong commitment to walking and bicycling. Many intersections have bike detectors and audible pedestrian signals, sidewalks and bicycle facilities are required for new developments, and the City has institutionalized walking and bicycling with multiple staff positions dedicated to planning and implementing active transportation projects. As a result of this strong tradition, the majority of the 70 policies reviewed require either minor or no changes. Only 26 of the policies reviewed have recommended revisions designed to better meet the goals established by this Plan Update. The recommendations are based on best practices and policies adopted in other cities that have made walking and bicycling a priority. The full text of the policy review, including web addresses for the model polices, is included in Appendix E.

Plan Update Goal		
Network	●	Adopting better construction and maintenance standards for walking and biking facilities will improve the active transportation network and the appeal of walking and biking.
Safety	●	A better network and facilities free of debris, pot holes and uneven sidewalks will improve safety for all road users.
Health	●	By improving multimodal access to a variety of destinations, these policy recommendations contribute to the community's physical and economic health.

The major policy recommendations fall into five categories, which are summarized below. The five categories are: Bicycle Facilities, Pedestrian Facilities, Trails, Construction and Maintenance, and Funding. A complete list of the reviewed policies and recommendations is included in Appendix E.

Bicycle Facility Guidelines

The City should adopt a set of context sensitive **bicycle facility guidelines**. Such guidelines are designed to help the City make appropriate facility choices based on the context of an individual street. These guidelines will emerge from the ongoing Streets That Work initiative, be flexible to meet the needs of Charlottesville's constrained street network, and include strategies for implementation.

As Charlottesville reviews and revises the sections of City code that address parking, it should adopt better **bicycle parking standards**. The new standards should address different types of bicycle parking for different needs, including long-term versus short term storage, as well as protection from the elements.

Covered bike parking helps protect bicycles from the elements.

For guidance on bicycle parking design standards, see the Association of Pedestrian and Bicycle Professionals' *Bicycle Parking Guidelines*.[14] Similarly, both Arlington, VA[15] and Washington, DC[16] have model zoning ordinances regarding the amount of bicycle parking required by different land uses.

Pedestrian Facilities

Charlottesville should update the language in the City Code and the Standards & Design Manual to reflect **appropriate sidewalk widths** for different contexts throughout the City. Currently, the minimum five foot width applies everywhere, regardless of zoning designations and land use patterns. Since sidewalks often must provide space for utilities, bus stops and other uses in addition to clear a path for walking, the five foot minimum is insufficient in many places. For example, the minimum width for sidewalks in downtown Harrisonburg, VA is 10 feet.[17] Appropriate sidewalk widths based on land use and street types will be part of the Street Design Guidelines emerging from the Streets That Work Initiative.

Many Charlottesville sidewalks are obstructed by **utility poles** located in the pedestrian right of way. Unfortunately, utility relocation is expensive and not usually a priority for the utility companies. Passing an ordinance similar to the one in Davidson, NC[18] that requires property owners to provide utility

14. Association of Pedestrian and Bicycle Professionals. Bicycle Parking Guidelines, Second Edition. 2010. http://c.ymcdn.com/sites/www.apbp.org/resource/resmgr/publications/bicycle_parking_guidelines.pdf
15. Arlington County. Arlington Master Transportation Plan- Bicycle Element. July 2008. http://arlingtonva.s3.amazonaws.com/wp-content/uploads/sites/31/2014/02/DES-MTP-Bicycle-Element.pdf
16. District Department of Transportation. Bicycle Parking Regulations. http://ddot.dc.gov/page/bicycle-parking-regulations
17. City of Harrisonburg. Bicycle and Pedestrian Plan, 2012. http://www.harrisonburgva.gov/sites/default/files/PublicWorks/files/bicycle-pedestrian/Bicycle%20%26%20Pedestrian%20Plan%20FINAL.pdf/DESIGN_GUIDELINES_OCTOBER_2012.pdf
18. City of Davidson, NC. Section 11, Streets and Greenways; 2001 Planning Ordinance. http://www.ci.davidson.nc.us/DocumentCenter/Home/View/1304

easements five feet from the back of the sidewalk would help mitigate future conflicts.

Charlottesville currently follows the Virginia Department of Transportation's "Guidelines for the Installation of Marked Crosswalks," and should continue to do so. Where there are exceptionally long blocks, mid-block pedestrian crossings can be used to shorten the distance a pedestrian needs to walk. All mid-block **marked crosswalks** should be accompanied by advanced signage and pedestrian scale lighting to improve the visibility of pedestrians. Crosswalk lines should not be used indiscriminately. An engineering study should be performed before crosswalk markings are installed at uncontrolled locations.

Covered walkways protect pedestrians next to construction zones while maintaining access.

Trails

As Charlottesville's trail network continues to expand and provide essential connections, the City should classify and maintain trails according to a standard set of **trail typologies**. With their wide, paved surfaces and routes that connect neighborhoods to important commercial centers, the new John C. Warner Parkway Trail and 250 Bypass Trail are the City's first commuter trail routes. As such, these trails need lights and snow removal plans in order to accommodate commuter traffic year round. Maintenance along these routes should be a high priority, just as routine road and sidewalk maintenance maintains smooth travel surfaces for other modes. Natural or soft surface trails used for recreation should also be maintained regularly, but may not have the same priority as a commuter route.

For instance, Denver, CO has over 100 miles of paved urban trails that are open 24 hours a day, 365 days per year. Trail sweeping, landscaping and trash collection are performed on a regular basis, while trail repairs and snow and ice removal are completed as needed. In the winter, the trails are treated with sand or ice melt and major routes are plowed starting at 5:00 AM after a snow storm.[19]

The city should continue to look for opportunities to create **off-road bicycle and pedestrian commuter trails** on level paths, such as stream valleys, to increase the ability of people to live and work in the City and County car-free.

Construction & Maintenance

The City of Charlottesville needs to strengthen its policies regarding **sidewalk and bike lane closures** in construction zones. The current policy does not assign fees based on the length of sidewalk closed nor limit the duration of the closure. The Washington, DC construction closure policy is a good example. The policy emphasizes pedestrian and bicycle access throughout a project by using covered walkways and construction barriers. Closures are only permitted during certain phases of construction and fees are assigned based on the amount of space affected and the duration of the closure.[20]

19. Denver Trail Policy. http://www.americantrails.org/resources/ManageMaintain/MaintCheck.html
20. Washington DC Department of Transportation. Pedestrian Safety and Work Zone Standards.

The **reporting of maintenance issues** is an important topic for consideration in Charlottesville. Residents can currently report street and sidewalk maintenance issues to the City by phone and email. With a variety of online and mobile issue tracking services available today, Charlottesville should consider making the reporting process more user friendly. These services allow users to read other reports that have been submitted, as well as provide a public platform for City staff to inform residents that requests have been received and issues have been fixed. See-Click-Fix is a popular platform used by many cities including Richmond, VA to track requests and improve customer service. Additionally, the responsible City department could also make a public commitment to resolve reported issues within a specified time period, whenever possible, to improve accountability.

Maintenance of **on-street bike facilities** should be included as part of routine street maintenance. Hazards on shoulders and in bike lanes do not only pose problems for bicyclists; if a bike lane is unusable bicyclists must ride farther out in the travel lane or may swerve unpredictably to avoid an object creating hazards for other users as well. To keep its bicycle facilities free of debris, the Pima County, AZ Department of Transportation sweeps bicycle infrastructure on arterials and collectors once a month or more as needed. Bicycle facilities on local roads are swept quarterly.[21]

Like any locale with four distinct seasons, **snow removal and winter maintenance** are an annual challenge for the City of Charlottesville. Bike lanes on primary and auxiliary snow removal routes should be plowed along with the street following a snow storm. Extra care should be taken not to deposit snow from the vehicular travel lanes into the bike lanes or sidewalks.

Residents and business owners should continue to receive annual reminders about their responsibility to clear the sidewalk in front of their property within 24 hours of the end of the snowfall. Neighborhood associations are encouraged to increase efforts to recruit volunteer labor to help those who are unable to clear the sidewalks on their own. After education and encouragement campaigns, the City should follow up and enforce the City ordinance with citations and fines to ensure sidewalks are cleared for use.

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http://ddot.dc.gov/sites/default/files/dc/sites/ddot/publication/attachments/pedestrian_safety_and_work_zone_standards_covered_and_open_walkways_july_2010.pdf

21. Pima County, AZ Bike lane Maintenance Policy http://www.americantrails.org/resources/trans/bikemaintpima.html

Snow plowed directly into the bike lane on Rose Hill Drive.

Funding

The review of the City **budget** and 2015-2019 Capital Improvement Program (CIP) revealed that Charlottesville is spending about $1,057,109 per year on specific pedestrian and bicycle improvements. Table 5.1 shows the amount of pedestrian and bicycle spending by category.

While Charlottesville's current spending rate is high relative to many other walking and bicycling friendly communities, increasing pedestrian and bicycle spending would help fund the recommendations in this Plan Update.

The City of San Luis Obispo, CA recently committed to spending 20 percent of its general fund transportation budget on bicycle facilities to match its stated 20 percent bicycle mode split goal.[22] Charlottesville is in an excellent position to adopt a similar policy, if desired.

Table 5.1: Pedestrian and Bicycle Spending in Charlottesville

Budget Line Item	Adopted FY 2015 Budget	5 Year Total (2015-2019)
New Sidewalks (Bondable)	$285,000	$1,425,000
Sidewalk Repair (Non-Bondable)	$400,000	$2,040,401
Citywide ADA Improvements (Non-Bondable)	$95,000	$475,000
Bicycle Infrastructure (Non-Bondable)	$200,000	$1,000,000
Trails and Greenway Development (Non-Bondable)*	$77,109	$393,334
Totals	$1,057,109	$5,333,735

	Adopted FY 2015 Budget	5 Year Total
Total Transportation Expenditures	$5,342,111	$24,756,440
Bicycle and Pedestrian expenditures as percentage of Transportation expenditures	18%	20%

* Trails and Greenway Development is listed under Parks & Recreation, and not included in the percentage of Transportation budget calculation.

22. "How San Luis Obispo Established the Most Powerful Bicycle Funding Policy in the Nation," http://www.bikewalkalliance.org/blog/535-how-san-luis-obispo-just-established-the-most-powerful-bike-funding-policy-in-the-nation

Program Recommendations

Policy change, while essential to creating and maintaining a community where people choose to walk and bike, is not usually visible or particularly exciting to the average citizen. Strong programs designed to educate the public of the many benefits of walking and bicycling and to encourage them to start leaving their cars at home for short trips are an essential component of the "culture shift" many stakeholders would like to see in Charlottesville. The City of Charlottesville is encouraged to partner with representatives from a variety of fields--public safety, education, community groups, neighborhood leaders, youth, local businesses and non-profits--to provide programs that educate and encourage more walking and bicycling.

Plan Update Goal		
Culture		Incentive and mentoring programs can be the extra push that encourage residents and visitors to switch to active travel modes for short trips.
Educate		Educational programs across a variety of levels inform all road users of their rights and responsibilities.
Evaluate		Expanding pedestrian and bicycle counting programs is essential for monitoring changes in travel mode and the progress of the Plan Update implementation in general.
Health		Programs that reduce household transportation costs by shifting trips to less expensive and less polluting modes can improve the community's economic, environmental and physical health.

The major programmatic recommendations are grouped into categories as follows: Education, Encouragement, Safe Routes to School and Evaluation. Each category below provides a sampling of activities that could be pursued. A complete list of the reviewed programs and recommendations is included in Appendix E.

Education

Traffic **safety education** should be included in school curricula for all ages. Elementary students need to learn basic bicycle and pedestrian safety while middle school students can cover more advanced bicycling skills in courses marketed as "Pre-Driver's Education." Lessons learned in elementary and middle school would be revisited during regular Driver's Education classes in high school. Students would graduate from the City school system with a holistic knowledge of traffic safety related to all travel modes.

Traffic safety **media campaigns** increase awareness and frequently remind road users of their rights and responsibilities. The best campaigns take advantage of the wide array of media outlets available today – print, outdoor advertising, radio, television, online and social media – to reach all demographics. Simple taglines and memorable graphics, such as Arlington, VA's "Be a PAL" or Metropolitan Washington's "Tired Faces" campaign grab the viewer's attention and are easily recognizable.

Set a goal to host at least one teen and adult **bicycling workshop** per quarter. Workshop topics should include how to ride a bike, the rules of the road and city riding strategies, but could also be expanded to include introductions to different types of recreational biking, safe bicycling in winter weather, and basic bicycle mechanics.

Create and distribute **bicycling maps** that highlight the level of traffic stress along each route. Show the locations of fix-it stations, bike shops, and other amenities.

Bike to Work Day pit stop on West Main Street.

Encouragement

Partner with the Thomas Jefferson Planning District Commission to market and support their existing **Ride Share** program to encourage commuters to take advantage of alternate modes of transportation. Engage the University of Virginia, State Farm, CFA, and other large employers to support their initiatives to increase walking and biking among their employees with technical expertise, small incentive items, and official letters of recognition.

Charlottesville currently has one **Bicycle Friendly Business** recognized by the League of American Bicyclists. Consider adopting a smaller scale local program by partnering with local Charlottesville organizations, such as Better World Betty or the Chamber of Commerce. Encourage businesses to provide small discounts to customers arriving by foot or bike. This rewards programs could be piloted during or as part of Earth Day or Bike Month activities and later expanded as popularity increases.

Build on the success of the Move2Health campaign and sponsor a similar individual or group **challenge** for walking and bicycling trips. Develop an app for participants to log their walking and bicycling trips from their smart phones and track their progress. Offer weekly prize drawings for logging at least one trip per week or other indicator of consistent participation, rather than awards for the number of trips or cumulative trip distance to encourage more regular drivers to participate.

Highlight **events** like National Walking Day (the first Wednesday in April) and National Bike Month (May) on the City's event calendars. Partner with community groups to host events.

Host low-cost or free **bicycle maintenance classes** in different areas of the City, making it easier for residents with seldom used bicycles to get riding again. The workshops could be held at schools, parks, and multi-family housing complexes.

Work with community organizations to expand existing **earn a bike programs** for underserved residents in need of job skills training and a reliable mode of transportation .

Coordinate a **bicycle mentor program** where experienced bicyclists are matched with less confident bicyclists for daily commutes and/or host social rides in the evenings or on weekends.

Continue to provide support to neighborhoods interested in hosting **Open Streets Events**, such as Bike Walk Play JPA. These events close city streets to motor vehicles to allow residents to safely walk and bike.

Safe Routes to School

Conduct annual **student travel tallies** and **parent surveys** at every school in Charlottesville to assess trends in student travel patterns and parental attitudes towards walking and biking. Parent surveys also help identify specific barriers to walking and biking that can be addressed through the five E's (engineering, education, encouragement, enforcement, and evaluation). Tally and survey forms are available on www.saferoutesinfo.org, and there is an online option for distributing the parent surveys.

Encourage schools to participate in Safe Routes to School events including **International Walk to School Day** in October and **Bike to School Day** in May. Support school efforts with incentive items, helping arrange for a local celebrity to walk or bike with students and providing official letters of recognition.

Support **bicycle rodeos** and bicycle safety education in physical education classes with a City-owned bicycle fleet for student use.

Collaborate with parent volunteers to coordinate **bike trains** and **walking school buses** for students that live within walking or biking distance of school. Provide parent leaders with reflective vests and pocket reference guides with safety tips and the procedures for reporting sidewalk issues and reckless drivers.

Hire a citywide **Safe Routes to School Coordinator**. This position could be within the local government or school division. Eligibility to participate in SRTS activities is completely independent of hiring a SRTS Coordinator; however, jurisdictions with SRTS Coordinators in Virginia have much higher participation rates in annual events and are in a better position to take advantage of grant opportunities. Funding for a coordinator may be available through grants from either the Virginia Department of Transportation or Virginia Foundation for Healthy Youth.

Burnley Moran Elementary School's Walk-a-Thon for Wellness was supported by a Virginia Department of Transportation Safe Routes to School QuickStart Mini-grant.

Evaluation

Monitor the success of UVA's **UBike bike share system** and explore potential partnerships to expand the system to other areas of the community, including popular destinations like Downtown and Barracks Road Shopping Center, and to populations without access to bicycles.

Recruit more **volunteers** to assist with biannual pedestrian and bicycle counts. Work with the University of Virginia, Charlottesville High School, Boy and Girl Scouts, neighborhood associations, and other community groups to recruit and train more volunteers. Find a business to donate coffee or snack vouchers for volunteers.

A UBike bike share dock on the University of Virginia campus.

Once completed, make pedestrian and bicycle **count data** publicly available. This can be both in its raw form for students and data enthusiasts to use, as well as in a summary format for general public consumption.

Track changes in walking and bicycling rates and crash reports over time, with particular attention to locations with infrastructure improvements.

Increase the use of **automatic** counters at key locations and explore options for installing permanent counters on new commuter trails and along main transportation corridors. Permanent counters with public interfaces are very visual reminders of the City's commitment to human powered modes of transportation.

Automated bike counter with public display in Seattle, WA. Image credit: SustainableSPU

The policy and program recommendations included in this Plan Update create a walk and bike friendly political and social environment to supplement the physical environment created by the infrastructure recommendations. This broad approach helps make walking and bicycling appeal to a wider audience and creates the basis for sustainable, long-term change.

Chapter 6: Implementation

Sidewalk and multi-use trail along the Water Street Extended

Chapter 6: Implementation

The walking and bicycling recommendations described in the previous chapters provide a guide for the type of facilities to build, the policies to develop, and the programs to conduct to improve active transportation in Charlottesville. The implementation of the City's vision will occur through individual projects and depend on available resources to put the Plan Update into action.

This chapter provides guidance regarding the implementation and phasing of the Plan Update. This implementation is designed to identify projects, policies, and programs that will inspire walking and bicycling in the City and promote further action to expand and maintain active transportation in the City.

The reconstructed Jefferson Park Avenue Bridge has sidewalks and bicycle lanes on both sides.

There are two elements to the Plan Update's implementation. The first is to identify the projects, policies, and programs that will have a significant beneficial impact toward achieving the Plan Update goals and vision. The second is to create a phased timeline for the implementation of identified projects, policies, and programs. It is important that this implementation process is adapted over time in response to the changing conditions in the City and to any opportunities that arise. As the City implements the Plan Update, it is important to consider available resources, concurrent construction projects and planning efforts, and public support.

This chapter includes five sections on implementation:

- Bicycle facility projects and prioritization
- Sidewalk projects and prioritization
- Project cost estimates
- Implementation phasing
- Funding strategies and sources

Bicycle Facility Projects and Prioritization

The bikeway prioritization process takes into account the dynamic nature of Charlottesville's streets. Bikeway facilities often change along a single corridor to reflect changing widths, traffic volumes, or neighborhoods. As such, there are over 800 individual facility segments that make up over 240 separate facility recommendations. In order to develop a manageable list of projects for implementation, the facilities have been grouped together into a total of 95 projects. The projects are grouped by a combination of facilities that together create a single corridor, or by multiple facilities of similar type that are within a single neighborhood. These projects will then be prioritized according to factors important to the City and the Community.

Prioritization provides the opportunity for all projects to be compared with each other using the same set of criteria. This helps the City identify which projects should be focused on first as they will likely have the most beneficial impact for bicycle transportation. A complete list of projects ranked by priority is shown in Appendix F.

This project utilized the ActiveTrans Priority Tool (APT), a model methodology developed by the National Cooperative Highway Research Program that can evaluate and prioritize pedestrian and bicycle improvements on existing roadways. The APT is a spreadsheet tool that provides a flexible, transparent, and step-by-step methodology that incorporates community and City values into the project prioritization process. The Plan Update uses the tool to quantitatively and objectively compare and prioritize the 95 identified projects.

The APT uses various factors and variables selected by the City and Steering Committee as criteria to compare and evaluate projects. Factors are categories used to express the community's values and to group variables with similar characteristics together. There are six factors used in the prioritization.

Variables are characteristics of roadways, neighborhoods, and other features that can be measured. Table 6.1 shows which factors and variables are used in the prioritization. Details regarding the weighting of factors and the scaling of variables is in Appendix F.

Table 6.1: Factors and Variables Used in Bicycle Project Prioritization

Factor	Variable
Equity	• Population density • Density of low income residents
Existing traffic conditions	• Average annual daily traffic (AADT)– motor vehicles • Posted speed limit
Implementation Effort	• Planning level cost estimate • Major action needed
Network connectivity	• Bicycle and pedestrian demand • Connections to trails (proposed) • Connections to on-road facilities (proposed) • Bicycle corridor type in Bicycle Vision Network
Public support	• Percentage of project that is along a route that the public currently takes or would like to take, identified by public wikimap
Safety and demonstrated need	• Bicycle level of traffic stress • Proximity to bicycle barrier, identified by public wikimap

The rankings by the APT provide an assessment of each project's likely impact on bicycling in the City. The twenty highest ranked projects are listed in Table 6.2 below.

The prioritization shows a variety of projects that will improve Charlottesville's bicycling environment. The top ranked project, Jefferson Park Avenue at Emmet Street, is a small section of Jefferson Park Avenue. It is a challenging intersection for bicycling and is near a densely populated area. Projects such as West Main Street and High Street represent corridors that have both a high demand for bicycling and a high bicyclist level of traffic stress. Other projects such as 5th Street SW or Preston Avenue and Preston Avenue/Barracks Road provide valuable corridors into and through Charlottesville.

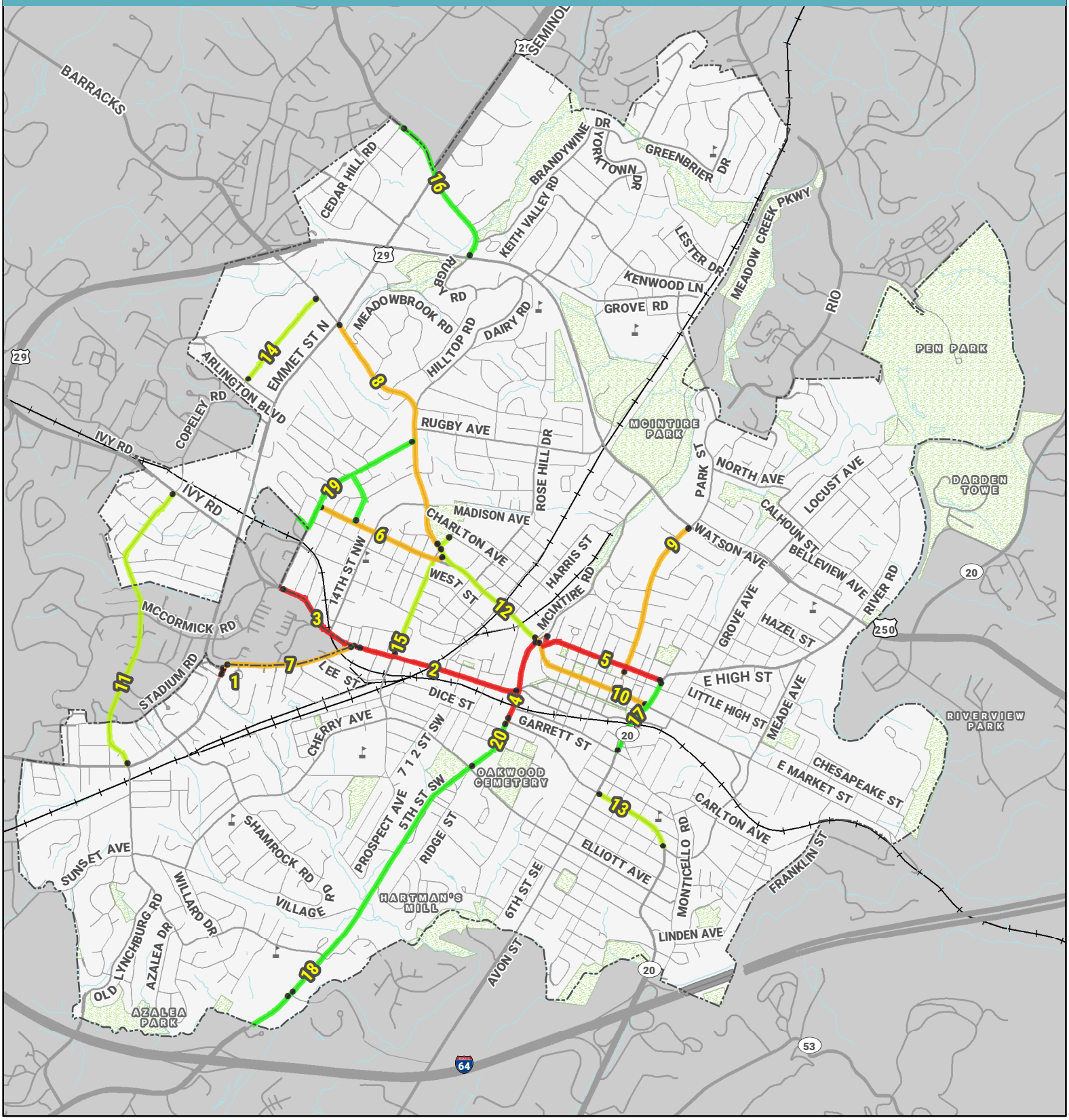
Although the top ranked projects will likely improve the bicycling environment in the City, it is recommended that Charlottesville review all projects to take advantage of other opportunities to expand the bicycling network. The City should especially consider including walking and bicycling improvements as part of scheduled repaving, road reconstruction and adjacent development projects. A list of bicycle facility improvement projects that overlap with repaving projects is shown in Appendix F.

Table 6.2: Bikeway Project Prioritization Results

Project Rank	Project Name and Location	Facility Type
1	Jefferson Park Avenue – At Emmet St	Bicycle Lanes
2	West Main Street	Separated Bicycle Lanes
3	University Avenue	Shared Roadway
4	Ridge McIntire Road	Bicycle Lanes
5	East/West High Street	Climbing Bicycle Lane
6	Grady Avenue	Shared Roadway
7	Jefferson Park Avenue – W Main St to Emmet St	Bicycle Lanes
8	Preston Avenue / Barracks Road	Climbing Bicycle Lane
9	Park Street	Shared Roadway
10	West Market Street	Climbing Bicycle Lane
11	Alderman Road	Shared Roadway
12	Preston Avenue	Separated Bicycle Lanes
13	Monticello Avenue – Avon St to Carlton Rd	Climbing Bicycle Lane
14	Millmont Street	Bicycle Lanes
15	10th Street NW	Climbing Bicycle Lane
16	Hydraulic Road	Separated Bicycle Lanes
17	9th Street NE/SE	Separated Bicycle Lanes
18	5th Street SW	Separated Bicycle Lanes
19	Rugby Road	Bicycle Lanes
20	Ridge Street	Bicycle Lanes

Map 6.1: Bicycle Project Prioritization

These 20 projects scored highest in the project prioritization process and will benefit Charlottesville's on-road bicycling environment.



Charlottesville, Virginia

Bike Walk Charlottesville
Bicycle and Pedestrian Master Plan Update 2014

Toole Design Group

Bicycle and Pedestrian Plan

Project Prioritization

Top 20 Prioritized Projects
- 1 - 5
- 6 - 10
- 11 - 15
- 16 - 20

- Schools
- Streams
- Rail Lines
- City Park
- City Limits

0 0.25 0.5 Miles

N

Date: *4/30/2015*

Sidewalk Projects and Prioritization

In 2011, the City of Charlottesville adopted a pedestrian project prioritization process that guided the development of the 2011-2016 Sidewalk Priority List for new sidewalk construction. It included the following general criteria:

- Commercial and Residential Connections
- Connected Streets
- Functional Roadway Classification
- Low Income Areas
- Overlap of School Areas
- Park Access
- School Proximity
- Existing sidewalk on one side of the road
- Transit Stop Access

Based on feedback received from the Steering Committee, the previously adopted criteria were refined slightly to prioritize gaps in the existing network and attempt to create a more transparent system for prioritizing sidewalks in the future. The new factors and variables are shown in Table 6.3.

Table 6.3: Factors and Variables Used in New Sidewalk Project Prioritization

Factor	Variable
Equity	• Located in a Community Development Block Grant (CDBG) neighborhood
Existing traffic conditions	• Posted speed limit • Functional classification of roadway • Located on cul-de-sac
Sidewalk Connectivity	• No existing sidewalks • Partial sidewalk exists • Sidewalks on adjacent block • Sidewalk is obstructed or partially obstructed
Proximity to Attractors/ Facilities	• Distance to bus stop • Distance to a school (includes pre-school, daycare, public, private) • Distance to grocery/shopping/office center • Distance to civic building or park
Land Use Context	• High Density Residential • Commercial/Mixed use • Office/Apartment/Hotel
Related Projects	• Combined with previously planned street work • Adjacent private development approved

Proposed new sidewalk construction projects are evaluated based upon scores received using the new criteria and scoring schedule (see Appendix F for more detailed information). The project score is determined by accumulated point total. Generally these criteria are used only for evaluating projects to construct **new sidewalk** spanning at least one block in length. The highest scoring sidewalk project in each neighborhood are listed below in Table 6.4.

Table 6.4: Sidewalk Projects by Neighborhood

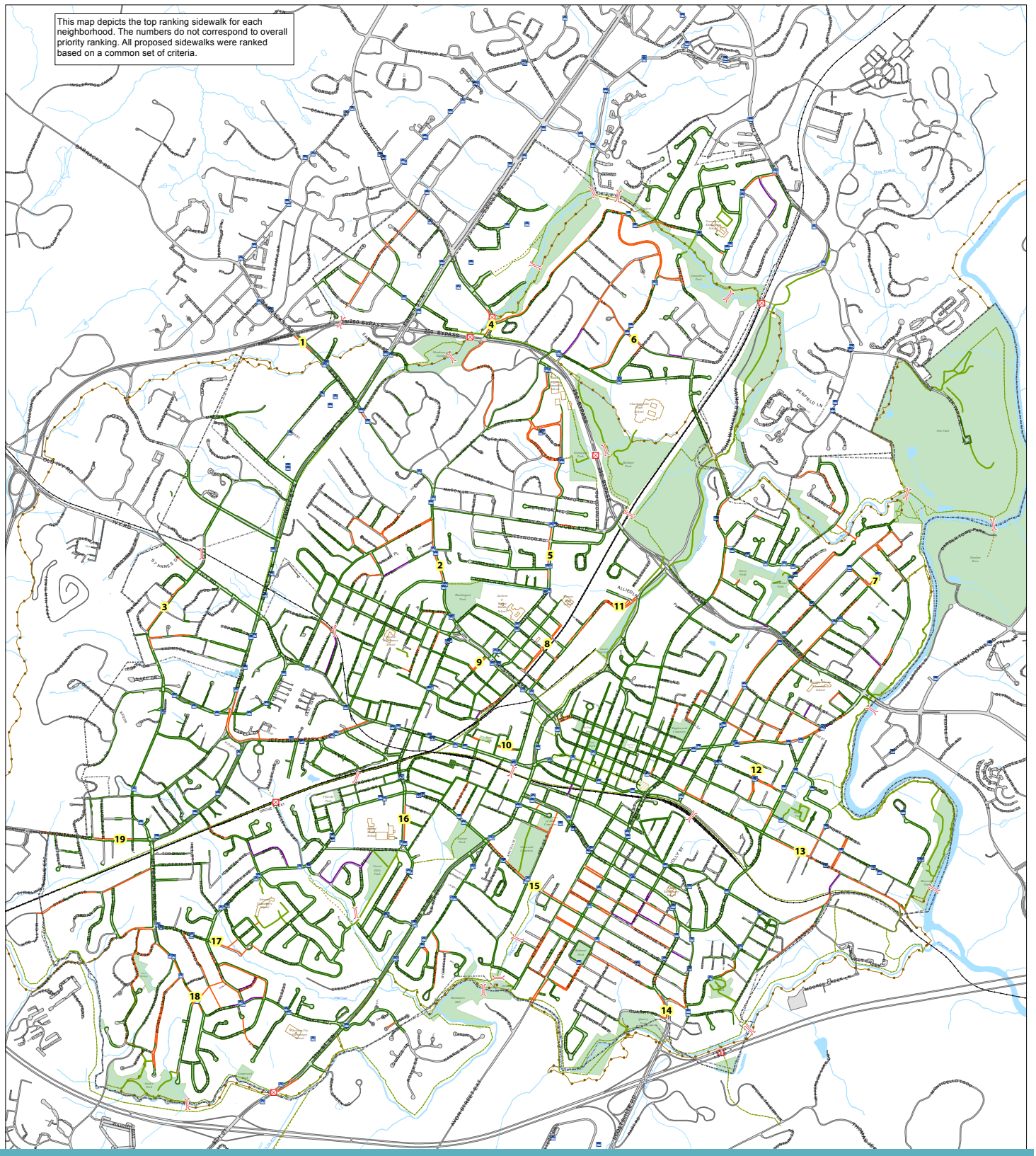
Neighborhood	Street	Sidewalk Location	Starting	Ending	Length (ft)	Cost ($)
Barracks Road	Barracks Road	SW	Existing	250/29 Bypass	530	$116,600
Venable	Preston Ave	South	Rugby Rd	Madison Ave	800	$176,000
Lewis Mountain	Alderman Road	NW	Kent Rd	Morris Rd	1260	$277,200
The Meadows	Hydraulic Road	West	Dominion Power	250 Bypass	525	$115,500
Barracks/Rugby	Rose Hill Drive	West	Rugby Ave	Madison Ave	1470	$323,400
Greenbrier	Kenwood Lane	South	Yorktown Dr	M'brook Hgts	920	$203,500
Locust Grove	St. Clair Avenue	NW	Peartree Ln	Smith St	280	$61,600
Rose Hill	Albemarle Street	Both	Dale Ave	Rivanna Ave	1300	$286,000
10th & Page	9th Street NW	Both	West St	Preston Ave	450	$99,000
Star Hill	Commerce St	South	6th St	Existing	420	$92,400
North Downtown	Harris Street	Both	Rivanna Ave	McIntire Rd	1540	$338,800
Martha Jefferson	12th Street NE	West	E Jefferson St	Meriwether St	860	$189,200
Woolen Mills	Market Street	Both	Franklin Ave	Meade Ave	1400	$308,000
Belmont	Monticello Avenue	West	Quarry Rd	Druid Ave	800	$176,000
Ridge Street	Elliott Avenue	North	Ridge St	Avon St	1320	$290,400
Fifeville	9th Street SW	East	Elm St	Existing	760	$167,200
Johnson Village	Cleveland Avenue	North	Existing	Ranier Rd	675	$148,500
Fry's Spring	Azalea Drive	Both	Existing	Harris Rd	270	$59,400
Jefferson Park Avenue	Fontaine Avenue	North	Summit St	JPA	890	$195,800
					Total Cost	**$3,624,500**

* Note: This project list does not include the results of the field assessment

Charlottesville Bicycle and Pedestrian Plan

Proposed Sidewalks for the Pedestrian Network

May 2015



Map 6.2: Proposed Sidewalks for the Pedestrian Network
These are the top ranking sidewalk priorities for each neighborhood determined using a common set of criteria.

Project Cost Estimates

Planning level cost estimates were developed for projects in the Plan Update, for use as a variable in the prioritization process and to be referenced in the phasing process. The construction cost of a project can vary greatly and is dependent on existing road conditions, type of facility built, and the length of the facility. The planning level cost estimates are provided per mile and take into account the typical elements that are built, modified, or removed for a new facility. These estimates also consider the major action that may be needed for implementation.

The major actions include:

- **Altering the curb location** – moving the curb location to increase a road's width to include bicycle or pedestrian facilities.
- **Consolidating Parking** – removing motor vehicle parking from one side of the roadway.*
- **Constructing new facilities** – building a new sidewalk or bicycle path on unpaved land.
- **Lane Diet** – reducing the width of each travel lane to create space for bicycles or pedestrians.
- **Pavement markings** – adding new pavement markings for shared lane facilities or bicycle lanes, that do not require adjusting any existing pavement markings.
- **Removing Parking** – removing motor vehicle parking from both sides of the roadway.*
- **Road Diet** – removing a travel lane to create space for bicycling or walking facilities.
- **Signage** – adding road signs along the street

The cost estimates do not include right-of-way acquisition or relocating utilities. It is recommended that a detailed cost estimate be made prior to construction of bicycle facilities. The methodology and assumptions for estimates, and a list of cost estimates for each project segment are shown in Appendix F.

* Note: Prior to any parking removal, the city will work with the neighboring public to address traffic concerns and ensure that replacement parking for adjacent uses has been provided.

Water St and 1st St intersection leading to the Downtown Mall

The cost of an infrastructure project may not completely reflect the impact that a project may have on traffic or neighboring uses. For instance, altering the curb location is expensive and will likely impact traffic and the surrounding areas during construction. Removing parking is a less expensive alternative to altering the curb location; however neighbors or nearby businesses may have concerns. For infrastructure projects where curbs are moved or parking is affected, the City will engage with the neighboring public to ensure that they understand the impacts of the bicycling or walking improvement and provide input on the design before any change is made.

Table 6.5: Major Action Cost Estimates

Facility Type and Major Action	Planning Level Cost Estimate per mile
Separated Bicycle Lanes	
Alter Curb Location	$ 9,140,000
Lane Diet	$ 36,000
Road Diet	$ 36,000
Shared Use Path or Side Path	
Alter Curb Location	$ 700,000
Bicycle Lanes	
Alter Curb Location	$ 2,102,000
Consolidate Parking	$ 55,000
Lane Diet	$ 64,000
Remove Parking	$ 54,000
Road Diet	$ 54,000
Contra Flow Bicycle Lanes	
Lane Diet	$ 47,000
Remove Parking	$ 33,000
Climbing Bicycle Lane	
Consolidate Parking	$ 57,000
Lane Diet	$ 66,000
Pavement Marking	$ 57,000
Remove Parking	$ 28,000
Road Diet	$ 47,158
Shared Roadway	
Consolidate Parking	$ 21,000
Pavement Marking	$ 22,000

Implementation Phasing

The implementation plan provides a guide for the City to build bicycle and pedestrian projects, conduct new programs, and propose new policies to improve walking and bicycling in the City. This process is designed to incorporate multiple strategies to achieve Plan Update goals within a reasonable timeframe. It is divided into three phases:

- **Near-term phase, 1-5 years**
- **Midterm phase, 5-10 years**
- **Long-term phase, 10+ years**

Although infrastructure improvements will likely remain permanent components of the City's transportation system, it is also recommended that programs and policies enacted in each phase continue on into the next phase. This will ensure that every year residents will be able to benefit from the active transportation policies and programs in the City. Additionally, this phasing plan only includes the twenty top ranked projects. The City should remain flexible and consider all projects during each phase in order to take advantage of opportunities to implement other projects should they arise.

Near-Term Phase – Years 1-5

Efforts initiated in the near term phase will build on the existing foundation of walking and bicycling in the City. Such projects will not only increase active transportation awareness, but also reinforce education, safety, and culture change. Additionally, a baseline assessment will be made during this phase in order to measure progress. Bicycle and pedestrian projects will provide safe and convenient facilities at key locations in the City. Policies will aim at developing City-approved design guidelines for bicycle and pedestrian infrastructure, as well as following best practices for maintaining said infrastructure. Programs will emphasize educating adults and children about how to safely bicycle, walk and drive in a multimodal environment.

Appendix F contains a table with all of the projects included in the Bicycle and Pedestrian Master Plan Update that also include segments scheduled in the Pavement Management Plan. These projects should be considered as possible near term bicycle infrastructure projects.

Midterm Phase – Years 5-10

Actions taken during the mid-term phase will build on the efforts made during the first phase to raise the profile of active transportation and to maintain a balanced and multimodal system. This phase will also continue to evaluate progress made and make any necessary changes. Bicycle and pedestrian projects will expand the network and improve connectivity between neighborhoods. The implemented policies will ensure that trails are maintained and provide appropriate infrastructure for year-round transportation. Programs will continue to stress education and encouragement of active transportation, as well as evaluate the progress of the Plan Update and rates of active transportation in the City.

Crosswalks, such as the 7th and E Market Street crosswalk shown, will require future maintenance.

Table 6.6: Near-Term Recommendations

Infrastructure Projects (On Road Bicycle Facilities)

Project Location	Facility Type	Planning Level Cost Estimate
2nd Street NW*	Contraflow Bicycle Lane	$ 44,970
5th Street SW	Separated Bicycle Lanes	$ 478,290
9th Street NE, including bridge	Separated Bicycle Lane	$91,410
Jefferson Park Avenue at Emmet Street	Bicycle Lanes	$ 1,040
Monticello Avenue -- Avon Street to Carlton Road	Climbing Bicycle Lane	$ 12,760
Park Street*	Shared Lanes	$ 14,360
Ridge Street	Bicycle Lanes	$14,080
Ridge McIntire Road	Bicycle Lanes	$ 20,010
West Main Street**	Separated Bicycle Lanes	$ 1,172,570
	Total Cost:	**$1,758,080**

*2nd Street NW is not included in the twenty highest ranked projects; however it is scheduled for repaving in summer 2015, in addition to being listed on the 2014-2015 pavement management schedule. Park Street is also scheduled for repaving.
**Conceptual Plan is currently underway for West Main Street. Cost estimate is higher for full street reconstruction. Cost of striping separated bicycle lanes only is approximately $75,000.

Infrastructure Projects (Trails)

Project Location	Facility Type	Planning Level Cost Estimate
250 Bypass Trail	Multi Use Path	$50,000
Rivanna River	Multi Use Path	$125,000
Moore's Creek (Upper)	Multi Use Path	$750,000
Meadow Creek (Pen Park)	Multi Use Path	$50,000
Meadow Creek	Culvert Trail	$50,000
Riverview to Pantops	Bridge over Rivanna River	$2,000,000
	Total Cost:	**$3,025,000**

Policy Recommendations
Develop and approve complete streets design guidelines
Develop and approve bicycle parking guidelines
Incorporate maintenance of on-street bicycle facilities into routine street maintenance
Revise and adopt a new sidewalk closure policy
Programmatic Recommendations
Pursue grant funding to hire a Safe Routes to School coordinator
Participate in Safe Routes to School events
Conduct annual student travel tallies and parent surveys
Host bicycle workshops and maintenance classes in different parts of the City
Partner with Thomas Jefferson Planning District Commission to support the Ride Share program
Launch an education and traffic safety media campaign
Recruit volunteers to expand the active transportation count program and share collected data
Continue to monitor UBike program

Table 6.7: Midterm Recommendations		
Infrastructure Projects (On Road Bicycle Facilities)		
Project Location	**Facility Type**	**Planning Level Cost Estimate**
10th Street NW	Climbing Bicycle Lane	$ 26,600
Alderman Road	Shared Roadway	$ 33,630
East/West High Street	Climbing Bicycle Lane	$ 17,510
Grady Avenue	Shared Roadway	$ 11,830
Hydraulic Road	Separated Bicycle Lanes	$ 1,214,250
Jefferson Park Avenue – West Main Street to Emmet Street	Bicycle Lanes	$ 30,220
University Avenue	Shared Roadway	$ 8,620
West Market Street	Climbing Bicycle Lane	$ 18,740
	Total Cost:	**$ 1,452,810**
Infrastructure Projects (Trails)		
Project Location	**Facility Type**	**Planning Level Cost Estimate**
Interstate 64 near Route 20	Tunnel	$1,500,000
Greenbrier Railroad	Tunnel	$1,500,000
Emmet Street	Multi Use Path	$500,000
Moore's Creek (Lower)	Multi Use Path	$350,000
Schenk's Greenway	Multi Use Path	$100,000
Melbourne Road	Multi Use Path	$125,000
	Total Cost:	**$4,075,000**
Policy Recommendations		
Approve a snow removal policy that incorporates bicycle and pedestrian facilities		
Develop a trails maintenance and improvement schedule based on trail typologies		
Develop a utility easement ordinance		
Program Recommendations		
Design an interactive citizen reporting system for road and sidewalk repair, similar to See-Click-Fix		
Create bicycle maps and distribute to the public		
Encourage local businesses to become "Bicycle Friendly"		
Establish a citywide and expanded bicyclist and pedestrian count program using automated counters		
Work with school volunteers to coordinate bike trains and walking school buses		
Work with community organizations to expand existing earn a bike programs		
Coordinate a bicycle mentor program		
Continue to provide support to neighborhoods interested in hosting Open Streets Events		

Table 6.8: Long-Term Recommendations		
Infrastructure Projects (On Road Bicycle Facilities)		
Project Location	**Facility Type**	**Planning Level Cost Estimate**
Millmont Street	Bicycle Lanes	$ 25,260
Preston Avenue	Separated Bicycle Lanes	$ 1,168,500
Preston Avenue / Barracks Road	Bicycle Lanes	$ 47,120
Rugby Road	Climbing Bicycle Lane	$ 35,370
	Total Cost:	**$1,276,250**
Infrastructure Projects (Trails)		
Project Location	**Facility Type**	**Planning Level Cost Estimate**
Darden Towe to Pen Park	Bridge over Rivanna River	$2,000,000
Rock Creek	Trail	$25,000
Lodge Creek	Trail	$25,000
Pollock's Branch	Trail	$50,000
	Total Cost:	**$2,100,000**
Policy Recommendations		
Dedicate more funds in the City's Capital Improvement Program specifically for bicycle and pedestrian projects		
Programmatic Recommendations		
Encourage local businesses and neighborhoods to participate in a car-diet challenge		
Monitor active transportation trends and expand count program, if necessary		

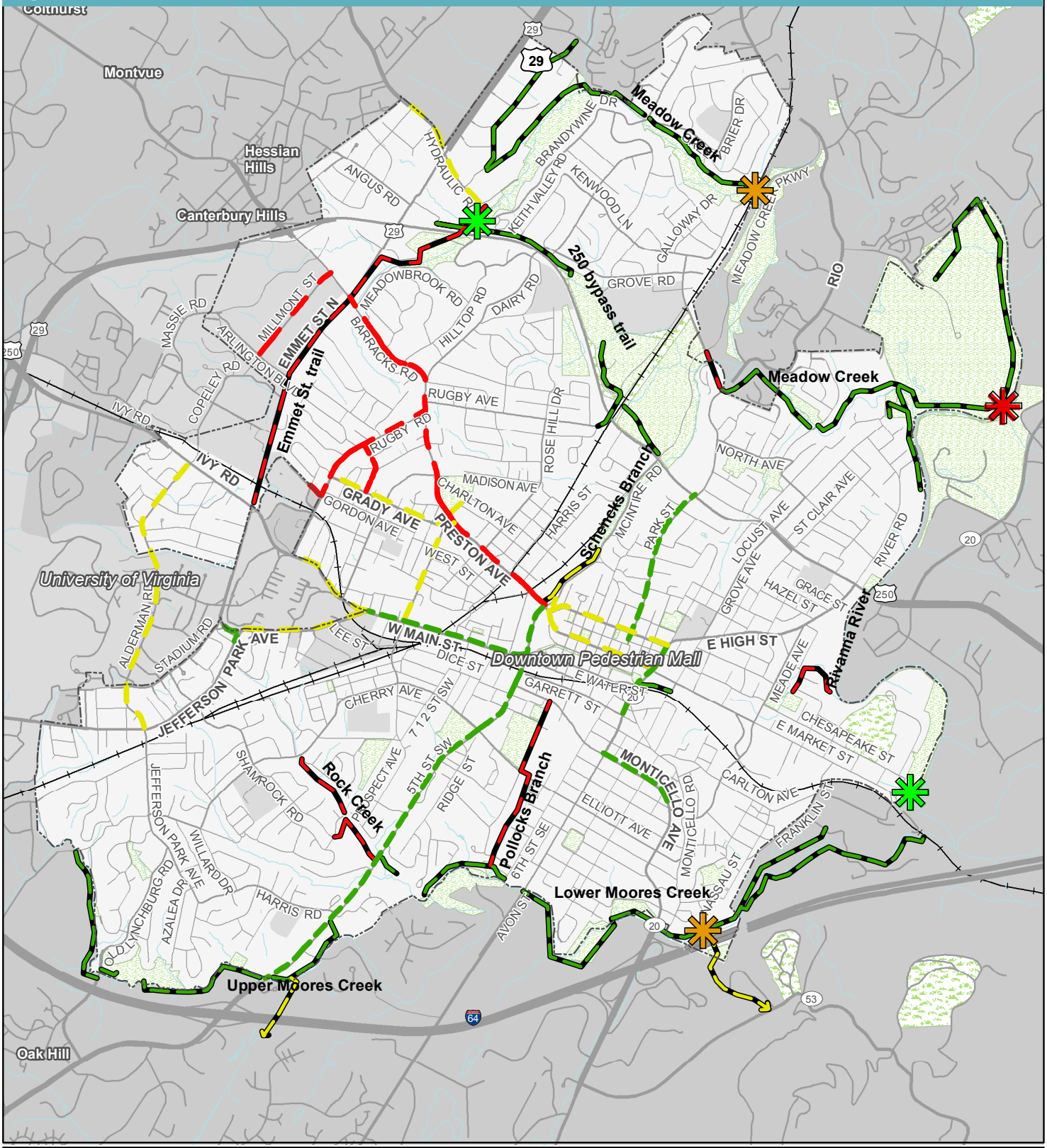
Funding Strategies and Sources

The City of Charlottesville has successfully leveraged available Capital Improvement Program funding with other state and federal funding opportunities to expand both on-road and off-road bicycle and pedestrian facilities. To build all of the bikeway and pedestrian facilities listed in this Plan Update, it will be necessary for the City to utilize both traditional and innovative funding sources. It is recommended that the City undertake multiple strategies to obtain funds not only for a complete and comprehensive walking and bicycling network, but also for active transportation policies and programs that may require dedicated funding. Strategies can include:

- Leveraging planned roadway improvements and other capital improvement projects. In many cases, the cost to add additional bicycle and pedestrian facilities to a road reconstruction project will only be a small percentage of the overall project budget.
- Identify projects that would be competitive for state and federal grant funds.

Map 6.3: Phased Bicycle Prioritized Projects

The following map shows near, medium and long term phasing of trail and on-road facilities that will benefit the regional bike network.



Charlottesville, Virginia

Bike Walk Charlottesville

Toole Design Group

Bicycle and Pedestrian Plan

Prioritized Projects

Top 20 Prioritized On-Street Projects
- Long Term
- Mid Term
- Near Term

Prioritized Trail Projects
- Long Term
- Mid Term
- Near Term

- Schools
- Streams
- Rail Lines
- City Park
- City Limits

0 0.25 0.5 Miles

N

Date: *6/2/2015*

- Partner with Albemarle County and the Thomas Jefferson Planning District Commission to fund mutually beneficial projects such as City-County facilities and automated counting programs.
- Partner with local organizations and businesses, such as schools, health groups, the University of Virginia, and private developers to fund and support bicycle and pedestrian programs.

There are multiple state and federal funding opportunities for active transportation projects and programs. It is recommended that the City apply for these funds to implement the Bicycle and Pedestrian Master Plan Update. Possible funding sources include:

- **Transportation Alternatives Program (TAP)** – TAP funds are federal funds authorized under MAP-21 and disbursed through VDOT. These funds are designated for non-motorized transportation projects such as trails, bicycle facilities, and sidewalks. In Virginia, projects that also qualify as Safe Routes to School Projects can receive TAP funds. TAP requires a 20% local match.
- **Recreational Trails Program (RTP)** – RTP funds are federal funds that are disbursed through the Virginia Department of Conservation and Recreation. These funds can be used to build and maintain trail facilities. RTP grants require a 20% local match.
- **National Highway Performance Program (NHPP)** – This Federal Highway Administration program disburses funds through VDOT and Metropolitan Planning Organizations (MPOs) and has been used to fund construction of new and retrofit crosswalks. To be qualified for NHPP funds, projects must be identified in a statewide or MPO long range plan.
- **Highway Safety Improvement Program (HSIP)** – This Federal Highway Administration program disburses funds through VDOT and has been used to administer bicycle and pedestrian safety projects.
- **Safe Routes to School (SRTS) Non-Infrastructure Grants** – SRTS non-infrastructure grants are disbursed by VDOT and can be used to hire a SRTS Coordinator and to pay for SRTS activities within a school division such as in-school bicycle and pedestrian safety education.
- **Healthy Community Action Team (HCAT) Grants** – HCAT grants are offered by the Virginia Foundation for a Healthy Youth and are used to hire a HCAT Coordinator who works to promote healthy living for children. Safe Routes to School activities are an eligible activity for HCAT coordinators.

The implementation recommendations included here are a key component of the Plan Update and will serve as the City's blueprint for improving the walking and bicycling environment for the next decade or more. Making improvements from the list of priority projects and following the schedule outlined in the timeline based on the City's current funding levels will help the City achieve its goals of making walking and bicycling practical, safe, convenient, and pleasant.

Chapter 7: Performance Measures

Participants in Parks and Recreation Storyline Camp (2013)

Chapter 7: Performance Measures

The following set of performance measures is designed to help track walking and bicycling in Charlottesville and assist with the implementation of this Plan Update. Establishing performance measures and regularly tracking progress will inform City staff, advocates, and the community at large as to whether or not the goals of the Plan Update are being achieved as outlined in Goal 5: Evaluate. Performance measures can also help prioritize the allocation of scarce resources like funding and staff time to where they are most needed.

The Walk Friendly Community feedback received in 2014 recommended adopting a set of performance measures as a way to improve Charlottesville's Walk Friendly rating. The table on page 91 shows performance measures developed for this Plan Update based on the measures used in other Walk Friendly cities. Each recommended measure supports at least one of the six goals of Charlottesville's 2015 Bicycle and Pedestrian Master Plan Update. The full text of the Plan Update's Goals and Objectives can be found in Appendix B.

The Downtown Mall Freedom of Speech Chalk Wall

Table 7.1: Plan Update Performance Measures

Performance Measure	Plan Goals					
	Goal 1 **Network**	Goal 2 **Safety**	Goal 3 **Culture**	Goal 4 **Educate**	Goal 5 **Evaluate**	Goal 6 **Health**
1. Establish mode share baseline	●		●		●	
2. Increase bicycle and pedestrian mode share	●		●		●	●
3. Establish bicycle/ pedestrian and motor vehicle crash baseline		●				●
4. Reduce rate of bicycle/ pedestrian and motor vehicle crashes		●		●		●
5. Establish a continuous citywide bicycle and pedestrian counting program					●	
6. Increase number of students receiving bicycle and pedestrian safety education		●	●	●		●
7. Increase miles of exclusive bicycle lanes	●					●
8. Increase miles of separated bicycle lanes	●					
9. Increase miles of off road trails	●	●				●
10. Increase amount of bicycle parking facilities	●		●			●
11. Obtain Platinum Walk Friendly Community designation	●	●	●			●
12. Obtain Gold level Bicycle Friendly Community designation	●	●	●	●		●

Plan Update Summary

The 2015 Bicycle and Pedestrian Master Plan Update sets forth a vision for Charlottesville where walking and bicycling are practical, safe, convenient, and pleasant ways to navigate the City for both transportation and recreation. It establishes six goals for the City and provides guidance for infrastructure, policy and program changes necessary to achieve those goals, as well as a ten year timeframe for implementation.

Charlottesville has repeatedly shown itself to be a community that supports active transportation, evidenced by a high percentage of work trips made by walking and bicycling and its recognition as a Walk and Bicycle Friendly Community. This Plan Update builds upon the City's best attributes and the substantial improvements of the past decade that resulted from the 2003 Bicycle and Pedestrian Master Plan. By hiring City staff focused on improving active transportation, dedicating funding for walking and bicycling improvements, and developing this Plan Update, Charlottesville has put in place a set of transformative strategies to tackle the City's transportation challenges and to achieve its walking and bicycling goals. Implementing this Plan Update will not only help Charlottesville increase safe and convenient access for walking and bicycling to all residents and visitors, but also help ensure economic, environmental, and social sustainability.

Market Street bicycle mural

Looking at the intersection of West Main Street and Ridge Street from Water Street

Appendices

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Walk Friendly Communities

walkfriendly.org

COMMUNITY REPORT CARD AND FEEDBACK

Charlottesville, Virginia
April 21, 2014

Introduction

Thank you for submitting an application to maintain Charlottesville's designation as a Walk Friendly Community. The application was evaluated by at least three reviewers to provide a fair assessment of your community and provide technical feedback on how to improve the walkability of your community.

After thorough consideration of the improvements that Charlottesville since the city's first application, we are designating Charlottesville as a **Gold Walk Friendly Community**! There were several areas that we were particularly impressed with, including:

- Charlottesville's extensive sidewalk system and policies that continue to promote infill.
- An ADA transition plan that is already being applied to all street improvement projects.
- The launch of an Open Streets event that is supported by a dedicated group of volunteers.
- The new count program, which will provide context for crash data and help Charlottesville prioritize pedestrian improvements.

Charlottesville has continuously exhibited a desire to become a community that supports active transportation. The application to the Walk Friendly Communities program is an endorsement of that desire and it is our hope that the feedback and information we provide can help your community improve in this regard. We also hope that, by identifying Charlottesville as a Gold Walk Friendly Community and highlighting some of these impressive programs on our website, other communities can follow your example and build their own successful programs.

We have noted several areas in which your community can continue to improve its policies, programs, and standards. This report card provides detailed feedback on how your community can take its programs and initiatives to the next level; take the time to review the feedback and contact us with any questions.

Primary Recommendations

This section identifies and provides suggestions for the most vital areas of improving Charlottesville's overall walkability. Additional details are provided in the following sections. **We recommend that you read these areas thoroughly and develop clear goals, benchmarks, funding sources, and an implementation schedule for reaching these goals.**

- It is time to consider developing new **safety campaigns** and **education programs** to promote walking in Charlottesville.
- Charlottesville could expand **staff training** opportunities by offering free webinars for city officials, planning and engineering staff, and school staff. It is also important for the city to offer on-going training about pedestrian law for police officers.
- Reexamine some your policies for **signal timing**, and consider enhancing signalization for pedestrians using pedestrian recall and increasing the number of intersections with leading pedestrian intervals.
- **Targeted enforcement** could be a great way for police to focus attention on pedestrian safety and ensure that motorists are aware of pedestrian safety laws.
- There are a number of **comprehensive evaluation tools**, including Health Impact Assessments and Road Safety Audits, which can help planners and residents of Charlottesville to understand how to improve the pedestrian environment.

Feedback by Section

This remainder of this report card will provide detailed feedback and suggestions for each section in the community assessment tool. Feedback will include research to support the importance of this question as well as tools, guides, and case studies of successful implementations in other communities.

Each section received an overall score as defined below:

- **Walk Friendly:** The responses in this section indicate that your community is particularly strong in this area with great efforts being made towards improving walkability. Even so, there are always areas within this section where improvements and growth could be made.
- **On the Right Track:** This score indicates that your community does not exhibit the characteristics to be truly walk friendly in this section, but that there are still good existing programs or new programs that could be expanded. Please review our suggestions on how you could improve the walkability in this area.
- **Needs Attention:** This score indicates that your community does not yet demonstrate strong programs, policies, and results, characteristic of a Walk Friendly Community based on the responses in this section. Please review our suggestions carefully on how you can create positive change in your community with both short- and long-term objectives.

Community Profile
Walk Friendly

- It is great to see dedicated staff time and committee activity dedicated to pedestrian issues. Should funding permit, establishing a full-time pedestrian coordinator would be a very beneficial step.
- Signing the International Charter for Walking would be a great way for city leadership to demonstrate its commitment to enhancing walkability and pedestrian safety. In Gold-level San Francisco, the Mayor signed a Pedestrian Safety Executive Directive to express support for pedestrian safety—that directive laid out short- and long-term goals for pedestrian safety, and launched a comprehensive effort to improve conditions for pedestrians throughout the city.

Status of Walking
On the Right Track

- Amazing walking mode share! The mode share suggests that walking is comfortable, easy, and convenient in the city. It was also good to see that Charlottesville have relatively high rates for biking and transit.
- Unfortunately, the city's injury rate is extremely high. You may want to check to see if your police are reporting all crashes, not just those resulting in injuries. It is important to look at even non-injury crashes, because it gives you a sense of where pedestrian/vehicle conflicts are happening.
- It is good to see that the Charlottesville is conducting pedestrian counts because this can help the city understand the relationship between crashes and pedestrian exposure.

Planning
Walk Friendly

- It is great to see that you have a pedestrian plan in the works. A target mode share would provide a specific goal for the city to attain, while a crash reduction goal can provide extra impetus in implementing crash countermeasures.
- One of the main reasons the Pedestrian Master Plan of Seattle, the only Platinum-level Walk Friendly Community, is such a successful document is the clear establishment of goals and measurable performance indicators. With the objective of becoming the country's most walkable city, Seattle established baseline measurements, performance targets, and data collection processes to improve walkability. These indicators fit into the four main goals of the plan: Safety, Equity, Vibrancy, and Health and contain such examples as reaching ten new schools a year with outreach and increasing pedestrian volumes in selected count locations.
- Great job following through on one of the main recommendations from Charlottesville's first application—an ADA transition plan. Hopefully the inventories are not only conducted along routes used by the advisory committee. Their needs should not be considered representative of the entire community's need.
- To take Complete Streets one step further would be develop guidelines and implementation strategies that transform streets into better public spaces. Elements of the guidelines from Charlotte or San Francisco could be helpful.

- Public input is vital to creating a vision for the community that is lasting and appealing to residents. Public participation is integral to the success of transportation planning and should be considered at every stage of the planning process, from collecting baseline data to conducting post-implementation evaluation. Charlottesville does a reasonable job of soliciting public input from citizens, but it seems like the city relies heavily on advisory boards and commissions. Consider using mobile apps, surveys, and project websites to engage residents, along with low-tech approaches like small group events that target different populations.
- It's good to see that the standard for Planned Unit Development includes language about connectivity, but the requirement is not very specific and likely only applies to a small area of Charlottesville. A standalone connectivity policy is important for encouraging pedestrian access and pedestrian travel, particularly with ensuring that infill development continues to maintain the high level of pedestrian access. Silver-level Bend, Oregon, has a Development Code that establishes pedestrian friendly block lengths in different zones of the city (e.g., 400 feet block length and 1,500 feet block perimeter in the Central Business District). See page 234 of this PDF.
- High quality trail networks form the facility network backbone of many walkable communities and can also encourage recreational walking. These types of trails also stimulate economic development and tourism and can raise property values. Considering formalizing the process for providing incentives to build trails could contribute to a greater network of trails in Charlottesville.
- The transit service in Charlottesville is excellent for a community of its size, but efforts could be made to improve accessibility around bus stops. Accessibility audits could be useful in accommodating disabled populations at stops. Since individuals with disabilities rely on transit service, it is critical to provide accessible facilities in and around transit stops. The Pedestrian Safety Guide for Transit Agencies can help identify areas where accessibility can be improved. This case study provides more information.
- The parking policies and practices have obviously been a focus in Charlottesville. Keep up the good work!
- Charlottesville has good policies to encourage density. The city could consider also using form-based codes to ensure that a comfortable walking environment is created in the city. Arlington County, Virginia, designated as a Gold-level Walk Friendly Community, has a great example of a form-based code. One of Arlington's main corridors, Columbia Pike, a 3.5-mile streetscape connecting the Pentagon to the Fairfax County line, has a form-based code that is designed to foster pedestrian-oriented development on this stretch of South Arlington's historic main street. More information can be found here.

Education & Encouragement

On the Right Track

- Charlottesville is doing a good job using Safe Routes to School programs to promote active transportation among your youngest pedestrians. Consider collecting some more information about student travel behavior and incorporate this into your school plans. Check out the services offered by the National Center for Safe Routes to School.
- It's great to see that SRTS maps will be included as part of the bicycle and pedestrian master plan update. Check out this example from Bronze-level Fort Collins, Colorado: all of their Safe Routes maps are available online.

- A combination of education and encouragement efforts can have a large effect on pedestrian volumes as well as pedestrian safety in a community. Also, there can be major differences in the walking abilities, behavioral patterns, and learning capacities of different groups of pedestrians and other road users. Because of this, educational programs succeed when tailored to specific audiences and to the behaviors they seek to modify. Charlottesville could consider environmental campaigns, walking training, and walk to work days and should tailor any campaigns to specific populations. Also, diversifying the audience to reach more residents of different types could be very effective in terms of educational initiatives. This PBIC webpage provides more guidance.
- If possible, the city could consider creating some pedestrian safety public service announcements (PSA). The city could partner with local institutions and schools to encourage children to participate, possibly providing a prize to the best PSA.
- Gold-level Arlington County, Virginia, has education and encouragement programs that are incredibly important in fostering community support for walkability:
    - Street Smart is a public awareness and enforcement campaign in its tenth year that uses print, outdoor, online, and broadcast media channels throughout the metropolitan Washington area to reach a diverse audience.
    - The Car Free Diet program is an innovative development aimed at raising awareness of the health, environmental, financial, and commuting benefits of going car-free or car-lite through web, video, blogs, social media, transit advertising, a Car-Free Diet Calculator, and media outreach.
    - The Neighborhood 25 program is a campaign that began in 2010 as a response to the difference in fatal crashes that occur at 20 mph and 30 mph with "Keep Kids Alive – Drive 25" signs placed throughout the neighborhoods in conjunction with police placement of speed feedback signs.
- Charlottesville should consider extending the wayfinding beyond the downtown mall. There are many community groups and businesses that might be interested in helping your city expand the wayfinding system. In Gold-level Washington D.C., the Downtown Business Improvement District led the effort of 30 stakeholder groups to develop a citywide wayfinding signage system that is now slated to expand to neighborhoods beyond downtown.
- It would be great to move the Bike Walk Play JPA event into different neighborhoods. Also, Charlottesville should find ways to also incorporate active living and walking groups into existing events, such as the farmers market.

Engineering

On the Right Track

- Sidewalks are the backbone of a good pedestrian system and encourage walking. Walkways should be part of every new and renovated facility and efforts should be undertaken to retrofit streets without sidewalks. It looks like Charlottesville has done a good job providing sidewalk on at least one side of most roads.
- Very impressive that the city has inventories of sidewalks and curb ramps and dedicated funding to maintain these facilities. Charlottesville could step up its schedule for installing curb ramps.

- Pedestrian signalization is an important component of a walkable environment. Great job providing countdown pedestrian signals at all intersections and Accessible Pedestrian Signals at over 10 percent of intersections.
- Pedestrian recall where pedestrians do not have to use a push button should be provided in all high pedestrian corridors and downtown.
- An advance stop/yield line can be placed 20 to 50 feet ahead of the crosswalk at uncontrolled locations. This treatment can greatly reduce the likelihood of a multiple-threat crash, as this encourages drivers to stop back far enough so a pedestrian can see if a second motor vehicle is not stopping and take evasive action. Charlottesville should consider this treatment.
- It is good to see that you are switching to high-visibility crosswalk markings and using flashing beacons at trail crossings. These devices have been shown to be effective in improving yielding rates to pedestrian.
- One area for improvement would be to create a policy for how crosswalks are placed around bus stops and other transit locations and ensure that pedestrians can safely cross around bus stations. The Pedestrian Safety Guide for Transit Agencies is an excellent resource.
- Charlottesville should consider moving away from the complaint-based system and begin proactively selecting locations where there is a problem. Ann Arbor, designated as a Gold-level Walk Friendly Community, has strong traffic calming initiatives that can serve as a guide. Using a neighborhood-based program, the city has met with success in reducing speeds along residential streets by employing speed humps, chokers, traffic circles, road diets, and raised intersections among others. Charlottesville could use this resource as a guide.

Enforcement

On the Right Track

- Excellent staff commitment! It's great to see that Charlottesville has a Traffic Unit and over 20 officers certified for bike patrol.
- It looks like your community is using targeted enforcement program, but your application needed more detail in this section. By informing the public about where and when enforcement activities will be, the police can create public support and offset the complaints of those breaking the law.
- It is great to see that police cite drivers for failing to yield to pedestrians. Also, keeping parked cars away from crosswalks and off of sidewalks is critical, so it's good to see you're doing that as well. If allowed by law, consider using photo enforcement to reduce red-light violations, which can often also improve pedestrian safety. See Chapter 8 of the Countermeasures That Work for more information.
- The crossing guard program sounds good. If you aren't already, consider evaluating your crossing guard placement regularly, and reallocating these resources as needed. Walking patterns may shift, or the installation of a new crossing treatment may require an additional crossing guard.
- It is great to see that the police department and other city departments collaborate regularly to review site plans and problem areas and identify possible solutions.

Evaluation

On the Right Track

- Great job starting a regional count program! Using volunteers to count multiple locations twice a year is a good way to launch a count program. The next step for Charlottesville is to analyze trends and figure out how these data can be incorporated into the project prioritization process.
- Charlottesville could consider using permanent counters to provide annual data. Gold-level Arlington County provides a good model where they perform seasonal manual counts in addition to 18 automated counters. They are also developing an integrated database to store, analyze and share results of the two sets of data.
- The 2013 edition of FHWA's Traffic Monitoring Guide (TMG) includes a review of existing techniques and guidance for implementing traffic monitoring programs for nonmotorized transportation. See Chapter 4 of the document.
- We were impressed with your ongoing partnership with the university to utilize PEQI.
- Charlottesville should also look into conducting road safety audits, especially in high-crash areas. The Pedestrian Road Safety Audit Guidelines and Prompt Lists can be very valuable for diverse groups of city staff (engineers, planners, law enforcement) in reviewing the pedestrian environment and developing recommendations, while other tools such as pedestrian level of service, Pedestrian Intersection Safety Index, and Health Impact Assessments can provide targeted information about pedestrian safety on roadways and in the community overall.
- In Silver-level Tallahassee, Florida, the Comprehensive Plan Mobility Element created multimodal level of service (LOS) standards and performance targets for the Mobility District (18-square-mile section of the city), whereby pedestrian, bicycle, and transit LOS take priority over vehicle LOS in the evaluation of roadway improvements, capital improvement planning, and funding allocation.

More Information

If you have questions or comments regarding this feedback, your community's initiatives and programs, or the application process in general, we'd like to hear from you. Please contact:

Carl Sundstrom, 919-843-4963, sundstrom@hsrc.unc.edu

Dan Gelinne, 919-962-8703, gelinne@hsrc.unc.edu

You can also send general inquiries to info@walkfriendly.org

Feedback

Bicycle Friendly Community Application

Charlottesville, VA

Spring 2012

League of American Bicyclists

Bicycle Friendly Community

The League of American Bicyclists has designated **Charlottesville, VA** as a Bicycle Friendly Community at the **Silver** level, because Charlottesville exhibits a strong commitment to cycling. The reviewers felt that notable steps are being taken to address the needs of current bicyclists and to encourage other residents to become regular cyclists as well:

- *Engineering:* Charlottesville recently implemented a policy to engineer streets with the consideration of bicyclists and is beginning to develop a trail network. The community has adopted good tools to implement their Complete Streets or Bicycle Accommodation policy. Community and transportation planners, and civil engineers receive training in bicycle and pedestrian planning and engineering. The community has a bike parking ordinance, an ordinance that allows bike parking to substitute for car parking and a building accessibility ordinance. Parking facility standards conform to the currently recognized safety standards. Most public buses are equipped with bike racks. About ten percent of roads accommodate bicycles. Charlottesville uses road diets and area wide traffic calming to make roads safer for all road users. The majority of arterial streets have bike lanes or paved shoulders. All natural surface trails and singletrack are open to bicyclists. Traffic signals are timed for cycling speeds and cyclists are accommodated at busy intersections through timed signals, loop detector markings and video detection.
- *Education:* All elementary and middle schools have Safe Routes to School programs. The community has recently educated motorists and bicyclists on sharing the road safely through public service announcements, community newsletters, bike ambassadors, dedicated bike page on the community website, blogs on cycling and share the road signs. Traffic Skills 101 classes, Cycling Skills classes and Commuter classes are offered regularly in the community. Charlottesville requires safe driving training for transit operators and school bus operators.
- *Encouragement:* There are a variety of community events and incentive programs. Community has a pump track, a cyclocross course and a mountain bike park.
- *Enforcement:* A police officer is an active member of the bicycle advisory committee and the community has an identified law-enforcement point person to interact with cyclists. There are specific penalties for failing to yield to a cyclist when turning and/or it is illegal to park or drive in a bike lane (intersections excepted). There are penalties for motor vehicle users that 'door' cyclists. There is a ban on cell phone use while driving. There is a ban on texting while driving. The community uses photo enforcement for red lights and/or speed.
- *Evaluation & Planning:* Bicycle mode share is above average for U.S. communities (2.7%). Charlottesville has low number of cyclist/motor vehicle crashes. Community has a bicycle master plan and meets annual targets for bike plan implementation. There is a trip reduction ordinance or program.

Particular **highlights** were bicycle rider safety school at Charlottesville High School; Women's Bike Night; Double the Wheels - Double the Party; Guaranteed Ride Home program; Clean Commute Day; Boys and Girls Club Cycling Challenge; Blue Ridge Extreme; O-Hill Meltdown Mountain Bike Race; Community Bikes; bike-in movies; bike carnival; Local Motion Campaign; and the CvilleRides project.

Reviewers were very pleased to see the current efforts, potential and commitment to make Charlottesville an even greater place for bicyclists which can be seen in the growing number of cyclists. The BFC review team expects great things in the future given the good local team and the coming improvements to the network and programs.

Below, reviewers provided recommendations to further promote bicycling in Charlottesville in the short and long term. Further increasing bicycle use can **improve the environment** by reducing the impact on residents of pollution and noise, limiting greenhouse gases, and improving the quality of public spaces; **Reduce congestion** by shifting short trips (the majority of trips in cities) out of cars. This will also make cities more accessible for public transport, walking, essential car travel, emergency services, and deliveries; **Save lives** by creating safer conditions for bicyclists and as a direct consequence improve the safety of all other road users. Research shows that increasing the number of bicyclists on the street improves bicycle safety; **Increase opportunities** for residents of all ages to participate socially and economically in the community, regardless of income or ability. Greater choice of travel modes also increases independence, especially among seniors and children; **Boost the economy** by creating a community that is an attractive destination for new residents, tourists and businesses; **Enhance recreational opportunities**, especially for children, and further contribute to the quality of life in the community; **Save city funds** by increasing the efficient use of public space, reducing the need for costly new road infrastructure, preventing crashes, improving the health of the community, and increasing the use of public transport; **Enhance public safety and security** by increasing the number of "eyes on the street" and providing more options for movement in the event of emergencies, natural disasters, and major public events; **Improve the health and well being** of the population by promoting routine physical activity.

The *key measures* Charlottesville should take to improve cycling in the community are:

- Have police officers distribute more helmets and bike lights (or coupons to the local bike shop for each) to encourage all types of cyclists to ride more safely and remove the barriers to attaining these essential bike accessories. See the helmet and light promotions at Stanford: http://transportation.stanford.edu/alt_transportation/BikeSafetyEd.shtml#helmet.

- Continue to expand the bike network and increase network connectivity through the use of bike lanes, cycle tracks, shared lane arrows, signed routes, contra-flow lanes and bicycle cut-throughs. Since arterial and collector roads are the backbone of every transportation network, it is essential to increase the number of bike lanes or cycle tracks along these roads to allow bicyclists of all skill levels to reach their destinations quickly and safely. Remove on-street parking, if neccessary. On-street improvements coupled with the expansion of the off-street system will continue to increase use and improve safety. These improvements will also increase the effectiveness of encouragement efforts by providing a broader range of facility choices for users of various abilities and comfort levels.

- Increase the amount of secure bicycle parking at popular destinations such as the historic downtown, transit stops, schools, the university, recreation and entertainment facilities, retail and office clusters and churches throughout the community.

- Ensure that there is dedicated funding for the implementation of the bicycle master plan.

- Encourage local businesses to promote cycling to the workplace and to seek recognition through the Bicycle Friendly Business program. Businesses will profit from a healthier, happier and more productive workforce while the community would potentially profit from some bicycle-active businesses as well: increasing the bicycle mode share, less commuter traffic, better air quality, public bike parking in prime locations provided by businesses, new and powerful partners in advocating for bike infrastructure and programs on the local, state and federal level, and public bike events, skills and maintenance classes hosted or sponsored by businesses. The city should be the model employer for the rest of the community.

- Install way-finding signage at strategic locations around the community. Here are some best practices from the Washington, DC area Council of Governments: http://www.mwcog.org/uploads/committee-documents/t1dZW1k20070516090831.pdf

Reviewers provided the following menu of recommendations to further promote bicycling:

Engineering
Low hanging fruit and fast results:

- Ensure that new and improved bicycle facilities conform to current best practices and guidelines – such as the *NACTO Urban Bikeway Design Guide*, *AASHTO Guide for the Development of Bicycle Facilities* and your DOT's own guidelines. Consider innovative bicycle infrastructure such as bicycle tracks, contra-flow bike lanes or colorful bike lanes.

- Consider hosting a *Smart Cycling* course for city staff to better understand cyclists' needs, behavior, and their right to use city streets as well as multi-use paths for transportation. Your local bicycle advocacy group are a great resource for this kind of training.

- Invite CAT to join the Bicycle Committee to increase the involvement of the transit agency in bicycle issues.

- Improve the coordination and communication between city departments and state paving and rehabilitation projects and facilities maintenance. Consider offering oversight to state DOT staff and contractors working within municipal boundaries. Ensure that facility design follows current best practice and that they are properly installed.

- Consider measuring the bicycle level of service (LOS) on community roads and at intersections, to be able to identify the most appropriate routes for inclusion in the community bicycle network, determine "weak links" in the network, prioritize sites needing improvement, and evaluate alternate treatments for improving bike-friendliness of a roadway or intersection: http://www.bikelib.org/bike-planning/bicycle-level-of-service/ (roads) and http://www.bicyclinginfo.org/library/details.cfm?id=4425 (intersections).

- Accommodate bicycles at intersections and multi-use path crossings to improve efficiency and safety of all road and path users. Consider adding bike boxes to make bicyclists more visible to motorists. Consider incorporating raised multi-use path crossings or other high-visibility treatments on medium and high traffic roads. Ensure that both path and road users are clearly informed about who has the right-of-way at every crossing.

- Develop a system of bicycle boulevards that creates an attractive, convenient, and comfortable cycling environment welcoming to cyclists of all ages and skill levels. See more on how to do it at http://www.ibpi.usp.pdx.edu/guidebook.php

Education
Low hanging fruit and fast results:

- Ensure that bicycle-safety education is a routine part of public education and that schools and the surrounding neighborhoods are particularly safe and convenient for biking. Work with your Bicycle Advisory Committee and local bicycle advocates to develop and implement Safe Routes to School programs that emphasizes bicycling for your high school.

- Add bicycling and motorist education messages to local routine activities such as drivers licensing and testing, or include inserts in utility bills.

- Start a bicyclist and motorist ticket diversion program. Road users given citation are offered an opportunity to waive fees for violations by attending a bicycling education course. This should include a classroom and on-road component. See what Pima County has done: http://bikeped.pima.gov/Safety%20(pdfs)/April%20-%20May%202011%20Bicycle%20Diversion%20Class%20(No%20Locations).pdf

- Team with a local advocacy group, bicycle shop, or League Cycling Instructor to offer regular public maintenance classes to residents at public parks, libraries, community centers and in conjunction with city events. A short tutorial on how to change a flat tire can empower a person to ride their bike more often. You can find local instructors and bike shops here: https://members.bikeleague.org/members_online/members/findit.asp

Encouragement
Low hanging fruit and fast results:

- Promote, host, sponsor and/or encourage a variety of bicycle-themed, fun and family-friendly community events year-round, such as a bike movie festival, a 4th of July bike parade, an "increase-your-appetite" Thanksgiving community ride, a dress-like-Santa community ride before Christmas, a kids triathlon, a bicycle fashion show (fashionable alternatives to lycra), a Halloween bike decoration competition, a bike to the arts event, etc. Work closely with local bicycle advocacy groups, bike clubs, bike shops, bike teams and schools. Provide appropriate safety measures such as road closures or police escorts.

- Consider passing an ordinance or local code that would require larger employers to provide shower facilities and other end-of-trip amenities.

- Actively involve the local bicycle community in community planning efforts, policy development and public outreach.

- Set up and promote bicycle-themed community celebrations and/or rides each time the community completes a new bicycle related project. This is a great way to show off the city's good efforts and introduces new users to the improvement.

- Consider offering a 'Ciclovia' or 'Summer Streets' type event, closing off a major corridor to auto traffic and offering the space to cyclists, pedestrians and group exercise events. http://cicloviarecreativa.uniandes.edu.co/english/index.html

- Consider partnering with a local bicycle advocacy group or bike club to launch a bike buddy or bicyclist mentorship program for inexperienced riders. A bike mentorship program that teams experienced cyclists with newcomers is a great way to encourage and educate novice commuters. See what Spokane, Wash. and Charlotte, N.C. are doing http://groups.google.com/group/bikementor, http://www.spokanebicycleclub.org/bikebuddy.htm

- Develop a series of short (2-5 mi.) (themed) loop rides around the community and provide appropriate way-finding signage. Integrate these rides into local bike maps.

Enforcement
Low hanging fruit and fast results:

- Ensure that police officers are initially and repeatedly educated on the "Share the Road" message and bicycle-related traffic law as it applies to bicyclists and motorists. Trainings we recommend are offered by the International Police Mountain Bike Association, the Law Enforcement Bicycle Association and the National Highway Traffic Safety Administration. You can find an example of a good Bicycle Safety seminar here:

http://www.bicyclinginfo.org/bikesafe/case_studies/casestudy.cfm?CS_NUM=801. See the video put out by the National Highway Traffic Safety Administration (NHTSA)http://www.nhtsa.dot.gov/portal/site/nhtsa/menuitem.810acaee50c651189ca8e410dba046a0/ Here are some Law Enforcement Products: Law Enforcement's Roll Call Video: "Enforcing Law for Bicyclists"; Enhancing Bicycle Safety: Law Enforcement's Role (CD-ROM Training); Training provided by the International Police Mountain Biking Association: http://www.ipmba.org/instructors.htm

- Enforcement practices could also include positive enforcement ticketing. Police officers could team up with local stores to reward safe cycling practices by handing out gift certificates to cyclists who are "caught" following the law. See what Tewksbury, MA is doing: http://www.wickedlocal.com/tewksbury/news/lifestyle/x1837747400/Tewksbury-police-reward-young-cyclists-for-wearing-their-helmets#axzz1WdjHHfMo

- Pass laws or ordinances that protect cyclists, e.g. implement penalties for motor vehicle users that 'door' cyclists.

- Adopt fair, equitable and uniform traffic laws that are "vehicle-neutral" to the greatest extent possible. Local laws that discriminate against cyclists, or restrict their right to travel, or reduce their relative safety, should be repealed.

Evaluation/Planning
Low hanging fruit and fast results:

- Consider conducting an economic impact study on bicycling in your community. See what Portland, OR has done: http://www.altaplanning.com/App_Content/files/fp_docs/2008%20Portland%20Bicycle-Related%20Economy%20Report.pdf

Long Term Goals

- Integrate the implementation of the bike plan into the master plan, all land use plans, zoning ordinances and larger development projects.

- Allow and encourage a mix of uses, a well-connected street network and compact development patterns throughout the community to shorten the distances people need to bike.

For more ideas and best practices please visit the Bicycle Friendly Community Resource Page.

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Vision, Goals, and Objectives

Vision

Walking and biking will be practical, convenient, safe, and pleasant ways to travel to destinations within and adjacent to the City.

Goals and Objectives

Goal 1: Expand and improve the multimodal network such that walking and biking is practical and appealing to those who are dependent on walking and biking and those for whom walking and biking is a choice.

- Install sidewalks and bicycle facilities along all arterials and neighborhood collectors .
- Identify bicycle and pedestrian destinations such as employment centers, stores, and transit stops and eliminate barriers .
- Implement short-term, high visibility projects to serve as models that can be applied throughout the City.
- Acquire mode share data for commuting trips with origins within the City, and set a goal for increasing bicycle and pedestrian mode share for commuting trips.
- Acquire mode share data and trip lengths data on non-commute trips with origins within the City, and set goals for increasing bicycle and pedestrian mode share for non-commute trips less than 3 miles in length (bicycling) and 1/2 mile (walking).
- Build the bicycle network such that all households are within a half mile of a trail or designated bicycle facility such as a bike lane.
- Build the pedestrian network such that all households are within an eighth of a mile of a sidewalk.
- Routinely engage VDOT and Albemarle County on the review of projects that affect travel between Charlottesville and the surrounding areas to make improvements for bicycling and walking in and out of the City.
- Develop a plan and schedule for maintaining bicycle and pedestrian facilities including but not limited to pavement markings, trail and sidewalk surfaces, vegetation adjacent to trails and sidewalks, signals, and signage to ensure that facilities are functional and accessible year-round.

Goal 2: Make safety and perceived safety for the most vulnerable users the most important factor of roadway, trail, and intersection design throughout the City.

- Implement measures to prevent bicycle and pedestrian crashes.
- Identify strategies that promote personal security in areas that feel vulnerable.
- Adopt innovative standards and guidelines set forth by AASHTO, NACTO, and ITE .
- Adopt streetscape design standards and guidelines to make walking and bicycling more comfortable.
- Consider implementing "No Turn on Red" restrictions and and/or leading pedestrian intervals at signals near schools, retail centers, and other pedestrian generators to provide additional protection for pedestrians from vehicles making turns.

Goal 3: Foster a culture that encourages and incentivizes walking and biking for transportation, health, recreation and fitness.

- Employ a simple, consistent, and legible bicycle and pedestrian wayfinding system to destinations within and immediately adjacent to the City.
- Continue to promote activities that encourage walking and biking such as Bike and Walk to Work Days, Bike and Walk to School Days, and Open Streets events.
- Strive to simplify the multi-modal transportation system for users of all modes, abilities and comfort levels.
- Adopt bicycle parking standards that address capacity, siting, security and design based on national best practices .
- Educate citizens and visitors on the benefits of walking and biking for individuals and the greater community.
- Provide economic incentive for businesses and employers to increase their walking and biking mode share for commuters and visitors.

Goal 4: Educate all users on their responsibilities and rights.

- Produce educational materials for all modes (bicyclists, pedestrians, motorists, etc.) that clearly state their responsibilities and rights, and make them publicly accessible to reduce confusion.
- Provide bicycle and pedestrian safety education to grade school students both in and out of a classroom setting.
- Partner with bicycle and pedestrian advocates to provide bicycle and pedestrian safety education to the public. A citywide safety campaign or event could be considered.
- Employ a variety of communication tools and media to make all users aware of new bicycle and pedestrian projects and improvements. Work with partners and advocates to increase public awareness and outreach.
- Enforce traffic safety laws consistently for all modes to promote a safe travel environment.

- As new traffic safety laws are adopted (i.e. the 3ft safe passing law for bicyclists), educate the public with a variety of methods and media.
- Partner with City police on developing accessible web resources that clearly state rules, responsibilities, and regulations for all modes.
- Provide additional and refresher training for police on traffic safety laws for pedestrians, bicyclists, and motorists.
- Implement traffic safety enforcement campaigns such that they promote safe behavior and educate users on safe, legal traffic maneuvers.

Goal 5: Evaluate the progress of the Plan on a bi-annual basis.

- When possible, identify and implement strategies with measureable outcomes.
- Participate in the National Household Travel Survey to learn and report on travel patterns within and through the City.
- Identify specific strategies and projects in this Plan that the City will aim to accomplish each year.
- Produce a publicly accessible report on the progress of the Plan each year.

TooleDesignGroup

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MEMORANDUM

Date: March 27, 2015

To: Amanda Poncy, Bicycle and Pedestrian Coordinator

Organization: City of Charlottesville, Neighborhood Development Services

From: Bicycle & Pedestrian Master Plan Update Project Team

Project: Charlottesville Bicycle & Pedestrian Master Plan Update

Re: Summary of Public Engagement

The 2015 Charlottesville Bicycle & Pedestrian Master Plan Update (Plan) project includes high-level collaboration with the public and stakeholder engagement focused on the following groups:

1. *Steering Committee:* Representatives from the City and other agencies, education, private enterprise and citizen interest groups. The committee met three times during the course of the Plan. Additionally, members of the steering committee hosted a guided bicycle tour for the project team.
2. *Stakeholders/Focus Groups:* Advocates, other City departments, UVA, and the business community. Interest areas for the focus groups included economics, safety, health, and education.
3. *City Council and Planning Commission:* Regular updates and information were provided to the council and commission via City Manager.
4. *General Public:* Emphasizing outreach to non-traditional constituents through radio and news articles; open house meetings, on-line engagement and the summer road shows.

The project engaged the aforementioned groups in a variety of ways throughout the course of the project: project web site, formal and informal meetings, focused stakeholder meetings, public open houses, and participation in key citywide events. Since the Plan Update officially began, the City has reached out to the public in a variety of ways, which are summarized in this memorandum. The City staff has also participated in regular Bicycle and Pedestrian Advisory Committee meetings, ADA Advisory Committee meetings, neighborhood meetings, and attended citywide events with information about the Plan Update.

STEERING COMMITTEE MEETINGS

The Steering Committee was City staff-appointed by invitation. The group provided valuable feedback and ideas for planning documents, analyses, and outreach activities. They also served as citizen "ambassadors" for the process by actively sharing information with their constituents and providing relevant insights to the planning team.

The committee meetings occurred in April 2014 (Kick-Off); June 2014 (Bicycle Tour); September 2014 (Network review); January 2014 (Project prioritization); and April 2015 (Plan review).

Table 1: Project Steering Committee Invitation List	
Rachel Falkenstein	Albemarle County Planner
Jim Self	Co-Chair CBPAC; Martha Jefferson
Jake Fox	Co-Chair CBPAC, Bike UVA
Jim Chang	The Meadows
Chris Gist	Fifeville, Community Bikes
Ruth Stornetta	CBPAC; Bike Charlottesville; North Downtown
Steven Bach	CBPAC; Bike Charlottesville; CHART
Susan Elliot	CBPAC; Fry's Spring
Peter Ohlms	CBPAC; Belmont
Carl Schwartz	CBPAC; BAR; 10th and Page
Scott Paisley	CBPAC; Place Task Force
Chris Gensic	City Trail Planner
Eberhard Jehle	CBPAC; Martha Jefferson
Lena Seville	CBPAC; Belmont
Will Cockrell	Thomas Jefferson Planning District Commission
Maya Kumazawa	City of Charlottesville Public Works
Mac Lafferty	CBPAC; County Planning Commission
Sue Berres	CBPAC; Pedestrian Advocate
Christine Appert	Advocate for People with Visual Impairments
Marty Silman	City of Charlottesville, Engineering
Julia Monteith	University of Virginia – Office of the Architect
Chris Wiles	CBPAC; Barracks-Rugby
Brian Carr	Midway Manor; Pedestrian Advocate
Mike Callahan	Charlottesville Bike-Ped Committee
Zak Richards	Boys and Girls Blub
Jim Herndon	City of Charlottesville; ADA Advisory Committee
Audrey Dannenberg	Lewis Mountain Neighborhood; Mobility Specialist
Kurt Burkart	CACVB
Steve Upman	City of Charlottesville, Police Department

Steering Committee Kick-Off
Date: April 3, 2014
Attendance: 28

This meeting oriented steering committee members to the planning process and the role they will play in supporting the project. The major components of the meeting included:

Background Information and Process

This presentation provided relevant background information and an overview of the Bicycle and Pedestrian Master Plan project. Topics covered in this presentation included:

- National trends in bicycling and walking
- Study priorities
- Project work plan overview
- Project timeline
- Known challenges for walking and biking in Charlottesville
- "Tools in the toolbox" for improving walking and biking conditions
- Introduction to bicycle "stress" level analysis
- The study's approach to improving conditions for pedestrians
- Planned public involvement opportunities
- Introduction to the online interactive map

Discussion of Vision, Goals and Objectives

The purpose of the discussion was to edit the draft text, identify additional goals and/or objectives that were needed and to remove any goals or objectives as appropriate. Highlights from that discussion are included below:

Feedback on Goals

- The Plan should focus on improving and expanding the existing walking and biking networks in such a way that they encourage more people to walk and ride their bikes, rather than catering to those who are already walking and riding on a regular basis.
- When choosing facility types, the more vulnerable users should be given priority, pedestrians, children, less confident bicyclists.
- While the focus of the Plan should be expanding transportation options, improving the network for health, fitness and recreation trips should also be considered.

Feedback on Objectives

- There needs to be an objective that addresses needs for bicycle parking.
- All users (pedestrians, bicyclists, motorists) need education and reminders on their responsibilities and rights.
- Outreach to police, motorists, bicyclists, students, and others will be needed to foster a welcoming bicycle and pedestrian culture.
- Economic incentives for bicycling should be included as an objective or strategy.

Feedback on Vision

- Include words such as “attractive”, “welcoming” and “appealing” for the long-term vision of Charlottesville’s walking and biking networks.

Discussion on Stakeholder Outreach

The purpose of the discussion was to identify people and groups that should be included in focus group discussions for the Master Plan. Highlights from this discussion are included below

- Law enforcement departments and agencies should be included in Plan discussions.
- The University of Virginia has many stakeholders such as students, faculty and staff. All will benefit from improved walking and biking conditions throughout the City.
- Merchants and chambers of commerce should be engaged as they could play a role in improving bicycle parking and/or pedestrian comfort.
- It will be important to reach out to groups of all races, ethnicities, and economic backgrounds. Churches, the International Rescue Committee and home owners associations may have resources to broaden outreach efforts.
- The County, MPO, and VDOT staff should be informed and engaged throughout the Plan development process.
- Upcoming festivals and events are opportunities to broaden public outreach of the Plan. Perhaps a booth could be set up with handouts and other giveaways that provide information about the development of the Plan.

Steering Committee Bicycle Tour
June 19th, 2014
Attendance: 10

Photo Courtesy Bill Emory

The steering committee led a citywide bicycle ride to explore area streets with the project team and offer suggestions on how to best navigate the City by bicycle. The event was an effort to identify desirable characteristics of future bicycle and pedestrian facilities. The group made several programmed stops to discuss the pros and cons of different street environments. Photographs and notes were taken at specific locations to document concerns of the members. Some key findings from the ride include:

- Developed a keen sense of the topography challenges in Charlottesville.
- Learned that many of the trails have management/maintenance issues and transitioning them to accommodate more transportation trips would in some cases require re-design and lighting.
- Gained insight into the "local" routes that bicyclists take to navigate the city.
- Built excellent rapport with the steering committee as we enter the network development phase and rely on them for a strong vetting process.
- A debrief lunch with a sub-group of committee members and project principal Bill Schultheiss took place to share wrap-up comments on the tour.

Steering Committee Meeting
Date: September 17, 2014
Attendance: 23

The second steering committee meeting provided a status check on project progress to date and then focused on review of the bicycle and pedestrian network. The project status update included a review of the final WikiMap results and highlights of the draft policy assessment. The study network overview focused on three components:

- Long-term vision and short-term implementation
- Bicycle network/connectivity, safety and level of traffic stress
- Pedestrian network/sidewalk gaps analysis and hotspots

Following the network overview the meeting then transitioned into breakout groups that were given discussion questions to facilitate group interaction. The questions and key comments follow.

Pedestrian Focused Questions

1. In 2011, the city council adopted criteria for establishing sidewalk construction projects. Are these criteria still relevant? Do they need to be revisited?
    - Reassess criteria regarding sidewalks existing on one side of the road, particularly if the sidewalk switches from one side of the road to the other, and dependent on the road classification (i.e. higher volume roads should have sidewalks on both sides)
    - Prioritize gaps in an otherwise continuous sidewalk route over a route without any sidewalks
    - Criteria should also include:
        - Areas near grocery stores
        - Local government buildings
        - Social Service Access

- When prioritizing sidewalks in school zones, the traffic volumes should be considered for prioritization between school zones
- Develop a Pedestrian Environmental Quality Index
- Include inadequate and substandard sidewalks in prioritization
- Create a similar process for intersection improvements
- School zones should have higher priority than other criteria
- Develop a consistent policy for sidewalk closures, better communication of this policy to the public
- Include public *voice* in prioritization
- Compare pedestrian improvements to vehicular improvements – is it equitable?
- Sidewalk gaps map is misleading because it doesn't include the quality of sidewalks
- Lighting needs to be included in improvements

2. Are there other specific pedestrian policies that need to be considered? (signal timing, sidewalk closure policies, crosswalk policies, etc)
    - Eliminate push-buttons
    - Increase the number of walk signals with leading pedestrian interval
    - Emphasize pedestrian protection instead of sidewalk closures at main transportation arteries
    - Use traffic calming measures along zones of constricted sidewalks, and temporary traffic calming for construction areas
    - Improve crosswalk visibility for crossings that are not at signalized intersections
    - Develop protocol to assess crosswalks citywide
    - Measure existing/expected traffic volumes and coordinate all new developments with the city's form based code
    - Stop signs preferred over stop lights
    - Shorter signal timing

3. What are the top 5 hot spot locations for pedestrians (perceived safety concerns)?
    a. Intersection of Emmett St and Stadium Rd
    b. Intersection of Ridge St/5th St and Elliot Ave-Tonsler Park
    c. Intersection of 5th St and Bent Creek Rd
    d. Intersection of W Main St, South St, Water St, and Ridge St
    e. Intersection of Monticello Ave and 6th St

4. What are the top 3 pedestrian priority corridors that should be improved in the next 5 years?
    a. Emmett St N corridor – Between Barracks Rd and Greenbrier Dr
        i. Rte 29 from University to 250Byp
        ii. Rte 29 from 250 Byp to Rio – Crossing are needed
    b. Roosevelt Brown / 10th St
    c. W Main St corridor
    d. 5th St Corridor – South of W Main St

Bike Focused Questions

1. Are sharrows used for filling gaps in the bicycle network or for wayfinding between non-shared road bicycle facilities (bike lanes, cycle tracks, side paths, etc.)?
    - Both

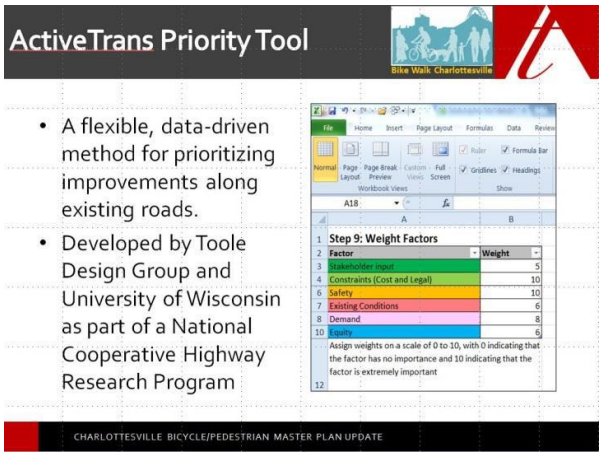
- Vehicle speeds/volumes are the biggest factor for determining usefulness of sharrows
- Sharrows can be used for wayfinding in conjunction with signs
- Include sharrows on downhill segments

2. Are there other specific bicycle policies that need to be considered? (bike parking, etc, etc.)
    - When possible, bike lanes have minimum 5-foot width with 2-foot buffer
    - Stronger motorist deterrents for bicycle collisions
    - Bicycle parking minimums
    - Require covered bicycle parking in larger commercial and residential areas
    - Ticket vehicles for parking in bicycle lane
    - Bicycle "Yield" signs at stop controlled intersections
    - Education campaign for the 3' passing space law

3. Where are 3 priority corridors or connections that should be improved in the next 5 years for bicyclists?
    - W Main St
    - Emmett St – Barracks Rd to City Limits
    - All city entrance/exit corridors
    - Old Lynchburg Rd
    - Preston Ave/Barracks Rd
    - 5th Street / Ridge St
    - Ridge/McIntire
    - E High Street
    - Garrett/Levy/Graves St
    - E Market

Steering Committee Meeting

Date: February 26, 2015



This meeting provided a comprehensive project progress report, a final network review, and presented a timeline for project completion. The featured activity was breakout sessions structured to assist the TDG team with project prioritization. The progress report included: policy assessment review, highlights of pedestrian and bicycle planning, detailed outline of the final plan document, and the project prioritization strategy. The TDG Team introduced the **Active Transportation Priority Tool** as a state-of-the-art strategy for prioritizing projects. The meeting came to a conclusion with a strategy discussion about presenting the final plan to the public through an open house and other venues.

Below is a sampling of comments received from the committee by presentation topic. The full meeting notes and video transcript can be accessed online at the project website.

Policy assessment discussion

- Bicycle Vision map - distinguish Transportation trails from recreational trails
- Recommend lighting on transportation trails
- Clearing sidewalks and bike lanes after the snow
- Street crossings: It would be helpful for the city to provide a list of criteria that explains the level of pedestrian facilities for an intersection i.e. when does an intersection receive a push button, crosswalk, etc.
- Woonerfs/Shared Space streets
    - Is there a VA law restricting woonerf style streets?

Pedestrian and bicycle planning discussion highlights

- Maps and wayfinding facilities would need to be available to guide people when on their bikes
- Topography was not included in level of stress assessment— however it was considered by recommendations we established
- The meeting opinion is that some of the routes on the map do not reflect which routes community members actually use
- Old Lynchburg road was removed from previous recommendations maps because of safety concerns
- Monte Vista is narrow, hilly and will not be used by bicyclists
- Overall opinion is that the map design is good! (head nods from all)— Would be useful to explain the bicycle network to others
- Map shows bike network on the rail beds—is this OK?
    - It probably won't happen, but having it on the plan is important (some are more feasible—might be good to designate this on the map—realistic vs. unrealistic)
- Maybe add dashed lines that show bike routes that are probable and those that aren't—might make it easier to sell this plan to people
- Or—two different maps—one pie-in-the-sky, one more realistic (implementation focused)

Bike network prioritization discussion

- Need to do a test run with two different sets of numbers to better understand how the tool works
- Recommended factor weighting - connectivity 35, demonstrated need 35, public support 20, implementation 10
- Run prioritization with all factors equal and for TDG recommended weighting
- Are weights negative? Weighting isn't "negative" however variables can be scaled so that certain projects will be prioritized at a lower level, e.g. an overly expensive project will receive less priority that a moderately priced project
- Demand map - rename "high demand" areas for what they are – proximity to commercial, schools, parks, etc.

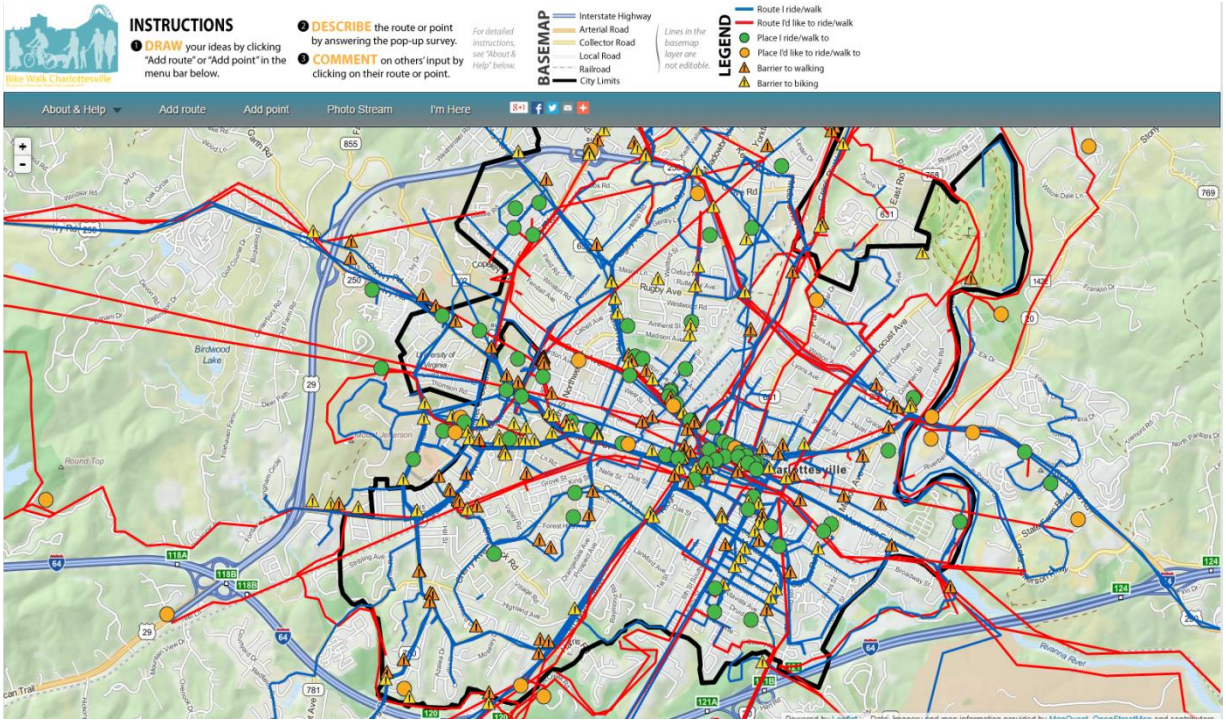
ONLINE OUTREACH

The project team supported the City's efforts to create an online presence to complement the in-person community outreach efforts of this plan. In addition to the online interactive map described below, the TDG Team provided a project description and schedule, meeting documents, draft Plan elements, and project team contact information. The City was responsible for uploading and maintaining webpage information.

The webpage enabled interested parties to submit questions and comments throughout the planning process to the City's bicycle/pedestrian plan project manager, who communicated directly with the public and compiled and forwarded comments to TDG for review. Additionally, the City of Charlottesville provided the results of its previous pedestrian and bicycling attitudes survey to supplement public responses to the WikiMap and questionnaire and feedback forms.

Interactive Online Map -Public WikiMap

The project team developed a WikiMap, an online interactive map that was available for input from late March 2014 through early September 2014. Users were asked to identify routes they already ride or walk, ones they would like to ride or walk, and barriers to bicycling or walking in Charlottesville. The map was available as a link from the plan website (www.charlottesville.org) and participation in the exercise was advertised and encouraged via local news, community meetings, social media blasts, UVA communications, organizations/outlets represented on the steering committee and at the public open house.



Input from this outreach effort helped identify the study network, informed network development, focused the team on key challenges and aided with policy recommendations. The tables below show a breakdown of Wikimap contributors by age, gender, and motor vehicle access.

Age

Under 18	18-35	36-65	Over 65	Prefer not to say
3	84	102	15	1

Gender

Female	Male	Prefer not to say
73	127	5

Motor vehicle access and ownership

No access to a motor vehicle	Access to a motor vehicle, but do not own	Ownership of a motor vehicle
13	31	161

Wikimap contributors were requested to identify routes that they currently use and routes that they would like use, destinations that they currently bike and walk to and destinations that they would like to, and barriers to walking and bicycling. Table 3 summarizes the number of comments that each comment type received.

Comment Type	Number of comments
Route I walk or bike	159
Route I'd like to walk or bike	125
Place I walk or bike to	73
Place I'd like to walk or bike to	35
Barriers to biking	108
Barriers to walking	97

WikiMap Highlights include:

Routes I'd like to walk/Bike

- Concentration on W. Main Street and Route 250.
- Other routes include Ridge Street
- Comments asking for connectivity between streets at Railroad tracks; many comments mentioned the possibility of a bridge from Market or Chesapeake to State Farm Area of Pantops.

Routes I walk/Bike on

- Monticello Avenue
- Preston Avenue
- Concentration on W. Main Street, 9th Street NE/Avon Street
- Other heavily used routes include Monticello avenue, Preston Avenue

Barriers to biking

- Concentration on intersections between US 29 and W. Main Street.
- High concentration of barriers on intersection of Fontaine Ave and Jefferson Park Ave (lots of restaurants around there).
- A number of barriers to biking on intersections at Ridge Street and Main Street.
- High concentration of barriers along Rialto Street south of Monticello Avenue.
- Many comments dealt with poor road conditions, difficult interaction between motorists and bicyclists at intersections , and no signal detection for bicyclist
- Intersections along Jefferson Park Ave. and Main St.
- Poor road conditions, motorist/bicycle interactions at intersections

Barriers to walking

- Concentration on Ridge Street at W Main Street; Chancellor Street next to railroad tracks next to 17th street NW, Grady Avenue and Preston Avenue; Old Lynchburg Road and Jefferson Park Avenue.
- Most comments dealt with "disappearing sidewalks", missing sidewalks, improvements to crosswalks needed, and pedestrian counts at intersections being too short.

Place I'd like to ride/walk to

- Virginia Piedmont College,
- Pantops Shopping Center
- UVA.

Place I walk or ride to

- Downtown Shops
- Harris Teeter
- City Market
- Downtown Shops, Harris Teeter, City Market.

ADA Accommodation

To make the WikiMap accessible for all users the project team translated information gathered through the on-line process and developed readable spreadsheets. Both city staff and the project team were available for technical assistance throughout the process.

STAKEHOLDER OUTREACH – FOCUS GROUPS

The purpose of the stakeholder focus groups was two-fold: one, to receive practical feedback and guidance from various user perspectives; and two, to foster buy-in and consensus among partners and organizations that play an active role in implementing the plan policies and recommendations. At each meeting a discussion guide was provided to prompt interaction and facilitate purposeful group discussion. Each group was presented a lead question and asked to respond, see questions below. Providing a lead question proved to be a useful technique to elicit focused and thoughtful discussion around the meeting topic. Also, included below is a summary of a particularly interesting or innovative idea that came out of the discussion. The meetings conducted were as follows:

Business and Economic Vitality Focus Group
June 18, 2014 from 12:00 PM – 1:30 PM at City Space
Attendance: 9
Lead Question: It's June 18, 2024 - Charlottesville is getting an award from the International Economic Development Council for increasing public revenues and creating new jobs by strategically improving our walk/bike environment. What did we do, and where did we do it?
Great Idea: Encourage a developer (s) to create a bicycle/pedestrian game akin to the "Bay Game" including an educational tool and kiosk for the game and potentially sponsored by UVA.

Safety and Enforcement Focus Group
June 18, 2014 from 2:00 PM – 3:30 PM at City Space
Attendance: 9
Lead Question: It's June 18, 2024 - Charlottesville is getting an award from the national Roadway Safety Foundation for being America's safest city for cycling and walking. What did we do, and where did we do it? Great Idea: Leverage the police departments shift toward geographic policing, particularly downtown/W. Main core. There is a 2 year expansion/strategic plan currently underway which may help redefine the size and role of certified bicycle officers but comes down to manpower & money – the department is looking for precedents elsewhere.

Active Living Focus Group
June 19, 2014 from 12:00 PM –1:30 PM at City Space
Attendance: 11

Lead Question: It's June 18, 2024 - Charlottesville is getting an award from the Robert Wood Johnson Foundation for making Charlottesville the city with the highest per capita rates of biking and walking activity among people of all ages. What did we do, and where did we do it?
Great Idea: There are a significant number of older youths in the foster care system; many rely on buses for transportation. There is strong interest in promoting other transportation alternatives to this population as transportation solutions are key part of overcoming poverty.

Table 2: Stakeholder Meeting Topics & Representatives	
Focus Group Topic	**Invited Organizations/ Individuals**
Safety and Enforcement	• Charlottesville, Albemarle & UVA Police • Department of Motor Vehicles driver Ed program • City & County schools driver & bike safety educators; SR2S coordinators • Insurance Institute for Highway Safety
Active Living	• Charlottesville Track Club • Charlottesville Bicycle Club • City Healthy Eating Active Living (HEAL) Campaign • City Move2Health campaign/Thomas Jefferson Health District • • Charlottesville City Schools • UVA Access Committee
Business and Economic Vitality	• Merchants groups & major employers • Visitor-oriented: Monticello, hotels, restaurants, Amtrak, Greyhound • Realtors (CAAR, Blue Ridge Apartment Council) • Developers • VEC Workforce Development Center

PUBLIC EVENTS

Public Open House

In coordination with City staff and Steering Committee members, the TDG Team facilitated two public open houses to provide information and gather input from any and all interested area citizens:

- The first meeting was a public workshop to present the draft vision and goals for the project, to capture input on existing needs, and (as appropriate) other outreach.
- The second meeting will be an open house to present the draft recommended network and to capture input on program prioritization and next steps.

The meetings featured activities and interactive tools that provided a variety of ways for attendees to provide comments and ideas. The TDG Team and city staff employed various techniques to encourage participation from groups that are typically not active participants in bicycle plans such as University Students, non-bicyclists, low-income residents, and visitors to the city.

June 18, 2014 from 4:30 PM to 6:30 PM at City Space
Attendance: 55

In coordination with City staff and Steering Committee members, the TDG Team facilitated a public meeting to provide information and gather input from any and all interested area citizens. The event was an Open House style with "stations" for public review and comment. As part of the public input process, citizens were also invited to use an online interactive map (or online survey if using a screen reader) to identify barriers to biking and walking, as well as desired routes. There was a brief presentation about the plan update process, national trends, and reflections about the city's bicycle and pedestrian network. Participants provided comments at the following stations:

- Welcome / Sign-in / Public information
- Demand Analysis with existing facilities
- Project Timeline
- Toolbox-bicycle & pedestrian facilities
- Vision and Goals
- Previous Outreach Efforts
- On-line interactive map

The primary themes that emerged from the public comments include:

- Linking the city network with county connectors to ensure a seamless transition between City and County bicycle and pedestrian facilities.
- Safety – planning and designing a network that prioritizes safety for all transportation modes.
- Focus on raising the profile (and priority) of bicyclists to balance the transportation system.
- Consider a multitude of recommendations (see attachment) at specific locations for specific facilities and treatments as the network gets assessed.

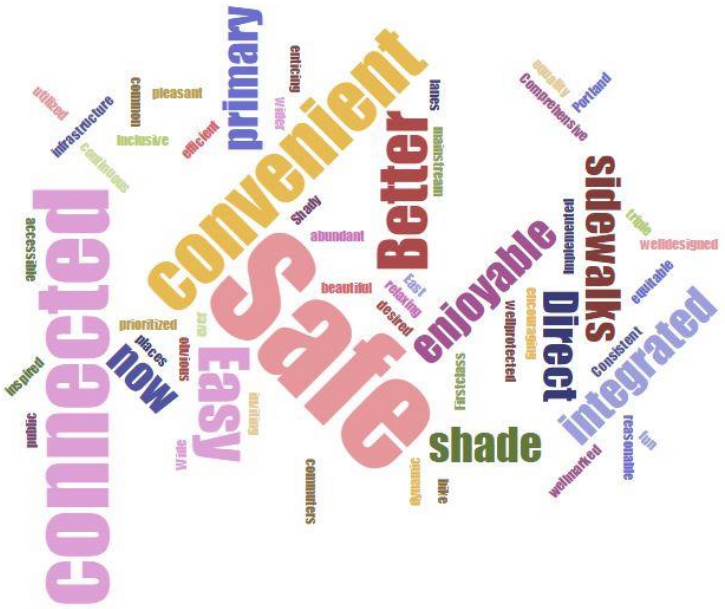
Stations: Detailed notes were taken at each station and transcribed from flip charts and public comment shared at the meeting. The comments were organized into four categories – programs, policy, network, and general comments. A series of maps were also marked up at the meeting identifying potential barriers, challenges and route suggestions. Information from the maps and flip charts were incorporated into the network development phase and subsequent project planning.

Three Words Question

A comment card at the meeting asked attendees the following questions. The word clouds below illustrate the responses and the relative number of each.

1. What 3 words describe bicycle and walking in Charlottesville today?

2. What 3 words should describe bicycling and walking in Charlottesville in the future?



3. Additional comments about bicycling and walking in Charlottesville?

Summer Road Shows

The road shows brought the Plan to a variety of events and activities throughout the summer. City staff led this public outreach effort to get the word out to constituents who do not or cannot participate in traditional public outreach. Attended events included the African American Cultural Fair, Sunday Sundowns at Washington Park; and Sounds of Summer at Belmont and Tonsler Parks, among others.

Community Meetings, Events, and Forums

In addition to public meetings organized by the project team, City staff and Steering Committee members "piggybacked" onto regular community events, neighborhood and other public meetings, and venues as opportunities to educate the public and to solicit input about the plan. Interactions with the public included a variety of forms, such as presentations at regular meetings, in-person surveys, flyers, and advertisements.

PUBLIC INVOLVEMENT SUMMARY

Each public outreach event held or tool used as part of the 2015 Plan has helped contribute to the final plan recommendations. While each of these has reached a somewhat different audience, together they have reached a wide variety of the population of Charlottesville. Several common themes were heard throughout the outreach process:

- Bicycling and walking in Charlottesville in the future should be **safe, connected and accessible**
- Enhanced infrastructure like **protected bike lanes and sidewalks** should be a priority
- **Education and enforcement**, particularly with regards to educating about and enforcing traffic laws, and educating youth, should be a priority
- **Connecting to the trail network** should be a high priority, as well as connecting to facilities in Albemarle County

ATTACHMENT A

Public Open House — Charlottesville Bicycle and Pedestrian Plan Update
City Space

June 18, 2014

The notes below are transcribed from flip charts and public comment shared at the meeting. The comments are organized into three categories – programs, policy, network, general comments – to provide context. A series of maps were also marked up at the meeting identifying potential barriers, challenges and route suggestions. Information from the maps will be incorporated into the network development phase of the project.

Station - Programs

- Financial support to buy MTB bikes for low income residents in coordination with the Charlottesville Racing Club Juniors Mountain Bike Team. Contact Nedormsby@hotmail.com
- Implement a bike share system, including a base for mountain bikes, for tourists and citizens to ride to Monticello
- Design speed and user awareness programs
- Take this show on the road to African American churches and community centers, public housing and other lower income neighborhoods
- Work with PVCC and CATEC, work with local elementary/middle/high school to promote bike groups.
- Wayfinding for routes, example- Ped/Bike Bridge (JPA) over Emmett Street

Station - Policy

- Legislature: Develop enabling legislation that gives protected/equal status to bicycle and pedestrian users of the R.O.W. (Not on the interstate!) when that ROW has a speed limit less than or equal to 25mph
- Pavilion events- whenever there is a $$ concert at the pavilion, the public sidewalk is blocked and no way to get from Belmont to Downtown, this is a disgrace.
- Move Street signs to inside of sidewalk.
- Construction companies should not be allowed to fence off long sections of sidewalk
- Need to coordinate with county
- We should consider parking garages around the edges of town so that people can park and ride in. The current garages are central to downtown and UVA and do not encourage biking or using mass transit.
- Pedestrian snow plowing policy - pedestrian safety issue when snow is not cleared.
- McIntyre Park- Hot spot
- Shower/Locker facilities and key designations. Even with fee comparable to parking, maybe business supported?
- Prioritize snow removal at bus stops on main lines

Station - Network

- Preston Avenue and 10th Street NW is a difficult intersection.
- Elliott Avenue has difficult intersections.
- It would be nice if pressing the cross-walk button at Market/Carlton/Meade activated the walk sign more quickly.
- Prefer elevation separation between bike and pedestrians
- Take Down the fence on the Belmont Bridge!
- School connectivity important!
- Hospital roads need bike lanes University to JPA/Emmett
- Elliott/Cherry and 5th street intersection is very dangerous
- UVA needs to accommodate cyclist bike lanes-JPA coordination with City
- A bike box is needed at Emmet Street and Barracks Road (from eastbound Barracks Road). Cars are jockeying and moving quickly because there is a long red light sequence and they want to get through the green cycle. Bicyclists have a difficult time getting into position to make turns or even go straight
- The bike lanes on Rose Hill Drive are un-usable because the bike lane is in the washboard section of the street and contains much debris. Many bikers choose to ride in the vehicular travel lanes to avoid this problem and dooring issues, but feel that they are not supposed to be there and upset motorists
- Trail or bike facility from city to Barracks Rd. Shopping center
- Pedestrian sign location in sidewalks
- Bike tracks on the side of stairways for rolling bikes up and down.
- Railroad underpasses/bridges –need plan for future fixes
- Level sidewalks with cars in driveways and streets having to go up and over.
- Tools for walking and biking. The Naked Street, Flush Street, no mounting, no sidewalks
- Connect a trail/bike facility from city to West Main Street
- Emmett St.-parallel/separated route and or trail
- Ventilate well with trails
- Connect to existing trail network
- Connection to Saunders Trail/ Monticello
- Connection to Biscuit
- Connect to Monticello visitor's center via a pedestrian bridge at the east end Market Street over Moore's creek and thence, up Monticello on an "Appalachian Trail Style" trail.
- Look at multi-use trail in the eastern part of Boulder, CO for examples of intersection design
- There are too many too big intersections. Trying to cross at staggered intersections such as Jefferson Park Avenue/Sunset Avenue/Cleveland Avenue is very difficult.
- Biscuit run corridor
- I would like a cycletrack on Ridge/McIntire from the Meadow Creek Parkway (under construction) into the southern part of town
- Consider separated/parallel route along RT.250
- Purchase 19 acre "circus grounds" to complete linear park from RT 250 south to I 64
- Develop a connected, safe and user friendly network with the County - the County currently has a 10 year old Greenways plan

- Free bridge and 250 east and South Pantops to I-64. (Especially South- eastbound lane)
    - 250 W- Bloomfield Rd.
    - 20 S past Avon Extended
    - Avon Extended
    - N→ (Emmett, Hillside, Berkmar Dr.)
- There is no crosswalk at Rio Road and Greenbrier Drive for children traveling to and from Greenbrier Elementary School. Bicyclists are not able to trip the signal at this location and sometimes must wait for a car to approach.
- Make sure to prioritize connections for bicyclists over cars. The 250 Bypass, railroad tracks, and steep topography create broken connections that may not be possible to complete with traditional roads, but may be connected with facilities for bicyclists
- Look for opportunities on city-owned land (easements included) to make connections for bicyclists and pedestrians
- I would like to see more roundabouts.

Station - General Comments

- Light at Markey/10th Northeast doesn't respond to a bike (or scooter) neither does the light at 10th and High
- Open up city yard-Page Street underpass to 10th and Page neighborhood
- West Main Street needs LPIs and NRTOR
- I don't like HAWK signals because they feel like a retrofit solution. I would rather see a full signal. *After some discussion*: Rapid Flashing Beacons seem like a better option.
- I really like having bike signals at traffic lights so that bicyclists understand what to do
- Bike tracks on the side of stairways for rolling bikes up and down are badly needed especially at UVA. Also, in the city, on the stairway near the transit center from Water Street up to the Mall.
- West Main Street is dangerous to bicycle on due to dooring and traffic

Bike/Ped Plan Kick-Off

18 June 2014

Open House Comment Forms Summary

Question 1. What 3 words describe bicycle and walking in Charlottesville today?	Question 2. What 3 words should describe bicycling and walking in Charlottesville in the future?	Question 3. Additional comments about bicycling and walking in Charlottesville?
Hilly, frustrating, intimidating Conditions need improvement Better than before Unsafe, stressful, inconvenient Always an adventure Need more city blocks Encouraged, frustrating, mixed bag Hills, dusty, dirty Super, ?, Fantastic Disconnected, difficult and discouraging, disconnected from the county OK for fearless and informed, iffy for new/cautious cyclists, walking mostly OK OK, disconnected, afterthought Solid core, weak ring Dangerous, hot, dodging projectiles Confusing, a little dangerous, congested Dangerous, insufficient, difficult Disconnected, secondary, enjoyable Fragmented, not connected to County Satisfactory, patchy, improving Disconnected, dangerous,	Inclusive, accessible, wider sidewalks Better than now Better than now Safe, convenient, more commuters Safe, pleasant, direct Will triple Convenient, safe, enticing Direct, convenient, shade Better than ever Easy, connected, encouraging Safe, inviting, well-protected Safe, convenient, obvious Safe, efficient, utilized Shady, safe, reasonable Easy, safe, well-marked Safe, abundant, connected Connected, primary, mainstream Implemented Consistent, equitable, fun Connected, safe, inspired First-class, primary, integrated Safe, continuous, common Connected, safe, prioritized	• More infrastructure please. • We need much better cooperation and coordination in planning and executing street improvements between the City and University. • Bike licenses to require bike safety test and provide for programs and infrastructure. • Crossing at intersections where drivers are turning right is the single most dangerous aspect of walking C'ville. Drivers need to be educated that they must yield to pedestrians when turn at intersections. There needs to be more effort made to educate drivers about pedestrians. • Generally good, but too many gaps in sidewalks, bike lanes that just end and things like phone poles in the middle of sidewalks. Downtown and UVA are great for pedestrians, but walking between some places can be a challenge. • A small village for two thousand, horse and buggy to a metro area of over two hundred thousand. Many innovations available, many discoveries. • Be sure to take note of projects in the pipeline already (i.e. bike box at Rugby/McCormick , etc); Avoid missed opportunities with UVA; Address enforcement for all modes; Better bike detection at signals • Poor drainage in places esp. at the sidewalk curb ramp • Need more clean air • C'ville can do MUCH better both in near future & NOW

discouraging Spoty, incomplete, secondary Downtown Mall, interrupted lanes/connections, unsafe Aggressive, marginal, progressing Dangerous, disrespect, improving Somewhat OK overall Not safe, disconnected bike/ped system with few interesting or useful places to go Scary, discouraged, challenging Risky, exhilarating, humbling Bike: quick & convenient Walk: sidewalks with poles in the middle, not ADA friendly Happening, growing, cool (except today)	Safe, dynamic, equality Easy, enjoyable, desired Safe, connected, beautiful well-designed public places Comprehensive, integrated, safe Safe, relaxing, enjoyable Wide sidewalks with shade More bike lanes More infrastructure Portland of the East	• Buffered lanes protect from dooring; signage/wayfinding to safer/lower traffic/bike friendly streets; driver education; yield to more vulnerable users • Good infrastructure, more application and safety and better marketing • Need more bike lane maps in bike shops and around town; I work at Barracks Road, no safe route from downtown. Emmet & Prescott need bike lanes or pave Rivanna Trail. It would so cool to bike the whole Rivanna Trail on a road bike! • As a native of C'ville I can get around safely, but I feel it is difficult for me to describe safe routes to new residents • We have a good community for walking and biking, but we also have a community with high standards. Keep at it but let's not forget to pay attention to ped infrastructure in communities w/o a strong voice • Long overdue! Excellent presentation esp how it was all tied to the bigger planning efforts • Thank you for doing this! • Focus long range planning on fixing major connectivity gaps for bike/ped only (along railroad alignments, along 250 bypass/29 N, across topographic barriers- Meadowcreek Pkwy west to 29 shopping) • There's a good foundation, beginnings of networks, lots of opportunities • Move utility poles from the middle of sidewalks making it impossible for two to walk together. • Explore/consider bike lanes that share (expanded) sidewalks rather than roadways so that bikes and pedestrians share adjacent space (grade separated from autos) rather than bikes & cars sharing • I appreciate the efforts of all who have brought about the progress thus far • Connectivity • Great that you're doing this

Bicycle-Pedestrian Plan Bike Ride/Tour

19 June 2014

Participants

Peter Ohlms
Ruth Stornetta
Eberhard Jehle
Scott Paisley
Jake Fox
Stephen Bach
Alec Gosse
Dede Smith
Susan Elliot
Bill Emory

Amanda Poncy-NDS
Wendy Phelps-NDS
Bill Schultheiss-TDG
Jeff Ciabotti-TDG

Bike/Ped Plan Focus Group

19 June 2014

Active Living

Participants

Ellen Houle—Charlottesville Track Club, Westminster Preschool
Elizabeth Beasley-Health Department
Caroline Laco-Community Bikes
Jessie Dodson-Community Attention
Juan Wade-School Board
Melanie Brady-UVA Health & Promotion
Jamie Leonard-UVA Health & Promotion

-Move 2 Health
Focus on positive messaging
Minutes not miles to include a variety of activities
Most participants in 30-55 age group; probably reaching people who are already active
-Community Bikes
Focus on biking for transportation
Free/cheap bikes for refugee/homeless populations
Voucher system through the Haven
Women & bikes-interest in family biking
Kid's bike rodeos
-Older youth in foster care system; many rely on the bus system for transportation; interested in promoting other transportation alternatives
-transportation solutions are key part of overcoming poverty
Want to see more minorities/diversity
-need to improve facilities for students biking to high school
Want to see more covered parking and separated, lit routes for students to bike to all City Schools
-adding bicycle education to school curriculum
-some grassroots efforts like walking school buses, but takes a lot of parent effort
-City/County connections are really scary
Georgetown Rd/Avon-disappearing shoulder, too much overgrowth
-increase in biking around UVA, want to see increase in helmet use, lights
The most severe UVA student ER cases are bicycle related
-Grady Ave, crossing at Preston is very difficult
Washington Park/pool virtually inaccessible for children in Venable neighborhood
-IM Rec Sports/Hoo's Well/Parking & Transportation have talked about forming a bicycle subcommittee
-no bicycle information in packet distributed to incoming first year students
Safe riding skills clinic offered in August with bike sale (Scott Paisley?)
-bike share

Will helmets be made available?

-starting education young

Westminster Bike Days, helmets/bike access are a barrier, what are the rules of the road

Partnerships with pre-schools, bike stores, health groups

-new developments with no bike lanes, make requirement for developers

-addressing County growth and those who can't bike commute the whole way with better storage etc. at park and ride facilities

-eliminate "funding" loophole as reason for bike lane removal from projects; in the County, rarely uses tax payer monies to fund bike lanes (rely on VDOT/state funding)

-tourism

Pedicabs, bike tours around town/historic sites, hotels with own rental bike inventories

-enforcement of the rules of the road

-reducing the number of cars on the road so other users feel safer

-better signals and information at intersections

Ridge/Main/Water is particularly challenging

-addressing the various needs of the people we serve; access to bikes, helmets, routes etc.

Recreation vs. daily needs

Going to community meetings to address issues

-using technology to improve transportation; what can be done with the "hardware" people already have (i.e. bicycles, smart phones, traffic signals)

-map of bike fix-it stations

-pedestrian infrastructure

Unobstructed sidewalks, longer pedestrian crossing times, providing trees, water fountains, seating areas—increasingly important for aging population

-maintaining existing infrastructure

Meadowbrook Parkway bike lane is NOT maintained

-new JPA bridge is an example of a good project

Bike, Walk, Play event was watershed type event; shows what is possible via human power transportation

Similar events elsewhere attract regional participants ie Cap to Cap race in Richmond

Maintaining bike/ped access during construction got more people walking and biking

Finished bridge has good lighting, wide sidewalks, bike lanes

-opportunities for more neighborhood commercial

Rio/Greenbrier intersection inaccessible to bikes/pedestrians

-bike/ped access on 29N

No crossings/bus stops to get to Stonefield

-incentives to encourage density, letting the market do the work

Bike/Ped Plan Focus Group

18 June 2014

Safety

Participants

Sgt. Steve Knick-Charlottesville Police Department
Officer Russell Handy- Charlottesville Police Department
Officer Rob Weal- Charlottesville Police Department
Cpl. Flip Dudley- Charlottesville Police Department
Sgt. Latroy (Tito) Durrette- Charlottesville Police Department

-bicyclists have 50% knowledge/compliance rate with rules of road
-Are there existing programs? Yes/No
Many repeat offenders, usually Jimmy John's, other food delivery companies
Lack of knowledge
PD generally tries to distribute pamphlets in lieu of tickets for first offenders; no guarantee the pamphlets are read
-PD has approx. 20 certified bicycle officers; growing their program
Shift toward geographic policing, particularly downtown/W. Main core
2 year expansion/strategic plan, but comes down to manpower & money
Looking at precedents elsewhere
Interested in forming partnerships to deal with manpower & money issue
-most infractions are not malicious; cyclists don't want to lose momentum and stop at red lights/stop signs
-other common issues include riding on sidewalks (enforceable? Only in downtown? Confusion) and not yielding to pedestrians
-lack of space for bikes on routes parallel to mall leads to people riding on the Mall
Water St and Market St are both challenging for cyclists
-fatal and severe bicycle/motor vehicle collisions
4th St/W. Main St
Alderman Rd/Ivy Rd (left turn, head on)
-motorist education component
Included in school driver's ed programs? Younger students?
Bike rodeos, helmet giveaways, special events i.e. Bike, Walk, Play
Would like expand to community centers, Boys & Girls Club
-The Corner: dooring, bicyclists not yielding to pedestrians
-bike boxes will take getting used to, particularly for aggressive drivers
-looking into and applying for pedestrian safety grants which could improve sidewalks, signals and

enforcement efforts
-distracted walking is an issue, as well as emphasis on general shared responsibilities
--walking and schools
Walking Wednesday events; many children ride with parents; some crossing guards only see 1-4 kids crossing at their posts
City has reduced crossing guard posts from 14 to 7
Rose Hill Drive/Burley Middle school
Cars parking in bike lane for drop off
Usually have targeted enforcement during back-to-school season
Sponsored helmet PSA last fall
-can be challenging to enforce laws with the wide variety of cycling styles
-getting more involved with bicycle and pedestrian advisory committee?

R Neal-Bike Officer on Downtown Mall (1 of 2)
Many do not follow bike laws on roadways, probably most do not know
Give out pamphlets with bike laws, but many repeat offenders
Are bikes allowed on sidewalks?
18-19 certified bike officers

Steve Knick-Crime Prevention Unit
(DT Mall & W Main) will enforce from Pavilion to Corner
2 year plan to implement; 12 man team on bikes

Russ Handy-former Mall officer
Many don't know the rules of the road, to be fair they acknowledge momentum
Not enough designated space for bikes
Market St—not great to ride or walk, whereas mall is desirable

Tito-Sargent
Fatal accident, another severe injury
Some aggressive riders
Rules of the road need to be understood by motorists and cyclists-shared responsibilities for all users

Street design & culture
Issues near corner where cyclists try to squeeze between cars and parked cars

Flip-manages CSO and school crossing guards
4th/W. Main

Bike/Ped Plan Focus Group

18 June 2014

Economic Vitality

Participants:

Kristin Morgan-UVA Office for Diversity & Equity
Genevieve Cox-Chamber of Commerce
Carolyn Dillard-UVA Community Relations
Jim Duncan-Nest Realty
Julia Monteith-UVA Office of the Architect, Steering Committee

-people are threatened by cars when crossing streets even with blinking lights
-disrespectful drivers are maybe not from here
There are a lot of tourists, how to set the expectation that they should drive slow
-traffic cops, education, re-integration programs
-creating bike lanes; jobs for people to create them
-as people come to the city, more buy local
-how far are people driving to get into the city?
Understand data better to target campaigns/outreach
-upstarts/entrepreneurs would want to be in 2030 Charlottesville (tech, small business)
Businesses could do more to encourage commuters by providing showers, bike racks
Health oriented businesses
-Hoo's Well UVA Wellness program, more incentives needed
*Better World Betty Business challenge
-Zoning: bike lanes not being built with new development, yet streets are really wide
Burnet Commons: bike garage in townhome section (Frank?)
Locality should offer incentives to encourage similar amenities
People want proximity to greenways: many clients want bikeable/walkable; shift in distance people are willing to walk
-meet with Dan Mahon and David Benish
-"Bay Game"—get developer to create a bike/ped game
Educational tool, kiosk for game sponsored by UVA etc?
-Grade separated bike facilities
-neighbors get involved when there is an issue, make people feel like they are partners
-relationship change between City/UVA

TooleDesignGroup

1062 Delaware Street
Denver, CO 80204
703.470.4332
www.tooledesign.com

MEMORANDUM

Date: September 17, 2014

To: Amanda Poncy, Bicycle and Pedestrian Coordinator

Organization: City of Charlottesville, Neighborhood Development Services

From: Bicycle & Pedestrian Master Plan Update Project Team

Project: Charlottesville Bicycle & Pedestrian Master Plan Update

Re: Bicyclist Level of Traffic Stress Description and Methodology

A Level of Traffic Stress (LTS) Analysis assesses the existing and potential future conditions of the transportation network in regard to the comfort level a bicyclist experiences while riding on a specific road segment or at a crossing. The analysis can be used to determine where high-stress "gaps" exist between low-stress areas, thereby identifying potential locations for improvements to create a connected low-stress transportation network that minimizes bicyclist interaction with motorized traffic.

Several factors determine the comfort level bicyclists experience while riding and are used to measure a road segment or intersection's LTS. These factors include speed limit, annual average daily traffic (AADT), the number of lanes, the width of the bike lane, presence of a turn lane, median, or traffic signal. A road segment or an intersection's LTS is determined by the most stressful factor, not an average of all the factors. Additionally, a road segment's LTS is determined by the "weakest link" principal, thus if an intersection is stressful to cross, the adjacent roadway segment's stress will be considered equally stressful, even if the individual segment in isolation is less stressful to ride on. It is important to note, the LTS analysis is sensitive to traffic speeds and volumes. For example, LTS is more stressful on roadways with speeds over 35mph or with four or more travel lanes, even if there is a bike lane.

Streets segments and crossings are classified into four levels of traffic stress, with "LTS 1" being the least stressful and "LTS 4" being the most stressful. The classifications correspond to the type of bicyclist, based on cycling ability:

- LTS 1 – Suitable for children (greenways, cycle tracks, low volume streets)
- LTS 2 – Interested but concerned adults (bike lanes, side paths, moderate volume streets)
- LTS 3 – Enthused and confident adults (bike lanes, high volume streets, and over 30mph streets)
- LTS 4 – Strong and fearless adults (high volume streets, over 30mph streets, and streets with no separation)

Traveling within individual neighborhoods in Charlottesville can be done completely on low-stress streets. However, travel between neighborhoods, or to downtown requires traveling across or along high-stress streets, such as Cherry Ave, Avon St, and Preston Ave, among others. The table below shows the LTS for all arterial, collector, and local streets in Charlottesville.

	Level of Traffic Stress			
	Low			High
	1	**2**	**3**	**4**
Arterials (28.9 miles)	0.8%	8.1%	16.8%	74.2%
Collector (16.7 miles)	27.6%	40.7%	16.0%	15.5%
Locals (122.9 miles)	84.9%	9.3%	1.1%	4.5%

TooleDesignGroup

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MEMORANDUM

Date: September 17, 2014

To: Amanda Poncy, Bicycle and Pedestrian Coordinator

Organization: City of Charlottesville, Neighborhood Development Services

From: Bicycle & Pedestrian Master Plan Update Project Team

Project: Charlottesville Bicycle & Pedestrian Master Plan Update

Re: Walking and Bicycling Demand Analysis Methodology

A walking and bicycling transportation demand map measures the relative expected pedestrian and bicycle traffic along a particular street segment. The expected pedestrian and bicycle traffic (or demand) is the result of considering the impact of various roadway and neighborhood characteristics. These factors include roadway characteristics, such as the existing bicycle and pedestrian facilities; destinations, such as schools or downtown; and land use characteristics, such as commercial and recreation areas.

The Charlottesville Bicycle and Pedestrian Master Plan Update demand map uses the following factors to develop a demand measurement:

- Population density – road segments near areas with higher population densities receive higher demand
- Commercial or Mixed Use areas – road segments near commercial or mixed use zones receive higher demand
- Employment density – road segments near areas with higher employment densities receive higher demand
- Tourist attractions – road segments near the Downtown Pedestrian Mall or the University of Virginia receive higher demand
- Transit – road segments that are near transit stops receive higher demand
- Existing pedestrian or bicycle facilities – road segments that have or are adjacent to existing pedestrian or bicycle facilities receive higher demand
- Recreation areas – road segments that are near recreation areas, such as parks, receive higher demand
- Zero-car households – road segments that are near areas with a higher percentage of zero-car households receive higher demand
- Schools – road segments near elementary, middle, and high schools receive higher demand

The factors in the demand map are not given equal importance or influence in the demand measurement. The relative importance of each factor was determined by the public steering committee and the City of Charlottesville staff. The table below shows the weight or the relative amount of influence in the final demand measurement. For example, a variable with a weight of 10 would have double the influence of a variable with a weight of 5.

Factor	Factor Weight
Population density	25
Commercial or Mixed Use areas	15
Employment density	15
Tourist attractions	15
Transit	8
Existing bicycle or pedestrian facilities	5
Recreation areas	5
Zero-car households	5
Schools	2.5

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Appendix D

Maps

Existing Facilities

Walking and Bicycling Demand Analysis

Public Wikimap Heat Maps

Bicyclist Level of Traffic Stress Analysis

Bicycle Vision Network

Bikeway Facility Recommendations

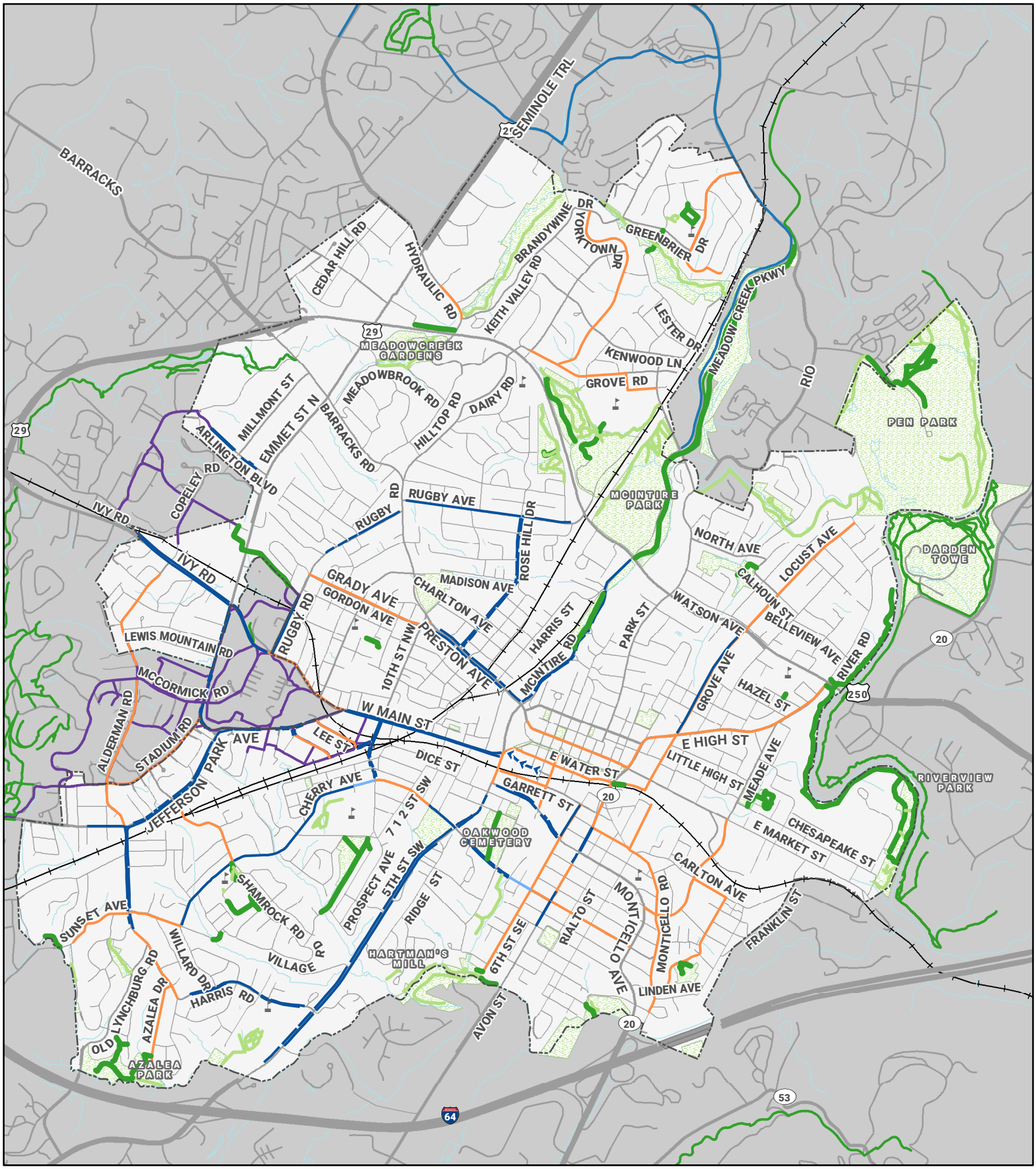
Intersection Improvements

Recommended Projects

Project Prioritization

Connectivity of the On-Road Pedestrian Network

Proposed Sidewalks for the Pedestrian Network



Charlottesville, Virginia

Bike Walk Charlottesville

Bicycle and Pedestrian Master Plan Update 2014

Toole Design Group

Bicycle and Pedestrian Plan

Existing Facilities

Existing Facilities

- Multi-Use
- RTF; Soft Surface

Albemarle County Greenways

Type

- Existing Bike Lane
- Existing Multi-Use Path
- Albemarle County Trails

UVA Bikeway*s

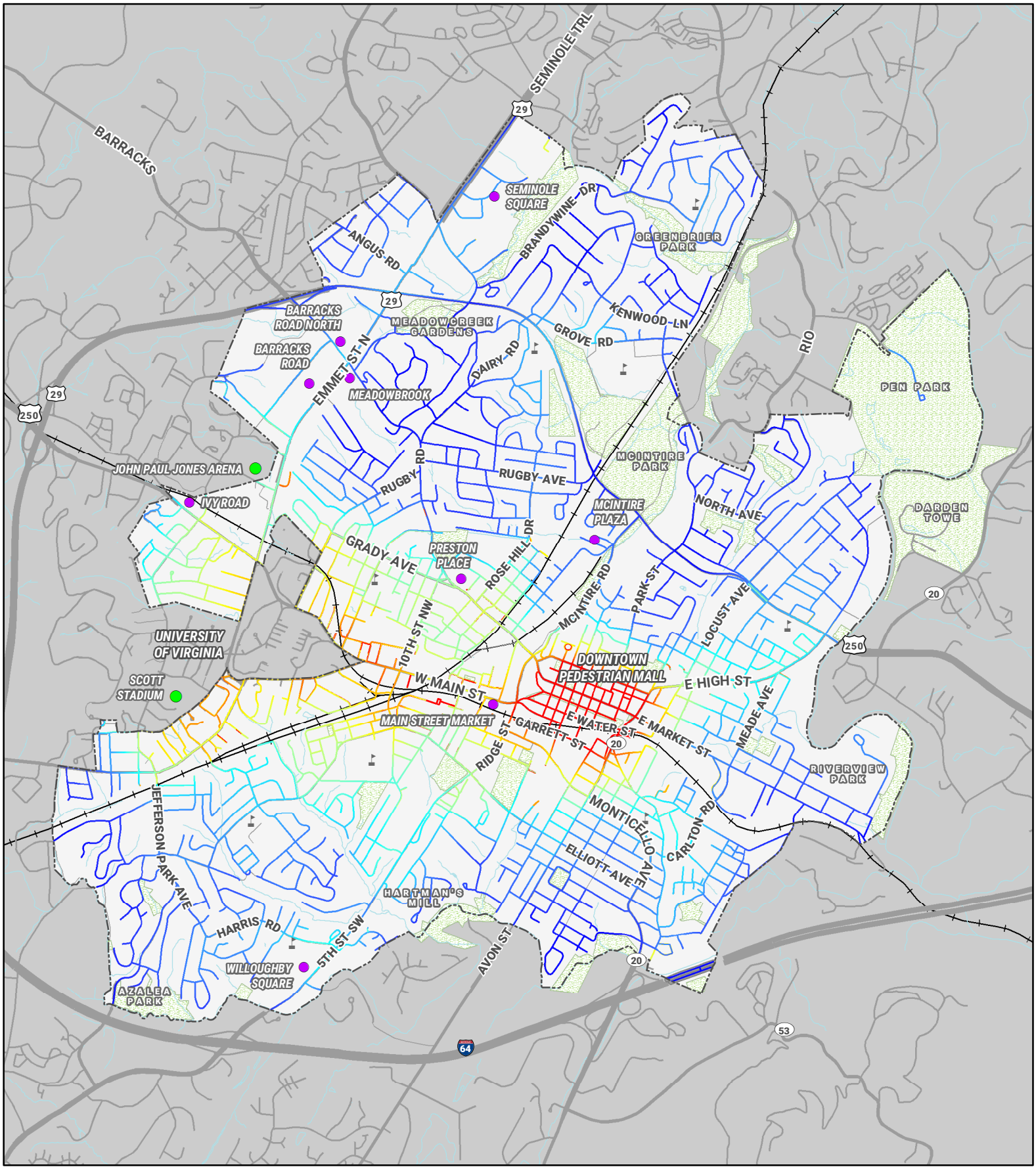
Bike_Route

- Existing
- Schools
- Streams
- Rail Lines
- City Park
- City Limits

0 0.25 0.5 Miles

N

Date: *4/30/2015*



Charlottesville, Virginia

Bike Walk Charlottesville
Bicycle and Pedestrian Master Plan Update 2014

Toole Design Group

Bicycle and Pedestrian Plan

Demand Analysis

Generalized Bicycling and Pedestrian Demand

High

Low

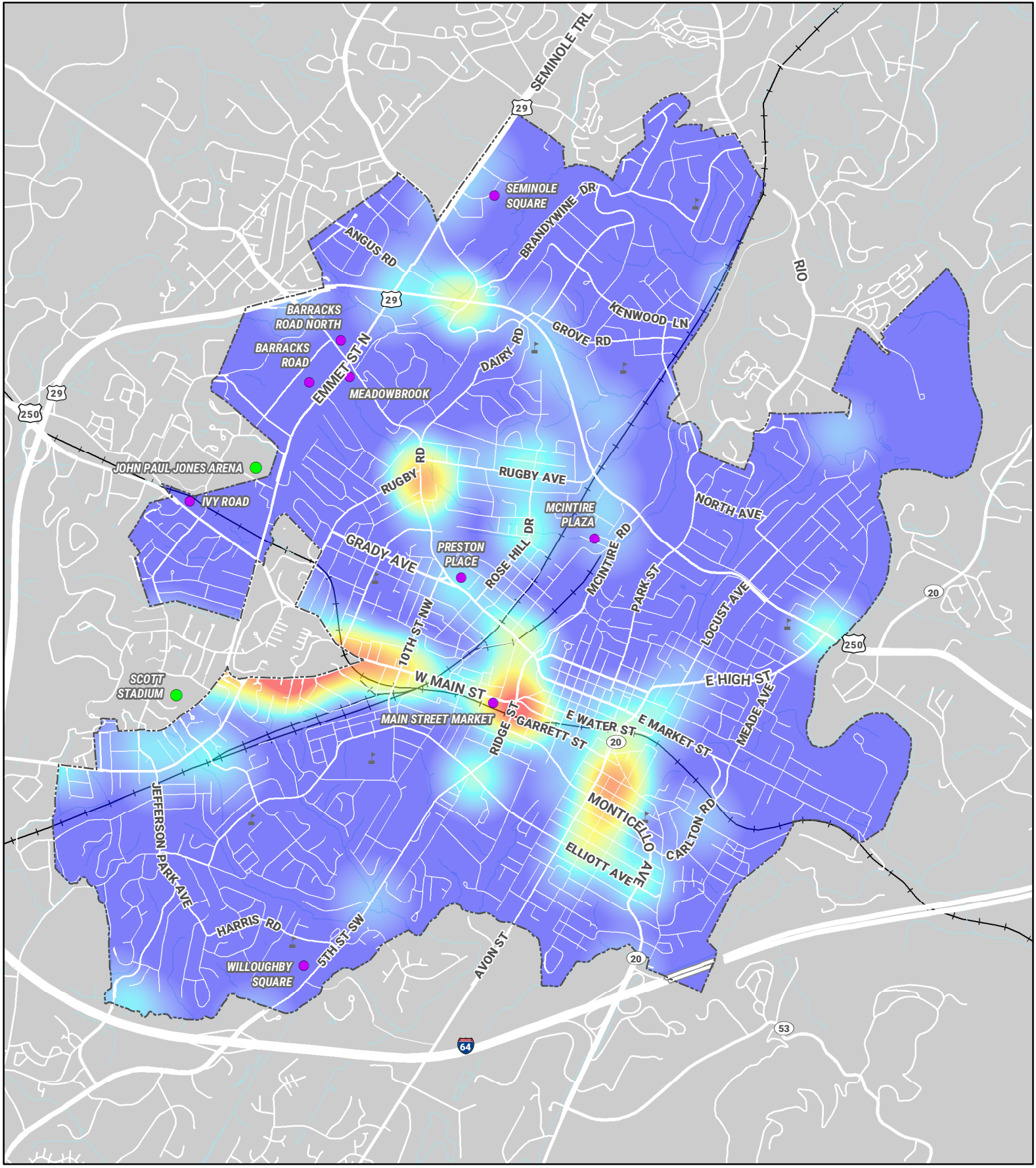
0 0.25 0.5 Miles

Points of Interest

- Sports Venues
- Shopping Centers
- Schools
- Streams
- Rail Lines
- City Park
- City Limits

N

Date: *4/29/2015*



Charlottesville, Virginia

Bike Walk Charlottesville
Bicycle and Pedestrian Master Plan Update 2014

Toole Design Group

Bicycle and Pedestrian Plan

Wikimap Comments:
Barriers to Biking

Wikimap Barriers to Biking
High
Low

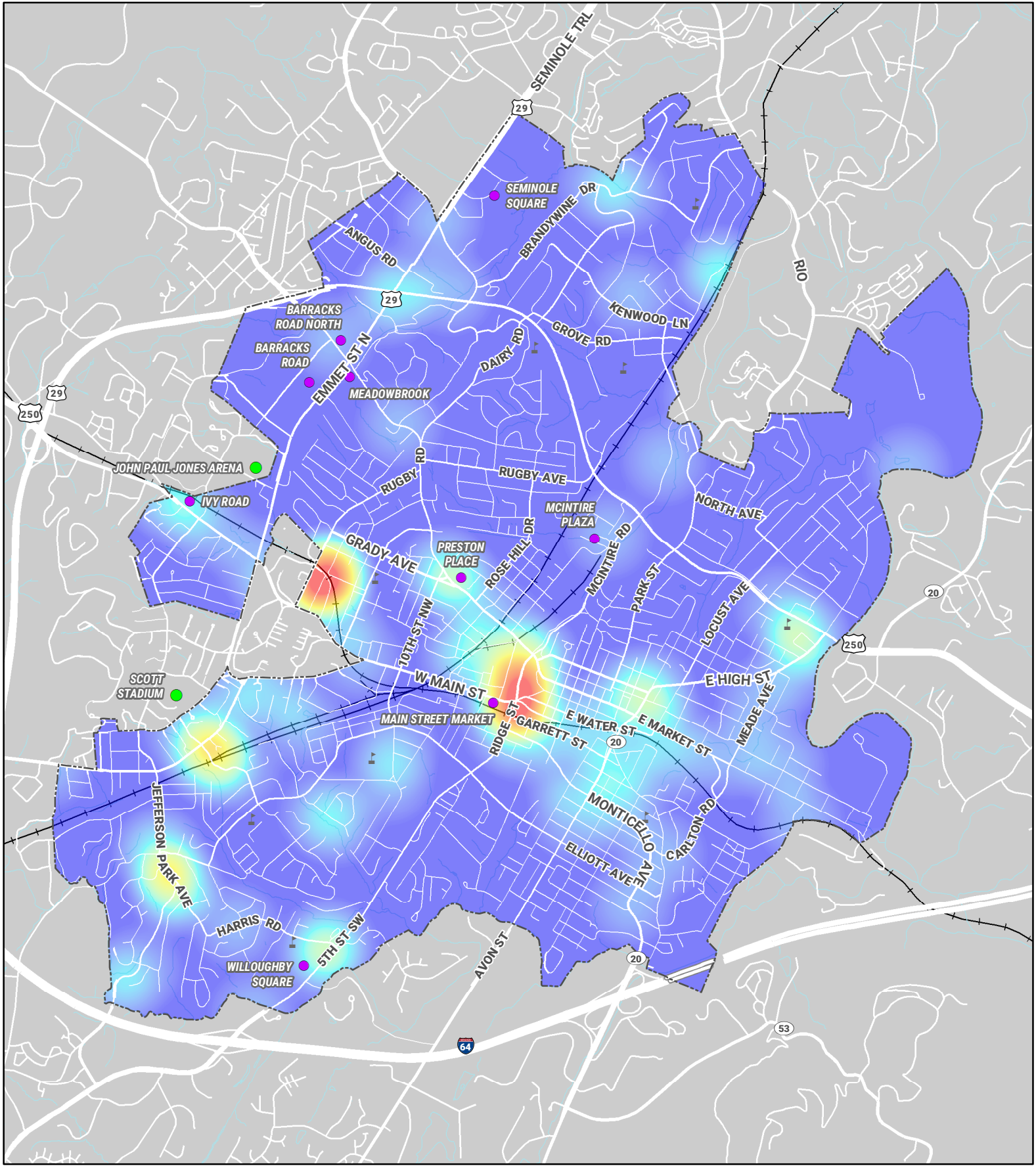
Schools
Streams
Rail Lines
City Limits

Points of Interest
Sports Venues
Shopping Centers

0 0.25 0.5 Miles

N

Date: *5/1/2015*



Charlottesville, Virginia

Bike Walk Charlottesville
Bicycle and Pedestrian Master Plan Update 2014

Toole Design Group

Bicycle and Pedestrian Plan

Wikimap Comments:
Barriers to Walking

Wikimap Barriers to Walking
High
Low

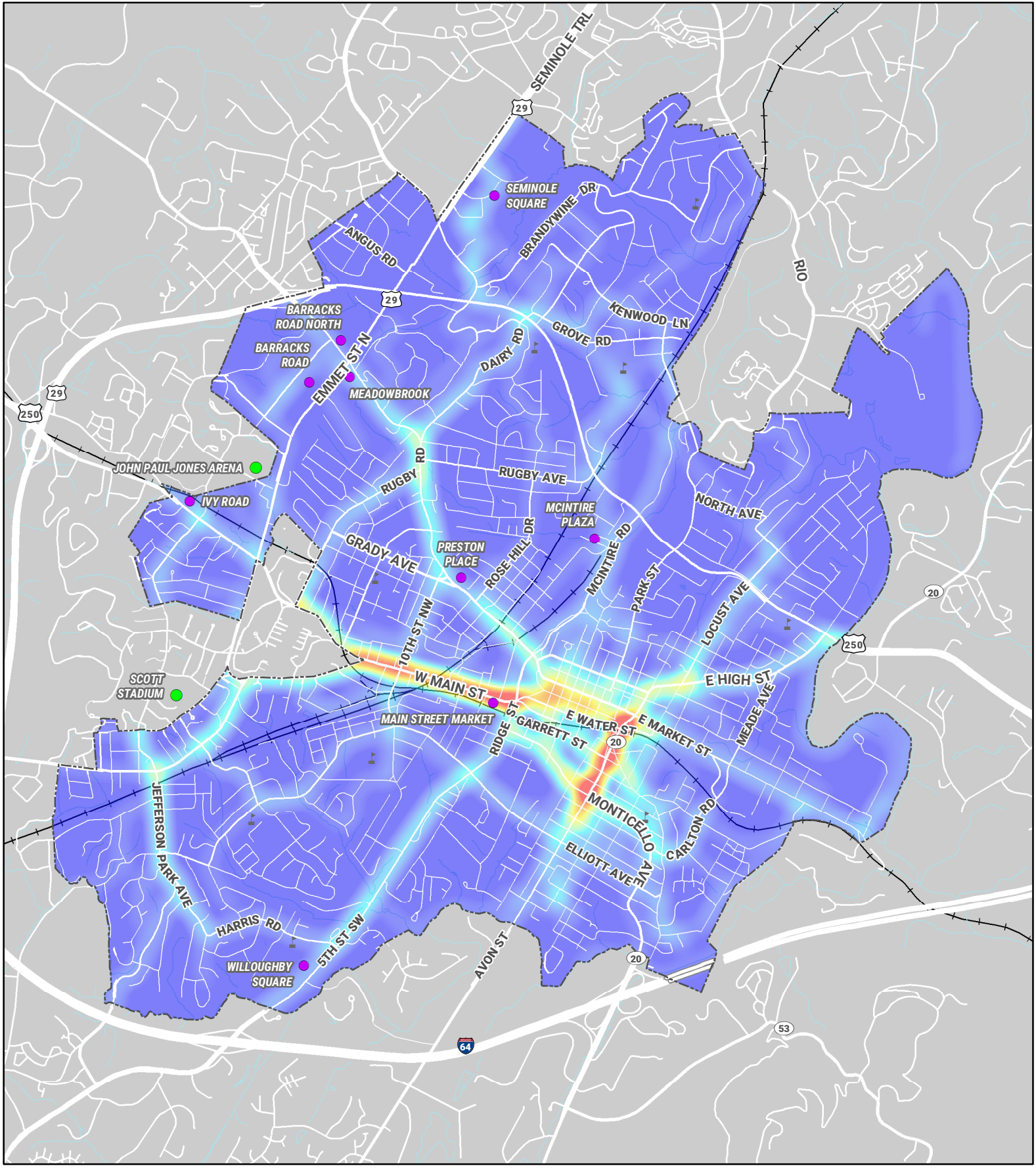
- Schools
- Streams
- Rail Lines
- City Limits

Points of Interest
- Sports Venues
- Shopping Centers

0 0.25 0.5 Miles

N

Date: *5/1/2015*



Charlottesville, Virginia

Bike Walk Charlottesville
Bicycle and Pedestrian Master Plan Update 2014

Toole Design Group

Bicycle and Pedestrian Plan

Wikimap Comments:
"Routes I Walk/Bike"

Routes I Walk/Bike
High
Low

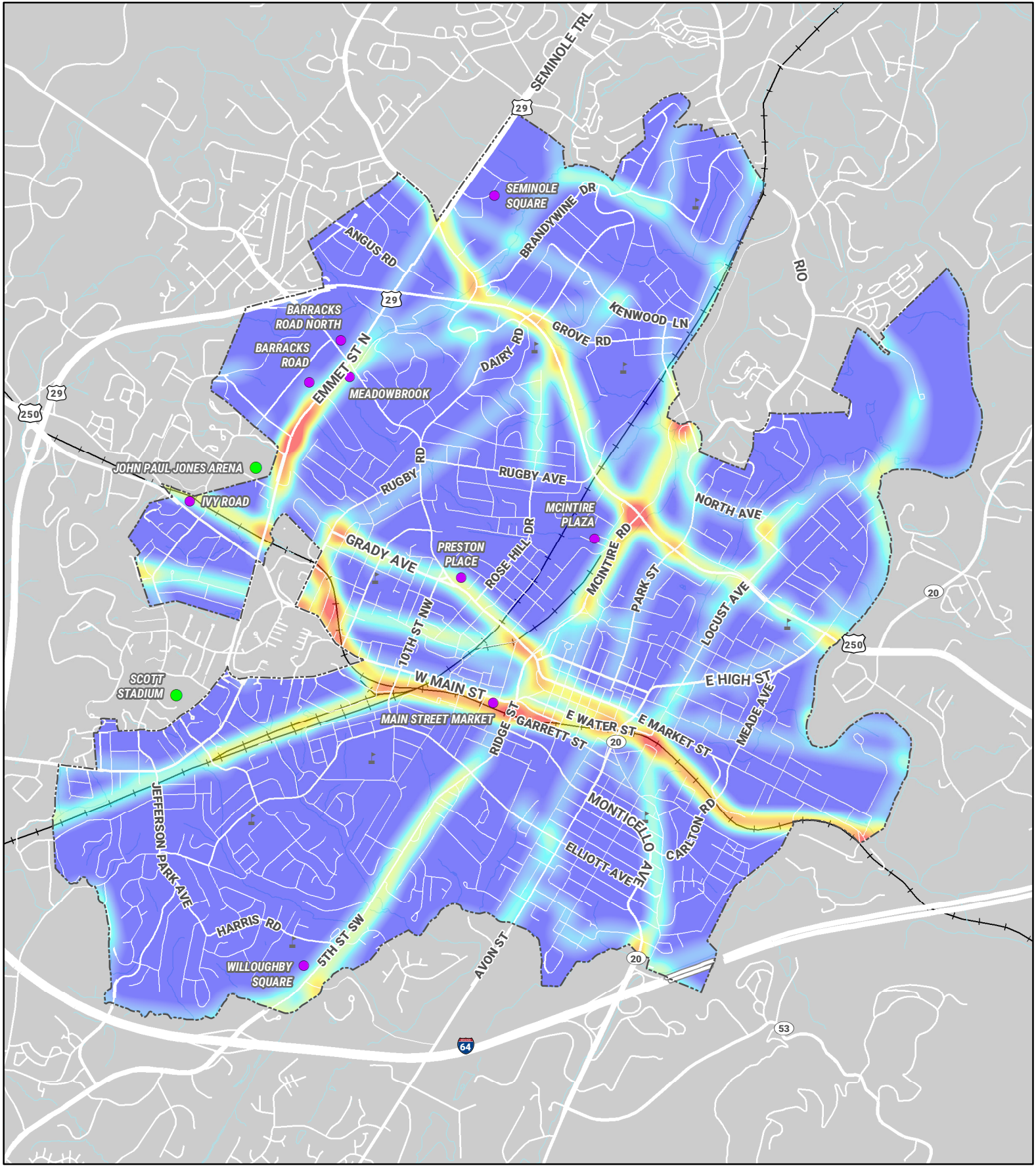
Schools
Streams
Rail Lines
City Limits

Points of Interest
Sports Venues
Shopping Centers

0 0.25 0.5 Miles

N

Date: *5/1/2015*



Charlottesville, Virginia

Bike Walk Charlottesville
Bicycle and Pedestrian Master Plan Update 2014

Toole Design Group

Bicycle and Pedestrian Plan

Wikimap Comments:
"Routes I'd Like to Walk/Bike"

Routes I'd Like to Walk/Bike
High
Low

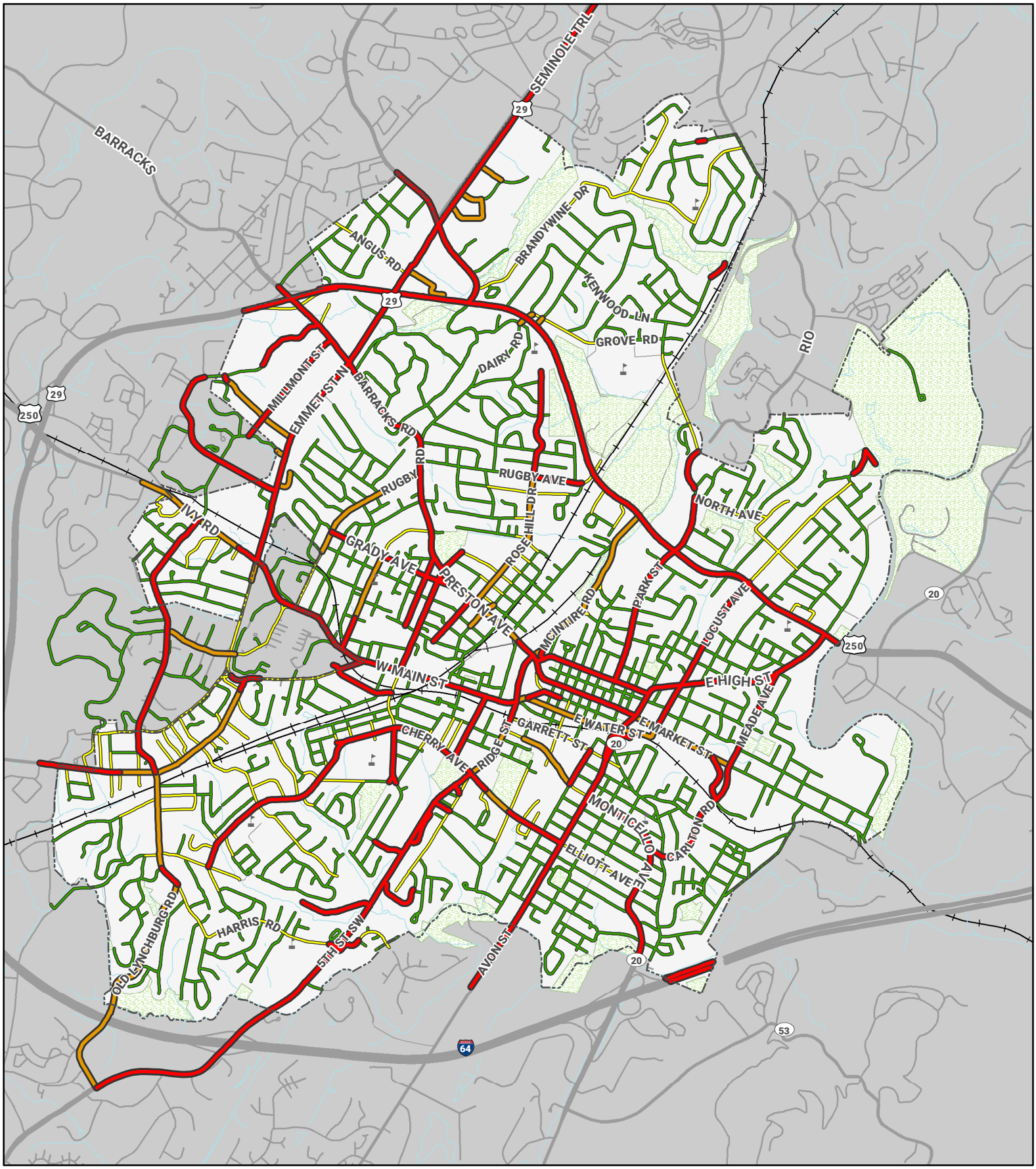
Points of Interest
- Sports Venues
- Shopping Centers

- Schools
- Streams
- Rail Lines
- City Limits

0 0.25 0.5 Miles

N

Date: *5/1/2015*



Charlottesville, Virginia

Bike Walk Charlottesville

Bicycle and Pedestrian Master Plan Update 2014

Toole Design Group

Bicycle and Pedestrian Plan

Level of Traffic Stress

Level of Traffic Stress

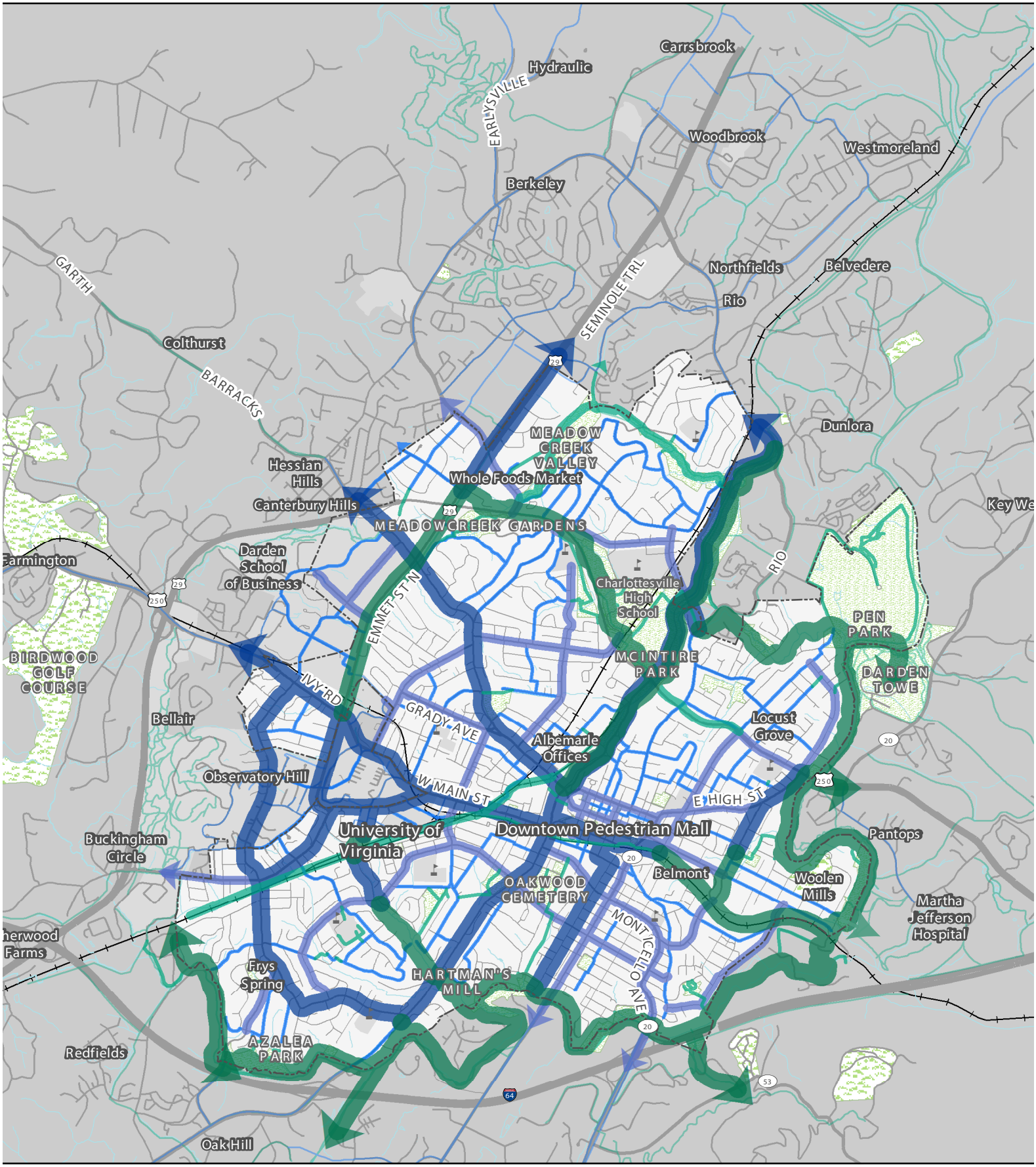
- 1
- 2
- 3
- 4

- Schools
- Streams
- Rail Lines
- City Park
- City Limits

0 0.25 0.5 Miles

N

Date: *4/29/2015*



Charlottesville, Virginia

Bike Walk Charlottesville
Bicycle and Pedestrian Master Plan Update 2016

Toole Design Group

Bicycle and Pedestrian Plan

Bicycle Vision Network

Trail Corridors
- Arterial
- Collector
- Local

On-Road Corridors
- Arterial
- Collector
- Local

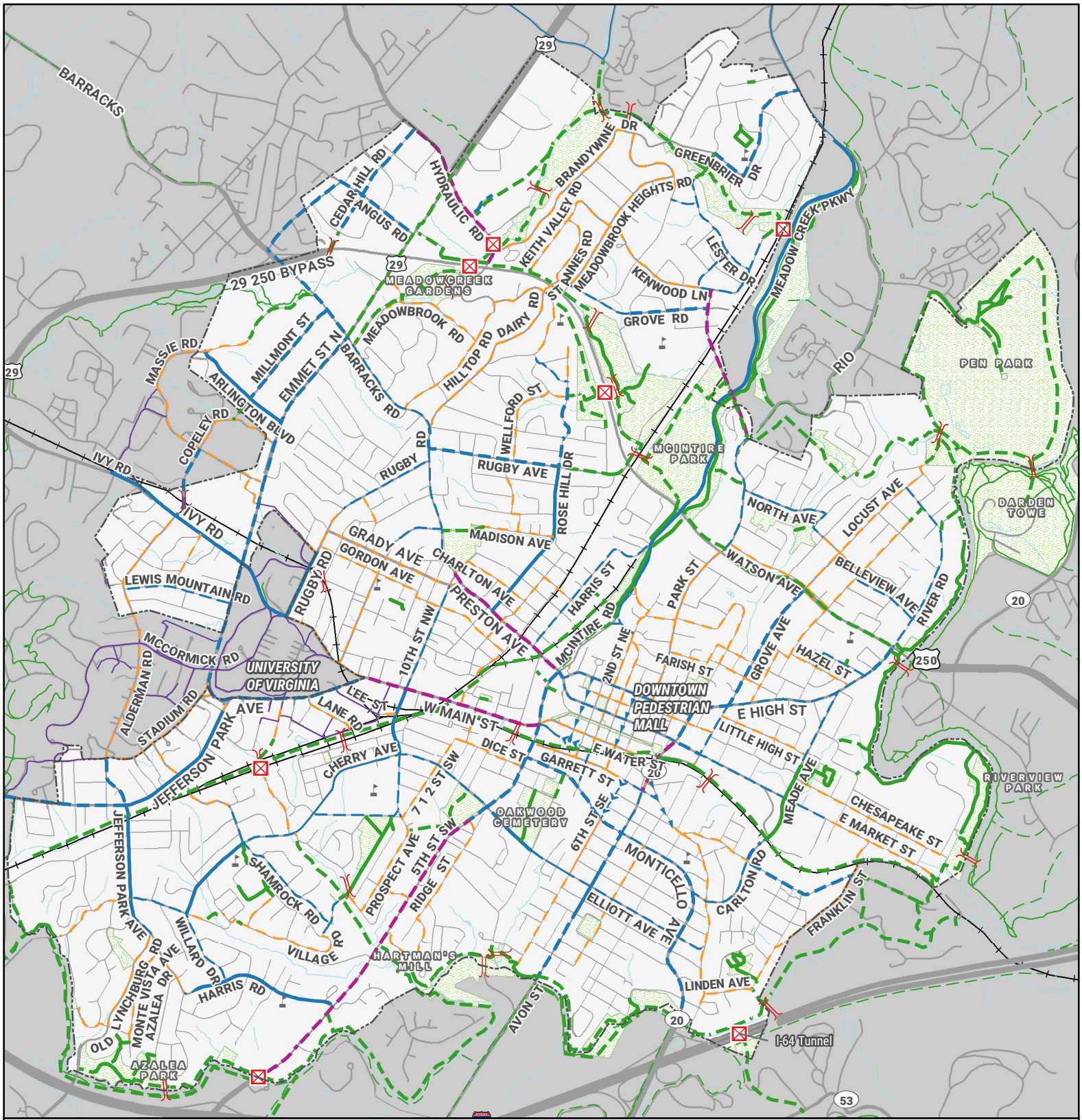
External Connections
- On-Road Facility
- Trail

- Schools
- Streams
- Rail Lines
- City Park
- City Limits

N

0 0.3 0.6 Miles

Date: 6/3/20



Bridges and Tunnels

- Proposed Greenway Underpass
- Proposed Greenway Bridge

Recommended Facilities

- Shared Use Path
- Protected Bike Lane
- Bike Lane; Buffered Bike Lane
- Contraflow Bike Lane
- Climbing Lane
- Shared Roadway

Existing Facilities

- Protected Bike Lane
- Bike Lane; Buffered Bike Lane
- Contra-Flow Bike Lane
- Climbing Lane
- Shared Roadway
- Shared Use Path

Albemarle County Greenways

- Existing Bike Lane
- Existing Multi-Use Path
- Proposed Multi-Use Path

UVA Bikeways

- Existing
- Proposed

- Schools
- Streams
- Rail Lines
- City Park
- City Limits

Bike Walk Charlottesville

Toole Design Group

Charlottesville, Virginia

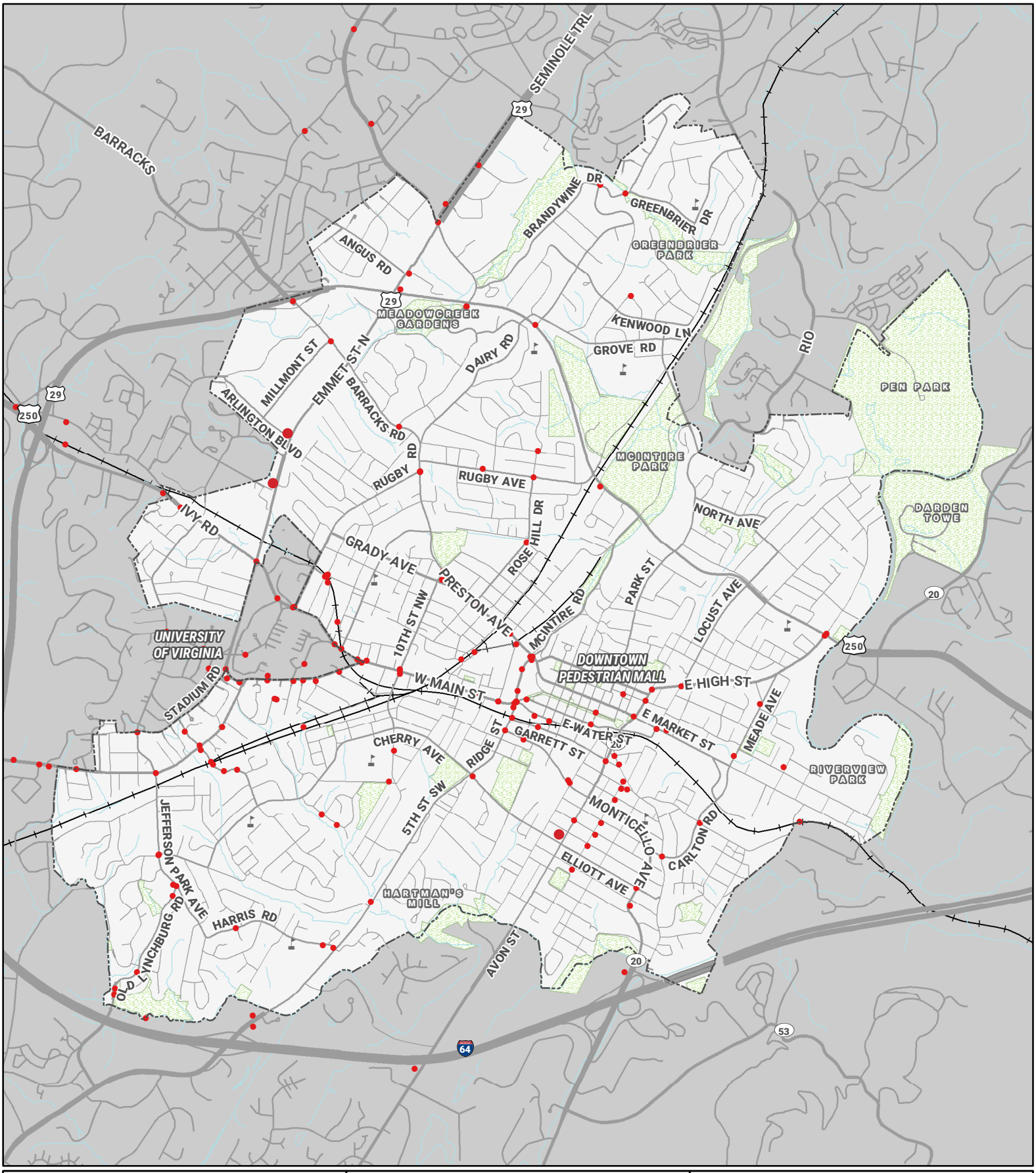
Bicycle and Pedestrian Plan

Bikeway Facilitiy Recommendations

0 0.5 1 Miles

N

Date: *5/3/2015*



Charlottesville, Virginia

Bike Walk Charlottesville
Bicycle and Pedestrian Master Plan Update 2014

Toole Design Group

Bicycle and Pedestrian Plan

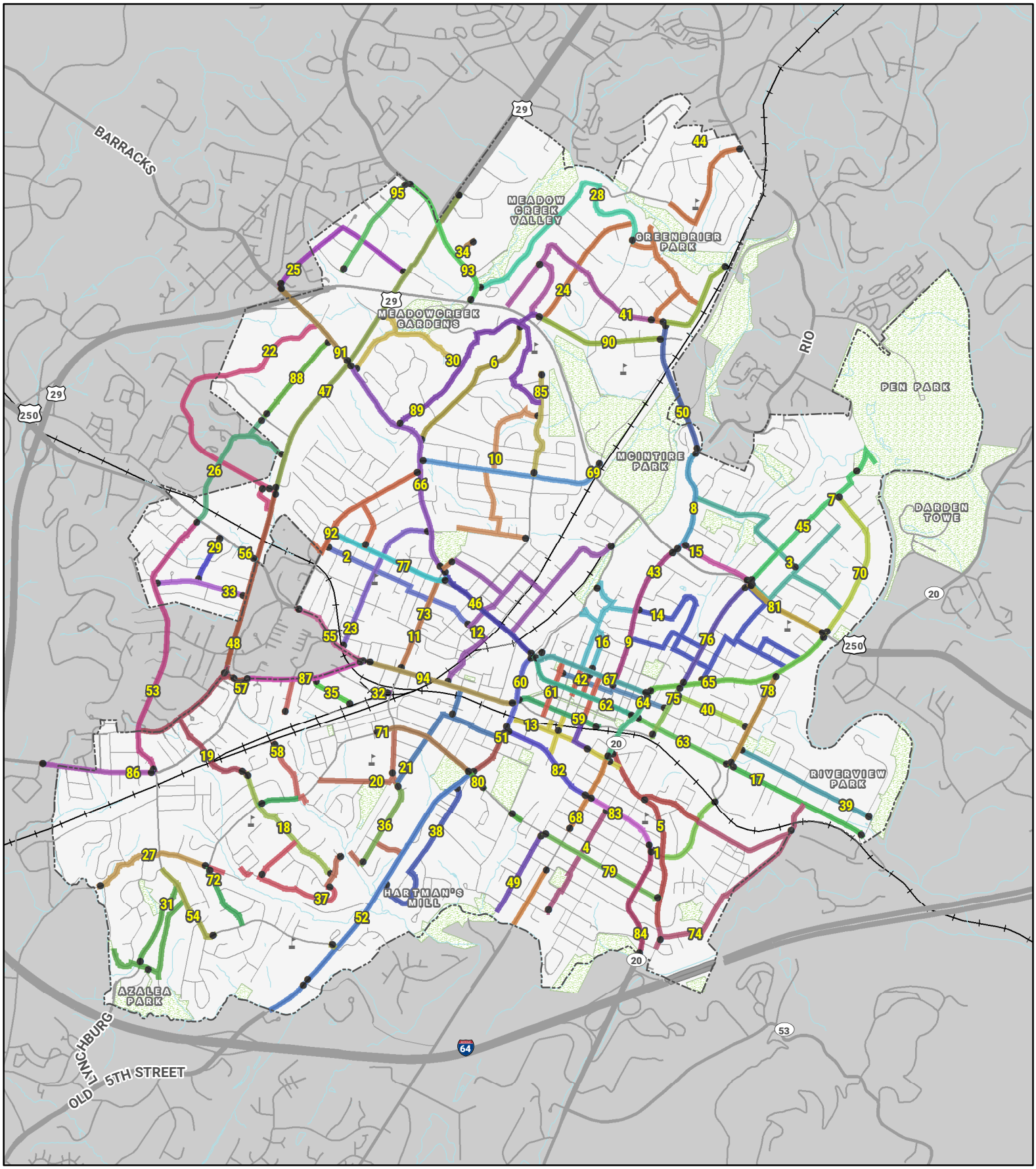
Intersection Improvements

- Intersection Improvements
- Schools
- Streams
- Rail Lines
- City Park
- City Limits

0 0.25 0.5 Miles

N

Date: *4/29/2015*



Charlottesville, Virginia

Bike Walk Charlottesville
Bicycle and Pedestrian Master Plan Update 2014

Toole Design Group

Bicycle and Pedestrian Plan

Recommended Projects

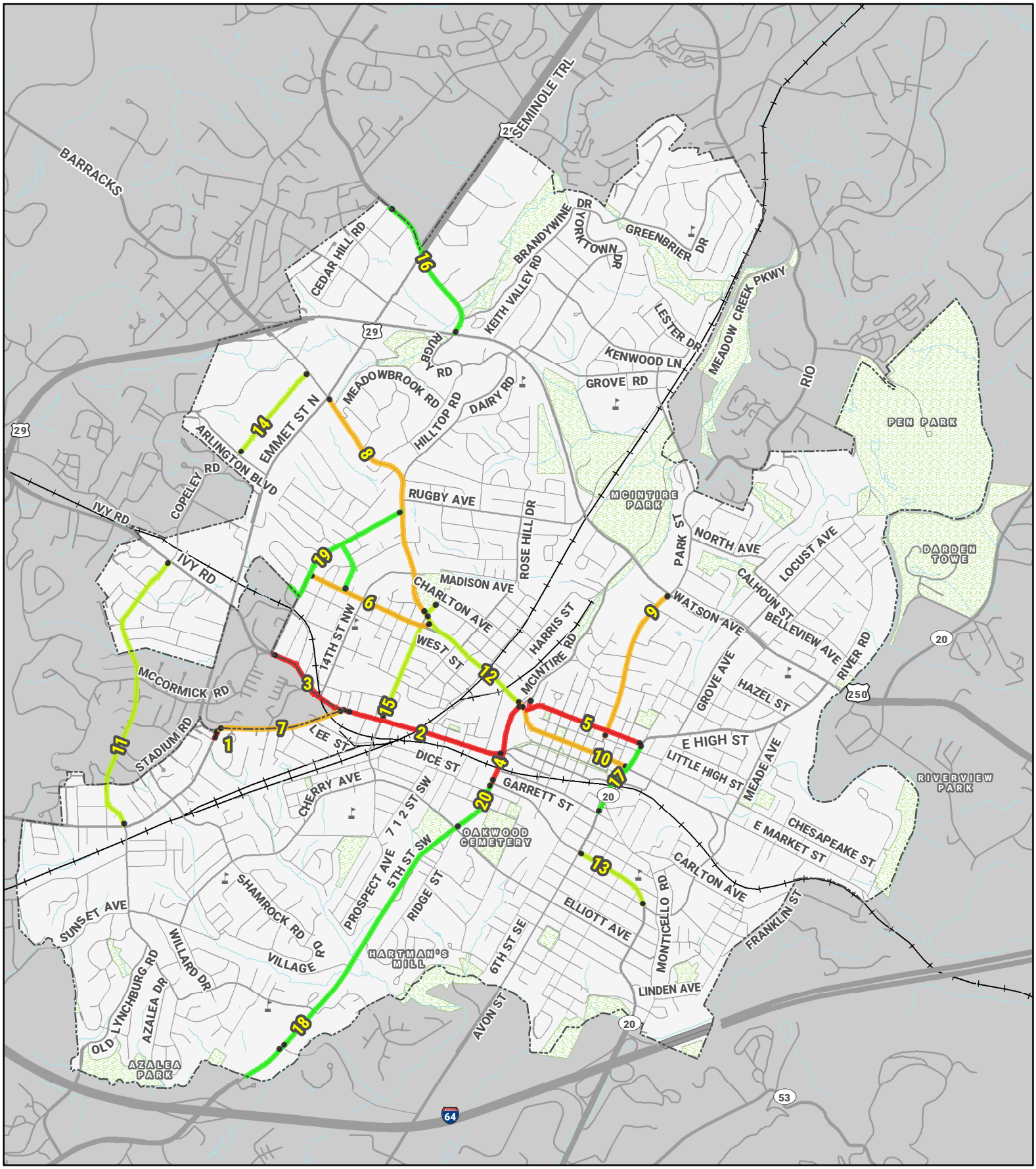
- Projects
- Schools
- Streams
- Rail Lines
- City Park
- City Limits

Note: Projects are symbolized in different colors for easy identification of project extents. Color does not represent any descriptive information about the project.

0 0.25 0.5 Miles

N

Date: *4/30/2015*



Charlottesville, Virginia

Bike Walk Charlottesville
Bicycle and Pedestrian Master Plan Update 2014

Toole Design Group

Bicycle and Pedestrian Plan

Project Prioritization

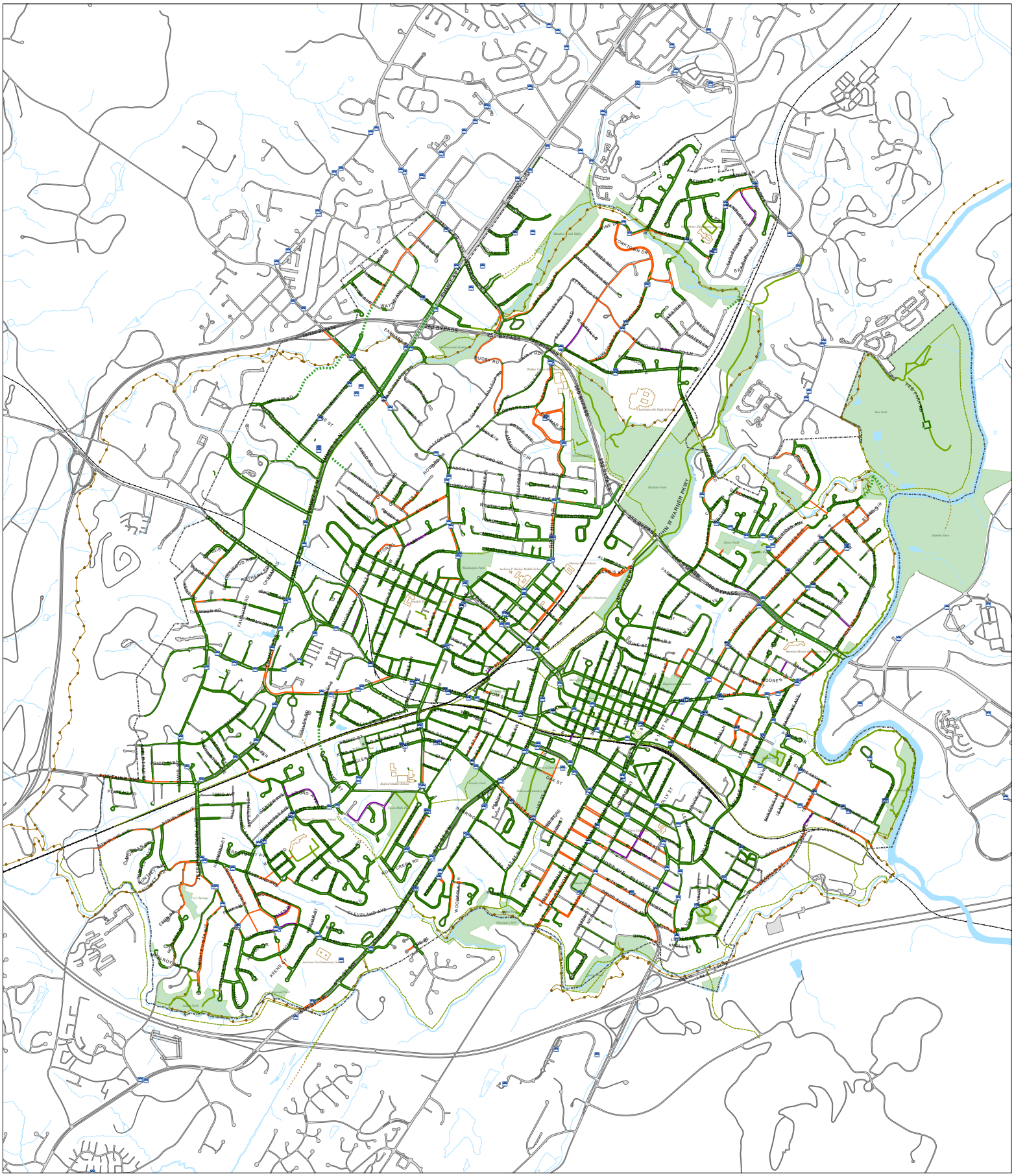
Top 20 Prioritized Projects
- 1 - 5
- 6 - 10
- 11 - 15
- 16 - 20

- Schools
- Streams
- Rail Lines
- City Park
- City Limits

0 0.25 0.5 Miles

N

Date: *4/30/2015*



Charlottesville Bicycle and Pedestrian Plan

Connectivity of the On-Road Pedestrian Network

Bike Walk Charlottesville

Legend

- CAT Bus Stop
- Existing Sidewalks
- Proposed Sidewalks
- Existing Multi-Use Trails
- Proposed Multi-Use Trails

N

0 0.5 1

Miles

Charlottesville Bicycle and Pedestrian Plan

Proposed Sidewalks for the Pedestrian Network

May 2015

Bike Walk Charlottesville

0 0.5 1 Miles

- CAT Bus Stop
- Existing Sidewalks
- Existing RTF Trails
- Existing Multi-Use Trails
- Proposed Multi-Use Trails
- Proposed Sidewalks
- Proposed Greenway Underpass
- Proposed Greenway Bridge

This map depicts the top ranking sidewalk for each neighborhood. The numbers do not correspond to overall priority ranking. All proposed sidewalks were ranked based on a common set of criteria.

Neighborhood	Street	Sidewalk Location	Starting	Ending	Length (ft)	Cost ($)
Barracks Road	Barracks Road	SW	Existing	250/29 Bypass	530	$116,600
Venable	Preston Avenue	West	Rugby Road	14th Street	1400	$308,000
Lewis Mountain	Alderman Road	NW	Kent Road	Morris Road	1260	$277,200
The Meadows	Hydralic Road	West	Dominion Power	250 Bypass	525	$115,500
Barracks/Rugby	Rose Hill Drive	West	Rugby Avenue	Madison Avenue	1470	$323,400
Greenbrier	Bunkerhill Drive	North	Yorktown Drive	Jamestown Drive	480	$105,600
Locust Grove	St. Clair Avenue	NW	Pear Tree	Smith	280	$61,600
Rose Hill	Albemarle Street	Both	Dale Avenue	Rivanna Avenue	1300	$286,000
10th & Page	9th Streetreet NW	Both	West Street	Preston Avenue	450	$99,000
Star Hill	Elsom Street	South	Cream Street	7th Street	225	$49,500
North Downtown	Harris Street	West	Rivanna Avenue	McIntire Road.	810	$178,200
Martha Jefferson	12th Street NE	West	E Jefferson Street	Meriwether Street	860	$189,200
Woolen Mills	Market Street	South	Franklin	Meade Avenue	1400	$308,000
Belmont	Monticello Avenue	West	Quarry	Druid Avenue	800	$176,000
Ridge Street	Elliott Avenue	North	Ridge Street	Avon Street	1320	$290,400
Fifeville	9th Streetreet SW	East	Elm Street	Existing	760	$167,200
Johnson Village	Cleveland Avenue	North	Existing	Ranier Road	675	$148,500
Fry's Spring	Azalea Drive	Both	Existing	Harris Road	270	$59,400
Jefferson Park Avenue	Fontaine Avenue	North	Summit Street	JPA	890	$195,800
				Total Cost		$3,458,100

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Bicycle Facilities

Document Title/Source	Relevant information	Comments	Model Programs or Best Practices	Policy recommendation
Charlottesville Entrance Corridor Design Guidelines **Chapter II-Streetscape** **II.D. Bicycle Routes** **Source:** **http://www.charlottesville.org/Modules/ShowDocument.aspx?documentid=20412**	1. Provide for bicycle traffic along major corridors and between major destinations, with particular emphasis on connecting residential areas to schools, recreation areas, and commercial centers. 2. Provide new bike paths to connect to planned or existing municipal paths or paths of adjoining developments. 3. Provide facilities to store or lock bicycles at appropriate sites, including schools, major recreation areas, office parks, public institutions, and large commercial centers. 4. Develop an easily identifiable graphic system of signs and road markings to designate bicycle routes and crossings.	Bicycle parking and wayfinding are encouraged in the City's Entrance Corridors, including Rt.29, Hydraulic Rd, Barracks Rd, Ivy Road, Fontaine/Jefferson Park Ave, Fifth St SW, Avon St, Monticello Ave, Long Street, E High St, Preston Ave and McInitre Road. This policy can help identify a framework for a bicycle network for the city.		No policy change needed.
Municipal Code Chapter 34 - Zoning **Article VIII. Improvements Required for Developments** **Division 3 - Off Street Parking and Loading** **Sec. 34-881 (page 22)** **Division 6 - Additional Standards for Specific Uses** **Sec. 34-936 (page 33)**	<u>Bicycle Storage Facilities</u> Adequate bicycle storage facilities may be required for sororities, fraternities, dormitories, boarding houses and similar uses, multi-family dwelling structures with five (5) or more units, and all nonresidential uses utilized by the public, where such facilities are deemed by the director of neighborhood development services or the planning commission to be in the public interest. No such facilities may be required in excess of the following standards: (1) Sororities, fraternities, dormitories, etc.: One (1) bicycle space per five hundred (500) square feet of bedroom area. (2) Multifamily dwellings: One (1) bicycle space for every two (2) dwelling units. (3) Nonresidential uses: One (1) bicycle space for every one thousand (1,000) square feet of public space. <u>Single Room Occupancy Facility</u> Single room occupancy facilities shall be subject to the following standards: There shall be bicycle storage space to accommodate one (1) bicycle space for every four (4) dwelling units	Bicycle parking *may* be required, specified by the planning commission or director of neighborhood development services. The zoning ordinance currently requires: Multi-Family - 1 bicycle space/2 units Sororities, etc. - 1 bicycle space/500 sq. ft. Non-Residential - 1 bicycle space/1,000 public sq. ft. Single Room Occupancy Facility - 1 bicycle space/4 units. Existing policy does not automatically require bicycle parking as part of all projects, does not designate the type of parking, nor adequate amounts of parking for these of types and intensities of use.	**APBP - Bicycle parking guidelines, 2nd edition, 2010**: The APBP guide defines types of bicycle parking, types of bicycle racks/lockers, space requirements, and amount of parking recommendations: Multi-Family w/o private garages - 0.5 space/bedroom long term, .1 space/bedroom short term Schools (public) - 1 space/20 students long term, 1.5 spaces/student short term College - 1.5 spaces/10 employees and 1 space/10 students long term, 1.5spaces/20 students short term General retail - 1 space/10,000sf long term, 1 space/5,000sf short term General Office - 1.5 spaces for 10,000 sf long term, 1 space for 20,000sf short term See guide for complete listing. Source: http://c.ymcdn.com/sites/www.apbp.org/resource/resmgr/publications/bicycle_parking_guidelines.pdf **ChangeLab Solutions:** Model policy describes the amount, location, purpose and rationales for bicycle parking. Source: http://changelabsolutions.org/sites/default/files/BikeParkingOrd_wAnnotns_20120711_updated121026_1.doc	Adopt bicycle parking guidelines for all types of development to the supply of available bicycle parking. Provide developers with guidelines for proper bicycle rack installation. If Charlottesville develops bike parking requirements similar to the APBP example, there will be an increase of bicycle parking in the city. Adopting a policy similar to the Change Lab solutions model ordinance would also increase the amount of bicycle parking in the city.

Bicycle Facilities

Document Title/Source	Relevant information	Comments	Model Programs or Best Practices	Policy recommendation
Municipal Code Chapter 28 - Streets and Sidewalks **Article I. In General** **Sec. 28-22 (page 9)**	Bicycle Racks on Sidewalks Section 28-21 shall not be construed to prohibit the use of bicycle racks on the sidewalks outside any place of business, if the director of public works approves the location thereof and the person maintaining such rack shall execute agreements indemnifying the city against any claim on account of such use of the sidewalk. Section 28-21 is reserved (a Dec. 1992 ordinance repealed 28-21 which pertained to driving or riding vehicles on the sidewalk	Bicycle racks are allowed to be placed on public sidewalks and will not conflict with a previous law (28-21). If a business owner wants a bicycle rack, and the director of public works approves the location, then an indemnification agreement is needed and a rack can be installed.	**City of Seattle, WA Sidewalk Bicycle Rack Location Criteria** Racks are installed in public space within City of Seattle limits, usually on a sidewalk with six or more feet of clear sidewalk space remaining. Source: http://www.seattle.gov/transportation/bikeparking.htm **ChangeLab Solutions Model National Bicycle Parking Ordinance** In-Street Bicycle Parking (in place of one or more vehicle parking spaces) can be an attractive option in dense commercial areas where demand for bicycle parking is high and there are limited off-street options or sidewalk clearance. In-street bicycle parking provides commercial districts with 8-12 bicycle parking spaces to each vehicle space and clearly advertises that it is a bike friendly area. Source: http://changelabsolutions.org/sites/default/files/BikeParkingOrd_wAnnotns_20120711_updated121026_1.doc	Provide more detail about the location and clearance requirements for bicycle racks on the sidewalk. Bicycle racks can be installed on sidewalks, provided there is adequate clearance space for pedestrians. If sidewalk real estate is limited, and the demand for bicycle parking is high, in-street bike corrals are recommended.
Charlottesville 2003 Bicycle and Pedestrian Facilities Master Plan **Chapter 4-2** **Pg. IV-52 (or 25)**	Colored Bike Lanes Many European countries and the City of Portland use solid-colored bike lanes to provide a higher level of definition to all roadway users…Solid color bike lanes are most common at conflict points, such as where the turning movement of a motorist is across bike lanes. In some cases the solid bike lane can be used for the entire length of the bike lane - especially in downtown and urbanized areas. FHWA has given interim approval for the use of colored bicycle lanes. Jurisdictions choosing to use colored bicycle lanes must obtain interim approval from FHWA and comply with technical conditions listed in MUTCD IA-14.	FHWA evaluation of experimental colored bicycle lanes shows that colored lanes may help bicyclists position themselves better and does not have any notable negative operational effects. http://www.fhwa.dot.gov/environment/bicycle_pedestrian/guidance/design_guidance/mutcd_bike.cfm http://mutcd.fhwa.dot.gov/resources/interim_approval/ia14/index.htm		Adopt a set of street design guidelines that follow best practices for bicycle facilities on various street types, taking colored bicycle lanes into consideration. Adopting this policy would affect the design of bicycle lanes built in the city. To use colored bicycle lanes, the City of Charlottesvill would have to obtain interim approval from the FHWA and comply with colored bicycle lane standards.

Bicycle Facilities

Document Title/Source	Relevant information	Comments	Model Programs or Best Practices	Policy recommendation
Charlottesville 2013 Comprehensive Plan, **Chapter 6 - Transportation** **Pg. 74 (or 5)**	Goal 5 - Parking 5.1 Continue to provide bicycle parking at all public buildings and explore opportunities to provide bicycle parking within public right-of-way to support local business	Public buildings are required to have bicycle parking. Furthermore, bicycle parking will be considered in the public right of way.	**APBP - Bicycle parking guidelines, 2nd edition, 2010.** This resource defines types of bicycle parking, types of bicycle racks/lockers, space requirements, and amount of parking recommendations. Source: http://c.ymcdn.com/sites/www.apbp.org/resource/resmgr/publications/bicycle_parking_guidelines.pdf	Develop a process for local business to request bicycle parking to be located in public right-of-way.
Charlottesville Standards & Design Manual **Pg. 39, Sec 209 D** **Source: https://www.charlottesville.org/modules/ShowDocument.aspx?documentid=10377**	On local streets, bicyclists should be considered a normal part of the vehicle mix on the street. Bike lanes should be **one-way facilities and carry bike traffic in the same direction as adjacent motor vehicle traffic**. The minimum width of a bike lane is five (5) feet from the face of a curb to the bike lane stripe. If parking is permitted, the bike lane should be placed between the parking area and the travel lane and have a minimum width of five (5) feet. **Bike lanes should never be placed between the parking lane and the curb line or sidewalk**.	As written, this policy restricts the types of bicycle lanes that can be built in the city. These standards discourage bicycle facilities that benefit bicyclists of all ages and abilities, including two-way separated bicycle lanes, contra-flow bicycle lanes, and bicycle lanes separated by parking lanes.		Adopt a set of street design guidelines that follow best practices for bicycle facilities on various street types, including two-way separated bicycle lanes and contra-flow lanes .
Municipal Code - Chapter 15 Motor Vehicles and Traffic **Article IX. Generally applicable regulations** **Division 2 - Off Street Parking** **Sec. 34-985**	(b) Certain reductions in the number of required parking spaces for a particular use shall be allowed, under the following circumstances: (3) Where bicycle lockers are provided on-site, the number of required off-street parking spaces shall be reduced by: (i) two (2) spaces for every five (5) lockers, for uses located within the Downtown North, Downtown South, High Street, Central City, Neighborhood, and Cherry Avenue Corridor Mixed-Use Districts, and within the McIntire/Fifth Street Residential Corridor District; or (ii) one (1) space for every five (5) lockers for uses located within any other zoning districts.	Developments in mixed use districts and some residential corridor districts can use bicycle lockers to reduce the number of required vehicle parking spaces.	**Arlington Master Transportation Plan** Vehicle parking needs and availability is examined from a neighborhood perspective rather than site by site basis; The special permit process allows developers to pay for other transportation improvements in lieu of providing parking in transit dense areas Source:http://arlingtonva.s3.amazonaws.com/wp-content/uploads/sites/31/2014/02/DES-MTP-Parking-and-Curb-Space-Management-Element.pdf	Include all mixed-use districts, and more types of bicycle parking. In addition to encouraging developers to provide long term bicycle parking in lieu of motor vehicle parking spaces, following Arlington's neighborhood parking model encourages shared parking agreements and helps prevent the construction of excessive motor vehicle parking.
Charlottesville 2003 Bicycle and Pedestrian Facilities Master Plan **Chapter VI - 5**	f. Free parking in outer lots. The City of Charlottesville could offer free parking outside of the Charlottesville business district, if the user arrives with a bike to ride to their final destination. Free parking will provide an incentive for bicycle commuters who live far from the City and reduce automobile use and parking congestion in the downtown area.	If implemented, this City-wide program could reduce parking demand near the university and downtown.	**VDOT Park and Ride Best Practices** http://www.virginiadot.org/travel/resources/parkAndRide/Final_PR_Best_Practices_021113.pdf	Consider providing secure bicycle parking with outer lot parking.

Complete Streets

Document Title/Source	Relevant information	Comments	Model Programs or Best Practices	Policy recommendation
City of Charlottesville Complete Streets Policy, 2014 **Pg. 5**	Additionally, the Charlottesville City Council declares it is the City of Charlottesville policy to: 3. Keep automobile travel lanes to the minimum necessary. 4. Provide pedestrian accommodation in the form of sidewalks or shared-used pathways on all arterial and collector streets and on local streets in identified pedestrian corridors. 5. Provide bicycle accommodation along or parallel to all arterial and collector streets.	If road capacity is higher than traffic volumes, motor vehicle travel lanes can be eliminated. All arterial/collector roads or a parallel route will require pedestrian/bicycle access.		No policy change needed. New development can incorporate Complete Streets policies. Requiring bicycle and pedestrian accommodations will improve the City's active transportation network.
Municipal Code Chapter 34 - Zoning **Article VIII. Improvements Required for Developments** **Division 5. Public Areas, Facilities and Uses** **Sec. 34-911 (page 1 or 26)**	Alternate transportation facilities. Provision shall be made for bus stops and bicycle paths and trails, in accordance with the requirements and design standards specified within the City's subdivision ordinance.	With new development, bicycle and transit facilities must be considered as an element of the subdivision requirements.		Consider adding pedestrian facilities to existing language and including similar policies for all development projects, not just subdivisions.
City of Charlottesville Complete Streets Policy, 2014 **Pg. 4**	By adopting this policy, the City of Charlottesville: o Affirms that Improving Streetscapes to create great streets, will improve both image and function by providing a safe and attractive environment for street users of all ages and abilities such as pedestrians, bicyclists, transit riders, and motorists; o Recognizes that the development of pedestrian and bicycle infrastructure supports the Council Vision because it enhances recreational opportunities, active transportation, and well-designed streetscapes, thus promoting active lifestyles; o Appreciates the positive role that good pedestrian and bicycle facilities play in attracting population growth and sustainable economic development; o Values the long-term cost savings of developing pedestrian and bicycle infrastructure as they relate to improved public health, improved environmental stewardship, reduced fuel consumption, and the reduced demand for motor vehicle infrastructure. o Recognizes that Complete Streets may be achieved through single projects or incrementally through a series of smaller	Incorporating bicycle and pedestrian transportation modes in the design of public streets will make the public realm more attractive for users of all ages and abilities, supports the Council vision, can contribute to economic development, has long term economic and environmental benefits and can maximize transit choice. Street designs can be implemented in a piecemeal approach as development occurs, so the entire length of a street does not need to be built at once.		No policy change needed. A Complete Streets policy will guide transportation aspects of future development, directly connecting transportation with goals of the Council Vision.

Complete Streets

Document Title/Source	Relevant information	Comments	Model Programs or Best Practices	Policy recommendation
City of Charlottesville Complete Streets Policy, 2014 **Pg. 4 (cont)**	improvements or maintenance activities over time, and that all sources of transportation-related funding be drawn upon to implement Complete Streets. o Intends to maximize the number of transportation options available within the public right-of-way.			
Charlottesville Comprehensive Plan 2013 **Chapter 6 - Transportation** **Pg. 71 (2)**	Goal 1 - Complete Streets 1.2 - Provide convenient and safe pedestrian connections within 1/4 miles of all commercial and employment centers, transit routes, schools and parks 1.4 - Explore and implement safe, convenient and visually attractive crossing alternatives to enable pedestrians and bicyclists to cross major thoroughfares. 1.5 - Continue to include bicycle and pedestrian accommodations in conjunction with the planning and design of all major road projects, all new development and road paving projects.	The Complete Streets Goal identifies priority locations for bicycle and pedestrian improvements as 1/4 mile radius around commercial and employment centers and continues to include bicycle and pedestrian infrastructure in major road projects and developments.		No policy change needed.
Charlottesville Comprehensive Plan 2013 **Chapter 6 - Transportation** **Pg. 6-2**	Goal 1.6 Consistently apply ADA standards to facility design and ensure that accessible curb ramps exist at all pedestrian crossings where conditions allow.	Curb ramps at all pedestrian crossings should be accessible for users of all abilities.		Continue ADA upgrades on curb ramps and sidewalks throughout the city based on Charlottesville's ADA Transition Plan.
Charlottesville Comprehensive Plan 2013 **Chapter 6 - Transportation** **Pg. 6-2**	Goal 1.8 Coordinate with public schools to develop a Safe Routes to School Travel Plan for every public school in the City.	Increase the number of students to walking and biking to school through a comprehensive Engineering, Education, Encouragement, Enforcement and Evaluation approach. Safe Routes to School Travel Plans will identify priority infrastructure projects to improve walking and bicycling environment around a school as well as programmatic actions that schools can incorporate to increase safe walking and biking.	**Fairfax County Public Schools** Fairfax County Public School Division Policy 8610.8 IV. C. states "Recognizing the health benefits, FCPS encourages parents to consider having their children walk and/or ride a bicycle to and from school using existing infrastructure. This parental decision is not subject to review by the principal. Ultimately, parents have the responsibility for selecting their children's routes to and from bus stops, schools, and home. Parents are also responsible for providing supervision that is appropriate for the student's age, maturity and conditions of the chosen route." Source: http://www.boarddocs.com/vsba/fairfax/Board.nsf/files/8YZFZ4417C61/$file/P8610.pdf **Harrisonburg City Public Schools** School district policy 445 B states "Students are	Investigate funding opportunities from the state level to hire a full or part-time Safe Routes to School Coordinator for Charlottesville. Both of the model policies encourage walking and biking to school by leaving the decision to allow students to walk and bike to parents and institutionalizing active transportation to and from school as part of the division-wide health policy.

Complete Streets

Document Title/Source	Relevant information	Comments	Model Programs or Best Practices	Policy recommendation
Charlottesville Comprehensive Plan 2013 **Chapter 6 - Transportation** **Pg. 6-2 (cont)**			given opportunities for physical activity through a range of before and/or after school programs including, but not limited to intramurals, interscholastic athletics, physical activity clubs, and active commuting to school (walking, biking, etc)." Source: http://boarddocs.com/vsba/hcsva/Board.nsf/Public#	
Charlottesville Comprehensive Plan 2013 **Chapter 6 - Transportation** **Pg. 6-3**	Goal 1.9 Seek to expand and anticipate traffic calming where applicable throughout the City in collaboration with neighborhood residents and as part of the development process.	Traffic calming helps reduce undesired motorist behavior on neighborhood streets and creates routes that are more comfortable and inviting for a wider range of bicyclists and pedestrians.	**Model Design Manual for Living Streets** Adopting policies similar to those outlined in the Model Design Manual for Living Streets will help calm traffic throughout the city, but would have tradeoffs including increased travel time for motor vehicles along certain routes. Source: http://www.modelstreetdesignmanual.com/index.html	Adopt and implement recommendations from the forthcoming Charlottesville Complete Streets Design Manual to calm traffic on key routes.
Charlottesville Comprehensive Plan 2013 **Chapter 6 - Transportation** **Pg. 6-3**	Goal 2.3 Improve walking and biking conditions by discouraging and/or minimizing curb cuts for driveways, garages, etc. in new development and redevelopment. 2.6 Promote urban design techniques, such as placing parking behind buildings, reducing setbacks and increasing network connectivity, to create a more pedestrian friendly streetscape and to reduce speeds on high volume roadways.	The comprehensive plan recognizes that the design of streets and adjacent parcels affects modal choices and safety.	**Arlington Master Transportation Plan Pedestrian Element** Curb Radii- The standard curb return radius is 15 feet with larger radii used when necessary to accommodate the low-speed turning movement of expected truck and bus traffic. Right Turn Slip Lanes - The use of right turn slip lanes and islands is discouraged except when intersection geometrics would otherwise require the use of curb radii of greater than 35 feet. Slip lanes and islands should be designed to minimize vehicular travel speeds and can include raised crosswalks, Stop sign controls and tight turning radii. **Howard County Bike Plan** Recommendation: Consider revising traffic volume warrants for slip lanes, including the review of design standards to include: a) a pocket bike lane and a dashed bike lane, b) the radii of slip lanes should be designed to reduce entry and exit speeds, and c) high quality bicycle and pedestrian crossing accommodations should be provided for those traveling on the crossing roadway (DPW, SHA & Design Manual). Right turn slip lanes at intersections can create a dangerous situation for cyclists.	Charlottesville should expand on the policies stated in the comprehensive plan with more detailed design guidance from the Charlottesville Complete Streets Design Guidelines. The Arlington and Howard County curb radii and right turn slip lane policies are model bicycle and pedestrian-oriented policies.

Complete Streets

Document Title/Source	Relevant information	Comments	Model Programs or Best Practices	Policy recommendation
Charlottesville Comprehensive Plan 2013 **Chapter 6 - Transportation** **Pg. 72 (or 3)**	Goal 3 - Arterial roadway network 3.4 Identify multimodal solutions to reduce single occupancy vehicle use 3.3 - Develop access management standards for new development and redevelopment along primary entrance corridors	Prioritizing multimodal solutions can increase walking and biking. Access management techniques will affect bicycle lanes and sidewalks and should be regulated by design guidelines.	**VDRPT Multimodal System Design Guide; Chapter 8 - Transportation Demand Management** Source: http://www.drpt.virginia.gov/activities/MultimodalSystemDesignGuidelines.aspx **Model Design Manual for Living Streets; Chapters 6 - Universal Pedestrian Access, 8 - Bikeway Design, and 13 - Designing Land Use Along Living Streets** Source: http://www.modelstreetdesignmanual.com/index.html	Consider developing a multi-modal transportation plan. Multimodal solutions can contribute to a reduction in traffic congestion. Some multimodal efforts (e.g. transit benefits, telecommuting) require investment on behalf of participants or the City. Include access management standards in the Complete Street Design Guidelines.
Charlottesville Comprehensive Plan 2013 **Chapter 3 - Economic Sustainability** **Pg.49 (or 3)**	Goal 3.3: Encourage the development of the City's key commercial corridors and surrounding sites (such as West Main Street, Preston Ave, and Cherry Avenue Goal 3.4: Proactively participate in planning and development studies such as the Small Area Plans, particularly as they relate to economic development opportunities in strategic areas throughout the City.	Target these streets for pedestrian/bicycle facilities and improvements. Goal is also in accordance with Albemarle County/ Charlottesville Joint goals. Incorporating pedestrian/bicycle improvements at the community level through *placemaking/development* can help ensure support. Goal is also in accordance with Albemarle County/Charlottesville Joint goals.		No policy change needed. Key commercial corridors and surrounding sites can be included in sidewalk construction and maintenance prioritization. Small Area Plans can identify areas needed for further infrastructure improvements.
Charlottesville Comprehensive Plan 2013 **Chapter 7 - Historic Preservation and Urban Design** **Pg. 85 (or 7)**	Goal 8: Ensure the quality of development in the city's designated entrance corridor overlap districts compatible with the city's historic, architectural, and cultural resources Goal 8.1: Emphasize placemaking elements and examine opportunities to create destinations Goal 8.2: Encourage site designs that consider building arrangements, uses, natural features, and landscaping that contribute to a sense of place and character that is unique to Charlottesville Goal 8.4: Use street trees, landscaping, and pedestrian routes to provide shade enclosure, and accessibility in streetscapes. Goal 8.6: Consider the designation of additional streets, such a s Ridge-McIntire, East Market Street, and Meade Avenue as entrance Corridor districts	The entrance corridors may impact pedestrian/bicycle facility design. Pedestrian/bicycle facilities can contribute to the placemaking elements and help achieve the unique Charlottesville character. These streets should be considered for pedestrian/bicycle facility improvements.		No policy change needed. Transportation facilities are a central component of placemaking efforts.

Complete Streets

Document Title/Source	Relevant information	Comments	Model Programs or Best Practices	Policy recommendation
Municipal Code - Chapter 34 Zoning **Article VI. Mixed Use Corridor District** **Division 3** **Sec. 34-524**	Neighborhood Commercial Corridor district. The intent of the Neighborhood Commercial Corridor district is to establish a zoning classification for the Fontaine and Belmont commercial areas that recognize their compact nature, their pedestrian orientation, and the small neighborhood nature of the businesses. This zoning district recognizes the areas as small town center type commercial areas and provides for the ability to develop on small lots with minimal parking dependent upon pedestrian access. The regulations recognize the character of the existing area and respect that they are neighborhood commercial districts located within established residential neighborhoods. Within this district the following streets shall have the designations indicated: Primary streets: Bainbridge St., Carlton Ave., Douglas Ave., Fontaine Ave., Garden St., Goodman St., Hinton Ave., Holly St., Lewis St., Maury Ave., Monticello Rd., and Walnut St.	An example of one Mixed Use Corridor District intent and purpose. This district intends to develop as a pedestrian oriented small town center and maintain compact development. Neighborhood Commercial Corridor District will guide future development in specific areas of the city. These areas will have limited parking, so it will be necessary to include bicycle and pedestrian accommodations. The primary street can be reviewed for potential pedestrian/bicycle facilities (e.g. racks and sidewalks) to contribute to minimal parking and maintaining compactness.		No policy change needed.
Municipal Code - Chapter 34 Zoning **Article VI. Mixed Use Corridor District** **Division 1** **Sec. 34-540**	Objectives of these districts include the following: (i) creation of a dynamic street life, encouraging the placement of buildings close to property lines, and/or heavily landscaped yard areas, in order to engage pedestrians and de-emphasize parking facilities; (ii) encouragement of mixed-use development; (iii) facilitation of development that demonstrates an appropriateness of scale; (iv) encouragement of development that offers creative minimization of the impact of parking facilities and vehicular traffic; (v) encouragement of landscaped spaces available for pedestrian use (e.g., pocket parks, tree-lined streets and walkways); (vi) encouragement of alternate forms of transportation (e.g., pedestrian travel, bicycle paths, use of public transit); (vii) encouragement of neighborhood-enhancing economic activity;	The Mixed Use district has direct and indirect objectives to increase the amount or improve the quality of walking and bicycling within those districts. These districts should be highlighted for recommendations. Direct: -Encourage alternate forms of transportation -Creation of dynamic street life -Encourage landscaped areas for pedestrians Indirect: -Minimize impact of parking facilities -Facilitate appropriate scale development		No policy change needed.

Complete Streets

Document Title/Source	Relevant information	Comments	Model Programs or Best Practices	Policy recommendation
Municipal Code Chapter 29 - Subdivision of Land **Article IV. Design and Improvements** **Sec. 29-182 (Pg. 34)**	Standards for streets and alleys Each street shall be configured, to the extent practicable, to conform to the natural topography, to minimize the disturbance of critical slopes and natural drainage areas, and to provide vehicular, bicycle and pedestrian interconnections within the subdivision and existing or future development on adjoining lands.	New streets should allow for pedestrian and bicycle connections between the new development and adjacent areas.	**Arlington Master Transportation Plan-Pedestrian Element** Policy 5 (7): Provide straight, level, unimpeded and appropriately-designated pedestrian travel whenever feasible. For example, pedestrian crossings at intersections should generally follow the center line of the sidewalk, and newly-constructed driveways across pedestrian facilities are expected to provide unobstructed pedestrian passage. Source: http://arlingtonva.s3.amazonaws.com/wp-content/uploads/sites/31/2014/02/DES-MTP-Pedestrian-Element.pdf **City of Berkeley Pedestrian Master Plan** Policy 1.2: Pedestrian Priority When addressing competing demands for sidewalk space, the needs of the pedestrian shall be the highest priority. (GP T-51) Source: http://www.cityofberkeley.info/uploadedFiles/Public_Works/Level_3_-_Transportation/1%20Cover%20-%20Chp%205%20January%202010(1).pdf	Establish guidelines similar to Arlington and Berkeley to ensure new and redeveloped sidewalks accommodate the needs of pedestrians before allocating space for other uses.
Municipal Code Chapter 29 - Subdivision of Land **Article I. General Provisions** **Sec 29-3 (Pg. 5)**	Street right-of-way means the total width of the strip of land dedicated to the city in fee simple for public use or reserved for travel, including without limitation the paved street surface, curbs, drainage improvements and gutters, shoulders, ditches, public sidewalks, bicycle paths, and, where necessary, utility easements.	Bicycle paths and sidewalks are part of the city's Right-of-Way. The City is responsible for maintenance and has the authority to change it.		No policy change needed.

Complete Streets

Document Title/Source	Relevant information	Comments	Model Programs or Best Practices	Policy recommendation
Municipal Code Chapter 29 - Subdivision of Land **Article IV. Design and Improvements** **Sec. 29-231 (page 40)**	The agent or commission shall require a subdivider to dedicate to the city for public use each public street (including each non-constructed street extension, and each required curb, gutter, sidewalk, bicycle trail, stormwater management facility and drainage improvement for the public street) and the agent or commission may require a subdivider to dedicate to the city for public use any stormwater management facility, bicycle trail or pedestrian trail within a subdivision or section thereof, as follows: (1) The city council shall not be required to compensate the subdivider for any such dedicated land or improvements. (2) The land and improvements to be dedicated shall be set apart on the final plat and shall be identified by a note on the plat stating that the land is dedicated for public use. (3) When a subdivision abuts one (1) side of an existing or platted street, the subdivider shall dedicate at least one-half (½) of the right-of-way necessary to make the street comply with the minimum width required for the street as designated in the Standards and Design Manual.	Charlottesville is able to require developer to dedicate land in new developments to the city for public use pedestrian and bicycle trails. The city is not required to compensate developers for land dedicated to public sidewalks/bicycle lanes. Public use improvements (e.g. sidewalks and bicycle trails) are required to be identified in the plans prior to development approval. Pedestrian and bicycle facilities built as part of a subdivision development will be dedicated to the City and the City will be responsible for maintaining these facilities.		No policy change needed.
Charlottesville 2003 Bicycle and Pedestrian Facilities Master Plan **Chapter 5 Pg. V-12 - V25**	There are 46 different on-street pedestrian and bicycle recommendations, page V-24 shows the entire list and priority Recommended improvements include : Share the road signage White stripe bicycle lane Solid bicycle lane	List of recommendations for on-street bicycle and pedestrian improvements. These streets should be reassessed and evaluated for additional improvements.		Adopt a set of street design guidelines that outline allowable and appropriate bicycle facilities on various street types. Link facility guidelines to the new bicycle transportation network being developed through this Master Plan.
City of Charlottesville Complete Streets Policy, 2014 **Pg. 4**	Through this policy, the City of Charlottesville intends to ensure that all transportation agencies within the City shall routinely plan, fund, design, construct, operate, and maintain their streets according to the Complete Street principles of the City's "Street Design Guidelines" with the goal of creating an attractive connected multimodal network and great places that balance the needs of all users, except where there are demonstrated exceptional circumstances.	Charlottesville has a council approved goal of creating a connected multi-modal network for all users. There is political support for building complete streets and expanding the bicycle and pedestrian networks.	**Littleton, MA** (ranked best Complete Streets policy of 2013) Implementation section: The Town shall make Complete Streets practices a routine part of everyday operations, shall approach every transportation project and program as an opportunity to improve streets and the transportation network for all users, and shall work in coordination with other departments, agencies, and jurisdictions to achieve Complete Streets. Town shall review and either revise or develop proposed revisions to all appropriate planning documents (master plans, open space and	No policy change needed.

Complete Streets

Document Title/Source	Relevant information	Comments	Model Programs or Best Practices	Policy recommendation
City of Charlottesville Complete Streets Policy, 2014 **Pg. 4 (cont)**			recreation plan, etc.), zoning and subdivision codes, laws, procedures, rules, regulations, guidelines, programs, and templates to integrate Complete Streets principles in all Street Projects on streets. A committee of relevant stakeholders designated by the Town Administrator will be created to implement this initiative. The Town shall maintain a comprehensive inventory of pedestrian and bicycle facility infrastructure that will prioritize projects to eliminate gaps in the sidewalk and bikeway network. The Town will reevaluate Capital Improvement Projects prioritization to encourage implementation of Complete Streets implementation.	
City of Charlottesville Complete Streets Policy, 2014 **Pg. 1**	WHEREAS, The 2013 Comprehensive Plan of the City of Charlottesville calls for the development of a comprehensive set of street design guidelines based on the City's Compete Streets Resolution and ITE's "Designing Walkable Urban Thoroughfares: A Context Sensitive Approach", as a way to ensure that transportation infrastructure investments support the making of an attractive, healthy, and safe, walkable and bike-able Charlottesville.	The complete streets policy aligns with the city's comprehensive plan and is a recognized as an approach to making an attractive, healthy, safe, walkable and bike-able city.		No policy change needed.

Land Use

Document Title/Source	Relevant information	Implication	Model Programs or Best Practices	Policy recommendation
Charlottesville Comprehensive Plan 2013 **Chapter 5 - Housing** **Pg. 61 (or 1)**	Vision: …City neighborhoods will feature a variety of housing types, housing sizes, and incomes all within convenient walking, biking or transit distances of enhanced community amenities that include mixed use, barrier free, higher density, pedestrian and transit oriented housing at employment and cultural centers....	New pedestrian/bicycle infrastructure that links housing with employment or cultural centers contributes to achieving the vision.		No policy change needed.
Charlottesville Comprehensive Plan 2013 **Chapter 5 - Housing** **Pg. 67 (or 7)**	Goal 8.5: Promote redevelopment and infill development that supports bicycle and pedestrian-oriented infrastructure and robust public transportation to better connect resident to jobs and commercial activity. Goal 8.1: Encourage mixed-use and mixed income housing developments Goal 8.3: Encourage housing development where increased density is desirable.... Goal 8.4: Promote environmentally sustainable patterns of development... Goal 8.7: Encourage the incorporation of green sustainable principles (e.g., LEED...	Goal 8.5 explicitly states promoting development that includes pedestrian/bicycle facilities. Goal is also in accordance with Albermale County/Charlottesville Joint goals. Goals 8.1, 3, & 4 all encourage mixed-use/dense development. Effective pedestrian/bicycle facilities can contribute to making this type of development more feasible. Goal 8.7 encourages LEED. Bike racks on new development sites can help developments earn LEED points.	**Arlington Master Transportation Plan** "Policy 10: Encourage the separation of the price of parking from the price of owning, renting or leasing a housing or office unit. Discourage subsidized parking for residents/commuters" "Experience in Arlington...has shown that when residents or employees must pay the true cost of parking, it increases their use of other modes of travel and reduces the demand for parking by 10% or more."	Encourage developers to unbundle the costs of parking from rent.
Charlottesville Comprehensive Plan 2013 **Chapter 6 - Transportation** **Pg. 72 (or 3)**	Goal 2 - Land Use and Community Design 2.2 - Encourage new street connections and alternate traffic patterns where appropriate to distribute traffic volumes across a network and reduce trip lengths for pedestrians, cyclists, and vehicles 2.5 - Develop a comprehensive set of street design guidelines based on the Complete Streets Resolution and ITE/CNU's Walkable Urban Thoroughfares Context sensitive solutions (CSS) Approach that balances multimodal transportation options while considering design techniques that allow for urban scale, walkable communities where appropriate.	Transportation network should balance equalize traffic volumes and improve cycling conditions. Design guidelines will affect bicycle/pedestrian facilities.		Adopt a set of street design guidelines that follow best practices for bicycle and pedestrian facilities on various street types, and incorporate Complete Streets principles. Land use that encourages distributing traffic will create less stressful routes for bicyclists and pedestrians. Complete streets policies will encourage development of bicycle and pedestrian accommodations.

Land Use

Document Title/Source	Relevant information	Implication	Model Programs or Best Practices	Policy recommendation
Municipal Code - Chapter 34 Zoning **Article VI. Mixed Use Corridor District** **Division 2** **Sec. 34-541**	Lists the 14 Mixed Use Corridor districts in Charlottesville	Each corridor district has its own specific goals related to type and intensity of development. It also lists the Primary and Linking streets, which could be targeted for recommendations.		No policy change needed.

Downtown Extended Corridor: Primary streets: Garrett Street, Monticello Avenue, 6th Street, Market Street, Carlton Road and 10th Street, N.E. Linking streets: Avon Street, Dice Street, 1st Street, 4th Street, Gleason Street, Goodman Street, Oak Street, and Ware Street.

North Downtown Corridor: Primary streets: 8th Street, N.E. (between High Street and Jefferson Street), 5th Street, N.E., 1st Street, 4th Street, N.E., High Street, Jefferson Street, Market Street, 9th Street, 9th Street, N.E., 2nd Street, N.E., 2nd Street, N.W., 7th Street, N.E., 6th Street, N.E., and 3rd Street, N.E. Linking streets: East Jefferson Street (east of 10th Street, N.E.), 8th Street, 11th Street, N.E., Lexington Street, Locust Street, Maple Street, Sycamore Street.

West Main Corridor: Primary streets: 4th Street, 14th Street, 10th Street, Wertland Street, and West Main Street. Linking streets: Cream Street, Commerce Street, 8th Street, Elsom Street, 7th Street, 6th Street, 10½ Street and, 12th Street.

West Main South Corridor: Primary streets: Jefferson Park Avenue, 9th/10th Connector, Ridge Street, 7th Street, and West Main Street.
Linking streets: Dice Street, 11th Street, 5th Street, 4th Street, and 7th Street.

Cherry Avenue Corridor: Primary streets: Cherry Avenue, 9th/10th Connector. Linking streets: 4th St., 5th St., Delevan St., Estes St., Grove St., King St., Nalle St., 9th St., 6th St., 6½ St., 7th St.

High Street Corridor: Primary streets: East High Street and Meade Avenue. Linking streets: 11th Street, Gillespie Avenue, Grace Street, Grove Avenue, Hazel Street, Moore's Street, Orange Street, Riverdale Drive, Stewart Street, Sycamore Street, Ward Avenue, and Willow Street.

Neighborhood Commercial Corridor District: Primary streets: Bainbridge St., Carlton Ave., Douglas Ave., Fontaine Ave., Garden St., Goodman St., Hinton Ave., Holly St., Lewis St., Maury Ave., Monticello Rd., and Walnut St. Linking streets: None.

Highway Corridor District: Primary streets: Bent Creek Road, Carlton Rd., Emmet Street, 5th Street, Harris Road, Hydraulic Road, Monticello Ave., and Seminole Trail. Linking streets: Angus Road, East View Street, Holiday Drive, India Road, Keystone Place, Knoll Street, Linden Avenue, Line Drive, Michie Drive, Mountain View Street, Seminole Circle, and Zan Road.

Urban Corridor: Primary streets: Barracks Road, Emmet Street, and Ivy Road. Linking streets: Arlington Boulevard, Cedars Court, Copeley Drive, Copeley Road, Earhart Street, Massie Road, Meadowbrook Road, Millmont Street and Morton Drive.

Central City Corridor: Primary streets: East High Street, Harris Street, Long Street, Preston Avenue, Rose Hill Drive, 10th Street, Preston Avenue, and River Road. Linking streets: Albemarle Street, Booker Street, Caroline Avenue, Dale Avenue, 8th Street, Forest Street, 9th Street, and West Street.

Water Street Corridor District: Primary streets: All. Linking streets: None.

South Street Corridor District: Primary streets: South Street. Linking streets: None.

Corner District: Primary streets: University Avenue, West Main Street, Wertland Street, Elliewood Avenue 13th Street and 14th Street. Linking streets: Chancellor Street, 12th Street, 12½ Street and 13th Street.

Funding

Document Title/Source	Relevant information	Comments	Model Programs or Best Practices	Policy recommendation
Capital Improvement Program Fund - FY 2015 **Pg. 145**	Bondable projects for FY 15, a total of $3.96 million is allocated to Transportation and Access projects which include: $1,422,539 for street milling and paving; **$285,000 for the design and construction of new sidewalks**; **$750,000 for the West Main Streetscape project**; $300,000 each for Small Area Plans and SIA Immediate Implementation; and $750,000 for design work related to the Martha Jefferson Neighborhood Streetscaping project.	Allocates funding for transportation and access projects.		No policy change needed.
Charlottesville 2003 Bicycle and Pedestrian Facilities Master Plan **Chapter 6 Pg. VI-8 - VI-11**	List of funding strategies	Funding strategies will need to be updated to reflect current public and private opportunities.	**City of Berkeley Sidewalk Program** 50-50 Cost Share program Source: http://www.ci.berkeley.ca.us/sidewalks.aspx	Explore additional funding programs to support pedestrian and bicycle project implementation and maintenance. By splitting sidewalk construction and maintenance costs with property owners, the City of Berkeley, CA is able to build more sidewalks with fewer public funds.
Capital Improvement Program Fund - FY 2015 **Pg. 146**	Non-Bondable projects for FY 15 transportation and access funding includes $168,710 in grant match funds for CAT Transit bus replacement and bus related purchases; **$400,000 for sidewalk repair (including ADA ramp upgrades on streets scheduled to be paved);** $95,000 for citywide traffic improvements; **$200,000 for bicycle infrastructure;** $95,000 for the intelligent transportation system; $121,137 for State bridge and highway inspections; $200,000 for minor bridge repairs; and **$95,000 for ADA improvements to sidewalks and curbs** throughout the City. Total funding for this area is $1.37 million.	Allocates funding for transportation and access projects.		No policy change needed.
Capital Improvement Program Fund - FY 2016 **Pg. 149**	Operation Impacts: $285,000 are allocated for new sidewalks each year for FY 2015-FY 2019 $400,000 are allocated for sidewalk repair for FY 2015 with a 1% increase per year for FY 2016 - FY 2019 $200,000 are allocated for bicycle infrastructure each year for FY 2015 - FY 2019 $95,000 are allocated for ADA improvements each year for FY 2015 - FY 2019	Allocates funding for infrastructure repair and construction.		No policy change needed.

Funding

Document Title/Source	Relevant information	Comments	Model Programs or Best Practices	Policy recommendation
Charlottesville 2003 Bicycle and Pedestrian Facilities Master Plan **Pg. VI-8**	Various methods for funding bicycle/pedestrian improvements: Public Sector - Highway Construction Fund, TEA-21 Transportation Enhancement Program, TEA-21 Department of Rail and Public Transportation, State aid transit grants, Virginia recreational trails fund, 402 Highway safety program annual grants, 402 highway safety program mini-grants, Private Sector - Corporate Grant Foundations, Civic Organizations, Citizens	Additional funding sources for future projects - list needs to be updated.	**Ithaca, NY Sidewalk Program** City is divided into 5 Zones; property owners pay annual fee into fund for sidewalk repairs and maintenance instead of being liable for sidewalks abutting their properties. Program views sidewalks as common good. Source: http://www.egovlink.com/public_documents300/ithaca/published_documents/Clerks_Office/In%20the%20news/Sidewalk%20Local%20Law%20Powerpoint2.pdf	Identify dedicated revenue stream for sidewalk and bicycle lane repair and maintenance. Fees provide a dedicated funding source for sidewalk improvements. Zone structure helps distribute funding evenly among neighborhoods.

Pedestrian Facilities

Document Title/Source	Relevant information	Comments	Model Programs or Best Practices	Policy recommendation
Virginia Department of Transportation Traffic Engineering Division **Guidelines for the Installation of Marked Crosswalks** **Pg. 10-12** Source: http://www.virginiadot.org/business/resources/marked_20crosswalks_20final_20guidelines_2012-14-05.pdf	Basic Justification for Marking a Crosswalk Crossings should be marked where **all of the following** are the case: • Sufficient demand exists to justify the installation of a crosswalk. Uncontrolled crossings should be identified as a candidate for marking if there is a demonstrated need for a marked crosswalk. Need can be demonstrated by either of the following: — The crosswalk would serve 20 pedestrians per hour during the peak hour, 15 elderly and/or children per hour, or 60 pedestrians total for the highest consecutive 4-hour period; or — The crossing is on a direct route to or from a pedestrian generator, such as a school (refer to section 7C.03 of the MUTCD), library, hospital, senior center, shopping center, park, employment center, and transit center or service. • The location is **300 feet** or more from another crossing location or a controlled crossing location. • The location has sufficient sight distance (sight distance in feet should be greater than 10 times the speed limit) and/or sight distance will be improved prior to crosswalk marking. • Safety considerations do not preclude a crosswalk. Figure 3 and Table 1 should be used to determine if special treatments are needed to ensure safe crossing at uncontrolled locations	The VDOT guide provides criteria, a decision tree and recommended crosswalk types for various street characteristics.	**Arlington Master Transportation Plan--Pedestrian Element--Mid-block Crossings** Along arterial streets, where intersections with marked crosswalks are more than **800** feet apart, and pedestrian crossing volumes are significant, consideration is to be given to providing mid-block crossings. Conditions such as sight distance, traffic volume, and travel speed are factored into the decision as to whether to mark mid-block crossings. Mid-block crossings should be made **very prominent and visible** through the use of signage, ladder crosswalk markings, curb extensions (nubs), and other engineering practices. Supplemental lighting and/or traffic signals should also be considered. A median refuge can enhance the safety of a mid-block crossing. Such refuges should be a minimum of six feet wide and should provide tactile warning strips as specified in ADA design guidelines. Source: http://arlingtonva.s3.amazonaws.com/wp-content/uploads/sites/31/2014/02/DES-MTP-Pedestrian-Element.pdf **City of Berkeley Pedestrian Master Plan Policy T-52 Provide safe and convenient pedestrian crossings throughout the city.** A. Seek to ensure that the distance between signal-controlled intersections, "smart crosswalks," or stop signs is never more than **1,320 feet** on major and collector streets. At intersections with severe or high pedestrian/automobile collision rates and at heavily used pedestrian crossings, consider all-way stop signals that allow the free flow of pedestrians through the intersection, "smart" signals to calm traffic and improve intersection safety, and pedestrian/bicycle-activated signals that allow bikes and pedestrians to cross busy streets without inviting traffic onto cross streets. Source: http://www.cityofberkeley.info/uploadedFiles/Public_Works/Level_3_-_Transportation/3%20Appendix%20A%20-%20Appendix%20C%20January%202010.pdf	Adhere to VDOT recommendations and enhance mid-block crossings with curb extensions, advance signage and lighting as needed.

Pedestrian Facilities

Document Title/Source	Relevant information	Comments	Model Programs or Best Practices	Policy recommendation
Charlottesville Comprehensive Plan 2013 **Chapter 2 - Land use** **Pg. 32 (or 3)**	Goal 2: Establish a mix of uses within walking distance of residential neighborhoods that will enhance opportunities for small group interaction throughout Charlottesville. 2.3: Enhance pedestrian connections between residences, commercial centers, public facilities and amenities and green spaces.	The comprehensive plan's land use goal # 2 specifically identifies improving pedestrian transportation. Mixed use zoning can be used to promote non-motorized transportation. Mixed use zoning districts exist in current municipal code: Chapter 34 - Zoning - Article VI - Mixed use corridor district.		No policy change needed.
012 Sidewalk Update **Pg. 1**	List of 23 streets approved as sidewalk priorities and will be constructed through 2016	Target these streets for near-term improvements as they have already been identified by the city - include complete streets design improvements. Note: Montrose Ave is the only street listed with two sections approved for construction (they are a few blocks apart).	**Arlington Master Transportation Plan** Appendix B: Sidewalk Project Ranking Criteria Projects are awarded points for connectivity, proximity, street traffic, land use, related projects and community impact. Standardized procedure for evaluating potential projects increases transparency and helps ensure health, safety and welfare of citizens. Source: http://arlingtonva.s3.amazonaws.com/wp-content/uploads/sites/31/2014/02/DES-MTP-Pedestrian-Element.pdf (page 29)	Charlottesville's existing sidewalk prioritization system could be improved by adopting a scoring rubric similar to the one used by Arlington County.
Municipal Code Chapter 34 - Zoning **Article VIII. Improvements Required for Developments** **Division 4 - Access and Pedestrian Ways** **Sec. 34-897 (Pg. 24)**	Pedestrian Walkways A pedestrian access and circulation system shall be provided for every development, and shall be designed so as to provide for safe, attractive and convenient pedestrian travel. …Provision shall be made, where appropriate, for pedestrian walkways in relation to private and public areas of recreation and open space, such as schools, parks, gardens, hiking trails, and areas of similar nature. Connection shall be made wherever possible of walkways, hiking trails and bicycle ways with similar facilities on adjacent property.	Pedestrian access is necessary for all developments and *should* provide access to other walking/biking trails when possible.		No policy change needed.
Municipal Code Chapter 28 - Streets and Sidewalks **Article I. In General** **Sec 28-31 (Pg. 13)**	*Public area* means an area to which the public or a substantial group of persons has access, including, but not limited to: alleys, bridges, buildings, driveways, parking lots, parks, playgrounds, sidewalks, streets open to the general public, and the doorways and entrances to buildings, together with the grounds enclosing them.	Sidewalks are part of the public area.		No policy change needed.

Pedestrian Facilities

Document Title/Source	Relevant information	Comments	Model Programs or Best Practices	Policy recommendation
Municipal Code Chapter 29 - Subdivision of Land **Article I. General Provisions** **Sec 29-3 (Pg. 4)**	Sidewalk means a paved pedestrian way designed to meet city standards.	City definition of sidewalk.	**City of Harrisonburg, VA** **Design & Construction Standards Manual** -new sidewalks without planting strips/buffers (2'-5') require special approval -minimum width for sidewalks in Urban Center/Business Districts is 10' The City of Harrisonburg has different definitions of sidewalk based on context. By requiring special approval for any sidewalk without a planted buffer strip, Harrisonburg ensures a higher level of comfort and separation for pedestrians. Source: http://www.harrisonburgva.gov/sites/default/files/PublicWorks/files/bicycle-pedestrian/Bicycle%20%26%20Pedestrian%20Plan%20FINAL.pdf	Adopt Charlottesville Complete Street Design Guidelines that follow best practices for sidewalk facilities on various street types (based on land use, vehicle volumes and other factors). Include sidewalk buffers, amenity zones and other features where appropriate.
Municipal Code Chapter 34 - Zoning **Article VIII. Improvements Required for Developments** **Division 4 - Access and Pedestrian Ways** **Sec. 34-897 (Pg. 24)**	The following standards shall apply to all nonresidential and mixed use developments: The pedestrian access and circulation system must connect all buildings within the project, and must provide connections between all buildings and other activities/uses within the project (such as vehicle parking, bicycle parking, outdoor recreation areas, outdoor open spaces, pedestrian amenities, etc.).	All buildings within a non residential or mixed use development must have pedestrian access. Moreover, there must also be pedestrian access between those buildings and other uses of the property (e.g. bicycle parking).		No policy change needed.
Application for Temporary Street/Sidewalk Closure Permit Source: https://www.google.com/url?q=http://www.charlottesville.org/Modules/ShowDocument.aspx%3Fdocumentid%3D10929&sa=U&ei=_o62VObWG8WkgwT6gYHwDw&ved=0CAUQFjAA&client=internal-uds-cse&usg=AFQjCNH6iX2P39XHU15dgQmGPvYjjIq-qw	There is a $20 per day fee per on-street parking space temporarily closed and $10 per day fee per sidewalk closure. There is a $50 per day fee per City right-of-way (street) utilized. Fees must be paid prior to authorization of the closure. Please make checks payable to the City of Charlottesville. Cash payment is accepted by the Department of Neighborhood Development Services located inside the 610 East Market Street entrance to City Hall. Please make arrangements to come to City Hall and obtain the approved closure permit, which should be kept at the job site.	Construction or other temporary uses that will block the public right of way must pay a fee. The requirements differ for travel lanes, parking spaces and sidewalks. If parking spaces are disrupted, signs must be posted 48 hours in advance. There is no similar requirement for sidewalk closures. While each parking space closure costs $20 per day, a sidewalk closure of unspecified length costs $10 per day.	**Washington DC Department of Transportation - Pedestrian Safety and Work Zone Standards** Complete sidewalk closures are only allowed during certain phases of construction projects, and have maximum time limits to encourage developers to stay on schedule. Source: http://ddot.dc.gov/sites/default/files/dc/sites/ddot/publication/attachments/pedestrian_safety_and_work_zone_standards_covered_and_open_walkways_july_2010.pdf **Washington DC Department of Transportation - Public Inconvenience Fee FAQ** The Public Inconvenience Fee applies to sidewalks, bike lanes, on-street parking and travel lanes. It is assessed per square foot per	Amend Charlottesville's policies to reduce the frequency and duration of sidewalk closures and assess fees fairly based on the amount of space removed from the public right of way.

Pedestrian Facilities

Document Title/Source	Relevant information	Comments	Model Programs or Best Practices	Policy recommendation
			day. Source: http://ddot.dc.gov/sites/default/files/dc/sites/ddot/publication/attachments/pif_faq.pdf The ddot policies limit sidewalk closures and places a high value on bicycle and pedestrian infrastructure.	
Pedestrian Accessibility in the Public Way During Construction Document Source: https://www.google.com/url?q=http://www.charlottesville.org/modules/ShowDocument.aspx%3Fdocumentid%3D20532&sa=U&ei=TZC2VJdlh8KCBLC_gLAK&ved=0CAUQFjAA&client=internal-uds-cse&usg=AFQjCNEAyGu9DcE7EGC0Py0IjqScpgkZtw	Any construction that impacts a public street or sidewalk should consider the following: Ø Advanced warning and guidance signs Ø Adequate illumination and reflectors Ø Use of temporary walkways Ø Channeling and barricading to separate pedestrians from traffic Ø Adequate barricading to prevent visually impaired pedestrians from entering work zones Ø Wheelchair accessible alternate pedestrian circulation routes with appropriate signage Alternative Circulation Path for Pedestrians The alternate circulation path shall have a minimum width of 48* inches and parallel the disrupted pedestrian access route when practicable.	The City provides guidelines for ADA compliant construction barriers and alternate pedestrian routes.	**Washington DC Department of Transportation - Pedestrian Safety and Work Zone Standards** Document provides detailed specifications for covered walkways and other accommodations in work zones that maintain pedestrian access. Source: http://ddot.dc.gov/sites/default/files/dc/sites/ddot/publication/attachments/pedestrian_safety_and_work_zone_standards_covered_and_open_walkways_july_2010.pdf	Encourage developers to use covered walkways and other strategies to maintain direct pedestrian routes during construction.

Plans and Policies

Document Title/Source	Relevant information	Comments	Model Programs or Best Practices	Policy recommendation
Charlottesville 2003 Bicycle and Pedestrian Facilities Master Plan **Chapter 4-3** **Pg. IV-69 (0r 14)**	Land Acquisition: Certain areas may be prioritized for acquisition and trail implementation. Areas of intended high use, public visibility, and ease of acquisition may be considered first. It may also benefit the City and the landowner before approaching the landowner. This may be in part determined by existing land use, topography, or amount or land desired. Methods of Acquisition: Donation, Land dedication, Lease or License, Revocable permits, access or use agreements, easement, utility corridors, purchase of title, rail banking, proffers.	If ROW is not immediately available for pedestrian/bicycle facilities, there are various methods the city will engage in to acquire land. Prioritized land will likely have higher intensity of use - beneficial of key pedestrian/bicycle corridors.	**VDOT Right of Way Manual of Instructions** Source: http://www.virginiadot.org/business/resources/Right_of_way/RW_Manual02132012_TechRev.pdf The FHWA has a **Best Practices in Right of Way Acquisition and Utility Relocation** resource. Source: http://www.fhwa.dot.gov/real_estate/right-of-way/program_administration/scans/bprowscan2.cfm	No policy change needed.
Charlottesville 2003 Bicycle and Pedestrian Facilities Master Plan **Chapter 6 Pg. VI-1 - VI-6**	This chapter includes implementation and funding strategies. Implementation strategies include: Proper Coordination and Management, Community Support, Political Support, Realistic Budget, Realistic Schedule, Demonstration project, and maintaining momentum There are also suggested encouragement activities: Master plan celebration, bike to work days, incentives for businesses, free bicycle clinics, bike to school programs, free parking in outer lots	Implementation strategies can be reviewed further - which strategies and encouragement activities work well and can be continued, and which activities should be revised in a future plan		Update possible funding strategies. Bicycle and pedestrian infrastructure and programmatic projects can impact the City's budget. Alternative sources of funding may be needed to implement projects.
Charlottesville Comprehensive Plan 2013 **Chapter 2 - Land Use** **Pg. 34 (or 5)**	Goal 5: explore progressive and innovative land use, design standards, and zoning regulations to accomplish the city's vision 5.3: Update the standards and design manual and subdivision ordinance so that these documents promote pedestrian-oriented, environmentally sensitive design where appropriate.	Achieving this goal would contribute to creating a better sense of place. Design standards include "Complete Streets" design standards.	**Form Based Codes** Source: http://formbasedcodes.org/definition **Arlington Master Transportation Plan** Parking and Curb Space Management Element Appendix A establishes priorities for curb space based on adjacent land uses. Source: http://arlingtonva.s3.amazonaws.com/wp-content/uploads/sites/31/2014/02/DES-MTP-Parking-and-Curb-Space-Management-Element.pdf	Adopt a form based code or other design guidelines that emphasize pedestrian-oriented design. A form based code that is reflective of Charlottesville's needs can guide development/re-development and street type standards to promote and encourage walking. Implementing a form based code will likely require the adoption of a new zoning district or a floating/overlay district, which will require city council approval.

Plans and Policies

Document Title/Source	Relevant information	Comments	Model Programs or Best Practices	Policy recommendation
Charlottesville Comprehensive Plan 2013 **Chapter 6 - Transportation** **Pg. 75 (or 6)**	Goal 7 - Regional Transportation 7.3 - Actively work with the MPO to collect information regarding regional travel patterns, such as origin destination data and bicycle counts to improve access to destinations within the City and region		**Bicycle and Pedestrian Documentation Project - Arlington County** Source: http://www.bikearlington.com/pages/biking-in-arlington/get-involved/bicycle-pedestrian-documentation-project/	Establish a comprehensive pedestrian and bicyclist counting program. Include automated counting devices in new roadway construction projects.
Charlottesville Site Plan Review Process **Pg. 1**	CITY STAFF REVIEWS SITE PLAN. Copies of the site plan are distributed to staff in various City departments, including Planning, Engineering, Traffic, Building, ADA Coordinator, Utilities, Police, Gas and Fire.	City staff has first opportunity to review site plans - planning/traffic/engineering/ADA coordinator can suggest pedestrian/bicycle improvements are included.	**Howard County Bike Plan** **Private Development and Site Plan Review Recommendations** Intersection improvements required of developers as a result of traffic impacts should include bicycle and pedestrian facility upgrades at and approaching the intersection.	Codify pedestrian and bicycle improvements for new developments. Howard County requires developments with major traffic impacts to improve multi-modal transportation infrastructure in the vicinity of the project.
Charlottesville Site Plan Review Process **Pg. 1**	FINAL SUBMISSION The applicant submits final site plan with all of the information required in Sec 34- 867 of the zoning ordinance. NDS staff and other City departments will review the plan for code compliance. Revisions and resubmissions may be required. If there are issues raised they will be worked out. To ensure that all the improvements shown on the site plan are done, the City may require a security agreement in the form of a letter of credit or a performance bond.	NDS staff and City departments have final review of plans to ensure applicable pedestrian/bicycle improvements. City needs to outline approval process for bicycle and pedestrian elements of a development project.		Add "Bicycle and Pedestrian Coordinator" to the list of city staff that reviews site plans on the Site Plan Review Process fact sheet. Source: https://www.charlottesville.org/modules/ShowDocument.aspx?documentid=11138
Charlottesville Site Plan Review Process **Pg. 1**	PRELIMINARY APPROVAL If the plan meets all the City's requirements, NDS staff or the Planning Commission will issue a letter approving the preliminary site plan. The preliminary site plan is valid for one year after approval.	Planning commission can hold off approval of plans unless they include pedestrian/bicycle improvements		Develop process to incorporate evaluation of pedestrian and bicycle accommodation within the development review process.
Charlottesville Site Plan Review Process **Diagrams**	PG 1 - Rezoning process 2 - Special Use Permit process 3 - Site Plan Review process 4 - Erosion and Sediment process 5 - Building permit process 6 - Board of Architectural Review process 7 - Entrance Corridor Review process	For each type of review, there is a specific process each with its own reviews/approvals. It will be important to identify where/who will be responsible for ensuring Complete Streets and pedestrian/bicycle guidelines and standards are met before construction/zoning changes/etc. take place.		Develop process to incorporate evaluation of pedestrian and bicycle accommodation within the development review process.

Plans and Policies

Document Title/Source	Relevant information	Comments	Model Programs or Best Practices	Policy recommendation
City of Charlottesville **Public Works Division Website** Source: http://www.charlottesville.org/Index.aspx?page=622	To report maintenance issues related to existing street, sidewalk, and stormwater infrastructure (potholes, unrepaired utility cuts, blocked drainage structures in the public right of way) call 970-3830 or email us.	The contact information for public works is displayed near the top of the page, but is not formatted in a way that makes it stand out.	**Howard County Bicycle Plan** On-Road Maintenance & Management Recommendations Use the County's existing 311 and/or online reporting systems system to identify road hazards that pose a safety risk for cyclists. Encourage bicycle clubs and advocacy groups to use this service. As hazards are addressed provide feedback to the citizens that report problems as well as to the community at large, to describe what citizens and government can do together in an ongoing partnership. **See Click Fix** SeeClickFix allows anyone to report and track non-emergency issues anywhere in the world via the internet. This empowers citizens, community groups, media organizations and governments to take care of and improve their neighborhoods. Source: http://en.seeclickfix.com/how-it-works **City of Alexandria, VA** Call Click Connect Online Customer Service System Source: http://request.alexandriava.gov/CCC/#tab=Find	Consider developing a citizen reporting app or enlisting a service like See Click Fix to manage public works requests.
FY 2014-2018 Capital Improvement Program Project Evaluation and Criteria Scoring **Pg. 1**	Criteria #2 - Public Health and Safety How does the project eliminate or prevent an existing health, environmental, or safety hazard? Project completely eliminates or prevents an existing health, environmental, or safety hazard. 5pts Project partially eliminates or prevents an existing health, environmental, or safety hazard. 3 pts Project does not eliminate or prevent an existing health, environmental, or safety hazard. 0 pts	Pedestrian/bicycle projects can arguably partially prevent existing health hazards. Criteria will grant bicycle and pedestrian projects additional qualification points.		Highlight this factor for all bicycle and pedestrian projects.

Plans and Policies

Document Title/Source	Relevant information	Comments	Model Programs or Best Practices	Policy recommendation
FY 2014-2018 Capital Improvement Program Project Evaluation and Criteria Scoring **Pg. 1**	Criteria # 3 - Infrastructure Investment / Protection How does the project protect and preserve the City's infrastructure? The project improves and / or protects the City's infrastructure. 5pts The project maintains the City's current infrastructure. 3 pts The project does not protect or preserve the City's infrastructure. 0 pts	Pedestrian/bicycle projects should improve the city's infrastructure. Criteria will grant bicycle and pedestrian projects additional qualification points.		Highlight this factor for all bicycle and pedestrian projects.
FY 2014-2018 Capital Improvement Program Project Evaluation and Criteria Scoring **Pg. 1**	Criteria #1 – City Council Adopted Strategic Vision and/or Priorities How does the project help meet the goals of the City Council Strategic Vision and/or the City Council Priorities? Project meets the goals of the City Council Strategic Vision and/or Priorities. 5 pts Project does not meet the goals of the City Council Strategic Vision and/or Priorities. 0 pts	Pedestrian/bicycle projects meet City Council Strategic Vision goals, including: A green city, a healthy city, and a connected community. Additionally, pedestrian/bicycle projects would contribute to achieving the City Council Goal 2: Be a safe, equitable, thriving and beautiful community. Criteria will grant bicycle and pedestrian projects additional qualification points.		Highlight this factor for all bicycle and pedestrian projects.
FY 2014-2018 Capital Improvement Program Project Evaluation and Criteria Scoring **Pg. 2**	Criteria # 8 - Ties in to other projects / organizations Does the project tie into other existing or proposed projects, and/or will the project be done in partnership with another non-City organization? The project ties into another existing project(s) or the project will be done in partnership with another non-City organization. 5 pts The project does not tie into another existing project and will not be done in partnership with another non-City organization. 0 pts	Pedestrian/bicycle projects should tie into other projects. It may not be done in partnership with other organizations. Criteria may grant bicycle and pedestrian projects additional qualification points.		No policy change needed.

Plans and Policies

Document Title/Source	Relevant information	Comments	Model Programs or Best Practices	Policy recommendation
FY 2014-2018 Capital Improvement Program Project Evaluation and Criteria Scoring **Pg. 2**	Criteria #6 - Environmental Sustainability/LEEDS building certification How does the majority of the project support the City of Charlottesville's environmental sustainability goals and commitments? Project directly meets the City's environmental sustainability goals/commitments (e.g., the project is directly related to a sustainability initiative and/or is committed to pursuing LEED certification for new construction or major renovations, where applicable) 5 pts Project contributes to the City's environmental substantiality efforts. 3 pts Project neither fulfills a LEED requirement nor does it contribute to the City's environmental substantiality efforts. 0 pts	Pedestrian/bicycle projects can support environmental goals and commitments. Criteria will grant bicycle and pedestrian projects additional qualification points.		Highlight this factor for all bicycle and pedestrian projects.
FY 2014-2018 Capital Improvement Program Project Evaluation and Criteria Scoring **Pg. 2**	Criteria #7: Encouragement of economic development How will the project help stimulate development or redevelopment of properties and/or encourage economic development in the City corridors? The project will encourage increased economic development in the City's corridors. 5 pts The project will not encourage increased economic development in the City's corridors. 0 pts	Pedestrian/bicycle projects increase access to areas which can have a beneficial economic impact and encourage further development. Criteria may grant bicycle and pedestrian projects additional qualification points.		No policy change needed.
FY 2014-2018 Capital Improvement Program Project Evaluation and Criteria Scoring **Pg. 2**	Criteria #9: Improves and/or increases level of service provided by the City How does the project improve and/or increase the level of service provided by the City? The project improves and/or increases the level of service provided by the City. 5 pts The project does not improve and or/increase the level of service provided by the City. 0 pts	Pedestrian/bicycle projects will increase the City's level of service. Criteria will grant bicycle and pedestrian projects additional qualification points.		Highlight this factor for all bicycle and pedestrian projects.

Plans and Policies

Document Title/Source	Relevant information	Comments	Model Programs or Best Practices	Policy recommendation
Municipal Code Chapter 15 - Motor Vehicles and Traffic **Article VI. Bicycles and Mopeds** **Sec. 15-246**	Riding and skating on sidewalks and the downtown mall. (a) No person shall ride a bicycle, an electric power-assisted bicycle or moped on any sidewalk or other area designated exclusively for pedestrian traffic including, without limitation, the pedestrian mall area on Main Street between the Ninth Street bridge and Ridge-McIntire Road; provided however, that this prohibition shall not apply to on-duty police officers and other uniformed emergency services personnel using the pedestrian mall. For the purposes of this section the terms electric power-assisted bicycle and moped shall have the meanings set forth within § 46.2-100 of the Virginia Code. (b) No person shall ride or use rollerskates, rollerblades, skateboards, scooters, or similar devices on wheels or runners on the above-described pedestrian mall area on Main Street.	Riding a bicycle on the sidewalk is illegal. All bicyclists must ride in the roadway.		Consider amending policy to allow small children to ride on the sidewalk.
Municipal Code Chapter 15 - Motor Vehicles and Traffic **Article VI. Bicycles and Mopeds** **Sec. 15-252**	Helmets required for riders age fourteen (14) and younger of bicycles and certain other motorized vehicles. (a) Every person fourteen (14) years of age or younger shall be required to wear a protective helmet which meets the Consumer Product Safety Commission standard whenever riding or being carried on a bicycle, electric personal assistive mobility device, toy vehicle, electric power-assisted bicycle, motorized skateboard or motorized scooter on any highway, street, sidewalk or bicycle path. (b) A violation of any provision of this section shall be punishable by a fine of twenty-five dollars ($25.00). However, such fine shall be suspended (i) for first-time violators or (ii) for any violator who, subsequent to the violation but prior to imposition of the fine, purchases a helmet of the type required by this section.	Bicycle helmets are required for riders under the age of 14.		No policy change needed.

Plans and Policies

Document Title/Source	Relevant information	Comments	Model Programs or Best Practices	Policy recommendation
Municipal Code Chapter 28 - Streets and Sidewalks **Article I. Sec. 28-25** **Removal of snow, sleet and ice from sidewalks**	Sec. 28-25. - Removal of snow, sleet and ice from sidewalks. (a) It shall be the duty of every owner and/or occupant of every house or lot which abuts or fronts on, or is otherwise situated on, a paved sidewalk or walkway to have all snow removed from such sidewalk or walkway within twenty-four (24) hours after the same has ceased falling. This requirement shall exist whether or not an unpaved strip of publicly-owned property runs between the paved sidewalk and the private property line and the words "abuts," "fronts on," "otherwise situated on," should be interpreted in accord with such requirement. The duty of snow removal imposed on each owner and/or occupant by this section extends only to that portion of a particular paved sidewalk or walkway which runs in front of that particular owner's or occupant's private property. (b) The provisions of subsection (a) of this section shall apply to ice or sleet on sidewalks or walkways, except that the same, when it cannot be removed without damage to the sidewalk or walkway, shall be covered, within the period of time specified, with sand, ashes or some other substance which will render it safe for travel. (c) Whenever any house or lot is unoccupied, it shall be the duty of the owner or the agent of the owner thereof to have the snow or ice removed from the sidewalk or walkway abutting, fronting on, or otherwise situated on such owner's property as is required by this section. (d) A warning shall be issued for a violation of this section. The warning shall be posted on the property or delivered by hand to the property owner and/or occupant, and shall provide the owner and/or occupant twenty-four (24) hours in which to correct the conditions. If after such warning and the passage of twenty-four (24) hours, the owner or occupant of the property affected by the provisions of this section shall fail to abate or obviate the condition, the director of neighborhood development services may do so and charge and collect the cost thereof from the owner or occupant of the property affected in any manner provided by law.		**Ann Arbor Snow Removal Practices** The City of Ann Arbor, MI provides residents with e-mail updates indicating deadlines for snow removal. Residents can pick up salt/sand mixture at city yard free of charge (BYO bucket and shovel) Source:http://www.a2gov.org/departments/field-operations/Pages/SnowRemoval.aspx	Consider providing residents with salt/sand mixture to help keep sidewalks clear during the winter. Providing free salt/sand mixture to residents helps keep sidewalks cleared during winter. Charlottesville could consider distributing the mixture to property owners similar to the way it delivers leaf collection bags.

Trails

Document Title/Source	Relevant information	Implication	Model Programs or Best Practices	Policy recommendation
Charlottesville Standards & Design Manual **Pg. 39 Sec. 209 D** **https://www.charlottesville.org/modules/ShowDocument.aspx?documentid=10377**	2. When two-way shared use trails are located adjacent to a roadway, wide separation is desirable to demonstrate to both the bicyclist and the motorist that the path functions as an independent facility for bicyclists and others. For curb and gutter streets, the bicycle or multi-use trail shall be a minimum of 6 feet from the back of the curb.	6' from curb minimum requires substantial amount of right-of-way. Design guidelines affect the installation of bicycle and pedestrian facilities in new development projects for the city.		Adopt a set of street design guidelines that follow best practices for bicycle facilities on various street types.
Charlottesville 2003 Bicycle and Pedestrian Facilities Master Plan **Chapters 4-1, 4-2, & 4-3**	These chapters provided very detailed design guidelines for off-street and on-street facilities Off Street guidelines, pg. IV-3 On Street guidelines, pg. IV-46	Design guidelines affect the installation of bicycle and pedestrian facilities in new development projects for the city and should be consulted during new trail design.		Adopt a set of street design guidelines that follow best practices for bicycle facilities on various street types. Adopt a set of standard trail typologies for off-street facilities based on their primary use (i.e. commuter route, recreation).
Charlottesville Comprehensive Plan 2006 **Chapter 6 - Transportation** **Pg. 131**	In 2006 a Trails Planner position was created within the Department of Parks and Recreation. One of the primary tasks assigned to the trails planner is implementation of the recommendations in the Bicycle and Pedestrian Facilities Master Plan.	The comprehensive plan identifies a person responsible (or at least someone who could help) implement pedestrian/bicycle projects, whether they are or are not in a park.		No policy change needed.
Charlottesville 2003 Bicycle and Pedestrian Facilities Master Plan **Chapter 5 Pg. V-12**	Off street recommendations: Rivanna River Moore's Creek Meadow Creek Rock Creek Unnamed Creek at Jordan Park Rails with Trails 250 Bypass Trail Holiday Drive Trail	List of recommendations for Off-Street bicycle improvements, these trails should be assessed for future improvements. These trails should be incorporated into the city-wide bicycle network.		No policy change needed.

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Appendix F

Active Trans Priority Tool Process Description and Complete Project List

Sidewalk Project Ranking Criteria

Cost Estimate Assumptions

Active Trans Priority Tool Process Description and Complete Project List

The large number of bicycle projects complicates the phasing and implementation of building the bicycle and pedestrian networks. An objective and transparent prioritization process was used to quantitatively evaluate and compare each project. The resulting project prioritization list will be a valuable tool to determine the phasing of implementation. Phasing of the network should not only consider the project prioritization, but also take into account available funding, concurrent construction and planning efforts, and public support.

Project groupings

The first step to prioritizing the recommendations is to group individual recommendations into projects. This Plan Update grouped the 240+ recommendations into 92 separate projects that take into account the two following characteristics:

- Corridors – recommendations that create a corridor or part of a corridor are combined into a single project
- Neighborhood – recommendations in an area that share similar recommended facilities are grouped into a single project

The project map shows how bicycle recommendations are grouped together.

ActiveTrans Priority Tool

The ActiveTrans Priority Tool (APT) is a step-by-step methodology, developed by the National Cooperative Highway Research Program, to evaluate and prioritize bicycle and pedestrian improvements along existing roadways. The APT was designed to help local communities and agencies establish a flexible and transparent project prioritization process that also incorporates community values.

The APT is a spreadsheet tool that helps users identify factors and variables for prioritization, determine individualized scaling measures, measure and input data, and calculate prioritization scores. The APT's output is a ranked list of projects.

The APT is available online at the Pedestrian and Bicycle Information Center website. You can download the tool at http://www.pedbikeinfo.org/planning/tools_apt.cfm. Also, a guide and webinar for using the APT is available at http://www.pedbikeinfo.org/training/webinars_PBIC_LC_120414.cfm. The results of APT for this Plan Update can be found at the end of this appendix.

Factors and variables for Bicycle Projects

The APT uses factors and variables to organize how the data is measured in the prioritization process. Factors are categories that group variables together based on similar characteristics and they are used to represent the values of the community.

In addition to choosing the factors used in the prioritization, the City and the Steering committee determined the weights used to compare the relative importance of each factor. Each factor is given a weight from one to ten, which is then used to multiply the un-weighted score for each project.
In this prioritization, the following factors and factor weights are used:

Table 1: Factor Weights	
Factor	**Factor Weight**
Equity	8
Existing roadway conditions	4
Implementation Effort	4
Network connectivity	10
Public support	8
Safety and demonstrated need	10

Under this factor and factor weighting scheme, network connectivity and safety and demonstrated need are given the most influence in the prioritization. Equity and public support are weighted slightly less. Existing roadway conditions and implementation effort are given the least amount of influence in the prioritization.

Variables are the characteristics of roadways and neighborhoods that can be measured. They are the core element of the prioritization process and are categorized into the factor groups. Variables can include measureable elements such as *distance to a school or transit stop*, *number of barriers along a specific route*, or *average annual daily traffic along certain routes*.

Unlike the prioritization factors, variables are not given specific weights. This means that all variables within a single factor are weighted the same. The data entered into the APT is the raw measurement for each project variable. The data is then scaled so that variables with different values can be compared with each other. In most instances, variables are scaled proportionately, so that the highest value is given a value of ten, the lowest value is given a score of zero, and the remaining values are provided proportional values between zero and ten. In a few instances, the data is scaled into quantiles, this done to limit the impact of outlier data. The table below shows each variable, its factor group, and its scaling process.

Table 2: Factor Descriptions			
Factor	Factor Weight	Variable	Score and scaling
Equity	8	Population density	Projects in areas with higher population density receive higher scores; scaled proportionately
		Level of poverty	Projects in areas with higher levels of poverty receive higher scores; scaled proportionately
Existing roadway conditions	4	Average annual daily traffic (AADT)– motor	Projects along routes with higher AADT receive higher scores, scaled

		vehicles	by quantile to reduce impact of outliers
		Posted speed limit	Project along roads with higher speed limits receive higher scores; scaled proportionately
Implementation Effort	4	Planning level cost estimate	Less expensive projects receive higher scores; scaled by quantile to reduce impact of outliers
		Major action needed	For each project, the major action is considered the implementation action that will be the most impactful to traffic and nearby residents. Projects with less impactful major actions receive higher scores; scaled proportionately Major actions are listed from least to most impactful: 1. Signage 2. Pavement marking 3. Road diet 4. Lane diet 5. Reverse motor vehicle traffic direction 6. Remove turn lane 7. Construct new facility 8. Alter curb location 9. Consolidate parking (street parking on one side of road only) 10. Remove parking (remove all street parking)
Network connectivity	10	Demand	Projects along routes with higher bicycle demand receive higher scores; scaled proportionately
		Connections to trails (proposed)	Projects with more connections to proposed trails receive higher scores; scaled proportionately
		Connections to on-road facilities (proposed)	Project with more connections to proposed on-road bicycle facilities receive higher scores, scaled proportionately
		Bicycle facility type in Bicycle Vision Network	Projects along proposed bicycle arterials, bicycle corridors, and

			bicycle local routes receive 3, 2, and 1 points respectively; scaled proportionately
Public support	8	Percentage of project that is along a route that the public currently or would like to take, identified by public wikimap	Projects with higher percentages receive higher scores; scaled proportionately
Safety and demonstrated need	10	Bicycle level of traffic stress	Projects along routes with higher levels of traffic stress receive higher scores; scaled proportionately
		Proximity to bicycle barrier, identified by public wikimap	Projects near more barriers receive higher scores; scaled proportionately

Prioritization results

The list below shows all of the bikeway facility recommendation ranked in order based on the steering committee factor weighting. Project Locations with an asterisk (*) designate a project or part of a project as also listed under the 2014-2015 Pavement Management List with expected road re-surfacing projects contingent upon available funding.

Table 3: Project Ranking

Prioritization Rank	Location	ID on Project Map	Prioritization Score
1	JEFFERSON PARK AVE*	57	326.3186
2	W MAIN ST*	94	325.3534
3	UNIVERSITY AVE	55	320.5454
4	RIDGE MCINTIRE RD*	60	310.1232
5	W HIGH ST*	67	296.2495
6	GRADY AVE	77	291.9349
7	JEFFERSON PARK AVE	87	290.377
8	PRESTON AVE/BARRACKS RD	66	286.1706
9	PARK ST*	9	274.9134
10	W MARKET ST	62	274.4829
11	ALDERMAN RD	53	272.2286
12	PRESTON AVE*	46	270.1264
13	MONTICELLO AVE	83	269.2475
14	MILLMONT ST	88	268.2806
15	10TH ST NW	11	265.473
16	HYDRAULIC RD	93	265.2353

17	9TH ST NE	64	265.1368
18	5TH ST SW	52	264.8984
19	RUGBY RD*	92	260.5059
20	RIDGE ST	51	256.6566
21	PARK ST	8	255.9142
22	LONG ST	81	252.4726
23	E WATER ST	59	250.9338
24	EMMET ST S*	48	249.9737
25	E HIGH ST*	65	247.3206
26	ELLIOTT AVE*	80	246.7971
27	CHERRY AVE	71	245.7308
28	10TH ST NE	75	244.6645
29	STADIUM RD*	19	243.4422
30	AVON ST*	68	240.0017
31	FONTAINE AVE	86	236.5716
32	JEFFERSON PARK AVE	54	236.4756
33	EMMET ST N	47	234.4178
34	ROSE HILL DR	85	234.3487
35	GARRETT ST	13	233.3098
36	CARLTON RD*	1	229.1824
37	LOCUST AVE	76	224.6822
38	MONTICELLO AVE	84	220.9675
39	MEADE AVE	78	217.4382
40	10TH ST NW	73	276.8823
41	BARRACKS RD	91	217.1085
42	E MARKET ST*	63	211.9732
43	CHERRY AVE*	58	210.9791
44	MONTICELLO AVE	82	207.7855
45	14TH ST NW*	23	206.0118
46	DEL MAR DR*	89	196.4022
47	MELBOURNE RD	50	191.4422
48	ELLIOTT AVE	79	188.1904
49	RIALTO ST	4	187.0032
50	MONTICELLO RD	5	182.9729
51	6TH ST SE	49	181.6099
52	MONTICELLO RD	74	181.2382
53	WILLARD DR	72	176.8097
54	LOCUST AVE	45	171.5436
55	W JEFFERSON ST*	42	171.5003
56	2ND ST NW*	61	170.5699
57	ANTOINETTE AVE*	20	166.5088
58	PARK ST	43	166.4042

59	MASSIE RD	22	164.1052
60	E MARKET ST	17	162.8194
61	LEWIS MOUNTAIN RD	33	162.2678
62	3RD ST NE*	16	161.1966
63	8TH ST NW	12	156.6741
64	DAIRY RD	6	156.2001
65	LEE ST	32	155.6707
66	BELLEVIEW AVE*	3	145.4858
67	GORDON AVE	2	145.0061
68	LITTLE HIGH ST	40	143.7712
69	COPELEY RD	26	143.5328
70	MEADOWBROOK RD	30	140.8838
71	CHESAPEAKE ST	39	140.7631
72	LOCUST AVE	7	138.6864
73	WATSON AVE	15	136.9304
74	LANE RD	35	136.491
75	IVY RD	56	175.8772
76	RIDGE ST	38	135.438
77	KERRY LN LINK	44	135.2368
78	7 1 2 ST SW	21	127.6986
79	BRANDYWINE DR	28	124.0531
80	RUGBY AVE	69	123.5036
81	FARISH ST	14	123.2827
82	SUNSET AVE*	27	119.5635
83	MADISON AVE*	10	119.2223
84	SHAMROCK RD*	18	114.6842
85	CAMERON LN	29	111.8567
86	KENWOOD LN	41	111.118
87	RIVER RD	70	109.4375
88	PROSPECT AVE*	36	108.4671
89	GROVE RD	90	100.5392
90	HILLSDALE DR	34	94.54971
91	MONTE VISTA AVE	31	90.58676
92	VILLAGE RD	37	85.3937
93	GREENBRIER DR	24	71.8003
94	ANGUS RD	25	71.09629
-	CEDAR HILL RD[1]	95	-

[1] The Cedar Hill Road recommendation was added to the project list after the prioritization process and was not included in the APT prioritization.

The table below shows projects included in the Bicycle and Pedestrian Master Plan Update that include segments scheduled in the Pavement Management Plan. The table also shows which roads are scheduled for pavement management within each project. These projects should also be considered as possible near-term bicycle infrastructure projects.

Table 4: Projects with segments included in Pavement Management Schedule

Project ID on Map	Master Plan Update Project Name	Street Scheduled for Pavement Management
1	Carlton Ave	Carlton Avenue
3	Belleview Avenue	Belleview Avenue
9	Park Street	Park Street
10	Madison Avenue	Madison Avenue Amherst Street Greenway Road
16	3RD Street	Nelson Drive
18	Shamrock Road	Shamrock Road
19	Stadium Road	Shamrock Road
20	Antoinette Avenue	Forest Hills Avenue
23	14TH Street NW	14TH Street NW
27	Sunset Avenue	Sunset Avenue
36	Prospect Avenue	Prospect Avenue
42	West Jefferson Street	Jefferson Street
46	Preston Avenue	Preston Avenue
48	Emmet St	Emmet Street
57	Jefferson Park Avenue	Emmet Street
58	Cherry Avenue	Rock Creek Road
60	Ridge McIntire Road	Ridge McIntire Road
61	2ND Street NW	2ND Street NW
63	Market Street	Market Street
65	E High Street	High Street
67	W High Street	High Street
68	Avon Street	Avon Street
80	Elliot Avenue	Elliot Avenue
89	Del Mar Road	Dairy Road
92	Rugby Road	Burnley Avenue
94	West Main Street	West Main Street

New Sidewalk Project Ranking Criteria

In 2011, Planning Commission approved the following Prioritization Criteria for new sidewalk construction:

- Commercial and Residential Connections
- Connected Streets
- Functional Roadway Classification
- Low Income Areas
- Overlap of School Areas
- Park Access
- School Proximity
- Sidewalk exist on one side of the road
- Transit Stop Access

The criteria guided the development of the 2011-2016 Sidewalk Priority List.

As part of the 2014-2015 Bicycle and Pedestrian Master Plan Update, the 2016-2021 Sidewalk Priority List will be developed. At the September 17, 2014 Bicycle and Pedestrian Master Plan Advisory Committee Meeting, the sidewalk prioritization criteria were reviewed and the following comments were provided:

- Reassess criteria regarding sidewalks existing on one side of the road, particularly if the sidewalk switches from one side of the road to the other, and dependent on the road classification (i.e. higher volume roads should have sidewalks on both sides)
- Prioritize gaps in an otherwise continuous sidewalk route over a route without any sidewalks
- Criteria should also include:
    - Areas near grocery stores
    - Local government buildings
    - Social Service Access
- When prioritizing sidewalks in school zones, the traffic volumes should be considered for prioritization between school zones
- School zones should have higher priority than other criteria
- Include inadequate and substandard sidewalks in prioritization

The following proposed sidewalk criteria attempt to address the comments received to date:

Proposed new sidewalk construction projects to be evaluated based upon scores received using the following criteria and scoring schedule. Score is determined by accumulated point total. Generally these criteria are used only for evaluating projects to construct new sidewalk spanning at least one block in length.

A. Sidewalk Context Connectivity:

- No existing sidewalks (4 points)
- Partial sidewalk exists (3 points)
- Sidewalks on adjacent block (2 point)

B. Proximity to Attractors/Facilities:

- Distance to bus stop (within 1/8 mile = 2 point, within 1/4 mile = 1 point)
- Distance to a school includes pre-school, daycare, public, private (within ¼ mile = 2 points, within ½ mile = 1 point)
- Distance to school bus stop (within 1/8 mile = 1 point) – pending available date
- Distance to grocery/shopping/office center (within ¼ mile = 1 point)
- Distance to civic building or park (within ¼ mile = 1 point)

C. Street Traffic:

- Presence of on-street parking (yes = 1 point)
- Posted speed limit (30 mph or greater = 1 point)
- Existence of an identified speeding problem using NTC standards (yes = 1 point)
- Located on arterial road (yes = 2 points)
- Located on collector (yes = 1 point)
- Reported crash within last 3 years (yes = 2 point)

D. Land Use (GLUP) Designation:

- High Density Residential (yes = 2 points)
- Commercial/Mixed use (yes = 2 points)
- Office/Apartment/Hotel (yes = 1 point)
- Located in neighborhood with low car access/low-income area (yes = 1 point)

E. Related Projects:

- Combined with previously planned street work (yes = 1 point)
- Adjacent private development approved (yes = 1 point)

Total = _____ points

F. FIELD ANALYSIS TO BE CONDUCTED BY STAFF to DETERMINE FEASIBILITY and COMMUNITY SUPPORT

- Right-of-way is available (yes = 1 point)
- Minimal impact upon healthy trees (yes = 1 point)
- Minimal cut & fill required (yes = 1 point)
- Strong support from neighbors (yes = 1 point)
- Sidewalk is obstructed or partially obstructed (yes = 1 point)

Consider a system of negative points for unbuildable sidewalks or if a sidewalk exists on the other side of the road in a residential/low traffic volume context

Complete Sidewalks Projects List

The following sidewalk list was compiled from citizen requests sent to staff via email, phone calls, and Town Hall Meetings over the last 5 years, as well the more recent Streets that Work neighborhood and public meetings. Members of the Master Plan Steering Committee and staff also contributed to the list of sidewalk gaps. Sidewalks highlighted in yellow are the top scoring sidewalk for each neighborhood. Those sidewalks in red are less than 200' in length and should be considered for improvement with pedestrian funds.

SCORE	STREET	SIDE OF ROAD	START	END	LENGTH (FEET)	PLANNING LEVEL COST ESTIMATE	NEIGHBORHOOD
18	Monticello Avenue	East	Altavista Ave	1103 Druid Ave	170	$37,400	Belmont
17	Monticello Avenue	West	Quarry Ave	Druid Ave	800	$176,000	Belmont
14	Avon Street	West	Druid Ave	Palantine Ave	920	$202,400	Belmont
14	Rosser Avenue	South	12th St NW	Preston Ave	525	$115,500	Venable
13	12th Street NE	West	E Jefferson St	Meriwether St	860	$189,200	Martha Jefferson
13	9th Street NW	Both	West St	Preston Ave	450	$99,000	10th&Page
13	Albemarle Street	Both	Dale Ave	Rivanna Ave	1300	$286,000	Rose Hill
12	6th Street SW	East	Dice St	306 6th St SW	40	$8,800	Fifeville
12	10 1/2 Street NW	East	Grady Ave	West Street	420	$92,400	10th&Page
12	Blenheim Avenue	South	Rialto St	Existing	200	$44,000	Belmont
12	Bolling Avenue	South	Monticello Ave	Meridian Ave	76	$16,720	Belmont
12	Bolling Avenue	Either	6th St SE	Avon St	470	$103,400	Belmont
12	West Main Street	South	Existing	Ridge St	225	$49,500	Star Hill
12	High Street	Both			1600	$352,000	Martha Jefferson
12	Rose Hill Drive	West	Rugby Ave	Madison Ave	1470	$323,400	Barracks/Rugby
11	Barracks Road	SW	Existing	250/29 Bypass	530	$116,600	Barracks Road
11	Elliott Avenue	North	Ridge St	Avon St	1320	$290,400	Ridge Street
11	Harris Street	Both	Rivanna Ave	McIntire Rd	1540	$338,800	N. Downtown
11	Hazel Street	South	E High St	1424 Hazel St	80	$17,600	Martha Jefferson
11	Hydralic Road	West	Dominion Pwr	250 Bypass	525	$115,500	The Meadows
11	Meade Avenue	West	Market St	Jefferson St	555	$122,100	N. Downtown
11	Montrose Avenue	Either	Rialto St	Avon St	350	$77,000	Belmont
11	Oakleaf Lane	Both	Rose Hill Dr	Greenleaf Ln	540	$118,800	Barracks/Rugby
11	Orange Street	East	Existing	High St	80	$17,600	Martha Jefferson
11	Poplar Street	North	St Clair Ave	Gillespie Ave	570	$125,400	Martha Jefferson
10	6th Street	West	Blenhiem Ave	Montrose Ave	100	$22,000	Belmont
10	9th Street SW	East	Elm St	Existing	760	$167,200	Fifeville
10	Barracks Road	South			225	$49,500	Barracks/Rugby
10	Blenheim Avenue	North	Castalia St	Monticello Ave	435	$95,700	Belmont
10	Brunswick Rd	east	JPA	Park Rd	770	$169,400	Fry's Spring
10	Cedar Hill Road	Either	N. Bershire Rd.	Hydraulic Rd	1070	$235,400	The Meadows
10	Chancellor St	SW	Madison Ln	Rugby Rd	315	$69,300	Venable
10	Fontaine Ave	North	City Line	JPA	2400	$528,000	JPA

SCORE	STREET	SIDE OF ROAD	START	END	LENGTH (FEET)	PLANNING LEVEL COST ESTIMATE	NEIGHBORHOOD
10	Gentry Lane	West	250 Exit	Greenleaf Ln	1200	$264,000	Barracks/Rugby
10	Greenleaf Lane	Both	Gentry Ln	Rose Hill Dr	2750	$605,000	Barracks/Rugby
10	Jefferson Park Avenue	North	McCormick Rd	W Main St	3715	$817,300	JPA
10	Market Street		Woolen Mills	Downtown	5820	$1,280,400	Woolen Mills
10	Oak Street	East	Oak St	Monticello Ave	650	$143,000	Ridge Street
10	Orange Street	West	Poplar St	Existing	200	$44,000	Martha Jefferson
10	Raymond Road	West	Ridge St	Baylor Ln	380	$83,600	Ridge St.
10	Rugby Road Ext	West	Dairy Rd	250 Bypass	2600	$572,000	Barracks/Rugby
10	St Clair Avenue	NW	Calhoun St	Hazel St	2270	$499,400	Locust Grove/Martha Jefferson
9	1924 Greenbrier Drive	South	1924	Existing	70	$15,400	Greenbrier
9	5th Street	Both	Existing	City Limits	2410	$530,200	Fry's Spring
9	6th Street	SE			700	$154,000	Belmont
9	8th Street	West	SNL	Market St	290	$63,800	N. Downtown
9	11th Street NW	West	Existing	West St	200	$44,000	Venable
9	18th Street	Both	E Market St	Short 18th St	735	$161,700	Woolen Mills
9	Allen Drive	SE	Willard Dr	Moseley Dr	500	$110,000	Fry's Spring
9	Avon Street	Either	Moores Creek	Palantine Ave	570	$125,400	Belmont
9	Azalea Drive	Both	Harris Rd	Ex. walk on both sides	270	$59,400	Fry's Spring
9	Bing Lane	Both	Existing	Cleavland Ave	290	$63,800	Johnson Village
9	Blenheim Avenue	Either	6th St	Avon St	460	$101,200	Belmont
9	Blenheim Avenue	North	Rialto St	Meridian Ave	500	$110,000	Belmont
9	Bunkerhill Drive	North	Yorktown Dr	Jamestown Dr	480	$105,600	Greenbrier
9	Calhoun Street	NE	Locust Ave	Existing	450	$99,000	Locust Grove
9	Christa Court	Either	Christa Ct	Flint Dr	700	$154,000	Fry's Spring
9	Cleveland Avenue	Both	Existing	Rainier Rd	175	$38,500	Johnson Village
9	Druid Avenue	SW	Rialto St	Monticello Ave	1500	$330,000	Belmont
9	Kenwood Lane		Yorktown Dr	Meadowbrook Heights Ln	950	$209,000	Greenbrier
9	Little High Street	Both	12th St NE	Meade Avenue	1043	$229,460	Martha Jefferson
9	Locust Avenue	SE	Peartree Ln	Locust Ln	875	$192,500	Locust Grove/Martha Jefferson
9	Montrose Avenue	Either	6th St	Avon St	470	$103,400	Belmont
9	Preston Avenue	South	Grady Ave	Rugby Rd	2480	$545,600	Venable
9	Preston Lane	North	Existing	Burnley Ave	720	$158,400	Venable
9	Raymond Road	east	Baylor Ln	Existing	770	$169,400	Ridge Street
9	Rialto Street	either	Belmont Park	Bincoe Ln	1050	$231,000	Belmont
9	Sycamore Street	North	St. Charles Ave	601 Locust Ave	150	$33,000	Martha Jefferson
9	Rives St	NW	Ridgecrest Dr	Existing	520	$114,400	Belmont

SCORE	STREET	SIDE OF ROAD	START	END	LENGTH (FEET)	PLANNING LEVEL COST ESTIMATE	NEIGHBORHOOD
8	Altavista Avenue	SW	6th St	Monticello Ave	2600	$572,000	Belmont
8	Azalea Drive	West	Trailhead	#223	500	$110,000	Fry's Spring
8	Brookwood Drive	Both	Ridge St	Existing	290	$63,800	Ridge Street
8	Dellmead Lane	North	Ricky Rd	Cedar Hill Rd	200	$44,000	The Meadows
8	E Market Street	SW	Franklin St	Riverside Ave	1650	$363,000	Martha Jefferson
8	Early Street		1508		360	$79,200	Belmont
8	Franklin Street	West	Carlton Ave	RR	275	$60,500	Belmont
8	Gillespie Avenue	East	Existing	Existing	290	$63,800	Martha Jefferson
8	Highland Avenue	Both	Existing	Rainier Rd	185	$40,700	Johnson Village
8	Jamestown Drive	East			440	$96,800	Greenbrier
8	Jefferson Park Avenue	SW	Jefferson Park Circle	Camellia Dr	1800	$396,000	Fry's Spring
8	John Street		11th St	Existing	220	$48,400	Venable
8	Locust Avenue	West	Poplar St	Calhoun St	2920	$642,400	Locust Grove
8	Montrose Avenue		700, 900, 1000 blocks		2000	$440,000	Belmont
8	Park Road	North	JPA	Brunswick Rd	570	$125,400	Fry's Spring
8	Park Street	East	Melbourne Rd	Existing	725	$159,500	Locust Grove
8	Riverdale Drive	South	#1319	Willow Dr	120	$26,400	Martha Jefferson
8	St Charles Avenue	Both	St Charles Ct	Calhoun St	1100	$242,000	Locust Grove
8	Sunset Avenue		At bus stop		550	$121,000	Fry's Spring
8	Yorktown Drive	Both	Brandywine Dr	Bunkerhill Dr	2075	$456,500	Greenbrier
7	7th Street NW	North	Page St	West St	575	$126,500	10th&Page
7	Agnese Street	West	Elizabeth Ave	1231 Agnese St	1000	$220,000	Locust Grove
7	Alderman Road	NW	Kent Rd	Morris Rd	1260	$277,200	LewisMountain
7	Alderman Road	East	Lewis Mountain Rd	Thomson Rd	230	$50,600	LewisMountain
7	Baylor Lane	North	Raymond Rd	Existing	220	$48,400	Ridge Street
7	Burnley Avenue	SW	Tunlaw Pl	Rugby Rd	270	$59,400	Venable
7	Brandywine Drive	West	Greenbrier Rd	Hydraulic Rd	3990	$877,800	Greenbrier
7	Holmes Avenue	Both	Existing	Locust Ln	555	$122,100	Locust Grove
7	Jefferson Park Circle		Park Rd	McElroy Dr	900	$198,000	Fry's Spring
7	Locust Lane	NE	Locust Ave	St Clair Ave	340	$74,800	Locust Grove
7	Monte Vista Avenue	Either			1400	$308,000	Fry's Spring
7	Monticello Road	West	Druid Ave	Elliott Ave	100	$22,000	Belmont
7	Park Street		North Ave	250 Bypass	1310	$288,200	Locust Grove
7	Prospect Avenue	SE			645	$141,900	Fifeville
7	Rose Hill Drive	West	Walker Elementary	Oxford Rd	1630	$358,600	Barracks/Rugby
7	Shale Place				240	$52,800	Ridge Street
7	Shamrock Road	North	Thomas Dr	RR	400	$88,000	Fry's Spring
7	Smith Street	SW	Locust Ave	St Clair Ave	600	$132,000	Locust Grove
7	St Charles Court	both	Existing	Locust Ln	130	$28,600	Locust Grove

SCORE	STREET	SIDE OF ROAD	START	END	LENGTH (FEET)	PLANNING LEVEL COST ESTIMATE	NEIGHBORHOOD
7	Yorktown Drive	West	Bunkerhill Dr	Grove Rd	2700	$594,000	Greenbrier
6	Carlton Avenue	South	Across from old concrete plant		740	$162,800	Belmont
6	Fairway Avenue	Either	Chesapeake St	#317	400	$88,000	Woolen Mills
6	Franklin Street	West	Across from RWSA property		1300	$286,000	Belmont
6	Meadowbrook Heights Road	SE	Yorktown Dr	Kenwood Ln	1700	$374,000	Greenbrier
6	Oak Street	East			500	$110,000	Ridge Street
6	River Road	West	Existing	Existing	790	$173,800	Locust Grove
6	Rugby Road	North	Rugby Pl	Preston Ave	1400	$308,000	Venable
6	St. Clair Avenue	NW	River Rd	Locust Ln	345	$75,900	Locust Grove
6	Winston Road	NE	Rugby Rd	Winston Ter	825	$181,500	Venable
6	Woodland Drive	East	Park Ln	Cleavland Ave	1200	$264,000	Fry's Spring
5	Fendall Lane	East	Edgewood Ln	Winston Ter	300	$66,000	Venable
5	Lewis Mountain Road	North	Alderman Rd	Existing	300	$66,000	LewisMountain
5	Lewis Mountain Road	North	Existing	Existing	370	$81,400	LewisMountain
5	Moseley Drive	West	Willard Dr	Harris Rd	1500	$330,000	Fry's Spring
5	Rosser Lane	NW	Winston Rd	Westview Rd	620	$136,400	Venable
5	Stribling Avenue	Either	JPA	City Limits	2720	$598,400	Fry's Spring
5	Winston Terrace	South	Winston Rd	Existing	260	$57,200	Venable
5	Willard Drive	West		Harris Rd	1400	$308,000	Fry's Spring
3	Cedar Hill Road	West	Angus Rd	Dellmead Ln	450	$99,000	The Meadows
					TOTAL COST	**$25,319,580**	

Cost Estimate Assumptions

Project Assumptions

Item	Unit Price	Unit	Notes
Lane Markings	$ 1.50	LF	Includes assumed eradication of existing lines
Trail Asphalt (10' wide)	$ 145.00	LF	Average price for off-road trail construction
Separeated Bicycle Lane Pavement & Widening (6' wide + 2' road pavement)	$ 28.61	LF	Based on $70/Ton for asphalt at 4" deep and $25/CY for stone at 6" deep and $25/CY of excavation
Roadway Widening (per bike lane)	$ 31.55	LF	Assumes 5' wide bike lane and 2' of additional widening
Curb	$ 25.00	LF	
Utility Poles	$ 25.00	LF	Assume 200' spacing at $5000 per pole
Drainage Improvements	$ 30.80	LF	Assume 1 MH Top, 1 Inlet, and 8' of pipe every 200'
Bike Symbol	$ 1.25	LF	Assumes 200' spacing
Sharrow	$ 1.60	LF	Assumes 200' spacing
Sidewalk (5' wide)	$ 220.00	LF	Cost estimate used by City of Charlottesville
Signal/ADA Upgrades	$ 100,000.00	EA	Estimated cost. Will vary based on signal equipment locations, etc.

Unit Prices to Develop Estimates

Item	Unit Price	Unit
Excavation	$ 25.00	CY
Asphalt	$ 70.00	Ton
Aggregate/Subbase	$ 25.00	CY
Curb	$ 25.00	LF
Utility Pole Relocation	$ 5,000.00	EA
length of pipe	$ 6,200.00	EA
Sidewalk	$ 220.00	LF
Signal/ADA Upgrades	$ 100,000.00	EA

Abbreviations Key

CY - Cubic Yard
EA - Each
LF - Linear Foot
SY - Square Yard

Table 4.1 City-County Bike and Pedestrian Projects

ID	Name	Description		Type	Area	Existing Estimate	YOE Term	Total (Inflated to YOE)
		From	To					
US 29 Projects								
BP1	Rivanna River Trail	Existing Rivanna River Trail (City)	Berkmar Dr Ext (Proposed)	MUP	7.22	$1,287,000	M	$1,802,000
BP2	Pen Park-Darden Towe	Pen Park	Darden-Towe	Bridge		$3,426,000	S	$4,176,000
BP3	Belvedere Blvd	S Fork Rivanna River	E Rio Rd	MUP	1.57	$1,036,2000	S	$1,263,000
BP4	Commonwealth Dr	Hydraulic Rd	Four Seasons	SW/BL	1.09	$1,700,400	M	$2,381,000
BP5	Hydraulic Road	Crossing Over US 29	Crossing Over US 29	Bridge	1.00	$3,426,000	S	$4,176,000
BP6	Townwood Drive	Cool Springs Rd	Hydraulic Rd	BL	0.21	n/a	S	$192,000
						Total Cost		**$13,990,000**
City Projects								
BP1 2	McIntire Park E Trail	McIntire Park W Trail	McIntire Rd Ext	MUP	0.35	$231,000	S	$282,000
BP1 3	McIntire Park W Trail	McIntire Park E Trail (Bridge)	Route 250 Bypass Trail	MUP	0.35	$231,000	S	$282,000
BP1 4	Route 250 Bypass Trail	McIntire Park W Trail	Hydraulic Rd	MUP	0.75	$495,000	S	$603,000
BP1 5	Emmet St/ Route 29	University Ave	Hydraulic Rd	MUP	1.77	$1,049,400	M	$1,636,000
BP1 6	Barracks Road	Georgetown Rd	Old Garth Rd	MUP	1.59	$745,800	L	$1,688,000
BP1 7	Meadow Creek Parkway/ Greenbrier Parkway	Meadow Crk	John Warner Prkway	MUP	1.13	n/a	S	$909,000
BP1 8	Jefferson Park Ave	JPA	W Main St	BL	0.60	n/a	M	$630,000

Table 4.1 City-County Bike and Pedestrian Projects

ID	Name	Description		Type	Area	Existing Estimate	YOE Term	Total (Inflated to YOE)
		From	To					
BP1 9	Cherry Ave/Elliot Ave	Avon St	Cleveland Ave	BL	2.06	n/a	S	$1,883,000
BP2 0	Harris Rd	5th Street	Camelia Dr	BL	0.63	n/a	S	$576,000
BP2 1	Rugby Rd/ Dairy Rd/ Grove Rd	US 250	Melbourne Rd	BL	1.50	n/a	M	$1,575,000
BP2 2	Barracks Rod/Preston Ave	10th Street	Georgetown Rd	BL	1.88	n/a	M	$1,974,000
BP2 3	E High Street	US 250	9th Street	SW	1.70	n/a	S	$1,679,000
						Total Cost		**$13,717,000**
Pantops Projects								
BP24	Rivanna River Connector (State Farm)	Riverview Park (City)	S Pantops Drive	MUP	0.40	$264,000	S	$322,000
BP25	River Bend Drive / South Pantops Dr.	Route 250/20	State Farm Boulevard	BL	0.85	n/a	M	$893,000
BP26	St. Farm Blvd	S. Pantops Dr	US 250	SW	1.02	n/a	S	$1,007,000
BP27	S. Pantops Dr	Existing sidewalk on S. Pantops Dr	Overlook Pl	SW	0.10	n/a	S	$99,000
BP28	Hansen Rd across US 250	Hansen Rd	north sidewalk US 250	CW	1.00	n/a	S	$128,000
						Total Cost		**$2,577,000**
South Projects								
BP36	Old Lynchburg Rd	5th St Ext	City Limit	SW/BL	0.44	$686,400	S	$837,000
BP37	5th St Extended	Old Lynchburg Rd	Bent Creek Dr	MUP	1.13	$745,800	M	$1,044,000

Table 4.1 City-County Bike and Pedestrian Projects

ID	Name	Description		Type	Area	Existing Estimate	YOE Term	Total (Inflated to YOE)
		From	To					
BP38	Moore's Creek	Sunset Ave	Old Lynchburg Rd	MUP	0.59	$389,400	S	$475,000
BP39	Carlton Bridge	Moore's Crk Trail	Linden Ave	MUP	0.07	$46,200	S	$56,000
BP40	Moore's Creek - 5th St Crossing	Bent Creek Rd	5th St Ext	MUP	1.00	$660,000	S	$805,000
BP41	Bent Creek Path	Avon Street	5th Street	MUP	1.14	$752,400	S	$917,000
BP42	Biscuit Run	Moore's Crk	Reynovia Lake	MUP	1.40	$924,000	S	$1,126,000
BP43	Route 20	City Limit	Avon St Ext	SW/BL	2.69	$4,196,400	S	$5,115,000
BP44	Avon St Extended	Bent Crk Dr Trail	Mill Creek S	MUP	2.67	$1,188,000	S	$1,448,000
BP45	Trail/Tunnel Michie Tavern Lane	Moore's Crk Trail (proposed)	Saunders Trail	MUP	0.75	$495,000	M	$693,000
						Total Cost		**$12,516,000**

BL - Bke lanes
SW - Sidewalk
MUP - Multi-use path or shared facility
CW-Crosswalk
Bridge- Bike and pedestrian bridge

This funding amount is derived from Group 4 of the MPO's Transportation Improvement Program
All estimates are planning-level, based on facility-type and distance
*** Project areas refer to map reference not jurisdiction***