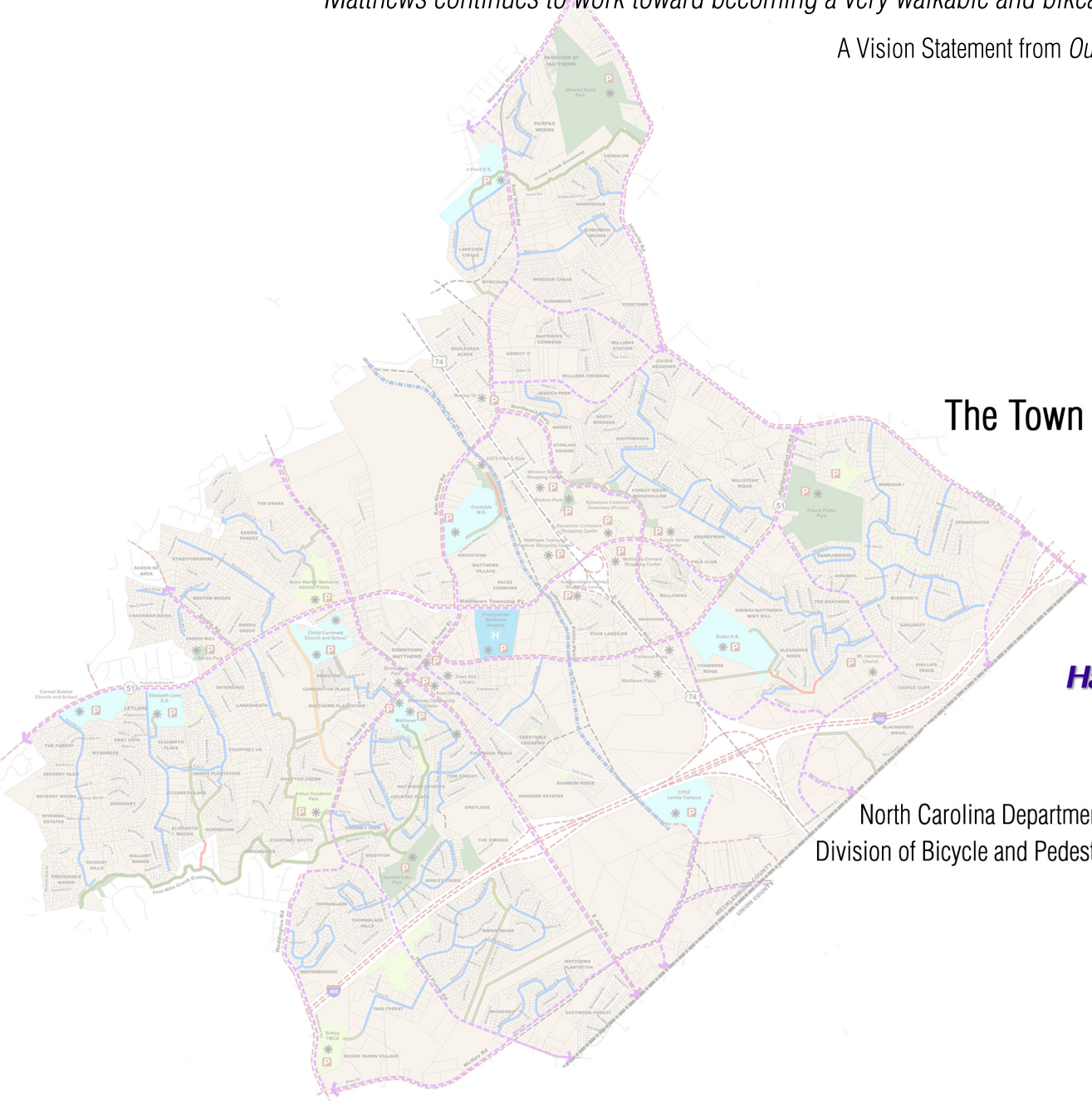
Comprehensive Bicycle Plan

"Matthews continues to work toward becoming a very walkable and bikeable community."

A Vision Statement from *Our Town - Our Vision*



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in conjunction with

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The Town of Matthews Comprehensive Bicycle Plan

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EXECUTIVE SUMMARY

The Comprehensive Bicycle Plan is a significant step toward incorporating bicycles into the planning, infrastructure and culture of Matthews. The plan can also be the catalyst for changing residents' attitudes to view bicycling as a legitimate and desirable mode of transportation. The projects, procedures, programs and policies contained in this Bicycle Plan respond to the existing physical structure of the Town and the family-oriented population of Matthews.

Benefits of Bicycling

Many communities across the United States have capitalized on the benefits of bicycling. In North Carolina, municipalities such as Cary and Carborro have developed a system of bicycle facilities that have positively impacted those communities in multiple ways. The benefits of bicycling are multifaceted and address several important issues facing communities today. The benefits include:

- Transportation alternative to the automobile by linking key destinations.
- The opportunity to integrate exercise into an everyday activity promotes an active healthy lifestyle.
- Bicycling can expand opportunities for residents of a community to meet and interact with the other residents resulting in a stronger social network.
- The economic benefits include higher property values for residences connected to a system of bicycle facilities and personal savings realized by reducing gasoline consumption and maintenance cost for automobiles.

The Process

The Town of Matthews received a matching grant through the 2004 North Carolina Department of Transportation (NCDOT), Bicycle and Pedestrian Planning Grant Initiative to develop the Comprehensive Bicycle Plan. The planning process was a yearlong effort with ongoing public input. One group that consistently contributed to the process was the Matthews Bicycle Steering Committee. The committee was comprised of local bicycle advocates, representatives of the Town staff and other regional and state agencies. They contributed knowledge of existing conditions and feedback on the Bicycle Plan.

Evaluation of Existing Conditions

Existing physical conditions, including existing bicycle facilities, were documented and evaluated. The major creeks, already identified as planned county greenway locations, provide significant opportunities to connect neighborhoods with other destinations. The existing road system is well distributed through Town although US-74 and I-485 are significant barriers to bicycling across Town.

Demographic analysis revealed that Matthews is a community of young family residents: 84% of the Town is under the age of 55, the median age is 36, and 75% of residents are part of a family unit. A survey gathered citizen input on existing conditions and identified user characteristics. The survey results and other input at public meetings indicated that bicycling in Matthews was limited due, in large part, to lack of facilities and the general automobile congestion on the roads within the Town. Community input also indicated that bicycle connectivity between cul-de-sac neighborhoods was very desirable, particularity since that type of connectivity would serve the novice riders, children and families. An on-road connector between the Town and roads through rural Union County was identified as a needed facility that would serve the advanced cyclists in the community.

Existing Programs, Plans and Policies

State bicycle initiatives have affected Matthews through funding and technical assistance for this Plan. A Town visioning effort completed in 2005 identified creation of a walkable and bikeable community as an important component for the future of Matthews. The Town instituted a policy to include bicycle planning in all roadway projects. Several existing regulations address bicycle issues, including a helmet ordinance, connectivity of subdivisions and requirements for subdivisions to include provisions for recreation needs. One impediment to bicycle planning and facility implementation in Matthews is the lack of a designated staff position responsible for coordinating the planning, funding and implementation of bicycle facilities.

Policies

The policies are the foundation for the Comprehensive Bicycle Plan and for creating a bicycle friendly community. In the Plan, there are accompanying objectives that define the intent of each policy. The policies are as follows:

- Policy 1: Incorporate bicycle awareness and improvements into all Town planning functions.

- Policy 2: Institutionalize the inclusion of bicycle facilities as part of all publicly and privately funded roadway construction, improvement and maintenance projects.
- Policy 3: Bicycle facilities constructed in the Town of Matthews should meet NCDOT and AASHTO standards.
- Policy 4: Coordinate the implementation of the Matthews Comprehensive Bicycle Plan with surrounding municipalities, Union and Mecklenburg counties, regional agencies and the NCDOT.
- Policy 5: Pursue multiple funding sources for the development of bicycle facilities, including local, state and private funding sources.
- Policy 6: Promote safe bicycling and motorist awareness of bicyclists.
- Policy 7: Promote the transportation, economic, health, and community building benefits of a bicycle friendly community.

Bicycle System

The bicycle system refers to more than the network of bikeways and trails; it also includes bicycle related procedures, programs and planning efforts. In the Bicycle Plan, specific projects and tasks were identified to create a system of bicycle facilities and improve safety and awareness of bicycles in Matthews. A description, potential funding sources and the relative priority was developed for each project, procedure, program or planning effort.

The bikeways identified in the plan include on-road facilities such as bike lanes, wide outside lanes and widened shoulders, and off-road facilities such as multi-use paths, off-road connectors and greenways. Facility definitions are located in Section 1: Introduction. Novice riders and children prefer off-road facilities such as multi-use paths or greenways. Advanced road cyclists utilize on-road facilities more frequently. Mountain bike enthusiasts prefer more challenging off road trails. The combination of on- and off-road facilities will create a system of bicycle improvements that connect all Town destinations and neighborhoods and includes facilities suitable for all user types and will often be used by all types of cyclists. Figure 1a: Bicycle System Map illustrates the planned bikeways.

Five high priority bicycle improvement projects were identified as potential pilot projects, see Section 5: The Bicycle System for maps and descriptions of each potential pilot project. The potential pilot projects include each facility type contained in the Bicycle Plan. Each project was selected because it will significantly contribute to the goal of creating a system of bicycle facilities. The

projects were also assessed to ensure that they can be constructed. The high priority projects from which the pilot projects will be selected are summarized below.

- Four-Mile Creek Greenway/Matthews Elementary School Greenway Connector – This greenway provides off-road access parallel to Trade Street from Squirrel Lake Park to Matthews Elementary School.
- Elizabeth Lane Off-Road Connector and Neighborhood Signed Connector – This project will include a signed connector on Elizabeth Lane/Mangionne Drive/Barington Place combined with an off-road connector to the bicycle parking on the school property.
- Lakenheath/Plantation Estates Off-Road Connector – This off-road connector will provide access from the dead-end Bubbling Well Road to the bike lane on Fullwood Lane.
- Primary Bikeways for Rural Road Access – The bikeway along Trade Street, Pleasant Plains Road and Weddington Road, will provide direct routes for cyclists to rural roads beyond Matthews into Union County.
- Butler High School Off-Road Connector and Neighborhood Signed Connector – This project includes an off-road connector between the school and the neighborhood and a signed neighborhood connector on Swaim Drive, Bathgate Lane, O'Malley Drive, Heathershire Lane, Strathaven Drive and Fraserburgh Drive.

In addition to the high priority construction projects listed above, there are high priority non-physical improvements. These are as follows:

- Create the role of bicycle coordinator to oversee the development of the Bicycle Plan and to coordinate bicycle friendly improvements and activities with other agencies, organizations and individual initiatives.
- Incorporate into the Town budget funding for the design, development and maintenance of bicycle facilities.
- Amend the Town's zoning, subdivision and other development codes and ordinances to require private developers to build bicycle facilities in new and expanding land development projects.
- Coordinate with Charlotte Mecklenburg Schools to incorporate the State's "Basics of Bicycling Program" into the curriculum of elementary schools, coordinate law enforcement initiatives with the Matthews Police Department.

- Retain and expand the existing Bicycle Rodeo, Fourth of July Bicycle Parade and Bike Week activities to include bicycle safety programs and improve awareness of bicycling.

Implementation Strategy

Town Commissioners will need to adopt the Comprehensive Bicycle Plan and the policies, procedures and programs outlined in the plan. Ongoing support of facility construction will be required to realize the plan. Determining the relative merits and priority for each project is an ongoing process. An assessment/evaluation process and strategy is outlined in the plan to address that continuing effort.

Successful implementation of the plan will require the Town to establish a Bicycle Coordinator position. It will also be critical for Matthews to institute ongoing coordination for bicycle related issues and initiatives within the Town, with adjacent municipalities and counties, with regional planning agencies and with the State of North Carolina. Implementation strategies designed to foster coordination within the Town include ongoing interdepartmental coordination discussions. Regular meetings with the City of Charlotte's Bicycle Coordinator will foster coordination with the City of Charlotte.

The Future

Matthews is at a critical juncture in its development with traffic congestion worsening and significant growth pressures. The Town needs to act now to integrate bicycle facilities into its infrastructure and planning. Through the development of this plan and the Visioning process, residents of Matthews expressed a desire for a bicycle friendly community. A system of bicycle facilities will provide Town residents with opportunities to pursue an active lifestyle through an alternative mode of transportation. However, creating a bicycle friendly community requires not only physical facilities and the accompanying plans and programs; it also requires a way of thinking that considers bicycling as another mode of transportation and an integral part of the make-up of Matthews. As the Comprehensive Bicycle Plan is implemented and facilities are built, attitudes about bicycling will evolve and the residents Matthews will reap the benefits.

SECTION 1: INTRODUCTION

Vision Statement

Bicycling must be an integral part of the highly livable, family friendly Town of Matthews. Residents can choose cycling as a safe and convenient transportation option for moving within and beyond the Town. A system of bicycle facilities is an integral part of Matthew's transportation system and should provide opportunities for residents to pursue an active healthy lifestyle, expanded recreation options and reinforce a sense of community.

The Benefits of Bicycling

There are many benefits of bicycling; therefore, the Town of Matthews should develop a system of bicycle improvements. A system of bicycle improvements affects transportation options, social and health issues and the economics of individuals and the community as a whole.

Transportation Benefits

- Bikeways are an essential part of a comprehensive transportation network, offering connectivity between origins and destinations such as neighborhoods, downtown, schools, libraries, civic centers, parks, offices, shopping areas and employment centers. A comprehensive system of bicycle facilities, created by linking on-road bicycle facilities, multi-use paths and greenways can be a valuable component of the Town's transportation network.
- A system of bicycle facilities in Matthews will provide residents with an alternative to the automobile. As Matthews becomes more congested it is possible that shorter in-town trips, particularly those that require traveling through downtown, may be accomplished faster with a bicycle than an automobile.
- A system of bicycle facilities can be an important link between individual homes and the public transportation system. It provides access to the public transportation system for those who do not own an automobile, for those who limit their automobile use or for those individuals who make the lifestyle choice of utilizing public transportation for any reason.
- A system of bicycle facilities provides independent travel options for children and those who do not have a driver's license. It provides opportunities to cycle safely to school, friend's houses and other key destinations, minimizing daily automobile trips.

Definitions

Ancillary Facilities *- These components of the bicycle system support the use of bikeways and shared roadways such as bicycle racks and bollards to keep automobiles out of multi-use paths.*

Bicycle Facilities *– This is a general term denoting improvements and provisions to accommodate or encourage bicycling, including parking and storage facilities, all bikeways and shared roadways and facility maps.*

Bicycle Lane *– A 4- to 6-foot wide portion of a roadway, which is designated by striping, and/or signing and pavement markings for the preferential or exclusive use of bicyclists.*

Social and Health Benefits

- As the nation struggles with an obesity epidemic, bicycling is an excellent way to integrate exercise into everyday activities. Jeffery Kaplan director of the Center for Disease Control, warns, "Obesity is an epidemic and should be taken as seriously as any disease epidemic".[1] Studies have shown that as little as 30 minutes a day of moderate-intensity exercise (such as cycling) can significantly improve mental and physical health.
- Providing opportunities for bicycling activities close to where people live and work is an important component for promoting healthy lifestyles for Matthews' residents. It also affords additional opportunities for interaction between neighbors and Town residents. It reinforces the Town's character as a "family oriented community".
- Using a bicycle as a form of transportation or for recreation demonstrates to children that a healthy lifestyle can be part of daily experiences. Traditionally, children are the segment of the population that spend the greatest portion of their time on bicycles but since 1998 there has been a 15% decrease in the time American children spend cycling. Some contributing factors to the decline are heavy automobile traffic and an overall lack of safe places to bicycle.[2]
- Air pollution and noncompliance with federal air pollution standards is a concern facing the Charlotte-Mecklenburg region. Due to those concerns, some residents may choose to modify their automobile-dependent lifestyles. By creating a system of bicycle facilities, residents will have an opportunity to respond to pollution concerns by reducing their automobile use.

Economic Benefits

- Recent trends have demonstrated that homebuyers value walking and bicycling amenities when purchasing a home. In research conducted for the real estate industry by American Lives, Inc., homebuyers ranked walking and bicycling trails as the third most desired component of planned communities.[3] Therefore, communities with a system of bicycle facilities might realize increased home values.
- With escalating fuel costs, using a bicycle can result in direct savings by reducing gasoline consumption and automobile expenses.

Definitions

Bikeway *– A generic term for any road, street, path or way which in some manner is specifically designated for bicycle travel, regardless of whether such facilities are designated for the exclusive use of bicycles or are to be shared with*

Designated Bicycle Route *– A system of bikeways designated by the jurisdiction having authority with appropriate directional and informational route markers, with or without specific bicycle route numbers. Bicycle routes may include a combination of various types of bikeways, may used to establish a continuous routing system.*

Greenway *- Off-road paths are designed for pedestrians and cyclists. They usually follow the stream systems and are a minimum width of 10 feet. Within this plan greenways are multi-use paths that are either a planned Town greenway or are part of the Mecklenburg County Greenway Master Plan.*

Past Efforts

Prior to the development of this Comprehensive Bicycle Plan, there have been limited bicycle related planning, regulatory (policies and ordinances) and implementation efforts in Matthews.

Planning efforts include the following:

- The Town of Matthews Connectivity Study (2000) and the Town of Matthews Preliminary Open Space Plan (2004) identified potential bikeway corridors.
- The Mecklenburg County Greenway Master Plan (1999) identified two future greenways located within the Town of Matthews, the Four Mile Creek Greenway and Irvins Creek Greenway.

The following bicycle related policies and ordinances have been enacted in Matthews since 1990.

- The subdivision ordinance requires connectivity with adjacent neighborhoods and or adjacent undeveloped tracts.
- A signage program identifies future off-road connection locations.
- Children under the age of 16 are required to wear bicycle helmets (also a state law).

Existing bicycle facilities include:

- Bicycle lanes along Fullwood Lane
- The bicycle parking racks at the Library/Town Hall and Community Center.
- "Share the Road" warning signs installed on several streets.

There are individuals that have advocated for a more bicycle friendly community. Their involvement has included participating in bicycle education programs at local elementary schools and supporting the Town's initiative to pursue the development of the Comprehensive Bicycle Plan.

Education/awareness efforts have included:

- Matthews Parks and Recreation Bike Rodeo
- Matthews Bike Week Events
- Safety and awareness training in schools by the Matthews Police Department

Definitions

Multi-Use Path *– Is a path that is physically separated from motorized vehicular traffic by an open space or barrier and either within the highway right-of-way or within an independent alignment. Multi-use paths might also be used by pedestrians, skaters, wheelchair users, joggers and other non-motorized users. A multi-use path should be a minimum of 10 feet wide.*

Off-Road Connector *- An off-road path with a minimum width of 10 feet that connects bikeways or bikeways and destinations. In Matthews this includes multi-use paths along creeks not identified as part of the Mecklenburg County Greenway System or as a planned Town greenway.*

Wide Paved Shoulders *- A wide paved shoulder has a minimum of 4 feet of additional pavement area on the shoulder of the roadway designed to accommodate bicycles. Additional width is desirable on roadways with higher traffic volumes or adjacent lane widths less than 12 feet.*

Current Trends/Initiatives

Annual community events that highlight bicycling in Matthews include the June Bike Rodeo, Bike Week, and ongoing efforts by the Matthews Police Department to educate school children about safe bicycling practices and helmet use.

The Charlotte Area Transit System (CATS) programs for bikes on buses and the covered bicycle parking at the Park and Ride station in Matthews are part of a CATS initiative to develop multi-modal facilities.

The Town has adopted the "*Our Town Our Vision*". The visioning process has noted and examined the positive and negative factors that impact the Town. The following is an excerpt from one of the Town's *"Vision Statements"* written from the perspective of the future in 2025:

> *Walkable and Bikeable Community*
>
> *Matthews continues to work toward becoming a very walkable and bikeable community. New streets, as well as improvements to existing streets, are designed for multiple users (motorists, bicyclists, and pedestrians) - according to the level of traffic intended. Most streets have sidewalks on both sides; many larger streets have bike lanes. Designated crosswalks are evident throughout Matthews, especially in the downtown area. In general, there is a high level of connectivity between streets, sidewalks, bikeways, walking trails, and greenway trails. Parking lots are also connected to allow shoppers to go from store to store without entering the highway. This continuous system provides for a multitude of driving, walking and bicycling alternatives. Cul-de-sacs are employed sparingly, in favor of fully connected neighborhood streets.*

At the state level, North Carolina's Department of Transportation (NCDOT) assists communities in North Carolina to become more bicycle friendly. Matthews received a matching grant through the 2004 NCOT Bicycle and Pedestrian Planning Grant Initiative to develop this Comprehensive Bicycle Transportation Plan. The NCDOT Division of Bicycle and Pedestrian Transportation also provided significant technical assistance in the development of this plan. The state conducts educational workshops for city, county and state staff, and North Carolina based consultants on planning for bicycles. That effort strives to improve the knowledge base about bicycling issues throughout the state.

Definitions

Shared Roadway *– A shared roadway is a roadway which is open to both bicycle and motor vehicle travel. This may be an existing roadway, street with wide curb lanes, or road with paved shoulders.*

Wide Curb Lane *– A wide curb lane is the outside travel lane that is directly adjacent to the curb and can accommodate both bicycle and motor vehicle traffic comfortably. It is recommended that the lane width be 14 feet wide, not including the gutter pan.*

Goals and Objectives

The following goals and objectives were developed with input from the Bicycle Steering Committee, Town staff and the public. The policies and objectives required to meet these goals are located in Section 4: Policies and Objectives. Projects are included in Section 5: Bicycle System Plan.

Bicycle Facility Goals

- Create a safe system of connecting bikeways between neighborhoods and destinations, such as schools, parks, shopping and downtown.
- Create a safe and effective way for advanced cyclists to access rural roads.
- Provide bikeway connectivity to existing and future CATS facilities.
- Provide bicycle parking and other facilities at destinations within Matthews.
- Develop maintenance standards for bicycle facilities.
- Develop a method to communicate problems with bicycle facilities to the Town.
- Build facilities to ASHTO and NCDOT standards.

Planning Goals

- Include bicycle facilities in road improvement projects, for both state and Town owned roads.
- Designate a staff position to oversee the implementation of the Comprehensive Bicycle Plan.
- Create an awareness and knowledge base within Town staff about the fundamental aspects of the Comprehensive Bicycle Plan and the role each department will play in implementing the plan.
- Integrate planning for bicycles into all local and regional planning activities
- Maintain an up to date inventory of bicycle facilities on public and private property, and dedicated right-of-way (ROW) for future facilities.
- Create a bicycle map when there are a substantial number of bicycle facilities.

Education and Awareness Goals

- Teach children in Matthews the bicycle skills needed to enhance their safety.
- Educate cyclists and drivers about the bicycle laws and sharing the road.

- Communicate bicycle laws and road etiquette to the culturally diverse communities.
- Create awareness of the value of bicycle connectivity.
- Communicate to the residents of Matthews how a system of bicycle facilities can positively affect them.
- Educate business owners and realtors that bicycle facilities are an asset for their business.
- Use partnerships with local institutions to educate the public about the health benefits of bicycling.
- Create easy access to information about bicycling in Matthews.

Scope and Purpose of the Plan

The plan scope includes compiling and analyzing the existing physical conditions, policies and regulatory framework affecting bicycles in the Town of Matthews. Using that analysis, data and ongoing public input, recommendations were developed for the bicycle facilities, projects, policies, implementation strategies and funding options. The planning process included participation from a wide variety of stakeholders including; Town staff, NCDOT Division of Bicycle and Pedestrian Transportation, the Bicycle Steering Committee and the general public. Planning initiatives, policies and projects proposed by the City of Charlotte and Mecklenburg County were also evaluated to ascertain possible impact on Matthews.

The purpose of the Comprehensive Bicycle Plan is to develop a system of bicycle facilities that offer transportation options for the residents of Matthews. The plan includes:

- An assessment of current conditions, initiatives and opportunities in the Town.
- Recommendations on bicycle facilities that are most appropriate for the Matthews road network and land development patterns.
- Identification of user groups in Matthews, the specific needs of each group, and how the system of bicycle facilities can address their requirements.
- A review of policies and institutional framework required to enact and implement the plan.
- A map of existing and proposed bikeways.
- Prioritized project descriptions with proposed funding sources.

- Graphics and descriptions of bikeway and ancillary facility standards and guidelines.
- Implementation strategies, including identifying tasks for Town staff, elected officials, state, regional and state agencies, advocacy groups and partnership organizations.
- General funding information.

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[1] http://www.bicyclinginfo.org/hf/index.htm
[2] http://www.bicyclinginfo.org/hf/index.htm
[3] http://www.americanlives.com

SECTION 2: EVALUATING EXISTING CONDITIONS

Overview

This section of the plan outlines the existing conditions in Matthews such as the characteristics of the roadway network, resident demographics and Town institutions. Understanding those existing conditions is an essential step in creating a comprehensive bicycle plan that reflects the unique character of the community.

Determining Community Concerns, Needs and Priorities

Public Input

Public involvement is an essential building block for a successful bicycle plan. It is needed to develop a plan that responds to residents' needs and concerns, and to generate public enthusiasm and interest for the implementation of the plan. The planning process included input from the residents of Matthews, utilizing a variety of forums to generate comments, concerns and ideas.

To receive regular input from a cross-section of residents and the Town institutions, a bicycle steering committee was formed. The committee included interested citizens and bicycle advocates representing different skill levels and bicycling preferences such as parents that primarily bicycle with their children, long distance on-road bicyclists and mountain bicycling enthusiasts. Other committee members included representatives from the Town of Matthews Planning, Police, Parks and Recreation and Cultural Resources departments; North Carolina Department of Transportation Bicycle and Pedestrian Division (NCDOT); Charlotte Area Transit System (CATS); Presbyterian Hospital Matthews; the Charlotte/Mecklenburg Bicycle Coordinator; Fit City Challenge; high school students; and a local bicycle shop.

The bicycle steering committee met on a monthly basis to develop the plan, goals and vision and respond to the planned bicycle system and other aspects of the plan.

To elicit public opinion, two public meetings were held and a survey was administered. The meetings provided an opportunity for the citizens to view the plan and provide comments about the proposed system map. The survey, *"How Bikable is Your Community?",* posed specific questions about current bicycling conditions in

Matthews. The survey was available at Town facilities, local businesses and on the Town of Matthews webpage. A copy of the survey and the survey tabulation is located in Appendix C. The survey responses consistently identified the following conditions:

- Most respondents noted that Matthews is a uncomfortable bicycling environment due to the lack of bicycle accommodations or the bicycle compatibility of roads.
- Signalization at intersections does not accommodate bicycles.
- Automobiles pass too close and too fast.
- The lack of signage, bicycle parking facilities and dedicated bicycle routes results in an unfriendly bicycling environment.

Public Input from Other Town Initiatives

Due to several important and controversial proposed land developments projects, as well as a general need to define the community's vision for the future of Matthews, the Town embarked on a visioning effort in 2005. Over 200 residents attended the first meeting for the "Town of Matthews Long Range Vision." They were asked to identify both the desired aspects of the Town's future and unwanted future conditions. Transportation planning and improvements received the greatest number of comments as a desired future aspect. Many comments also focused on the desire to reduce traffic congestion. A walkable/bikable community was identified as one of the 12 aspects of a desired future. In several different ways, the residents indicated that there was significant concern about how traffic will impact the future of Matthews.[1]

Responsibilities and Concerns

To be effective, a comprehensive bicycle plan must address the key issues and concerns facing the Town staff and involved agencies with regard to the planning and implementation of bicycle facilities, policies and programs. The issues, concerns and processes of the affected departments or agencies are described below.

Planning Department

The Matthews Planning Department is responsible for the following bicycle related issues or processes:

- Reviewing subdivision plans for compliance with connectivity requirements.
- Documenting and completing the process for acceptance of right-of-way dedicated for future connectivity.
- Notifying the Public Works Department about new locations for Future Trail signage.
- Serving as project manager of the Comprehensive Bicycle Plan.
- Developing policies that support bicycle facilities in Matthews.

- Proposing and writing new ordinances or revising existing ordinances that affect bicycle facilities
- Mapping Town facilities and infrastructure.
- Coordinate with the Matthews representative on the Technical Coordinating Committee (TCC) of the Mecklenburg Union Metropolitan Planning Organization (MUMPO).
- Monitoring NCDOT projects and Town projects for inclusion of bicycle facilities.
- Proposing projects for inclusion in the Transportation Improvement Program (TIP)
- Communicating to the Board of Commissioners and the Planning Commission bicycle related issues

There is no designated staff member responsible for overseeing bicycle related issues or processes in the planning department. The majority of Planning Department Staff time is spent responding to proposed land development projects; thus, limited time is available for administering or starting bicycle related Town initiatives.

Public Works Department

Matthews Public Works Department is responsible for the maintenance and construction of the Town owned roads, sidewalks and many storm water facilities. The department has limited responsibilities for construction or maintenance of bicycle facilities because there are few existing facilities. In the future, the Public Works Department will be responsible for the maintenance of bicycle facilities in town-owned right-of-way and may be responsible for the construction or construction administration of bicycle improvements. It is critical to the success of future bicycle improvements that the Public Works Department is familiar with bicycle facility standards set forth by NCDOT and American Association of State Highway and Transportation Officials (AASHTO).

Parks, Recreation and Cultural Resources Department

The Matthews Parks, Recreation and Cultural Resources Department and the Mecklenburg County Park and Recreation Department coordinate on greenway construction. The department encourages bicycling in Matthews through an annual Bike Rodeo and the Fourth of July Bike Parade.

Police Department

The police department upholds the existing state and local laws governing bicycle use and bicycling/motorist and bicycle/pedestrian interaction. They are also involved with teaching bicycle safety in the Matthews schools and the department actively promoted bicycle helmet use when the helmet ordinance was enacted in 2003.

Health Related Institutions and Organizations

In Matthews, there are some key health related institutions, including the Siskey YMCA and Presbyterian Hospital Matthews. FitCity Challenge is a Mecklenburg County initiative to encourage and empower program participants to increase their level of physical activity and change their diet. The Carolina Wellness Coalition is a non-profit organization focused on educating the Charlotte-Mecklenburg region about health related issues. The coalition includes health professionals, alternative medicine providers and related businesses. These institutions and organizations will be future resources and potential partners for the Bicycle Plan Implementation.

User Characteristics

The demographics of Matthews will impact the system of bicycle improvements planned for the Town. Families dominate the population of Matthews. In the 2000 census, one third of the population of Matthews was under age 19 and 78% of residents live in family households.

To create an effective bicycle system it is important to define who will use the system. Bicyclist skill levels can vary significantly with some types of bicycle facilities being better suited for a particular skill level. Adult cyclists are classified into two categories: basic and advanced. The basic cyclists are casual riders or those new to riding. They generally prefer to bicycle on streets with lower traffic volumes or off-road facilities, such as multi-use paths or greenways. Advanced cyclists are comfortable operating their bicycle as a vehicle. The advanced cyclist is comfortable with, and usually prefers, on-road bicycling. Mountain biking cyclists can be grouped into basic and advanced as well, although mountain biking trails are usually located within a park or designated location rather than being part of a connected system of facilities.

In addition to the two types of adult cyclists, there are other groups that will also use the bicycle system if it is responsive to their specific requirements. Although children are not considered basic cyclists they share many of the same traits as the basic cyclists and the facilities best suited for their skill level are the same as those for the basic cyclist.

Other important characteristics of the Town that impact the type of bicycle facilities proposed are the distinct user groups, which include:

- Teenagers
- Commuters
- Culturally distinct groups within the community.

Trip Characteristics

The bicycle survey indicated that the majority of current bicycle usage in Matthews is recreational. Recreational trips noted in the survey results included short trips within neighborhoods or along greenways and longer trips on rural roads in surrounding counties.

The family oriented cyclist uses off-road facilities, such as greenways or multi-use paths. They are intimidated by the complexity of the transportation network of Matthews, and do not want to expose themselves or their children to what they consider unsafe conditions.

Advanced cyclists expressed a desire for a safe route out of Matthews to the rural roads in adjacent counties. Local organized rural road trips originate at the bike shop in downtown. The trips are specifically timed to occur when the traffic congestion in downtown is not a impediment to cycling through Town.

The specific characteristics of bicycle trips in Matthews are difficult to determine and are anecdotal at best. Other cyclists include members of the Hispanic community, most of whom have been observed cycling on main thoroughfares that do not have bicycle facilities. Some users have also been observed riding their bicycle or taking their bike on the bus to and from their place of employment.

Assessment of Existing Physical Conditions

Crash Data

Crash data is another source of information that is used to understand existing conditions. Between the years 1997 and 2002 the Department of Motor Vehicles (DMV) in the Town of Matthews recorded only nine bicycle crashes. For DMV to record a crash there must be a minimum damage amount of $1,000 or an injury. Other crashes involving bicycles could have occurred in Matthews but did not fit the criteria, and therefore were not recorded. The City of Charlotte recorded 511 crashes during the same time frame. The low incidence of crashes does not indicate that Matthews is necessarily a safe bicycling environment, rather it is probably

attributeable to the fact that Matthews has limited bicycle facilities, resulting in very few cyclists riding.

Residents' Assessment of Existing Conditions

The following are reasons cited by residents for not bicycling in Matthews. These are observations from surveys, comments by steering committee members and the general public.

- There is a lack of bicycle facilities.
- The majority of roads that pass through Town and could provide connectivity are thoroughfares with large traffic volumes and many drivers who exceed the posted speed limit.
- Neighborhoods are connected by roads that are unsafe for bicycling,
- There are limited locations for children or novice cyclists to safely bicycle within the Town of Matthews.
- US 74 and I-485 limit cross-town bicycle travel.
- Families with children usually do not consider bicycling to destinations because there is a real and/or perceived lack of time to cycle to the destination.
- There is a lack of enforcement of the laws governing the rights of cyclists.

Gaps, Hazards and Barriers

The Town of Matthews is comprised of many types of streets. Most of those streets are neighborhood streets that have low speeds limits and traffic volumes. Unfortunately there are some streets that create barriers to the overall connectivity of the community. The Town of Matthews has two limited access state highways; Independence Boulevard (US-74) and the Charlotte Outerbelt (I-485). Independence Boulevard bisects the Town of Matthews and does not provide accommodations, such as bridges for bicyclists to easily cross, therefore creating a barrier within the community. Other roads such as Monroe Road and NC 51 (Pineville-Matthews Road/Matthews Township Parkway/Matthews-Mint Hill Road) are not considered barriers that require bridge accommodations for bicycles, but they are very hazardous for bicyclists to cross even at signalized intersections.

Another barrier to bicyclists is downtown Matthews. Downtown is a barrier because of the severe congestion on John Street and Trade Street. At this critical intersection the lane widths are very tight and are not easily accessible to bicyclists.

Street Patterns

Many of Matthews' neighborhood streets are ideal places for bicycling, although they do not connect with adjacent neighborhoods street network. Unfortunately, the

Cul-de-sac pattern

majority of the residential developments are built with a cul-de-sac street pattern. The cul-de-sac pattern is characterized by limited access from major roads, and internal looping roads resulting in little connectivity between neighborhoods via the road network. It is not uncommon to have two adjacent neighborhoods without direct access between them. There is also no consistent connectivity to origin and destination points, such as schools, parks and downtown from the neighborhood street system.

Greenways

The planned greenways for Mecklenburg County typically follow stream corridors or utilize the sanitary sewer right-of-way. The planned greenways, Four Mile Creek Greenway and Irvins Creek Greenway follow an east-west orientation. Grade separation between the greenways in the low lying stream corridors and the elevated roads crossing over the greenways can result in a gap between the two facilities, limiting access.

Transit Interface

The Mathews "Park & Ride", located on Independence Pointe Parkway, is a Charlotte Area Transit System (CATS) facility. This facility provides parking for both motorists and cyclists. Bicycle lockers are provided for cyclists wanting to leave their bicycles behind. The lockers provide protection from vandalism, theft and inclement weather. Alternatively, cyclists can utilize the front-mounted bicycle racks located on CATS buses to take their bicycles with them. This provides the cyclists flexibility, allowing them to load their bicycle in the rack and travel greater distances through the Town or the City of Charlotte.

Inventory and Assessment of Existing Facilities

Condition of Existing Facilities

The 0.9-mile bicycle lane along Fullwood Lane was the first effort to develop a defined bicycle route by the Town of Matthews. The width of the bicycle lane varies from 1 foot to 5 feet and is on both sides of the road. NCDOT and AASHTO design standards indicate that a designated and striped bicycle lane should be a minimum of 4 feet wide. The bicycle lane does not extend the entire length of the roadway; it ends approximately 1000 feet from the Matthews Township Parkway intersection and 120 feet from the South Trade Street intersection. It does not have signage to instruct cyclists and motorists of where the bicycle lane begins and ends.

Other facilities in Mathews, including the Share-the-Road signs and the bicycle parking along Matthews Station Street at the Library/Town hall, meet NCDOT standards outlined in this plan.

Matthews has instituted a program to identify public rights-of-way for future off-road facilities, the *Future Connector Sign Program.* These rights-of-way are required by paragraph 152.21(H) of the Subdivision Ordinance titled "Encourage neighborhood connectivity". A sign is installed in the right-of-way indicating that it is the site of a future off-road connection. The purpose is to inform the public of the future facility. There is no current inventory of which future connectors are signed.

[1] The Town of Matthews. Town of Matthews Long Range Vision – "The Desired Future and the Unwanted Future. (June 7, 2005) p1.

SECTION 3: EXISTING PLANS, POLICIES, PROGRAMS AND ORGANIZATIONS

Local, Regional and State Plans and Guidelines

All of the following local, regional and state plans, policies and programs have had some impact on the Comprehensive Bicycle Plan, and many will continue to play a role as the plan is implemented. Some of these plans are a significant resource for the development of the Comprehensive Bicycle Plan, particularly the Charlotte-Mecklenburg Bicycle Transportation Plan and other state planning resources.

Local Plans

Town of Matthews Comprehensive Parks, Recreation and Open Space Master Plan (scheduled to begin in the winter of 2006) – This plan will describe the future comprehensive network of public parks, recreational facilities and open spaces throughout Matthews. The Comprehensive Parks, Recreation and Open Space Master Plan will be coordinated with the Comprehensive Bicycle Plan.

Our Town - Our Vision (2005) - The Town of Matthews has developed a long-range vision for the community titled *Our Town - Our Vision*. The vision will influence Town decisions on traffic and transportation, commercial development, downtown development, community appearance, parks and recreation, housing and neighborhoods. One of the components identified as part of the community's vision is the creation of a bikeable/walkable community.

CPCC Sector Plan and I-485 Corridor Study (initiated in 2005) - The Town of Matthews is developing plans which will significantly impact future community growth and development in the study area.

Small Area Plan (ongoing as of the summer of 2005) – The study area, bounded by Matthews-Mint Hill Road, US 74, I-485, TankTown Road/the Crestdale neighborhood /InteliCoat, is approximately 300 acres, of which 160 acres was initially acquired by Mecklenburg County in the 1980's as a future landfill site. The County planned to convert the site to recreational use after the landfill was full. In 1999, it was determined that the landfill was not needed. The Town of Matthews and the County explored the option of developing the site and the adjacent, mostly vacant, private property in a coordinated effort. The additional property was included in the planning because it is needed for adequate site access. There are several creeks in the 300 acre site that could provide off-road connectivity within the site. The southeast transit corridor has a proposed station within the site. For Matthews, it is a unique

opportunity to develop a transit-supporting higher density development. Matthews and Mecklenburg County are considering development of a large outdoor sports complex on the county-owned land.

Matthews Preliminary Open Space Plan (2004) – The Preliminary Open Space Plan outlined the components needed to develop a Comprehensive Parks, Recreation and Open Space Master Plan. Based on previous studies, an existing and proposed connectivity map was completed. That connectivity map outlined potential bikeway corridors that follow the major thoroughfares through Matthews, such as NC 51 (Pineville-Matthews Road; Matthews Township Parkway; Matthews-Mint Hill Road), Idlewild Road and Monroe Road.

Town of Matthews Connectivity Study (2000) – This is a two-phase student project. The first phase was an inventory of planned and proposed pedestrian, bicycle and roadway improvement projects contained in county and local-level planning documents. The second phase is a prioritized listing, including a cost analysis of each project based on a rating system. The bikeway and greenway improvements identified in the connectivity study are included in the Comprehensive Bicycle Plan.

Town of Matthews Downtown Master Plan and Design Guidelines (April 1997) – Although this plan does not contain specific recommendations for bikeways, it does identify the need to utilize existing and proposed greenways to serve the downtown area and encourage bicycle use by providing convenient bicycle parking. It identifies the existing green space between the railroad track and Charles Street as a green space to be preserved.

Matthews Land Use Plan – A Guide to Growth (October 2002) – Specific recommendations from the Land Use Plan directly support the development of bikeways and encourage non-vehicular connectivity within the community. These recommendations include the following:

- Develop pedestrian sidewalks, bikeways and similar facilities, which encourage alternative transportation choices, and connect existing portions of off-street paths for greater continuity.
- Require bike facilities to be constructed as a part of construction/road improvement projects to the greatest extent possible.
- Encourage development of the greenway system along floodways, as called for in the Master Park Plan and Mecklenburg County Greenway Master Plan. Encourage the use of greenways as potential links in a bicycle system.

- Encourage the donation of usable recreation areas and passive open space land through the rezoning and subdivision process for neighborhood park development.[1]

Regional Plans

The following plans are included for reference purposes, and are not plans that directly guide the Town of Matthews, though Matthews is often impacted or influenced by trends in the City of Charlotte and Mecklenburg County.

Charlotte-Mecklenburg Bicycle Transportation Plan (1999) – Many policies and recommendations outlined in the Charlotte-Mecklenburg Bicycle Transportation Plan have been implemented. Since the completion of the plan the City of Charlotte has hired a bicycle coordinator. The bicycle coordinator for the City of Charlotte will be a significant resource for the Town of Matthews as implementation begins on the Comprehensive Bicycle Plan.

Charlotte Urban Street Design Guidelines (Draft April, 2005) – The purpose of these guidelines is to ensure that there is a process in place that clearly, consistently and comprehensively considers the needs of motorists, pedestrians and bicyclists when planning and designing streets. [2]

City of Charlotte Zoning Ordinance – In 2005, the City of Charlotte Zoning Ordinance was amended to require bicycle parking facilities in new land development projects. The parking requirements in the Matthews Comprehensive Bicycle Plan are based on the standards contained in Section 12, Part 2: Off Street Parking and Loading, of the City of Charlotte Zoning Code.

Mecklenburg County Greenway Master Plan (1999) – The greenway master plan identifies multiple corridors throughout Mecklenburg County for potential greenways. Two of the identified greenway corridors, Four Mile Creek Greenway and Irvins Creek Greenway, are located in the Town of Matthews. Because they are part of the Greenway Master Plan, construction of those greenways will be funded by Mecklenburg County.

State Plans

2006-2012 Transportation Improvement Program (TIP) – The TIP is a list of transportation improvement projects that the North Carolina Department of Transportation (NCDOT) expects to implement over the next 7 years. The TIP is approved by the North Carolina Board of Transportation (NCBOT) and represents the State's funding priorities.

Guidelines

The following documents represent a collection of the state and national guidelines that the Town of Matthews will utilize to develop bicycle facilities.

- North Carolina Bicycle Facilities Planning and Design Guidelines (1994)
- Manual on Uniform Traffic Control Devices (MUTCD) for Streets and Highways – 2003 Edition
- AASHTO Guide for the Development of Bicycle Facilities (1999)

The Town of Matthews has some street design standards contained in the Charlotte-Mecklenburg Land Development Standards Manual.

Policies and Institutional Framework

Town of Matthews Ordinances

The following existing ordinances affect bicycle facilities in Matthews.

- Helmet Child Protection 71.06. This ordinance was passed in 2003 and requires children under the age of 16 to wear a helmet when riding a bicycle.
- Section 152.21(H) of the Subdivision Ordinance, Encourage Neighborhood Connectivity. This section states that, whenever practicable, residential subdivisions should be designed to connect adjacent neighborhoods by streets, bicycle trails or walking paths in such a manner as to allow for access between neighborhoods and for improving access for emergency services without encouraging through traffic.
- Ordinance 152.21(L) Public Park, Greenway, Recreation, and Open Space sites. The subdivider of each residential subdivision shall dedicate a portion of such land or pay a fee in lieu of land dedication, in accordance with Sections 152.40 and 152.41, for public parks, greenway, recreation, and open space sites to serve the recreational needs of the residents of the subdivision.

Existing Policies

- Consideration of Bicycle Facilities – The Town Commissioners have adopted a policy that future roadway projects will consider bike facilities as part of the design.

Programs and Initiatives

NCDOT Funding Programs – Transportation Improvement Program (TIP)

The TIP is the process that the State of North Carolina uses for the planning, design and construction of state-funded transportation improvement projects. Improvements for bicycling may be included in the TIP process as either part of a programmed roadway improvement project, referred to as "incidental" projects, or as a stand alone project where there is no scheduled roadway improvement, referred to as "independent" projects.

The Division of Bicycle and Pedestrian Transportation (DBPT) works with municipalities around the state to develop a four-year schedule for bicycle projects. To develop this project listing, the Division of Bicycle and Pedestrian Transportation utilizes three sources: the Local Transportation Improvement Program lists produced by the 17 MPOs (Metropolitan Planning Organization) around the state, which derive from separate lists created by the individual municipalities that form the MPO; project requests that are made at the biannual TIP meetings and/or through written requests; and internal Division of Bicycle and Pedestrian Transportation assessment of statewide bicycle project needs.

Once the bicycle improvement list is finalized, the DBPT reviews and prioritizes the list and develops the 4-year schedule of bicycle projects and submits it to the North Carolina Board of Transportation for approval and inclusion in the state's overall TIP.

The following are the TIP funding programs that could be used to assist the Town of Matthews in developing the bicycle system. For a detailed description of these funding programs, see Section 5, pages 5-1 through 5-3.

- NCDOT Bicycle Transportation Improvement Program (Independent Projects)
- NCDOT Bicycle Transportation Improvement Program (Incidental Projects)
- NCDOT Enhancement Program (SAFETEA-LU)
- Congestion Mitigation and Air Quality Funds (CMAQ)
- Discretionary Funding

The projects listed below are on the NCDOT 2006-2012 Transportation Improvement Program (TIP) list and are either partially or completely within the Town of Matthews. As these projects move forward in the planning and design stages, the Town of Matthews should coordinate with NCDOT to include bicycle facilities as part of the design.

- John Street/Old Monroe Road – Widen to multi-lanes from Trade Street to Wesley Chapel-Stouts Road.
- NC 51 (Matthews Mint-Hill Road) – feasibility study for widening of NC 51 from Matthews Township Parkway to Lawyers Road.
- McKee Road Extension – Extending existing McKee Road from Pleasant Plains Road to Campus Ridge Road.

NCDOT Funding Programs – Other Programs

The following is another funding program that could be used to assist the Town of Matthews in developing the bicycle related programs. For a detailed description of thise funding programs, see Section 5, pages 5-1 through 5-3.

- NCDOT Governors Highway Safety Program

Privately Funded TIP Projects

Private land developers can fund and construct TIP projects. This does occur in Matthews due to the development pressure with the Town. Private land developers can elect to fund the construction of the project if they determine that their project would be negatively impacted if the TIP project is not built in a time frame conducive to their plans.

Existing Local Funding Programs

In 2004, the Town of Matthews passed two bond referendums, one for road improvements and the other for recreational improvements.

The $5.5 million road bond referendum may include bicycle facilities as part of roadway improvements.

The second bond referendum was for $5 million and is slated to be used by the Parks, Recreation and Cultural Resources Department.

Safety and Education Programs and Resources

For a successful bicycle plan to be achieved, educational opportunities must exist to develop an understanding of proper cycling in the community. Building on existing programs can save time and money for the Town in the future. Currently, representatives from the police department and the local bicycle shop travel to elementary schools within Matthews and educate children about proper bicycling procedures and safety.

Police Department Programs and Initiatives

Currently the Matthews Police Department does not have a bike patrol program. The police department has recognized the need and benefit of having a bicycle patrol in the community and is pursuing the development of an official Bicycle Patrol Program.

The police department is involved in an education program in the Matthews Elementary schools to teach children bicycle safety.

Communication Program

In 2006, the Town will institute a centralized contact source, to simplify and clarify communication between residents and Town government.

Encouragement Programs

The following are programs or organizations that encourage the use of bicycles and celebrate biking. Often these organizations play a key role in keeping bicycle issues in the forefront of the ongoing planning and funding discussions. The descriptions of the following organizations were taken directly from their respective resources.

Charlotte Area Transit System (CATS) – CATS encourages everyone to utilize the local public transportation system. CATS provides transit serve to Mecklenburg County, including the City of Charlotte and the six suburban towns surrounding Charlotte: Davidson, Huntersville, and Cornelius to the north; and Matthews, Pineville and Mint Hill to the south. CATS provides service to the City of Concord in Cabarrus County, the City of Gastonia in Gaston County, the Town of Mooresville in Iredell County, and the City of Monroe in Union County and the Town of Rock Hill in York County, South Carolina.

To encourage use of the transit system, CATS provides the following programs:

- Bikes on Buses – All CATS buses are equipped with bicycle racks on the front of the bus. Each rack accommodates up to two bicycles. These racks provide bicyclists the advantage to travel longer distances without having to ride on busy streets.
- Park & Ride – These facilities are equipped with bicycle lockers for cyclisst who want to leave their bikes behind
- ETC Program (Employee Transportation Coordinator) – The ETC program provides organizations with the tools and benefits to offer transportation alternatives and provides cost saving options. Employees of organizations participating in the ETC program receive many benefits including: discounts on transit passes ranging from 10%, 20%, 30% off regular prices, pre-tax

deduction on transit and vanpool passes, reduced commuting costs and reduced stress levels

- Best Work Places - "Best Work Places for Commuters" is a national program sponsored by the U.S. Environmental Protection Agency (EPA) and U.S. Department of Transportation (DOT) that honors businesses and organizations that meet the "National Standard of Excellence" for commuter benefits. Commuter benefits vary by company but typically the benefits are related to reducing single occupant automobile commuting. [3]

Matthews Park and Recreation Bike Rodeo – The Park and Recreation Department hosts an annual "Bike Rodeo" in the rear parking lot of Matthews Elementary School. The purpose is to allow children ages 5-14 to participate in a bike safety check and bike skills test.[4]

Matthews Bike Week Events – In an effort to build public awareness about the comprehensive bicycle planning process the Town of Matthews hosted its first annual Bike Week event on May 1, 2005, piggybacking on an established Bike Week in Charlotte. Employees from the local bicycle shop supplied "monkey bicycles" for participants to race. The FitCity Challenge displayed exhibits demonstrating the importance of an active lifestyle. Participants in the MS 150 Bike Tour distributed information about the annual ride, a 200-mile bicycle tour used to raise money for the National Multiple Sclerosis Society. Staff from the Town of Matthews and the consultant were on hand to discuss the Comprehensive Bicycle Plan and members of the steering committee handed out bicycle safety coloring books. A "Ride with the Mayor" was also held, with Mayor R. Lee Meyers leading the group on a ride around downtown Matthews.

Bike! Charlotte - The City of Charlotte Department of Transportation (CDOT), CATS and Charlotte Sports Cycling team up annually to host one of Charlotte's most healthy and inspiring events: Bike! Charlotte. Bike! Charlotte is 10 days of bicycle related events and promotions used to encourage families, friends, and colleagues to incorporate bicycles into their daily routines.

Organizations

Governmental Organizations

Mecklenburg-Union Metropolitan Planning Organization (MUMPO) – MUMPO is responsible for coordinating transportation policy for local governmental jurisdictions within the Charlotte Urbanized Area; which includes Matthews. The Charlotte Urbanized Area is defined as Charlotte, Mecklenburg County plus that area beyond the

existing urbanized area boundary of Mecklenburg and Union Counties that is expected to become urban within a 20-year planning period.

MUMPO, in cooperation with the State of North Carolina, develops transportation plans and programs for the urbanized area. These plans will assist governing bodies and official agencies in determining courses of action and in formulating attainable capital improvement programs in anticipation of community needs; and guide private individuals and groups in making planning decisions which can be important factors in the pattern of future development and redevelopment of the area. (www.mumpo.org)

Centralina Council of Governments (COG) – The COG is a regional organization for the areas in and around Charlotte. It serves as a conduit of grants, a staff resource for members, and a forum for local governments to address current problems and future needs. One of the many programs that COG administers is SEQL (Sustainable Environment for Quality of Life). SEQL is an integrated environmental initiative for multiple counties around Charlotte in North and South Carolina. One of many action items for SEQL is to promote sustainable growth through a variety of initiatives, including the development of greenways, open space and connectivity to multi-modal transportation. The Town of Matthews is currently a member of COG and should capitalize upon this relationship to assist the development of the Comprehensive Bicycle Plan.

Bicycle Organizations

There are many different bicycle organizations in the region each with a particular focus. The common concern of all the groups is increasing safe cycling opportunities and bicycle use in the region.

B.I.K.E.S. (Bicyclists Initiating Kinder Environments and Safety) – B.I.K.E.S. was formed in 1995 as the "child" of an effort to produce a bicycle suitability map for Charlotte. It has flourished because of the hard work of volunteers and the support of a few key officials in Charlotte/Mecklenburg. B.I.K.E.S. worked with Charlotte/Mecklenburg to develop a Bicycle Master Plan which was officially adopted in 1999. (www.charlottebikes.org)

Charlotte Sports Cycling (CSC) – This group of cyclists is focused on promoting the positive health and environmental benefits of cycling channeled through diverse community activities. Their strong community involvement is highlighted through the leadership of their competitive road and mountain bike team and includes event promotions such as charitable rides for people of varying cycling abilities, educational and safety clinics for children, and elite racing events. (www.charlottesportscycling.com)

Dirt Divas – Dirt Divas is a mountain biking club for women of all ages and skill levels who share an enthusiasm for mountain biking and cycling. They make it easier to find compatible women riders by scheduling group rides and events. Dirt Divas rides encourage a safe and supportive environment for women who like to ride trails. They strive to protect the environment by participating in regular trail maintenance and are actively involved in the community through bicycling advocacy. (www.dirtdivas.net)

The Evergreen-Easton-Clif Bar Cycling Team Scholarship – This program provides scholarships to young cyclists who have excelled on and off the bike. The cyclists support the organization through volunteering and devoting time to promote cycling through events, advocacy, and educational programs. Each recipient receives a $400 college scholarship. (www.charlottesportscycling.com)

Tarheel TrailBlazers – The Trailblazers have built and now maintain over 25 miles of mountain bike trails in and around the Charlotte Metro area. They are actively involved in pursuing the development of additional trails throughout the region. They act as the voice of advocacy for mountain bikers in the area and provide a clearinghouse of information on rides and other activities related to mountain biking. (www.tarheeltrailblazers.com)

True Wheelers-The True Wheelers is a cycling club dedicated to raising funds for fighting Multiple Sclerosis. Their main cycling event is the MS 150 annual ride to Myrtle Beach. Some of its members are residents of Matthews who participated in the Matthews Bike week event. (www.truewheels.org)

Health Related Organizations

Carolina Wellness Coalition – This is a non-profit organization with a sponsor list of 81 companies, including local doctors and health and business professionals. Their goal is to be *"the trusted resource for total body wellness…improving the quality of every human life".* The Carolina Wellness Coalition is a possible partner that the Town of Matthews can utilize to promote awareness and events in Matthews. (www.wellnesscoalition.net)

FitCity Challenge – The FitCity Challenge is a community level initiative to encourage and empower participants to increase their level of physical activity and maintain a healthy diet. Beyond promotional and awareness campaigns, the FitCity Challenge aims to provide the tools, the motivation and the mentoring for both the individual and the community to succeed in addressing the epidemic of obesity. FitCity Challenge is the result of the work of the Mecklenburg County, NC Healthy Weight Task Force. (www.fitcitychallenge.org)

[1] The Town of Matthews. Matthews Land Use Plan – A Guide for Growth. (October 2002) p.29
[2] City of Charlotte Planning Commission. Urban Street Design Guidelines. (Draft April 2005) p.12
[3] http://charmeck.org/Departments/CATS/Transit+Programs/Best+Work+Place.htm
[4] http://www.matthewsnc.com/June2005.pdf

SECTION 4: POLICIES

Overview

The following policies create the framework for the Comprehensive Bicycle Plan. Accompanying each policy is a series of supportive objectives. These objectives provide an explanation of what each policy will accomplish. Adoption of the Comprehensive Bicycle Plan will result in adoption of the policies.

The specific projects, procedures, programs and planning efforts required to implement each policy are listed as tasks in Section 7: Implementation. Those tasks are also compiled in tabular form in Figure 7a: Implementation Matrix.

Policies and Objectives

The following policies are numbered for reference purposes only and do not reflect prioritization.

Policy 1: **Develop a system of bicycle facilities that serves as a comprehensive bicycle transportation network for the residents of Matthews.**

Objective A: *Departments in the Town of Matthews work in a coordinated effort to implement the Comprehensive Bicycle Plan.*

Objective B: *Coordinate and communicate the bicycle needs of the Town with MUMPO.*

Policy 2: **Incorporate bicycle awareness and improvements into all planning and regulatory functions.**

Objective A: *Include discussion of bicycle-related opportunities in each planning activity by elected officials, appointed advisory Boards and/or Town staff.*

Objective B: *Increase the number of individuals specifically assigned the responsibility of bicycle planning within the Town government structure.*

Objective C: *Research, develop and implement new standards and regulations that accommodate bicycle facilities.*

Policy 3: Institutionalize the inclusion of bicycle facilities as part of all publicly and privately funded roadway construction, improvements and maintenance projects. Institutionalize the inclusion of off-road facilities to provide connectivity through the Town.

Objective A: *All roadway projects (construction of new roads and improvements of existing roads) should include bicycle facilities.*

Objective B: *Provide off-road bicycle facilities to create connectivity between neighborhoods and destinations where there are no on-road connecting facilities or where an off-road connector is more suitable for the user group.*

Objective C: *Road maintenance practices result in a bicycle friendly roadway system.*

Objective D: *Incorporate bicycle facilities as part of roadway re-striping projects where feasible.*

Policy 4: Bicycle facilities constructed in the Town of Matthews should meet NCDOT and AASHTO standards.

Objective A: *Develop safe and effective bicycle facilities.*

Objective B: *Create a system of bicycle facilities through the implementation of uniform standards for each type of bicycle facility.*

Objective C: *Communicate the need to adhere to standards to private developers of such facilities.*

Policy 5: Coordinate the implementation of the Matthews Comprehensive Bicycle Plan with surrounding municipalities, Union and Mecklenburg counties, regional agencies and the NCDOT.

Objective A: *Create a bicycle transportation system with connectivity to surrounding municipalities and counties through ongoing coordination of planning and construction of roads and greenways.*

Objective B: *Coordinate regional planning efforts with NCDOT through MUMPO.*

Objective C: *Maximize the Town's opportunities for integrating bicycles in public transportation facilities through coordination with CATS.*

Objective D: *Coordinate with Mecklenburg County to prioritize and construct planned greenways in Matthews.*

Policy 6: Pursue multiple funding sources for the development of bicycle facilities, including local, state and private funding sources.

Objective A: *Create a funding source in the Town budget to fund planning, design and construction of bicycle facilities.*

Objective B: *Pursue state funding for bicycle facilities as part of road improvement projects and improvements designed specifically for bicycle transportation needs.*

Objective C: *Develop partnerships with Town businesses to fund components of the bicycle system.*

Objective D: *Provide bicycle connectivity within new development and between new development and adjacent parcels through a comprehensive system of bicycle facilities.*

Policy 7: Promote safe bicycling and motorist awareness of bicyclists.

Objective A: *Implement established, comprehensive education programs to teach elementary and middle school children safe cycling practices.*

Objective B: *The Matthews Police Department will proactively enforce state and local bicycle related laws and ordinances.*

Objective C: *Matthews' residents will use bicycle helmets when riding their bicycles.*

Objective D: *Safe bicycling practices will be used by Town residents.*

Objective E: *Matthews' motorists will understand and respect bicyclist's rights and responsibilities.*

Policy 8: Promote the transportation, economic, health, and community building benefits of a bicycle friendly community.

Objective A: *Residents of Matthews recognize that a bicycle system expands their transportation options and can positively affect the value of their property and the community.*

Objective B: *Residents use the bicycle system as part of a healthy life style.*

SECTION 5: THE BICYCLE SYSTEM

System Overview

To effectively develop a bicycle system the Town of Matthews must incorporate bicycle planning into every department. A complete bicycle system includes bicycle planning, programs, procedures and facilities. This section of the Bicycle Plan outlines the tasks required to implement the planning initiatives, programs and procedures. It also includes a list and maps of the bikeways proposed for Matthews.

Funding Sources

Several funding sources exist that the Town of Matthews can utilize for the development of the bicycle facilities, plans and programs listed within this document. Some bikeway projects are eligible for multiple funding sources while others have more limited funding options. In some situations, private developers may construct the bicycle improvements as part of their development. The private development option is not listed in the Implementation Matrix (Section 7, Table 7a) since it is completely dependent upon the plans of the private developer. The following funding options are listed in Table 5a, the Bikeway Matrix; pages 5-13 through 5-19 or Table 7a: Implementation Matrix, page 7-10.

Funding by the Town of Matthews

- Matthews Operating Budget (M/OB) – This is a funding source in the annual budget that could be used for funding project design, maintenance or small projects.
- Matthews Capital Improvement Program (M/CIP) – Typically, these funds are limited, and must be included in the Town's budgeting process and require a special line item for specific projects. This funding source could also be used for grant programs that require matching funds.
- Matthews Bonds (M/B) – Matthews can issue bonds for funding projects. Bonds require a public referendum. Bonds are often used to fund parks and recreation projects, road improvements.

Funding by Mecklenburg County

- Mecklenburg County Bonds (MC/B) – The greenways included in the Bicycle Plan are part of the county's greenway master plan and therefore, are slated to be funded by the county. There is a requirement that new land development projects located adjacent to a planned greenway dedicate the land needed to construct that section of the greenway to the county. Private developers have also built sections of greenways. The county has funded greenways through

bond referenda. Inclusion of the greenways as part of the Comprehensive Bicycle Plan may create a higher priority to fund the Matthews greenways. Parks and Recreation Trust Fund (PARTF) has also been used to fund greenways although there are specific criteria that need to be part of the project (multiple uses, part of a planning effort) and the funding available is limited to $300,000.00 per phase.

North Carolina Department of Transportation (NCDOT)

Descriptions of these funding sources can be found at http://www.ncdot.org/transit/bicycle/funding/funding_categories.html categories.html.

- NCDOT Transportation Improvement Program, Independent Projects (NCDOT/TIPIndp) - These are funds set aside for bicycle improvements that are independent of scheduled highway projects in communities throughout the state. The current (2006) allocation is $6 million annually. Eighty percent of these funds are from Surface Transportation Program (STP)-Enhancement funds, while state funds provide the remaining 20 percent. These funds are requested through MUMPO, the local MPO. Currently (2006) $200,000 is allocated to the Division of Bicycle and Pedestrian Transportation for projects such as training workshops, bicycle safety and research projects, and other bicycle needs statewide.

- NCDOT Transportation Improvement Program, Incidental Projects (NCDOT/TIPIncd) – These are state and federal funds that can be used for bicycle accommodations such as bike lanes, widened paved shoulders and bicycle-safe bridge design and are built as part of a scheduled highway project. In addition, bicycle-safe drainage grates are a standard feature of all highway construction. The Town of Matthews must specifically request these funds through MUMPO for an appropriate bicycle accommodation as part of a highway or bridge project.

- NCDOT Enhancement Program (NCDOT/EP) – These funds come from the federal government but are administered by the State. The enhancement funds are now known as Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU formerly known as ISTEA and TEA21). This funding source, generally awarded every two years, is a competitive application process and requires a 20% match by the local municipality and conformance with Federal Highway Administration requirements regarding design and selection of consultants and contractors.

- NCDOT Governors Highway Safety Program (NCDOT/GHSP) – These are state and federal funds that are awarded annually through a competitive application process. The amounts available vary from year to year. This funding source primarily funds safety and law enforcement initiatives including education efforts.

- Congestion Mitigation and Air Quality Funds (CMAQ) – Bicycle and pedestrian projects are eligible for CMAQ funds. Since the Charlotte-Mecklenburg area is a "maintenance" area, and the Town of Matthews is within that area, the Town of Matthews is eligible for CMAQ funding.

- Discretionary Funding (NCDOT/D) – Each NCDOT Division Office receives $100,000 per year in discretionary funds. The funds can be carried over from year-to-year and distributed by the district office. These funds may be available for small bicycle improvement projects, but are primarily used for pedestrian projects.

Public/Private Initiatives

- Public/Private Initiatives (P/PI) – This type of funding source is usually developed to respond to a specific project. They are not very common for construction projects. The participants in these public/private partnerships will vary for each project.

The Process of Determining Bikeway Needs

A system of bicycle facilities will create connectivity throughout the Town and provide transportation options. By connecting different types of bikeways, such as neighborhood connector streets, greenways and bicycle lanes on thoroughfares, residents will have bike routes that connect to destinations, create commuting options and enhance recreational cycling. This plan is a significant step toward developing a comprehensive bicycle transportation system. Using the existing conditions analysis, community input through public meetings and generators and attractors for bicycle travel, a system of recommended bicycle facilities was developed and mapped.

The initial step in developing the bicycle system was the completion of an inventory of the existing roadways, destinations, planned greenways, public transit facilities and existing bikeways. In workshops with the Bicycle Steering Committee, there were discussions about barriers to bicycling, preferred routes, and roadways that are unsafe for bicycling and other pertinent existing conditions. There were also discussions about goals for the community: how to reach all residents to teach them about safe cycling, how to raise awareness about bicycling; and how to induce or inspire the community to ride their bicycles.

The Bicycle Steering Committee and the public identified the need to create connectivity between adjacent neighborhoods via neighborhood collector streets, off-road connectors and greenways. Those facilities, combined with wide outside lanes, bike lanes and widened shoulders, will offer additional transportation options for the residents of Matthews.

Matthews will also be impacted as CATS develops and implements plans for the proposed Southeast Transit Corridor. The transit corridor, in combination with system of bicycle facilities, will significantly increase connectivity between Charlotte and Matthews. The resulting system will create real transportation options for residents of Matthews by combining both transit and bicycling options.

Destinations and Existing Road Network

The Destinations Map, Figure 5a on page 5-6, illustrates the existing destination points that are both generators and attractors for bicycle travel within the Town of Matthews. The proposed bikeways will provide connectivity to these destinations. Downtown includes multiple destinations and it is essential to develop bicycle connectivity to this very important center of Town activity. This map illustrates the existing pattern of roads including the lack of connectivity between neighborhoods, the thoroughfares that run through the community and the interstates that divide the Town. The existing road network will be improved to accommodate the on-road bikeways in the recommended bicycle system.

Downtown

- Matthews Library / Town Hall
- Farmers Market
- Post Office
- Downtown Retail
- Matthews Community Center
- Wingate University- Matthews Center
- Stumptown Park

Commercial Centers

- Movies 10 (movie theater)
- Sycamore Commons
- Windsor Square
- Matthews Township Festival
- Matthews Commons

Institutions (not located in downtown)

- Levine Senior Center
- Siskey YMCA
- Presbyterian Hospital Matthews

Public Transportation

- CATS Park and Ride
- Future Southeast Corridor Transit

Schools

- Elizabeth Lane Elementary School
- Butler High School
- Carmel Christian School
- Central Piedmont Community College (CPCC) – Levine Campus
- Christ Covenant Church and School
- Crestdale Middle School
- Matthews Elementary School
- Crown Point Elementary School

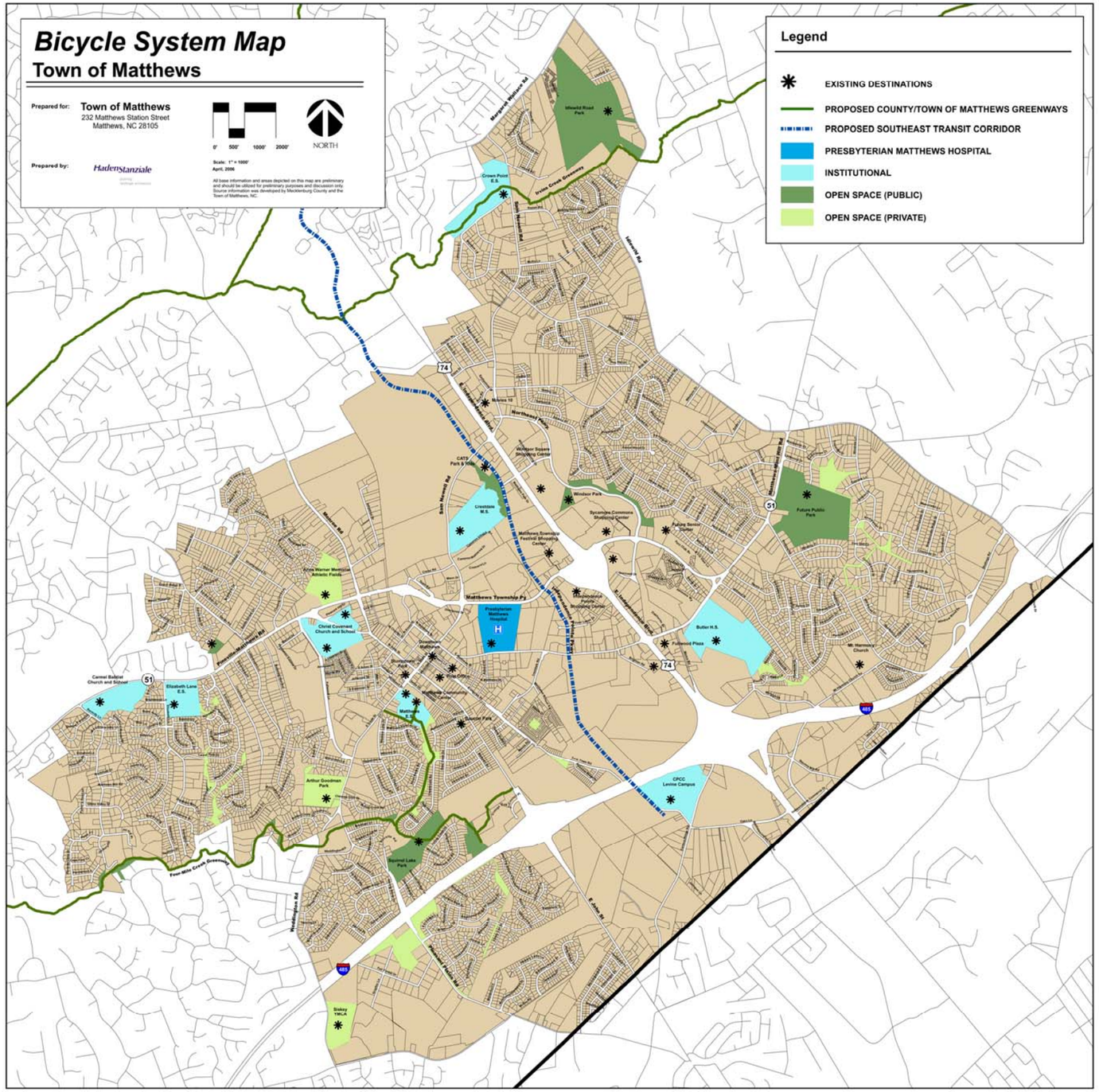
Parks

- Arthur Goodman Park
- Idlewild Park
- Windsor Park
- Squirrel Lake Park
- Idlewild Road Park
- Baucon Park

Other

- Union County / rural roads
- Four-Mile Creek Greenway (future)
- Irvins Creek Greenway (future)

Figure 5a – Destinations Map



The Bicycle System Map

The Bicycle System Map illustrates how Matthews' proposed bicycle transportation system will provide connectivity throughout the Town. The Bicycle System Map, Figure 5b on page 5-9 includes the following bicycle facility types:

- Proposed Bicycle Parking – Proposed bicycle parking is shown at destinations within the Town.
- Existing Destinations – These are the existing generators and attractors.
- Future Roadways – These are planned roads. Those roads should be designed and built to provide connectivity to other planned bicycle facilities.
- Future Roadway Improvements – These are improvements that are included in MUMPO's 2220-2030 plan. Each of these planned improvements should include bicycle facilities as shown on the Bicycle System Map.
- Proposed County/Town of Matthews Greenways - These are 10 to 12-foot wide, paved off-road multi-use paths. The map includes the proposed County greenways - Irvins Creek Greenway, located in the northwestern section of Matthews, and Four-Mile Creek Greenway, located in the southern portion of the Town and the Town of Matthews proposed greenway. In the fall of 2004, Matthews' voters approved a bond referendum. Potentially, those bond funds could finance some portion of greenway construction or land acquisition for greenways.
- Existing Fullwood Lane Bike Lane - Matthews' only bicycle lane is located along Fullwood Lane. The bike lane width varies throughout the entire length of the route.
- Primary Corridors for Future Bicycle Improvements - These bikeways may be bicycle lanes, wide outside lanes and/or wide paved shoulders. The type of improvement will depend on the roadway cross-section, existing lane widths, speed limit, edge treatment (curb & gutter or shoulder), and adjacent land use. Through the planning process access the rural roads beyond Matthews was identified as a specific need. Two specific routes were identified to serve that purpose, Pleasant Plains Road or Weddington Road. Both roads are shown as Primary Corridors for Future Bicycle Improvements
- Proposed Neighborhood Signed Routes - Neighborhood signed routes occur on neighborhood streets that connect to thoroughfares at the entrance of the neighborhood, to off-road connector, or other neighborhood signed route.
- Proposed Off-Road Connectors (with existing ROW and ROW needed) - These 10-foot wide multi-use paved paths connect two neighborhood signed routes or a neighborhood signed route with a destination or a greenway. Property ownership for the off-road connectors varies but is characterized by

one of following: the Town of Matthews owns the land; there is an easement; the land has been dedicated but has not yet been accepted by the Town; or the land or easement will need to be acquired. The two Duke Power utility easements in the northeast and southwest quadrant of the Town are significant open space and are shown as future off-road connectors.

- Proposed Southeast Transit Corridor – A proposed transit facility is being planned to extend from uptown Charlotte to the CPCC Levine Campus. This public transportation infrastructure will offer an additional transportation option and non-automobile connectivity option.

Adjacent Bicycle Facilities

There are other planned roadway/bicycle lane projects located adjacent to the Town of Matthews. These facilities are not shown on the Bicycle System Map, but will offer bicycle connectivity into and out of the Town of Matthews. These facilities are:

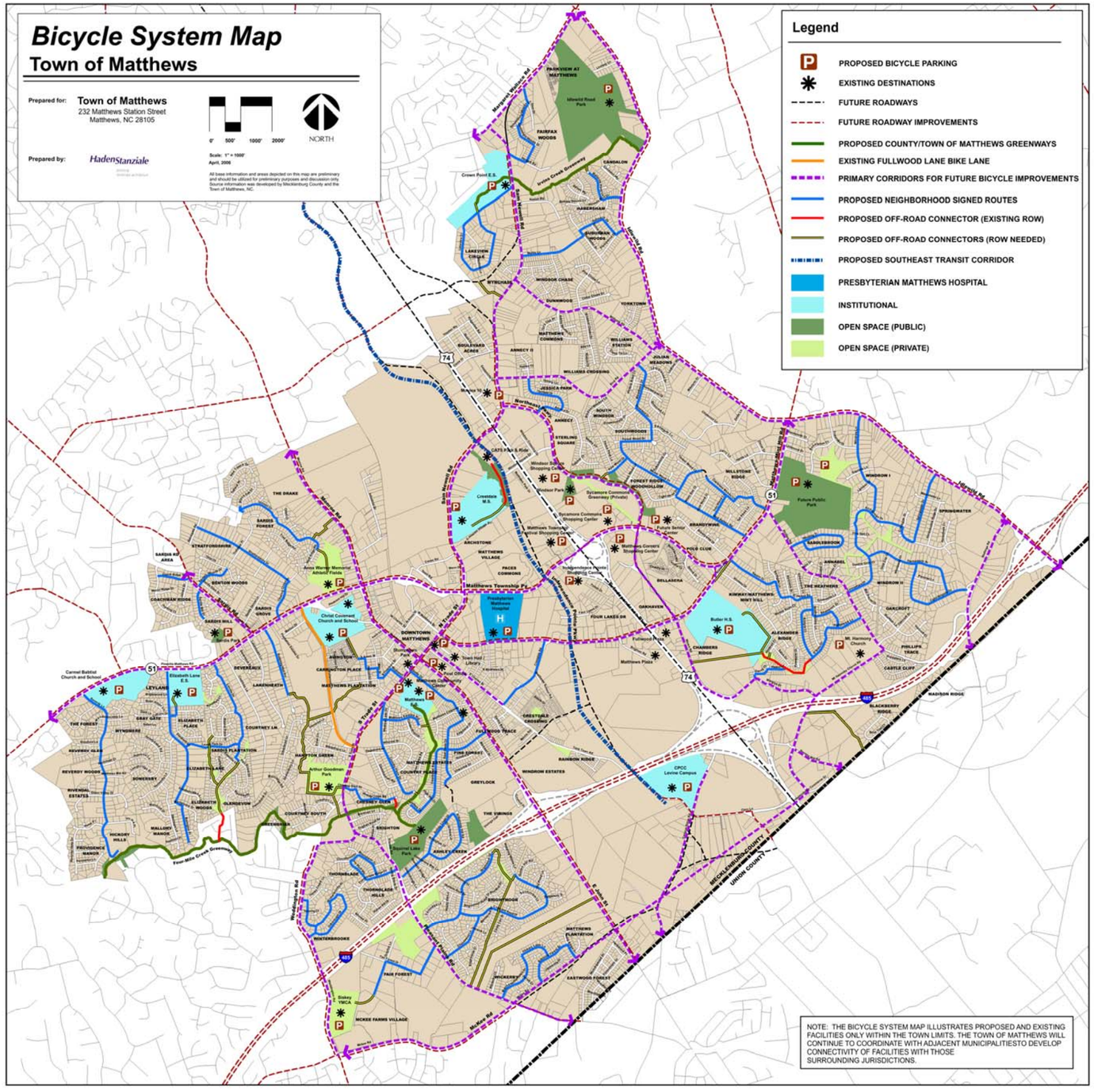
- Bicycle lanes on Idlewild Road from WT Harris to Margaret Wallace.
- Bicycle lanes on Margaret Wallace Road.
- A new road that will parallel Independence from Krefeld across Margaret Wallace Road and connect to Northeast Parkway (behind Windsor Square) with bicycle lanes
- Bicycle lanes on Independence Pointe Parkway.
- Bicycle lanes on Ballantyne Commons Parkway and Tilley Morris Road, which would connect to Col. Francis Beatty Park.

Ancillary Facilities

In addition to bikeways, other facilities are needed to create a comprehensive bicycle system and improve bicycle transportation options. These facilities support the bikeways by creating safe conditions, providing bicycle storage at destinations, providing restrooms, transporting bicycles on public transportation or describing the bicycle system. Ancillary facilities include the following:

- Bicycles on buses
- Bicycle racks / lockers
- Bicycle route signage / pavement markings
- Crossing signals / warning systems/ bollards
- Comfort stations
- System Maps

Figure 5b – Bicycle System Map



Bikeway Matrix

The Bikeway Matrix, Table 5a, located on pages 5-14 through 5-20, was developed to list and organize proposed construction projects. The matrix serves as a checklist to monitor the progress of the plan. It can be updated periodically as new projects are identified and other projects are completed. The Bikeway Matrix lists the proposed projects by facility type, within each project type the projects are alphabetized under each priority classification pilot projects (immediate), short-term (1-5 years), mid-term (5-10 years) and long-term (over 10 years). The matrix also includes the beginning and ending points, length and potential funding sources. For quick reference there is a project number assigned to each proposed improvement. The numbers were assigned beginning in the southwest quadrant on the town at I-485 and continuing in a clockwise direction. If a project includes multiple streets, then there will be a separate number for each street (e.g. 2a, 2b, 2c etc.).

Located on the side of the Bikeway Matrix is a legend that describes the abbreviations found in the actual table. At the top of the legend is the Scheduling Priority. The scheduling priority assigns each project a timeframe in which each project should be built. Located below the scheduling priority is the proposed Funding Source. Each project has been assigned a proposed funding source. The standards required for construction of the projects are described in Section 6. The following is a description of the prioritization and funding sources included in the matrixes.

Project Prioritization

Support for biking in Matthews is strong and continues to gain momentum. To maintain and build upon that support it is important that the Town of Matthews follow through with the recommendations outlined in this report. The projects listed in the Bikeway Matrix are prioritized according the following scheduling categories; pilot projects (immediate), short-term (1-5 years), mid-term (5-10 years) and long-term (over 10 years). The proposed pilot projects are a subset of the short-term projects. Developing a few projects in the short term (1-3 years) will help the Town of Matthews maintain the momentum created by the development of this plan. It will illustrate to the citizens that the Town is dedicated to providing biking opportunities for the community.

Pilot Projects

The projects listed below have been selected as “potential pilot projects”. Pilot projects are projects with high visibility that raise awareness of the Comprehensive Bicycle Plan and start the implementation process. Due to limited resources and manpower Matthews can only complete one or two of the pilot projects in the next three years. Because the list reflects “potential pilot projects” the Town can select which project(s) to pursue. Selection of a pilot project will include consideration of

the costs, the number of residents potentially affected by the project and the visibility of the project. Any projects not selected from the list of potential pilot projects to be built as a pilot project will then be considered a short-term project. See Figures 5c-5g for maps of the projects and Tables 5c-5g for the cost associated with each.

- Bubbling Well Road/Fullwood Lane Off-Road Connector – This project is located west of downtown Matthews and will provide off-road access from Bubbling Well Road to the designated bike lane along Fullwood Lane. This paved off-road connector requires the acquisition of ROW and is approximately 2,113 feet in length or 0.40 miles long.

- Butler High School Off-Road Connector and Neighborhood Signed Route This project is located in the southeastern portion of Matthews in the Alexander Ridge neighborhood, just west of Independence Boulevard. This project will provide two types of bikeways from surrounding neighborhoods to Butler High School. Butler High School was identified as a major destination, therefore bicycle parking should be included as part of this project. The two types of bikeways are as follows:
  - Off-Road Connection (ROW needed) – This segment of the project would be a 10 foot paved trail that requires additional ROW to be acquired. Construction of this segment will need to be coordinated with Charlotte Mecklenburg Schools. This segment is approximately 1,836 feet in length or 0.35 miles long.
  - Off-Road Connection (Existing ROW) – This portion of the project would also be a 10 foot wide paved trail that utilizes existing public ROW and is approximately 2,260 feet in length or 0.43 miles long.
  - Neighborhood Signed Route – This portion of the project requires the signing of existing neighborhood streets. Since these are existing streets, acquisition of ROW is not needed. The following streets would be signed as part of this project: Swaim Drive, Bathgate Lane, O'Malley Drive, Heathershire Lane, Strathaven Drive, Fraserburgh Drive, Port Patrick Lane and O'Toole Drive. The total length of this portion of the project is approximately 7,411 feet in length or 1.4 miles long.

- Elizabeth Lane Off-Road Connector and Neighborhood Signed Route – This project is located along NC 51 in the western portion of Town. This project will provide two types of bikeways from surrounding neighborhoods to the Elizabeth Lane Elementary School. The school was identified as a major

destination for the community, therefore bicycle parking should be included as part of this project. The two types of bikeways are as follows:

- Signed Neighborhood Route – This portion of the project requires the signing of existing neighborhood streets. Since these are existing streets, acquisition of ROW is not needed. The following streets comprise this portion of the project: Barington Place, Mangionne Drive, Cithera Drive and Elizabeth Lane. The total length of this portion of the project is approximately 6,207 feet or 1.17 miles.
- Off-Road Connector (Existing ROW) – This segment of the project is a 10 foot wide paved trail that utilizes existing public ROW to connect the Elizabeth Place neighborhood to Elizabeth Lane Elementary School. This segment of the project is approximately 379 feet in length or 0.07 miles long.

- Four-Mile Creek Greenway/Matthews Elementary School Greenway Connector – This project is located southwest of downtown Matthews connecting multiple destinations. It utilizes a portion of the proposed County Four-Mile Creek Greenway and includes the proposed Town of Matthews greenway. Also as part of this project, the off-road connectors that link the surrounding neighborhoods to the Town of Matthews greenway have been included and would be 10 foot wide paved trails. This will provide access to Squirrel Lake Park, Matthews Elementary School and the proposed Primary Access to Rural Roads located along South Trade Street/Pleasant Plains Road. The total length of the proposed greenways is 6,226 feet or 1.17 miles. Three of the four off-road connectors require the acquisition of right-of-way. The total length of the off-road connectors needing ROW is 378 feet or 0.07 miles. The off-road connector that utilizes existing public ROW is 358 feet in length or 0.06 miles long.

- Primary Corridor for Future Bicycle Improvements (Weddington Road and Pleasant Plains Road) – This project utilizes South Trade Street/Pleasant Plains Road and Weddington Road to access rural roads outside of Matthews in Union County. The need to access rural roads was identified as part of the public and steering committee meetings. The project extends from downtown Matthews to the southwestern portion of the Town to the Town limits. This project is both a pilot project and a mid-term project. The pilot project component is to install share the road signs. The mid-term project is designated to be completed with Moving Ahead funds as part of the I-485 interchange project.

Short-term Projects

These are projects that should be built in the 1-5 years. The majority of these projects are off-road connectors that will connect neighborhoods. The Town of Matthews should begin securing funding for these projects within fiscal year 2006-2007.

Mid-term Projects

These are projects that should be built in the time frame of 5-10 years. Several important on road facilities such as Phillips Road are included in this category.

Long-term Projects

These projects either require significant coordination with NCDOT or could be costly to construct. The time frame identified for these projects is 10 years or greater. Projects in this category include bikeways along thoroughfares, such as Monroe Road and NC 51.

Table 5a – Bikeway Matrix

BIKEWAY MATRIX

Project #	Project Location	From	To	Destinations	Facility Type	Improvements	Length (Feet)	Length (Miles)	Scheduling Priority	Funding Source
Proposed County/Town of Matthews Greenways										
43b	Matthews Elementary School Greenway Connector	Four-Mile Creek Greenway - Section C	Matthews E.S.	Matthews E.S.	Greenway	10' Trail, warning, regulatory and guiding signs, trash receptacles, benches, intersection warning signs and signals	3659.59	0.69	P	MC/B, M/CIP, M/B
43a	Four-Mile Creek Greenway - Section C	S. Trade Street	Matthews Elementary School Greenway Connector	Matthews E.S. / Squirrel Lake Park	Greenway	10' Trail, warning, regulatory and guiding signs, trash receptacles, benches, intersection warning signs and signals	2566.96	0.49	P	MC/B, M/B, NCDOT/TIPIncd
42	Four-Mile Creek Greenway (FMCG) - Section B	Sardis Plantation / Four-Mile Creek Greenway Connector	S. Trade Street	Matthews E.S. / Squirrel Lake Park	Greenway	10' Trail, warning, regulatory and guiding signs, trash receptacles, benches, intersection warning signs and signals	6263.85	1.19	S	MC/B, M/B, NCDOT/TIPIncd
45	Irvins Creek Greenway - Section B	Sam Newell Rd	Idlewild Rd	Crown Point E.S. / Idlewild Road Park	Greenway	10' Trail, warning, regulatory and guiding signs, trash receptacles, benches, intersection warning signs and signals	5128.34	0.97	M	MC/B, M/CIP, M/B
41	Four-Mile Creek Greenway - Section A	Providence Manor Neighborhood	Sardis Plantation / Four-Mile Creek Greenway Connector	Matthews E.S. / Squirrel Lake Park	Greenway	10' Trail, warning, regulatory and guiding signs, trash receptacles, benches, intersection warning signs and signals	4824.87	0.91	M	MC/B, M/CIP, M/B
44	Irvins Creek Greenway - Section A	Crown Point E.S.	Sam Newell Rd	Crown Point E.S.	Greenway	10' Trail, warning, regulatory and guiding signs, trash receptacles, benches, intersection warning signs and signals	1538.20	0.29	M	MC/B, M/CB, M/B
Proposed Neighborhood Signed Routes (NSR)										
2a	Barington Place	Mangionne Drive	End of Street	FMCG/Elizabeth Lane E.S.	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-1	1223.89	0.23	P	M/CIP, M/B, PPI
25b	Bathgate Lane	Swaim Drive	O'Malley Drive	Butler H.S.	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-2	530.69	0.10	P	M/CIP, M/B, PPI
2b	Cithara Drive	Elizabeth Ln	Willow Brook Dr	FMCG/Elizabeth Lane E.S.	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-3	228.20	0.04	P	M/CIP, M/B, PPI
2c	Elizabeth Lane	Pineville-Matthews	Mangionne Dr	FMCG/Elizabeth Lane E.S.	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-4	4487.40	0.85	P	M/CIP, M/B, PPI
25f	Fraserburgh Drive	Strathaven Drive	Port Patrick Lane	Butler H.S.	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-5	577.64	0.11	P	M/CIP, M/B, PPI
25d	Heathershire Lane	O'Malley Drive	Strathaven Drive	Butler H.S.	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-6	620.60	0.12	P	M/CIP, M/B, PPI
2d	Mangionne Drive	Elizabeth Ln	Barington Place	FMCG/Elizabeth Lane E.S.	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-7	267.94	0.05	P	M/CIP, M/B, PPI
25c	O'Malley Drive	Bathgate Lane	Heathershire Lane	Butler H.S.	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-8	1011.48	0.19	P	M/CIP, M/B, PPI
25h	Otoole Drive	Port Patrick Lane	Alexander Ridge / Butler High School Connector	Butler H.S.	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-9	1227.35	0.23	P	M/CIP, M/B, PPI
25g	Port Patrick Lane	Otoole Drive	Phillips Road	Butler H.S.	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-10	1154.15	0.22	P	M/CIP, M/B, PPI
25e	Strathaven Drive	Heathershire Lane	Fraserburgh Drive	Butler H.S.	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-11	608.42	0.12	P	M/CIP, M/B, PPI
25a	Swaim Drive	Matthews-Mint Hill Rd	Bathgate Lane	Butler H.S.	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-12	1680.99	0.32	P	M/CIP, M/B, PPI
2e	Willow Brook Drive	Cithara Drive	Elizabeth Lane E.S. Connector	FMCG/Elizabeth Lane E.S.	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-13	274.67	0.05	P	M/CIP, M/B, PPI
29a	Alexander Ridge Drive	Marglyn Drive	Danny Court	Butler H.S.	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-14	138.56	0.03	S	M/CIP, M/B, PPI

LEGEND

Scheduling Priority

S - Short-term (1-5 years)

P - Pilot Projects (immediate)

M - Mid-term (5-10 years)

L - Long -term (over 10 years)

Funding Sources

M/CIP - Matthews/Capital Improvement Program

M/B - Matthews/Bonds

MC/B - Mecklenburg County Park and Recreation Bonds

PPI - Public Private initiatives

NCDOT- North Carolina Department of Transportation

NCDOT/TIPIndp - NCDOT Transportation Improvement Program - Independent Projects

M - Mid-range (within 10 years)

NCDOT/EP - NCDOT Enhancement Program

Other

NSR - Neighborhood Signed Route

Table 5a – Bikeway Matrix (continued)

BIKEWAY MATRIX

Project #	Project Location	From	To	Destinations	Facility Type	Improvements	Length (Feet)	Length (Miles)	Scheduling Priority	Funding Source
Proposed Neighborhood Signed Routes (NSR)										
12b	Ballards Pond Lane	Hounds Run Drive	Habersham / Irviins Creek Greenway Connector	Irvins Creek Greenway/Crown Point E.S	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-14	1025.86	0.19	S	M/CIP, M/B, PPI
4a	Bubbling Well Road	Pineville-Matthews	Arthur Goodman Park / Bubbling Well Connector	Arthur Goodman Park/Downtown/FMCG	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-15	2245.17	0.43	S	M/CIP, M/B, PPI
29b	Danny Court	Alexander Ridge Drive	Hadco Lane	Butler H.S.	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-16	486.21	0.09	S	M/CIP, M/B, PPI
33a	Fair Forest Drive	Gray Fox Lane	Pleasant Plains Rd	Siskey YMCA	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-17	2238.09	0.42	S	M/CIP, M/B, PPI
33b	Gray Fox Lane	Fair Forest Drive	Fair Forest / Siskey YMCA Connector	Siskey YMCA	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-18	1131.24	0.21	S	M/CIP, M/B, PPI
29c	Hadco Lane	Danny Court	Alexander Ridge / Butler High School Connector	Butler H.S.	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-19	572.37	0.11	S	M/CIP, M/B, PPI
12a	Hounds Run Drive	Idlewild Rd	Ballards Pond Lane	Irvins Creek Greenway/Crown Point E.S	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-20	581.94	0.11	S	M/CIP, M/B, PPI
3a	Laurel Fork Drive	Point Drive	Elizabeth Lane	FMCG	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-21	1779.12	0.34	S	M/CIP, M/B, PPI
3b	Linville Drive	Pineville-Matthews	Point Drive	FMCG	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-22	1683.64	0.32	S	M/CIP, M/B, PPI
3c	Point Drive	Linville Drive	Port Royal Drive	FMCG	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-23	1672.93	0.32	S	M/CIP, M/B, PPI
3d	Port Royal Drive	Point Drive	Sardis Plantation Open Space Connectors	FMCG	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-24	155.35	0.03	S	M/CIP, M/B, PPI
1	Reverdy Lane	Pineville-Matthews	End of Street	Carmel Baptist Church & School	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-25	6035.47	1.14	S	M/CIP, M/B, PPI
16b	Annecy Drive	Tanfield Drive	Northeast P	Multiple	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-26	856.41	0.16	M	M/CIP, M/B, PPI
36a	Ashely Creek Drive	Pleasant Plains Rd	Kilkenny Hill Road	Squirrel Lake Park	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-27	2652.78	0.50	M	M/CIP, M/B, PPI
31b	Biltmore Forest Drive	Holly Ridge Drive	Future McKee Rd Extension	Multiple	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-28	1718.14	0.33	M	M/CIP, M/B, PPI
32c	Brightmoor Drive	Pleasant Plains Rd	Brightmoor / Pleasant Plains Road Connector	Multiple	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-29	3663.83	0.69	M	M/CIP, M/B, PPI
37a	Chesney Glen Drive	S. Trade Street	Woody Creek Road	Arthur Goodman Park/Downtown/FMCG	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-30	377.79	0.07	M	M/CIP, M/B, PPI
32a	Chesswood Lane	Pleasant Plains Rd	Cresent Knoll Drive	Multiple	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-31	1820.30	0.34	M	M/CIP, M/B, PPI
39a	Clearbrook Road	Jeffers Drive	E. John Street	FMCG	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-32	3931.83	0.74	M	M/CIP, M/B, PPI
35c	Cloudburst Dr	Ivy Bluff Way	Moonstone Drive	Squirrel Lake Park	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-33	310.99	0.06	M	M/CIP, M/B, PPI
18c	Cochrane Woods Lane	Connector Missing	Phillips Woods Lane	Multiple	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-34	1208.64	0.23	M	M/CIP, M/B, PPI
38a	Country Place Drive	S. Trade Street	Country Place Drive / Matthews Elementary School Greenway Connector	Matthews E.S. / Matthews Elementary School Greenway Connector	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-35	3348.77	0.63	M	M/CIP, M/B, PPI
32b	Cresent Knoll Drive	Brightmoor Drive	Brightmoor / Pleasant Plains Road Connector	Multiple	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-36	4588.12	0.87	M	M/CIP, M/B, PPI
40b	Crestdale Road	E. Charles Street	Matthews-Mint Hill Rd	Downtown Matthews	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-37	2534.67	0.48	M	M/CIP, M/B, PPI
34b	Cross Point Road	Winterbrooke Drive	Honey Creek Lane	Multiple	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-38	1041.88	0.20	M	M/CIP, M/B, PPI

LEGEND

Scheduling Priority

P - Pilot Projects (immediate)

S - Short-term (1-5 years)

M - Mid-term (5-10 years)

L - Long -term (over 10 years)

Funding Sources

M/CIP - Matthews/Capital Improvement Program

M/B - Matthews/Bonds

MC/B - Mecklenburg County Park and Recreation Bonds

PPI - Public Private initiatives

NCDOT- North Carolina Department of Transportation

NCDOT/TIPIndp - NCDOT Transportation Improvement Program - Independent Projects

NCDOT/EP - NCDOT Enhancement Program

NCDOT/EP - NCDOT Enhancement Program

Other

NSR - Neighborhood Signed Route

Table 5a – Bikeway Matrix (continued)

BIKEWAY MATRIX

Project #	Project Location	From	To	Destinations	Facility Type	Improvements	Length (Feet)	Length (Miles)	Scheduling Priority	Funding Source
Proposed Neighborhood Signed Routes (NSR)										
39d	Deer Creek Drive	Vinecrest Drive	Sadie Drive	FMCG	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-38	2144.86	0.41	M	M/CIP, M/B, PPI
17b	Firewood Drive	Woodbend Drive	Forest Wood Drive	Multiple	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-40	1258.14	0.24	M	M/CIP, M/B, PPI
17c	Forest Wood Drive	Firewood Drive	Winter Wood Drive	Multiple	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-41	991.25	0.19	M	M/CIP, M/B, PPI
31c	Hickory Lake Lane	Biltmore Forest Drive	Matthews Plantation Drive	Multiple	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-42	1106.85	0.21	M	M/CIP, M/B, PPI
9a	Hinson Drive	McNabb Ct	Neill Ridge Drive	Anna Warner Memorial Athletic Fields	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-43	1419.96	0.27	M	M/CIP, M/B, PPI
31a	Holly Ridge Drive	Future McKee Rd Extension	Biltmore Forest Drive	Multiple	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-44	511.97	0.10	M	M/CIP, M/B, PPI
34a	Honey Creek Lane	Cross Point Road	Weddington Rd	Multiple	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-45	141.67	0.03	M	M/CIP, M/B, PPI
35b	Ivy Bluff Way	Thornblade Ridge Drive	Cloudburst Dr	Squirrel Lake Park	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-46	812.63	0.15	M	M/CIP, M/B, PPI
18d	Ivy Woods Lane	Reid Harkey Road	Cochrane Woods Lane	Multiple	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-47	849.34	0.16	M	M/CIP, M/B, PPI
39b	Jeffers Drive	Jeffers Drive / Matthews Elementary School Greenway Connector	Clearbrook Road	FMCG	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-48	375.35	0.07	M	M/CIP, M/B, PPI
17e	Kale Wood Drive	Winter Wood Drive	Forest Ridge-Woodhollow / Northeast Parkway Connector	Multiple	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-49	799.84	0.15	M	M/CIP, M/B, PPI
36b	Kilkenny Hill Road	Ashely Creek Drive	Ashely Creek Drive	Squirrel Lake Park	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-50	2246.36	0.43	M	M/CIP, M/B, PPI
25k	Kintyre Court	Heathershire Lane	Otoole Drive	Butler H.S.	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-51	1863.57	0.35	M	M/CIP, M/B, PPI
10a	Lakeview Circle	Sam Newell Rd	Sam Newell Rd	Irvins Creek Greenway/Crown Point E.S	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-52	6044.13	1.14	M	M/CIP, M/B, PPI
18a	Light Wood Drive	Reid Harkey Road	Connector Missing	Multiple	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-53	1277.77	0.24	M	M/CIP, M/B, PPI
38b	Matthews Estates Road	Country Place Drive	Matthews Estates / Matthews Elementary School Greenway Connector	Matthews E.S. / Matthews Elementary School Greenway Connector	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-54	1368.29	0.26	M	M/CIP, M/B, PPI
31d	Matthews Plantation Drive	Hickory Lake Lane	Pleasant Plains Rd	Multiple	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-55	1794.60	0.34	M	M/CIP, M/B, PPI
35d	Moonstone Drive	Cloudburst Dr	Thornblade Ridge Drive	Squirrel Lake Park	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-56	936.52	0.18	M	M/CIP, M/B, PPI
9b	Neill Ridge Drive	Hinson Drive	Sardis Forest / Anna Warner Memorial Athletic Fields Connector	Anna Warner Memorial Athletic Fields	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-58	1907.18	0.36	M	M/CIP, M/B, PPI
34d	Oxborough Drive	Winterbrooke Drive	Winterbrooke Drive	Multiple	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-59	1980.75	0.38	M	M/CIP, M/B, PPI

LEGEND

Scheduling Priority

P - Pilot Projects (immediate)

S - Short-term (1-5 years)

M - Mid-term (5-10 years)

L - Long -term (over 10 years)

Funding Sources

M/CIP - Matthews/Capital Improvement Program

M/B - Matthews/Bonds

MC/B - Mecklenburg County Park and Recreation Bonds

PPI - Public Private initiatives

NCDOT- North Carolina Department of Transportation

NCDOT/TIPIndp - NCDOT Transportation Improvement Program - Independent Projects

NCDOT/EP - NCDOT Enhancement Program

Other

NSR - Neighborhood Signed Route

Table 5a – Bikeway Matrix (continued)

BIKEWAY MATRIX										
Project #	**Project Location**	**From**	**To**	**Destinations**	**Facility Type**	**Improvements**	**Length (Feet)**	**Length (Miles)**	**Scheduling Priority**	**Funding Source**
Proposed Neighborhood Signed Routes (NSR)										
18f	Phillips Woods Lane	Cochrane Woods Lane	Phillips Road	Multiple	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-60	667.91	0.13	M	M/CIP, M/B, PPI
18e	Reid Harkey Road	Light Wood Drive	Matthews-Mint Hill Rd	Multiple	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-61	2590.74	0.49	M	M/CIP, M/B, PPI
39c	Sadie Drive	Deer Creek Drive	S. Trade Street	FMCG	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-62	2378.05	0.45	M	M/CIP, M/B, PPI
16a	Tanfield Drive	Rice Road	Annecy Drive	Multiple	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-64	1823.30	0.35	M	M/CIP, M/B, PPI
35a	Thornblade Ridge Drive	Pleasant Plains Rd	Ivy Bluff Way	Squirrel Lake Park	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-65	1007.11	0.19	M	M/CIP, M/B, PPI
39e	Vinecrest Drive	Vinecrest Drive / Four-Mile Creek Greenway Connector	Deer Creek Drive	FMCG	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-66	352.06	0.07	M	M/CIP, M/B, PPI
17d	Winter Wood Drive	Forest Wood Drive	Light Wood Drive	Multiple	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-67	2524.75	0.48	M	M/CIP, M/B, PPI
34c	Winterbrooke Drive	Pleasant Plains Rd	Oxborough Drive	Multiple	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-68	1738.03	0.33	M	M/CIP, M/B, PPI
17a	Woodbend Drive	Rice Road	Firewood Drive	Multiple	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-69	1536.57	0.29	M	M/CIP, M/B, PPI
37b	Woody Creek Road	Chesney Glen Drive	Chesney Glen / Four-Mile Creek Greenway	Arthur Goodman Park/Downtown/FMCG	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-70	1498.92	0.28	M	M/CIP, M/B, PPI
22a	Andalusian Drive	Connemara Drive	Creekside Drive	Multiple	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-71	2000.13	0.38	L	M/CIP, M/B, PPI
7	Benton Woods Drive	Sardis Rd	Tillot Dr	Multiple	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-72	1205.25	0.23	L	M/CIP, M/B, PPI
11b	Candlelight Woods Drive	Dion Dr	Fairfax Woods Dr	Irvins Creek Greenway/Crown Point E.S	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-74	1646.55	0.31	L	M/CIP, M/B, PPI
8a	Charging Cross Drive	Pineville-Matthews	Stratfordshire Drive	Multiple	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-75	1289.78	0.24	L	M/CIP, M/B, PPI
6	Coach Ridge Place	Sardis Rd	Hunting Ct	Multiple	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-76	977.76	0.19	L	M/CIP, M/B, PPI
22d	Connemara Drive	Andalusian Drive	Hakamore Drive	Multiple	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-77	2844.10	0.54	L	M/CIP, M/B, PPI
22b	Creekside Drive	Andalusian Drive	Springwater Drive	Multiple	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-78	706.97	0.13	L	M/CIP, M/B, PPI
11a	Dion Drive	Margaret Wallace Rd	Candlelight Woods Dr	Irvins Creek Greenway/Crown Point E.S	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-79	547.41	0.10	L	M/CIP, M/B, PPI

LEGEND

Scheduling Priority

P - Pilot Projects (immediate)

S - Short-term (1-5 years)

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L - Long -term (over 10 years)

Funding Sources

M/CIP - Matthews/Capital Improvement Program

M/B - Matthews/Bonds

MC/B - Mecklenburg County Park and Recreation Bonds

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Other

NSR - Neighborhood Signed Route

Table 5a – Bikeway Matrix (continued)

BIKEWAY MATRIX

Project #	Project Location	From	To	Destinations	Facility Type	Improvements	Length (Feet)	Length (Miles)	Scheduling Priority	Funding Source
Proposed Neighborhood Signed Routes (NSR)										
11c	Fairfax Woods Drive	Candlelight Woods Dr	Hargett Rd	Irvins Creek Greenway/Crown Point E.S	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-79	605.48	0.11	L	M/CIP, M/B, PPI
13c	Gladewater Drive	Mullis Lane	Hallmark Drive	Multiple	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-80	210.93	0.04	L	M/CIP, M/B, PPI
23a	Hakamore Drive	Connemara Drive	Light Brigade Drive	Multiple	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-81	3317.23	0.63	L	M/CIP, M/B, PPI
13b	Hallmark Drive	Gladewater Drive	Plentywood Drive	Multiple	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-82	1477.21	0.28	L	M/CIP, M/B, PPI
11d	Hargett Road	Fairfax Woods Dr	Sam Newell Rd	Irvins Creek Greenway/Crown Point E.S	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-83	614.92	0.12	L	M/CIP, M/B, PPI
26b	Independence Commerce Drive	Mt. Harmony Church Road	Future McKee Rd Extension	Butler H.S.	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-84	413.50	0.08	L	M/CIP, M/B, PPI
23b	Light Brigade Drive	Hakamore Drive	Stallings Road	Multiple	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-85	3066.68	0.58	L	M/CIP, M/B, PPI
28b	Marglyn Drive	Moore Road	Mt. Harmony Church Road	Butler H.S.	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-86	2114.52	0.40	L	M/CIP, M/B, PPI
13d	Mullis Lane	Sam Newell Rd	Gladewater Drive	Multiple	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-88	2122.65	0.40	L	M/CIP, M/B, PPI
13a	Plentywood Drive	Hallmark Drive	Idlewild Rd	Multiple	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-89	251.27	0.05	L	M/CIP, M/B, PPI
5	Sardis Mills Drive	Sardis Rd	Ochmeade Ln	Multiple	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-91	950.71	0.18	L	M/CIP, M/B, PPI
8b	Stratfordshire Drive	Charging Cross Drive	Harrogate Rd	Multiple	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-92	3431.51	0.65	L	M/CIP, M/B, PPI
22c	Springwater Drive	Creekside Drive	Idlewild Rd	Multiple	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-93	2283.49	0.43	L	M/CIP, M/B, PPI
20	Winding Trail	Phillips Road	Phillips Road	Multiple	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-96	3365.07	0.64	L	M/CIP, M/B, PPI
21	Windrow Lane	Idlewild Rd	Andalusian Drive	Multiple	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-97	3380.38	0.64	L	M/CIP, M/B, PPI
60a	S. Ames Street	Christ Covenant Church and School Connector	Alexander St	Christ Covenant Church and School, Downtown Matthews	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-98	245.38	0.05	L	M/CIP, M/B, PPI
60b	Alexander Street	S. Ames St	Jefferson St	Christ Covenant Church and School, Downtown Matthews	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-99	344.74	0.07	L	M/CIP, M/B, PPI
60c	Jefferson Street	Alexander St	Main St	Christ Covenant Church and School, Downtown Matthews	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-100	361.90	0.07	L	M/CIP, M/B, PPI
60d	Main Street	Jefferson St	S. Freemont St	Christ Covenant Church and School, Downtown Matthews	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-101	330.27	0.06	L	M/CIP, M/B, PPI
60e	S. Freemont Street	Main St	McDowell St	Christ Covenant Church and School, Downtown Matthews	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-102	524.46	0.10	L	M/CIP, M/B, PPI
60f	McDowell Street	S. Freemont St	S. Trade St	Christ Covenant Church and School, Downtown Matthews	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-103	466.73	0.09	L	M/CIP, M/B, PPI

LEGEND

Scheduling Priority

P - Pilot Projects (immediate)

S - Short-term (1-5 years)

M - Mid-term (5-10 years)

L - Long -term (over 10 years)

Funding Sources

M/CIP - Matthews/Capital Improvement Program

M/B - Matthews/Bonds

MC/B - Mecklenburg County Park and Recreation Bonds

PPI - Public Private initiatives

NCDOT- North Carolina Department of Transportation

NCDOT/TIPIndp - NCDOT Transportation Improvement Program - Independent Projects

NCDOT/EP - NCDOT Enhancement Program

Other

NSR - Neighborhood Signed Route

Table 5a – Bikeway Matrix (continued)

BIKEWAY MATRIX

Project #	Project Location	From	To	Destinations	Facility Type	Improvements	Length (Feet)	Length (Miles)	Scheduling Priority	Funding Source
Proposed Off-Road Connectors/with ROW										
25i	Alexander Ridge / Butler High School Connector	O'toole Drive	Butler H.S.	Butler H.S.	Multi-Use Trail	Trail Signage, MUTCD Regulatory Signage, Bollards	2049.36	0.39	P	MC/B, M/CIP, M/B
43c	Chesney Glen / Four-Mile Creek Connector	Woody Creek Road	Four-Mile Creek Greenway	FMCG / Squirrel Lake Park	Multi-Use Trail	Trail Signage, MUTCD Regulatory Signage, Bollards	358.65	0.07	P	MC/B, M/CIP, M/B
3e	Sardis Plantation / Four-Mile Creek Greenway Connector	Glendevon Neighborhood	Four-Mile Creek Greenway	FMCG	Multi-Use Trail	Trail Signage, MUTCD Regulatory Signage, Bollards	960.44	0.18	S	MC/B, M/CIP, M/B
Proposed Off-Road Connectors/ROW needed										
2f	Elizabeth Lane Elementary School Connector	Willow Brook Drive	Elizabeth Lane E.S.	Elizabeth Lane E.S.	Multi-Use Trail	Trail Signage, MUTCD Regulatory Signage, Bollards	379.27	0.07	P	MC/B, M/CIP, M/B
4d	Hampton Green / S. Trade Street Connector	Hampton Green Neighborhood	S. Trade Street	Arthur Goodman Park	Multi-Use Trail	Trail Signage, MUTCD Regulatory Signage, Bollards	1986.32	0.38	S	MC/B, M/CIP, M/B
10b	Lakeview Circle / Irvins Creek Greenway Connector	Lakeview Circle	Irvins Creek Greenway	Irvins Creek Greenway/Crown Point E.S	Multi-Use Trail	Trail Signage, MUTCD Regulatory Signage, Bollards	231.61	0.04	M	MC/B, M/CIP, M/B
25j	Alexander Ridge / Butler High School Connector	Kimbrell Ct	Alexander Ridge / Butler High School Connector	Butler H.S.	Multi-Use Trail	Trail Signage, MUTCD Regulatory Signage, Bollards	210.72	0.04	P	MC/B, M/CIP, M/B
47	Crestdale Middle School / CATS Park and Ride Connector	Crestdale M.S.	CATS Park & Ride	CATS Park & Ride	Multi-Use Trail	Trail Signage, MUTCD Regulatory Signage, Bollards	2711.13	0.51	S	MC/B, M/CIP, M/B
43d	Country Place Drive / Matthews Elementary School Greenway Connector	Country Place Drive	Matthews E.S. Greenway Connector	Matthews E.S.	Multi-Use Trail	Trail Signage, MUTCD Regulatory Signage, Bollards	80.66	0.02	S	NCDOT/TIPIndp, MC/B, M/CIP, M/B
33c	Fair Forest / Siskey YMCA Connector	Fair Forest Drive	Siskey YMCA	Siskey YMCA	Multi-Use Trail	Trail Signage, MUTCD Regulatory Signage, Bollards	705.14	0.13	S	NCDOT/TIPIndp, MC/B, M/CIP, M/B
43e	Jeffers Drive / Matthews Elementary School Greenway Connector	Jeffers Dr	Matthews E.S. Greenway Connector	Matthews E.S.	Multi-Use Trail	Trail Signage, MUTCD Regulatory Signage, Bollards	61.66	0.01	P	NCDOT/TIPIndp, MC/B, M/CIP, M/B
43f	Matthews Estates / Matthews Elementary School Greenway Connector	Matthews Estates Rd	Matthews E.S. Greenway Connector	Matthews E.S.	Multi-Use Trail	Trail Signage, MUTCD Regulatory Signage, Bollards	236.50	0.04	P	NCDOT/TIPIndp, MC/B, M/CIP, M/B
4a	Bubbling Well Road / Fullwood Lane Connector	Bubbling Well Rd	Fullwood Lane	Fullwood Bike Lane	Multi-Use Trail	Trail Signage, MUTCD Regulatory Signage, Bollards	2113.63	0.40	P	NCDOT/TIPIndp, MC/B, M/CIP, M/B
4b	Fullwood Lane / South Freemont Connector	Fullwood Lane	South Freemont Street	Downtown Matthews	Multi-Use Trail	Trail Signage, MUTCD Regulatory Signage, Bollards	1442.96	0.27	M	NCDOT/TIPIndp, MC/B, M/CIP, M/B
4c	Arthur Goodman Park / Bubbling Well-Fullwood Lane Connector	Bubbling Well Rd-Fullwood Lane Connector	Arthur Goodman Park	Arthur Goodman Park	Multi-Use Trail		2060.50	0.39	M	NCDOT/TIPIndp, MC/B, M/CIP, M/B
4e	Arthur Gooman Park / Four-Mile Creek Greenway Connector	Arthur Goodman Park	FMCG	Arthur Goodman Park / FMCG	Multi-Use Trail	Trail Signage, MUTCD Regulatory Signage, Bollards	689.25	0.13	M	NCDOT/TIPIndp, MC/B, M/CIP, M/B
25k	Butler High School Connector	Alexander Ridge / Butler High School Connector	Butler H.S.	Butler H.S.	Multi-Use Trail	Trail Signage, MUTCD Regulatory Signage, Bollards	1836.76	0.35	M	NCDOT/TIPIndp, MC/B, M/CIP, M/B
17f	Forest Ridge-Woodhollow / Northeast Parkway Connector	Kale Wood Dr	Northeast Pkwy	Sycamore Commons Shopping Center / Windsor Park	Multi-Use Trail	Trail Signage, MUTCD Regulatory Signage, Bollards	300.80	0.06	M	NCDOT/TIPIndp, MC/B, M/CIP, M/B
12c	Habersham / Irviins Creek Greenway Connector	Ballards Pond Ln	Irvins Creek Greenway	Irvins Creek Greenway/Crown Point E.S	Multi-Use Trail	Trail Signage, MUTCD Regulatory Signage, Bollards	162.82	0.03	M	NCDOT/TIPIndp, MC/B, M/CIP, M/B
49c	Matthews Mint-Hill Road Connector	Matthews-Mint Hill Rd	Matthews-Mint Hill Rd	Multiple	Multi-Use Trail	Trail Signage, MUTCD Regulatory Signage, Bollards	843.88	0.16	M	NCDOT/TIPIndp, MC/B, M/CIP, M/B
3f	Sardis Plantation Open Space Connectors	Southern Cross Ln and Port Royal Dr	Sardis Plantation / Four-Mile Creek Greenway Connector	FMCG	Multi-Use Trail	Trail Signage, MUTCD Regulatory Signage, Bollards	3667.92	0.69	M	NCDOT/TIPIndp, MC/B, M/CIP, M/B
9c	Sardis Forest / Anna Warner Memorial Athletic Fields Connector	Neill Ridge Rd	Anna Warner Memorial Athletic Fields	Anna Warner Memorial Athletic Fields	Multi-Use Trail	Trail Signage, MUTCD Regulatory Signage, Bollards	873.81	0.17	M	NCDOT/TIPIndp, MC/B, M/CIP, M/B
9d	Sardis Forest / Monroe Road-Bus Shelter Connector	Neill Ridge Rd	Monroe Rd	Bus Stop	Multi-Use Trail	Trail Signage, MUTCD Regulatory Signage, Bollards	1091.81	0.21	M	NCDOT/TIPIndp, MC/B, M/CIP, M/B
32d	Brightmoor / Pleasant Plains Road Connector	Cresent Knoll Dr	Pleasant Plains Rd	Multiple	Multi-Use Trail	Trail Signage, MUTCD Regulatory Signage, Bollards	5140.06	0.97	M	NCDOT/TIPIndp, MC/B, M/CIP, M/B
25j	Butler High School / Moore Road Connector	Alexander Ridge / Butler High School Connector	Moore Rd	Butler H.S.	Multi-Use Trail	Trail Signage, MUTCD Regulatory Signage, Bollards	2323.32	0.44	L	NCDOT/TIPIndp, MC/B, M/CIP, M/B
46	Future Sardis Road North Extension / Sam Newell Road Connector	Future Sardis Rd North Extension	Sam Newell Rd	Multiple	Multi-Use Trail	Trail Signage, MUTCD Regulatory Signage, Bollards	907.17	0.17	L	NCDOT/TIPIndp, MC/B, M/CIP, M/B
26c	Mt. Harmony Church Road / Union County Connector	Mt. Harmony Church Road	Union County line	Union County	Multi-Use Trail	Trail Signage, MUTCD Regulatory Signage, Bollards	2594.18	0.49	L	NCDOT/TIPIndp, MC/B, M/CIP, M/B
59	Duke Power Right-of-Way	Pleasant Plains Rd	E. John Street	Multiple	Multi-Use Trail	Trail Signage, MUTCD Regulatory Signage, Bollards	4925.74	0.93	L	NCDOT/TIPIndp, MC/B, M/CIP, M/B
61	Christ Covenant Church and School / S. Ames Street Connector	Ames Street	Christ Covenant Church and School Property	Downtown Matthews and Christ Covenat Church and School	Multi-Use Trail	Trail Signage, MUTCD Regulatory Signage, Bollards	731.40	0.14	L	NCDOT/TIPIndp, MC/B, M/CIP, M/B

Scheduling Priority

P - Pilot Projects (immediate)

LEGEND

S - Short-term (1-5 years)

M - Mid-term (5-10 years)

L - Long -term (over 10 years)

Funding Sources

M/CIP - Matthews/Capital Improvement Program

M/B - Matthews/Bonds

MC/B - Mecklenburg County Park and Recreation Bonds

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NCDOT/EP - NCDOT Enhancement Program

Other

NSR - Neighborhood Signed Route

Table 5a – Bikeway Matrix (continued)

BIKEWAY MATRIX

Project #	Project Location	From	To	Destinations	Facility Type	Improvements	Length (Feet)	Length (Miles)	Scheduling Priority	Funding Source
***Primary Corridors for Future Bicycle Improvements**										
**58b	Pleasant Plains Road	Weddington Rd	Matthews Town Limits	Multiple	Bike Lanes	5' Wide Bike Lane, MUTCD signage	9856.68	1.87	P	NCDOT/TIPIncd, M/B
**58a	S. Trade/Weddington Road	John Street	McKee Road	Multiple	Bike Lanes	5' Wide Bike Lane, MUTCD signage	14793.80	2.80	P	NCDOT/TIPIncd, M/B
40a	E. Charles Street	N. Trade Street	Crestdale Road	Downtown Matthews	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-39	2955.93	0.56	L	M/CIP, M/B, PPI
26a	Mt. Harmony Church Road	Phillips Road	Independence Commerce Drive	Mt. Harmony Church	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-57	6097.49	1.15	L	M/CIP, M/B, PPI
28a	Moore Road	Matthews-Mint Hill Rd	Marglyn Drive	Butler H.S.	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-87	4276.93	0.81	L	M/CIP, M/B, PPI
27	Stevens Mill Road	Mt. Harmony Church Road	Mecklenburg County Line	Mt. Harmony Church	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-63	1780.15	0.34	L	M/CIP, M/B, PPI
30	Campus Ridge Road	CPCC Levine Campus	Future McKee Rd Extension	CPCC Levine Campus	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-73	4394.65	0.83	L	M/CIP, M/B, PPI
24	Stallings Road	Idlewild Rd	Mecklenburg County Line	Multiple	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-94	4413.95	0.84	L	M/CIP, M/B, PPI
15	Rice Road	Sam Newell Rd	Idlewild Rd	Multiple	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-90	6021.14	1.14	L	M/CIP, M/B, PPI
14	Williams Road	Sam Newell Rd	Rice Rd	Multiple	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-95	5146.41	0.97	L	M/CIP, M/B, PPI
19	Phillips Road	Phillips Woods Lane	Mt. Harmony Church Road	Multiple	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-59	6643.91	1.26	L	M/CIP, M/B, PPI
56	Idlewild Road	Margaret Wallace Rd	Just south of 1-485	Multiple	Bike Lanes	MUTCD Guidance and Warning signs	27111.10	5.13	L	NCDOT/TIPIncd, M/B
55	Margaret Wallace Road	Idlewild Rd	Sam Newell Rd	Multiple	Wide Outside Lane	5' Wide Bike Lane, MUTCD signage	4689.40	0.89	L	NCDOT/TIPIncd, M/B
49a	Matthews-Mint Hill Road	N. Trade Street	NC 51	Multiple	Bike Lanes	MUTCD Guidance and Warning signs	10041.86	1.90	L	NCDOT/TIPIncd, M/B
59	McKee Road	Weddington Rd	Holly Ridge Dr	Multiple	Wide Paved Shoulder	MUTCD Guidance and Warning signs	5955.15	1.13	L	NCDOT/TIPIncd, M/B
53b	McKee Road Extension	McKee Rd	Campus Ridge Rd	Multiple	Wide Paved Shoulder	MUTCD Guidance and Warning signs	10129.00	1.92	L	NCDOT/TIPIncd, M/B
51	Monroe Road/John Street	Just south of Galleria Blvd	Union County line	Multiple	Bike Lanes	MUTCD Guidance and Warning signs	20010.75	3.79	L	NCDOT/TIPIncd, M/B
48	NC 51	Echo Forest Drive	Idlewild Rd	Multiple	Bike Lanes	MUTCD Guidance and Warning signs	28830.22	5.46	L	NCDOT/TIPIncd, M/B
52	North Trade Street / Sam Newell Road	John Street	Margaret Wallace Rd	Multiple	Bike Lanes	5' Wide Bike Lane, MUTCD signage	18774.88	3.56	L	NCDOT/TIPIncd, M/B
54a	Northeast Parkway	Sam Newell Rd	Matthews Township Pkwy	Multiple	Bike Lanes	5' Wide Bike Lane, MUTCD signage	8203.14	1.55	L	NCDOT/TIPIncd, M/B
54b	Northeast Parkway Extension	Northeast Pkwy	Moore Rd	Multiple	Bike Lanes	5' Wide Bike Lane, MUTCD signage	2059.10	0.39	L	NCDOT/TIPIncd, M/B
50	Sardis Road	Pineville-Matthews	Town limits	Multiple	Wide Outside Lane	MUTCD Guidance and Warning signs	2913.66	0.55	L	NCDOT/TIPIncd, M/B
Future Roadways										
***18b	Lightwood Drive / Cochrane Woods Lane	Light Wood Drive	Cochrane Woods Lane	Multiple	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-76	277.54	0.05	M	M/B, M/CIP, PPI
***39f	Vinecrest Drive / Ashley Creek Neighborhood	Vinecrest Drive	Ashley Creek Neighborhood	Multiple	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-77	687.49	0.13	M	M/B, M/CIP, PPI
57	E. John Street / Future Recreation Area	E. John Street	Future Recreation Area	Multiple	NSR	MUTCD Signs - M1-8, D11-1, W11-1 and W16-75	4521.24	0.86	L	M/B, M/CIP, PPI

LEGEND

Scheduling Priority

P - Pilot Projects (immediate)

S - Short-term (1-5 years)

M - Mid-term (5-10 years)

L - Long -term (over 10 years)

Funding Sources

M/CIP - Matthews/Capital Improvement Program

M/B - Matthews/Bonds

MC/B - Mecklenburg County Park and Recreation Bonds

PPI - Public Private initiatives

NCDOT- North Carolina Department of Transportation

NCDOT/TIPIndp - NCDOT Transportation Improvement Program - Independent Projects

NCDOT/EP - NCDOT Enhancement Program

Other

NSR - Neighborhood Signed Route

*These bikeways have been cross-referenced with the Mecklenburg-Union County Metropolitan Planning Organization (MUMPO) 2030 Long Range Transportation Plan.

**The construction of these Pilot Projects is anticipated to occur in the Mid-term 5-10 years. In the short-term (1-5 years) they will be signed using MUTCD signs W11-1(Bicycle Warning) and W16-1(Share the Road).

***These are proposed roadways that will be constructed as part of future residential development.

Figure 5c – Bubbling Well Road / Fullwood Lane Off-Road Connector

Figure 5d – Butler High School Off-Road and Neighborhood Signed Route

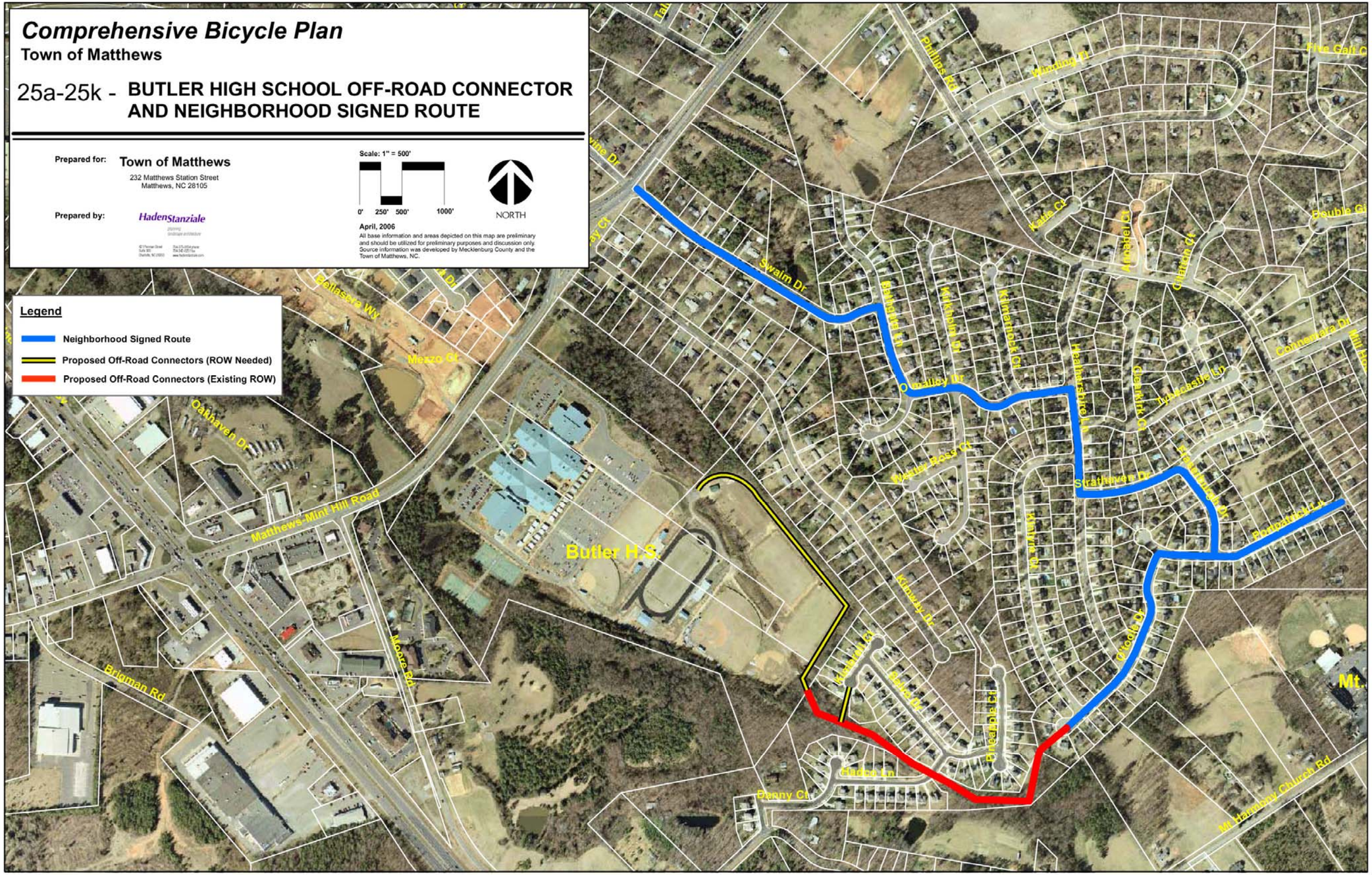


Figure 5e – Elizabeth Lane Off-Road Connector and Neighborhood Signed Route

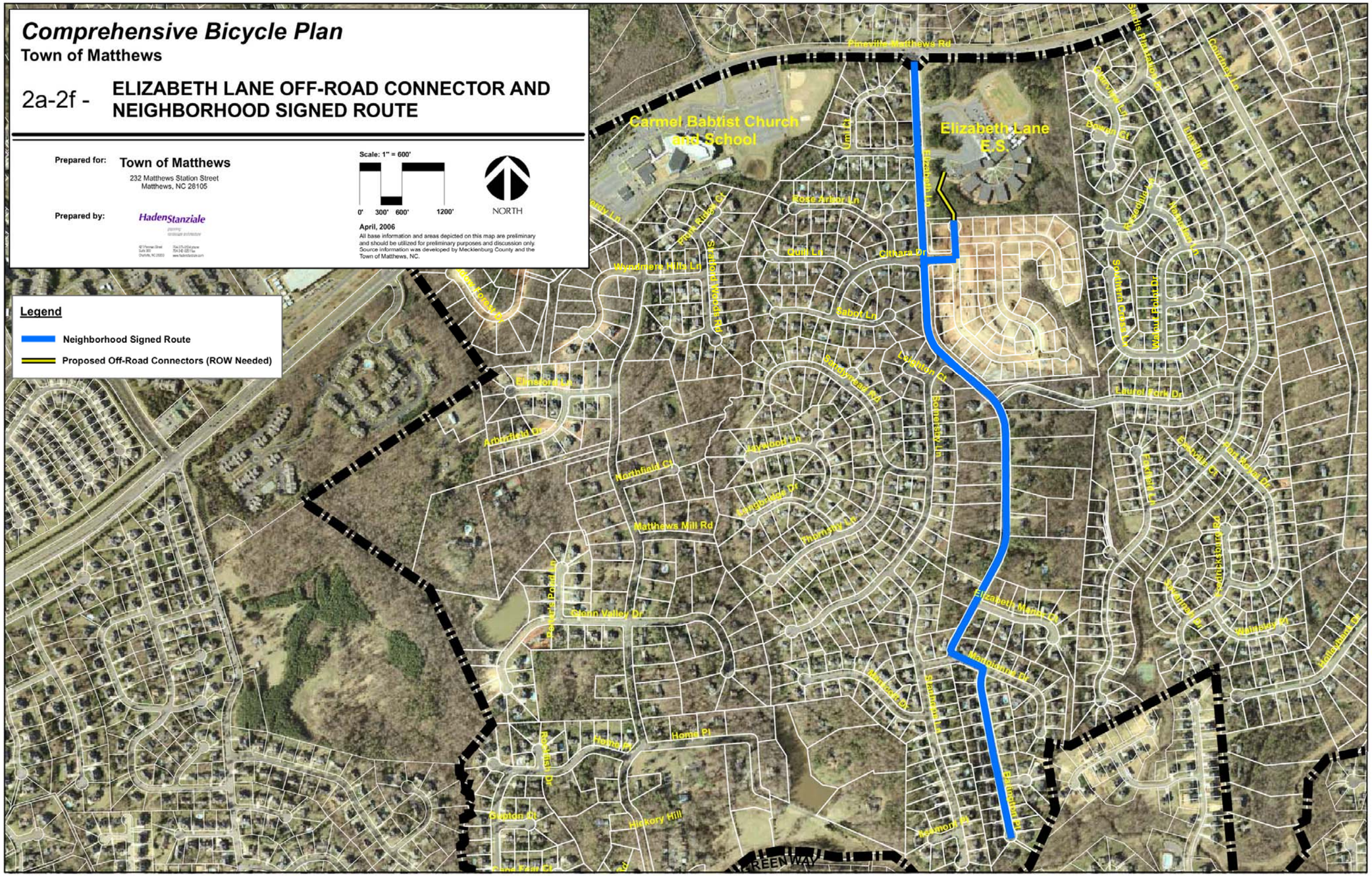


Figure 5f – Four-Mile Creek Greenway / Matthews Elementary School Greenway Connector

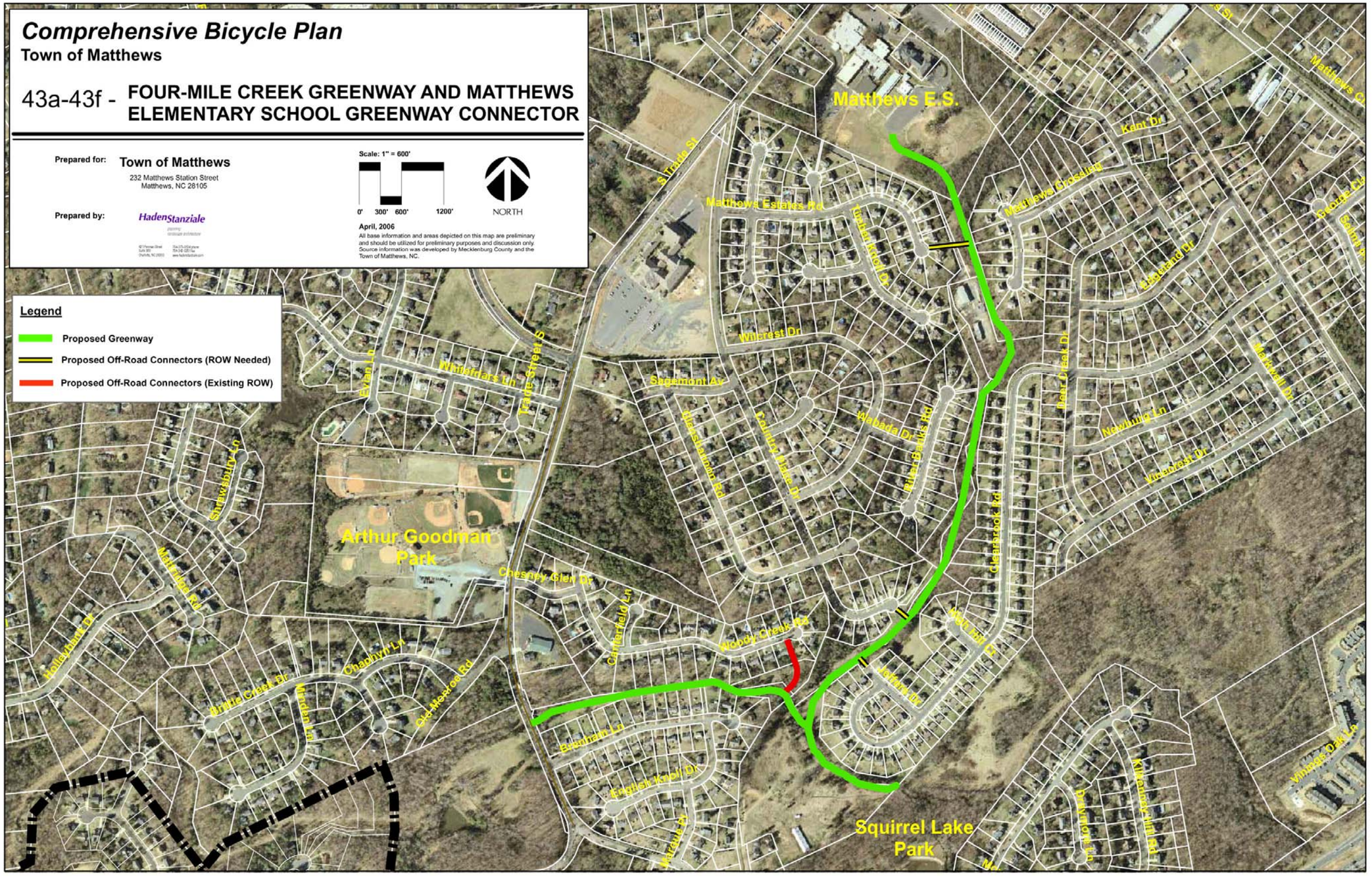


Figure 5g – Primary Access for Rural Road Access

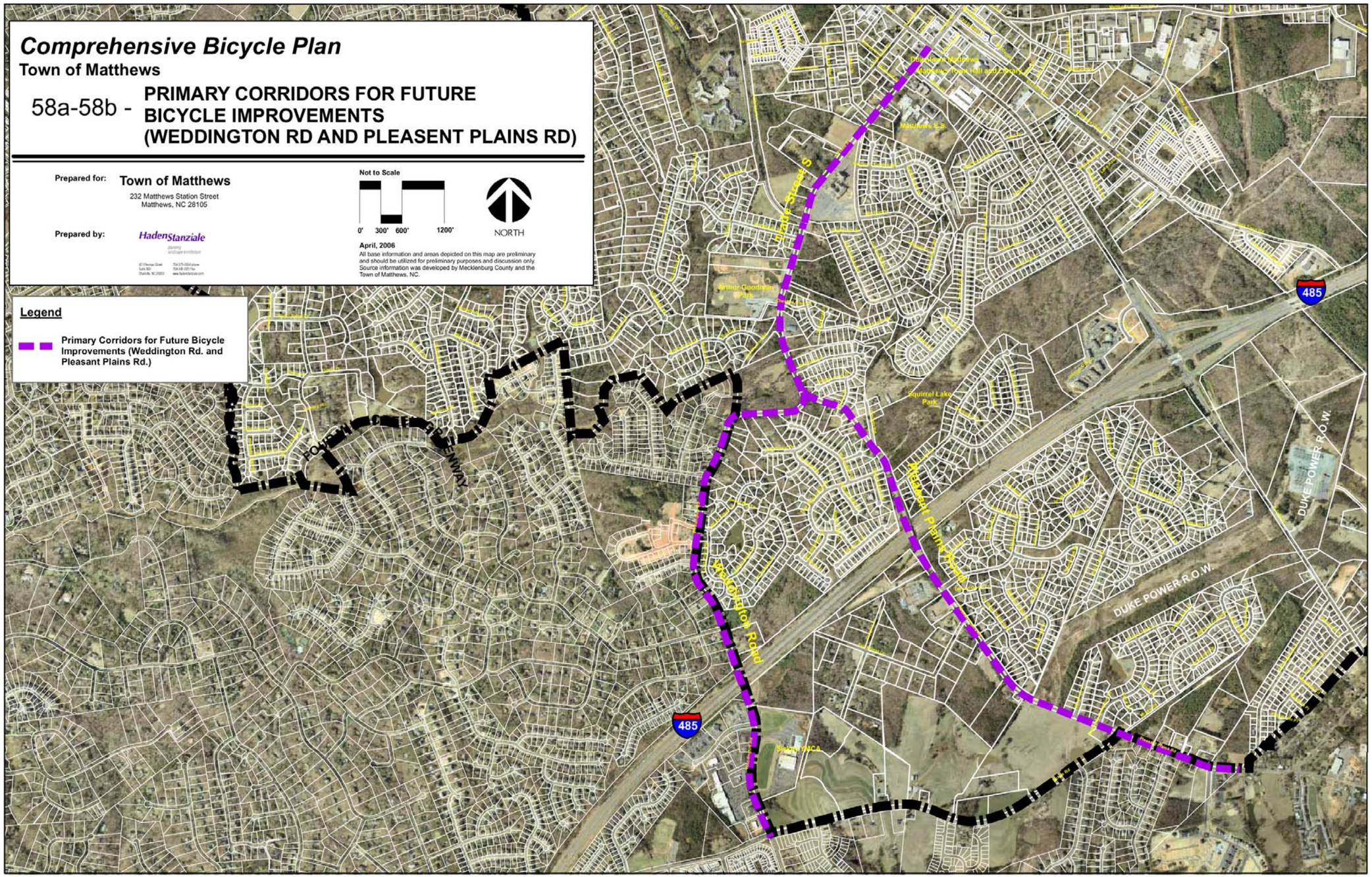


Table 5b – 4a - Bubbling Well Road / Fullwood Lane Off-Road Connector Cost Estimate

Project:	***Bubbling Well Road/Fullwood Lane Off-Road Connector***				
Date:	***April 10, 2006***				
	Off-road connector/ multi-use path/ ROW needed				***2100 ft.***
Item No.	**Item Description**	**Quantity**	**Unit**	**Unit Price**	**Value**
1	Mobilization	1	LS	$ 8,684.50	$ 8,685
2	Erosion Control	4,200	LF	$ 2.90	$ 12,180
3	Comprehensive Grading	1	LS	$ 34,000.00	$ 34,000
4	Asphalt Trail	2,100	LF	$ 26.00	$ 54,600
5	Wheel Chair Ramp (Single)	2	EA	$ 1,100.00	$ 2,200
6	Storm Drain Pipe	90	LF	$ 33.00	$ 2,970
7	Bollards	6	EA	$ 550.00	$ 3,300
8	Safety Rail	150	LF	$ 55.00	$ 8,250
9	Signage	12	EA	$ 220.00	$ 2,640
10	Seeding	63,000	SF	$ 0.85	$ 53,550
11	Design and Engineering Costs	1	LS	$ 21,884.94	$ 21,885
		Subtotal			$ 204,259
		10% Contingency			$ 20,426
		**TOTAL ----------> **			**$ 224,685**

This cost estimate is based on a conceptual layout and the following assumptions were used in developing the cost estimate:

- Erosion control fence on both sides of trail
- 3 locations requiring storm drainage pipe
- 3 bollards at each end of multi-use trail
- 2 bicycle racks and pads, located at the front of the school and in the parking lot.
- 4 regulatory signs, 4 warning signs and 4 guiding signs
- Seeding and grading extends 15' on both sides of the multi-use trail
- ROW or easement acquisition is not included in the cost estimate
- Mobilization is 5% of construction costs
- Design and engineering costs are 12% of the total construction costs

Pricing is based on 2006 US dollars and is not adjusted for inflation.

Table 5c – 25a-25k - Butler High School Off-Road and Neighborhood Signed Route Cost Estimate

Project:	***Butler High School Off-Road Connector and Neighborhood Signed Route***
Date:	***April 10, 2006***
	Length of Neighborhood Signed Route 7400 ft.
	Off-road connector/ multi-use path/ with existing ROW 2300 ft.
	Off-road connector/ multi-use path/ROW needed 1800 ft.

Item No.	Item Description	Quantity	Unit	Unit Price	Value
1	Mobilization	1	LS	$ 15,978.50	$ 15,979
2	Erosion Control Fencing	8,200	LF	$ 2.90	$ 23,780
3	Comprehensive Grading	1	LS	$ 60,000.00	$ 60,000
4	Asphalt Multi-Use Path	4,100	LF	$ 26.00	$ 106,600
5	Wheel Chair Ramp (Single)	2	EA	$ 1,100.00	$ 2,200
6	Storm Drain Pipe	90	LF	$ 33.00	$ 2,970
7	Bollards	6	EA	$ 550.00	$ 3,300
8	Safety Rail	150	LF	$ 55.00	$ 8,250
9	Bike Rack and Concrete Pad	2	EA	$ 2,200.00	$ 4,400
10	Signage	16	EA	$ 220.00	$ 3,520
11	Seeding	123,000	SF	$ 0.85	$ 104,550
12	Design and Engineering Costs	1	LS	$ 40,265.82	$ 40,266
		Subtotal			$ 375,814
		10% Contingency			$ 37,581
		**TOTAL ----------> **			**$ 413,396**

This cost estimate is based on a conceptual layout and the following assumptions were used in developing the cost estimate:

- Erosion control fence on both sides of trail
- 3 locations requiring storm drainage pipe
- 3 bollards at each end of multi-use trail
- 2 bicycle racks and pads, located at the front of the school and in the parking lot.
- 4 regulatory signs, 4 warning signs and 8 guiding signs
- Seeding and grading extends 15' on both sides of the multi-use trail
- ROW or easement acquisition is not included in the cost estimate
- Mobilization is 5% of construction costs
- Design and engineering costs are 12% of the total construction costs

Pricing is based on 2006 US dollars and is not adjusted for inflation.

Table 5d – 2a-2f - Elizabeth Lane Off-Road Connector and Neighborhood Signed Route

Project:	***Elizabeth Lane Off-Road Connector and Neighborhood Signed Route***				
Date:	***April 10, 2006***				
	Length of Neighborhood Signed Route				***6500 ft.***
	Off-road connector/ multi-use path/ with existing ROW				***400 ft.***
Item No.	**Item Description**	**Quantity**	**Unit**	**Unit Price**	**Value**
1	Mobilization	1	LS	$ 2,562.50	$ 2,563
2	Erosion Control Fencing	800	LF	$ 2.90	$ 2,320
3	Comprehensive Grading	1	LS	$ 6,000.00	$ 6,000
4	Asphalt Trail	400	LF	$ 26.00	$ 10,400
5	Wheel Chair Ramp (Single)	2	EA	$ 1,100.00	$ 2,200
6	Storm Drain Pipe	60	LF	$ 33.00	$ 1,980
7	Bollards	6	EA	$ 550.00	$ 3,300
8	Safety Rail	150	LF	$ 55.00	$ 8,250
9	Bike Rack and Concrete Pad	1	EA	$ 2,200.00	$ 2,200
10	Signage	20	EA	$ 220.00	$ 4,400
11	Seeding	12,000	SF	$ 0.85	$ 10,200
12	Design and Engineering Costs	1	LS	$ 6,457.50	$ 6,458
		Subtotal			$ 60,270
		10% Contingency			$ 6,027
		**TOTAL ----------> **			**$ 66,297**

This cost estimate is based on a conceptual layout and the following assumptions were used in developing the cost estimate:

- Erosion control fence on both sides of trail
- 2 locations requiring storm drainage pipe
- 3 bollards at each end of multi-use trail
- 1 bicycle racks and pads, located at the side of the school.
- 4 regulatory signs, 4 warning signs and 4 guiding signs
- Seeding and grading extends 15' on both sides of the multi-use trail
- ROW or easement acquisition is not included in the cost estimate
- Mobilization is 5% of construction costs
- Design and engineering costs are 12% of the total construction costs

Pricing is based on 2006 US dollars and is not adjusted for inflation.

Table 5e – 43a-43f - Four-Mile Creek Greenway / Matthews Elementary School Greenway Connector Cost Estimate

Project:	***Four Mile Creek Greenway and Matthews E.S. Greenway Connector***				
Date:	***April 10, 2006***				
	Greenway				***6743 ft.***
	Off-road connector/ multi-use path/ with existing ROW				***380 ft.***
	Off-road connector/ multi-use path/ROW needed				***360 ft.***
Item No.	**Item Description**	**Quantity**	**Unit**	**Unit Price**	**Value**
1	Greenway from Squirrel Lake to Trade St.	1	LS	$ 350,000.00	$ 350,000
2	Mobilization	1	LS	$ 3,748.60	$ 3,749
3	Erosion Control	1,480	LF	$ 2.90	$ 4,292
4	Comprehensive Grading	1	LS	$ 12,000.00	$ 12,000
5	Asphalt Trail	740	LF	$ 26.00	$ 19,240
6	Wheel Chair Ramp (Single)	2	EA	$ 1,100.00	$ 2,200
7	Storm Drain Pipe	60	LF	$ 33.00	$ 1,980
8	Bollards	6	EA	$ 550.00	$ 3,300
9	Safety Rail	150	LF	$ 55.00	$ 8,250
10	Bike Rack and Concrete Pad	1	EA	$ 2,200.00	$ 2,200
11	Signage	12	EA	$ 220.00	$ 2,640
12	Seeding	22,200	SF	$ 0.85	$ 18,870
13	Design and Engineering Costs	1	LS	$ 51,446.47	$ 428,721
		Subtotal			$ 857,441
		10% Contingency			$ 85,744
		**TOTAL ----------> **			**$ 943,185**

This cost estimate is based on a conceptual layout and the following assumptions were used in developing the cost estimate:

- Greenway is based on an 50.00 per linear foot cost
- Erosion control fence on both sides of trail
- 2 locations requiring storm drainage pipe
- 3 bollards at each end of multi-use trail
- 1 bicycle racks and pads, located at the side of the school.
- 4 regulatory signs, 4 warning signs and 4 guiding signs
- Seeding and grading extends 15' on both sides of the multi-use trail
- ROW or easement acquisition is not included in the cost estimate
- Mobilization is 5% of construction costs
- Design and engineering costs are 12% of the total construction costs

Pricing is based on 200 US dollars and is not adjusted for inflation.

Table 5f – 58a-58b-Primary Corridors for Future Bicycle Improvements (Weddington Road and Pleasant Plaints Road)

Project:	***Primary Corridors for Future Bicycle Improvements (Weddington Road and Pleasant Plains Road)***				
Date:	***April 10, 2006***				
	Roadway length				**22000 ft.**
	The bicycle facilities on this roadway are part of CIP project to be completed in the mid-term time frame				
Item No.	**Item Description**	**Quantity**	**Unit**	**Unit Price**	**Value**
9	Signage	18	EA	$ 220.00	$ 3,960
		Subtotal			$ 3,960
		10% Contingency			$ 396
		**TOTAL ----------> **			**$ 4,356**

Pricing is based on 2006 US dollars and is not adjusted for inflation.

SECTION 6: FACILITY STANDARDS AND GUIDELINES

Overview

Bicycle facilities include both bikeways and ancillary facilities. The bikeways included in the bicycle plan are as follows:

- Greenways
- Neighborhood Signed Routes
- Off-Road Connectors
- Bicycle Lanes
- Wide Outside Lanes
- Wide Paved Shoulders
- Multi-Use Paths

Each type of bicycle facility has specific design requirements. The requirements are determined by public agencies responsible for safety standards at the state and federal levels. Adherence to the requirements is necessary to ensure a safe system of bicycle facilities. The design standards are taken from the following resources:

- American Association of State Highway and Transportation Officials (AASHTO) Guide for the Development of Bicycle Facilities (1999)
- North Carolina Department of Transportation (NCDOT) Bicycle Facilities Planning and Design Guidelines (1994)
- Manual on Uniform Traffic Control Devices (MUTCD) 2003 Edition – Part 9 Traffic Controls for Bicycle Facilities

The standards included in this report are the minimum requirements and can be exceeded unless otherwise noted.

Greenways

A greenway is a linear open space established along either a natural corridor, such as riverfront, stream valley, or ridgeline, or overland along a railroad right-of-way converted to recreational use. Greenways are also used to control flooding, improve water quality, protect wetlands, conserve habitat for wildlife, and buffer adjacent land uses. Greenways incorporate varying types and intensity of human use, including trails for recreation and transportation.[1] The greenways identified in this plan are those that have been identified in the Mecklenburg County Greenway Master Plan (1999) and by the Town of Matthews. A typical greenway cross-section is shown in Figure 6a.

Minimum Design Standards

- 10-foot wide asphalt trail
- 2-foot wide shoulders (crushed stone or turf)
- 16-feet minimum horizontal clearance

Ancillary Facilities

- Signs - warning, regulatory and guiding
- Trash receptacles
- Benches
- Intersection warning signals and signs
- Bollards

References

- NCDOT Bicycle Facilities Planning and Design Guidelines (1994)
- AASHTO Guide for the Development of Bicycle Facilities (1999)

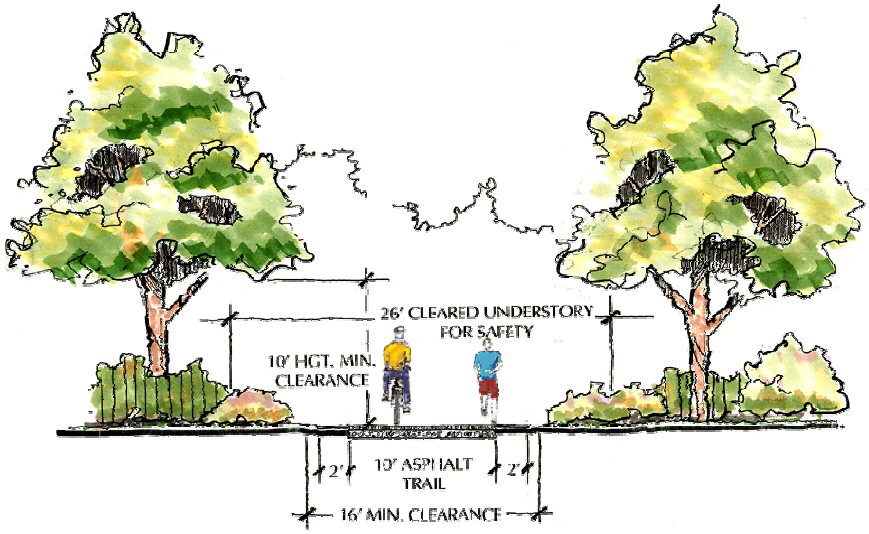


Figure 6a
Typical Greenway Cross Section

Neighborhood Signed Route

Neighborhood streets are typically characterized by low traffic volumes moving at lower speeds. Such streets are often the preferred routes for cyclists as there is little conflict with motor vehicles. Signing neighborhood routes can be challenging, particularly to clearly delineate direction of the bikeways at intersections. Numbered route signs, similar to those on page 6-14 in Figure 6l, can be used to clarify route direction, but can become a maintenance challenge for sign replacement, since the signs are specific to each route. It is recommended that Town of Matthews strategically sign a few neighborhood Routes to raise the visibility of bicycling, but continue to assess the effectiveness of the signage prior to signing all the proposed neighborhood routes.

Figure 6b shows what a Neighborhood Signed Route would look like on a typical neighborhood street in Matthews. Bicycle route signs should be placed at frequent intervals (approximately ¼-mile apart and at intersections) to keep bicyclists informed of route changes as well as remind motorists of the presence of bicyclists. Improvements for neighborhood signed routes will consist of the installation of MUTCD regulatory signs.

Minimum Design Standards

- Matthews roadway width standards (see Figure 6b)

Ancillary Facilities

- MUTCD approved signs: M1-8 (Bicycle Route Sign), D11-1 (Bicycle Route Guide Sign) and W11-1 (Bicycle Warning Sign), W16-1 (Share the Road Plaque)

References

- Charlotte-Mecklenburg Land Development Standards (2001)
- NCDOT Bicycle Facilities Planning and Design Guidelines (1994)
- AASHTO Guide for the Development of Bicycle Facilities (1999)
- MUTCD 2003 Edition – Part 9 Traffic Controls for Bicycle Facilities

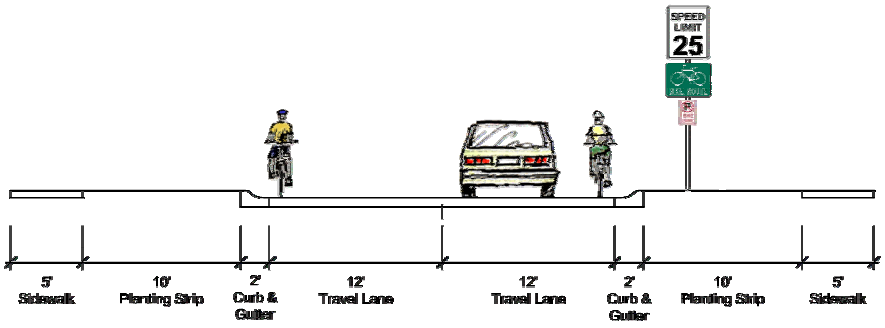


Figure 6b
Matthews Local Residential Street – Typical Section

Wide Outside Lanes

A wide outside lane refers to the through lane (not right-turn lane) closest to the curb and gutter of a roadway. This lane, which is typically 14 feet in width, not including the gutter pan, provides the motorist enough room to pass a cyclist without having to change lanes (see Figure 6d). This type of facility typically occurs in urban, suburban and, occasionally, rural conditions.

Minimum Design Standards

- 14-foot wide outside lane

Ancillary Facilities

- Bike route warning and guide signs (MUTCD approved W11-1 and W16-1).

References

- NCDOT Bicycle Facilities Planning and Design Guidelines (1994)
- AASHTO Guide for the Development of Bicycle Facilities (1999)
- MUTCD 2003 Edition – Part 9 Traffic Controls for Bicycle Facilities

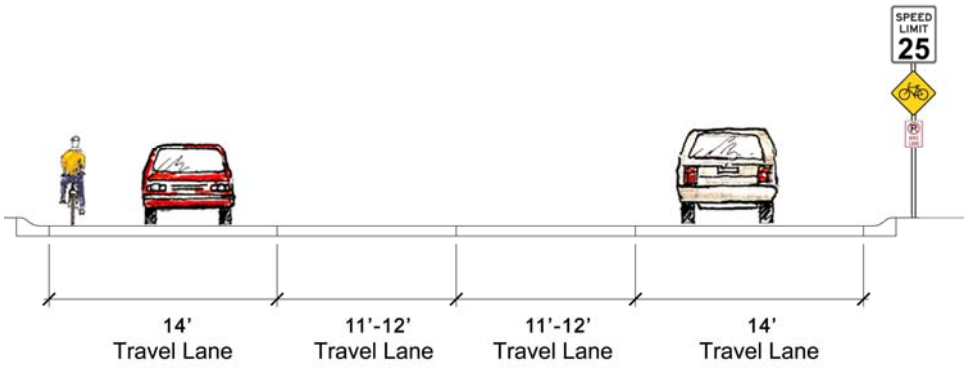


Figure 6c
Typical Wide Outside Lane Cross Section

Wide Paved Shoulders

A paved shoulder refers to the part of the highway that is adjacent to the regularly traveled portion of the highway and is on the same level as the highway. Ideally, wide paved shoulders should be included in the construction of new highways and the upgrade of existing highways. Wide paved shoulders can be marked or unmarked facilities. When marked they should utilize the standard bicycle lane pavement markings. Figure 6e shows a typical wide paved shoulder cross-section.

Minimum Design Standards

- 12-foot wide travel lanes
- 4-foot wide paved shoulder

Ancillary Facilities

- Bike route warning and guide signs (MUTCD approved D11-1, W11-1 and W16-1).

References

- NCDOT Bicycle Facilities Planning and Design Guidelines (1994)
- AASHTO Guide for the Development of Bicycle Facilities (1999)
- MUTCD 2003 Edition – Part 9 Traffic Controls for Bicycle Facilities

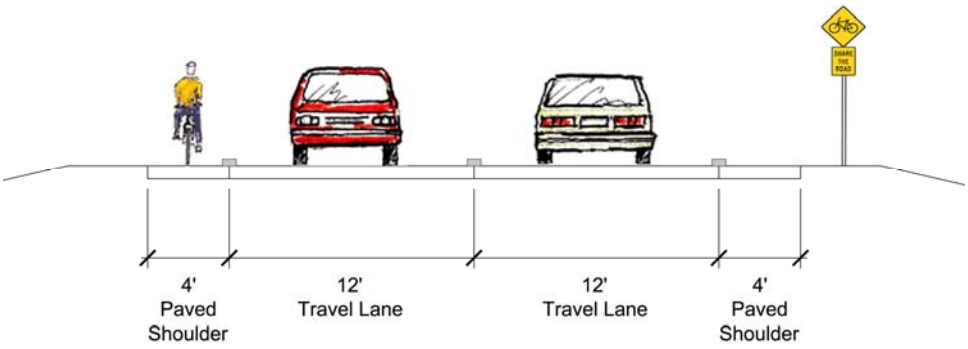


Figure 6d
Typical Wide Paved Shoulder Cross Section

Off-Road Connectors

Off-road connectors are paved multi-use trails/paths that link adjacent neighborhoods. The off-road connectors allow cyclists to access adjacent neighborhoods and destinations without having to travel on a congested and busy thoroughfare. The two types of off-road connectors are illustrated below. Figure 6f shows a connection of two abutting neighborhoods with cul-de-sac streets through a multi-use trail. Figure 6g shows a connection between a neighborhood cul-de-sac street and a greenway through a multi-use trail.

Minimum Design Standards

- 10-foot wide asphalt trail
- 2-foot wide shoulders (crushed stone or turf)
- 16-feet minimum horizontal clearance

Ancillary Facilities

- Trail signage
- Regulatory signs (MUTCD signs, R5-3, W11-1 and W11-2)
- Bollards

References

- NCDOT Bicycle Facilities Planning and Design Guidelines (1994)
- AASHTO Guide for the Development of Bicycle Facilities (1999)
- MUTCD 2003 Edition – Part 9 Traffic Controls for Bicycle Facilities

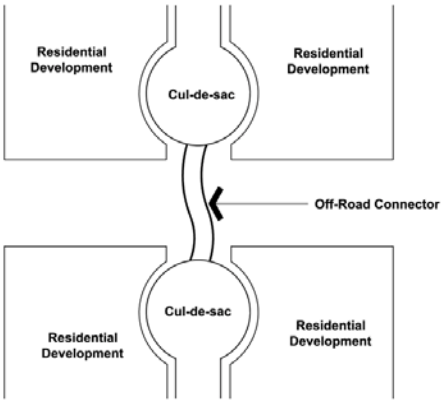
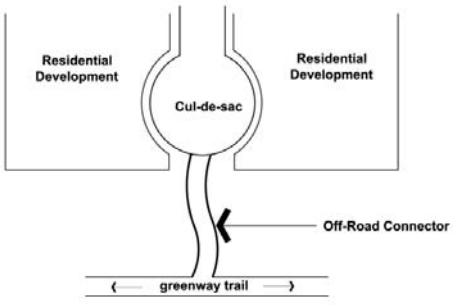


Figure 6e
Off-Road Connector
Residential to Residential



6f
Off-Road Connector
Residential to Greenway

Bicycle Lane

A bicycle lane is a portion of a roadway which has been designated by striping, signing and/or pavement markings for the exclusive use of bicyclists. Minimum standards and ancillary facilities are listed below. Bike lanes can occur in three different scenarios; these are shown in Figure 6h, Typical Bike Lane Cross Sections. It is inevitable that bicyclists will travel through an intersection at some point during their trip. Required treatments at intersections provide for a safer bicycling environment, by guiding both the bicyclist and the motorist to make the correct movement through the intersection. Treatments vary depending on the complexity and type of the intersection. Please see page 6-9 for additional information on intersections.

Minimum Design Standards

- On roadways with curb and gutter, the minimum width of a bicycle lane should be 4 feet, not including the gutter pan. If the roadway carries high volumes of traffic, the marked lane should be 5 or 6 feet.
- On roadways without curb and gutter, the minimum width of a bicycle lane should be 4 feet. If the roadway carries high volumes of traffic, the marked lane should be 5 or 6 feet.
- If parking is permitted, the bike lane should be placed between the parking area and the travel lane and have a minimum width of 5 feet.
- Bicycle safe drainage grates (see ancillary facilities)
- Bike Lane Signs (MUTCD Regulatory Signs, R3-17, R3-17a, R3-17b, W11-1 and W16-1)
- 6 in. striping to separate motor vehicle travel lanes from bicycle lane
- 4in. striping to separate bicycle lane from on-street parking stalls

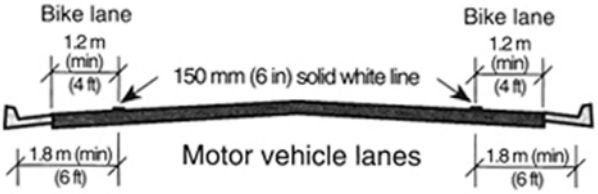
Ancillary Facilities

- Bicycle route signs
- Regulatory signs
- Pavement markings
- Striping
- Bicycle safe drainage grates

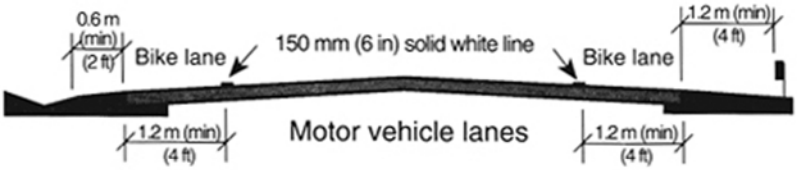
References

- NCDOT Bicycle Facilities Planning and Design Guidelines (1994)
- AASHTO Guide for the Development of Bicycle Facilities (1999)

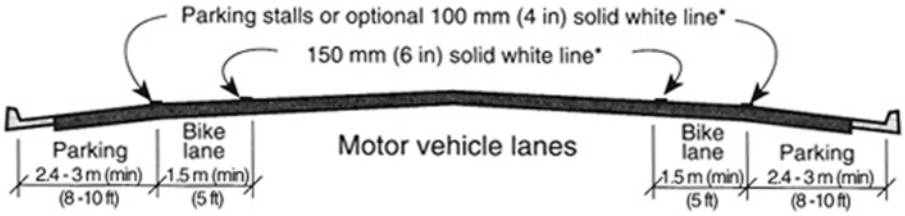
(1) Parking prohibited



(2) Typical roadway in outlying areas parking restricted

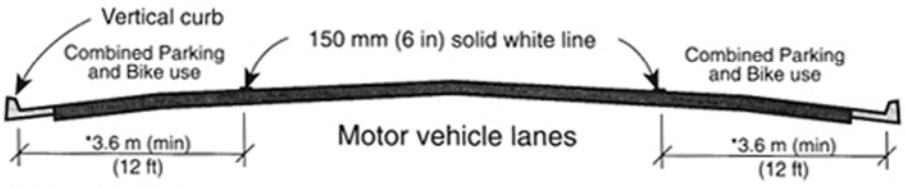


(3) Marked parking and bike lanes



* The optional solid white stripe may be advisable where stalls are unnecessary (because parking is light) but there is concern that motorists may misconstrue the bike lane to be a traffic lane.

(4) Combined parking and bike use



* 3.9 m (13 ft) is recommended where there is substantial parking or turnover of parked cars is high (e.g., commercial areas).

Figure 6g
Typical Bicycle Lane Cross Sections (NCDOT)

Intersections

Since bicyclists and motorists share the road, both modes of transportation must be considered in intersection design. Bicycles at intersections and mid-block can create conflicts with motorists, but with proper lane striping, signage and warning signals and/or signs, those conflicts can minimized.

Detectors for traffic-actuated signals should be sensitive to bicycles and should be located in the expected path of the bicyclist. Traditional loop detectors are not sensitive to bicycles constructed of newer, light weight materials; therefore Matthews should explore the use of newer detectors.

Bicycle Lanes at Intersections

Maintaining the presence of the bicycle lane as it approaches a signalized intersection is critical to the safety of the cyclist. Striping helps separate the bicyclist from the motorist, providing a safer environment for the cyclist. Bike lane striping should not be installed across any pedestrian crosswalk and, in most cases, should not continue through an intersection. Bike lane striping should stop at the crosswalk and resume at the other side of the intersection.

At intersections where motorists are turning right and bicyclists are traveling straight, paths must cross. To minimize a possible collision, proper signage and striping that encourages the bicyclist to merge prior to the intersection is preferred.

At signalized or stop-controlled intersections with a right turn lane for motorists, the solid striping to the approach should be replaced with a broken line section. This broken line is typically constructed of 2-foot dots that have a 6-foot spacing. The length for this can be anywhere from 50 feet to 200 feet.

In instances where there's not enough right-of-way to continue the bicycle lane into the intersection, proper signage is needed to allow both the motorist and the cyclist sufficient time to adjust and make the proper movements. The NCDOT Bicycle Facilities Planning and Design Guidelines provide specific data on which treatments are appropriate for which intersections.

Midblock Crossing

The preferred road crossing location of greenways and multi-use paths is at roadway intersections, however, there are instances when mid-block crossings are necessary. When this

occurs proper signage and striping is required to warn both the bicyclists and motorist of an intersection. Many variables exist that must be considered when dealing with a midblock crossing, such as traffic control devices, sight distance for the motorist and the bicyclist, refuge island use, access control and pavement marking.

- MUTCD signage (R1-1, W2-1, W11-1, and R5-3) is required to warn the motorists and bicyclist of the crossing.
- Bollards – Located at the entrance of the trail to prohibit motorists from accessing the greenway/multi-use path. Bollards can be permanent or removable to allow for authorized vehicle use. Bollards should be a minimum of three feet high, and have five feet of clear area for passage.
- Optional Motion Detecting Cross Alert Systems – Newer devices exist that can warn motorists of trail activity. Matthews should explore the use of this type of warning system for midblock crossing situations.

Railroad Crossings

Ideally, railroad crossings should be made at a right angle to the rails. The greater the crossing deviates from the ideal crossing angle, the greater the potential for a bicyclist's front wheel to be trapped in the flangeway, causing loss of steering control. Any crossing less than a 45 degree angle will need to be widened to ensure the proper angle. Figure 6i illustrates the widening of a bikeway to address this issue. Proper signage is necessary to warn the cyclist of the railroad crossing.

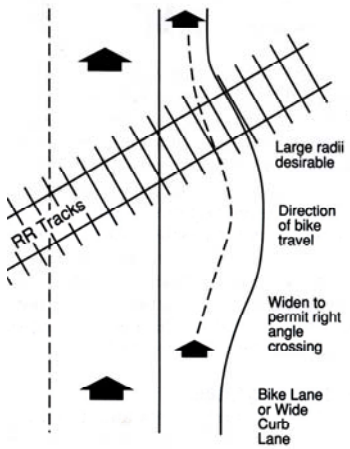


Figure 6h
Railroad crossing (NCDOT)

Grade Separated Crossings

There are instances where an "at-grade" crossing cannot be achieved. Depending on the circumstance the crossing will occur either under or over an existing roadway, known as "below grade" crossing or "above grade" crossing, respectively.

- "Below-grade" – A crossing of an existing road under street level utilizing culverts or tunnels
- "Above grade" – A crossing utilizing bridges to overcome physical constraints, such as waterways, limited access roadways or steep grades.

Below Grade Crossing

Below grade crossings utilize the underside of a roadway to achieve a continuous pathway. Typically culverts or tunnels can be used to provide access under the roadway.

- Warning signs – MUTCD signs (W5-4a) "Bikeway Narrows" should be located at least 50 feet in advance of obstruction; 9C.03 Type III should be located on the adjacent obstruction.
- Vertical clearance – A minimum of 8 feet.
- Horizontal clearance – A minimum of 12 feet

Above Grade Crossing

Although expensive, it is sometimes necessary to provide a bridge to accommodate bicycle transportation. Existing bridges without bike facilities can be very difficult to retrofit, particularly if there are no existing sidewalk facilities. Retrofitting existing bridges can be difficult, and requires careful consideration. An engineering study would need to be conducted to determine the safety of the proposed addition.

Ideally a separate bicycle bridge is recommended. A bridge of this nature would be a minimum of 10 feet wide, although 12 to 14 feet is preferred. Railings on either side are required and should have a minimum height of 42 inches if sidewalks are present, and 54 inches where sidewalks are not present. See the NCDOT Bicycle Facilities Planning and Design Guidelines for specific information regarding this type of facility.

Ancillary Facilities

A listing of ancillary facilities is provided below:

- Signage
- Striping/Pavement Markings
- Signalization
- Bike-safe drainage grates
- Parking (long-term and short-term)

Signage

Bicycle signage has three basic functions; regulate, warn and provide direction/wayfinding for bicyclists and motorists. Some signs can serve dual functions.

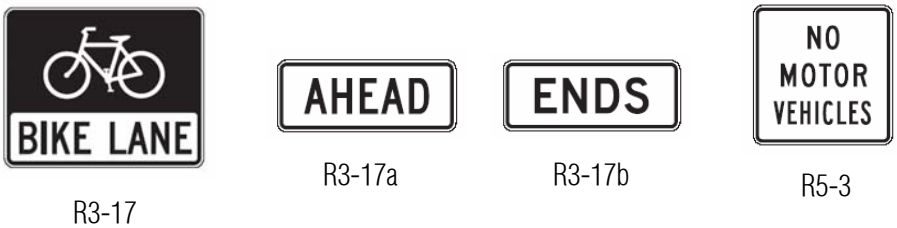
- Regulatory- Regulates bicycle use
- Warning - Warns of upcoming conditions
- Way Finding - Directs bicyclist along a designated route

Refer to the MUTCD 2003 Edition for specific information on each sign, its use, and configuration.

The correct use and placement of these signs is important to ensure the safety of motorists and cyclists. Placing too many signs can be confusing to both types of users. Signs should be located in areas of high visibility and be at a height easy to access for maintenance purposes. The NCDOT Bicycle Facilities Planning and Design Guidelines reference 8 feet as a standard minimum height for vertical clearance. Signs should be located a maximum of 6 feet from the edge of bikeway.

Regulatory Signs

Regulatory signs inform bicyclists, pedestrians and motorists of traffic laws. Regulatory signs shall be erected at the point where the regulations apply. The sign message shall clearly indicate the requirements imposed by the regulations and shall be visible and legible to bicyclists and, where appropriate, motorists and pedestrians as well. Figure 6j shows examples of regulatory signs. Additional examples can be found in the MUTCD 2003 Edition.



R3-17 R3-17a R3-17b R5-3

Figure 6i
MUTCD Regulatory Signs

Warning Signs

Warning signs are used to warn bicyclists or motorists of existing or potentially hazardous conditions, on or adjacent to a highway or trail. Figure 6k represents examples of warning signs. Other examples can be found in the MUTCD 2003 Edition.

W11-1 W16-1 W3-1 W3-2 W3-3

Figure 6j
MUTCD Warning Signs

Guide Signs

Guide signs are used along bikeways to inform bicyclists of directional changes or location of parking facilities. Where a designated bikeway exists, special bicycle route signing should be provided at decision points, including signs to inform cyclists of bicycle route direction changes. Guide signage should be repeated at regular intervals to ensure that bicyclists approaching from side streets know they are traveling on an officially designated bikeway. Figure 6l shows examples of guide signs to be used for bicycle facilities. Additional examples can be found in the MUTCD 2003 Edition.

D4-3 D11-1 M1-8 M1-9

Figure 6k
MUTCD Guiding Signs

Striping and Pavement Markings

Striping and pavement markings are used to provide separation between the travel lane and the bicycle lane and to inform motorists and cyclists of the designated bike lane.

- Bicycle lane striping should consist of a 6-inch wide solid white line separating the bike lane from motor vehicle lane.
- An optional 4-inch wide solid white line can be used to separate the bike lane from on-street parking spaces. The 4-inch line encourages motorists to park inside the line rather than projecting into the bike lane area.
- A bike lane should be painted with standard pavement symbols to inform bicyclists and motorists of the presence of the bike lane.

See MUTCD 2003 Edition for additional information regarding standard bicycle lane markings.

Signalization

At signalized intersections where bicycle traffic is anticipated, the timing of the traffic signal cycle, as well as the method of detecting the presence of the bicyclists, should be considered. In mixed traffic flow the bicyclist normally can cross the intersection under the same signal phase as motor vehicles. The greatest risk to the bicyclist is during the clearance interval and during the actuated phases during the periods of low traffic flow.[2] Detection of bicycles at traffic-actuated signals is crucial for bicyclists' safety and for compliance with traffic laws. Detectors that have been placed for vehicle traffic can usually detect the presence of bicycles once the sensitivity level is adjusted.

Bicycle Safe Drainage Grates

Drainage grate inlets and utility covers can be serious hazards to bicyclists. Unsafe grates can divert a cyclist's front wheel, causing a crash. Parallel bar drainage grate inlets are the most hazardous because they can trap the front wheel of a bicycle causing loss of steering control or wheels to drop into the grates. NCDOT has approved bicycle-safe drainage grates (see Figure 6m), which should be used whenever new roadways are built that require curb and gutter. More information about drainage grates can be found in the NCDOT Bicycle Facilities Planning and Design Guidelines and AASHTO's Guide for the Development of Bicycle Facilities.

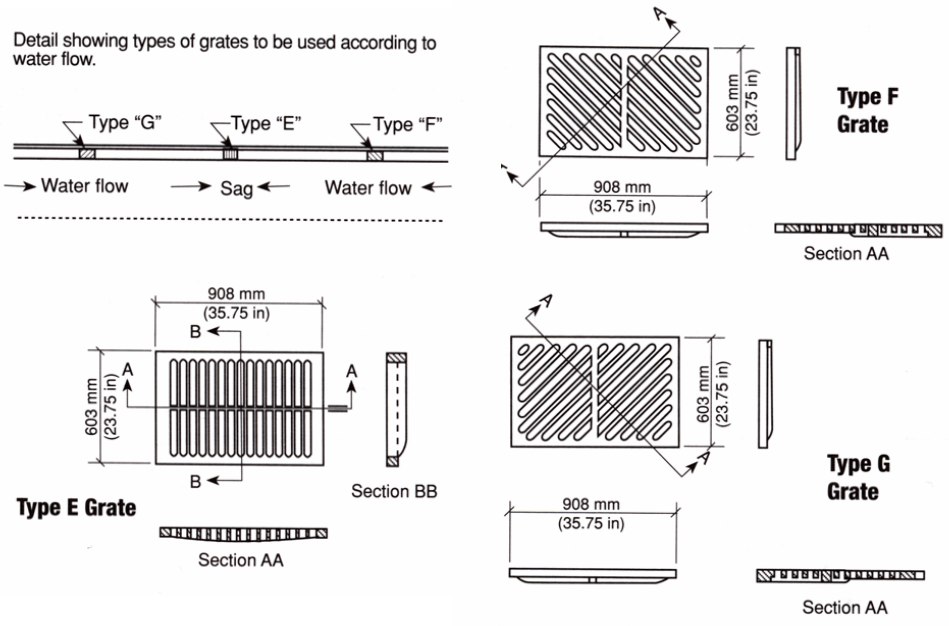


Figure 6l

Bicycle-safe drainage grates approved by the North Carolina Department of Transportation

Parking

An important aspect of a bicycle system is parking. Through this planning process, the lack of bicycle parking facilities in Matthews was noted. National studies have shown that if parking is not provided at key destinations, then cyclists are less likely to utilize the facilities. Most of the information contained in this portion of the section is taken from the Charlotte's Department of Transportation Bicycle Program "Employer Bike Parking Primer" presentation.

Bike parking is a necessary element in the overall development of a bicycle plan. It allows the cyclist to safely secure their bicycle for an extended period of time. Providing parking at the correct locations is vital to the success of the overall system.

Types of Parking - In general there are two types of bicycle parking: short-term and long-term. See Appendix D for more detailed information on costs, selection and placement of bicycle parking facilities.

Short-term parking

- *Short-term parking* – Short-term bike parking provides the cyclists a secure, convenient and accessible place to park their bikes, typically for two hours or less. Many cyclists prefer a rack where the bike can touch the rack at two points. A wide variety of short-term parking devices are available. An example of short-term parking is shown to the left.

Long-term parking

- *Long-term parking* – Long-term bike parking provides the cyclists a secure and weather protected place to park their bikes. Typically this structure will be located around transit stops or other locations where the cyclist will be away for longer than two hours. A wide variety of long-term bike parking devices are available. An example is shown to the left.

Requirements - The number of required spaces is dependent on the type of use. It is recommended that the Town of Matthews adopt the same parking requirement as the City of Charlotte. See Appendix D for a complete listing of bicycle parking requirement from the City of Charlotte.

Maintenance

Maintenance activities play an integral part in the usability of bicycle facilities. Table 6a, on the following page, identifies maintenance procedures, responsible agency and specific safety concerns and requirements to mitigate the conditions. Determination of the responsible agency will depend on the ownership of the roadway, greenway or multi-use path, and may be the NCDOT, Mecklenburg County Park and Recreation Department, the Town of Matthews Public Utilities Department or the Town of Matthews Parks, Recreation and Cultural Resources Department.

Table 6a: Maintenance Concerns

Roadway Resurfacing	
1.	*Concern*: Pavement build-up at gutter pan
	Remedy: Mill and resurface to a maximum lip of asphalt at gutter pan to be 3/8".
2.	*Concern:* Pavement build-up around drainage grates
	Remedy: Mill and resurface to a maximum lip of asphalt around drainage grate at 3/8", lip may need to be reset to fulfill this requirement.
Pavement and Shoulder Repair	
1.	*Concern:* Potholes, cracks, gullies or drop-off on roadway shoulder
	Remedy: Use the Town of Matthews' single point of contact process to identify the appropriate department to expedite the repair process.
2.	*Concern:* Potholes or cracks in the greenway or multi-use trail
	Remedy: Use the Town of Matthews' single point of contact process to identify the appropriate department to expedite the repair process.
Sweeping	
1.	*Concern:* Debris build-up can create dangerous or unpleasant cycling environment.
	Remedy: Develop regular schedule for street sweeping.
2.	*Concern:* Debris collecting or plant material growing on the greenway or multi-use trail
	Remedy: Develop regular schedule for street sweeping.
Signage Maintenance	
1.	*Concern:* Damaged or missing signs can create confusion between the bicyclists and motorists.
	Remedy: Use the Town of Matthews' single point of contact process to identify the signs that need repair or replacement. Once identified, repair or replace the damaged sign(s).
Removal of Site Obstructions and Trimming of Vegetation	
1.	*Concern:* Obstructed bikeways can create dangerous bicycling environments.
	Remedy: Remove obstructions and trim vegetation to meet standard clearances.
Removal of Dead Animals	
1.	*Concern:* Obstructed bikeways can create dangerous bicycling environments.
	Remedy: Remove dead animals to provide a safe bicycling environment.

[1] Flink, A. and Searns, M (1993). Greenways: A Guide to Planning, Design and Development. Washington, DC. The Conservation Foundation. Preface

[2] AASHTO (American Association of State Highway and Transportation Officials). Guide for the Development of Bicycle Facilities. (1999) p3

SECTION 7: IMPLEMENTATION

Implementation of the Bicycle Plan will require a concerted effort on the part of the Town; it will also require support from the residents of Matthews. During implementation, the Town of Matthews should continue to use the NCDOT Division of Bicycle and Pedestrian Transportation and the Bicycle Coordinator for the City of Charlotte as resources. Implementation of the Town of Matthews Comprehensive Bicycle Plan includes the following steps, policy recommendations and tasks.

Adoption of the Comprehensive Bicycle Plan and Plan Policies

The Board of Commissioners may receive responses from the Planning Board, the Transportation Advisory Board and the Parks, Recreation and Cultural Resource Advisory Board regarding the Bicycle Plan. A public hearing will provide residents with an opportunity to share their thoughts regarding the Plan. After receiving public input, and any review comments from the affected boards the Matthews Board of Commissioners will vote on adoption of the Plan. Adoption of the Comprehensive Bicycle Plan will signal the Board of Commissioners' adoption of the policies contained in the Plan and the intent to implement the projects, and programs outlined.

Coordination

Ongoing coordination with local, regional and state municipalities will be an important part of successfully implementing the Bicycle Plan and ensuring future connectivity to areas outside of Matthews. Ongoing coordination needs to include the following:

- Upon adoption of the bicycle plan, it is recommended that the Town staff hold a interdepartmental meeting to discuss and review the Comprehensive Bicycle Plan and implementation efforts. It is recommended that the bicycle coordination meeting occur two times a year for the first two years and then change to an annual schedule. At a minimum, the meeting(s) should include the Town Manager, the Town Bicycle Coordinator, representatives of the Planning, Parks, Recreation and Cultural Resource, Public Works and the Police Departments. The inaugural coordination meeting will serve as an opportunity for all departments to familiarize themselves with the Comprehensive Bicycle Plan and to develop an action strategy for each department. The action strategy will include tasks to be completed within 5 years, the

individual(s) responsible for each action and a time frame allocated for completion. The efforts included in the action strategy will be developed utilizing the prioritization/implementation steps found in this section. Those meetings will also include review of bicycle related achievements as outlined in the performance measures of the Vision Plan.

Subsequent coordination meetings will be used to review the action strategy and update with new projects as needed

The interdepartmental meetings will become annual events to assess ongoing efforts, to continue updating priorities and to share thoughts, success and improvements to the Town's implementation of the Bicycle Plan.

- Ongoing coordination between Matthews' Bicycle Coordinator with surrounding jurisdictions, such as the City of Charlotte, Mecklenburg County, the Town of Stallings, Mint Hill and Union County, will encourage connectivity throughout the region and make a stronger case for funding requests to MUMPO. The multi-jurisdictional coordination will provide a necessary resource that will include discussions of successful strategies, programs, projects and efforts.

- The greenways included in the plan are a critical part of Town's proposed the system of bicycle facilities. The greenways are the responsibility of the Mecklenburg County Park and Recreation Department. Ongoing coordination will assure that the planned greenways are built, ensure the design of the greenways provide the connectivity outlined in the Plan and determine maintenance practices and responsibilities.

- Coordination with the Mecklenburg-Union Metropolitan Planning Organization (MUMPO) is critical to the success of the Plan. MUMPO is the agency that compiles and prioritizes the funding requests for the region and then communicates and coordinates those requests with NCDOT.

Policy Related Tasks

The following are the tasks associated with each policy outlined in Section 4: Policies. The Implementation Matrix, Table 7a, on page 7-10, lists the following coordination efforts and tasks in a tabular form. The Implementation Matrix includes a timeframe in which each task should be completed, the party responsible and potential funding sources.

Policy 1: Develop a system of bicycle facilities that serves as a comprehensive bicycle transportation network for the residents of Matthews.

Task 1a Implement the Comprehensive Bicycle Plan through a coordinated effort of all involved Town departments.

Task 1b Coordinate and communicate the bicycle needs of the Town with MUMPO.

Policy 2: Incorporate bicycle awareness and improvements into all Town planning functions.

Task 2a <u>Create a Bicycle Coordinator position.</u> Planning for bicycle facilities requires a well-coordinated, consistent effort and knowledge of all ongoing or proposed transportation related planning efforts at the state, regional and local level. The Bicycle Coordinator will play a key part in the successful implementation of the Comprehensive Bicycle Plan. The Coordinator will be responsible for the following tasks in addition to serving as a proactive advocate for ways to improve bicycling in Matthews.

- Implement the Bicycle Plan.
- Review development plans for compliance with bicycle facility standards.
- Coordinate with other town departments regarding the planning, design and construction of bicycle facilities.
- Coordinate and work with the various NCDOT units, particularly the Division of Bicycle and Pedestrian Transportation, Transportation Planning Branch and Matthew's Division office. Review NCDOT plans for opportunities to incorporate

bicycle improvements.

- Coordinate with the Matthews representative on the Technical Coordination Committee for MUMPO.
- Serve as staff to the proposed Bicycle Steering Committee.
- Coordinate safety, education and awareness programs for the Town and in conjunction with other local, state and regional agencies.
- Serve as the bicycle ambassador for the Town by making presentations about bicycle planning and issues and generally working to raise bicycle awareness in Matthews.
- Coordinate with local, regional and state agencies to obtain funding for bicycle improvement projects and programs.
- Coordinate with private agencies to obtain funding and support bicycle programs in Matthews.
- Brief Town Commissioners on the status of implementation efforts.
- Update the Plan, as needed.

Task 2b Appoint a Bicycle Advisory Committee. A Bicycle Advisory Committee will assist the Bicycle Coordinator in implementing the Comprehensive Bicycle Plan. Communities that are bicycle friendly have significant and evident citizen support. The Bicycle Advisory Committee can provide that citizen support. The composition and organizations represented in the existing Bicycle Steering Committee can be the basis for the Bicycle Advisory Committee. The Town Board of Commissioners will appoint members.

Task 2c Identify bicycle projects to be included in the local Transportation Improvement Plan (TIP). The Bicycle Coordinator, working with Town departments and the Bicycle Advisory Committee will develop a list of bicycle improvements projects to be included in the TIP.

Task 2d Review the Comprehensive Bicycle Plan on a regular basis, at a minimum every five years, to ensure that the plan reflects changing conditions in the community.

Policy 3: Institutionalize the inclusion of bicycle facilities as part of all public and privately funded roadway construction, improvement and maintenance projects.

Task 3a Amend the existing subdivision and zoning ordinance to include requirements for the following bicycle facilities: bicycle signage, on road facilities and parking. The State and the Town are responsible for incorporating bicycle facilities in roads under their jurisdiction. Privately developed roads should also incorporate bicycle facilities. As both the pubic and private sectors incorporate bicycle facilities, Matthews will become a bicycle friendly community.

Task 3b Amend the existing subdivision and zoning ordinance to include requirements for the dedication of ROW and the construction of multi-use paths in that ROW that fulfill connectivity requirements. Multi-use paths that are off-road connectors are another alternative to provide connectivity between neighborhoods and between neighborhoods and generators or attractors. Developers should be required to construct the off-road connectors as part of new land development projects

Task 3c Pursue construction of bicycle improvements during routine maintenance and resurfacing. Assess roadways slated for routine maintenance or resurfacing to determine if bicycle facility improvements can made at the same time. For example, after repaving, lanes can be narrowed and restriped to provide a widened shoulder. The bicycle coordinator will review the list of streets scheduled for resurfacing and/or maintenance to determine if there is potential for including bicycle facilities in the process.

Task 3c Institute road maintenance procedures and methods that are bicycle friendly. There are specific maintenance practices that can have a significant

impact on the safety of bikeways. The following should be standard practice for the Public Works Department: new asphalt will not be higher than 3/8 of an inch above the edge of the concrete gutter pan; replace hazardous grates; repair and patch potholes and gullies in the road shoulder; adjust signal light timing (for adequate clearance interval and sensitivity to bicycles) and expand the existing street sweeping program.

Policy 4: Bicycle facilities constructed in the Town of Matthews should meet NCDOT and AASHTO standards.

Task 4a Add bicycle facilities standards to the Town's development standards within the Charlotte-Mecklenburg Land Development Standards Manual. Existing roadway design standards may need to be revised and standards for other facilities added to the Town's development standards. By including bicycle facility standards within the Town's development standards it sends a clear message that bicycle facilities are important.

Policy 5: Coordinate the implementation of the Matthews Comprehensive Bicycle Plan with surrounding municipalities, Union and Mecklenburg Counties, MUMPO, regional agencies and the NCDOT.

Task 5a Coordinate with CATS to ensure bicycle improvements are included in CATS facilities.

Task 5b Coordinate greenway planning and construction. The Comprehensive Bicycle Plan includes the greenways as an integral part of the Matthews bicycle transportation network. Mecklenburg County is responsible for planning and construction of greenways therefore coordination with the County is essential.

Task 5c Coordinate with Mecklenburg County the inclusion of Matthews' revised, bicycle friendly land development standards into the Charlotte-Mecklenburg Land Development Standards Manual.

Task 5d Coordinate with the NCDOT Division office for resurfacing, road-widening projects and other projects that are coordinated through the Division office.

Task 5e Coordinate implementation of the Bicycle Plan with the Matthews TCC representative to MUMPO, other regional agencies and both the state and division offices of the NCDOT. Ongoing coordination with those entities will build trust, foster effective communication and demonstrate that Matthews is serious about creating a bicycle friendly community.

Policy 6: Pursue multiple funding sources for the development of bicycle facilities, including local, state and private funding sources.

Task 6a Pursue state and federal funds for bicycle improvement projects. The Bicycle Coordinator will be responsible for pursuing State and Federal funding sources. The Bicycle Coordinator will coordinate with the Matthews' TCC representative to MUMPO. MUMPO plays a significant role in funding opportunities since it is responsible for approving and endorsing the TIP and also the distribution of funds to Metropolitan Planning Organizations (MPOs) under the Transportation Efficiency Act of the 21st Century.

Task 6b Budget Town funds designated for bicycle improvements. The Town should annually budget funds for design and construction of bicycle improvement projects. Those funds can be leveraged as matching funds for State or Federal grants.

Task 6c Pursue public/private partnerships to fund bicycle improvements. When local businesses and corporations invest in the community it allows the Town to leverage its investment and it also creates "buy-in". Some facilities are more appropriate for funding through a public/private partnership such as a system map, bicycle racks, benches or trash receptacles. To fund larger improvements, a bikeway could be divided in segments with each private partner funding a segment. The aggregate investment of

multiple partners would provide funding for a larger improvement. The contribution would be noted similar to the adopt-a-street program. This funding strategy is well suited for a smaller community such as Matthews.

Task 6d Pursue public private partnerships to fund bicycle initiatives. Initiatives such as helmets "give always" or bicycling safety programs can be effectively financed through a public private partnership.

Policy 7: Promote safe bicycling and motorist awareness of bicyclists.

Task 7a Teach bicycle safety at elementary and middle schools. Knowledge of bicycle safety is important for cyclists and motorists. When the police teach bicycle safety it instills the concept that bicycles are another type of vehicle and that bicycle safety is an important issue. Matthews' police and volunteers have conducted safety programs in the elementary schools and at various public events. Adopt the "Basics of Bicycling" available through the NCDOT Division of Bicycle and Pedestrian Transportation. Include the training required to implement the program. Bicycle safety practices need to be reinforced and re-taught in middle schools. Investigate existing curriculum developed for middle schools and select a curriculum and complete the requirement.

Task 7b Increase bicycle helmet use. Helmet use can significantly reduce the severity of or prevent head injury during a crash. Matthews presently has a helmet law but there should be ongoing efforts to encourage helmet use and teach proper fitting and adjustment of the helmet. During existing bicycle related events (Bike Rodeo, Fourth of July Parade and Bike Week) include helmet "give aways". Fund the helmet "give aways" through private donations. Include a helmet check program at the events to teach children how to properly wear and adjust their helmet.

Task 7c Increase bicycle safety awareness in cultural groups within the community. For example, a series of articles

on bicycle safety in the Hispanic newspaper would communicate safe bicycling procedures to that community.

Task 7d Increase motorist awareness about the rights and responsibilities of bicyclists and the need to "share the road" with cyclists. Use the Town web site and the local free paper to communicate a "share the road" campaign to educate motorists about the rights of bicyclists.

Task 7e Enforce existing laws for both motorists and bicyclists. Town of Matthews Police Department will develop an initiative to focus both motorists and bicyclists that are breaking the law. Specifically the motorists that are breaking laws that negatively impact bicycling in the community such as speeding, not stopping at stop sign and running red lights.

Policy 8: Promote the transportation, economic, health, and community building benefits of a bicycle friendly community.

Task 8a Produce a bicycle map for the Town of Matthews. A critical aspect of successfully implementing the Comprehensive Bicycle Plan is increasing bicycle use in Matthews. Residents of Matthews may not be aware of roads and/or off road facilities that are suitable for cycling. A Bicycle Map raises the profile of bicycling in Matthews and it indicates that things are happening to make Matthews more bicycle friendly. Begin planning and identifying funding for the map when construction has begun on the first few projects identified in the Comprehensive Bicycle Plan.

Task 8b Develop an awareness program to describe the benefits of bicycling for the residents of Matthews. There is a significant health provider/fitness network in Matthews. Presbyterian Hospital Matthews, Siskey YWCA, doctors and other healthcare providers are a significant resource to communicate the benefits of bicycling. The awareness program could be communicated through the development of a brochure that was distributed by the health provider/fitness network.

Table 7a – Implementation Matrix

Tasks	Scheduling Priority	Funding Source	Depart. Resp./ Partnership Opp.
Planning			
Adopt the Comprehensive Bicycle Plan	I	N/A	BOC, PL
Appoint a bicycle coordinator	S	MOB	CM, PL
Write and approve an ordinance requiring bicycle parking in all new land development projects	S	N/A	PL
Write and approve an ordinance requiring bikeways on roads and multi-use paths to be built in any off-road connectors	S	N/A	PL
Formally accept ROW that has been dedicated for off road connectors by private developer	S	N/A	PL
Add definitions of bicycle facilities types to Town ordinance	S	N/A	PL
Add bicycle facility standards to the Town Development Standards	S	N/A	PL
Appoint a Bicycle Advisory Committee	S	N/A	BOC, BC
Review NCDOT roadway projects, new roadways, widening or resurfacing for inclusion of bicycle facilities	A	N/A	BC
Review Town roadway projects, new roadways, widening or resurfacing for inclusion of bicycle facilities	A	N/A	BC
Update the Comprehensive Bicycle Plan	M	N/A	BC
Review land development plans for inclusion of bicycle facilities (occurs after zoning is amended to require facilities)	O	N/A	PL, BC
Coordinate inclusion of bicycle facilities at public transportation facilities	O	N/A	BC
Set-up funding for bicycle improvements in the Town budget, for design, construction and spot improvements	O	N/A	BC, PL
Funding			
Complete funding requests for TIP	B	NCDOT/TIP, Indp & Incd	PL, BC
Select project and complete grant application for SAFETEA-LU Grant	B	NCDOT/EP	PL, BC
Allocate CIP funding for bicycle facilities	A	M/CIP	BOC, CM
Pursue private funding for specific projects, suitability map, bicycle helmet initiative and others	O	P/PI	BC, PR
Allocate other local funds for bicycle facilities	A	M/B	BOC, CM
Construction			
Select and build the pilot projects	S	NCDOT/TIP, Indp & Incd, M/CIP	NA
Construct TIP projects as funding is allocated	O	NCDOT/TIP, Indp & Incd	NA
Install signs on Signed Neighborhood Collectors	S	M/OB	PW
Build Off-Road Connectors	S	M/CIP	PW
Construct incidental elements of highway and bridge projects	O	NCDOT/TIP, Incd, M/CIP	
Build Greenways	M, L	MC/B	MC
Maintenance			
Maintain roadway sweeping schedule	O	N/A	PW
Develop a protocol to complete identified maintenance concerns	O	N/A	PW, BC
Replace unsafe grates with parallel bars	O	MOB. NCDOT/D	PW
Repave roads without creating asphalt lip at gutter plan or lip around drainage grates	O	N/A	PW
Incorporate bicycle facility maintenance into the Town's maintenance program	S	M/OB	PW
Education/Bicycle Visibility			
Partnering with Siskey YWCA, Presbyterian Hospital Matthews to create an outreach program that describes the benefit of bicycling	S	P/PI	BC
Create a bicycle system map including safety information and laws regarding bikes	M	P/PI	BC, BAC, BO
Institute the "Basics of Bicycling" and a middle school bicycle safety curriculum in the schools, train instructors to teach the curriculum	S	NCDOT/GHSP	BC, POL, S
Develop a helmet promotion to encourage helmet use	A	P/PI	PR, POL, BC, BO
Continue and expand existing bicycle events	A	P/PI	PR, POL, BC, BO
Develop a communication plan to present the Comprehensive Bicycle Plan to schools groups, civic groups and churches	S	N/A	BC
Implement law enforcement initiative	M	NC DOT/GHSP	POL
Work with media to raise awareness (helmet promotions, law enforcement initiatives)	S	N/A	BC
Coordination with Other Municipalities and Agencies			
Attend quarterly meetings with the Charlotte Bike Coordinator	O	N/A	BC
Coordinate with NCDOT to ensure inclusion of bicycle facilities on state highway and bridge projects	O	N/A	BC
Coordinate with Charlotte Mecklenburg Schools (CMS) to construct off-road connectors and bike racks at Matthews schools	S	P/PI	BC, PW, S
Coordinate greenway planning and construction with Mecklenburg County	O	N/A	PR, BC, MC
Coordinate with the Metrolina Council of Governments (COG)	O	N/A	BC, COG
Coordinate with CATS (Charlotte Area Transit System) to ensure the inclusion of bicycle facilities in any future transit projects	O	N/A	BC, CATS

Legend

Scheduling Priority

O - Ongoing
A-Annual
B - Biannual task
I - Immediate
S - Short Term (3-5 years)
M - Middle Range (5-7 years)
L - Long Range (7-10 years)

Funding Source

M/OB - Matthews Operating Budget
M/CIP - Matthews/Capital Improvement Program
M/B - Matthews/Bonds
MC/B - Mecklenburg County Park and Recreation Bonds
NCDOT/TIP, Indp - NCDOT Transportation Improvement Program -Independent Projects
NCDOT/TIP, Incd - NCDOT Transportation Improvement Program-Incidental Projects
NCDOT/EP - NCDOT Enhancement Program
NCDOT/GHSP - Governors Highway Safety Program
CMAQ - Congestion Mitigation and Air Quality Funds
PPI - Public Private initiatives

Department Responsible/Partnership Opportunities

BAC - Bicycle Advisory Committee
BC - Bicycle Coordinator
BO - Bicycle Organizations
BOC - Board of Commissioners
CATS - Charlotte Area Transportation System
CM - City Manager's Office
COG - Council of Governments
HH - Health Care Providers/Health Professionals
MC - Mecklenburg County
PR - Park, Recreation and Cultural Resources
PL- Planning Department
POL - Police Department
PW - Public Works Department
S - Schools and School Advocates Groups

Implementation of the Bikeways

The Bikeway Matrix consists of the proposed bikeways that have been identified through this planning process. These projects are listed in Table 5a: Bikeway Matrix, in Section 5, pages 5-14 through 5-20.

Five potential pilot projects have been identified. One or two potential pilot projects will be selected for construction based on the criteria for prioritizing bikeways detailed in the following section. If a potential pilot project is not selected to be implemented as a pilot project is then is considered a project to be implemented in the short-term timeframe The criteria for prioritizing bikeways will also be used will be used to determine the project priority for implementation for all future projects and will also be used to determine the selection of projects to be submitted for inclusion in NCDOT's Transportation Improvement Projects. The initial step for the project to be considered for implementation is the development of an order of magnitude cost estimate.

Criteria for Prioritizing Bikeways

The criteria below are the factors to consider when determining project priority, which is not a static process. Changes such as new development, a project being selected for the TIP or when the Town acquires a piece of property can all affect the relative priority of a project. The Town will need to regularly review the project priorities. The following criteria are listed in order of importance.

1. Constructability: Is the facility constructible considering the physical situation such as terrain and proximity to structures and the regulatory restrictions that are connected to certain terrain such as flood plain that will require environmental permitting.

2. Cost of Bikeway Facility Development: For Town projects it has been determined that it is financially feasible to build the bicycle facility and/or a specific funding source will be pursued to implement the project.

3. Ownership of Land: The Town, County or the State has title or rights of public access and use of the property, or can acquire the title or access rights.

4. Financial Partnering: Agencies or private sector groups have committed funds in support of the project (i.e. partnerships have been established).

5. Expansion of Existing System: The proposed bicycle facility is an extension of an existing bikeway or a critical link in the overall system.

6. Opportunity: Origin and Destination: The bikeway provides connectivity to key destinations as identified in Bicycle Plan.

7. Public Support: The surrounding neighborhoods and communities support and advocate for development of the bikeway.

8. Geographical Equity: Construction of the trail ensures that there is an equitable balance in bicycle facility development throughout the Town.

Bikeway Construction Process

The following steps need to be completed for the construction of each bikeway corridor:

Step One – Land Acquisition: Before detailed planning of an individual bikeway corridor occurs, it is necessary for the Town, County or State to have an ownership interest in the land.

Step Two – Corridor Planning: Site specific planning for individual bikeway corridors will determine the type of facility for an on-road facility or the feasibility for an off-road facility. Each plan for an off-road facility that is not signed as a future improvement should involve residents from surrounding neighborhoods, as well as adjacent property owners and businesses.

Step Three – Detailed Design and Construction Documentation: After corridor planning has been completed and a specific corridor plan has been defined, detailed construction documents will then be produced for the project as well as a detailed cost estimation and assignment of responsibilities and costs.

Step Four – Construction and Facility Development: Construction of the bicycle facilities, such as roadway re-striping and trails will take place. Construction and development operations can be phased as necessary to meet budget and time constraints.

Step Five – Maintenance and Management: Once the bikeway facilities have been completed, maintenance and management should begin immediately. The Town of Matthews' Bicycle Coordinator will coordinate with the Public Works, Planning and Parks, Recreation and Cultural Resource Departments to assure that proper maintenance and management of the bicycle facilities is being completed.

Ongoing Communication

The completion of the Comprehensive Bicycle Plan will generate momentum for Matthews. To continue the momentum, the Bicycle Coordinator and the Bicycle Advisory Committee should meet annually to review the "State of Bicycling in Matthews". The review will result in a report to be posted on the Town's web site. The report will include a list of ongoing efforts and completed tasks that have supported the implementation of the Comprehensive Bicycle Plan.

Appendix A

Resources and References

RESOURCES AND REFERENCES

Local

- Town of Matthews Long Range Vision - The Desired Future and the Unwanted Future. Town of Matthews, 2005.
- Preliminary Open Space Plan. Town of Matthews, 2004.
- Urban Street Design Guidelines - Designing Streets for Multiple Users. City of Charlotte, Draft 2005.
- Charlotte-Mecklenburg Bicycle Transportation Plan. City of Charlotte Department of Transportation, 1999.
- Bicycle Parking PowerPoint Presentation. City of Charlotte Department of Transportation, 2002
- Mecklenburg County Greenway Master Plan. Mecklenburg County Park and Recreation Department, 1999.
- Cary Comprehensive Transportation Plan – Bicycle Element. Town of Cary, 2004.

State

- North Carolina Bicycle Facilities Planning and Design Guidelines. North Carolina Department of Transportation, 1994.
- Bicycle Facilities Guide: Types of Bicycle Accommodations. North Carolina Department of Transportation, 2003.

National / Federal

- Manual on Uniform Traffic Control Devices (MUTCD) for Streets and Highways - Part 9, Traffic Controls for Bicycle Facilities. U.S. Department of Transportation Federal Highway Administration, 2003
- Guide for the Development of Bicycle Facilities. American Association of State Highway and Transportation Officials (AASHTO), AASHTO Task Force on Geometric Design, 1999.
- Pinsof, Suzan A. and Musser, Terri. Bicycle Facility Planning. American Planning Association. Planning Advisory Service, Report Number 459. 1995.

Web Based

- www.matthewsnc.com
- www.ncdot.org/transit/bicycle/
- www.bicyclinginfo.org
- www.walkablecommunities.org

- www.portlandonline.com/transportation
- www.bikewalk.org
- safety.fhwa.dot.gov
- www.madrax.com
- www.vbgov.com
- www.mumpo.org
- www.apbp.org

Others

- Flink, Charles A. and Searns, Robert M. Greenways: A Guide to Planning, Design and Development. Island Press, 1993. The Conservation Fund.

Appendix B

Acknowledgements

ACKNOWLEDGEMENTS

Steering Committee Members

Bill Brawley
Brendon Hamlin
Brett Christoffersen
Bryan LePage
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Doug Bishop
Greg Plough
Jim Dean
Jim Godfrey, AIA
John Arciero
Kelsey Starnes
Ken Tippette (Charlotte-Mecklenburg Bicycle Planner)
Mark Rosen
Mary Meletiou – NCDOT Representative
Michael Clanton
Nancy LaFond
Stacey Manley
Jim Johnson
Will Leger

Appendix C

Survey and Survey Tabulations

Town of Matthews

Comprehensive Bike Plan

How Bikeable is Your Community Survey Results

1) Did you have a place to bicycle safely?

a) On the road, sharing the road with motor vehicles?

Yes	1	3.7%
Some Problems (please note locations):	26	96.3%
Total	***27***	***100.0%***
No space for bicyclists to ride	19	
Bicycle lane or paved shoulder disappeared	2	
Heavy and/or fast-moving traffic	10	
Too many trucks or buses	1	
No space for bicyclists on bridges or in tunnels	3	
Poorly lighted roadways	1	
Other problems: See Additional Comments Sheet	4	

b) On an off-road path or trail, where motor vehicles were not allowed?

Yes	10	37.0%
Some Problems (please note locations):	7	25.9%
N/A	10	37.0%
Total	***27***	***100.0%***
Path ended abruptly	2	
Path didn't go where I wanted to go	3	
Path intersected with roads that were difficult to cross	5	
Path was crowded	0	
Path was unsafe because of sharp turns or dangerous downhills	2	
Path was uncomfortable because of too many hills	1	
Path was poorly lighted	2	
Other problems: See Additional Comments Sheet	0	

2. How was the surface that you rode on?

Good	5	18.5%
Some problems, the road or path had:	19	70.4%
N/A	3	11.1%
Total	***27***	***100.0%***
Potholes	10	
Cracked or broken pavement	10	
Debris (e.g. broken glass, sand, gravel, etc.)	11	
Dangerous drain grates, utility covers, or metal plates	1	
Uneven surface or gaps	3	
Slippery surfaces when wet (e.g. bridge decks, construction plates, road markings)	1	
Bumpy or angled railroad tracks	2	
Rumble strips	1	
Other problems: See Additional Comments Sheet	0	

4. Did drivers behave well?		
Yes	3	**11.1%**
Some Problems, Drivers:	24	**88.9%**
Total	***27***	***100.0%***
Drove too fast	9	
Passed me too close	14	
Did not signal	9	
Harassed me	6	
Cut me off	4	
Ran red lights or stop sign	7	
Other problems: See Additional Comments Sheet	0	

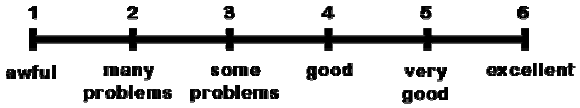
5. Was it easy for you to use your bike?		
Yes	4	**14.8%**
Some Problems:	20	**74.1%**
N/A	3	**11.1%**
Total	***27***	***100.0%***
No maps, signs, or road markings to help me find my way	4	
No safe or secure place to leave my bicycle at my destination	5	
No way to take my bicycle with me on the bus or train	1	
Scary dogs	4	
Hard to find a direct route I liked	4	
Route was too hilly	1	
Other problems: See Additional Comments Sheet	0	

6. What did you do to make your ride safer?		
Your behavior contributes to the bikeability of your community. Check all that apply:		
Wore a bicycle helmet	21	
Obeyed traffic signal and signs	25	
Rode in a straight line (didn't weave)	20	
Signaled my turns	19	
Rode with (not against) traffic	21	
Used lights, if riding at night	9	
Wore reflective and/or retroreflective materials and bright clothing	14	
Was courteous to other travelers (motorist, skaters, pedestrians, etc.)	23	

7. Tell us a little about yourself.		
In good weather months, about how many days a month do you ride your bike?		
Never	0	**0.0%**
Occasionally (one or two)	5	**18.5%**
Frequently (5-10)	14	**51.9%**
Most (more than 15)	7	**25.9%**
Every day	1	**3.7%**
Total	***27***	***100.0%***
Which of these phrases best describes you?		
An advanced, confident rider who is comfortable riding in most traffic situations	11	**40.7%**
An intermediate rider who is not really comfortable riding in most traffic situations	11	**40.7%**
A beginner rider who prefers to stick to the bike path or trail	4	**14.8%**
N/A	1	**3.7%**
Total	***27***	***100.0%***

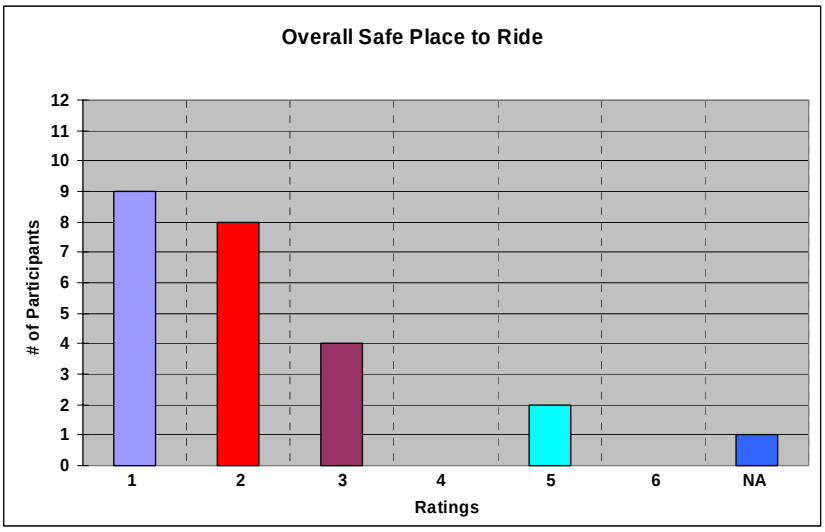
8. Tell us how you relate to the Matthews Community.		
Town of Matthews resident	23	**85.2%**
Resident near but not within the Town of Matthews	4	**14.8%**
Bike rider in area that includes part of Matthews	0	**0.0%**
Total	***27***	***100.0%***

Rating Scale

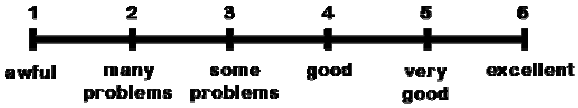


1) Overall Safe Place to Ride

1	2	3	4	5	6	N/A	TOTAL
1	1	1		1		1	
1	1	1		1			
1	1	1					
1	1	1					
1	1						
1	1						
1	1						
1	1						
1							
9	8	4	0	2	0	1	24
37.5%	33.3%	16.7%	0.0%	8.3%	0.0%	4.2%	100.0%

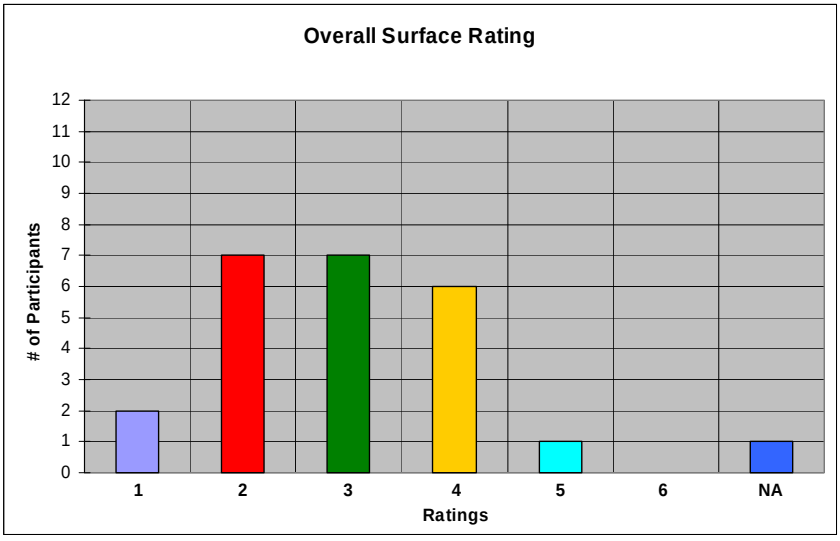


Rating Scale

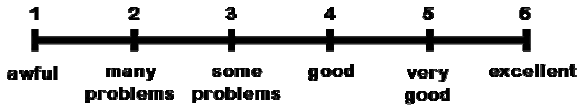


2) Overall Surface Rating

1	2	3	4	5	6	N/A	TOTAL
1	1	1	1	1		1	
1	1	1	1				
	1	1	1				
	1	1	1				
	1	1	1				
	1	1	1				
	1	1					
2	7	7	6	1	0	1	24
8.3%	29.2%	29.2%	25.0%	4.2%	0.0%	4.2%	100.0%

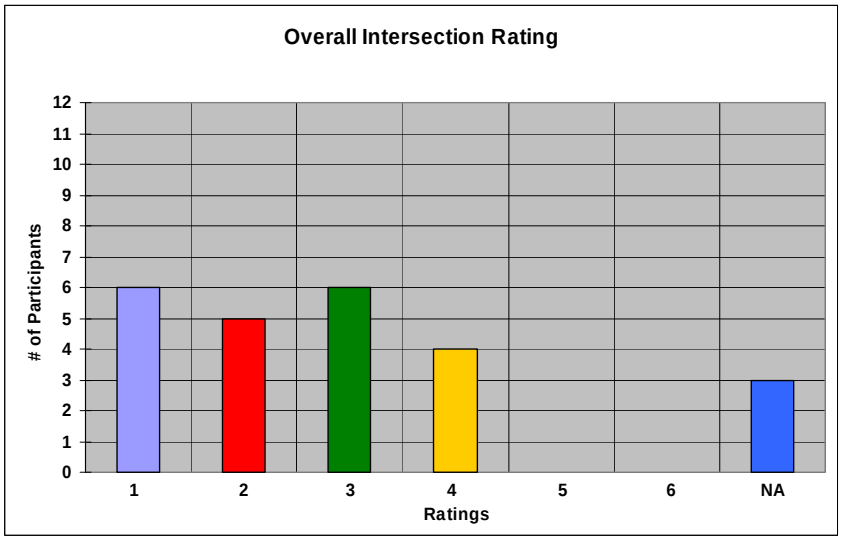


Rating Scale

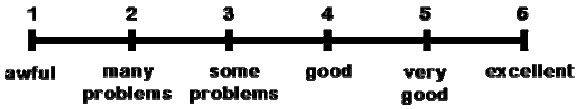


3) Overall Intersection Rating

1	2	3	4	5	6	N/A	TOTAL
1	1	1	1			1	
1	1	1	1			1	
1	1	1	1			1	
1	1	1	1				
1	1	1					
1		1					
6	5	6	4	0	0	3	24
25.0%	20.8%	25.0%	16.7%	0.0%	0.0%	12.5%	100.0%

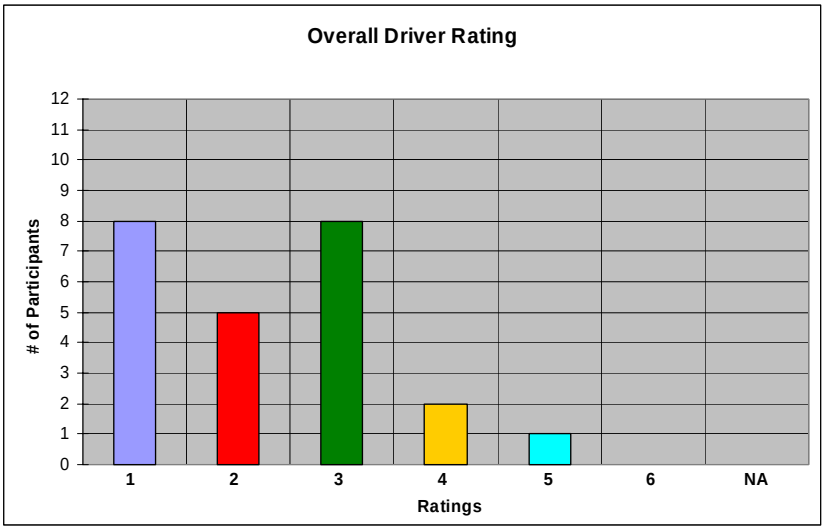


Rating Scale



4) Overall Driver Rating

1	2	3	4	5	6	N/A	TOTAL
1	1	1	1	1			
1	1	1	1				
1	1	1					
1	1	1					
1	1	1					
1		1					
1		1					
1		1					
8	5	8	2	1	0	0	24
33.3%	20.8%	33.3%	8.3%	4.2%	0.0%	0.0%	100.0%



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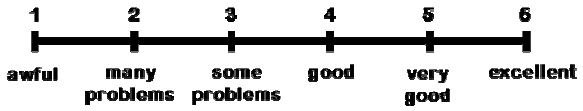
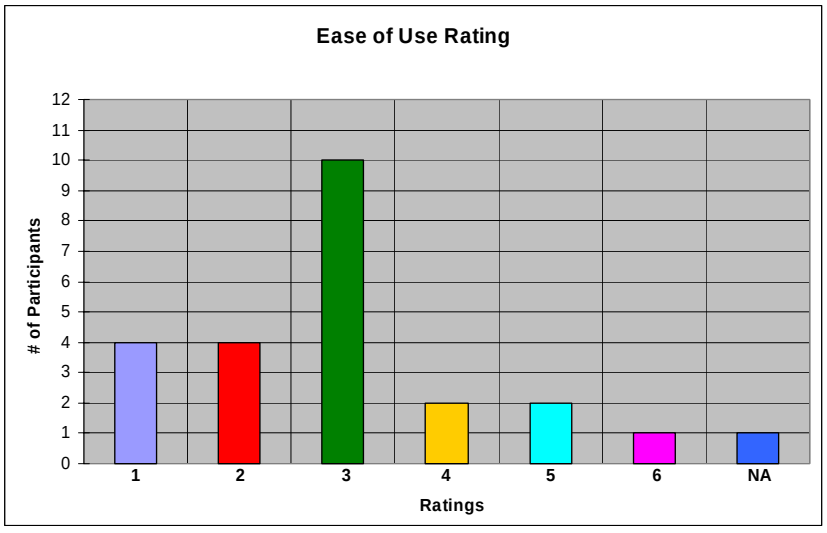


5) Ease of Use Rating

1	2	3	4	5	6	N/A	TOTAL
1	1	1	1	1	1	1	
1	1	1	1	1			
1	1	1					
1	1	1					
		1					
		1					
		1					
		1					
		1					
		1					
4	4	10	2	2	1	1	24
16.7%	16.7%	41.7%	8.3%	8.3%	4.2%	4.2%	100.0%



HOW BIKEABLE IS YOUR COMMUNITY SURVEY RESULTS

Additional Comments

1. Did you have a place to bicycle safely?

a) On the road, sharing the road with motor vehicles?

- We have to ride out toward Waxhaw and beyond. Many problems until you get to Union County.
- I have tried it but the Fullwood bike lane appears to disappear at points
- No sidewalks, cars drive to fast thru community, unleashed dogs a big threat
- Heavily traveled area – cars don't slow down for cyclists
- No crosswalks anywhere on the 74 or the 51 to get into downtown Matthews
- Fullwood Ave between 51 and Trade St.
- UNSAFE - NO ROOM - DRIVERS DO NOT CARE OR NOTICE.
- I ride with a group that starts in Matthews and goes into Union County
- Highway 51 towards Arboretum
- From Siskey YMCA past Providence Plantation to Matthews library.
- Roads too narrow
- It just does not seem safe. I would not even attempt it at this point.

b) On an off-road path or trail, where motor vehicles were not allowed?

- Could not find such a place
- McAlpine is only place to ride, and is VERY crowded with runners, walkers, animals, and other bikers.
- Rode sidewalk from Ashley Creek to Stallings
- I don't know of any paths

2. ***How was the surface that you rode on?***

- Shoulder's small or non-existent. Construction traffic tends to create furrows. Pot holes are always an issue but worse obviously in the winter.
- I have ridden the roads enough that you will always find hole and loose items – pay attention
- I ride on the sidewalk because there are no bike lanes on the road. I would be scared to death to ride by bike anywhere on the roads in Matthews.
- I had to ride on the grass because there was too much traffic to ride on the very narrow shoulder.
- SHOULDERS ARE UNSAFE AND NOT KEPT UP - POT HOLES THAT SWALLOW UP A CAR - MUCH LESS A BIKE
- Road is narrow, and sidewalks are crowded (as expected)
- I have only tried on my side street so far

3. ***How were the intersections you rode through?***

- For non-road biking (i.e., shopping, dining) it is horrible. Hard to maneuver around town and no place to lock up bike except for one small bike rack at the Chamber.
- Monroe Road / John Street and Hwy. 51 is a nightmare
- Again a biker should be willing to walk his/her bike through an intersection – wish the lights would or a button was available for bikers at intersections
- Too many cars going to fast thru intersections, no where to wait safely for light change.
- Since I ride on the sidewalk, I use the pedestrian crosswalk. It has been my experience that drivers give little to no regard for the safety of a bicyclist.
- With no cross walks, and left turn lights that I couldn't see, I was frightened trying to cross.
- DRIVERS DO NOT CARE OR NOTICE
- It was long enough, but as soon as I went through it changed.

- Some problems at Weddington Road/Trade Street intersection
- I think the signals I know of so far would be just fine since I walk through the intersections with my baby carriage.

4. ***Did drivers behave well?***

- As I said earlier I road bikes a lot for many years but the roads are much to busy now for me – I miss biking and wish there were bike roads like those in Washington, DC or Denver, Colorado
- Drivers give no respect to cyclists.
- COPS COULD SPEND MORE TIME WATCHING INTERSECTIONS. I THINK YOUR BUDGET PROBLEM WILL DISAPPEAR. LOTS OF THROUGH COMMUTERS THAT SHOULD BE TICKETED.
- The drivers here are rude and not careful

5. ***Was it easy for you to use your bike?***

- Where the traffic is lighter one must be aware of the dogs
- I felt like there wasn't anywhere I could safely ride, especially with my baby behind me. I'm afraid to ride on the roads.
- Intersections dangerous and drivers not aware of bicyclists
- I don't know where to go that is safe.

6. ***Overall Additional Comments***

- Not to be critical, but I think this survey could use some more work. Using a scale (e.g., 1-5) for all the subjective answers with a section for comments would have elicited better feedback.
- I am a teenager that would like to be able to ride with friends to places within the community and feel safe to do that.
- Keep on working on the Greenway and development of bike paths – I really like those that have been developed
- It would be wonderful to live in a town that was biker and pedestrian friendly. While I ride my bike outside of the neighborhood, I do not take my child with me because I feel it is too dangerous. That is really a shame.

- I think this survey need to be more specific and more clearly written. It asks for me to be specific about my cycling location, but there is nowhere to say what it is. Also, the question of "Did I have a place to cycle safely?" is very vague. It is written as if I rode my bike one time instead of on numerous occasions and in various locations throughout Matthews. Also – I'm hoping that all of the steps I took to make my ride safer are recorded. There is no clarification to show that it is. Overall, this survey is poorly designed. I hope it obtains the information necessary to assess the problems.

- I love living in Matthews. The addition of bike lanes on Fullwood Road was a nice start, but I think Matthews has a long way to go before it would be considered a bicycle friendly community. I hope the feedback from this survey will turn things around.

- The traffic problems that are in the Weddington Road/Pleasant Plains Road area you have to be an experienced rider. It is dangerous to ride with your kids. The traffic problems have got to be fixed.

- So much of this also applies to pedestrians--the streets of Matthews just aren't pedestrian or bicycle friendly. (And thus, not very family friendly.) Crosswalks are desperately needed on Sam Newell crossing the 51.

- I believe the community would benefit from creating bike lanes on all major roads. The new bike lane on Fullwood disappears in the middle of the ride between SR 51 and Trade St. In my opinion this is more dangerous than not having at a bike lane at all as it forces the rider to suddenly merge with traffic.

- Matthews NEEDS a competent Town Planner. The ones you have have their heads somewhere but in the job. The development without concern or planning for the infrastructure suggests there is a LOT of underhandedness going on. This is not unique to Matthews, but rampant in Mecklenburg County. I believe that people should be fired rather than commended because the city has LOST its control and the developer with the most money is running things.

- It's not too late. We can change our coarse of big development, no infrastructure. I've lived in many smaller communities that invested in paved bike trails. Many 'Groups' I ride with don't feel safe until we get into Union County. I hope I'm heard – Thanks

- I am so hopeful that the section of road from Trade Street to Siskey YMCA

- Keep up the good work. Let’s get connectivity.
- Get with it, don't delay. They have been talk of improving walking and bike trails in Matthews for the 10 years I've lived here. Look at Idlewild road, Rice road, Sam Newell also.... not just downtown Matthews area.
- It would be great to have a greenway from Squirrel Lake Park to downtown Matthews. Many people use the Sidewalks on Pleasent Plains but turn around at Squirrel Lake
- I hope you can make this a great community for bike riders!

Appendix D

Standards and Guidelines

Bicycle Parking Resources

Bicycle Parking Cost - Pedestrian and Bicycle Information Center

Another benefit of providing parking for cyclists is the cost savings associated with it.

- Cost to provide surface parking for 1 automobile - $2,200
- Cost to provide parking garage space for 1 automobile - $12,500
- Installation of a bike rack that holds two bikes - $150
- Number of bike spaces in 1 automobile space – 10 to 12

Criteria for Placement and Selection of Bike Racks – City of Charlotte

The following criteria should be used to determine where to place bike racks as well as what types of racks to invest in.

A good bike rack will:

- Support the whole bike and allow the owner to lock the frame and wheels of the bike with a U-lock or cable lock.
- Not damage the bike
- Be located so that it's clearly visible and does not pose a hazard to pedestrians or automobiles
- Be located in an area that will deter thieves and vandals
- Be easy to install and vandal proof

Bicycle Parking Location – City of Charlotte

When locating bike parking facilities for short-term and long-term purposes, the following should be used as a guide:

Short-term bike parking works when:

- Located within fifty (50) feet of the entrance it is intended to serve
- Located in visible and prominent locations
- Located in areas where there is high pedestrian activity
- Located to avoid isolation

Long-term parking is effective when:

- Located on-site or within 750 feet of the site
- Located in a secure location
- Providing protection from the elements
- Located in well lit areas

- It may involve bike lockers

Also consider these items for both short-term and long-term parking when locating a bike rack or locker:

- Each bike parking space should be easily accessible.
- Cyclists should be able to securely lock their bikes without undue inconvenience and their bikes should be reasonably safeguarded from intentional or accidental damage.
- Consider the area a full rack of bikes will take up, not just the rack by itself.
- Consider that cyclists require a sufficient pathway in and out of the parking area
- Each parking space must be accessible without moving another bike
- Provide an aisle at least five feet wide behind all bike parking to allow room for proper maneuvering
- Avoid installing bike racks too close to a wall or too close to each other.
- Avoid installing bike racks too close to automobile parking
- Bike racks should be securely anchored to the ground

Bicycle Parking Requirements – City of Charlotte

MINIMUM REQUIRED OFF-STREET PARKING SPACES BY USE*

PERMITTED USES	REQUIRED NUMBER OF AUTO PARKING SPACES	LONG-TERM BICYCLE	SHORT-TERM BICYCLE
RESIDENTIAL USES:			
Bed & Breakfasts (B & B's)	1 additional space per guest room	n/a	n/a
Boarding houses	1 additional space per boarding room	n/a	n/a
Dormitories	1 space per 2 residents	1 space per 2 residents	1 space per 8 units; min. 4
Dwellings, detached	2 spaces per unit	n/a	n/a
Dwellings, duplex	2 spaces per unit	n/a	n/a
Dwellings, triplex	1.5 spaces per unit	none	none
Dwellings, quadraplex	1.5 spaces per unit	none	none
Dwellings, attached	1.5 spaces per unit	n/a	n/a
Dwellings, multi-family	1.5 spaces per unit	none	2, or 1space per 20 units
Dwellings,multi-family elderly or disabled	.25 spaces per unit	n/a	n/a
Dwellings, accessory elderly or disabled	1 space per unit	n/a	n/a
Dwellings, low income	1 space per unit	n/a	n/a
Dwellings, mixed use	1 space per unit	none	2, or 1space per 20 units
Manufactured housing	2 spaces per unit	n/a	n/a
INSTITUTIONAL USES:			
Adult care centers	1 space per employee, plus 1 space per 6 adults	2, or 1 per 20 employees	2
Child care centers	1 space per employee, plus 1 space per 10 children	2, or 1 per 20 employees	2
Civic, social service or fraternal facilities	1 space per 250 square feet	2, or 1 per 10,000 square feet	5% of auto parking

Bicycle Parking Requirements – City of Charlotte (continued)

PERMITTED USES	REQUIRED NUMBER OF AUTO PARKING SPACES	LONG-TERM BICYCLE	SHORT-TERM BICYCLE
Cultural facilities	1 space per 4 seats	2, or 1 per 10,000 square feet	2, or 1 space per 20 seats
Elementary, middle or junior high schools	1 space per classroom	none	1 space per classroom
Fire stations	1 space per 300 sq. ft., excluding apparatus room	2 per station	None
Government buildings	1 space per 300 square feet	2, or 1 per 10,000 square feet	5% of auto parking
Group homes	2 spaces per unit	2, or 1 per 10,000 square feet	none
Health institutions	1.2 spaces per bed	2, or 1 per 10,000 square feet	5% of auto parking
High schools	1 space per classroom, plus 1 space per 5 students	none	1 space per classroom
Jails	1 space per 2 employees	2, or 1 per 10,000 square feet	5% of auto parking
Nursing homes, retirement homes, etc. Dependent living facility Independent living facility	1 space per 3 beds 1.5 spaces per unit	2, or 1 per 10,000 square feet	5% of auto parking
Religious institutions	1 space per 4 seats	none	2% of auto parking
Stadiums, arenas or coliseums	1 space per 3 seats	none	2% of seats or per CMPC review
Universities, colleges or junior colleges	1 space per 2 students	2 spaces per office building, except for dormitories, above	10% of auto parking
Rail or bus stations, transit centers without parking lots		A minimum of 8 or per CDOT review	A minimum of 8 or per CDOT review
Park and Ride Lots with parking lots (rail or bus)		4% of auto spaces for lots < 400 auto spaces or a minimum of 8 3% of auto spaces of lots of 400-800 auto spaces 2% of auto spaces of lots > 800 auto spaces or per CDOT review.	A minimum of 6 or per CDOT review

Bicycle Parking Requirements – City of Charlotte

PERMITTED USES	REQUIRED NUMBER OF AUTO PARKING SPACES	LONG-TERM BICYCLE	SHORT-TERM BICYCLE
Other institutional uses	1 space per 250 square feet	2, or 1 per 10,000 square feet	5% of auto parking
OFFICE AND BUSINESS USES:			
Bus terminals and train stations	1 space per 4 seats in the terminal	5 % of auto parking or a minimum of 8 or per CDOT review	A minimum of 6 or per CDOT review
Clinics	1 space per 200 square feet	2, or 1 per 70,000 square feet or per CMPC review*	5% of auto parking
Financial institutions	1 space per 200 square feet	2, or 1 per 10,000 square feet	5% of auto parking
Showrooms	1 space per 1000 sq ft	2, or 1 per 20,000 square feet	5% of auto parking
Hotels/motels (a) Per room for rent (b) Per meeting room capacity (c) Restaurant/entertainment facility	1 space per room or suite, plus 1 space per 4 seats, plus 1 space per 250 square feet	1 space per 20 rentable rooms	None
Indoor recreation - Swimming pool - Tennis or racquet court - Other indoor recreation	1 space per 75 square feet of water 3 spaces per court 1 space per 200 square feet	2, or 1 per 10,000 square feet, or per CMPC review	5% of auto parking
Laboratories	1 space per 400 square feet	2, or 1 per 10,000 square feet, or per CMPC review*	5% of auto parking
Marinas	1 space per boat slip	1 per 20 berths	5% of auto parking
Offices	1 space per 300 square feet	2, or 1 per 10,000 square feet	2, or 1 per 40,000 square feet
Medical offices	1 space per 200 square feet	2, or 1 per 10,000 square feet	5% of auto parking
Neighborhood food and beverage service	1 space per 175 square feet	2, or 1 per 10,000 square feet	5% of auto parking
Nightclubs, lounges and bars	1 space per 75 square feet	none	5% of auto parking
PERMITTED USES	REQUIRED	LONG-TERM	SHORT-TERM

Bicycle Parking Requirements – City of Charlotte (continued)

PERMITTED USES	REQUIRED NUMBER OF AUTO PARKING SPACES	LONG-TERM BICYCLE	SHORT-TERM BICYCLE
Outdoor recreation (See specific district for location) -Driving range - Golf Course (9 and 18 holes) - Par 3 golf course - Riding academy - Swimming pool - Swimming pool (as part of planned dev.) - Tennis or racquet court - Tennis courts (as part of planned dev.)	1.2 spaces per tee90 spaces per 9 holes 40 spaces per 9 holes 1 space per horse stall 1 space per 75 square feet of water 1 space per 100 square feet of water 3 spaces per court 2 spaces per court	2, or 1 per 10,000 square feet (for employees)	None for Golf Course (9 and 18 holes) and Par 3 golf course. 5% of auto parking for all other uses.
Post offices	1 space per 400 square feet	2, or 1 per 10,000 square feet	5% of auto parking
Restaurants	1 space per 75 square feet	2, or 1 per 10,000 square feet	5% of auto parking
Retail establishments - Motion Picture Theatres - Other retail establishments	1 space per 3 seats 1 space per 250 square feet	2, or 1 per 12,000 square feet	5% of auto parking
Shopping centers, greater than 50,000 square feet	1 space per 250 square feet	2, or 1 per 12,000 square feet	5% of auto parking
Wholesale establishments	.25 space per 1,000 square for the wholesaling portion plus 1 space per 400 square feet for any accessory office	2, or 1 per 40,000 square feet	5% of auto parking
Other business uses	1 space per 250 square feet	2, or 1 per 10,000 square feet	5% of auto parking
INDUSTRIAL USES:			
Airports	1 space per 4 seats in the terminal	Per CMPC review*	Per CMPC review
Manufacturers and warehouses	25 space per 1,000 square feet for the manufacturing or warehousing portion plus 1 space per 400 square feet for any accessory office	2, or 1 per 40,000 square feet	1% of auto parking

PERMITTED USES	REQUIRED NUMBER OF AUTO PARKING SPACES	LONG-TERM BICYCLE	SHORT-TERM BICYCLE
Other industrial uses	1 space per 400 sq feet	2, or 1 per 40,000 square feet	1% of auto parking

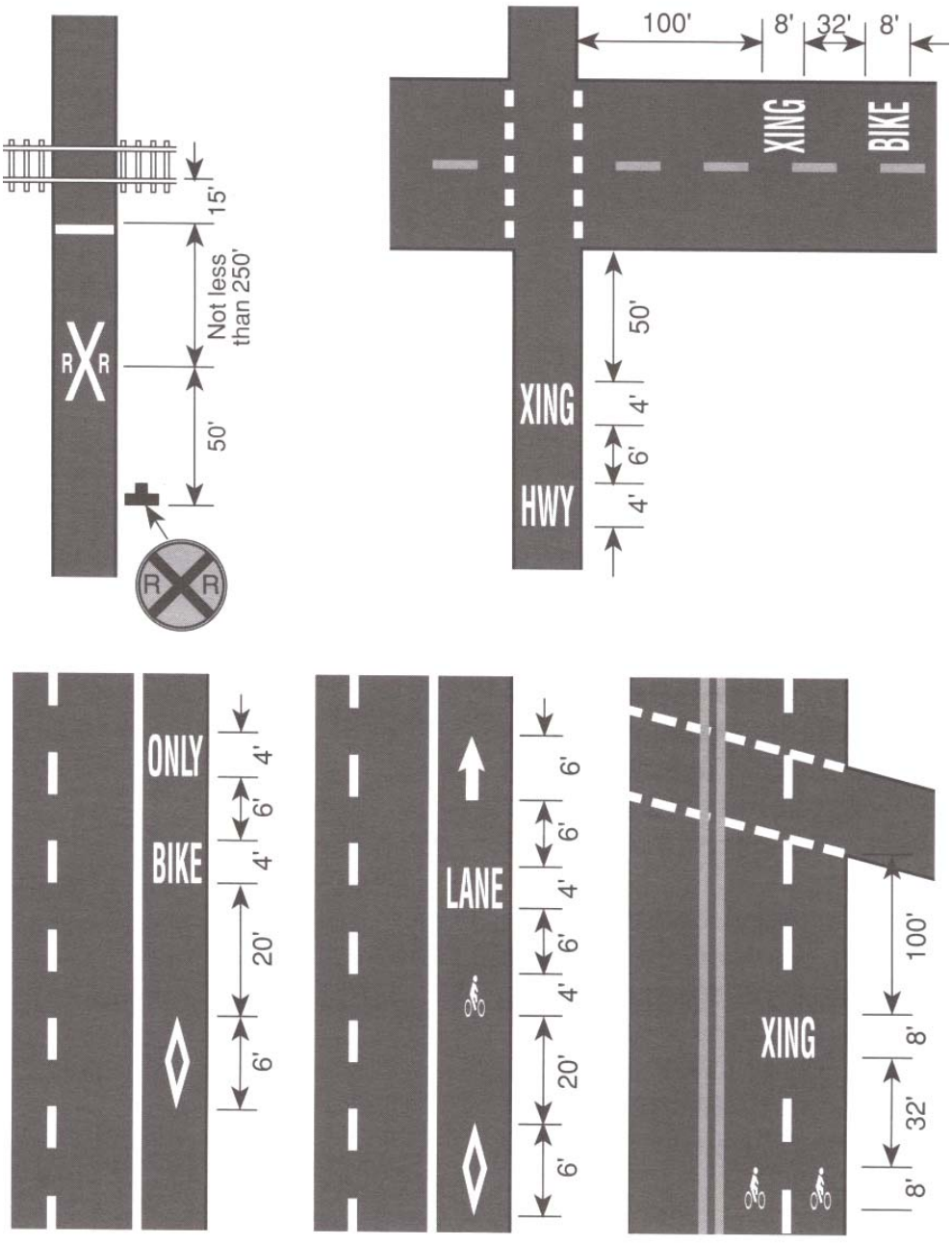
Planning Commission staff in conjunction with CDOT may waive or reduce bicycle parking depending on the surrounding land uses of a particular development, and the accessibility of a site by bicycle. One example of a location where less bicycle parking would be required is at a freeway interchange with no connection to the surrounding neighborhoods.

* - All square footage is gross footage.

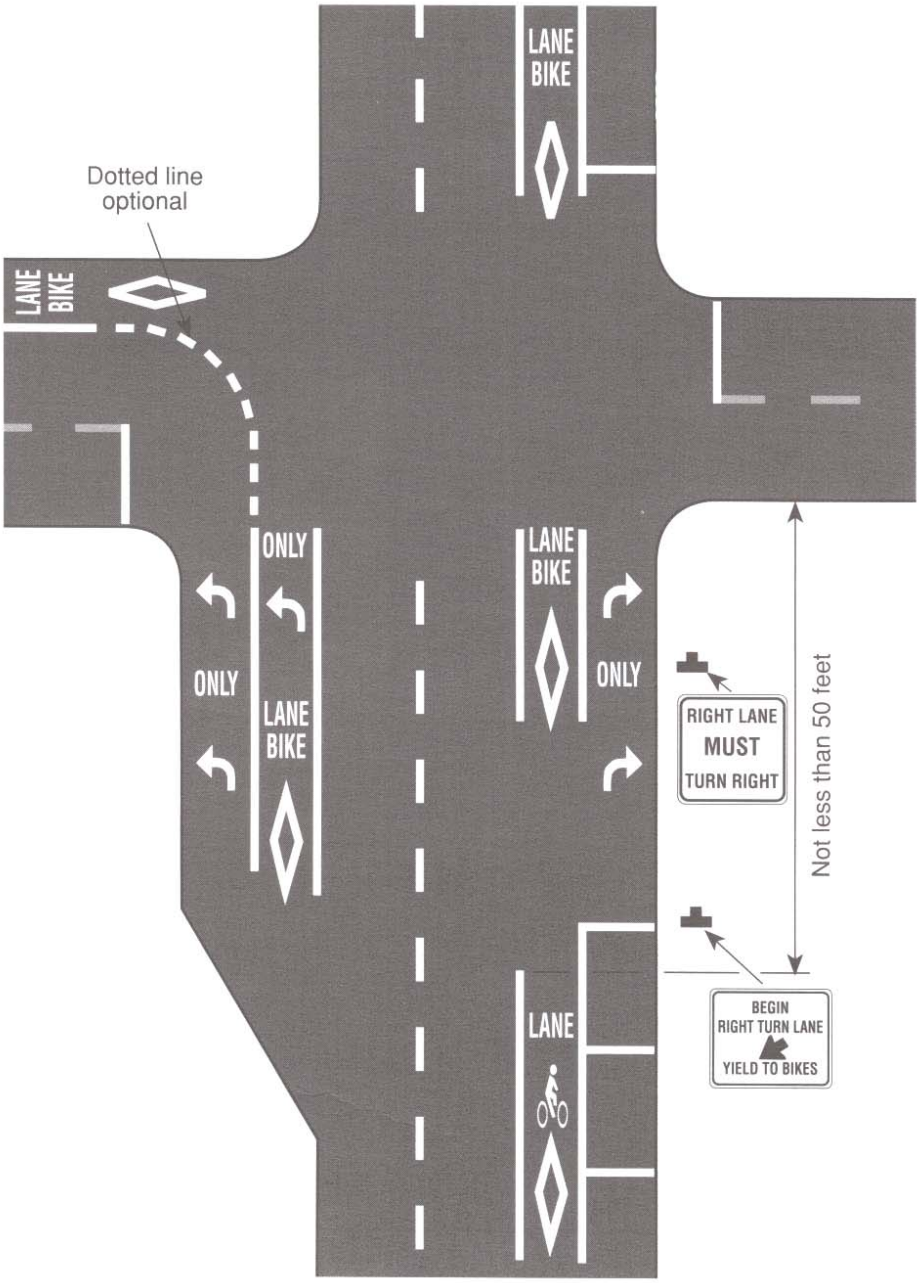
Pavement Markings and Signage Locations for Bicycle Facilities

(North Carolina Bicycle Facilities Planning and Design Guidelines)

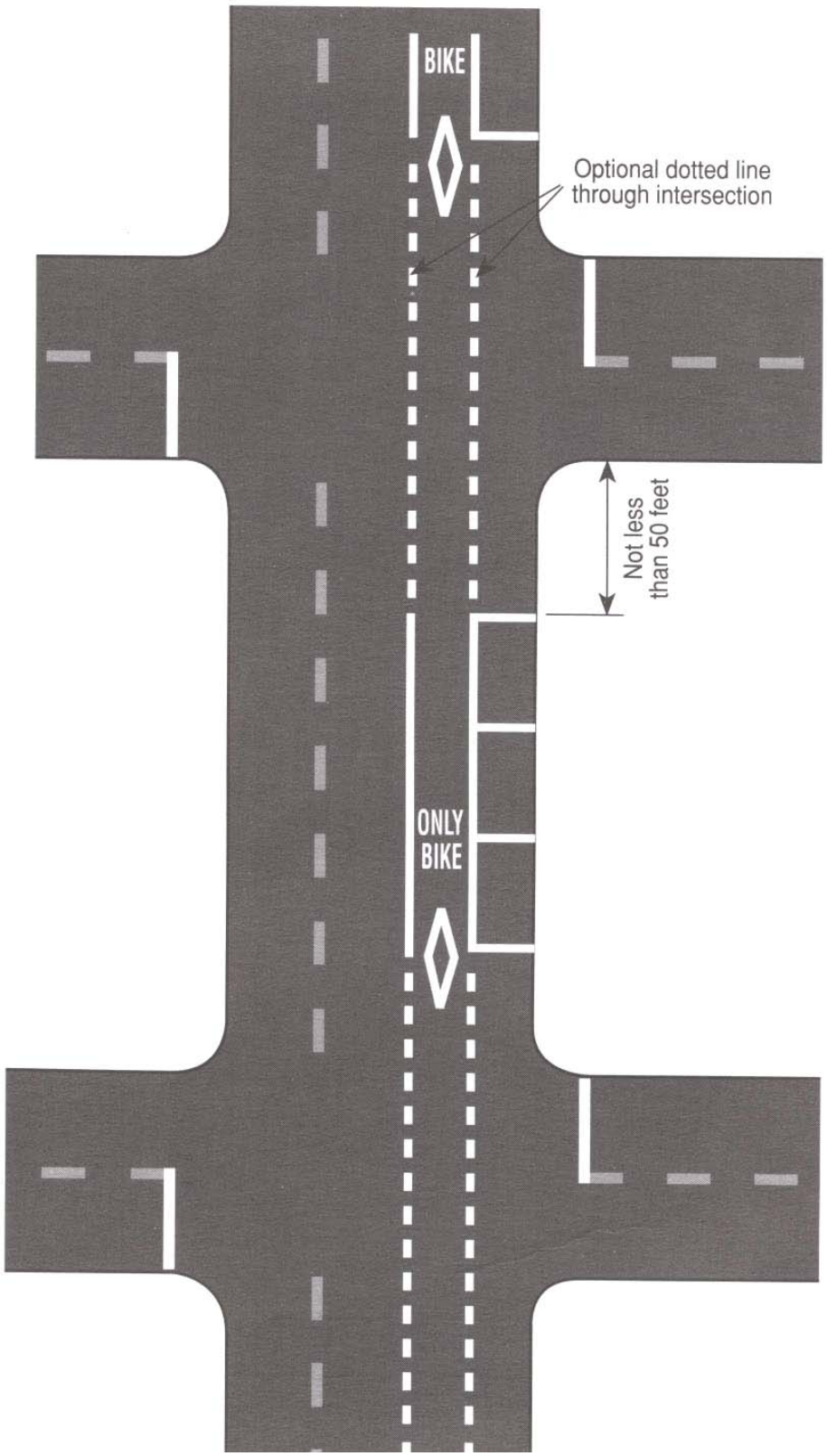
Word and symbol pavement markings for bicycle facilities



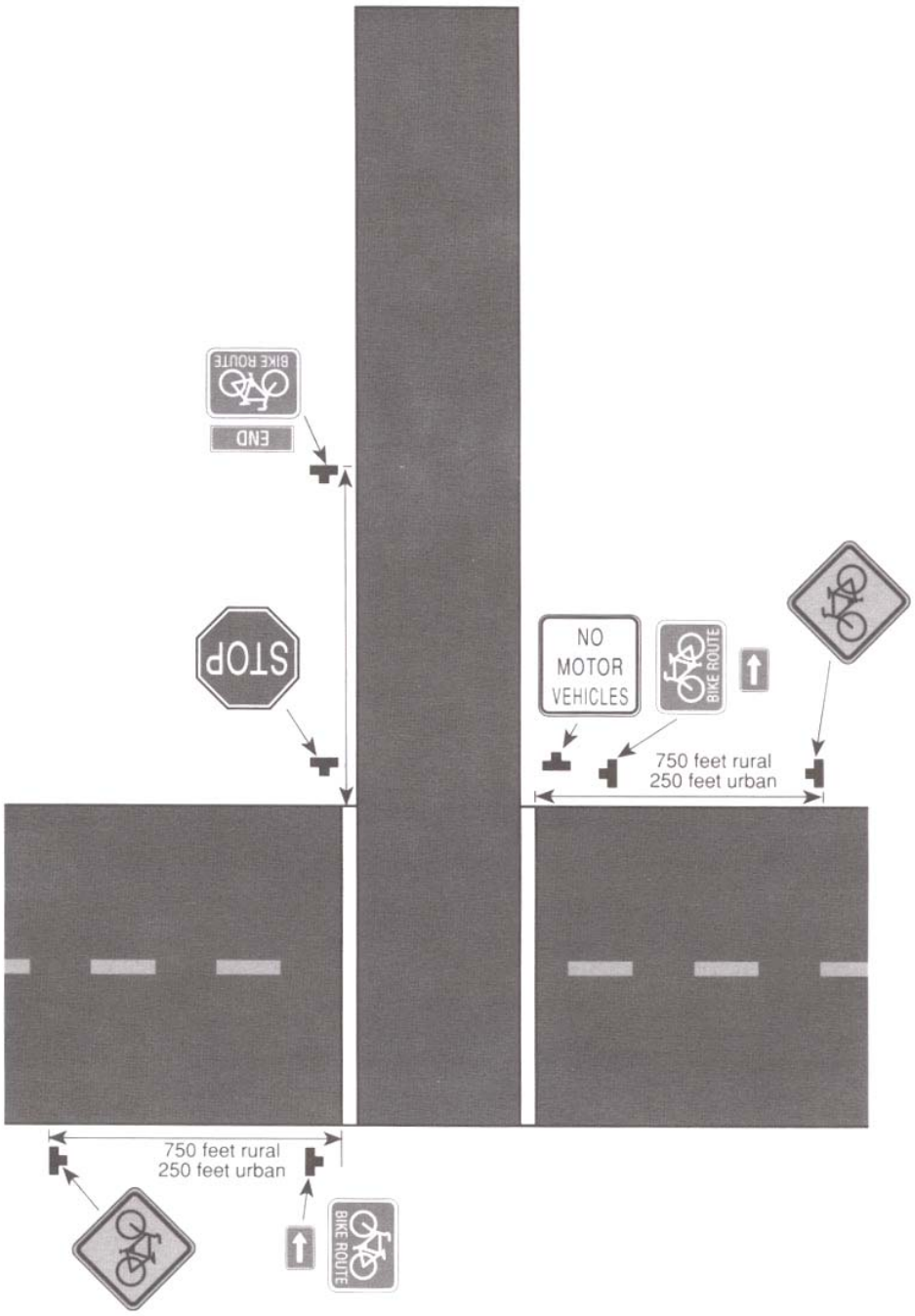
Intersection pavement markings – designated bicycle lane with left turn area, heavy turn volumes, parking, one-way traffic or divided roadway.



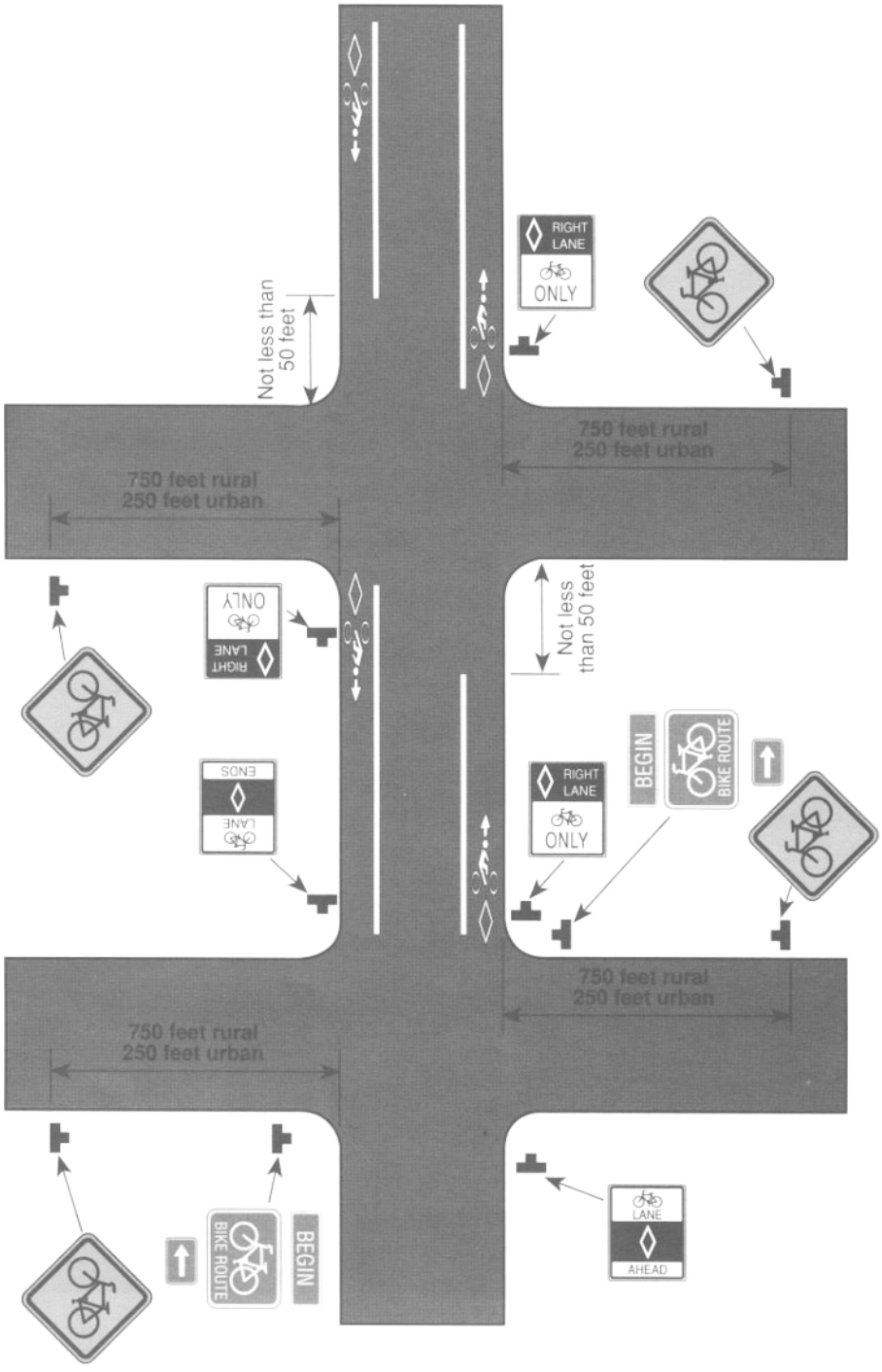
Typical pavement markings – designated bicycle lane, two-way traffic with parking and low right turn volume.



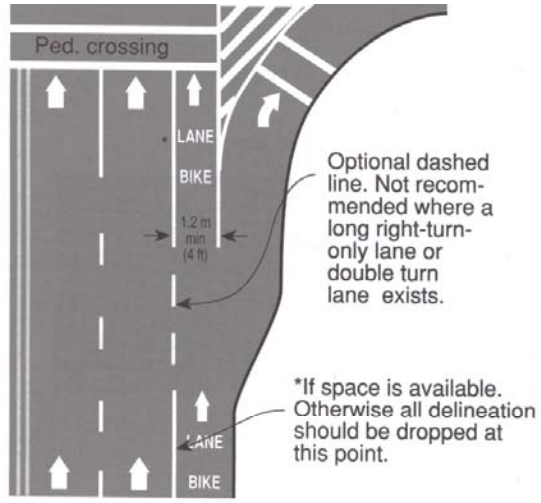
Typical signing for beginning and ending of bicycle trail



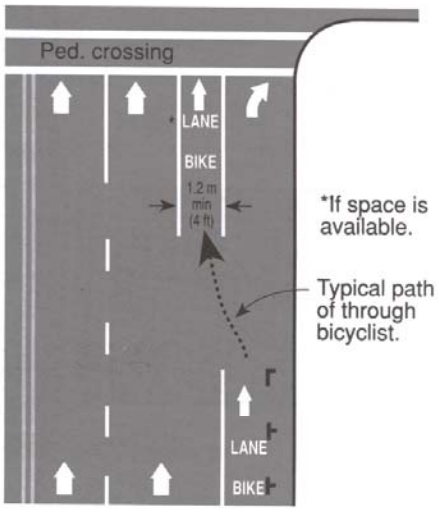
Typical signing for the beginning and ending of designated bicycle lane



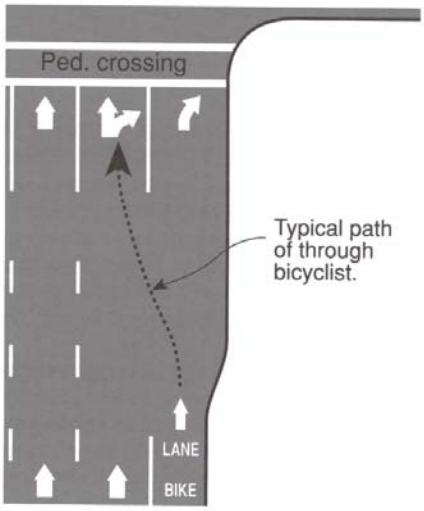
Bicycle lane marking options at intersections with right-turn-only lanes



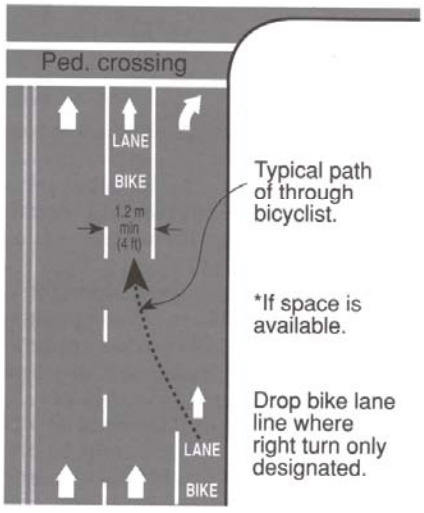
(1) Right-turn-only lane



(2) Parking area becomes right-turn-only lane



(3) Optional double right-turn-only lane



(4) Right lane becomes right-turn-only lane

Typical bicyclist and motor vehicle movement in an intersection of two multi-lane streets with bicycle lanes