STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

JOSH STEIN
GOVERNOR

DANIEL H. JOHNSON
SECRETARY

December 3, 2025

MEMORANDUM TO: Becca Gallas, P.E.
Division 5 Engineer

FROM: Alan Shapiro, P.E.
NCTA Chief Engineer

DocuSigned by:
Alan Shapiro
B149124683BD45D...

SUBJECT: Triangle Expressway Southeast Extension (Complete 540) from NC 55 Bypass in Apex to US 64/264 (I-87) in Knightdale, Wake and Johnston Counties; Federal Aid No. STP-0540(19), STP-0540(20), and STP-0540(21); WBS Nos. 37673.1.TA1, 35516.1.TA1, and 35517.1.TA1; STIP Project Nos. R-2721, R-2828, and R-2829

Attached are the modified US Army Corps of Engineers (USACE) Phased Section 404 Individual Permit, NC Division of Water Resources (NCDWR) Section 401 Individual Water Quality Certification, Neuse Riparian Buffer Authorization, and Non-404 Jurisdictional Wetlands and Waters Permit for the construction of the Triangle Expressway Southeast Extension (Complete 540) from NC 55 Bypass in Apex to US 64/264 (I-87) in Knightdale, Wake and Johnston Counties. STIP Nos. R-2721, R-2828, and R-2829. ***The changes are based on the November 25, 2025 request for modification of the permit 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 on the R-2829B section of the project. Additionally, a small area of mechanized clearing in wetlands has been modified to permanent fill in wetlands at Site 31.*** Subject to any requisite permit modifications, all environmental permits have been received for the construction of the final design sections of this project.

A copy of this permit package is posted on the NCDOT website at:
https://xfer.services.ncdot.gov/pdea/PermIssued

cc: w/o attachment (see website for attachments)
Mr. Ron Davenport, P.E. Contracts Management
Mr. Clarence Coleman, P.E., FHWA
Mrs. Heather Montague, Division 5
Mr. Mark Craig, P.E., Division 5
Mr. Boyd Tharrington, P.E., Deputy Chief Engineer
Mr. Bill Martin, P.E., Programming and TIP
Mr. Timothy Ritacco, Utilities Unit
Mr. Matt Lauffer, P.E., Hydraulics Unit
Mr. David Snoke, P.E., Structures Management Unit
Mr. Mark Staley, Roadside Environmental
Mr. John Jamison, Environmental Policy Unit
Ms. Beth Harmon, NCDMS
Ms. Deanna Riffey, Natural Environment Unit-Environmental Coordination & Permitting

Mailing Address:
NC DEPARTMENT OF TRANSPORTATION
TURNPIKE AUTHORITY
1599 MAIL SERVICE CENTER
RALEIGH, NC 27699-1599

Telephone: (919) 707-2700
Fax: (919) 715-5511
Customer Service: 1-877-368-4968

Website: www.ncdot.gov

Location:
2501 AERIAL CENTER PARKWAY
SUITE 200
MORRISVILLE, NC 27560

404/401

Permits

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, WILMINGTON DISTRICT
RALEIGH FIELD OFFICE
3331 HERITAGE TRADE DRIVE SUITE 105
WAKE FOREST NC 27587

December 3, 2025

Regulatory Program

Alan Shapiro, P.E.
Chief Engineer
North Carolina Turnpike Authority
1599 Mail Service Center
Raleigh, NC 27699-1599

Dear Mr. Shapiro:

Reference the Department of the Army permit issued to the North Carolina Turnpike Authority, (NCTA) on October 24, 2019, and subsequently modified, to authorize the discharge of fill material into waters of the United States, for construction of the Triangle Expressway Southeast Extension (Complete 540) from NC 55 Bypass in Apex to US 64/264 (1-87) in Knightdale, Wake and Johnston Counties. Sections included within this permit are R-2721, R-2828, and R-2829.

Also, please reference your November 25, 2025 email, requesting modification of the permit to authorize change of impacts at Permit Sites 14, 15, and 31, for R-2829B. The modifications at 14 and 15 are necessary for an alternate Neuse River bridge design that reduces the overall length of the bridge by 290 feet, saves approximately $2 million in construction costs, reduces bridge construction time by 23 weeks (including short term impacts to the river and the Neuse River Greenway), and reduces required concrete truck trips by 262 loads.

The modification at Site 31 is to realistically show the expected impacts for the construction of a culvert and headwall in the wetlands.

The additional proposed 404 impacts at each site are summarized below:

Site 14: Impacts from southern end bent relocation
• 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)

Site 15: Neuse River – Bank stabilization
• Permanent Stream Impact: 51 lf (previously 76 lf - decrease of 25 lf)
• Temporary Stream Impact: 73 lf (previously 108 lf - decrease of 3 5 lf)

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

The additional permanent wetland fill impacts and stream loss impacts that require compensatory mitigation at a 2:1 ratio total 0.074 acre and 58 linear feet.

The Corps has completed the evaluation of your request and has determined that it is appropriate and reasonable, and that no public notice is required for this modification. Therefore, the permit is modified as requested and as shown on the enclosed R-2829B Mod Permit Drawings, Sheets 1, 30-39, 76, and 110-112, submitted November 25, 2025.

Additional compensatory wetland mitigation of 0.148 acre shall be provided in accordance with the provisions outlined on the most recent version of the attached Compensatory Mitigation Responsibility transfer form. The requirements of this form, including any special conditions listed on this form, are hereby incorporated as special conditions of this permit authorization.

It is noted that due to NCTA's previous mitigation calculation error for R-2829A, Site 37, and including the required 116 linear feet of compensatory mitigation for the current modification, NCTA currently has a "credit" of 23 linear feet of stream mitigation that has been paid for but has not been used. NCTA is not currently requesting a refund for this "credit" due to the possibility that additional compensatory stream mitigation may be needed for future modifications for this project.

The other special conditions for the permit are also enclosed, and have not changed from the revised Special Conditions provided with the December 13, 2024 modification. The revised permit expiration date remains December 31, 2029.

Should you have any questions, contact Mr. Eric Alsmeyer, via email at Eric.C.Alsmeyer@usace.army.mil or by telephone at (919) 817-1570. Please take a moment to complete our customer satisfaction survey located at https://regulatory.ops.usace.army.mil/customer-service-survey/.

Sincerely,

M. Scott Jones, PWS
WRDA / Transportation Branch Chief
USACE Wilmington District

Enclosures

cc: Jennifer Harris, NC Turnpike Authority (via ext-jhharris1@ncdot.gov)
Deanna Riffey, NCDOT (via driffey@ncdot.gov)

Revised SPECIAL CONDITIONS

Action ID SAW-2009-02240; Complete 540; TIPS R-2721, R-2828, and R-2829

Note: Special Condition 9 was modified on October 28, 2024, and Special Condition 30 was added on December 12, 2024.

1. **Work Limits:** All work authorized by this permit shall be performed in strict compliance with the attached permit plans submitted on September 12, 2018, and revised on February 8, 2019, which are a part of this permit. The Permittee shall ensure that the construction design plans for this project do not deviate from the permit plans attached to this authorization. Any modification to the attached permit plans must be approved by the U.S. Army Corps of Engineers (Corps) prior to any active construction in waters or wetlands.

2. **Unauthorized Dredge and/or Fill:** Except as authorized by this permit or any U.S. Army Corps of Engineers approved modification to this permit, no excavation, fill, or mechanized land-clearing activities shall take place at any time in the construction or maintenance of this project, within waters or wetlands, or shall any activities take place that cause the degradation of waters or wetlands. There shall be no excavation from, waste disposal into, or degradation of, jurisdictional wetlands or waters associated with this permit without appropriate modification of this permit, including appropriate compensatory mitigation. This prohibition applies to all borrow and waste activities connected with this project. In addition, except as specified in the plans attached to this permit, no excavation, fill or mechanized land-clearing activities shall take place at any time in the construction or maintenance of this project, in such a manner as to impair normal flows and circulation patterns within, into, or out of waters or wetlands or to reduce the reach of waters or wetlands.

3. **Permit Distribution:** The Permittee shall require its contractors and/or agents to comply with the terms and conditions of this permit in the construction and maintenance of this project, and shall provide each of its contractors and/or agents associated with the construction or maintenance of this project with a copy of this permit. A copy of this permit, including all conditions and drawings shall be available at the project site during construction and maintenance of this project.

4. **Preconstruction Meeting:** The Permittee shall conduct an onsite preconstruction meeting between its representatives, the contractor's representatives and the appropriate U.S. Army Corps of Engineers Project Manager prior to undertaking any work within jurisdictional waters and wetlands to ensure that there is a mutual understanding of all terms and conditions contained within the Department of the Army permit. The Permittee shall schedule the preconstruction meeting for a time frame when the Corps, and NCDWR Project Managers can attend. The Permittee shall invite the Corps, and NCDWR Project Managers a minimum of thirty (30) days in advance of the scheduled meeting in order to provide those individuals with ample opportunity to

schedule and participate in the required meeting. The thirty (30) day requirement can be waived with the concurrence of the Corps.

5. **Notification of Construction Commencement and Completion:** The Permittee shall notify the U.S. Army Corps of Engineers in writing prior to beginning the work authorized by this permit and again upon completion of the work authorized by this permit.

6. **Reporting Address:** All reports, documentation, and correspondence required by the conditions of this permit shall be submitted to the following: U.S. Army Corps of Engineers, Wilmington District Raleigh Regulatory Field Office, Attn: Eric Alsmeyer, 3331 Heritage Trade Drive, Suite 105, Wake Forest, NC 27587, or eric.c.alsmeyer@usace.army.mil. The Permittee shall reference the following permit number, SAW-2009-02240, on all submittals.

7. **Permit Revocation:** The Permittee, upon receipt of a notice of revocation of this permit or upon its expiration before completion of the work will, without expense to the United States and in such time and manner as the Secretary of the Army or his authorized representative may direct, restore the water or wetland to its pre-project condition.

8. **Reporting Violations:** Violation of these permit conditions or violation of Section 404 of the Clean Water Act or Section 10 of the Rivers and Harbors Act shall be reported to the Corps in writing and by telephone at: 919.554.4884, extension 23, within 24 hours of the Permittee's discovery of the violation.

9. Endangered Species

1) **The Permittee shall implement all necessary measures to ensure the authorized activity does not kill, injure, capture, harass, or otherwise harm any federally-listed thr**eatened or endangered species, except as authorized by the October 15, 2019 US Fish and Wildlife Service BIOLOGICAL/CONFERENCE OPINION, as modified by the September 30, 2024 ADDENDUM. While accomplishing the authorized work, if the Permittee discovers or observes an injured or dead threatened or endangered species, the U.S. Army Corps of Engineers, Wilmington District Raleigh Field Office, telephone 919.554.4884, extension 23, email to eric.c.alsmeyer@usace.army.mil will be immediately notified to initiate the required Federal coordination.

2) Atlantic Sturgeon: In order to protect the federally-listed Atlantic sturgeon, no temporary causeways or work bridges will block more than 50% of the Neuse River below its ordinary high water mark, and will be removed at the end of the project's construction.

3) DWM Biological Opinion: This Department of the Army permit does not authorize you to take an endangered species, in particular the Dwarf wedgemussel, *Alasmidonta heterodon.* In order to legally take a listed species, you must have separate authorization under the Endangered Species Act (ESA) (e.g., an ESA Section 10 permit, or a BO under ESA Section 7, with "incidental take" provisions with which you must comply). The attached October 15, 2019 US Fish and Wildlife Service BIOLOGICAL/CONFERENCE OPINION, as modified by the September 30, 2024 ADDENDUM (B/CO-A), contains mandatory terms and conditions to implement the reasonable and prudent measures that are associated with "incidental take" that is also specified in the B/CO-A. Your authorization under this permit is conditional upon your compliance with all of the mandatory terms and conditions associated with incidental take of the attached B/CO-A, which terms and conditions are incorporated by reference in this permit. Failure to comply with the terms and conditions associated with incidental take of the BO, where a take of the listed species occurs, would constitute an unauthorized take, and it would also constitute non-compliance with your permit. The U.S. Fish and Wildlife Service is the appropriate authority to determine compliance with the terms and conditions of its B/CO-A, and with the ESA.

4) NLEB Programmatic Biological Opinion: 11. The Wilmington District, Federal Highway Administration, U.S. Fish and Wildlife Service (USFWS), and the North Carolina Department of Transportation (NCDOT) have conducted programmatic Section 7(a)(2) consultation for the Northern long-eared bat (NLEB) for NCDOT projects located in Divisions 1-8. The result of this programmatic consultation is a Programmatic Biological Opinion (PBO) issued by the USFWS titled, "Programmatic Biological Opinion – Revised, NCDOT Program Effects on the Northern Long-eared Bat in Divisions 1-8", dated December 15, 2022. This PBO contains agreed upon conservation measures which would minimize take of NLEB. As noted in the PBO, applicability of these conservation measures varies depending on the location of the project. The USFWS has documented that no reasonable and prudent measures, nor terms and conditions, are necessary or appropriate to minimize the amount or extent of incidental take of NLEB caused by the Action; therefore, the incidental take statement does not provide reasonable and prudent measures for this species. Department of the Army (DA) authorization under general permit or standard permit (Individual Permit) is conditional upon the permittee's compliance with applicable, agreed upon conservations measures of the PBO, which is incorporated by reference in this permit. Failure to comply with the applicable conservation measures, where a take of the NLEB occurs, would constitute an unauthorized take by the permittee, and would also constitute permittee non-compliance with this permit. The USFWS is the appropriate authority to determine compliance with the terms and conditions of its PBO and the ESA. All PBOs can be found on our website at:
https://www.saw.usace.army.mil/Missions/Regulatory-Permit-Program/Agency-Coordination/ESA/.

5) TCB Programmatic Biological Opinion: The U.S. Fish and Wildlife Service's (USFWS's) Programmatic Conference Opinion (PCO) titled "NCDOT Program Effects on the Tricolored Bat in Divisions 1-8", dated November 20, 2023, contains

mandatory terms and conditions to implement the reasonable and prudent measures that are associated with “incidental take” that are specified in the PCO. Your authorization under this Corps permit is conditional upon your compliance with all the mandatory terms and conditions associated with incidental take of the PCO, which terms and conditions are incorporated by reference in this permit. Failure to comply with the terms and conditions associated with incidental take of the PCO, where a take of the listed species occurs, would constitute an unauthorized take, and it would also constitute non-compliance with your Corps permit. The USFWS is the appropriate authority to determine compliance with the terms and conditions of its PCO, and with the ESA.

10. **Maintain Flows and Circulation Patterns of Waters:** Except as specified in the plans attached to this permit, no excavation, fill or mechanized land-clearing activities shall take place at any time in the construction or maintenance of this project, in such a manner as to impair normal flows and circulation patterns within waters or wetlands or to reduce the reach of waters and/or wetlands.

11. **Sediment and Erosion Control:**

1) During the clearing phase of the project, heavy equipment shall not be operated in surface waters or stream channels. Temporary stream crossings will be used to access the opposite sides of stream channels. All temporary diversion channels and stream crossings will be constructed of non-erodible materials. Grubbing of riparian vegetation will not occur until immediately before construction begins on a given segment of stream channel.

2) No fill or excavation impacts for the purposes of sedimentation and erosion control shall occur within jurisdictional waters, including wetlands, unless the impacts are included on the plan drawings and specifically authorized by this permit. This includes, but is not limited to, sediment control fences and other barriers intended to catch sediment losses.

3) The Permittee shall remove all sediment and erosion control measures placed in waters and/or wetlands, and shall restore natural grades on those areas, prior to project completion.

4) The Permittee shall use appropriate sediment and erosion control practices which equal or exceed those outlined in the most recent version of the “North Carolina Sediment and Erosion Control Planning and Design Manual” to ensure compliance with the appropriate turbidity water quality standard. Erosion and sediment control practices shall be in full compliance with all specifications governing the proper design, installation and operation and maintenance of such Best Management Practices in order to ensure compliance with the appropriate turbidity water quality standards. This shall include, but is not limited to, the immediate installation of silt fencing or similar appropriate devices around all areas subject to soil disturbance or the movement of earthen fill, and the immediate stabilization of all disturbed areas. Additionally, the

project shall remain in full compliance with all aspects of the Sedimentation Pollution Control Act of 1973 (North Carolina General Statutes Chapter 113A Article 4). Adequate sedimentation and erosion control measures shall be implemented prior to any ground disturbing activities to minimize impacts to downstream aquatic resources. These measures shall be inspected and maintained regularly, especially following rainfall events. All fill material shall be adequately stabilized at the earliest practicable date to prevent sediment from entering into adjacent waters or wetlands.

12. **Clean Fill:** The Permittee shall use only clean fill material for this project. The fill material shall be free of items such as trash, construction debris, metal and plastic products, and concrete block with exposed metal reinforcement bars. Soils used for fill shall not be contaminated with any toxic substance in concentrations governed by Section 307 of the Clean Water Act. Unless otherwise authorized by this permit, all fill material placed in waters or wetlands shall be generated from an upland source.

13. **Water Contamination:** All mechanized equipment shall be regularly inspected and maintained to prevent contamination of waters and wetlands from fuels, lubricants, hydraulic fluids, or other toxic materials. In the event of a spill of petroleum products or any other hazardous waste, the Permittee shall immediately report it to the N.C. Division of Water Quality at (919) 733-3300 or (800) 858-0368 and provisions of the North Carolina Oil Pollution and Hazardous Substances Control Act shall be followed.

ANADROMOUS FISH / AQUATIC LIFE

14. **Aquatic Life Movement:** No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area. All discharges of dredged or fill material within waters of the United States shall be designed and constructed to maintain low flows to sustain the movement of aquatic species.

15. **Prohibitions on Concrete:** The Permittee shall take measures necessary to prevent live or fresh concrete, including bags of uncured concrete, from coming into contact with any water in or entering into waters of the United States. Water inside coffer dams or casings that has been in contact with concrete shall only be returned to waters of the United States when it no longer poses a threat to aquatic organisms (concrete is set and cured).

COMPENSATORY MITIGATION

16. In order to compensate for impacts associated with this permit, mitigation shall be provided in accordance with the provisions outlined on the most recent version of the attached Compensatory Mitigation Responsibility Transfer Form. The requirements of this form, including any special conditions listed on this form, are hereby incorporated as special conditions of this permit.

CULTURAL RESOURCES

17. Historic Properties (MOA): The Permittee shall fully implement the Memorandum of Agreement between the Permittee, the North Carolina State Historic Preservation Officer and the U.S. Army Corps of Engineers, Wilmington District, dated last signed 3/11/2018, which is incorporated herein by reference.

CULVERTS

18. Unless otherwise requested in the application and depicted on the approved permit plans, culverts greater than 48 inches in diameter shall be buried at least one foot below the bed of the stream. Culverts 48 inches in diameter and less shall be buried or placed on the stream bed as practicable and appropriate to maintain aquatic passage, and every effort shall be made to maintain existing channel slope. The bottom of the culvert shall be placed at a depth below the natural stream bottom to provide for passage during drought or low flow conditions. Culverts shall be designed and constructed in a manner that minimizes destabilization and head cutting.

19. Measures shall be included in the culvert construction/installation that will promote the safe passage of fish and other aquatic organisms. The dimension, pattern, and profile of the stream above and below a culvert or pipe shall not be modified by widening the stream channel or by reducing the depth of the stream in connection with the construction activity. The width, height, and gradient of a proposed opening shall be such as to pass the average historical low flow and spring flow without adversely altering flow velocity. Spring flow should be determined from gauge data, if available. In the absence of such data, bankfull flow can be used as a comparable level.

20. The Permittee shall implement all reasonable and practicable measures to ensure that equipment, structures, fill pads, work, and operations associated with this project do not adversely affect upstream and/or downstream reaches. Adverse effects include, but are not limited to, channel instability, flooding, and/or stream bank erosion. The Permittee shall routinely monitor for these effects, cease all work when detected, take initial corrective measures to correct actively eroding areas, and notify this office immediately. Permanent corrective measures may require additional authorization by the U.S. Army Corps of Engineers.

21. Culverts placed within wetlands must be installed in a manner that does not restrict the flows and circulation patterns of waters of the United States. Culverts placed across wetland fills purely for the purposes of equalizing surface water shall not be buried, but the culverts must be of adequate size and/or number to ensure unrestricted transmission of water.

PONDS

22. Sediment Sluicing: The release of sediments from ponds (sluicing) is not authorized by this permit. The Permittee shall take all measures necessary to control any bottom

sediments that may be sluiced during the drainage of pond(s) on the project site.

UTILITY LINES

23. Temporary Impacts Restoration Measures: Within thirty (30) days of the date of completing the authorized work, the Permittee shall remove all temporary fills in waters of the United States and restore the affected areas to pre-construction contours and elevations. The affected areas shall be re-vegetated with native, non-invasive vegetation as necessary to minimize erosion and ensure site stability. In wetland areas where pipeline installation via trenching is authorized, wetland topsoil shall be segregated from the underlying subsoil, and the top 6 to 12 inches of the trench shall be backfilled with topsoil from the trench.

24. Cleared wetland areas shall be re-vegetated with a wetland seed mix or a mix of native woody species. Fescue grass or any invasive species such as *Lespedeza* spp., shall not be used within the wetland areas.

25. Prior to construction within any jurisdictional areas, the Permittee shall correctly install silt fencing (with or without safety fencing) parallel with the utility line corridor, on both sides of the jurisdictional crossing. This barrier is to serve both as an erosion control measure and a visual identifier of the limits of construction within any jurisdictional area. The Permittee shall maintain the fencing, at minimum, until the wetlands have re-vegetated and stabilized.

26. Hydraulic Fracturing (Fracking): When directional boring or horizontal directional drilling (HDD) under waters of the United States, including wetlands, the Permittee shall closely monitor the project for hydraulic fracturing or “fracking” and material from the drilling operation leaching to the surface and into jurisdictional areas. Any discharge from fracking or leaching into waters of the United States, including wetlands, shall be reported to U.S. Army Corps of Engineers, Wilmington District Raleigh Field Office, telephone 919.554.4884, extension 23, email to eric.c.alsmeyer@usace.army.mil within 48 hours. Restoration and/or mitigation may be required as a result of any unintended discharges.

NCDOT STANDARD PERMIT CONDITIONS

27. Phased Permit and Mitigation: This permit only authorizes work on Sections A and B of TIP R-2721. Construction on Sections of TIP, R-2828 and R-2829 shall not commence until all the following occur:
(a) final design has been completed for those sections and submitted to the U.S. Army Corps of Engineers (Corps); (b) the Permittee has minimized impacts to waters and wetlands to the maximum extent practicable and the Corps concurs with this assessment through standard Merger 4B and 4C meetings; (c) any modification to the plans have been approved by the Corps in writing; and (d) a final compensatory mitigation plan for the relevant TIP project has been submitted by the Permittee and approved by the Corps.

28. **Temporary Fills:** Within thirty (30) days of the date of completing the authorized work, the Permittee shall remove all temporary fills in waters of the United States and restore the affected areas to pre-construction contours and elevations. The affected areas shall be re-vegetated with native, non-invasive vegetation as necessary to minimize erosion and ensure site stability.

29. **Borrow and Waste:** To ensure that all borrow and waste activities occur on high ground and do not result in the degradation of adjacent waters and wetlands, except as authorized by this permit, the Permittee shall require its contractors and/or agents to identify all areas to be used as borrow and/or waste sites associated with this project. The Permittee shall provide the U.S. Army Corps of Engineers with appropriate maps indicating the locations of proposed borrow and/or waste sites as soon as such information is available. The Permittee shall submit to the Corps site-specific information needed to ensure that borrow and/or waste sites comply with all applicable Federal requirements, to include compliance with the Endangered Species Act and the National Historic Preservation Act, such as surveys or correspondence with agencies (e.g., the USFWS, the NC-HPO, etc.). The required information shall also include the location of all aquatic features, if any, out to a distance of 400 feet beyond the nearest boundary of the site. The Permittee shall not approve any borrow and/or waste sites before receiving written confirmation from the Corps that the proposed site meets all Federal requirements, whether or not waters of the U.S., including wetlands, are located in the proposed borrow and/or waste site. All delineations of aquatic sites on borrow and/or waste sites shall be verified by the U.S. Army Corps of Engineers and shown on the approved reclamation plans. The Permittee shall ensure that all borrow and/or waste sites comply with Special Condition 2 of this permit. Additionally, the Permittee shall produce and maintain documentation of all borrow and waste sites associated with this project. This documentation will include data regarding soils, vegetation, hydrology, any delineation(s) of aquatic sites, and any jurisdictional determinations made by the Corps to clearly demonstrate compliance with Special Condition 2. All information will be available to the U.S. Army Corps of Engineers upon request. The Permittee shall require its contractors to complete and execute reclamation plans for each borrow and/ or waste site and provide written documentation that the reclamation plans have been implemented and all work is completed. This documentation will be provided to the U.S. Army Corps of Engineers within 30 days of the completion of the reclamation work.

30. **Boater Safety Plan:** The permittee shall implement the *NEUSE RIVER & NEUSE RIVER GREENWAY TRAIL USER SAFETY PLAN*, attached, submitted 9/16/2024, which would mitigate the impacts to personal watercraft use of this portion of the Neuse River by providing safety signage, buoys, ring buoys, and designated portage routes during construction of bridge spans over the Neuse.

NEUSE RIVER & NEUSE RIVER GREENWAY TRAIL USER SAFETY PLAN

NC 540 (R-2829B)

Triangle Expressway Southeast Extension

from south of SR 2542 (Rock Quarry Road) to I-87/US 64/US 264

SUBMITTED 7/22/2025

Submitted by

FLATIRON

FRED SMITH COMPANY CONSTRUCTION

In partnership with

ICE of CAROLINAS, PLLC

NC 540 Triangle Expressway Southeast Extension (R-2829B)
from south of SR 2542 (Rock Quarry Road) to I-87 / US 64 / US 264

Neuse River and Neuse River Greenway Trail Safety Plan

The R-2829B project includes construction activities at, across and above the Neuse River and the existing Neuse River Greenway Trail. This plan provides details of the safety measures to be incorporated into the construction operations to ensure that users of both the Neuse River and the Neuse River Greenway Trail are informed of ongoing construction hazards and are protected from construction activities while passing through the construction area.

General Safety Procedures and Precautions:

Throughout the duration of construction, the Flatiron-Fred Smith JV will have the following measures in place for both the Neuse River and the Neuse River Greenway Trail:

- Flatiron-Fred Smith JV will comply with all Contract and RFP requirements while implementing this safety plan.

- As required per Division One of the NCDOT Standard Specifications Section 108-3, modified by the RFP, Flatiron-Fred Smith JV will provide a Site Specific Safety Plan (SSSP) prior to starting any work. The SSSP with spill control and response plan will be provided to all on-site staff and shall include details on spill prevention and cleanup, marine operations, and emergency/crisis management.

- This plan shall be reviewed annually, at a minimum, by Flatiron-Fred Smith JV and NCDOT to determine if any adjustments need to be made to improve the functionality of the plan or address any changes on-site.

- Regular safety inspections of all equipment will be performed monthly to ensure everything is in proper condition and working order.

- Flatiron-Fred Smith JV will have monitors and/or flaggers to direct river and greenway users away from active or hazardous construction areas and activities.

- Unless work is being performed outside of the allowable public use of the greenway (dawn to dusk), if an overhead operation is ongoing without a greenway trail detour or river user diversion in place, Flatiron-Fred Smith JV will have monitors / flaggers on each side of the construction zone to stop construction work while users pass beneath an overhead operation.

  The greenway and river traffic will be shifted to the proposed detour / portage routes when any unprotected overhead work is ongoing in an area. When the new bridge girders are in place, the stay in place decking is installed, and the overhangs with plywood protection are installed, this will prevent materials from falling onto the active portions of the greenway trail or Neuse River.

- In the event of a storm being forecast in the area that could result in localized flooding or overtopping the temporary access causeway, Flatiron-Fred Smith JV will remove all materials and equipment in advance of the storm.

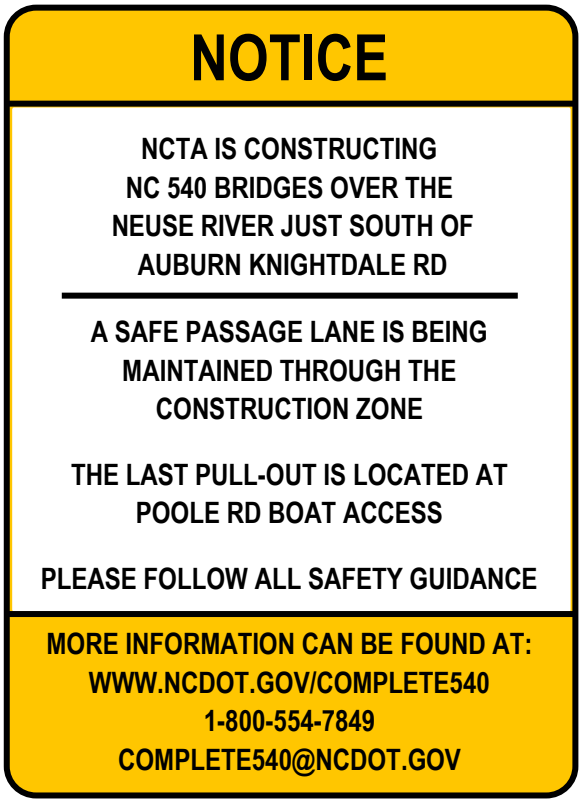
Neuse River Specific Safety Precautions:

Paddlers or other users of the Neuse River waterway will be protected from construction operations as follows:

- Advanced warning Signage will be installed and maintained by Flatiron-Fred Smith JV at the following canoe / kayak access points upstream and downstream of the project location:

    - Lower Milburnie Dam (1101 Old Milburnie Rd, Raleigh, NC 27604)
    - Anderson Point Boat Access (20 Anderson Point Drive, Raleigh, NC 27610)
    - Poole Road Boat Access (6501 Poole Rd, Raleigh, NC 27610)
    - Mial Plantation Road Access (near 6008 Mial Plantation Rd, Raleigh, NC 27610)
    - Hwy 42 Boat Launch (2075 NC Highway 42 E, Clayton, NC)
    - Town of Smithfield Boat Ramp (200 N Front St, Smithfield, NC 27577)

    The signs will be similar to the image below:



- Ring Buoys will be staged on each side of the river shoreline both immediately upstream and downstream of the construction zone for emergency rescue operations. Each ring

buoy will be equipped with a minimum of 100 feet of rescue line and a throw bag, mounted on a 4x4 timber post.

- Buoys and signage will be installed in the river to direct river users through the safe portion of the waterway (see sketch NEUSE-01).

- The buoys and signage will provide a safe perimeter around the proposed construction access causeway on the northern bank of the river to warn against unauthorized access to the causeway and work area by river users.

- Signage will direct river users if the river passage is open or closed. The passage will be open when it is safe to pass under the proposed bridge construction and there are no overhead activities ongoing. The passage will be closed and require canoe portage when active overhead operations such as bridge girder erection, stay in place form placement or overhang protection installation and removal. A portage route will be cleared and signed to allow for safe portage around the active construction. The portage route will be chosen to minimize the height of the bank to traverse during normal water elevations. In addition, during these closed times, Flatiron-Fred Smith JV will have monitors and flaggers further directing river users of the proper portage route.

- The Flatiron-Fred Smith JV will communicate to NCDOT / NCTA Communications and Marketing Department (CAMD) at least forty-five (45) days in advance of any construction activities that impact use of the Neuse River.

Neuse River Greenway Trail Specific Safety Precautions:

Users of the Neuse River Greenway Trail will be protected from construction operations as follows:

- The Flatiron-Fred Smith JV shall inform NCDOT Division 5 and NCTA at least forty-five (45) days in advance of any construction activities that impact use of the Neuse River Greenway Trail.

- A temporary trail detour route will be constructed and used to divert trail traffic away from active overhead construction activities (see sketches NEUSE-02 through NEUSE-04).

- Prior to beginning construction, orange safety fence will be placed on both sides of the existing greenway trail to keep greenway users on the trail and away from adjacent construction activities and equipment. The limits of the orange safety fence are shown on Figure NEUSE-02 and shall be turned 90 degrees and tied to the nearest tree to “funnel” users between the runs of safety fence. Orange safety fence to be maintained and/or reinstalled at the end of each shift where trail is being used for construction access.

- During the first phase of the bridge construction, trail traffic can be maintained on the existing trail while Bridge Spans C through I are completed. The temporary greenway trail alignment and a portion of the permanent greenway alignment revisions will be constructed during this phase of bridge construction. Paved trail surface to be maintained throughout this phase.

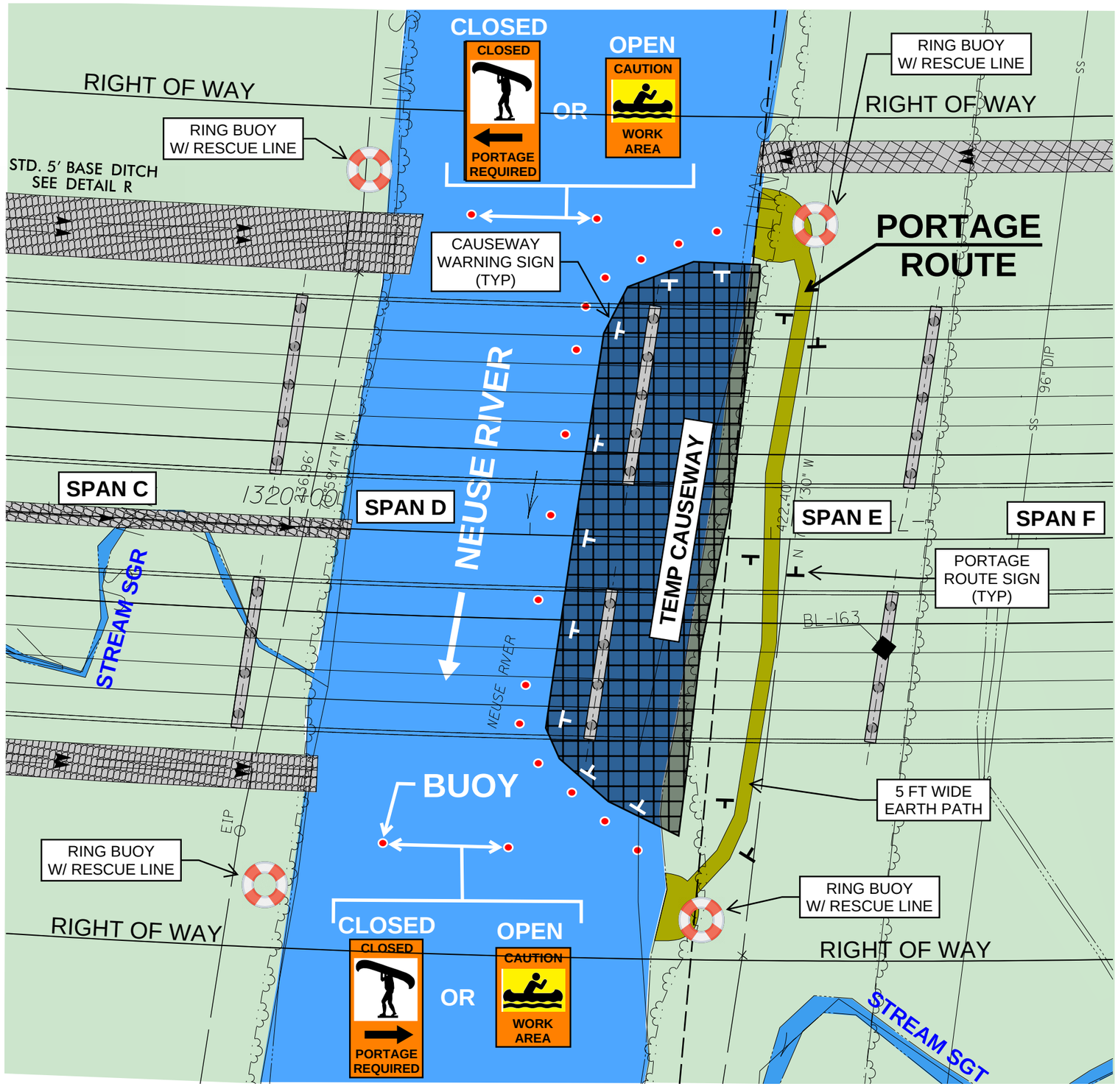
- Once Span C of the bridge is completed, the orange safety fencing will be added to the temporary and permanent trail alignment and greenway trail traffic will be switched to the temporary detour route under completed Span C. Once greenway trail traffic is switched under Span C, construction can commence on Spans A and B as well as the remainder of the permanent greenway alignment revisions.

- Bridge overhang protection removal over the Neuse River Greenway Trail will be done when the trail is closed at night between dusk and dawn.

- With the greenway traffic relocated, the construction of Bridge Spans A and B can be completed and the greenway trail traffic will be shifted to the revised permanent greenway alignment. Orange safety fence is to be placed and maintained along the revised permanent greenway trail for the remainder of the construction contract as well as any portion of the existing trail that remains in use through the construction area.

- The Flatiron-Fred Smith JV shall coordinate installation and removal of greenway protective measures with NCDOT Division 5 and NCTA when crossing the trail. No obstructions that impede the use of the trail shall be left in place after crossing the trail.

Details of the proposed user routing for both the Neuse River and the Neuse River Greenway Trail are provided on the following Figures NEUSE-01 through NEUSE-04.



SAFETY PLAN
R-2829B

NEUSE-01

N

PADDLE ACCESS:

1. PRIOR TO CONSTRUCTION OF BRIDGE SPAN D, PADDLER TRAFFIC WILL BE ROUTED THROUGH THE SOUTHERN SIDE OF THE RIVER USING FLOATING BUOYS AND CAUTION SIGNAGE AS SHOWN BELOW.

2. DURING LIFTING OF SPAN D BEAMS OR OTHER OVERHEAD OPERATIONS FOR SPAN D, THE RIVER WILL BE CLOSED TO PADDLERS USING THE "PORTAGE REQUIRED" SIGNAGE. NO CONSTRUCTION ACTIVITY IN SPAN E IS ALLOWED WHEN THE PORTAGE ROUTE IS IN USE.

3. PLACE RING BUOYS FOR EMERGENCY USE AT EACH PORTAGE LANDING AND ON OPPOSITE SIDE OF RIVER..

CAUTION SIGNAGE:

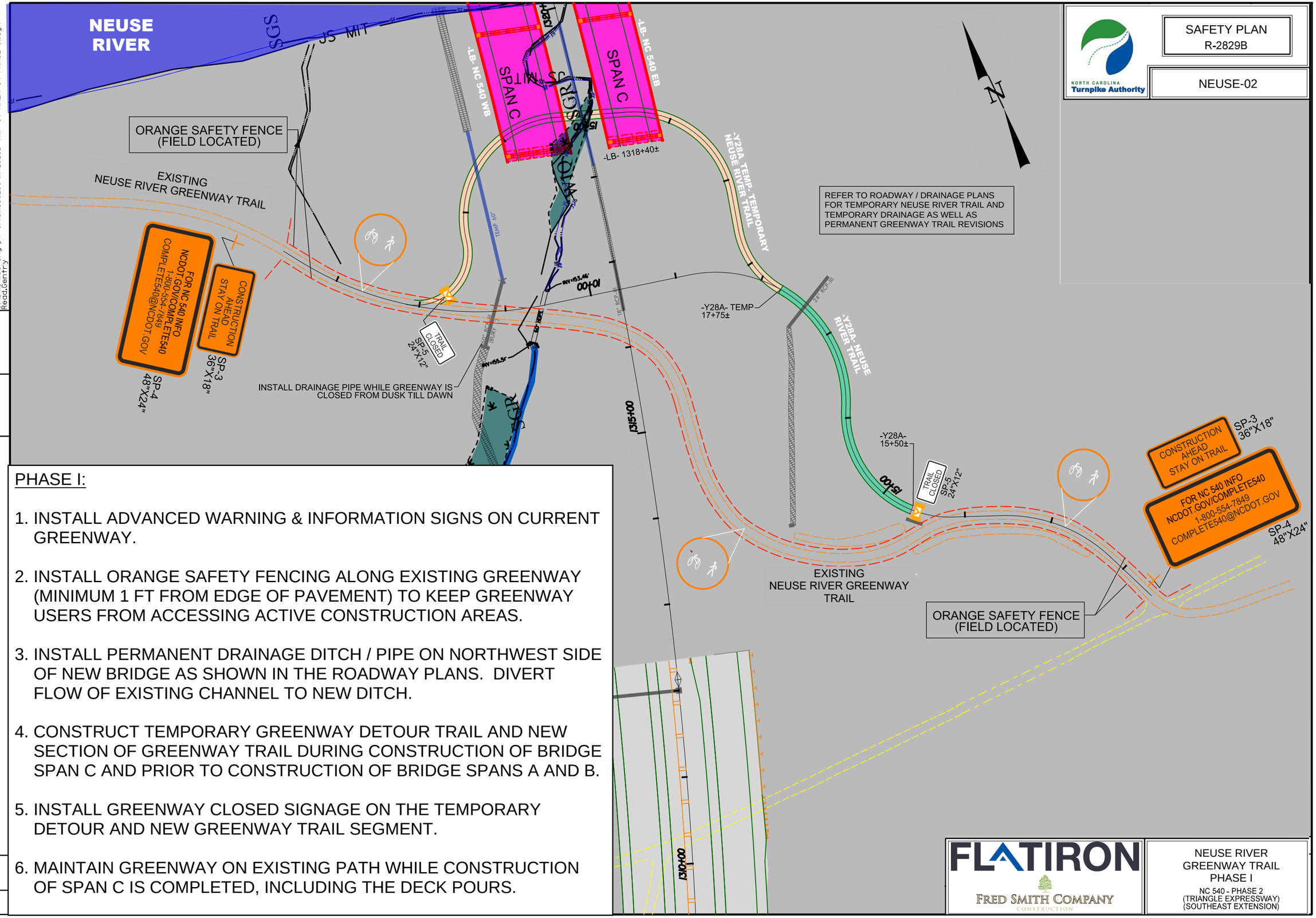
CAUSEWAY WARNING SIGN

PORTAGE ROUTE SIGN

FLATIRON
FRED SMITH COMPANY
CONSTRUCTION

NEUSE RIVER ACCESS

NC 540 - PHASE 2
(TRIANGLE EXPRESSWAY)
(SOUTHEAST EXTENSION)



PHASE I:

1. INSTALL ADVANCED WARNING & INFORMATION SIGNS ON CURRENT GREENWAY.
2. INSTALL ORANGE SAFETY FENCING ALONG EXISTING GREENWAY (MINIMUM 1 FT FROM EDGE OF PAVEMENT) TO KEEP GREENWAY USERS FROM ACCESSING ACTIVE CONSTRUCTION AREAS.
3. INSTALL PERMANENT DRAINAGE DITCH / PIPE ON NORTHWEST SIDE OF NEW BRIDGE AS SHOWN IN THE ROADWAY PLANS. DIVERT FLOW OF EXISTING CHANNEL TO NEW DITCH.
4. CONSTRUCT TEMPORARY GREENWAY DETOUR TRAIL AND NEW SECTION OF GREENWAY TRAIL DURING CONSTRUCTION OF BRIDGE SPAN C AND PRIOR TO CONSTRUCTION OF BRIDGE SPANS A AND B.
5. INSTALL GREENWAY CLOSED SIGNAGE ON THE TEMPORARY DETOUR AND NEW GREENWAY TRAIL SEGMENT.
6. MAINTAIN GREENWAY ON EXISTING PATH WHILE CONSTRUCTION OF SPAN C IS COMPLETED, INCLUDING THE DECK POURS.

NORTH CAROLINA Turnpike Authority

SAFETY PLAN
R-2829B

NEUSE-02

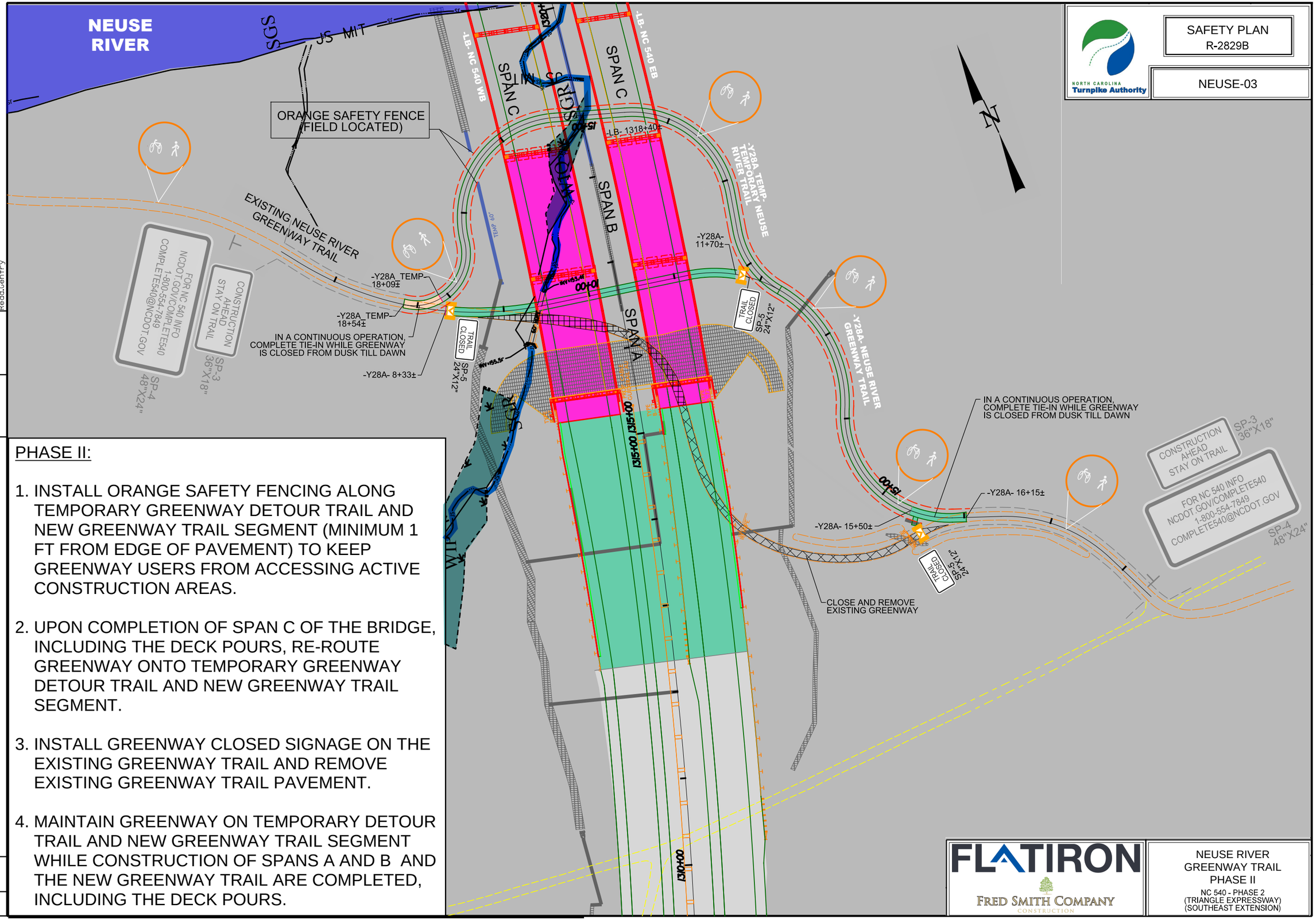
REVISIONS

NO.	DATE	DESCRIPTION	REVISED BY	CHECKED BY
1	6-16-25	Y28 & Y28A NEUSE RIVER GREENWAY TRAIL ALIGNMENTS REVISED	CEO	GMK
2	7-21-25	Y28A & Y28A TEMP NEUSE RIVER GREENWAY TRAIL ALIGNMENTS REVISED	KRG	GMK

7/21/2025
c:\bms\ice-eng-pw-01\dms59256\R-2829B TMP 07 AREA 04 PHASE 01.dgn
Read.Gentry

FLATIRON
FRED SMITH COMPANY
CONSTRUCTION

NEUSE RIVER
GREENWAY TRAIL
PHASE I
NC 540 - PHASE 2
(TRIANGLE EXPRESSWAY)
(SOUTHEAST EXTENSION)



PHASE II:

1. INSTALL ORANGE SAFETY FENCING ALONG TEMPORARY GREENWAY DETOUR TRAIL AND NEW GREENWAY TRAIL SEGMENT (MINIMUM 1 FT FROM EDGE OF PAVEMENT) TO KEEP GREENWAY USERS FROM ACCESSING ACTIVE CONSTRUCTION AREAS.

2. UPON COMPLETION OF SPAN C OF THE BRIDGE, INCLUDING THE DECK POURS, RE-ROUTE GREENWAY ONTO TEMPORARY GREENWAY DETOUR TRAIL AND NEW GREENWAY TRAIL SEGMENT.

3. INSTALL GREENWAY CLOSED SIGNAGE ON THE EXISTING GREENWAY TRAIL AND REMOVE EXISTING GREENWAY TRAIL PAVEMENT.

4. MAINTAIN GREENWAY ON TEMPORARY DETOUR TRAIL AND NEW GREENWAY TRAIL SEGMENT WHILE CONSTRUCTION OF SPANS A AND B AND THE NEW GREENWAY TRAIL ARE COMPLETED, INCLUDING THE DECK POURS.

REVISIONS

NO.	DATE	DESCRIPTION	REVISED BY	CHECKED BY
1	6-16-25	Y28 & Y28A NEUSE RIVER GREENWAY TRAIL ALIGNMENTS REVISED	CEO	GMK
2	7-21-25	Y28A & Y28A TEMP NEUSE RIVER GREENWAY TRAIL ALIGNMENTS REVISED	KRG	GMK

7/21/2025
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Read.Gentry

NORTH CAROLINA Turnpike Authority

SAFETY PLAN
R-2829B

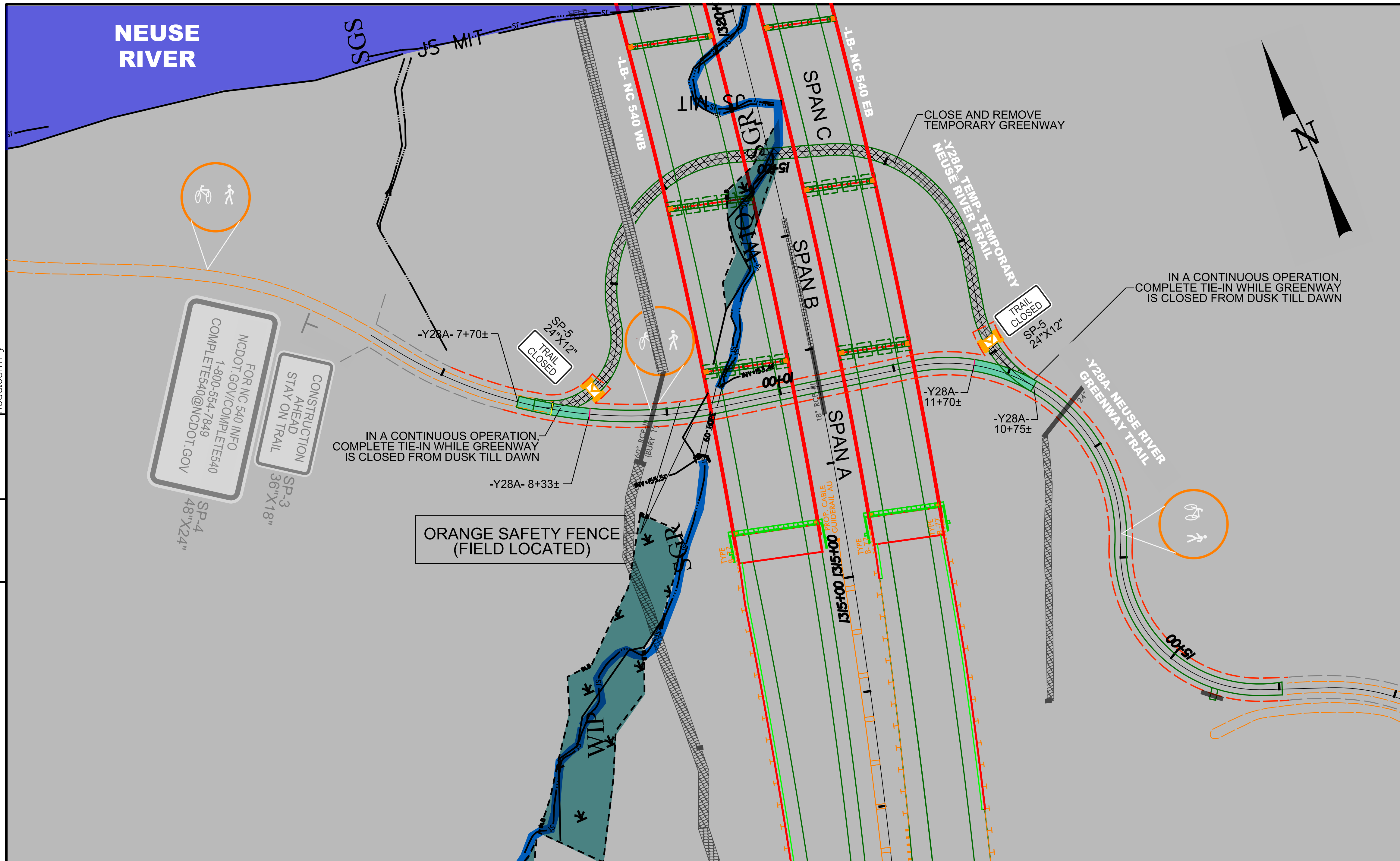
NEUSE-03

FLATIRON
FRED SMITH COMPANY CONSTRUCTION

NEUSE RIVER GREENWAY TRAIL
PHASE II
NC 540 - PHASE 2
(TRIANGLE EXPRESSWAY)
(SOUTHEAST EXTENSION)

SAFETY PLAN
R-2829B

NEUSE-04



PHASE III:

1. UPON COMPLETION OF SPANS A AND B OF THE BRIDGE, INCLUDING DECK POURS, RE-ROUTE GREENWAY ONTO PERMANENT GREENWAY TRAIL ALIGNMENT.
2. REMOVE TEMPORARY GREENWAY TRAIL AND TRAIL CLOSED SIGNAGE.
3. AFTER PROJECT COMPLETION, REMOVE ADVANCED WARNING AND INFORMATION SIGNS AND ORANGE SAFETY FENCE FROM TRAIL.

REVISIONS

NO.	DATE	DESCRIPTION	REVISED BY	CHECKED BY
1	6-16-25	Y28 & Y28A NEUSE RIVER GREENWAY TRAIL ALIGNMENTS REVISED	CEO	GMK
2	7-21-25	Y28A & Y28A TEMP NEUSE RIVER GREENWAY TRAIL ALIGNMENTS REVISED	KRG	GMK

7/21/2025
c:\bms\ice-eng-pw-01\dms59256\R-2829B TMP 07B AREA 04 PHASE 03.dgn
Read.Gentry

NORTH CAROLINA Turnpike Authority

FLATIRON
FRED SMITH COMPANY CONSTRUCTION

NEUSE RIVER GREENWAY TRAIL PHASE III
NC 540 - PHASE 2 (TRIANGLE EXPRESSWAY) (SOUTHEAST EXTENSION)

JOSH STEIN
Governor
D. REID WILSON
Secretary
RICHARD E. ROGERS, JR.
Director

NORTH CAROLINA
Environmental Quality

December 1, 2025

Alan Shapiro, P.E., Chief Engineer
North Carolina Turnpike Authority
1578 Mail Service Center
Raleigh, NC 27699
awshapiro@ncdot.gov

Subject: MODIFICATION of 401 Water Quality Certification Pursuant to Section 401 of the Federal Clean Water Act with ADDITIONAL CONDITIONS for Proposed construction of the Triangle Expressway Southeast Extension (NC 540) in Wake County, Federal Aid Project No. 050047, State Project No. 35517.3.TA1, TIP Nos, R-2721, R-2828, & R-2829. (TIP R-2829B for This Modification)
NCDWR Project No. 20181249 version 27.

Dear Mr. Shapiro:

Attached hereto is a copy of Modification to Certification No. 4179 issued to The North Carolina Department of Transportation (NCDOT), Turnpike Authority, originally dated February 15, 2019 and most recent modification dated December 1, 2025

This approval is for the purpose and design described in your application. The plans and specifications for this project are incorporated by reference as part of this Water Quality Certification. If you change your project, you must notify the Division and you may be required to submit a new application package with the appropriate fee. If the property is sold, the new owner must be given a copy of this Certification and is responsible for complying with all conditions. [15A NCAC 02H .0507(d)(2)]. This Certification does not relieve the permittee of the responsibility to obtain all other required Federal, State, or Local approvals before proceeding with the project, including those required by, but not limited to, Sediment and Erosion Control, Non-Discharge, and Water Supply Watershed regulations.

If we can be of further assistance, do not hesitate to contact us.

Sincerely,

Signed by:
Faith Hardin
3185423002EA45E...

Faith Hardin, Supervisor
401 & Buffer Transportation Permitting Branch

Attachments
Cc: Eric Alsmeyer, US Corps of Engineers, Raleigh Field Office (Eric.C.Alsmeyer@usace.army.mil)
Jennifer Harris, PE, NC Turnpike Authority (ext-jharris1@ncdot.gov)
Deanna Riffey, NCDOT Environmental Analysis (driffey@ncdot.gov)
Nicole Duprey, NC Turnpike Environmental (ext-njduprey@ncdot.gov)
Beth Harmon, NC Division of Mitigation Services (beth.harmon@deq.nc.gov)
File Copy

MODIFICATION to 401 Water Quality Certification Pursuant to Section 401 of the Federal Clean Water Act with ADDITIONAL CONDITIONS

THIS MODIFIED CERTIFICATION is issued in conformity with the requirements of Section 401 Public Laws 92-500 and 95-217 of the United States and subject to the North Carolina Division of Water Resources (NCDWR) Regulations in 15 NCAC 2H .0500. This certification modification authorizes the NC Turnpike Authority to impact 8.872 acres of jurisdictional wetlands and 10515 linear feet of jurisdictional streams in Wake & Johnston Counties; for the Complete 540 project. The project shall be constructed pursuant to the modification application received November 26, 2025. The authorized additional impacts for this modification are as described below:

Modified R-2829B Wetland Impacts in the Neuse River Basin

Site	Permanent Fill (ac)	Mechanized Clearing (ac)	Excavation (ac)
14	0.036 (Previously 0; Increase of 0.036)	0.030 (Previously 0.011; Increase of 0.019)	0.021 (Previously 0.002; Increase of 0.019)
31	0.616 (Previously 0.615; Increase of 0.001)	0.014 (Previously 0.015; Decrease of -0.001)	N/A

Total Permanent Wetland net Revision for R-2829B: +0.037 ac Permanent Fill
+0.018 ac Mechanized Clearing
+0.019 ac Excavation
Total net change: +0.074 ac Mitigable wetland impact.

Modified R-2829B Stream Impacts in the Neuse River Basin

Site	Permanent Impact to Intermittent Stream (linear ft)	Permanent Impact to Perennial Stream (linear ft)	Temporary Impact to Perennial Stream (linear ft)
14	500 (Previously 442; Increase of 58)	N/A	N/A
15	N/A	51 (Previously 76; Decrease of -25)	73 (Previously 108; Decrease of -35)

Total Stream Net Revision for R-2829B: +33 linear feet Permanent Impact
-35 linear feet Temporary Impact.

**Note: Site 37: Change impacts to non-mitigable in 404; No change in 401 imapacts nor 401 mitigation*

The application provides adequate assurance that the discharge of fill material into the waters of the Neuse River Basin in conjunction with the proposed development will not result in a violation of applicable Water Quality Standards and discharge guidelines. Therefore, the State of North Carolina certifies that this activity will not violate the applicable portions of Sections 301, 302, 303, 306, 307 of PL 92-500 and PL 95-217 if conducted in accordance with the application and conditions hereinafter set forth.

This approval is only valid for the purpose and design that you submitted in your modification application received November 14, 2024. Should your project change, you are required to notify the NCDWR and submit a new application. If the property is sold, the new owner must be given a copy of this Certification and approval letter, and is thereby responsible for complying with all the conditions. If any additional wetland impacts, or stream impacts, for this project (now or in the future) exceed 0.1 acre or 300 linear feet, respectively, additional compensatory mitigation may be required as described in 15A NCAC 2H .0506 (h) (6) and (7).

For this approval to remain valid, you are required to comply with all the conditions listed below. In addition, you should obtain all other federal, state or local permits before proceeding with your project including (but not limited to) Sediment and Erosion control, Coastal Stormwater, Non-discharge and Water Supply watershed regulations. This Certification shall expire on the same day as the expiration date of the corresponding Corps of Engineers Permit.

This Water Quality Certification neither grants nor affirms any property right, license, or privilege in any lands or waters, or any right of use in any waters. This Water Quality Certification does not authorize any person to interfere with the riparian rights, littoral rights, or water use rights of any other person and does not create any prescriptive right or any right of priority regarding any usage of water. This Water Quality Certification shall not be interposed as a defense in any action respecting the determination of riparian or littoral rights or other rights to water use. No consumptive user is deemed by virtue of this Water Quality Certification to possess any prescriptive or other right of priority with respect to any other consumptive user regardless of the quantity of the withdrawal or the date on which the withdrawal was initiated or expanded. Upon the presentation of proper credentials, the Division may inspect the property.

Conditions of Certification:

1. Compensatory mitigation for impacts to an additional 0.074 acres of non-riparian wetlands is required. We understand that you have chosen to perform compensatory mitigation for impacts to wetlands through the North Carolina Division of Mitigation Services (DMS), and that the DMS has agreed to implement the additional mitigation for the project. DMS has indicated in a letter dated November 24, 2025 that they will assume responsibility for satisfying the federal Clean Water Act compensatory mitigation requirements for the above-referenced project, in accordance with DMS's Mitigation Banking Instrument signed July 28, 2010.

2. All conditions in the Water Quality Certification for this project dated February15, 2019, and all other versions thereof, are still applicable to this approval.

This Certification shall become null and void unless the above conditions are made conditions of the Federal 404 and/or Coastal Area Management Act Permit. This Certification shall expire upon the expiration of the 404 or CAMA permit. Please be aware that impacting waters without first applying for and securing the issuance of a 401 Water Quality Certification violates Title 15A of the North Carolina Administrative Code (NCAC) 2H .0500. Title 15A NCAC 2H .0500 requires certifications pursuant to Section 401 of the Clean Water Act whenever construction or operation of facilities will result in a discharge into navigable waters, including wetlands, as described in 33 Code of Federal Regulations (CFR) Part 323. It also states any person desiring issuance of the State certification or coverage under a general certification required by Section 401 of the Federal Water Pollution Control Act shall file with the Director of the North Carolina Division of Water Quality. Violations of any condition herein set forth may result in revocation of this Certification and may result in criminal and/or civil penalties. Pursuant to G.S. 143-215.6A, these violations and any future violations are subject to a civil penalty assessment of up to a maximum of $25,000.00 per day for each violation.

This approval and its conditions are final and binding unless contested [G.S. 143-215.5]. Please be aware that impacting waters without first applying for and securing the issuance of a 401 Water Quality Certification violates Title 15A of the North Carolina Administrative Code (NCAC) 2H .0500. Title 15A NCAC 2H .0500 requires certifications pursuant to Section 401 of the Clean Water Act whenever construction or operation of facilities will result in a discharge into navigable waters, including wetlands, as described in 33 Code of Federal Regulations (CFR) Part 323. It also states any person desiring issuance of the State certification or coverage under a general certification required by Section 401 of the Federal Water Pollution Control Act shall file with the Director of the North Carolina Division of Water Quality. Pursuant to G.S. 143-215.6A, these violations and any future violations are subject to a civil penalty assessment of up to a maximum of $25,000.00 per day for each violation.

This Certification can be contested as provided in Chapter 150B of the North Carolina General Statutes by filing a Petition for a Contested Case Hearing (Petition) with the North Carolina Office of Administrative Hearings (OAH) **within sixty (60) calendar days**. Requirements for filing a Petition are set forth in Chapter 150B of the North Carolina General Statutes and Title 26 of the North Carolina Administrative Code. Additional information regarding requirements for filing a Petition and Petition forms may be accessed at http://www.ncoah.com/ or by calling the OAH Clerk's Office at (919) 431-3000.

A party filing a Petition must serve a copy of the Petition on:
Dan Hirschman, General Counsel
Department of Environmental Quality
1601 Mail Service Center
Raleigh, NC 27699-1601

If the party filing the Petition is not the permittee, then the party must also serve the recipient of the Certification in accordance with N.C.G.S 150B-23(a).

This the 1st day of December 2025

DIVISION OF WATER RESOURCES

Signed by:
Faith Hardin
3185423002EA45E...

Faith Hardin, Supervisor
401 & Buffer Transportation Permitting Branch

WQC No. 4179

JOSH STEIN
Governor
D. REID WILSON
Secretary
RICHARD E. ROGERS, JR.
Director

NORTH CAROLINA
Environmental Quality

December 1, 2025

DWR #20181249 ver 27
Wake County

Alan Shapiro, P.E., Chief Engineer
North Carolina Turnpike Authority
1578 Mail Service Center
Raleigh, NC 27699
awshapiro@ncdot.gov

Subject: MODIFICATION of APPROVAL of NEUSE RIPARIAN BUFFER IMPACTS WITH ADDITIONAL CONDITIONS
PROJECT: TIP #R-2829B: NC 540 Extension of Triangle Expressway

Dear Mr. Shapiro:

You have our approval for the impacts listed below for the purpose described in your Modification application received by the Division of Water Resources (Division) on November 26, 2025. These impacts are covered by the Neuse Buffer Rules and the conditions listed below. Please note that you should get any other federal, state or local permits before proceeding with your project, including those required by (but not limited to) Sediment and Erosion Control, Non-Discharge, and Water Supply Watershed regulations.
The following additional impacts are hereby approved, provided that all of the Conditions listed below and all of the conditions of the Neuse Buffer Rules are met. No other impacts are approved, including incidental impacts. [15A NCAC 02B.0611(b)(2)]

Additional R-2829B Zone 1 Riparian Buffer Impacts

Site	Zone 1 Impact (sq ft)	*minus* Wetlands in Zone 1 (sq ft)	= Zone 1 Buffers (not wetlands) (sq ft)	Zone 1 Buffer Mitigation Required (using 3:1 ratio)
14	27754 (Previously 24910; Increase of 2844)	1611 (Previously 40; Increase of 1571)	26143 (Previously 24870; Increase of 1273)	78429 (Previously 74610; Increase of 3819)
36	5421 (Previously 3038; Increase of 2383)	0	5421 (Previously 3038; Increase of 2383)	N/A

Total Additional Zone 1 Buffer Impact for Project: +5227 square feet.
Total Additional Zone 1 Buffer Mitigation for Project: +3819 square feet
** n/a = Total for Site is less than 1/3 acre= No mitigation required*

Additional R-2829B Zone 2 Riparian Buffer Impacts

Site	Zone 2 Impact (sq ft)	*minus* Wetlands in Zone 2 (sq ft)	= Zone 2 Buffers (not wetlands) (sq ft)	Zone 2 Buffer Mitigation Required (using 1.5:1 ratio)
14	18077 (Previously 16255; Increase of 1822)	1280 (Previously 156; Increase of 1124)	16797 (Previously 16099; Increase of 698)	25195 (Previously 24148; Increase of 1047)
36	2836 (Previously 0; Increase of 2836)	0	2836 (Previously 0; Increase of 2836)	N/A

Total Additional Zone 2 Buffer Impact for Project: +4658 square feet.
Total Additional Zone 2 Buffer Mitigation for Project: +1047 square feet
** n/a = Total for Site is less than 1/3 acre= No mitigation required*

This approval is for the purpose and design described in your modification application. The plans and specifications for this project are incorporated by reference as part of this Authorization Certificate. If you change your project, you must notify the Division and you may be required to submit a new application package. If the property is sold, the new owner must be given a copy of this Authorization Certificate and is responsible for complying with all conditions. [15A NCAC 02B.0611(b)]. If you are unable to comply with any of the conditions below, you must notify the DWR Transportation Permitting Branch within 24 hours (or the next business day if a weekend or holiday) from the time the permittee becomes aware of the circumstances.
The permittee shall report to the NC Division of Water Resources any noncompliance with the conditions of this Authorization Certificate and/or any violation of state regulated riparian buffer rules [15A NCAC 02B.0611(b)]. Information shall be provided orally within 24 hours (or the next business day if a weekend or holiday) from the time the applicant became aware of the circumstances.

Conditions of Approval:

1. Compensatory mitigation for impacts to an additional 1273 square feet of protected riparian buffers in Zone 1 and 698 square feet of protected riparian buffers in Zone 2 shall be required. We understand that you have chosen to perform compensatory mitigation for impacts to protected buffers through use of the North Carolina Division of Mitigation Services (DMS). Mitigation for unavoidable impacts to Neuse Riparian Buffers shall be provided in the Neuse River Basin and done in accordance with 15A NCAC 2B.0295**.** The DMS has indicated in a letter dated November 24, 2025 that they will assume responsibility for satisfying the compensatory mitigation requirements for the above-referenced project, in accordance with DMS's Mitigation Banking Instrument signed June 14, 2016.

2. All prior conditions of the original Neuse Buffer Authorization for this project issued February 15, 2019, and all subsequent modifications since, are still all applicable.

This approval and its conditions are final and binding unless contested. [G.S. 143-215.5]
This Authorization Certificate can be contested as provided in Chapter 150B of the North Carolina General Statutes by filing a Petition for a Contested Case Hearing (Petition) with the North Carolina Office of Administrative Hearings (OAH) **within sixty (60) calendar days**. Requirements for filing a Petition are set forth in Chapter 150B of the North Carolina General Statutes and Title 26 of the North Carolina Administrative Code. Additional information regarding requirements for filing a Petition and Petition forms may be accessed at http://www.ncoah.com/ or by calling the OAH Clerk's Office at (919) 431-3000.
One (1) copy of the Petition must also be served to the North Carolina Department of Environmental Quality:

William F. Lane, General Counsel
Department of Environmental Quality
1601 Mail Service Center
Raleigh, NC 27699-1601

This Authorization shall expire five (5) years from the date of this letter.
This letter completes the review of the Division under the Neuse Riparian Buffer Rules as described in 15A NCAC 02B.0714. Please contact Rob Ridings at rob.ridings@deq.nc.gov or 919-707-8786 if you have any questions or concerns.

Sincerely,

Signed by:
Faith Hardin
3185423002EA45E...

Faith Hardin, Supervisor
401 & Buffer Transportation Permitting Branch

Cc: Eric Alsmeyer, US Corps of Engineers, Raleigh Field Office (Eric.C.Alsmeyer@usace.army.mil)
Jennifer Harris, PE, NC Turnpike Authority (ext-jharris1@ncdot.gov)
Deanna Riffey, NCDOT Environmental Analysis (driffey@ncdot.gov)
Nicole Duprey, NC Turnpike Environmental (ext-njduprey@ncdot.gov)
Beth Harmon, NC Division of Mitigation Services (beth.harmon@deq.nc.gov)
File Copy

Permitted Drawings

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

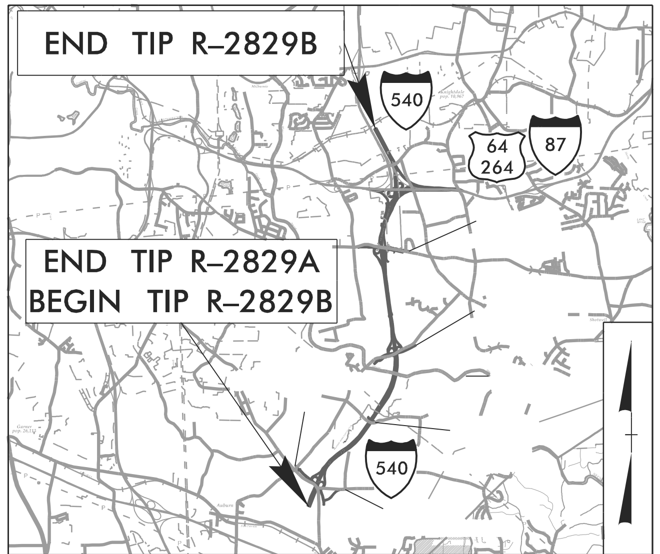
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WAKE COUNTY

PERMIT DRAWING
SHEET 1 OF 112

WETLAND AND SURFACE WATER IMPACTS PERMIT

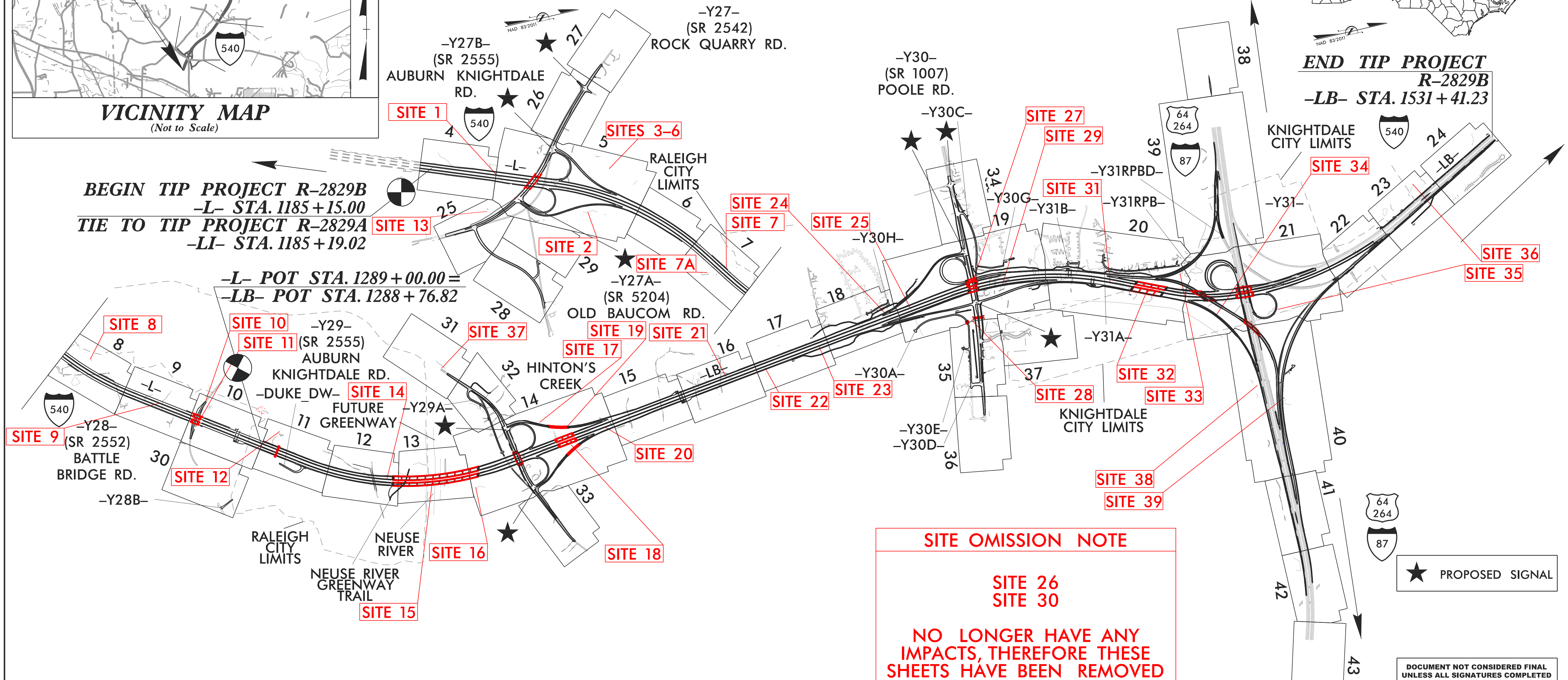
REVISED 10/14/2025



VICINITY MAP
(Not to Scale)

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



SITE OMISSION NOTE

SITE 26
SITE 30

NO LONGER HAVE ANY IMPACTS, THEREFORE THESE SHEETS HAVE BEEN REMOVED

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:
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ICE of Carolinas, PLLC
4505 Falls of Neuse Road, Suite 110
Raleigh, North Carolina 27609
Phone: 603-622-0333
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

PERMIT DRAWING
SHEET 30 OF 112

ICE of CAROLINAS, PLLC
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Phone: 803-822-0333
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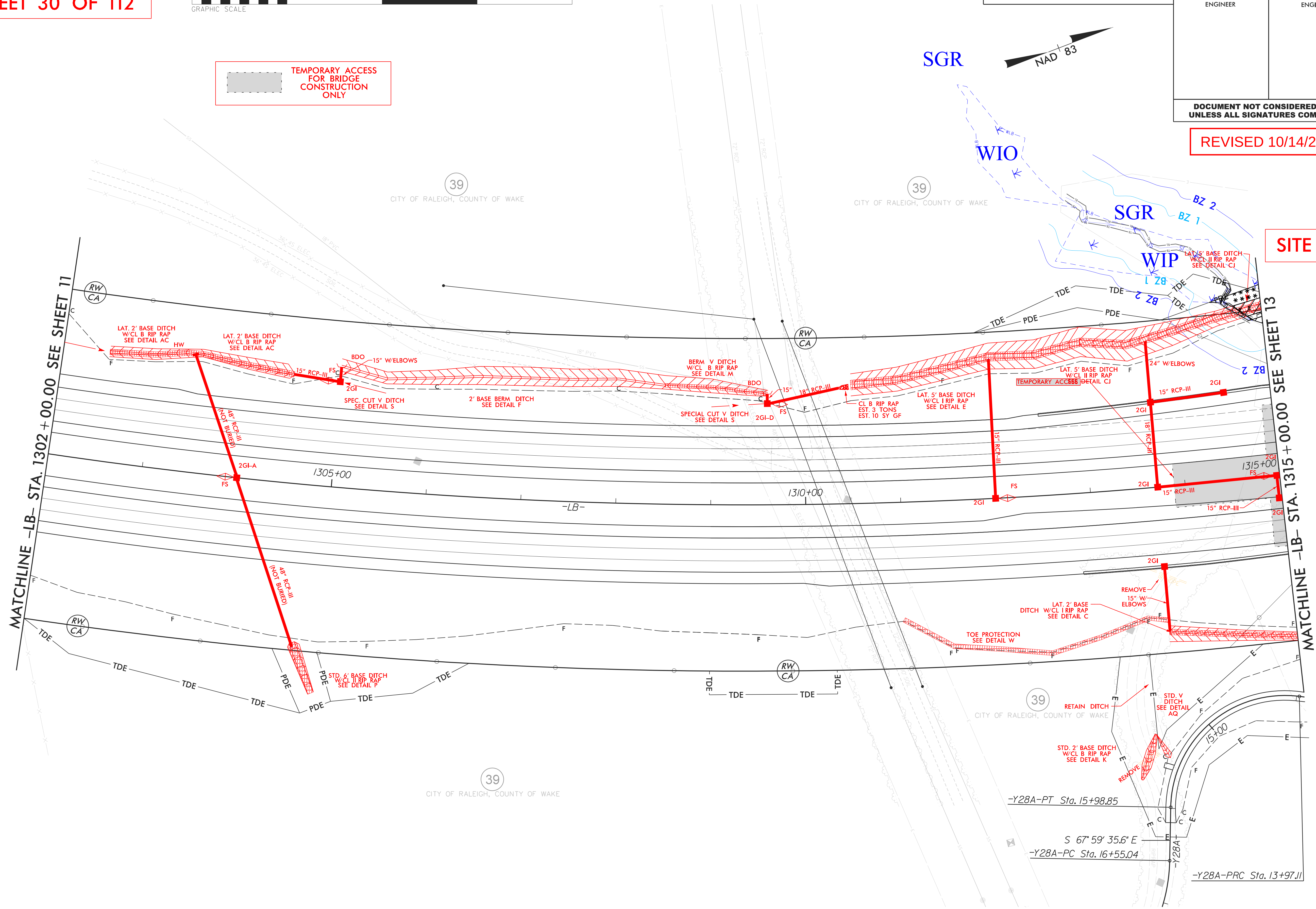
PROJECT REFERENCE NO.	SHEET NO.
R-2829B	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISED 10/14/2025

TEMPORARY ACCESS FOR BRIDGE CONSTRUCTION ONLY

SITE 14



100' 0' 100' 200' 300'
GRAPHIC SCALE
NAD 83
SGR
WIO
SGR
WIP
BZ 1
BZ 2
CITY OF RALEIGH, COUNTY OF WAKE
MATCHLINE -LB- STA. 1302+00.00 SEE SHEET 11
MATCHLINE -LB- STA. 1315+00.00 SEE SHEET 13
LAT. 2' BASE DITCH W/CL B RIP RAP SEE DETAIL AC
15" W/ELBOWS
SPEC. CUT V DITCH SEE DETAIL S
2' BASE BERM DITCH SEE DETAIL F
BERM V DITCH W/CL B RIP RAP SEE DETAIL M
SPECIAL CUT V DITCH SEE DETAIL S
CL B RIP RAP EST. 3 TONS EST. 10 SY GF
LAT. 5' BASE DITCH W/CL I RIP RAP SEE DETAIL E
LAT. 5' BASE DITCH W/CL II RIP RAP SEE DETAIL CJ
24" W/ELBOWS
15" RCP-III
18" RCP-III
48" RCP-III (NOT BURIED)
1305+00
1310+00
1315+00
-LB-
STD. 6' BASE DITCH W/CL II RIP RAP SEE DETAIL P
TOE PROTECTION SEE DETAIL W
LAT. 2' BASE DITCH W/CL I RIP RAP SEE DETAIL C
REMOVE 15" W/ ELBOWS
RETAIN DITCH
STD. V DITCH SEE DETAIL AQ
STD. 2' BASE DITCH W/CL B RIP RAP SEE DETAIL K
-Y28A-PT Sta. 15+98.85
S 67° 59' 35.6" E
-Y28A-PC Sta. 16+55.04
-Y28A-PRC Sta. 13+97.11

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

Submitted November 25, 2025

PERMIT DRAWING SHEET 31 OF 112

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

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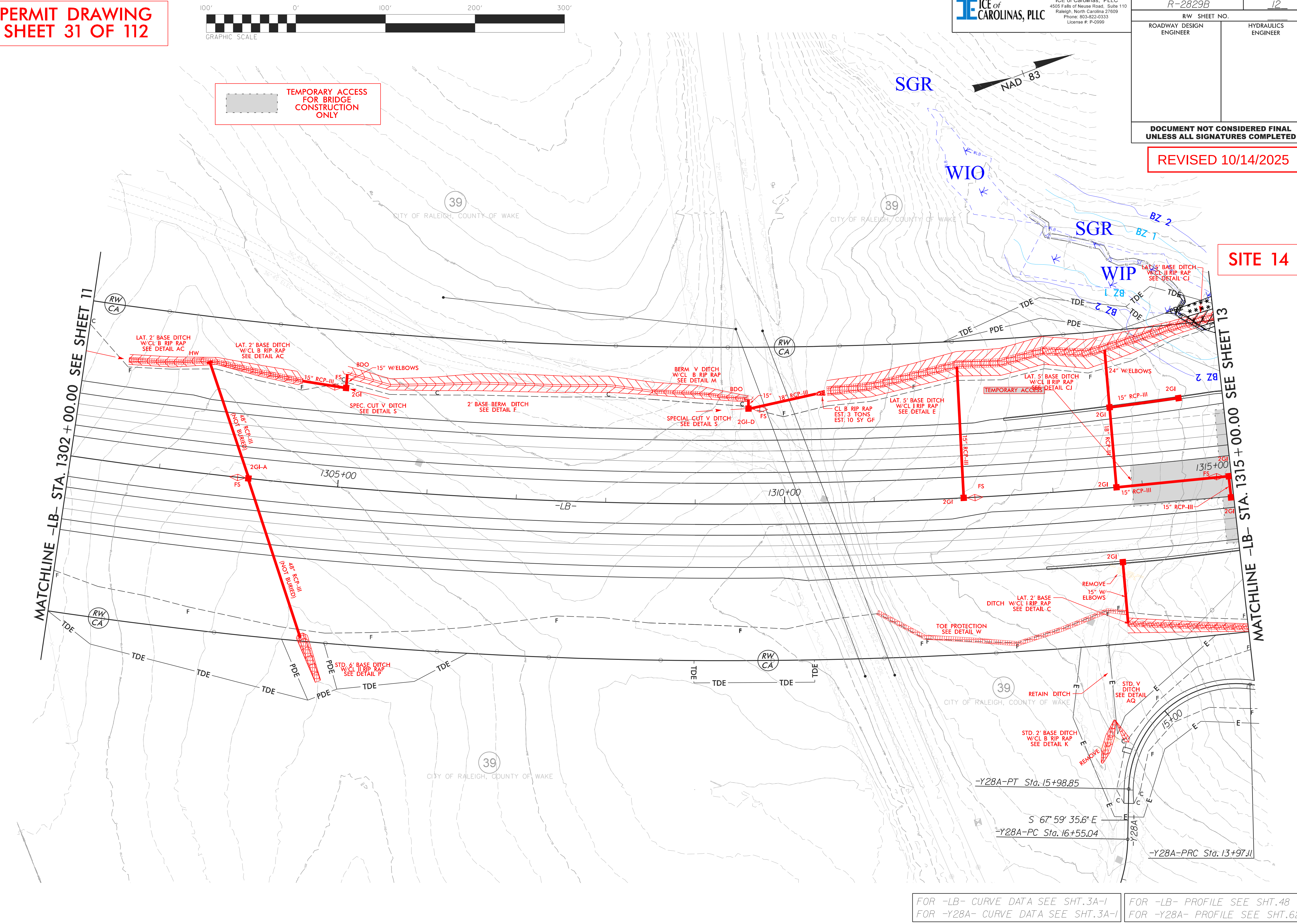
REVISED 10/14/2025

SITE 14



100' 0' 100' 200' 300'
GRAPHIC SCALE
TEMPORARY ACCESS FOR BRIDGE CONSTRUCTION ONLY
NAD 83
SGR
WIO
SGR
WIP
BZ 2
BZ 1
CITY OF RALEIGH, COUNTY OF WAKE
MATCHLINE -LB- STA. 1302+00.00 SEE SHEET 11
MATCHLINE -LB- STA. 1315+00.00 SEE SHEET 13
LAT. 2' BASE DITCH W/CL B RIP RAP SEE DETAIL AC
15" W/ELBOWS
SPEC. CUT V DITCH SEE DETAIL S
2' BASE BERM DITCH SEE DETAIL F
BERM V DITCH W/CL B RIP RAP SEE DETAIL M
SPECIAL CUT V DITCH SEE DETAIL S
CL B RIP RAP EST. 3 TONS EST. 10 SY GF
LAT. 5' BASE DITCH W/CL I RIP RAP SEE DETAIL E
LAT. 5' BASE DITCH W/CL II RIP RAP SEE DETAIL CJ
TEMPORARY ACCESS
24" W/ELBOWS
15" RCP-III
18" RCP-III
48" RCP-III (NOT BURIED)
2GI-A
2GI-D
2GI
1305+00
1310+00
1315+00
-LB-
STD. 6' BASE DITCH W/CL II RIP RAP SEE DETAIL P
REMOVE 15" W/ ELBOWS
LAT. 2' BASE DITCH W/CL I RIP RAP SEE DETAIL C
TOE PROTECTION SEE DETAIL W
RETAIN DITCH
STD. V DITCH SEE DETAIL AQ
STD. 2' BASE DITCH W/CL B RIP RAP SEE DETAIL K
REMOVE
-Y28A-PT Sta. 15+98.85
S 67° 59' 35.6" E
-Y28A-PC Sta. 16+55.04
-Y28A-PRC Sta. 13+97.11
-Y28A-
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

PERMIT DRAWING
SHEET 32 OF 112

PROJECT REFERENCE NO.	SHEET NO.
R-2829B	13

R/W SHEET NO.

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

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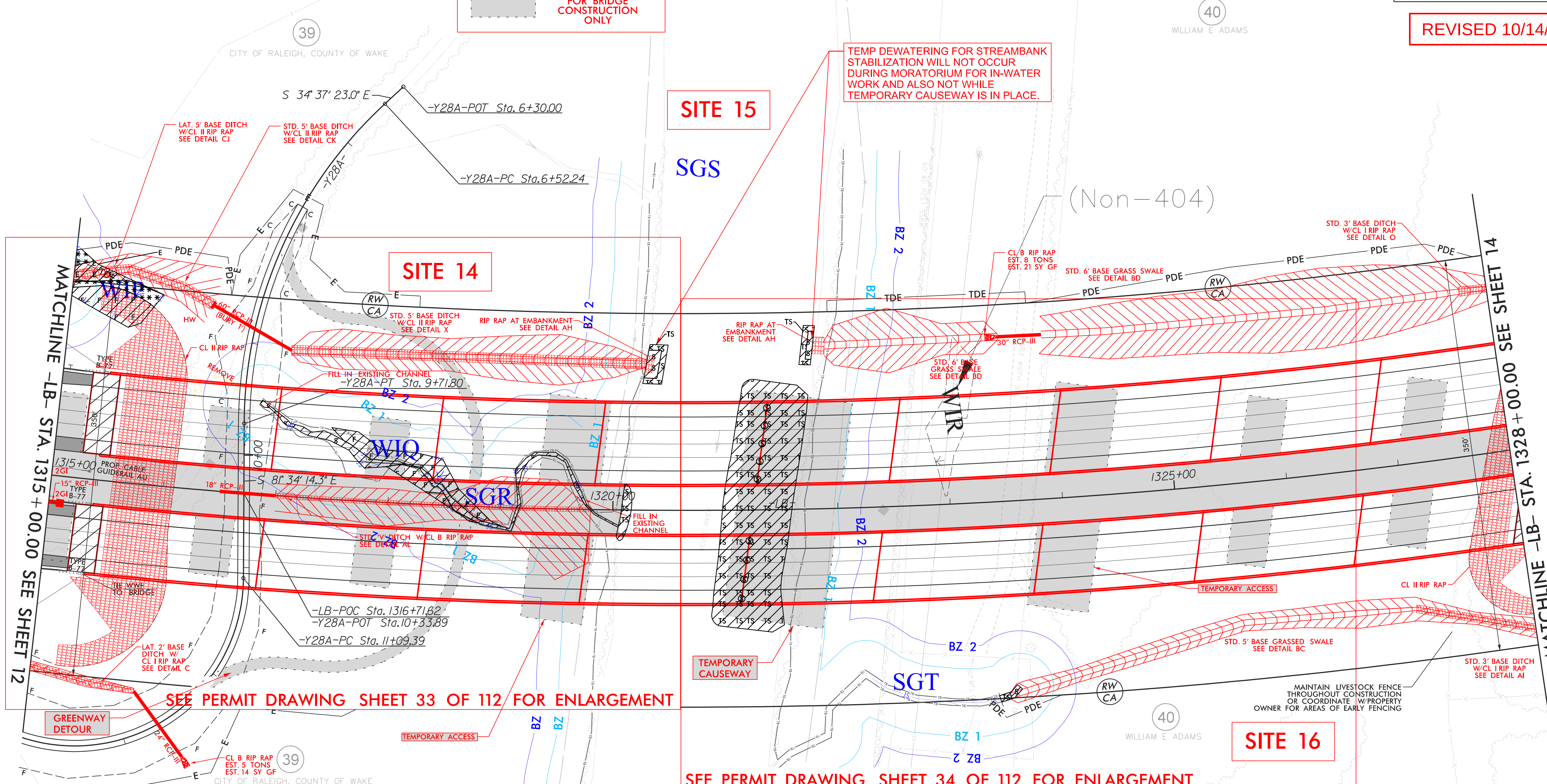
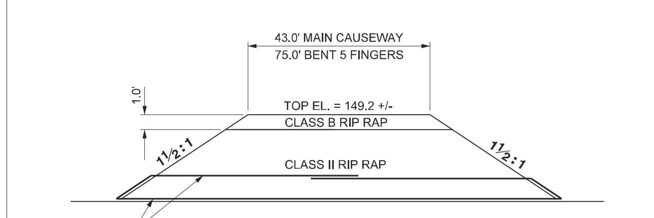
Raleigh, North Carolina 27609
Phone: 803-822-0333
License #: P-0999

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)
39
CITY OF RALEIGH, COUNTY OF WAKE
40
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
1315+00
1320+00
1325+00
MATCHLINE -LB- STA. 1315+00.00 SEE SHEET 12
MATCHLINE -LB- STA. 1328+00.00 SEE SHEET 14
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
CL II RIP RAP
REMOVE
PROP. CABLE GUIDERAIL
TIE W/WF TO BRIDGE
LAT. 2' BASE DITCH W/ CL I RIP RAP SEE DETAIL C
STD. V DITCH W/CL B RIP RAP SEE DETAIL AI
CL B RIP RAP EST. 5 TONS EST. 14 SY GF
GREENWAY DETOUR
TEMPORARY ACCESS
SEE PERMIT DRAWING SHEET 33 OF 112 FOR ENLARGEMENT
TEMP DEWATERING FOR STREAMBANK STABILIZATION WILL NOT OCCUR DURING MORATORIUM FOR IN-WATER WORK AND ALSO NOT WHILE TEMPORARY CAUSEWAY IS IN PLACE.
RIP RAP AT EMBANKMENT SEE DETAIL AH
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
30" RCP-III
TEMPORARY CAUSEWAY
CL II RIP RAP
STD. 5' BASE GRASSED SWALE SEE DETAIL BC
STD. 3' BASE DITCH W/CL I RIP RAP SEE DETAIL AI
MAINTAIN LIVESTOCK FENCE THROUGHOUT CONSTRUCTION OR COORDINATE W/PROPERTY OWNER FOR AREAS OF EARLY FENCING
SEE PERMIT DRAWING SHEET 34 OF 112 FOR ENLARGEMENT
BZ 1
BZ 2
PDE
TDE
RW CA



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

Submitted November 25, 2025

8/17/99

NAD 83

PERMIT DRAWING
SHEET 33 OF 112

SITE 14

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

WETLAND EXCAVATION
SURFACE WATER IMPACTS
MECHANIZED CLEARING (GRUBBING)
TEMPORARY SURFACE WATER IMPACTS
FILL IN WETLAND

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

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REVISED 10/14/2025

SITE 14 & 15 ENLARGEMENT

TEMPORARY ACCESS FOR BRIDGE CONSTRUCTION ONLY

MATCHLINE -LB- STA. 1315+00.00 SEE SHEET 12

WIP

60" RCP-III (BURY 1')

HW

CL II RIP RAP

REMOVE

TYPE B-77

350'

STD. 5' BASE DITCH W/CL II RIP RAP SEE DETAIL X

RIP RAP AT EMBANKMENT SEE DETAIL AH

FILL IN EXISTING CHANNEL

-Y28A-PT Sta. 9+71.80

BZ 2

BZ 1

TEMP DEWATERING IMPACTS CAN NOT BE AT THE SAME TIME AS BRIDGE CAUSEWAY, NOR AS MORATORIUM

WIQ

SGR

1315+00

PROP. CABLE GUIDERAIL AU

2GI

15" RCP-III

TYPE B-77

2GI

S 81° 34' 14.3" E

18" RCP-III

1320+00

FILL IN EXISTING CHANNEL

STD. 'V' DITCH W/CL B RIP RAP SEE DETAIL AL

TYPE B-77

TIE WWF TO BRIDGE

-LB-POC Sta. 1316+71.62

-Y28A-POT Sta. 10+33.89

-Y28A-PC Sta. 11+09.39

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

GREENWAY DETOUR

TEMPORARY ACCESS

SITE 15

1 RIP RAP AT EMBANKMENT SEE DETAIL AH

$DATE$ $TIME$ $LOGIN$ $FILENAME$

Submitted November 25, 2025

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

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REVISED 10/14/2025

PERMIT DRAWING SHEET 34 OF 112

SITE 15 & 16 ENLARGEMENT

GRAPHIC SCALE 40′ 0′ 40′ 80′ 120′

TS TS TEMPORARY SURFACE WATER IMPACTS

S S SURFACE WATER IMPACTS

▨ TEMPORARY ACCESS FOR BRIDGE CONSTRUCTION ONLY

Submitted November 25, 2025

PERMIT DRAWING SHEET 35 OF 112

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

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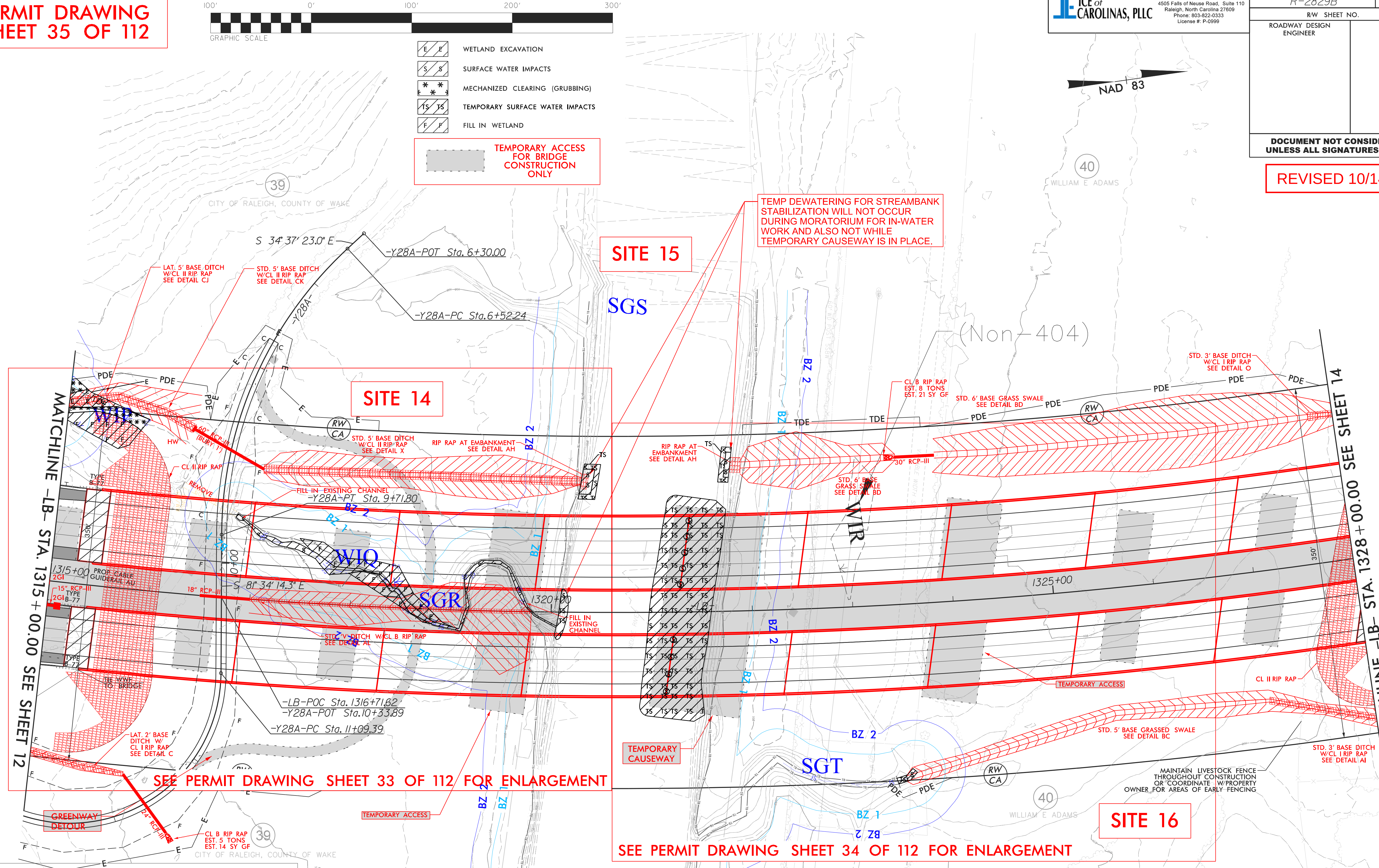
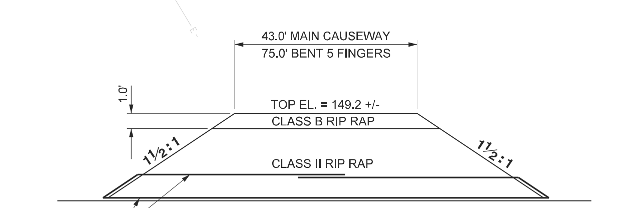
REVISED 10/14/2025



100' 0' 100' 200' 300'
GRAPHIC SCALE
WETLAND EXCAVATION
SURFACE WATER IMPACTS
MECHANIZED CLEARING (GRUBBING)
TEMPORARY SURFACE WATER IMPACTS
FILL IN WETLAND
TEMPORARY ACCESS FOR BRIDGE CONSTRUCTION ONLY
NAD 83
TEMP DEWATERING FOR STREAMBANK STABILIZATION WILL NOT OCCUR DURING MORATORIUM FOR IN-WATER WORK AND ALSO NOT WHILE TEMPORARY CAUSEWAY IS IN PLACE.
SITE 14
SITE 15
SITE 16
SGS
SGR
SGT
WIP
WIQ
WIR
(Non-404)
39
CITY OF RALEIGH, COUNTY OF WAKE
40
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
-LB-POC Sta. 1316+71.62
-Y28A-POT Sta. 10+33.89
-Y28A-PC Sta. 11+09.39
S 81° 34' 14.3" E
1315+00
1320+00
1325+00
MATCHLINE -LB- STA. 1315+00.00 SEE SHEET 12
MATCHLINE -LB- STA. 1328+00.00 SEE SHEET 14
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
CL II RIP RAP
STD. 'V' DITCH W/CL B RIP RAP SEE DETAIL AI
LAT. 2' BASE DITCH W/ CL I RIP RAP SEE DETAIL C
TIE WWF TO BRIDGE
PROP. CABLE GUIDERAIL
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 B RIP RAP EST. 5 TONS EST. 14 SY GF
MAINTAIN LIVESTOCK FENCE THROUGHOUT CONSTRUCTION OR COORDINATE W/PROPERTY OWNER FOR AREAS OF EARLY FENCING
TEMPORARY ACCESS
TEMPORARY CAUSEWAY
GREENWAY DETOUR
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-I
FOR -Y28A- CURVE DATA SEE SHT.3A-I

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

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

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

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

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

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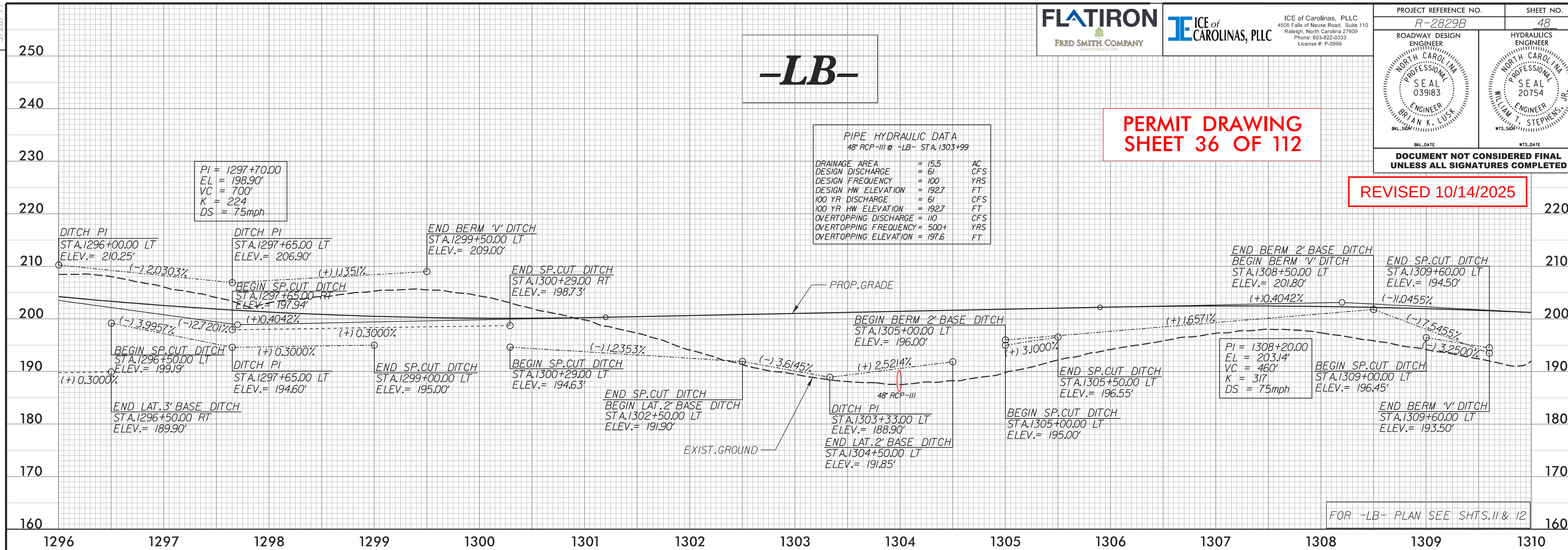
PERMIT DRAWING SHEET 36 OF 112

REVISED 10/14/2025

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

-LB-



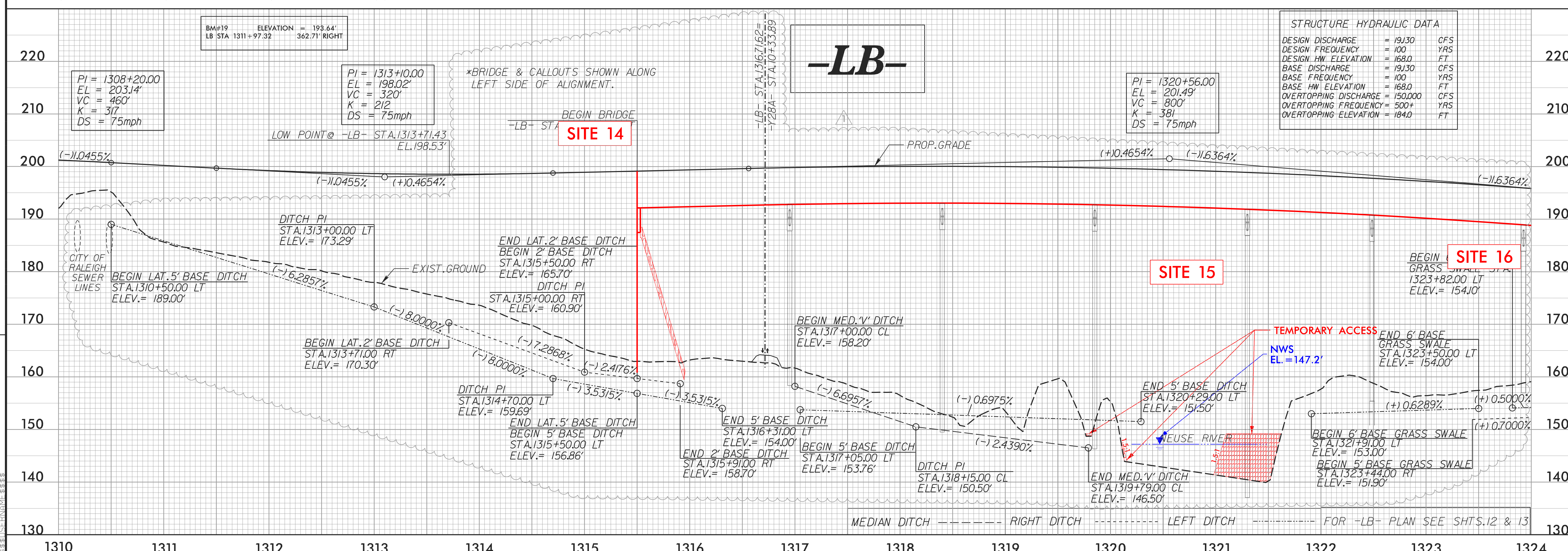
PI = 1297+70.00
EL = 198.90'
VC = 700'
K = 224
DS = 75mph
DITCH PI STA.1296+00.00 LT ELEV.= 210.25'
DITCH PI STA.1297+65.00 LT ELEV.= 206.90'
END BERM 'V' DITCH STA.1299+50.00 LT ELEV.= 209.00'
END SP.CUT DITCH STA.1300+29.00 RT ELEV.= 198.73'
BEGIN SP.CUT DITCH STA.1297+65.00 RT ELEV.= 197.94'
BEGIN 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 SP.CUT DITCH BEGIN LAT.2' BASE DITCH STA.1302+50.00 LT ELEV.= 191.90'
END LAT.3' BASE DITCH STA.1296+50.00 RT ELEV.= 189.90'
BEGIN BERM 2' BASE DITCH STA.1305+00.00 LT ELEV.= 196.00'
DITCH PI STA.1303+33.00 LT ELEV.= 188.90'
END LAT.2' BASE DITCH STA.1304+50.00 LT ELEV.= 191.85'
48" RCP-III
END SP.CUT DITCH STA.1305+50.00 LT ELEV.= 196.55'
BEGIN SP.CUT DITCH STA.1305+00.00 LT ELEV.= 195.00'
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'
PI = 1308+20.00
EL = 203.14'
VC = 460'
K = 317
DS = 75mph
BEGIN SP.CUT DITCH STA.1309+00.00 LT ELEV.= 196.45'
END BERM 'V' DITCH STA.1309+60.00 LT ELEV.= 193.50'
PROP.GRADE
EXIST.GROUND
(-)2.0303%
(+)1.1351%
(-)3.9957%
(-)2.7201%
(+)0.4042%
(+)0.3000%
(+)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.
LOW POINT @ -LB- STA.1313+71.43 EL.198.53'
BEGIN BRIDGE
SITE 14
-LB- STA.1316+71.62= -Y28A- STA.10+33.89
PI = 1320+56.00
EL = 201.49'
VC = 800'
K = 381
DS = 75mph
PROP.GRADE
EXIST.GROUND
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'
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'
END MED.'V' DITCH STA.1319+79.00 CL ELEV.= 146.50'
END 5' BASE DITCH STA.1320+29.00 LT ELEV.= 151.50'
SITE 15
TEMPORARY ACCESS
NWS EL.=147.2'
NEUSE RIVER
BEGIN GRASS SWALE STA.1323+82.00 LT ELEV.= 154.10'
SITE 16
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

Submitted November 25, 2025

5/28/99

REVISIONS

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

$$$$$$SYSTIME$$$$$$
$$$$$$USERNAME$$$$$$
$$$$$$FRAME$$$$$$

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. DATE

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 37 OF 112

REVISED 10/14/2025

-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

-LB- Sta. 1337+44.77 =
-Y29- Sta. 32+41.69

PROP. GRADE
EXIST. GROUND
SITE 16

(-)1.6364%
(-)0.3025%
(-)0.3533%
(+)0.6800%
(+)3.8800%
(+)3.4903%
(+)7.0000%
(+)4.5000%
(+)0.5000%
(+)0.7000%

END BRIDGE
-LB- STA. 1328+24.83 LT

BEGIN MED. 'V' DITCH
STA. 1331+50.00 CL
ELEV.= 182.53'

END MED. 'V' DITCH
STA. 1332+50.00 CL
ELEV.= 182.18'

DITCH PI
STA. 1329+00.00 RT
ELEV.= 168.39'

END 3' BASE DITCH
BEGIN LAT. 3' BASE DITCH
STA. 1328+00.00 RT
ELEV.= 161.39'

END LAT. 3' BASE DITCH
STA. 1331+50.00 RT
ELEV.= 178.09'

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'

END 5' BASE GRASS SWALE
BEGIN 3' BASE DITCH
STA. 1327+00.00 RT
ELEV.= 154.39'

DITCH PI
STA. 1329+93.00 LT
ELEV.= 165.88'

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'

FOR -LB- PLAN SEE SHTS. 13 & 14

-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

PROP. GRADE
EXIST. GROUND
TEMPORARY ACCESS

(-)10.3025%
(-)1.1200%
(-)2.6000%
(+)0.3750%
(-)0.5263%
(-)0.4000%
(+)2.9500%

BEGIN BRIDGE
-LB- STA. 1345+23.83 LT

END BRIDGE
-LB- STA. 1348+23.83 LT

DITCH PI
STA. 1344+50.00 CL
ELEV.= 177.70'

BEGIN MED. 'V' DITCH
STA. 1344+00.00 CL
ELEV.= 178.26'

END MED. 'V' DITCH
STA. 1345+30.00 CL
ELEV.= 178.00'

BEGIN MED. 'V' DITCH
STA. 1348+50.00 LT
ELEV.= 170.60'

BEGIN SP. CUT DITCH
STA. 1344+00.00 LT
ELEV.= 177.54'

END SP. CUT DITCH
STA. 1344+40.00 LT
ELEV.= 176.50'

NWS EL. =155.4'
HINTON'S CREEK
TEMP PIPE TO CONVEY 50% OF CHANNEL FLOW AREA

END 6' BASE DITCH
STA. 1346+26.00 RT
ELEV.= 155.00'

BEGIN 6' BASE DITCH
STA. 1345+88.00 RT
ELEV.= 155.20'

DITCH PI
PI =1349+00.00 LT
ELEV.= 170.40'

END MED. 'V' DITCH
STA. 1351+00.00 LT
ELEV.= 176.30'

UNDERCUT
RIGHT DITCH ----------
LEFT DITCH ----------
MEDIAN DITCH ---------

FOR -LB- PLAN SEE SHT. 14

Submitted November 25, 2025

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

6/23/16

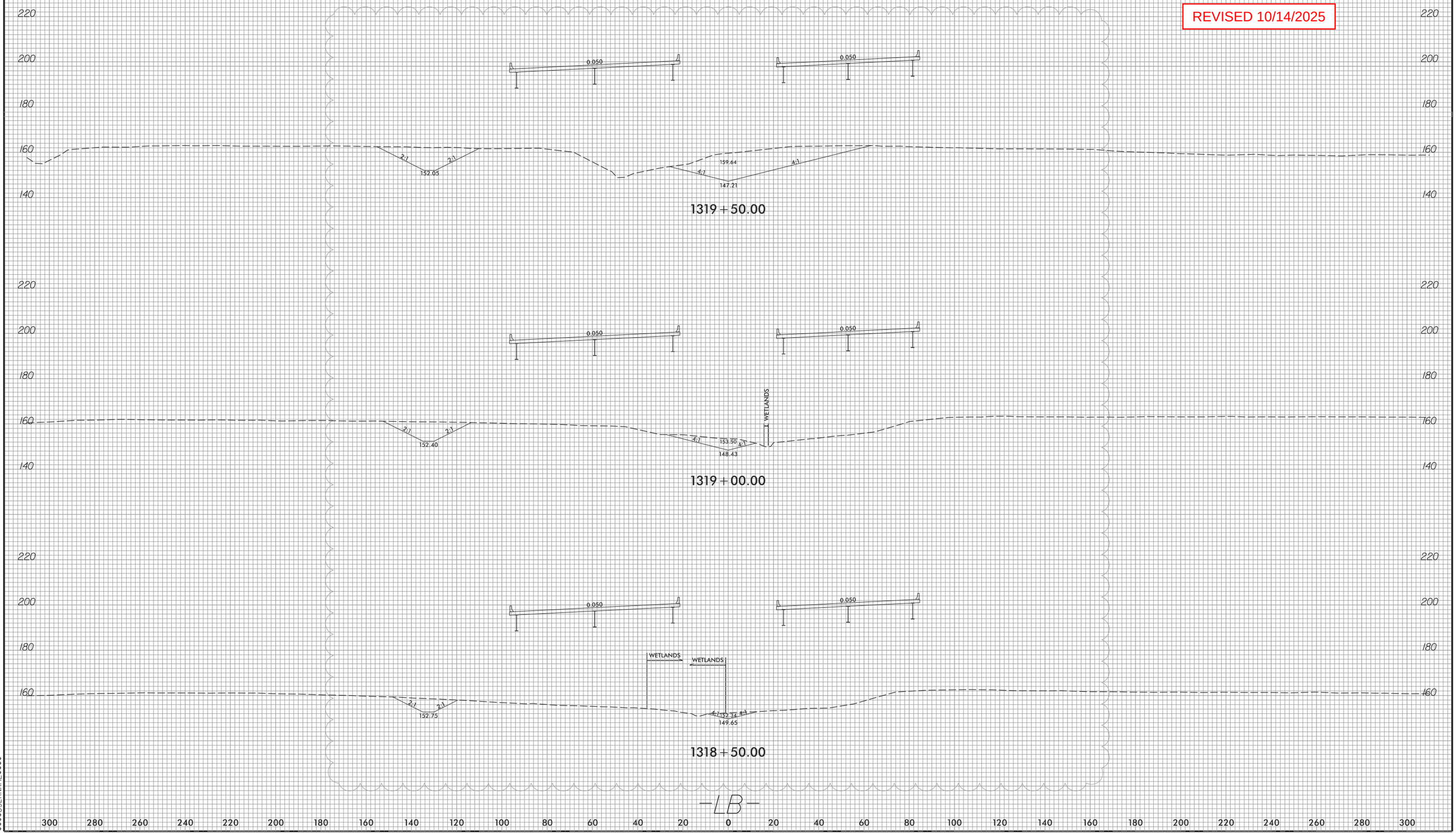
REVISIONS

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.

SITE 14

PERMIT DRAWING
SHEET 38 OF 112

REVISED 10/14/2025



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

Submitted November 25, 2025

6/23/16

0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	R-2829B	X-64

300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

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.

SITE 15

1 PERMIT DRAWING SHEET 39 OF 112

REVISED 10/14/2025

200
180
160
140

0.050 0.050

WETLANDS WETLANDS

4:1 4:1 153.67 156.42

1323+00.00

200
180
160
140

0.050 0.050

4:1 4:1 153.37 158.77

1322+50.00

200
180
160
140

0.050 0.050

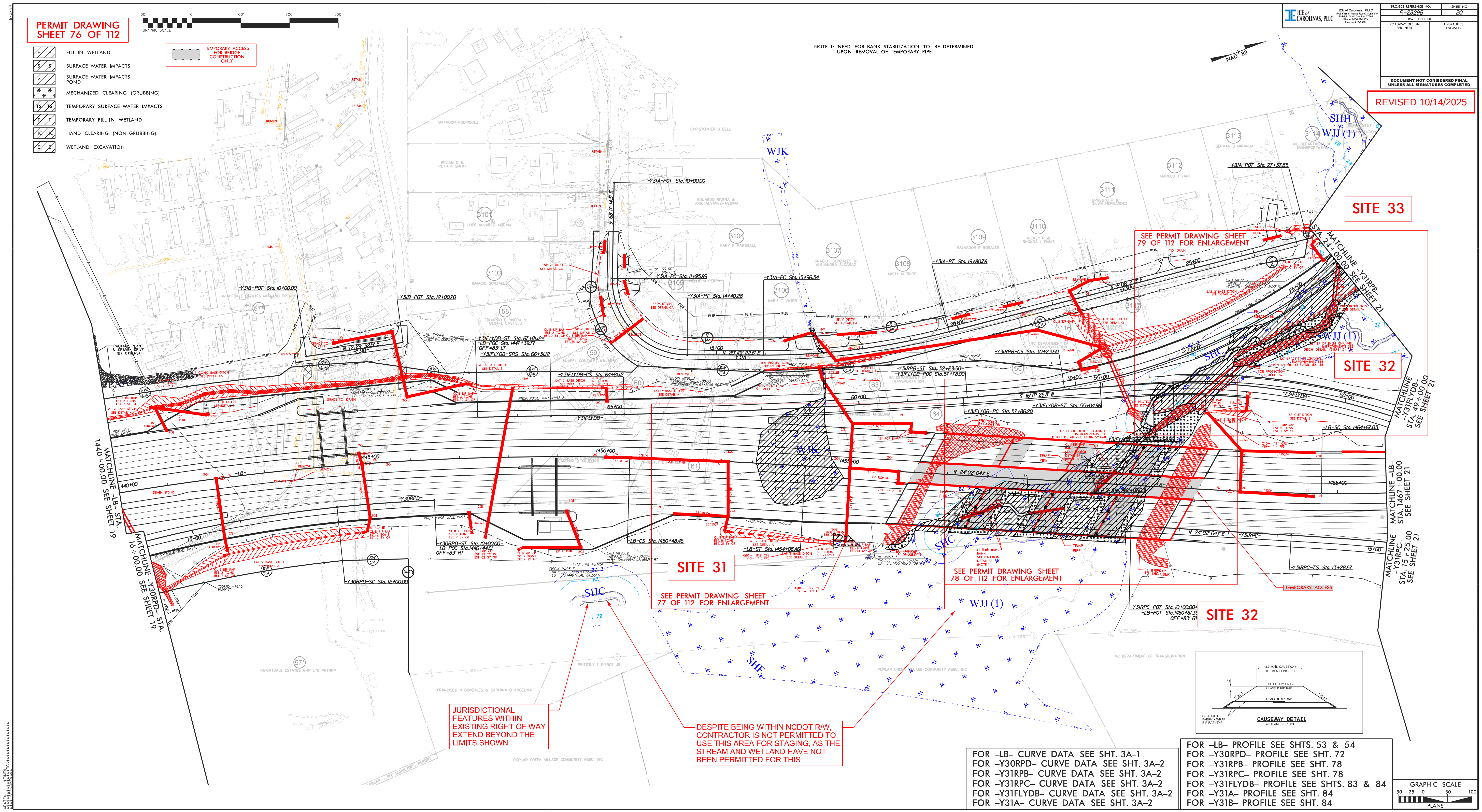
4:1 4:1 153.06 157.56

1322+00.00

–LB–

300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

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



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
GRAPHIC SCALE
NOTE 1: NEED FOR BANK STABILIZATION TO BE DETERMINED UPON REMOVAL OF TEMPORARY PIPE
NAD 83
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.
R-2829B
SHEET NO.
20
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
REVISED 10/14/2025
SHH
WJJ (1)
WJK
SHC
SHF
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
TEMPORARY ACCESS
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
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
WETLANDS BRIDGE
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

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

09/08/69

TIP PROJECT: R-2829B

CONTRACT: C204825

$$$$USERNAME$$$$ $$$$SYSTIME$$$$

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
WAKE COUNTY

BUFFER DRAWING
SHEET 1 OF 34

BUFFER IMPACTS PERMIT

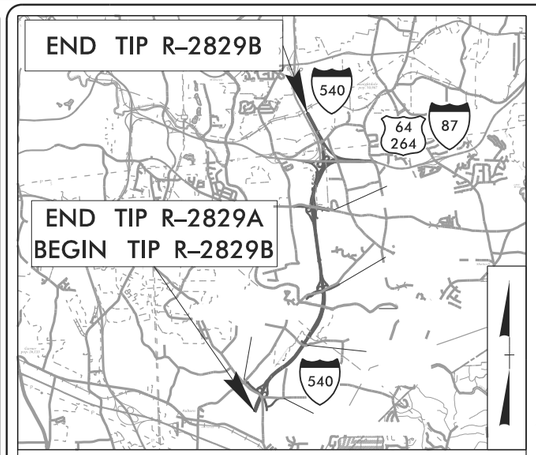
REVISED 10/14/2025

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

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)

END TIP PROJECT R-2829B
-LB- STA. 1531+41.23

BEGIN TIP PROJECT R-2829B
-L- STA. 1185+15.00
TIE TO TIP PROJECT R-2829A
-LI- STA. 1185+19.02

-L- POT STA. 1289+00.00 =
-LB- POT STA. 1288+76.82

-Y27- (SR 2542) ROCK QUARRY RD.
-Y27B- (SR 2555) AUBURN KNIGHTDALE RD.
-Y30- (SR 1007) POOLE RD.
-Y30C-
-Y28- (SR 2552) BATTLE BRIDGE RD.
-Y28B-
-Y29- (SR 2555) AUBURN KNIGHTDALE RD.
-DUKE_DW-
-Y29A-
-Y27A- (SR 5204) OLD BAUCOM RD.
-Y30H-
-Y30G-
-Y31B-
-Y31RPBD-
-Y31RPB-
-Y31-
-Y31A-
-Y30A-
-Y30E-
-Y30D-
-L-
-LB-
-LI-
RALEIGH CITY LIMITS
NEUSE RIVER
NEUSE RIVER GREENWAY TRAIL
HINTON'S CREEK
FUTURE GREENWAY
KNIGHTDALE CITY LIMITS

SITE 1
SITES 3-6
SITE 7
SITE 8
SITE 10
SITE 12
SITE 14
SITE 15
SITE 16
SITE 18
SITE 20
SITE 22
SITE 24
SITE 25
SITE 27
SITE 28
SITE 29
SITE 30
SITE 32
SITE 33
SITE 35
SITE 36
SITE 37
SITE 38
SITE 39

★ PROPOSED SIGNAL

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

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

BUFFER DRAWING SHEET 13 OF 34

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

TEMPORARY ACCESS FOR BRIDGE CONSTRUCTION ONLY

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

FLATIRON FRED SMITH COMPANY

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License #: P-0999

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

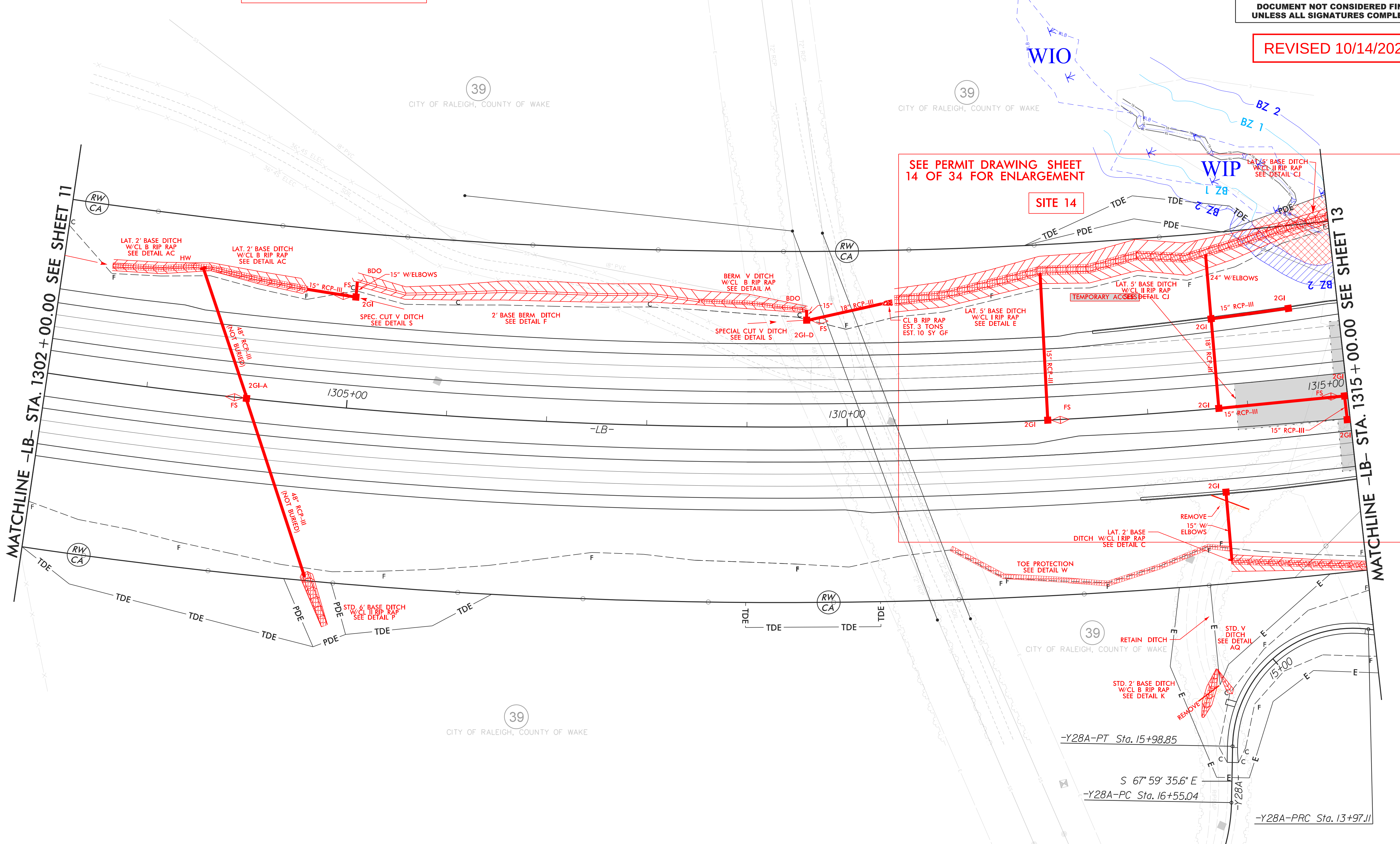
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISED 10/14/2025

REVISIONS

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. 13+90 TO STA. 15+00.

8/17/99



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

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

TEMPORARY ACCESS

24" W/ELBOWS

15" RCP–III

18" RCP–III

2GI

FS

REMOVE 15" W/ ELBOWS

LAT. 2' BASE

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

1315+00

50

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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

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

BUFFER DRAWING SHEET 15 OF 34

REVISED 10/14/2025

FLATIRON
FRED SMITH COMPANY CONSTRUCTION

ICE of CAROLINAS, PLLC

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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

REVISIONS

1 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. 1315+00 TO STA. 1316+46.41.

8/17/99

- ▨ TEMPORARY ACCESS FOR BRIDGE CONSTRUCTION ONLY
- 🟥 MITIGABLE IMPACTS ZONE 1
- ▨ MITIGABLE IMPACTS ZONE 2
- 🟩 ALLOWABLE IMPACTS ZONE 1
- ▨ ALLOWABLE IMPACTS ZONE 2

GRASS SWALE DATA
DA = 14.4 AC.
SLOPE = 0.50%
L REQ. = 1440 FT.
L PRO. = 534 FT.
Q2 = 55 CFS
V2 = 2.2 FPS
D2 = 1.9 FT.
Q10 = 70 CFS
V10 = 2.4 FPS
D10 = 2.0 FT.
STA. -LB- 1322+50 LT

GRASS SWALE DATA
DA = 2.1 AC.
SLOPE = 0.70%
L REQ. = 510 FT.
L PRO. = 355 FT.
Q2 = 14.5 CFS
V2 = 1.8 FPS
D2 = 1.0 FT.
Q10 = 18.6 CFS
V10 = 2.0 FPS
D10 = 1.1 FT.
STA. -LB- 1324+00 RT

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 & 49
FOR -Y28A- PROFILE SEE SHT. 63

Submitted November 25, 2025

BUFFER DRAWING
SHEET 25 OF 34

100′ 0′ 100′ 200′ 300′
GRAPHIC SCALE

- 🟩 ALLOWABLE IMPACTS ZONE 1
- ▨ ALLOWABLE IMPACTS ZONE 2

FLATIRON
FRED SMITH COMPANY
CONSTRUCTION

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License #: P-0999

PROJECT REFERENCE NO.	SHEET NO.
R-2829B	23
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISED 10/14/2025

REVISIONS

8/17/99

2 8/29/2025: REVISED ROADWAY AND DRAINAGE DESIGN FOR FINAL NOISE WALL LOCATIONS. REVISED PAVED SHOULDER TO 14′ OFFSET -LB- STA. 1516+28(+/-) TO 1518+00 RT. UPDATED PUE FOR DRAINAGE REVISION. ADDED GUARDRAIL TO PROTECT SIGN POST @ -LB- STA. 1515+00 LT. REMOVED EXISTING CABLE GUIDERAIL AND ADDED TERMINAL ANCHORS -LB- STA. 1514+23.86 TO 1518+20 MED.

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**