US 74 (Independence Boulevard) Improvements

From West of Idlewild Road to I-485 (Charlotte Outer Loop) in Charlotte and Matthews

Mecklenburg County, North Carolina

Federal Aid Project No. NHS-74(70)

NCDOT STIP Project No. U-2509

WBS No. 38965.1.1

Administrative Action

Environmental Assessment

Submitted Pursuant to the National Environmental Policy Act 42 U.S.C 4332(2)(c)

By the

United Stated Department of Transportation, Federal Highway Administration;

North Carolina Department of Transportation

1/6/2020

DocuSigned by:
Clarence W. Coleman, Jr.
6BD9E254A36D46A...

Date of Approval

For John F. Sullivan, III, PE

Division Administrator

Federal Highway Administration

1/2/2020

DocuSigned by:
Derrick Weaver
047D90B49865400...

Date of Approval

Derrick Weaver, PE

Environmental Policy Unit Head

North Carolina Department of Transportation

The following persons may be contacted for additional information concerning this document:

Mr. John F. Sullivan, III, PE
Division Administrator
Federal Highway Administration
310 New Bern Avenue, Suite 410
Raleigh, NC 27601
(919) 856-4346

Mr. Derrick Weaver, PE
Environmental Policy Unit
NC Department of Transportation
1000 Birch Ridge Drive
Raleigh, NC 27610
(919) 707-6253

Ms. Laura Sutton, PE
Project Management Team Lead
NC Department of Transportation
1000 Birch Ridge Drive
Raleigh, NC 27610
(919) 707-6030

Comments must be received by Laura Sutton, PE, Team Lead, Project Management Unit, NC Department of Transportation, 1595 Mail Service Center Raleigh NC 27669-1595 by January 31, 2020.

US 74 (Independence Boulevard) Improvements

From West of Idlewild Road to I-485 (Charlotte Outer Loop) in Charlotte and Matthews

Mecklenburg County, North Carolina

Federal Aid Project No. NHS-74(70)

NCDOT STIP Project No. U-2509

WBS No. 38965.1.1

Administrative Action

Environmental Assessment

Documentation prepared by:

VHB Engineering NC, P.C.

Raleigh, NC

NORTH CAROLINA PROFESSIONAL SEAL 14118 ENGINEER KEITH D. LEWIS

1/2/2020
Date

DocuSigned by:
Keith Lewis
3045EE0584B8461...

Keith D. Lewis, PE
Project Manager
VHB Engineering NC, P.C.

12/31/2019
Date

DocuSigned by:
Don Brown
BC33CBAC7C04447...

Donald Brown, III, AICP
Deputy Project Manager
VHB Engineering NC, P.C.

Documentation prepared for:

North Carolina Department of Transportation

1/2/2020
Date

DocuSigned by:
Laura C. Sutton
AE35E3E6727640E...

Laura E. Sutton, PE
Project Management Unit Team Lead – Divisions 7, 9, 10
tation

1/2/2020
Date

DocuSigned by:
D.W. Stroud
F7BC0DE327DC438...

Wilson Stroud
Project Manager
North Carolina Department of Transportation

PROJECT COMMITMENTS

U.S. 74 (Independence Boulevard) Improvements from West of Idlewild Road to I-485 (Charlotte Outer Loop) in Charlotte and Matthews

Mecklenburg County
WBS 38965.1.1
STIP Project No. U-2509

The following special commitments have been agreed to by NCDOT:

City of Charlotte, Town of Matthews, and Mecklenburg County/NCDOT Local Programs Office

- All three jurisdictions will complete municipal agreements prior to construction and contribute their cost share portions of the funds for the requested inclusion of bicycle and pedestrian accommodations in the project.

NCDOT Division 10

- At the request of the City of Charlotte and the Town of Matthews, NCDOT will provide planting strips through betterment at several locations, as well as replace/compensate for impacts to existing landscaping by project construction. Aesthetic features/landscaping will also be included in roadway designs where practicable and cost effective.
- NCDOT will attempt to avoid and minimize impacts to streams and wetlands to the greatest extent practicable; investigate potential on-site stream and wetland mitigation opportunities for the build alternative once a final decision has been rendered on the location of the preferred Independence Point Parkway option. If on site mitigation is not feasible, mitigation will be provided by North Carolina Division of Mitigation Services (NCDMS).
- This project involves construction activities on or adjacent to FEMA-regulated stream(s). Therefore, the Division shall submit sealed As-built construction plans to the Hydraulics Unit upon completion of structure construction, certifying that the drainage structure(s) and roadway embankment that are located within the 100-year floodplain were build as shown in the construction plans, both horizontally and vertically.

NCDOT Environmental Analysis Unit

- The Biological Surveys Group will conduct surveys to confirm there will be no effects to the Northern long-eared bat.
- If on-site mitigation is not feasible, mitigation will be provided by North Carolina Division of Environmental Quality Division of Mitigation Services (NCDMS) or through the use of private mitigation banks.

NCDOT Hydraulics Unit

- The Hydraulics Unit will coordinate with the NC Floodplain Mapping Program (FMP) to determine status of project with regard to applicability of NCDOT's Memorandum of Agreement, or approval of a Conditional Letter of Map Revision (CLOMR)* and subsequent final Letter of Map Revision (LOMR).
- During final design, the NCDOT Hydraulics Unit will review the arch culvert design to insure compatibility with the concrete bench design.

*If project is in Mecklenburg County, CLOMR submittals should be coordinated with Charlotte-Mecklenburg Storm Water Services.

NCDOT Geotechnical Engineering Unit, Project Management Unit

- One hundred eleven (111) sites of concern were identified as documented in the July 18, 2017 *U-2509 Phase I 2017* report. Sites of concern that will be impacted by the project will have a Phase II GeoEnvironmental Investigation performed on them and Right of Way Acquisition Recommendations will be provided prior to the right of way being acquired. Contaminated soil, underground fuel storage tanks, and ground water monitoring wells in conflict with the project will be removed prior to let or addressed in a Project Special Provision.

Merger Team

- The Merger Team will meet to decide on the LEDPA approximately three months after the signing of this Environmental Assessment.
- The Merger Team will meet to decide on the avoidance and minimization approximately three months after the signing of this Environmental Assessment.

Table of Contents

List of Tables

List of Figures

Figure No. Description **Page**

List of Acronyms

AADT	Annual Average Daily Traffic
CAFÉ	Corporate Average Fuel Economy
CATS	Charlotte Area Transit System
CCR	Community Characteristics Report
CFR	Code of Federal Regulations
CIA	Community Impact Assessment
CPCC	Central Piedmont Community College
CTP	Comprehensive Transportation Plan
BRT	Bus Rapid Transit
CAMA	Coastal Area Management Act
CDOT	Charlotte Department of Transportation
CLOMOR	Conditional Letter of Map Revision
CMSWS	Charlotte Mecklenburg Storm Water Services
CTP	Comprehensive Transportation Plan
DCIA	Direct Community Impact Area
EL	Express Lanes
ENT	Entertainment District
ESA	Endangered Species Act
EVAD	Enhanced Voluntary Agricultural District
FEMA	Federal Emergency Management Act
FHWA	Federal Highway Administration
FLUSA	Future Land Use Study Area
FONSI	Finding of No Significant Impact
HOT	High Occupancy Toll
HOV	High Occupancy Vehicle
HQW	High Quality Waters
ICE	Indirect and Cumulative Effects
LEDPA	Least Environmentally Damaging Practicable Alternative
LOMR	Letter of Map Revision
LOS	Level of Service
LUSA	Land Use Scenario Assessment

MOE	Measures of Effectiveness
MPH	Miles Per Hour
MRM	Metrolina Regional Model
MTC	Metropolitan Transit Commission
MVMT	Million Vehicle Miles Traveled
NCDMS	North Carolina Department of Environmental QualityQuality Division of Mitigation Services
NCDOT	North Carolina Department of Transportation
NCFMP	North Carolina Floodplain Mapping Program
NCGS	North Carolina General Statute
NCTA	North Carolina Turnpike Authority
NFIP	National Flood Insurance Program
NLEB	Northern long-eared bat
NCNHP	North Carolina Natural Heritage Program
NRCS	Natural Resources Conservation Service
NRTR	Natural Resources Technical Report
ORW	Outstanding Resource Waters
PDA	Probable Development Areas
PDEA	Project Development and Environmental Analysis
PMU	Project Management Unit
PNA	Primary Nursery Areas
PTI	Planning Time Index
SHPO	State Historic Preservation Office
STIP	State Transportation Improvement Program
TDM	Travel Demand Management
TSM	Transportation Systems Management
UDO	Unified Development Ordinance
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
U.S.C.	United States Code
USGS	U.S. Geological Survey
UST	Underground Storage Tanks
UT	Unnamed Tributary
VAD	Voluntary Agriculture District

1

SUMMARY OF THE PROPOSED ACTION

1.1 Project Vicinity

The Charlotte Region is growing. Charlotte (Mecklenburg County's seat) is North Carolina's largest city, with an estimated population of 842,000. Matthews, which had a 2016 estimated population of 31,495, directly abuts Charlotte to the southeast. Between 2000 and 2010, the population of Mecklenburg County has had an annualized growth rate between 2000 and 2010 of 2.8 percent.

To accommodate that growth and to keep traffic moving, the Charlotte Regional Transportation Planning Organization (CRTPO) has proposed a network of express lanes throughout the region (https://www.ncdot.gov/projects/us-74-express-lanes/Documents/AreaProjectsMap2.pdf). This includes express lanes on I-77, I-485, and US 74 (Independence Boulevard hereafter referred to as US 74). Additionally, the Monroe Expressway is a toll road providing a bypass of US 74 east of Charlotte in Union County. Figure 1-1 shows the study area for STIP project U-2509 and its location in the Charlotte Region.

1.2 Summary of Project

US 74 is a major northwest-southeast roadway in Mecklenburg County connecting Charlotte with the communities of Matthews, Mint Hill, Stallings, and Monroe. As described below in greater detail, the project would widen and upgrade US 74 with additional general purpose lanes, auxiliary lanes, express lanes in the median, and replace at-grade intersections with interchanges and overpasses. The project would also extend and connect several existing parallel collector roads along the corridor.

1.2.1 General Purpose Lanes

Currently, the roadway has two lanes (in each direction) in some locations and three lanes in others. The project would provide three general purpose lanes in each direction. Additionally, an auxiliary lane for turning, accelerating, and decelerating between interchanges would be provided in each direction.

1.2.2 Intersection Improvements

The US 74 improvements would also include the elimination of some at-grade intersections. Other changes to at-grade intersections include the elimination of existing left turns and U-turns; conversion of some intersections to right-in right-out only; and the conversion of some intersections to grade-separated interchanges. Additionally, the existing interchange at NC 51 would be redesigned to accommodate express lanes and additional general purpose lanes underneath. Table 1-1 identifies the at-grade intersections on US 74 that would be grade-separated with this project.

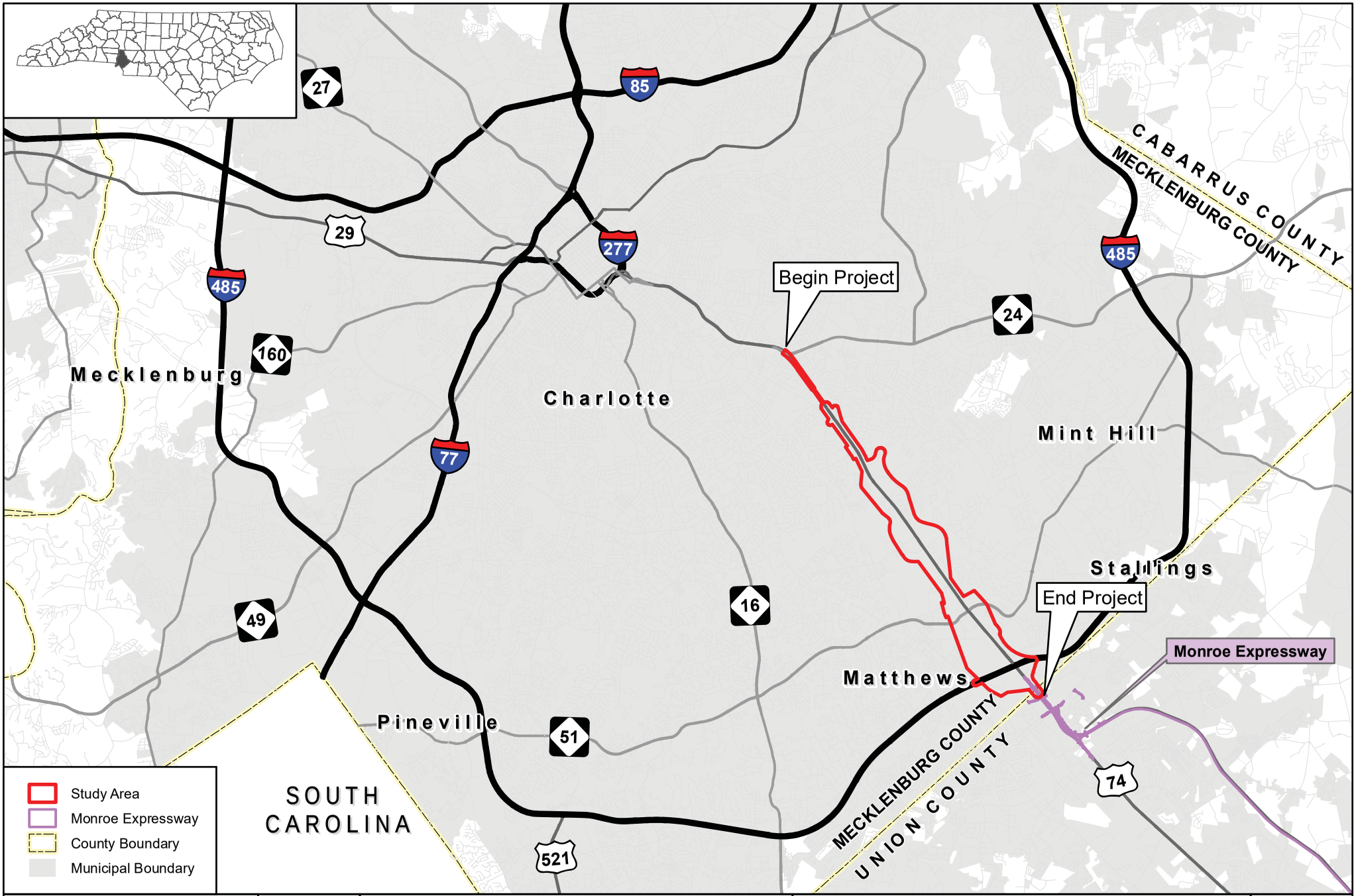


Figure 1-1

Project Vicinity Map

US 74 (Independence Boulevard) Improvements

STIP Project U-2509

Mecklenburg County

Table 1-1 Proposed US 74 Grade Separations

At-Grade Intersection	Proposed Configuration
Sharon Forest Drive	Grade-Separated Overpass with access via Wallace Road
Village Lake Drive	Grade-Separated Overpass with access via Margaret Wallace Road and Quadrant Loops on the south side
Krefeld Drive	Grade-Separated Overpass with Quadrant Loop in Northeast Quadrant
Sardis Road North	Partial Cloverleaf Interchange with direct connectors to the express lanes to and from the west
Sam Newell Road	Grade-Separated Overpass with Access to US 74 via Rice Road
Matthews-Mint Hill Road	Grade-Separated Overpass with Quadrant Loops in Northwest and Southwest Quadrants

1.2.3 Express Lanes

Express lanes are toll lanes built within an existing highway corridor. They provide additional capacity to accommodate more traffic and offer drivers the option of more reliable travel times. The project would also add express lanes to the US 74 corridor. One express lane in each direction would be added in the median of US 74 from west of Idlewild Road to I-485. The project is intended to serve as part of a larger network of express lanes offering drivers a reliable travel time option during peak demand periods. On the northwestern end of the corridor, these express lanes would connect with other planned express lanes on US 74 from I-277 to west of Idlewild Road (State Transportation Improvement Program [STIP] project U-6103). On the southeastern end of the corridor, they would directly connect with express lanes under construction as part of STIP project I-5507 along I-485 from I-77 to US 74. The Monroe Expressway, which is a toll road beginning approximately one mile east of this project, was opened for traffic on November 27, 2018. Express lanes on I-77 from I-277 (Brookshire Freeway) in Mecklenburg County to NC 150 in Iredell County are open to traffic; the northern section of the I-77 Express Lanes from Hambright Road near I-485 to NC 150 opened in June 2019 and the southern section of the I-77 Express Lanes from I-277 to Hambright Road opened in November 2019. STIP project I-5718 is under study to provide express lanes from I-277 to the South Carolina state line.

Transit vehicles, emergency responders, motorcycles, and other registered vehicles meeting the requirements to be set by the North Carolina Turnpike Authority (NCTA) will be permitted to use the express lanes free of charge. Non-registered/compliant vehicles choosing to use the lanes will be assessed a variable fee. As more vehicles enter the express lanes and travel speeds in the express lanes begin to decrease, the fee will increase to maintain a minimum speed of 45 miles per hour (mph) in the express lanes. This transportation option provides travel time reliability and improves traffic flows on the network.

Express Lanes operate using an electronic tolling system with transponders mounted on the vehicles to collect tolls from prepaid toll accounts. Video cameras capture license plates of users without transponders, who are billed by mail and pay a slightly higher rate to cover the cost of collection. There will be no toll plazas or stopping to pay tolls. Motorists will see signs noting the toll rate, they will have the option to move in to the express lane or remain in the free general purpose lanes.

Proposed express lane access points are listed in Table 1-2.

Table 1-2 Express Lane Access Points

General Location	Proposed Configuration
Sharon Amity Road[1]	Eastbound Ingress from, and Westbound Egress to, General Purpose Lanes
Conference Drive	Direct Connector Access to and from Conference Drive in Both Directions
Sardis Road North	Eastbound Direct Connector Exit to, and Westbound Direct Connector Entrance from, Sardis Road North
Sam Newell Road	Ingress/Egress in Both Directions between General Purpose Lanes and Express Lanes near Sam Newell Road
I-485	Direct Connector Access from US 74 Eastbound to I-485 Southbound; from I-485 Northbound to US 74 Westbound; and from I-485 Northbound to US 74 Eastbound

1.2.4 Parallel Collector Roads

The project would extend and connect several existing parallel collector roads along the corridor. These roads would provide improved connections for the community.

The project would be consistent with long-term planning efforts undertaken by the City of Charlotte and the Town of Matthews to reshape the focus of business activity toward the parallel collector roads and away from US 74, as seen in the visualization shown in Figure 1-2.

1.3 Project History

As stated in the 2015 Charlotte Area Transit System (CATS) *Review of Previous Studies for the Southeast Corridor Transit Study*, the need for improvements along the US 74 corridor has long been recognized as a priority among community advocates, municipal and state agencies, and politicians. As early as the 1960s, US 74 was recommended for conversion to a limited access expressway. In the 1970s and 1980s, several environmental reviews were undertaken to study the conversion of US 74 to an expressway and an expressway with high occupancy vehicle (HOV) lanes in the median. In the 1990s and early 2000s, Bus Rapid Transit (BRT) was proposed as the preferred mode of transit along the US 74 corridor (City of Charlotte, 2015).

In 1989, STIP project U-2509 was scheduled for a feasibility study in the 1990-1996 STIP. In September 1995, the 2015 Long Range Transportation Plan (LRTP) was adopted by the Charlotte Regional Transportation Planning Organization (CRTPO). The LRTP mentioned for the first time the Independence Expressway/HOV Facility along US 74 from Idlewild Road to the Eastern Loop (I-485). The project was finally funded in the 2012-2020 STIP.

In 2007, the NCDOT, Charlotte Department of Transportation (CDOT), South Carolina Department of Transportation, and other local agencies began the *Charlotte Region Fast Lanes Study*. This study examined existing and planned major highways in the region to identify areas where express lanes could help manage congestion during peak travel periods. Phase I of the *Charlotte Region Fast Lanes Study*, completed in 2008, identified five corridors for further study, including US 74 from I-277 to I-485. The

[1] The Sharon Amity locations are preliminary and subject to change based on coordination wth STIP Project U-6103.

Figure 1-2

Visualization of Project

US 74 (Independence Boulevard) Improvements
STIP Project U-2509
Mecklenburg County

Study's Phase II detailed analysis was completed in 2009; it revealed high demand for express lanes in the US 74 corridor and recommended that regional long-range transportation plan updates consider the Phase II findings.

In 2010, NCDOT completed a feasibility study for widening US 74 from Idlewild Road to I-485. This study examined several potential cross-sections to US 74.

In 2011, the Urban Land Institute completed a study of the US 74 corridor that suggested BRT or express bus service could operate in shared express lanes, rather than requiring both dedicated transit right-of-way and express lanes. Based on the results of this study, the Metropolitan Transit Commission decided not to preserve the median of US 74 exclusively for rapid transit.

In the same year, the Charlotte City Council adopted the *Independence Boulevard Area Plan*, which established a vision and guidance policies for the area's future growth and development. The 2011 *Independence Boulevard Area Plan* recommended that development should occur at key nodes with a long-term, reverse-frontage land use vision that reorients development away from Independence Boulevard. As noted in the 2015 *CATS Review of Previous Studies for the Southeast Corridor Transit Study*, key principles of the plan include the provision of transportation choices, defining the US 74 transportation vision, and balancing the needs of neighborhoods, communities, and the region. In 2012, NCDOT began a re-evaluation of the 2010 feasibility study for STIP project U-2509. The re-evaluation investigated several different cross-sections. In addition to the Independence Boulevard corridor, several crossing and parallel road improvements were also evaluated for Village Lake Drive, Margaret Wallace Road, Sam Newell Road, and Matthews-Mint Hill Road.

In 2013, Phase III of the *Charlotte Region Fast Lanes Study* was completed. Phase III included public outreach and provided a better understanding of policy and technical issues associated with express lanes. NCDOT also finalized the re-evaluation of the feasibility study for STIP project U-2509.

In 2015, NCTA completed a Level I Traffic and Revenue study for express lanes on US 74 from I-277 to Wallace Lane. The study analyzed an initial project—one reversible express lane from I-277 to Albemarle Road and two express lanes (one in each direction) from Albemarle Road to Wallace Lane—and analyzed potential access points, potential operational issues, express lane policy, costs, and revenues.

In February 2013, NCDOT began construction for the STIP project U-0209B and construction was completed in late 2017. This project involved widening and upgrading Independence Boulevard from Albemarle Road to Wallace Lane, construction of the Conference Drive overpass and Idlewild Road improvements, and the construction of one bus lane in each direction in the median of Independence Boulevard. Additionally, STIP project U-5526, which proposed to convert the bus lanes in the median of US 74 from I-277 to Wallace Lane to express lanes, was programmed for planning and environmental studies. After completion of the planning and environmental studies as well as preliminary engineering, STIP project U-5526 was superseded by STIP project U-6103, which proposes to widen and improve US 74 from I-277 to west of Idlewild Road. The proposed improvements would allow for two-way express lane operations.

Planning and environmental review for STIP project U-2509 began in 2014. Through a series of stakeholder meetings and ongoing coordination, the project evolved from the concepts analyzed in the feasibility studies to the Proposed Action analyzed in this EA.

1.3.1 Cost Estimates

Cost estimates for the proposed action are presented in Table 1-3 below.

Table 1-3 Project Cost Estimates

	Right-of-Way[1]	Utilities[1]	Construction[2]	Total Cost
Parallel Collector Roads	$77,255,000	$8,921,868	–	–
Independence Pointe Parkway – Option 1	$16,537,500	$2,225,844	–	–
Independence Pointe Parkway – Option 2	$22,537,500	$1,723,133	–	–
Independence Pointe Parkway – Option 3	$25,537,500	$1,723,133	–	–
US 74	$323,552,123	$36,889,047	–	–
TOTAL	$417,344,623-$426,344,623	$47,534,048-$48,036,759	$484,440,000	$949,821,382-$958,318,671

[1] Based on completed estimates from NCDOT-Project Management Unit on May 22, 2019.

[2] Based on estimates included in NCDOT 2020-2029 STIP; segmented project costs not available.

2

NEED FOR AND PURPOSE OF PROJECT

2.1 Need for Project

The need for this study is summarized as follows:

- Existing US 74 does not provide reliable travel time and connectivity for residents, business patrons, and commuters in southeastern Charlotte and Matthews.
- Traffic estimates indicate that US 74 will require additional capacity to achieve a goal of level of service (LOS)[2] D for users by the design year (2040).
- This project is needed to provide reliable travel time, system sustainability, and connect to a system of express lanes planned on US 74 to the northwest, I-485 to the south, and the Monroe Expressway to the southeast.

2.2 Purpose of Project

The purpose for the proposed action is to provide reliable travel time and improve mobility along the US 74 corridor, provide system sustainability, and maintain and improve connectivity across and along US 74 to, from, and between adjacent communities within the study area.

2.3 Supporting Information

2.3.1 Existing Conditions

The study area is located in both the City of Charlotte and the Town of Matthews in Mecklenburg County, North Carolina. US 74 runs southeast from uptown Charlotte toward Matthews and is a major corridor in the region. US 74 has developed over the past 50 years into a commercially dense corridor whose businesses serve the surrounding residential communities and the region. Its dual role as both a commuting corridor and a local thoroughfare has created a highly congested road during many times of the day. The existing LOS of F causes delay for commuters, residents, and business patrons traveling short distances along US 74, and residents seeking to cross from areas on one side of US 74 to the other. Because of the congested roadway, travel time along US 74 is unreliable. Figure 2-1 provides pictures of four sections of the existing road.

[2] The relationship of travel demand compared to the roadway capacity determines the level of service of a roadway. Six levels of service identify the range of possible conditions. Designations range from LOS A, which represents the best operating conditions, to LOS F, which represents the worst operating conditions.

Looking Westbound on US 74 from NC 51 Bridge

Looking Westbound on US 74 from East of Sardis Road North

Looking Westbound on US 74 from East of Windsor Square Drive

Looking Westbound on US 74 from East of Windsor Square Drive

Figure 2-1

Image of Existing Conditions

US 74 (Independence Boulevard) Improvements

STIP Project U-2509

Mecklenburg County

2.3.2 Transportation and Land Use Plans

NCDOT has identified US 74 as one of the state's 25 Strategic Transportation Corridors (Corridor U). The Strategic Transportation Corridors comprise North Carolina's core multimodal transportation network, moving people and goods across the state. These corridors play a key role in North Carolina's economic development and guide long-term planning. Therefore, NCDOT considers their maintenance (both physical condition and LOS) to be the highest priority within the framework of regional and local plans, as seen in Table 2-1.

The completion of the parallel road network (Independence Pointe Parkway and Krefeld Drive to the southwest of Independence Boulevard and Northeast Parkway and Arequipa Drive to the northeast of Independence Boulevard) could enhance travel options and access in the area and minimize negative impacts to businesses along the project corridor. Local officials within the Town of Matthews and the City of Charlotte have requested this and it is included in the Metropolitan Transportation Plan.

Table 2-1 Transportation and Land Use Plans Summary

Plan Name	Date	Brief Description
Area and Land Use Plans		
Charlotte-Mecklenburg East District Plan	Adopted 1990	The plan envisions creating a Regional Center around the Idlewild and Independence Boulevard intersection and smaller Community Centers along Independence Boulevard at the intersections of Margaret Wallace Road and Sardis Road.
Charlotte-Mecklenburg Eastland Area Plan	Adopted 2003	The plan includes recommendations for land use, community design, the transportation system, parks and greenways, community safety, and a community organization. Independence Boulevard is identified as one of the three major thoroughfares that travel through the plan area.
Charlotte-Mecklenburg Independence Boulevard Area Plan	Adopted 2011	The recommendations from this plan include three regional/transit nodes in the area (Conference Drive, Village Lake, and Sardis Road), bike facilities along Monroe Road, pedestrian accommodations along Sardis Road North/Independence Boulevard interchange, Campbell Creek Greenway overland connector, multiple overpasses for pedestrians, and crosswalks at all existing and future signalized intersections.
Town of Matthews Land Use Plan	Adopted 2012	The plan addresses long term sustainability, transit support developments, mixed use developments, and multi-modal transit. Planned improvements to Independence Boulevard identified in the plan include closing most access points along the roadway and completing construction of parallel collector roads.
Bicycle, Greenway, Pedestrian, and Park Plans		
Charlotte-Mecklenburg Greenway Plan Update	Published 2008	The plan includes expansions to the McAlpine Creek Greenway, the Campbell Creek Greenway, and a new Irvine Creek Greenway that would connect to the McAlpine Creek Greenway in McAlpine Park. There is a proposed greenway that would run under Independence Boulevard near NC 51 and along a creek near Independence Pointe Parkway and Krefeld Drive.

Table 2-1 Transportation and Land Use Plans Summary (Continued)

Plan Name	Date	Brief Description
Bicycle, Greenway, Pedestrian, and Park Plans		
Charlotte-Mecklenburg Comprehensive Park & Recreation Master Plan	Updated 2015	The recommendations from this plan include developing additional greenways, connecting existing greenways, expanding existing and developing new recreation centers, and adding core recreational programs. Multiple greenway extensions and overland collectors are planned within the vicinity of the project.
Matthews Composite Bicycle & Pedestrian Plan	Approved 2015	The recommendations from this plan include greenways, multi-use trails/paths, neighborhood signed routes, bike lanes, wide outside lanes, wide paved shoulders, and grade separated crossings designed to accommodate complete bicycle and pedestrian facilities.
Independence Boulevard Sidewalk and Bikeway Improvements Plan	Created 2016	The plan evaluated 28 possible sidewalk and bikeway improvement projects along Independence Boulevard and recommended prioritizing 4 out of the 28 projects—Independence Trail North, Briar Creek Road Connector, Eastway Drive/Wendover Road Connector, and Independence Trail South.
Charlotte BIKES Bicycle Plan	Adopted 2017	The key recommendations from this plan include creating a bike network and bike-related programming, bikeway design guidance, funding a Bicycle Program, and requires bike facilities be built on all new or reconstructed roadways.
Charlotte WALKS Pedestrian Plan	Adopted 2017	The plan aims to address back-of-curb sidewalks as redevelopment occurs, fixing the 50 percent rule sidewalk exemption, and providing more crossing opportunities on busy thoroughfares. There are currently two active projects within proximity to Independence Boulevard along Margaret Wallace Road and Sardis Road North.
Carolina Thread Trail Master Plan for Mecklenburg County	Draft May 2018	The plan includes connecting the McAlpine Creek Greenway to the Four Mile Creek Greenway along the west side of Independence Boulevard, extensions to the McAlpine Creek Greenway and the new Irvine Creek Greenway, and an overland collector along Sam Newell Road to connect the McAlpine Creek Greenway and Four Mile Creek Greenway.
Transportation Plans		
2030 Charlotte Area Transit Corridor System Plan	Adopted November 2006	The plan envisions BRT along Independence Boulevard; however, in 2011, the Metropolitan Transit Commission removed the requirement to preserve the median of Independence Boulevard for exclusive transit guideway. November 2016, the Metropolitan Transit Commission (MTC) adopted the LYNX Silver Line light rail alignment into the plan. The LYNX Silver Line runs alongside Independence Boulevard.
Matthews/Stallings Comprehensive Transportation Plan	Adopted 2013	The recommendations from this plan include widening many of the major roadways, adding bicycle facilities, expansions of sidewalks, expanding the greenway network, and improvements to local feeder transit service.

2.3.3 System Linkage/Travel Time/Access Needs

The project is intended to serve as part of a larger network of express lanes offering drivers a system of free-flowing, reliable travel lanes. STIP project U-6103 is under study to provide express lanes on US 74 from I-277 to west of Idlewild Road. The Monroe Expressway, which is a toll road beginning approximately one mile east of this project, was opened for traffic on November 27, 2018. NCDOT project STIP I-5507 is under construction to build express lanes along I-485 from I-77 to US 74. Express lanes on I-77 from I-277 (Brookshire Freeway) in Mecklenburg County to NC 150 in Iredell County are open to traffic; the northern section of the I-77 Express Lanes from Hambright Road near I-485 to NC 150 opened in June 2019 and the southern section of the I-77 Express Lanes from I-277 to Hambright Road opened in November 2019. STIP project I-5718 is under study to provide express lanes from I-277 to the South Carolina state line.

In addition to the system linkage and travel time needs there is a substantial interest along the corridor to preserve access to local businesses. Improving the reliability of the travel corridor while maintaining business access should be balanced so that travel needs are met, while economic viability of the business community can continue.

2.3.4 North Carolina Toll Policy

The North Carolina Board of Transportation adopted an NC Toll Project Development Policy on February 1, 2018 to improve NCDOT's ability to manage a reliable transportation network, address congestion, leverage limited financial resources, and provide more user choice. Under the policy, NCDOT shall "evaluate the feasibility of financing high-capacity urban and rural highway improvements through levying of tolls or managed lanes pricing options."

The policy focuses on providing candidate projects for tolls and priced managed lanes constructed within existing expressways or freeways and also upgrades existing partial control of access roadways to full access control highways, by converting at-grade intersections to grade-separated interchanges, eliminating driveway connections to the main lanes, and tolling the new capacity.

2.4 Traffic Carrying Capacity

The project's traffic simulation study, analyzed the traffic operations of the proposed roadway improvements for US 74 from North Sharon Amity Road to I-485, including (as discussed in Section 2.4.2):

- Design Year (2040) No-Build Conditions includes:
  - Both the general purpose lanes and bus lanes as-built by STIP project U-0209B and those being planned for STIP project U-6103 for US 74 from I-277 to west od Idlewild Road. Wallace Lane;
  - NCDOT's proposed U-5805 improvements at the SR 1009 (Monroe Road)/ Rama Road/ Idlewild Road intersections; and
  - STIP projects I-5507, U-4714B, and U-4913 at the eastern end of the study area.
- Design Year (2040) Build Conditions: Includes projects identified in the No-Build scenario and the proposed project.

2.4.1 Base Year (2015) Conditions

The Base Year (2015) Conditions were based on existing lane geometrics and traffic controls as they existed in December 2015, with one exception. The improvements associated with STIP project U-0209B, US 74 widening from Albemarle Road to Idlewild Road with additional dual left-overs at Sharon Forest Drive with a pedestrian z-crossing, were included in the Base Year (2015) traffic simulation model since construction was underway in 2013

and mostly completed when the model was developed. Each model was assessed and compared to others via one or more performance measures. One key measure is the planning time index (PTI), which represents how much total time a traveler should allow to ensure on-time arrival. A PTI of 1.00 would be ideal and the closer to 1.00 the better. The trip times between the endpoints along US 74 were analyzed for all scenarios during the AM and PM peak periods. Other performance measures include corridor speeds, freeway LOS, and intersection LOS.

2.4.1.1 Base Year (2015) Traffic Volumes

NCDOT used 2014 Annual Average Daily Traffic (AADT) estimates, project-specific traffic counts, traffic counts from neighboring studies, and count ratios to develop appropriate 2014 AADT volumes. A growth rate was determined based on historic growth in the area and the calculated 2014 volumes were then grown to 2015 values. To determine the volumes for the AM and PM peak hours, a calculated peak hour factor (K) and directional distribution factor (D) were applied to the AADT value.

2.4.2 Design Year (2040) No-Build Conditions

The Design Year (2040) No-Build scenario is based on the Base Year (2015) No-Build network and includes the appropriate background projects that are projected to be in place before the 2040 design year as follows:

- U-6103 Providing one express lane in each direction along US 74 from I-277 to west of Idlewild Road.
- U-5805 – Intersection improvements at the intersection of SR 1009 (Monroe Road) and Rama Road/Idlewild Road.
- I-5507 – I-485 widening and construction of express lanes from I-77 to Independence Boulevard.
- U-4717B – Widening Old Monroe Road from Overcash Road to Matthews-Mint Hill Road.
- U-4913 – Widening Idlewild Road from I-485 to Stevens Mill Road.
- MTP 199 – Widening East John Street from Trade Street to I-485.

Except for the above-mentioned projects, the 2040 No-Build scenario assumed that no capacity or geometric improvements will be made to the study corridor. Each model was assessed and compared to others via one or more performance measures with the key ones being average corridor travel time, speed differentials between adjacent lanes, queue spillback by approach, and LOS by lane group.

2.4.2.1 Design Year (2040) No-Build Traffic Volumes

The Design Year (2040) volumes were calculated by applying a growth rate to the Base Year (2015) No-Build Average Annual Daily Traffic volumes based on the Metrolina Regional Model (MRM) and the *U-5526 Traffic and Revenue Study*. No additional rerouting was applied to the Design Year (2040) No-Build volumes. The annual volumes were then used to determine the AM and PM peak hour link volumes and build the origin and destination matrices for the Design Year (2040) No-Build scenario. Table 2-2 shows a comparison of the operations under Base Year (2015) No-Build and Design Year (2040) No-Build Conditions with detailed results contained in the *U-2509 US 74 Express Lanes Traffic Operations Analysis*.

Table 2-2 Comparison of Base Year (2015) and Design Year (2040) No-Build Conditions

Measure of Effectiveness	Base Year (2015) No-Build Conditions	Design Year (2040) No-Build Conditions
PTI	• Generally ranged from 1.2 and 2.3 during the AM peak period. The exception was between Wallace lane and Krefeld Drive, which peaked at 5.3 between 8 AM and 9 AM. • During the PM peak period, US 74 ranged between 1.2 and 4.5 for most segments. • The US 74 eastbound, between Wallace Lane and Krefeld Drive, reached a high of 10.4 between 6 PM and 7 PM. • The US 74 westbound east of NC 51 reached a PTI high of 8.2.	• Ranged between 1.4 and 4.2 on the US 74 eastbound corridor during the AM peak period, with the exception of the segment between Wallace Lane and Krefeld Drive which peaked at 10.4 between 9 AM to 10 AM. • Most westbound sections of US 74 ranged from 1.2 to 3.2 during the AM peak, however the segments east of NC 51 exceeded 10.0. • During the PM peak period along US 74 eastbound, the minimum was 5.3 with most segments greater than 10.0. • The US 74 westbound PTI ranged from 1.6 to 3.7 during the PM peak period.
Corridor Speeds	• During the AM peak period, US 74 speeds generally ranged from 40 to 55 miles per hour (mph), with the exception of Wallace Lane to Krefeld Drive, which dropped as low as 14.9 mph in the eastbound direction. • During the PM peak period, US 74 speeds generally ranged from 35 to 50 mph, with the exception of between Wallace Lane to Krefeld Drive, which dropped as low as 6.2 mph in the eastbound direction.	• During the AM peak period, US 74 speeds generally ranged from 25 to 45 mph, with multiple segments operating with speeds less than 10.0 mph. • During the PM peak period, one third of the segments has speeds less than 10 mph, with the rest in the 10 to 40 mph range.
Freeway Level of Service	• All twenty-seven freeway segments operate at LOS D or better during the AM peak. • All but one freeway segment operates at LOS D or better during the PM peak.	• Thirty-two of the thirty-seven freeway segments operate at LOS D or better during the AM peak. • Eighteen of the thirty-seven freeway segments operate at LOS D or better during the PM peak.
Intersection Level of Service	• Twenty of the twenty-four signalized intersections operate at LOS D or better during the AM peak. • Fifteen of the twenty-four signalized intersections operate at LOS D or better during the PM peak.	• Eleven of the twenty-four signalized intersections operate at LOS D or better during the AM peak. • Six of the twenty-four signalized intersections operate at LOS D or better during the PM peak.

2.5 Secondary Benefits of the Project

2.5.1 Crash Analysis

VHB conducted an analysis of five-year crash data obtained from NCDOT for relevant portions of the project corridor. The total number of crashes during the five-year period from 2012 to 2017 for the four analyzed road

segments was 3,267; of these 5 crashes were fatal, 1,010 were non-fatal injury crashes, and 2,252 were property damage only crashes. Figure 2-2 highlights these locations. Table 2-2 compares the US 74 corridor to the North Carolina 2013 to 2015 statewide crash rates for US routes (defined by the number of crashes per 100 million vehicle miles traveled, or MVMT). Table 2-2 also compares segments of Matthews-Mint Road, Krefeld Drive, and Village Lake Drive to the statewide critical crash rates for Secondary Routes.

2.6 Project Funding

The September 2019 North Carolina 2020 – 2029 STIP indicates State Highway Trust Funds as the funding source for the proposed project. Current STIP estimates for the proposed project are presented in Table 2-3.

Table 2-3 Project Cost Estimates

Prior Year(s)	ROW	Utilities	Construction	Total Cost
$2,418,000	$106,480,000	$12,000,000	$484,440,000	$605,338,000

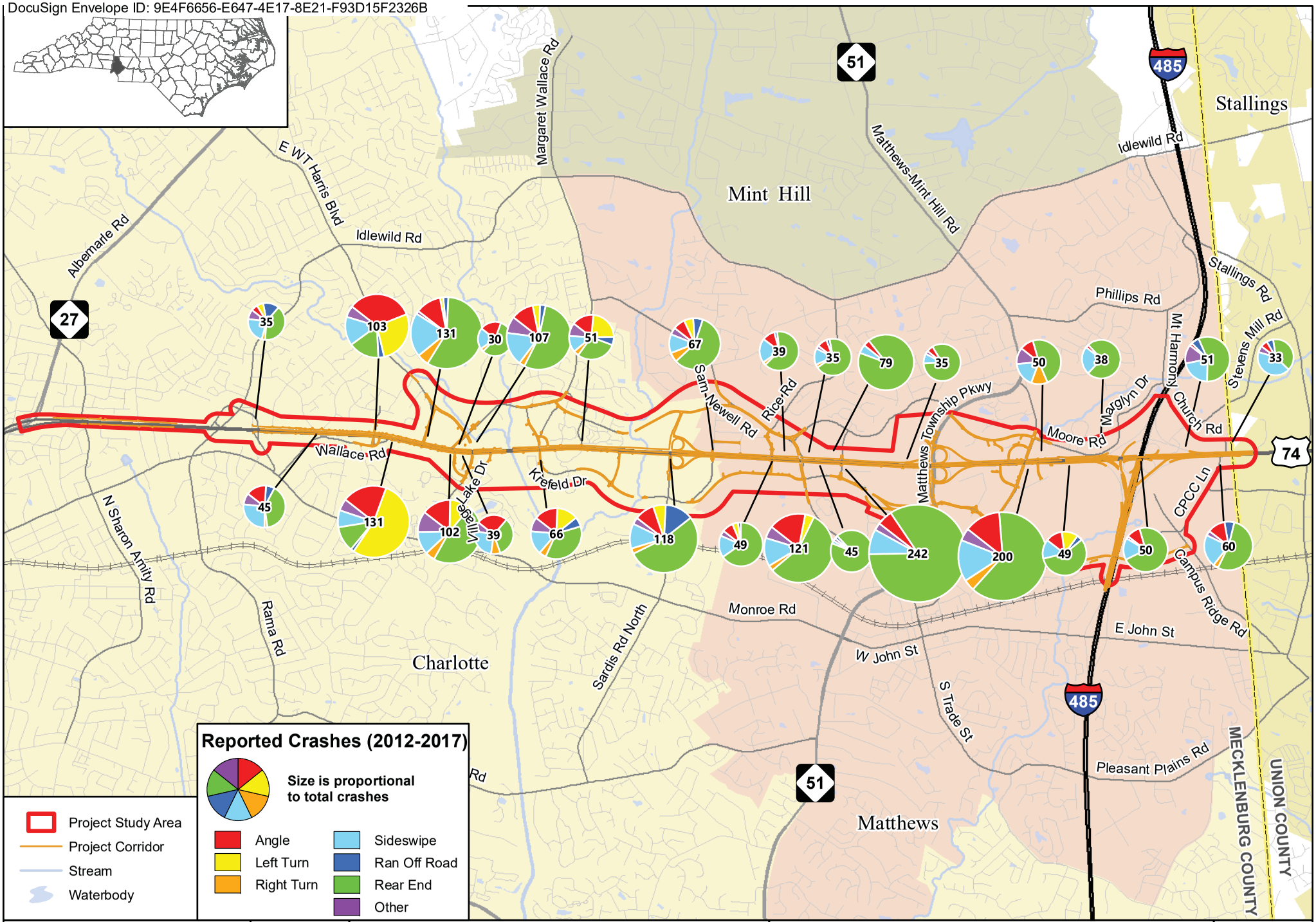


Figure 2-2
Crash Locations*
*Intersections with < 30 crashes have been omitted

US 74 (Independence Boulevard) Improvements
STIP Project U-2509
Mecklenburg County

3

ALTERNATIVES

3.1 Preliminary Study Alternatives

As the project progressed through the planning process, several preliminary study alternatives were considered prior to the 2016 selection of the Detailed Study Alternatives. In addition to the project (the build alternative), this chapter presents a summary of all other alternatives that were considered.

3.1.1 Alternative Modes of Transportation

Two alternative modes of transportation (Travel Demand Management [TDM] and mass transit) were analyzed for this project.

3.1.1.1 Travel Demand Management

TDM improvements and strategies include measures and activities that change travelers' daily behavior. A TDM alternative may include demand management strategies such as staggered work hours, flex-time, and ridesharing. However, the ability of these voluntary programs to reduce traffic volumes on particular roadways is minimal.

Although the US 74 corridor is a commuter route between Charlotte and points southeast (including Union County), the origins and destinations of the users are likely to be very scattered, making specific carpool or vanpool operations inefficient. TDM measures are not likely to reduce through capacity demand enough to reduce the projected congestion along the corridor. For this reason, the TDM alternative was eliminated from further consideration.

3.1.1.2 Mass Transit

The study area is a targeted growth corridor for the City of Charlotte, and the corridor has been identified for high-frequency, high-capacity transit service in the future. However, transit, as a sole alternative to the proposed project, is not viable because it would not be able to effectively handle projected future volumes along the US 74 corridor. The corridor was originally identified for BRT in the median of US 74. According to the *Southeast Corridor Transit Study's Review of Previous Studies* (2015), "the focus of transit investment in the corridor is no longer about 'rail or bus', but rather is centered on how a rail transit project on a new alignment can work in a complementary manner with enhanced bus services using the future managed lanes." As the MTC's policy shifted transit plans toward light rail development in the southeast corridor, STIP project U-2509 team worked closely with CATS in incorporating accommodations for future light rail during the planning and design phases of STIP project U-2509.

3.1.2 Transportation Systems Management

Transportation Systems Management (TSM) improvements involve increasing the available capacity of the facility within the existing right-of-way with minimum capital expenditures and without reconstructing the existing facility. Items such as the addition of turn lanes, striping, signing, signalization, and minor realignments are examples of TSM physical improvements. Traffic law enforcement, speed restrictions, access control, and signal timing changes are examples of TSM operational improvements. The projected future through volumes along the US 74 corridor

are too high to be effectively handled solely through TSM improvements; rather, additional through capacity is necessary. Therefore, TSM was not carried forward as a Detailed Study Alternative.

3.1.3 Preliminary Build Alternatives

The preliminary build alternatives evolved through a series of feasibility studies, local stakeholder input, and the NEPA/404 Merger Team input.

3.1.3.1 2010 Feasibility Study

As described in Section 1.2, in October 2010, NCDOT completed a Feasibility Study for a proposed widening of US 74 from I-485 to Idlewild Road. The purpose of the project was to improve the traffic safety and operations along US 74. Several different cross-sections were investigated, including 6, 8, and 10-lane divided facilities.

The purpose of this Feasibility Study, which was the initial step in the planning and design process, was to describe the proposed project, including cost, and to identify potential problems that may require consideration in the planning and design phases. The study concluded that both the 8- and 10-lane divided expressway sections with dedicated transit area would be able to accommodate the projected 2035 design year traffic volumes. The cost of those alternatives was estimated to be between $195.5 million and $227.9 million.

3.1.3.2 2011 City of Charlotte and Town of Matthews Recommendations for a New Feasibility Study

In October 2011, the MTC unanimously voted to amend the description of the Southeast Rapid Transit Corridor so that the median of US 74 should no longer be reserved exclusively for rapid transit. Based on that action and the programmed construction of the Monroe Expressway, the City of Charlotte and the Town of Matthews requested in November 2011 that NCDOT complete a new feasibility study to review:

- An exclusive six-lane or eight-lane freeway/expressway with a four-lane High Occupancy Toll (HOT) facility in the median;
- A six-lane roadway with traffic signals where the toll facility in the median would be grade-separated from the at-grade intersections; and
- A six-lane freeway with frontage roads and a four-lane HOT facility in the median.

The two municipalities also requested interchanges/grade separations at:

- Wallace Lane,
- Harris Boulevard/Village Lake Drive,
- Sardis Road North,
- Sam Newell Road,
- NC 51, and
- Matthews-Mint Hill Road.

The municipalities did not identify locations for express lane access points but suggested working with NCDOT to determine those in the preliminary design stage of project development.

3.1.3.3 2013 Feasibility Study

A re-evaluation for the proposed upgrading of US 74 from Idlewild Road to I-485 was completed in January 2013. The following cross sections were investigated:

- Six-lane divided curb and gutter expressway or freeway with buffer-separated managed lanes on variable width of right-of-way;
- Six-lane divided curb and gutter expressway or freeway with barrier-separated managed lanes on variable width right-of-way;
- Six-lane divided curb and gutter expressway with buffer-separated managed lanes and frontage roads on variable width right-of-way;
- Six-lane divided curb and gutter expressway with elevated managed lanes on 230 feet of right-of-way;
- Eight-lane divided curb and gutter expressway or freeway with buffer-separated managed lanes on variable width right-of-way; and
- Eight-lane divided curb and gutter expressway or freeway with barrier-separated managed lanes on variable width right-of-way.

The cost of the above cross sections was estimated to be between $200 million and $574.9 million. The Feasibility Study also included an additional estimated cost of $29.9 million for five parallel collector routes.

3.1.3.4 Preliminary Build Alternative Concepts Analyzed During the NEPA/404 Merger Process

During the NEPA/404 Merger Process for this project, several preliminary build alternative concepts were analyzed and discussed before the Merger Team selected the Detailed Study Alternatives to be carried forward. The preliminary concepts were developed by local stakeholders from the Town of Matthews, City of Charlotte, CRTPO, CATS, and NCDOT and were based on the 2013 Feasibility Study, the local Comprehensive Transportation Plan (CTP), the CRTPO 2045 Metropolitan Transportation Plan and other previous studies. Once the preliminary concepts were developed, they were analyzed and compared based on cross street access, commercial business access, general traffic flow on US 74, and whether a parallel road system would be required as part of a build alternative.

The preliminary concepts studied are shown in photo simulations in Figure 3-1 and included:

- Expressway with at-grade express lanes in the median and with interchanges and grade separations at the major road crossings. This concept would allow right-in and right-out access with turn lanes or auxiliary lanes.
- Freeway with at-grade express lanes in the median and with interchanges and grade separations at the major road crossings. Some service roads would be provided for access.
- Expressway with at-grade express lanes in Charlotte and arterial with elevated express lanes in Matthews. The existing signalized intersections would remain for the general purpose lanes in Matthews.
- Connections/extensions of existing parallel roads for access and connectivity.

Consensus was reached by the local stakeholders (City of Charlotte, Town of Matthews, NCDOT's Division 10 and PMU, formerly PDEA) on the project approach at a meeting on November 18, 2014. The recommended concept was an expressway (with limited segments of freeway) with at-grade express lanes in the median widening to six general purpose lanes, interchanges and grade-separations, and extensions of parallel roads. Two Merger Team meetings were held on March 19, 2015 and May 19, 2016 to develop the agreed upon Detailed Study Alternatives to be carried forward, which are described in Section 3.2 below.

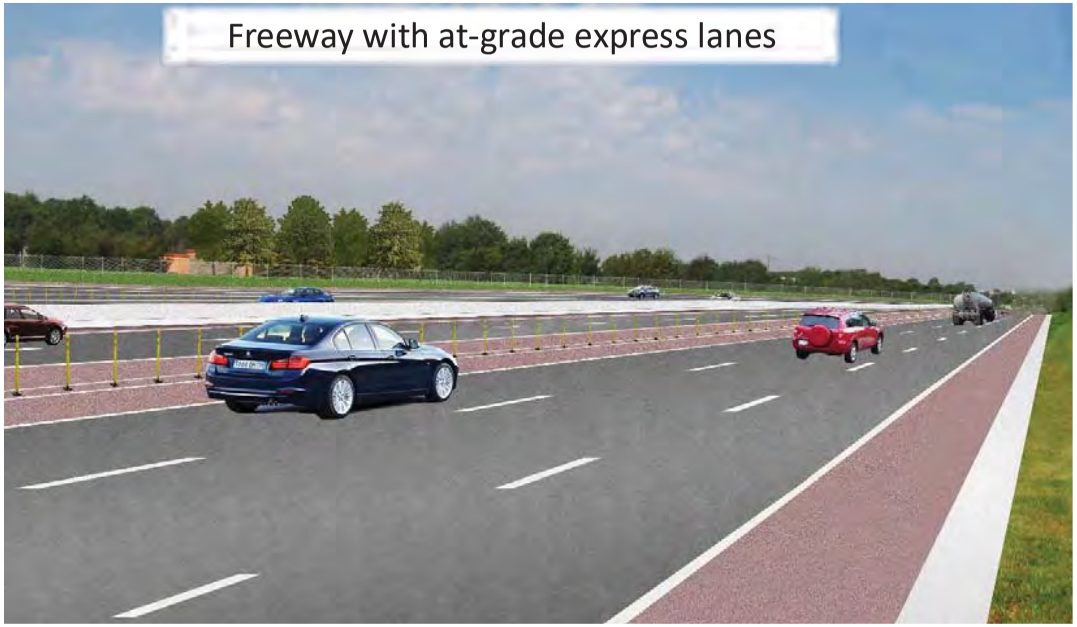


Figure 3-1

Photo Simulations of Previous Concepts

US 74 (Independence Boulevard) Improvements
STIP Project U-2509
Mecklenburg County

3.2 Detailed Study Alternatives

Two Detailed Study Alternatives are being carried forward and analyzed in this EA - a No Build Alternative and a Build Alternative. While there is one best-fit Build Alternative for the mainline improvements on US 74, three options for the Sardis Road North Interchange (Diamond Interchange, the Partial Clover, and the City Design) and three alignment options for the connection of Independence Pointe Parkway, were presented to the NEPA/404 Merger Team at the Concurrence Point 2 Meeting on May 19, 2016. The three options for the Sardis Road North interchange included a Diamond Interchange, a Partial Cloverleaf Design, and the City Design (a design submitted by the City of Charlotte). All options for the two scenarios were selected for detailed study by the Merger Team except for the Diamond Interchange design option for Sardis Road North. It was eliminated from consideration by the Merger Team because of the more extensive stream and wetlands impacts. Potential traffic operations concerns were discussed at the meeting related to the City Design. It was decided that the results of an upcoming traffic operations analysis would determine if the City Design Interchange would continue to be a viable alternative. The detailed Build Alternatives carried forward was; a Best-Fit Widening to US 74 and parallel road connections with two Sardis Road North Interchange options (a Partial Cloverleaf design and the City Design) and three alignment options for the connection of Independence Pointe Parkway.

In collaboration with the Merger Team in December 2018, the City Design for the Sardis Road North interchange was eliminated from further consideration because it did not meet traffic demand at an acceptable LOS and thus, did not meet the Purpose and Need of the project. Therefore, the Partial Cloverleaf design for the Sardis Road North interchange became the only option for the Build Alternative.

The options for the Sardis Road North interchange are described below and shown in Figure 3-2. The three options for the connection of Independence Pointe Parkway are described below and shown in Figure 3-3.

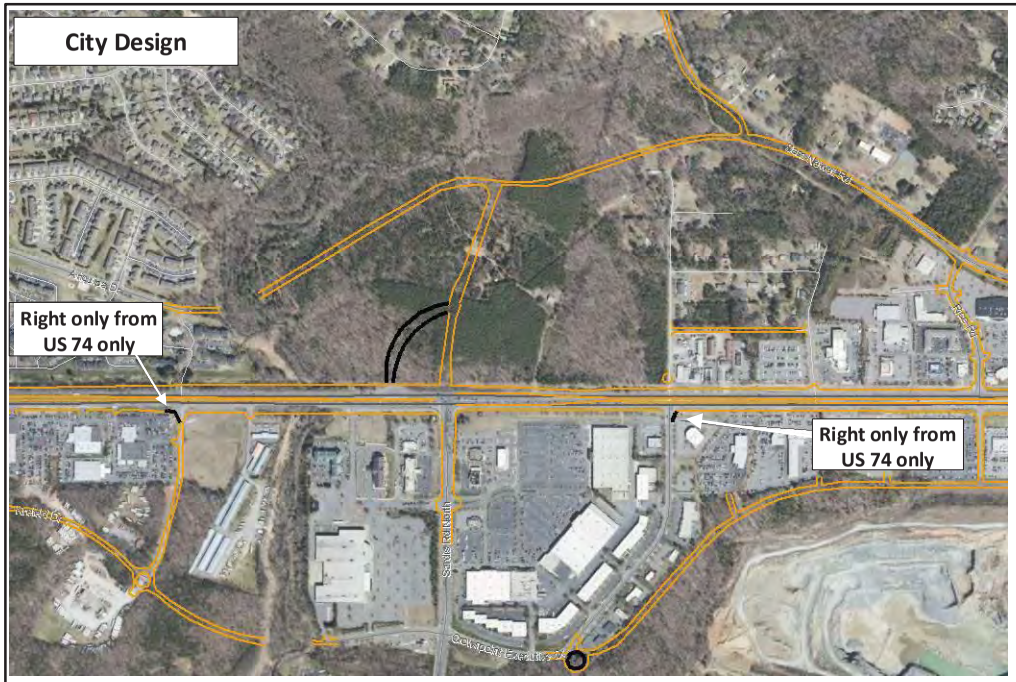
3.2.1 Build Alternative

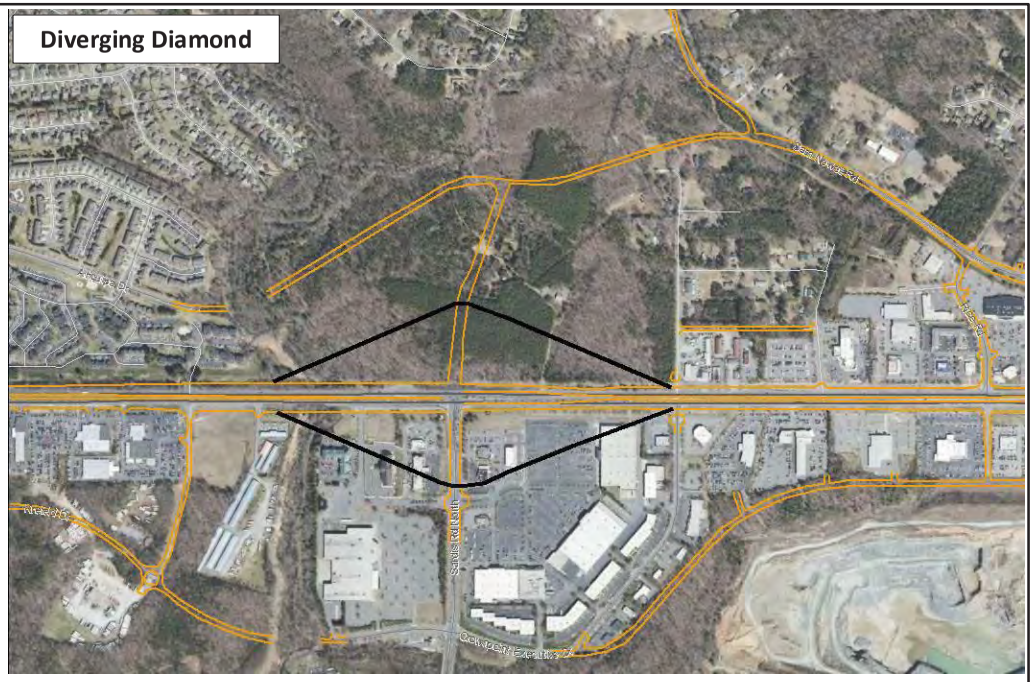
The Build Alternative includes improvements to 6.4 miles of US 74 and many secondary roads along the corridor, from west of Idlewild Road to I-485. The Build Alternative would widen and upgrade US 74 with additional general purpose lanes, an auxiliary lane in each direction, express lanes in the median, and the replacement of at-grade intersections with interchanges and overpasses. The project would also extend and connect several existing parallel collector roads along the corridor.

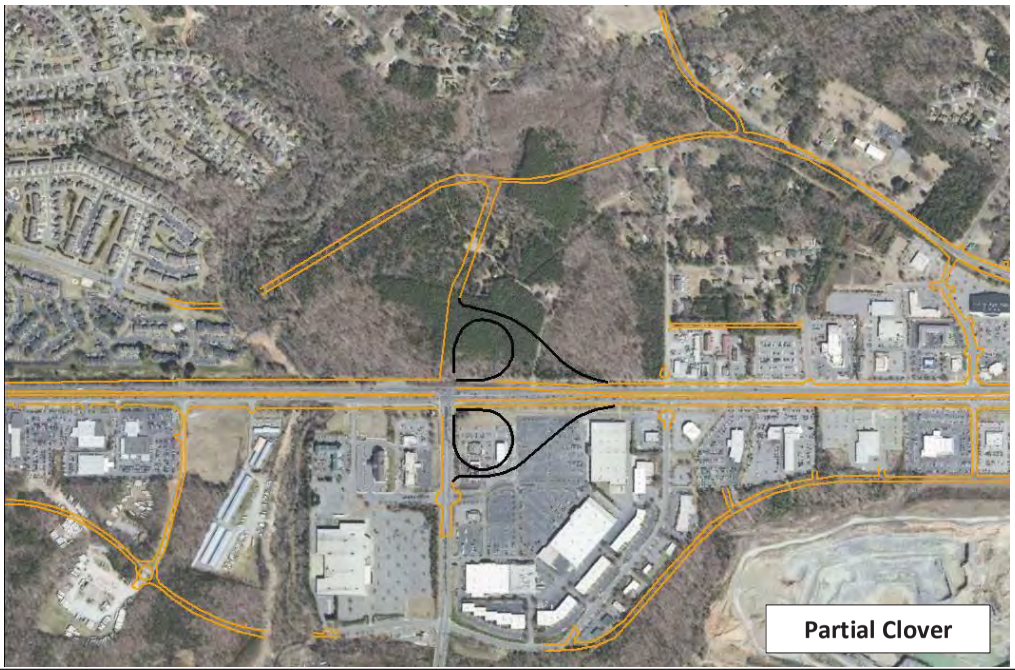
Direct connections between the proposed express lanes and a proposed I-485 Express Lane project to the south (STIP project I-5507) are included, as well as direct connections to and from the west from the proposed interchange at Sardis Road North, and in both directions at the Conference Drive interchange. The direct connections are shown on Figure 3-3.

The following parallel roads are being connected or extended to provide improved travel patterns and access (and are shown in Figure 3-3:

- Krefeld Drive Extension (Krefeld Drive to Sardis Road North);
- Arequipa Drive/Sam Newell Road/Northeast Parkway (Margaret Wallace Road to Sam Newell Road);
- Independence Pointe Parkway (Crownpoint Executive Drive to Sam Newell Road);
- Northeast Parkway (NC 51 to Matthews-Mint Hill Road);
- Independence Pointe Parkway (Windsor Square Drive to NC 51); and
- Independence Pointe Parkway (NC 51 to Campus Ridge Road).







Scale
0 0.25 0.5 1
Mile

Figure 3-2

Sardis Road North Interchange Options

US 74 (Independence Boulevard) Improvements
STIP Project U-2509
Mecklenburg County

BEGIN PROJECT U-2509

EXPRESS LANE EXIT POINT

EXPRESS LANE ENTRY POINT

MATCHLINE - 3-3B

Coronado Dr
Cedarwood Ln
Aspendale Ln
Amity Pl
Vandalia Dr
Hooper Ct
Collier Ct
Athens Pl
N Sharon Amity Rd
Kipling Dr
Keats Av
Shelley Terrace Ln
Old Lantern Wy
Whittier Pl
Farmingdale Dr
74
Eaton Rd
Charleston Dr
Yardley Pl
Glendora Dr
Ashmore Dr
Jerlyn Dr
Idlewild Rd
Long Av
Monroe Rd
Rama Rd
Unaka Av
Cwynne Av
Albright Av
Harcourt Ln
McMullen Creek
Buena Vista Av
Lantana Av

- Proposed Roadway
- Proposed Express Lanes
- Existing Roadway To Be Removed
- Proposed Structure, Islands, Retaining Walls, Barriers, Sidewalks and Multiuse Path
- Proposed Right of Way
- Existing Right of Way
- Existing Structure
- Existing Roadway
- Proposed Toll Gantry
- Express Lane Entry Point
- Express Lane Exit Point

0 150 300 600
Feet

Figure 3-3A
Detailed Study Alternatives

US 74 (Independence Boulevard) Improvements
STIP Project U-2509
Mecklenburg County

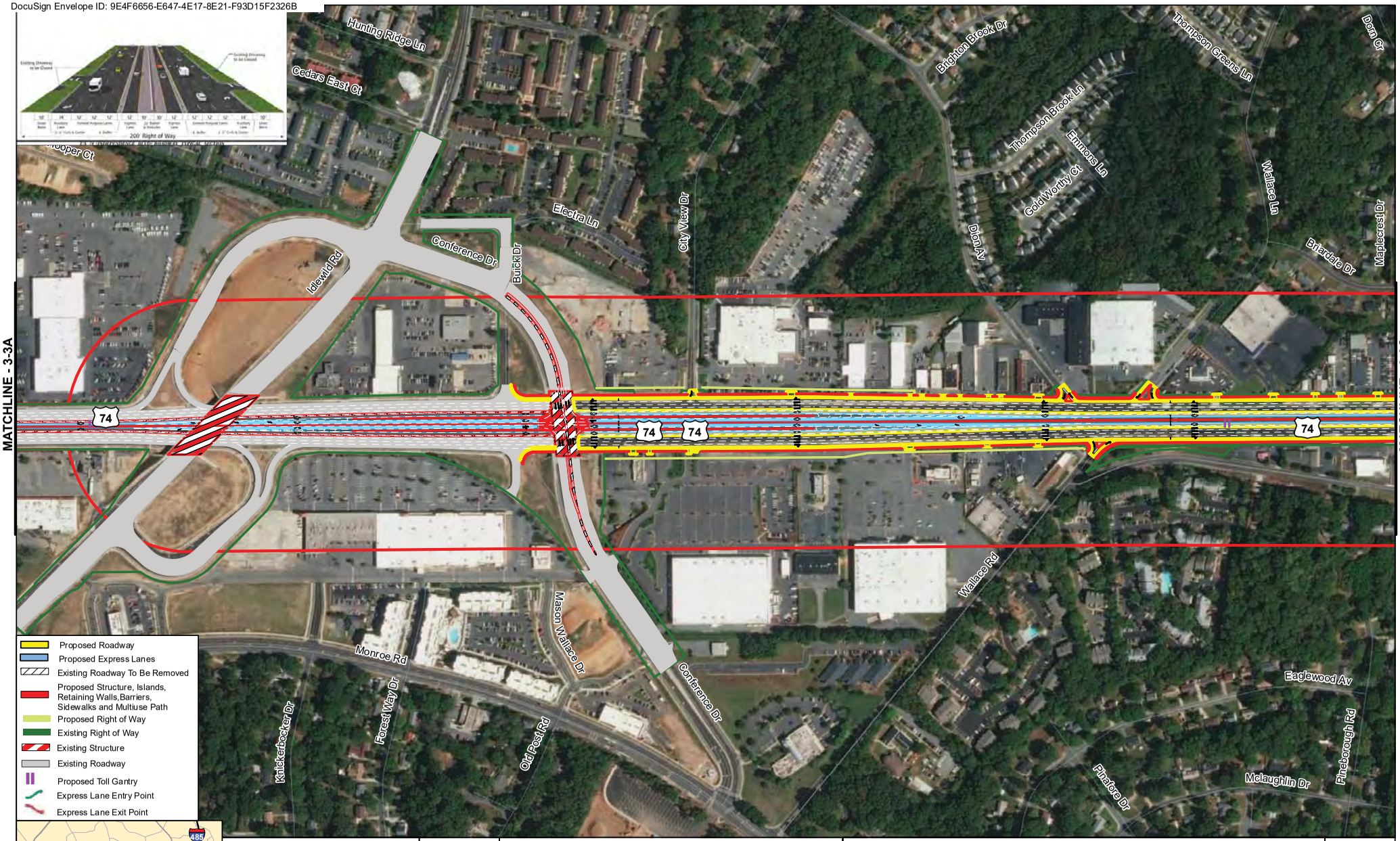


Figure 3-3B

Detailed Study Alternatives

US 74 (Independence Boulevard) Improvements

STIP Project U-2509

Mecklenburg County

Figure 3-3C

Detailed Study Alternatives

US 74 (Independence Boulevard) Improvements

STIP Project U-2509

Mecklenburg County

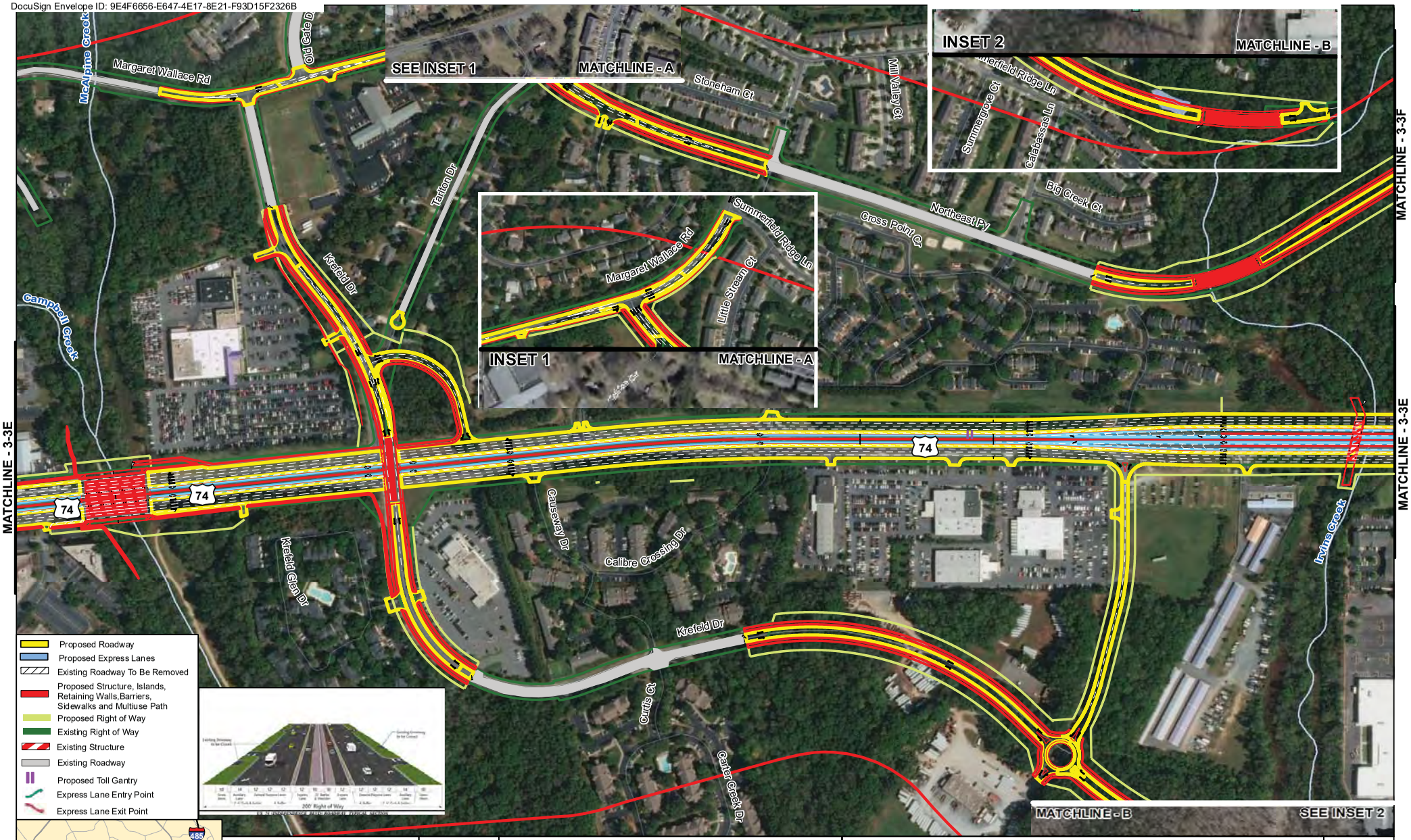


Figure 3-3D

Detailed Study Alternatives

US 74 (Independence Boulevard) Improvements

STIP Project U-2509

Mecklenburg County

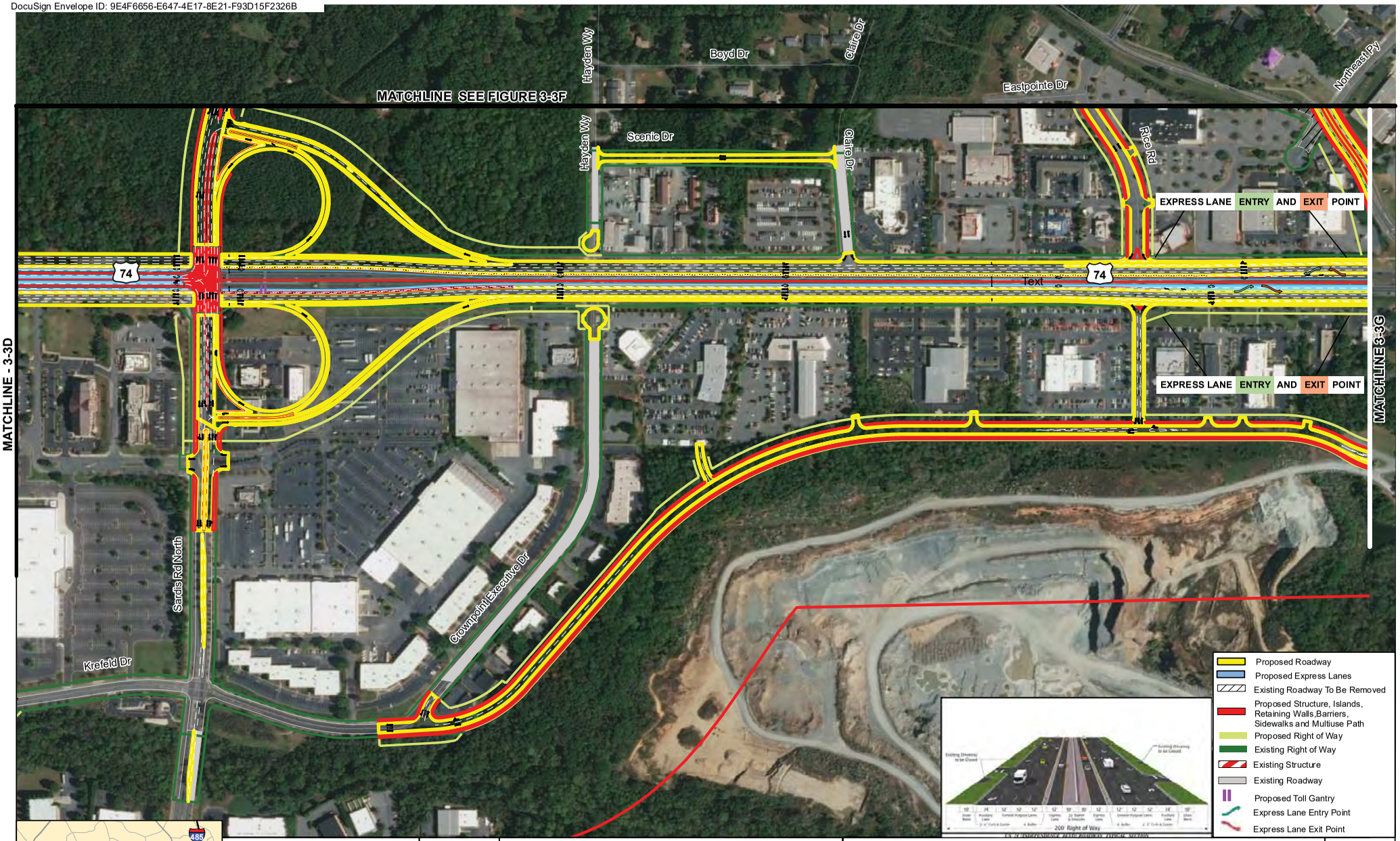


Figure 3-3E

Detailed Study Alternatives

US 74 (Independence Boulevard) Improvements

STIP Project U-2509

Mecklenburg County

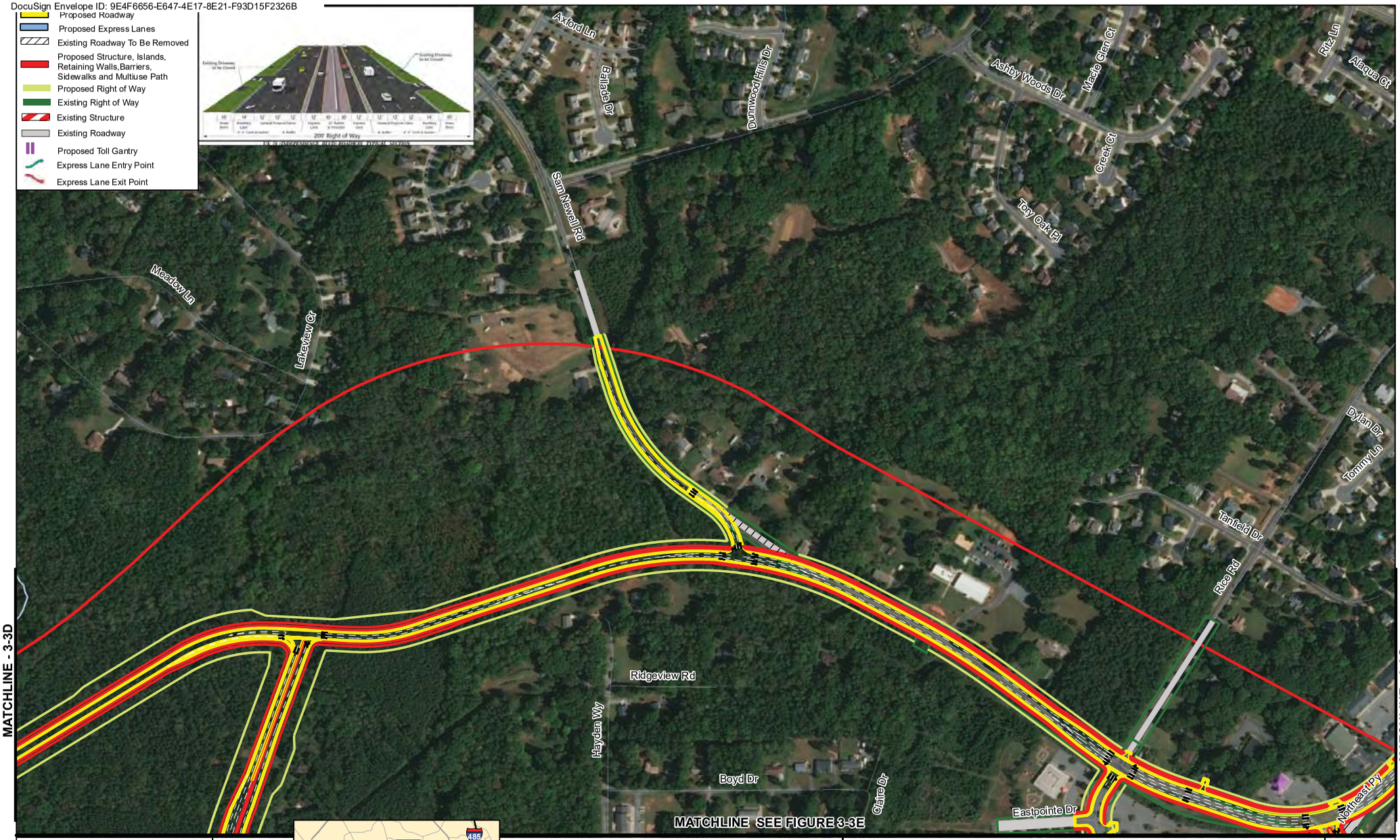


Figure 3-3F

Detailed Study Alternatives

US 74 (Independence Boulevard) Improvements

STIP Project U-2509

Mecklenburg County

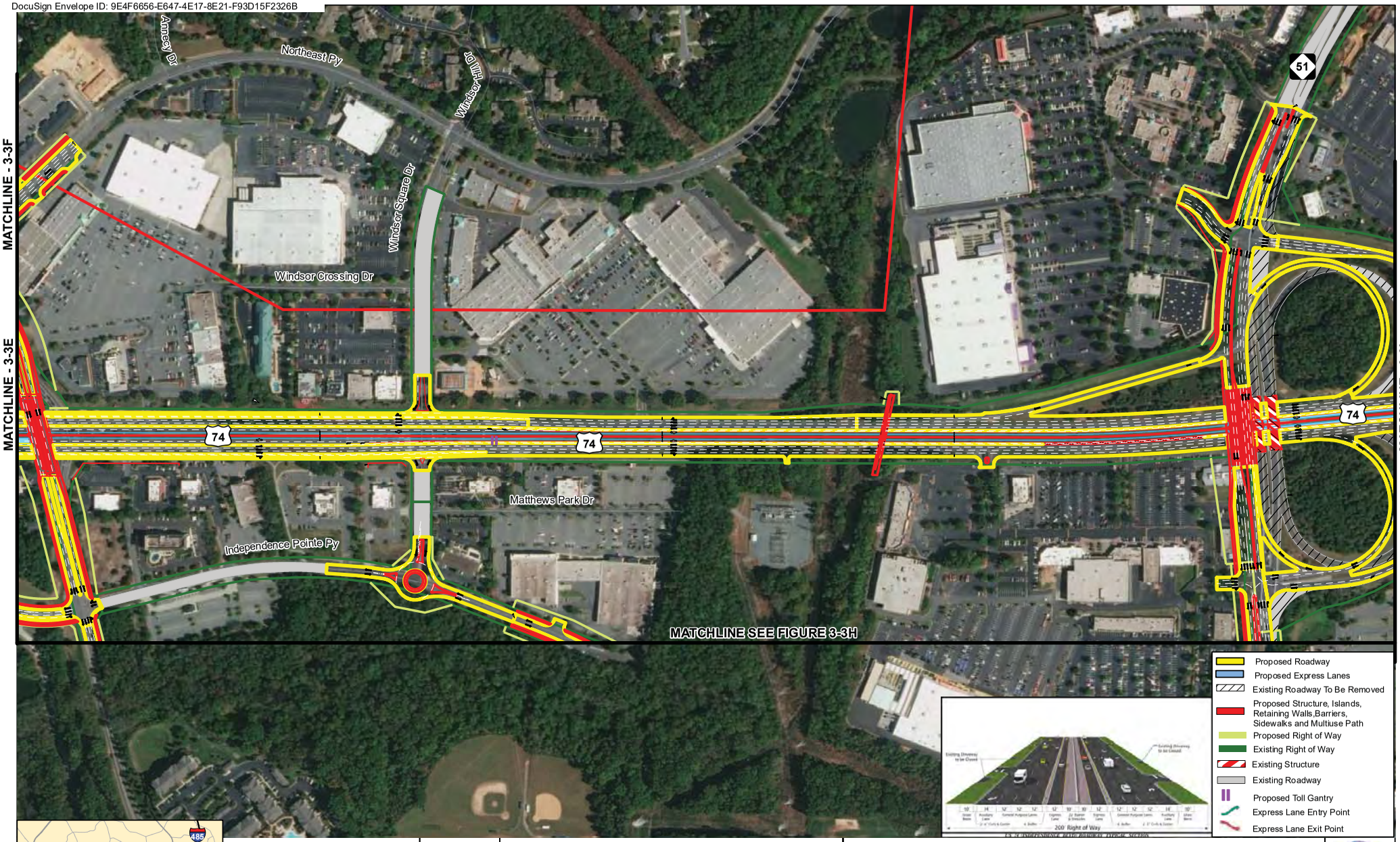


Figure 3-3G

Detailed Study Alternatives

US 74 (Independence Boulevard) Improvements

STIP Project U-2509

Mecklenburg County

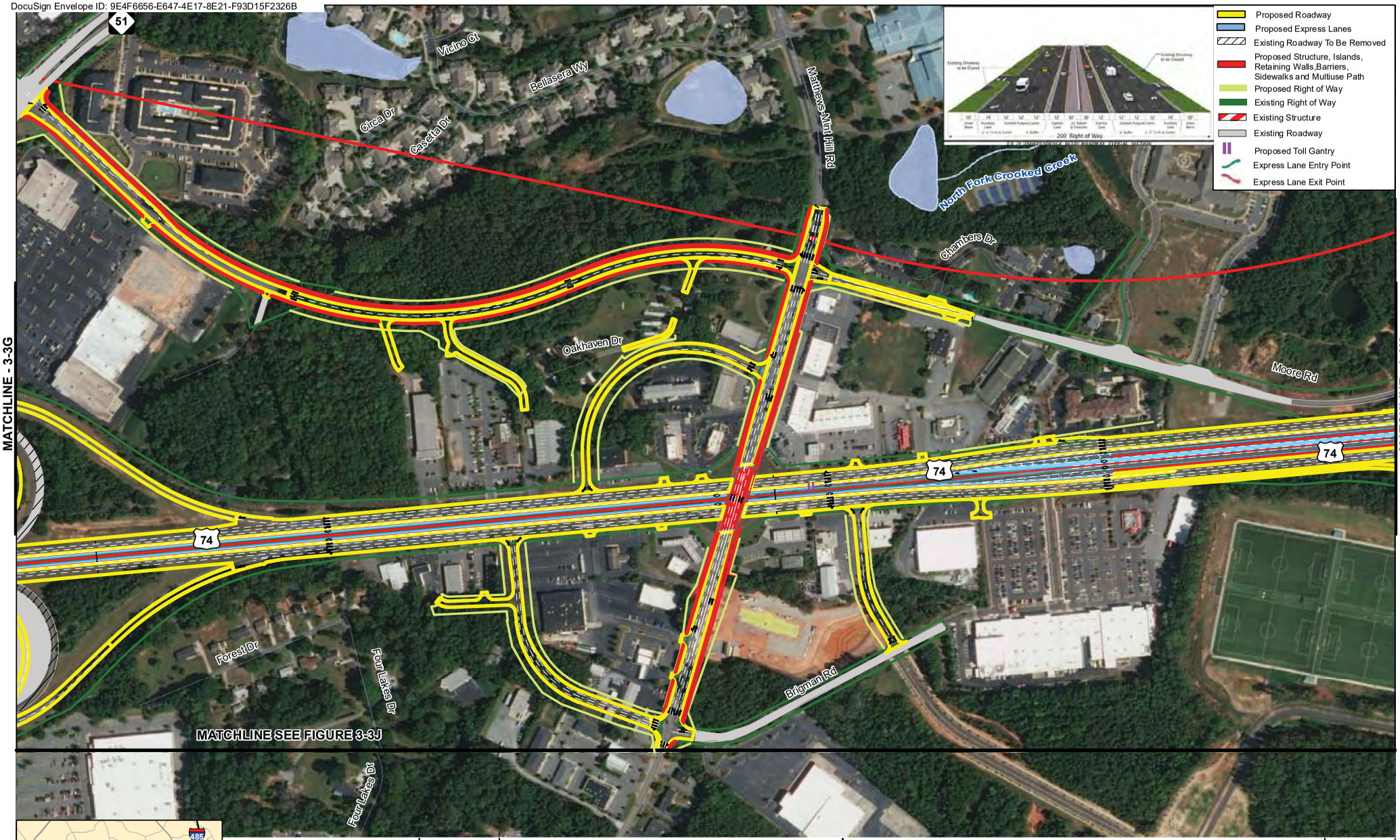
Figure 3-3H

Detailed Study Alternatives

US 74 (Independence Boulevard) Improvements

STIP Project U-2509

Mecklenburg County



0 150 300 600
Feet

Figure 3-3I

Detailed Study Alternatives

US 74 (Independence Boulevard) Improvements
STIP Project U-2509
Mecklenburg County

Figure 3-3J

Detailed Study Alternatives

US 74 (Independence Boulevard) Improvements

STIP Project U-2509

Mecklenburg County

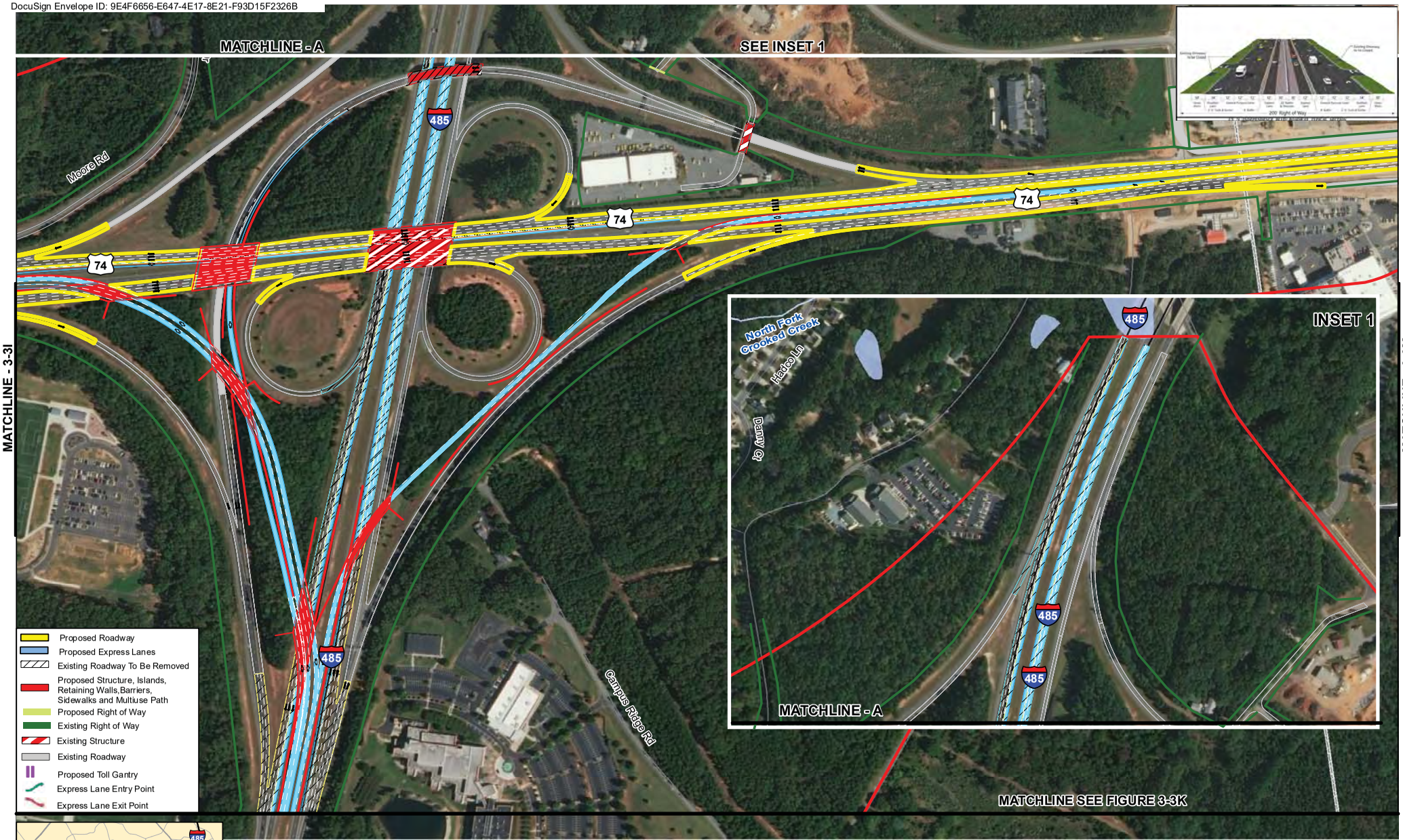


Figure 3-3K

Detailed Study Alternatives

US 74 (Independence Boulevard) Improvements

STIP Project U-2509

Mecklenburg County

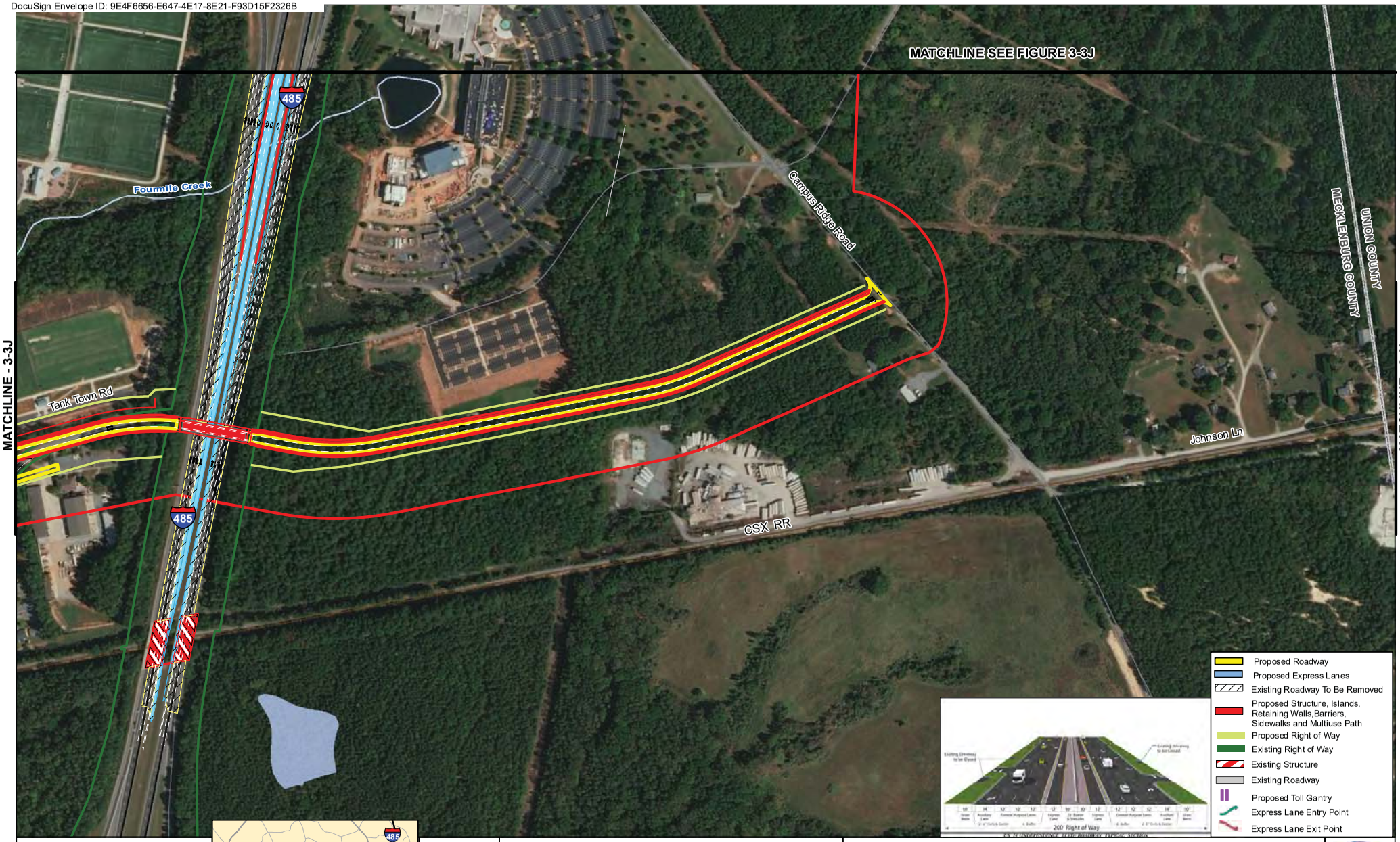


Figure 3-3L

Detailed Study Alternatives

US 74 (Independence Boulevard) Improvements
STIP Project U-2509
Mecklenburg County

Figure 3-3M

Detailed Study Alternatives

US 74 (Independence Boulevard) Improvements

STIP Project U-2509

Mecklenburg County

3.2.1.1 Sardis Road North Interchange Options

The three Sardis Road North Options are described below and shown in Figure 3-2 Sardis Road North Interchange Options.

Sardis Road North – Diamond Interchange Option

This interchange alternative would be a traditional diamond interchange design.

Sardis Road North – Partial Cloverleaf Option

This interchange alternative would have entrance and exit ramps between Sardis Road North and US 74 in the northeast and southeast quadrants of the interchange. In addition, Ardis Court would be a right-in right-out access at US 74 and Crownpoint Executive Drive would be closed with a cul-de-sac and no longer connected to US 74. Because this option became the only option in December 2018, it is discussed in this EA as part of the Build Alternative.

Sardis Road North – City Design Option

This interchange alternative would have a quadrant loop road between Sardis Road North and US 74 in the northwest quadrant of the interchange, allowing for entrance/exit to/from US 74 westbound. For eastbound travel along US 74, Ardis Court would have been a right-in only from US 74 and Crownpoint Executive Drive would have been a right-out only connection to US 74. The quadrant loop, right-in, and right-out movements would have functioned together as an interchange.

3.2.1.2 Independence Pointe Parkway Options

The three Independence Pointe Parkway Options are described below and shown in Figure 3-3.

Independence Pointe Parkway – Option 1

Option 1 would connect the existing sections of Independence Pointe Parkway from Windsor Square Drive to NC 51 in a relatively straight line, following behind the existing development at Matthews Festival Shopping Center currently fronting US 74. It would include a 250-foot bridge and impact approximately 991 feet of streams (plus bridge 176 feet of streams and relocate another 249 feet of streams) and two Duke Energy transmission towers.

Independence Pointe Parkway – Option 2

Option 2 would connect the existing sections of Independence Pointe Parkway from Windsor Square Drive to NC 51 in a similar way to Option 1 but curving away from the existing development at Matthews Festival Shopping Center currently fronting US 74 east of Irvins Creek – Tributary 1. It would include a 250-foot bridge and impact approximately 951 feet of streams (plus bridge 176 feet of streams and relocate another 249 feet of streams), two apartment buildings with 24 relocatees, and two Duke Energy transmission towers.

Independence Pointe Parkway – Option 3

Option 3 would connect the existing sections of Independence Pointe Parkway from Windsor Square Drive to NC 51 in a similar way to Options 1 and 2 but curving away from the existing development at Matthews Festival Shopping

Center currently fronting US 74 west of Irvins Creek– Tributary 1. It would include a 250-foot bridge and impact approximately 656 feet of streams (plus bridge 128 feet of streams), three apartment buildings with 36 relocatees, and one Duke Energy transmission tower.

3.2.2 No Build Alternative

The No Build Alternative is the baseline comparative alternative for the 2040 design year. The No Build Alternative would forego any improvements to existing roads with the exception of routine maintenance and other STIP projects in the project vicinity. No other changes to US 74 are assumed to take place by the 2040 design year. The existing US 74 would remain a major east-west corridor between Charlotte and Monroe and would continue as a four- to six-lane roadway from west of Idlewild Road to I-485.

The No Build Alternative would not be compatible with North Carolina's transportation goals of improving the safety and efficiency of the region's highway system. The existing facility currently operates at LOS F, and the congestion is expected to increase substantially by 2040. Without improvement, the projected traffic along this corridor will exceed the roadway's capacity creating undesirable levels of service.

The No Build Alternative does not meet the transportation goals of the State of North Carolina, the transportation needs of the region, or the purpose and need of the project. The No Build Alternative does, however, provide a baseline for comparing the adverse impacts and benefits of the Build Alternative.

3.3 Traffic Capacity Analysis Summary of Build Alternative

3.3.1 Design Year (2040) Build Conditions

The Design Year (2040) Build scenario is based on the Design Year (2040) No-Build network and includes the background projects that are projected to be in place before the 2040 design year as previously mentioned. In addition to the projects noted above, the Build network includes the construction of the proposed expressway improvements along US 74 that are associated with the STIP project U-2509. Each model was assessed and compared to others via one or more performance measures with the key ones being PTI, average corridor speed, intersection LOS, and freeway LOS.

In the Design Year (2040) Build scenario, the roadway network changes significantly as compared to the Base Year (2015) No-Build and Design Year (2040) No-Build conditions. The key changes were the addition of express lanes and the replacement of several intersections with either grade separations or service interchanges.

The Design Year (2040) volumes were calculated by applying a growth rate to the Base Year (2015) No-Build AADT volumes based on the MRM and the 2015 *U-5526 Traffic and Revenue Study*. In addition, the MRM was utilized to develop diversion percentages to be applied to the 2040 No-Build volumes to calculate the 2040 Build volumes. The annual volumes were then used to determine the AM and PM peak hour link volumes and build the origin and destination matrices for the Design Year (2040) Build scenario.

Table 3-1 shows a comparison of the operations under Design Year (2040) No-Build and Design Year (2040) Build Conditions.

Table 3-1 Comparison of Design Year (2040) No-Build and Design Year (2040) Build Conditions

Measure of Effectiveness	Design Year (2040) No-Build Conditions	Design Year (2040) Build Conditions
PTI	• Ranged between 1.4 and 4.2 on the US 74 eastbound corridor during the AM peak period, with the exception of the segment between Wallace Lane and Krefeld Drive which peaked at 10.4 between 9 AM to 10 AM. • Most westbound sections of US 74 ranged from 1.2 to 3.2 during the AM peak, however the segments east of NC 51 exceeded 10.0. • During the PM peak period along US 74 eastbound, the minimum was 5.3 with most segments greater than 10.0. • The US 74 westbound PTI ranged from 1.6 to 3.7 during the PM peak period.	• Generally ranged from 1.1 to 2.0 during the AM peak period along both directions of US 74. • The section of US 74 westbound general purpose lanes from Wallace Lane to Monroe Road was 4.2. • Generally ranged from 1.1 to 2.5 during the PM peak period along both directions of US 74. • Between 5 PM and 6 PM, the route between Idlewild Road southbound to the US 74 (Independence Blvd) eastbound general purpose lanes at Wallace Lane had a PTI of 7.1.
Corridor Speeds	• During the AM peak period, US 74 speeds generally ranged from 25 to 45 mph, with multiple segments operating with speeds less than 10.0 mph. • During the PM peak period, one third of the segments has speeds less than 10 mph, with the rest in the 10 to 40 mph range.	• During the AM peak period, US 74 speeds generally ranged from 40 to 55 mph, with multiple segments dropping with to the 15 to 35 mph range. • During the PM peak period, US 74 speeds generally ranged from 40 to 55 mph, with several segments dropping with to the 10 to 35 mph range.
Freeway Level of Service	• Thirty-two of the thirty-seven freeway segments operate at LOS D or better during the AM peak. • Eighteen of the thirty-seven freeway segments operate at LOS D or better during the AM peak.	• Eight-two of the ninety freeway segments operate at LOS D or better during the AM peak. • Sixty-two of the ninety freeway segments operate at LOS D or better during the PM peak.
Intersection Level of Service	• Eleven of the twenty-four signalized intersections operate at LOS D or better during the AM peak. • Six of the twenty-four signalized intersections operate at LOS D or better during the PM peak.	• Thirty of the thirty-three signalized intersections operate at LOS D or better during the AM peak. • Twenty-two of the thirty-three signalized intersections operate at LOS D or better during the PM peak.

3.3.2 Sardis Road North Interchange Alternative Assessment

3.3.2.1 Design Background

The City of Charlotte proposed a northwest quadrant ramp alternative at the US 74 and Sardis Road interchange instead of the partial clover leaf design previously analyzed in the Design Year (2040) Build Model. The alternative interchange design was assessed to determine whether the alternative would adequately serve the projected traffic associated with the Future Year Build conditions and not increase the travel time or delay experienced within the roadway network. The quadrant ramp alternative would allow for direct connections from the westbound US 74 general purpose lanes to Sardis Road, from Sardis Road to the westbound US 74 express lanes and direct connections from the eastbound US 74 express lanes on to Sardis Road. Under the alternative interchange conditions, no access will be provided from Sardis Road to the eastbound US 74 express lanes and to/from the eastbound US 74 general purpose lanes. Traffic will be routed to access the eastbound US 74 general purpose lanes from Crownpoint Executive Drive and Krefeld Drive.

3.3.2.2 Capacity Analysis

The proposed quadrant ramp alternative was preliminarily analyzed using Synchro/SimTraffic Professional Version 9 to test the traffic operations. If the alternative operated at a LOS E or F, then no further analysis would have been completed. However, the interchange design performed adequately under the build conditions tested in Synchro and was therefore analyzed in TransModeler.

The approved Future Year (2040) Build Model was adopted to test the alternative interchange design at Sardis Road. The origin and destination matrices and all other relevant modeling parameters remained consistent and the geometric changes were restricted to only the Sardis Road location to determine the impact of the alternative interchange design on the network. The analysis and simulation observation showed that, without any additional capacity or geometric improvements to the surrounding areas or intersections, the quadrant ramp alternative proposed by the city would have significant adverse impacts on traffic operations. The model showed a significant increase in delay and queueing within the network at the intersections surrounding the Sardis Road Interchange.

4

PROPOSED IMPROVEMENTS

This chapter provides a detailed description of the proposed improvements to US 74, the parallel collector roads, and cross streets.

4.1 Roadway Typical Sections and Alignments

4.1.1 US 74

The typical section for US 74 is shown in Figure 4-1. It encompasses a 200-foot right-of-way and consists of three, 12-foot general purpose lanes, a 12-foot express lane, and a 14-foot auxiliary lane in each direction. A 22-foot median with a concrete barrier and shoulder divides the two opposing express lanes; a 4-foot buffer with flexible delineators separates the express lanes from the general purpose lanes; and a 2.5-foot curb and gutter and 10-foot grass berm are outside the auxiliary lanes. Some existing driveways would be closed, while others would remain open and would be accessed from the auxiliary lane.

4.1.2 Parallel Collector Roads and Cross Streets

Typical sections of the parallel collector roads and cross streets are shown in the series Figure 4-2a through 4-2f.

4.2 Right-of-Way and Access Control

4.2.1 Right-of-Way

Right-of-way currently exists for the US 74 corridor and the existing segments of the cross streets and parallel collector roads. For the segments of cross streets and parallel collector roads that would be constructed as part of the project, right-of-way does not exist, but in some cases has been preserved for future road construction.

4.2.1.1 US 74

For most of the project corridor, US 74 has a 200-foot right-of-way, with some locations having up to 210 feet of right-of-way. Most of the project would be constructed within this existing right-of-way with the exception of grade separations, interchanges, and in areas where the roadway would be widened for express lane access points.

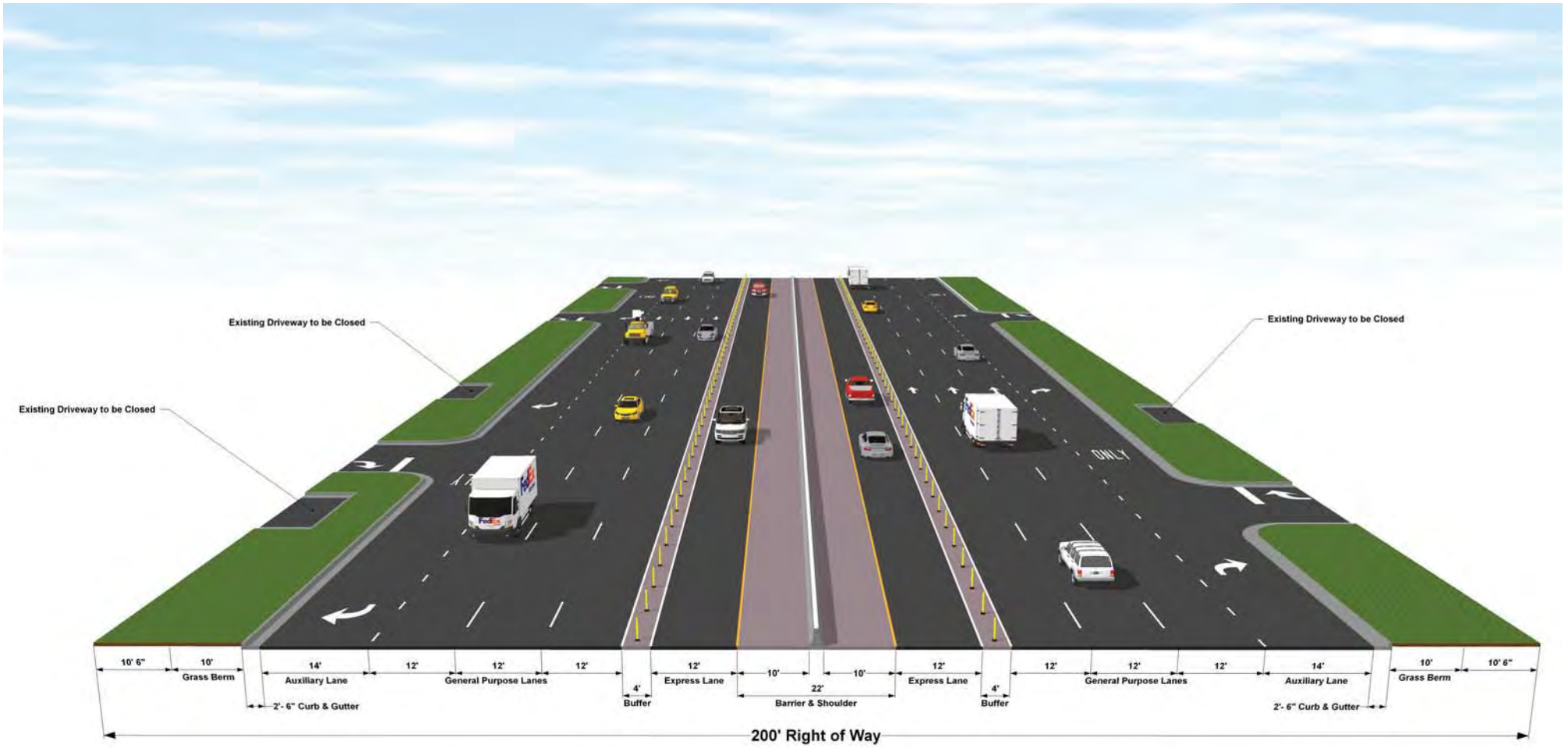
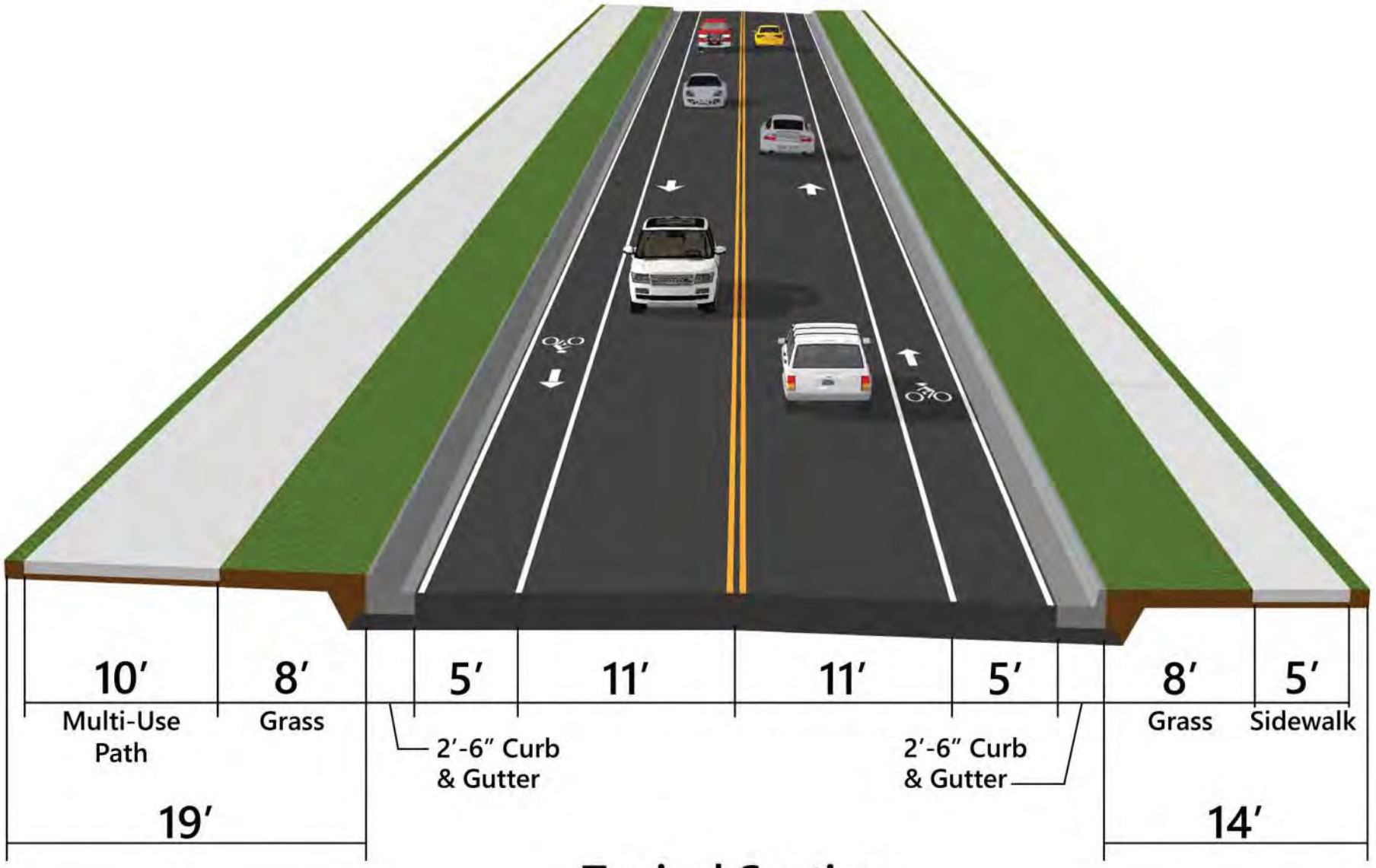


Figure 4-1
Typical Section for US 74

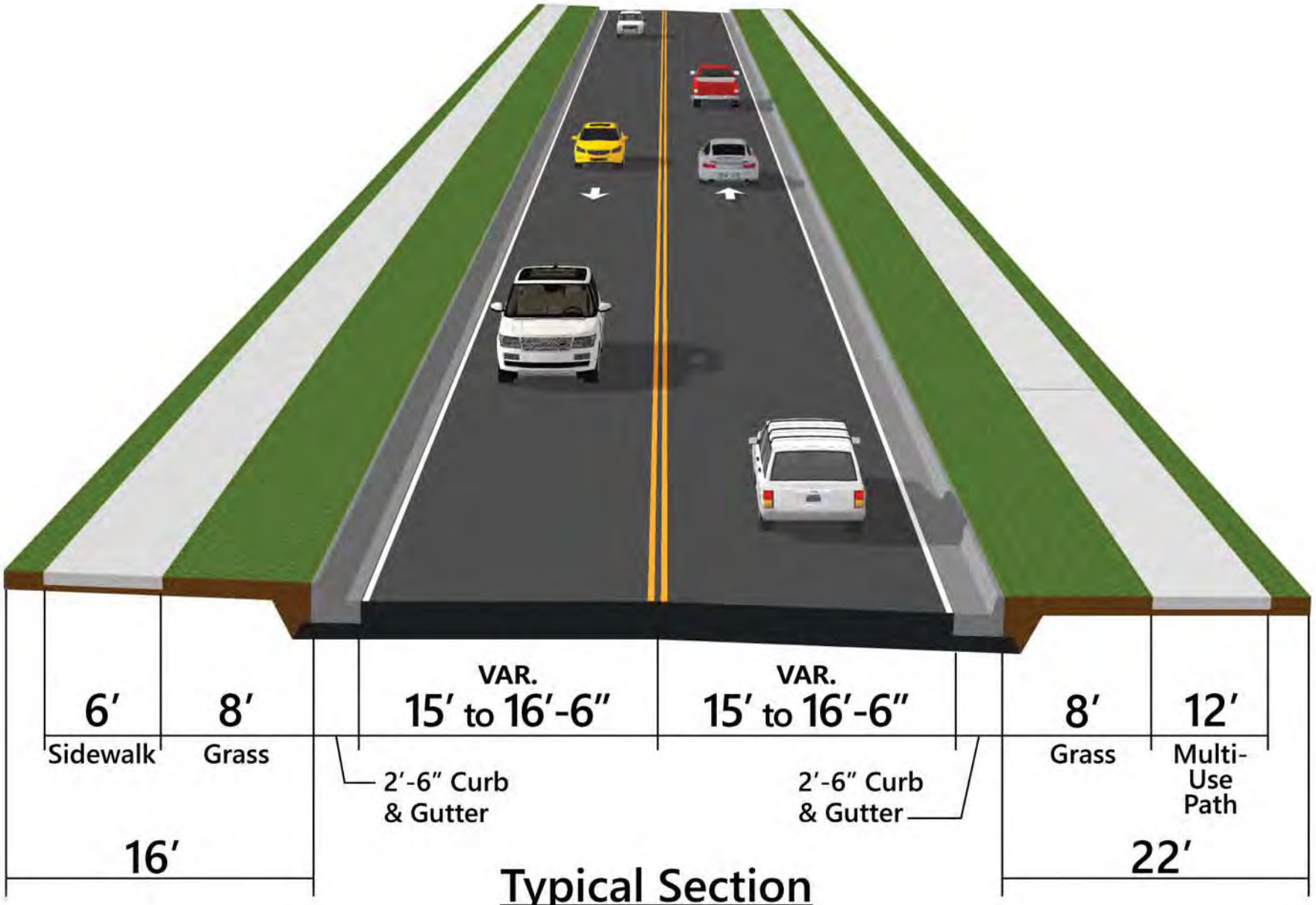
US 74 (Independence Boulevard) Improvements
STIP Project U-2509
Mecklenburg County



Typical Section

Independence Pointe Parkway from Matthews-Mint Hill Road to Campus Ridge Road

	Figure 4-2A Typical Section for Parallel Collector Roads and Cross Streets	**US 74 (Independence Boulevard) Improvements** STIP Project U-2509 Mecklenburg County

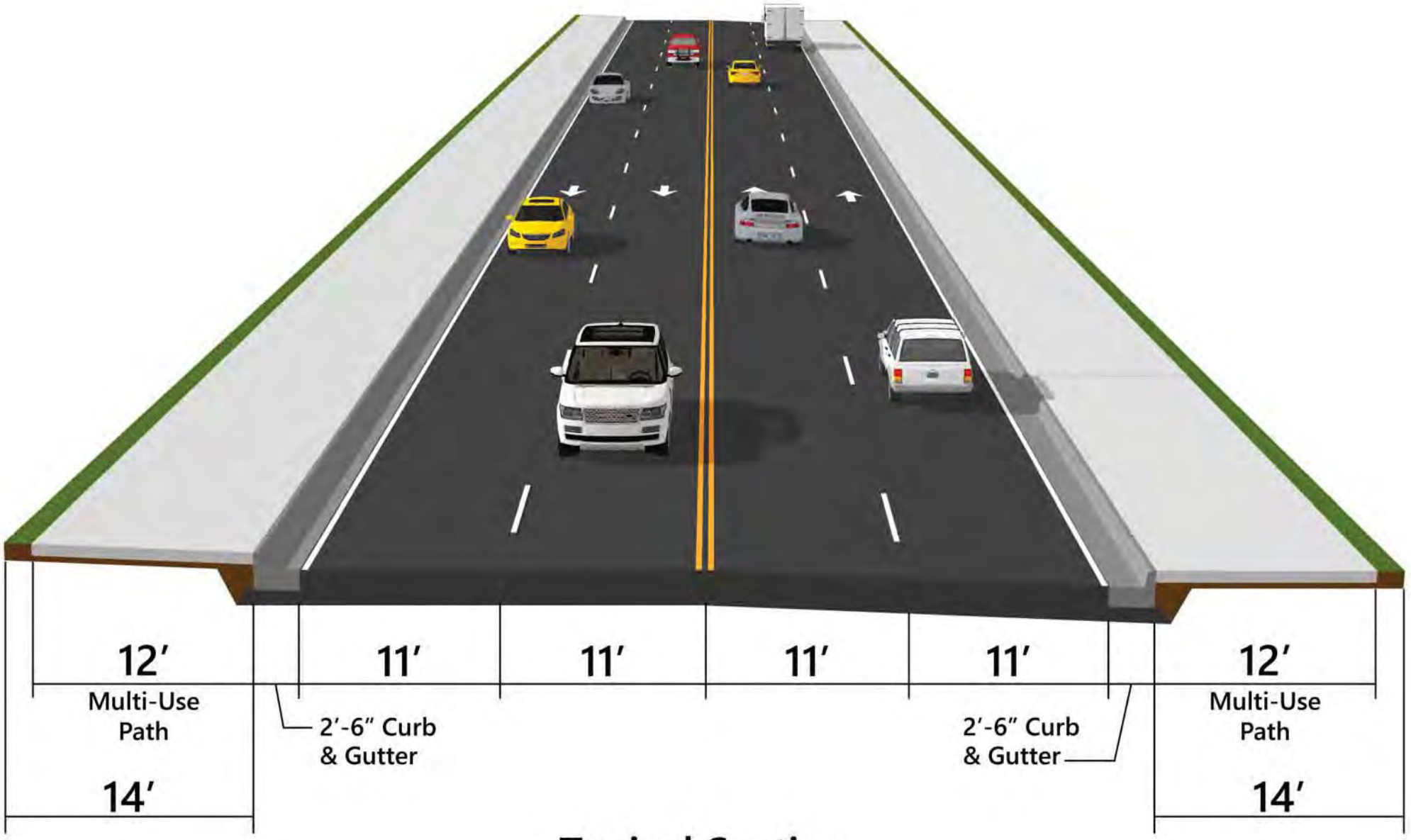


Typical Section

Arequipa Drive
Margaret Wallace Road
Independence Point Park from Sardis Road to Matthews Township Parkway (NC 51)

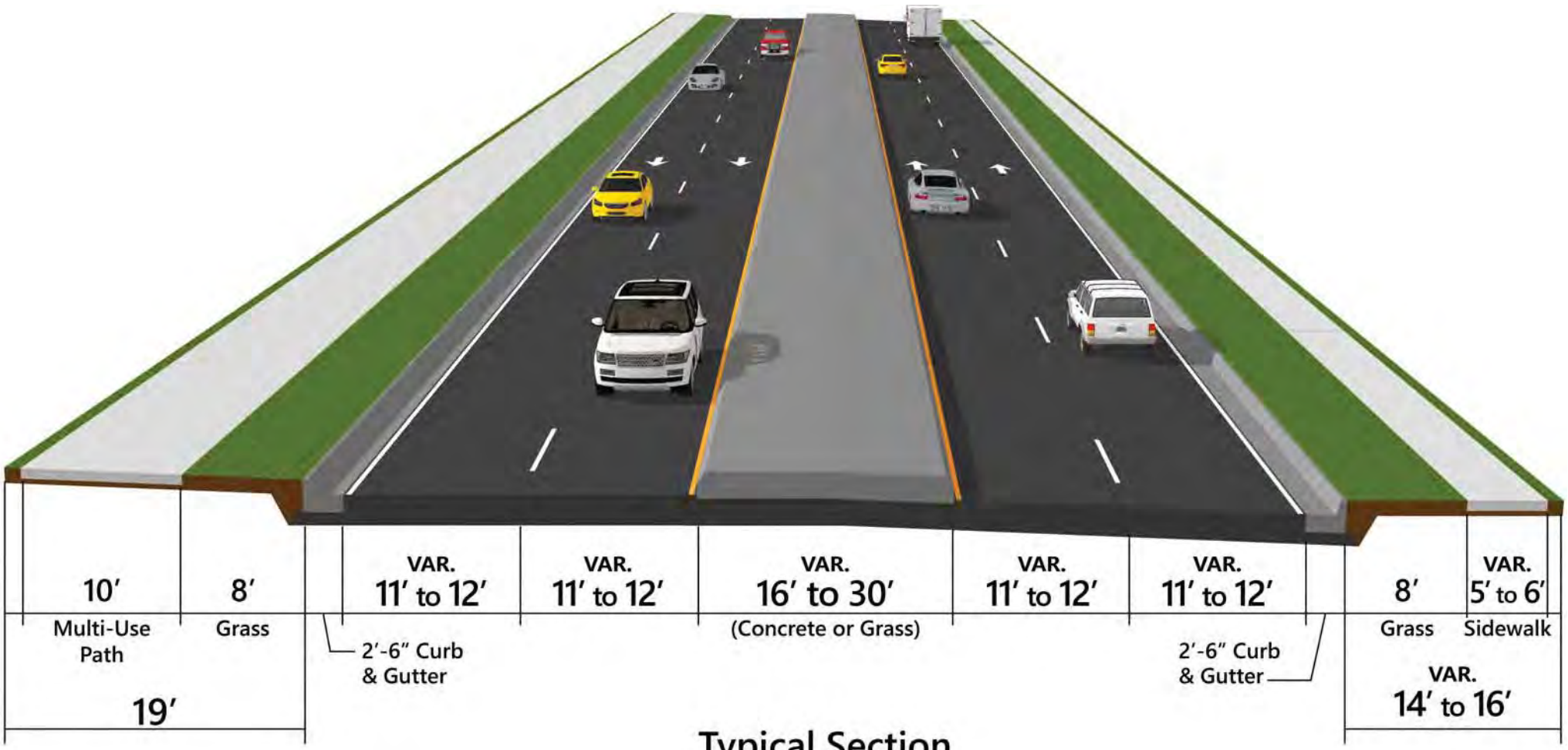
Sharon Forest Drive
Wallace Road
Krefeld Drive

	Figure 4-2B Typical Section for Parallel Collector Roads and Cross Streets	**US 74 (Independence Boulevard) Improvements** STIP Project U-2509 Mecklenburg County



Typical Section
Village Lake Drive

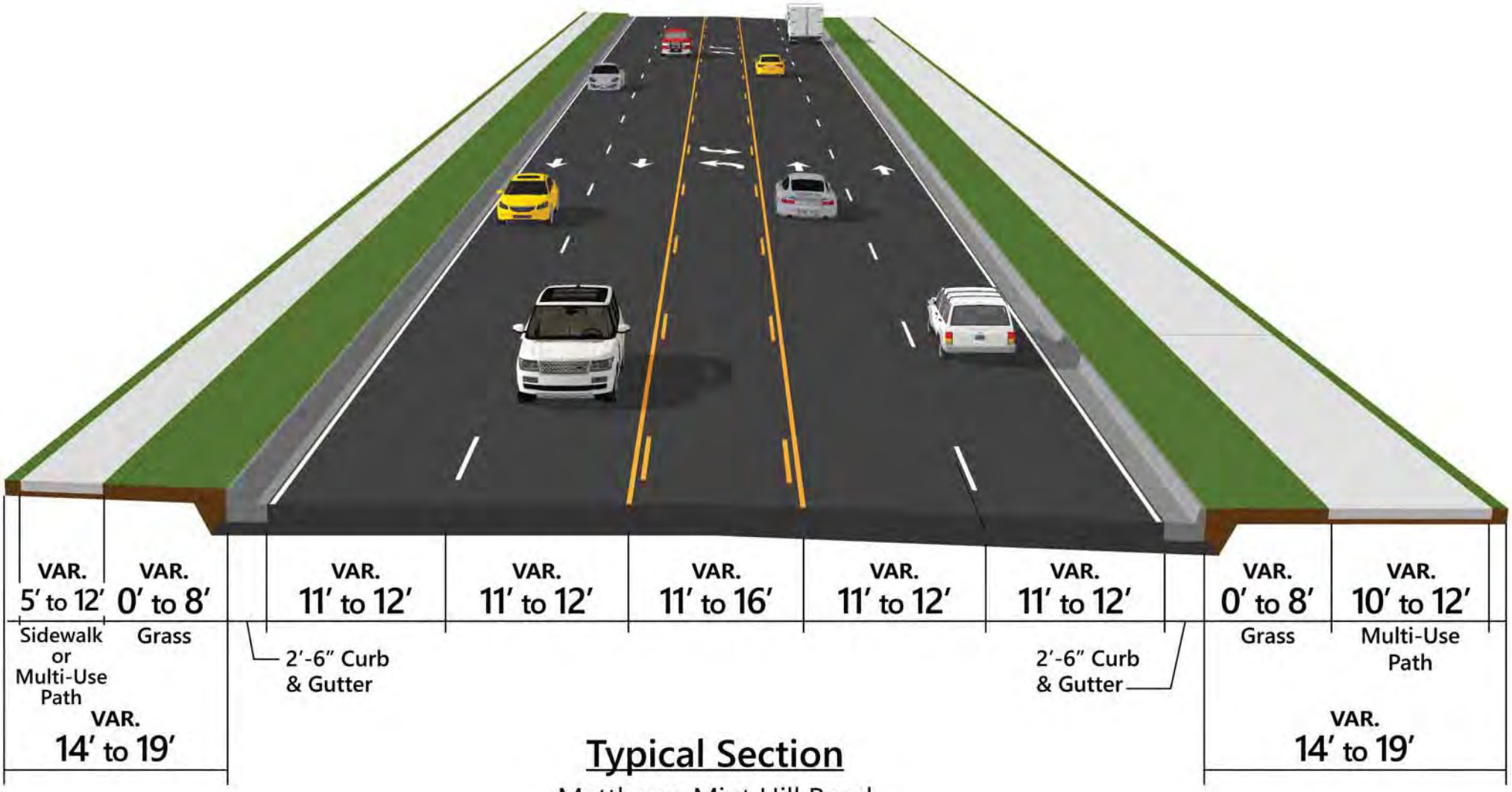
	Figure 4-2C Typical Section for Parallel Collector Roads and Cross Streets	**US 74 (Independence Boulevard) Improvements** STIP Project U-2509 Mecklenburg County



Typical Section

Sam Newell Road
W. T. Harris Boulevard
Matthews Township Parkway

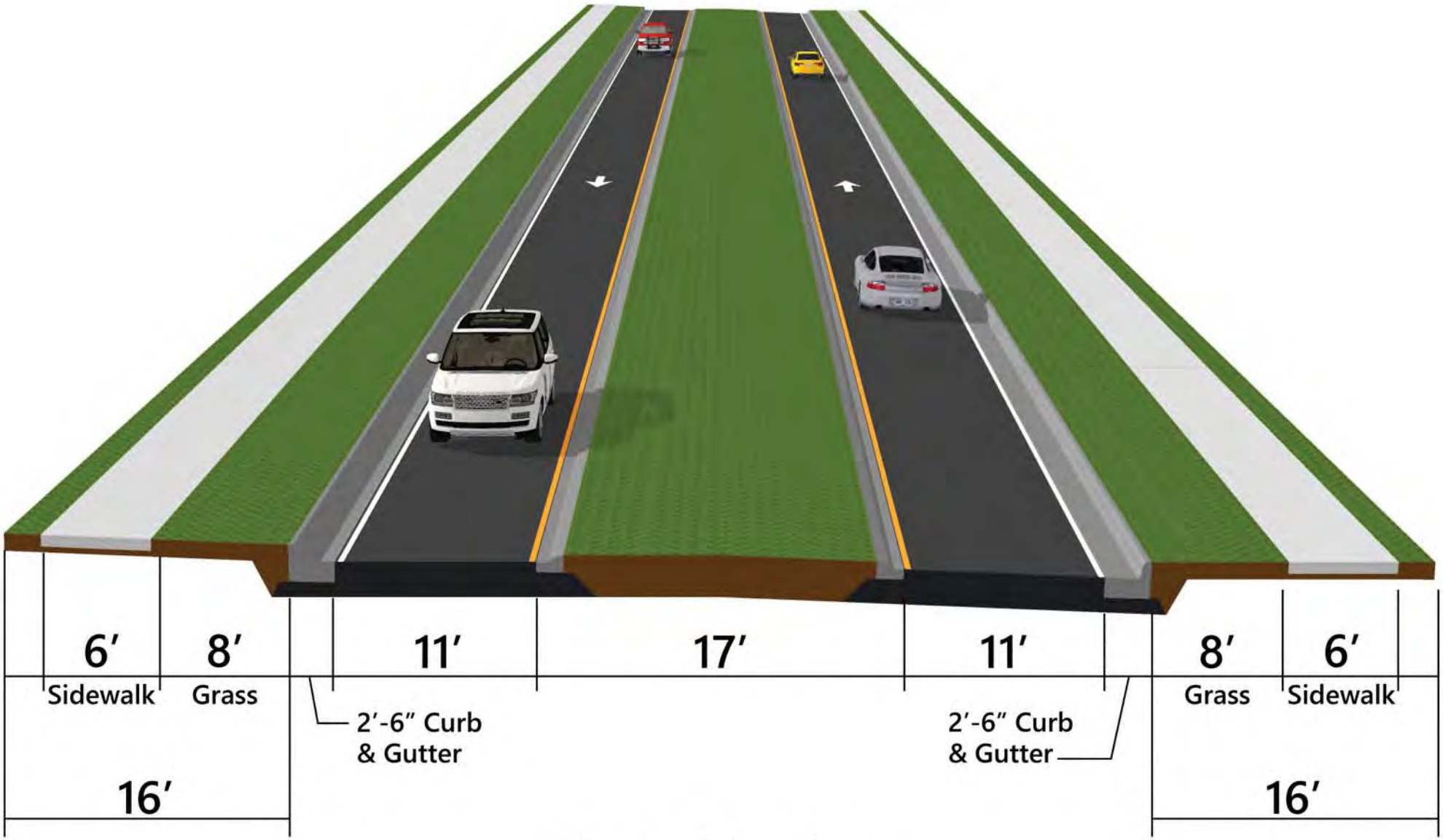
	Figure 4-2D Typical Section for Parallel Collector Roads and Cross Streets	**US 74 (Independence Boulevard) Improvements** STIP Project U-2509 Mecklenburg County



Typical Section

Matthews-Mint Hill Road
Sardis Road North

	Figure 4-2E Typical Section for Parallel Collector Roads and Cross Streets	**US 74 (Independence Boulevard) Improvements** STIP Project U-2509 Mecklenburg County



Typical Section
Northeast Parkway

Figure 4-2F
Typical Section for Parallel Collector Roads and Cross Streets

US 74 (Independence Boulevard) Improvements
STIP Project U-2509
Mecklenburg County

4.2.1.2 Parallel Collector Roads and Cross Streets

There are several parallel collector roads and cross streets included in the project with varying rights-of-way (see Table 4-1). Right-of-way would need to be acquired for the new location segments of these parallel collector roads.

Table 4-1 Right-of-Way

Roadway	Existing Right-of-Way (feet)	Proposed Right-of-Way (feet)
US 74	200+/-	200 – 300+/-
Wallace Road	60	200
Sharon Forest Drive	60+	80+
E WT Harris Boulevard	80	155
Margaret Wallace Road	65	160+
Village Lake Drive	65	160 – 215+/-
Quadrant Loop (west)	N/A	60
Quadrant Loop (east)	N/A	80
Krefeld Drive	62 – 80	120 – 150
Krefeld Drive Quadrant Loop	N/A	250
Arequipa Drive	80	120 – 170
Ardis Court	N/A	80
Sardis Road North	100+	160 – 190
Sardis Road North Interchange	N/A	250-1,330
Hayden Way	60	N/A
Crownpoint Executive Drive	N/A	N/A
Scenic Drive	60	80
Independence Pointe Parkway	N/A	100
Rice Road	60 – 80	120
Sam Newell Road	60	120 – 220
Independence Pointe Parkway	80	160
NC 51	130+	160 – 220
Northeast Parkway	75	120
Matthews-Mint Hill Road	100	125
Matthews-Mint Hill Road Quadrant Loop (north)	N/A	100
Matthews-Mint Hill Road Quadrant Loop (south)	N/A	110
Sports Parkway	N/A	70+
Independence Pointe Parkway	N/A	140
Sports Parkway Quadrant Loop	N/A	70+

4.2.2 Access Control

Most of the existing US 74 project corridor has little control of access with numerous driveways and cross streets. Based on years of planning and recent coordination with local stakeholders, the project would bring the facility to the level of an expressway with limited sections of freeway. As such, the facility would have a substantial increase in access control.

Coordination with local stakeholders and the public (see Chapter 6) from 2014 through 2019 yielded decisions on grade separations, interchanges, and the reduction in the number of driveways connecting to US 74 (see Sections 4.5 and 0 below). The proposed changes in access control were designed to best maintain the existing businesses, maintain the connectivity of the local community, and provide a more reliable trip time along US 74.

4.3 Design Speed and Posted Speed

The design speed for US 74 is 50 mph, with a posted speed limit of 45 mph. The project will provide a reliable travel time option (45 mph minimum average speed) in the express lanes during peak demand periods.

The design speed and posted speed limit for US 74 and all cross streets and parallel collector roads are listed in Table 4-2 below.

Table 4-2 Design Speed and Posted Speed Limit

Route	US 74	E. WT Harris Blvd	Village Lake Drive, Krefeld Drive, Sardis Road North, Independence Pointe Parkway, Northeast Parkway	Margaret Wallace Road, Sam Newell Road, Matthews-Mint Hill Road	NC 51	Ramps	Loops
Design Speed (mph)	50	45	40	40	50	45	30
Posted Speed (m)	45	40	35	35	45	40	25

4.4 Anticipated Design Exceptions

There are no anticipated design exceptions for this project.

4.5 Intersections/Interchanges

With the improvements to US 74, existing left turns and U-turns would be eliminated as some at-grade intersections would be converted to right-in-right-out only and others along the project corridor would be eliminated or converted into a grade-separation (overpass) or an interchange. Table 4-3 identifies the at-grade intersections that would be grade-separated with this project. Additionally, the existing interchange at NC 51 would be redesigned to accommodate express lanes and the widening of US 74 underneath.

Table 4-3 Grade Separated Interchanges

At-Grade Intersection	Proposed Configuration
Sharon Forest Drive	Grade-Separated with access in SE Quadrant
Village Lake Drive	Grade-Separated with Quadrant Loop(s) in SW and SE Quadrants and Margaret Wallace Road access in NW Quadrant
Krefeld Drive	Grade-Separated with Quadrant Loop in NE Quadrant
Sardis Road North	Grade-Separated with Partial Cloverleaf Interchange with loops and ramps in the NE and SE Quadrants and Express Lane Direct Connectors to and from the west
Sam Newell Road	Grade-Separated with Access to US 74 via Rice Road in the western Quadrants and Windsor Square Drive in the eastern Quadrants
Matthews-Mint Hill Road	Grade-Separated with Quadrant Loops in NW and SW Quadrants

4.6 Service Roads, Quadrant Loops, Parallel Collector Roads, Cross Streets, and Driveway Access

No service roads would be provided with this project. However, access to adjacent properties would be served by connecting and extending existing parallel collector roads. These roads would be accessed by new cross street grade-separated connections, quadrant loops, and road realignments, all constructed as part of this project. Driveway access would be provided to the parallel collector roads and will allow for the many driveways that currently connect to US 74 to be removed or relocated.

4.6.1 Quadrant Loops

With the grade separation of Village Lake Drive at US 74, a quadrant loop in the southwest quadrant would be constructed. The loop would intersect with US 74 to the east of the Margaret Wallace Road intersection and would connect to Village Lake Drive across from Creekridge Road. In the southeast quadrant, a loop was added within the Quorum Market, just outside of the Quorum Business Park (QBP) boundaries. The loop would impact the businesses within the Quorum Market. Access to the loop from the QBP would be allowed. In the NW quadrant Margaret Wallace Road crosses Village Lake Drive and ends at US 74 allowing right-in right-out access.

With the grade separation of Krefeld Drive at US 74, a quadrant loop in the northeast quadrant would be included with the project.

Sam Newell Road would be grade separated, going over US 74, and connecting to a realigned Northeast Parkway to the north and an extended Independence Pointe Parkway to the south. Rice Road and Windsor Square Drive both would connect Northeast Parkway to US 74. Extensions of these access roads on the south side would be included to connect Independence Pointe Parkway to US 74. These connections would allow users to access Sam Newell Road and cross US 74 to travel in either direction.

Matthews-Mint Hill Road would become grade-separated going over US 74, with quadrant loops in the northwest and southwest quadrants that would allow it to function as an interchange. In addition, Sports Parkway would be extended to US 74 and Brigman Road would connect it to Matthews-Mint Hill Road providing access to US 74 in the southeast quadrant.

4.6.2 Parallel Collector Roads

There are several parallel collector roads along US 74 on both sides of the highway, but some are missing linkages to other roads and others end short of needed connections. This results in many short trips on US 74 where a fully connected system of parallel roads would serve and benefit the local traffic. This project would complete this system of parallel roads and would provide additional access to residential areas and businesses. In particular, properties that lose access along US 74 may be provided access to the rear of their properties along the parallel roads. These roads would provide improved connections for the local community. Six parallel collector roads are included with this project:

- Krefeld Drive Extension (Krefeld Drive to Sardis Road North);
- Arequipa Drive/Sam Newell Road/Northeast Parkway (Margaret Wallace Road to east of Sam Newell Road);
- Independence Pointe Parkway (Crownpoint Executive Drive to Sam Newell Road);
- Northeast Parkway (NC 51 to Matthews-Mint Hill Road);
- Independence Pointe Parkway (Windsor Square Drive to NC 51); and
- Independence Pointe Parkway (NC 51 to Campus Ridge Road).

Krefeld Drive would be extended from its current end point south of US 74 to the east to just prior to its intersection with Sardis Road North. Along this new section of roadway, Ardis Court would intersect at a new roundabout. This new section of roadway would provide a connection between the apartment homes on Krefeld Drive and the shopping areas along Sardis Road North that would not require the use of US 74. Margaret Wallace Road would be widened from west of Krefeld Drive to northeast of Arequipa Drive.

There is an existing section of Arequipa Drive from Cross Point Circle to the east of the apartment homes. With the project, Arequipa Drive would be extended west to connect to Margaret Wallace Road at Tarlton Drive, and east to connect to Sam Newell Road. Along the latter new section, Sardis Road North would extend north to intersect Arequipa Drive. This would give the numerous residences in this area the ability to access shopping areas and other businesses in southeast Charlotte and in the Town of Matthews without having to use US 74. It also provides a direct connection, by way of Sardis Road North, for users wanting to access US 74 express lanes and general purpose lanes.

Continuing to the east, Sam Newell Road would be realigned onto Northeast Parkway with the free-flow traffic movement being provided through the parallel roads.

The last section of parallel roads on the north side of US 74 is the widening and extension of Northeast Parkway from NC 51 to Matthews-Mint Hill Road at Moore Road.

On the south side of US 74, east of Sardis Road North, Independence Pointe Parkway would be extended from Crownpoint Executive Drive to Sam Newell Road while utilizing as much as possible of an 80-foot wide corridor reserved by Martin Marietta Materials, Inc. This segment of Independence Pointe Parkway would provide rear access to numerous businesses fronting US 74 and would connect to an existing segment of Independence Pointe Parkway east of Sam Newell Road.

With the project, the existing segment of Independence Pointe Parkway east of Sam Newell Road would be extended to NC 51. There are three alternatives being evaluated for this section.

From NC 51 to Matthews-Mint Hill Road, Independence Pointe Parkway would be widened with a roundabout added at the intersection of Four Lakes Drive as a part of a Bowtie Intersection at Matthews-Mint Hill Road. The

final section of Independence Pointe Parkway would be to extend it from Matthews-Mint Hill Road to the east, going over I-485, and terminate at Campus Ridge Road on the Levine Campus of Central Piedmont Community College (CPCC).

Upon the completion of the parallel collector roads, vehicles could travel from E. WT Harris Boulevard in Charlotte to Moore Road (just inside I-485) in Matthews on the north side, and from Krefeld Drive in Charlotte to CPCC in Matthews on the south. This would provide an alternative option for local traffic that would not require the use of US 74.

4.6.3 Cross Street Access Changes

The following cross street access changes are included in this project:

- Wallace Road right-in right-out access to US 74 would remain the same, however the roadway would be realigned to provide a more direct approach to US 74.
- Sharon Forest Road would be grade-separated from US 74 with an overpass to connect to the residential neighborhoods. (see Section 4.5 above).
- The Wallace Lane and Sharon Forest Drive intersection would be realigned and made into a roundabout. The Wallace Lane connection to US 74 would be realigned but would continue to operate as a right-in right-out access to US 74.
- E. WT Harris Boulevard currently is a signalized intersection (see Section 4.5 above) with US 74. The proposed improvements would remove the left turning movements and E. WT Harris Boulevard would access US 74 via right-in and right-out only. North of US 74, E. WT Harris would be realigned with a T-intersection at Village Lake Drive extension.
- Left-turning movements to and from Margaret Wallace Road would be eliminated, but the intersection would continue to operate as a right-in right-out intersection with US 74.
- Village Lake Drive would be grade-separated from US 74 (see Section 4.5) and extended north of US 74, intersecting with Margaret Wallace Road, and extended to connect to E. WT Harris Boulevard heading northwest. The extension of Village Lake Drive from US 74 to E. WT Harris Boulevard would be on new location.
- Krefeld Drive would be grade-separated from US 74 (see Section 4.5).
- Ardis Court would be extended south to connect to the Krefeld Drive extension at a new roundabout. With the Partial Cloverleaf Interchange at Sardis Road North, the Ardis Court intersection with US 74 would become a right-in right-out intersection.
- Sardis Road North would be grade-separated from US 74 with a Partial Cloverleaf Interchange and extended north beyond US 74 to the Arequipa Drive extension. The City of Charlotte has plans for Sardis Road North to be extended north of Arequipa Drive in the future. This would be part of another project, the Eastern Circumferential Road.
- Access from Crownpoint Executive Drive would be closed to US 74 and converted into a cul-de-sac due to its proximity to the interchange on-ramp from Sardis Road North.
- Hayden Way, directly across US 74 from Crownpoint Executive Drive, would become a cul-de-sac prior to intersecting US 74 due to the close location of the off-ramp to Sardis Road North.
- Left-turning movements to and from Rice Road would be eliminated, but the intersection would continue to operate as a right-in right-out intersection with US 74. The existing cul-de-sac of Rice Road Extension south of Sam Newell Road would be connected at Rice Road, creating a new four-way intersection providing additional access to and from US 74.

- Windsor Square Drive, which currently operates as a full signalized intersection with US 74, would become a right-in right-out only intersection on the north side as would its' connection to Independence Pointe Parkway on the south side.
- Sam Newell Road would be grade-separated from US 74 (see Section 4.5). The connection of Rice Road to Sam Newell Road, as well as Windsor Square Drive connections, on the north side of US 74 and to Independence Pointe Parkway on the south side of US 74 would allow improved access and the ability for the Sam Newell Road grade separation to function as an interchange.
- Matthews-Mint Hill Road, which currently operates as a full signalized intersection, would become grade-separated from US 74, with a quadrant loop in the northwest and southwest quadrants, and access by way of Brigman Road and extending Sports Parkway to intersect with right-in right-out access at US 74 would allow this overpass to function as an interchange (see Section 4.5).

4.6.4 Driveway Access

Because this project proposes upgrading US 74 from a signalized arterial to an expressway, driveway access to properties along the corridor would be consolidated. The project planning team coordinated closely with local officials and property owners throughout project development to consolidate and reduce the number of driveways, which minimizes the number of conflict points along US 74, while still maintaining acceptable access (see Chapter 6 for a summary of coordination efforts). In locations where properties could be accessed via parallel collector roads, driveways along US 74 would be closed and access would be provided along the parallel collector road. Access to and from businesses would also be provided in many locations via the improved cross street access described above in Section 4.6.3. However, many driveways that currently access US 74 would remain open.

4.7 Railroad Crossings

There are no railroad crossings with the project.

4.8 Structures

Table 4-4 identifies all structures and associated improvements planned with the project.

Table 4-4 Project Structures

Roadway	Location	Structure	Description of Improvement
US 74	Conference Drive	Direct Collector Ramps	Constructing Direct Collector ramps in the median of US 74 to connect to Conference Drive to and from EB and WB US 74
Sharon Forest Drive	US 74	Grade Separation	Constructing grade separation of Sharon Forest Drive over US 74
Margaret Wallace Road	Campbell Creek	Bridge	Replacing existing bridge to accommodate creek and greenway alongside
Village Lake Drive	US 74	Grade Separation	Constructing grade separation of Village Lake Drive over US 74
US 74	McAlpine Creek	Bridge	Replacing existing bridge over McAlpine Creek
Krefeld Drive	US 74	Grade Separation	Constructing grade separation of Krefeld Drive over US 74
Krefeld Drive	Irvins Creek	Bridge	Constructing bridge over Irvins Creek on Krefeld Drive Extension
Arequipa Drive	Irvins Creek	Bridge	Constructing bridge over Irvins Creek on Arequipa Drive Extension
Sardis Road North	US 74	Interchange	Constructing an interchange on Sardis Road North over US 74
Sam Newell Road	US 74	Grade Separation	Constructing grade separation of Sam Newell Road over US 74
Independence Pointe Parkway	Irvins Creek Tributary 1	Bridge	Constructing bridge over Irvins Creek Tributary 1
NC 51	US 74	Bridge Replacement	Replacing bridge over US 74
Matthews-Mint Hill Road	US 74	Grade Separation	Constructing grade separation of Matthews-Mint Hill Road over US 74
Direct Connector Ramp	US 74	Bridge	Constructing bridge over US 74 EB General Purpose Lanes
Direct Connector Ramp	SB I-485 Entrance Ramp	Bridge	Constructing bridge over SB I-485 Entrance Ramp
Direct Connector Ramp	I-485 SB	Bridge	Constructing bridge over I-485 SB General Purpose Lanes
US 74	SB I-485 Entrance Ramp	Bridge	Replacing bridge over SB I-485 Entrance Ramp
US 74	I-485	Bridge	Widening bridge over I-485
Direct Connector Ramp	I-485 NB	Bridge	Constructing bridge over I-485 NB General Purpose Lanes
Direct Connector Ramp	US 74	Bridge	Constructing bridge over US 74 EB General Purpose Lanes

4.9 Bicycle and Pedestrian Facilities

The City of Charlotte, Town of Matthews, and Mecklenburg County have extensive bicycle and pedestrian plans. Throughout project development, the project team coordinated closely with local stakeholders to evaluate the inclusion of the requested bicycle and pedestrian facilities (see Section 6.10.3 for a summary of this coordination). The three jurisdictions have agreed to contribute their negotiated portions of the cost share and betterment funds. Cost share and betterment costs will be reevaluated during final design and updated to be consistent with NCDOT's *Complete Streets Policy*, adopted in August 2019. All the planned bicycle and pedestrian facilities to be included in this project are listed in Appendix A.

4.10 Utilities

Utilities are available from various providers within the vicinity of the project. Power distribution and transmission is provided by Duke Energy, and there are overhead utility lines and power poles along the project corridor and a substation is located between US 74 and the proposed Independence Pointe Parkway extension just west of the Matthews Festival Shopping Center. In this area there are many transmission towers and distribution poles. Coordination with Duke Energy continues as they are presently evaluating potential impacts and relocations of towers to coincide with the three options for extending Independence Point Parkway. Water and sewer are provided by Charlotte Water to the City of Charlotte and the Town of Matthews. Natural gas is provided by Piedmont. Telecommunications are provided by multiple companies (all known owners of utilities found in the study area are listed in Appendix B). A fiber optic network/ITS is maintained by NCDOT.

4.11 Landscaping

It is NCDOT policy to replace or compensate for landscaping impacted by project construction. NCDOT will also provide planting strips with grass at the request of the City of Charlotte and the Town of Matthews. Planting strips that exceed those defined in NCDOT's *Complete Streets Policy* would be considered a betterment. Planting strips are included in the designs and any additional landscaping materials would be planted and maintained by the municipalities at the following locations:

- US 74 from Idlewild Road to McAlpine Creek;
- Sharon Forest Drive;
- Wallace Road;
- Margaret Wallace Road;
- WT Harris Boulevard;
- Krefeld Drive Extension (Krefeld Drive to Sardis Road North);
- Arequipa Drive / Northeast Parkway (Margaret Wallace Road to Sam Newell Road);
- Krefeld Drive / Independence Pointe Parkway (Crownpoint Executive Drive to Sam Newell Road);
- Rice Road;
- Sam Newell Road south of US 74 and north of US 74 to Northeast Parkway;
- Northeast Parkway, Sam Newell, and Arequipa Drive (whole segment from Ross/Kohls to Town of Matthews/City of Charlotte boundary). Partial median throughout segment;
- Independence Pointe Parkway Alternatives (Windsor Square Drive to NC 51);
- Northeast Parkway (Overcash Drive to Matthews-Mint Hill Road);
- Matthews-Mint Hill Road; and
- Independence Pointe Parkway (NC 51 to Campus Ridge Road).

4.12 Noise Barriers

Noise barriers include two basic types: earthen berms and noise walls. These structures act to diffract, absorb, and reflect highway traffic noise. For this project, earthen berms are not found to be a viable abatement measure because the additional right of way, materials, and construction costs are estimated to exceed the NCDOT maximum allowable base quantity of 4,200 cubic yards per benefited receptor plus an incremental increase as defined in the NCDOT Traffic Noise Policy.

At this time, a noise analysis of existing, no-build and build conditions has been completed, identifying the number of impacts that are projected to result from the proposed action by land use type. Mitigation recommendations for those impacts are currently under development. Those areas that are recommended likely for noise barriers per the NCDOT Traffic Noise Policy will be included in the final Traffic Noise Report as well as the forthcoming Finding of No Significant Impact (FONSI) for the proposed action.

4.13 Work Zone, Traffic Control, and Construction Phasing

During construction, the contractor will be required to meet the traffic maintenance standards contained in the current editions of the *NCDOT Standard Specifications for Roads and Structures*, the *NCDOT Work Zone Traffic Control Design Manual*, and the *Manual on Uniform Traffic Control Devices*. Also, applicable Best Management Practices for construction of culverts and bridges over surface waters will be used to control storm water runoff, sedimentation, and erosion.

NCDOT prepared the design and construction scheduling with much consideration for maintaining traffic flow. During construction, traffic is expected to be maintained on US 74, Wallace Road, E. WT Harris Boulevard, Margaret Wallace Road, Arequipa Drive, Northeast Parkway, I-485, and the I-485 interchange at US 74. All the existing parallel roads to US 74 can be left open to traffic while constructing their extensions and connections. To ease congestion during construction, it is anticipated that these parallel road connections will be constructed first, allowing traffic to utilize these roads during construction of the US 74 widening and the addition of express lanes and grade-separated crossings.

It is anticipated Sharon Forest Drive, Village Lake Drive, Krefeld Drive, Sardis Road North, Sam Newell Road, and Matthews-Mint Hill Road will be closed during construction of the bridges over US 74. Traffic will be detoured and will utilize the existing parallel roads and the new parallel road connections.

North Sharon Amity Road, Idlewild Road, and NC 51 are expected to remain open during construction. The existing bridge on NC 51 over US 74 will remain open until the adjacent replacement bridge is constructed.

Conceptual designs, maintenance of traffic concepts, and construction cost estimates were developed for Independence Pointe Parkway crossing over and under existing I-485. Preliminary findings indicate designing the roadway alternative crossing over I-485 would be less disruptive to traffic and would have a lower construction cost.

Once construction is complete, all remaining at-grade roadways intersecting US 74 would have right-in right-out access. The proposed action would alter property driveways for many properties adjacent to US 74. Minor short-term business and community impacts may occur as a result of changes in access during construction. Efforts will be made to keep driveway access open during business hours.

4.14 Hydrology

4.14.1 Bridges and Drainage Structures

A Preliminary Hydraulics Report was prepared for the project in January 2018. Within the project study area, there are eight existing hydraulic structures and six proposed structures at new location stream crossings. Table 4-5 below presents the proposed bridges and drainage structures at major stream crossings for alternatives under consideration within the limits of STIP project U-2509. The location of the proposed structures are shown in Figure 4-3.

Table 4-5 Preliminary Structure Recommendations for Major Stream Crossings

Site*	Proposed Alignment	Location	Stream	Existing Structure	Recommended Structure
1	E. WT Harris Blvd	0.2 miles East of junction with US 74	Unnamed Tributary (UT) to Campbell Creek	1 @ 8' x 6' RCBC	Extend existing by 250' downstream end only
2	Margaret Wallace Rd	0.2 miles East of junction with US 74	Campbell Creek	4 @ 13' x 9' RCBC	150' bridge
3	US 74	0.3 mile West of junction with Krefeld Drive	McAlpine Creek	4 @ 40' bridge	225' bridge
4	Northeast Parkway Extension	0.8 miles East of junction with Margaret Wallace Rd	Irvins Creek	None (new location alignment)	250' bridge with 72' overflow pipe
5	US 74	0.3 miles West of junction with Sardis Road	Irvins Creek	1 @ 38' x 18.5' concrete arch	Extend by 62' upstream and 70' downstream
6	Krefeld Drive Extension	0.2 miles West of junction with Sardis Road North	Irvins Creek	None (new location alignment)	300' bridge
7	US 74	0.1 miles East of junction with Sam Newell Road	UT to Irvins Creek Tributary 1	1 @ 66" RCP at inlet	Extend existing by 45' upstream end only
8	US 74	0.3 miles West of junction with NC 51	Irvins Creek Tributary 1	2 @ 8' x 10' RCBC	Extend existing by 20' upstream and 45' downstream

Table 4-5 Preliminary Structure Recommendations for Major Stream Crossings (Continued)

Site*	Proposed Alignment	Location	Stream	Existing Structure	Recommended Structure
9	Sam Newell Rd	0.1-mile South of Junction with Independence Pointe Parkway	Irvins Creek Tributary 1	1 @ 18' x 7.8' structural plate arch	Terminate road improvements prior to site if possible; otherwise 80' bridge
10	Independence Pointe Pkwy Extension	0.5 miles East of junction with Sam Newell Road	Irvins Creek Tributary 1	None (new location alignment)	250' bridge (all alternatives); realign tributary with natural stream design methods (Options 1 & 2 only)
11	Independence Pointe Pkwy Extension	0.2 miles West of junction with NC 51	UT to Irvins Creek Tributary 1	None (new location alignment)	2 @ 8' x 7' RCBC; bury inverts 1'
12	Independence Pointe Pkwy Extension	At junction with NC 51	UT to Irvins Creek Tributary 1	1 @ 16.4' x 8.2' structural plate arch	Extend existing by 210' downstream end only
13	CPCC Lane Extension	0.7 miles East of junction with NC 51	Four mile Creek	None (new location alignment)	2 @ 8' x 7' RCBC; bury inverts 1' w/ equalizer pipes in floodplain
14	Independence Pointe Pkwy Extension	0.5 miles East of junction with Sam Newell Road	UT to Irvins Creek Tributary 1	None (new location alignment)	250' bridge (all alternatives); realign tributary with natural stream design methods (Options 1 & 2 only)

Note: Structure sizes and lengths are preliminary and subject to change at final design. *Site number corresponds with site number in Figure 4-3. N/A = not applicable; RCBC = reinforced concrete box culvert; RCP = reinforced concrete pipe.

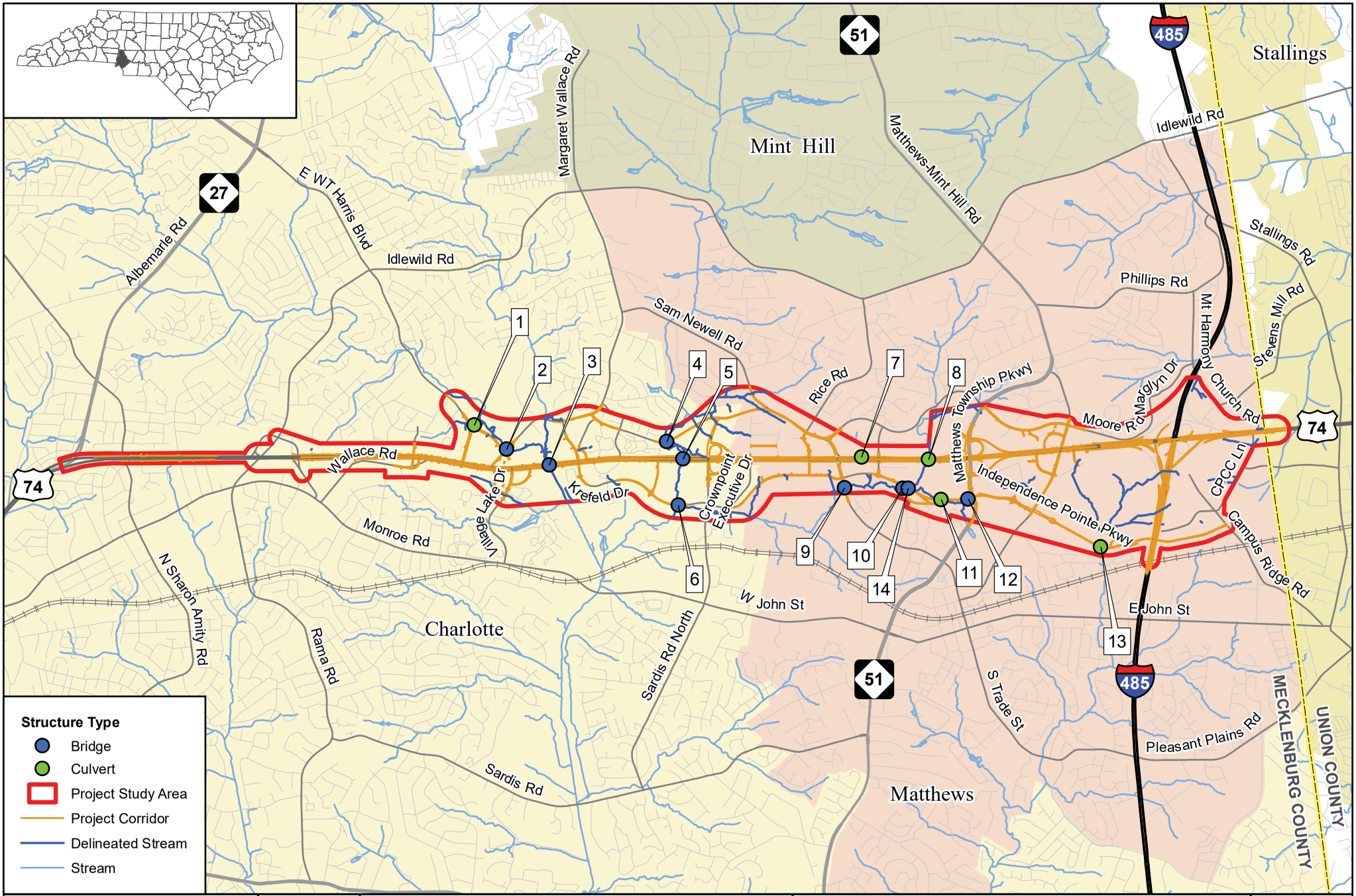


Figure 4-3 Hydraulic Structures

US 74 (Independence Boulevard) Improvements
STIP Project U-2509
Mecklenburg County

4.14.2 Flood Plains and Floodways

Mecklenburg County is a participant in the National Flood Insurance Program (NFIP), administered by the Federal Emergency Management Agency (FEMA). The county is an independent Cooperating Technical Partner (CTP) with FEMA and therefore NFIP compliance is not managed by the North Carolina Floodplain Mapping Program (NCFMP). According to the Effective Flood Insurance Study and Digital Insurance Rate Map obtained from Charlotte Mecklenburg Storm Water Services (CMSWS), Campbell Creek, McAlpine Creek, Irvins Creek, and Irvins Creek Tributary 1 are located in Detailed Study Areas with regulated floodplains and mapped floodways. Table 4-6 identifies floodplain impacts that are anticipated to result from the project.

Table 4-6 Anticipated Floodplain Impacts

Site*	Stream	Study Type	Anticipated Requirements	Anticipated Additional Permits
1	UT to Campbell Creek	None	No FEMA involvement	None
2	Campbell Creek	Detailed	MOA or CLOMR/LOMR	Mecklenburg Floodplain Development Permit
3	McAlpine Creek	Detailed	MOA	Mecklenburg Floodplain Development Permit
4	Irvins Creek	Detailed	MOA or CLOMR/LOMR	Mecklenburg Floodplain Development Permit
5	Irvins Creek	Detailed	MOA or CLOMR/LOMR	Mecklenburg Floodplain Development Permit
6	Irvins Creek	Detailed	MOA or CLOMR/LOMR	Mecklenburg Floodplain Development Permit
7	UT to Irvins Creek Tributary 1	None	No FEMA involvement	None
8	Irvins Creek Tributary 1	Detailed	MOA or CLOMR/LOMR	Mecklenburg Floodplain Development Permit
9	Irvins Creek Tributary 1	Detailed	MOA or CLOMR/LOMR	Mecklenburg Floodplain Development Permit
10	Irvins Creek Tributary 1	Detailed	MOA or CLOMR/LOMR	Mecklenburg Floodplain Development Permit
11	UT to Irvins Creek Tributary 1	None	No FEMA involvement	None
12	UT to Irvins Creek Tributary 1	None	No FEMA involvement	None
13	Four mile Creek	None	No FEMA involvement	None
14	UT to Irvins Creek Tributary 1	None	No FEMA involvement	None

*Site number corresponds with site number in Figure 4-3.

The NCDOT Hydraulics Unit will coordinate with CMSWS and NCFMP, the delegated state agency for administering FEMA's National Flood Insurance Program, to determine the status of the project with regard to applicability of NCDOT'S Memorandum of Agreement with NCFMP, or approval of a Conditional Letter of Map Revision (CLOMR) and subsequent final Letter of Map Revision (LOMR).

This project involves construction activities on or adjacent to a FEMA-regulated stream. Therefore, the Division shall submit sealed as-built construction plans to the Hydraulics Unit upon completion of project construction, certifying that the drainage structures and roadway embankment that are located within the 100-year floodplain were built as shown in the construction plan, both horizontally and vertically.

5

ENVIRONMENTAL EFFECTS OF PROPOSED ACTION

The following sections describe the existing conditions and potential environmental effects that may result from the project. The study area includes US 74 from west of Idlewild Road to I-485 (Charlotte Outer Loop) in Charlotte and Mathews, Mecklenburg County. The study area ranges from 500 to 2,000 feet on either side of the existing US 74 centerline, as well as an expanded area around the I-485 interchange to include connection alternatives to eastbound US 74 and to the Monroe Expressway. Figure 5-1 illustrates the study area.

5.1 Natural Environment

The evaluation of natural resources for this project includes biotic resources, water resources, wetlands, and federally protected species. This section summarizes the October 2018 *Natural Resources Technical Report* (NRTR), for which field investigations were conducted between November 2015 and January 2016; in June and September 2017; and updated protected species investigations were conducted in September 2018.

5.1.1 Soils

The Mecklenburg County Soil Survey identifies 18 soil types, and the Union County Soil Survey identifies three soil types, in the study area. The hydric soils generally align with valleys containing wetlands and streams discussed below. The soil types are listed in the NRTR.

5.1.2 Biotic Resources

5.1.2.1 Terrestrial Communities

Terrestrial communities in the study area are comprised of natural and disturbed habitats that support typical urban/suburban wildlife species. These communities include: maintained/disturbed (1,580 acres), mesic mixed hardwood forest (530 acres), Piedmont alluvial forest (210 acres), and pine forest (220 acres). Terrestrial communities would be impacted by project construction as a result of grading and paving, but these impacts are not expected to be substantial.

5.1.2.2 Aquatic Communities

Aquatic communities in the project study area consist of perennial streams and some intermittent streams, each containing typical warm water Piedmont aquatic species. Project construction may impact aquatic communities due to grading and paving activities, but these impacts are not expected to be substantial.

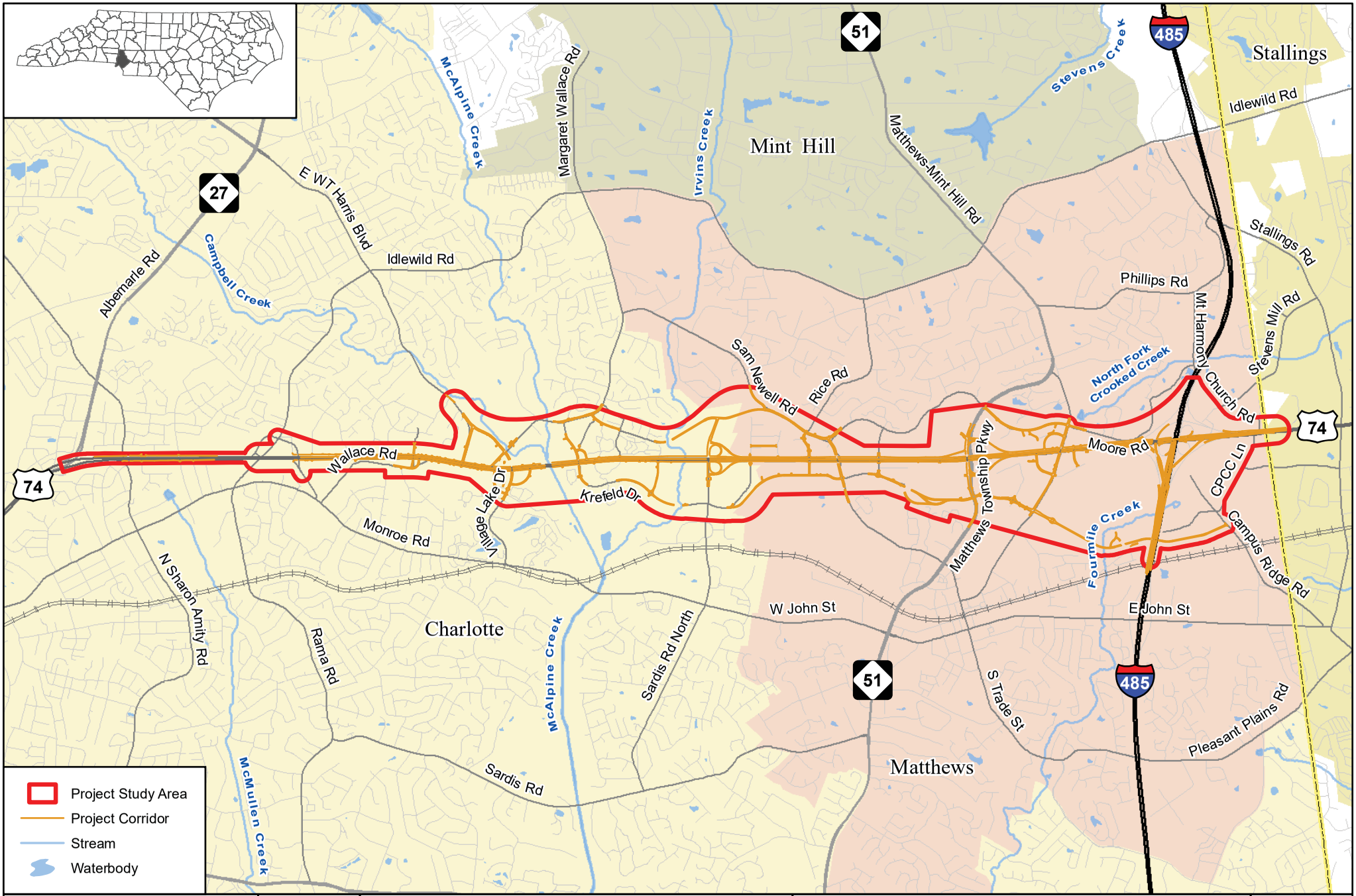


Figure 5-1

Project Location Map

US 74 (Independence Boulevard) Improvements
STIP Project U-2509
Mecklenburg County

5.1.3 Water Resources

Water resources in the study area are part of the Catawba River basin (US Geological Survey [USGS] Hydrologic Unit Code [HUC] 03050103) as well as the Yadkin-Pee Dee River basin (USGS HUC 03040105). A total of 57 streams were identified in the study area (refer to Figure 3 series in the NRTR). The list of streams and their physical characteristics can be found in Appendix C.

There are no designated anadromous fish waters, Primary Nursery Areas, High Quality Waters, Outstanding Resource Waters, or water supply watersheds in the project vicinity. McAlpine Creek and North Fork Crooked Creek are on the 2016 North Carolina 303(d) list of impaired waters due to poor benthos quality. There are no sites monitored by NC Stream Fish Community Assessment Program or the North Carolina Division of Water Resources (NCDWR) Ambient Monitoring System within one mile downstream of the study area.

5.1.3.1 Jurisdictional Water Resources

Surface waters and wetlands fall under the broad category of Waters of the US, as defined in 33 Code of Federal Regulations (CFR) § 328.3. Any action that proposes to dredge or place fill material into surface waters of wetlands falls under the jurisdiction of the US Army Corps of Engineers (USACE) under Section 404 of the Clean Water Act. The jurisdictional streams, ponds, and wetlands within the study area are shown in Figure 5-2 and in the Figure 3 series of the NRTR.

Fifty-seven jurisdictional streams, totaling approximately 60,906 feet in length, were identified in the study area; all are designated as warm water streams for the purposes of stream mitigation. A table of the jurisdictional streams and their characteristics can be found in Appendix D.

Sixty-eight jurisdictional wetlands, totaling approximately 14.5 acres in area, were identified in the study area. All wetlands are within the Catawba River basin (USGS HUC 03050103) and within the Piedmont Alluvial Forest community. A table of the jurisdictional wetlands and their characteristics can be found in Appendix E.

There are four jurisdictional ponds located within the study area; Pond One is connected to wetland WCF, Pond Two is along a roadside and connected to stream SCD via a culvert, and Pond Three is connected to stream SQ via a culvert. Pond Four is connected to stream SI, with a concrete channel for overflow from this pond to SI.

The project is anticipated to impact jurisdictional streams and wetlands. Table 5-1 summarizes the jurisdictional resource impacts for the parallel collector roads, each Independence Pointe Parkway Option, and US 74 (including Y-lines, ramps, and loops).

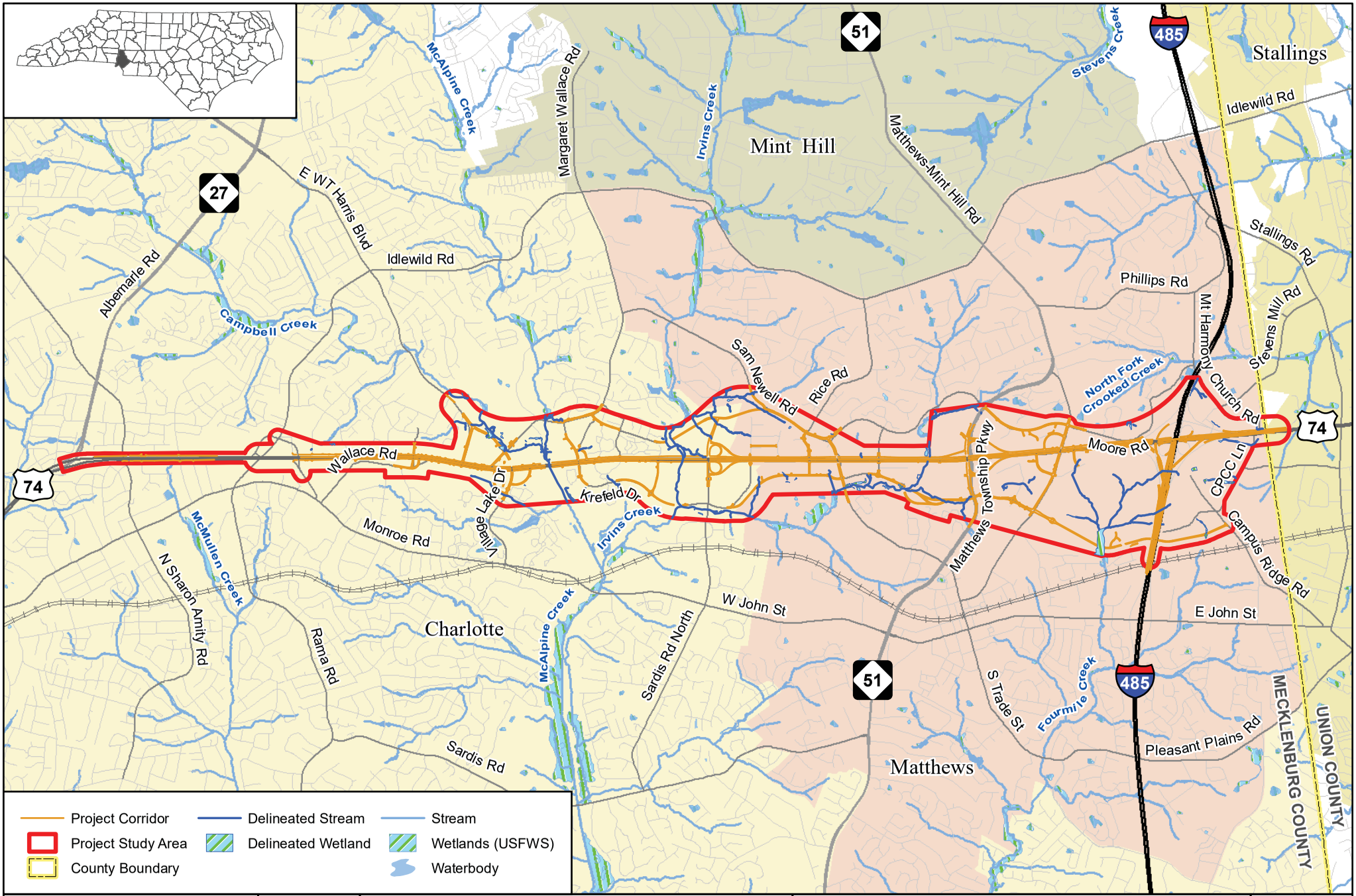


Figure 5-2

Wetlands and Streams

US 74 (Independence Boulevard) Improvements
STIP Project U-2509
Mecklenburg County

Table 5-1 Potential Jurisdictional Steam and Wetland Impacts

Jurisdictional Water Resource	Impacts[1]				
	Parallel Collector Roads	Independence Pointe Parkway Extension[2] Alternatives			US 74, Y-Lines, Ramps & Loops
		Option 1	Option 2	Option 3	
Wetlands (ac.)	0.92	0.12	0.12	0.19	0.93
Streams (linear ft.)	1,836	1,225	1,192	656	1,471
Bridged Streams (linear ft.)	592	176	176	128	223
Relocated Streams (linear ft.)	N/A	249	249	N/A	N/A
Ponds (ac.)	0.0	0.0	0.0	0.0	0.0

[1] Calculated with slope stakes limits plus 25-foot buffer. [2] Windsor Square Drive to NC 51.

5.1.3.2 Avoidance, Minimization, and Compensatory Mitigation of Environmental Consequences

NCDOT will attempt to avoid and minimize impacts to streams and wetlands to the greatest extent practicable. NCDOT will also investigate potential on-site stream and wetland mitigation opportunities for the Build Alternative. If on-site mitigation is not feasible, mitigation will be provided by North Carolina Division of Environmental Quality Division of Mitigation Services (NCDMS) or through the use of private mitigation banks.

5.1.4 Federally Protected Species

The Endangered Species Act (ESA; 16 United States Code [USC] §§ 1531 et seq.) provides for the conservation of species that are endangered or threatened and is intended to protect and recover these species and the ecosystems on which they depend. The ESA prohibits the take of federally-listed fish and wildlife species.

The US Fish and Wildlife Service (USFWS) lists six federally protected species for Mecklenburg County and three federally protected species for Union County (Table 5-2). As of January 9, 2019, the latest USFWS list of federally protected species is dated June 27, 2018. A brief description of each species' habitat requirements follows, along with the Biological Conclusion rendered based on the survey results of the study area.

Table 5-2 Federally Protected Species

Scientific Name	Common Name	Federal Status	Habitat Present	Biological Conclusion	County
Lasmigona decorata	Carolina heelsplitter	E	No	No Effect	Both
Rhus michauxii	Michaux's sumac	E	Yes	No Effect	Both
Echinacea laevigata	Smooth coneflower	E	Yes	No Effect	Mecklenburg
Helianthus schweinitzii	Schweinitz's sunflower	E	Yes	No Effect	Both
Myotis septentrionalis	Northern long-eared bat	T	*	*	Mecklenburg
Bombus affinis	Rusty-patched bumble bee	E	**	N/A	Mecklenburg

T: Threatened. E: Endangered. *May Affect, Likely to Adversely Affect- NLEB is exempt due to consistency with 4(d) rule. **The USFWS does not and will not require surveys for rusty-patched bumble bee in North Carolina because USFWS assumes the state is unoccupied by the rusty-patched bumble bee.

Smooth coneflower

Suitable habitat for smooth coneflower is present in the study area along roadside shoulders and utility easements. However, because no smooth coneflower was found during field investigation and the review of the July 2018 North Carolina Natural Heritage Program (NCNHP) database indicated no known occurrences within one mile of the study area, this project will have no effect on this species.

Northern long-eared bat

NCDOT has determined that the proposed action does not require separate consultation on the grounds that the proposed action is consistent with the final Section 4(d) rule. Therefore, this project may affect, and is likely to adversely affect, this species. A review of the July 2018 NCNHP database indicated no known occurrences within one mile of the study area.

Carolina heelsplitter

General habitat for the Carolina heelsplitter is shaded areas in large rivers to small streams, often burrowed into clay banks between the root systems of trees, or in runs along steep banks with moderate current. Based upon a lack of appropriate habitat; no known occurrences of the species in these streams; and lack of field observations during surveys this project will have no effect on this species.

Michaux's sumac

Michaux's sumac is known to occur in maintained railroad, roadside, powerline, and utility rights-of-way. Marginal habitat for Michaux's sumac is present in the study area along roadside shoulders and utility easements. However, no Michaux's sumac was found during field investigations. A review of the July 2018 NCNHP database indicates no known occurrences within one mile of the study area. Therefore, this project will have no effect on this species.

Schweinitz's sunflower

This rhizomatous perennial herb occurs in Xeric Hardpan Forests, as well as along roadside rights-of-way, maintained power lines, edge of thickets, old pastures, clearings and edges of upland oak-pine-hickory woods and Piedmont longleaf pine forests, and other sunny or semi-sunny habitats where disturbances help create open areas of sunlight. Suitable habitat for Schweinitz's sunflower is present in the study area along roadside shoulders and utility easements. However, a review of the July 2018 NCNHP database indicates no known occurrences within one mile of the study area and no Schweinitz's sunflower was found during field investigations. Therefore, this project will have no effect on this species.

5.1.4.1 Bald Eagle and Golden Eagle Protection Act

The bald eagle is protected under the Bald and Golden Eagle Protection Act (16 USC 668-668d), which is under the regulatory purview of the USFWS. Habitat for the bald eagle primarily consists of mature forests in proximity to large bodies of open water for foraging. Large dominant trees are utilized for nesting sites, typically within one mile of open water.

A review of the October 2015 and April 2017 NCNHP databases indicate no known occurrences of this species within one mile of the project study area. Due to the lack of habitat, no known occurrences, and survey results indicating no bald eagle presences, it has been determined that this project would not affect this species.

5.1.4.2 Endangered Species Act Candidate Species

As of March 26, 2018, the USFWS lists one Candidate species, *Symphyotrichum georgianum*, commonly known as Georgia aster for both Mecklenburg and Union Counties. A review of NCNHP records, last updated April 2017 indicates no occurrence of Georgia aster within one mile of the study area.

5.2 Cultural Resources

Historical, architectural, archaeological, and cultural resources encompass a range of sites, properties, and physical resources relating to human activities, society, and cultural institutions. Section 106 of the National Historic Preservation Act requires Federal agencies to consider the effects of their projects on historic properties. The Advisory Council on Historic Preservation and the State Historic Preservation Office (SHPO) administer Federal and state historic preservation programs. A project that receives Federal aid funding must participate in the Section 106 consultation process.

5.2.1 Historic Architectural Resources

In 2015, the SHPO recommended conducting an architectural survey for the area of potential effect (APE). The subsequent 2016 architectural investigation recorded 104 resources. The historical resources for this project can be found in Figure 5-3.

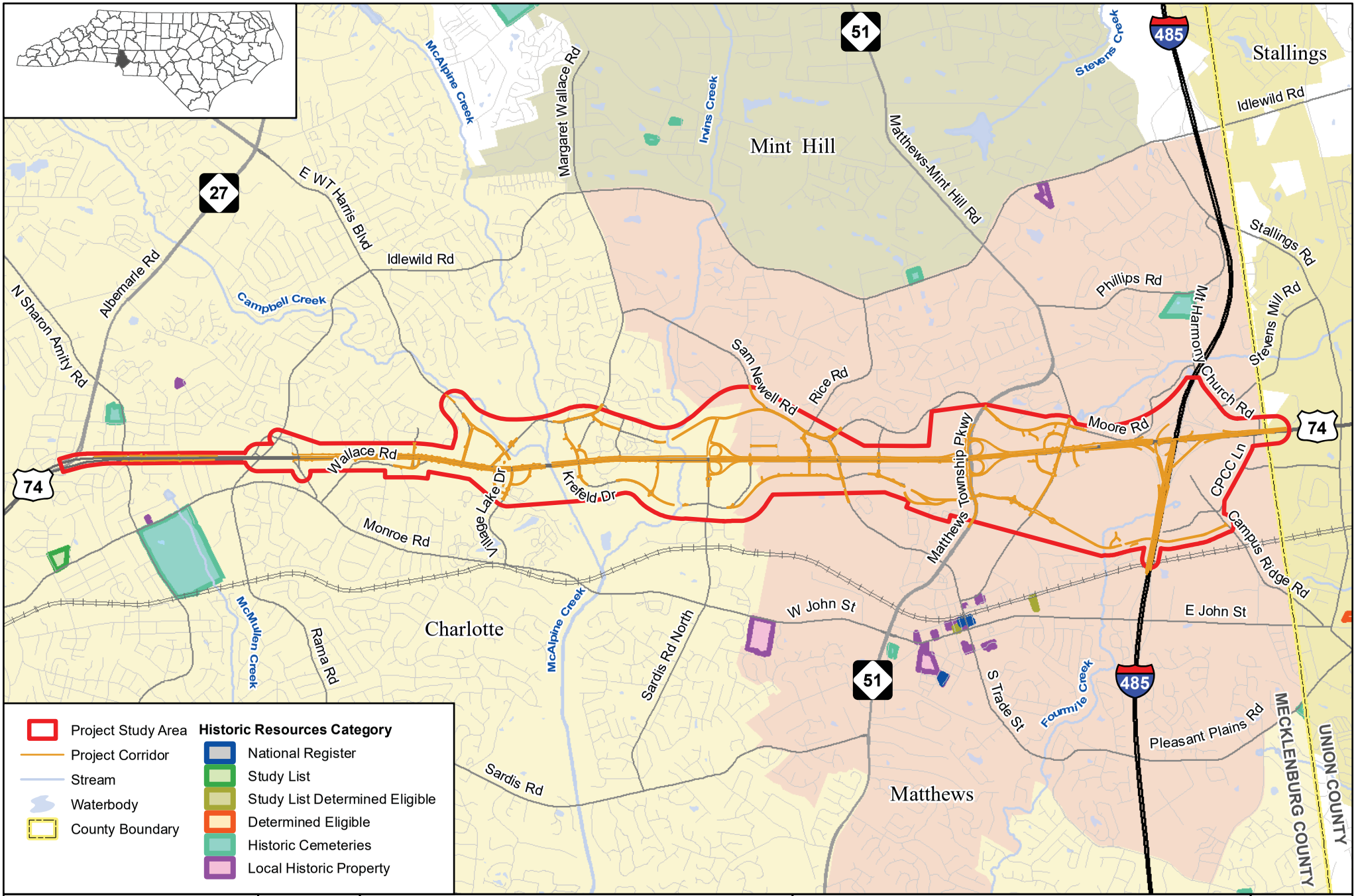


Figure 5-3 Historic Resources

US 74 (Independence Boulevard) Improvements
STIP Project U-2509
Mecklenburg County

Of the resources evaluated, three were recommended for further evaluation. NCDOT concluded that the following three resources were ineligible for listing on the NRHP. SHPO concurred with these findings in February 2017.

- Triston G. and Barbara Stegall House (MK3539);
- Harkey-McEwen-Moore House/McEwen-Moore Farmhouse (MK1178); and
- Layton E. and Margie Duncan House (MK3646).

Later in 2017, the APE was expanded to encompass new design alterations in the northwest and southeast. NCDOT conducted an additional on-site survey on November 13, 2017 and recorded 51 resources, including 21 resources constructed prior to 1970. Of the pre-1970 resources, none were exceptional examples of their type or candidates for further study. NCDOT Historic Architecture determined, and SHPO confirmed, that no resources within the expanded study area are listed on or eligible for the NRHP. The project is not anticipated to adversely impact historic resources and is in compliance with Section 106 and General Statutes for historic architecture resources, which can be found in Appendix F.

5.2.2 Archaeological Resources

In 2015, the SHPO recommended no archaeological investigation because there are no known archaeological sites in the proposed study area. The SHPO deemed it highly unlikely, based on knowledge of the area, that any archaeological resources eligible for the NRHP would be affected by the project. In 2017, the study area was expanded to encompass new design alterations in the northwest and southeast. The SHPO determined that the additional areas would not require systematic, intensive archaeological survey because of the disturbance from existing development and sloped and/or eroded soils. Accordingly, the project is not anticipated to adversely impact archaeological resources.

5.3 Section 4(f) / 6(f) Resources

Section 4(f) of the Department of Transportation Act stipulates that the Federal Highway Administration (FHWA) and other US Department of Transportation agencies cannot approve the use of land from publicly owned parks, recreational areas, wildlife and waterfowl refuges, or public and private historical sites unless:

- There is no feasible and prudent avoidance alternative to the use of land; and the action includes all possible planning to minimize harm to the property resulting from such use; or
- The Administration determines that the use of the property will have a *de minimis* impact. A *de minimis* impact is one that, after taking into account avoidance, minimization, mitigation and enhancement measures, results in no adverse effect to the activities, features, or attributes qualifying a park, recreation area, or refuge for protection under Section 4(f).

According to FHWA's Section 4(f) Tutorial, "Section 4(f) applies to a planned facility when a public entity owns the property and has formally designated and determined it to be significant for park, recreation area, or wildlife and waterfowl refuge purposes. Evidence of formal designation is the inclusion of the publicly owned land, and its function as a Section 4(f) property, into a City or County Master Plan. A mere expression of interest or desire is not sufficient, and the property must be currently publicly owned. When privately owned lands of these types are formally designated into a Master Plan for future development, Section 4(f) is not applicable."

There are numerous recreational resources within the project vicinity that are potential Section 4(f) properties. McAlpine Creek Park is part of the Charlotte-Mecklenburg parks system and located just west of Independence Boulevard near Village Lake Drive. The park is 114 acres and includes soccer fields, trails, a lake, play structures, the McAlpine Creek Greenway, and the Campbell Creek Greenway. According to local planners, a portion of a very popular 5K running course in McAlpine Creek Park is located along the McAlpine Creek and Campbell Creek Greenways.

The Mecklenburg County Regional Sports Complex is located near the Independence Boulevard/I-485 interchange. This partially constructed sports complex is under development and includes several soccer fields to tournament standards and associated parking, lighting, restrooms, greenway trails, and a playground.

Two future parks will be located within the project vicinity – Independence Pointe Neighborhood Park, currently in the planning stages, and a currently undeveloped park property near Central Piedmont Community College.

Several greenways and greenway extensions are also planned within the Direct Community Impact Area (DCIA), including the Irvins Creek Greenway Corridor, the Matthews Sports Complex Collector, and the Four Mile Creek Greenway extension.

NCDOT identified 12 potentially affected Section 4(f) properties, shown in Figure 5-4, by comparing the functional design maps to the 2015 Mecklenburg County Comprehensive Park & Recreation Master Plan Update and Mecklenburg County GIS data.

Table 5-3 presents an overview of the potential Section 4(f) properties. Trails, paths, bikeways, and sidewalks along existing or proposed roadways are not included in this since their primary purpose is to function as transportation facilities, not recreation facilities. Resources that do not have the potential to be impacted by the project (due to factors such as distance from the proposed improvements) are excluded.

Coordination between NCDOT, FHWA, and local officials with jurisdiction over these resources resulted in the incorporation of avoidance, minimization, mitigation, and enhancement measures into the project's design. Sidewalks, multi-use paths, and a pedestrian bridge have been discussed with Mecklenburg County and are incorporated into the designs to accommodate the planned greenways. The project is not anticipated to result in adverse effect to the activities, features, or attributes qualifying these resources for protection under Section 4(f), and a *de minimis* impact determination has been proposed for all potentially affected resources.

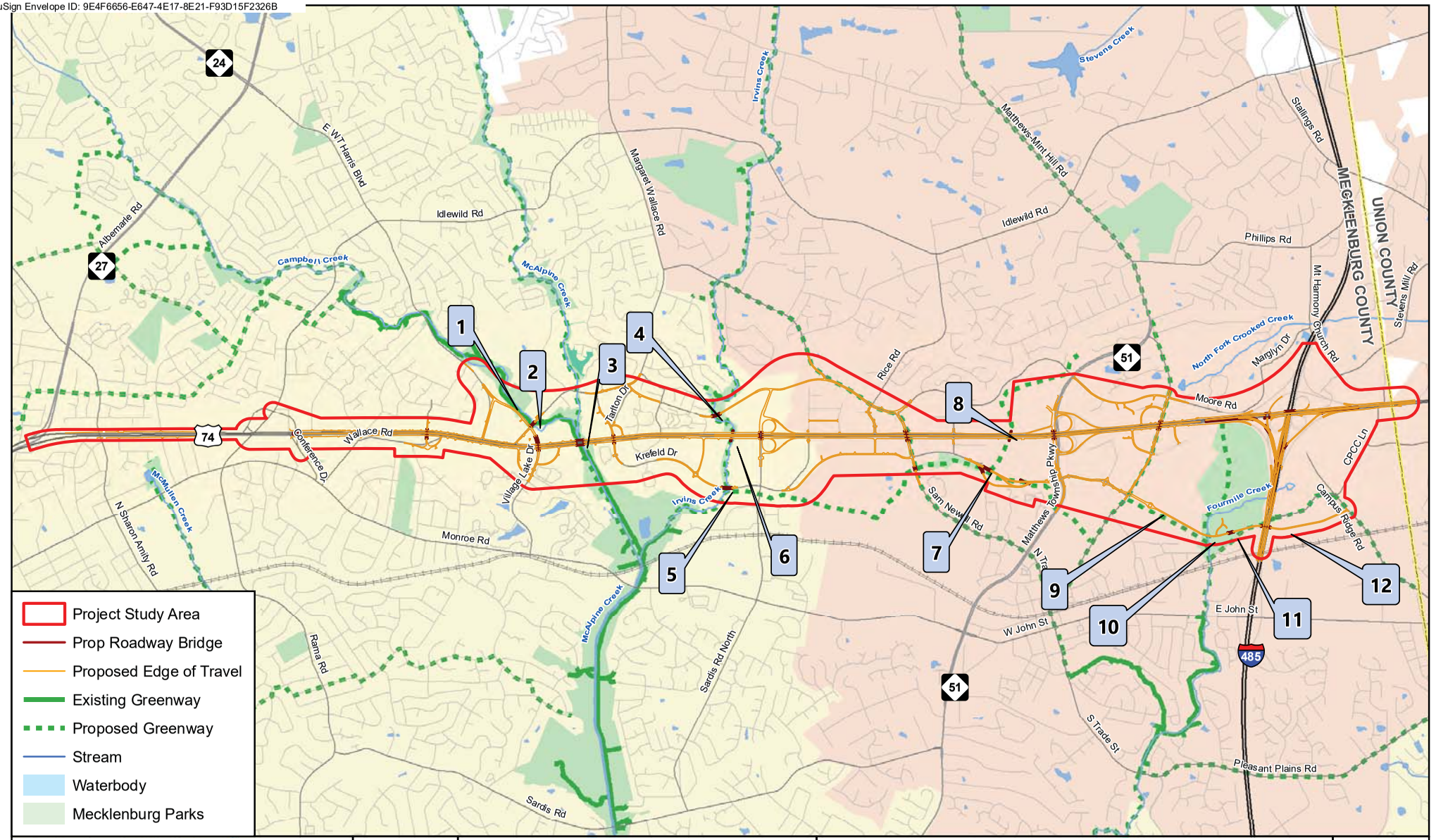


Figure 5-4

Potential Section 4(f) Resources

US 74 (Independence Boulevard) Improvements

STIP Project U-2509

Mecklenburg County

Table 5-3 Potential Section 4(f) Properties

Map ID #	Property Name	Property Ownership within the Study Area	U-2509 Project Segment(s)	U-2509 Project Proposed Improvement[1]	Proposed Impact Determination[2]	Description
1	Campbell Creek Greenway	Mecklenburg County	Village Lake Drive Extension	New location alignment	*De Minimis*	The project would intersect county property for the existing Campbell Creek Greenway, which runs along a tributary to McAlpine Creek between Margaret Wallace Road and Harris Boulevard. Campbell Creek Greenway connects to Upper McAlpine Creek Greenway at Margaret Wallace Road.
2	Campbell Creek Greenway/Upper McAlpine Creek Greenway	Mecklenburg County	Margaret Wallace Road	A 150' bridge would replace the existing 4 @ 13' x 9' RCBC[3]	*De Minimis*	The project would intersect county property for the existing Campbell Creek Greenway/Upper McAlpine Creek Greenway connection. Campbell Creek Greenway connects to Upper McAlpine Creek Greenway at Margaret Wallace Road. The existing greenway crosses Margaret Wallace Road at-grade. Following completion of this project, the greenway would be enhanced by moving it under the bridge.
3	McAlpine Creek Regional Park & Greenway	Mecklenburg County	US 74	A 225' bridge would replace the existing 4 @ 40' bridge	*De Minimis*	The project would intersect county property and the existing McAlpine Creek Greenway. US 74 crosses over the existing greenway.
4	(Planned) Irvins Creek Greenway Corridor	Private	Arequipa Drive extension	A 250' new alignment bridge	Not Applicable	The project would intersect a planned extension of the Irvins Creek Greenway, but, the property is not currently owned by Mecklenburg County; therefore, Section 4(f) is not applicable.

Table 5-3 Potential Section 4(f) Properties (Continued)

#	Property Name	Property Ownership within the Study Area	U-2509 Project Segment(s)	U-2509 Project Proposed Improvement[1]	Impact Determination	Description
5	(Planned) Irvins Creek Greenway Corridor	Mecklenburg County	Krefeld Drive extension	A 300' bridge on new alignment	*De Minimis*	The project would intersect county property and a planned extension of the Irvins Creek Greenway west of Sardis Road North. No improvements have been made to date.
6	Irvins Creek Greenway Corridor	Mecklenburg County	US 74	Extend the existing 1 @ 38' x 18.5' bottomless concrete arch	*De Minimis*	The project would intersect county property and a planned extension of the Irvins Creek Greenway west of Sardis Road North/Independence Boulevard intersection. No improvements have been made to date.
7	Independence Pointe Neighborhood Park & Planned Greenways	Mecklenburg County	Independence Pointe Parkway extension	A 250' bridge on new alignment	Not Applicable	The project would intersect the privately-owned, undeveloped Independence Pointe Neighborhood Park property, where there is also a planned greenway. Two of the three alternatives for Independence Pointe Parkway would also intersect the planned greenway along Irvins Creek Tributary #1 (southwest of the Matthews Festival Shopping Center).
8	Planned Greenway along Irvins Creek Tributary #1	Private	US 74	Extend the existing 2 @ 8' x 10' RCBC	Not Applicable	The project would intersect a planned greenway along the Irvins Creek Tributary #1. However, according to GIS data, the property is not currently owned by Mecklenburg County.
9	Planned Mecklenburg County Sports Complex Connector	Private with power easement	Independence Pointe Parkway extension	New alignment	Not Applicable	The project would parallel the planned greenway connector for the Mecklenburg County Sports Complex. Per the 2015 Master Plan Update, the planned greenway would connect the Sports Complex to Matthews-Mint Hill Road along an existing power easement.

Table 5-3 Potential Section 4(f) Properties (Continued)

#	Property Name	Property Ownership within the Study Area	U-2509 Project Segment(s)	U-2509 Project Proposed Improvement[1]	Impact Determination	Description
10	Planned Four Mile Creek Greenway extension	Mecklenburg County	Independence Pointe Parkway extension	2 @ 8' x 7' RCBC would be constructed on new alignment	*De Minimis*	The project would intersect a planned extension of the Four Mile Creek Greenway within the Mecklenburg County Regional Sports Complex. However, a transportation corridor for the proposed Independent Pointe Parkway extension is identified in the 2007 Mecklenburg County Regional Sports Complex Master Plan.
11	Mecklenburg County Regional Sports Complex	Mecklenburg County	Independence Pointe Parkway extension	New alignment	*De Minimis*	The project would intersect the existing Mecklenburg County Regional Sports Complex. However, a transportation corridor for the proposed Independent Pointe Parkway extension is identified in the 2007 Mecklenburg County Regional Sports Complex Master Plan.
12	Planned Park Near Central Piedmont Community College	Mecklenburg County	Independence Pointe Parkway extension	New alignment	*De Minimis*	The project would intersect an approximately 22-acre, County-owned property that is identified as a planned park in the 2015 Mecklenburg County Comprehensive Park and Recreation Master Plan Update. NCDOT will provide access to the future park property.

[1] The proposed improvements in this table are drawn from the Concurrence Point 2A Form dated June 20, 2016 as well as subsequent design modifications. [2]A meeting was held with Mecklenburg County in March 2017 to discuss the proposed Section 4(f) properties. FHWA used the results of that meeting to make the proposed impact determination in August 2017. [3] RCBC = Reinforced Concrete Box Culvert.

A review was conducted and it was determined that there was one Section 6(f) resource (Mason Wallace Park) in the study area. There are no impacts to any Section 6(f) resource.

5.4 Social Effects

For NCDOT projects, the evaluation of the human environment includes a detailed study of existing community characteristics and analysis of potential impacts. This section provides a summary of the 2015 Community

Characteristics Report (CCR), 2017 Community Impact Assessment (CIA), 2017 Indirect and Cumulative Effects (ICE) Screening, and 2017 Land Use Scenario Assessment (LUSA) that were prepared for the project.

Census data indicates a Spanish language-speaking population that meets or exceeds the US Department of Justice Limited English Proficiency (LEP) Safe Harbor threshold within the DSA. Census data also indicates Other Indo-European, Asian/Pacific, and Other language-speaking population that exceed 50 persons within the DSA that may require language assistance. Local planners were unable to provide additional clarification regarding the other languages spoken.

Because LEP populations within the DSA exceed the Department of Justice's Safe Harbor thresholds, written translations of vital documents should be (and have been) provided for the Spanish language-speaking population, in addition to other measures assuring meaningful language access, as determined by NCDOT Public Involvement to satisfy the requirements of Executive Order 13166.

5.4.1 Neighborhoods/Communities

5.4.1.1 Affected Neighborhoods/Communities

The project's Direct Community Impact Area (DCIA) is much larger than the aforementioned Study Area and encompasses portions of Charlotte, Matthews, and Stallings. The community facilities and DCIA are shown on Figure 5-5a. Toward the northwestern portion of the study area, there are a few residential neighborhoods and apartment complexes. The community resources include places of worship, daycares, schools, and the Campbell Creek Greenway. The commercial and retail uses such as shopping malls, stores, restaurants, and auto-related services such as repair shops and dealerships are along US 74.

This portion of the DCIA has fewer community resources, commercial, and retail uses. Most places of worship and schools can be found along Margret Wallace Road. Most commercial and retail uses can be found along Independence Boulevard.

Near Matthews, there are a few residential neighborhoods and apartment complexes. This area is predominately commercial, and retail oriented with shopping centers such as Windsor Square and Matthews Festival Shopping Center and auto-related services such as repair shops and dealerships along Independence Boulevard and NC 51.

Effects on communities and neighborhoods can include the physical taking of land, homes, and businesses; the construction of physical or psychological barriers that result from new transportation facilities that divide or isolate a section of the community; changes in access or travel patterns within a community or physical intrusions such as noise, dust, or visual impacts can negatively affect a community. Overall, there is little community cohesion within the project study area due to the large amount of commercial uses; therefore, the project is not anticipated to result in the division of existing residential neighborhoods. However, the addition of general purpose lanes, express lanes in the median, and the replacement of at-grade intersection with interchanges and overpasses, is expected to affect community resources and bus routes due to the change of travel patterns and accessibility to communities and/or neighborhoods.

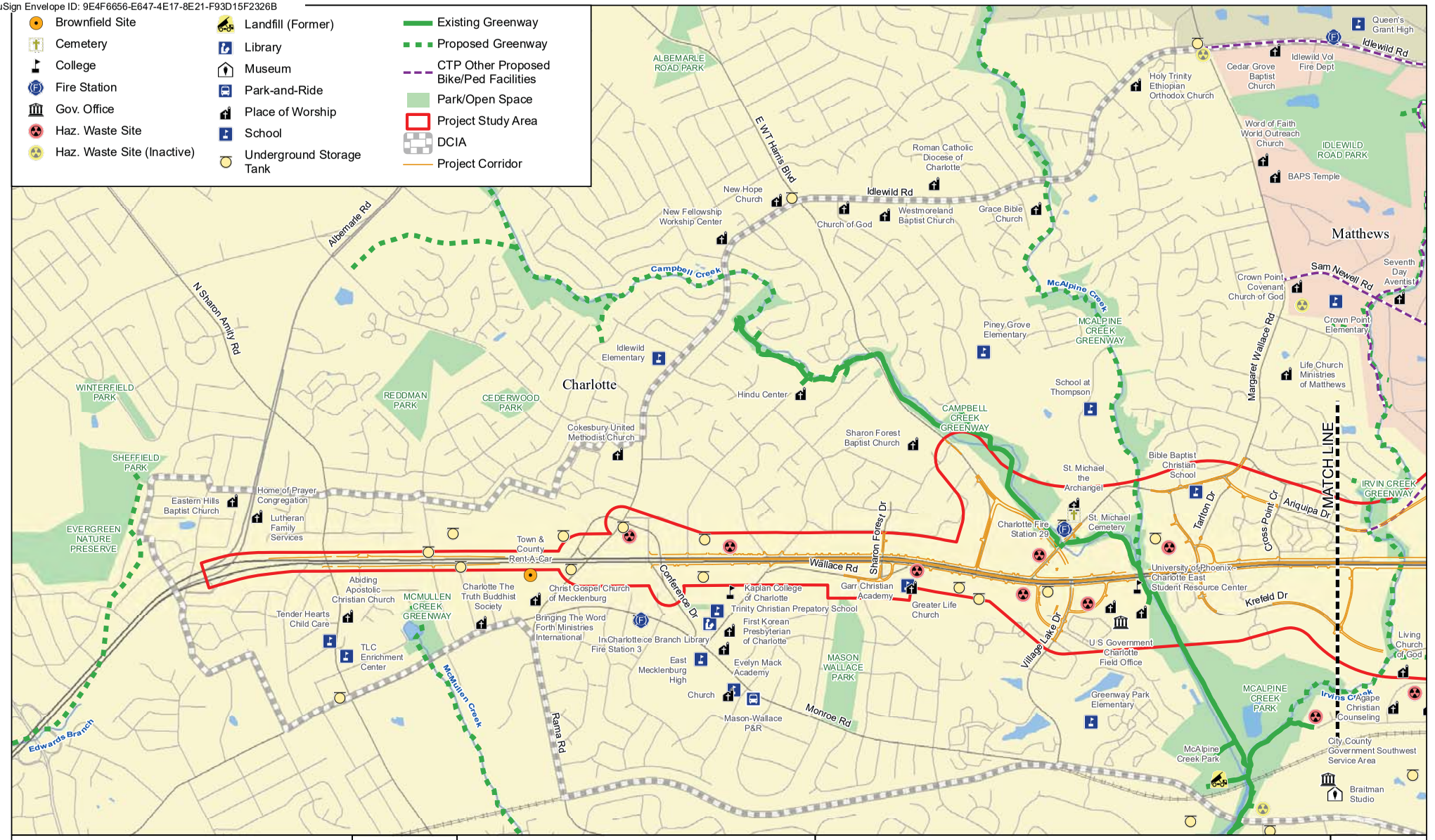


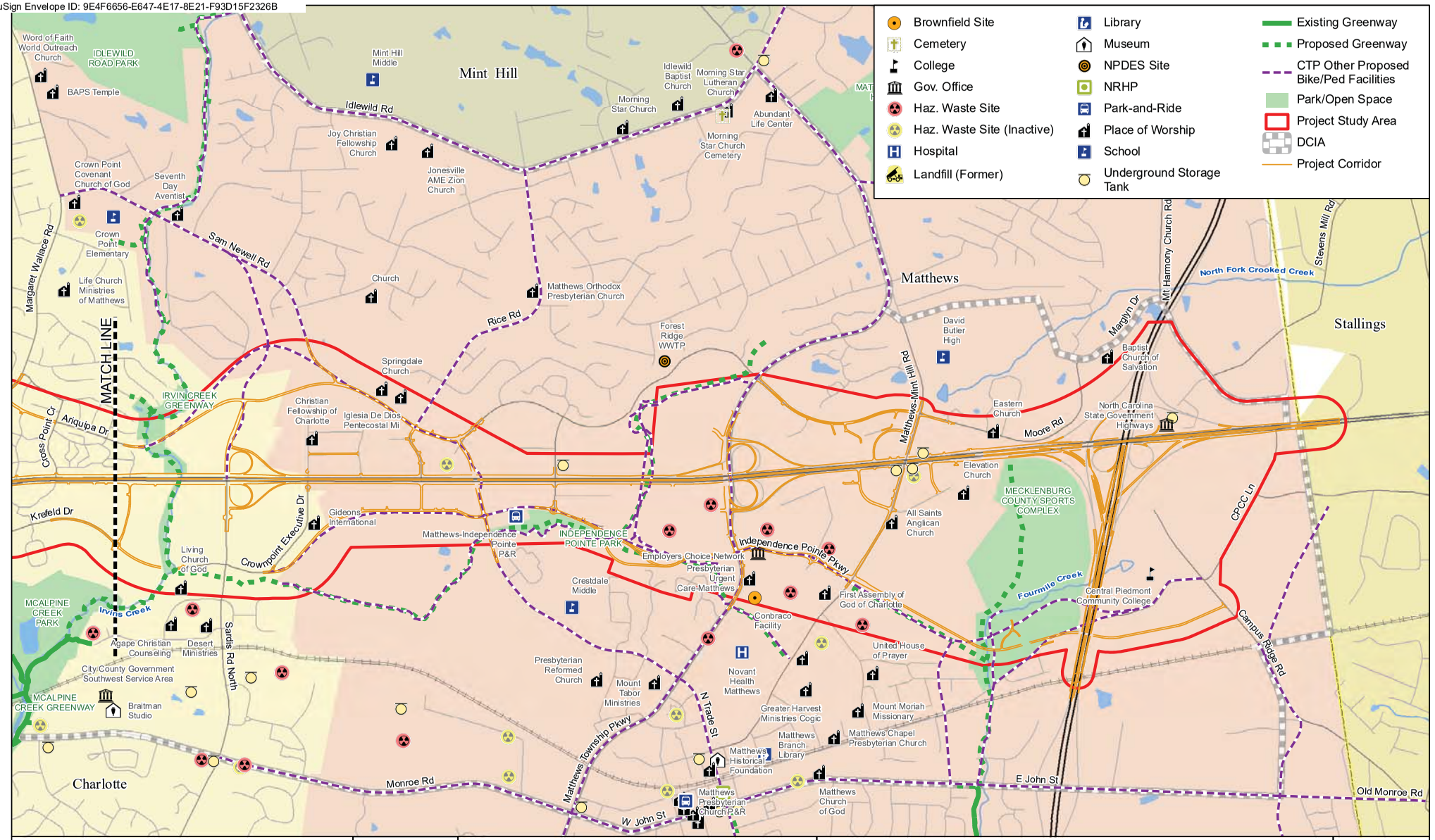
Figure 5-5a

Community Facilities

US 74 (Independence Boulevard) Improvements

STIP Project U-2509

Mecklenburg County



Scale
0 0.25 0.5 1
Mile

Figure 5-5b

Community Facilities

US 74 (Independence Boulevard) Improvements
STIP Project U-2509
Mecklenburg County

5.4.2 Relocations

The project would result in the taking and/or relocation of many businesses along the project corridor due to the widening and introduction of grade separations and interchanges. Where feasible, retaining walls have been incorporated into the project design to minimize the construction footprint and subsequently the number of businesses directly impacted. Table 5-4 summarizes the residential and business relocations.

Table 5-4 Anticipated Relocation Impacts

Type of Relocations	Impacts				
	Parallel Collector Roads	Independence Pointe Parkway Extension[1] Alternatives			US 74, Cross Streets, Ramps & Loops
		Option 1	Option 2	Option 3	
Residential Relocations	4	0	24	36	5
Business Relocations	8	0	0	0	94
Place of Worship Relocations	0	0	0	0	7
Total	12	0	24	36	106

Source: NCDOT EIS Relocation Report, May 22, 2019. [1](Windsor Square Drive to NC 51).

Construction of the parallel collector roads is anticipated to result in 4 to 40 residential relocations, 8 business relocations, and no place of worship or cemetery relocations. Independence Pointe Parkway Extension Option 1 would not cause any anticipated relocations. Independence Pointe Parkway Extension Option 2 and 3 would result in 24 and 36 residential relocations, respectively (2 and 3 apartment buildings with 12 units each), and no business, place of worship, or cemetery relocations.

US 74, Y-line, and ramp and loop construction of interchanges is anticipated to result in 5 residential relocations, 94 business relocations, 7 places of worship relocations, and no cemetery relocations for a total of 106 relocations.

Public Law 91-646, the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, commonly called the Uniform Relocation Act, is the primary law for acquisition and relocation activities on Federal or federally-assisted projects. The law provides uniform policy and procedures for the acquisition of real property by all agencies that receive financial assistance for any program or project of the United States Government. Because Federal funds are used in this project, the Uniform Relocation Act applies.

The NCDOT's relocation assistance program is based on the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, and Title 49 CFR Part 24. The NCDOT Right of Way Unit is responsible for acquisition of land and right-of-way for the construction and improvements of all roads and highways that are part of the State Highway System. The Right of Way Unit ensures that persons displaced as a result of a project are treated fairly, consistently, and equitably so that such persons will not

suffer disproportionate impacts as a result of projects designed for the benefit of the public as a whole. Appendix G contains the Relocation Reports for this project.

All relocation services and benefits are administered without regard to race, color, national origin, or sex in compliance with Title VI of the Civil Rights Act (42 USC 2000d, et seq), per NCDOT's Title VI Policy Statement.

5.4.3 Title VI and Environmental Justice

Title VI of the Civil Rights Act of 1964 protects individuals from discrimination on the grounds of race, age, color, religion, disability, sex, and nation origin. Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, requires that each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its program, policies, and activities on minority and low-income populations.

Census data indicates a notable presence of minority and low-income populations meeting the criteria for Environmental Justice within the Demographic Study Area, and minority and low-income communities were observed within the DCIA during field visits. As a result of the Environmental Justice analysis completed, both minority and low-income populations that meet the Environmental Justice criteria were identified in the project vicinity. Notably adverse community impacts are anticipated with this project but appear to affect all populations equally; thus, impacts to minority and low-income populations do not appear to be disproportionately high and adverse. Benefits and burdens resulting from the project are anticipated to be equitably distributed throughout the community. No disparate impacts are anticipated under Title VI and related statutes.

The U-2509 project would result in moderate negative impacts to access, accessibility, and mobility, particularly for pedestrians and transit users. The additional general purpose lanes, express lanes, jersey barrier, and plastic delineators would reduce the ability for pedestrians to cross midblock. The closure of seven intersections and the conversion of six at-grade intersections to grade-separations or interchanges would lengthen travel distances for some pedestrians and bicyclists. The evolution of transit along the project corridor, which is occurring independent of the U-2509 project, would shift the focus to enhanced bus service within the express lanes.

The impacts to pedestrians and transit users would occur along the entire project corridor and not only in the Block Groups with high percentages of minority and/or low-income populations in the western half of the DCIA. Because these modes of transportation are more critical to low-income populations, the project team has coordinated with local planners to minimize these effects.

Notable improvements have been incorporated in the project to lessen the impact of barriers for pedestrians and bicyclists as detailed in Section 5.5.4 below.

While CATS envisions transit service along the project corridor to be more oriented toward regional commuter trips, the planned LYNX Silver Line would provide access to more destinations within the corridor and would serve many trip purposes.

In addition to providing a reliable travel time options and improving mobility along the corridor, another purpose of the U-2509 project is to improve connectivity across and along US 74 to, from, and between

adjacent communities within the study area. The completion of parallel connector roads is planned to alleviate impacts that the US 74 improvements may have on local connectivity, and may allow for further transit enhancements.

The U-2509 project would result in several notable offsetting benefits for the entire corridor, including reduced congestion, reduced travel times, improved travel options, and improved safety. Based on the above discussion and analysis, the U-2509 project would not cause disproportionately high and adverse effects on any minority or low-income populations.

5.4.4 Bicycle & Pedestrian Facilities

There are existing sidewalks in some locations along US 74, but not throughout the project corridor. Additionally, there are some pedestrian crosswalks and signalized pedestrian countdown timers, but these are limited. Surrounding streets also have some existing sidewalks, but many gaps exist.

As noted in Section 4.9, extensive bicycle and pedestrian improvements are planned as part of the project. Potential impacts to bicyclists and pedestrians would occur along the entire project corridor. Because these modes of transportation are more critical to low-income populations, the project team has coordinated extensively with local planners to minimize these effects and maximize the benefits of new facilities.

Notable improvements have been incorporated into the project bicyclists as detailed in Section 5.5.4 below. Eight-foot sidewalks would be provided along both sides of US 74 from Idlewild Road to Krefeld Drive, connecting existing gaps and replacing existing five-foot sidewalks. An additional grade separation with pedestrian accommodations at Sharon Forest Drive has been added to the project in response to connectivity concerns from residents and local planners. Bike and pedestrian accommodations on grade-separated interchanges and parallel collector roads and connections to greenways have also been incorporated into the project's design.

These improvements would mitigate negative impacts for some pedestrians and result in improved safety and connectivity. However, some pedestrians would still experience increased trip distances resulting from the project's improvements. While this negative impact would have the potential to affect low-income populations that are reliant on walking as their main mode of transportation, it would not constitute an appreciably more severe impact. Accordingly, pedestrian impacts to low-income populations would not be disproportionately high and adverse.

5.4.5 Other Public Facilities and Services

Other public facilities and services in, or in proximity to, the study area includes 55 churches, Mathews Historical Foundation Museum, Matthews Public Library, Public Library of Charlotte and Mecklenburg County, City Council Government Southwest Service Area, City County Government Parks/Nature Preserves, US Government Charlotte Field Office, Employer's Choice Network, and the NCDOT Independence Transportation Park. None of these facilities are affected by the project.

5.5 Economic Effects

The project would close the driveways of numerous businesses along Independence Boulevard. However, these businesses would be provided access via the system of parallel collector roads. Several intersections would be grade-separated with altered access to the corridor, and some intersections would no longer

have access to Independence Boulevard. Where cross street access to general purpose lanes is maintained, it would be converted to right-in right-out access only, and some interchanges would provide free-flow access onto US 74. Ninety-four businesses would be relocated because of the widening but mostly due to the introduction of grade separations and interchanges.

Businesses that are not relocated are likely to experience temporary impacts during construction because of reduced access and/or less travel in the corridor during project construction. Businesses that rely on drive-by traffic could temporarily experience minor decreases in revenue resulting from construction traffic or decreased access caused by construction activities.

Once the project is completed, the improved US 74 and road network, would provide more capacity and less congestion, faster travel times, and improved travel connectivity.

5.6 Land Use and Zoning

The following section describes existing and planned land uses and zoning in the vicinity of the project. Current zoning can be found in Figure 5-6.

5.6.1 Existing Land Use and Zoning

5.6.1.1 City of Charlotte

Zoned land uses along the project corridor are predominately business (B-2, and B-D [CD]) and commercial (B-1SCD and CC) uses with a few residential (R-12MF [CD]) uses. Much of the corridor can be characterized as commercial parcels fronting the highway, with most of the businesses having direct access to US 74 Outside of the project corridor the land use consists of predominately residential uses and a few industrial and office uses.

5.6.1.2 Town of Matthews

The Town of Matthews Zoning Map, updated on May 9, 2018, identifies the zoned land use along the project corridor in the Town of Matthews as a mix of business (Highway Business [B-H] and Neighborhood Business [B-1]), entertainment district (ENT), residential (R-20 and R-12), light and general industrial (I-1 and I-2), and conditional-only uses. Outside of the project corridor, the zoned land use largely consists of residential (R-20, R-15, R-9, R-12), and industrial uses. Much of the corridor can be characterized as commercial parcels fronting the highway. Most of the businesses have direct access to US 74.

5.6.2 Future Land Use

5.6.2.1 City of Charlotte

The City of Charlotte's 2040 Comprehensive Plan, which is intended to guide the city on what and where developments can occur, does not provide recommendations for planned land uses within the project study area. However, the East District Plan, which was adopted in 1990, shows that the project corridor's planned land use is to support residential, retail, transit-oriented, office/retail, park/open space, and industrial uses.

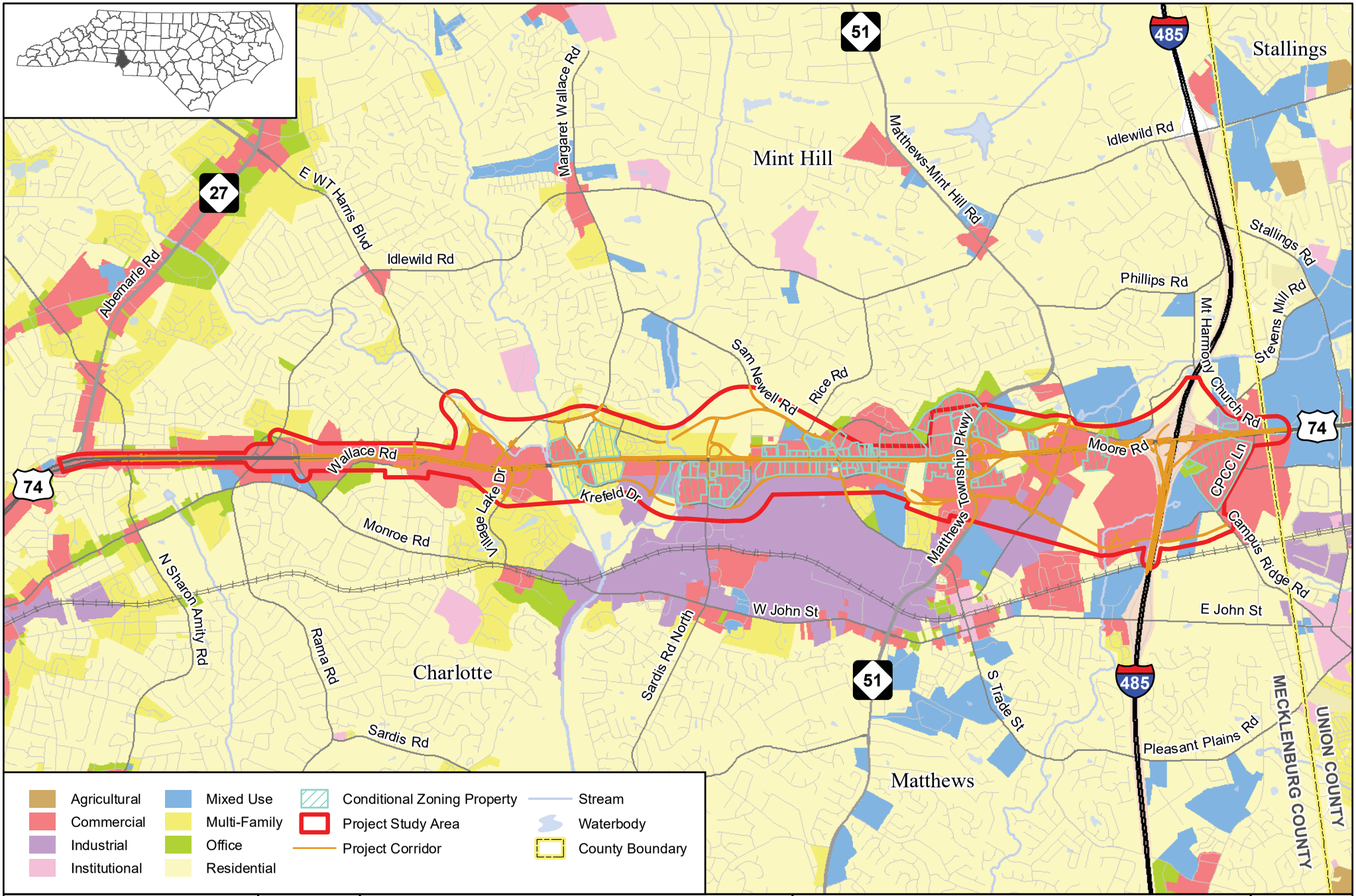


Figure 5-6

Zoning

US 74 (Independence Boulevard) Improvements
STIP Project U-2509
Mecklenburg County

5.6.2.2 Town of Matthews

Planned land uses within the Town of Matthews include developing the area around the sports complex into a regional park with a dozen sports fields, trails, picnic areas, playgrounds, a stadium, as well as a new mixed-use urban-scale neighborhood with housing, shops and services, restaurants, and a strong focus on entertainment venues for all ages. Along the Monroe Road corridor, planned uses include redevelopment of the strip retail into multi-story mixed buildings, creating a more pedestrian friendly environment, encouraging the preservation of large canopy trees along the corridor, and limiting uses that generate significant new traffic.

5.6.3 Conditional Zoning

Conditional zoning districts are zoning districts in which the development and use of the property is subject to predetermined ordinance standards and the rules, regulations, and conditions imposed as part of the legislative decision creating the district and applying it to the particular property. A conditional zoning district allows particular uses to be established only in accordance with specific standards and conditions pertaining to each individual development project. For the past 30 years, the Town of Matthews has used conditional zoning to preserve a 350-foot transitional right-of-way or open space for road improvements and green space. Owners of businesses along this corridor have been aware throughout this time period that access will likely be altered by improvements to US 74. Right-of-way has also been preserved on a system of parallel collector roads that would provide access to businesses that are currently accessed via US 74. The conditional zoning areas within the project study area are shown in Figure 5-7.

5.7 Indirect and Cumulative

The project has the potential for transportation-impact causing activities that may influence nearby land uses or stimulate growth. Therefore, in December 2017 an ICE screening report was prepared, as well as a LUSA.

5.7.1 Indirect and Cumulative Effects

As noted in the 2017 ICE Screening, the project is of moderately high concern because it is expected to have notable indirect land use effects in the Future Land Use Study Area (FLUSA). The land use effects resulting from the project are probable as the project would increase the capacity of the road, generate a notable travel time savings, alter existing driveways and cross streets along US 74, and provide new access and opportunities for increased traffic exposure to properties within the FLUSA by improving connectivity among adjacent communities. Additionally, the study area is a targeted growth corridor for the City of Charlotte and the Town of Matthews, however there is limited available land for new development.

Because the proposed project is of moderately high concern and would likely lead to substantial land use changes, the indirect and cumulative effects screening report concluded a LUSA was warranted.

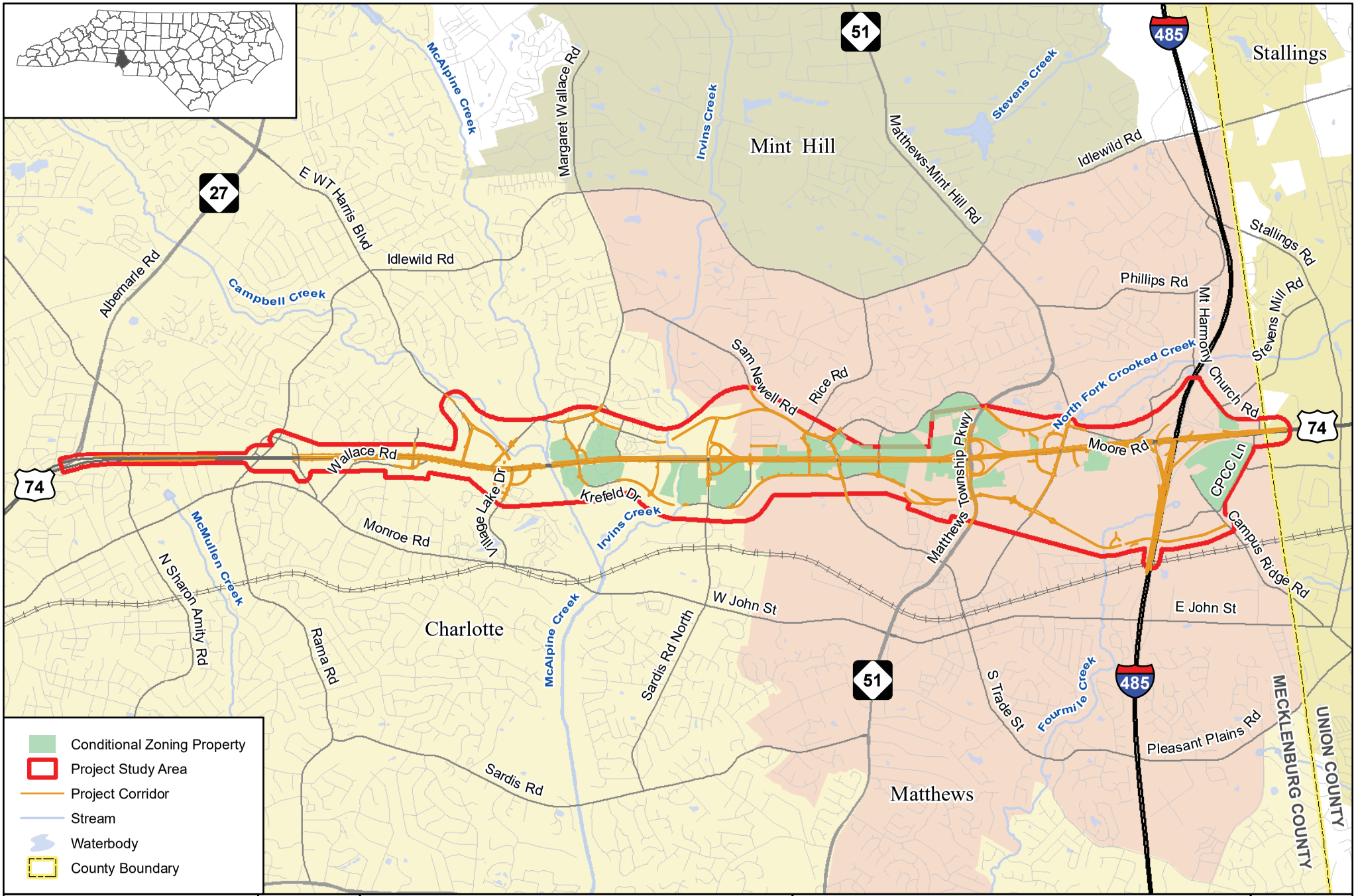


Figure 5-7

Conditional Zoning

US 74 (Independence Boulevard) Improvements
STIP Project U-2509
Mecklenburg County

5.7.2 Land Use Scenario Assessment

As detailed in the 2018 LUSA, the FLUSA was divided into eight sub-areas referred to as probable development areas (PDAs) to better examine the growth scenario. After comparing the potential impacts in each PDA with a build and no-build scenario, the LUSA concluded the land within the FLUSA is likely to experience development regardless of the presence of the project. However, the project would result in new connections and improvements to existing facilities, making the land within the FLUSA more attractive for development and redevelopment. The project would also speed up development as well as refocus some development away from Independence Boulevard and toward the parallel collector roads. Additionally, residential and commercial development is also likely to occur with or without the project but may be accelerated and enhanced by project improvements. Examination of the PDAs showed that this project will create new access to land available for redevelopment and new development; therefore, the project is likely to accelerate and expand development in the area. Redevelopment is anticipated to align with the local plans for targeted growth.

5.8 Traffic Noise Analysis

In accordance with Title 23 Code of Federal Regulations Part 772, Procedures for Abatement of Highway Traffic Noise and Construction Noise (Title 23 CFR 772) and the North Carolina Department of Transportation Traffic Noise Policy, each Type I highway project must be analyzed for predicted traffic noise impacts. In general, Type I projects are proposed State or Federal highway projects that construct a highway on new location, add new through lanes to an existing highway, substantially change the horizontal or vertical alignment of an existing highway, add or relocate interchange ramps or loops to complete an existing partial interchange, or involve new construction or substantial alteration of transportation facilities such as weigh stations, rest stops, ride-share lots or toll plazas.

Traffic noise impacts are determined through implementing the current Traffic Noise Model (TNM®) approved by the Federal Highway Administration (FHWA) and following procedures detailed in Title 23 CFR 772, the NCDOT Traffic Noise Policy and the NCDOT Traffic Noise Manual. When traffic noise impacts are predicted, examination and evaluation of alternative noise abatement measures must be considered for reducing or eliminating these impacts. Construction noise impacts may occur if noise-sensitive receptors are in proximity to project construction activities. All reasonable efforts should be made to minimize exposure of noise sensitive areas to construction noise impacts.

A traffic noise analysis is currently underway for this proposed action by VHB Engineering. The traffic noise impacts discussed below are taken from TNM models of the Existing, No-Build and Build Scenarios. A Traffic Noise Report will be completed for the project and will present predicted traffic noise impacts and locations where noise abatement is preliminarily feasible and reasonable (that is, “likely”). The predicted noise impacts and areas where noise abatement is likely will also be presented in the Finding of No Significant Impact (FONSI) for U-2509.

5.8.1 Traffic Noise Impacts

The number of receptors in each project alternative predicted to become impacted by future traffic noise is shown in Table 5-5. The table includes the combined total of those receptors expected to experience traffic noise impacts by either approaching or exceeding the FHWA Noise Abatement Criteria or by a substantial increase in exterior noise levels as defined in the NCDOT Traffic Noise Policy.

Table 5-5 Predicted Traffic Noise Impacts by Alternative*

Alternative	Traffic Noise Impacts			
	Residential (NAC B)	Places of Worship/Schools, Parks, etc. (NAC C & D)	Businesses (NAC E)	Total
Build 1	422	18	5	445
Build 2	435	18	5	458
Build 3	431	18	5	454

*Per TNM 2.5 and in accordance with 23 CFR Part 772.

It should be noted that a new townhome subdivision is currently under development in the northeast quadrant of the US 74 and I-485 interchange. The Mt. Harmony Townhome subdivision is planned to include up to 123 attached dwelling units. The U-2509 project is proposing improvements to the US 74 and I-485 interchange. At the time of this analysis, the development has not been issued building permits. It is unlikely that the proposed action will result in impacts to this development given its distance from US 74 however, that development, along with other new development, must be checked against the date of public knowledge for noise abatement eligibility as part of the DNR development.

5.8.2 Traffic Noise Contours

The maximum extent of the 71- and 66- dB(A) noise level contours measured from the edge of the nearest travel lane along US 74 is 110 feet and 240 feet, respectively. The maximum extent of the 71- and 66- dB(A) noise level contours measured from the edge of the nearest travel lane along I-485 is 210 feet and 390 feet, respectively. While Independence Pointe Parkway has three (3) Build alternatives, the noise level contours do not change per alternative in that area. Table 5-6 provides a summary of noise contours at various points along the project mainline.

Table 5-6 Predicted Noise Contours*

Traffic Noise Contours			
Alternative	Location	71 dB(A) (Feet from edge of nearest travel lane)	66 dB(A) (Feet from edge of nearest travel lane)
Build	West side of US 74 between Glendora Dr Ashmore Dr	110	230
Build	East side of US 74 between City View Dr and Dion Ave	80	180
Build	East side of US 74 between Margaret Wallace Rd and Village Lake Dr	90	210
Build	East side of US 74 at Claire Dr	90	190

Table 5-6 Predicted Noise Contours* (Continued)

Traffic Noise Contours			
Alternative	**Location**	**71 dB(A) (Feet from edge of nearest travel lane)**	**66 dB(A) (Feet from edge of nearest travel lane)**
Build	East side of US 74 at Matthews Township Pkwy	90	220
Build	West side of US 74 between Sports Pkwy and I-485	90	200
Build	East side of US 74 between I-485 and Independence Commerce Dr	100	240
Build	North side of I-485 at Rainbow Ridge Dr	210	390

5.8.3 Traffic Noise Abatement Measures

Measures for reducing or eliminating the traffic noise impacts are being considered for all impacted receptors in each alternative. The results of the abatement measure evaluation, including noise barriers for the preferred alternative that preliminarily meet feasibility and reasonableness criteria found in the NCDOT Traffic Noise Policy, will be included in the FONSI.

5.9 Air Quality Analysis

A Qualitative Air Quality Report for the project was prepared in July 2019. The Air Quality Report found no adverse effects on air quality as a result of the project.

The project is in Mecklenburg County, which is within the Charlotte maintenance area for the prior 1997 ozone National Ambient Air Quality Standard (NAAQS) as defined by the EPA. This area was designated moderate nonattainment under the 1997 ozone NAAQS on June 15, 2004 and due to improved air quality in the region was re-designated maintenance on January 2, 2014. The Charlotte area was designated for the 2008 ozone NAAQS resulting in the 1997 ozone NAAQS being revoked on April 6, 2015. On February 16, 2018, the United States Court of Appeals for the District of Columbia Circuit in South Coast Air Quality Mgmt. District v. EPA (“South Coast II,” 882 F.3d 1138) held that transportation applies for the revoked 1997 ozone NAAQS areas. Transportation conformity for plans and TIPs for the 1997 Ozone NAAQS can be demonstrated without a regional emissions analysis pursuant to 40 CFR 93.109(c).

The project location is also within the Charlotte maintenance area for the 2008 ozone (O3) standard as defined by the EPA. This area was designated marginal nonattainment under the 2008 ozone NAAQS on July 20, 2012 and due to improved air quality in the region was re-designated maintenance on August 27, 2015. Section 176(c) of the Clean Air Act Amendment (CAAA) requires that transportation plans, programs, and projects conform to the intent of the state air quality implementation plan (SIP). The current SIP does not contain any transportation control measures for Mecklenburg County. The 2045 Charlotte Regional Transportation Planning Organization MTP and the 2018-2022 TIP conform to the intent of the SIP. The USDOT made a conformity determination on the MTP and the TIP on December 3, 2018. The current conformity determination is consistent with the final conformity rule found in 40 CFR Parts 51and 93. There are no significant changes in the project’s design concept or scope, as used in the conformity analyses.

The Air Quality Report completes the assessment requirements for air quality of the 1990 Clean Air Act Amendments and the NEPA process. No additional reports are necessary.

5.10 Hazardous Materials and Underground Storage Tanks

A GeoEnvironmental Planning Report for STIP Project U-2509 was prepared in 2017, which documents sites of concern within the project study area that are or may be contaminated. Sites of concern may include but are not limited to underground storage tanks (USTs), dry cleaners, industry, hazardous waste, regulated landfills, and unregulated dumpsites. One hundred and eleven (111) sites of concern were identified within the proposed study area, including:

- Ninety-two sites with petroleum-related, UST concerns for which low monetary and scheduling impacts are anticipated;
- Nine sites with dry-cleaning facilities for which moderate monetary and scheduling impacts are anticipated; and
- Ten industrial sites, for which low to high monetary and scheduling impacts are anticipated. Three of these sites are anticipated comprise a single superfund site: Academy Steel Drum. High geoenvironmental impacts are anticipated because further investigation is required before acquisition recommendations are issued for a superfund site.

Details on each of the 111 sites are included in the GeoEnvironmental Planning Report for U-2509.

The project is likely to impact three sites along the project corridor at either US 74, cross streets, or in the ramps and loops associated with interchanges. All three sites are USTs and are illustrated in Figure 5-8. The Academy Steel Drum parcels are avoided in the current design; the proposed Independence Pointe Parkway alignment is not anticipated to cut below the existing grade so as to minimize the potential for encountering contaminated materials.

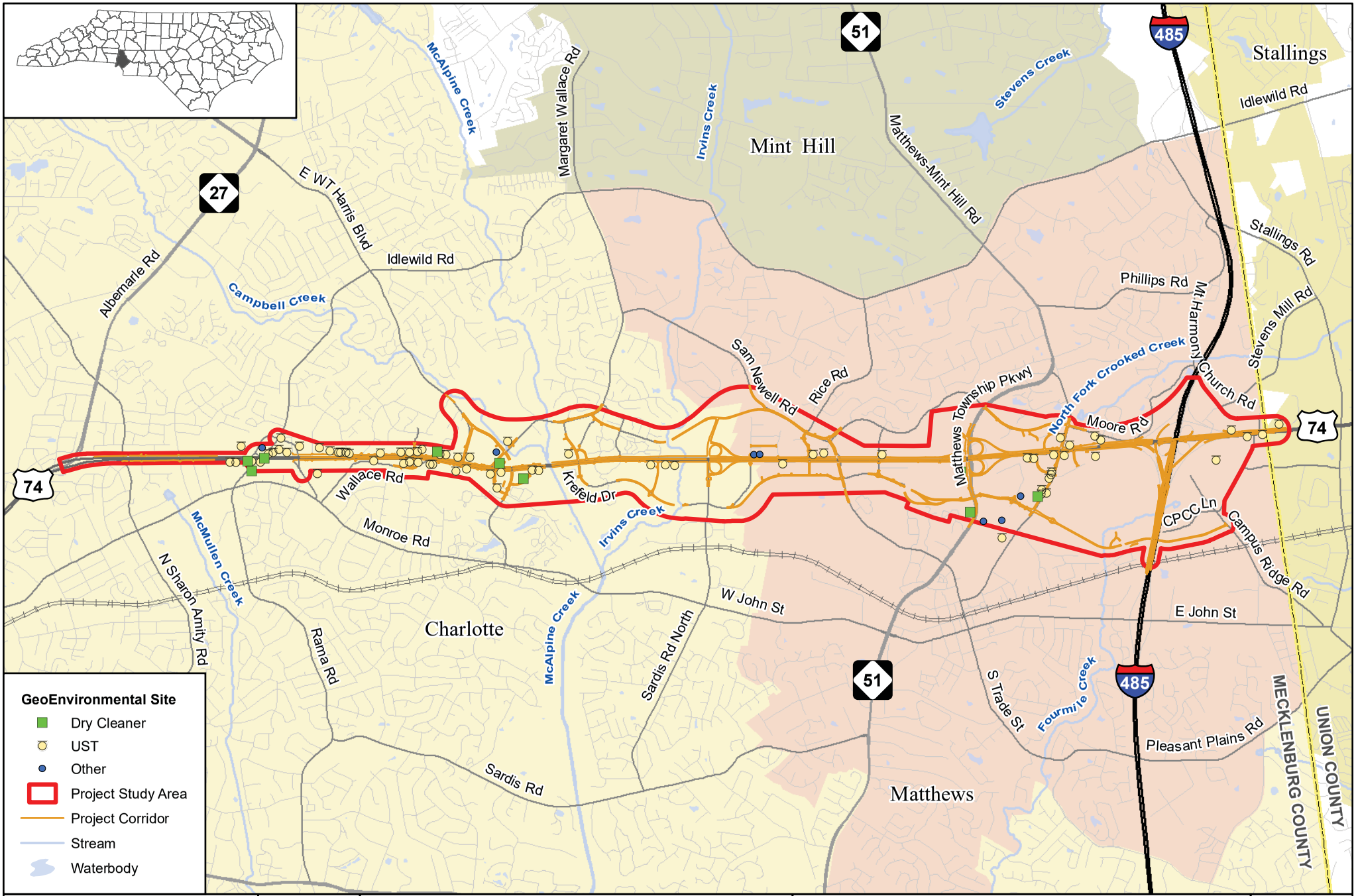


Figure 5-8

Potential Hazardous Materials

US 74 (Independence Boulevard) Improvements

STIP Project U-2509

Mecklenburg County

5.11 Summary

Table 5-7 below provides a summary of the environmental consequences anticipated with construction of the project based on the preliminary design.

Table 5-7 Summary of Major Impacts

Feature	Impacts				
	U-2509A				U-2509B
	Parallel Collector Roads	Independence Pointe Parkway Extension[1] Alternatives			US 74, Y-Lines, Ramps & Loops
		Option 1	Option 2	Option 3	
Relocations					
Residential Relocations	4	0	24	36	5
Business Relocations	8	0	0	0	94
Human Environment					
Historic Properties	0	0	0	0	0
Archaeological Sites	0	0	0	0	0
Geoenvironmental	0	0	0	0	3
Public Lands/Parks	2	1	1	1	4
Section 4(f)[2]	*De minimis*	*De minimis*	*De minimis*	*De minimis*	*De minimis*
Places of Worship	0	0	0	0	7
Natural Environment					
Streams (linear ft.)	2,028	991	951	656	2,139
Bridged Streams (linear ft.)	592	176	176	128	223
Relocated Streams (linear ft.)	N/A	249	249	N/A	N/A
Wetland Impacts (ac.)[4]	0.92	0.12	0.12	0.19	0.93
100-Year Floodplain (ac.)[3]	1.60	1.13	1.12	0.70	3.44

[1]Windsor Square Drive to NC 51. [2]Based on public lands/parks, FHWA has determined de minimis impacts. There are 4 for B, 1 for A, and 3 for IPP. [3]Calculated with slope stake limits plus 10-foot buffer. [4]Calculated with slope stake limits plus 25-foot buffer. All other items were calculated based on proposed right-of-way.

6

COMMENTS AND COORDINATION

6.1 Public Meetings

6.1.1 Public Meeting

Public meetings were held on two consecutive nights – one in the City of Charlotte and one in the Town of Matthews. The City of Charlotte meeting was held on March 30, 2015 from 4:00 PM to 7:00 PM at the Ovens Auditorium and the Town of Matthews meeting was held on March 31, 2015 from 4:00 PM to 7:00 PM at the Matthews Town Hall. These public meetings were joint for STIP projects U-2509 and U-5526A. The overall purpose of these public meetings was to present to the public the concept of US 74 express lanes and share maps of STIP project U-5526A and the approximated right-of-way that may be needed for the improvements.

6.1.1.1 City of Charlotte Comments Received

A total of 42 residents signed in at the public meeting. This included members of the media, both television and newspaper. The public was encouraged to submit written comments and many of the comments were concerns about how the express lanes would integrate in the community.

6.1.1.2 Town of Matthews Comments Received

A total of 43 residents signed in at the public meeting. This included members of the media, both television and newspaper. The public was encouraged to submit written comments and many of the comments were concerns on what properties would be taken.

6.1.2 I-485 Public Meetings

Public meetings for the I-5507 (I-485) Express Lanes project were held on April 15-16, 2015, July 25-26, 2018 and on June 27, 2019. At each public meeting, the US 74 project was among the adjacent express lane projects that were also presented.

Over the series of three meetings, NCDOT representatives provided an overview of the proposed U-2509 project, including preliminary project designs/maps and display boards with visualizations, and included a description of the proposed network of express lanes and resulting connectivity south of uptown Charlotte. There were approximately 70 people in attendance and 33 comments were submitted in 2015, 320 people and 55 comments in 2018, and 360 people and 67 comments in 2019.

6.1.3 NCTA Outreach

Between 2014 and 2019, NCTA held a series of outreach meetings to provide information to the public on express lanes, including STIP project U-2509. Presentations were made to more than 30 neighborhood groups, Lions Clubs, Rotary Clubs, Kiwanis Clubs, Chambers of Commerce, and similar organizations

during that time. At some, US 74 was the main theme of the meeting; at others, there was reference to US 74 within the larger context of a presentation on express lanes.

6.2 Handouts

Project information was shared with the public through handouts (in English and Spanish) at each public meeting.

6.2.1 2015 Handout

A handout was prepared for the 2015 meetings and shared with the public at the meetings on March 30 and March 31, 2015 (see Appendix H). The overall purpose of this handout was to introduce the proposed projects and explain the project development processes. The information provided in the handout included what to expect at the public meeting, background information on the proposed express lane projects, the project's purpose, need, process and schedule, and provide visualizations to give the public an idea of what the potential typical section may look like.

6.2.2 Charlotte Regional Express Lanes Network Handout

A handout was prepared for the 2018 Public Meeting held for I-5507 (I-485) and shared with the public on July 25 and 26, 2018 (see Appendix H). The overall purpose of this handout was to provide background information on the network of express lanes projects in the Charlotte region, give updates on the projects' (including STIP project U-2509) process and schedule, and provide answers to frequently asked questions regarding express lanes.

6.3 Local Officials Meetings

NCDOT hosted a local officials' meeting prior to each night of the 2015 public meeting. In addition, NCDOT intermittently held meetings with local officials from 2014 through 2019 to discuss express lanes, access locations, driveway access, bicycle and pedestrian accommodations to be included in the project, and other topics.

6.3.1 Local Officials Meeting Prior to the 2015 Public Meeting

NCDOT met with local officials prior to each March 2015public meeting. The City of Charlotte meeting was held on March 30, 2015 from 1:30 PM to 7:30 PM at the Ovens Auditorium and the Town of Matthews meeting was held on March 31, 2015 from 1:30 PM to 7:30 PM at the Matthews Town Hall. The overall purpose of both Local Officials Meetings was to update local government officials on the project, to show the PowerPoint video that would be shown at the Public Meeting that night, and to allow the local officials to see various project stations that would be set up for the Public Meeting.

6.3.1.1 City of Charlotte

A total of 20 people signed in at the Local Officials Meeting. This included members from the project team. Following the project update and power point review, the City of Charlotte local officials and others provided a list of concerns for the upcoming public meeting. The concerns were addressed by NCDOT.

Following the meetings, local officials were invited to view the maps and displays. Some concerns with the concepts were raised by City of Charlotte local officials, including a request for a potential new grade

separation (at Krefeld Drive), local access (Stegall Trucking Driveway; and Margaret Wallace Road and E. WT Harris Boulevard connections), and express lane direct connectors at Conference Drive.

6.3.1.2 Town of Matthews

A total of 27 people signed in at the Local Officials Meeting. This included representatives from the project team. Following the project update and slideshow review, the Town of Matthews local officials and others shared their concerns. These included clarification of what aspects of the project are included in the projected cost, and the number of express and general purpose lanes to be included.

There were no comments when local officials were invited to view the maps and displays.

6.3.2 Local Municipality and Stakeholder Meetings

Throughout project development, meetings were held with the Town of Matthews, City of Charlotte, CRTPO, Mecklenburg County, and other local stakeholders to gain input and direction on numerous aspects of the project. These meetings included presentations to the Town of Matthews Board of Commissioners and Charlotte City Council, right-of-way and access meetings, bicycle and pedestrian coordination meetings, a series of six design workshops, coordination with CATS on their light rail extension plans, as well as coordination meetings with local EMS officials and CPCC officials.

6.4 Project Website

A project website was developed in English and Spanish to keep the public informed about project details throughout the planning and development process. Information provided included the project description and schedule, purpose and need, project team contact information, educational information on Express Lanes, alternative concepts, typical sections, specific areas of concern, progress status updates, and public involvement opportunities.

6.5 Phone and Mail Contacts

A project mailing list was generated by the NCDOT – Public Involvement section prior to each public meeting. Additional contacts were added to the list with each phone call, letter, and e-mail from the public. The up-to-date contact list was used for all public mailings during the duration of the project development and planning.

6.6 Toll Free Hotline

A toll-free hotline phone number (1-800-861-7441) was set up in 2015 to receive calls for this project and the STIP project U-5526A. The phone number was provided to the public in the newsletters, handouts, website, and at the public meetings. The project team responded to all project calls and provided information to the public. Phone calls and emails were received and addressed weekly during the project development process. The most common questions were related to impacts to property or business and how the project will change the access and travel patterns to stakeholder's homes or businesses.

6.7 Newsletters

Newsletters (in English and Spanish) were mailed to residents to keep them informed about the project. The newsletter was mailed to the public in March 2015, prior to the Public Meeting. The overall purpose of

the newsletter was to provide the logistics for the upcoming public meeting, provide an overview of STIP projects U-5526A and U-2509 as well as the schedule, introduce express lanes and explain the purpose and need of the projects, and provide contact information.

6.8 Public Hearing

A Public Hearing is planned to be held after the signing of this Environmental Assessment and prior to the FONSI.

6.9 NEPA/Clean Water Act Merger Process

The sections below describe the concurrence points that were achieved through NCDOT's Merger Process with our regulatory partners. The signed concurrence forms are provided in Appendix I.

6.9.1 Concurrence Point 1 – Purpose and Need and Study Area Defined

The study area for this project was developed by the Merger Team and agreed upon at the Concurrence Point 1 meeting on March 19, 2015. The study area ranges from 500 to approximately 2,000 feet on either side of the existing US 74 centerline. The study area also includes an expanded area around the I-485 interchange to evaluate express lanes connection alternatives and an extension to the southeast along US 74 to include connection alternatives to the Monroe Expressway.

The project purpose and need statement was discussed, revised, and agreed upon March 19, 2015.

The need for this study can be summarized as follows:

- Existing US 74 does not provide reliable travel time and connectivity for residents, business patrons, and commuters in Southeastern Charlotte and Matthews;
- Traffic estimates indicate that US 74 will require additional capacity to achieve a goal of LOS D for users by the design year (2040); and
- Provide reliable travel time, system sustainability, and connect to a system of express lanes planned on US 74 to the northwest, I-485 to the south, and the Monroe Expressway toll road to the southeast.

The purpose for the proposed action is as follows:

- To provide reliable travel time and improve mobility along the US 74 corridor, provide system sustainability, and maintain and improve connectivity across and along US 74 to, from, and between adjacent communities within the study area.

6.9.2 Concurrence Point 2 – Detailed Study Alternatives Carried Forward

The Merger Team met on March 19, 2015 to begin the discussion of the Detailed Study Alternatives to be carried forward. Three concepts (Expressway with At-Grade Express Lanes, Freeway with At-Grade Express Lanes, and Expressway with Elevated Express Lanes) were presented, but concurrence was not achieved and additional details for each concept were requested. Discussions continued with the co-team leaders in September 2015 and the Merger Team met again on May 19, 2016 to reach concurrence on Concurrence Point 2. The Team dropped two alternatives and carried forward the "Expressway with At-Grade Express Lanes" alternative in a best-fit alignment for US 74 with two alternative interchange designs at Sardis Road

North (Half-Clover and City Design) and three alternative alignments (Options 1, 2, and 3) at Independence Pointe Parkway Extension to NC.

6.9.3 Concurrence Point 2A – Bridging Decisions and Alignment Review

The Merger Team met on May 19, 2016 to begin the discussion of the Bridging Decisions and Alignment Review. Discussions continued when the Merger Team met again on June 20, 2016 at the Town of Matthews offices and investigated locations in the field more thoroughly. Seven sites were visited by the Merger Team, and concurrence was reached for all 14 major drainage structures, as presented in the Preliminary Hydraulics Study for Environmental Impacts prepared in April 2016 and revised based on the field review. The Merger Team also concurred on the review of the preliminary alignment for each Detailed Study Alternative resulting from Concurrence Point 2.

6.9.4 Concurrence Point 3 –LEDPA/Preferred Alternative Selection

The Merger Team will meet to decide on the LEDPA after the signing of this Environmental Assessment and prior to the FONSI.

6.9.5 Concurrence Point 4A – Avoidance and Minimization

Avoidance and minimization have been documented throughout the NEPA process and discussed at each Merger meeting. The Merger Team will document past efforts and decide any additional avoidance and minimization efforts once the LEDPA is determined.

6.10 Other Agency Coordination

6.10.1 Other Express Lane and Toll Projects

Throughout the planning process, the project team met multiple times with the project teams from adjacent express lane and toll road projects, including STIP project U-5526A (convert the existing bus lanes to reversible express lanes on US 74 from I-277 to Wallace Lane), I-5507 (express lanes on I-485 from I-77 to US 74), and R-3329/R-2559 (Monroe Expressway). STIP project U-5526A has since been superseded by a new project, U-6103, to study providing an express lane in each direction.

6.10.1.1 STIP Project U-5526A – US 74 Express Lanes

STIP project U-5526A proposed to convert an existing bus lane into express lanes and complete those express lanes from I-277 to Wallace Lane. There was much coordination between the two project teams to ensure consistency between projects. Both projects were presented to the public together. This project was deleted from the 2020-2029 STIP.

6.10.1.2 STIP Project U-6103 – US 74 Express Lanes

STIP project U-6103 proposes to widen US 74 from I-277 to west of Idlewild Road to allow for two-way express lanes. This project replaced STIP project U-5526A in the 2020-2029 STIP in 2018. There has been initial coordination between the two project teams to ensure consistency between projects.

6.10.1.3 STIP Project I-5507 – I-485 Express Lanes

STIP project I-5507 proposes adding express lanes to the median along I-485 from I-77 to US 74. Because the STIP project U-2509 proposes direct collectors between the two projects, there has been significant coordination between the two project teams. This included several in depth meetings between the two teams to discuss designs in 2017. Coordination has continued between the two teams as the projects moved through the development process and will continue as the I-5507 designs are completed.

6.10.1.4 STIP Project R-3329/R-2559 – Monroe Expressway

STIP projects R-3329/R-2559 constructed a new location toll road bypassing US 74 around the City of Monroe. Early in the project development process, the project team coordinated with Monroe Expressway team members regarding how the two projects would interface. It was decided that the express lanes on US 74 would begin/end approximately one-mile northwest of Monroe Expressway. The Monroe Expressway was completed and opened to traffic in November 2018.

6.10.2 NCTA

The NCTA has been an integral part of the project team throughout the project development phase of the STIP project U-2509. NCTA and its consultants provided traffic and revenue study information that informed the development of the STIP project U-2509. NCTA was a part of the stakeholder meetings where decisions were made for the project, including where express lane access points would be located. NCTA worked with the project team on draft standards for express lane ingress, egress, and weave movements that were used in the preliminary designs. NCTA presented at CRTPO on March 1, 2018; March 21, 2018; April 18, 2018; July 12, 2018; January 3, 2019; January 16, 2019.

6.10.3 Bicycle and Pedestrian Coordination

The Town of Matthews, City of Charlotte, and Mecklenburg County have plans for bicycle and pedestrian accommodations alongside many of the roadways that are part of the STIP project U-2509. These greenways and other bicycle and pedestrian facilities were included on maps during the stakeholder coordination meetings. In October 2016, the project team met with officials from the Town of Matthews, City of Charlotte, and Mecklenburg County to determine the specific bicycle and pedestrian accommodations that would be requested for inclusion as part of the STIP project U-2509. Additional coordination continued throughout the project planning process, including phone conversations and e-mails with local officials and meetings on November 7, 2017, December 2, 2017, December 20, 2017, and December 14, 2018.

Construction cost estimates for the requested bicycle and pedestrian accommodations were prepared and presented to the local officials. On November 27, 2018, the City of Charlotte agreed on the bicycle and pedestrian facilities that would be included as part of the STIP project U-2509. On December 11, 2018, the Town of Matthews agreed on the bicycle and pedestrian facilities that would be included as part of the STIP project U-2509.

Coordination will occur as the *Complete Streets Policy* is implemented.

6.10.4 Duke Energy Coordination

The project team held coordination meetings with Duke Energy in April and May 2019 to discuss alternatives and mitigation measures with regard to the Independence Pointe Parkway extension alternatives. Two of the alternatives would require moving two transmission towers; one alternative would require moving one transmission tower. An additional 15 feet was added to the proposed right-of-way along each corridor of the project (US 74 and all cross streets and collector roads) to accommodate possible utility relocations.

7

List of Preparers

Consultant, VHB

Keith Lewis, PE, Director of Transportation, Project Manager

Donald Brown, III, AICP, Deputy Project Manager

Mark Hussey, Senior Roadway Lead Designer

James Goodnight, Jr., PE, Senior Transportation Engineer

Andrew Topp, PE, PTOE, Senior Project Manager

Lauren Triebert, PE, ENV SP, Transportation Engineer

Candice Andre, AICP, Senior Project Planner

Elyse Mize, Environmental Planner

Nathan Rhomberg, EI, Transportation Analyst

Kathleen Arbogast, PE, Project Manager

Priscilla Brownlow, Noise Specialist

Eric Illich, EIT, Air and Noise Quality Analyst

Rebecca Shedd, Air and Noise Quality Analyst

Christopher DuBois, Visualization Tech Specialist

Danielle Bertoncini, Graphic Designer

Ryan Noyes, Director of Innovative Project Delivery

Randy Hill, Roadway Designer

Ryan Sargent, Hydraulic Designer

Kara Peach, Transportation Planner

Jeff Kapala, GIS Planner

Timothy Tresohlavy, AICP, GISP, Transportation Planner

Lauren Blackburn, AICP, Senior Project Manager

Ian Hamilton, AICP, Transportation Planner

Meg Bryson, Research Assistant

Hanna Woldemariam, Traffic Noise Specialist

Jessica Luther, EIT, Roadway Designer

Christina Oliver, EI, Environmental Analyst

Jayna Sananikone, Environmental Planner

Catherine Chestnutt, Communications Specialist

Paige Dickerhoof, Project Coordinator

Melissa Hyland, EI, Transportation Analyst

North Carolina Department of Transportation

Wilson Stroud, Project Manager

Bryan Key, PE, Senior Project Manager

Laura Sutton, PE, Project Management Team Lead

John Jamison, Environmental Policy Unit Western Region Team Lead

Derrick Weaver, PE, Environmental Policy Unit Team Lead

Scott Cole, PE, Former Division Engineer, Division 10

Stuart Basham, Division Planning Engineer

Brett Canipe, PE, Division Engineer

Diane Wilson, Senior Public Involvement Officer

Jamille Robbins, Public Involvement Group Leader

James Dunlop, PE, Congestion Management Regional Engineer

Elise Groundwater, Congestion Management Project Engineer

Federal Highway Administration

Loretta Barren, Planning and Environment Specialist

Clarence Coleman, PE, Preconstruction and Environment Director

John Sullivan, III, PE, Division Administrator

North Carolina Turnpike Authority

Rodger Rochelle, PE, Chief Engineer, Innovative Delivery

Dennis Jernigan, PE, Director of Highway Operations

Jennifer Harris, PE, CPM

8

List of References

AECOM. April 3, 2014. “Traffic and Revenue Final Report”. Accessed on December 4, 2019.

Bartos, Ramona M., North Carolina Department of Natural and Cultural Resources State Historic Preservation Office. May 18, 2015. *Independence Boulevard Improvements from Conference Drive to I-485, U-2509, Mecklenburg County, ER 15-1017.* Memo to Don Brown, VHB.

Bartos, Ramona M., North Carolina Department of Natural and Cultural Resources State Historic Preservation Office. September 27, 2017. *Widening and Upgrading of US 74 from Conference Drive to I-485, Charlotte and Matthews, Mecklenburg County, U-2509, ER 15-1017.* Memo to Brian Overton, NCDOT Office of Human Environment.

Carolina Thread Trail. May 2018. “Draft in Progress Mecklenburg County Park & Recreation Greenways.” Available at: https://www.carolinathreadtrail.org/wp-content/uploads/2018/05/Mecklenburg_County_Master_Plan.pdf. Accessed on: December 5, 2019.

CDOT and CATS. 2007. Independence Boulevard Land Use / Infrastructure Assessment.

Charlotte Area Transit System. “Review of Previous Studies Southeast Corridor Transit Study.” Available at: https://www.charlottenc.gov/cats/transit-planning/Documents/Review%20of%20Previous%20Studies.pdf. Accessed on: December 6, 2019.

Charlotte-Mecklenburg Planning Commission. 1990. “East District Plan”. Available at: http://ww.charmeck.org/Planning/Land%20Use%20Planning/EastDistrictPlan.pdf. Accessed on: December 5, 2019.

Charlotte-Mecklenburg Planning Commission. June 23, 2003. “Eastland Area Plan.” Available at: http://ww.charmeck.org/Planning/Land%20Use%20Planning/EastlandAreaPlan.pdf. Accessed on: December 5, 2019.

Charlotte-Mecklenburg Planning Department. May 23, 2011. “Independence Boulevard Area Plan.” Available at: http://ww.charmeck.org/Planning/Land%20Use%20Planning/IndependenceBlvdAreaPlan.pdf. Accessed on: December 5, 2019.

Charlotte-Mecklenburg Planning Department. 2013. “East District Adopted Future Land Use.” Available at: http://ww.charmeck.org/Planning/Land%20Use%20Planning/District%20Plan%20Maps/east.pdf. Accessed on February 8, 2019.

Charlotte Regional Transportation Planning Organization. 2017. “Charlotte Region Fast Lanes Study.” Available at: http://ww.charmeck.org/fastlanes/home.htm/. Accessed on: January 22, 2018.

City of Charlotte. 2006. "2030 Transit Corridor System Plan." Available at: https://charlottenc.gov/cats/transit-planning/2030-plan/Pages/default.aspx. Accessed on: December 5, 2019.

City of Charlotte. 2011. *Independence Boulevard Area Plan*.

City of Charlotte. April 2015. "Review of Previous Studies Southeast Corridor Transit Study." Available at: https://www.charlottenc.gov/cats/transit-planning/Documents/Review%20of%20Previous%20Studies.pdf. Accessed on: December 3, 2019.

City of Charlotte Department of Transportation. February 27, 2017. "Charlotte WALKS Pedestrian Plan." Available at: https://charlottenc.gov/Transportation/Programs/Documents/Charlotte%20WALKS%20Adopted%20Plan%20-%20February%202017_Document.pdf. Last accessed on December 5, 2019.

City of Charlotte Department of Transportation. May 22, 2017. "Charlotte BIKES Bicycle Plan." Available at: https://charlottenc.gov/Transportation/Programs/Documents/Charlotte%20BIKES%20Final.pdf. Accessed on: December 5, 2019.

CRTPO. 2013. "Charlotte Region Fast Lanes Study Phase III Results Summary." Available at: http://www.crtpo.org/PDFs/FastLanes/PDFs/FastLanesPh_III_Results_Summary.pdf. Accessed on December 3, 2019.

Federal Highway Administration. May 2012. "Manual on Uniform Traffic Control Devices." Available at: https://mutcd.fhwa.dot.gov/pdfs/2009r1r2/mutcd2009r1r2edition.pdf. Accessed on: December 6, 2019.

Federal Highway Administration. N.d. "Section 4(f) Tutorial." Available at: https://www.environment.fhwa.dot.gov/env_topics/4f_tutorial/default.aspx. Accessed on December 3, 2019.

Gledhill-Earley, Renee, North Carolina Department of Natural and Cultural Resources State Historic Preservation Office. February 23, 2017. *Historic Structures Survey Report for Improvements to US 74 (East Independence Boulevard) From I-485 to Idlewild Road, U-2509, Mecklenburg County, ER 15-1017.* Memo to Vanessa Patrick, NCDOT.

LDR International, Inc., et al. 1998. 2025 Integrated Transit/Land-Use Plan For Charlotte-Mecklenburg.

Matthews Planning Board. November 28, 2012. "Town of Matthews Land Use Plan 2012-2022." Available at: https://matthews.municipalcms.com/files/documents/LandUsePlan1318092231040617AM.pdf. Accessed on December 5, 2019.

Mecklenburg County Parks and Recreation. 2008. "Mecklenburg County Parks and Recreation Greenway Plan Update 2008". Available at: https://www.mecknc.gov/ParkandRec/Greenways/OpenGreenways/Documents/MPAppendix2.pdf. Last accessed December 5, 2019.

Mecklenburg County Parks and Recreation. April 2015. "Comprehensive Park & Recreation Master Plan Update." Available at https://www.mecknc.gov/ParkandRec/Parks/ParkPlanning/Documents/Master%20Plan%202014/Mecklen

burg%20County,%20NC%20PR%20Master%20Plan%20Update%20FINAL.pdf. Accessed on December 5, 2019.

NCDOT. February 18, 2013. "U-2509 Re-evaluation: Proposed upgrading of US 74 (Independence Boulevard) from Idlewild Road to I-485 (Charlotte Outer Loop)". Available at: https://connect.ncdot.gov/projects/planning/FeasibilityStudiesDocuments/U-2509_Feasibility-Study_Report-Re-Evaluation-2013.pdf. Accessed on December 4, 2019.

NCDOT. January 2019. "Standard Specifications for Roads and Structures." Available at: https://connect.ncdot.gov/resources/Specifications/StandSpecLibrary/2018%20Standard%20Specifications%20for%20Roads%20and%20Structures.pdf. Accessed on: December 5, 2019.

NCDOT. October 27, 2010. "Feasibility Study: Widening of US 74 (Independence Boulevard) From I-485 (Charlotte Outer Loop) to Idlewild Road". Available at: https://connect.ncdot.gov/projects/planning/FeasibilityStudiesDocuments/U-2509_Feasibility-Study_Report_2010.pdf. Accessed on December 4, 2019.

NCDOT. November 1989. "1990-1996 Transportation Improvement Program."

NCDOT. N.d. "U.S. 74 Express Lanes: Conference Drive to I-485." NCDOT High Profile Projects & Studies. Available at: https://www.ncdot.gov/projects/U-2509/. Accessed on: January 22, 2018.

NCDOT. N.d. "U.S. 74 Express Lanes: I-277 to Wallace Lane." NCDOT High Profile Projects & Studies. Available at: https://www.ncdot.gov/projects/U-5526/. Accessed on: January 22, 2018.

NCDOT. November 11, 2017. Email from Vanessa E. Patrick, NCDOT Historic Architecture, to Donald Brown, VHB, concerning U-2509 expanded study area compliance with GS 121-12(a) and Section 106 for historic architecture.

NCDOT Work Zone Traffic Control Section. N.d. "Transportation Management Plans Design Manual." Available at: https://connect.ncdot.gov/projects/WZTC/Work%20Zone%20Traffic%20Control%20Documents/Cover%20Design%20Manual.pdf. Accessed on: December 6, 2019.

North Carolina Department of Agriculture and Consumer Services. 2017. Voluntary Agricultural Districts. http://www.ncadfp.org/documents/VADs1-18-17.pdf Accessed on: January 22, 2018.

Patrick, Vanessa E., NCDOT Environmental Analysis Unit. November 14, 2017. *Expanded Study Area Review. U-2509, Mecklenburg County (US 74 Improvements).* Memo to Donald Brown, VHB.

Sungate Design Group. 2018. Preliminary Hydraulics Study for Environmental Impact: NCDOT TIP NO. U-2509 US 74 Improvements, Mecklenburg County, NC.

Town of Matthews North Carolina. May 11, 205. "Composite Bicycle & Pedestrian Plan Town of Matthews." Available at: https://www.matthewsnc.gov/files/documents/CompBikePedPlan1332114603012716AM.pdf. Accessed on: December 5, 2019.

Town of Matthews North Carolina. 2013. "Comprehensive Transportation Plan." Available at: https://www.matthewsnc.gov/files/documents/ComprehensiveTransportationPlan1318094936100716AM.pdf. Accessed on December 3, 2019.

Town of Matthews North Carolina. 2018. "Development Plans." Available at: https://www.matthewsnc.gov/pview.aspx?id=20795&catid=0. Accessed on February 11, 2019.

Town of Matthews and Stallings. 2013. "Comprehensive Transportation Plan." Available at: https://www.matthewsnc.gov/files/documents/ComprehensiveTransportationPlan1318094936100716AM.pdf. Accessed on: December 5, 2019.

Town of Stallings. 2017. "Comprehensive Land Use Plan." Available at: https://www.stallingsnc.org/Portals/0/Departments/Planning%20%26%20Zoning/Documents/Stallings%20LUP%20121217.pdf. Accessed on February 11, 2019.

Urban Land Institute Rose Center for Public Leadership. 2011. "City Leadership For The 21st Century: The 2011 Annual Report of The ULI Rose Center". Pg 8. Available at: http://uli.org/wp-content/uploads/ULI-Documents. Accessed on December 4, 2019.