



# Williamson Road (SR 1109) Widening From I-77 to Brawley School Road (SR 1100) Iredell County STIP Project R-5100A

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## Pre-screening Meeting September 12, 2018

### PROPOSED ACTION

The Williamson Road widening project is included in NCDOT's 2018-2027 State Transportation Improvement Program (STIP) as R-5100A. The project would widen Williamson Road (SR 1109) in the vicinity of Mooresville in southern Iredell County from I-77 to Brawley School Road (SR 1100). The total length of the project is about 2.4 miles. Exhibit 1 shows the project location in relationship to other projects in the area.

### PROJECT PURPOSE

The purpose of the proposed project is to improve traffic flow, reduce forecast congestion, and enhance traffic operations on Williamson Road between I-77 and Brawley School Road. See Exhibits 2 and 3 for the complete Purpose and Need Statement and Logical Termini Memo, respectively.

### PROJECT ALTERNATIVES

Williamson Road is a well-developed corridor with subdivisions, multi-family units, and commercial properties abutting the road. The existing right-of-way width is 100 feet and the proposed right-of-way width is 110 feet (minimum). Based on existing infrastructure and setbacks, it appears that the widening project has been anticipated for quite some time. For the most part, a best fit alignment was utilized. The exception is along the causeway and bridge over Lake Norman where west side widening is proposed in order to maintain traffic on the existing bridge and avoid impacts to the residential and commercial development on the east side of Williamson Road. Two alternatives were prepared for the lake crossing:

- Alternative 1 (Exhibit 4A) – Dual bridges that maintain the existing low chord elevation and span arrangement,
- Alternative 2 (Exhibit 4B) – A new, stage-constructed, 3-span single bridge that will provide 12-foot of vertical clearance above the maximum pond elevation (760 feet).

Table 1 shows preliminary impact information for the alternative bridge crossings.

### Non-Roadway Alternatives

Considering the size and location of Mooresville, non-roadway alternatives, such as improving transit and implementing Transportation Demand Management (TDM) or Transportation Systems Management (TSM) strategies were not considered viable for this project. The Mooresville Main bus route, operated by the Iredell County Transportation System (ICATS), crosses Williamson Road at Brawley School Road and NC 150 but does not stop on Williamson Road. The bus provides service into downtown Charlotte.

**Table 1 – Comparison of Alternatives**

	<b>ALTERNATIVE 1 (Dual Bridges)</b>	<b>ALTERNATIVE 2 (Single Bridge)</b>
Length (mi)	2.4	2.4
Relocations	0	0
Properties Impacted	74	74
Historic Properties	1 <sup>1</sup>	1 <sup>1</sup>
Parks	0	0
Potential Underground Storage Tanks / Hazardous Materials Sites	2	2
Wetlands Affected (acres)	0	0
Stream Crossings (no. / Linear Feet)	0 / 0	0 / 0
Acres of Fill in Lake Norman (Perm. / Temp.)	1.02 / 0.39	1.55 / 0.44
Acres of Floodplain Impacts	1	3

Notes:

<sup>1</sup> One property was identified as needing an evaluation for NHRP eligibility.

## **JURISDICTIONAL RESOURCES**

### **Protected Species**

Bog Turtle, Northern Long-Eared Bat, and Dwarf-Flowered Heartleaf are listed for Iredell County. The NRTR prepared in April 2018 stated that a biological conclusion for the Bog Turtle was not required due to no suitable habitat in the project area and no known occurrences within 1.0 mile of the project area. The biological conclusion for the Dwarf-Flowered Heartleaf is “No Effect” based on a survey of suitable habitat on the site and no known occurrences within 1.0 mile of the study area. The biological conclusion for the Northern Long-Eared Bat (NLEB) is “Unresolved.” The NCDOT Biological Surveys Group will provide a biological conclusion at a later date. There are no known occurrences of the NLEB within 1.0 mile of the study area.

### **Water Resources**

There are no Outstanding Resource Water (ORW), designated High Quality Waters (HQW) or water supply watersheds (WS-I or WS-II) within 1.0 mile downstream of the study area. The North Carolina 2014 Final 303(d) list of impaired waters identifies the Catawba River (Lake Norman) within the study area as an impaired water due to PCB in fish tissue samples.

One surface water was identified within the study area (Table 2).

**Table 2. Surface Waters in the Study Area**

<b>Surface Water</b>	<b>Jurisdictional</b>	<b>Map ID of Connection</b>	<b>Area (ac) in Study Area</b>
Lake Norman/Reeds Creek	Yes	Lake Norman/ Reeds Creek	12.8

One jurisdictional wetland was identified within the study area (Table 3). Wetland WA is located within the Catawba River basin [USGS Hydrologic Unit 03050101].

**Table 3. Characteristics of jurisdictional wetlands in the study area**

<b>Map ID</b>	<b>NCWAM Classification</b>	<b>NCWAM Rating</b>	<b>Hydrologic Classification</b>	<b>Area (ac)</b>
WA	Headwater Forest	Low Reeds Creek	Riparian	0.05
			TOTAL	0.05

Exhibit 5 shows the water resources identified in the project area.

**Permitting Concerns**

Permits will be required from the following agencies:

Federal Energy Regulatory Commission (FERC)

US Army Corps of Engineers

Division of Water Quality – 401

Catawba Buffer Certification

**N.C. River Basin Buffer Rules**

The Lake Norman shoreline within the study area is protected under provisions of the (Catawba River Buffer Rules) administered by NCDWR. Potential impacts to protected stream buffers will be determined once a final alignment and design have been determined.

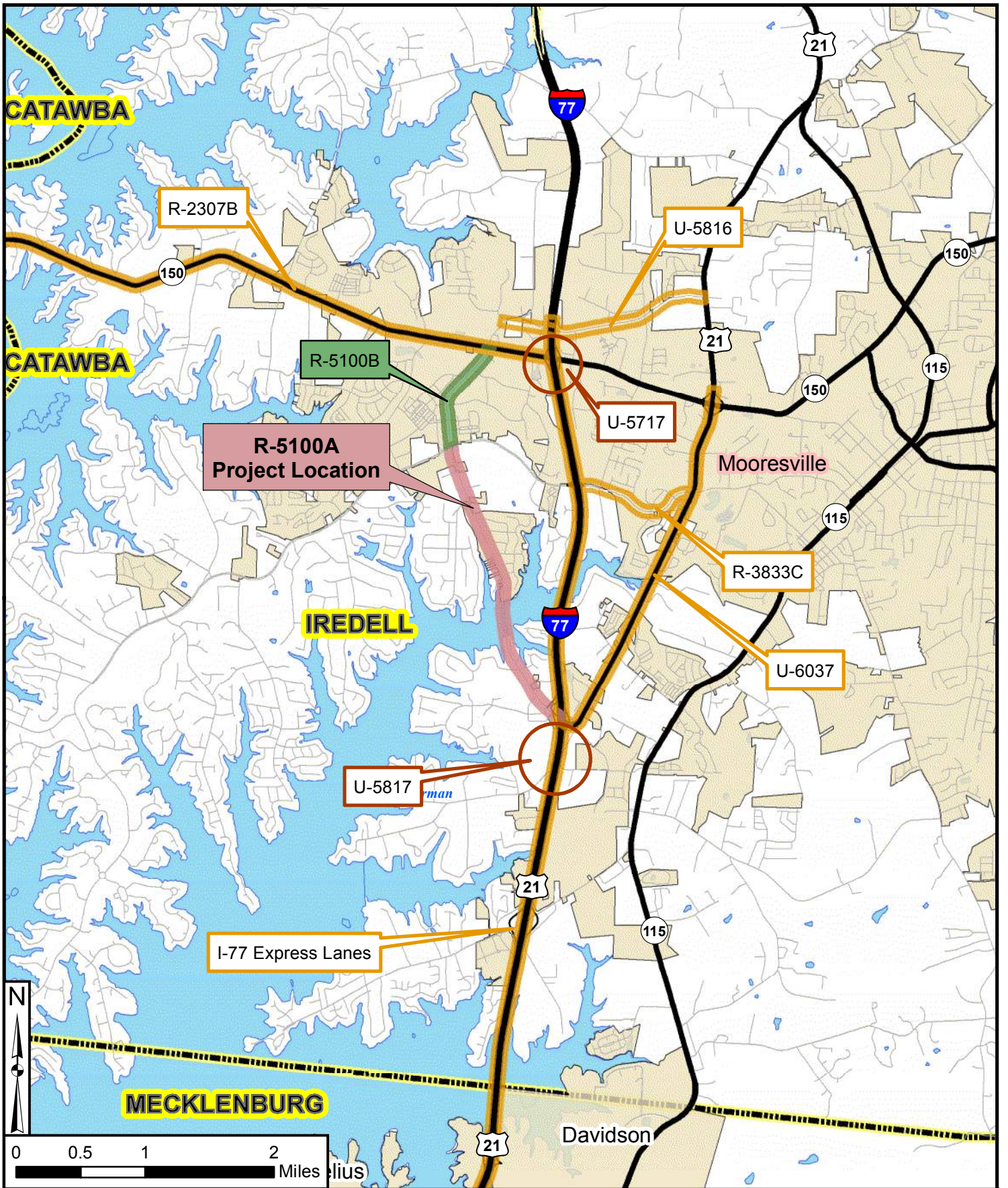
**CULTURAL RESOURCES**

**Historic Architecture**

A preliminary screening on the project has identified one property needing an evaluation for NHRP eligibility. This property is a 30-acre farm located in the northern half of the project on the east side of Williamson Road opposite from Sundown Road. A house and several out-buildings are located on the property. An eligibility evaluation is currently underway.

**Archaeology**

An archaeology review request has been submitted and is currently being assessed.



NORTH CAROLINA  
DEPARTMENT OF  
TRANSPORTATION

**LOCATION MAP  
SR 1109 (WILLIAMSON ROAD) WIDENING  
FROM I-77 TO NC 150  
IREDELL COUNTY**

TIP: R-5100A  
WBS: 41890.1.D1  
Div.: 12  
Date: March 2018



## Williamson Road Widening Iredell County STIP Project R-5100A

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### Purpose and Need Summary May 10, 2018

#### PROPOSED ACTION

The Williamson Road widening project is included in NCDOT's 2018-2027 State Transportation Improvement Program (STIP) as R-5100A. The project would widen Williamson Road (SR 1109) in the vicinity of Mooresville in southern Iredell County from I-77 to Brawley School Road (SR 1100). The total length of the project is about 2.3 miles.

#### PROJECT PURPOSE

The purpose of the proposed project is to improve traffic flow, reduce forecast congestion, and enhance traffic operations on Williamson Road between I-77 and Brawley School Road.

#### PROJECT NEED

The needs to be addressed by the proposed project include:

- Two of the five signalized intersections along the project corridor currently operate at an unacceptable Level of Service (LOS) in the AM peak period. By the project's design year of 2040, three of the signalized intersections will operate at unacceptable LOS in both the AM and PM peak periods.
- Anticipated continued population and employment growth in Mooresville and surrounding area will lead to increasing traffic volumes on area roadways. Existing traffic volumes on Williamson Road of 21,600 to 23,800 vehicles per day (vpd) are anticipated to increase by nearly 50% by 2040, to 31,700 to 34,700 vpd.
- The Mooresville Comprehensive Transportation Plan (2008) notes existing conflicts between numerous driveway cuts on Williamson Road and inefficient traffic flow along the roadway, and also note that the inconsistent use of a curb and gutter cross section along Williamson Road is undesirable.

#### Existing Conditions and Traffic Patterns

Exhibit 1 shows the study area for the project. The segment of Williamson Road included in R-5100A is characterized by low-density residential, office and retail development. North of the project, there is higher density mixed-use development, including regional commercial development and employment centers. At the southern end of the project, land uses closer to I-77 are typical of those found near interstate interchanges, with retail, restaurants, hotels, and gas stations. Williamson Road is an important connector between I-77 and growing areas in western Mooresville. Williamson Road is the only roadway crossing over Lake Norman west of I-77 in this area.

At the southern end of the project, Williamson Road features a multi-lane typical section that transitions to a two-lane section north of the interchange but south of the Lake Norman crossing. North of Lake Norman, the roadway is two lanes wide with turn lanes at certain intersections and commercial entrances.

### **Population Growth**

The Town of Mooresville has grown rapidly in recent years. According to the U.S. Census, between 2000 and 2016, the town's population almost doubled from 18,823 to 36,543 residents. Other nearby communities in the vicinity of Lake Norman have also grown rapidly, and rapid growth in the area is anticipated to continue. The Centralina Council of Governments projects that by 2030, the population of the Mooresville and surrounding southern Iredell County will increase to nearly 100,000. With this continued growth, traffic volumes in the area are projected to increase, placing an increasing burden on the area's roadways, many of which already experience notable traffic congestion.

### **Local Planning Context**

The Mooresville Comprehensive Transportation Plan (2008) identifies the Williamson Road corridor as a Community Strategic Corridor, which means that the community identified Williamson Road for closer consideration for proposed improvements based on perceived congestion. The Plan notes that Williamson Road is characterized by existing intersection congestion, conflicts between numerous driveway cuts and traffic flow, and inconsistent use of a curb and gutter cross section.

### **Traffic Volumes and Congestion**

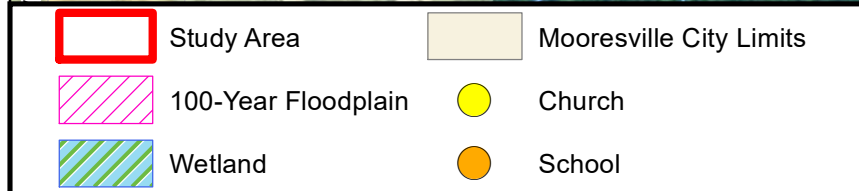
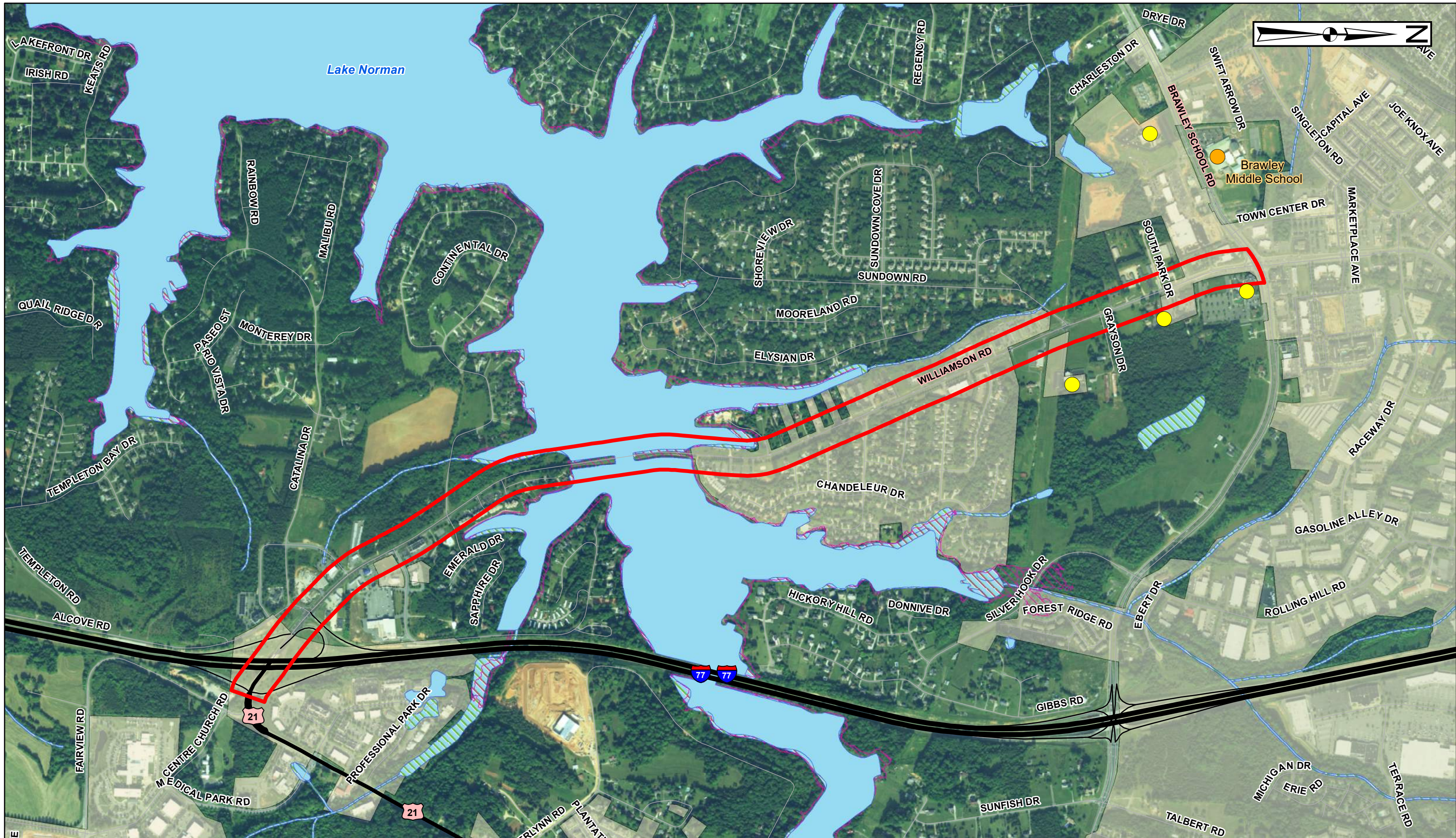
A traffic capacity analysis was performed for the years 2015 and 2040 using the current road network and lane configurations to determine level of service. Level of service (LOS) is a performance measure describing operational conditions of a traffic stream along a roadway or at an intersection. Levels of service are defined from LOS A to LOS F, with LOS A representing little-to-no delay and LOS F representing heavy congestion and large delays. Generally, LOS A through LOS D is considered acceptable, while LOS E and LOS F are unacceptable.


The traffic study included analysis of the five signalized intersections along Williamson Road within the project limits. Results of the analysis using 2015 traffic volumes indicate unacceptable levels of service at the following signalized intersections:

- Intersection at the I-77 southbound ramp/Alcove Road operates at LOS F in the AM peak period.
- Intersection at Bridgewater Lane operates at LOS E in the AM peak period.

In the 2040 design year, conditions will worsen at four of the five signalized intersections, leading to unacceptable levels of service at the following signalized intersections:

- Intersection at Bridgewater Lane will operate at LOS F in the AM and PM peak periods.
- Intersection at Sundown Road will operate at LOS F in the AM and PM peak periods.
- Intersection at Brawley School Road will operate at LOS F in the AM peak period and LOS E in the PM peak period.

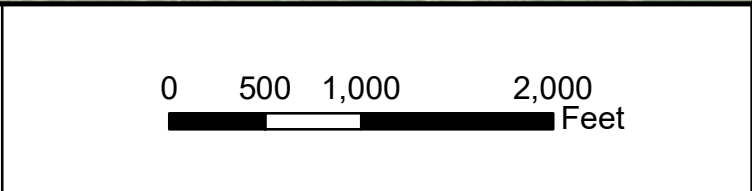




NORTH CAROLINA  
DEPARTMENT OF  
TRANSPORTATION

**Exhibit 1**  
**SR 1109 (WILLIAMSON ROAD) WIDENING**  
**FROM I-77 TO NC 150**  
**IREDELL COUNTY**

TIP: R-5100A  
WBS: 41890.1.D1  
Div.: 12  
Date: May 2018





STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION

ROY COOPER  
GOVERNOR

JAMES H. TROGDON, III  
SECRETARY

MEMO TO: Steven Kichefski, USACE

FROM: Derrick Weaver, PE, NCDOT  
Team Lead – Divisions 11-14 Project Management Unit

DATE: April 16, 2018

SUBJECT: Project R-5100A (SR 1109 (Williamson Road) Widening) Iredell County  
WBS 41890.1.D1

### Independent Utility and Logical Termini

To ensure meaningful evaluation of alternatives, Federal Highway Administration (FHWA) regulations require that:

1. *Projects have logical limits (known as “logical termini”) and be long enough that the environmental analysis has a sufficiently broad scope.*

For the Williamson Road project, the southern project terminus is at I-77 - a four-lane interstate freeway that connects Columbia, South Carolina to Cleveland, Ohio. Express lanes are currently being added to I-77 (see Table 1 for a description of this project as well as other funded projects in the area). The northern project terminus is at SR 1100 (Brawley School Road) - a 4-lane divided roadway from west of SR 1109 (Williamson Road) to I-77. A new Single Point Urban Interchange was constructed within the last ten years to provide direct access from SR 1100 (Brawley School Road) to I-77. Project R-3833C will widen SR 1100 (Brawley School Road) from I-77 east to US 21 (see Table 1). Both of these terminal points would connect the proposed project to the greater roadway network and would allow for a sufficiently broad environmental analysis of corridor improvement alternatives. Refer to Figure 1 for R-5100A project limits as well as other area projects.

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## Memorandum

Steven Kichefski – USACE

April 16, 2018

2. *Projects are usable, even if no additional transportation improvements in the area are made (known as “independent utility”).*

The project would have independent utility because improvements to Williamson Road between its terminal points would be useful at improving the corridor without requiring other abutting or adjacent projects to be built. As shown on Figure 1, other area projects are already funded and underway in some form of project development, design, or construction including the R-5100B project that will widen SR 1109 (Williamson Road) from SR 1100 (Brawley School Road) to NC 150 (classified as a Principal Arterial). Additionally, SR 1109 (Williamson Road) is classified as a Major Collector in the NCDOT classification system. Interstate 77, the southern terminus of project R-5100A is classified as an Interstate. At the northern terminus, SR 1100 (Brawley School Road) is classified as a Major Collector and exists as a 4-lane, median divided roadway and also connects to I-77. The R-5100A project would connect roadways of similar or higher functional classifications.

3. *Approval of a project would not restrict consideration of alternatives for other foreseeable transportation improvements.*

The project has been developed in coordination with CRTPO, Iredell County, and the Town of Mooresville. Continuing coordination will help to avoid potential conflicts with foreseeable transportation improvements. The R-5100A project proposes to widen an existing facility. The location of the facility is such that approval of the proposed widening would not restrict development of alternatives on other foreseeable transportation improvements in the area, most notably:

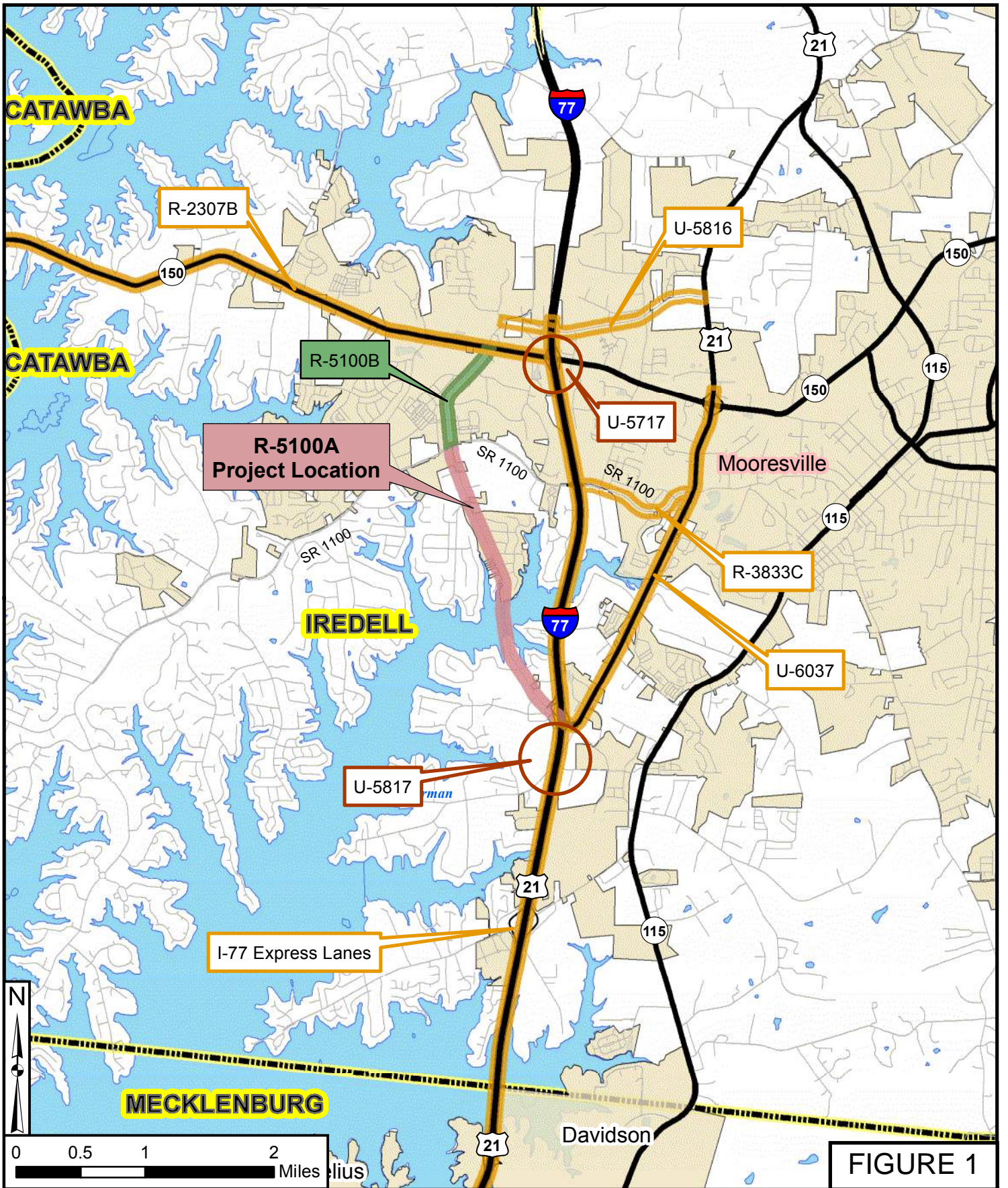
- a. I-77 Express Lanes – under construction
  - b. U-6037 – US 21 Widening in project development phase with a southern terminus at Medical Park Drive where US 21 exists as a 4-lane facility
  - c. R-5100B – SR 1109 (Williamson Road) Widening in design phase. Portions of the southern terminus of this project were widened as part of the R-3833B project
  - d. R-2307 – NC 150 Improvements is in the right-of-way phase
  - e. U-5817 – Fairview Road over I-77 with connector to SR 1109 (Williamson Road) is under design. Two alternatives for tie to Williamson Road are under consideration.
4. *Conclusions*

Based on the above discussion, the R-5100A project satisfies the FHWA regulations for logical termini, independent utility, and not restricting development of alternatives on other transportation improvements.

**Table 1 – Transportation Project Surrounding R-5100A**

<b>TIP Project</b>	<b>Description</b>	<b>ROW Date</b>	<b>Constr. Date</b>
R-5100A	SR 1109 (Williamson Road) from I-77 to SR 1100 (Brawley School Road). Widen to 4-lanes divided.	2019	2020
R-5100B	SR 1109 (Williamson Road) from SR 1100 (Brawley School Road) to NC 150. Widen to 4-lanes divided.	2019	2020
R-2307B	NC 150 From East of SR 1840 (Greenwood Road) in Catawba Co. to US 21 in Iredell Co.	Current	2019
U-5816	SR 1305 (Oates Road) from US 21 (Charlotte Highway) to SR 1474 (Bluefield Road). Widen to three lanes with overpass over I-77.	2019	2021
U-5817	Extend SR 1246 (Fairview Road) over I-77 to connect with SR 1206 (Alcove Road) and construct parallel north-south connector roads to SR 1109 (Williamson Road).	2019	2021
R-3833C	SR 1100 (Brawley School Road) From I-77 to US 21. Widen to multi-lanes.	2018	2020
U-6037	US 21 From NC 150 (Plaza Drive) to SR 1245 (Medical Park Road) Widen to 4-lanes divided.	2022	2024
I-77 Express Lanes	I-77 Express Lanes project will help provide more reliable travel times on 26 miles of I-77 from the Brookshire Freeway (Exit 11) in Mecklenburg County to N.C. 150 (Exit 36) in Iredell County	NA	Current
U-5717	NC 150 interchange improvements	Current	2019

DW/BDD

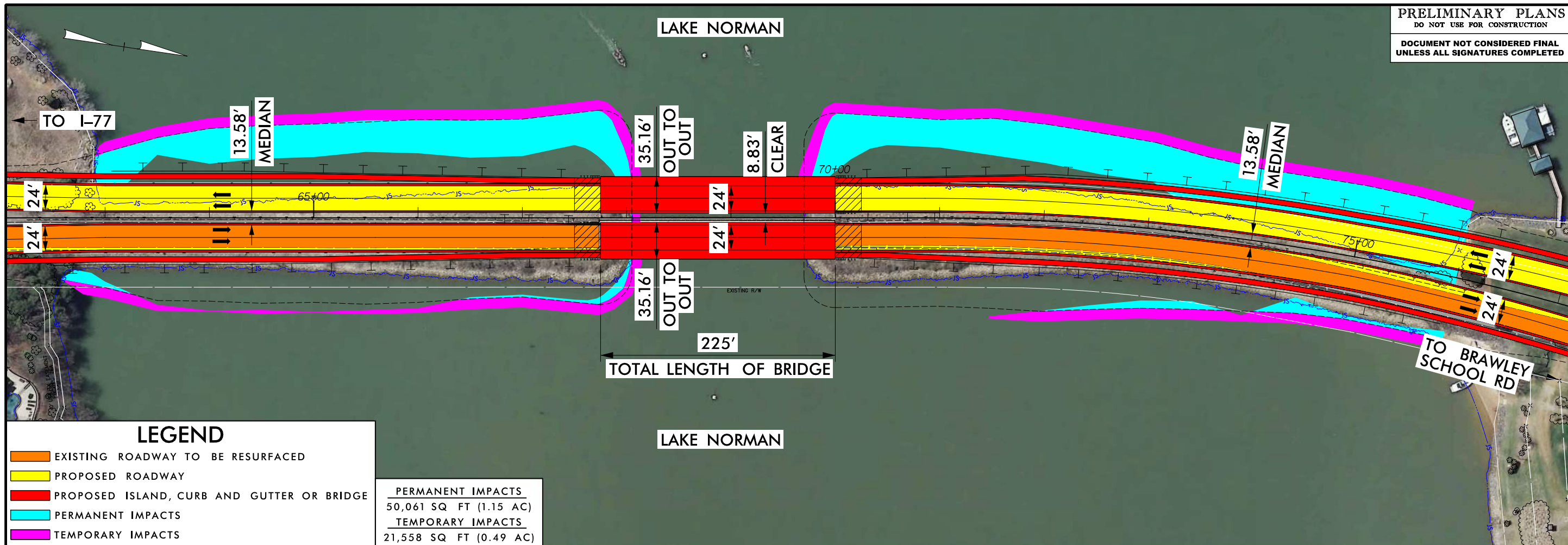


**LOCATION MAP  
 SR 1109 (WILLIAMSON ROAD) WIDENING  
 FROM I-77 TO NC 150  
 IREDELL COUNTY**

TIP: R-5100A  
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 Div.: 12  
 Date: March 2018



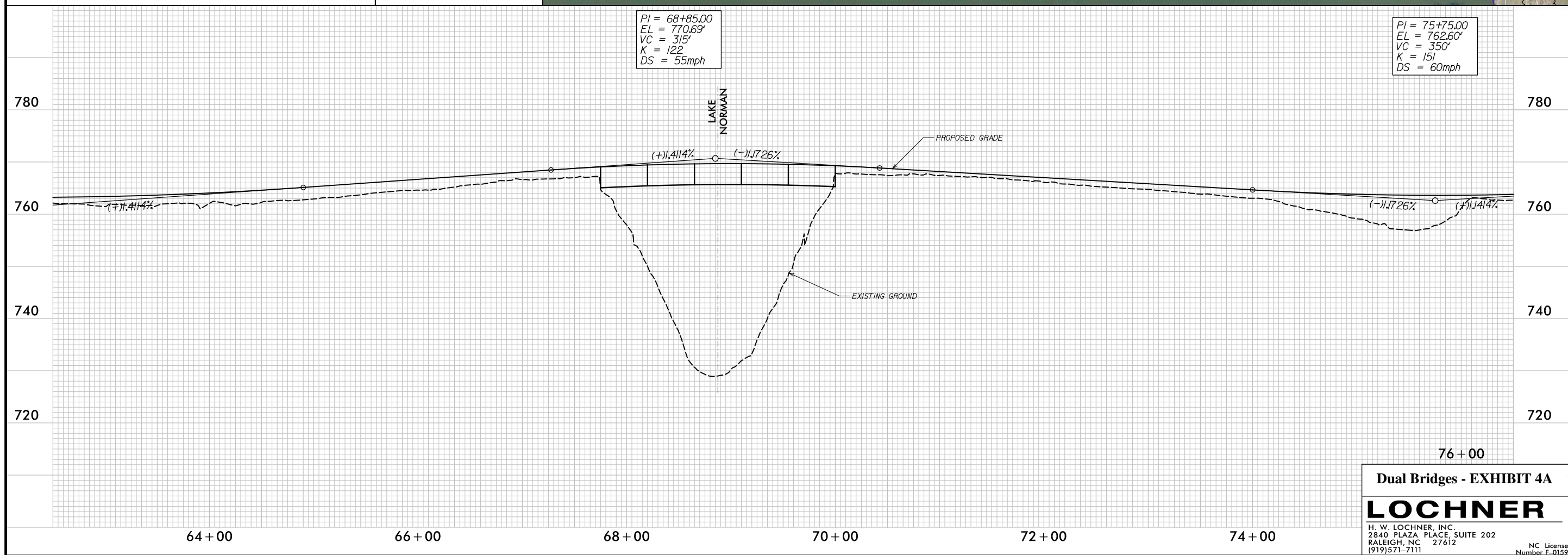
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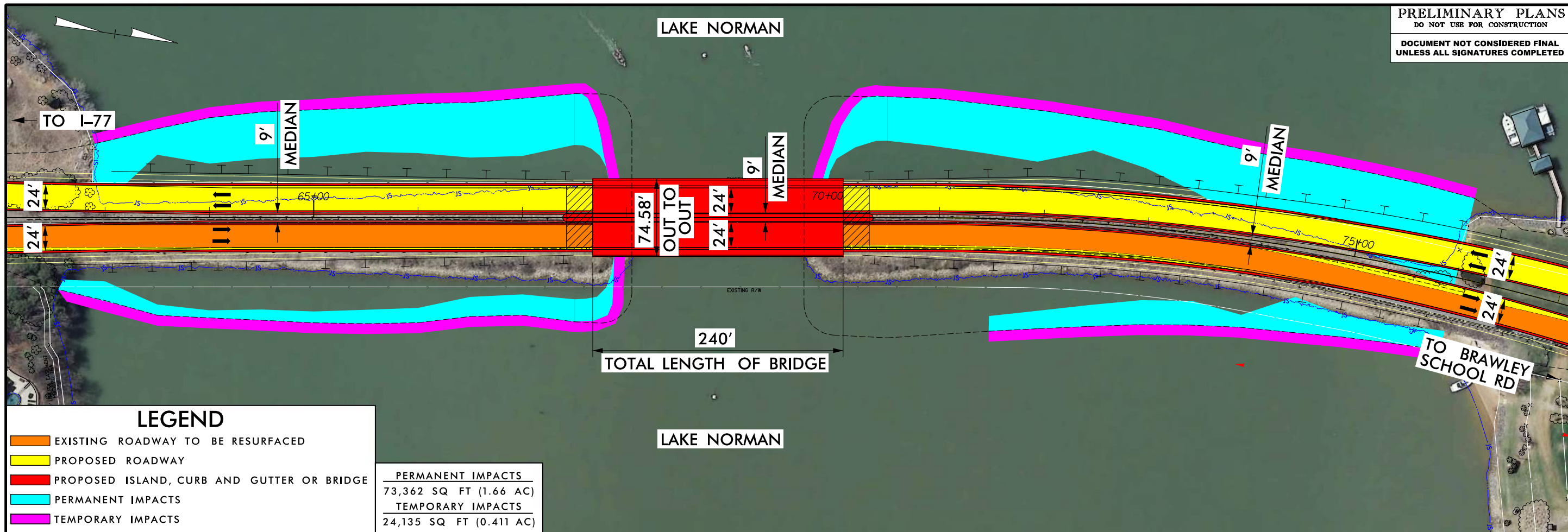


**LEGEND**

- EXISTING ROADWAY TO BE RESURFACED
- PROPOSED ROADWAY
- PROPOSED ISLAND, CURB AND GUTTER OR BRIDGE
- PERMANENT IMPACTS
- TEMPORARY IMPACTS

<b>PERMANENT IMPACTS</b>	
50,061 SQ FT	(1.15 AC)
<b>TEMPORARY IMPACTS</b>	
21,558 SQ FT	(0.49 AC)





**LEGEND**

- EXISTING ROADWAY TO BE RESURFACED
- PROPOSED ROADWAY
- PROPOSED ISLAND, CURB AND GUTTER OR BRIDGE
- PERMANENT IMPACTS
- TEMPORARY IMPACTS

PERMANENT IMPACTS	
73,362 SQ FT	(1.66 AC)
TEMPORARY IMPACTS	
24,135 SQ FT	(0.411 AC)

