

chapter three

new bike network

3.1 Overview

Based on an examination of the existing conditions (Chapter 2) and an understanding of the community's vision and goals for improved cycling opportunities (Chapter 1), the Winston-Salem Urban Area has adopted a new Bicycle Network.

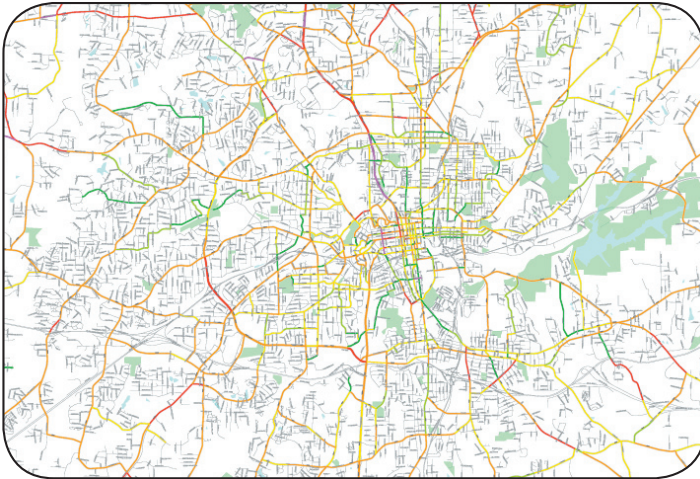
Some of the individual Bicycle Network components that are described in this chapter include recommended bicycle facility types, major corridors that shape the network, and a number of specific recommendations for needed, individual changes. The methodology that was used to develop the network is briefly introduced in section 3.3.

This chapter describes the facilities recommended for this new Bicycle Network, while priorities, time lines, and steps for implementing the plan are presented in Chapter 4 - Implementation. Together, these two chapters provide a complete picture of the nature and design of the new Bicycle Network as well as the steps that are necessary for turning the vision into a reality.

3.2 The Network

The Bicycle Network is the set of routes that should be improved to create a system of safe and convenient bicycle facilities throughout the Winston-Salem Urban Area. The newly proposed network includes 1,245 miles of bicycle facilities. These facilities include paved shoulders, bike lanes, shared-use paths, and other bicycle accommodations. It is anticipated that the full network will be complete by 2030.

The Bicycle Network is shown on two large maps included at the back of this document and available online at: www.cityofws.org/DOT. Map 1, the Winston-Salem Urban Area Bicycle Network Facility



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Recommendations Map, designates key road corridors where bicycle facilities should be added or improved to provide connectivity for biking throughout the region (see Map Insert 1). Map 2, the Winston-Salem Urban Area Signed Bicycle Route System, shows which roads and shared-use paths should be signed as official bike routes (see Map Insert 2). The signed bicycle route system (Map 2) is a subset of the larger bicycle network (Map 1), which includes facilities that serve cyclists all over the Winston-Salem area, but are not signed as specific bicycle routes.

Development of the Winston-Salem Urban Area Bicycle Network will require a long-term, cooperative effort between the City of Winston-Salem, the North Carolina Department of Transportation, Forsyth County, Davidson County, Davie County, Stokes County, and other local and state agencies.

3.3 Bicycle Network Methodology

A variety of information sources were consulted during the development of the Bicycle Network, including previous plans and studies, recommended projects, the consultants' field work, and noted bicycle trip attractors. A more complete list of information inputs is found in the box below (Figure 3.1). The process of selecting roadways and facilities for the Bicycle Network also considered existing roadway

cross-sections, traffic patterns, and surrounding land use characteristics.

Several concepts were developed as guides for the network development process. These concepts represented the interests expressed by the client, the BAC, and the public. They also help achieve the goals articulated in other local planning documents. Some of the concepts that guided the development of the network include:

- 1) Residents who live within two miles of Downtown Winston-Salem should not be more than one-half mile from the closest bike route in the network.
- 2) Residents who live in all other parts of the Winston-Salem area should not be more than two miles from the closest bike route in the network.
- 3) Most of the network's roadway segments should serve as connectors to important destinations.
- 4) Other roadway segments within the network should fill in the transportation gaps between destination points.
- 5) Bicycle network roadways that are part of a signed bike route should have a Bicycle Level of Service of "C" or better.

Figure 3.1

Winston-Salem Urban Area Bicycle Network

List of Information Inputs

- 1) Locations of the existing signed bike routes in the City of Winston-Salem and Forsyth County
- 2) 2003 Greenway Plan for Winston-Salem and Forsyth County
- 3) Scoring reports from the consultants' Bicycle Level of Service study
- 4) Public comments made during community workshops
- 5) Responses from the City of Winston-Salem's Bicycle Survey
- 6) Recommendations from representatives of the Bicycle Advisory Committee
- 7) Field observations made in Fall 2004
- 8) Projects listed in the 2004-2010 Metropolitan Transportation Improvement Program (MTIP)
- 9) Projects listed in the 2003 Winston-Salem Metropolitan Planning Organization Transportation Needs Report
- 10) Projects listed in the 2003 NCDOT Moving Ahead Program
- 11) Projects listed in the Winston-Salem Urban Area Thoroughfare Plan
- 12) Existing parks, hospitals, schools, colleges, transit facilities, and other pedestrian and bicycle attractors



3.4 Recommended Facilities

There are many facility types that support bicycle use. The primary ones recommended in this plan are shown in Table 2 (below). For each of these facility types, the miles that currently exist and the miles that this plan recommends as part of the network are also listed. The different facility types have specific design components that are appropriate for particular types of roadways. Selection of a facility type depends on roadway specifications such as volume of traffic flow, speed of traffic, amount of space available, and surrounding land use characteristics. Each of the facility types noted in Table 2 is described in more detail on the following paragraphs.

3.4.1 Shared Roadways (No special bicycle facilities)

Shared roadways are streets and roads where bicyclists can be served by sharing the travel lanes with motor vehicles. Usually, these are streets with low traffic volumes and/or low speeds, which do not need special bicycle accommodations in order to be bicycle-friendly. The Bicycle Network Facility Recommendations Map includes 99.5 miles of on-road



Buena Vista Road is an example of a shared roadway.

bikeway connectors. These are shared roadways that provide important connections to other recommended bicycle facilities and destinations in the region. They do not require any new facilities.

Examples: Ivy Avenue; Grubbs Road

3.4.2 Striped/Paved Shoulders

Paved shoulder space improves the safety and comfort of bicyclists. There is no minimum width for paved shoulders, however a width of 4 feet is preferred^{1,2,3}. On many roadways, motor vehicle travel lanes can be narrowed to provide more shoulder space. According to the AASHTO Guide for the Development of Bicycle Facilities (1999), “where 4-foot widths

Table 2. Winston-Salem Urban Area Bicycle Network Recommended Facilities

Existing Facilities		Recommended Bicycle Network	
Facility Type	Miles ¹	Facility Type	Miles ¹
Signed bicycle route ²	198.1	Roads that could be signed as bicycle routes ²	463.3
Paved shoulder	21.4	Paved shoulder	386.7
Bicycle lane	0.6	Bicycle lane	64.0
Shared-use path/Greenway	22.2	Shared-use path/Greenway	171.3
	-	Other on-road bicycle accommodation ³	27.1
	-	Other on-road bicycle facility, but sidepath may be used in the short-term ⁴	114.0
	-	Unknown facility	18.0
Total	242.2	Total	1244.5

¹Centerline miles (facilities on both sides of the road are not counted separately).

²These figures include bike routes being considered for the public bicycle map, which total 175.5 miles. Note that some roadway segments recommended for bicycle routes are also included in the other categories.

³Other on-road bicycle accommodations include edgelines and shared pavement markings.

⁴The long-term goal for roads in this category is to provide on-road facilities for bicyclists. However, a sidepath adjacent to the roadway can be acceptable in the short-term when a roadway has high-speed, high-volume traffic and few intersecting roadways and driveways and there is no other option for widening the roadway. Sidepath bikeways in locations with frequent driveways are not a good solution due to conflicts with turning vehicles. If used, these facilities should not be signed as bike routes. NOTE: The GIS database lists this category as "Sidepath" or "Wide Sidewalks".



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cannot be achieved, any additional shoulder width is better than none at all”¹. Paved shoulders also improve safety for motor vehicles, prevent pavement deterioration at the edge of the travel lanes, and provide space for pedestrians. In rural parts of the Winston-Salem Urban Area, shoulders were recommended on roads for three main reasons: 1) field data collectors noted that it may not be difficult to add a shoulder to the side of the road (few obstructions, generally level grade); 2) the road serves as a logical recreational route; 3) the road has a Bicycle LOS grade lower than “C”, and adding a shoulder would help improve the Bicycle LOS.

Examples: Hawthorne Road; parts of Germanton Road

3.4.3 Bike Lanes

A bike lane is a portion of the roadway that has been designated by striping, signing, and pavement markings for the preferential or exclusive use of bicyclists. Bike lanes are always located on both sides of the road (except one way streets), and carry bicyclists in the same direction as adjacent motor vehicle traffic. The minimum width for a bicycle lane is 4 feet; five- and six-foot bike lanes are typical for collector and arterial roads.

Example: Tallison Drive

3.4.4 Shared-Use Paths/Greenways (Separated from the roadway right-of-way)

Shared-use paths (multi-use trails) are an important component of a bicycle and pedestrian transportation system. They can provide a high-quality bicycling



A shared-use path at Drayton Pines Park.

experience in an environment that is protected from motor traffic because they are constructed in their own corridor, often within open-space areas. Shared-use paths can be paved and should be a minimum of 10-feet wide. Their width may be reduced to eight feet if there are physical or right-of-way constraints. Greenway paths that are recommended in this Plan provide important connections that complement on-road bicycle facilities. The 2003 Greenway Plan recommends other multi-use trails that should also be developed.

Examples: Salem Creek Trail; Bethabara Trail

3.4.5 Signed Bike Routes

A signed bike route is a shared roadway which has been designated by signing as a preferred route for bicycle use. Bike route signs can be posted on key routes to indicate to bicyclists that particular advantages exist to using these routes compared with alternative routes. Bike route signs can also be used with a variety of other bicycle facility types, including shared roadways, bike lanes, paved shoulders, and greenways. Road segments on bike routes should be Bicycle LOS “C” or better.

Examples: Kernersville Loop Bike Route; North Carolina Bike Route 2

3.5 Other Improvements for Bicyclists

Signed bike routes, paved shoulders, bike lanes, and shared-use paths are the most common facilities that will be used to develop the Bicycle Route Network in the Winston-Salem Urban Area. Yet, it is not possible to provide these types of facilities in some locations. In certain cases, other types of improvements that benefit bicyclists are recommended. These other beneficial bicycle facilities are described below.

3.5.1 Edgelines

Edgelines are pavement stripes that narrow the motor vehicle travel lanes to 10- or 11-foot wide and provide a shoulder or a wide striped parking lane that bikes can use. However, they do not create enough space for a designated bike lane. Edgelines define the space for automobiles, can help slow





Example of edgelines along Acadia Avenue

traffic, and result in a marginal increase in Bicycle LOS. While this treatment is not an official bikeway type, it is supported by the AASHTO Guide for the Development of Bicycle Facilities (1999, p.16), which states, "...where four-foot [paved shoulder] widths cannot be achieved, any additional shoulder width is better than none at all." ¹

3.5.2 Shared Roadway Pavement Markings

Shared roadway pavement markings can be used to mark bike routes and show the proper direction for cycling on the road and provide a visual cue that bikes are welcome on the road. They can be used on roadways where there is not enough space to provide standard, 5-foot-wide bike lanes. Because they do not require as much paint, these markings are also less expensive than bike lanes. These markings have been used in communities such as Denver, CO, Gainesville, FL, and San Francisco, CA.

3.5.3 Sidepaths (Adjacent to roadways)

This type of path is similar to a multi-use trail (recommended 10-foot width), but it is constructed within a roadway corridor right-of-way. Bicyclists retain the right to use the roadway even if a sidepath is adjacent to it. A sidepath can be acceptable in the short-term when a roadway has high-speed, high-volume traffic and few intersecting roadways and driveways and there is no other option for widening the roadway. However, in the long-term, all roads should provide on-road facilities for bicyclists. When used, it is desirable to have sidepaths on both sides of

the roadway to make it easier for bicyclists to ride in the same direction as motor vehicle traffic.

Sidepaths are most appropriate in corridors with few driveways and intersections because conflicts between turning motorists and bicyclists are less of a problem. Routes where sidepaths are recommended should not be designated as signed bike routes unless adequate on-road bike facilities are provided.

3.5.4 Bicycle racks and bicycle lockers

Secure bicycle parking located close to building entrances and transit entry points can make bicycling more attractive to potential cyclists. It also reduces the risk of bicycle damage or theft. Bike rack design and site location are discussed in the Bicycle Parking Guidelines, developed by the Association of Pedestrian and Bicycle Professionals⁴. Bike lockers provide added protection from theft and weather. Bike parking is important at destinations such as town centers, historic sites, transit stations and park-and-ride lots. It is also good to have bike parking available near business entrances and at employment sites.

3.5.5 Bike-friendly traffic signals

There are a variety of ways to make traffic signals more suitable for bicyclists. These treatments include changing signal timing so that bicyclists are able to clear intersections during yellow, reducing the wait time for bicyclists on side streets, and installing improved detection equipment.

3.5.6 High-visibility bicycle warning signs

Advance warning signs can be posted to make drivers more aware of trail and other key bike route crossings. "Share the Road" signs can be posted on roads that bicyclists use regularly. These signs can increase awareness of bicyclists, especially in areas where bicyclists may not be expected or where many drivers are tourists. A new fluorescent yellow/green color has been approved in the national Manual on Uniform Traffic Control Devices and can be used on these signs. Signs should be used judiciously—too many signs can cause visual clutter and lead to non-compliance.



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3.5.7 *Bike-friendly traffic calming*

Slowing motor vehicle speeds helps improve the Bicycle LOS of a road. Striping narrower lanes can help slow motor vehicles, and it can also create more space on the road for bicyclists. Traffic circles and medians are other examples of facilities that can be added to a roadway to slow motor vehicles.

3.6 Roadway Crossings and Intersections

In addition to modifications to the actual throughways for cyclists, it is also important to ensure that intersections are appropriately designed to facilitate safe and efficient bicycle traffic. High-speed, multi-lane arterial roadways and freeway access ramps are particularly important crossings to address. Driveways in residential and commercial areas also create the potential for conflict between bicycles and turning motor vehicles. Map 3, in Chapter 4, pinpoints the most critically needed intersection modifications in the study area.

Accommodations for bicyclists at intersections is discussed in detail in the Design Guidelines in Chapter 5. Treatments that can be used to improve intersections in the Winston-Salem Urban Area include:

- High-visibility crosswalks
- Roadway medians/median crossing islands
- Bike-friendly traffic signals
- Advance warning signs and flashing lights
- Reduced (i.e., 15-foot) motor vehicle turning radii (to reduce motor vehicle turning speeds)

3.7 Key Corridors and Areas

Section 3.7 describes the major, on-road connections that make up a significant portion of the proposed bicycle network. The section is divided into 13 subsections which focus on individual geographic parts of the project area. In each subsection, specific recommended projects are discussed. Implementation phasing and timing, however, are not presented until Chapter 4 - Implementation.

In each subsection, only major corridors are listed. Smaller projects are described later in the document. Subsections 3.7.1 - 3.7.7 focus on the City of Winston-Salem. Subsections 3.7.8 - 3.7.13 cover the surrounding communities, e.g. Kernersville, King, and Lewisville.

The proposed Northern Beltway will include new freeway ramp intersections. It is essential that these intersections be designed to allow safe and convenient bicycle crossings. In addition, some roadways are likely to be cut off by the new freeway. Though the roads will be closed to motor vehicle traffic, a pedestrian and bicycle tunnel can be provided under the freeway to maintain access for pedestrians and bicyclists. Because these roads will have significantly lower traffic volumes, but still provide tunnel access, they can become excellent through-routes for bicycling.

3.7.1 *Downtown Winston-Salem*

Downtown Winston-Salem has the greatest concentration of employment in the urban area and is surrounded by some of the highest density residential neighborhoods in the study area. This area has excellent potential to serve more bicycle trips, particularly work commute trips.

Block-by-block bicycle facility recommendations for the streets of Downtown Winston-Salem are listed in Appendix E. There is adequate roadway space to provide one-way bike lanes on Main and Liberty Streets through the entire downtown area. All downtown streets bounded by Sixth Street (north), First Street (south), Main Street (east), and Poplar Street (west) should be designated with signs reminding people to drive slowly and share the road with bikes, regardless of the presence of bike lanes. These signs should be placed strategically so that they do not add sign clutter to the downtown area.

The main east-west connections through the east side of Downtown Winston-Salem will be on Third, Fourth, and Fifth Streets. The City should restripe the existing lanes on these streets and include new



bike lanes. West of Liberty Street, the City should designate bicycle routes on First, Second, and Sixth Streets. This will move part of the existing bike routes from Fourth and Fifth Streets to wider streets with less traffic.

Many of the streets immediately outside Downtown Winston-Salem will be improved with new facilities. On the south side, Salem Avenue should be striped with bicycle lanes to connect the downtown area with Salem College. On-road bicycle facilities should be added to South Marshall and Broad Street to provide connections into neighborhoods south of the urban core.

The reconstruction of Business Interstate 40 is an excellent opportunity for providing better bicycle access between Downtown Winston-Salem and the south side of the City. The City of Winston-Salem should work closely with NC DOT throughout this project to ensure that bicycle access is provided across new bridges and ramps. Recommendations for bicycle facilities on the bridges across Business Interstate 40 are contained in Appendix E.



Cleveland Avenue

To the west, on-road facilities should be added to First Street and the existing bike route will be maintained on Fourth Street to connect to the West End neighborhoods. This bike route can continue west on Glade Street and south on Crafton Street to cross under Business Interstate 40.

On the north side, a short connector path should be provided through Drayton Pines Park to connect to North Cherry Street. This will make it easier for bicyclists to use Cherry Street as an alternative to University Parkway. Other connections out of downtown to the north include new on-road facilities on Trade Street and Patterson Avenue. A bike route should be signed to provide access to the northeast of Downtown Winston-Salem along Liberty Street, Fourteenth Street, and Cleveland Avenue.

Connections to neighborhoods on the east side should be provided with on-road facilities on Highland Avenue, Cleveland Avenue, and by maintaining the existing bike route that uses File Street, East Tenth Street, and Cameron Avenue. Shoulder bike lanes should be added to Martin Luther King, Jr. Drive in the long-term. However, sidepaths may be installed to serve bicyclists before the road is reconstructed or widened. The bicycle facilities on Martin Luther King, Jr. Drive, a new bicycle route connection on Stadium Drive, and a new path and bike lanes on Vargrave Street will provide connectivity to Winston-Salem State University.

The City of Winston-Salem should coordinate the planning and construction of bikeways on the



With some modifications, Main and Liberty Streets could serve as primary bicycle travel routes through Downtown Winston-Salem. Existing and simulated conditions shown above, respectively.



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southeast side of Downtown with the development of the Piedmont Triad Research Park. The Piedmont Triad Research Park Master Plan, produced by Alliance, Inc. in 2002, emphasizes providing bicycle and pedestrian facilities for recreation:

“A key element of the Research Park will be a 45-acre “greenspace network” of new parks and open space. The network will consist of a stream corridor, a series of urban parks, natural green spaces and a recreational trail system. The result will be a continuous greenway extending through virtually the entire park.”⁵

3.7.2 East Side of Winston-Salem

The City should provide several significant connections on the east side of Winston-Salem. New bike lanes should be striped along Old Greensboro Road to connect the downtown Winston-Salem area with Petree Elementary School and the new high school. Bike lanes should be striped on Bowen Boulevard to provide better bicycle access to the park. Bike lanes should also be provided on most of Carver School Road to provide connections to Carver High School and the Winston Lake area. A combination of bike lanes and other on-road facilities should be added to Reynolds Park Road to improve bicycle access between the Winston-Salem State Campus area and Reynolds Park and Salem Lake. The existing bike routes in the Salem Lake area should be maintained.

New shoulder facilities on less-developed sections of New Walkertown Road, Reidsville Road, Reynolds Park Road, and Kernersville Road should be provided



Carver School Road



Clemmonsville Rd. should have bike lanes and a wider sidewalk.

to connect neighborhoods in the City of Winston-Salem with rural areas east of the city.

3.7.3 South Side of Winston-Salem

The neighborhoods on the south side of Winston-Salem should be connected with the downtown area along several different routes. On-road bicycle facilities should be provided on Waughtown Street, Main Street, and Broad Street. Similar facilities should be used to provide east-west connectivity through these neighborhoods on Waughtown Street, Sprague Street, and Acadia Avenue. Paved shoulders should be added to the section of Peters Creek Parkway between Downtown Winston-Salem and Clemmonsville Road when it undergoes construction. This will provide better conditions for both bicyclists and pedestrians traveling to the many restaurants and stores in the corridor. It will also provide students at Parkland High School and Independence High School with better access along the corridor. Sidepaths should be considered for improving bicycling conditions on this roadway in the short-term if no other options are available.

Shoulders should be provided on less-developed parts of Thomasville Road, Old Lexington Road, Main Street, Peters Creek Parkway, and Ebert Road, to connect the neighborhoods with rural areas south of the City.

3.7.4 West Side of Winston-Salem

Several important bike routes should be maintained as connections from communities on the west side of Winston-Salem to the downtown area. Bike routes



on streets such as Elizabeth Avenue, Brent Street, and Ardsley Street feed into Crafton Street, which goes under Business Interstate 40 and into the West End neighborhood. The bike routes that use Runnymede Road, Buena Vista Road, and Yorkshire Road should also continue to provide low-traffic alternatives to Country Club Road, Robinhood Road, and Peace Haven Road. The existing shoulders on Hawthorne Road should be extended towards Wake Forest University Medical Center, bike lanes should be added to North Stratford Road, and other on-road facilities should be provided on Miller Street, Knollwood Street, and Academy Street. These facilities will help improve access to the Wake Forest and Forsyth Medical Centers.

South Stratford Road, Country Club Road, Robinhood Road, Peace Haven Road, and Reynolda Road are important bikeway corridors that should be improved with shoulder bike lanes in the long-term. However, sidepaths should be considered along parts of these roadways with low numbers of turning vehicles. While these sidepaths will not be recommended as signed bike routes, they can help some bicyclists reach the restaurants, shops, and office destinations on these roads. These sidepaths would also benefit pedestrians because they would be wider than the existing sidewalks.

Silas Creek Parkway connects many of the neighborhoods on the west side of Winston-Salem. While the southern sections of this road may have enough space to add shoulders, there are physical constraints to widening the road footprint in other parts of the corridor. In addition, there are several on- and off-ramps along this route that make adding safe bicycle facilities difficult. Therefore, bicycle facilities for the western side of this route should be determined when plans are made to reconstruct the road.

3.7.5 Wake Forest University Area

Connections between Wake Forest University and Downtown Winston-Salem are important because these are two of the most significant trip attractors in the urban area. Bike lanes should be provided on

Reynolda Road between West End Boulevard and Stratford Road. Though the opportunities for bicycle facilities between Stratford Road and Wake Forest Drive are currently constrained, bicyclists can use a driveway through the Reynolda House and Gardens to access a greenway path that connects to Faculty Drive on the Wake Forest Campus. This connection should be formalized as a bicycle route.

The other route between the downtown and campus areas should take advantage of the path through Drayton Pines Park and use Cherry Street. This connects to the intersection of University Parkway and Twenty-Seventh Street. From this location, shoulders should be added to Coliseum Drive to provide access from University Parkway to Reynolda Drive. In addition, an on-road bicycle facility should be added to University Parkway in the long-term to provide a connection between the Fairgrounds, the Coliseum area, and the main campus. In the short-term, sidepaths should be provided along University Parkway. An on-road facility along Thurmond Street can also provide access between the west side of the downtown area and Twenty-Fifth Street, which connects to Cherry Street.



Polo Road (top) and Reynolda Road (bottom)



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There are several other important routes that provide access to the Wake Forest Campus. An on-road bike facility should be added to Polo Road and Reynolda Road (see images on previous page). Because the on-road bicycle facility on Reynolda Road may not be completed for many years, sidepaths should be provided on both sides of Reynolda Road and connected into the University area. Access from the northwest should also be provided by adding shoulders on parts of Bethabara Road and a shared-use path to connect the northwest end of Bethabara Road (dead end) with Bethania-Rural Hall Road in Bethania. This would provide a continuous bikeway from Wake Forest University to Bethania.

3.7.6 North Side of Winston-Salem

The redeveloping neighborhoods near Drayton Pines Park and other north side neighborhoods should be connected to downtown Winston-Salem with bike facilities on several streets. The City should provide on-road bicycle facilities on Trade Street, Patterson Avenue, and Liberty Street. East-west routes through these neighborhoods should include on-road facilities on the existing Twenty-Fifth Street bike route and new on-road bike facilities on the one-way pair of Twenty-Seventh and Twenty-Eighth Streets. Because this one-way pair has low traffic volumes, it may be possible to remove a motor-vehicle lane from each road to provide space for one-way bike lanes. On-road bicycle facilities should also be provided if these roads are converted to two-way traffic. The lane configuration on sections of Indiana Avenue should also be changed to include on-road bike facilities.



Germanton Road is an example of a road that could accommodate a newly paved shoulder.

Shoulders should be provided on several roads to connect these north-side neighborhoods to areas further from the city. These roadways include Glenn Avenue, Ogburn Avenue, Motor Road, Old Rural Hall Road, and Germanton Road, which already has paved shoulders in the area near the North Summit Square Shopping Center.

3.7.7 Northeast Side of Winston-Salem

Several bikeway connections are recommended in the neighborhoods on the northeast side of Winston-Salem. Bike lanes should be included when Reidsville Road and Waterworks Road are reconstructed. Shoulders should be added to Baux Mountain Road, Williston Road, Walnut Cove Road, Belews Creek Road, Lansing Drive, and Northampton Drive. In addition, the Lowery Creek Greenway should be constructed between Salem Lake and Riedsville Road, south of Walkertown. A bike route should be signed through the northeast part of the City using Bowen Boulevard, Carver School Road, Butterfield Drive, Oak Ridge Drive, and Dippen Road. This route would serve Forsyth Community College.

3.7.8 Walkertown Area

Old Walkertown Road and New Walkertown Road are important connections between Winston-Salem and Walkertown. Shoulders should be provided on both of these roads. North Carolina State Highway 66 serves the south side of Walkertown, and it should have wide sidewalks on both sides between Salem Road and Reidsville Road. These sidewalks will benefit both bicyclists and pedestrians accessing the commercial buildings and schools in this area. Shoulders should be added along all other parts of State Highway 66 to provide a connection for bicyclists between King, Rural Hall, Walkertown, and Kernersville. Several other roadways in the Walkertown Area should also have shoulders, including Baux Mountain Road, Williston Road, Walnut Cove Road, Belews Creek Road, and Reidsville Road.

The Mill Creek Greenway Path should also be constructed between the Summit Square shopping area and Walkertown. This path would use some short



sections of existing streets, including Chris Drive and Amarillo Lane. Sidepaths should be provided along Main Street in the short-term, but on-road facilities should be provided in the long-term. This would make it possible to provide a signed bicycle route on Harley Drive, Main Street, and Darrow Road in the future, and would in turn provide an on-road connection between recommended shared-use paths on the west and southeast sides of Walkertown.

3.7.9 Kernersville Area

Parts of North Main Street, Old Greensboro Street, Broad Street, Pineview Drive, Oakhurst Drive, and Southern Street can be signed as bike routes. These routes can provide connectivity between Downtown Kernersville and surrounding neighborhoods. Traffic volumes and/or speeds on these roads are low enough to provide suitable bicycling conditions without additional bicycle facilities.

Bike facilities should be constructed on several roads in the Kernersville area. Shoulders should be added to East Mountain Street, Graves Street, and Old Greensboro Road on the east side of town. Shoulders should be added to North Main Street, Piney Grove Road, Linville Springs Road, Kerner Road, and Dobson Street to the north of Kernersville. On the west side of town, shoulders should be added to Old Winston Road and Hopkins Road. West Mountain Street should have on-road bicycle facilities in the town area, shoulders on the section immediately west of Kernersville, and a sidepath beside the road next to the railroad tracks between Weslo Drive and Old Greensboro Road. Shoulders should be added to Shields Drive, Whicker Road, Hastings Hill Road, Old Salem Road, Linville Road, Oak Grove Church Road, Glenn Hurd Road, and Wallburg Road south of Kernersville. Sidepaths should be provided on both sides of South Main Street/Kernersville Road to serve this commercial corridor until space can be provided for on-road bicycle facilities.

Several important greenway paths should be constructed in the Kernersville area. This includes a section of the Piedmont Greenway Trail between



Kernersville Road

Salem Lake and Greensboro, a greenway path through the neighborhoods on the west side of Downtown Kernersville, and two greenway paths leading south from the east side of Downtown Kernersville. In addition, a shared-use path should be provided along with the freeway loop that is proposed to go on the north side of Kernersville (Transportation Improvement Plan Project U-2800). It will be important to provide connector pathways to connect this main path with surrounding neighborhoods.

3.7.10 Clemmons Area

Two of the major bicycle trip attractors in the Clemmons Area are Downtown Clemmons and Tanglewood Park. Shoulders should be added to several sections of the Forsyth County Bike Route through Clemmons (North Carolina Bicycle Route 2). These route sections include parts of Lasater Road, Fair Oaks Drive, Harper Road, Hampton Road, Frye Bridge Road, and Fraternity Church Road. Other roads that should receive new shoulders include Middlebrook Drive and parts of Idols Road. While shoulders or bike lanes should be added to Clemmons Road through Downtown Clemmons to provide bicycle and pedestrian access to public buildings and commercial properties in the future, sidepaths should be used as a short-term solution. Sidepaths should also be provided on the entire length of South Stratford Road between Winston-Salem and Clemmons. It may be possible to construct the sidepath on the east side of the road as a rail-with-trail. This corridor is developing rapidly to the south of Interstate 40, and it will be important to



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provide sidepaths and on-road bicycle facilities as development occurs.

Lewisville-Clemmons Road is an important connector between two downtown areas, serving several schools, commercial stores, and restaurants. Shoulders or bike lanes should be included in future roadway widening projects on Lewisville-Clemmons Road. Sidepaths should be installed on both sides of the road between Peace Haven Road and Clemmons Road in the short-term to provide better pedestrian and bicycle access to this the commercial area. Sidepaths should also be used as a short-term solution between Styers Ferry Road and August Drive to serve West Forsyth High School and Southwest Elementary School.

A path should be provided on the east side of the Yadkin River. This Yadkin River Greenway Path would connect roads in Davidson County to Tanglewood Park. It would also connect Lewisville with the Yadkin River and Tanglewood Park. Greenway paths should be constructed in many of the stream valleys in the Clemmons area. One of these paths should connect Stratford Road on the east side of Clemmons to the Salem Creek Greenway on the south side of Winston-Salem.

Several proposed roadway extensions are excellent opportunities to provide bicycle facilities when construction occurs. The Pope Road Extension, Idols Road Extension, and Springfield Farm Road Extension projects should include both on-road and off-road bicycle facilities.

In Davie County, shoulders should be added to US Highway 158 and North Carolina Highway 801. If the proposed “Davie County-Forsyth County Connector” is constructed across the Yadkin River south of Tanglewood Park, this new roadway should include wide paved shoulders and sidepaths (wide sidewalks should be provided on the Yadkin River Bridge to accommodate pedestrian and bicycle activity). The MPO should work closely with Davie County and the community of Bermuda Run to develop additional bicycle routes in Davie County.

3.7.11 Lewisville Area

Several Forsyth County bike routes pass through the Lewisville Area. Shoulders should be added to sections of these routes, including parts of Shallowford Road, Reynolds Road, Lewisville-Vienna Road, and Vienna-Dozier Road (south of Skylark Road). Shoulders should also be provided on other roads that are not currently bike routes, including Styers Ferry Road and the sections of Shallowford Road between Williams Road and the Yadkin River.

A new signed bike route should be established between Lewisville and Clemmons. This route should follow Reynolds Road, Styers Ferry Road, Harper Road, Peace Haven Road, Lasater Road, and Fair Oaks Drive.

A system of greenway paths should also be constructed in the Lewisville area. These paths will utilize several residential streets, including Poplar Ridge Road, Conrad Circle, and North Street to save on new path construction costs. It will be important to provide signage in the areas of these streets to direct bicyclists to the greenway paths.

3.7.12 Tobaccoville and Rural Hall Area

On-road bicycle facilities should be added to several roads when they are widened in the developing part of this region. In the shorter-term, sidepaths should be provided on both sides of Broad Street to the south of North Carolina Highway 65 and on North Carolina Highway 65 to the east of Broad Street in the historic Rural Hall area. Additionally, on-road bicycle facilities should be added to University Parkway between Old Hollow Road and North Cherry Street, Hanes Mill Road in the Summit Square shopping area, Bethabara Park Boulevard, Home Road, North Point Boulevard, and Bethabara Road.

Many roads in this area should receive new shoulders. In many locations, these shoulders can be added when development occurs. Shoulders should be added to Tobaccoville Road, Doral Drive, Main Street Bethania, Bethania Road, Transou Road, Shattalon Drive, Bethania-Rural Hall Road, Ziglar Road, Oak



Summit Road, Old Hollow Road, North Patterson Avenue, Germanton Road, and Old Rural Hall Road.

A new signed bicycle route should be provided between Bethania and King. This route would use Main Street (Bethania), Bethania-Tobaccoville Road, Doral Drive, Griffen Road, Westinghouse Road, Tobaccoville Road, Jefferson Church Road, Moore Road, Spainhour Road, and Kirby Road. This route should be connected to the City of Winston-Salem bicycle route on Oak Summit Road using Bethania-Rural Hall Road, Walker Road, Murray Road, and Shattalon Drive.

Historic Bethabara is an attractive destination for bicyclists, and is currently served by the Bethabara Trail. This path should be extended to Bethabara Road. Bicycle facilities should be improved along Bethabara Road to connect Historic Bethabara with Bethania. This would include providing shoulders on Bethabara Road between Bethabara Park Boulevard and Shattalon Road and constructing a greenway path from the Bethabara Road dead end to Bethania-Rural Hall Road. In addition, greenway paths should be developed to connect the Lewisville area to Historic Bethabara from the southwest and to connect the Summit Square shopping area to Historic Bethabara from the northeast.

New greenway paths should also be provided between Historic Bethabara and Rural Hall and between the Summit Square shopping area and Horizons Park.

3.7.13 King Area

Main Street King is a commercial destination and a through-route for bicyclists. On-road bicycle facilities should be incorporated into future roadway widening projects on Main Street. In the short-term, sidepaths should be provided on both sides of the street between US Highway 52 and Winchester Drive on the north side of King. Dalton Road and Old US Highway 52 should be signed as a bike route to connect King with other parts of Davie County. Shoulders should be added along all parts of this route except West Dalton Road in King where there is insufficient space.

In the long-term, shoulders should be added to other roads in the area, including North Carolina Highway 66, Meadowbrook Drive, Butner Road, Spainhour Mill Road, Moore Road, and parts of Southern Road, Hartgrove Road, and Mountain View Road.

Notes

¹ Association of American State Highway Transportation Officials. *Guide for the Development of Bicycle Facilities*, 1999. Order from: <https://bookstore.transportation.org/publications/bookstore.nsf/Categorized?OpenForm&cat=Design/Operations/Planning>

² Harkey, D.L.; D.W. Reinfurt; M. Knuiman; and A. Sorton. *Development of the Bicycle Compatibility Index: A Level of Service Concept: Final Report*, Report No. FHWA-RD-98-072, Federal Highway Administration, Washington, DC, August 1998. Available Online: <http://www.hsrc.unc.edu/research/pedbike/98095/>

³ Landis, Bruce W.; Venkat R. Vattikuti; and Michael T. Brannick. "Real-Time Human Perceptions: Towards a Bicycle Level of Service," *Transportation Research Record* 1578, 1996. Available Online: http://www.dot.state.fl.us/planning/systems/sm/los/pdfs/BLOS_TRBscanned.pdf

⁴ Association of Pedestrian and Bicycle Professionals. *Bicycle Parking Guidelines*, 2003.

⁵ Idealliance, Inc. Piedmont Triad Research Park Master Plan, 2002. Online, available at <http://www.ideallianceinc.org/ptpr/masterplan.htm>.

