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## 5 Multimodal Access

The Recommended Alternative alignment from the i-26ALT<sup>1</sup> study generally follows US 78 (Rivers Avenue), a major regional transportation corridor that lacks pedestrian and bicycle connectivity for all transit users and good accessibility to destinations. As noted in Chapter 4, the study area includes several TCL and CARTA bus routes. TCL bus route CS2 primarily runs in the study area from Summerville to Rivers Avenue and Otranto Road in North Charleston. CARTA Bus Route 10 runs along US 78, Rivers Avenue, and provides service from Trident Medical Center to downtown Charleston. Route 10 is the highest ridership route in the CARTA system.

Connecting existing and proposed transit facilities to an enhanced pedestrian and bicycle network can promote greater equity of transportation opportunities and increase transportation efficiency, safety among transit-dependent groups, and overall transit ridership. Safe connections to transit facilities benefit all users, enhance the desirability of residential communities close to transit corridors, and provide an alternative to the single occupancy vehicle mode of travel.

An inventory of existing conditions of pedestrian and bicycle infrastructure in the study area was determined through relevant local data captured on geographic information systems (GIS) mapping, Google Earth aerial imagery, and local planning documents.<sup>2</sup> The inventory is summarized in this chapter. For this analysis, inventoried crosswalks are those striped or otherwise designated crossings.

The existing pedestrian facilities for the study area are shown on Figures 5.1 through 5.3. The existing bicycle facilities for the study area are shown on Figure 5.4; this is the only section in the study area with existing bicycle facilities. Table 5.1 summarizes the existing pedestrian and bicycle facilities in the study area.

**Table 5.1 Existing Pedestrian and Bicycle Facilities within the Study Area**

Existing feature	Total (miles)
Sidewalks	245.5
Bike lanes	12.47
<b>Total existing facilities</b>	<b>257.97</b>

Source: HDR 2019

<sup>1</sup> i-26 Fixed Guideway Alternatives Analysis, 2016, BCDCOG

<sup>2</sup> Draft Walk and Bike – Planning for a Walkable & Bikeable Region, 2017, Berkley Charleston Dorchester Council of Government (BCDCOG) <https://apd.app.box.com/s/dkudfs11ad85irx01f8jlk4afeyxgqkh>

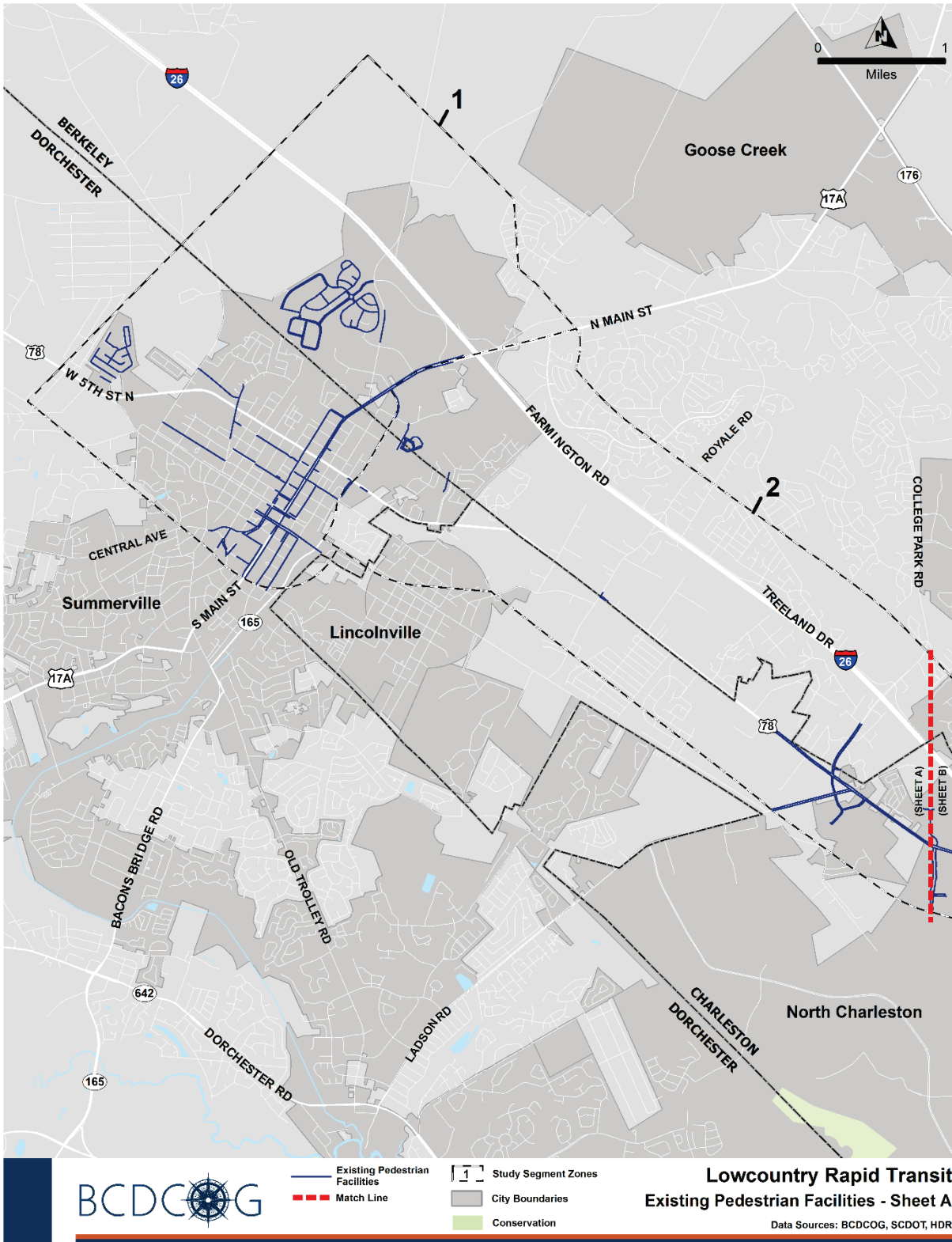


Figure 5-1 Existing Pedestrian Facilities (Sheet A)

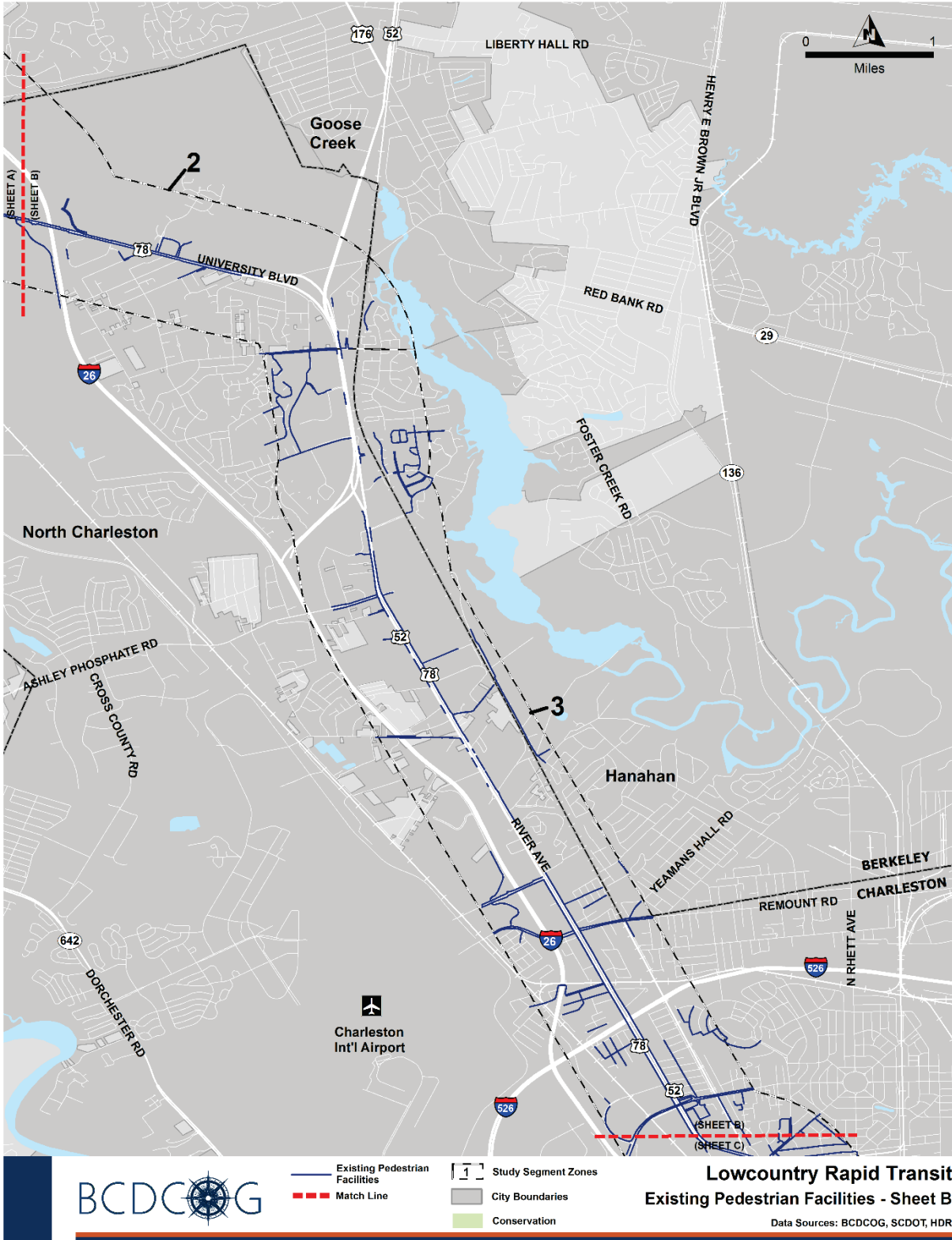


Figure 5-2 Existing Pedestrian Facilities (Sheet B)

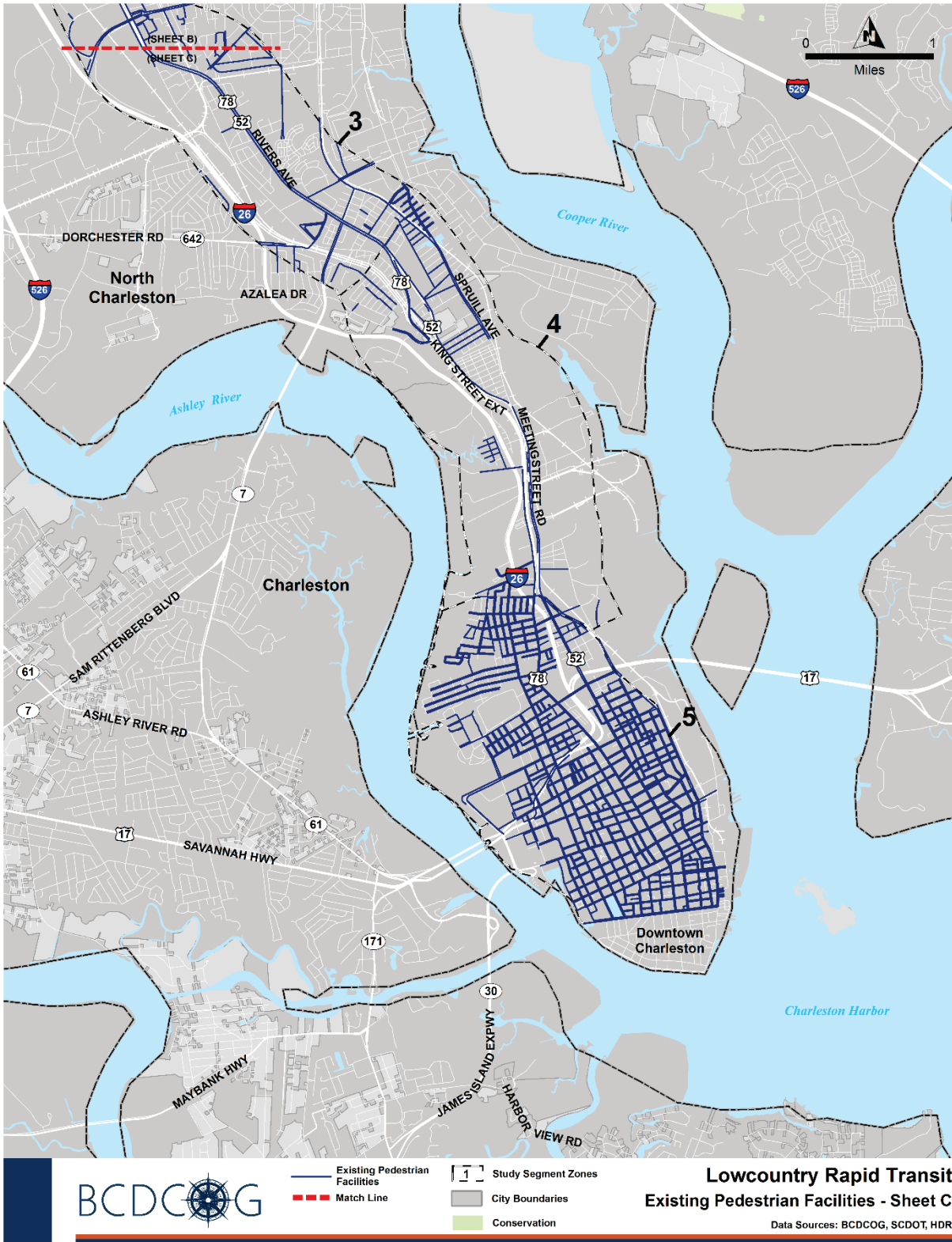


Figure 5-3 Existing Pedestrian Facilities (Sheet C)



Figure 5-4. Existing Bike Facilities

Pedestrian and bicycle accommodations and conditions of the infrastructure in the study area are described in a north to south direction in this chapter. Long segments of the study area are described between proposed stations. Limiting factors for network improvements are also noted.

The Recommended Alternative from the i-26ALT study begins in the town of Summerville’s historic district, at US 17ALT (Main Street) and Richardson Avenue in Dorchester County. This intersection is the proposed site for a downtown Summerville LCRT station. The segment extends approximately one mile in a northeast direction, turning to southeast at US 78, and continues to SC 165, to the proposed Berlin G Myers LCRT station. The Recommended Alternative alignment of i-26ALT study assumes transit operations along this segment are in mixed traffic with one-way service circulating Hutchinson Square, in the downtown area, and in curbside lanes to Berlin G Myers Parkway.

Hutchinson Square, located across from Summerville Town Hall, is the site of special events held throughout the year. Within the study area, Main Street begins with a travel lane in each direction, on street parking on both sides of the roadway, an intermittent center lane, and auxiliary turn lanes. Main Street widens to four travel lanes with a center turn lane, north of the at-grade railroad crossing at Luke Avenue. Continuous sidewalks, primarily well maintained, are available on both sides of Main Street from Richardson Avenue to US 78 (E 5<sup>th</sup> North Street). Utilities are located within the easements on both sides of the roadway resulting in unobstructed sidewalks; however, light poles, trees, and streetscape furniture contribute to narrow sidewalks, predominately on the west side of Main Street. Portions of the western sidewalk are located in the middle of a parking lot for a commercial bank and retail business. This section of sidewalk could present safety concerns for bicyclists and pedestrians, especially pedestrians with disabilities or young children, since drivers may use the sidewalk area when reversing. Stripped crosswalks are at major intersections. Buffered bicycle facilities, designated by stripping or separation, are not available on Main Street.



Summerville shopping center with safety concerns.

At US 78, the LCRT corridor continues in a southeastern direction with one travel lane in each direction, auxiliary turn lanes, and some paved shoulders to Berlin G Myers Parkway. The posted speed limit for this portion on US 78 is 30 mph. Aerial analysis of the corridor indicates vehicles parked on shoulders. This portion of the corridor appears to include many long-standing, small businesses. Recent roadway improvements or new businesses do not appear evident until the Berlin G Myers Parkway intersection. Therefore, sidewalks along this portion of US 78 are primarily non-existent. The roadway is too narrow for designated bicycle lanes. The proximity of this portion of US 78 to downtown Summerville and the addition of a LCRT station



at Berlin G Myers Parkway may encourage land use changes that may necessitate pedestrian and bicycle accommodations to new residential or retail destinations.

In the study area and located two miles east of the North Main Street/ US 78 intersection is the Nexton development. Nexton is a 4,000-acre development planned for a variety of uses, including 6,500 homes and a mixture of retail, commercial, and office.

Currently, Nexton has over ten-miles of walking and biking trails. Brighton Park Boulevard, a gateway to the community, has sidewalks, sharrows<sup>3</sup>, and crosswalks on both sides of the roadway from North Main Street to Rose Drive.

Sidewalks are located on both sides of North Main Street east of I-26 to the entrance of Brighton Park Boulevard. Bike lanes or sharrows are not available along this portion of North Main Street.



Sidewalks and bike lanes along Brighton Park Boulevard looking northwest



Berlin G Myers Parkway/ US 17ALT intersection.

Berlin G Myers Parkway south of US 78 includes two travel lanes in each direction, and intermittent center or auxiliary turn lanes. There are no sidewalks or bike facilities along this section of Berlin G Myers Parkway.

Crosswalks are located at the Berlin G Myers Parkway intersection with island refuges providing safe crossing to the numerous shopping areas

such as Azalea Square, home improvement stores, Target, and Walmart between Berlin G Myers Parkway and I-26. Crosswalks are also available at the I-26 intersection ramps, across the structure, and at Sigma Drive/Farmington Road. Sidewalks continue on both sides of North Main Street past Brighton Park Boulevard. Bike facilities are not available on this portion of Berlin G Myers Parkway.

<sup>3</sup> Sharrows are shared travel lanes for bicycles and vehicles. The portion for bicycle use is designated with signage on the roadway.

North Main Street past US 78 begins with two travel lanes in each direction and a center turn lane. The roadway widens to three travel lanes in each direction with dedicated turn lanes, and a landscaped median as it nears I-26. Continuous sidewalks are located on both sides of North Main Street between the US 78 intersection and I-26. Bike lanes or sharrows are not available on this portion of the roadway.

There are approximately 8.3 miles along US 78 between Berlin G Myers Parkway and Otranto Road in North Charleston. Four LCRT stations are proposed for this area: US 78 and Royle Road, US 78 and College Park Road, Trident Health/CSU (US 78 and Medical Plaza Drive/Excellence Way), and Otranto (US 52 and Otranto Road). LCRT operating assumption in the area is an at-grade semi-exclusive guideway with cross traffic and curbside lanes.

US 78 widens at the intersection of Berlin G Myers Parkway to accommodate left and right turn lanes. The southeastern quadrant of the US 78/Berlin G Myers Parkway intersection contains Collins Square (formerly Heritage Square Shopping Center). Berlin G Myers Parkway is proposed for a southwestern extension to Orangeburg Road. Sidewalks are located on US 78 and Berlin G Myers Parkway along the shopping center parcel. This intersection does not contain crosswalks. The sidewalk along US 78 ends approximately 700 feet south of the intersection. This portion of US 78 has a posted speed limit of 45 mph with business, industrial, and residential land uses. Residential communities are located on either side of US 78 with access provided from US

78. US 78 has one travel lane in each direction with intermittent shoulders, and curb and gutter sections. Slopes extend on both sides of the roadway to drainage ditches with guardrails at culverts or waterways. The right of way is narrow and constrained by signage, utilities, and mailboxes making pedestrian navigation difficult.

Without sidewalks, pedestrian travel along this portion of the corridor is a safety concern.



Pedestrians heading south on US 78 between Royle Rd. and Midview Dr.

As US 78 enters Charleston County, non-continuous redevelopment results in portions of the corridor widened with intermittent turn lanes, shoulders, and sidewalks. The right of way also widens in the newer developed areas with utilities located further away from the roadway. Worn walk paths are evident where there are gaps in the sidewalk network.



US 78/Royle Road intersection looking northeast.

The US 78 intersection with Royle Road/Von Ohsen Road is the site of the proposed LCRT Royle station. A crosswalk is located at the intersection on the southern side of Royle Road. Sidewalks are located in the two eastern quadrants. Southeast of the intersection, sidewalks begin on both sides of US 78 and extend approximately 250 feet southward. US 78 widens with a center turn lane north of C & B Volunteer Fire Department.

Coastal Carolina Fair and Exchange Park are regional event venues within the corridor where pedestrian travel is likely. The posted speed limit remains 45 mph as US 78 widens again to accommodate four travel lanes with an intermittent center turn lane or auxiliary turn lanes. Sidewalks return to both sides of the roadway. Varying in width, the sidewalks appear well



Existing conditions along US 78 looking south near Exchange Park

maintained with few impediments to pedestrians.

An LCRT station is proposed for the US 78/College Park Road intersection. This area contains sidewalks along all four quadrants of the intersection. The roadway configuration continues with four travel lanes, a center turn lane, auxiliary turn lanes, and varying widths of well-maintained sidewalks along both sides of US 78.

Prior to crossing I-26, there is a crosswalk on Blue House Road along the southern side of US 78. Sidewalks continue on both sides of US 78 across the I-26 bridge to Trident Health/ CSU, the location of the next proposed LCRT station. Pedestrian accommodations are available on both sides of US 78 (University Boulevard) towards US 78/US 52 (Rivers Avenue).

Crosswalks are located at several intersections including:

- Both driveways for Medical Plaza Drive
- Tricom Street
- Elms Plantation Boulevard
- Elms Center Boulevard
- Fernwood Drive, and
- Nevonna Drive

Bike lanes or signage for bicycles is not available between Berlin G Myers Parkway and BUC Club Boulevard/Medical Plaza Drive. At BUC Club Boulevard/ Medical Plaza Drive on the north side of US 78, the sidewalk widens into a multi-use path (MUP). The MUP continues in a northerly direction adjacent to southbound (SB) US 52 (Rivers Avenue). The sidewalk on the south side of US 78 ends at Old University Boulevard, prior to US 78 the merge ramp with Rivers Avenue. Sidewalks and bike lanes are not available on the US 78/US 52 access ramps.

Land use along US 78, between Otranto Road and Carner Avenue, consists primarily of retail and institutional uses. The LCRT in this segment is assumed to operate in an at-grade, semi-exclusive guideway in the Rivers Avenue median with cross traffic. This roadway segment, approximately 10.4 miles in length, and generally considered a superstreet design with restricted left turns contains eight proposed LCRT stations.

Intermittent sidewalks are located on either side of Rivers Avenue between Otranto Road and Carner Avenue. Small gaps in the sidewalk network with worn footpaths exist primarily in front of individual parcels. Some intersections contain pedestrian refuge areas with signals to allow safer crossing of the multi-lane roadway. Designated bike lanes are not available. However, the 45 mph speed limit, numerous intersections, and multiple driveways along this corridor segment could limit bicycle use on Rivers Avenue to experienced riders.



A worn path along Rivers Avenue south of Dunlap Street showing the need for pedestrian and bicycle infrastructure improvements

The northern portion of Rivers Avenue at the US 78 merge consists of four-travel lanes in each direction divided by a grass or raised concrete median. Full vehicular movements are allowed at signalized intersections. Auxiliary lanes allow left turns and U-turns at median breaks. Residential and institutional land uses are located on both sides of Rivers Avenue behind the businesses lining the roadway. Intermittent sidewalks are located primarily on the west side of Rivers Avenue to the I-26 ramps. Designated bike lanes are not available. Otranto Road is the site for a proposed LCRT station and access to a number of large size apartment communities is from Otranto Road.



Sidewalk conditions along Rivers Avenue just north of Ashley Phosphate Road

South of the I-26 access ramps, Rivers Avenue narrows to include three travel lanes on each side of a center turn lane, with slip lanes and auxiliary turn lanes. A regional shopping center, Northwoods Mall, Walmart, and other retail destinations are located around Ashley Phosphate Road, the site for a proposed Ashley Phosphate LCRT station. South of Ashley Phosphate Road, Rivers Avenue widens to include a median and superstreet configuration with left turns allowed at designated locations.

Rivers Avenue and Stokes Avenue is the location of the proposed Stokes LCRT station. A notable destination in this area of the study corridor is Trident Technical College (TTC). A gap in the southbound sidewalk inhibits safe, convenient access to TTC, located on northbound (NB) Rivers Avenue. Sidewalks, crosswalks, and pedestrian signals on SB Rivers Avenue could help transit users, pedestrians, and bicyclists cross the multi-lane roadway and access the community college campus.

Between Stokes Avenue and Aamco Way, sidewalks are located on NB Rivers Avenue. The sidewalks are predominately in a state of good repair. Crosswalks are located at Hanahan Road and Aichele Drive. A gap in the sidewalk at Tipson Street prevents a continuous connection to the bus stop closest to TTC. Northbound sidewalks stop south of Aamco Way. Worn



Lack of crosswalks at Rivers Ave. and Remount Rd.

paths are evident down to the next section of sidewalk that begins at Hawthorne Drive. This intersection is an existing transit stop. Mobile home communities and apartments are located on the NB side of Rivers Avenue between Hawthorne Drive and Stokes Avenue.

Continuous, unimpeded sidewalks begin on NB Rivers Avenue at Hawthorne Drive and at Aviation Avenue in the SB direction. From there, sidewalks continue on both sides of Rivers Avenue until Rivers Avenue splits into two parallel roads south of the intersection with Success Street, the Rivers Avenue/King Street Extension and the Carner Avenue/Meeting Street roadway alignments.

Regarding Rivers Avenue/King Street Extension, continuing south from Success Street, Rivers Avenue crosses Meeting Street Road at grade and via an elevated road over the railroad where the name Rivers Avenue changes to King Street Extension. Along this stretch of roadway sidewalks continue on both sides until King Street Extension intersects with Azalea Drive. At this point the sidewalks along King Street Extension end. Sidewalks are non-existent along King Street Extension from Azalea Drive to



Rivers Ave. looking south near Carner Ave.

Hagood Street. At this intersection the sidewalks are available on the south side of King Street Extension/King Street and continue to Mt. Pleasant Street. At the Mt. Pleasant Street intersection sidewalks are available on both sides of King Street and continue into the downtown area. Two railroad tracks flank the King Street Extension on both sides from north of Azalea Drive to Discher Street. Throughout the King Street Extension/King Street corridor the sidewalks appear to be in fair condition.

Regarding Carner Avenue/Meeting Street, continuing south from Success Street at the intersection of Rivers Avenue and Carner Avenue, Rivers Avenue splits and becomes Carner Avenue. Carner Avenue continues south with sidewalks available on the east side of the roadway alignment until Carner Avenue merges with Meeting Street. At this point Carner Avenue ends and becomes Meeting Street south of this intersection. Meeting Street continues south with sidewalks on the east side of the roadway alignment until Meeting Street merges with Spruill Avenue at Tuxbury Lane. Sidewalks are present along east side of the Meeting Street roadway alignment from Tuxbury Lane to Cherry Hill Lane; south of Cherry Hill Lane and the railroad crossing sidewalks are present on both sides of Meeting Street until Herbert Street. From Herbert Street to Mt. Pleasant Street sidewalks are present on the east side of the Meeting Street roadway alignment with intermittent sidewalks available on the west side of the roadway alignment. The surrounding area contains a mixture of industrial and vacant land uses. One railroad track flanks

Meeting Street from Stromboli Avenue to Cunnington Avenue to the west. An LCRT station is proposed at the intersection of Milford and Meeting streets. Overall, sidewalks are present along this area are in various states of repair. Aerial analysis of the roadway indicates that utilities are generally not located within the sidewalk. Pedestrians however compete with vehicles and trash receptacles for access of the narrow sidewalks. The roadway does not contain shoulders or bike lanes. The assumed heavy truck traffic in this industrial area and narrow travel lanes could present a safety concern for both pedestrians and bicyclists.

South of the intersection of Spruill Avenue and Tuxbury Lane, Meeting Street widens to a five-lane roadway with a center turn lane, four travel lanes, and a striped bike lane. A 40 mph posted speed limit and storm water grates located within the bike lane present safety hazards for cyclists.

Historical and current industrial land uses are intermingled with commercial and residential land uses in this area. With the land constraints in downtown Charleston, opportunities exist for the redevelopment of vacant, heavy industrial sites with large acreage into mixed-use communities or office campuses. One area under consideration for redevelopment is a mixed-use community on a 182-acre site between the Ashley River and I-26. The area, referred to as the



Sharrow pavement markings in downtown near the Charleston Visitor Center

Magnolia<sup>4</sup> tract, is located west of I-26 between Hagood Street and Braswell Street. Existing zoning allows for residential, commercial, retail, hotel, parking, and green spaces within the Magnolia tract. When the Magnolia site is fully developed, Meeting Street and the Milford station area could become a popular transit corridor and destination. The area also connects with several businesses.

An Upper Peninsula station is proposed at the Meeting Street/Mt. Pleasant Street/US 52 Business (Morrison Drive) intersection. Beginning at Cunningham Avenue, sidewalks are located on the SB side of Meeting Street to Mt. Pleasant Street. Land uses along this portion of Meeting Street consist primarily of industrial transitioning to residential south of Mt. Pleasant Street.

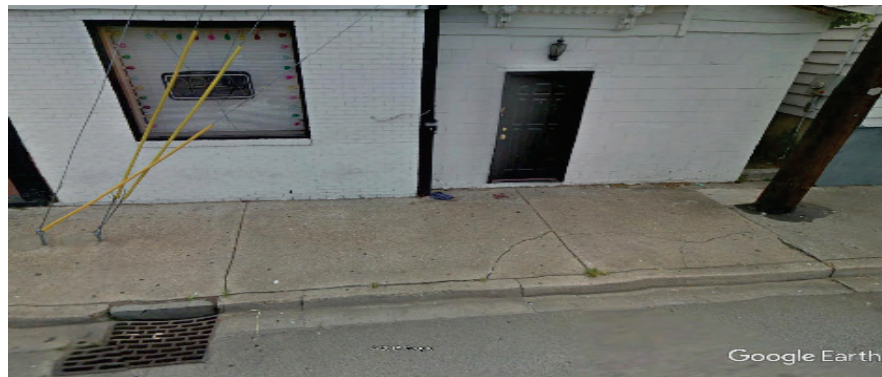
The final i-26<sup>ALT</sup> Recommended Alternative alignment consists of the portion of Meeting Street between Mt. Pleasant Street and Line Street in downtown Charleston. In this area, the LCRT is

<sup>4</sup> Segrist, L. (2018, January). Magnolia site gets another group of investors. Charleston Regional Business Journal, Retrieved from <https://charlestonbusiness.com/news/real-estate-commercial/73575/>

assumed to operate curbside with mixed traffic. In addition and as previously noted, the LCRT alignment is still being refined. In order to effectively evaluate the final portion of the alignment and potential station locations, the LCRT southern terminus study area extends to Broad Street to the south and is bound by Bay Street to the east and the Ashley River to the west.

This portion of the study area is located within the Charleston Peninsula in the historic area of the city. South of the Mt. Pleasant Street intersection, this segment consists primarily of two travel lanes in each direction, widening at intersections, with intermittent auxiliary lanes and sporadic on-street parking. The posted speed limit is 30 mph. Key roadway corridors in this area include Lockwood Drive, Ashley Avenue, Rutledge Avenue, King Street, Meeting Street, E Bay Street, Broad Street, Calhoun Street, Cannon Street, Spring Street, Fishburne Street, and Septima Clark Parkway. The remaining roadway network is comprised of small residential streets that connect to the key roadways. Currently, Meeting Street, a primary corridor through downtown Charleston, does not have sharrows, bike lanes, or wide travel lanes to support pavement markings. However, the city of Charleston has been proceeding recently with placing sharrows in the downtown area.

Overall, in the area, the design of older storm drains makes on street biking difficult. CARTA bus stops are located on most blocks along this portion of Meeting Street. As a result, the Charleston Peninsula has the best pedestrian connectivity to transit stops and destinations



Meeting Street/Sheppard Street utilities in sidewalk and storm drain

within the LCRT corridor. Sidewalk improvements are evident along both sides of Meeting Street as tight or narrow right of way resulted in ramps or portions of the sidewalks impeded by utilities. The historic area also includes decorative light poles and streetscape trees, some edged with bricks. The bricks or tree roots can, over time, result in unlevelled sidewalks.

Sidewalks with utilities or that are unlevelled are considered compliance issues under the ADA Standards for Accessible Design.<sup>5</sup> Redevelopment in the downtown area presents temporary sidewalk connectivity gaps from construction activities. This results in unsafe use of travel lanes or requires crossing a four-lane roadway to complete trips.

Charleston has several pedestrian and bicycle mobility advocacy groups calling for safer and more accessible streets for residents and visitors.<sup>6</sup> Recently two of those advocates released studies. Beginning in 2015, Charleston Moves<sup>7</sup> and the city of Charleston's Design Division

<sup>5</sup> [https://www.ada.gov/2010ADASTandards\\_index.htm](https://www.ada.gov/2010ADASTandards_index.htm)

<sup>6</sup> Palmetto Cycling Coalition web page, available at <http://pccsc.net/sc-bike-laws/>

<sup>7</sup> Charleston Moves web page, <https://charlestonmoves.org/missionandvision/>



evaluated bicycle movement in downtown Charleston. The evaluation resulted in the 2017 People Pedal Plan<sup>8</sup> & Urban Bikeway Design Toolkit (PPP). The PPP evaluated existing bicycle movement within and outside of downtown Charleston, roadway networks suitable for cycling, bicycle collisions, and public perception of bicycling in the area. The insight gathered through the review resulted in the recommended strategies: urban bikeway network (e.g., sharrows and separated cycletracks), intersection improvements (e.g., bike boxes and cycletrack approaches), and street resurfacing. Beyond advocacy, the city of Charleston also provides a bike share program. Holy Spokes<sup>9</sup> is a municipal bike share system available on the Charleston Peninsula. Currently 250 bikes are available at 27 locations across downtown Charleston.

### 5.1 Connections to Greenways and Intercity Transit Service

The proposed Meeting Street/Line Street LCRT station location is approximately five blocks west of the East Bay Street portion of the East Coast Greenway<sup>10</sup> giving it close proximity to the future greenway network. This station, proposed as a transit hub, will provide connections to additional transit routes. The Meeting Street/Line Street station is forecast to have the largest ridership of the entire LCRT system.

The North Charleston Regional Intermodal Transportation Facility is located next to the existing Amtrak station, at the intersection of Gaynor Avenue and Hock Avenue (4565 Gaynor Avenue), in North Charleston. The facility provides intermodal connections between Amtrak intercity passenger rail, CARTA local bus service, and Southeastern Stages intercity bus service. The proposed LCRT station at Rivers Avenue/Durant Avenue is approximately 0.15 miles south of the intermodal facility. Southeastern Stages, Inc., located at 3610 Dorchester Road, provides intercity bus service in the Charleston area and it will eventually be moved to the new Amtrak station. The Greyhound transit station is also located off I-26 at 3610 Dorchester Road. The Rivers Avenue/McMillan Avenue LCRT station proposed location is approximately one mile northeast of the Greyhound transit station.

### 5.2 Planned and Potential Projects

A comprehensive review of BCDCOG's CHATS LRTP<sup>11</sup>, which includes the recommendations of the Walk Bike BCD Plan, as well as planning documents and maps from local municipalities identify proposed spot and linear pedestrian and bicycle facility improvements within the transit corridor. The US 78/US 52 corridor is identified in numerous planning studies for redevelopment and transit-oriented development. As future redevelopment occurs, pedestrian and bicycle accommodations are expected to be enhanced and expand beyond those enumerated in the LRTP. Within the timeframe of the LCRT project, expansion of Holy Spokes bike share locations is also expected.

As previously noted, the PPP evaluated bike movement in downtown Charleston. Safety and comfort sharing lanes with motorists were identified as cyclists' concerns. Recommendations in the plan include road signage, paint, and intersection timing. These low-cost recommendations

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<sup>8</sup> People Pedal Plan & Urban Bikeway Design Toolkit, 2017, City of Charleston Design Division, retrieved from <http://www.designdivision.org/peoplepedal/>

<sup>9</sup> Holy Spokes web page, available at <https://charlestonbikeshare.com/>

<sup>10</sup> East Coast Greenway web page, available at <https://www.greenway.org/about/the-east-coast-greenway>

<sup>11</sup> Charleston Area Transportation Study (CHATS) 2040 Long Range Transportation Plan, 2018, BCDCOG

can be implemented while maintaining the flow of traffic and roadway design. A proposed bikeway system map shows routes by type of improvement. The improvements include, but are not limited to, traffic calming, sharrows, greenways, side paths, and bike lanes. The plan also provides design examples and implementation strategies for the improvements. A toolkit containing Charleston design standards, design data, and decision-making tools can aid the city in implementing the urban bikeway system.

This LCRT pedestrian and bike analysis also includes potential MUPs or greenways. The CSX Transportation (CSX) freight railroad owns approximately three miles of unused or out of service rail along the LCRT corridor in North Charleston. The segment begins south of Buist Avenue and travels in a southeastern direction to approximately the intersection of Meeting Street/Spruill Avenue. Additionally, there is the Lowcountry LowLine. The Lowcountry LowLine is approximately 1.6 miles of an unused/out of service freight rail segment between Heriot Street/Courtland Avenue and Spring Street/Woolfe Street, in downtown Charleston. The alignment was previously owned by Norfolk Southern (NS), the city of Charleston recently purchased the property.



Path near the LowLine trail looking south from Brigade St.

Tables 5.2 and 5.3 identify future pedestrian and bicycle facilities through LCRT design year 2040. Figures 5.5 through 5.10 depict planned pedestrian and bicycle improvements. Out of service rail segments that could be future rails to trails<sup>12</sup> greenways are also shown.

<sup>12</sup> South Carolina East Coast Greenway- Transportation Safety, Route Location and Facility Needs Study, South Carolina State University, 2004, <http://www.scsu.edu/utc/old/research/Reports/2003/greenway.htm>

**Table 5.2 Proposed Pedestrian Facilities within the Study Area**

Proposed pedestrian facilities	Length (miles)
Improve existing sidewalk	13.5
New sidewalk	12.0

Source: BCDCOG 2017

**Table 5.3 Proposed Bicycle Facilities within Study Area**

Proposed bike facilities	Length (miles)
Bicycle boulevard	6.1
Bike lanes	9.0
Buffered bike lanes	3.1
Paved shoulder	10.4
Separated bike lanes	12.5
Shared use path	48.8
Shared use path and paved shoulder	2.0
Sharrows	13.0
Sidepath	4.5

Source: BCDCOG 2017

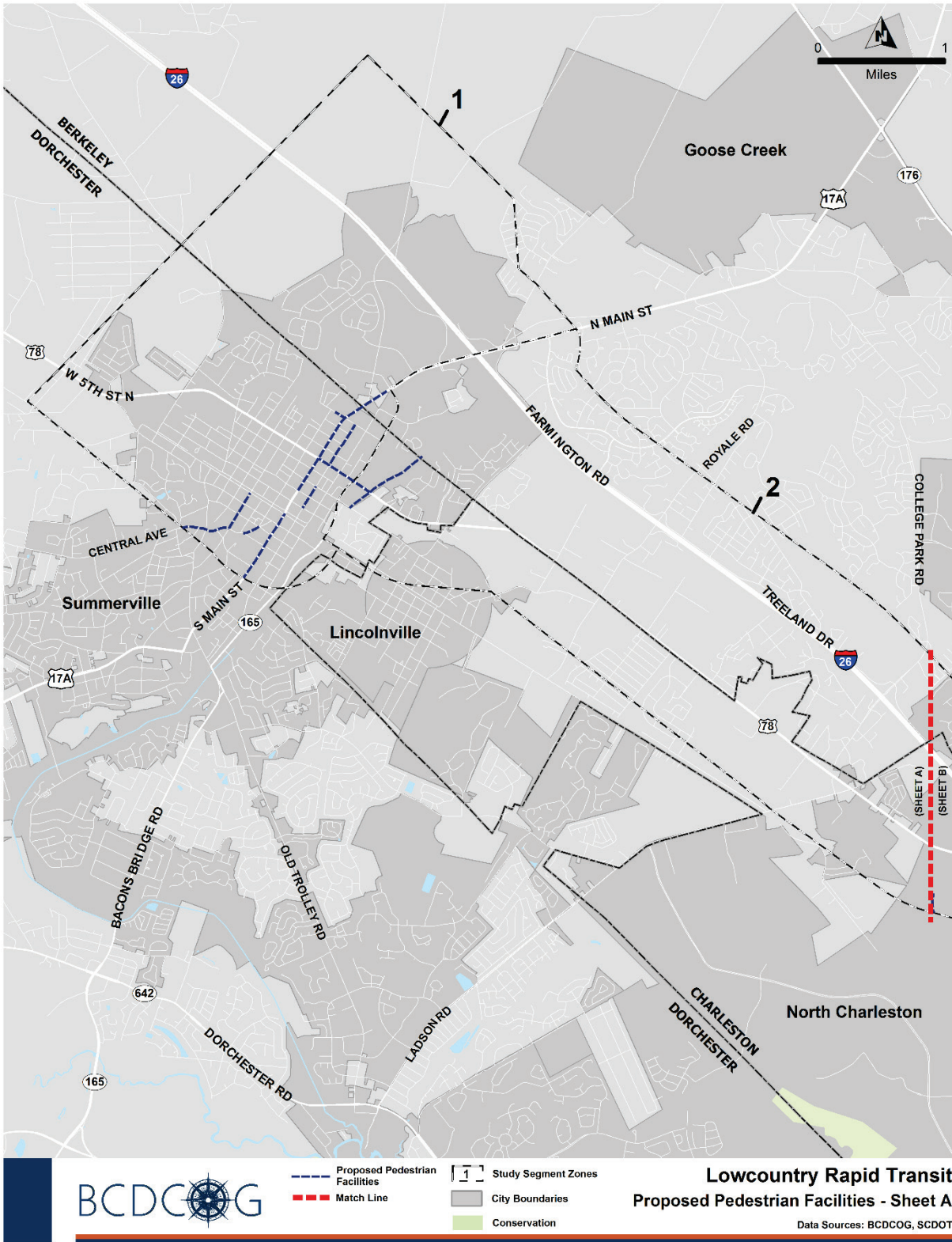


Figure 5-5 Proposed Pedestrian Facilities (Sheet A)

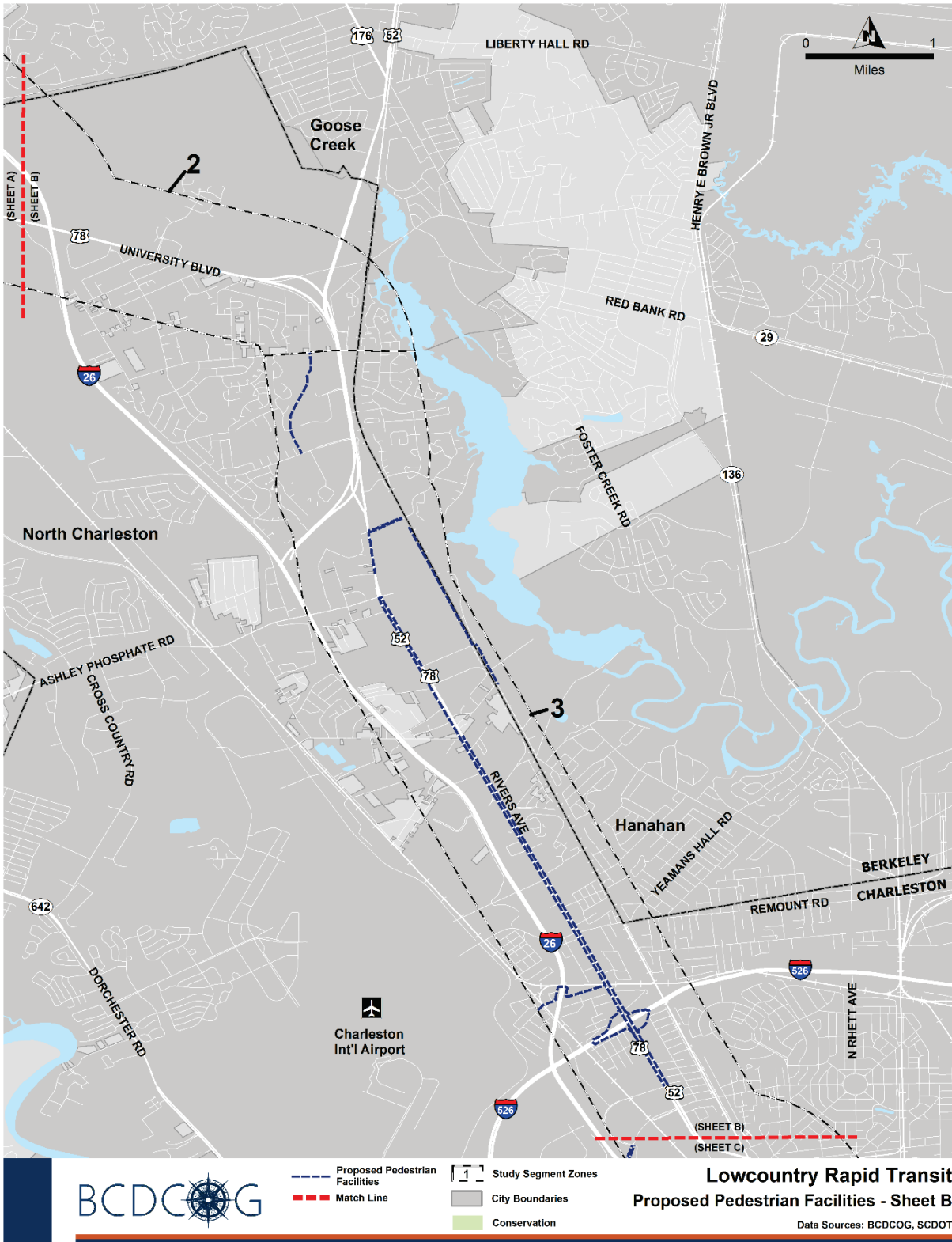


Figure 5-6 Proposed Pedestrian Facilities (Sheet B)

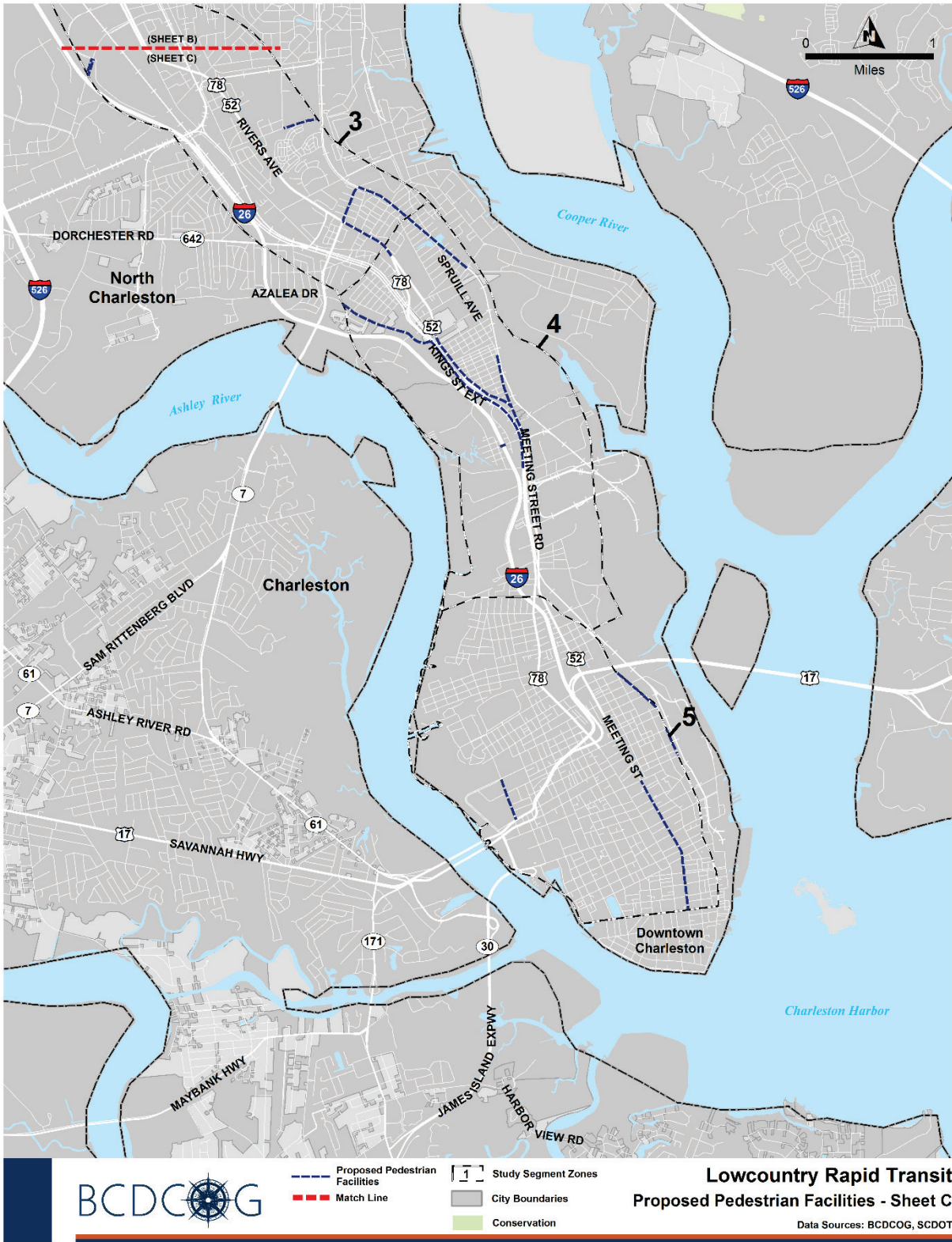


Figure 5-7 Proposed Pedestrian Facilities (Sheet C)

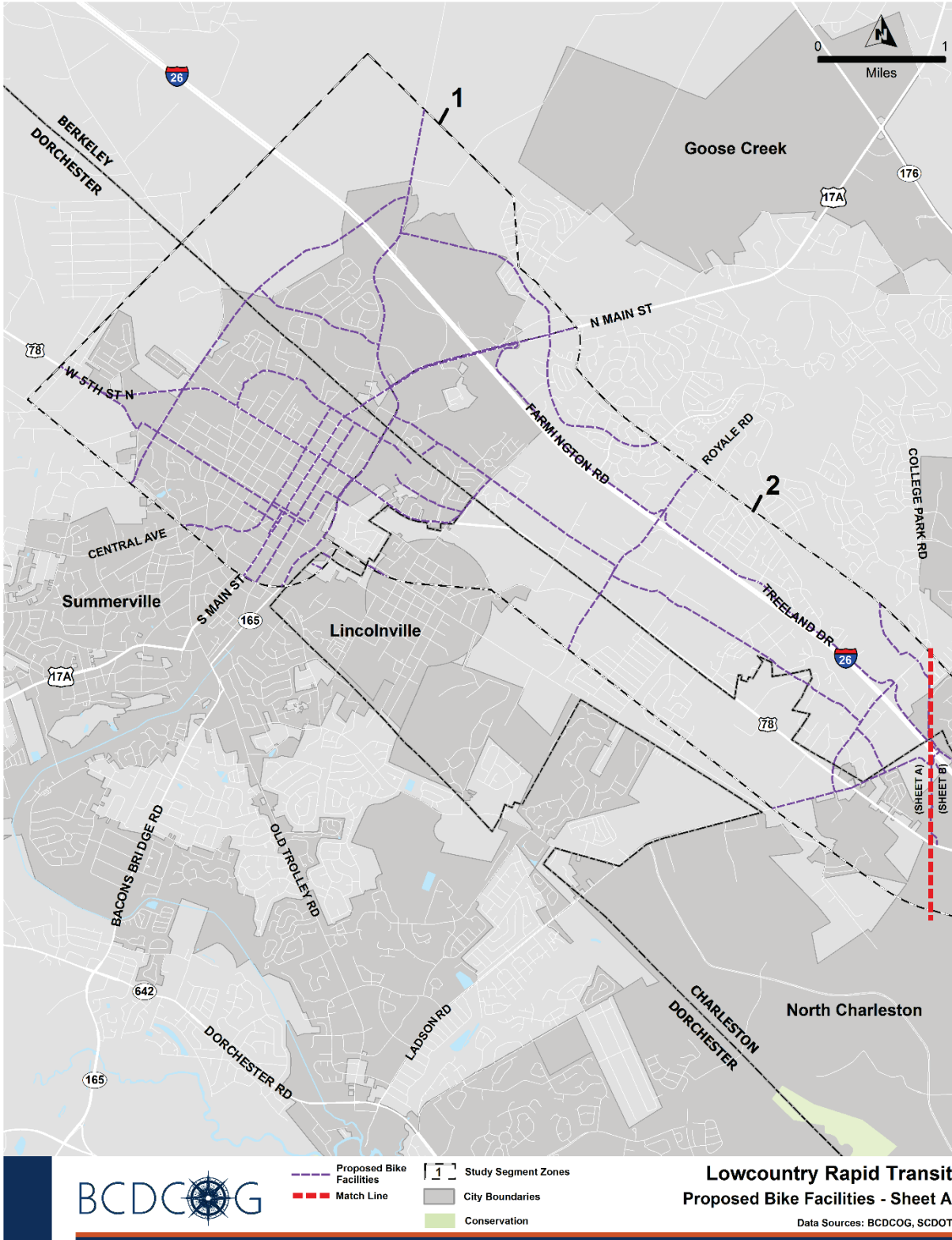


Figure 5-8 Proposed Bike Facilities (Sheet A)

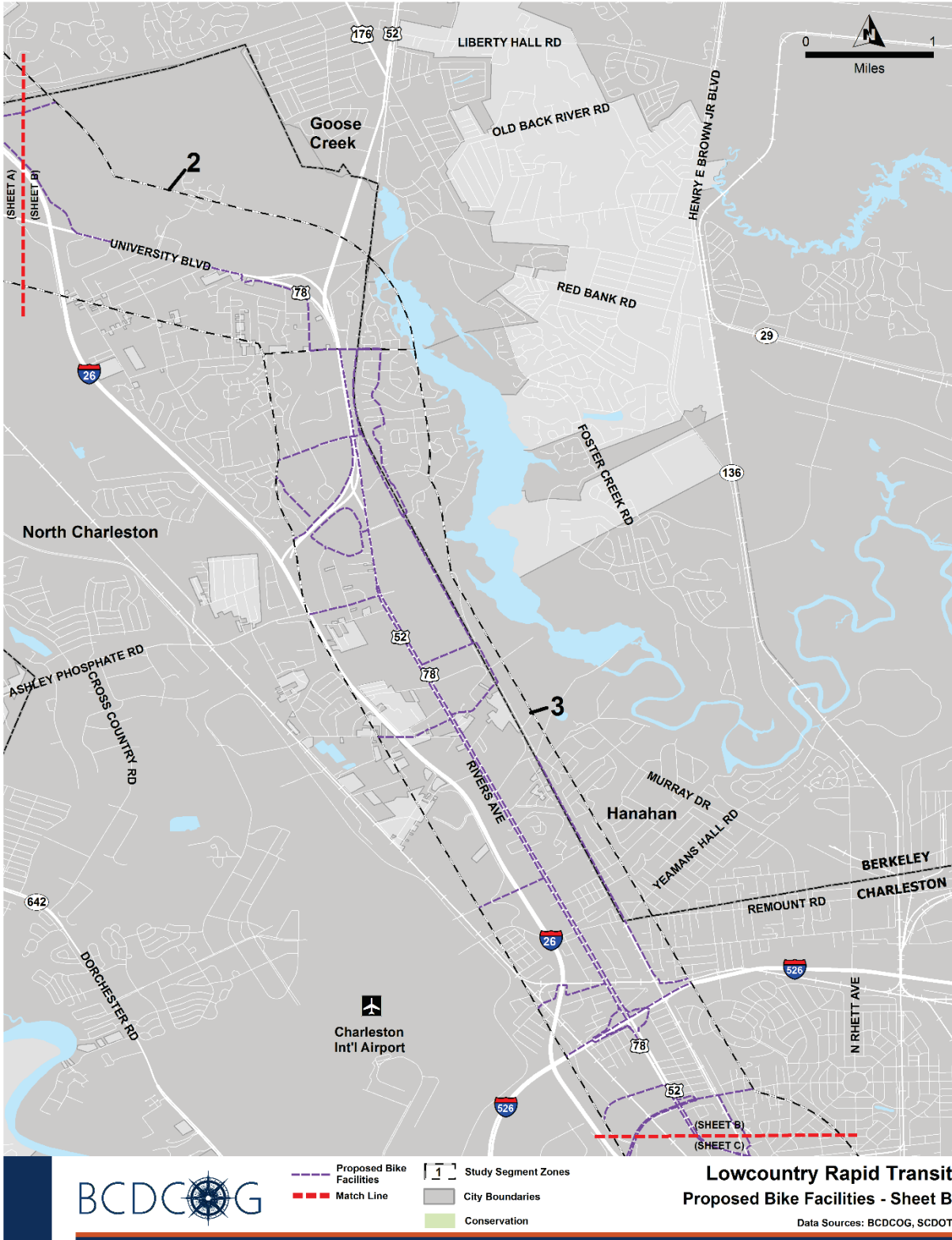


Figure 5-9 Proposed Bike Facilities (Sheet B)



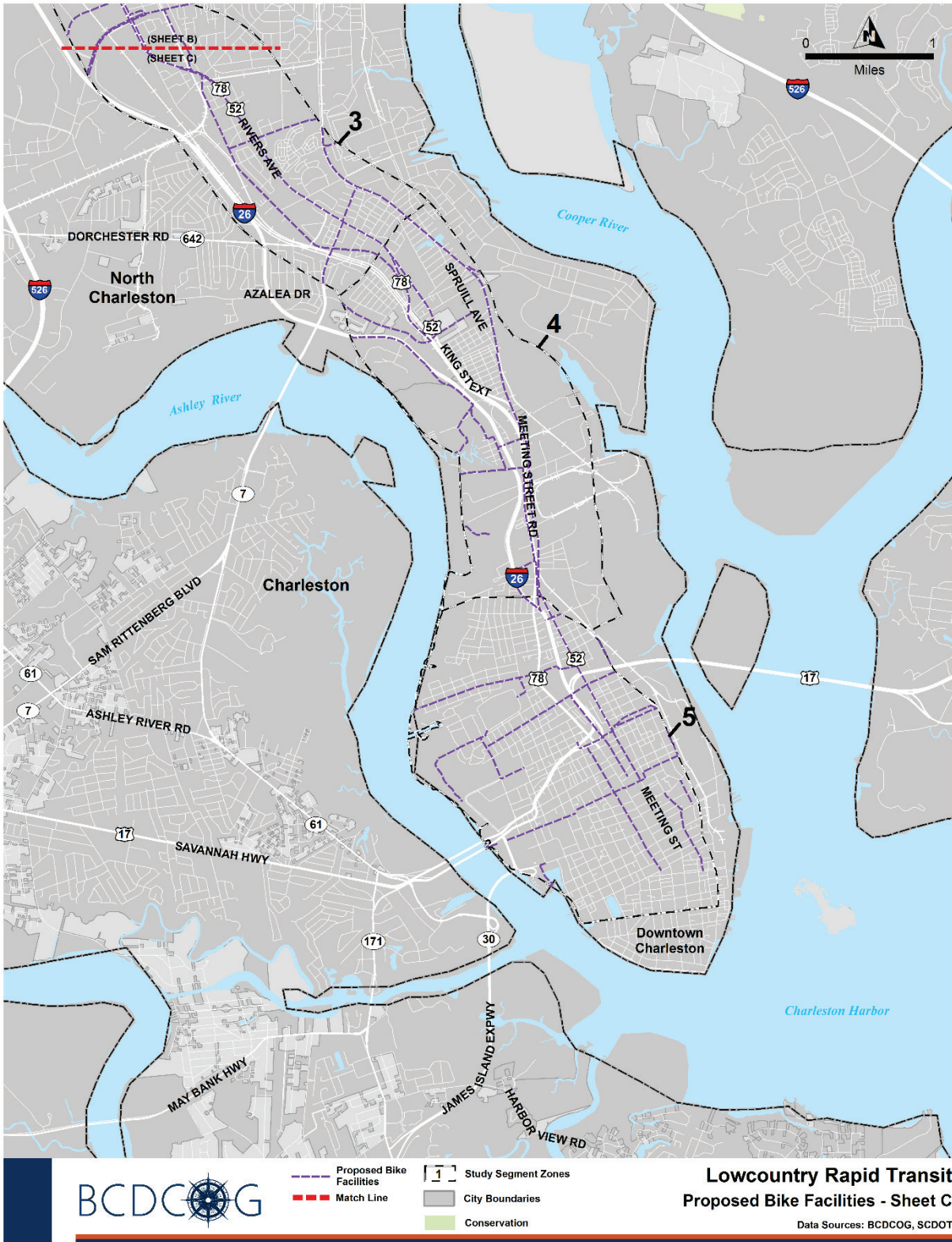


Figure 5-10 Proposed Bike Facilities (Sheet C)

### 5.3 System Gaps

Uninterrupted travel minimizes the opportunity for transportation users to be in harm's way. When sidewalks or multiuse paths contain breaks, pedestrians or bicyclists may choose to travel on a vehicle lane, unpaved shoulder, or potentially difficult terrain to access their final destination. An interconnected, convenient system of sidewalks, multi-use paths, and bicycle facilities from transit stops to key destinations can improve the safety of these first-mile/last-mile connections. Key destinations within the study area include schools, places of worship, businesses, residential communities, recreation areas, and community resources. Continuous pedestrian or bicycle facilities can also provide alternative travel opportunities to key destinations for commuters or transit-dependent populations including the elderly, disabled and lower-income. Additionally, uninterrupted pedestrian facilities may increase the attractiveness of transit service to visitors.

As indicated in BCDCOG's Our Region Our Plan (OROP), the Lowcountry's regional planning vision is for mixed-use development served by transit.<sup>13</sup> Uninterrupted pedestrian and bicycle facilities surrounding a rapid transit corridor can serve future developments or destinations.

Deficiencies within the study area were identified by capturing existing pedestrian and bicycle facilities and proposed transportation projects using GIS data and Google Earth aerial mapping. The difference, or gap, is shown for pedestrian and bicycle infrastructure (see Figures 5.11 and 5.12). The gaps, when filled, increase connectivity and offer an opportunity to improve the design geometry or substandard conditions. At time of development of this report, no gaps were identified in the Neck and Peninsula area (see Figure 5.13).

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<sup>13</sup> BCDCOG's Our Region Our Plan

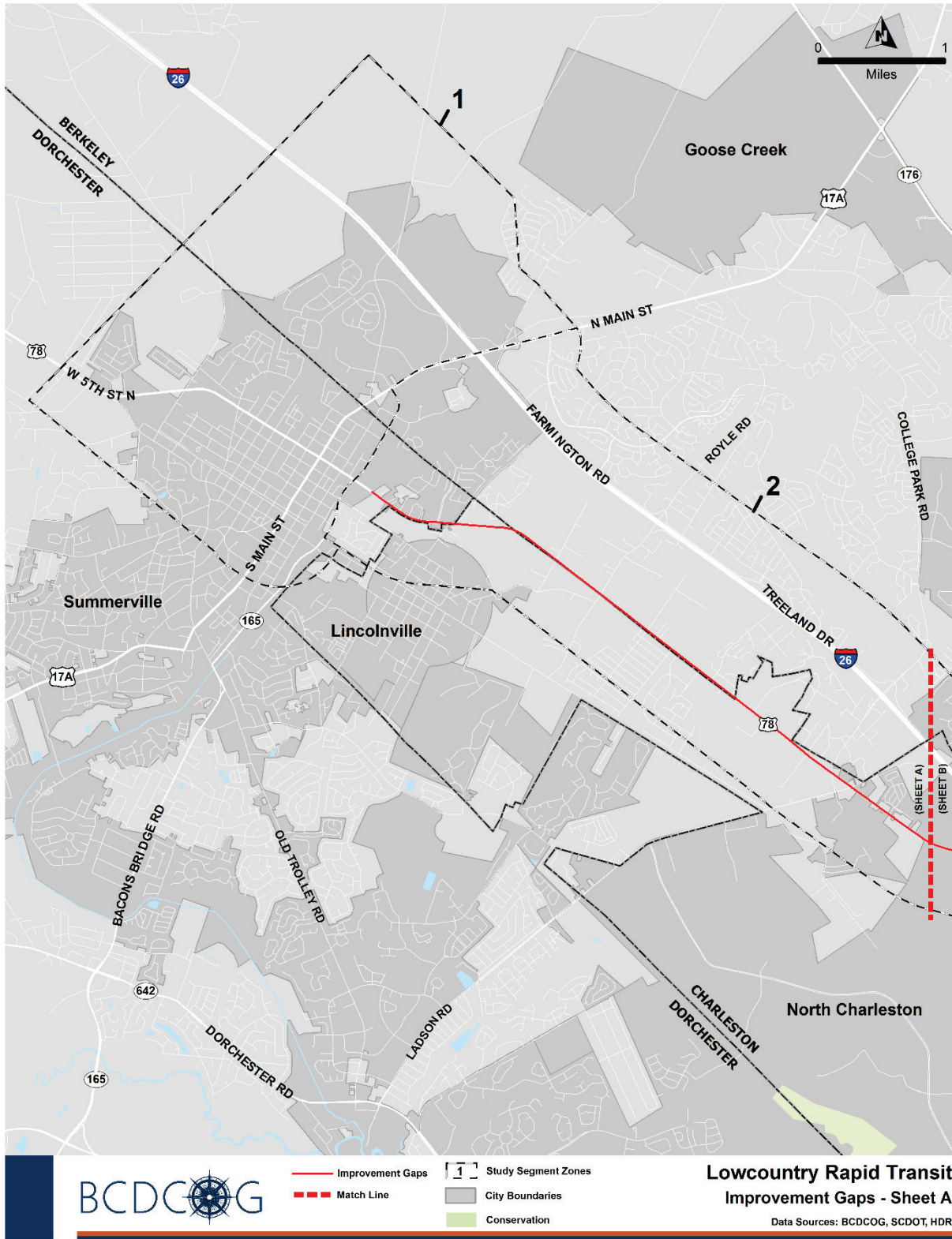


Figure 5-11 Improvement Gaps (Sheet A)

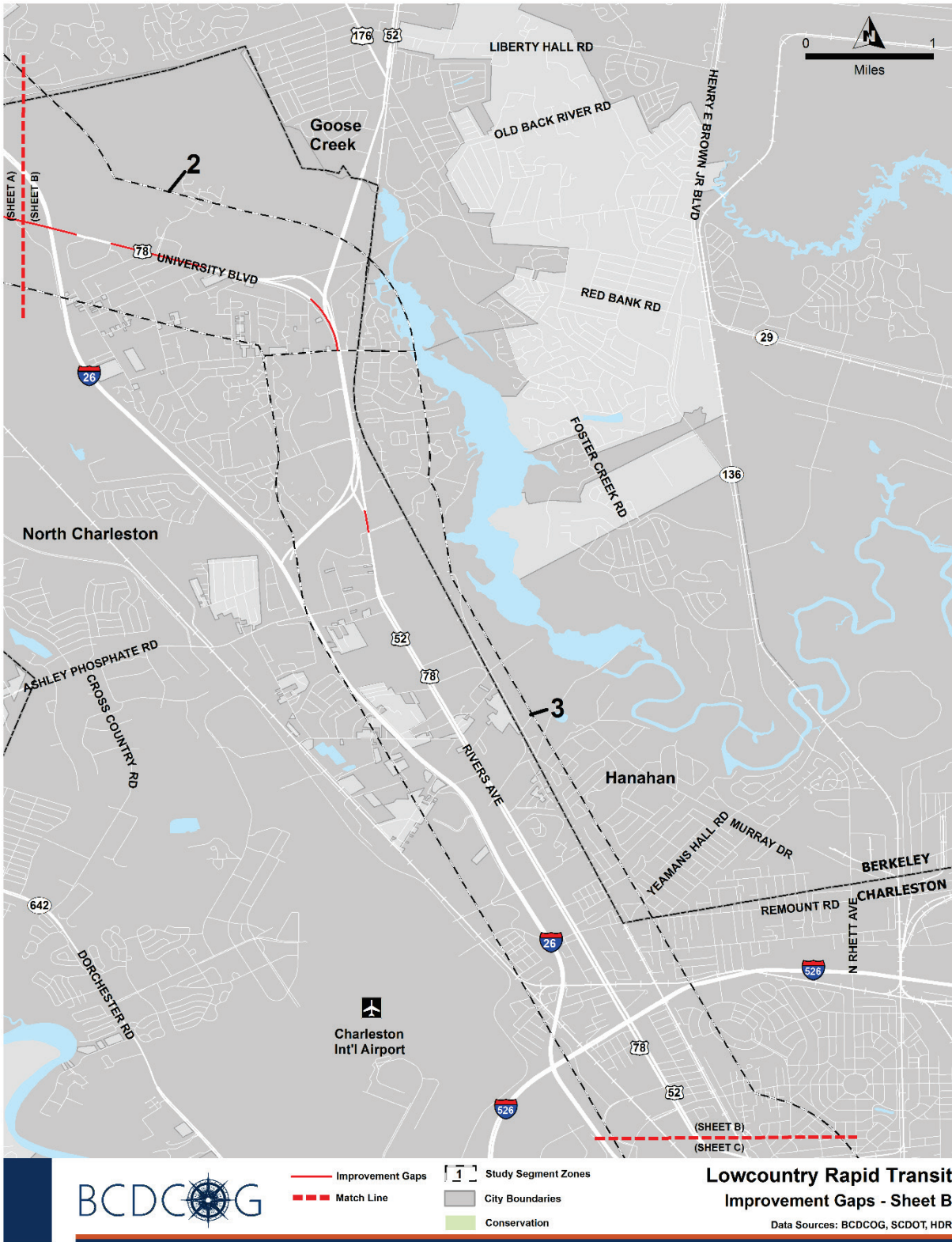


Figure 5-12 Improvement Gaps (Sheet B)

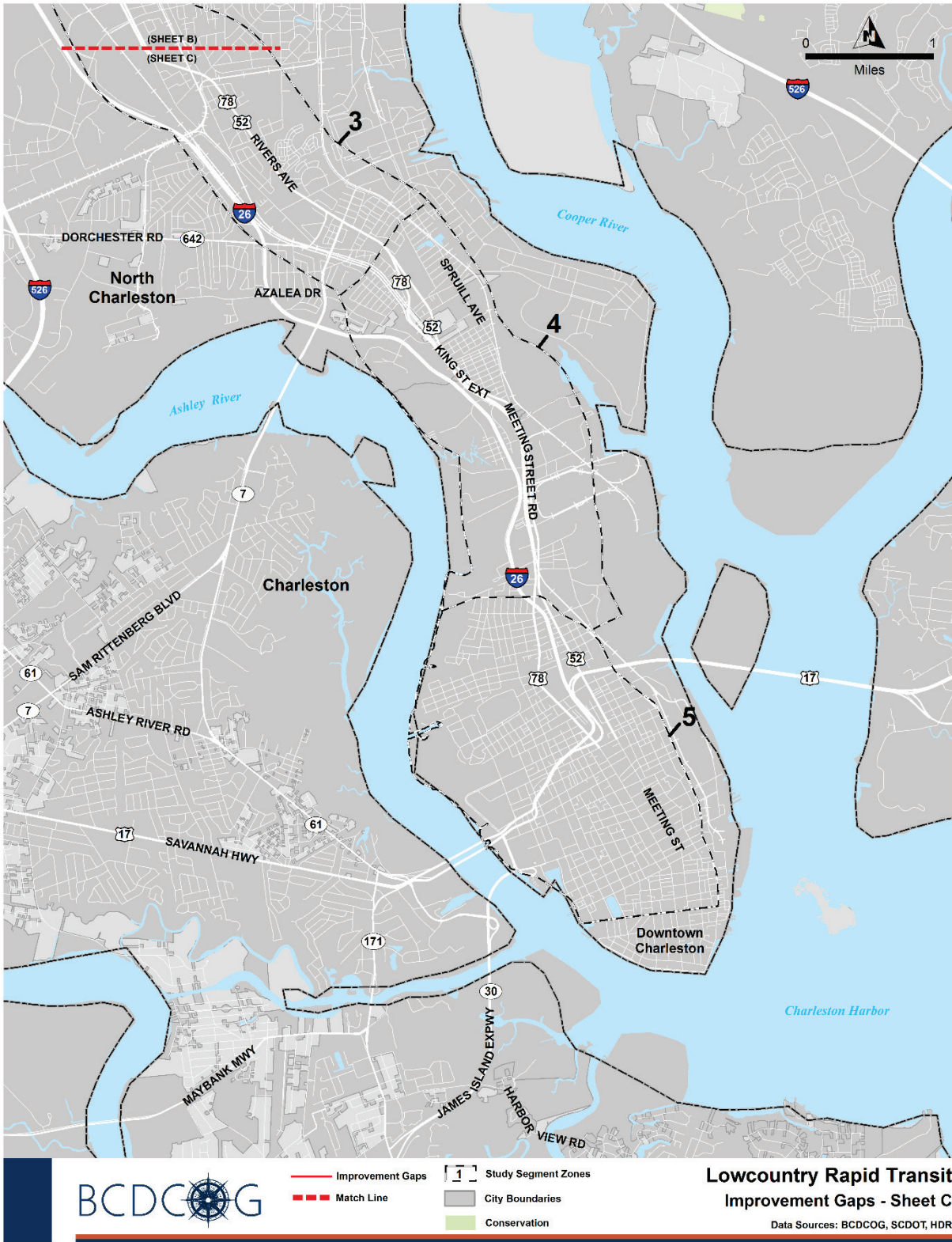


Figure 5-13 Improvement Gaps- (Sheet C)

## 5.4 Complete Streets Initiatives

Complete streets is the policy and practice of designing and operating a multimodal network for all transportation users. Both SCDOT and the city of Charleston support complete streets strategies.

The SCDOT added the National Association of City Transportation Officials Urban Street Design Guide to their Roadway Design Reference Materials list. This design guide incorporates a complete streets philosophy and process for reconfiguring existing roadways to incorporate multiple transportation modes. SCDOT's inclusion of this design guide indicates that the state will consider and incorporate multimodal transportation elements during the project planning process.

The city of Charleston formally incorporated a complete streets policy with a 2008 Complete Streets Resolution. The resolution affirms, "the City shall ensure the accommodation of travel by pedestrians, bicyclists, public transit, and motorized vehicles and their passengers is a regular part of the permitting process for such public street construction and/ or reconstruction projects." The resolution also states that, "the South Carolina Department of Transportation in a February 2003 resolution requires South Carolina counties and municipalities to make bicycling and pedestrian improvements an integral part of their transportation planning and programming where State and Federal Highway funding is utilized."

Charleston County does not have a formal written policy related complete streets, however their goal is to incorporate complete streets to all new projects tied to the recent sales tax.

The CHATS Implementation Plan includes an action item continuing to implement a complete streets program. The state of South Carolina, city of Charleston, and BCDCOG desire to incorporate complete streets into the LCRT project. By designing the LCRT project with multimodal connectivity, the project is more than just a transit project it's an opportunity to transform the community and improve mobility through the implementation of complete streets design elements.

## 5.5 Corridor Safety and Crashes

The South Carolina Pedestrian and Bicycle Crash Analysis 2009-2017 (2018)<sup>14</sup> found that almost 30 percent of the bicycle crashes, and more than 20 percent of pedestrian crashes across the state, occurred in the BCDCOG region. The analysis also found that one in four bicycle crashes, or 23 percent, happened in Charleston County. The number of pedestrian crashes has been trending upward since 2014, with an increase of 4 percent as of 2017. The BCDCOG pedestrian crash rate was 21 percent of the reported statewide pedestrian crashes. Again, Charleston County had the largest percentage of pedestrian crashes at 15 percent of the statewide total. Combined bicycle and pedestrian crashes in Charleston County represent 6.13 crashes per 1,000 people. The next highest combined crash rate is 4.13 in Horry County. Completing the bicycle and sidewalk network within the LCRT corridor could be part of the solution to provide safer transportation alternatives in the Charleston area.

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<sup>14</sup> South Carolina Pedestrian and Bicycle Crash Analysis 2009-2017 (2018), available at <https://bloximages.newyork1.vip.townnews.com/postandcourier.com/content/tncms/assets/v3/editorial/b/80/b806c130-de0e-11e8-abef-8f4edaf2dc49/5be0bfa5a0198.pdf.pdf>

Pedestrian activity along Rivers Avenue appears to be leading to a trend towards pedestrian-related crashes on Rivers Avenue. Signalized crosswalks, which are infrequent along Rivers Avenue, are a result of the infrequent signal spacing, and limited use of crosswalks across Rivers Avenue at existing signals. Destinations along Rivers Avenue, such as businesses and CARTA bus stops, are largely unconnected to opposite sides of the road, which results in several pedestrian crossings being made mid-block across multiple lanes of traffic without signalized protection or pavement markings.

Between Morris Baker Road and the Montague Avenue overpass, which is a 4.20-mile segment of Rivers Avenue carrying more than 40,000 vehicles per day (vpd), there are no marked crosswalks. Eleven pedestrian crashes took place within this segment, which resulted in two fatalities and two more serious injury events.

South of the Montague Avenue overpass, a similar trend of mid-block pedestrian crashes is observed in the attachments. Similar conclusions can be drawn as to the cause of this crash activity. Signals with crosswalks do become more frequent between Helm Drive and Carner Avenue, with an average signal spacing of one signal per 0.3 mile. There were a total of 11 pedestrian crashes in this section as well, with five being reported with serious injuries.

A separate memo (Safety and Operational Issues Memo, Appendix C) was developed that discusses the corridor crash rates along the principal arterials that would be impacted by the project, and investigates specific crash hotspots along Rivers Avenue. A set of crash maps are provided as an attachment to this memo which illustrates each pedestrian crash as a red dot. Please reference this memo for any additional crash related information for the corridor.

## 5.6 Summary

Generally, sidewalks are located at the northern project terminus along Main Street in the Summerville historic district, from Trident Health/CSU to US 52 (Rivers Avenue), and at the southern project terminus along Meeting Street in downtown Charleston.

After examining the existing and future (2040) sidewalks, bike lanes/bikeways, greenway connections, and resulting deficiencies/gaps, and assuming that all planned improvements are in place, the following key findings emerged within the study area:

- There are approximately 12.47 miles of existing bike lanes.
- There are approximately 245.5 miles of existing sidewalks.
- Over 109.4 miles of bike facilities are proposed.
- Gaps in the sidewalk network will cause unacceptable first/last-mile travel conditions to key destinations.
- Gaps in the sidewalk surrounding stations may result in decreasing the desirability and use of LCRT service.
- Travel conditions where gaps occur will result in unsafe movements.
- Opportunities exist to expand sidewalks and bicycle networks by designing the LCRT to accommodate new mixed-use development, greenways and rails to trails corridors.

- Approximately four miles of the study corridor located between the Carner Avenue and Mt. Pleasant Street are the most economically diverse portion of the corridor and poised for redevelopment opportunities and mixed-use destinations.
- The older, historic downtown portions of Summerville and Charleston, in northern and southern areas of the study corridor, contain sidewalks with the most impediments.