



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

Purpose and Need Summary 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 2.3 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 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 inefficient traffic flow along Williamson Road.

Existing Conditions and Traffic Patterns

Exhibit 2 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.

Traffic Volumes and Congestion

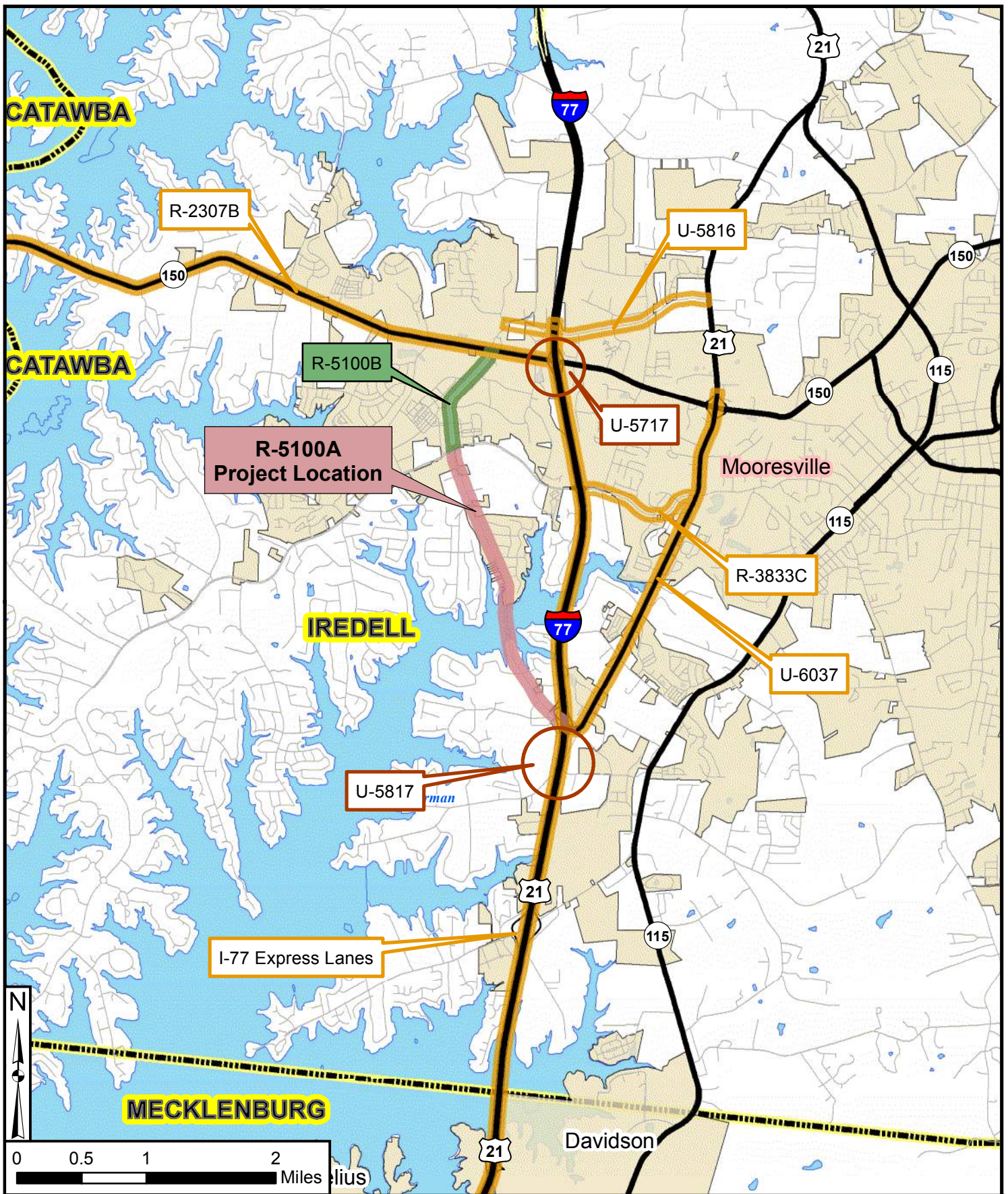
A traffic capacity analysis was performed for the years 2015 and 2040 using the current road network and lane configurations to determine level of service. Level of service (LOS) is a performance measure describing operational conditions of a traffic stream along a roadway or at an intersection. Levels 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 three signalized intersections:

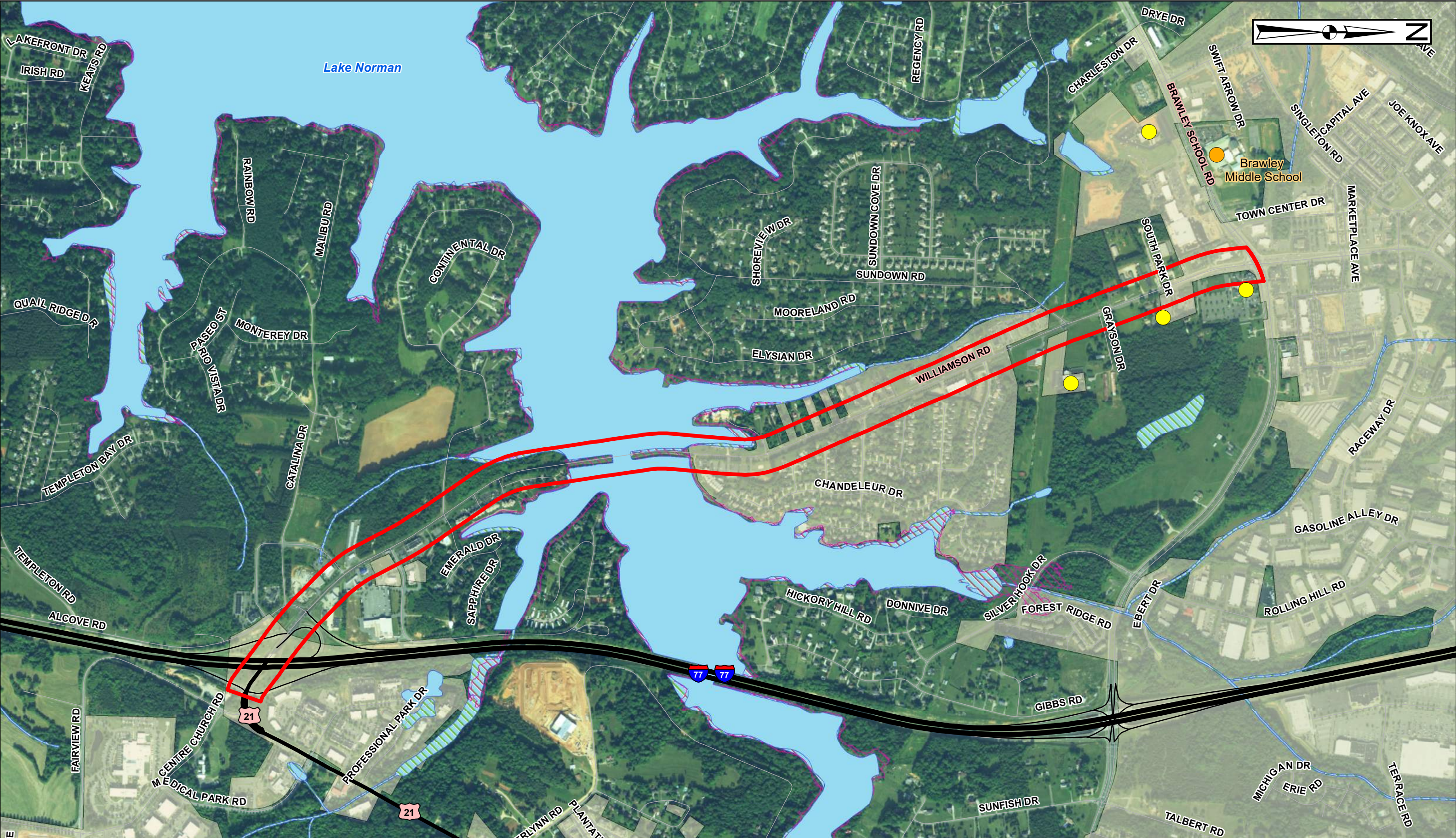
- Intersection at Bridgewater Lane will operate at LOS F in the AM and PM peak periods.
- Intersection at Sundown Road will operate at LOS F in the AM and PM peak periods.
- Intersection at Brawley School Road will operate at LOS F in the AM peak period and LOS E in the PM peak period.



NORTH CAROLINA
DEPARTMENT OF
TRANSPORTATION

**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



	Study Area		Mooresville City Limits
	100-Year Floodplain		Church
	Wetland		School

NORTH CAROLINA
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Exhibit 2
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

0 500 1,000 2,000
Feet



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

**Merger Screening Meeting
September 12, 2018**

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.

Bridging Options:

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

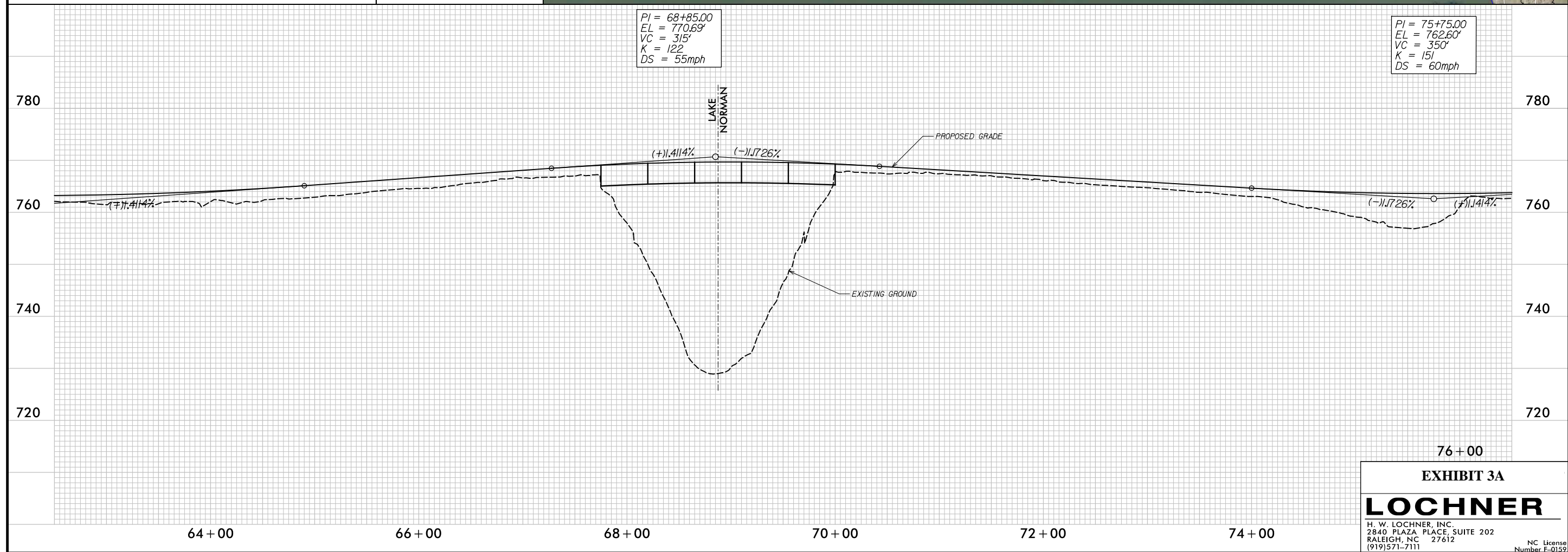
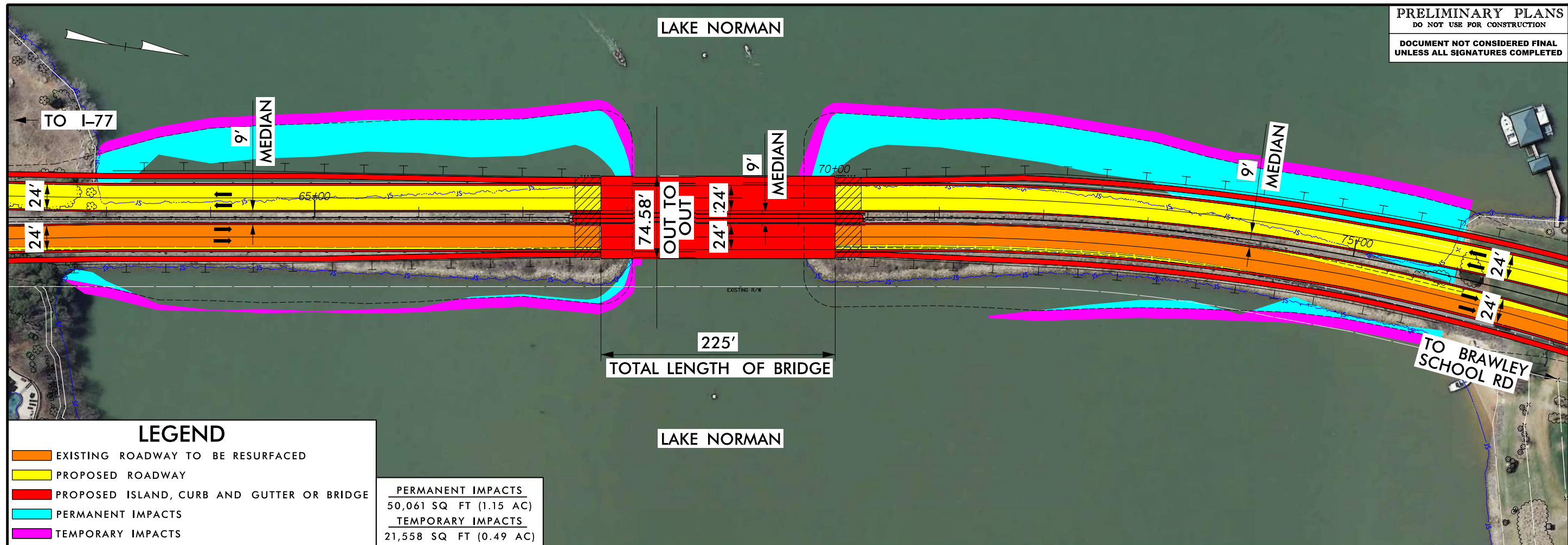
Table 1 shows preliminary impact information for the alternative bridge crossings.

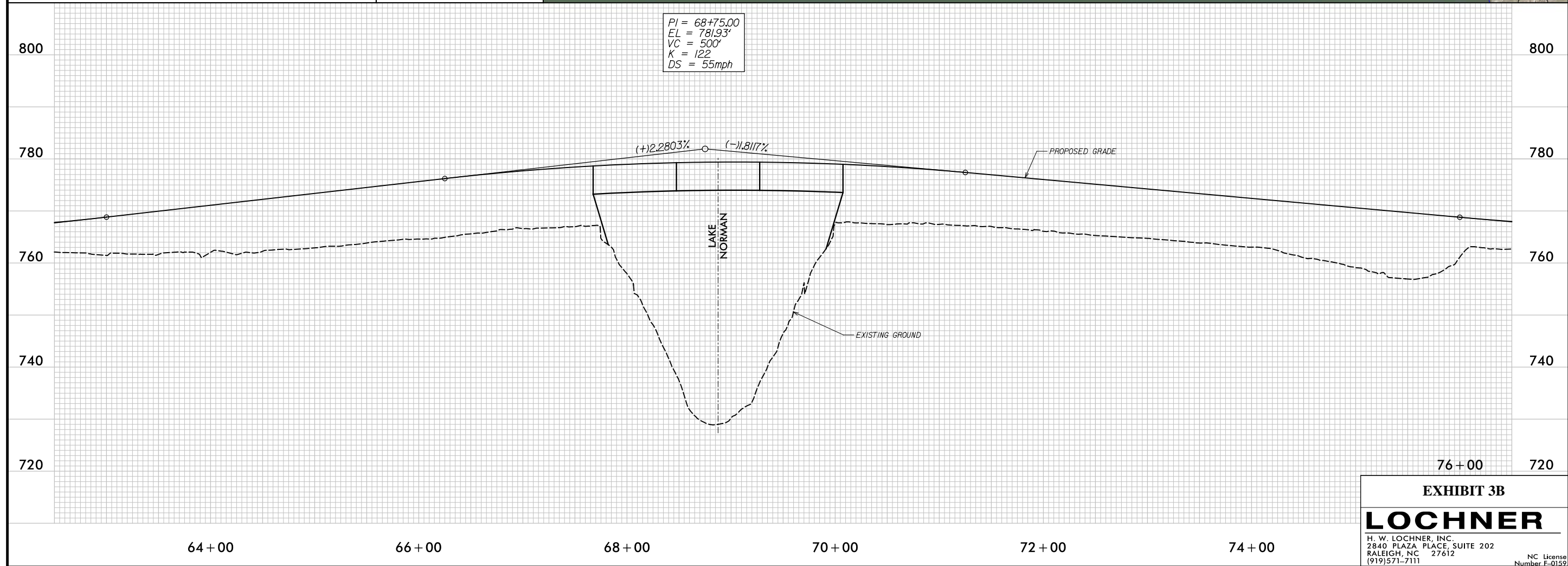
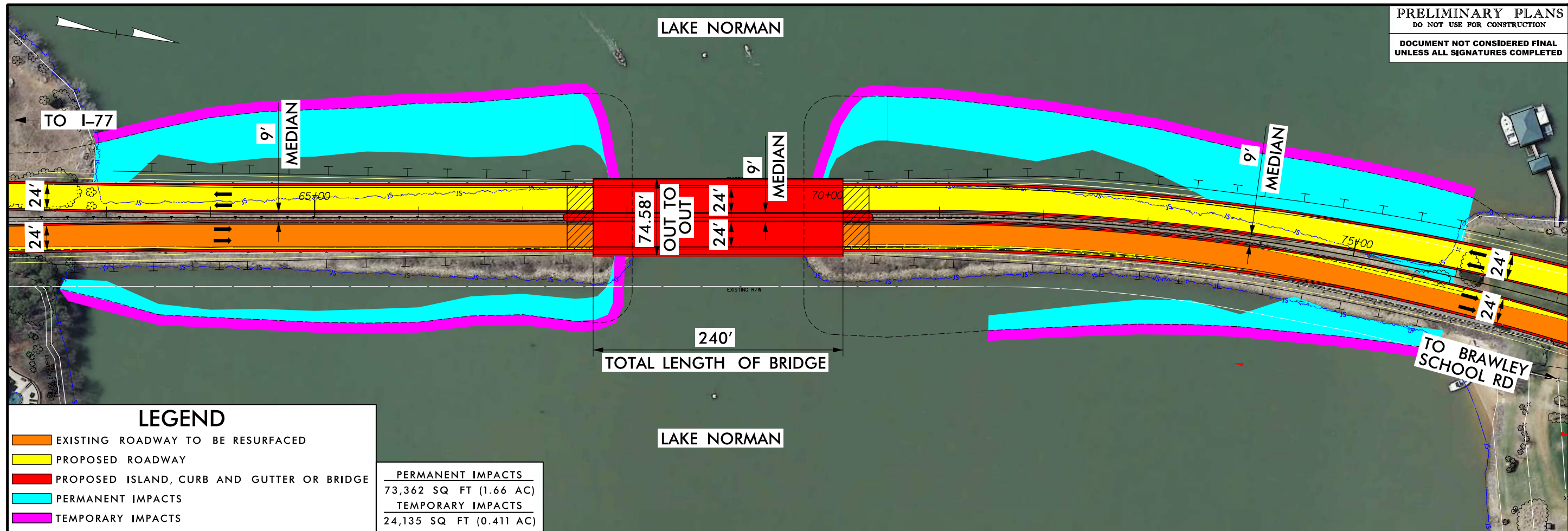
Table 1 – Comparison of Alternatives

	ALTERNATIVE 1	ALTERNATIVE 2
Length (mi)	2.4	2.4
Relocations	0	0
Properties Impacted	74	74
Historic Properties	1 ¹	1 ¹
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:

¹ One property was identified as needing an evaluation for NHRP eligibility.





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.

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.” 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

Surface Water	Jurisdictional	Map ID of Connection	Area (ac) in Study Area
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

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

Exhibit 4 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

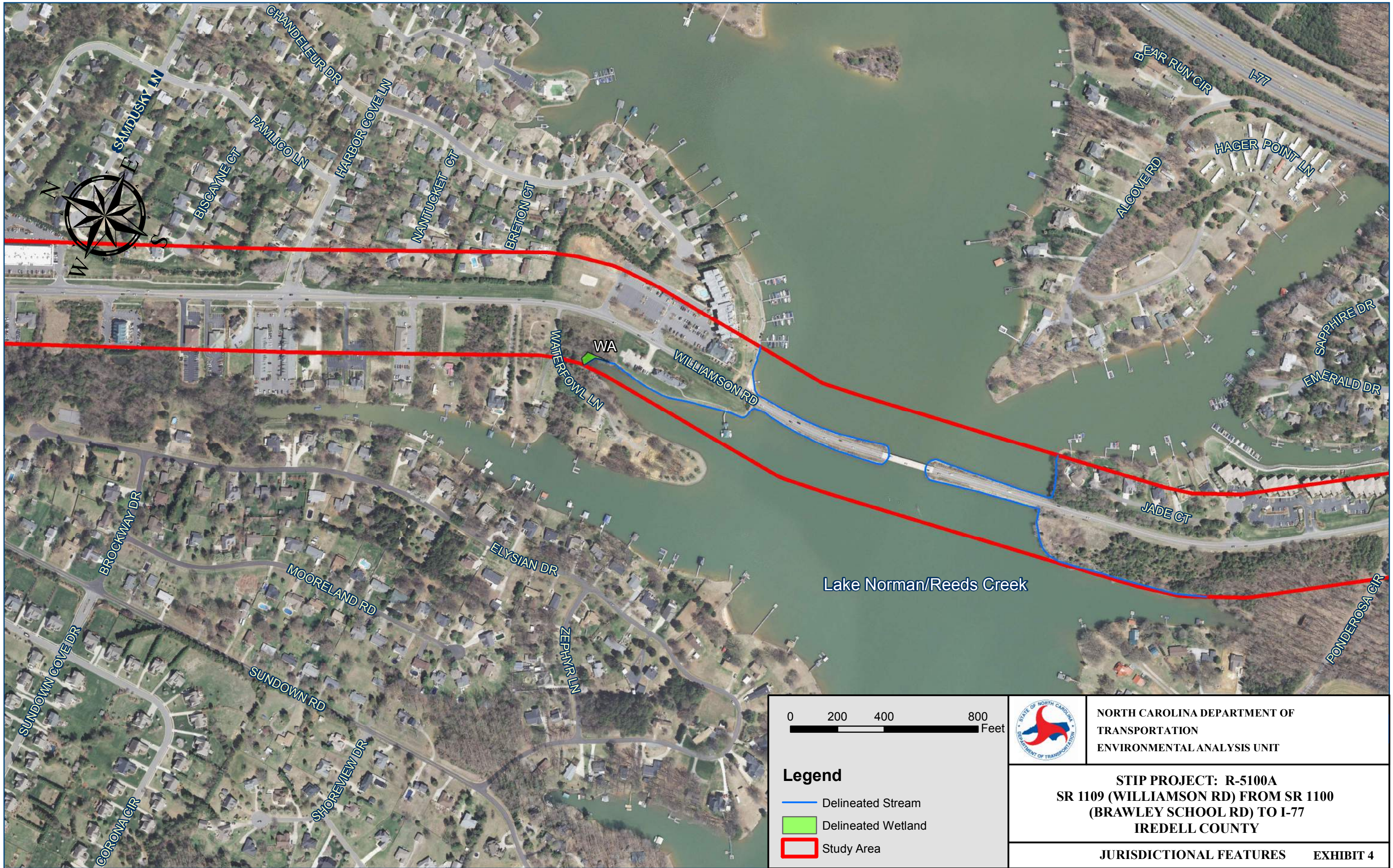
The Lake Norman shoreline within the study area is protected under provisions of the (Catawba River Buffer Rules) administered by NCDWR. Potential impacts to protected stream buffers will be determined once a final alignment and design have been determined.

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.



0 200 400 800 Feet

Legend

- Delineated Stream
- Delineated Wetland
- Study Area



NORTH CAROLINA DEPARTMENT OF
TRANSPORTATION
ENVIRONMENTAL ANALYSIS UNIT

STIP PROJECT: R-5100A
SR 1109 (WILLIAMSON RD) FROM SR 1100
(BRAWLEY SCHOOL RD) TO I-77
IREDELL COUNTY