

# Appendix C-3: Proposed Refinements Pedestrian and Bicycle Facilities Report

Durham-Orange Light Rail Transit Project



**October 2018**

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### List of Acronyms and Abbreviations

Acronym/Abbreviation	Definition
AASHTO	American Association of State Highway Transportation Officials
ADA	Americans with Disabilities Act
BMPs	Best Management Practices
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
DEIS	Draft Environmental Impact Statement
EA	Environmental Assessment
FEIS	Final Environmental Impact Statement
D-O LRT	Durham-Orange Light Rail Transit
I-40	Interstate 40
NC	North Carolina
NCCU	North Carolina Central University
NCRR	North Carolina Railroad
NEPA	National Environmental Policy Act
ROD	Record of Decision
UNC	University of North Carolina
US	United States
USC	United States Code

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## 1. Introduction

### 1.1 Background

The Durham-Orange Light Rail Transit Project (D-O LRT Project) follows North Carolina Highway (NC) 54, Interstate 40 (I-40), United States Highway (US) 15-501, and the North Carolina Railroad (NCR) Corridor in both downtown and east Durham. The alignment begins at University of North Carolina (UNC) Hospitals, parallels Fordham Boulevard, proceeds east along highway NC 54, travels north along I-40, and parallels US 15-501 before it turns east toward the Duke University campus along Erwin Road, and then follows the NCR Corridor parallel to highway NC 147 through downtown Durham, before reaching its eastern terminus along Alston Avenue near the Lawson Street intersection and North Carolina Central University (NCCU) campus. The Federal Transit Administration (FTA) evaluated the D-O LRT Project in accordance with the National Environmental Policy Act (NEPA) in a Draft Environmental Impact Statement (DEIS), a Final Environmental Impact Statement/Record of Decision (FEIS/ROD), a Supplemental Environmental Assessment (EA) for the NCCU Station Refinement, and an Amended ROD. For purposes of this report, the D-O LRT Project analyzed in the previous NEPA documentation is referred to as the Previous Design.

In the NEPA documentation for the Previous Design, GoTriangle committed to the study and design of additional bike and pedestrian accommodations. As a result, the Amended ROD included several commitments, including R04 (page Amended ROD-14), PBF01 through PBF04 (pages Amended ROD-8 and -10), and NCR02 (page Amended ROD-13). These committed GoTriangle to measures such as:

*“During Engineering, coordinate with NCDOT [North Carolina Department of Transportation] and the municipalities to refine the project design to ensure that light rail station design includes improvements to bicycle and pedestrian facilities. The design shall ensure that:*

- Sidewalks and crosswalks at the stations are enhanced.
- Pedestrian crossings of light rail tracks are designed in accordance with ADA [Americans with Disabilities Act] requirements and standards to ensure access and mobility for all users.
- Bicycle and pedestrian infrastructure within station areas are designed according to BMPs [Best Management Practices] for pedestrian and bicycle safety.
- Pedestrians are discouraged from crossing the tracks outside of the designated track crossings (e.g., fencing, signage, and/or pedestrian corals); and include [sic] measures to enhance the safety for pedestrians at permitted crossing locations (e.g., pedestrian signals and/or well-marked crosswalks).”

This technical report details the new proposed bicycle and pedestrian improvements included in the Proposed Refinements to the Previous Design that are intended to accommodate the committed measures and enhance the multimodal access to the stations and along the D-O Corridor. All prior documentation, including the relevant technical reports and environmental evaluations, are therefore incorporated by reference.

### 1.2 Proposed Refinements

The Proposed Refinements associated with the D-O LRT Project result from:

- Advancements in design since the Amended ROD, including refinements resulting from Value Engineering workshops and evaluation of additional measures to reduce project cost;

- Responses to public comments and stakeholder feedback on the previous NEPA documentation and the Amended ROD;
- Recommendations from the Transit Oriented Development grant study to optimize platform locations for future development; and
- Recommendations from the updated Durham County and Orange County transit plans.

The Proposed Refinements include the following changes to the Previous Design:

- Modification to the station platform lengths;
- Adjustments to the location and configuration of the station platforms, as well as corresponding refinements to the track alignments;
- Modifications to the planned park-and-ride lots;
- Inclusion of bicycle and pedestrian facilities throughout the project;
- Changes in the locations and number of Traction Power Substations;
- Reconfiguration of the Rail Operations and Maintenance Facility (ROMF) and rail yard;
- Using single-track configuration for segment that includes New Hope Creek and Sandy Creek;
- Revision to the alignment to pass underneath the intersection of University Drive and Shannon Road, rather than cross through the intersection at grade;
- Elevation of the alignment on Erwin Road;
- Addition of a new station at Blackwell/Mangum Streets and a pedestrian/bicycle signature civic space that would span Pettigrew Street, the light rail tracks, NCRRT tracks, and Ramseur Street approximately mid-block between Blackwell Street and Mangum Street; and
- Inclusion of drainage, grading, and site preparation throughout the project.

### 1.3 Pedestrian and Bicycle Facility Design Guidance and Overview

This report details the pedestrian and bicycle improvements included in the Proposed Refinements. While the proposed dimensions of each facility are specified in most facility descriptions, it should be noted that identified dimensions are based on the design level at the time this report was drafted. As the final design process progresses, these dimensions may be adjusted to reflect various design considerations that may arise. In accordance with local agency design standards, the general width of sidewalk facilities will vary between 5 and 12 feet and, in some locations, the design will include a hardscape or landscape buffer between the back-of-street curb line and inside edge of sidewalk. Similarly, the multi-use path dimensions, in accordance with the American Association of State Highway Transportation Officials (AASHTO) Guide for the Development of Bicycle Facilities, will range from 10 feet up to 16 feet and, in some locations, these will include a similar hardscape or landscape buffer between the edge of curb line and path. In constrained locations, the sidewalk width may be reduced to 4 feet (or as low as 3 feet at pinch points such as utility poles). Similarly, multi-use paths may be reduced to 8 feet in width at constrained locations.

### 1.4 Description of the Study Corridor

The D-O Corridor is located within the Triangle region. It extends approximately 17.7 miles from southwest Chapel Hill to east Durham and includes several educational, medical, and other key activity centers that generate a large number of trips each day. With the addition of several proposed pedestrian and bicycle

connections between the stations and the surrounding neighborhoods, the land use context has expanded to also include additional residential land uses. The land uses in the D-O Corridor are supported by a network of major highways, including NC 54, I-40, US 15-501, and NC 147. Additional detail regarding the study corridor is included in the D-O LRT Project DEIS, Chapters 1 and 2.

## 2. Legal and Regulatory Framework

No specific laws or executive orders regulate how impacts to pedestrian and bicycle facilities resulting from transit projects are evaluated. The NEPA (41 United States Code [USC] 4321) forms the general basis of consideration of these potential impacts. In addition, the Council on Environmental Quality (CEQ) (40 Code of Federal Regulations [CFR] 1502) contains regulatory requirements for the description of the affected environment and environmental consequences for general resources, including pedestrian and bicycle facilities.

## 3. Methodology

The existing pedestrian and bicycle conditions and planned pedestrian and bicycle facilities potentially affected by the Proposed Refinements were identified through field visits, aerial photography, and reviews of the local pedestrian and bicycle plans. In addition to the planning documents considered in development of the NEPA documentation for the Previous Design, the following new and updated pedestrian and bicycle plans were reviewed for this analysis:

- Chapel Hill Mobility and Connectivity Plan (2017)
- City of Durham Priority Trails Brochure (2015)
- Durham Bike+Walk Implementation Plan (2017)
- Durham Vision Zero Action Plan (Ongoing)
- Duke Bicycle & Pedestrian System Plan (2017)
- Durham Beltline Plan (Ongoing)
- North Carolina Central University 2017 Master Plan Update (2017)
- University of North Carolina at Chapel Hill Bicycle Master Plan (2014)

The evaluation areas for the Proposed Refinements are similar to those discussed in the NEPA documentation for the Previous Design. They are identified as follows, with differences noted, and shown in **Figure 3-1**.

- **UNC Campus Area** – This evaluation area has expanded to include the neighborhoods between the Fordham Boulevard/Old Mason Farm Road intersection and the Prestwick Road/Hamilton Road intersection.
- **East Chapel Hill** – This evaluation area has expanded to include the Oaks Condominium neighborhood north of NC 54 and Downing Creek neighborhood.
- **Leigh Village** – There are no proposed changes within the Leigh Village evaluation area.



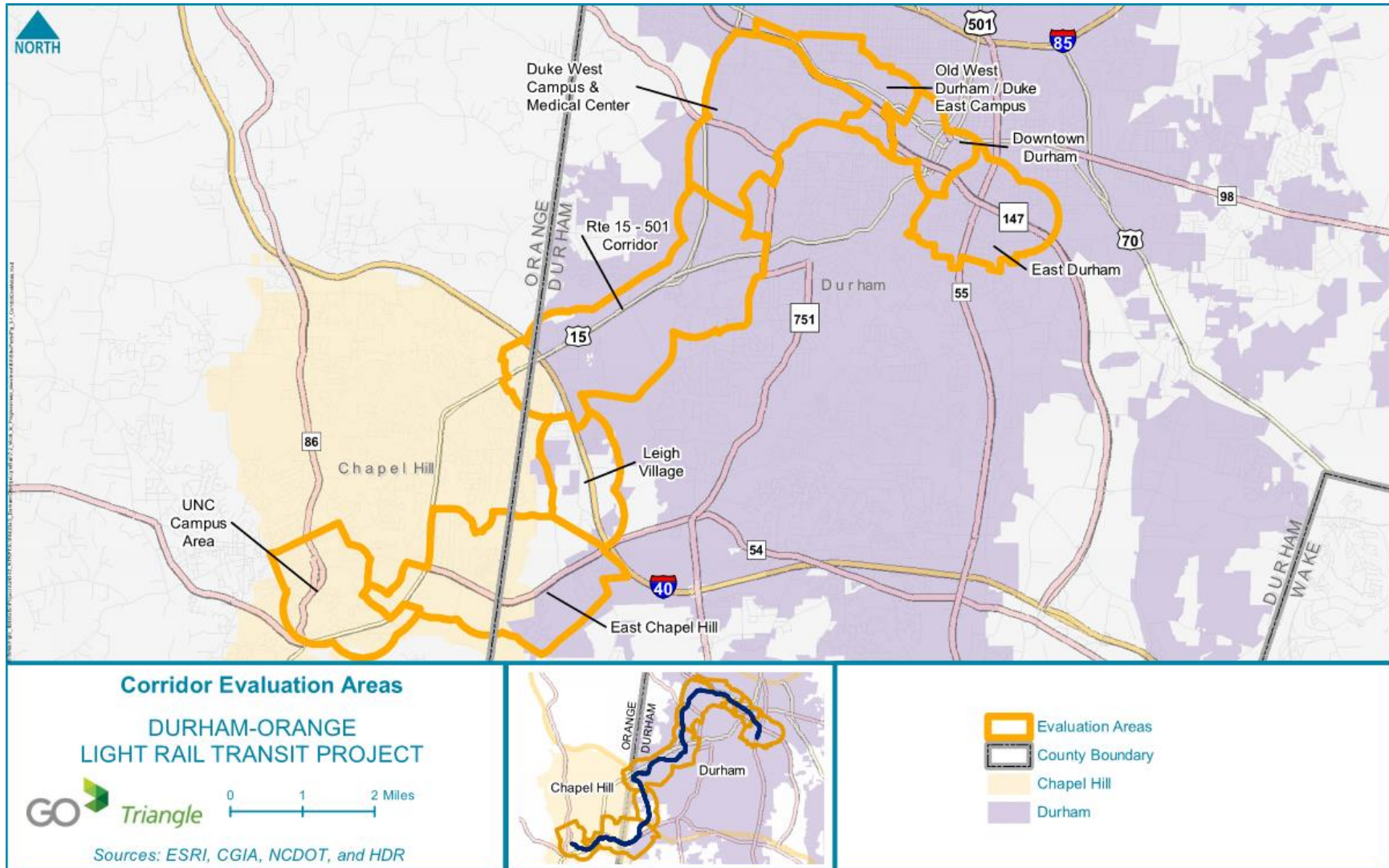


Figure 3-1: Corridor Evaluation Areas

- **US 15-501 Corridor** – This evaluation area has expanded to include the Popes Crossing neighborhood to the west and south of I-40 and US 15-501. Additional Durham neighborhoods include the neighborhood in the southwest quadrant of Martin Luther King Jr Parkway/University Drive intersection and South Square plaza neighborhood.
- **Duke West Campus and Medical Center** – There are no proposed changes within the Duke West Campus and Medical Center evaluation area.
- **Old West Durham/Duke East Campus** – There are no proposed changes within the Old West Durham/Duke East Campus area.
- **Downtown Durham** – This evaluation area has expanded to include the Durham County Courthouse neighborhood.
  - **East Durham** – This evaluation area has expanded to include the Plum Street neighborhood.

#### 4. Affected Environment

The different evaluation areas show substantial variation in pedestrian infrastructure, ranging from no pedestrian infrastructure to extensive sidewalk networks with marked crosswalks, ramps, pedestrian signals, and multi-use paths. The UNC Campus Area, East Chapel Hill, Duke West Campus and Medical Center, Old West Durham/Duke East Campus, and Downtown Durham evaluation areas have the most pedestrian infrastructure, while the Leigh Village Evaluation Area has the least.

Existing bicycle infrastructure includes marked shared lanes, wide shoulders, bicycle lanes, and multi-use paths. As with pedestrian infrastructure, there is substantial variation among evaluation areas. The East Chapel Hill Evaluation Area has a more developed bicycle network with bicycle lanes in the Woodmont development and multi-use paths along NC 54. Leigh Village has the least bicycle infrastructure. In addition to physical infrastructure, the City of Durham has recently permitted the use of three separate dockless bike share vendors to deploy bicycles throughout the community.

Appendix K.12 of the D-O LRT Project DEIS, Pedestrian and Bicycle Facilities Technical Report, describes the existing and planned bicycle and pedestrian facilities in the project study area as of July 2015. **Table 4-1** summarizes the pedestrian and bicycle facilities planned by others within the D-O LRT Project area since that report was published.

**Table 4-1: Planned Pedestrian and Bicycle Infrastructure by Other Agencies**

Facility Name	Type
University of North Carolina at Chapel Hill Area <sup>4</sup>	Bicycle
South Columbus Street, NC 54, Oakwood Drive, Burning Tree Drive <sup>1</sup>	Pedestrian and Bicycle
Meadowmont Lane <sup>1</sup>	Pedestrian and Bicycle
West Barbee Chapel Road <sup>1</sup>	Pedestrian and Bicycle
Sprunt Street <sup>1</sup>	Pedestrian and Bicycle
Old Durham Road, Old Chapel Hill Road <sup>1</sup>	Pedestrian and Bicycle
Sandy Creek Trail <sup>2</sup>	Pedestrian and Bicycle
West Cornwallis Road <sup>2</sup>	Pedestrian and Bicycle
University Drive <sup>3</sup>	Pedestrian and Bicycle
Fulton Street <sup>3</sup>	Pedestrian and Bicycle
Morreene Road <sup>5</sup>	Pedestrian and Bicycle

**Table 4-1 (Cont'd): Planned Pedestrian and Bicycle Infrastructure by Other Agencies**

Facility Name	Type
West Chapel Hill Street <sup>3</sup>	Pedestrian and Bicycle
West Morgan Street <sup>3</sup>	Pedestrian and Bicycle
Watts Street <sup>3</sup>	Pedestrian and Bicycle
West Chapel Hill Street <sup>3</sup>	Pedestrian and Bicycle
West Morgan Street <sup>3</sup>	Pedestrian and Bicycle
Morris Drive <sup>3</sup>	Pedestrian and Bicycle
West Chapel Hill Street <sup>3</sup>	Pedestrian and Bicycle
West Morgan Street <sup>3</sup>	Pedestrian and Bicycle
American Tobacco Trail <sup>2</sup>	Pedestrian and Bicycle
South Roxboro Street <sup>2</sup>	Pedestrian and Bicycle
North Roxboro Street <sup>2</sup>	Pedestrian and Bicycle
Holloway Street <sup>2</sup>	Pedestrian and Bicycle
East Main Street	Bicycle
Blackwell Street <sup>3</sup> , Corcoran Street <sup>3</sup> , Foster Street <sup>3</sup>	Bicycle
Fayetteville Street <sup>3</sup>	Bicycle
South Alston Avenue <sup>2</sup>	Pedestrian and Bicycle
Pearsontown Trail <sup>2</sup>	Pedestrian and Bicycle
Grant Street <sup>2</sup>	Pedestrian and Bicycle
Amber Place <sup>2</sup>	Pedestrian and Bicycle
Bryant Bridge North/Goose Creek West Trail <sup>2</sup>	Pedestrian and Bicycle
Burton Park Trail <sup>2</sup>	Pedestrian and Bicycle

<sup>1</sup>Chapel Hill Mobility and Connectivity Plan (2017), <sup>2</sup>City Of Durham Priority Trail Brochure (2015), <sup>3</sup>Durham Bike+Walk Implementation Plan (2017), <sup>4</sup>University Of North Carolina At Chapel Hill Bicycle Master Plan (2014), <sup>5</sup>Bicycle Lanes & Sidewalks Project C-4928 (2020).

## 5. Environmental Consequences

**Table 5-1** identifies pedestrian and bicycle facilities included in the Proposed Refinements. **Figure 5-1** through **Figure 5-10** illustrate these new proposed facilities, as well as the pedestrian and bicycle facilities planned by others.

**Table 5-1: Proposed Pedestrian and Bicycle Infrastructure by Evaluation Area**

Map ID	Facility Name	Type
<b>UNC Campus Area</b>		
PR1	Mason Farm Road	Sidewalk
<b>East Chapel Hill</b>		
PR2	Fordham Boulevard (Highland Wood – Old Mason Farm Road to Prestwick Road)	Multi-use Path
PR3	Burning Tree Drive (West Side, North of NC 54)	Sidewalk
PR4	NC 54 (North Side, West of Burning Tree Drive)	Multi-use Path
PR5	Friday Center Drive (East Side, South of Marriott Way)	Sidewalk
PR6	Stancell Drive (Barbee Chapel Road to Downing Creek Parkway)	Multi-use Path
PR7	Downing Creek Parkway (Cranebridge Place to Stancell Drive)	Sidewalk
<b>Leigh Village</b>		
PR8	George King Road (Lift Station to Cleora Drive)	Multi-use Path
<b>US 15-501 Corridor</b>		
PR9	Pope Road (East Side, Olde Coach Road to Old Chapel Hill Road)	Sidewalk
PR10	Larchmont Road (West Side, University Drive to Gatehouse Lane)	Sidewalk
PR11	University Drive (Martin Luther King Jr. Parkway to Shannon Road)	Multi-Use Path and Sidewalk
PR12	East Side of LRT Tracks (University Drive to South Shore Station)	Multi-Use Path
<b>Duke West Campus and Medical Center</b>		
PR13	Erwin Road (Emergency Drive to Anderson Street)	Bike Lane/Multi-use Path
<b>Old West Durham/Duke East Campus</b>		
PR14	Ninth Street Station (Erwin Road and Pettigrew Street)	Crossing Improvement
PR15	Pettigrew Street ( Erwin Road to Swift Avenue)	Sidewalk
<b>Downtown Durham</b>		
PR16	Chapel Hill Street (Pettigrew Street and Chapel Hill Street)	Crossing Improvement
PR17	Blackwell Street (Pettigrew Street to Vivian Street)	Multi-use Path
PR18	Pettigrew Street (Blackwell Street to Chatham Place)	Sidewalk
PR19	Dillard Street (North Side) East of S. Roxboro Street	Sidewalk
<b>East Durham</b>		
PR20	R. Kelly Bryant Bridge Connector (R. Kelly Bryant Bridge to Alston Avenue)	Multi-use Path
PR21	Alston Avenue (East Side, NC 147 Ramps to Lawson Street)	Sidewalk Enhancement
PR22	Linwood Avenue (North Side, Alston Avenue to Ridgeway Avenue)	Sidewalk
PR23	Lawson Street (South Side, Alston Avenue to Wabash Street)	Sidewalk
PR24	Alston Avenue (West Side, NC 147 Ramps to Lawson Street)	Multi-Use Path

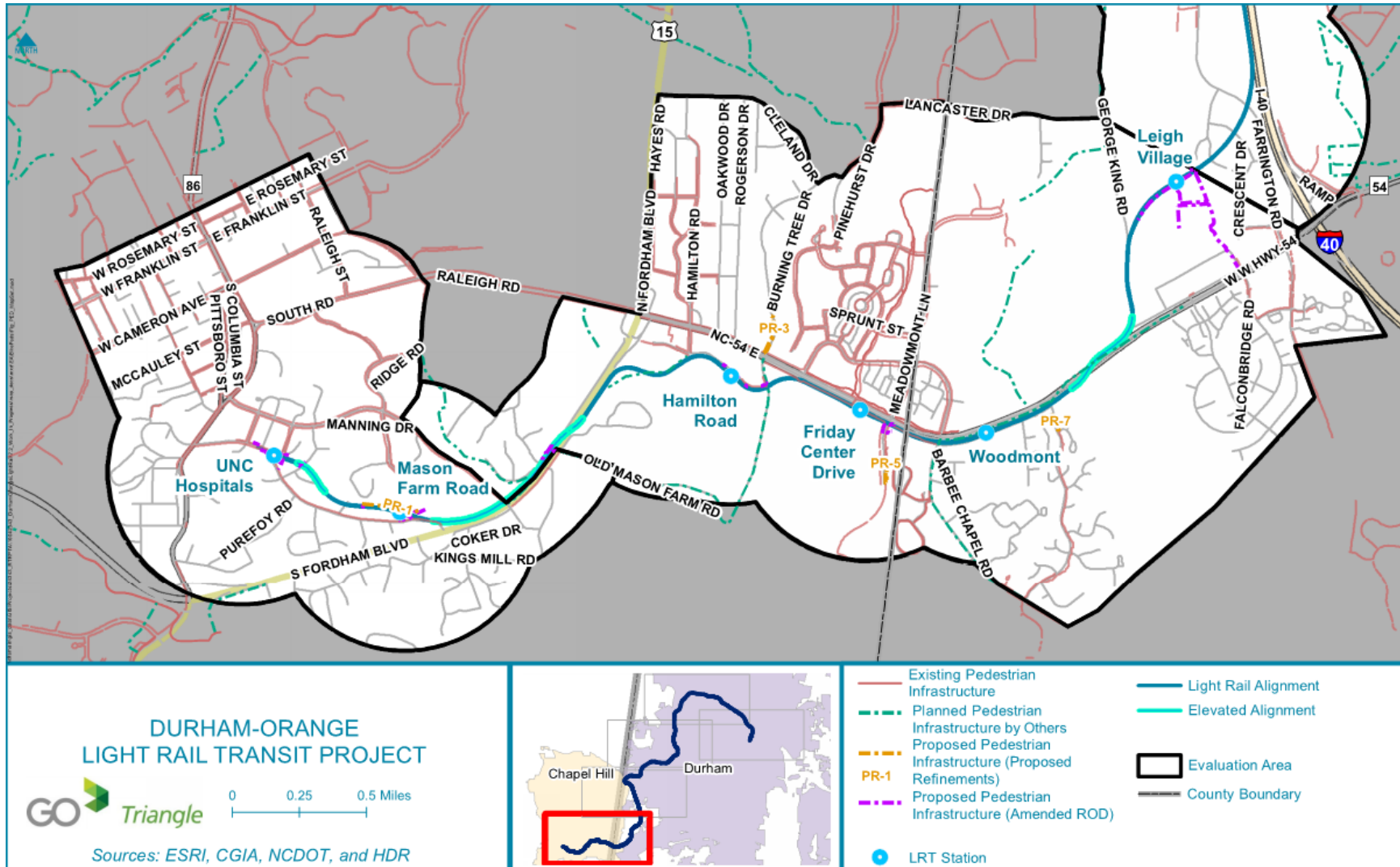
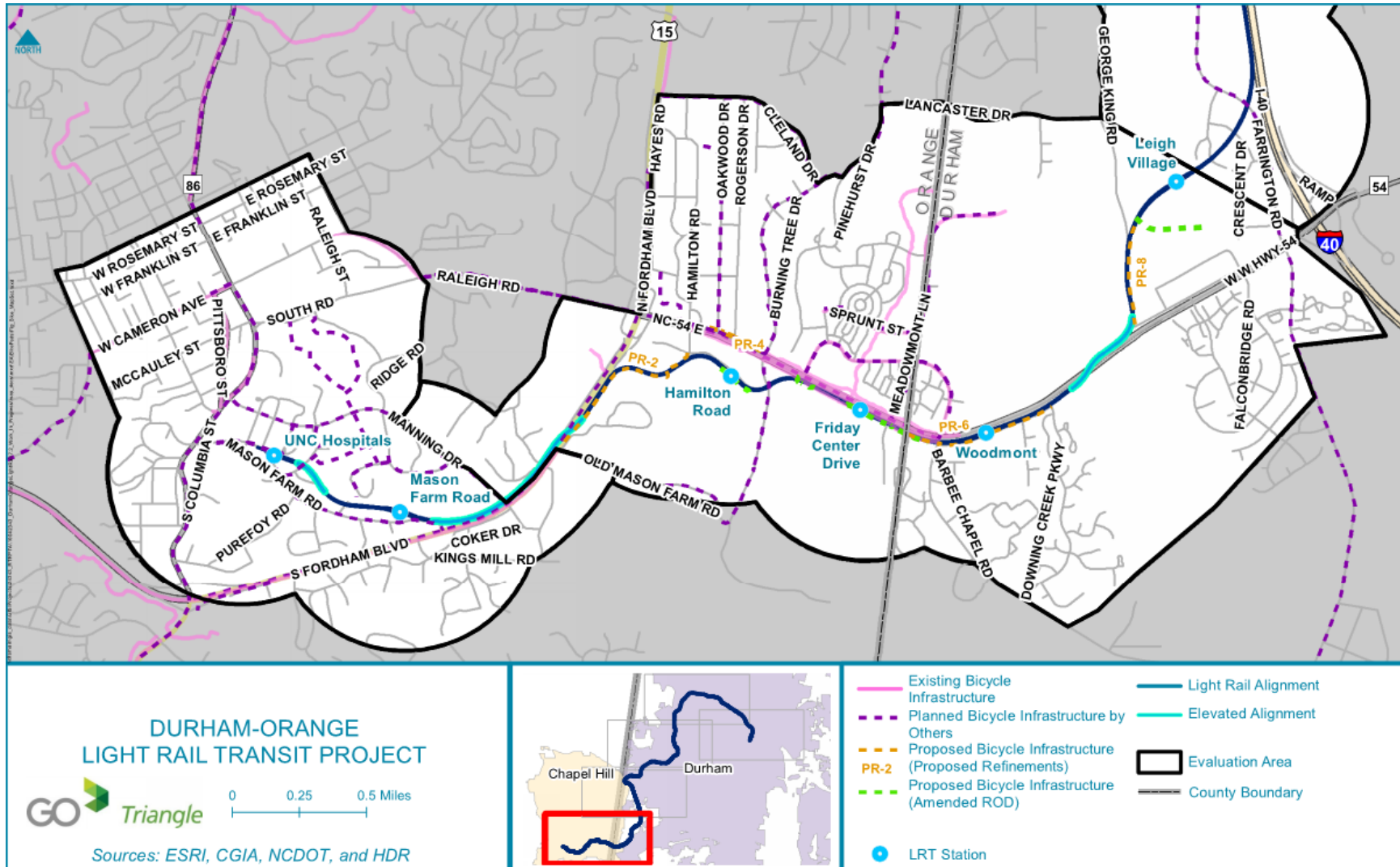


Figure 5-1: Planned and Proposed Pedestrian Facilities  
(UNC Campus, East Chapel Hill, Leigh Village Evaluation Areas)



**Figure 5-2: Planned and Proposed Bicycle Facilities  
(UNC Campus, East Chapel Hill, Leigh Village Evaluation Areas)**

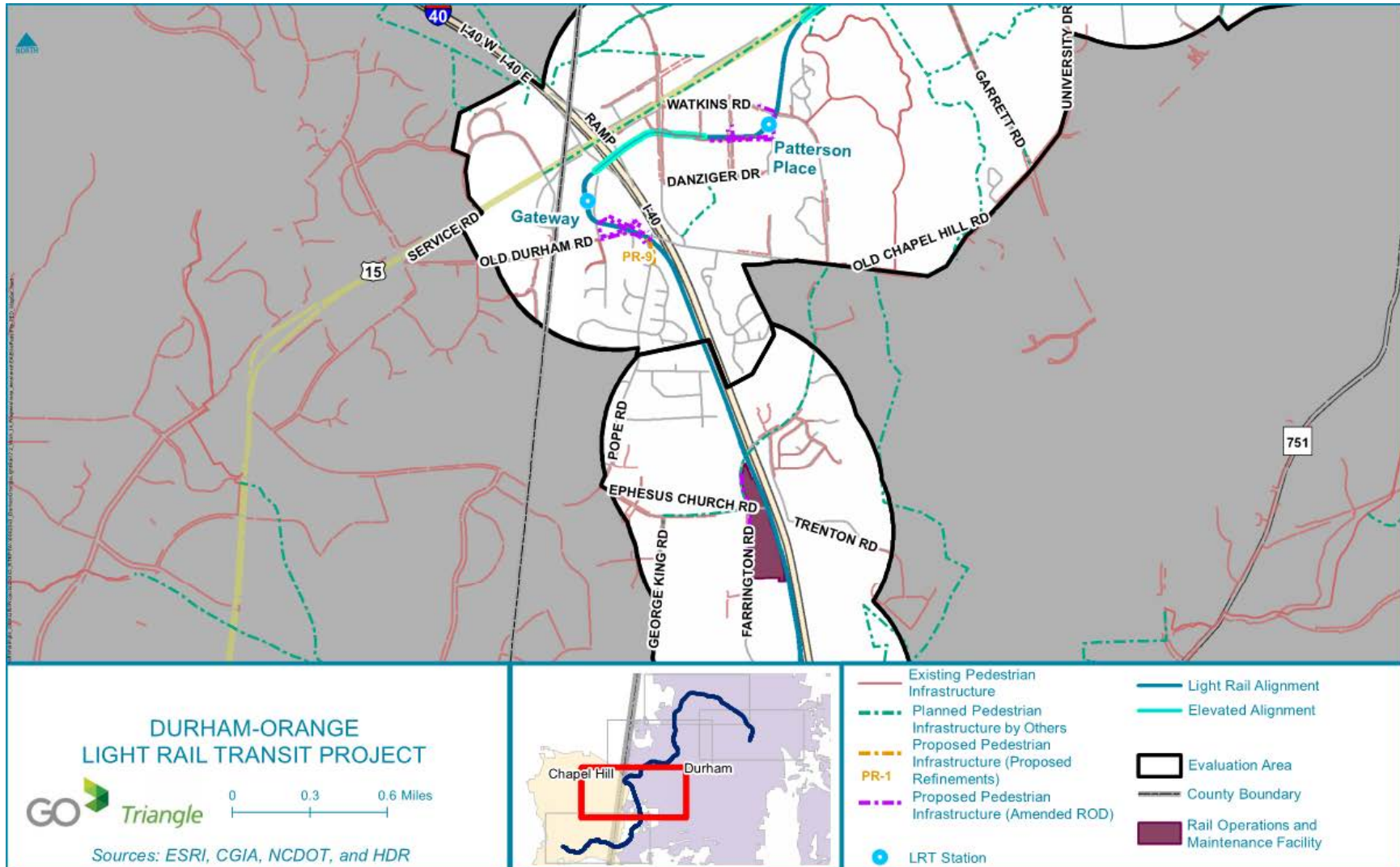


Figure 5-3: Planned and Proposed Pedestrian Facilities (US 15-501 Corridor Evaluation Area)

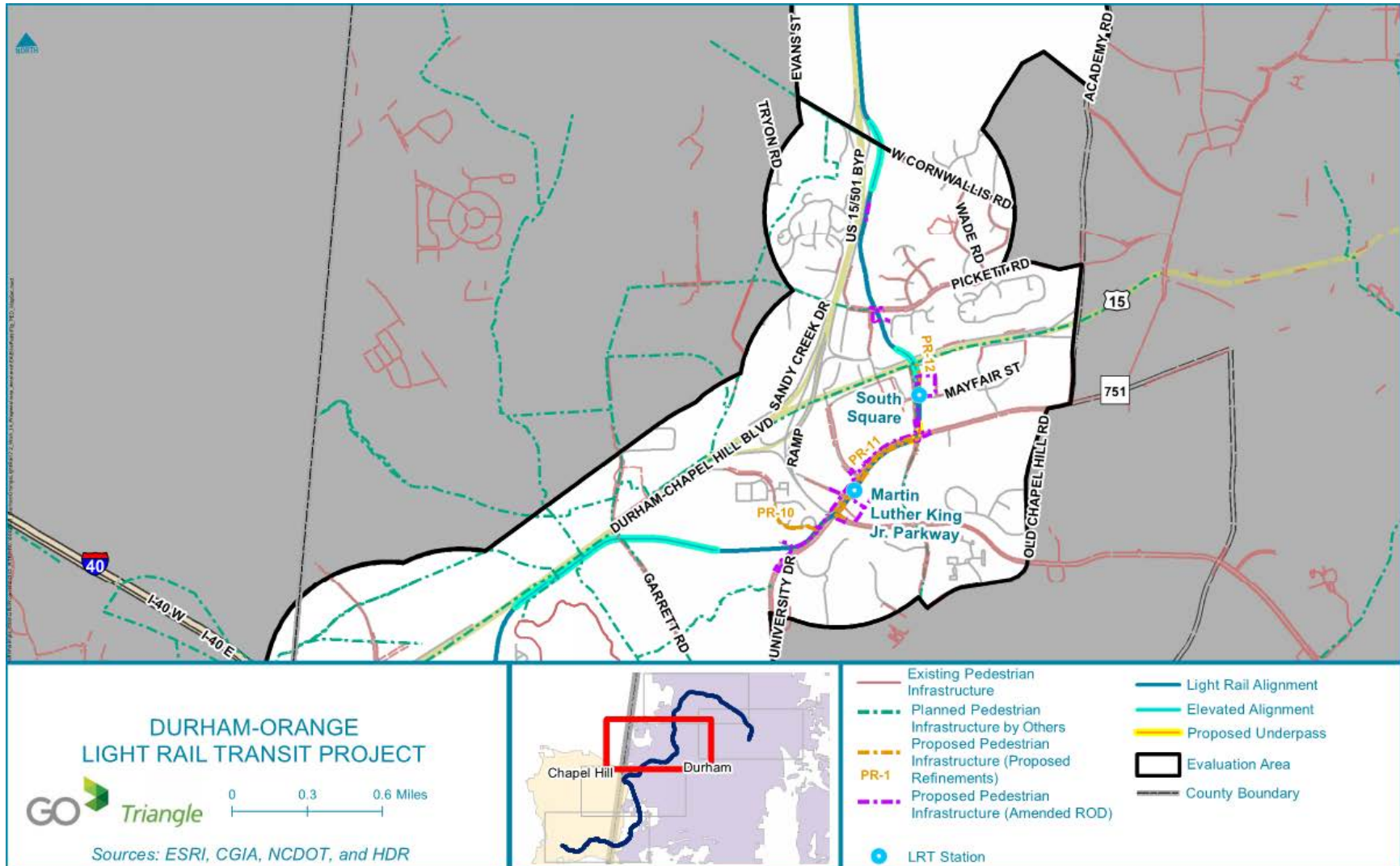


Figure 5-4: Planned and Proposed Pedestrian Facilities (US 15-501 Corridor Evaluation Area)



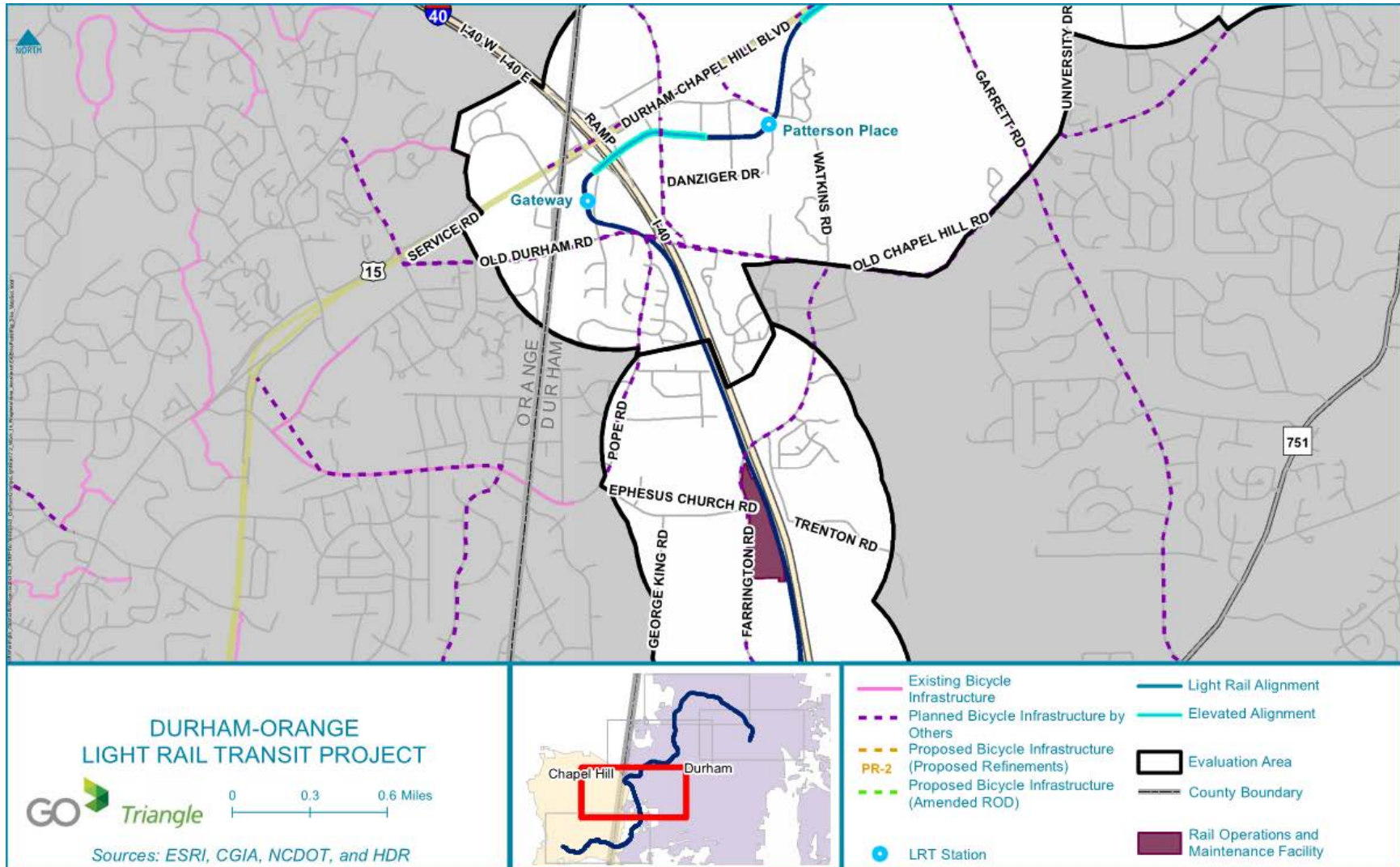


Figure 5-5: Planned and Proposed Bicycle Facilities (US 15-501 Corridor Evaluation Area)

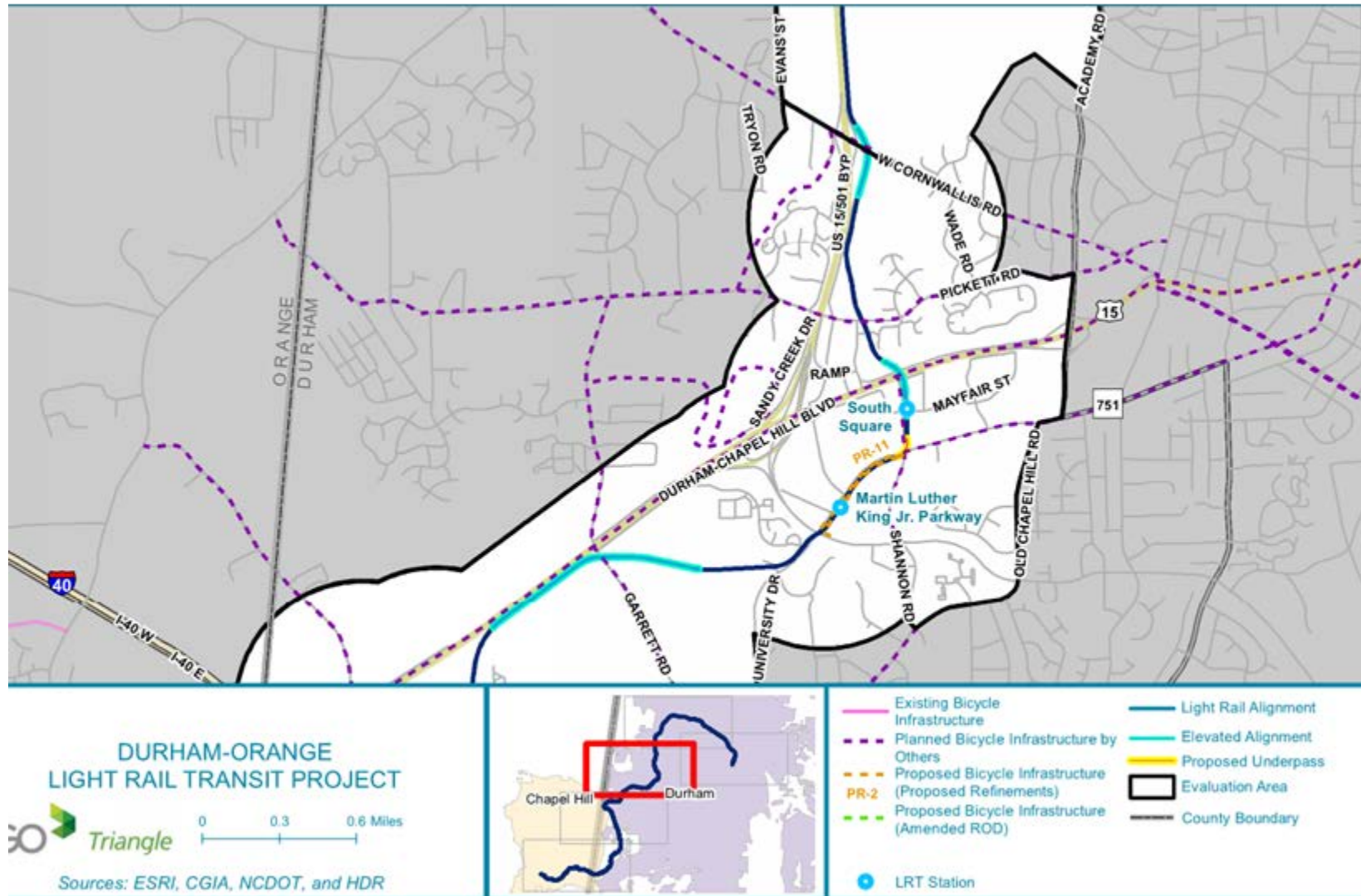


Figure 5-6: Planned and Proposed Bicycle Facilities  
(US 15-501 Corridor Evaluation Area)

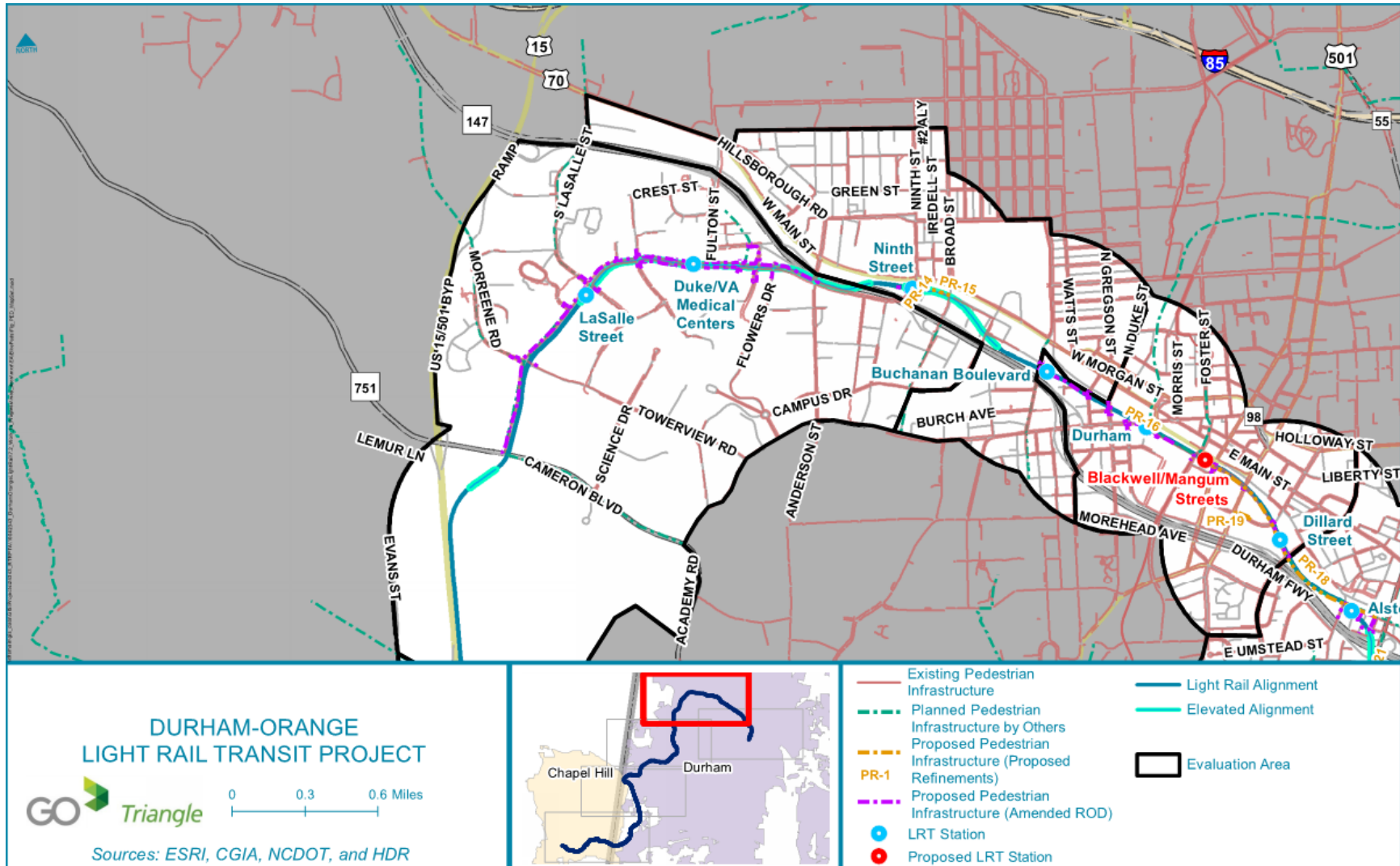


Figure 5-7: Planned and Proposed Pedestrian Facilities  
(Duke West Campus and Medical Center, Old West Durham/Duke East Campus, and Downtown Durham Evaluation Areas)

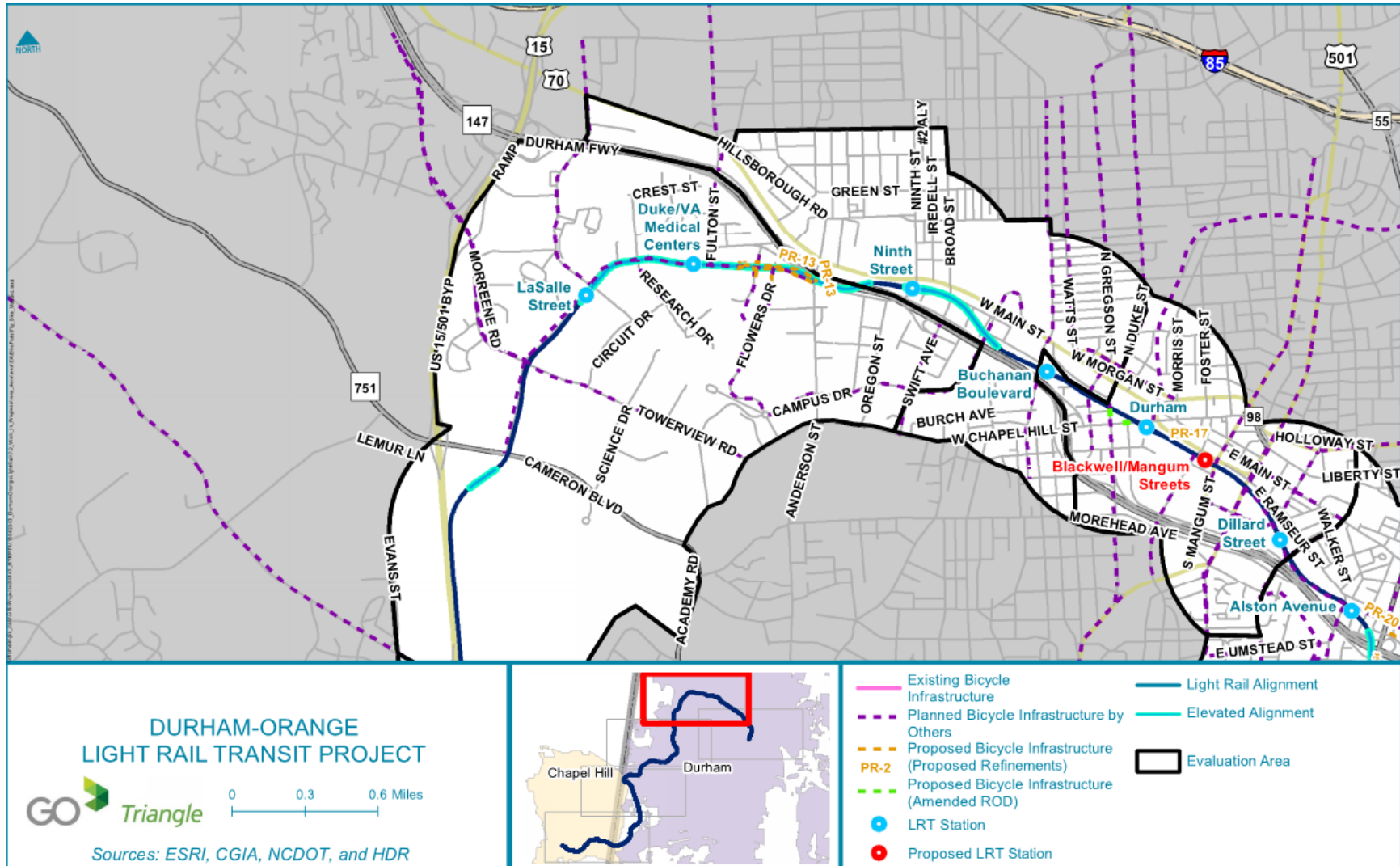


Figure 5-8: Planned and Proposed Bicycle Facilities  
(Duke West Campus and Medical Center, Old West Durham/Duke East Campus, and Downtown Durham Evaluation Areas)

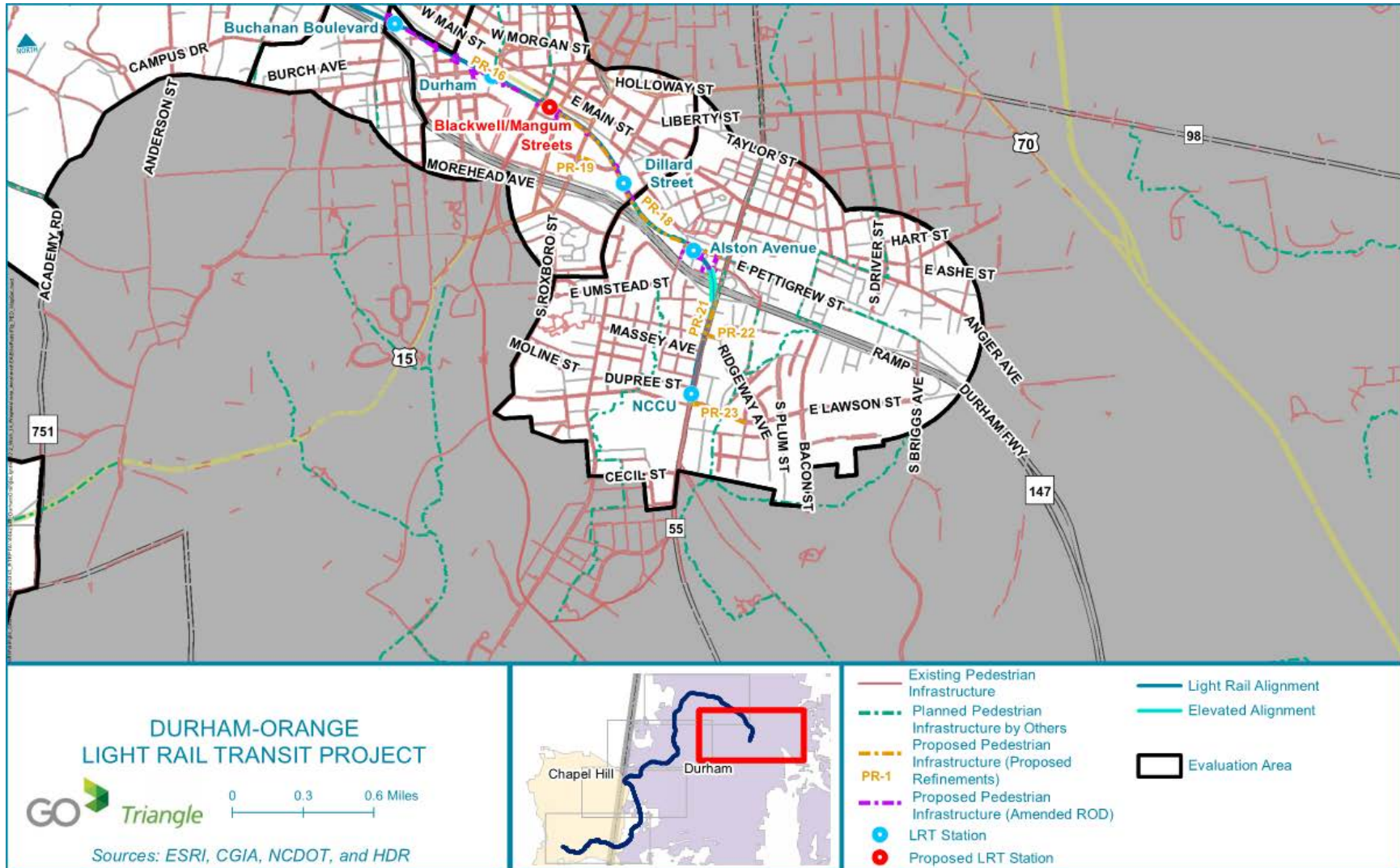


Figure 5-9: Planned and Proposed Pedestrian Facilities  
(East Durham Evaluation Area)

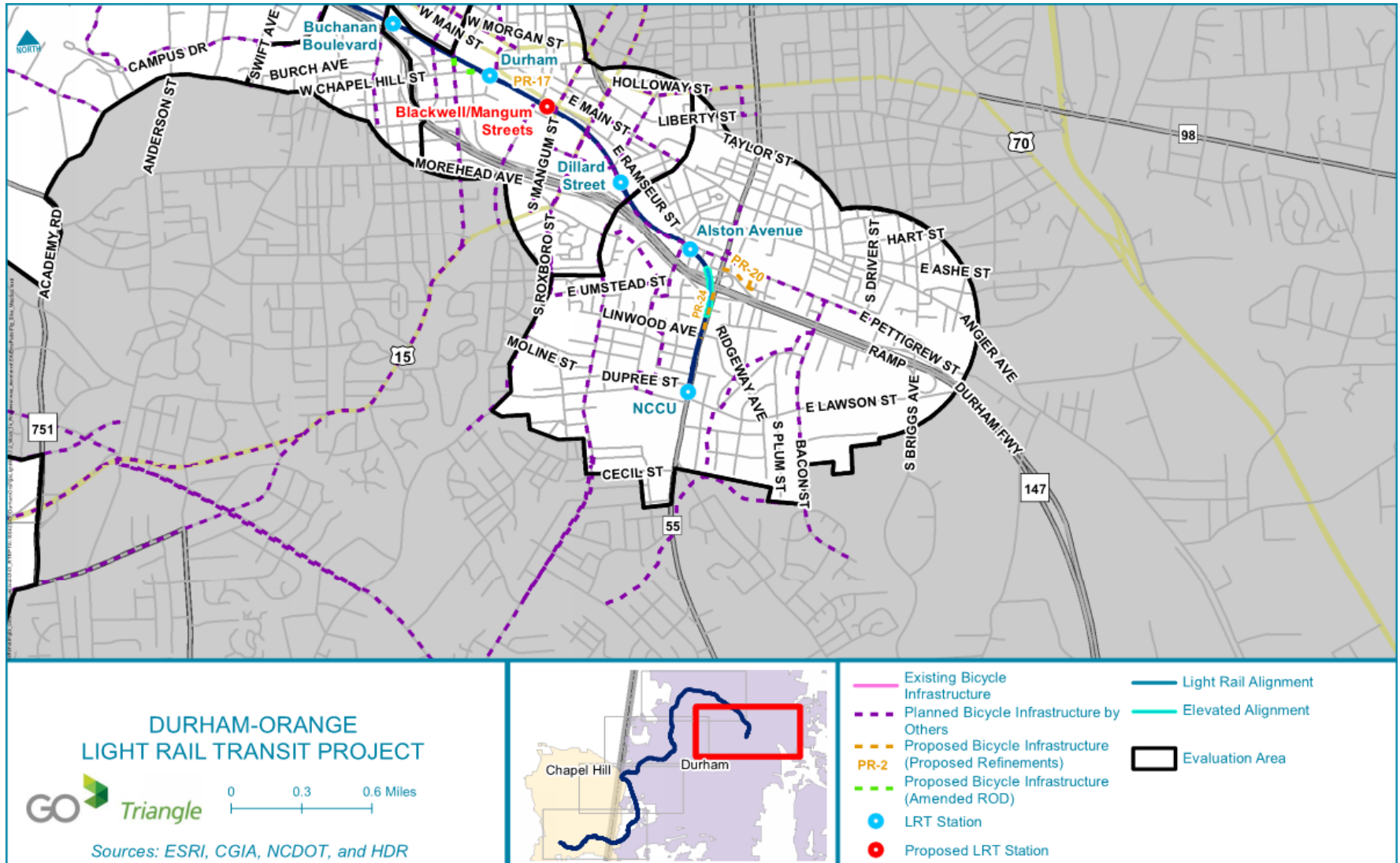


Figure 5-10: Planned and Proposed Bicycle Facilities  
(East Durham Evaluation Area)

The following discussion presents the evaluation of the potential environmental consequences of the Proposed Refinements in the eight evaluation areas. Pedestrian and bicycle improvements associated with the Proposed Refinements are identified by ID number corresponding to **Table 5-1** and **Figure 5-1** through **Figure 5-10**. It should be noted that several of the improvements include multi-use paths, which serve to accommodate both pedestrian and bicycle users through a wider facility cross-section. For the purposes of this discussion and to avoid repetition, the descriptions of multi-use paths are with the descriptions of bicycle facilities. In addition to these identified pedestrian and bicycle improvements, further improvements will be integrated into the project surrounding the station locations, including sidewalks and pedestrian ramps, pedestrian crossing signals and warning devices, pedestrian crossing gates, pedestrian scale lighting, bicycle parking, pedestrian crosswalk markings, pedestrian refuge median islands, and curb extensions.

### 5.1 UNC Campus Evaluation Area

There will be two LRT stations in the UNC Campus Evaluation Area: UNC Hospitals and Mason Farm Road. Proposed Refinements at UNC Hospitals Station include elimination of the pedestrian bridge of the Previous Design. This change would improve pedestrian access between the station, the parking decks, and the hospitals relative to the Previous Design; i.e., pedestrians would not need to circulate via a pedestrian bridge and through the parking deck to access the hospital and surrounding university buildings from the station. Under the Proposed Refinements, pedestrian access to UNC Hospitals Station would be provided along East Drive. The Mason Farm Road Station area includes new pedestrian facilities to improve connectivity between the station and the surrounding neighborhoods under the Proposed Refinements.

#### 5.1.1 Pedestrian

The following improvements to pedestrian infrastructure would be implemented as a part of the Proposed Refinements in the Mason Farm Road Station area:

- **PR-1** – A 12-foot-wide walkway would be constructed to connect the Dean E. Smith Center to the Mason Farm Road Station platform. Sidewalks and a stairway (with elevator option) would also be added in the station area, providing access to the Dean E. Smith Center.
- **PR-1** – A 6-foot-wide sidewalk would be constructed to continue east beyond the Mason Farm Road Station platform's western access point to Baity Hill Drive and then along the west side of Baity Hill Drive to connect to the existing sidewalk on that side of the street.
- **PR-1** – A 6-foot-wide sidewalk would be constructed to extend west from the Dean E. Smith Center stairs and ramps to provide connection to adjacent apartments and the Kenan-McColl Business School parking lot.

The planned and proposed pedestrian facilities in the vicinity of the D-O LRT Project within the UNC Campus Evaluation Area are identified in **Figure 5-1**.

#### 5.1.2 Bicycle

The Proposed Refinements do not include bicycle facilities within the UNC Campus Evaluation Area.

### 5.2 East Chapel Hill Evaluation Area

There will be four LRT stations in the East Chapel Hill Evaluation Area: Hamilton Road, Friday Center, Woodmont, and Leigh Village. Some portions of the light rail alignment would be elevated in order to

improve connectivity between the stations and the surrounding neighborhoods, while other portions would be at grade.

### 5.2.1 Pedestrian

The following improvements to pedestrian infrastructure would be implemented as a part of the Proposed Refinements:

- **PR-3** – A 6-foot-wide sidewalk with 3-foot buffer would be constructed along the west side of Burning Tree Drive from NC 54 to approximately 800 feet north of NC 54. A 6-foot-wide sidewalk without a landscape buffer is proposed for the first 200 feet north of NC 54 to avoid impacts to the existing screening trees.
- **PR-5** – A 6-foot-wide sidewalk without a landscape buffer would be constructed along the east side of Friday Center Drive from Marriott Way to the bus shelter, which is approximately 450 feet south of Marriott Way.
- **PR-7** – A 6-foot-wide sidewalk without a landscape buffer would be constructed on the east side of Downing Creek Parkway from Cranebridge Place to approximately 200 feet north where the sidewalk would terminate. A mid-block crosswalk would be located at this location, and a 6-foot-wide sidewalk with 3-foot buffer would be constructed along the west side of Downing Creek Parkway between the proposed crosswalk and Stancell Drive.

The planned and proposed pedestrian facilities in the vicinity of the D-O LRT Project within the East Chapel Hill Evaluation Area are identified in **Figure 5-1**.

### 5.2.2 Bicycle

The following improvements to bicycle infrastructure would be implemented as a part of the Proposed Refinements:

- **PR-2** – A 10-foot-wide multi-use path would be constructed along the D-O LRT Project track alignment from the Fordham Boulevard/Old Mason Farm Road intersection to the Prestwick Road/Hamilton Road intersection. The natural surface recreation trails in the Highland Woods area are to be maintained. The multi-use path is proposed to follow along the south side of the preferred track alignment once it crosses over Fordham Boulevard east of Old Mason Farm Road, then shift to the north side of the preferred track alignment at the proposed pedestrian underpass.
- **PR-4** – A 10-foot-wide multi-use path would be constructed along the north side of NC 54 from the west side of the parcel on the west side of Oakwood Drive to Burning Tree Drive.
- **PR-6** – A 10-foot-wide multi-use path would be constructed along the north side of Stancell Drive from Barbee Chapel Road to Downing Creek Parkway. Curb and gutter would be added in sections to both the north and south sides of the road.
- **PR-8** – A 10-foot-wide multi-use path would be constructed along the east side of the D-O LRT Project tracks (which are being placed along the existing gravel George King Road alignment), between the lift station on Old NC 54 and Cleora Drive. The 10-foot-wide multi-use path would replace a 5-foot-wide sidewalk that is being installed by the developer along the western side of the Chapel Run development.

The planned and proposed bicycle facilities in the vicinity of the D-O LRT Project within the East Chapel Hill Evaluation Area are illustrated in **Figure 5-2**.



### 5.3 US 15-501 Corridor Evaluation Area

There are four stations proposed in the US 15-501 Corridor Evaluation Area: Gateway, Patterson Place, Martin Luther King Jr Parkway, and South Square.

#### 5.3.1 Pedestrian

The following pedestrian improvements would be implemented as a part of the Proposed Refinements to improve connectivity between the LRT stations and the surrounding neighborhoods:

- **PR-9** – A 5-foot buffer and a 6-foot-wide sidewalk is proposed along the east side of Pope Road from Olde Coach Road to Old Chapel Hill Road.
- **PR-10** – A 6-foot-wide attached sidewalk is proposed along the west side of Larchmont Road between University Drive and Gatehouse Lane.
- **PR-11** – A 12-foot-wide sidewalk area with trees is proposed on the south side of University Drive from Martin Luther King Jr. Parkway to Shannon Road. This sidewalk would be placed on the north side of the LRT tracks.
- **PR-12** – The traffic signal at US 15-501/Shannon Road would be modified to add a marked crosswalk and pedestrian signals on the east leg of the intersection.
- **PR-12** – Ramp and stairs would be constructed from the north side of US 15-501 to Chapel Hill Boulevard Service Road.

The planned and proposed pedestrian facilities in the vicinity of the D-O LRT Project alignment within the US 15-501 Corridor Evaluation Area are illustrated in **Figure 5-3** and **Figure 5-4**.

#### 5.3.2 Bicycle

The following bicycle improvements would be implemented as a part of the Proposed Refinements to improve connectivity between the LRT stations and the surrounding neighborhoods:

- **PR-11** – A 12-foot-wide multi-use path is proposed along the south side of the LRT tracks from Martin Luther King Jr. Parkway to Shannon Road.
- **PR-11** – A multi-use path would be extended on the east side of the LRT tracks between University Drive and South Square Station.

The planned and proposed bicycle facilities in the vicinity of the D-O LRT Project within the US 15-501 Corridor Evaluation Area are illustrated in **Figure 5-5** and **Figure 5-6**.

### 5.4 Duke West Campus and Medical Center Evaluation Area

There are two stations in the Duke West Campus and Medical Center Evaluation Area: LaSalle Street and Duke/VA Medical Centers. LaSalle Street Station will be an elevated station located at the Erwin Road/LaSalle Street intersection. The Duke/VA Medical Centers Station will be located just west of Fulton Street, oriented between the Durham VA Hospital and the Duke University Medical Center Eye Care Center. The Duke/VA Medical Centers Station will be an elevated station, located in the median of Erwin Road, with pedestrian bridges connecting the station with the hospitals.

### 5.4.1 Pedestrian

The Proposed Refinements do not include additional pedestrian facilities within the Duke West Campus and Medical Center Evaluation Area.

### 5.4.2 Bicycle

The following improvements to bicycle infrastructure would be implemented as a part of the Proposed Refinements to improve connectivity between the LRT stations and the surrounding neighborhoods:

- **PR-13** – An on-street bike lane is proposed to be constructed on the north side of Erwin Road between Emergency Drive and Anderson Street and a multi-use path is proposed to be constructed on the south side of Erwin Road within this extent. These bicycle facilities would tie into the existing bike lanes east of Anderson Street.

The planned and proposed bicycle facilities in the vicinity of the D-O LRT Project within the Duke West Campus and Medical Center Evaluation Area are illustrated in **Figure 5-8**.

## 5.5 Old West Durham/Duke East Campus Evaluation Area

In the Old West Durham/Duke East Campus Evaluation Area, there will be two LRT stations: Ninth Street and Buchanan Boulevard.

### 5.5.1 Pedestrian

The following pedestrian improvements would be implemented as a part of the Proposed Refinements to improve connectivity between the LRT stations and the surrounding neighborhoods:

- **PR-14** – A new at-grade pedestrian crossing on the south leg of the Erwin Road/Pettigrew Street intersection would be constructed to provide a safe crossing opportunity for pedestrians and to address the sight distance concerns.
- **PR-15** – A 12-foot-wide sidewalk area (including planting areas) would be constructed to meet the City of Durham sidewalk standards on the south side of Pettigrew Street between Erwin Road and Swift Avenue. The sidewalk location would vary and be located partially or completely underneath the elevated track structure. Based on the specific placement of the track bridge piers, a 12-foot-wide sidewalk area may not be possible. If this is the case, the width should be maximized with a total 8-foot walkway width desired.

The planned and proposed pedestrian facilities in the vicinity of the D-O LRT Project within the Old West Durham/Duke East Campus Evaluation Area are illustrated in **Figure 5-7**.

### 5.5.2 Bicycle

There are no new bicycle facilities included in the Proposed Refinements at the Old West Durham/Duke East Campus Area.

## 5.6 Downtown Durham Evaluation Area

In the Downtown Durham Evaluation Area, there will be three LRT stations: Durham, Blackwell/Mangum Streets and Dillard Street.

### 5.6.1 Pedestrian

The following improvements to pedestrian infrastructure would be implemented as a part of the Proposed Refinements to improve connectivity between the LRT stations and the surrounding neighborhoods:

- **PR-16** – Pedestrian gates are proposed on the north side of Chapel Hill Street at Pettigrew Street adjacent to Durham Station to mitigate pedestrian sight distance concerns at this location.
- **PR-18** – The previously proposed 5.5 to 8-foot-wide sidewalk on the south side of Pettigrew Street would be widened to a 12-foot sidewalk area (including planting areas) from Blackwell Street to Chatham Place.
- **PR-19** – An 8-foot-wide sidewalk with 4-foot brick buffer would be constructed on the north side of Dillard Street. The proposed design would match the new sidewalk just west of the D-O LRT Project. The design would meet the City’s standards for this area and will also match what is likely to occur on the east side of the D-O LRT Project when that site redevelops.

The planned and proposed pedestrian facilities in the vicinity of the D-O LRT Project within the Downtown Durham Evaluation Area are illustrated in **Figure 5-7**.

### 5.6.2 Bicycle

The following improvement to bicycle infrastructure would be implemented as a part of the Proposed Refinements to improve connectivity between the LRT stations and the surrounding neighborhoods:

- **PR-17** – A 12-foot-wide multi-use path would replace the previously proposed 10-foot-wide sidewalk on the east side of Blackwell Street from the north side of Pettigrew Street at the existing railroad south to Vivian Street. The east sidewalk along Blackwell Street is part of the Downtown Trail and the East Coast Greenway. The 12-foot width would provide a safer shared-use space for the high volume of bicyclists and pedestrians.

The planned and proposed bicycle facilities in the vicinity of the D-O LRT Project within the Downtown Durham Evaluation Area are described below and illustrated in **Figure 5-8**.

### 5.6.3 Closure of Blackwell Street between Ramseur and Pettigrew Streets

The Proposed Refinements include closure of Blackwell Street to vehicle, pedestrian, and bicycle access between Ramseur and Pettigrew streets. GoTriangle proposes to maintain pedestrian and bicycle connectivity on the Trail with a pedestrian/bicycle signature civic space approximately mid-block between Blackwell and Mangum streets.

## 5.7 East Durham

There will be two LRT stations in the East Durham Evaluation Area: Alston Avenue and NCCU.

### 5.7.1 Pedestrian

The following pedestrian improvements would be implemented as a part of the Proposed Refinements to improve connectivity between the LRT stations and the surrounding neighborhoods:

- **PR-21** – A variable width brick paver strip would be installed between the existing sidewalk and back of curb along Alston Avenue between Linwood Avenue and the NC 147 eastbound on-ramp.

- **PR-22** – A 7-foot-wide sidewalk without a landscape buffer would be constructed along the north side of Linwood Avenue between Ridgeway Avenue and Alston Avenue. Due to space constraints and potential right of way impacts, this sidewalk would be installed in the street and replace the existing curb and gutter as well as on-street parking.
- **PR-23** – A 6-foot-wide sidewalk with 3-foot buffer would be constructed along the south side of Lawson Street between Alston Avenue and Wabash Street.

The planned and proposed pedestrian facilities in the vicinity of the D-O LRT Project within the East Durham Evaluation Area are illustrated in **Figure 5-9**.

### 5.7.2 Bicycle

The following bicycle improvements would be implemented as a part of the Proposed Refinements to improve connectivity between the LRT stations and the surrounding neighborhoods:

- **PR-20** – North of the NC 147 westbound off-ramp, the existing sidewalk would be replaced with an accessible 12-foot-wide multi-use path between the R. Kelly Bryant Bridge and Alston Avenue, and pedestrian-scale lighting and wayfinding signs would be added.
- **PR-24** – A multi-use path would be constructed on the west side of Alston Avenue between Lawson Street and NC 147.

The planned and proposed bicycle facilities in the vicinity of the D-O LRT Project within the East Durham Evaluation Area are described below and illustrated on **Figure 5-10**.

## 6. Summary of Changes

The previous NEPA documentation identified 34 proposed pedestrian and 14 bicycle connections to the proposed LRT stations. The Proposed Refinements would add more pedestrian and bicycle facilities relative to the Previous Design to improve connectivity and accessibility between the LRT stations and the surrounding neighborhoods. Total impacts of the Proposed Refinements include an increase of 19 pedestrian facilities and an increase of 10 bicycle facilities compared to the Previous Design, plus the addition of a pedestrian/bicycle signature civic space for the Downtown Durham Trail crossing of Pettigrew Street, the light rail tracks, the NCCR tracks, and Ramseur Street.

## 7. Mitigation

GoTriangle will develop the aesthetic design of the pedestrian/bicycle signature civic space for the Downtown Durham Trail crossing of Pettigrew Street, the light rail tracks, the NCCR tracks, and Ramseur Street using community input through an open public process. The Proposed Refinements do not require other additional mitigation measures for the proposed bicycle and pedestrian facilities compared to the mitigation measures included in the Amended ROD.

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