STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

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GOVERNOR

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November 25, 2025

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Raleigh Regulatory Field Office
3331 Heritage Trade Dr., Suite 105
Wake Forest, NC 27587

N.C. Division of Water Resources
Transportation Permitting Branch
1617 Mail Service Center
Raleigh, NC 27699-1617

ATTN: Mr. Eric Alsmeyer
NCDOT Coordinator

Mr. Rob Ridings
NCDOT Coordinator

SUBJECT: Request for Modification of the Phased Section 404 Individual Permit and Section 401 Individual Water Quality Certification, Neuse River Riparian Buffer Authorization for the construction of the Triangle Expressway Southeast Extension from NC-55 Bypass in Apex to I-40, Wake and Johnston Counties. TIP Nos.: R-2721, R-2828, and R-2829. Federal Aid Project No. 0540047.

REFERENCE: USACE Section 404 Authorization SAW-2009-02240, issued October 24, 2019, modified February 4, 2020 (corrected revision issued February 7, 2020), April 29, 2020, January 7, 2021, March 19, 2021, March 3, 2022, July 1, 2022, September 13, 2022, February 17, 2023, June 21, 2023, July 19, 2023, August 4, 2023, August 11, 2023, December 13, 2023, January 22, 2024, May 29, 2024, October 28, 2024, December 13, 2024, May 19, 2025, June 6, 2025, August 26, 2025, October 8, 2025, October 27, 2025, and October 31, 2025.

NCDWR Water Quality Certification Number 4179 and Neuse River Riparian Buffer Authorization, issued February 15, 2019, modified January 30, 2020, April 20, 2020 (corrected revision issued April 23, 2020), June 1, 2020, December 29, 2020, March 9, 2021, April 8, 2021, November 1, 2021, May 18, 2022, July 22, 2022, February 15, 2023, June 19, 2023, July 19, 2023, August 4, 2023, August 11, 2023, December 12, 2023, January 22, 2024, May 29, 2024, October 7, 2024, December 10, 2024, May 15, 2025, June 2, 2025, August 20, 2025, October 2, 2025, October 24, 2025 and October 30, 2025.

Dear NCDOT Coordinators:

As you are aware, the North Carolina Department of Transportation (NCDOT) applied for a phased

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Section 404 Individual Permit, Section 401 Individual Water Quality Certification (WQC), and Neuse River Riparian Buffer Authorization, and Non-404 Jurisdictional Wetlands and Waters Permit for the subject project in September 2018. The project, also known as Complete 540, encompasses three NCDOT Transportation Improvement Plan (TIP) projects: R-2721 (NC-55 Bypass to US-401), R-2828 (east of US-401 to I-40 Interchange), and R-2829 (east of I-40 to US 64/264). The permit and previous modification dates are listed in the reference section above.

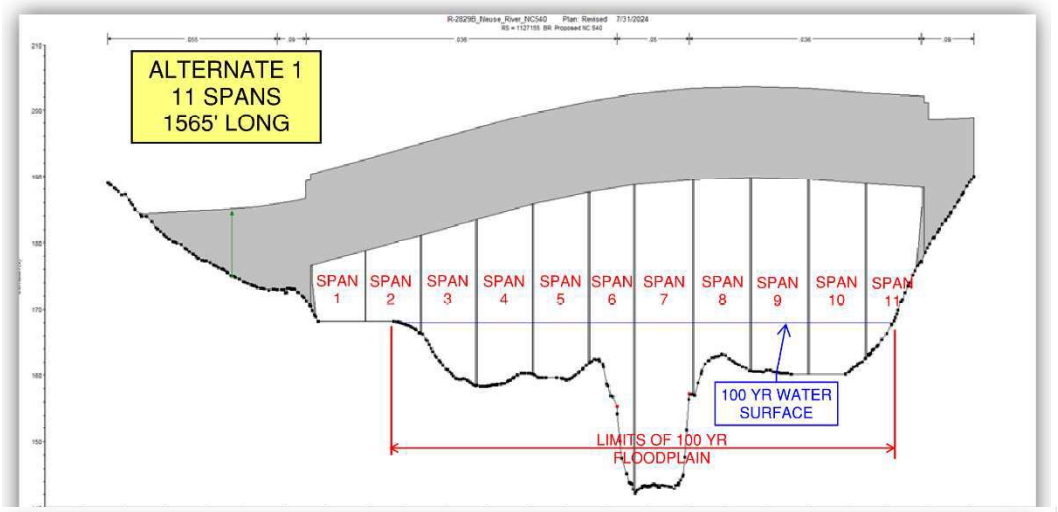
We are requesting a modification to Section 404 Authorization (SAW-2019-02240) and the associated 401 Individual Water Quality Certification (Permit No. 20181249). This request is prompted by the Design-Build Team identifying an opportunity to reduce the overall length of the Neuse River Bridge by approximately 290 feet while maintaining the FEMA and NC Floodplain Mapping "no-rise" condition at Sites 14 and 15. This has numerous benefits that are described in further detail below. It is estimated that the construction cost savings to the project by reducing the length of the Neuse River Bridge is on the order of $2 million.

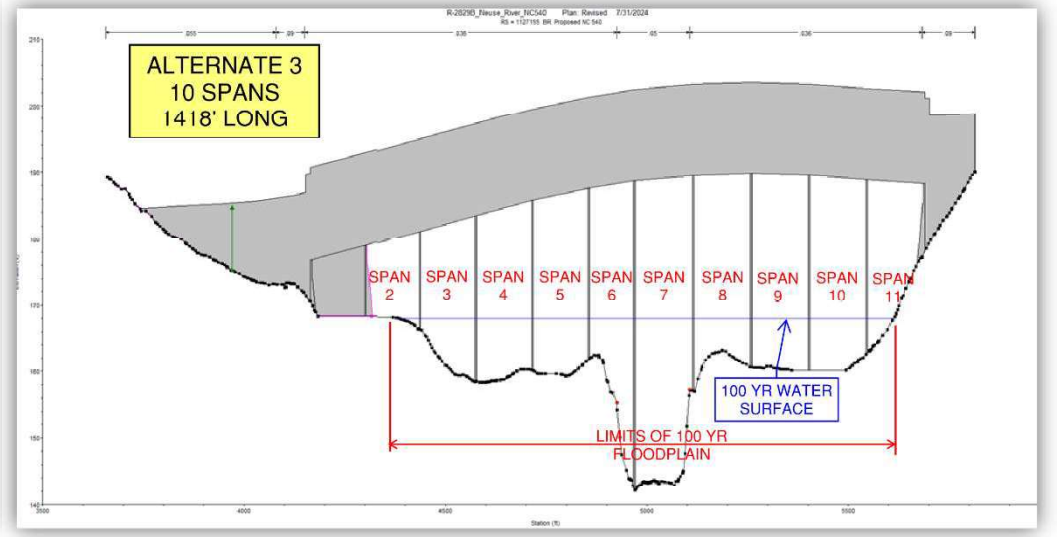
Evaluation of the final bridge length was based on several alternatives. Please see the table below for a summary of the alternatives considered as well as sketches of the hydraulic models depicting each option.

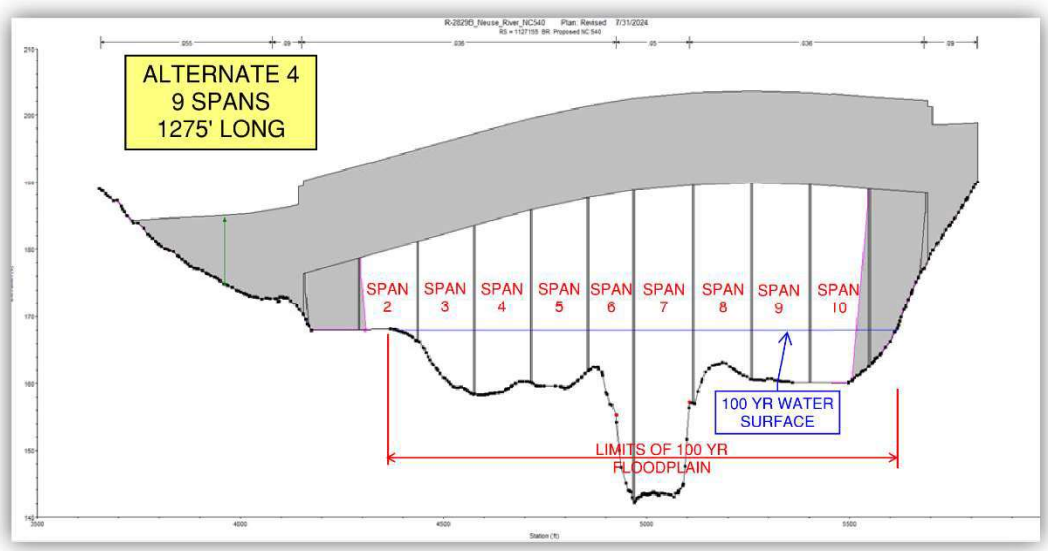
Table 1. Neuse River Bridge Alternatives Analysis

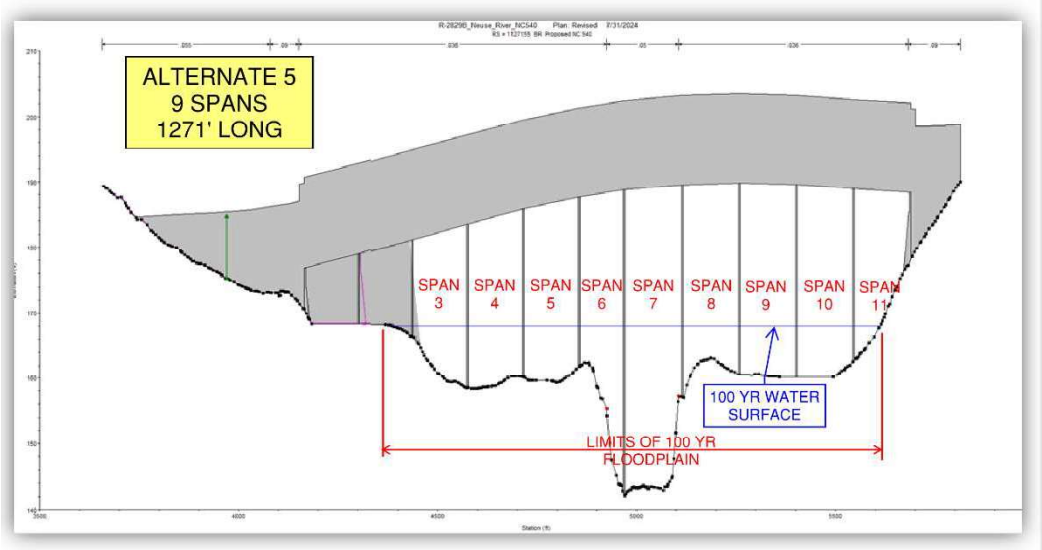
Alt.	Description	FEMA Compliance	Additional Permit Impacts	Comments
1	11 Spans 1565' long	No Rise No Structure Impacts	None – impacts currently permitted	Original design bridge length based on spanning the entire FEMA Floodplain limits. Longest duration of construction at 116 weeks, no reduction in concrete material and concrete trucks trips required, (14,179 cubic yards [CY]/1,418 truckloads), maximum impacts to greenway trail (116 weeks of construction noise), recreational users on the Neuse having to portage around construction area, etc.
2	10 Spans 1422' long	No Rise No Structure Impacts	None – impacts currently permitted	Eliminate Span 11 (north end of bridge). Reduces total construction duration by 12 weeks for a total duration of 104 weeks. 1,289 CY concrete material reduction and 129 less truck trips required.
3	10 Spans 1418' long	No Rise No Structure Impacts	Site 14 - addtl impacts Site 15 - reduced impacts (Impacts are the Same as Alt 4)	Eliminate Span 1 (south end of bridge). Reduces total construction duration by 12 weeks for a total duration of 104 weeks total. 1,289 CY concrete material reduction and 129 less truck trips required.
4	9 Spans 1275' long	No Rise No Structure Impacts	Site 14 - addtl impacts Site 15 - reduced impacts. (See Table 2 below)	Eliminate Span 1 and Span 11. Maximum schedule benefit saving 23 weeks of construction reducing timeline for bridge construction to 93 weeks total, maximum reduction in time impacts to greenway trail (93 weeks), maximum reduction in materials and carbon footprint with 2,616 CY concrete material reduction and 262 less truck trips required.

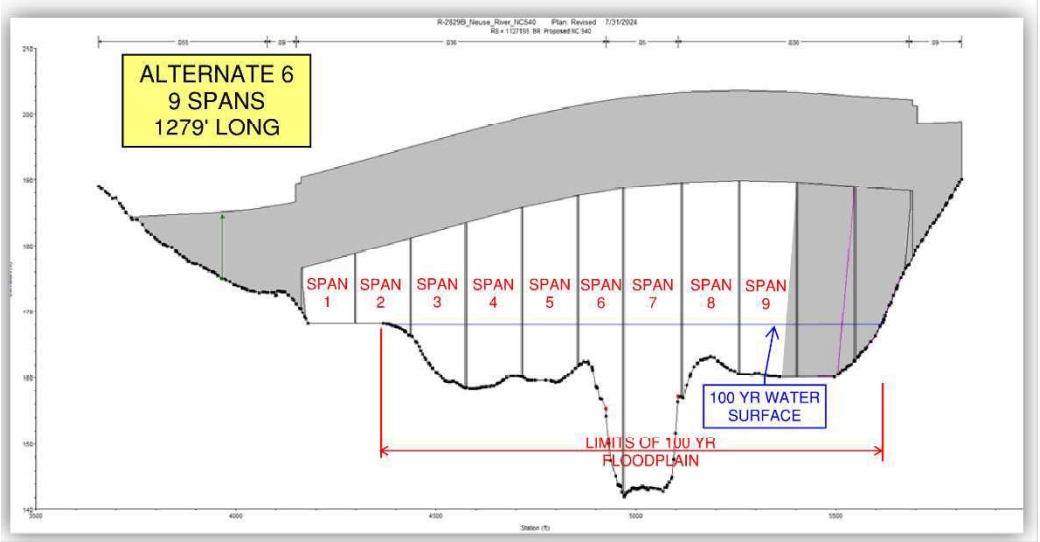
5	9 Spans 1271’ long	Rise and Structure Impacts	Site 14 - addtl impacts Site 15 - reduced impacts (Impacts are the same as Alt 4)	Eliminate Spans 1 and 2 (south end of bridge). Is not feasible due to FEMA water elevation rise of over 0.02 feet that is carried up to 8 miles upstream and will impact over 12 existing structures. Reduces construction timeline to 93 weeks total. 2,616 CY concrete material reduction and 262 less truck trips required.
6	9 Spans 1279’ long	Rise and Structure Impacts	None – impacts currently permitted	Eliminate Spans 10 and 11 (north end of bridge). Not feasible due to FEMA water elevation rise and structure impacts. Reduces construction timeline to 93 weeks total. 2,616 CY concrete material reduction and 262 less truck trips required. Attempted to eliminate the water elevation rise and structure impacts by performing permanent bank excavation, however this was not feasible due to: existing City of Raleigh sewer line constraints on the north bank of the River; and impacts to the Neuse River Greenway Trail on the south bank of the River.











After evaluation of these alternatives, Alternative 4 was selected as the proposed preferred alternative due to the compliance with FEMA regulations and the maximum 23 weeks of construction reduction benefits to the schedule reducing total bridge construction to 93 weeks, 2,616 CY of material reduction, carbon footprint reduction by reducing required concrete truck trips by 262 loads delivered to site, 23 weeks reduction of disruption to the Neuse River Greenway trail and river users' impact, reduction in safety risks to construction team, and long-term maintenance reduction by removing deck drains. Speeding up the construction timeline minimizes the impacts done to the local environment and reduces the amount of fuel needed for construction vehicles, noise pollution, and traffic disturbances caused by the project. Further detailed discussion of the benefits of Alternative 4 is provided below.

A shorter construction timeframe means less exposure for active construction activities to potential storm events, minimizing disruptions and potential damage to the project and its surroundings. Roughly 23 work weeks are cut from the 116-week original 11 span schedule, by selecting Alternative 4. A shorter bridge design directly translates into a more streamlined construction schedule. The reduced length of the bridge means less time spent on key activities, such as foundation installation and deck construction, which reduces the overall exposure of sensitive areas to construction-related activities. With a shorter duration of construction, the project minimizes the time spent in areas that may be sensitive to environmental disturbance, including riparian zones and areas adjacent to the Neuse River. Less deck area to construct reduces the carbon footprint of this bridge site as well as requiring less raw material to complete construction. Taking a step back to view the impacts to the surrounding community and roadways connecting to this corridor is important to the Flatiron-Fred Smith JV as 2,616 CY less concrete, 262 less concrete truck trips, less fuel trucks, less steel, and less hauling is required with a shorter bridge.

Table 2. Summary of Neuse River Bridge Impact Changes

Feature	2024 Final Design Impact	Proposed 2025 Permit Modification Impact	Comments
WIP	0.013 ac	0.087 ac	Final drainage design required a base ditch around the end of the permanent bridge fill that resulted in additional impacts.
SGR	442 lf	500 lf	58 additional linear feet of stream impacts due to the required base ditch around the end of the permanent bridge fill and the portion of the stream needed to tie Stream SGR to the base ditch.
Neuse	76 lf	51 lf	Elimination of one lateral ditch results in a reduction of bank stabilization stream impacts by 25 lf.

Fig.1: Looking upstream of the existing 60" at SGR and WIP. The 60" Headwall is visible in the picture

Fig.2: Looking upstream at the lowest point(downstream) of the wetland boundary for WIP. WIP and SGR are dry with no water visible at time of picture.

Fig.3: Looking Upstream, approximately 50-100 feet upstream of Fig.2 standing in WIP. WIP and SGR are dry with no water visible at time of picture.

Fig.4: Looking Downstream at the OUTLET of the 60" Pipe. Stream SGR has visible flow in the channel, WIQ is also shown in this picture. Likely groundwater that is flowing in the channel.

While the number of bents in the Neuse River stays the same, there are fewer bents in the FEMA flood plain, which means less grubbing is needed in sensitive areas and results in less impacts to the natural habitat for local flora and fauna. The proposed shorter bridge requires fewer construction activities that would necessitate intensive maintenance and monitoring of erosion control devices (e.g., silt fences, etc.). With less area exposed to construction activities, there will be a reduced likelihood of issues such as erosion, sedimentation, or the need for reinstallation or adjustments to these devices. This results in a lower risk of environmental impact during the construction phase. The shorter timeline for bridge construction diminishes the exposure of the project site to major weather events (such as storms) that could otherwise result in flooding, erosion, or washout, further reducing the potential for environmental degradation.

Early in the project, the team carefully evaluated possible realignment options. However, the presence of a City of Raleigh sewer line crossing, along with limited space around existing manholes, made any shift impractical. Because of these constraints, the current alignment was chosen as it represents the best—and only—feasible location for the project.

The shorter bridge design (Alternative 4) directly reduces the timeline of disturbance to the Neuse River Greenway Trail, a valuable community asset frequented by hikers, bikers, joggers, paddlers and nature enthusiasts. The trail, as an important recreational and environmental resource, is sensitive to both physical impacts from construction equipment and indirect impacts such as noise, dust, and changes in water quality. By minimizing the length of the bridge construction, the potential for disturbing this community asset is significantly lowered, creating fewer disruptions for both local residents and wildlife. Additionally, the minimized bridge footprint reduces the time the construction team will be using construction equipment on the ground to prepare the site for access and foundation work by roughly 23 weeks.

As design advanced, the team conducted additional drilling to refine the geotechnical data used in the early stages. The new findings on rock conditions and potential scour led to a change in foundation design, causing a change in Bents 6, 7 and 8 in the Neuse River from pile foundations to drilled shaft foundations. Drilled shafts associated with the shorter bridge are less risky, from the environmental and safety perspective, than the piles with foundations that are deep and require dewatering. Drill shafts typically require less disturbance to surrounding soil and groundwater compared to deep pile foundations. The need for dewatering associated with pile foundations can cause significant disruption to local hydrology and water quality, especially in areas near sensitive water bodies like the Neuse River. Drill shafts pose less risk in terms of safety during construction, as they require less intensive equipment and are less prone to accidents such as pile driving failures or blowouts during dewatering operations. This minimizes the risk of accidental releases of pollutants or materials into the environment.

The shorter bridge, with its reduced deck area, will require less maintenance and inspection in the long term. Larger, more complex bridge decks can pose a higher risk of wear and tear, leading to potential environmental impacts during repair or maintenance activities (e.g., runoff from chemicals, maintenance debris, or equipment use near sensitive areas). During the design alternative selection process, the team also considered changing the way deck drains on the Neuse River Bridge outlet into the Neuse River. The team went through several revisions calling for a splashpad and stone ditch before finding the deck area reduction of Alternative 4 allowed for the deck drains to be removed entirely. Water on the Alternative 4 bridge will therefore drain off the bridge and be filtered through a vegetated buffer, which is better for overall water quality in the Neuse River. This Alternative 4 bridge length reduction approach is consistent with the project team's goal of balancing infrastructure needs with environmental stewardship.

Details of the revised impacts are outlined below and depicted on the updated permit drawing sheets corresponding to each revision. For ease of review, all modified impacts areas are shown in bold font in this submittal.

Summary of Impacts

Revised impacts for final design for R-2829B include: 9.591 acres of permanent wetland (riparian

and non-riparian) impacts (fill, excavation, and mechanized clearing); 8,333 linear feet of permanent stream impacts (including 600 linear feet of bank stabilization); 1,177 linear feet of temporary stream impacts; and Neuse River Riparian Buffer impacts, as follows: 93,428 square feet Allowable Zone 1, 54,468 square feet Allowable Zone 2, 592,965 square feet Mitigable Zone 1, and 391,158 square feet Mitigable Zone 2 buffer impacts (Revised Table 5).

Revised Table 5. R-2829B Jurisdictional Resources Impacts

Riparian Wetlands Temp./ Perm. (ac.)	Non-Riparian Wetlands Perm. (ac.)	Ponds (ac.)	Streams (lf)			Mitigable Riparian Buffer (sq. ft.) Zone 1/ Zone 2
			Perm.	Temp.	Bank Stab.[2]	
1.021[1]/ 9.132	**0.459**	14.104	**8,333**	**1,177**	**600**	**Allowable:** 93,428/54,468 **Mitigable**: **592,965/391,158**

[1] Includes 0.398 acres of hand clearing.
[2] Includes countersunk riprap pads, which do not count toward mitigation

Impacts to Jurisdictional Resources

Revisions to proposed impacts are summarized below and reflected in the updated Tables 20, 21, and 22, which detail site specific impacts to wetlands and streams. The revised permit drawings identify the station number, structure size and type, jurisdictional feature name and associated impact type for each location. All impacts occur within the Neuse River Basin (HUC 03020201). Detailed revisions are provided below.

Site 14: WIP and SGR

- Fill in Wetland: 0.036 ac (previously 0 – increase of 0.036 ac)
- Excavation in Wetland: 0.021 ac (previously 0.002 – increase of 0.019 ac)
- Mechanized Clearing in Wetland: 0.030 ac (previously 0.011 – increase of 0.019 ac)
- Permanent Surface Water Impacts: 500 lf (previously 442 – increase of 58 lf)
- Buffer Zone 1 Impacts: 27,754 sq ft (previously 24,910 sq ft – increase of 2,844 sq ft)
    - Wetlands in Zone 1 (WIP): 1,611 sq ft (previously 40 sq ft – increase of 1,571 sq ft)
- Buffer Zone 2 Impacts: 18,077 sq ft (previously 16,255 sq ft – increase of 1,822 sq ft)
    - Wetlands in Zone 2 (WIP): 1,280 sq ft (previously 156 sq ft – increase of 1,124 sq ft)

Permit Site 14 has increased impacts due to the lateral base ditch going around the end of the permanent bridge fill. These impacts were reduced to the greatest extent possible. Steeper slopes are not possible given the topography of the area. A retaining wall option was explored, but it did not reduce impacts to the jurisdictional resources in this area because regardless of steepening the bridge abutment fill slope and bringing the lateral base ditch closer to the NC 540 alignment, the flow in stream SGR would still have to be intercepted and conveyed through the lateral base ditch to the Neuse River, resulting in similar impacts. During the early planning phases of the project, the design team thoroughly explored potential realignment options, including the bank excavation approach outlined in Alternative 6 as a possible mitigation measure. After careful review, it was determined that excavation would likely create additional impacts to the City of Raleigh's sewer line, which already presents challenges due to a critical crossing and the limited space around existing manholes.

Excavation would also increase disturbance to the adjacent greenway trail, affecting both the corridor itself and its users. Given these engineering and community considerations, the current alignment was confirmed as the most practical and least disruptive option available.

Site 15: Neuse River (-LB- 1319+95 TO 1321+83 M - BANK STABILIZATION)

- Permanent Stream Impact: 51 lf (previously 76 lf – decrease of 25 lf)
- Temporary Stream Impact: 73 lf (previously 108 lf – decrease of 35 lf)

The elimination of a lateral base ditch results in a reduction of bank stabilization impacts to the Neuse River where the ditch previously tied in.

Early on the team considered the option of removing the base ditches at Sites 15 and 16 to reduce buffer impacts, but this proved unfeasible. Existing grades require the ditches for proper drainage to the Neuse River, and elimination would demand extensive regrading and excavation. Space constraints and the added disturbance made this option impractical.

Site 31

- Permanent Fill in Wetland: 0.616 ac (previously 0.615) – Increase of 0.001 ac
- Mechanized Clearing in Wetland: 0.014 ac (previously 0.015) – Decrease of 0.001 ac
- Total Mitigable Impacts: 0.630 ac (previously 0.630) – **Overall No Change**

A small area of Mechanized Clearing in Wetlands has been modified to Permanent Fill in Wetlands. The construction of the proposed culvert headwall and wingwalls results in an additional 0.001 ac of Permanent Fill in Wetlands to fully cover the limits of the proposed inlet construction not originally depicted in the permit drawings.

Site 36

- Buffer Zone 1 Impacts: 5,421 sq ft (previously 3,038 sq ft – increase of 2,383 sq ft)
- Buffer Zone 2 Impacts: 2,836 sq ft (previously 0 sq ft – increase of 2,836 sq ft)

Additional Zone 1 and Zone 2 Buffer Impacts are required to allow for construction access to construct the proposed pipe and riprap scour and channel protection. The site requires access parallel to the existing NC 540 lanes, necessitating the impact to the Zone 1 and 2 Buffers, which should be Allowable Upon Authorization considering this is an existing transportation facility.

Site 37

An error was made in previously placing Site 37 embankment impacts as mitigable stream impacts. These impacts are riprap at embankment (bank stabilization) impacts and do not require mitigation. This notation has been corrected in Revised Table 21 and explained further in the Compensatory Mitigation section of this letter.

Revised Table 20. R-2829B Wetland Impacts

Permit Drawing Site Number	NRTR Label	NCWAM Type	Riparian or Non-riparian	Impact Type	Permanent Fill (ac.)	Temporary Impacts (ac.)	Excavation (ac.)	Mechanized Clearing (ac.)	Hand Clearing (ac.)
1	WHH	Headwater Forest	Non-riparian	Roadway Fill	0.143	-	-	-	-
2	WHQ	Headwater Forest	Riparian	Excavation	-	-	0.021	0.031	-
3	WHR	Headwater Forest	Riparian	Fill Pond	0.037	-	-	-	-
4	WRV	Headwater Forest	Riparian	Ditch Excavation	0.043	-	0.040	-	-
5	WAAH	Headwater Forest	Riparian	Fill	0.095	-	-	-	-
6	WHS	Headwater Forest	Riparian	Ditch	0.024	-	-	0.003	-
7	WHP	Headwater Forest	Riparian	2@ 6'x8' RCBC	0.027	-	-	-	-
7A	WHM	Non-tidal Freshwater Marsh	Riparian	Ditch Excavation	-	-	-	0.038	-
9	WIC	Headwater Forest	Riparian	Roadway Fill	0.052	-	-	-	-
10*	WIG	Headwater Forest	Riparian	O/H Power Lines	-	-	-	-	0.002
11	WIH	Headwater Forest	Non-riparian	Roadway Fill	0.053	-	-	-	-
13	WHG	Headwater Forest	Riparian	Ditch Excavation	-	-	0.002	0.006	-
14	WIP	Headwater Forest	Non-riparian	Channel Realignment	**0.036**	-	**0.021**	**0.030**	-
14	WIQ	Headwater Forest	Non-riparian	Channel Realignment	0.044	-	0.011	-	
17	WIU	Non-tidal Freshwater Marsh	Riparian	Roadway Fill	0.118	-	-	0.031	-
18	WIW	Non-tidal Freshwater Marsh	Riparian	Bridge Causeway	0.615	-	0.028	0.113	-
19	WIV	Headwater Forest	Riparian	Bridge/Channel Change	0.066	-	0.133	0.115	-
20	WIX	Non-tidal Freshwater Marsh	Riparian	Roadway Fill	0.001	-	0.001	0.021	-
21	WIY	Headwater Forest	Non-riparian	Roadway Fill	0.089	-	-	0.032	-
22	WIZ	Headwater Forest	Riparian	Roadway Fill	0.181	-	-	-	-
22	WJA	Headwater Forest	Riparian	Roadway Fill	0.002	-	0.003	0.036	-
23	WJB	Headwater Forest	Riparian	Roadway Fill	-	-	-	0.011	-
24	WJD	Headwater Forest	Riparian	1@6'x8' RCBC	0.357	-	0.039	0.044	-

Revised Table 20. R-2829B Wetland Impacts

Permit Drawing Site Number	NRTR Label	NCWAM Type	Riparian or Non-riparian	Impact Type	Permanent Fill (ac.)	Temporary Impacts (ac.)	Excavation (ac.)	Mechanized Clearing (ac.)	Hand Clearing (ac.)
25	WJF	Bottomland Hardwood Forest	Riparian	1@6'x8' RCBC	1.232	-	0.039	0.102	-
25	WJF	Bottomland Hardwood Forest	Riparian	1@6'x8' RCBC	0.209	-	0.042	0.156	-
27	WJH	Headwater Forest	Riparian	Roadway Fill	0.271	-	-	-	-
31	WJK	Headwater Forest	Riparian	Roadway Fill	**0.616**	-	-	**0.014**	-
31*	WJK	Headwater Forest	Riparian	O/H Power Lines	-	-	-	-	0.006
32	WJJ(1)	Bottomland Hardwood Forest	Riparian	Bridge	0.008	0.623	-	0.270	0.390
32	WJJ(1)	Bottomland Hardwood Forest	Riparian	Roadway Fill	0.013	-	-	0.034	-
32	WJJ(1)	Bottomland Hardwood Forest	Riparian	1@10'x8' RCBC	0.218	-	0.048	0.101	-
32	WJL	Headwater Forest	Riparian	Roadway Fill/Channel Change	0.407	-	0.094	0.119	-
32	WJJ(1)	Bottomland Hardwood Forest	Riparian	Roadway Fill	0.346	-	0.037	0.069	-
32	WJL	Headwater Forest	Riparian	Roadway Fill	0.018	-	-	-	-
33	WJJ(1)	Bottomland Hardwood Forest	Riparian	1@6'x8' RCBC	-	-	0.052	0.083	-
34	WJJ(2)	Non-tidal Freshwater Marsh	Riparian	Roadway Fill	1.052	-	-	0.120	-
35	WJX	Headwater Forest	Riparian	Roadway Fill	0.144	-	-	-	-
35	WJS	Headwater Forest	Riparian	Roadway Fill	0.007	-	-	0.005	-
38	WJJ(2)	Bottomland Hardwood Forest	Riparian	1@9'x6' RCBC Extension	0.128	-	-	0.091	-
39	WJJ(1)	Bottomland Hardwood Forest	Riparian	1@9'x6' RCBC Extension	0.508	-	0.003	0.142	-
			Total		**7.160**	0.623	**0.614**	**1.817**	0.398
			Total Riparian		6.795	0.623	0.582	1.755	0.398
			Total Non-Riparian		**0.365**	-	**0.032**	**0.062**	-

* Utility Impacts

Revised Table 21. R-2829B Surface Water (Stream) Impacts

Permit Drawing Site Number	NRTR Label	Impact Type	Permanent Impacts (lf)	Temporary Impacts (lf)	Mitigation Required
4	SOR	Ditch Excavation	-	34	No
6	SAAM	Ditch Excavation	-	11	No
6	SGJ	Fill	160	-	Yes
7	SGJ	Bank Stabilization	28	23	No
7	SGJ	Countersunk Riprap	39	-	No
7	SGK	2@6'x8' RCBC	406	23	Yes
7	SGK	Countersunk Riprap	55	-	No
7	SGK	Countersunk Riprap	44	47	No
8	SGJ	Bank Stabilization	32	42	No
8	SGJ	Ditch Excavation	7	7	Yes
10	SGJ	Bank Stabilization	32	57	No
12	SGI	Bank Stabilization	22	17	No
12	SGI	Countersunk Riprap	48	-	No
12	SGI	3@7'x8' RCBC	408	105	Yes
12	SGI	Countersunk Riprap	26	-	No
12	SGI	Bank Stabilization	61	5	No
14	SGR	Channel Realignment	**500**	-	Yes
15	Neuse River	Bridge	20	51	Yes
15	Neuse River	Bridge Causeway	-	220	No
15	Neuse River	Bank Stabilization	**51**	**73**	No
16	SGT	Ditch	10	12	Yes
18	SGU (Hinton's Creek)	Bridge Causeway		73	No
18	SGU (Hinton's Creek)	Bank Stabilization	306	36	No
20	SGV	Roadway Fill	793	12	Yes
22	SGY	Roadway Fill	309	-	Yes
22	SGY	Countersunk Riprap	28	10	No
24	SHA	1@ 6'x8' RCBC	290	-	Yes
24	SHA	Countersunk Riprap	15	11	No
25	SHB	1@ 6'x8' RCBC	48	-	Yes
25	SHB	Countersunk Riprap	8	13	No
27	SHD	Roadway Fill	1,804	-	Yes
27	SHD	Countersunk Riprap	10	10	No
28	SHC	2@ 12'x11'	174	-	Yes
28	SHC	Countersunk Riprap	83	9	No
28	SHC	Channel Change	39	-	Yes

Revised Table 21. R-2829B Surface Water (Stream) Impacts

Permit Drawing Site Number	NRTR Label	Impact Type	Permanent Impacts (lf)	Temporary Impacts (lf)	Mitigation Required
28	SHC	3@ 12'x11'	48	-	Yes
28	SHC	Countersunk Riprap	30	-	No
28	SHC	Bank Stabilization	65	10	No
29	SHE	Roadway Fill	173	-	Yes
32	SHC	Bridge Bank Stabilization	195	74	No
32	SHC	1@ 10'x8' RCBC	255	-	Yes
32	SHC	Roadway Fill/Channel Change	319	14	Yes
32	SHC	Roadway Fill	967	11	Yes
33	SHH	1@ 6'x8' RCBC	127	11	Yes
35	SHM	Roadway Fill	-	16	No
36	SAAJ	42" RCP-III	13	-	Yes
36	SAAJ	Countersunk Riprap	37	10	No
37	Neuse River	Riprap at Embankment	26	37	No
38	SHL	1@ 9'x6' RCBC Ext	31	-	Yes
38	SHL	Countersunk Riprap	33	-	No
38	SHL	Bank Stabilization	32	78	No
38	SAAL	Roadway Fill	46	-	Yes
39	SHL	1@ 9'x6' RCBC Extension	55	-	Yes
39	SHL	Countersunk Riprap	25	15	No
Total			**8,333**	**1,177**	
Bank Stabilization/Countersunk Riprap			**1,331**	**600**	
Total Requiring Mitigation			**7,002**	**-**	

Revised Table 22. R-2829B Riparian Buffer Impacts

		Allowable		Mitigable		Wetlands in Buffer	
Buffer Drawing Site Number	NRTR Label	Zone 1 (sq. ft.)	Zone 2 (sq. ft.)	Zone 1 (sq. ft.)	Zone 2 (sq. ft.)	Zone 1 (sq. ft.)	Zone 2 (sq. ft.)
1	SGH	-	-	1,571	2,334	-	-
3	PAH	-	-	74,171	48,230	7,333	991
6	SAAM	-	-	1,574	180	185	0
6	SGJ	-	-	10,462	5,253	1,002	0
7	SGK	-	-	34,491	21,916	1,492	656
8	SGJ	-	-	2,484	1,462	-	-
10	SGJ	2,813	1,850			-	-
12	SGI			33,194	21,796	-	-

Revised Table 22. R-2829B Riparian Buffer Impacts

		Allowable		Mitigable		Wetlands in Buffer	
Buffer Drawing Site Number	**NRTR Label**	**Zone 1 (sq. ft.)**	**Zone 2 (sq. ft.)**	**Zone 1 (sq. ft.)**	**Zone 2 (sq. ft.)**	**Zone 1 (sq. ft.)**	**Zone 2 (sq. ft.)**
14	SGR	-	-	**27,754**	**18,077**	**3,477**	**1,280**
15	Neuse River	12,996	5,136	8,779	5,123	-	-
16	SGT	-	-	3,912	4,609	-	-
18	SGU (Hinton's Creek)	32,853	18,719	20,211	14,256	3,034 (WIW) 883 (WIV)	3,429 (WIW) 363 (WIV)
20	SGV	-	-	42,154	27,904	22	136
20	SGV	3,232	1,006	1,978	1,336	-	-
22	SGY	-	-	20,339	13,343	5,677	969
22	PAI	-	-	38,584	27,420		
24	SHA	-	-	19,269	13,337	3,215	2,327
25	SHB	-	-	9,054	7,487	6,932	2,763
27	SHD	-	-	16,565	8,783	3,905	5,107
27	SHD	-	-	74,775	42,097	-	-
28	SHC	-	-	25,651	14,793	-	-
29	SHE	-	-	14,071	12,463	-	-
30	PAAB	186	1,026	-	-	-	-
32	SHC	24,699	19,034	-	-	24,019	14,226
32	SHC	-	-	33,895	20,847	24,771	9,339
32	SHC	-	-	22,197	14,637	506	-
32	SHC	-		19,305	10,950	17,998	8,967
33	SHH	-	-	12,507	12,767	7,266	3,102
35	PAM	-	-	22,774	18,737	244	136
36	SAAJ	**5,421**	**2,836**	-	-	-	-
37	Neuse River	-	-	1,244	1,021	-	-
38	SHL	4,572	887	-	-	5,329	740
38	SAAL	1,859	733	-	-	-	-
39	SHL	4,797	3,241			4,797	3,241
Totals		**93,428**	**54,468**	**592,965**	**391,158**	**122,087**	**57,772**
Total Buffer Impacts Requiring Mitigation				**506,154**	**352,126**	**86,811**	**39,032**

Compensatory Mitigation:

Compensatory mitigation for additional unavoidable buffer and non-riparian wetlands impacts for R-2829B will be provided by the NC Division of Mitigation Services (DMS). Included in this permit modification request is the revised acceptance letter for DMS Mitigation. Below is a summary of the proposed impacts.

Revised Table 28. R-2829B Proposed Compensatory Mitigation[1]

Mitigation Type	Riparian Wetlands Perm. (ac.)	Non-Riparian Wetlands Perm. (ac.)	Stream (lf)	Riparian Buffer Calculation (sq. ft.)		Riparian Buffer Total (sq. ft.)
				Zone 1	Zone 2	
Neuse River Basin (HUC 03020201)	9.132 (0)	0.459 **(+0.074)**	**7,002**	**506,154 (+1,273)**	**352,126 (+698)**	**858,280 (+1,971)**

[1] Mitigation ratios not applied

NCDOT does have additional stream impacts reported on this modification; however, an error was made previously in placing Site 37 embankment impacts as mitigable stream impacts. Currently we have proposed 7,002 linear feet of permanent stream impact that requires mitigation; however, we have provided mitigation for 7,025 linear feet of stream with the previous permit modifications. Therefore, we are not proposing additional stream mitigation with this modification request.

NCDOT has requested additional non-riparian wetland mitigation from DMS for 0.074 acres. The total mitigation needed is 0.459 acres. Previously non-riparian impacts were reported as 0.385 acres.

NCDOT has requested additional mitigation of 1,971 square feet from DMS to cover the revised total of 858,280 (previously 856,309) square feet of buffer impacts in Hydrological Unit 03020201. There are 506,154 (previously 504,881) square feet of impacts in Buffer Zone 1 and 352,126 (previously 351,428) square feet of impacts in Buffer Zone 2. The proposed impact amounts approved by DMS were multiplied by the appropriate mitigation ratios to calculate the proposed mitigation amounts (3:1 for Zone 1 riparian buffer impacts, and 1.5:1 for Zone 2 riparian buffer impacts).

Regulatory Approvals

Section 404:
We are requesting a modification to the USACE Permit Number SAW-2009-02240 Section 404 Individual Permit for the above-described activities.

Section 401:
We are requesting a modification to the Section 401 Individual WQC Permit Number 4179 from NCDWR and the Neuse Riparian Buffer Authorization.

The individual permit modification package for the Complete 540 project (STIP Projects R-2721, R2828, and R-2829) is available at:
https://xfer.services.ncdot.gov/pdea/PermApps/

Thank you for your assistance with this project. If you have any questions or need additional information, please contact Deanna Riffey at driffey@ncdot.gov or (919) 707-6151.

Sincerely,

DocuSigned by:
Alan Shapiro
B149124683BD45D...

Alan Shapiro, P.E.
Chief Engineer
North Carolina Turnpike Authority

Cc: NCDOT Permit Application Standard Distribution List

Submitted November 25, 2025

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WAKE COUNTY

PERMIT DRAWING
SHEET 1 OF 112

WETLAND AND SURFACE WATER IMPACTS PERMIT

REVISED 10/14/2025

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2829B	1	

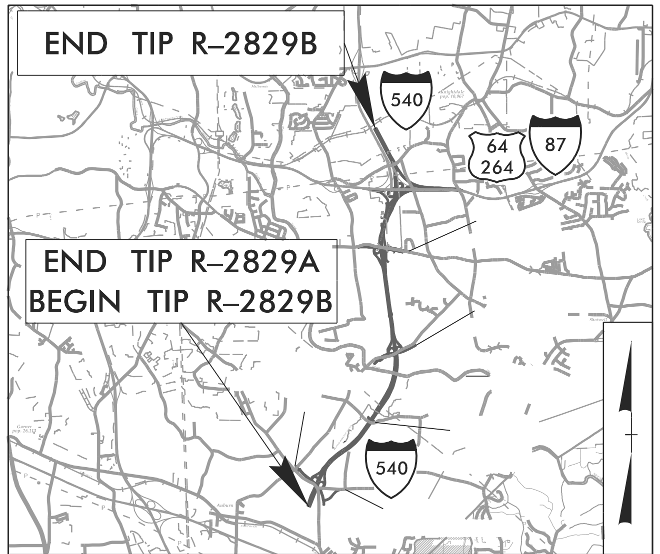
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
35517.3.TA2	N/A	DESIGN-BUILD
35517.3.TAGV2	0540048	DESIGN-BUILD

TIP PROJECT: R-2829B

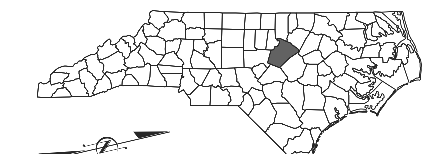
CONTRACT: C204825

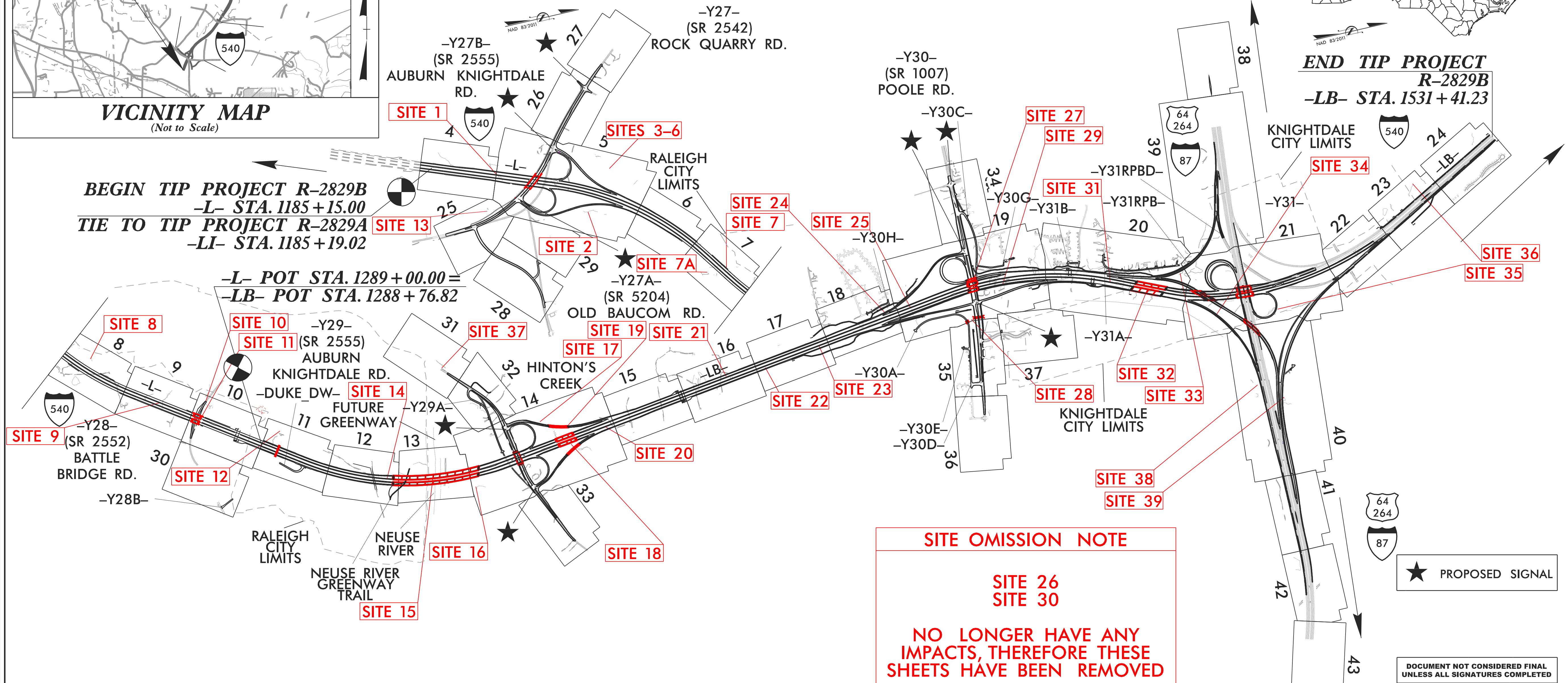
LOCATION: TRIANGLE EXPRESSWAY SOUTHEAST EXTENSION FROM SOUTH OF SR 2542 (ROCK QUARRY ROAD) TO I-87/US 64/US 264

TYPE OF WORK: GRADING, PAVING, DRAINAGE, STRUCTURES, SIGNING, AND SIGNALS



VICINITY MAP
(Not to Scale)





THIS IS A CONTROLLED ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.

GRAPHIC SCALES

Scale					
PLANS	50	25	0	50	100
PROFILE (HORIZONTAL)	50	25	0	50	100
PROFILE (VERTICAL)	20	10	0	10	20

DESIGN DATA

ADT 2025 = 34,800
ADT 2045 = 66,600
K = 12%
D = 60/65%
T = 10% *
V = 75 MPH
* TTST = 4% DUAL = 6%
FUNC CLASS = INTERSTATE STATEWIDE TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-2829B = 5.967 MILES
LENGTH STRUCTURE TIP PROJECT R-2829B = 0.595 MILES
TOTAL LENGTH TIP PROJECT R-2829B = 6.562 MILES

Prepared In the Office of:
ICE of Carolinas, PLLC
ICE of Carolinas, PLLC
4505 Falls of Neuse Road, Suite 110
Raleigh, North Carolina 27609
Phone: 803-622-0333
License #: P-0999

Prepared for:
NORTH CAROLINA TURNPIKE AUTHORITY
1000 Birch Ridge Dr., Raleigh NC 27610

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: 8/29/2023

LETTING DATE: 8/29/2023

BRIAN LUSK, P.E.
PROJECT ENGINEER

RON McCOLLUM, P.E.
NCTA CONTACT
EASTERN DEPUTY
CHIEF ENGINEER

HYDRAULICS ENGINEER

P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

P.E.
SIGNATURE:

NORTH CAROLINA
Turnpike Authority

Submitted November 25, 2025

8/17/99

PERMIT DRAWING SHEET 30 OF 112

GRAPHIC SCALE 100′ 0′ 100′ 200′ 300′

TEMPORARY ACCESS FOR BRIDGE CONSTRUCTION ONLY

ICE of CAROLINAS, PLLC
ICE of Carolinas, PLLC
4505 Falls of Neuse Road. Suite 110
Raleigh, North Carolina 27609
Phone: 803-822-0333
License #: P-0999

PROJECT REFERENCE NO.	SHEET NO.
R-2829B	12
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISED 10/14/2025

SITE 14

SGR NAD 83

WIO

SGR

WIP

BZ 1 BZ 2

39 CITY OF RALEIGH, COUNTY OF WAKE

MATCHLINE -LB- STA. 1302+00.00 SEE SHEET 11

MATCHLINE -LB- STA. 1315+00.00 SEE SHEET 13

-LB-

-Y28A-

-Y28A-PT Sta. 15+98.85

S 67° 59′ 35.6″ E

-Y28A-PC Sta. 16+55.04

-Y28A-PRC Sta. 13+97.11

1305+00 1310+00 1315+00 15+00

LAT. 2′ BASE DITCH W/CL B RIP RAP SEE DETAIL AC

LAT. 5′ BASE DITCH W/CL I RIP RAP SEE DETAIL CJ

LAT. 5′ BASE DITCH W/CL I RIP RAP SEE DETAIL E

LAT. 2′ BASE DITCH W/CL I RIP RAP SEE DETAIL C

2′ BASE BERM DITCH SEE DETAIL F

BERM V DITCH W/CL B RIP RAP SEE DETAIL M

SPEC. CUT V DITCH SEE DETAIL S

SPECIAL CUT V DITCH SEE DETAIL S

CL B RIP RAP EST. 3 TONS EST. 10 SY GF

TEMPORARY ACCESS DETAIL CJ

TOE PROTECTION SEE DETAIL W

STD. 6′ BASE DITCH W/CL II RIP RAP SEE DETAIL P

STD. 2′ BASE DITCH W/CL B RIP RAP SEE DETAIL K

STD. V DITCH SEE DETAIL AQ

RETAIN DITCH

REMOVE

REMOVE 15″ W/ ELBOWS

15″ W/ELBOWS

24″ W/ELBOWS

15″ RCP-III

18″ RCP-III

48″ RCP-III (NOT BURIED)

BDO

FS

2GI 2GI-A 2GI-D

HW

RW CA

TDE PDE

FOR -LB- CURVE DATA SEE SHT.3A-1
FOR -Y28A- CURVE DATA SEE SHT.3A-1

FOR -LB- PROFILE SEE SHT.48
FOR -Y28A- PROFILE SEE SHT.62

$DATE$ $TIME$
$$$$USERNAME$$$$ $$$$DGN$$$$

Submitted November 25, 2025

8/17/99

PERMIT DRAWING
SHEET 31 OF 112

GRAPHIC SCALE 100' 0' 100' 200' 300'

TEMPORARY ACCESS FOR BRIDGE CONSTRUCTION ONLY

ICE of CAROLINAS, PLLC
ICE of Carolinas, PLLC
4505 Falls of Neuse Road, Suite 110
Raleigh, North Carolina 27609
Phone: 803-822-0333
License #: P-0996

PROJECT REFERENCE NO.	SHEET NO.
R-2829B	12
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISED 10/14/2025

SITE 14

SGR
NAD 83
WIO
SGR
WIP
BZ 1
BZ 2

MATCHLINE -LB- STA. 1302+00.00 SEE SHEET 11

MATCHLINE -LB- STA. 1315+00.00 SEE SHEET 13

-LB-

-Y28A-PT Sta. 15+98.85

S 67° 59' 35.6" E

-Y28A-PC Sta. 16+55.04

-Y28A-PRC Sta. 13+97.11

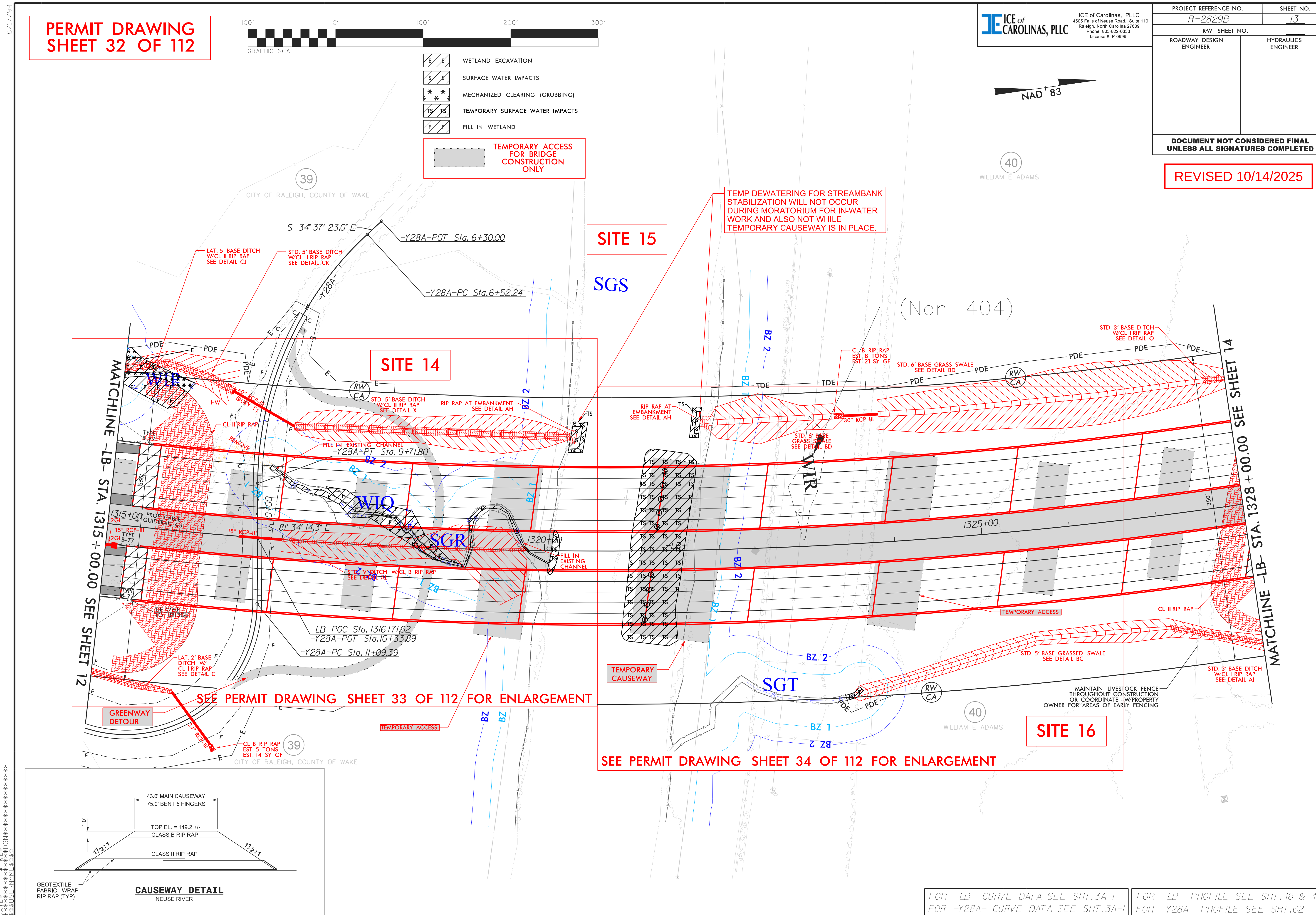
CITY OF RALEIGH, COUNTY OF WAKE

FOR -LB- CURVE DATA SEE SHT. 3A-1
FOR -Y28A- CURVE DATA SEE SHT. 3A-1

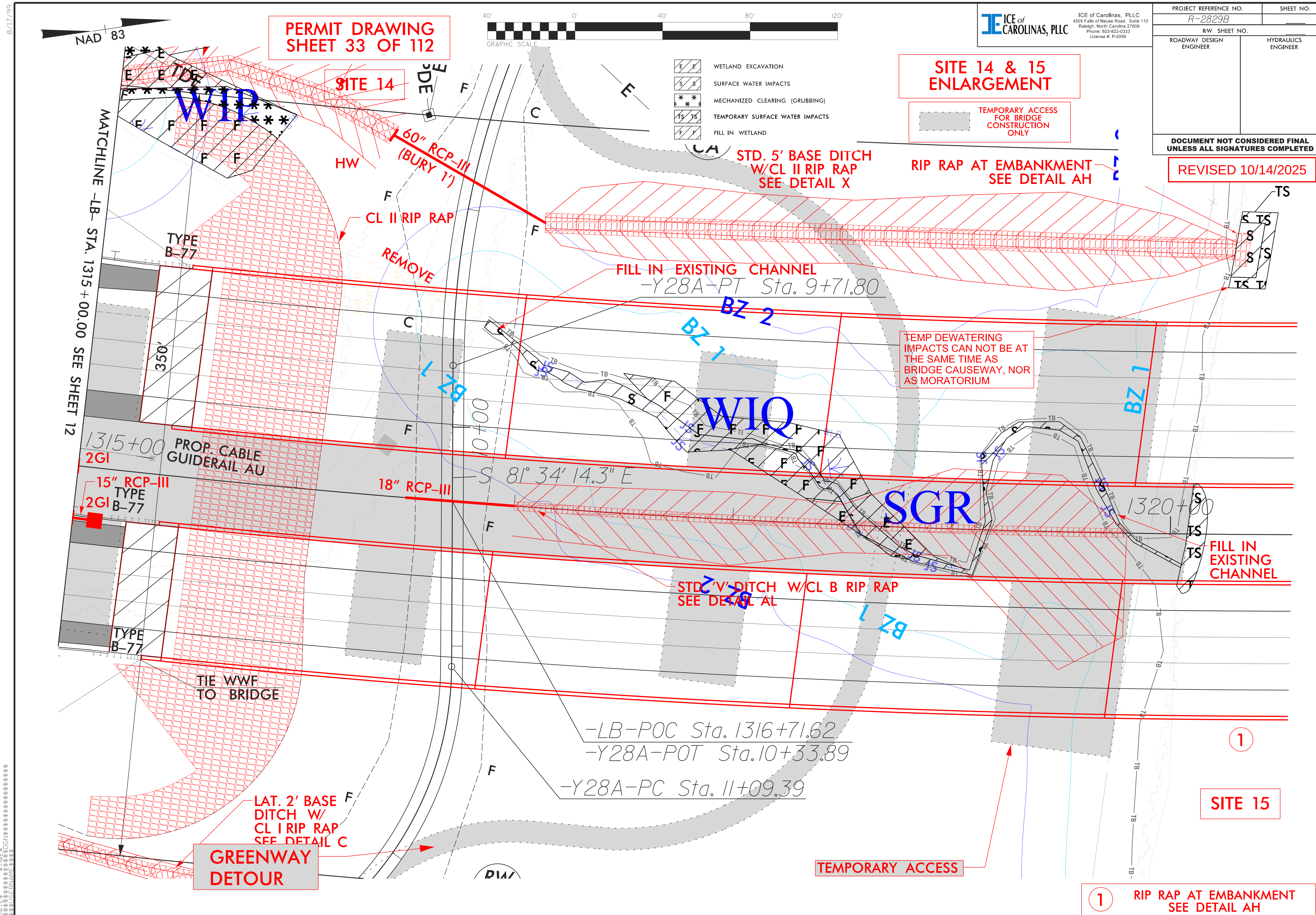
FOR -LB- PROFILE SEE SHT. 48
FOR -Y28A- PROFILE SEE SHT. 62

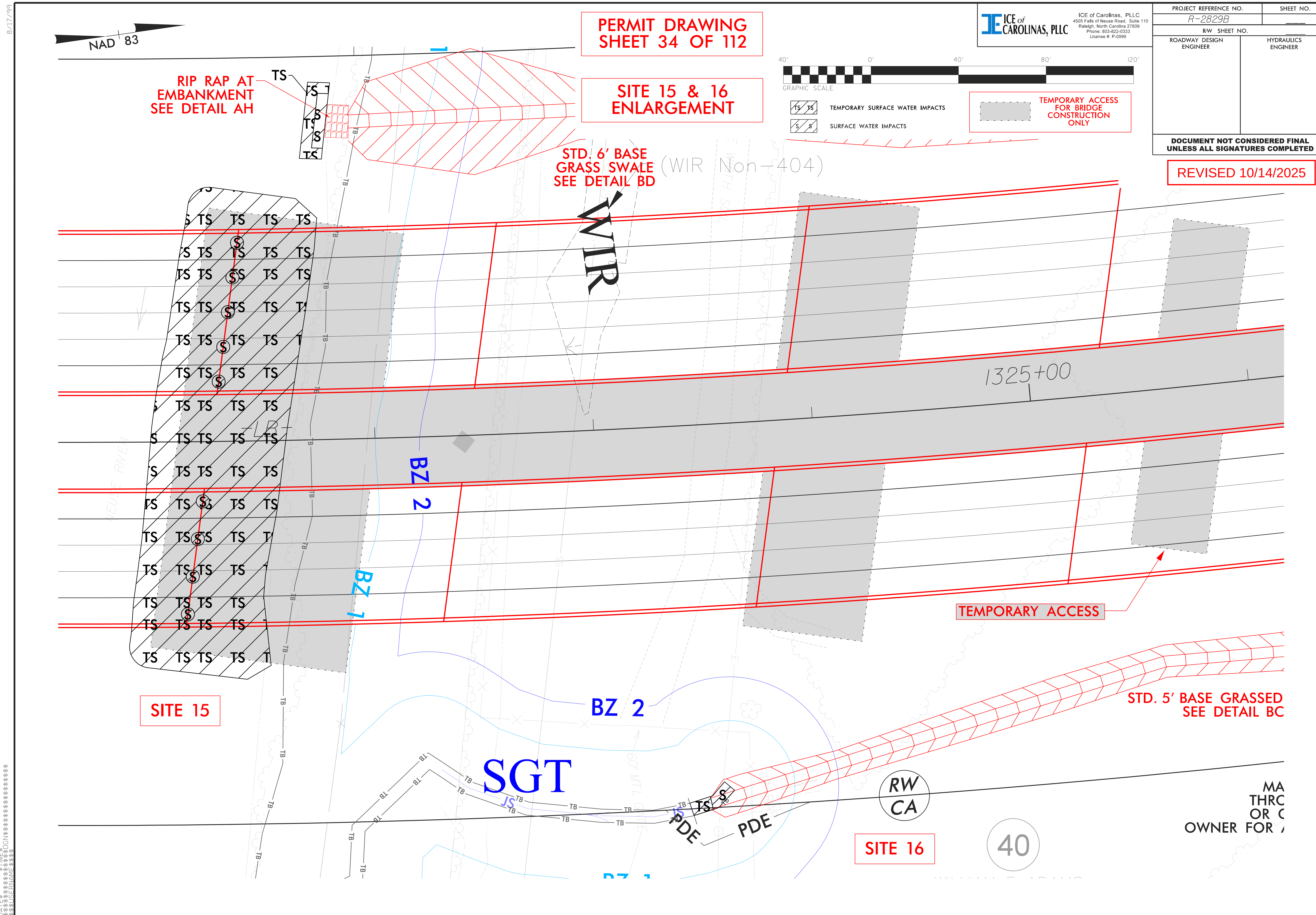
$DATE$ $TIME$
$USERNAME$ DGN

Submitted November 25, 2025



Submitted November 25, 2025




PERMIT DRAWING
SHEET 34 OF 112
SITE 15 & 16
ENLARGEMENT
ICE of CAROLINAS, PLLC
ICE of Carolinas, PLLC
4505 Falls of Neuse Road, Suite 110
Raleigh, North Carolina 27609
Phone: 803-822-0333
License #: P-0999
PROJECT REFERENCE NO.
SHEET NO.
R-2829B
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED
REVISED 10/14/2025
40'
0'
40'
80'
120'
GRAPHIC SCALE
TEMPORARY SURFACE WATER IMPACTS
SURFACE WATER IMPACTS
TEMPORARY ACCESS
FOR BRIDGE
CONSTRUCTION
ONLY
NAD 83
RIP RAP AT
EMBANKMENT
SEE DETAIL AH
STD. 6' BASE
GRASS SWALE
SEE DETAIL BD
(WIR Non-404)
WIR
1325+00
-LB-
BZ 2
BZ 1
TEMPORARY ACCESS
SITE 15
SGT
PDE
RW
CA
SITE 16
40
STD. 5' BASE GRASSED
SEE DETAIL BC
MA
THRC
OR C
OWNER FOR A
8/17/99

Submitted November 25, 2025

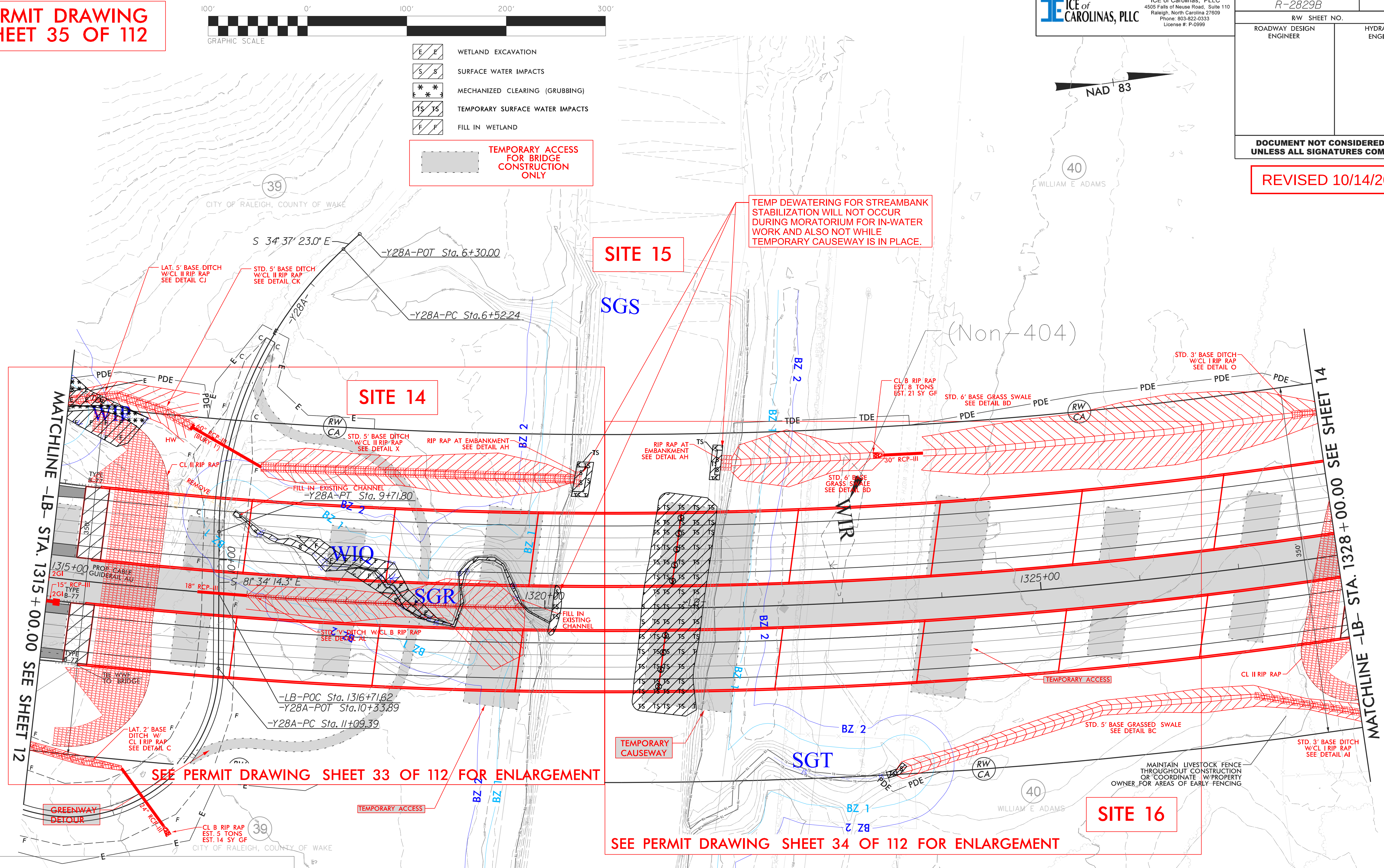
PERMIT DRAWING SHEET 35 OF 112

ICE of CAROLINAS, PLLC
ICE of Carolinas, PLLC
4505 Falls of Neuse Road, Suite 110
Raleigh, North Carolina 27609
Phone: 803-822-0333
License #: P-0999

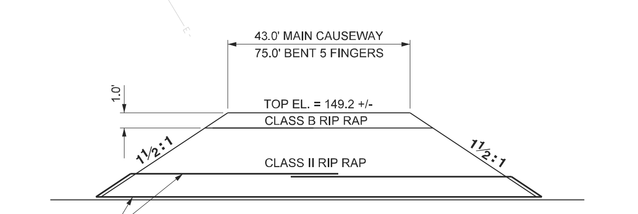
PROJECT REFERENCE NO.	SHEET NO.
R-2829B	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISED 10/14/2025



GRAPHIC SCALE
100' 0' 100' 200' 300'
WETLAND EXCAVATION
SURFACE WATER IMPACTS
MECHANIZED CLEARING (GRUBBING)
TEMPORARY SURFACE WATER IMPACTS
FILL IN WETLAND
TEMPORARY ACCESS FOR BRIDGE CONSTRUCTION ONLY
NAD 83
SITE 14
SITE 15
SITE 16
SGS
SGR
SGT
WIP
WIQ
WIR
(Non-404)
TEMP DEWATERING FOR STREAMBANK STABILIZATION WILL NOT OCCUR DURING MORATORIUM FOR IN-WATER WORK AND ALSO NOT WHILE TEMPORARY CAUSEWAY IS IN PLACE.
CITY OF RALEIGH, COUNTY OF WAKE
WILLIAM E. ADAMS
S 34° 37' 23.0" E
-Y28A-POT Sta. 6+30.00
-Y28A-PC Sta. 6+52.24
-Y28A-PT Sta. 9+71.80
S 81° 34' 14.3" E
-LB-POC Sta. 1316+71.62
-Y28A-POT Sta. 10+33.89
-Y28A-PC Sta. 11+09.39
MATCHLINE -LB- STA. 1315+00.00 SEE SHEET 12
MATCHLINE -LB- STA. 1328+00.00 SEE SHEET 14
1315+00
1320+00
1325+00
LAT. 5' BASE DITCH W/CL II RIP RAP SEE DETAIL CJ
STD. 5' BASE DITCH W/CL II RIP RAP SEE DETAIL CK
STD. 5' BASE DITCH W/CL II RIP RAP SEE DETAIL X
RIP RAP AT EMBANKMENT SEE DETAIL AH
FILL IN EXISTING CHANNEL
STD. 'V' DITCH W/CL B RIP RAP SEE DETAIL AI
LAT. 2' BASE DITCH W/ CL I RIP RAP SEE DETAIL C
CL B RIP RAP EST. 5 TONS EST. 14 SY GF
CL B RIP RAP EST. 8 TONS EST. 21 SY GF
STD. 6' BASE GRASS SWALE SEE DETAIL BD
STD. 3' BASE DITCH W/CL I RIP RAP SEE DETAIL O
STD. 5' BASE GRASSED SWALE SEE DETAIL BC
STD. 3' BASE DITCH W/CL I RIP RAP SEE DETAIL AI
CL II RIP RAP
TIE WWF TO BRIDGE
PROP. CABLE GUIDERAIL
TEMPORARY ACCESS
TEMPORARY CAUSEWAY
GREENWAY DETOUR
MAINTAIN LIVESTOCK FENCE THROUGHOUT CONSTRUCTION OR COORDINATE W/PROPERTY OWNER FOR AREAS OF EARLY FENCING
SEE PERMIT DRAWING SHEET 33 OF 112 FOR ENLARGEMENT
SEE PERMIT DRAWING SHEET 34 OF 112 FOR ENLARGEMENT



CAUSEWAY DETAIL
NEUSE RIVER

FOR -LB- CURVE DATA SEE SHT.3A-1
FOR -Y28A- CURVE DATA SEE SHT.3A-1

FOR -LB- PROFILE SEE SHT.48 & 49
FOR -Y28A- PROFILE SEE SHT.62

FLATIRON
FRED SMITH COMPANY

ICE of CAROLINAS, PLLC
ICE of Carolinas, PLLC
4505 Falls of Neuse Road, Suite 110
Raleigh, North Carolina 27609
Phone: 803-822-0333
License #: P-0999

PROJECT REFERENCE NO.	SHEET NO.
R-2829B	48

ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 039183 ENGINEER BRIAN K. LUSK

HYDRAULICS ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 20754 ENGINEER WILLIAM T. STEPHENS, JR.

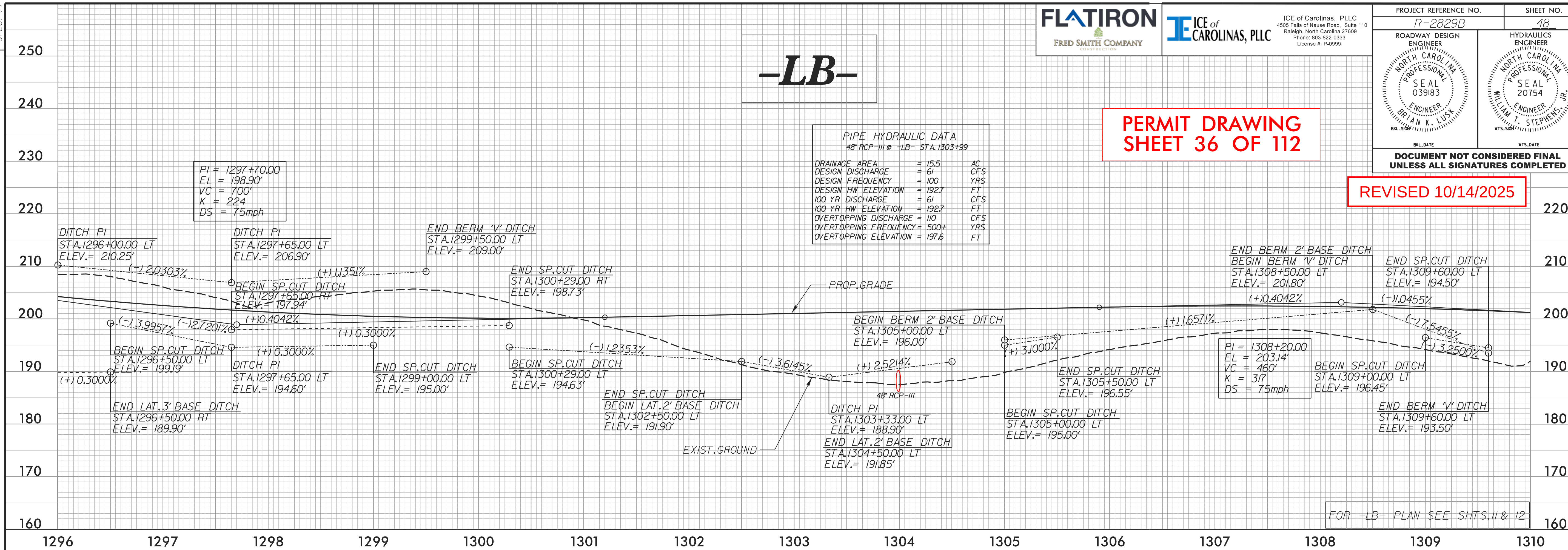
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 36 OF 112

REVISED 10/14/2025

REVISIONS
5/2/2025: UPDATED BRIDGE STATION CALLOUTS AND DITCH PROFILES FOR NEUSE RIVER BRIDGE REDUCTION.

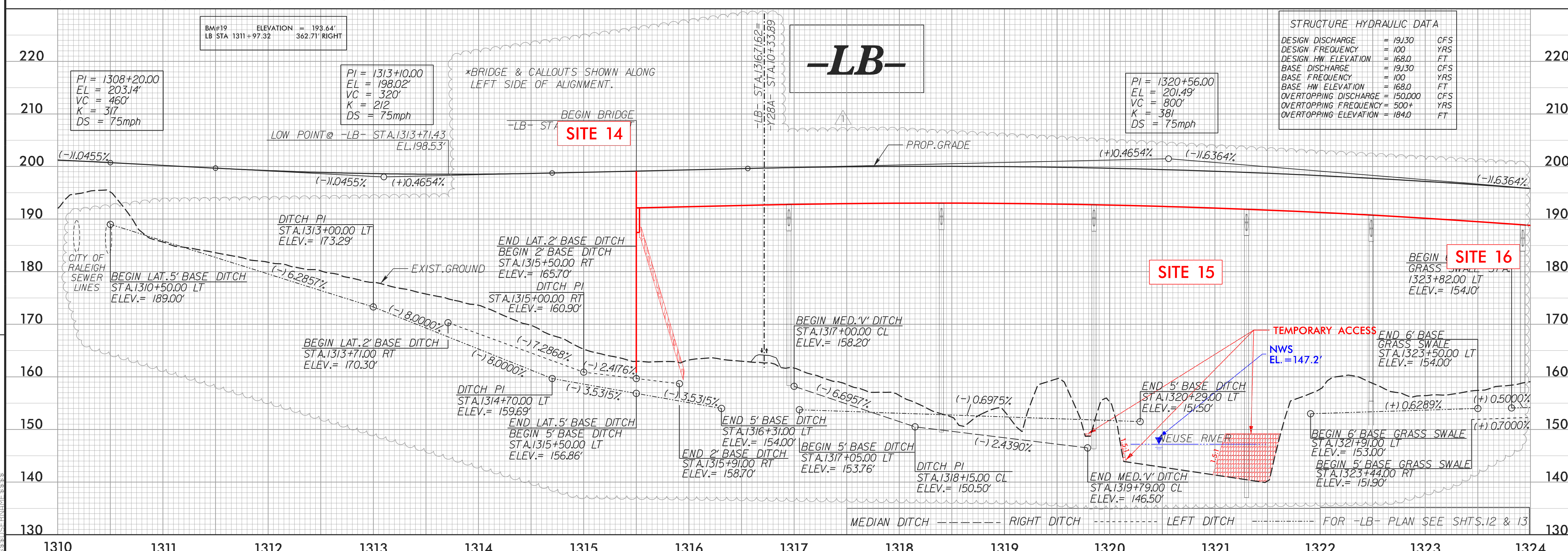
-LB-



PI = 1297+70.00
EL = 198.90'
VC = 700'
K = 224
DS = 75mph
DITCH PI
STA.1296+00.00 LT
ELEV.= 210.25'
DITCH PI
STA.1297+65.00 LT
ELEV.= 206.90'
END BERM 'V' DITCH
STA.1299+50.00 LT
ELEV.= 209.00'
END SP.CUT DITCH
STA.1300+29.00 RT
ELEV.= 198.73'
BEGIN SP.CUT DITCH
STA.1297+65.00 RT
ELEV.= 197.94'
PROP.GRADE
EXIST.GROUND
BEGIN SP.CUT DITCH
STA.1296+50.00 LT
ELEV.= 199.19'
DITCH PI
STA.1297+65.00 LT
ELEV.= 194.60'
END SP.CUT DITCH
STA.1299+00.00 LT
ELEV.= 195.00'
BEGIN SP.CUT DITCH
STA.1300+29.00 LT
ELEV.= 194.63'
END LAT.3' BASE DITCH
STA.1296+50.00 RT
ELEV.= 189.90'
END SP.CUT DITCH
BEGIN LAT.2' BASE DITCH
STA.1302+50.00 LT
ELEV.= 191.90'
BEGIN BERM 2' BASE DITCH
STA.1305+00.00 LT
ELEV.= 196.00'
48" RCP-III
DITCH PI
STA.1303+33.00 LT
ELEV.= 188.90'
END LAT.2' BASE DITCH
STA.1304+50.00 LT
ELEV.= 191.85'
END SP.CUT DITCH
STA.1305+50.00 LT
ELEV.= 196.55'
BEGIN SP.CUT DITCH
STA.1305+00.00 LT
ELEV.= 195.00'
PI = 1308+20.00
EL = 203.14'
VC = 460'
K = 317
DS = 75mph
END BERM 2' BASE DITCH
BEGIN BERM 'V' DITCH
STA.1308+50.00 LT
ELEV.= 201.80'
END SP.CUT DITCH
STA.1309+60.00 LT
ELEV.= 194.50'
BEGIN SP.CUT DITCH
STA.1309+00.00 LT
ELEV.= 196.45'
END BERM 'V' DITCH
STA.1309+60.00 LT
ELEV.= 193.50'
(-) 2.0303%
(+) 1.1351%
(-) 3.9957%
(-) 2.7201%
(+) 0.4042%
(+) 0.3000%
(+) 0.3000%
(-) 1.2353%
(-) 3.6145%
(+) 2.5214%
(+) 3.1000%
(+) 1.6571%
(+) 0.4042%
(-) 1.0455%
(-) 7.5455%
(-) 3.2500%
FOR -LB- PLAN SEE SHTS.11 & 12

PIPE HYDRAULIC DATA 48" RCP-III @ -LB- STA.1303+99		
DRAINAGE AREA	= 15.5	AC
DESIGN DISCHARGE	= 61	CFS
DESIGN FREQUENCY	= 100	YRS
DESIGN HW ELEVATION	= 192.7	FT
100 YR DISCHARGE	= 61	CFS
100 YR HW ELEVATION	= 192.7	FT
OVERTOPPING DISCHARGE	= 110	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 197.6	FT

-LB-



BM#19 ELEVATION = 193.64'
LB STA 1311+97.32 362.71' RIGHT
PI = 1308+20.00
EL = 203.14'
VC = 460'
K = 317
DS = 75mph
PI = 1313+10.00
EL = 198.02'
VC = 320'
K = 212
DS = 75mph
*BRIDGE & CALLOUTS SHOWN ALONG LEFT SIDE OF ALIGNMENT.
BEGIN BRIDGE
SITE 14
LOW POINT @ -LB- STA.1313+71.43
EL.198.53'
-LB- STA.1316+71.62=
-Y28A- STA.10+33.89
PROP.GRADE
PI = 1320+56.00
EL = 201.49'
VC = 800'
K = 381
DS = 75mph
CITY OF RALEIGH SEWER LINES
BEGIN LAT.5' BASE DITCH
STA.1310+50.00 LT
ELEV.= 189.00'
DITCH PI
STA.1313+00.00 LT
ELEV.= 173.29'
EXIST.GROUND
END LAT.2' BASE DITCH
BEGIN 2' BASE DITCH
STA.1315+50.00 RT
ELEV.= 165.70'
DITCH PI
STA.1315+00.00 RT
ELEV.= 160.90'
BEGIN LAT.2' BASE DITCH
STA.1313+71.00 RT
ELEV.= 170.30'
DITCH PI
STA.1314+70.00 LT
ELEV.= 159.69'
END LAT.5' BASE DITCH
BEGIN 5' BASE DITCH
STA.1315+50.00 LT
ELEV.= 156.86'
END 2' BASE DITCH
STA.1315+91.00 RT
ELEV.= 158.70'
END 5' BASE DITCH
STA.1316+31.00 LT
ELEV.= 154.00'
BEGIN MED.'V' DITCH
STA.1317+00.00 CL
ELEV.= 158.20'
BEGIN 5' BASE DITCH
STA.1317+05.00 LT
ELEV.= 153.76'
DITCH PI
STA.1318+15.00 CL
ELEV.= 150.50'
SITE 15
TEMPORARY ACCESS
NWS
EL.=147.2'
NEUSE RIVER
END 5' BASE DITCH
STA.1320+29.00 LT
ELEV.= 151.50'
END MED.'V' DITCH
STA.1319+79.00 CL
ELEV.= 146.50'
SITE 16
BEGIN GRASS SWALE
1323+82.00 LT
ELEV.= 154.10'
END 6' BASE GRASS SWALE
STA.1323+50.00 LT
ELEV.= 154.00'
BEGIN 6' BASE GRASS SWALE
STA.1321+91.00 LT
ELEV.= 153.00'
BEGIN 5' BASE GRASS SWALE
STA.1323+44.00 RT
ELEV.= 151.90'
(-) 1.0455%
(-) 1.0455%
(+) 0.4654%
(+) 0.4654%
(-) 1.6364%
(-) 1.6364%
(-) 6.2857%
(-) 8.0000%
(-) 8.0000%
(-) 7.2868%
(-) 2.4176%
(-) 3.5315%
(-) 3.5315%
(-) 6.6957%
(-) 0.6975%
(-) 2.4390%
(+) 0.6289%
(+) 0.5000%
(+) 0.7000%
MEDIAN DITCH
RIGHT DITCH
LEFT DITCH
FOR -LB- PLAN SEE SHTS.12 & 13

STRUCTURE HYDRAULIC DATA		
DESIGN DISCHARGE	= 19,130	CFS
DESIGN FREQUENCY	= 100	YRS
DESIGN HW ELEVATION	= 168.0	FT
BASE DISCHARGE	= 19,130	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 168.0	FT
OVERTOPPING DISCHARGE	= 150,000	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 184.0	FT

FLATIRON
FRED SMITH COMPANY CONSTRUCTION

ICE of CAROLINAS, PLLC
ICE of Carolinas, PLLC
4505 Falls of Neuse Road, Suite 110
Raleigh, North Carolina 27609
Phone: 803-822-0333
License #: P-0999

PROJECT REFERENCE NO.	SHEET NO.
R-2829B	49

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 039183 ENGINEER BRIAN K. LUSK
BKL_SIGN
BKL_DATE

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 20754 ENGINEER WILLIAM T. STEPHENS, JR.
WTS_SIGN
WTS_DATE

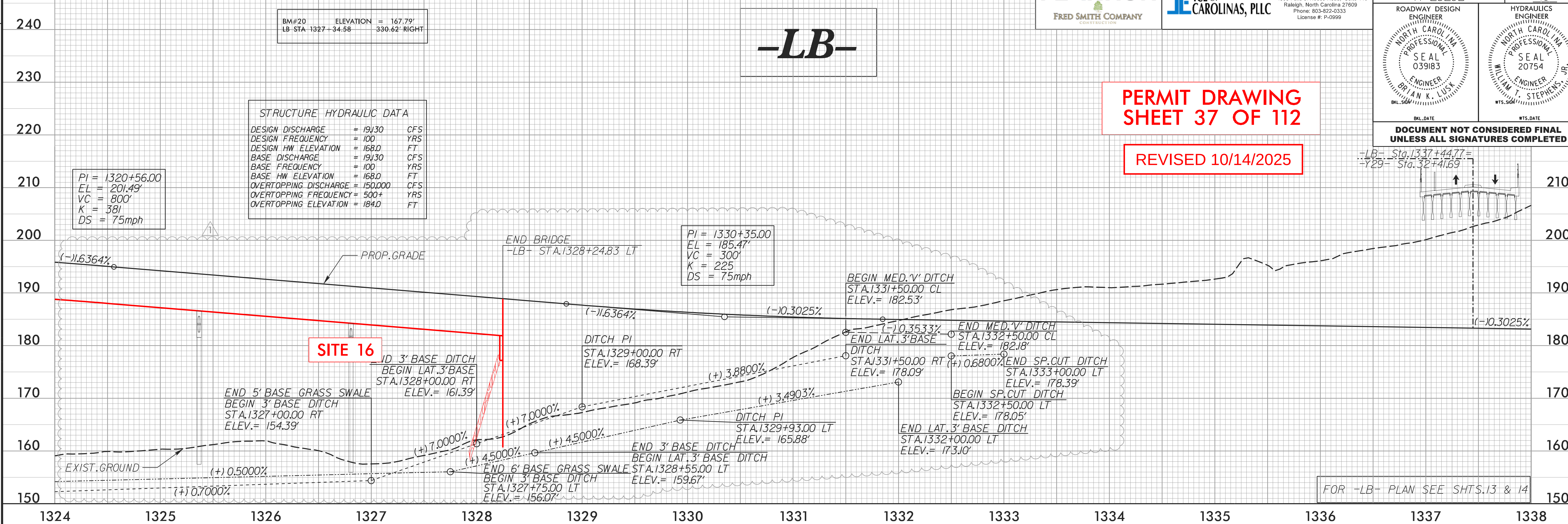
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 37 OF 112

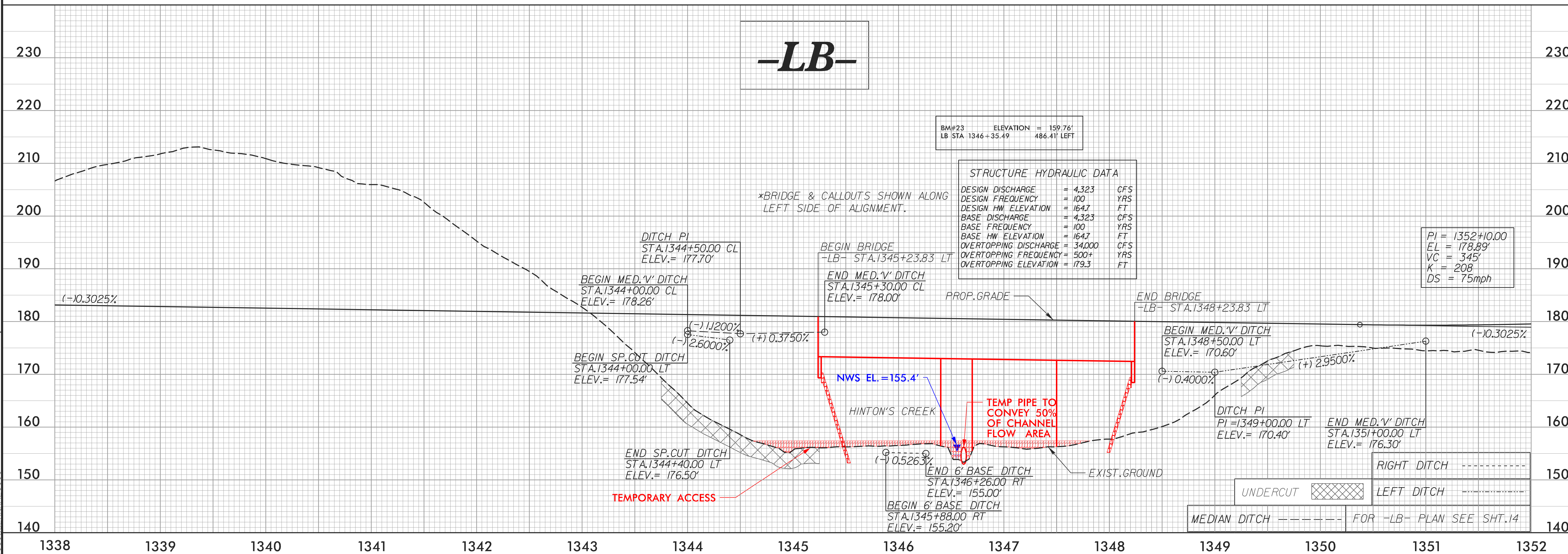
REVISED 10/14/2025

REVISIONS
△1 5/2/2025: UPDATED BRIDGE STATION CALLOUTS AND DITCH PROFILES FOR NEUSE RIVER BRIDGE REDUCTION.

5/28/99



-LB-
BM#20 ELEVATION = 167.79'
LB STA 1327+34.58 330.62' RIGHT
STRUCTURE HYDRAULIC DATA
DESIGN DISCHARGE = 19,130 CFS
DESIGN FREQUENCY = 100 YRS
DESIGN HW ELEVATION = 168.0 FT
BASE DISCHARGE = 19,130 CFS
BASE FREQUENCY = 100 YRS
BASE HW ELEVATION = 168.0 FT
OVERTOPPING DISCHARGE = 150,000 CFS
OVERTOPPING FREQUENCY = 500+ YRS
OVERTOPPING ELEVATION = 184.0 FT
PI = 1320+56.00
EL = 201.49'
VC = 800'
K = 381
DS = 75mph
PI = 1330+35.00
EL = 185.47'
VC = 300'
K = 225
DS = 75mph
(-)1.6364%
PROP.GRADE
END BRIDGE
-LB- STA.1328+24.83 LT
(-)0.3025%
BEGIN MED.'V' DITCH
STA.1331+50.00 CL
ELEV.= 182.53'
(-)0.3533%
END LAT.3'BASE DITCH
STA.1331+50.00 RT
ELEV.= 178.09'
END MED.'V' DITCH
STA.1332+50.00 CL
ELEV.= 182.18'
(+)0.6800%
END SP.CUT DITCH
STA.1333+00.00 LT
ELEV.= 178.39'
BEGIN SP.CUT DITCH
STA.1332+50.00 LT
ELEV.= 178.05'
END LAT.3' BASE DITCH
STA.1332+00.00 LT
ELEV.= 173.10'
SITE 16
END 3' BASE DITCH
BEGIN LAT.3'BASE
STA.1328+00.00 RT
ELEV.= 161.39'
DITCH PI
STA.1329+00.00 RT
ELEV.= 168.39'
(+)3.8800%
(+)3.4903%
DITCH PI
STA.1329+93.00 LT
ELEV.= 165.88'
END 5' BASE GRASS SWALE
BEGIN 3' BASE DITCH
STA.1327+00.00 RT
ELEV.= 154.39'
(+)7.0000%
(+)7.0000%
(+)4.5000%
(+)4.5000%
END 3' BASE DITCH
BEGIN LAT.3' BASE DITCH
STA.1328+55.00 LT
ELEV.= 159.67'
END 6' BASE GRASS SWALE
BEGIN 3' BASE DITCH
STA.1327+75.00 LT
ELEV.= 156.07'
EXIST.GROUND
(+)0.5000%
(+)0.7000%
-LB- Sta.1337+44.77=
-Y29- Sta.32+41.69
(-)0.3025%
FOR -LB- PLAN SEE SHTS.13 & 14
240 230 220 210 200 190 180 170 160 150
1324 1325 1326 1327 1328 1329 1330 1331 1332 1333 1334 1335 1336 1337 1338



-LB-
BM#23 ELEVATION = 159.76'
LB STA 1346+35.49 486.41' LEFT
STRUCTURE HYDRAULIC DATA
DESIGN DISCHARGE = 4,323 CFS
DESIGN FREQUENCY = 100 YRS
DESIGN HW ELEVATION = 164.7 FT
BASE DISCHARGE = 4,323 CFS
BASE FREQUENCY = 100 YRS
BASE HW ELEVATION = 164.7 FT
OVERTOPPING DISCHARGE = 34,000 CFS
OVERTOPPING FREQUENCY = 500+ YRS
OVERTOPPING ELEVATION = 179.3 FT
*BRIDGE & CALLOUTS SHOWN ALONG LEFT SIDE OF ALIGNMENT.
PI = 1352+10.00
EL = 178.89'
VC = 345'
K = 208
DS = 75mph
(-)0.3025%
DITCH PI
STA.1344+50.00 CL
ELEV.= 177.70'
BEGIN MED.'V' DITCH
STA.1344+00.00 CL
ELEV.= 178.26'
BEGIN BRIDGE
-LB- STA.1345+23.83 LT
END MED.'V' DITCH
STA.1345+30.00 CL
ELEV.= 178.00'
PROP.GRADE
END BRIDGE
-LB- STA.1348+23.83 LT
(-)1.1200%
(-)2.6000%
(+)0.3750%
BEGIN SP.CUT DITCH
STA.1344+00.00 LT
ELEV.= 177.54'
NWS EL.=155.4'
HINTON'S CREEK
TEMP PIPE TO CONVEY 50% OF CHANNEL FLOW AREA
END SP.CUT DITCH
STA.1344+40.00 LT
ELEV.= 176.50'
TEMPORARY ACCESS
(-)0.5263%
END 6' BASE DITCH
STA.1346+26.00 RT
ELEV.= 155.00'
BEGIN 6' BASE DITCH
STA.1345+88.00 RT
ELEV.= 155.20'
EXIST.GROUND
BEGIN MED.'V' DITCH
STA.1348+50.00 LT
ELEV.= 170.60'
(-)0.4000%
(+)2.9500%
(-)0.3025%
DITCH PI
PI =1349+00.00 LT
ELEV.= 170.40'
END MED.'V' DITCH
STA.1351+00.00 LT
ELEV.= 176.30'
RIGHT DITCH
LEFT DITCH
UNDERCUT
MEDIAN DITCH
FOR -LB- PLAN SEE SHT.14
230 220 210 200 190 180 170 160 150 140
1338 1339 1340 1341 1342 1343 1344 1345 1346 1347 1348 1349 1350 1351 1352

$$$$SYSTIME$$$$
$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

Submitted November 25, 2025

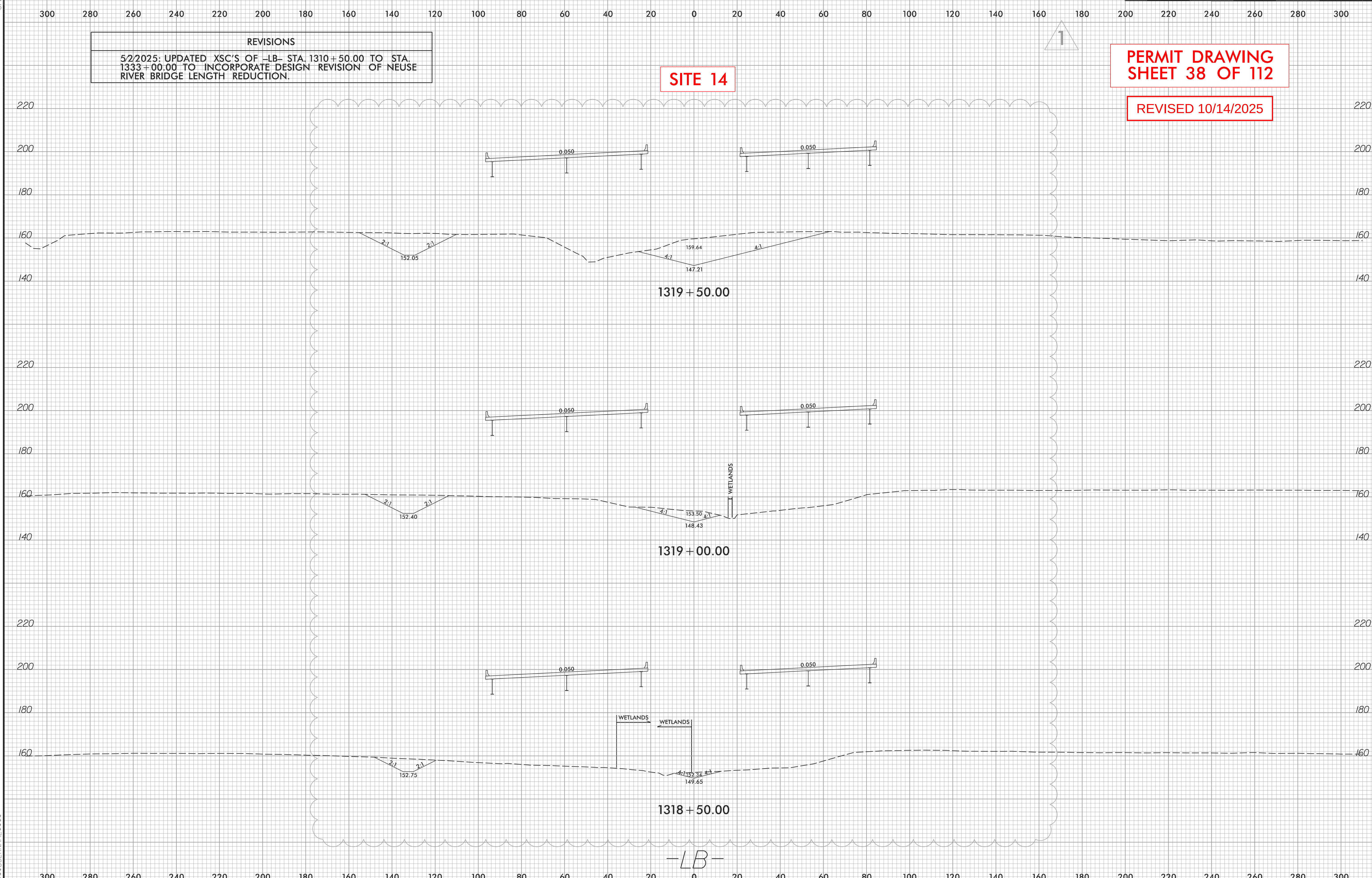
0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	R-2829B	X-61

PERMIT DRAWING
SHEET 38 OF 112

REVISED 10/14/2025

SITE 14

REVISIONS
5/2/2025: UPDATED XSC'S OF -LB- STA. 1310+50.00 TO STA. 1333+00.00 TO INCORPORATE DESIGN REVISION OF NEUSE RIVER BRIDGE LENGTH REDUCTION.



Submitted November 25, 2025

PROJ. REFERENCE NO.	SHEET NO.
R-2829B	X-64

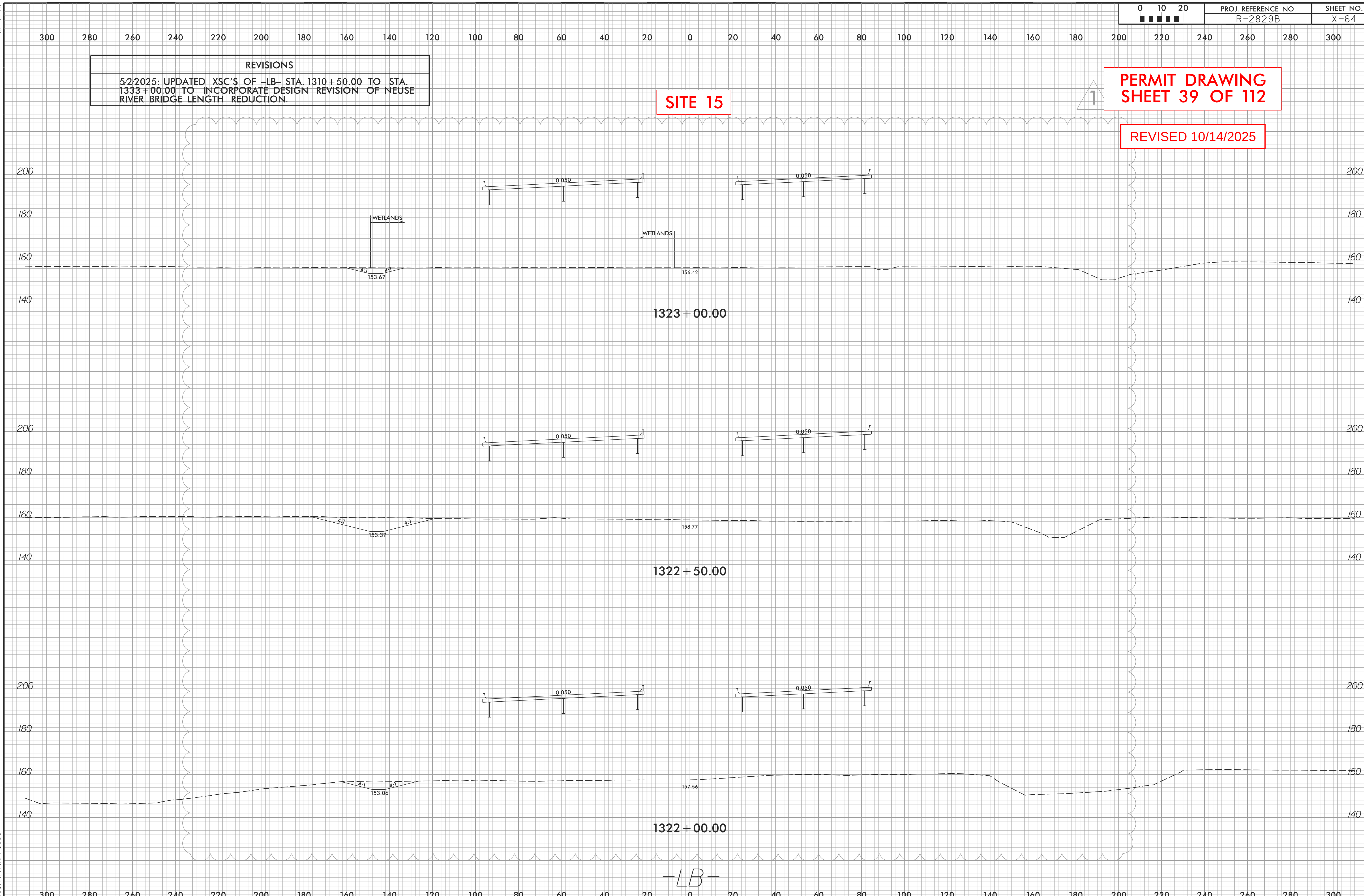
PERMIT DRAWING
SHEET 39 OF 112

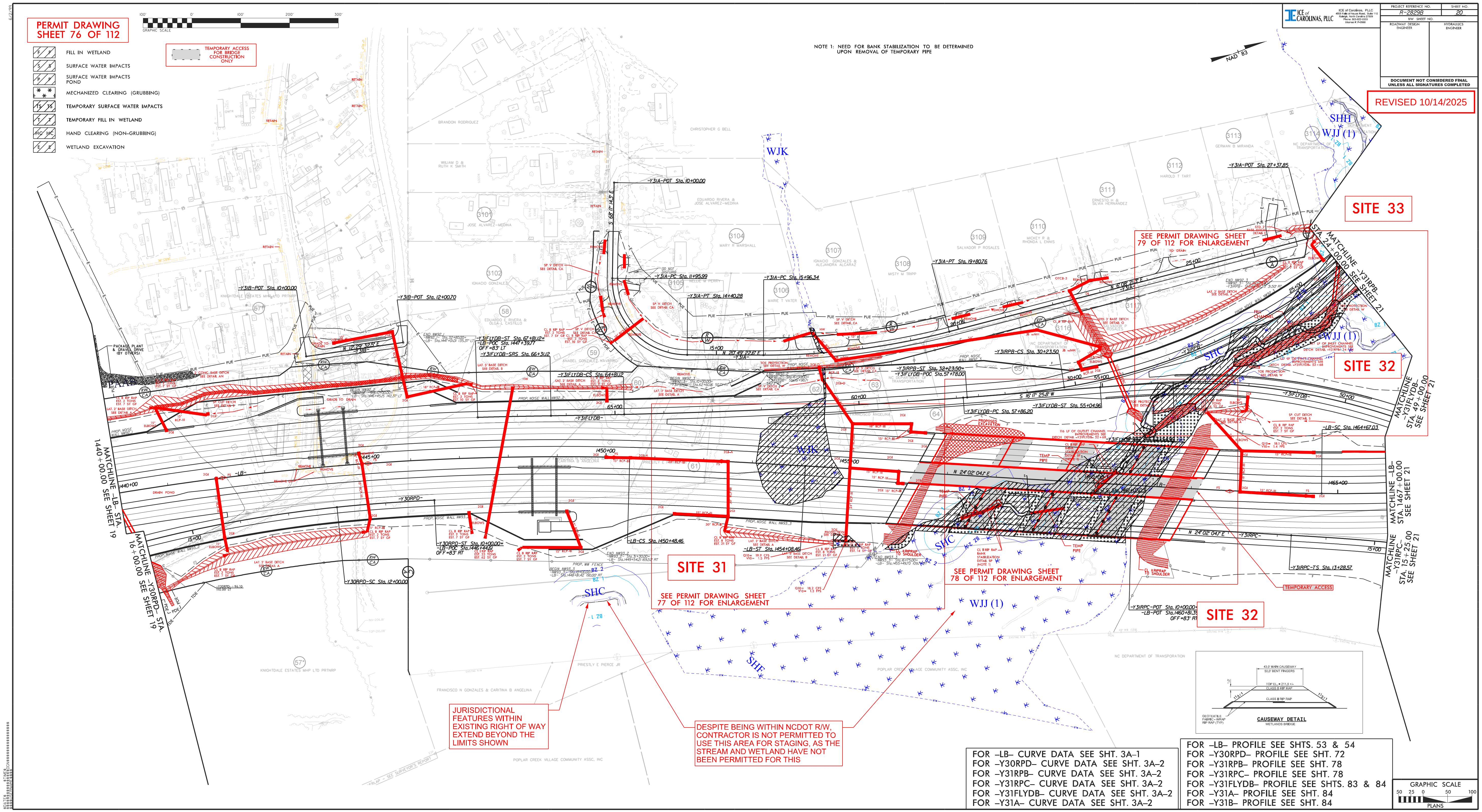
REVISED 10/14/2025

SITE 15

REVISIONS

5/2/2025: UPDATED XSC'S OF –LB– STA. 1310+50.00 TO STA. 1333+00.00 TO INCORPORATE DESIGN REVISION OF NEUSE RIVER BRIDGE LENGTH REDUCTION.




PERMIT DRAWING
SHEET 76 OF 112
FILL IN WETLAND
SURFACE WATER IMPACTS
SURFACE WATER IMPACTS POND
MECHANIZED CLEARING (GRUBBING)
TEMPORARY SURFACE WATER IMPACTS
TEMPORARY FILL IN WETLAND
HAND CLEARING (NON-GRUBBING)
WETLAND EXCAVATION
TEMPORARY ACCESS FOR BRIDGE CONSTRUCTION ONLY
NOTE 1: NEED FOR BANK STABILIZATION TO BE DETERMINED UPON REMOVAL OF TEMPORARY PIPE
REVISED 10/14/2025
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
R-2829B
20
SITE 31
SITE 32
SITE 33
SEE PERMIT DRAWING SHEET 77 OF 112 FOR ENLARGEMENT
SEE PERMIT DRAWING SHEET 78 OF 112 FOR ENLARGEMENT
SEE PERMIT DRAWING SHEET 79 OF 112 FOR ENLARGEMENT
MATCHLINE -LB- STA. 1440+00.00 SEE SHEET 19
MATCHLINE -Y30RPD- STA. 16+00.00 SEE SHEET 19
MATCHLINE -LB- STA. 1467+00.00 SEE SHEET 21
MATCHLINE -Y31RPC- STA. 15+25.00 SEE SHEET 21
MATCHLINE -Y31FLYDB- STA. 49+00.00 SEE SHEET 21
MATCHLINE -Y31RPB- STA. 24+00.00 SEE SHEET 21
WJK
WJJ (1)
SHC
SHH
SHF
TEMPORARY ACCESS
JURISDICTIONAL FEATURES WITHIN EXISTING RIGHT OF WAY EXTEND BEYOND THE LIMITS SHOWN
DESPITE BEING WITHIN NCDOT R/W, CONTRACTOR IS NOT PERMITTED TO USE THIS AREA FOR STAGING, AS THE STREAM AND WETLAND HAVE NOT BEEN PERMITTED FOR THIS
CAUSEWAY DETAIL
FOR -LB- CURVE DATA SEE SHT. 3A-1
FOR -Y30RPD- CURVE DATA SEE SHT. 3A-2
FOR -Y31RPB- CURVE DATA SEE SHT. 3A-2
FOR -Y31RPC- CURVE DATA SEE SHT. 3A-2
FOR -Y31FLYDB- CURVE DATA SEE SHT. 3A-2
FOR -Y31A- CURVE DATA SEE SHT. 3A-2
FOR -LB- PROFILE SEE SHTS. 53 & 54
FOR -Y30RPD- PROFILE SEE SHT. 72
FOR -Y31RPB- PROFILE SEE SHT. 78
FOR -Y31RPC- PROFILE SEE SHT. 78
FOR -Y31FLYDB- PROFILE SEE SHTS. 83 & 84
FOR -Y31A- PROFILE SEE SHT. 84
FOR -Y31B- PROFILE SEE SHT. 84
GRAPHIC SCALE
PLANS

Submitted November 25, 2025

WETLAND AND SURACE WATER IMPACTS SUMMARY

				WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Wetland and/or Stream ID	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	-L- 1197+22/1198+69, M	ROADWAY FILL	WHH	0.143									
2	-Y27-RPD- 18+86/20+85, LT	EMB. EXCAVATION	WHQ			0.021	0.031						
3	-Y27-RPA- 12+57/22+32, RT	FILL (POND)	WHR, PAH	0.037					7.078				
4	-Y27-RPA- 21+68/23+22, RT	DITCH EXCAVATION	WRV, SOR	0.043		0.040				0.002		34	
5	-Y27-RPA- 13+89/17+08, RT	FILL	WAAH	0.095									
6	-Y27-RPA- 11+97/12+09, RT	DITCH	WHS,SAAM	0.024			0.003			0.002		11	
6	-Y27-RPA- 11+81/12+99, RT	FILL	SGJ						0.022		160		
7	-L- 1241+61/1242+00, RT	BANK STABILIZATION	SGK						0.006	0.005	28	23	
7	-L- 1242+00/1242+30, RT	STRUCTURE STABILIZATION	SGK						0.006		39		
7	-L- 1243+18, M	2 @ 6'x8' RCBC	WHP, SGK	0.027					0.054	0.005	406	23	
7	-L- 1244+17/1244+44, LT	STRUCTURE STABILIZATION	SGK						0.013		55		
7	-L- 1244+19/1244+91, LT	STRUCTURE STABILIZATION	SGJ						0.009	0.009	44	47	
7A	-L- 1240+99/1241+32, RT	DITCH EXCAVATION	WHM				0.038						
8	-L- 1253+21/1253+29, LT	BANK STABILIZATION	SGJ						0.003	0.006	32	42	
8	-L- 1253+21/1253+29, LT	DITCH EXCAVATION	SGJ						0.001	0.001	7	7	
9	-L- 1268+92/1269+46, LT	ROADWAY FILL	WIC	0.052									
10	-Y28- 14+75, LT/RT	BANK STABILIZATION	SGJ						0.004	0.008	32	57	
11	-L- 1276+60/1277+19 RT	ROADWAY FILL	WIH	0.053									
12	-L- 1288+28/1288+34, LT	BANK STABILIZATION	SGI						0.004	0.003	22	17	
12	-L- 1288+34/1288+15, LT	STRUCTURE STABILIZATION	SGI						0.008		48		
12	-L- 1288+18, M	3 @ 7'x8' RCBC	SGI						0.087	0.023	408	105	
12	-L- 1288+11/1288+06, RT	STRUCTURE STABILIZATION	SGI						0.007		26		
12	-L- 1288+06/1288+28, RT	BANK STABILIZATION	SGI						0.014	0.002	61	5	
13	-Y27- 25+62, LT	DITCH EXCAVATION	WHG			0.002	0.006						
14	-LB- 1315+04 TO 1315+72 LT	CHANNEL REALIGNMENT	**WIP, SGR**	**0.036**		**0.021**	**0.030**		**0.005**		**58**		
14	-LB- 1316+80 TO 1320+05 M	CHANNEL REALIGNMENT	WIQ, SGR	0.044		0.011			0.036		442		
15	-LB- 1320+03 TO 1321+42 M	BRIDGE	Neuse River						0.005	0.009	20	51	
15	-LB- 1320+87 TO 1321+76 M	BRIDGE CAUSEWAY	Neuse River							0.300		220	
15	-LB- 1319+95 TO 1321+83 M	BANK STABILIZATION	Neuse River						**0.011**	**0.012**	**51**	**73**	
16	-LB- 1323+35 TO 1323+55 RT	DITCH	SGT						0.002	0.001	10	12	
TOTALS*:				**0.554**	0.000	**0.095**	**0.108**	0.000	**7.375**	**0.388**	**1949**	**727**	

*Rounded totals are sum of actual impacts

NOTES:

SITE 15 WETLAND WIR IS NON-404

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
10/14/2024 (REV 7/18/2025 & 10/14/2025)
WAKE COUNTY

R-2829B

WETLAND AND SURACE WATER IMPACTS SUMMARY

Site No.	Station (From/To)	Structure Size / Type	Wetland and/or Stream ID	WETLAND IMPACTS: Permanent Fill In Wetlands (ac)	WETLAND IMPACTS: Temp. Fill In Wetlands (ac)	WETLAND IMPACTS: Excavation in Wetlands (ac)	WETLAND IMPACTS: Mechanized Clearing in Wetlands (ac)	WETLAND IMPACTS: Hand Clearing in Wetlands (ac)	SURFACE WATER IMPACTS: Permanent SW impacts (ac)	SURFACE WATER IMPACTS: Temp. SW impacts (ac)	SURFACE WATER IMPACTS: Existing Channel Impacts Permanent (ft)	SURFACE WATER IMPACTS: Existing Channel Impacts Temp. (ft)	SURFACE WATER IMPACTS: Natural Stream Design (ft)
17	-Y29RPA- 28+45 TO 27+03 LT	ROADWAY FILL	WIU	0.118			0.031						
18	-LB- 1343+75 TO 1348+35 M**	BRIDGE CAUSEWAY	SGU, WIW	0.615		0.028	0.113			0.007		73	
18	-LB- 1345+30 TO 1346+41 M	BANK STABILIZATION	SGU						0.071	0.016	306	36	
19	-Y29RPA- 19+91 TO 22+80 M ***	BRIDGE/CHANNEL CHANGE	WIV	0.066		0.133	0.115						
20	-LB- 1348+26 TO 1354+79 M	ROADWAY FILL	SGV, WIX	0.001		0.001	0.021		0.036	0.001	793	12	
21	-LB- 1373+42 TO 1374+06 RT	ROADWAY FILL	WIY	0.089			0.032						
22	-LB- 1377+53 TO 1382+16 M	ROADWAY FILL	SGY, WIZ	0.181					0.021		309		
22	-LB- 1381+13 TO 1381+24 LT	COUNTERSUNK RIPRAP	SGY						0.002	0.001	28	10	
22	-LB- 1381+15 TO 1381+55 LT	ROADWAY FILL	WJA	0.002		0.003	0.036						
22	-LB- 1377+53 TO 1380+76 RT	ROADWAY FILL (POND)	PAI						1.679				
23	-LB- 1390+22 TO 1390+64 RT	ROADWAY FILL	WJB				0.011						
23	-LB- 1388+53 TO 1394+71 M	ROADWAY FILL (POND)	PAK						4.543				
24	-LB- 1404+10 TO 1405+75 M	1 @ 6'x8' RCBC	SHA, WJD	0.357		0.039	0.044		0.023		290		
24	-LB- 1404+71 TO 1404+82 RT	COUNTERSUNK RIPRAP	SHA						0.001	0.001	15	11	
25	-LB- 1412+45 TO 1415+37 M	1 @ 6'x8' RCBC	SHB, WJD	1.232		0.039	0.102		0.003		48		
25	-LB- 1413+94 LT	COUNTERSUNK RIPRAP	SHB							0.001	8	13	
25	-Y30A- 10+58 TO 12+97 M	1 6'x8'	SHD	0.209		0.042	0.156						
27	-Y30- 22+73 TO 37+02 M	ROADWAY FILL	SHC	0.271					0.171		1804		
27	-Y30- 22+79 RT	COUNTERSUNK RIPRAP	SHC						0.001	0.001	10	10	
28	-Y30- 36+94 TO 37+96 M	2 @ 12'x11'	SHC						0.041		174		
28	-Y30- 37+24 TO 37+64 LT	COUNTERSUNK RIPRAP	SHC						0.029	0.003	83	9	
28	-Y30- 37+21 TO 38+01 RT	CHANNEL CHANGE	SHC						0.015		39		
28	-Y30A- 21+58 TO 22+00 M	3 @ 12'x11'	SHC						0.022		48		
28	-Y30A- 21+64 TO 21+94 RT	COUNTERSUNK RIPRAP	SHC						0.015		30		
28	-Y30A- 21+37 TO 22+00 RT	BANK STABILIZATION	SHC						0.031	0.005	65	10	
29	-Y30RPD- 25+73 TO 25+06 LT	ROADWAY FILL	SHE						0.024		173		
29	-LB- 1431+22 TO 1432+16 M	ROADWAY FILL (POND)	POND WJI						0.106				
TOTALS*:				3.141	0.000	0.285	0.661	0.000	6.834	0.036	4223	184	

*Rounded totals are sum of actual impacts

NOTES:
** SITE 18 Mechanized clearing total has been calculated for the worst-case scenario of losing entire wetland WIW
*** SITE 19 There will be temporary fill placed in the 0.003 ac. under the causeway which will be removed post-construction

SITE 26 CONTAINS NO WET IMPACTS AND HAS BEEN OMITTED FROM SUMMARY
SITE 30 CONTAINS NO WET IMPACTS AND HAS BEEN OMITTED FROM SUMMARY

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
10/14/2024 (REV 07/18/2025
WAKE COUNTY

R-2829B

WETLAND AND SURACE WATER IMPACTS SUMMARY

Site No.	Station (From/To)	Structure Size / Type	Wetland and/or Stream ID	WETLAND IMPACTS: Permanent Fill In Wetlands (ac)	WETLAND IMPACTS: Temp. Fill In Wetlands (ac)	WETLAND IMPACTS: Excavation in Wetlands (ac)	WETLAND IMPACTS: Mechanized Clearing in Wetlands (ac)	WETLAND IMPACTS: Hand Clearing in Wetlands (ac)	SURFACE WATER IMPACTS: Permanent SW impacts (ac)	SURFACE WATER IMPACTS: Temp. SW impacts (ac)	SURFACE WATER IMPACTS: Existing Channel Impacts Permanent (ft)	SURFACE WATER IMPACTS: Existing Channel Impacts Temp. (ft)	SURFACE WATER IMPACTS: Natural Stream Design (ft)
31	-LB- 1453+07 TO 1454+88 M	ROADWAY FILL	WJK	**0.616**			**0.014**						
32	-LB- 1456+41 TO 1461+83 M	BRIDGE / BANK STABILIZATION	SHC, WJJ(1)	0.008	0.623		0.270	0.39	0.02	0.009	195	74	
32	-LB- 1454+75 TO 1456+43 RT	ROADWAY FILL	WJJ(1)	0.013			0.034						
32	-Y31FLYDB- 51+90 TO 54+62 M	1 @ 10'x8' RCBC	SHC, WJJ(1)	0.218		0.048	0.101		0.032		255		
32	-Y31RPB- 23+56 TO 27+29 M	RDY FILL/CHANNEL CHANGE	SHC, WJL	0.407		0.094	0.119		0.045	0.002	319	14	
32	-Y31LPB- 17+74 TO 23+16 M	ROADWAY FILL	SHC, WJJ(1)	0.346		0.037	0.069		0.100	0.001	967	11	
32	-Y31LPB- 18+26 TO 18+67 RT	ROADWAY FILL	WJL	0.018									
33	-Y31RPB- 21+60 TO 24+06 M	1 @ 6'x8' RCBC	SHH, WJJ(1)			0.052	0.083		0.007	0.001	127	11	
34	-Y31RPC- 21+40 TO 26+00 M	ROADWAY FILL	WJJ(2)	1.052			0.120						
35	-Y31LPD- 19+31 TO 21+97 M	ROADWAY FILL	SHM, WJX	0.144						0.002		16	
35	-Y31LPD- 18+56 TO 19+86 LT	ROADWAY FILL (POND)	PAM						0.698				
35	-Y31RPD- 55+77 TO 56+11 LT	ROADWAY FILL	WJS	0.007			0.005						
36	-LB- 1516+53 TO 1516+56 LT	42" RCP-III	SAAJ								13		
36	-LB- 1516+45 TO 1516+56 LT	COUNTERSUNK RIPRAP	SAAJ						0.004		37	10	
37	-Y29- 8+37 TO 8+54 LT	RIPRAP AT EMBANKMENT	Neuse River						0.003	0.005	26	37	
38	-Y31- 76+81 TO 79+47 RT	1@9'x6' RCBC EXTENSION	SHL, WJJ(2)	0.128			0.091		0.013		31		
38	-Y31- 77+71 TO 78+03 RT	COUNTERSUNK RIPRAP	SHL						0.009		33		
38	-Y31- 77+16 TO 77+48 RT	BANK STABILIZATION	SHL						0.006	0.021	32	78	
38	-Y31- 76+91 TO 77+28 RT	ROADWAY FILL	SAAL						0.005		46		
39	-Y31RPD- 36+61 TO 40+84 RT	1@9'x6' RCBC EXTENSION	SHL, WJJ(1)	0.508		0.003	0.142		0.014		55		
39	-Y31RPD- 39+93 TO 40+03 RT	COUNTERSUNK RIPRAP	SHL						0.004	0.002	25	15	
	PAGE 110 TOTALS			**0.554**		**0.095**	**0.108**		**7.375**	**0.388**	**1949**	**727**	
	PAGE 111 TOTALS			3.141		0.285	0.661		6.834	0.036	4223	184	
TOTALS*:				**7.160**	0.623	**0.614**	**1.817**	0.390	**15.170**	**0.467**	**8333**	**1177**	

*Rounded totals are sum of actual impacts

NOTES:

WETLAND WIT (former Site 37) ON PSH 32 HAS BEEN REMOVED AND OMITTED FROM WETLAND IMPACT SUMMARY

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
10/14/2024 (REV 07/18/2025 & 10/14/2025)
WAKE COUNTY

R-2829B

Submitted November 25, 2025

TIP PROJECT: R–2829B

CONTRACT: C204825

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R–2829B	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
35517.3.TA2	N/A	DESIGN–BUILD
35517.3.TAGV2	0540048	DESIGN–BUILD

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

BUFFER DRAWING
SHEET 1 OF 34

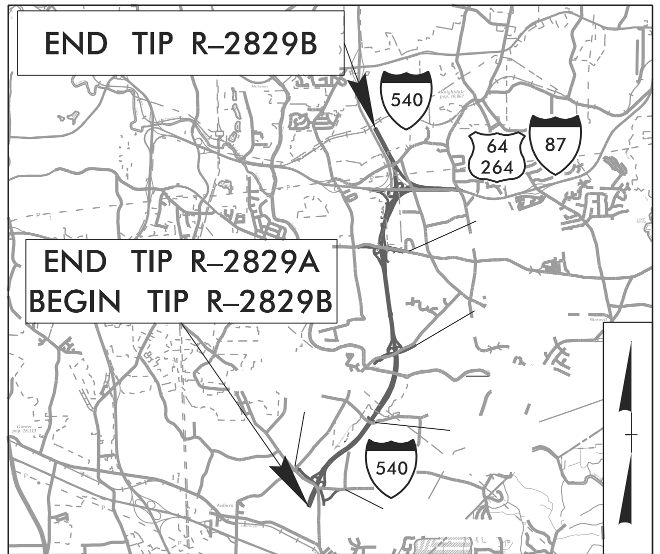
BUFFER IMPACTS PERMIT

REVISED 10/14/2025

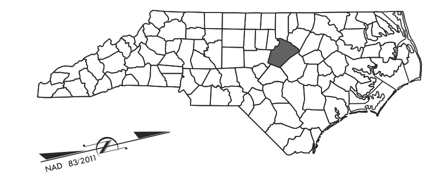
WAKE COUNTY

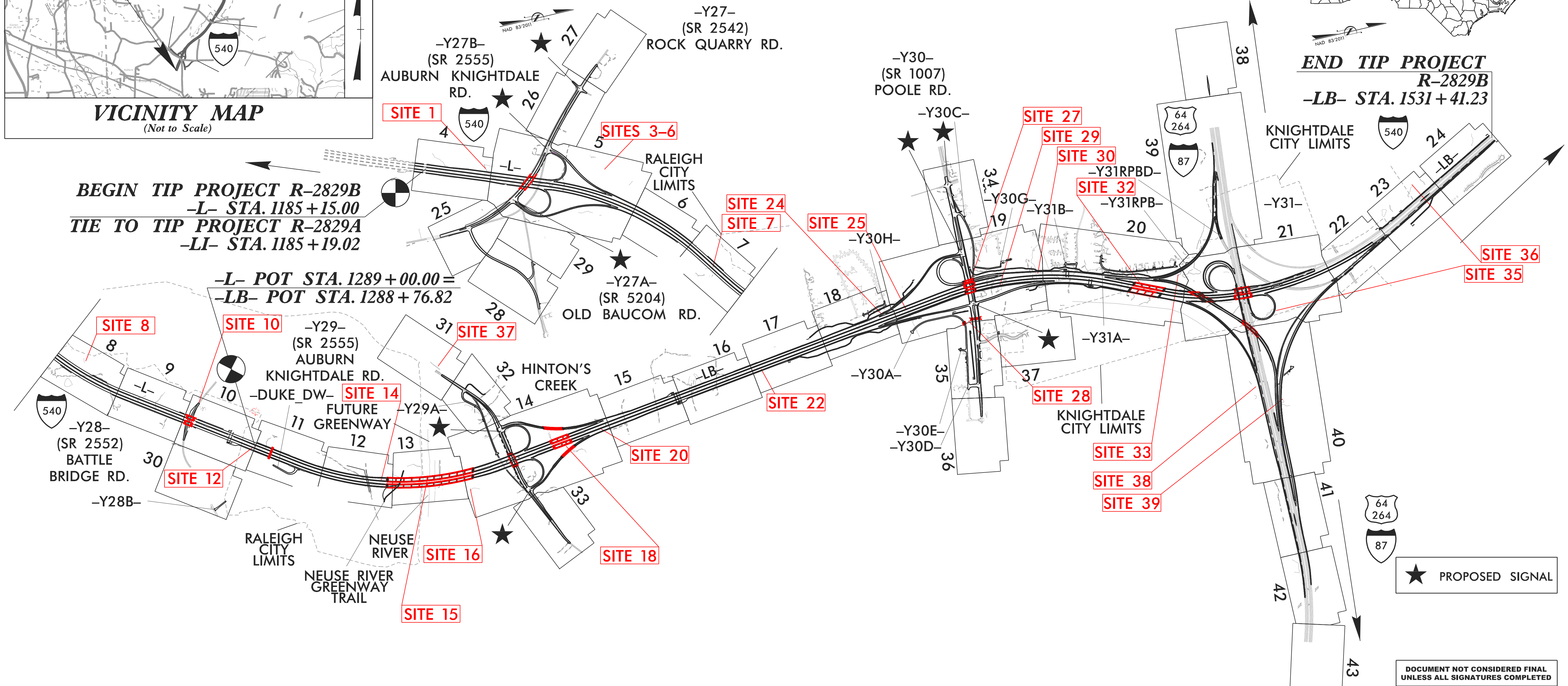
LOCATION: TRIANGLE EXPRESSWAY SOUTHEAST EXTENSION FROM SOUTH OF SR 2542 (ROCK QUARRY ROAD) TO I–87/US 64/US 264

TYPE OF WORK: GRADING, PAVING, DRAINAGE, STRUCTURES, SIGNING, AND SIGNALS



VICINITY MAP
(Not to Scale)





★ PROPOSED SIGNAL

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

THIS IS A CONTROLLED ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

20 10 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2025 = 34,800
ADT 2045 = 66,600
K = 12%
D = 60/65%
T = 10% *
V = 75 MPH
* TTST = 4% DUAL = 6%
FUNC CLASS =
INTERSTATE
STATEWIDE TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R–2829B = 5.967 MILES
LENGTH STRUCTURE TIP PROJECT R–2829B = 0.595 MILES
TOTAL LENGTH TIP PROJECT R–2829B = 6.562 MILES

Prepared In the Office of:
ICE of CAROLINAS, PLLC
ICE of Carolinas, PLLC
4505 Falls of Neuse Road, Suite 110
Raleigh, North Carolina 27609
Phone: 803-822-0333
License #: P-0999

Prepared for:
NORTH CAROLINA TURNPIKE AUTHORITY
1000 Birch Ridge Dr., Raleigh NC 27610

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
8/29/2023

LETTING DATE:
8/29/2023

BRIAN LUSK, P.E.
PROJECT ENGINEER

RON McCOLLUM, P.E.
NCTA CONTACT EASTERN DEPUTY CHIEF ENGINEER

HYDRAULICS ENGINEER

P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

P.E.
SIGNATURE:

NORTH CAROLINA
Turnpike Authority

09/08/99

$$$$$$SYSTIME$$$$ $$$$$$$$$$$$DGN$$$$$$$$$$$$ $$$$USERNAME$$$$

Submitted November 25, 2025

BUFFER DRAWING SHEET 13 OF 34

GRAPHIC SCALE 100′ 0′ 100′ 200′ 300′

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

TEMPORARY ACCESS FOR BRIDGE CONSTRUCTION ONLY

FLATIRON FRED SMITH COMPANY CONSTRUCTION

ICE of CAROLINAS, PLLC
ICE of Carolinas, PLLC
4505 Falls of Neuse Road, Suite 110
Raleigh, North Carolina 27609
Phone: 803-822-0333
License #: P-0999

PROJECT REFERENCE NO.	SHEET NO.
R-2829B	12
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISED 10/14/2025

NAD 83 SGR

WIO

WIP

BZ 2 BZ 1

SEE PERMIT DRAWING SHEET 14 OF 34 FOR ENLARGEMENT

SITE 14

MATCHLINE –LB– STA. 1302+00.00 SEE SHEET 11

MATCHLINE –LB– STA. 1315+00.00 SEE SHEET 13

–LB–

–Y28A–PT Sta. 15+98.85

S 67° 59′ 35.6″ E

–Y28A–PC Sta. 16+55.04

–Y28A–PRC Sta. 13+97.11

39 CITY OF RALEIGH, COUNTY OF WAKE

REVISIONS

8/17/99

5/2/2025: REVISIONS TO THE DESIGN DUE TO NEUSE RIVER BRIDGE LENGTH REDUCTION. –Y28A– REALIGNED. REVISED TCE ALONG –Y28A– AND ADDED PDE FOR NEW DITCH STA.1313+90 TO STA.1315+00.

$DATE$ $TIME$
$USERNAME$ DGN

ALL DRIVEWAY RADII 10′ UNLESS NOTED OTHERWISE.

FOR DITCH DETAILS SEE SHTS. 2D–1 THRU 2D–5

R/W LABELED OFF –LB– UNLESS NOTED OTHERWISE.

FOR –LB– CURVE DATA SEE SHT. 3A–1
FOR –Y28A– CURVE DATA SEE SHT. 3A–1

FOR –LB– PROFILE SEE SHT. 48
FOR –Y28A– PROFILE SEE SHT. 63

Submitted November 25, 2025

8/17/99

BUFFER DRAWING SHEET 14 OF 34

SITE 14 ENLARGEMENT

GRAPHIC SCALE 40' 0' 40' 80' 120'

TEMPORARY ACCESS FOR BRIDGE CONSTRUCTION ONLY

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

NAD 83

SITE 14

WIP

LAT. 5' BASE DITCH W/CL II RIP RAP SEE DETAIL CJ

BZ 1

BZ 2

TDE

PDE

F

LAT. 5' BASE DITCH W/CL I RIP RAP SEE DETAIL E

B RIP RAP
. 3 TONS
. 10 SY GF

TEMPORARY ACCESS

24" W/ELBOWS

15" RCP–III

18" RCP–III

2GI

FS

1315+00

REMOVE 15" W/ ELBOWS

LAT. 2' BASE

MATCHLINE –LB– STA. 1315+00.00 SEE SHEET 13

50

ICE of CAROLINAS, PLLC
ICE of Carolinas, PLLC
4505 Falls of Neuse Road. Suite 110
Raleigh, North Carolina 27609
Phone: 803-822-0333
License #: P-0999

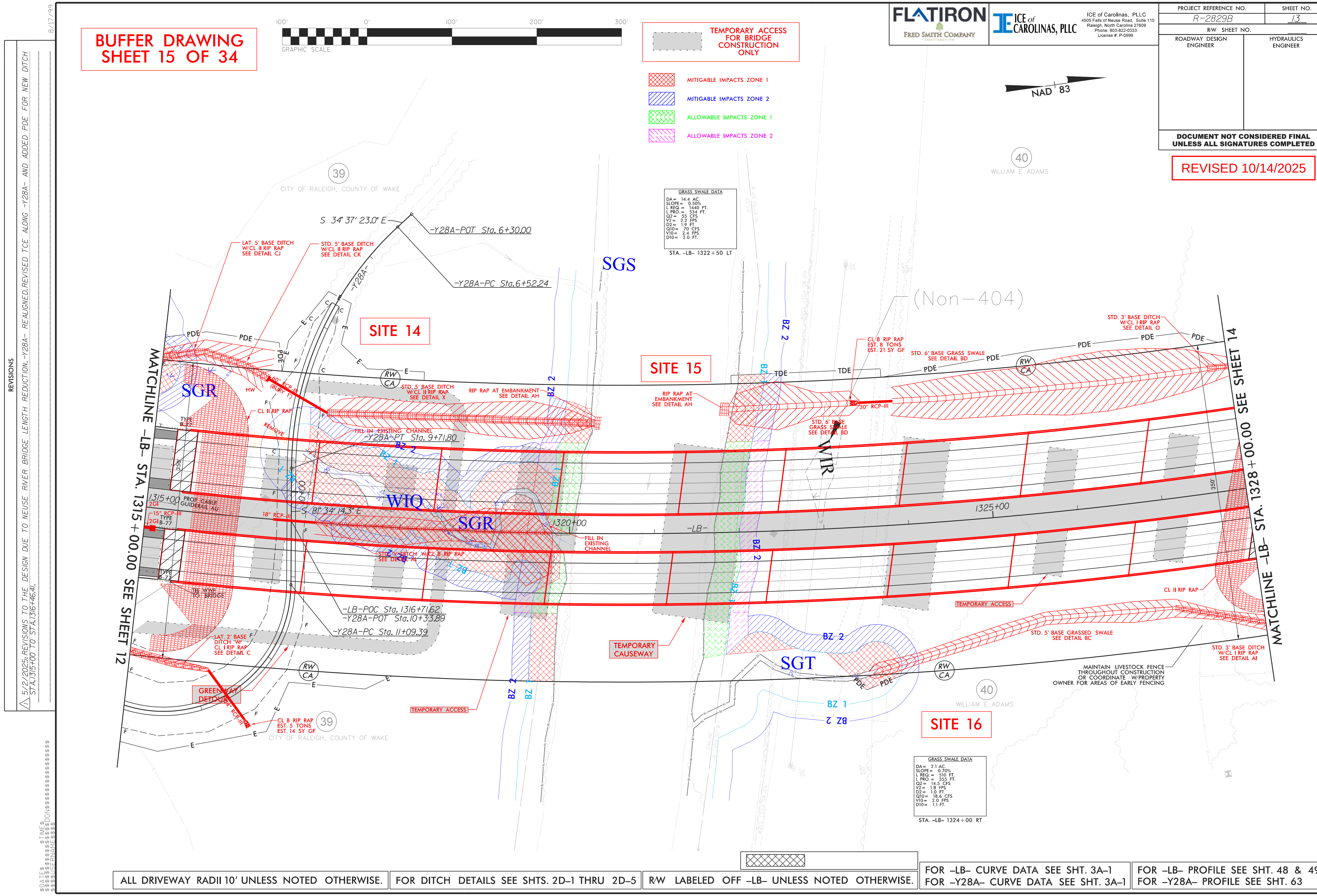
PROJECT REFERENCE NO.	SHEET NO.
R-2829B	___
R/W SHEET NO.	___
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

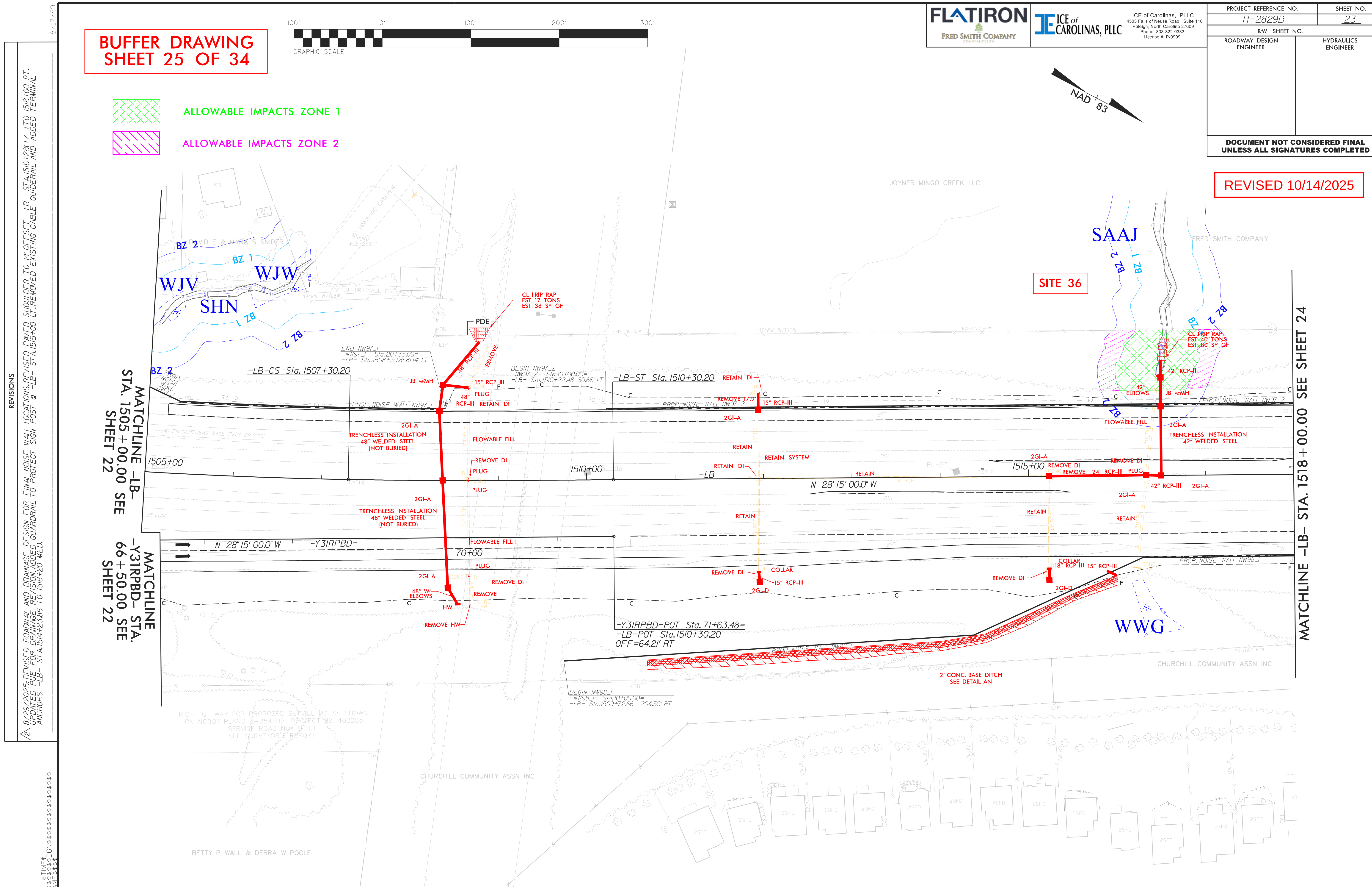
REVISED 10/14/2025

$DATE$ $TIME$
$$$$USERNAME$$$$ $$$$DGN$$$$

Submitted November 25, 2025



Submitted November 25, 2025



ALL DRIVEWAY RADII 10' UNLESS NOTED OTHERWISE. | FOR DITCH DETAILS SEE SHTS. 2D-1 THRU 2D-5 | R/W LABELED OFF -LB- UNLESS NOTED OTHERWISE. | FOR -LB- CURVE DATA SEE SHT. 3A-1 | FOR -LB- PROFILE SEE SHT. 55

RIPARIAN BUFFER IMPACTS SUMMARY

Site No.	Station (From/To)	Structure Size / Type	Stream ID	IMPACTS									BUFFER REPLACEMENT	
				TYPE			ALLOWABLE			MITIGABLE				
				ROAD CROSSING	BRIDGE	PARALLEL IMPACT	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)
1	-L- 1195+47/1196+04 , LT	DITCH EXCAVATION	SGH			X				1571	2334	3905		
3	-Y27-RPA- 12+22/22+93, RT	POND REMOVAL	PAH			X				74171	48230	122401		
6	-Y27-RPA- 22+78/23+28, RT	DITCH EXCAVATION	SAAM			X				1574	180	1754		
6	-Y27-RPA- 22+78/23+28, RT	POND REMOVAL	SGJ			X				10462	5253	15715		
7	-L- 1241+20/1245+56	2 @ 6'x8' RCBC	SGK	X						34491	21916	56407		
8	-L- 1253+17/1253+96, LT	DITCH EXCAVATION	SGJ			X				2484	1462	3946		
10	-Y28- 15+00	ROAD CROSSING	SGJ			X	2813	1850	4663					
12	-L- 1287+08/1288+88	3 @ 7'x8' RCBC	SGI	X						33194	21796	54990		
14	-LB- 1313+98 TO 1319+64 M	CHANNEL REALIGNMENT	SGR		X					**27754**	**18077**	**45831**		
15	-LB- 1319+37 TO 1322+40 M	BRIDGE	Neuse River		X		12996	5136	18132					
15	-LB- 1319+35 TO 1322+57 M	DITCH EXCAVATION	Neuse River		X					8779	5123	13902		
16	-LB- 1321+75 TO 1324+01 RT	BRIDGE	SGT		X					3912	4609	8521		
18	-LB- 1344+83 TO 1348+34 M	BRIDGES	SGU		X		32853	18719	51572	20211	14256	34467		
20	-LB- 1348+68 TO 1355+27 M	ROADWAY FILL	SGV	X						42154	27904	70058		
20	-LB- 1348++13 TO 1349+37 RT	BRIDGE	SGV		X		3232	1006	4238	1978	1336	3314		
22	-LB- 1380+15 TO 1381+80 M	ROADWAY FILL	SGY	X						20339	13343	33682		
22	-LB- 1377+04 TO 1381+28 RT	ROADWAY FILL (POND)	PAI	X						38584	27420	66004		
24	-LB- 1404+17 TO 1405+90 M	1 @ 6'x8' RCBC	SHA	X						19269	13337	32606		
25	-Y30RPB- 17+72 TO 20+71 M	1 @ 6'x8'	SHB	X						9054	7487	16541		
27	-Y30- 22+34 TO 24+77 M	ROADWAY FILL	SHD	X						16565	8783	25348		
27	-Y30- 23+31 TO 36+68 M	ROADWAY FILL	SHD			X				74775	42097	116872		
28	-Y30- 36+45 TO 38+85 M	2@12'X11', 3@12'X11'	SHC	X						25651	14793	40444		
29	-Y30RPD- 24+55 TO 26+22 LT	ROADWAY FILL	SHE	X						14071	12463	26534		
30	-LB- 1438+31 TO 1438+74 LT	DITCH EXCAVATION	SAAB	X			186	1026	1212					
32	-LB- 1456+26 TO 1461+73 M	BRIDGE	SHC		X		24699	19034	43733					
32	-Y31FLYDB- 50+22 TO 54+90 M	1@10'x8' RCBC	SHC	X						33895	20847	54742		
32	-Y31LPB- 16+32 TO 22+05 LT	ROADWAY FILL	SHC			X				22197	14637	36834		
32	-Y31LPB- 15+66 TO 16+52 LT	ROADWAY FILL	SHC	X						19305	10950	30255		
33	-Y31RPB- 21+02 TO 24+50 M	1 @ 6'x8' RCBC	SHH	X						12507	12767	25274		
35	-Y31LPD- 18+30 TO 20+14 LT	ROADWAY FILL	Pond PAM	X						22774	18737	41511		
TOTALS*:							**76779**	**46771**	**123550**	**591721**	**390137**	**981858**	**0**	**0**

NOTES:

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
12/4/2024 (REV 10/14/2025)
WAKE COUNTY
R-2829B

RIPARIAN BUFFER IMPACTS SUMMARY

Site No.	Station (From/To)	Structure Size / Type	Stream ID	IMPACTS									BUFFER REPLACEMENT	
				TYPE			ALLOWABLE			MITIGABLE				
				ROAD CROSSING	BRIDGE	PARALLEL IMPACT	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)
36	-LB- 1516+21 TO 1516+72 LT	ROADWAY FILL	SAAJ	X			**5421**	**2836**	**8257**					
37	-Y29- 8+50 TO 9+10 LT	DITCH EXCAVATION	Neuse River	X						1244	1021	2265		
38	-Y31RPC- 36+27 TO 38+23 RT	1@9'x6' RCBC EXTENSION	SHL	X			4572	887	5459					
38	-Y31RPC- 35+98 TO 37+05 RT	ROADWAY FILL	SAAL	X			1859	733	2592					
39	-Y31RPD- 39+41 TO 40+67 RT	1@9'x6' RCBC EXTENSION	SHL	X			4797	3241	8038					
	SHEET 32 TOTALS						**76779**	**46771**	**123550**	**591721**	**390137**	**981858**		
TOTALS*:							**93428**	**54468**	**147896**	**592965**	**391158**	**984123**	**0**	**0**

NOTES:

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
12/4/2024 (REV 10/14/2025)
WAKE COUNTY
R-2829B

WETLANDS IN BUFFER IMPACTS SUMMARY

SITE NO.	STATION (FROM/TO)	WETLAND ID	WETLANDS IN BUFFERS	
			ZONE 1 (ft^2)	ZONE 2 (ft^2)
3	-Y27-RPA- 19+09/20+33, RT	WHR	1615	0
3	-Y27-RPA- 21+68/22+86, RT	WRV	1682	894
3	-Y27-RPA- 13+90/17+08, RT	WAAH	4036	97
6	-Y27-RPA- 13+88/17+08, RT	WHS	185	0
6	-Y27-RPA- 13+88/17+08, RT	WHS	1002	0
7	-L- 1243+20/1243+59, LT	WHP	994	45
7	-L- 1241+20/1241+68, RT	WHM	498	611
14	-LB- 1314+05/1315+42 LT	WIP	**1611**	**1280**
14	-LB- 1316+56/1319+94 M	WIQ	1866	0
18	-LB- 1345+15/1345+94 M	WIW	3034	3429
18	-Y29RPA- 22+33/23+00 LT	WIV	883	363
20	-LB- 1348+33/1355+30 RT	WIX	22	136
22	-LB-1380+18/1381+26 RT	WIZ	4161	856
22	-LB-1381+16/1381+57 LT	WJA	1516	113
24	-LB- 1404+63/1405+58 M	WJD	3215	2327
25	-Y30RPB- 17+72/19+05 M	WJF	6932	2763
27	-Y30- 28+62/33+72 M	WJH	3905	5107
32	-LB- 1456+60/1461+72 M	WJJ(1)	24019	14226
32	-Y31FLYDB- 50+23/54+62 M	WJJ(1)	24771	9339
32	-Y31LPB- 45+35/45+81 RT	WJL	506	0
32	-Y31LPB- 15+68/16+45 LT	WJJ(1)	17998	8967
33	-Y31RPB- 21+60/24+46 M	WJJ(1)	7266	3102
35	-Y31LPD- 19+19/19+25 LT	WJU	130	39
35	-Y31LPD- 19+50/19+61 M	WJX	0	97
35	-Y31LPD- 19+43/19+51 LT	WJS	114	0
38	-Y31RPC- 36+06/38+24 RT	WJJ(2)	5329	740
39	-Y31RPD- 39+39/40+67 RT	WJJ(1)	4797	3241
TOTAL:			**122087**	**57772**

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
12/4/2024 (REV 10/14/2025)
WAKE COUNTY
R-2829B

JOSH STEIN
Governor
D. REID WILSON
Secretary
MARC RECKTENWALD
Director

NORTH CAROLINA
Environmental Quality

November 24, 2025

Ms. Deanna Riffey
Environmental Analysis Unit
North Carolina Department of Transportation
1598 Mail Service Center
Raleigh, North Carolina 27699-1598

Dear Ms. Riffey:

Subject: DMS Mitigation Acceptance Letter:

R-2829B, Complete NC 540 – Eastern Wake Expressway from South of Rock Quarry Road to I-87 / US 64 / US 264 Bypass, Wake County

References: USACE 404 Individual Permit issued December 13, 2024 (USACE Action ID 2009-02240)

NCDWR 401 Water Quality Certification issued December 10, 2024 (NCDWR ID 2018-1249 v20)

The purpose of this letter is to notify you that the Division of Mitigation Services (DMS) will provide the additional wetland and riparian buffer mitigation for the subject project. Based on the information supplied by you on November 24, 2025, the wetland impacts are located in CU 03020201 of the Neuse River basin in the Central Piedmont (CP) Eco-Region, and the riparian buffer impacts are located in Neuse 01 Outside Falls Lake watershed and are as follows:

Table 1 – Additional Impacts (feet / acres)

Neuse 03020201 CP	Stream			Wetlands			Riparian Buffer (Sq. Ft.)	
	Cold	Cool	Warm	Riparian	Non-Riparian	Coastal Marsh	Zone 1	Zone 2
Impacts (feet/acres)	0	0	0	0	0.074	0	1,273.000	698.000

This additional impact and associated mitigation needs were not projected by the NCDOT in the 2025 impact projection dataset. DMS is currently providing wetland and buffer mitigation for the impacts associated with this project located in cataloging unit 03020201 of the Neuse River basin as required by the 404 and 401 permits issued in 2024, as shown in the below table (in mitigation credits):

Table 2 – Current Permitted Impacts and Associated Mitigation Requirements provided by DMS (based on issued permits) and Revised Anticipated Impacts (based on mitigation request)

Impact Type	Total Permitted Impacts (feet / acre / sq ft)	Mitigation Provided by DMS per Issued Permits (Credits)	Additional Impact (for approval)	Revised Total Impacts
Non-riparian Wetland	0.385	0.770	**0.074**	0.459
Buffer – Zone 1	504,881.000	1,514,643.000	**1,273.000**	506,154.000
Buffer – Zone 2	351,428.000	527,142.000	**698.000**	352,126.000

All buffer mitigation requests and approvals are administrated through the Riparian Restoration Buffer Fund. The NCDOT will be responsible for ensuring that appropriate compensation for the buffer mitigation will be provided in the agreed upon method of fund transfer. Upon receipt of the NCDWR's Buffer Authorization Certification, DMS will transfer funds from the NCDOT Fund into the Riparian Restoration Buffer Fund. Upon completion of transfer payment, NCDOT will have completed its riparian buffer mitigation responsibility for TIP R-2829B. Subsequently, DMS will conduct a review of current NCDOT ILF Program mitigation projects in the river basin to determine if available buffer mitigation credits exist. If there are buffer mitigation credits available, then the Riparian Restoration Buffer Fund will purchase the appropriate amount of buffer mitigation credits from NCDOT ILF Program.

This mitigation acceptance letter replaces the mitigation acceptance letters issued on November 7 and December 9, 2024. DMS commits to implementing additional sufficient wetland mitigation credits to offset the impacts associated with this project as determined by the regulatory agencies using the delivery timeline listed in Section F.3.c.iii of the In-Lieu Fee Instrument dated July 28, 2010. If the above referenced impact amounts are revised, then this mitigation acceptance letter will no longer be valid and a new mitigation acceptance letter will be required from DMS.

If you have any questions or need additional information, please contact Ms. Beth Harmon at 919-707-8420.

Sincerely,

Elizabeth Harmon

Elizabeth A. Harmon
DMS NCDOT ILF Coordinator

cc: Mr. Scott Jones, USACE – Regulatory Field Office
Mr. Rob Ridings, Division of Water Resources, Wetlands/401 Unit
File: R-2829B_Additional