

Appendix E: Proposed Refinements Visual and Aesthetics Technical Report

Durham-Orange Light Rail Transit Project



October 2018

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List of Acronyms and Abbreviations

Acronym/Abbreviation	Definition
D-O LRT	Durham-Orange Light Rail Transit
DEIS	Draft Environmental Impact Statement
DPAC	Durham Performing Arts Center
EA	Environmental Assessment
FEIS	Final Environmental Impact Statement
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
I-40	Interstate 40
NCCU	North Carolina Central University
NCRR	North Carolina Railroad
NEPA	National Environmental Policy Act
ROD	Record of Decision
ROMF	Rail Operations and Maintenance Facility
UNC	University of North Carolina
USACE	United States Army Corps of Engineers
VA	Veterans Affairs

1. Introduction

This technical report supplements previous National Environmental Policy Act (NEPA) documentation of the Durham-Orange Light Rail Transit (D-O LRT) Project, which includes the Draft Environmental Impact Statement (DEIS), Combined Final Environmental Impact Statement/Record of Decision (Combined FEIS/ROD), Supplemental Environmental Assessment (Supplemental EA) for the North Carolina Central University (NCCU) Station Refinement, and Amended ROD. Since publication of the Amended ROD, engineering design has advanced, resulting in Proposed Refinements to the D-O LRT Project design. This report supplements the Visual and Aesthetics Technical Report included in the DEIS and the Visual and Aesthetics Conditions for NCCU Station Refinement included in the Supplemental EA for the NCCU Station Refinement by presenting an evaluation of the potential effects of the Proposed Refinements on visual and aesthetic conditions relative to the Previous Design.

2. Description of the Proposed Refinements

The Proposed Refinements are based on the following:

- Advancements in design since the Amended Record of Decision (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 major refinements discussed in this Supplemental EA include:

- 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 the 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, NCCR tracks, and Ramseur Street approximately mid-block between Blackwell Street and Mangum Street; and
- Inclusion of drainage, grading, and site preparation throughout the project.

3. Legal and Regulatory Framework

This Visual and Aesthetics Technical Report follows the same legal and regulatory framework as the NEPA documentation of the Previous Design.

4. Methodology

The analysis presented in this technical report follows the same methodology as the NEPA documentation of the Previous Design, which follows the Federal Highway Administration (FHWA) visual quality and aesthetics assessment methodology because the Federal Transit Administration (FTA) has not issued specific guidance on visual quality assessment.

The degree of visual change for new and refined elements of the project design as compared with the affected environment are characterized as substantial, moderate, or minor based on the following definitions:

- **Substantial change** – A significant impact would be made to the visual quality and existing character of the study area.
- **Moderate change** – Notable changes would take place and affect the visual quality and existing character of the study area.
- **Minor change** - Few or very specific instances can be noted that would have an effect on the visual quality and character of the study area.

The analysis examines the Proposed Refinements using the same 11 landscape units examined in the NEPA documentation of the Previous Design. This report updates the description of the affected environment based on 2018 GIS data sources and is supported by photographs taken during a site visit on March 25, 2018.

5. Affected Environment and Environmental Consequences

The following sections describe changes to the existing conditions of the 11 landscape units in the study area and provide an assessment of potential visual impacts associated with the Proposed Refinements relative to the potential effects of the Previous Design.

5.1 Landscape Unit #1: University (UNC Campus Area)

5.1.1 Existing Conditions and Viewers

The visual character and visual resources of this unit remain unchanged from previous analysis, with the exception of University of North Carolina (UNC) moving forward with demolition of the Odum Village residential complex per the UNC Master Plan. GoTriangle anticipated UNC’s demolition of the Odum Village buildings in the NEPA documentation of the Previous Design. A summary of existing conditions for Landscape Unit #1 is provided in **Table 5-1**; visual resources are shown on **Figure 5-1**.

Table 5-1: Landscape Unit #1 – University (UNC Campus Area) Existing Visual Conditions

Visual Character	Visual Resources
University campus with academic, research, and residential buildings, and open space <i>Vividness:</i> Moderate <i>Intactness:</i> Moderate <i>Unity:</i> Moderate Visual quality: Moderate	UNC Hospitals and research facilities UNC chiller plant UNC student housing (Odum Village - to be demolished, Mason Farm, and Baity Hill) Single-family homes Kenan Flagler Business School Dean Smith Center H.G. Baity House*

* Visually sensitive resource

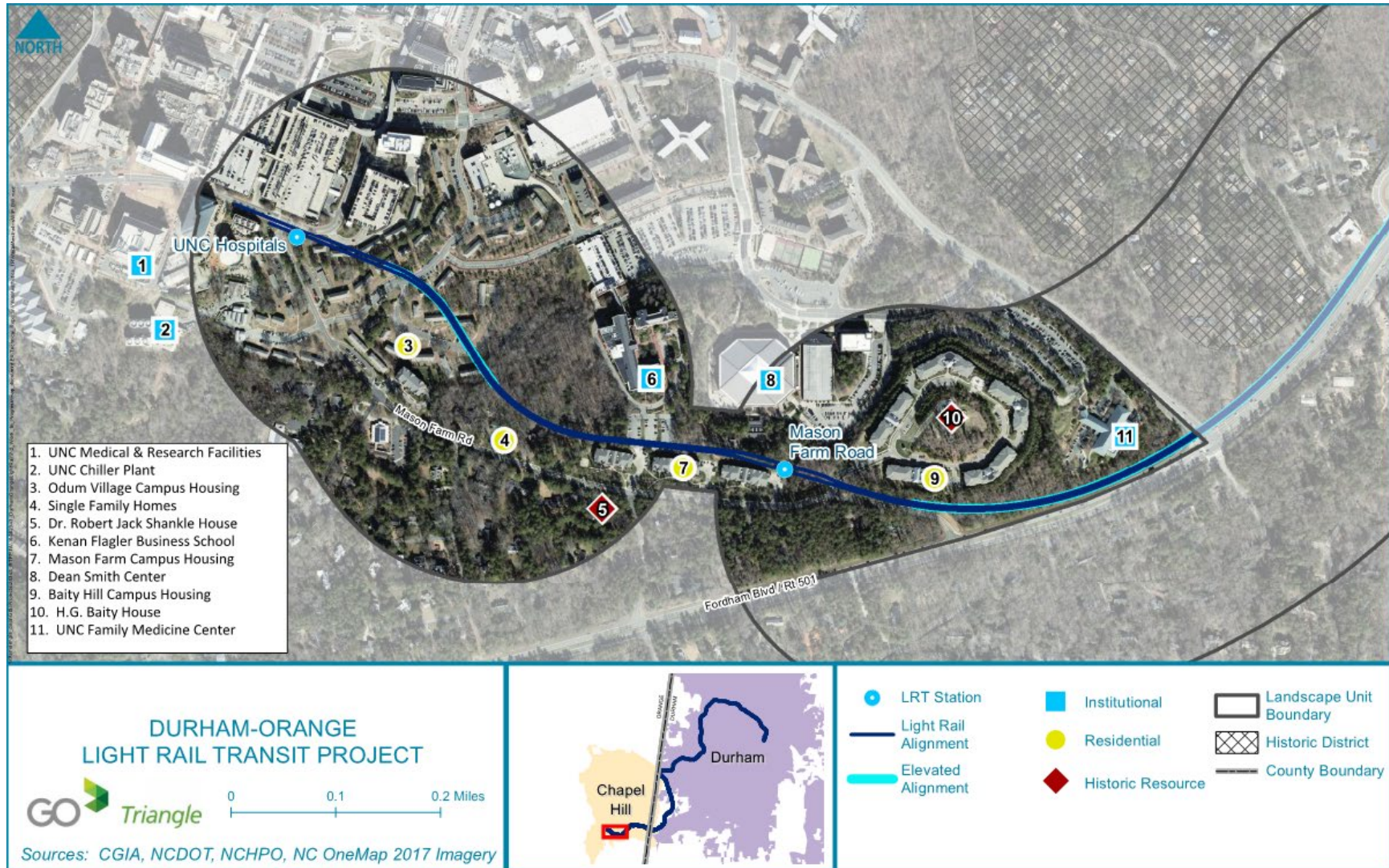


Figure 5-1: Landscape Unit #1

5.1.2 Impacts Assessment

The following sections describe the visual impacts of the Proposed Refinements and changes to Landscape Unit #1 relative to the Previous Design.

5.1.2.1 UNC Hospitals Station

The proposed modifications at UNC Hospitals Station include reconfiguration of roadways, elimination of the pedestrian signature civic space that would span to/from the UNC Hospitals Station and the Dogwood Deck parking structure on the north side of Mason Farm Road, a shift of the station platforms to just east of East Drive, and a change in pedestrian access along East Drive. These changes would change visual elements in the station area relative to the Previous Design. The elimination of the pedestrian bridge would change the degree of visual change for the streetscape element from moderate to minor because the bridge would have been a prominent feature in the streetscape views.

5.1.2.2 Mason Farm Road Station

The Proposed Refinements include widened walkways from the station to the Dean E. Smith Center, stairs and elevators and the addition of a new sidewalk west of the Dean E. Smith Center stairs along Baity Hill Drive, and a new multi-use path along the light rail alignment from Old Mason Farm Road to Prestwick Road. The pedestrian walkways and stairs are consistent with the campus environment, but would remove vegetation from the hillside leading up to the Dean E. Smith Center. Views of the H.G. Baity House historic property would be unaffected by the Proposed Refinements (see **appendix F-2** of the Supplemental EA for the Proposed Refinements, Historic Architecture Technical Report for additional details). The addition of the multi-use path from Old Mason Farm Road to Prestwick Road would be parallel to Fordham Boulevard within a wooded area. These would be minor changes and would not affect the degree of visual change relative to the Previous Design.

5.1.2.3 Summary of Visual Changes

Table 5-2 summarizes visual changes to Landscape Unit #1 from the Previous Design and Proposed Refinements. The UNC University landscape unit is largely urban and developed, and the light rail system would not be out of character for the setting, where elements such as pedestrian facilities, retaining walls, and overhead wires already exist today. With the removal of the pedestrian bridge from the design, the streetscape impacts would be reduced. Overall, the Proposed Refinements are consistent with the campus setting and viewer expectations in this area, similar to the Previous Design. Thus, the impact on Landscape Unit #1 - University (UNC Campus Area) would remain moderate as described in the NEPA documentation of the Previous Design.

Table 5-2: Visual Impacts – Landscape Unit #1

Viewer Response		Visual Change		
Viewers	Viewers' Response	Visual Elements	Degree of Change for Visual Elements – Previous Design	Degree of Change for Visual Elements – Proposed Refinements
Residents – single- and multi-family housing	High	Transit Infrastructure	Substantial	Substantial
University visitors, students, professors, staff	Moderate	Elevation	Substantial	Substantial
Hospital visitors, patients, staff	Moderate	Displacement of structures	Minor*	Minor*
Motorists	Low	Parking area/structure	Minor	Minor
Transit riders	Low	View Disruption	Minor	Minor
Performing arts patrons, conference attendees, attendees at sporting events	Low	Removal of existing screens to residential uses	Moderate	Moderate
		Visual changes to parklands	Minor	Minor
		Blocks scenic features	Minor	Minor
		Changes to streetscape	Moderate	Minor
		Removal of vegetation	Moderate	Moderate
		Visual change to historic resources	Minor	Minor
		New night lighting	Moderate	Moderate

*Does not include UNC's demolition of Odum Village buildings, which is being done as part of the UNC Campus Master Plan and is not associated with the D-O LRT Project.

Bold print indicates a change between the Previous Design and Proposed Refinements.

Viewer Response: Moderate + Visual Changes: Moderate = Visual Impacts: Moderate

5.2 Landscape Unit #2: Mixed Use/Institutional (East Chapel Hill)

5.2.1 Existing Conditions and Viewers

The visual character of this unit is defined by roadside development typical of a suburban college town, which has remained unchanged since the previous analysis. There has been a change to visual resources in this landscape unit since the NEPA documentation of the Previous Design: the Aldersgate United Methodist Church was purchased by St. Thomas More Church for use as a daycare, and the SECU Family House at UNC Hospital is an added resource. Neither resource would introduce a new type of viewer or viewer response to the landscape unit. A summary of existing conditions for Landscape Unit #2 is provided in **Table 5-3**; visual resources are shown on **Figure 5-2**. **Figure 5-3** through **Figure 5-5** show photographs of views within the Landscape Unit #2.

Table 5-3: Landscape Unit #2 – Mixed Use/Institutional (East Chapel Hill) Existing Visual Conditions

Visual Character	Visual Resources
Mix of commercial and institutional development along roadways with some newer mixed-use development; residential subdivisions with single-family homes on wooded lots that are not visible from existing major roadways <i>Vividness:</i> Moderate <i>Intactness:</i> Moderate <i>Unity:</i> Moderate Visual quality: Moderate	SECU Family House at UNC Hospital Laurel Hill - Rocky Ridge Farm neighborhood Historic District* North Carolina Botanical Gardens* St. Thomas More Church St. Thomas More Daycare Highland Woods Historic District* Glenwood Elementary School Finley Golf Course* UNC Cross Country Trails* Mixed-use at East 54 Meadowmont Village* Meadowmont Park* The Cedars of Chapel Hill* DuBose House/Rizzo Conference Center

* Visually sensitive resource

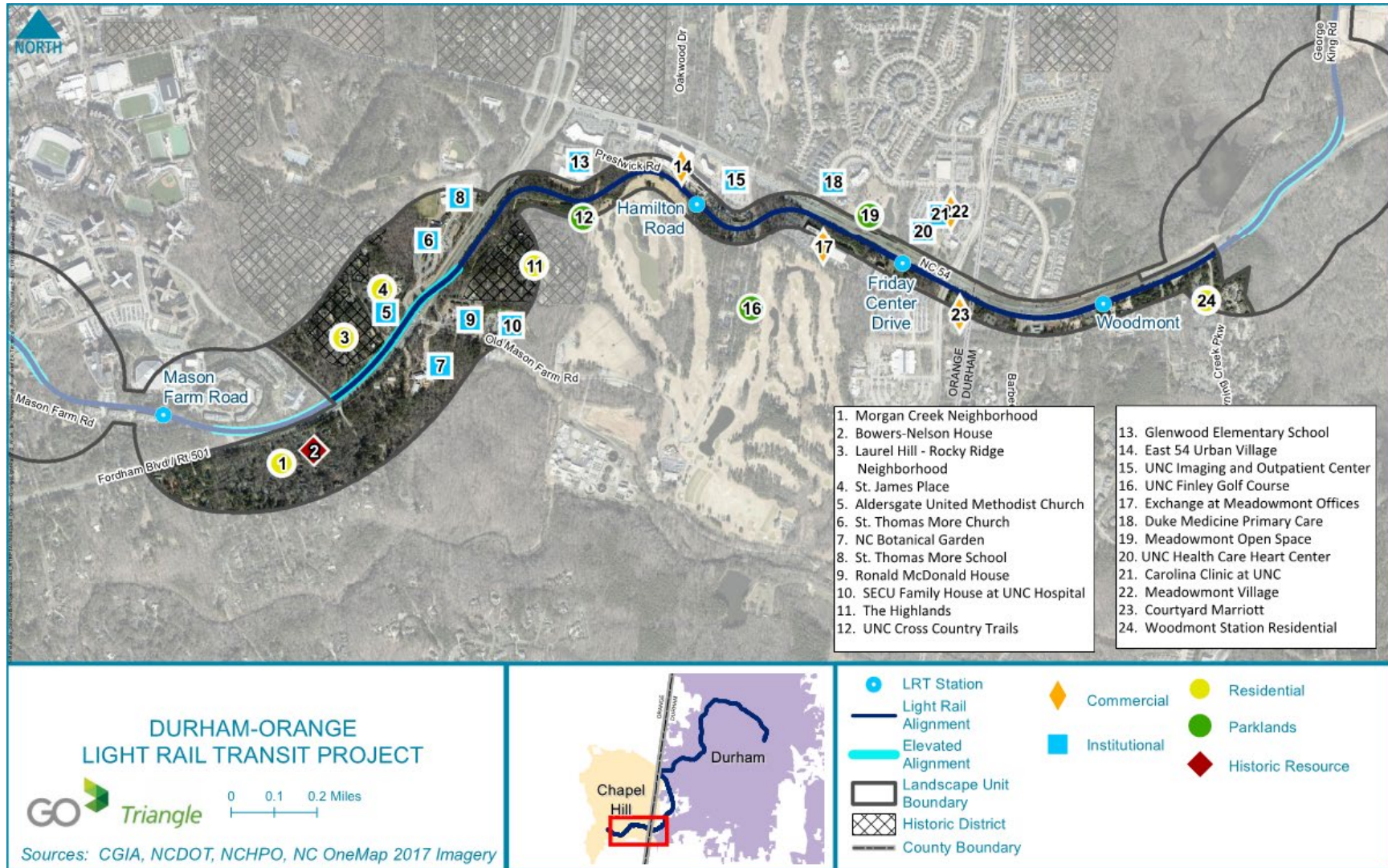


Figure 5-2: Landscape Unit #2



Figure 5-3: Downing Creek Parkway and Stancell Drive Intersection (Facing Northwest; Location of Proposed At-Grade crossing north of the Woodmont Station)



Figure 5-4: Downing Creek Parkway and Stancell Drive Intersection (Facing Northeast; Location of Proposed Elevated Section at NC 54)



Figure 5-5: Woodmont Station – Sample Design (Facing North)

5.2.2 Impacts Assessment

The following sections describe the visual impacts of the Proposed Refinements and changes to Landscape Unit #2 relative to the Previous Design.

5.2.2.1 Hamilton Road Station

Proposed refinements at Hamilton Road Station include a new sidewalk along the west side of Burning Tree Drive from NC 54 to Oak Tree Drive and a new multi-use path along the north side of NC 54 from Oakwood Drive to Burning Tree Drive. These Proposed Refinements would not change the degree of visual change in the landscape unit relative to the Previous Design.

5.2.2.2 Friday Center Station

Proposed refinements at Friday Center Station include refinements to the station location and bicycle parking layout, an additional sidewalk, and the addition of a multi-use path to improve the connection to the existing pedestrian tunnel and parking lot. These Proposed Refinements would not change the degree of visual change in the landscape unit relative to the Previous Design.

5.2.2.3 Woodmont Station

At Woodmont Station, the Proposed Refinements would add a multi-use path to the south side of Stancell Drive from Barbee Chapel Road to Downing Creek Parkway and tie it into the existing path west of Barbee Chapel Road. The Proposed Refinements also would add a multi-use path east of the light rail alignment along Downing Creek Parkway from the lift station to Cranebridge Place.

These refinements would require vegetation removal resulting in a moderate visual change, which is the same level of changes as the Previous Design.

5.2.2.4 Summary of Visual Changes

Table 5-4 shows visual changes to Landscape Unit #2 from the Previous Design and Proposed Refinements.

Table 5-4: Visual Impacts – Landscape Unit #2

Viewer Response		Visual Change		
Viewers	Viewers' Response	Visual Elements	Degree of Change for Visual Elements – Previous Design	Degree of Change for Visual Elements – Proposed Refinements
Residents – single- and multi-family housing	High	Transit Infrastructure	Substantial	Substantial
Business owners	High	Elevation	Moderate	Moderate
Golf course players	High	Displacement of structures	Minor	Minor
Bike and pedestrian trail users	High	Parking area/structure	Moderate	Moderate
Children, parents, and teachers – daycare	Moderate	View Disruption	Minor	Minor
Church members	Moderate	Removal of existing screens to residential uses	Minor	Minor
Shoppers	Moderate	Visual changes to parklands	Minor	Minor
Office workers	Moderate	Blocks scenic features	Minor	Minor
Motorists	Low	Changes to streetscape	Substantial	Substantial
Transit riders	Low	Removal of vegetation	Moderate	Moderate
Conference and attendees at sporting events	Low	Visual change to historic resources	Minor	Minor
		New night lighting	Substantial	Substantial

Viewer Response: Moderate + Visual Changes: Minor to Substantial = Visual Impacts: Low to Moderate

The Proposed Refinements in Landscape Unit #2 would have the same moderate viewer response and minor to substantial visual changes identified in the NEPA documentation of the Previous Design. The Proposed Refinements would result in a low to moderate visual impact on Landscape Unit #2 - Mixed Use/Institutional (East Chapel Hill), which is the same as the Previous Design.

5.3 Landscape Unit #3: Natural (East Chapel Hill)

5.3.1 Existing Conditions and Viewers

The visual character of this unit is defined by large wooded areas and lack of development due to U.S. Army Corps of Engineers (USACE) regulations protecting the Jordan Lake watershed and Upper Little Creek

Waterfowl Impoundment. New residential development (since the NEPA documentation of the Previous Design) is currently under construction south of the proposed light rail alignment. A summary of existing conditions for Landscape Unit #3 is provided in **Table 5-5**; visual resources are shown on **Figure 5-6**.

Table 5-5: Landscape Unit #3 – Natural (East Chapel Hill) Existing Visual Conditions

Visual Character	Visual Resources
Wooded area bordering NC 54; unpaved, gravel road with adjacent horse pastures and scattered single-family homes <i>Vividness</i> - Moderate <i>Intactness</i> - High <i>Unity</i> – High Visual quality: High	USACE’s land/Upper Little Creek Waterfowl Impoundment* George King Road residences/horse pastures* Crescent Drive single-family homes*

* Visually sensitive resource

5.3.2 Impacts Assessment

The Proposed Refinements in this landscape unit are limited to reconfigured roadways providing access to Leigh Village Station and other proposed residential developments adjacent to the USACE-owned open space.

5.3.2.1 Leigh Village Station

The Proposed Refinements in this landscape unit are limited to:

- Reconfigured roadways around the Leigh Village Station to accommodate stormwater management and transit facilities;
- Improvements to roadway connections and intersections, and access to the station; and
- The addition of a path east of the light rail alignment between the lift station and Cleora Drive.

The Proposed Refinements would require more tree clearing and two more residential acquisitions than the Previous Design. Despite these changes, the overall visual impacts in the landscape unit would remain the same as the Previous Design. Views from residences toward the project would be consistently wooded.

5.3.2.2 Summary of Visual Changes

Table 5-6 summarizes visual changes to Landscape Unit #3 from the Previous Design and Proposed Refinements.

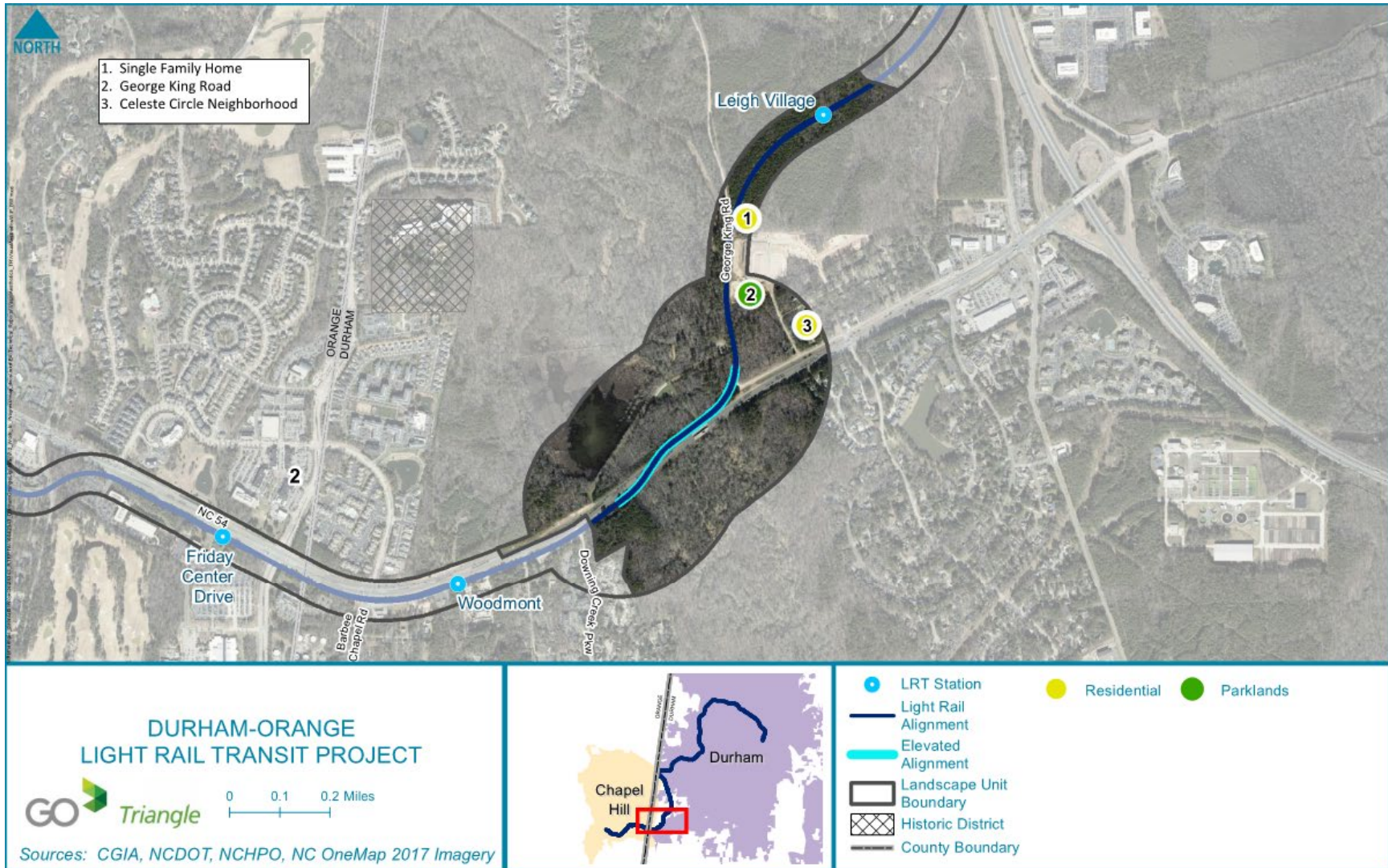


Figure 5-6: Landscape Unit #3

Table 5-6: Visual Impacts – Landscape Unit #3

Viewer Response		Visual Change		
Viewers	Viewers' Response	Visual Elements	Degree of Change for Visual Elements – Previous Design	Degree of Change for Visual Elements – Proposed Refinements
Residents – single- and multi-family housing	High	Transit Infrastructure	Substantial	Substantial
Nature enthusiasts, hikers, and hunters	High	Elevation	Moderate	Moderate
Motorists	Low	Displacement of structures	Minor	Moderate
Transit riders	Low	Parking area	Moderate	Moderate
		View Disruption	Minor	Minor
		Removal of existing screens to residential uses	Minor	Minor
		Visual changes to parklands	Minor	Minor
		Blocks scenic features	Minor	Minor
		Changes to streetscape	Substantial	Substantial
		Removal of vegetation	Minor	Moderate
		Visual change to historic resources	Minor	Minor
		New night lighting	Substantial	Substantial

Bold print indicates a change between the Previous Design and Proposed Refinements.

Viewer Response: Moderate + Visual Changes: Moderate = Visual Impacts: Moderate

The degree of visual changes to the visual elements in Landscape Unit #3 from the Proposed Refinements would be the same as the Previous Design. The reconfigurations to the proposed roadways around the station to improve access would clear additional forested area compared to the Previous Design; however, the modifications to the proposed roads are within a heavily forested area and would not be visible from nearby viewers. As a result, the Proposed Refinements would have the same level of visual changes as the Previous Design, and the overall visual impacts would remain moderate for Landscape Unit #3 - Natural (East Chapel Hill).

5.4 Landscape Unit #4: Interstate (Leigh Village)

5.4.1 Existing Conditions and Viewers

The visual character of this unit is unchanged from previous analysis. The NEPA documentation of the Previous Design did not identify the Ruth Sizemore Store as a visual resource, but it has been added to this assessment of the Proposed Refinements as a visually sensitive resource. A summary of existing conditions for Landscape Unit #4 is provided in **Table 5-7**; visual resources are shown on **Figure 5-7**. Photographs within the landscape unit are provided on **Figure 5-8** and **Figure 5-9**.

Table 5-7: Landscape Unit #4 – Interstate (Leigh Village) Existing Visual Conditions

Visual Character	Visual Resources
Interstate highway and interstate right-of-way lined by a wooded buffer <i>Vividness</i> - Low <i>Intactness</i> - Moderate <i>Unity</i> – Moderate Visual quality: Moderate	Farrington Road/Pope Road residential area* White Oak Drive area* Walter Curtis Hudson Farm historic property* Patterson’s Mill Country Store Interstate 40 (I-40) Wooded buffer along highway Ruth Sizemore Store historic property*

* Visually sensitive resource

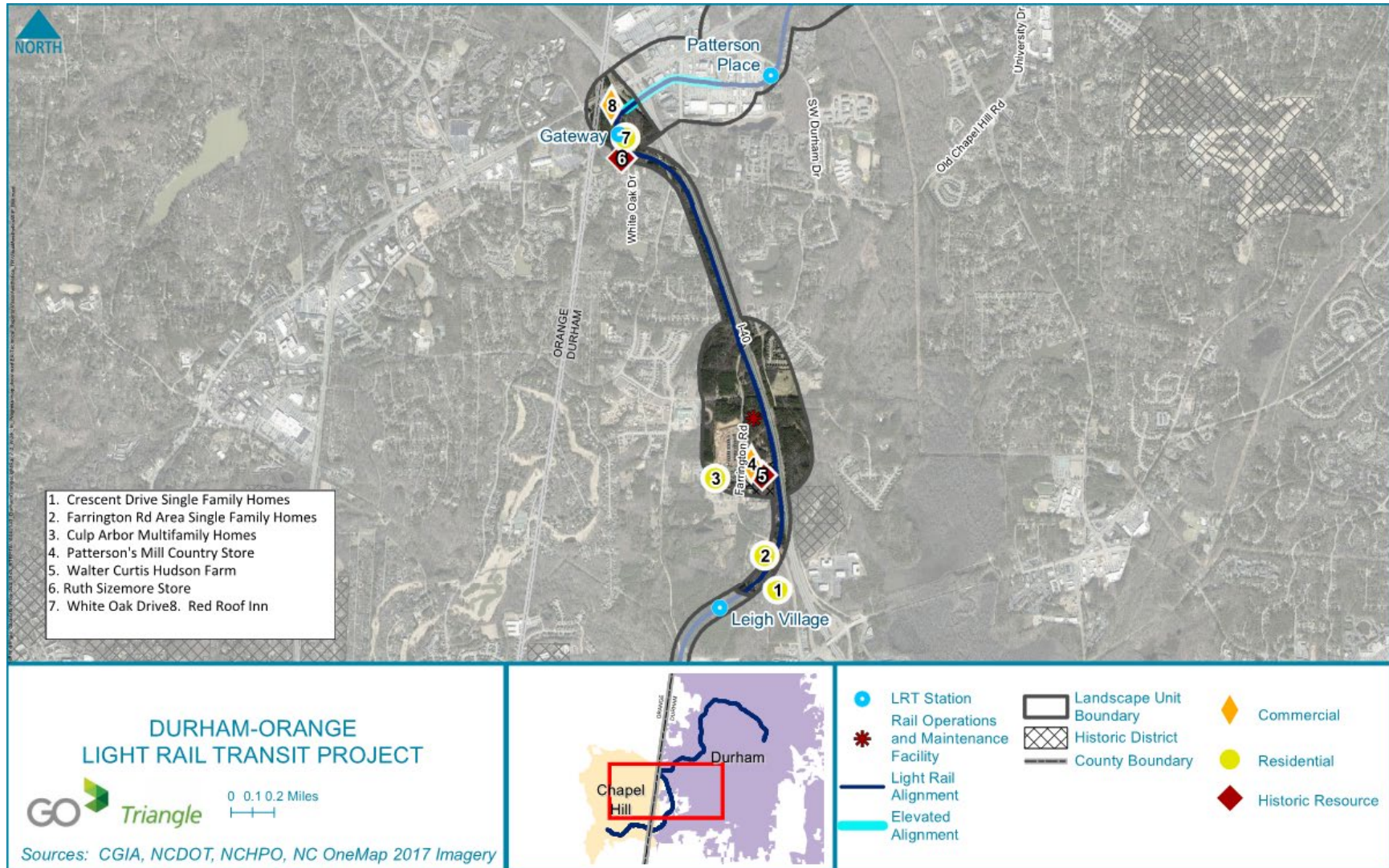


Figure 5-7: Landscape Unit #4



Figure 5-8: Ruth Sizemore Store on Old Chapel Hill Road near White Oak Drive (Facing North)



Figure 5-9: North White Oak Drive (Facing South; Within the Gateway Station Park-and-Ride Location)

5.4.2 Impacts Assessment

The visual changes that would result from the Proposed Refinements would be similar to those identified in the NEPA documentation of the Previous Design. The following sections describe the Proposed Refinements and resulting visual impacts in Landscape Unit #4.

5.4.2.1 Realignment in Vicinity of I-40

The Proposed Refinements involve a shift to the track alignment farther west from the I-40 eastbound travel lane. This track alignment shift would require additional tree clearing; however, a forested and vegetated buffer between the eastbound interstate and other properties would remain, and the degree of visual change would remain the same as the Previous Design.

5.4.2.2 Rail Operations and Maintenance Facility (ROMF)

The Proposed Refinements at the ROMF would change the track alignments and building locations as well as raise the elevation of the ROMF by approximately 4 feet. This elevation change would also reduce the height and number of retaining walls needed at the facility. The Proposed Refinements also include the addition of vegetative buffers and other landscape enhancements, as well as a retaining wall. The ROMF would remain in the same location as the Previous Design; however, additional vegetation and landscape buffers are proposed to further screen the ROMF from the surrounding properties. The ROMF would still be depressed compared to Farrington Road and does not change the visual impact to the Walter Curtis Hudson Farm Historic District.

5.4.2.3 Farrington Road Bridge

The Proposed Refinements add an underpass and reduce modifications to the Farrington Road Bridge to accommodate NCDOT access for inspection and maintenance of the bridge. The degree of visual change would be the same as the Previous Design.

5.4.2.4 Gateway Station

The Proposed Refinements at Gateway Station reconfigure the station and park-and-ride site layout and add a sidewalk along the east side of Pope Road from Olde Coach Road to Chapel Hill Road. The Proposed Refinements would clear additional forested area to accommodate future development near the station. The station modifications would require more tree clearing and three more residential acquisitions than the Previous Design within a contiguous forested area. The degree of visual change would be the same as the Previous Design, which is substantial. Proposed Refinements would move the alignment slightly closer to the historic Ruth Sizemore Store; however, the alignment would still be approximately 200 feet away from the property and would have no adverse effect on the resource (see also **appendix F-2** of the Supplemental EA for the Proposed Refinements, Historic Architecture Technical Report for additional details). The anticipated visual effects of the Proposed Refinements would not be different from the effects disclosed in the NEPA documentation for the Previous Design.

5.4.2.5 Summary of Visual Changes

Table 5-8 shows visual changes to Landscape Unit #4 from the Previous Design and Proposed Refinements.

Table 5-8: Visual Impacts – Landscape Unit #4

Viewer Response		Visual Change		
Viewers	Viewers' Response	Visual Elements	Degree of Change for Visual Elements – Previous Design	Degree of Change for Visual Elements – Proposed Refinements
Residents – single- and multi-family housing	High	Transit Infrastructure	Substantial	Substantial
Motorists	Low	Elevation	Minor	Minor
Transit riders	Low	Displacement of structures	Moderate	Moderate
		Parking area/structure	Substantial	Substantial
		View Disruption	Minor	Minor
		Removal of existing screens to residential uses	Substantial	Substantial
		Visual changes to parklands	Minor	Minor
		Blocks scenic features	Minor	Minor
		Changes to streetscape	Moderate	Moderate
		Removal of vegetation	Moderate	Moderate
		Visual change to historic resources	Minor	Minor
		New night lighting	Moderate	Moderate

Viewer Response: Moderate + Visual Changes: Moderate = Visual Impacts: Moderate

While increased landscaping at the ROMF would reduce the degree of visual change at that location relative to the Previous Design, the degree of visual changes at other locations would remain the same, including substantial changes at Gateway Station. The Proposed Refinements in Landscape Unit #4 – Interstate (Leigh Village) would result in a moderate visual impact, which is the same as the Previous Design.

5.5 Landscape Unit #5: Suburban Commercial (US 15-501 Corridor)

5.5.1 Existing Conditions and Viewers

The visual character of this unit is typical of suburban development, with the New Hope Creek natural area providing a visual break between two highly developed commercial areas. A summary of existing conditions for Landscape Unit #5 is provided in **Table 5-9**; visual resources are shown on **Figure 5-10**. Since NEPA documentation of the Previous Design, three visual resources no longer occur in this landscape unit: South Court building, Herald Sun Building, and the former Pepsi plant.

Table 5-9: Landscape Unit #5 – Suburban Commercial (US 15-501 Corridor) Existing Visual Conditions

Visual Character	Visual Resources
Typical suburban development with a mix of new and aging commercial shopping centers, apartment complexes, and office/institutional uses made up of many different architectural styles, developed and built over time <i>Vividness:</i> Moderate <i>Intactness:</i> Low <i>Unity:</i> Low Visual quality: Low	Commercial areas (Patterson Place, New Hope Commons, Oak Creek, South Square) Sayward Drive residences* Apartment complexes* New Hope Creek University Tower University Drive/Shannon Road commercial area Levin Jewish Community Center*

* Visually sensitive resource

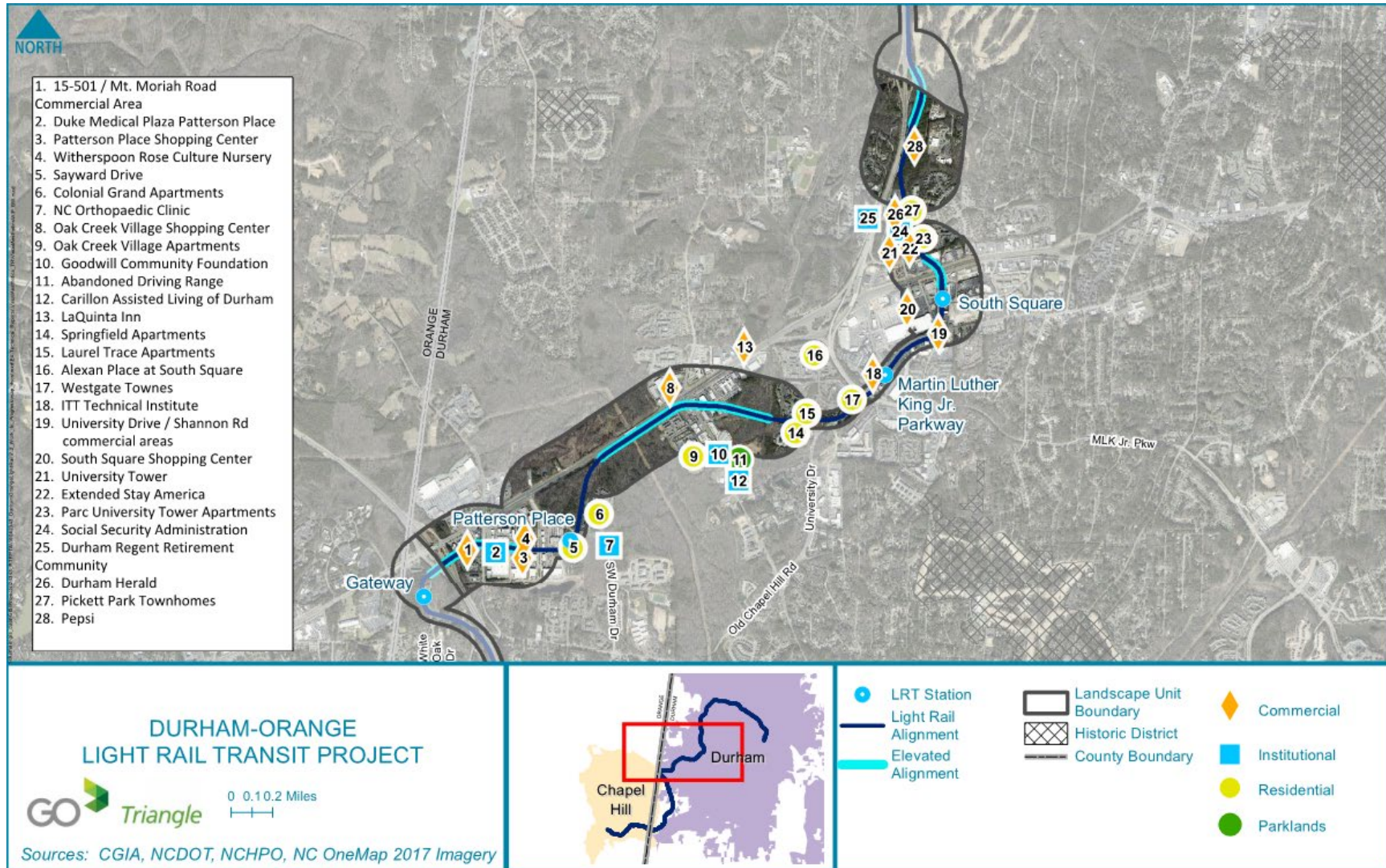


Figure 5-10: Landscape Unit #5

5.5.2 Impacts Assessment

The Proposed Refinements in this landscape unit include shifting the platform locations and improving pedestrian access at three stations: Patterson Place, Martin Luther King Jr. Parkway, and South Square stations. The Proposed Refinements also include alignment changes at other locations within this landscape unit. The following sections describe the visual impacts of the Proposed Refinements and changes to Landscape Unit #5 relative to the Previous Design.

5.5.2.1 Patterson Place Station

The Proposed Refinements would shift the Patterson Place Station platform and the associated track alignment across SW Durham Drive (to the northeast side), which would improve access and visibility of the station. In addition, the Sayward Drive and SW Durham Parkway intersection has been shifted east to avoid a rail crossing conflict, and MacFarland Road has been modified to connect with SW Durham Parkway, via Sayward Drive. The revised alignment would concentrate any future development away from New Hope Creek. The station and roadway modifications would require three more residential acquisitions than the Previous Design. The degree of visual change would remain similar to the Previous Design; views would remain as a retail commercial corridor to the west of Patterson Place Station and a forested area to the east. The forested area to the east would remain intact and provide vegetative screening to residences in the vicinity.

To the north of Patterson Place Station and north of Southwest Durham Drive, the alignment shifts east and closer to the residential complex; however, the wooded area between the alignment and the residential complex would continue to provide screening of the light rail. Also in this segment, the light rail would operate on a single-track alignment, which would reduce the project footprint relative to the Previous Design, but would not change the visual impact to the residential complex. A design refinement along the elevated section between Patterson Place Station and Martin Luther King Jr. Parkway Station would result in the acquisition of two additional commercial properties on Garrett Road, a tile store and a warehouse.

5.5.2.2 Martin Luther King Jr. Parkway Station Track and Station Relocation

The Proposed Refinements would move the Martin Luther King Jr. Parkway Station from the median to the south side of University Drive, which would require realignment of the light rail track in this area. The track was realigned from the median to the shoulder on the north side of University Drive between Snow Crest Trail and Martin Luther King Jr. Parkway, with an at-grade crossing on a diagonal through the intersection of Martin Luther King Jr. Parkway. As the Proposed Refinements would involve side-running track, they result in substantially less roadway reconstruction and avoid widening University Drive. The shift in alignment and change in location of the Martin Luther King Jr. Parkway Station, and reconfiguration of the park-and-ride lot, would result in the displacement of one multifamily residential building and the acquisition of a commercial building, two banks, and a vacant NCDOT parcel.

The Proposed Refinements also include changes to pedestrian facilities and a new sidewalk to improve access to the station and along adjacent roads. A new sidewalk would be added along the west side of Larchmont Road between University Drive and Gatehouse Lane, connecting the residential neighborhood to the proposed station.

As the light rail alignment turns northward along University Drive, the Proposed Refinements would clear more of the wooded area adjacent to the Snow Crest Trail residential complex; however, a wooded buffer

area would continue to provide screening for the light rail alignment. The proposed multi-use path along Larchmont Drive would be compatible with the existing road and sidewalk of the neighborhood.

With the Proposed Refinements, the light rail alignment would eliminate widening of University Drive along the west side. The alignment would continue to follow the same roadway corridors, and the visual changes would remain similar to the Previous Design. The views along the alignment south of Martin Luther King Jr. Parkway would continue to be lined with wooded areas, and views of the retail commercial corridor to the north of Martin Luther King Jr. Parkway would remain similar to the Previous Design.

5.5.2.3 South Square Station

The Proposed Refinements would shift the location of the South Square Station platform, improve pedestrian access to the station and platforms, and add spaces to the park-and-ride facility. There would be no changes in visual impacts near the South Square Station. The Proposed Refinements revise the at-grade crossing through the intersection of University Drive and Shannon Road to an underpass. The proposed South Square Station was lowered from an elevated station to ground level and shifted approximately 230 feet to the south to accommodate pedestrian connections. Sidewalk and other pedestrian access improvements were added to the station design, and the park-and-ride parking lot design was expanded from 250 spaces to approximately 600 spaces.

The South Square Station park-and-ride area has been added as a proposed refinement to accommodate future development in the station area, which would require three additional acquisitions of commercial properties. The track alignment and station infrastructure modifications of the Proposed Refinements would still fall within the same industrial and commercial corridor as the Previous Design and would result in similar visual changes as the Previous Design. No new impacts to visual resources in the vicinity would occur.

5.5.2.4 Conifer Glen Lane

The Proposed Refinements at this location would remove the previously proposed elevated structure crossing over Conifer Glen Lane. The alignment would be returned to ground level north of the US 15-501 crossing and remain at ground level through the Parc at University Tower Apartments. Conifer Glen Lane would be closed at Tower Boulevard, and a new access road to Pickett Road would be constructed for the Parc at University Tower Apartments.

Similar to the Previous Design, the new light rail would be visible to residents, particularly in the Parc at University Tower apartment buildings. However, the track would be at ground level instead of elevated in this area and may not be seen from as far away as the Previous Design. The new entrance to the Parc at University Tower from Pickett Road would be landscaped with trees and shrubs, similar to the existing entrance to US 15-501. The track alignment of the Proposed Refinements would result in similar visual changes as the Previous Design.

5.5.2.5 Western Bypass

The Proposed Refinements would shift the rail alignment to the east, away from US 15-501 and east of the Western Bypass. The elevated section over W. Cornwallis Road is retained. The Proposed Refinements would clear a wooded area for the alignment shift to the east similar to the Previous Design; however, the wooded area would continue to provide screening of the light rail from adjacent areas. The track alignment of the Proposed Refinements would result in similar visual changes as the Previous Design.

5.5.2.6 Summary of Visual Changes

Table 5-10 shows visual changes to Landscape Unit #5 from the Previous Design and Proposed Refinements. Overall, the Proposed Refinements would result in no changes to the visual impacts on Landscape Unit #5 - Suburban Commercial (US 15-501 Corridor) relative to the Previous Design.

Table 5-10: Visual Impacts – Landscape Unit #5

Viewer Response		Visual Change		
Viewers	Viewers' Response	Visual Elements	Degree of Change for Visual Elements – Previous Design	Degree of Change for Visual Elements – Proposed Refinements
Residents- Single-family and multi-family housing	High	Transit Infrastructure	Substantial	Substantial
Business owners	High	Elevation	Substantial	Substantial
Nature enthusiasts and hikers (New Hope Creek)	High	Displacement of structures	Minor	Moderate
Shoppers	Moderate	Parking area/structure	Minor	Minor
Office Workers/ students	Moderate	View Disruption	Moderate	Moderate
Motorists	Low	Removal of existing screens to residential uses	Minor	Minor
Transit riders	Low	Visual changes to parklands	Minor	Minor
		Blocks scenic features	Moderate	Moderate
		Changes to streetscape	Substantial	Substantial
		Removal of vegetation	Substantial	Substantial
		Visual change to historic resources	N/A	N/A
		New night lighting	Moderate	Moderate

Viewer Response: Moderate + Visual Changes: Moderate to Substantial = Visual Impacts: Moderate to High

5.6 Landscape Unit #6: Recreational (Duke West Campus)

5.6.1 Existing Conditions and Viewers

The visual character of this unit consists of a recreational landscape; it parallels US 15-501 from W. Cornwallis Road to Cameron Boulevard before crossing Duke University property to Erwin Road. The visual character of this unit is characterized by the US 15-501 highway and its right-of-way, the surrounding Duke Forest, and Washington Duke Golf Course. Wooded areas block views of other nearby resources. A summary of existing conditions for Landscape Unit #6 is provided in **Table 5-11**; visual resources are shown on **Figure 5-11**.

Table 5-11: Landscape Unit #6 – Recreational (Duke West Campus) Existing Visual Conditions

Visual Character	Visual Resources
Highway right-of-way with wooded buffer and adjacent recreational areas (golf course, cross country trails, and forest) <i>Vividness: Moderate</i> <i>Intactness: Moderate</i> <i>Unity: High</i> Visual quality: Moderate	Al Buehler Cross Country Trail* US 15-501 highway Washington Duke Golf Course* Duke Forest* Duke Lemur Center

* Visually sensitive resource

5.6.2 Impacts Assessment

Visual changes would be similar to those identified in NEPA documentation of the Previous Design and would include the introduction of light rail infrastructure. The following sections describe the visual impacts of the Proposed Refinements and changes to Landscape Unit #6 relative to the Previous Design.

5.6.2.1 Duke Golf Course Alignment

The Proposed Refinements would involve shifting the alignment on the east side of US 15-501 north of W. Cornwallis Road closer to the highway. The design modifications include relocation of the existing 30-inch water main along the east side of US 15-501 to the west side of US 15-501. A narrow clearing in the wooded area east of US 15-501 would be removed for the water line relocation; however, a wooded buffer would remain between the highway and the new water line installation. The proposed realignment reduces the amount of tree removal necessary on the east side of US 15-501. In the Previous Design, enough vegetation remained to adequately screen the light rail alignment from the Al Buehler trail and Washington Duke Golf Course; therefore, the Proposed Refinements would not affect the degree of visual changes relative to the Previous Design in this area.



Figure 5-11: Landscape Unit #6

5.6.2.2 Summary of Visual Changes

Table 5-12 shows no visual changes to Landscape Unit #6 from the Previous Design and Proposed Refinements.

Table 5-12: Visual Impacts – Landscape Unit #6

Viewer Response		Visual Change		
Viewers	Viewers' Response	Visual Elements	Degree of Change for Visual Elements – Previous Design	Degree of Change for Visual Elements – Proposed Refinements
Golf course players	High	Transit Infrastructure	Substantial	Substantial
Nature enthusiasts, hikers, and hunters	High	Elevation	Moderate	Moderate
Motorists	Low	Displacement of structures	Minor	Minor
Transit riders	Low	Parking area/structure	Minor	Minor
		View Disruption	Moderate	Moderate
		Removal of existing screens to residential uses	Minor	Minor
		Visual changes to parklands	Substantial	Substantial
		Blocks scenic features	Moderate	Moderate
		Changes to streetscape	Moderate	Moderate
		Removal of vegetation	Moderate	Moderate
		Visual change to historic resources	Minor	Minor
		New night lighting	Minor	Minor

Viewer Response: Moderate + Visual Changes: Moderate = Visual Impacts: Moderate

The Proposed Refinements would result in a moderate visual impact on Landscape Unit #6 – Recreational (Duke West Campus), which is the same as the Previous Design.

5.7 Landscape Unit #7: University (Duke West Campus and Medical Center)

5.7.1 Existing Conditions and Viewers

The visual character of this unit consists of a typical university campus setting. This University landscape unit, as with Landscape Unit #1, is characterized by a major university and medical campus and surrounding support services, including a mix of retail, restaurants, and apartments. The Duke University Medical Center, Duke Eye Care Center, and Durham Veterans Affairs (VA) Medical Center are large medical complexes that have been constructed and expanded over many years. Duke’s Central Campus is along the eastern portion of Erwin Road and includes a large surface parking lot and campus housing. The existing viewshed is urban in nature with typical building facades, sidewalks, trees, utility poles, and streetlights along the roadways. The trees, some of which are evergreens, provide natural screening between the buildings and roadways. The magnitude of the medical facilities, in particular the Duke University Medical Center and Durham VA Medical Center, and associated parking structures dominate the visual character of the unit. A summary of existing conditions for Landscape Unit #7 is provided in **Table 5-13**; visual resources are shown on **Figure 5-12**. Photographs of elements within the landscape unit are provided on **Figure 5-13** through **Figure 5-15**.

Table 5-13: Landscape Unit #7 – University (Duke West Campus & Medical Center) Existing Visual Conditions

Visual Character	Visual Resources
Blend of mixed-use development, older medical support buildings, parking decks, and surface lots, dominated by large hospital complexes <i>Vividness:</i> Moderate <i>Intactness:</i> Low <i>Unity:</i> Moderate Visual quality: Moderate	Duke University undeveloped property The Lofts at Lakeview Duke University Medical Center Duke Eye Center Durham VA Medical Center Medical support service buildings Duke University Central Campus UniHealth Post Acute Care (Erwin Gardens)

* Visually sensitive resource



Figure 5-12: Landscape Unit #7



Figure 5-13: Erwin Road near the Research Drive Intersection (Facing East; Location of Proposed Elevated Section in the Median of Erwin Road)



Figure 5-14: Erwin Road (Facing South across the Median; Location near the Proposed Elevated Duke/VA Medical Centers Station)



Figure 5-15: Typical Elevated Section

5.7.2 Impacts Assessment

The Proposed Refinements and resulting visual impacts in Landscape Unit #7 are described in following sections.

5.7.2.1 Erwin Road Elevated Alignment

With the Proposed Refinements, the rail alignment would shift from the median of Erwin Road at the intersection of Cameron Boulevard to the southeast side of Erwin Road. Just southwest of LaSalle Street, the alignment would transition from ground level to elevated structure, remain elevated and transition into the median of Erwin Road. The elevated rail structure would remain within the existing Erwin Road footprint and would be compatible with the adjacent university and medical campus and surrounding multi-story commercial and apartment buildings.

In the vicinity of LaSalle Street Station and Duke/VA Medical Centers Station, the elevated track and stations would provide new views from the hospitals and adjacent land uses, as well as for pedestrians and the motoring public. Given the existing built environmental setting, the Proposed Refinements would be consistent with the visual environment.

Pedestrian access improvements to sidewalks along Erwin Road between Cameron Boulevard and Research Drive, and from Emergency Drive to Anderson Street would be installed, including a multiuse path and new sidewalks on Pettigrew Street from Erwin Road to Swift Avenue. The elevated track segment would be located in an area that includes large multi-story buildings and parking structures in an urban setting. The alignment would shift out of the median and back to ground level at the eastern end of this landscape unit, just east of Flowers Drive on the north side of Erwin Road.

The Proposed Refinements also involve two station refinements. The LaSalle Street Station would be raised from a ground level station to an elevated station but would remain at the Erwin Road and LaSalle

Street location. The Duke/VA Medical Centers Station would be relocated from between Trent and Flowers Drive in the Previous Design to just west of Fulton Street, between the Durham VA Hospital and the Duke University Medical Center Eye Care Center. The Proposed Refinements shift the multi-use path along the alignment to the south side of the Erwin Road in a location that would minimally affect the Duke University property.

5.7.2.2 Summary of Visual Changes

Table 5-14 summarizes visual changes to Landscape Unit #7 from the Previous Design and Proposed Refinements.

Table 5-14: Visual Impacts – Landscape Unit #7

Viewer Response		Visual Change		
Viewers	Viewers' Response	Visual Elements	Degree of Change for Visual Elements – Previous Design	Degree of Change for Visual Elements – Proposed Refinements
Residents-Single-family housing	High	Transit Infrastructure	Substantial	Substantial
Business owners	High	Elevation	Minor	Moderate
University visitors, student, professors, staff	Moderate	Displacement of structures	Minor	Minor
Hospital visitors, patients staff	Moderate	Parking area/structure	Minor	Minor
Shoppers	Moderate	View Disruption	Minor	Minor
Office workers	Moderate	Removal of existing screens to residential uses	Minor	Minor
Motorists	Low	Visual changes to roadway	Minor	Minor
Transit riders	Low	Blocks scenic features	Minor	Minor
		Removal of vegetation	Minor	Minor
		Visual change to historic resources	Minor	Minor
		New night lighting	Moderate	Moderate

Bold print indicates a change between the Previous Design and Proposed Refinements.

Viewer Response: Moderate + Visual Changes: Minor = Visual Impacts: Low to Moderate

Overall, the degree of visual changes from the Proposed Refinements along Erwin Road would remain the same as with the Previous Design. The elevated structures through this segment would provide new views from the hospitals and adjacent land uses, as well as for pedestrians and the motoring public.

The elevated structures and the piers supporting the alignment and the LaSalle Street and Duke/VA Medical stations would be the largest visible elements of the transit infrastructure. The height of the

bottom of the alignment would be at least 14 1/2 feet from the surface of the roadway to accommodate large tractor-trailers and emergency vehicles. The elevated alignment plus the overhead catenary would make the highest point of the light rail system approximately 30 to 35 feet above the roadway surface. Adjacent buildings are between 4 and 9 stories (approximately 40 to 90 feet tall). The other items that add “bulk” to the alignment would be the median located stations, which would have platforms, a canopy or cover, and lighting. These elements, along with the alignment, would be visible and cast shadows depending on lighting conditions, time of day, and season. However, given the existing built environment, the proposed improvements would be visually consistent with the surrounding urban context.

5.8 Landscape Unit #8: Historic / Emerging Urban (Old West Durham/Duke East Campus)

5.8.1 Existing Conditions and Viewers

The Historic/Emerging Urban landscape unit begins at NC 147 and follows the existing railroad tracks, passing the Ninth Street historic urban retail corridor, and adjacent redevelopment projects, as well as Duke University’s East Campus. The viewshed in this unit includes a variety of uses, including commercial retail, medical, multi-family residential, historic single-family homes, large churches, and the historic Duke East Campus. Although there are a variety of uses, most of the unit makes use of complementary architectural elements, a notable exception being the modern, multi-story Erwin Square. Redevelopment, either through renovation of existing structures or through construction of new buildings, is ongoing in this unit, creating a denser, more urban character in the area. A summary of existing conditions for Landscape Unit #8 is provided in **Table 5-15**; visual resources are shown on **Figure 5-16**.

Table 5-15: Landscape Unit #8 – Historic/Emerging Urban (Old West Durham/Duke East Campus) Existing Visual Conditions

Visual Character	Visual Resources
Architecturally cohesive historic buildings and redevelopment within the Ninth Street, East Campus, and Trinity Park neighborhood areas <i>Vividness</i> - Moderate <i>Intactness</i> - Moderate <i>Unity</i> – High Visual quality: Moderate	Erwin Square West Durham Historic District* Mixed-use redevelopment Ninth Street retail and Bull City Market shopping center Churches (St. Joseph’s Episcopal Church, Blacknall Memorial Presbyterian Church) Medical facilities (Pettigrew Rehabilitation and Healthcare Center*, Hillcrest Convalescent Center*) Duke University East Campus and Historic District* Duke Center for Documentary Studies Smith Warehouse* Trinity Historic District*

* Visually sensitive resource

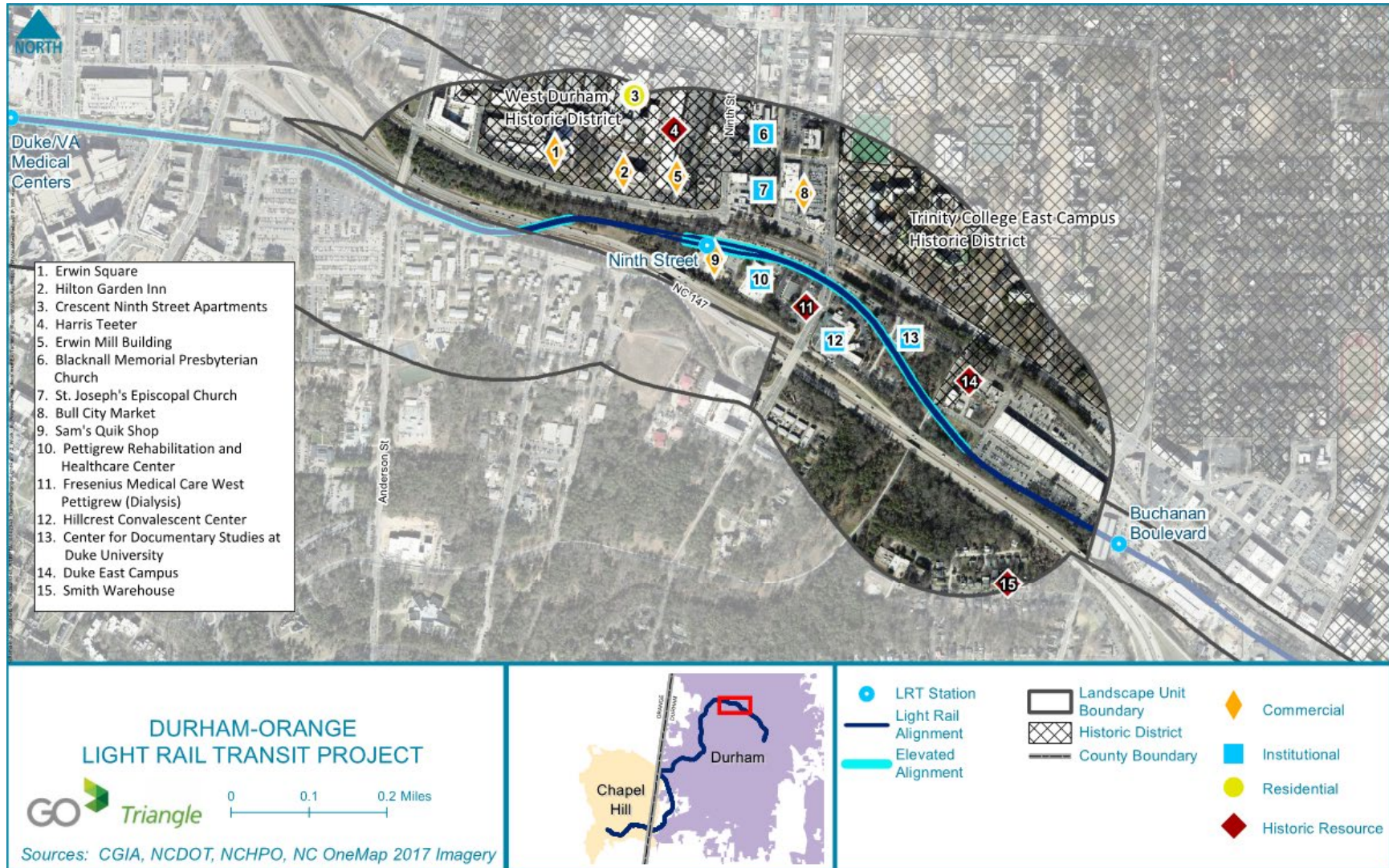


Figure 5-16: Landscape Unit #8

5.8.2 Impacts Assessment

Visual changes would be similar to those identified in NEPA documentation of the Previous Design. The Proposed Refinements and resulting visual impacts are described below by station area.

5.8.2.1 Ninth Street Station

The Proposed Refinements would shift the elevated station to the east approximately 220 feet to straddle Erwin Road, allowing direct pedestrian access from both the east and west sides of the street. The Proposed Refinements would add a new sidewalk on the south side of Pettigrew Street from Erwin Road, under the elevated light rail structure. The station would continue to be compatible with the surrounding commercial and transportation corridor, as it would be parallel to and of similar height as both NC 147 and the CSX freight rail, which are also elevated. The West Durham Historic District is west of the Ninth Street Station; however, the adjacent elevated CSX freight rail and wooded area would shield most of the views of the elevated station and light rail alignment in this area. As a result, the Proposed Refinements would have similar visual impacts as the Previous Design.

5.8.2.2 Summary of Visual Changes

Visual changes to Landscape Unit #8 are shown in **Table 5-16**.

Table 5-16: Visual Impacts – Landscape Unit #8

Viewer Response		Visual Change		
Viewers	Viewers' Response	Visual Elements	Degree of Change for Visual Elements – Previous Design	Degree of Change for Visual Elements – Proposed Refinements
Residents- Single- and multi-family housing	High	Transit Infrastructure	Substantial	Substantial
Residents and visitors in historic districts	High	Elevation	Substantial	Substantial
Business owners	High	Displacement of structures	Minor	Minor
University visitors, student, professors, staff	Moderate	Parking area	Minor	Minor
Church members	Moderate	View Disruption	Moderate	Moderate
Hospital visitors, patients staff	Moderate	Removal of existing screens to residential uses	Minor	Minor
Shoppers	Moderate	Visual changes to parklands	Minor	Minor
Office workers	Moderate	Blocks scenic features	Minor	Minor
Motorists	Low	Changes to streetscape	Moderate	Moderate
Transit riders	Low	Removal of vegetation	Moderate	Moderate
		Visual change to historic resources	Minor	Minor
		New night lighting	Moderate	Moderate

Viewer Response: Moderate + Visual Changes: Moderate = Visual Impacts: Moderate

Overall, the Proposed Refinements would result in no changes to the visual impacts on Landscape Unit #8 –Old West Durham/Duke East Campus relative to the Previous Design.

5.9 Landscape Unit #9: Downtown Urban (Downtown Durham)

5.9.1 Existing Conditions and Viewers

The visual character of this unit includes the historic portion of downtown Durham that developed around the railroad tracks. The unit is a mixture of historic commercial buildings, renovated tobacco warehouses,

government buildings, cultural and entertainment facilities, and transit facilities. There are retail/dining/nightlife establishments in the Brightleaf Square, American Tobacco Campus, and the historic downtown Durham districts. There are also government and institutional land uses including Durham City Hall, Durham County Courthouse, and the Durham County Jail. This landscape unit also has the highest concentration of cultural facilities including the Carolina Theater, Durham Performing Arts Center (DPAC), Durham Bulls Athletic Park, and Museum of Durham History. The visual character is typical of an urban downtown environment with a blend of contemporary buildings and historic structures. Development is dense on a grid-street plan, with large-scale complexes for government, sports, and entertainment. The visual setting includes building facades, sidewalks, trees, utility poles, greenspace, parking areas, railroad tracks, and streetlights along the existing roadways. Notable visual features are the high rise Mutual Life Building and SunTrust Tower. A summary of existing conditions for Landscape Unit #9 is provided in **Table 5-17**; visual resources are shown on **Figure 5-17**. Photographs of visual elements within the landscape unit are provided on **Figure 5-18** through **Figure 5-20**.

Table 5-17: Landscape Unit #9 – Downtown Urban (Downtown Durham) Existing Visual Conditions

Visual Character	Visual Resources
Mixture of historic commercial buildings, renovated tobacco warehouses, government buildings, cultural and entertainment facilities dense development, gridded streets, and large-scale complexes for government, sports, and entertainment	Downtown skyline Renovated tobacco warehouses (Brightleaf Square and West Village)* Duke Memorial United Methodist Church* Mutual Life Building* Durham Transit Center and Amtrak Station Downtown Durham Historic District* American Tobacco Campus* and Durham Bulls Athletic Park DPAC Durham County Justice Center
<i>Vividness</i> - High <i>Intactness</i> - Moderate <i>Unity</i> – Moderate	
Visual quality: Moderate	

* Visually sensitive resource

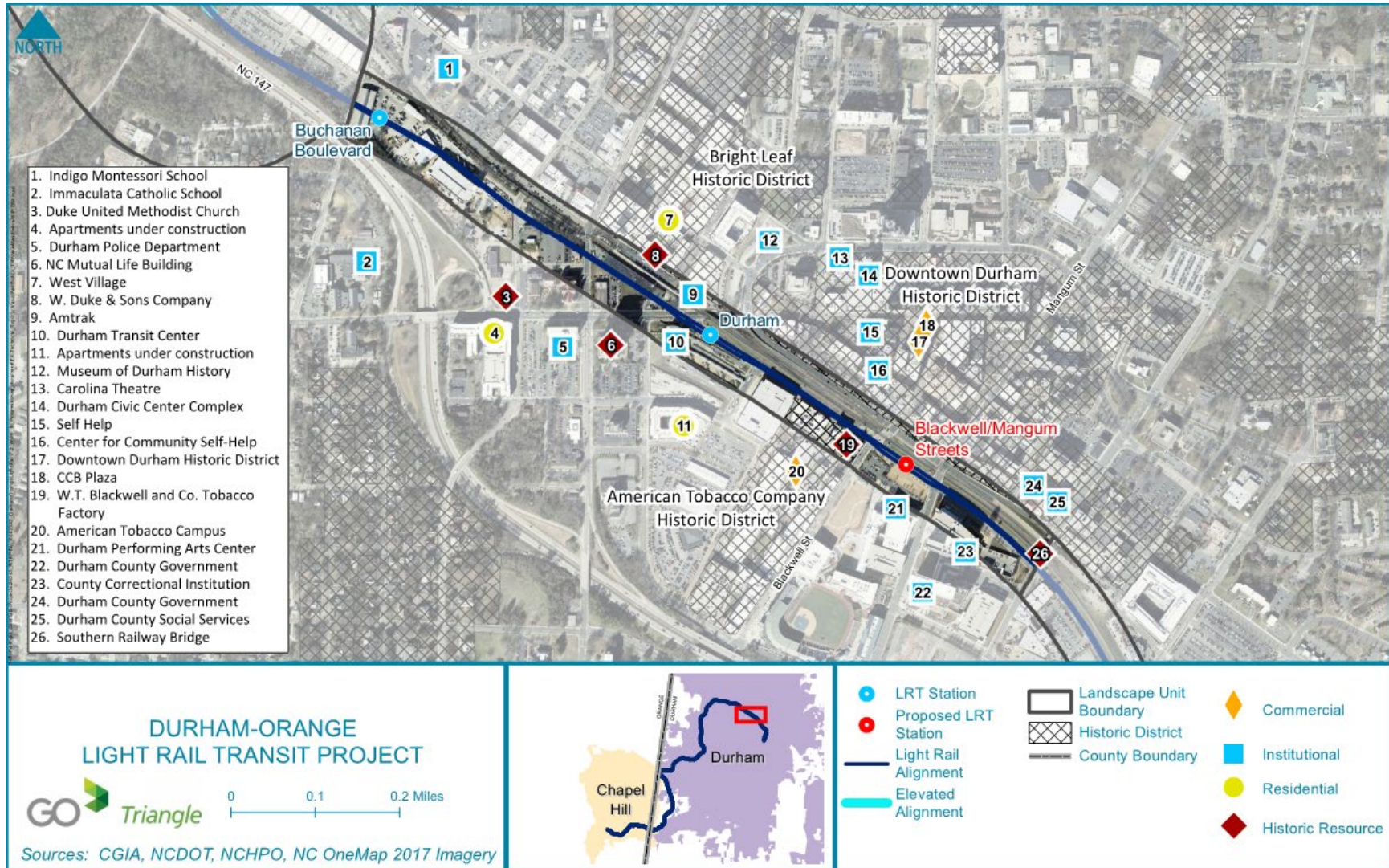


Figure 5-17: Landscape Unit #9



Figure 5-18: Downtown Durham (Facing Northeast from Pettigrew Street between Blackwell and Mangum Streets; View from the Proposed Blackwell/Mangum Streets Station)



Figure 5-19: Pettigrew Street (Facing Northwest toward Blackwell Street Intersection; View from the Proposed Blackwell/Mangum Streets Station)



Figure 5-20: Proposed Blackwell/Mangum Streets Station

5.9.2 Impacts Assessment

Visual changes would be similar to those identified in NEPA documentation of the Previous Design. The Proposed Refinements and resulting visual impacts are described below by facility or station area.

5.9.2.1 Buchanan Station

At Buchanan Station, the Proposed Refinements change the station type from a single center platform in the Previous Design to two side platforms, and shift the station to the west to directly connect to sidewalks along Buchanan Boulevard. These minor modifications to sidewalks and roadways represent minimal revisions to ground level transportation infrastructure in an urban setting. The Proposed Refinements would not change the degree of visual changes in the area relative to the Previous Design.

5.9.2.2 Durham Station

The Proposed Refinements would add a GoTriangle-owned parcel, bounded by North Carolina Railroad (NCRR) right-of-way, Duke Street, and Chapel Hill Street to accommodate future development near the station. As part of site preparation for future development, hazardous materials remediation of the site would be included. These Proposed Refinements would have the same degree of visual change as the Previous Design.

5.9.2.3 Proposed Blackwell/Mangum Streets Station and Pedestrian/Bicycle Connection

The proposed Blackwell/Mangum Streets Station would be near the DPAC located between Blackwell Street and Mangum Street. To accommodate the new center platform station, Pettigrew Street would be shifted southward approximately 10 feet toward DPAC and avoid the W. T. Blackwell Bull Durham Building (a National Historic Landmark). A new pedestrian/bicycle signature civic space would span Pettigrew Street, the light rail tracks, NCRR tracks, and Ramseur Street approximately mid-block between Blackwell

Street and Mangum Street to accommodate the Downtown Durham Trail. A multi-use path would be added on the east side of Blackwell Street from Pettigrew Street to Vivian Street and a sidewalk would be added on Pettigrew Street from Blackwell Street to Chatham Place.

Nearby, Ramseur Street would be reconfigured to permit two-way traffic operations between Blackwell Street and Dillard Street, which would accommodate separate bus operations. While the addition of the station platform, associated transit infrastructure, and the pedestrian/bicycle signature civic space would introduce a new visual impact to the area, the proposed changes would be consistent with the multi-story, urban character of downtown Durham, including the adjacent NCRRT tracks, DPAC, and Tobacco Warehouse District. GoTriangle will develop the aesthetic design of the pedestrian/bicycle signature civic space using community input through an open public process.

5.9.2.4 Summary of Visual Changes

Table 5-18 summarizes visual changes to Landscape Unit #9 from the Previous Design and Proposed Refinements.

Table 5-18: Visual Impacts – Landscape Unit #9

Viewer Response		Visual Change		
Viewers	Viewers' Response	Visual Elements	Degree of Change for Visual Elements – Previous Design	Degree of Change for Visual Elements – Proposed Refinements
Residents – single- and multi-family housing	High	Transit Infrastructure	Moderate	Substantial
Residents and visitors in historic districts	High	Elevation	Minor	Substantial
Business owners	High	Displacement of structures	Minor	Minor
Church members	Moderate	Parking area/structure	Minor	Minor
Shoppers	Moderate	View Disruption	Minor	Minor
Office workers	Moderate	Removal of existing screens to residential uses	Minor	Minor
Motorists	Low	Visual changes to parklands, trail	Minor	Substantial
Transit riders	Low	Blocks scenic features	Minor	Minor
Performing arts patrons, conference attendees, attendees at sporting events	Low	Changes to streetscape	Moderate	Substantial
Attendees at festivals	Low	Removal of vegetation	Minor	Minor
		Visual change to historic resources	Minor	Minor
		New night lighting	Minor	Moderate

Bold print indicates a change between the Previous Design and Proposed Refinements.
Viewer Response: Moderate + Visual Changes: Moderate = Visual Impacts: Moderate

The visual impact in the Downtown Urban (Downtown Durham) landscape unit would be moderate. This represents a change in visual impacts from the effects disclosed in the NEPA documentation of the Previous Design, where visual impacts from Landscape Unit# 9 were low.

The light rail tracks would be embedded in the street and would blend in with the existing roadway surface. The proposed station would consist of a platform, ticket vending machine(s), lighting, and a canopy. Other new visual elements would include poles and wires for the overhead propulsion or catenary system, which would be approximately 18 feet above the tracks. These elements would be visible in the area; however, given the built environment of the surroundings, they would be consistent with the multi-story urban character of downtown Durham.

The Proposed Refinements would have a moderate visual impact in Landscape Unit #9 – Downtown Urban (Downtown Durham), which is higher than the low visual impact disclosed for the Previous Design.

5.10 Landscape Unit #10: Urban Industrial (East Durham)

5.10.1 Existing Conditions and Viewers

The Urban Industrial (East Durham) landscape unit is characterized by minor industrial activity, railroad infrastructure, and residential land uses that have not changed since the NEPA documentation of the Previous Design. A summary of existing conditions for Landscape Unit #10 is provided in **Table 5-19**; visual resources are shown on **Figure 5-21**. Photographs of visual elements in the landscape unit are provided on **Figure 5-22** through **Figure 5-24**.

Table 5-19: Landscape Unit #10 – Urban Industrial (East Durham) Existing Visual Conditions

Visual Character	Visual Resources
Existing railroad tracks with adjacent industrial uses and scattered residential areas	Venable Tobacco Warehouse*
<i>Vividness</i> - Moderate	Large churches (First Presbyterian Church, St. Phillips Episcopal Church, New Creation United Methodist Church)
<i>Intactness</i> - Low	Durham County Public Health Department
<i>Unity</i> – Low	Scattered residential neighborhoods*
Visual quality: Low	Industrial operations along East Pettigrew Street and Ramseur Street
	Durham Water Tower and Valve House*

* Visually sensitive resource

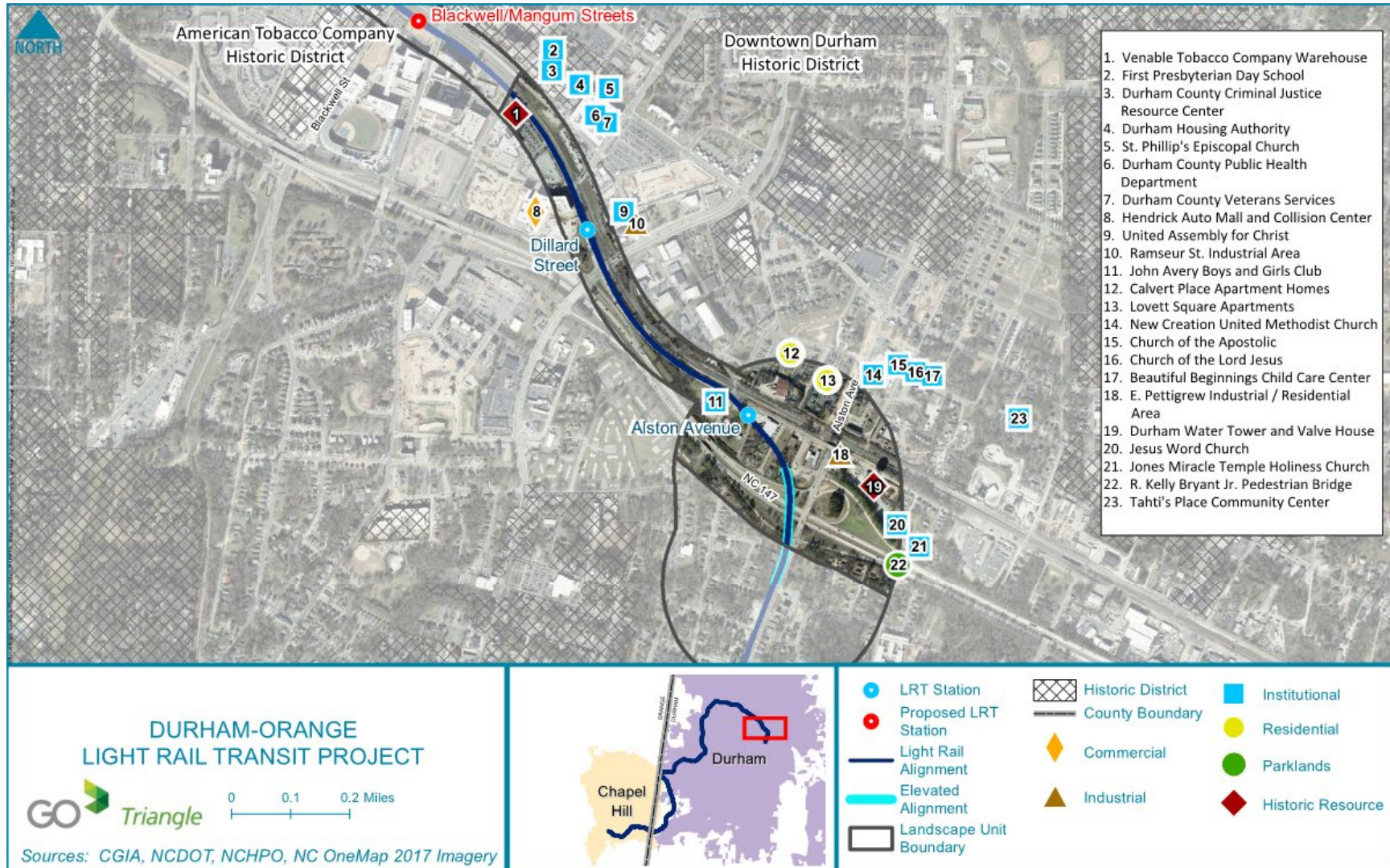


Figure 5-21: Landscape Unit #10



Figure 5-22: Pettigrew Street (Facing Northwest from near Alston Avenue)



Figure 5-23: Gillette Avenue (Facing West from Murphy Street Intersection near Proposed Alston Avenue Station and Parking)



Figure 5-24: Proposed Dillard Street Station – Sample Design

5.10.2 Impacts Assessment

The Proposed Refinements include changes to parking, roadway design around Dillard Street and Alston Avenue stations, and shifts in platform locations. The following sections describe the visual impacts of the Proposed Refinements and changes to Landscape Unit #10 relative to the Previous Design.

5.10.2.1 Dillard Street Station

The Proposed Refinements eliminate park-and-ride lots at the Dillard Street Station, reconfigure the roadway design along Pettigrew Street, shift the platform and corresponding track alignment eastward, and add a retaining wall and sidewalk along Pettigrew Street. These ground level streetscape changes would be similar to the Previous Design visual changes and would be consistent with the urban character of the urban industrial setting.

5.10.2.2 Alston Avenue Station

The Proposed Refinements would change the Alston Avenue Station parking facility from a parking structure to two surface parking lots. To enhance pedestrian routes, an existing path from Bryant Bridge to Alston Avenue just north of NC 147 would be converted to a multi-use path. The at-grade crossing of Pettigrew Street would be reconfigured, and the station platform moved closer to the intersection of Pettigrew Street and Grant Street to improve pedestrian access to the station. The park-and-ride site is added to the design to accommodate transit patrons and potential future development near the station. As part of site preparation for potential future development, hazardous materials remediation of the site would be included in the Project.

With the change from a parking structure with Previous Design to two surface parking lots with the Proposed Refinements, the impact on the historic Durham Water Tower and Valve House would be reduced from moderate to minor (see also **appendix F-2** of the Supplemental EA for the Proposed Refinements, Historic Architecture Technical Report for additional details).

5.10.2.3 Summary of Visual Changes

Table 5-20 summarizes visual changes to Landscape Unit #10 from the Previous Design and Proposed Refinements.

Table 5-20: Visual Impacts – Landscape Unit #10

Viewer Response		Visual Change		
Viewers	Viewers' Response	Visual Elements	Degree of Change for Visual Elements – Previous Design	Degree of Change for Visual Elements – Proposed Refinements
Residents – single- and multi-family housing	High	Transit Infrastructure	Moderate	Moderate
Business owners	High	Elevation	Minor	Minor
Children and teachers-school (Girls and Boys Club)	Moderate	Displacement of structures	Moderate	Substantial
Church members	Moderate	Parking area/structure	Substantial	Moderate
Motorists	Low	View Disruption	Minor	Minor
Transit riders	Low	Removal of existing screens to residential uses	Moderate	Moderate
		Visual changes to parklands	-	-
		Blocks scenic features	Minor	Minor
		Changes to streetscape	Moderate	Moderate
		Removal of vegetation	Minor	Minor
		Visual change to historic resources	Moderate	Minor
		New night lighting	Moderate	Moderate

Bold print indicates a change between the Previous Design and Proposed Refinements.

Viewer Response: Moderate + Visual Changes: Minor to Moderate = Visual Impacts: Low to Moderate

The Proposed Refinements would reduce the project footprint in this landscape unit. Design changes are consistent with existing mixed uses of industrial areas, highway and freight railroad infrastructure, and apartment buildings. The Proposed Refinements would have low to moderate visual impacts on Landscape Unit #10 - Urban Industrial (East Durham), which is a change from the moderate impact disclosed in the NEPA documentation for the Previous Design.

5.11 Landscape Unit #11: Industrial Residential

5.11.1 Existing Conditions and Viewers

The Industrial Residential landscape unit is characterized by minor industrial activity and single-family residential land uses and has not changed since the NEPA documentation for the Previous Design. This

unit abuts the NCCU Campus. The landscape unit contains single-family homes, a few small businesses, and several stand-alone places of worship. Viewers in this area include motorists and transit riders, church members, residents, business owners, and university employees and students. A summary of existing conditions for Landscape Unit #11 is provided in **Table 5-21**; visual resources are depicted on **Figure 5-25**.

Table 5-21: Landscape Unit #11 – Industrial Residential Existing Visual Conditions

Visual Character	Visual Resources
Residential area with some commercial properties. <i>Vividness</i> - Moderate <i>Intactness</i> - Low <i>Unity</i> – Low Visual quality: Low	R. Kelly Bryant Pedestrian Bridge NC 147 highway Churches (Russell Memorial Christian Methodist Episcopal Church, Oak Grove UA Free Will Baptist Church, Monument of Faith Church) Single-family and multi-family homes* NCCU Campus

* Visually sensitive resource



Figure 5-25: Landscape Unit #11

5.11.2 Impacts Assessment

The Proposed Refinements in this landscape unit include regrading and street modifications along Alston Avenue, pedestrian access improvements, and a reconfiguration of the track and station platform at NCCU Station.

5.11.2.1 Alston Avenue

The roadway modifications along Alston Avenue would require the acquisition of one vacant and six additional residential properties along Colfax Street, Grant Street, and Gillette Avenue, and a commercial property (gas station) on Alston Avenue. The design changes also require one residential acquisition on Linwood Avenue and on residential acquisition on Dupree Street. New sidewalks would be placed along the north side of Linwood Avenue between Ridgeway Avenue, along Alston Avenue, and along the south side of Lawson Street between Alston Avenue and Wabash Street. The Proposed Refinements also include sailor-brick edging aesthetic enhancements along the east side of the avenue and brick pavers between the sidewalk and back of curb along the east side of Alston Avenue from Linwood Avenue to the NC 147 eastbound on-ramp.

The roadway modifications along Alston Avenue would create minor additional visual changes to the streetscape of the neighborhood relative to the Previous Design.

5.11.2.2 NCCU Station

The Proposed Refinements at NCCU Station involve reconfiguration of the storage tracks at the end of the line, resulting in the station platform shifting closer to Lawson Street. Pedestrian access to Alston Avenue is included in the Proposed Refinements. These minor adjustments would not change the degree of visual change relative to the Previous Design.

5.11.3 Summary of Visual Changes

Table 5-22 summarizes visual changes to Landscape Unit #11 from the Previous Design and Proposed Refinements.

Table 5-22: Visual Impacts – Landscape Unit #11

Viewer Response		Visual Change		
Viewers	Viewers' Response	Visual Elements	Degree of Change for Visual Elements – Previous Design	Degree of Change for Visual Elements – Proposed Refinements
Residents – single- and multi-family housing, business owners	High	Transit Infrastructure	Substantial	Substantial
University visitors, student, professors, staff	Moderate	Elevation	Substantial	Substantial
Church members, children, teachers, parents at F. Howard Alston Russell Mem. Child Dev. Center	Moderate	Displacement of structures	Substantial	Substantial
Motorists	Low	Parking area/structure	Substantial	Substantial
Transit riders	Low	View Disruption	Moderate	Moderate
		Removal of existing screens to residential uses	Minor	Minor
		Visual changes to parklands	Minor	Minor
		Blocks scenic features	Minor	Minor
		Changes to streetscape	Substantial	Substantial
		Removal of vegetation	Minor	Minor
		Visual change to historic resources	Minor	Minor
		New night lighting	Moderate	Moderate

Viewer Response: Moderate + Visual Changes: Moderate = Visual Impacts: Moderate

The Proposed Refinements would continue to result in moderate visual effects on Landscape Unit #11, similar to the Previous Design.

6. Mitigation

GoTriangle will implement some or all of the following mitigation measures for the affected areas identified in the previous sections:

- Using interdisciplinary design teams to create aesthetic guidelines and standards for use in the design of all project elements;
- Integrating project facilities with area development and redevelopment plans;

- Minimizing clearing for construction and operation;
- Planting appropriate vegetation in and adjoining the project right-of-way;
- Replanting remainder or remnant parcels;
- Using source shielding in exterior lighting at stations, park-and-ride lots, the ROMF, and auxiliary facilities; and
- Incorporating aesthetic measures into design of project.

The following are recommendations to reduce visual impacts associated with temporary construction activities.

- Stabilize and vegetate construction areas as quickly as possible so that sediment and erosion control devices can be removed.
- Locate staging areas in the least visible sensitive project areas. When feasible locate these facilities out of view of residents, businesses or any potential viewer. Implement height limits for staged materials or excavated soil so that they are less visible.
- Lighting should be directed toward the interior of the construction areas or shielded to minimize light pollution into adjacent properties.
- Screen construction activities whenever feasible.

For site-specific potential visual impacts, GoTriangle will continue to coordinate with affected residents, businesses, and community facilities to identify strategies to minimize the effects of the project.