



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

JOSH STEIN
GOVERNOR

DANIEL H. JOHNSON
SECRETARY

October 7, 2026

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

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

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

DocuSigned by:
Alan Shapiro
B149124683BD45D...

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 October 1, 2026, request for modification of the permit for the R-2829B section of the project due to sloughing of the existing southern bank of the Neuse River during a large storm event on July 24, 2026. This modification is necessary to perform removal of the material from the river bottom and perform bank stabilization. This work will result in additional permanent stream impacts where the bank stabilization rip rap is keyed into the riverbank and additional temporary stream impacts for installation of the temporary coffer dam. There is no change to the buffer or wetland impacts on the project due to this modification.*** 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/EnvironmentalPermits/I-540%20\(R-2721%20R-2828%20R-2829\)/R-2829B%20Wake%20Johnston/](https://xfer.services.ncdot.gov/pdea/EnvironmentalPermits/I-540%20(R-2721%20R-2828%20R-2829)/R-2829B%20Wake%20Johnston/)

cc: w/o attachment (see website for attachments)
Mr. Jon Weathersbee, 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., Senior Deputy Chief Engineer
Mr. Hon Yeung, Capital Programming
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**

and

**NOAA-NMFS
Concurrence**



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

October 7, 2026

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 Department of Transportation (NCDOT) 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.

On October 2, 2026, the Corps received your request to modify the permit to remove sloughed bank material from the Neuse River, and stabilize the bank using riprap and a 1.5:1 slope at Permit Site 15. The modifications are necessary to repair an approximately 150 feet long reach of the southern bank of the river that was damaged during a large rainstorm event on July 24, 2026. To perform the removal of the material from the river bottom and perform the bank stabilization on of the river, a temporary cofferdam will be installed in the river so that the area can be temporarily dewatered. This work will occur during the moratorium for in-water work in the Neuse River but will not block more than 50% of the flow area of the river, when combined with the currently installed temporary causeway. This work will result in additional permanent stream impacts where the bank stabilization rip rap is keyed into the riverbank and additional temporary stream impacts for installation of the temporary coffer dam. The proposed additional impacts for this modification are described below:

Permit Site 15: Neuse River

- Permanent Surface Water Impact: 0.050 ac (previously 0.011 acre; increase of 0.039 acre)
- Temporary Surface Water Impact: 0.058 acre (previously 0.012 ac; increase of 0.046 acre)
- Permanent Stream Impact: 203 linear feet (lf) (previously 51 lf; increase of 152 lf)
- Temporary Stream Impact: 30 lf (previously 73 lf; decrease of 43 lf)

No additional stream impacts requiring mitigation are proposed, and there are no changes in wetland impacts.

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, 32, 33, 35, 36, 110, 111, and 112, last revised 9/14/2026, and the NEUSE RIVERBANK REPAIR CONSTRUCTION, SEQUENCE STA.1320+00 -LB, SHEET NO. EC-13B/Const.-13), received on 10/2/2026.

The special conditions for the permit have not changed from the revised Special Conditions provided with the March 18, 2026 modification. The revised permit expiration date remains December 31, 2029.

Should you have any questions, contact Mr. Eric Alsmeyer, via email at Eric.C.Alsmeier@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,

A handwritten signature in black ink that reads "M. Scott Jones". The signature is written in a cursive style with a large, stylized "M" and "J".

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 threatened 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, *Alasmodonta 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 conservation 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.

JOSH STEIN
Governor

D. REID WILSON
Secretary

MICHAEL PJETRAJ
Director



NORTH CAROLINA
Environmental Quality

October 6, 2026

DWR #20181249 version 30
Wake County

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

Subject: Approval of Modification of Individual 401 Water Quality Certification

Triangle Expressway Southeast Extension (NC 540), Federal Aid Project No. 050047, State Project No. 35517.3.TA1, USACE #SAW-2019-02240, TIP Nos, R-2721, R-2828, & R-2829. (TIP R-2829B for This Modification) 35.7259341655, -78.509471661

Dear Mr. Shapiro:

Attached hereto is a modification of Water Quality Certification No. 4719 issued to the North Carolina Department of Transportation, Turnpike Authority, originally dated February 15, 2019, most recent previous modification March 17, 2026 and current modification dated October 6, 2026. This Certification is being issued pursuant to a modification request submitted with fee received on October 2, 2026 for the purpose of: Repairing sloughing off of the Neuse River southern bank under the bridge at Site 15 of Section R-2829B. All of the authorized activities and conditions of certification associated with the Water Quality Certification No. WQC004719 dated February 15, 2019, and all subsequent modifications, still apply except where superseded by this certification.

This Water Quality Certification does not relieve the recipient of the certificate (or 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, Water Supply Watershed, and Trout Buffer regulations.

Upon the presentation of proper credentials, the Division of Water Resources (Division or DWR) may inspect the property.

This Water Quality Certification shall expire on the same day as the expiration date of the corresponding Section 404 Permit that is current at the time this Certification is issued. The conditions shall remain in effect for the life of the project, regardless of the expiration date of this Water Quality Certification.



North Carolina Department of Environmental Quality | Division of Water Resources
512 North Salisbury Street | 1617 Mail Service Center | Raleigh, North Carolina 27699-1617
919.707.9000

Non-compliance with or violation of the conditions herein set forth may result in revocation of this Water Quality Certification for the project and may also result in criminal and/or civil penalties.

Notice regarding the right to contest this 401 Water Quality Certification decision is attached to this letter.

This letter completes the Division's review under section 401 of the Clean Water Act and 15A NCAC 02H .0500. Please contact Rob Ridings at 919-707-8786 or rob.ridings@deq.nc.gov if you have any questions or concerns.

Sincerely,

Signed by:

3185423002EA45E...

Faith Hardin, Supervisor
401 & Buffer Transportation Permitting Branch
Division of Water Resources, NCDEQ

Attachments

Cc: Eric Alsmeyer, US Corps of Engineers, Raleigh Field Office (Eric.C.Alsmeier@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)
File Copy



**NOTICE REGARDING THE RIGHT TO CONTEST A DWR 401 WATER QUALITY
CERTIFICATION AND/OR BUFFER AUTHORIZATION**

Right of Persons Aggrieved to File a Contested Case for the Decision on a 401 Water Quality Certification and/or Buffer Authorization:

The Division's decision is subject to review under NCGS 150B-23.

Rights of Persons Aggrieved to File a Contested Case: Pursuant to NCGS 150B, Article 3, a party or person aggrieved may commence a contested case by filing a petition under NCGS 150B-23 in the Office of Administrative Hearings within 60 days after the Division provides notice of its decision on an application, as provided in NCGS 150B-23(f). If no contested case is commenced within the required time, the Division's decision is final and is not subject to review.

General Filing Instructions: A petition for contested case hearing must be in the form of a written petition, conforming to NCGS 150B-23, and filed with the Office of Administrative Hearings, 1711 New Hope Church Road, Raleigh NC, 27609, along with a fee in an amount provided in NCGS 150B-23.2. A petition for contested case hearing form may be obtained upon request from the Office of Administrative Hearings or on its website at <https://www.oah.nc.gov/hearings-division/filing/hearing-forms>. Additional specific instructions for filing a petition are set forth at 26 NCAC Chapter 03.

Service Instructions: A party filing a contested case is required to serve a copy of the petition, by any means authorized under 26 NCAC 03 .0102, on the process agent for the Department of Environmental Quality:

Daniel Hirschman, General Counsel
North Carolina Department of Environmental Quality
1601 Mail Service Center
Raleigh, North Carolina 27699-1601

If the party filing the petition is a person aggrieved other than the recipient of the certificate (the "Permittee"), the party must also serve the Permittee in accordance with NCGS 150B-23(a).

Be aware that other rules or laws may apply to the filing of a petition for a contested case. Additional information is available at <https://www.oah.nc.gov/hearings-division/hearing-process/filing-contested-case>. Please contact the Office of Administrative Hearings at (984) 236-1850 with all questions regarding the filing fee and/or the details of the filing process.



NORTH CAROLINA 401 WATER QUALITY CERTIFICATION

MODIFICATION to CERTIFICATION #WQC004719 is issued in conformity with the requirements of Section 401, Public Laws 92-500 and 95-217 of the United States and subject to North Carolina's Regulations in 15 NCAC 02H .0500 and 15A NCAC 02B .0200, to North Carolina Department of Transportation, Turnpike Authority who has authorization for the additional impacts listed below, as described within your modification request received by the Division of Water Resources (Division or DWR) with fee on October 2, 2026, and by original Public Notice issued by the U. S. Army Corps of Engineers on September 25, 2018, and within the *Reasonable Period of Time* pursuant to 40 CFR Part 121.6.

The State of North Carolina certifies that this activity will comply with water quality requirements and the applicable portions of Sections 301, 302, 303, 306, 307 of the Public Laws 92-500 and PL 95-217 if conducted in accordance with the application, the supporting documentation, and conditions hereinafter set forth.

The following additional impacts are hereby approved. No other impacts are approved in this modification, including incidental impacts. [15A NCAC 02H .0506(b)]

Type of Impact	Amount Approved Permanent	Amount Approved Temporary
<i>Perennial Streams: R-2829B Site 15</i>		
Previous Site Impacts: Riprap Riverbank Stabilization	51 linear feet	73 linear feet
Revised Site Impacts: Riprap Riverbank Stabilization	203 linear feet	30 linear feet
<i>Increase/Decrease:</i>	<i>+152 linear feet</i>	<i>-43 linear feet</i>

This approval requires you to follow the conditions listed in the certification below.

CONDITIONS OF CERTIFICATION [15A NCAC 02H .0507(c)]:

Modification-specific conditions:

1. The permittee shall coordinate with resource agencies that prescribe any and all in-water work moratoria including the NC Wildlife Resources Commission, the US Fish & Wildlife Service, National Marine Fisheries and/or the NC Division of Marine Fisheries. No work can occur in the river during moratoria dates without approval of the appropriate moratorium-prescribed agency. [15A NCAC 2H.0506(b)(2) and 15A NCAC 4B.0125]



2. All conditions in the original Water Quality Certification 4719 issued February 15, 2026 and all 29 subsequent modifications (most recently issued March 17, 2026) for this project still apply.

Standard Water Quality Certification Conditions:

3. The plans and specifications for this project are incorporated by reference as part of this Water Quality Certification. Any final construction plans for a project must include or reference the application and plans submitted to the DWR. The Permittee must evaluate all other acquired permits to ensure that they are consistent with the plans submitted to the DWR, and all relative impacts are accounted for and shown on the final construction plans. Any modifications or additional impacts to streams and/or wetlands and/or waters within the project require the permittee to notify the DWR and may require submission of a new application package with the appropriate fee. *Citation: 15A NCAC 02H .0506(b)(2) and (3); 15A NCAC 02H .0507(c)*
4. If the property is sold, the Permittee shall provide the new owner with a copy of this Certification and all plans and specifications incorporated by reference. The Permittee may transfer a Certification to the new owner by submitting a letter to the Division with the following statement: *"At the time the property is transferred, the terms and conditions of this 401 Individual Water Quality Certification, including the responsibility to ensure compliance, are binding on the new owner(s) of the property."* The letter shall be signed and dated by both the transferee and the new owner. *Citation: 15A NCAC 02H .0507(d)(2)*
5. The Permittee shall allow the Director, or an authorized representative (including an authorized contractor acting as a representative of the Director), upon the presentation of credentials and other documents as may be required by law, to: *Citation: 15A NCAC 02H .0502(e); 15A NCAC 02H .0507(c)*
 - a. Enter, at reasonable times, upon the Permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this certificate;
 - b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this certificate;
 - c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this certificate; and
 - d. Sample or monitor at reasonable times, for the purposes of assuring certificate compliance or as otherwise authorized by the Clean Water Act, any substances or parameters at any location



6. For all projects that include multiple parcels and/or lots, including transportation and/or utility-related projects installed as infrastructure for multiple parcels and/or lots, deed notifications or similar mechanisms shall be placed on all lots/parcels that include jurisdictional wetlands, streams, open waters, and state-regulated riparian buffers within the overall project boundaries. These mechanisms shall be put in place at the time of recording of the property or individual parcels, whichever is appropriate. *Citation: 15A NCAC 02H .0502(a); 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c)*
7. For phased projects with conceptual future phases, when final design plans are completed, the Permittee shall ensure that final designs shall reflect all appropriate avoidance and minimization of impacts to wetlands, streams, and other surface waters. *Citation: 15A NCAC 02H .0506(b)(2) and (3); 15A NCAC 02H .0507(c)*
8. All wetlands, streams, and surface waters located within the limits of disturbance and within 50 feet of the limits of disturbance/construction area on the project site shall be clearly marked (example- orange fabric fencing) prior to any land disturbing activities. The marking/fencing shall be maintained until the project or project phase is completed. Impacts to areas within the marked area/fencing are prohibited unless otherwise authorized by this certification. *Citation: 15A NCAC 02H .0506(b)(2); 15A NCAC 02H .0507(c)*
9. For projects that include draining a pond or lake, appropriate erosion and sediment control measures shall be utilized while draining the pond or lake to ensure limited impact to downstream waters as well as to native aquatic species. Such measures shall also be utilized to avoid any sediment release into downstream waters as a result of pond draining. The permittee shall observe any natural channel re-establishment, or utilize natural channel construction techniques, to ensure that the jurisdictional stream channel above and below the drained pond remain stable, and that no additional impacts occur within the natural stream channel as a result of draining the pond. The Permittee shall consult with NCWRC prior to the relocation or release of any aquatic species during pond draining or dam removal activities. During pond or lake refill, sufficient flow shall be continually released to the receiving stream to ensure aquatic life survival and maintenance of biological integrity. *Citation: 15A NCAC 02H .0506(b)(2); 15A NCAC 02H .0507(c)*
10. The permittee shall report to the DWR Transportation Permitting Branch any noncompliance with, and/or any violation of, stream or wetland standards [15A NCAC 02B .0200], including but not limited to sediment impacts to streams or wetlands. Information shall be provided orally within 24 hours (or the next business day if a weekend or holiday) from the time the permittee became aware of the non-compliance circumstances. *Citation: 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c)*
11. No additional temporary or permanent impacts from waste, spoil, solids, fill, excavation, or staging of equipment, shall occur in wetlands or waters beyond the footprint of the impacts (including temporary impacts) identified in this Certification. *Citation: 15A NCAC 02H .0506; 15A NCAC 02H .0507(c)*



12. All activities shall be in compliance with any applicable State Regulated Riparian Buffer Rules in Chapter 2B of Title 15A in the North Carolina Administrative Code. *Citation: 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c)*

13. When applicable, all construction activities shall be performed and maintained in full compliance with G.S. Chapter 113A Article 4 (Sedimentation Pollution Control Act of 1973). Regardless of applicability of the Sedimentation Pollution Control Act, all projects shall incorporate appropriate Best Management Practices for the control of sediment and erosion so that no violations of state water quality standards, statutes, or rules occur.

Design, installation, operation, and maintenance of all sediment and erosion control measures shall be equal to or exceed the requirements specified in the most recent version of the *North Carolina Erosion and Sediment Control Planning and Design Manual*, or the *North Carolina Department of Transportation Erosion and Sediment Control Design and Construction Manual*.

Appropriate measures should be installed prior to any land clearing activities to protect wetlands, streams, and/or buffers from turbidity and/or sedimentation. These measures should be routinely inspected and properly maintained, and excavated materials should be contained outside wetland, stream, and/or buffer boundaries.

For installation of bridges that involve driving or drilling activities within stream channels, open waters, or along streambanks turbidity curtains shall be installed within the surface water.

All devices shall be maintained on all construction sites, borrow sites, and waste pile (spoil) sites, including contractor-owned or leased borrow pits associated with the project. Sufficient materials required for stabilization and/or repair of erosion control measures and stormwater routing and treatment shall be on site at all times.

For borrow pit sites, the erosion and sediment control measures shall be designed, installed, operated, and maintained in accordance with the most recent version of the *North Carolina Surface Mining Manual*. Reclamation measures and implementation shall comply with the reclamation in accordance with the requirements of the Sedimentation Pollution Control Act and the Mining Act of 1971.

If the project occurs in waters or watersheds classified as Primary Nursery Areas (PNAs), SA, WS-I, WS-II, High Quality Waters (HQW), or Outstanding Resource Waters (ORW), then the sedimentation and erosion control designs shall comply with the requirements set forth in 15A NCAC 04B .0124, *Design Standards in Sensitive Watersheds*.

Citation: 15A NCAC 02H .0506(b)(2); 15A NCAC 02H .0507(c); 15A NCAC 02B .0200; 15A NCAC 02B .0231



14. Sediment and Erosion Control Measures (S&EC) in wetlands or waters should be avoided to the maximum extent possible and any S&EC occurring in wetlands or waters shall be restored to pre-existing conditions upon completion of the project. The Permittee shall utilize sediment and erosion control measures that avoid and minimize the need for the placement of silt fence along streams at the normal water level. Where measures are placed within authorized impact areas then placement of such measures shall not be conducted in a manner that results in a loss of function of any wetlands, streambeds, or streambanks. Any erosion control measures, including silt fence, installed within wetlands shall be removed from wetlands and the natural grade restored and revegetated within two (2) months of the date the appropriate sediment and erosion control program has released the specific area within the project to ensure wetland standards are maintained upon completion of the project. *Citation: 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c); 15A NCAC 02B .0200; 15A NCAC 02B .0231*
15. Erosion control matting shall not be placed within a stream bed. Erosion control matting that incorporates plastic mesh and/or plastic twine shall not be used along streambanks or within wetlands. *Citation: 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c)*
16. If the project is covered by NPDES Construction Stormwater Permit Number NCG010000 or NPDES Construction Stormwater Permit Number NCG250000, full compliance with permit conditions including the erosion and sedimentation control plan, inspections and maintenance, self-monitoring, record keeping and reporting requirements is required. *Citation: 15A NCAC 02H .0506(b) and (c); 15A NCAC 02H .0507(c)*
17. The North Carolina Department of Transportation (NCDOT) shall maintain full compliance with the conditions related to construction activities and post construction stormwater design, construction and maintenance, within the most recent version of their Individual NPDES Stormwater Permit Number NCS000250. *Citation: 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c); 15A NCAC 02B .0200; 15A NCAC 02B .0231*
18. All work in or adjacent to streams, ponds, lakes, and reservoirs shall be conducted so that the work area is isolated from surface waters. Approved best management practices from the most current version of the DEMLR [NC Erosion and Sediment Control Planning and Design Manual](#), or the *NC Department of Transportation Best Management Practices For Construction and Maintenance Activities Manual*, such as sandbags, rock berms, cofferdams, pump-arounds, and other diversion structures shall be used to minimize excavation in flowing water. Water that comes in contact with the work area shall be treated through an appropriate sediment/erosion control measure (sediment basin, filter bag, etc) prior to discharging to a surface water. All temporarily disturbed areas for the purpose of isolation/dewatering shall be restored to original grade, including each stream's original cross-sectional dimensions, planform pattern, and longitudinal bed profile. All temporarily impacted sites shall be restored and stabilized with native vegetation as practicable. *Citation: 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c); 15A NCAC 02B .0200*
19. Bridge piles and bents shall be constructed using driven piles (hammer or vibratory) or drilled shaft construction methods. More specifically, jetting or other methods of pile driving are prohibited under this Certification. *Citation: 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c); 15A NCAC 02B .0200*



20. Unless already approved by an NPDES permit, bridge deck drains shall not discharge directly into the stream. Stormwater shall be directed across the bridge and pre-treated through site-appropriate means to the maximum extent practicable (e.g. grassed swales, pre-formed scour holes, vegetated buffers, etc.) before entering the stream. This condition may be waived with prior written approval from the NCDWR. *Citation: 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c)*
21. Demolition of existing structures, such as culvert or bridge removal, shall be conducted to ensure water quality standards are maintained. NCDOT activities shall adhere to NCDOT's *Best Management Practices for Construction and Maintenance Activities*. *Citation: 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c); 15A NCAC 02B .0200*
22. Culverts shall be designed and installed in such a manner that the original stream profiles are not altered and allows for aquatic life movement during low flows. The dimension, pattern, and profile of the stream above and below a pipe or culvert 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 culvert shall be such as to pass the average historical low flow and spring flow without adversely altering flow velocity. If the width of the culvert is wider than the stream channel, the culvert shall include multiple boxes/pipes, baffles, benches and/or sills to maintain the natural width of the stream channel. If multiple culverts/pipes/barrels are used, low flows shall be accommodated in one culvert/pipe and additional culverts/pipes shall be installed such that they receive only flows above bankfull.

Placement of culverts and other structures in streams shall also meet one of the following requirements:

- a. For structures less than 72" in diameter/width and in area where topographic constraints dictate culvert slopes will be greater than 2.5%, culverts shall be installed "at grade" such that low flow conditions in the stream are maintained provided that all alternative options for flattening the slope have been investigated and aquatic life movement/connectivity has been provided when possible (e.g. rock ladders, cross-vanes, sills, baffles etc.); or
- b. When bedrock is present in culvert locations, culvert burial is not required, provided that there is documentation of the presence of bedrock.
- c. For all other culverts:
 - i. Culverts with a diameter greater than 48 inches shall be below the elevation of the streambed by one foot
 - ii. Culverts with diameter less than or equal to 48 inches shall be below the streambed by 20% of the culvert diameter

If a culvert outlet is submerged within a pool or scour hole and designed to provide for aquatic passage, then culvert burial into the streambed is not required.

Documentation such as a location map of the culvert, culvert profile drawings, slope calculations, geotechnical reports, photographs, etc. shall be provided to DWR upon written request.



For culvert replacements within the same location/footprint, and of similar length, culverts shall be designed and installed to meet the above requirements of this Condition unless prohibited by existing conditions on site, such as existing infrastructure or topographic constraints.

Installation of culverts in wetlands shall ensure continuity of water movement and be designed to adequately accommodate high water or flood conditions. When roadways, causeways, or other fill projects are constructed across FEMA-designated floodways or wetlands, openings such as culverts or bridges shall be provided to maintain the natural hydrology of the system as well as prevent constriction of the floodway that may result in destabilization of streams or wetlands.

The establishment of native woody vegetation and other soft stream bank stabilization techniques shall be used where practicable instead of rip-rap or other bank hardening methods.

Citation: 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c)

23. Application of fertilizer to establish planted/seeded vegetation within disturbed riparian areas and/or wetlands shall be conducted at agronomic rates and shall comply with all other Federal, State and Local regulations. Fertilizer application shall be accomplished in a manner that minimizes the risk of contact between the fertilizer and surface waters. *Citation: 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c); 15A NCAC 02B .0231*
24. Discharging hydroseed mixtures and washing out hydroseeders and other equipment in, or adjacent to, surface waters is prohibited. *Citation: 15A NCAC 02H.0506(b)*
25. If concrete is used during construction (including bulkhead components, such as deadman anchors, tie-back systems and concrete caps), then all necessary measures shall be taken to isolate the concrete from waters of the state by maintaining a dry work area to prevent direct contact between curing concrete and surface waters. Drill slurry and water that inadvertently contacts uncured concrete shall not be discharged to waters of the state. Water that inadvertently contacts uncured concrete shall not be discharged to surface waters due to the potential for elevated pH and possible aquatic life and fish kills. Any water that contacts uncured concrete shall be captured, treated, and disposed of properly. *Citation: 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c); 15A NCAC 02B .0200; 15A NCAC 02B .0231*
26. All temporary pipes, culverts, rip-rap pads, causeways, etc. in streams shall be installed so as not to restrict stream flow or installed in such a manner that restricts aquatic life movement during low flow conditions. All temporary pipes and/or culverts shall be installed as outlined in the most recent edition of the *North Carolina Erosion and Sediment Control Planning and Design Manual* or the *North Carolina Surface Mining Manual* or the *North Carolina Department of Transportation Best Management Practices for Construction and Maintenance Activities*. *Citation: 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c)*



27. All temporary fill and temporary culverts shall be removed, and the impacted area shall be returned to natural conditions, within 60 calendar days after the temporary impact is no longer necessary. The impacted areas shall be restored to original grade, including each stream's original cross-sectional dimensions, planform pattern, and longitudinal bed profile. All temporarily impacted sites shall be restored and stabilized with native vegetation when practicable. For all areas where wetlands are impacted by temporary roads constructed by temporary fill material, the Permittee shall remove the fill material and conduct activities necessary to restore preconstruction hydrology by addressing soil compaction. When temporary fill has been added to wetlands, or heavy equipment has been placed within a wetland, the Permittee shall ensure restoration of preconstruction soil conditions when restoring wetland areas. Upon restoration of the wetland, the Permittee shall inspect the area quarterly for a minimum of two years to document successful restoration. The Permittee shall provide documentation of inspections to DWR when requested. The monitoring requirement can be relieved with review and written approval by DWR. If the area is not restored to preconstruction conditions the impacts shall be considered permanent, and the Permittee shall request a modified Certification from DWR. With prior written approval from DWR, removal of temporary fill and temporary culverts and restoration of the impacted area may be postponed to accommodate moratorium periods. *Citation: 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c)*
28. Any rip-rap or other armoring materials required for proper culvert placement, stream stabilization, or restoration of temporarily disturbed areas shall be restricted to the area directly impacted by the construction activity covered by this Certification. All rip-rap or other non-natural armoring material placed in streams shall be placed such that the original streambed elevation and streambank contours are restored, and that the finished elevation of the rip rap shall not exceed that of the original stream bed. All rip-rap or other armoring materials shall consist of clean rock or masonry material free of debris or toxic pollutants. Placement of rip-rap or other armoring materials shall not result in de-stabilization of the stream bed or banks upstream or downstream of the area or be installed in a manner that precludes aquatic life passage. *Citation: 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c)*
29. Any rip-rap or other non-natural armoring material (i.e. gabion baskets, revetments, bulkheads, seawalls, retaining walls) used for stream or shoreline stabilization shall be of a size and density to prevent movement by wave, current action, or stream flows, and shall consist of clean rock or masonry material free of debris or toxic pollutants. Rip-rap or other armoring materials shall not be installed in the streambed except in specific areas required for velocity control and to ensure structural integrity of bank stabilization measures. Any rip-rap or other armoring materials placed in the streambed shall be such that the finished elevation of the rip rap or other armoring materials shall not exceed that of the original stream bed. *Citation: 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c); 15A NCAC 02B .0201*
30. All mechanized equipment operated near surface waters shall be inspected and maintained regularly to prevent contamination of surface waters from fuels, lubricants, hydraulic fluids, or other toxic materials. Construction shall be staged in order to minimize the exposure of equipment to surface waters to the maximum extent practicable. Fueling, lubrication, and general equipment maintenance shall be performed in a manner to prevent, to the maximum



extent practicable, contamination of surface waters by fuels and oils. *Citation: 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c); 15A NCAC 02B .0200; 15A NCAC 02B .0231*

31. Heavy equipment working in wetlands shall be placed on mats or non-impact equipment shall be used to ensure no disturbance and/or compaction of soil from equipment except within the footprint of the impacts covered by this Certification. Heavy equipment necessary for in stream activities shall be operated from the banks to the maximum extent practical and in no cases shall cause unstable stream banks or a violation of water quality standards. *Citation: 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c); 15A NCAC 02B .0231*
32. In accordance with G.S. 143-215.85(b), the Permittee shall report any petroleum spill of 25 gallons or more; any spill regardless of amount that causes a sheen on surface waters; any petroleum spill regardless of amount occurring within 100 feet of surface waters; and any petroleum spill less than 25 gallons that cannot be cleaned up within 24 hours. *Citation: 15A NCAC 02H .0507(c); N.C.G.S 143-215.85(b)*
33. Wetland areas impacted by temporary clearing shall be stabilized and reseeded with native wetland seed. *Citation: 15A NCAC 2H.0506(b)*
34. The Permittee and their authorized agents shall conduct all activities in a manner consistent with State water quality standards (including any requirements resulting from compliance with §303(d) of the Clean Water Act), and any other appropriate requirements of State and Federal Law. *Citation: 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c)*
35. The post-construction removal of any temporary bridge structures must return the project site to its preconstruction contours and elevations. The impacted areas shall be revegetated with appropriate native species. *Citation: 15A NCAC 2H.0506(b)(2)*
36. A copy of this Certification shall be retained on site during the construction and maintenance of this project, or with the project manager, and be available for inspection at all times. The Permittee shall require its contractors and/or agents to comply with the terms and conditions of this Certification 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 Certification. If the Permittee becomes aware of any inability to comply with any of the conditions of this Certification, they must notify the appropriate Regional Office within 24 hours (or the next business day if a weekend or holiday) from the time the Permittee becomes aware of the circumstances. *Citation: 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c)*
37. 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.

Citation: 15A NCAC 02H .0506(b); 15A NCAC 02H .0507(c)

This Water Quality Certification shall expire on the same day as the expiration date of the corresponding Section 404 Permit that is current at the time this Certification is issued. The conditions shall remain in effect for the life of the project, regardless of the expiration date of this Water Quality Certification.

Upon completion of the proposed project, the applicant shall submit a Certificate of Completion and/or shall provide as-built documentation. Certificates of Completion and/or as-built documentation can be submitted via the DWR website: <https://edocs.deq.nc.gov/Forms/Certificate-of-Completion>.

This, the 6th day of October 2026

Signed by:

Faith Hardin

3185423002EA45E...

Faith Hardin, Supervisor
401 & Buffer Transportation Permitting Branch



From: Francesca Innocenti - NOAA Federal <francesca.innocenti@noaa.gov>
Sent: Friday, October 2, 2026 6:13 PM
To: Duprey (Sage Group), Nicole J <ext-njduprey@ncdot.gov>
Cc: Shapiro, Alan W <awshapiro@ncdot.gov>; Riffey, Deanna <driffey@ncdot.gov>
Subject: [External] Re: Complete 540, R2829B Individual Permit Modification Wake Johnston County Emergency Repair Request on the Neuse River

Hi Nikki,

Please proceed with the emergency work described in your email and attached documentation. This emergency consultation request has been assigned the NMFS tracking ID: INQ-2026-0029; please reference this number when providing follow-up information or additional actions taken associated with this request.

To minimize the potential for adverse impacts of ESA listed species for all proposed actions, please implement SERO's [Protected Species Construction Conditions](#) during all project activities. For more information on NMFS SERO emergency response, please visit NOAA SERO's webpages:

**[Mitigation Measures and Best Management Practices
Regulations, Policies, and Guidance for the Southeast Region](#)**

Section 7 of the Endangered Species Act allows for expedited consultations in emergencies. 50 CFR 402.05, authorizes informal and formal consultations in situations such as disasters, acts of God, casualties, or national defense emergencies. Informal and formal consultations must be initiated as soon as possible after the emergency is under control. Under the guidelines of section 7 of the Endangered Species Act, we received your request for emergency section 7 consultation and will treat the project actions under our emergency consultation procedures. This letter simply addresses your initiation of consultation and allows us to reiterate some measures we think could minimize the effects of the emergency response on listed species and their habitat. After the emergency nature of this response has passed or the project is completed, you can request to initiate consultation. Upon receipt of a Biological Assessment or Expedited request for the after-the-fact permitted activities from your office, we will provide an after-the-fact biological opinion or LOC.

Thank you and please reach out if you have any questions.

Francesca

--

Francesca Innocenti
Natural Resource Specialist
Protected Resources Division-Southeast Regional Office
NOAA, National Marine Fisheries Service | U.S. Department of Commerce
www.fisheries.noaa.gov

Consult <nmfs.ser.emergency.consult@noaa.gov> wrote:

Good afternoon everyone!

As per our earlier meeting in August and subsequent email correspondence, please find the attached Permit Mod request for Emergency Repair on the banks of the Neuse River in Wake County, NC.

A large storm event that occurred in July 2026 resulted in a significant section of the near-vertical banks of the Neuse River to slough off. NC Turnpike Authority (NCTA), the Design Build Team (DBT), and the Joint Venture (JV) contractors have devised a way to retrieve the sloughed material - which is creating a significant impediment within the Neuse River which will only further destabilize the banks – and repair the banks which are immediately adjacent to the approved (and under construction) bridge crossing of the Neuse for the new highway. The attached details the failure, the proposed repair, an erosion control (EC) plan to address how work will be done in the dry to reduce the potential for additional sedimentation, turbidity and other negative, downstream water quality effects, and the specifics of the coffer dam the team intends to use.

We are requesting authorization from NOAA/NMFS to proceed under the Endangered Species Act Emergency Consultations to begin this work immediately rather than waiting for the lifting of the in-water work Moratorium which begins on November 1 .

Please let me know if you have any questions or require any discussion of the proposal we have provided.

We have also requested the changes to the previously authorized USACE and DWR verifications/approvals for the permanent and temporary proposed impacts to the Neuse River under separate cover.

Thank you!

Nikki

Nicole Duprey, PWS

Please note new name

North Carolina Turnpike Authority
North Carolina Department of Transportation

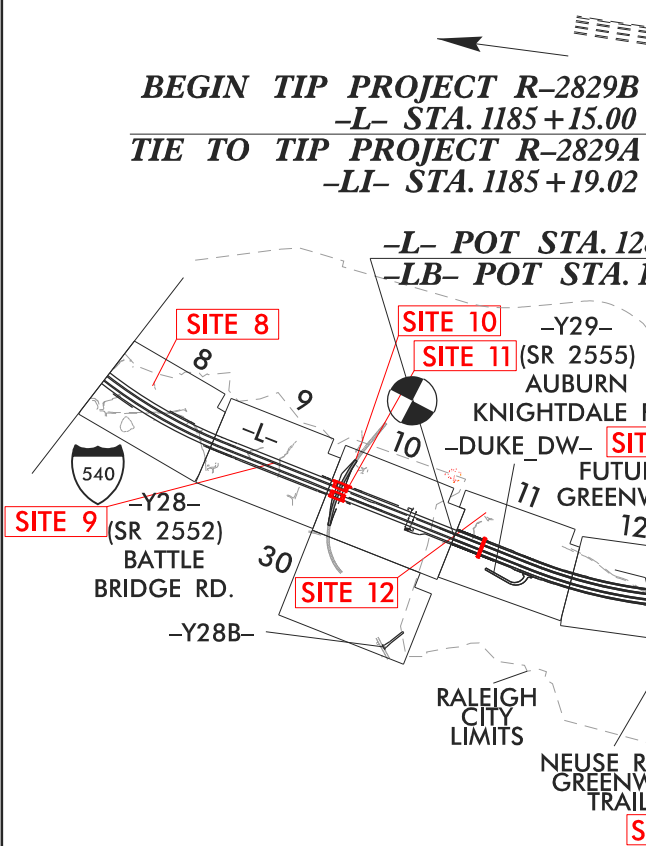
[919-754-7806](tel:919-754-7806)

1 South Wilmington Street
Raleigh, NC 27601
1578 Mail Service Center
Raleigh, NC 27699-1578

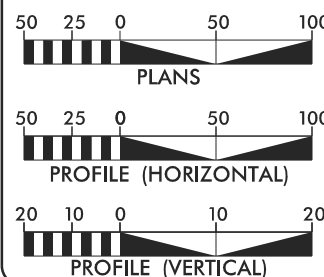
Permitted Drawings

\$\$\$SYTIME\$\$\$
 \$\$\$DGN\$\$\$
 \$\$\$USERNAME\$\$\$

CONTRACT: C204825



GRAPHIC SCALES

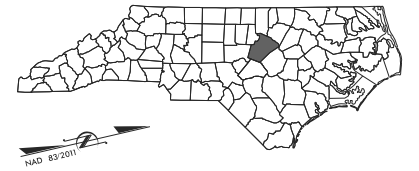


ADT 2025 = 34,800
ADT 2045 = 66,600
K = 12%
D = 60/65 %
T = 10% *
V = 75 MPH
* TTST = 4% DUAL = 6%
FUNC CLASS =
INTERSTATE
STATEWIDE TIER

WAKE COUNTY

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

WETLAND AND SURFACE WATER IMPACTS PERMIT

[illegible]

SITE 13
SITE 26
SITE 30

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

<i>PROJECT LENGTH</i>	
LENGTH ROADWAY TIP PROJECT R-2829B	= 5.967 MILES
LENGTH STRUCTURE TIP PROJECT R-2829B	= 0.595 MILES
TOTAL LENGTH TIP PROJECT R-2829B	= 6.562 MILES

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

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
8/29/2023

LETTING DATE:
8/29/2023

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

BRIAN LUSK, P.E.
PROJECT ENGINEER

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

HYDRAULICS ENGINEER

SIGNATURE: _____ *P.E.*

**ROADWAY DESIGN
ENGINEER**

SIGNATURE: _____ *P.E.*



NORTH CAROLINA
Turnpike Authority

8/17/99

PERMIT DRAWING
SHEET 32 OF 112

REVISED 9/14/2026



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

TEMPORARY ACCESS
FOR BRIDGE
CONSTRUCTION
ONLY

ICE of
CAROLINAS, PLLC

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

PROJECT REFERENCE NO. SHEET NO.

R-2829B 13

RW SHEET NO.

ROADWAY DESIGN
ENGINEER

HYDRAULICS
ENGINEER

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

NAD 83

40

WILLIAM E. ADAMS

SITE 15

SGS

(Non-404)

SITE 14

SITE 16

0.47%

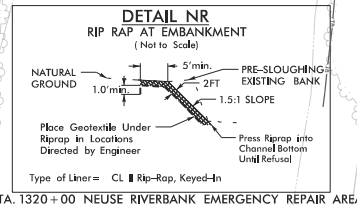
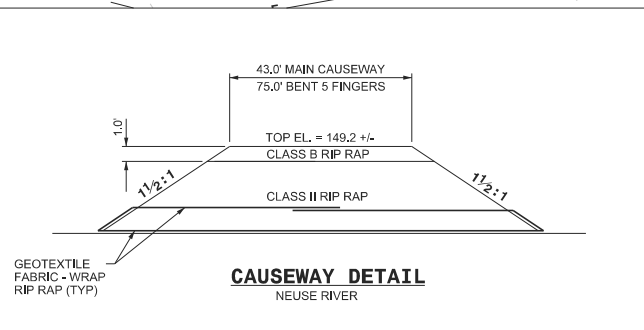
1.64%

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

MATCHLINE -LB- STA. 1328 + 00.00 SEE SHEET 14

SEE PERMIT DRAWING SHEET 33 OF 112 FOR ENLARGEMENT

SEE PERMIT DRAWING SHEET 34 OF 112 FOR ENLARGEMENT



Type of Liner = CL II Rip-Rap, Keyed-In

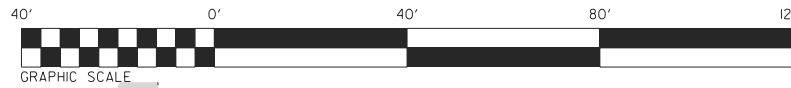
FOR -LB- CURVE DATA SEE SHT.3A-I
FOR -Y28A- CURVE DATA SEE SHT.3A-I

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

8/17/99

NAD 83

PERMIT DRAWING
SHEET 33 OF 112



ICE of
CAROLINAS, PLLC

ICE of Carolinas, PLLC
4505 Falls of Neuse Road, Suite 110
Raleigh, North Carolina 27609
Phone: 803-822-0333
License #: P-09999

PROJECT REFERENCE NO.		SHEET NO.	
R-2829B			
R/W SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
REVISD 9/14/2026			
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			

SITE 14 & 15
ENLARGEMENT

TEMPORARY ACCESS
FOR BRIDGE
CONSTRUCTION
ONLY

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

1315+00 PROP. CABLE
GUIDERAIL AU

15" RCP-III
TYPE
2GI B-77

TYPE
B-77

TIE WWF
TO BRIDGE

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

SITE 14

60" RCP-III
(BURY 1')

CL II RIP RAP
FILL IN HOLE &
GRADE TO DRAIN

REMOVE

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

RIP RAP AT
EMBANKMENT
SEE DETAIL NR

FILL IN EXISTING CHANNEL
-Y28A-RT Sta. 9+48.03

WIO

SGR

18" RCP-III

S 78° 04' 41.7" E

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

CL I
RIP RAP

RIP RAP AT
EMBANKMENT
SEE DETAIL NR

-LB-POC Sta. 1316+67.11
-Y28A-POT Sta. 10+33.71
-Y28A-PC Sta. 11+15.67

SITE 15

TEMPORARY ACCESS

\$DATE\$ \$TIME\$
\$FILE\$ \$REV\$ \$BY\$ \$APP\$
\$USER\$ \$NAME\$ \$\$\$\$

8/17/99

PERMIT DRAWING
SHEET 35 OF 112

REVISED 9/14/2026



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

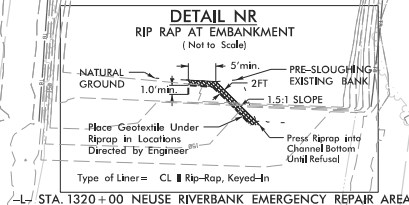
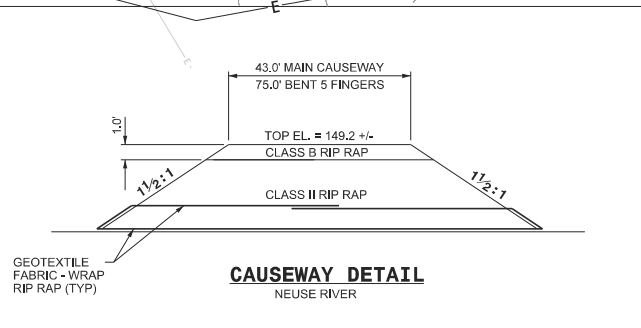
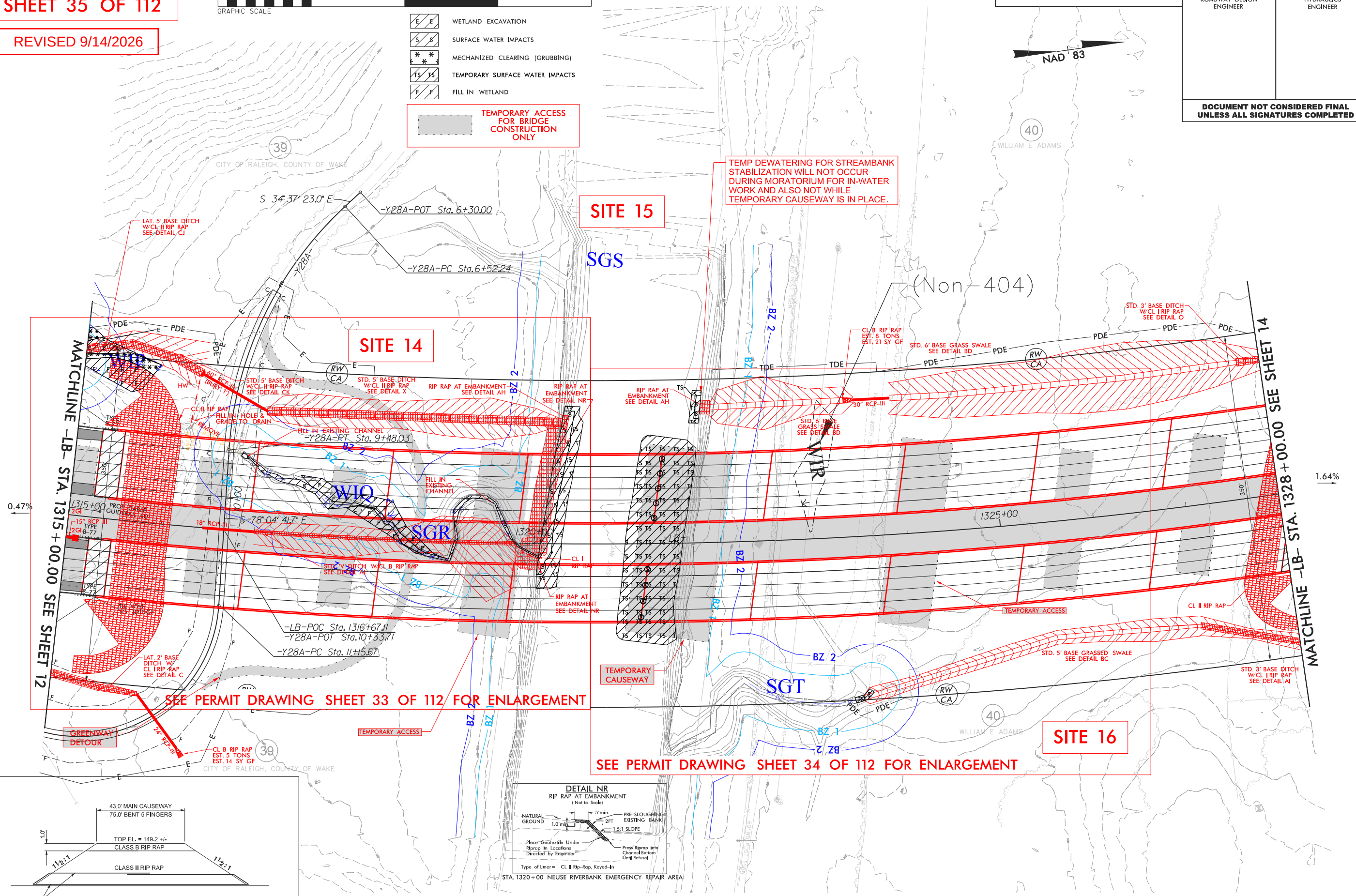
TEMPORARY ACCESS
FOR BRIDGE
CONSTRUCTION
ONLY

ICE of
CAROLINAS, PLLC

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

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

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



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



WETLAND AND SURFACE WATER IMPACTS SUMMARY													
Site No.	Station (From/To)	Structure Size / Type	Wetland and/or Stream ID	WETLAND IMPACTS					SURFACE WATER IMPACTS				
				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						0.050	0.058	203	30	
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	7.414	0.434	2101	684	

*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, 9/14/2026)
WAKE COUNTY

R-2829B

SHEET 110 OF 112

WETLAND AND SURFACE WATER IMPACTS SUMMARY													
Site No.	Station (From/To)	Structure Size / Type	Wetland and/or Stream ID	WETLAND IMPACTS					SURFACE WATER IMPACTS				
				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)
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 SURFACE WATER IMPACTS SUMMARY

Site No.	Station (From/To)	Structure Size / Type	Wetland and/or Stream ID	WETLAND IMPACTS					SURFACE WATER IMPACTS				
				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)
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		7.414	0.434	2101	684	
	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	15.209	0.513	8485	1134	

*Rounded totals are sum of actual impacts

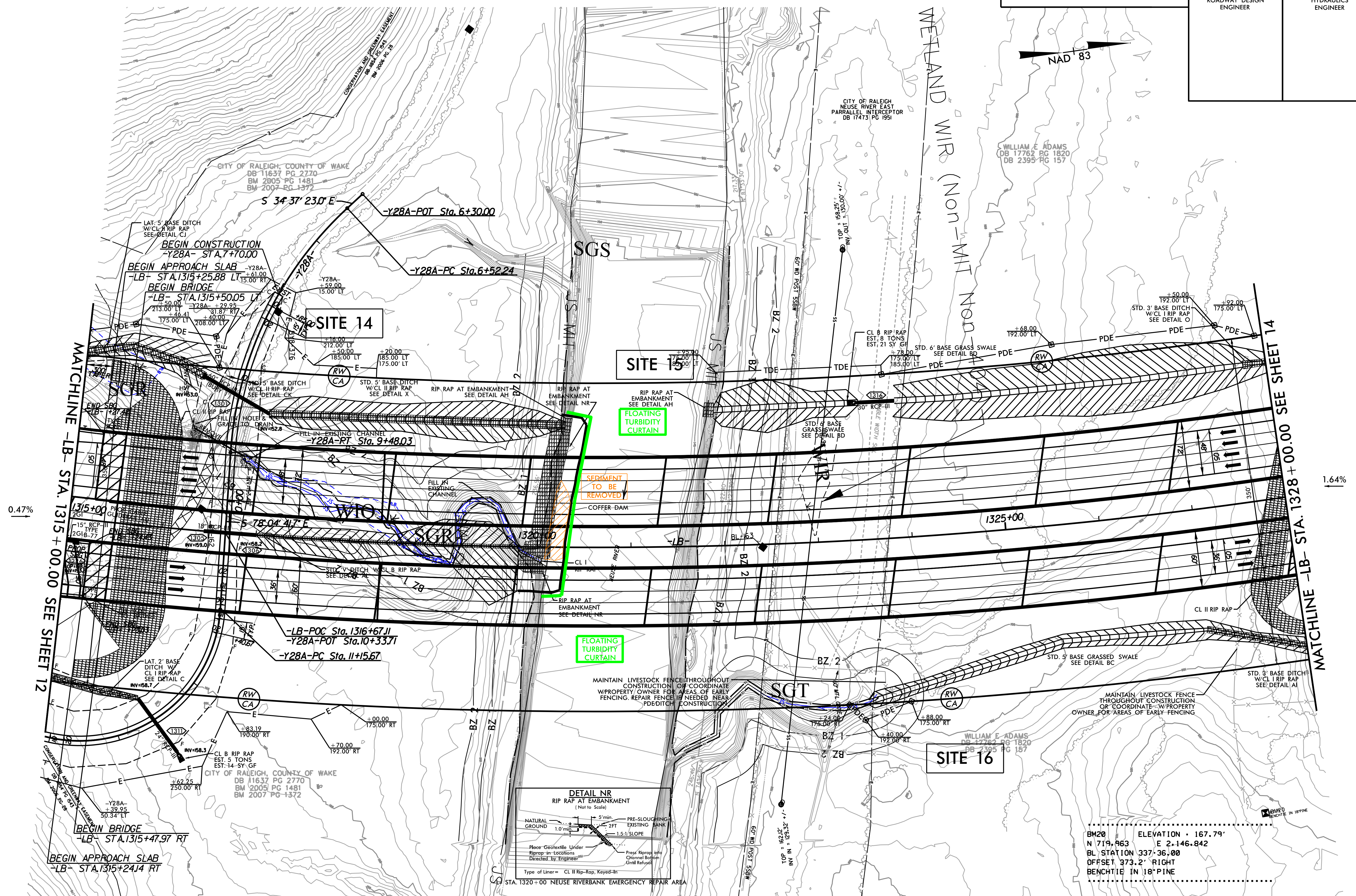
NOTES:

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 & 9/14/2026)
WAKE COUNTY

R-2829B

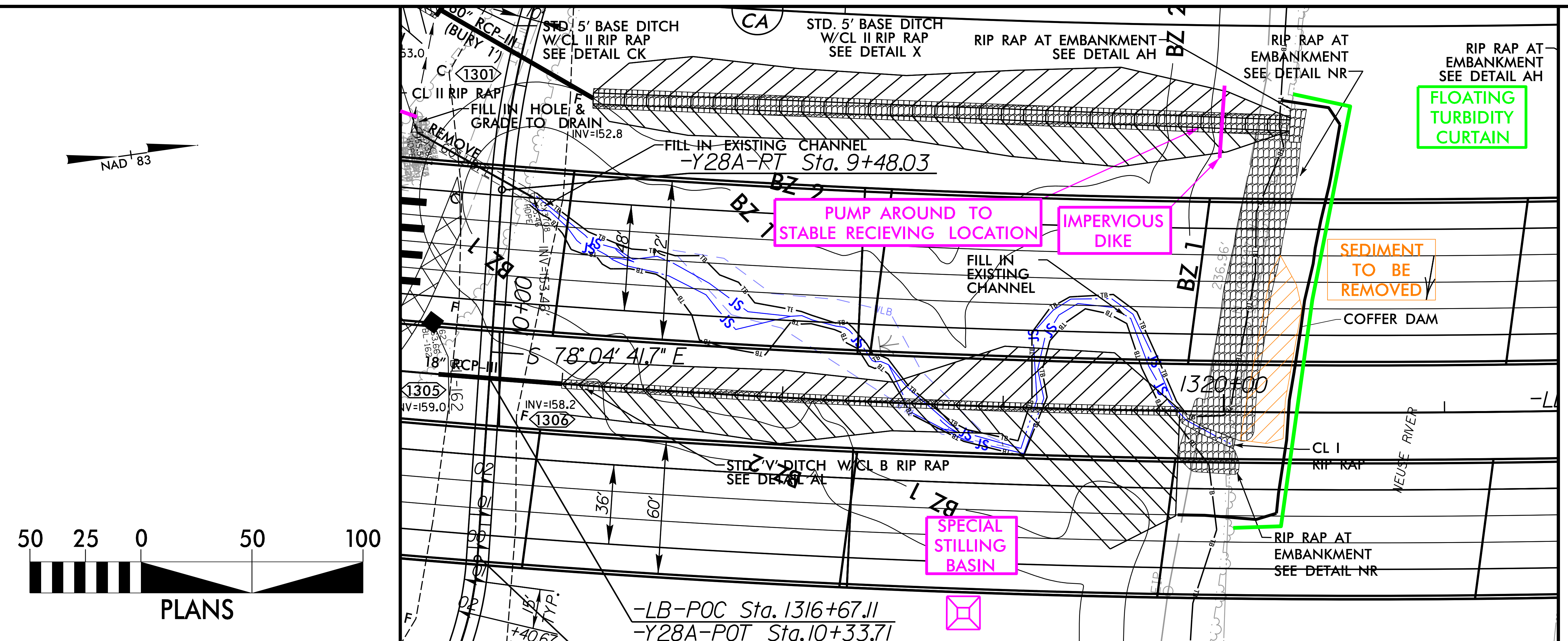
SHEET 112 OF 112



FOR -LB- CURVE DATA SEE SHT.3A-1 FOR -LB- PROFILE SEE SHT.48 & 49
FOR -Y28A- CURVE DATA SEE SHT.3A-1 FOR -Y28A- PROFILE SEE SHT.62

NEUSE RIVERBANK REPAIR CONSTRUCTION SEQUENCE STA. 1320+00 -LB-

1. CUT TREES BY HAND SEPARATE CANOPY FROM ROOTBALL. REMOVE CANOPY OF TREES FROM RIVER WITH CRANE. LEAVE ROOTBALL IN PLACE.
2. PROCEED TO NEXT STEP WHEN THE WEATHER FORECAST IS SHOWING LITTLE PRECIPITATION FORECASTED.
3. INSTALL TURBIDITY CURTAIN.
4. INSTALL PUMP AROUND FOR STREAM SGR IN 5' BASE DITCH BELOW THE 60" PIPE SO THE WATER IS NOT FLOWING INTO THE WORK AREA.
5. PREPARE STILLING BASIN TO DEWATER WORK AREA.
6. CHECK RIVER BOTTOM FOR COFFER DAM PLACEMENT. IF TREES OR OTHER LARGE IMPERFECTIONS ARE PRESENT COORDINATE WITH NCTA ENVIRONMENTAL.
7. INSTALL WATER FILLED COFFER.
8. DEWATER WORK AREA.
9. RECOVER SLOUGHED OFF MATERIAL FROM RIVER. SEDIMENT FROM RIVER MAY BE PLACED IN AN EVAPORATION CELL SURROUNDED BY SILT FENCE. THE LOCATION MAY BE COORDINATED IN THE FIELD WITH PROPOSED EROSION CONTROL AND GRADING. THE LOCATION OF THE CELL WILL BE AT LEAST 50 FEET AWAY FROM JURISDICTIONAL AREAS. PERFORM STREAMBANK REPAIR WORK AND INSTALL RIP RAP ALONG BANK PER PLAN.
10. REMOVE COFFER DAM.
11. REMOVE TURBIDITY CURTAIN





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

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.

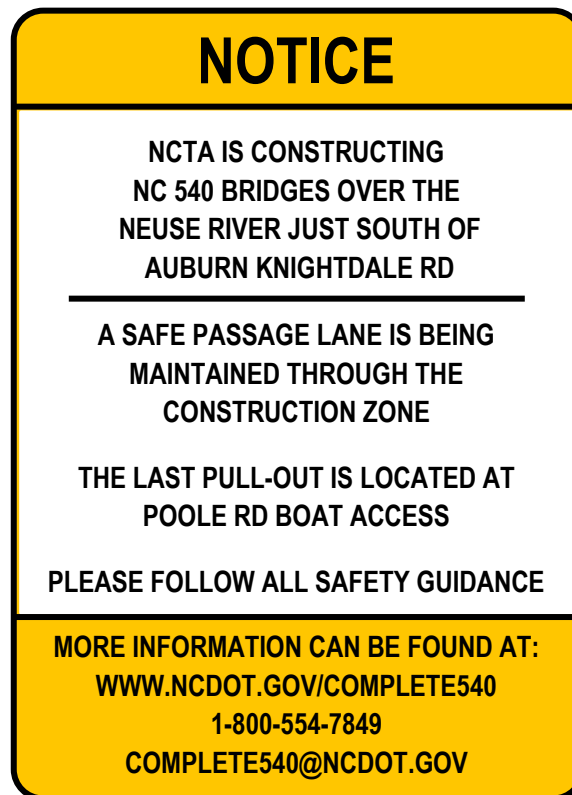
- In the event of a storm being forecast in the area that could result in localized flooding or overtopping the temporary access causeway, Flatiron-Fred Smith JV will remove all materials and equipment in advance of the storm.

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.

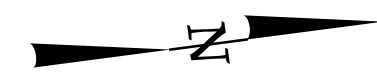
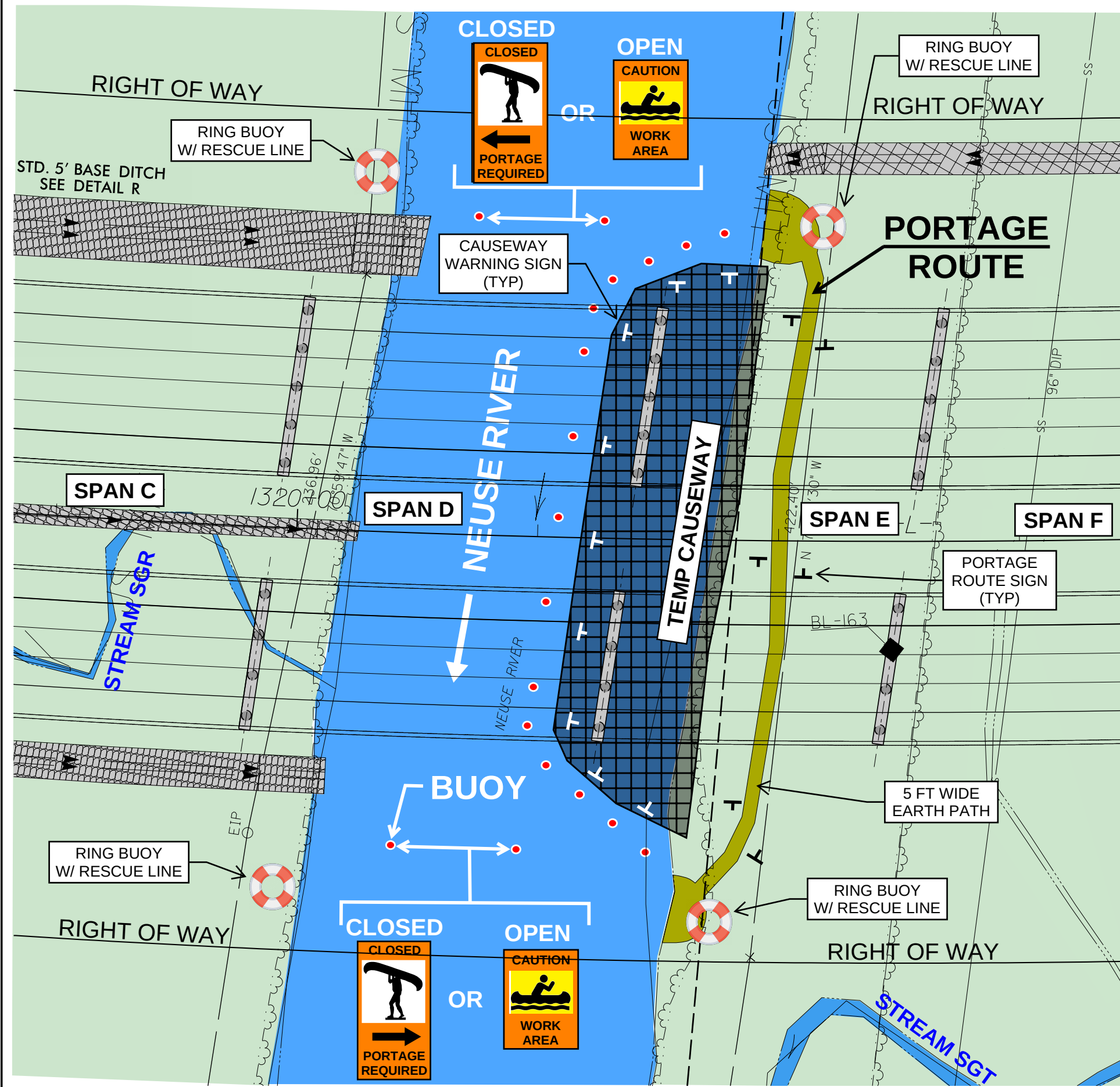
Neuse River Greenway Trail Specific Safety Precautions:

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.



- 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:

DANGER
KEEP OFF
WORK AREA

CAUSEWAY WARNING SIGN

PORTAGE ROUTE


PORTAGE ROUTE SIGN

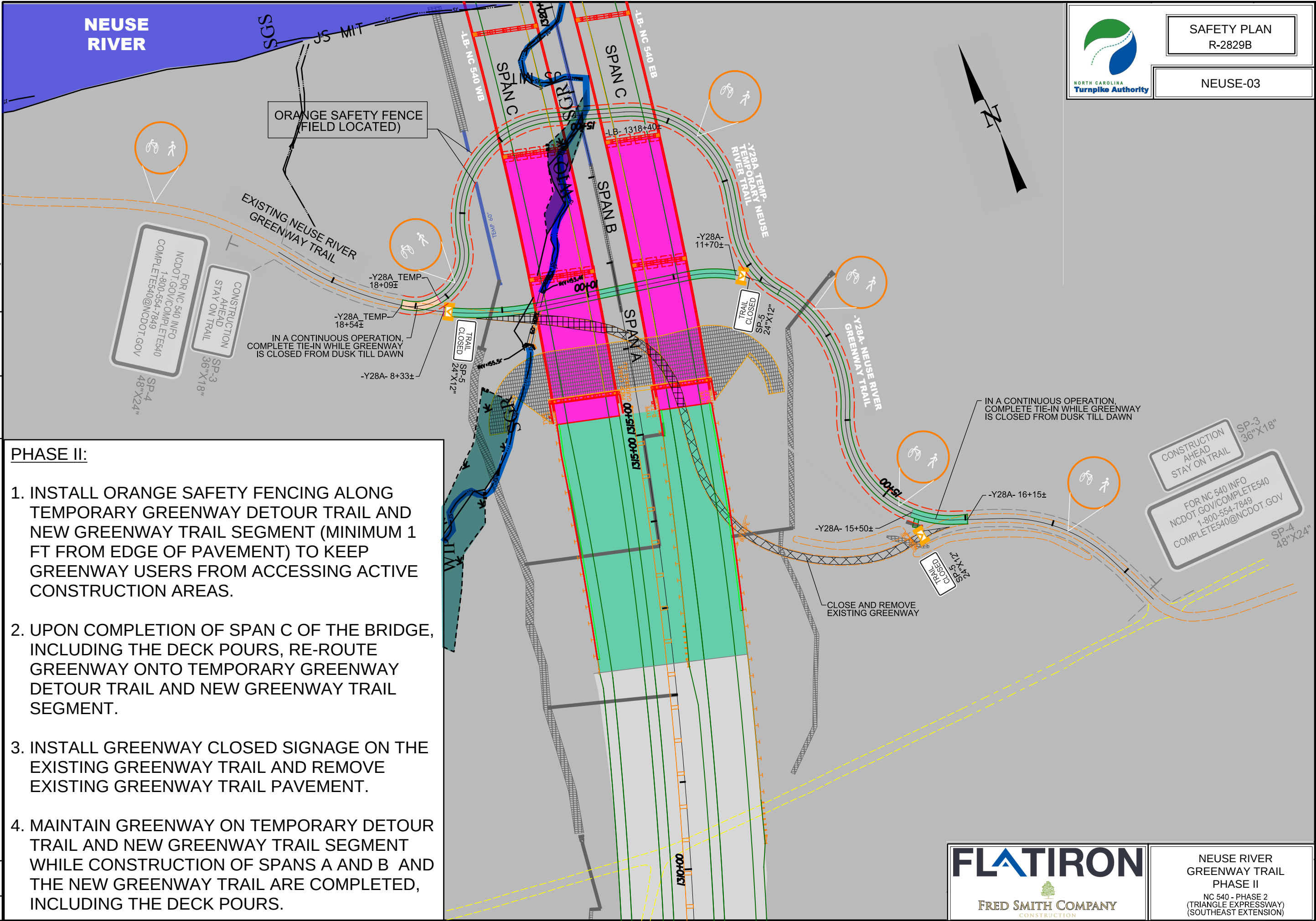
REVISIONS

NO.	DATE	DESCRIPTION	REVISOR	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

7/2/2025
c:\bms\ice-eng-pw-0\dms59256\R-2829B TMP 07A AREA 04 PHASE 02.dgn
ReedGentry

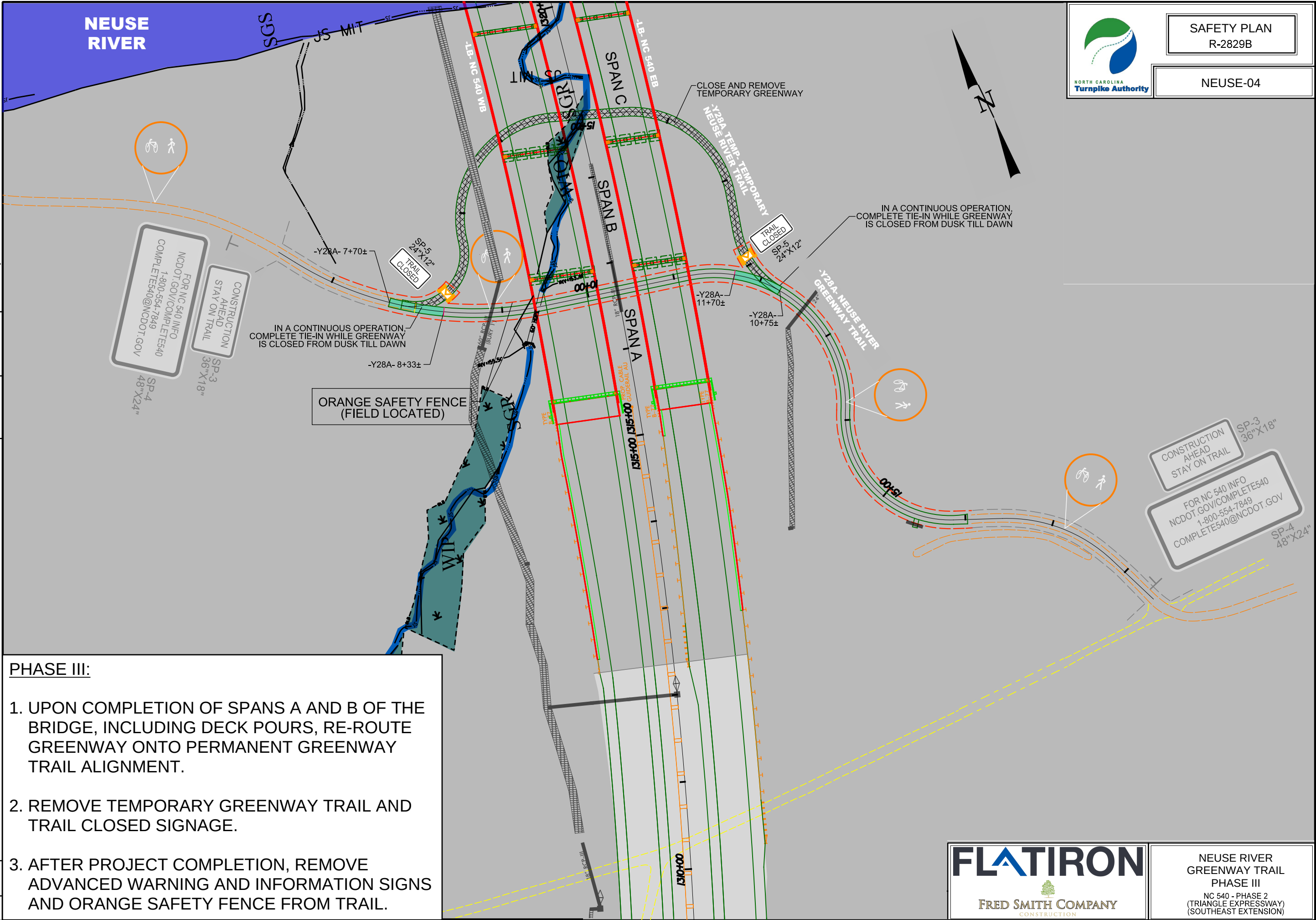
PHASE II:

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	
Δ	6-16-25	Y28 & Y28A NEUSE RIVER GREENWAY TRAIL ALIGNMENTS REVISED	
Δ	7-21-25	Y28A & Y28A TEMP NEUSE RIVER GREENWAY TRAIL ALIGNMENTS REVISED	

7/2/2025
c:\bms\ice-eng-pw-0\dm559256\R-2829B TMP 07B AREA 04 PHASE 03.dgn
ReedGentry





SAFETY PLAN
R-2829B

NEUSE-04



FRED SMITH COMPANY
CONSTRUCTION

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

Dam-It Dams Portable Water Filled Dams



Dam-It Dams is a World Class provider of water-filled cofferdams for numerous types of projects with varying needs. We are an Award-Winning leader of innovative solutions for de-watering a project site and diverting or damming water, which enables a project's initiation, safety, and completion. We also offer our services for home flood protection, making our dams ideal for the commercial industry and the private sector! With easy-to-use solutions that are environmentally friendly, reusable, portable, and cost-effective, you can't go wrong with Dam-It Dams!

Reasons to Choose Dam-It Dams, Inc.

Adaptable – Our product conforms to virtually every type of landscape and weather condition, making it ideal for countless uses.

Affordable – Our water-filled dams are reusable, making them more cost conscientious than the alternatives, as well as their predecessors, such as sandbags.

Durable – Dam-It Dams water inflated cofferdams are made of industrial strength geo-textile materials that can withstand tremendous water pressure, and are puncture resistant.

Environmentally friendly – We've engineered a cofferdam that uses on-site water, not imported earthen fill, which results in less impact being made on the landscape.

Expandable – Our water inflated cofferdams can be linked as needed to form any length barrier with heights of 1' to 12', widths of 2' to 23'

Immediately Available – You can contact our company for purchase or rental in cases of emergency, or pre-planned projects.

Portable – Because of the lightweight material used to create our cofferdams, and the simple usability of the product, it is easy to store in addition to moving from site to site.

Temporary – Once removed from the work site, there are minimal traces of it's existence, if any, and there is no structurally aesthetic changes to be seen/tolerated.



Our Services

- ✓ Bridge Repairs
- ✓ Boat Ramp Repairs
- ✓ Canal Repairs
- ✓ Cofferdam Dredging
- ✓ Pipeline Repairs
- ✓ River Crossings,
- ✓ River Diversion,
- ✓ Water Containment,
- ✓ Wetlands Preservations,
- ✓ Flood Protection,
- ✓ The Construction Industry
- ✓ Dewatering Work Sites
- ✓ Boat Ramps
- ✓ Culvert Repairs
- ✓ Diversion Pipes
- ✓ Emergency Response
- ✓ International Projects
- ✓ Pipe Crossing
- ✓ Pond Liner Repair
- ✓ Remediation & Hazmat
- ✓ Canals
- ✓ Stream and River Diversions
- ✓ Flood Control
- ✓ Flood Control for Governments
- ✓ Water Storage Dams

Our Cofferdam Technology

A portable cofferdam is any pre-fabricated water barrier that can be transported to and installed at a project site, oftentimes in response to an emergency rising water level situation, like a flood or the need for drier work environments. Cofferdams offer a reliable solution to many water damming or diversion necessities in the construction industry, as well as homes and businesses that need flood protection.

How Our Cofferdams Work

Our water inflated cofferdams use on-site water filled dual inner tubes that allow the dam's chambers to slowly and evenly inflate, forming a strong, stable cylindrical barrier. As the inner tubes fill and water pressure builds, the dam unrolls in a controlled and steady manner to create the cofferdam and provide an even and gradual build to make it more secure. This method offers a superior barrier as compared to sandbags, which are often ill-equipped to handle large amounts of water or flood walls which create a long-term barrier that alters the aesthetic of a home or business from its original intended appearance.

Environmentally Superior Water Filled Dams (Cofferdams)

Because our inflatable cofferdams work with the environment, they create effective water barriers that leave minimal or even no footprint on the environment. When the project is completed, the dam is then easily drained and rolled up for return, storage, or transport to another project site. They also don't require the relocation of earthen-fill from another site or location in order to provide the safe and secure environment you and your crew should absolutely expect of a water barrier. In addition, their ability to be re-used, as well as their durability against oftentimes destructive conditions, means they're less likely to become a burden that sits in a landfill somewhere instead of the handy and necessary tool and companion it's intended to be.



**Do you need a portable and
dependable damming solution?**



Dam-It Dams Inc

546 E Reid Road

Grand Blanc, MI 48439



810-695-1695



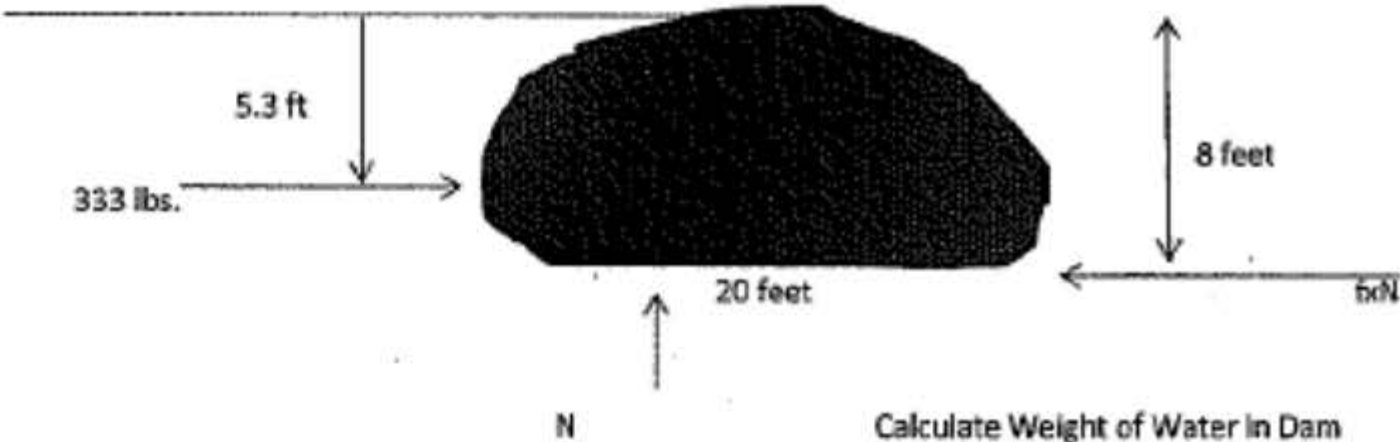
sales@damitdams.com



www.damitdams.com

Dam-It Dams Stability from Sliding Calculations

DAM-IT DAMS, INC.
12263 Center Road
Fenton, MI 48430
248-755-7383



Calculate Water Load

At point 2/3 depth from water surface

5.3328 Depth above point of load
62.4 lb/ cf weight of water

332.7667 lbs, total load

Calculate Weight of Water in Dam
Maximum 499.2 per foot
Minimum 374.4 at edges

These calculations based on Dam-it Dams on a flat surface with a friction factor equal or greater than granite.

Friction to resist load

Mirafi 600x
f= 0.6 TenCate Rich Sack
0.6 granite on granite

N for 1 ft width
499.2 8 X 62.4

F=f X N 299.52 One ft of dam

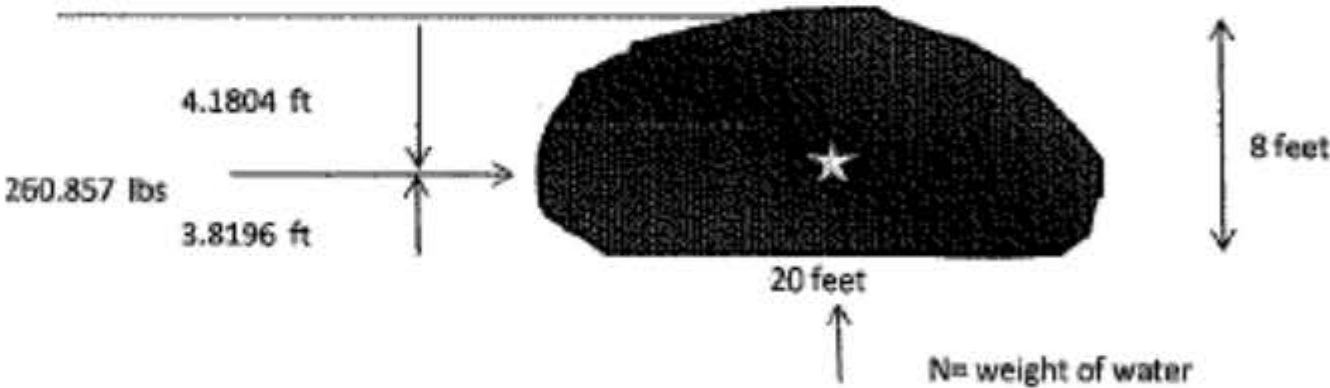
Use average height of 5 ft
F = 20 X ave ht. X 62.4 X f
F= 4492.8

Factor of Safety (F.of S.) F/Load
13.5

Dam-It Dams Stability from Rotation

Center of Gravity

0.4244 radius 8
3.3952 ft from bottom



Clockwise Rotation at 1/3 from top of dam:
Mo= 4.1804 times 260.857 1090.486 ft lbs.

Resisting Moment
Total Height 8
62.4
499.2 lbs
Arm 10 ft
Mr= 4992 ft. lbs

Factor of Safety against rotation
4992 Mr
divided by 1090.486 Mo
F.of S. 4.6





Providing Water Solutions Worldwide Since 1928

User Manual



www.damitdams.com

(313) 886-6761

546 E. Reid Rd. Grand Blanc, Michigan 48439

© 2015 All Rights Reserved

Introduction

Purpose

This Manual provides important information about Dam-It Dams' Award-Winning portable, water-filled Cofferdams and Cofferdam Systems.

has been prepared to help new, current and future users of Dam-It Dams' Cofferdams and Cofferdam Systems.

Although not designed to be a comprehensive guide, the following topics are addressed in significant detail to give you important information about our cofferdams, including installation, maintenance and removal:

- Applications
- Installation Example
- Specifications
- Installation Guidelines
- Small Cofferdam Installations
- Large Cofferdam Installations
- Cofferdam Connections
- Maintenance and Repairs
- Removal

If this Manual does not provide the information you need or if you have any questions, please do not hesitate to contact us.

Company Background and Information

Dam-It Dams, Inc. has been an innovator in cofferdams and cofferdam systems since 2000. We are dedicated to providing the best product and the best service in the industry. Our patented, portable cofferdams use on-site water to manage, move, dam or divert water with minimal or no impact on the environment. In addition, we offer a wide selection of various types of cofferdams that provide cost effective and highly adaptable solutions for virtually every contractor's need.

We are headquartered in Fenton, Michigan, about 45 miles northwest of downtown Detroit. We can be ready within a moment's notice to travel anywhere in the world to bring portable water solutions where they are needed...from projects we've completed in Alaska and Dubai to right in our own backyard.

Today, Dam-It Dams is the Midwest's Largest Manufacturer of portable water-filled cofferdams. They are made of a heavy-duty, geotextile woven polypropylene outer casing. Our dams create an effective water barrier that leaves no or only a minimal

footprint on the environment. They work with Mother Nature, not against her. And because of their industrial strength, our cofferdams are reusable.

Precautions

No two cofferdam projects are exactly the same. Soil and weather conditions alone can affect everything from initial transport to ultimate removal.

The descriptions, instructions, photos, procedures and other information contained in this User Manual are provided to help you with the success of your project. However, they are primarily Guidelines that may not provide definitive answers to all the specific issues that may arise.

If you need help or have any questions about the installation, maintenance or removal of Dam-It Dams' cofferdams or cofferdam systems, please contact us at (248) 755-7383 or visit www.damitdams.com.

Table of Contents

What Is a Cofferdam?	5
How Does a Cofferdam Work?	7
Applications	10
Installation Example	13
Specifications.....	17
Height, Width and Length.....	17
Height and Width Recommendations.....	17
Water Depth	17
Water Width	18
Length	18
Cofferdam Water Capacity	20
Installation Guidelines	22
Overview	22
Site Analysis and Preparation	22
Small Cofferdam Installations	23
Size.....	23
Equipment Needs.....	23
Project Personnel	23
Site Preparation	23

Installation Procedures	23
Large Cofferdam Installations	29
Size.....	29
Equipment Needs.....	29
Project Personnel	30
Site Preparation	30
Installation Procedures	31
Cofferdam Connections	37
Connection Procedures.....	37
Maintenance and Repairs.....	42
Maintenance Guidelines.....	42
Repair Procedures.....	42
Removal	43
Small Cofferdam Removal.....	43
Large Cofferdam Removal	43

What Is a Cofferdam?

A cofferdam is a temporary enclosure in or around a body of water that is constructed to allow dewatering, diversion or damming of an enclosed area. The primary purpose of a cofferdam is to create a dry environment for a project to proceed. They were first used in 1736.



Figure 1 – A fully inflated cofferdam holds back water from the work site.

Today's cofferdams are typically conventional embankment dams of both earth- and rock-fill, although concrete or some sheet piling also may be used.

Dam-It Dams' cofferdams use on-site water to fill dual inner tubes that cause the dam's chambers to slowly and evenly inflate, forming a strong, stable cylindrical tube. As the inner tubes continue to fill and the water pressure builds, the dam unrolls in a controlled manner to create the cofferdam.



Figure 2 – Workers unroll a cofferdam in preparation for inflation.

How Does a Cofferdam Work?

This is a cross section of a standard Dam-It Dams cofferdam:



Figure 3 – This is a cross section of a standard Dam-It Dams’ cofferdam.

Our cofferdams have three basic parts:

Part A – An outer casing that is made of heavy-duty, geotextile woven polypropylene contains two side-by-side inner tubes (Parts B & C).

Part B – This inner tube – in combination with Part C – acts as a stabilizer to keep the dam from rolling due to outside water pressure or other forces.

Part C – The companion to Part B. Acting together and when filled with on-site water, Parts B and C provide the ideal combination of weight, mass and pressure to stabilize the cofferdam while the project proceeds.

When water (onsite or otherwise) is pumped into the dual inner tubes, the outer casing confines the inner tubes to create counter-balanced pressure that stabilizes the cofferdam against external factors, such as lateral water movement.



Figure 4 – Dam-It Dams’ cofferdams can withstand tremendous lateral pressure.

The materials used in our cofferdams are very durable and flexible. They can be molded to perfectly fit a lake bed, river bed, watershed or any other type of physical setting. Not only does this make for an excellent seal, it also helps ensure minimal onsite water escape.



Figure 5 – Cofferdams mold to the environment to seal and prevent water escape.

Applications

There are hundreds of applications for which Dam-It Dams' Cofferdams are perfectly suited – too many to fully describe in this Manual. However, the following are some of the most frequently requested:

- Boat Ramp Dewatering
- Bridge/Pier Repairs
- Chemical Spills Control
- Construction Site Dewatering
- Dredging
- Environmental Remediation
- Environmentally Sensitive Area Protection
- Fish Habitat Protection
- Flood Barriers
- Foot Causeways
- Hazardous Material Contamination Control
- Levee Construction and Repairs
- Pipeline Crossings
- Pond Liners and Repairs
- Shoreline Restoration
- Water Storage
- Wetland Management

In today's highly regulated-environmental industry, alternatives to earth-filled barriers (for example, sandbags) are required. There currently is no better alternative than a water-filled, portable cofferdam. It is the most adaptable and least costly means of managing water while protecting the environment.



Figure 6 – A cofferdam holding back water so work can proceed.

Dam-It Dams has successfully worked with the US Army Corps of Engineers, the Department of Transportation and leading engineering firms throughout the United States and worldwide to solve complex dewatering and water containment challenges. With current weather and climate changes causing unpredictable water movement and an expanded need for flood control, the speed with which our Portable Cofferdams can be installed make them indispensable for emergency situations.



Figure 7 – A rolled up cofferdam arrives at the work site.



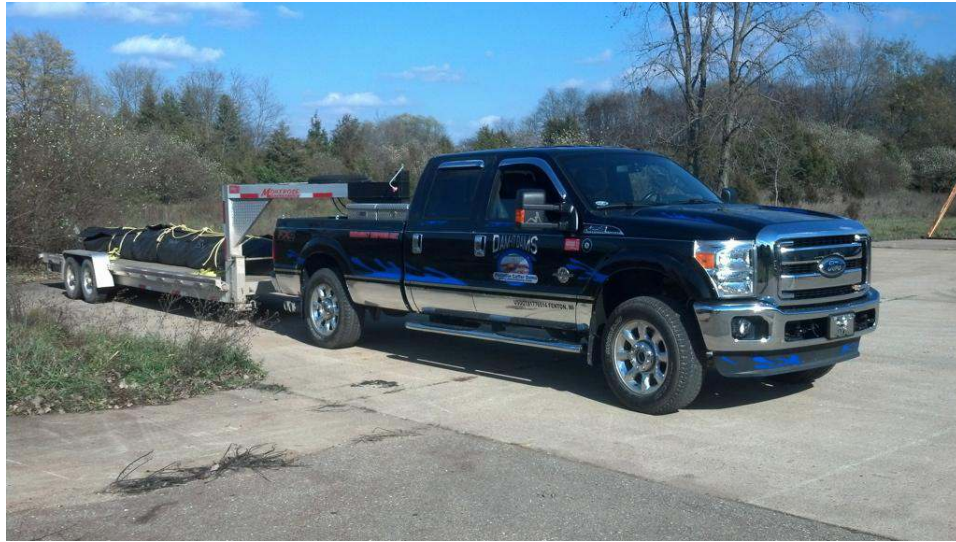
Figure 8 – Our cofferdams are portable and readily available for any situation, including emergencies.

The following sections will continue the description of Dam-It Dams' Cofferdams and Cofferdam Systems, including specifications, installation, maintenance, repairs and removal.

Installation Example

The 8-step process on the following pages shows a simple, uncomplicated installation of a Dam-It Dams cofferdam.

Step 1: The rolled-up Dam is delivered to the job site on a truck or trailer.



Step 2: The Dam is lifted from the trailer and placed at the shoreline.



Step 3: Two identical pumps are hooked up to fill the internal tubes with onsite water.



Step 4: As the pumps fill the Dam, the Dam unrolls and is guided into place.



Step 5: The Dam is nearly fully inflated as it reaches the opposite shore.



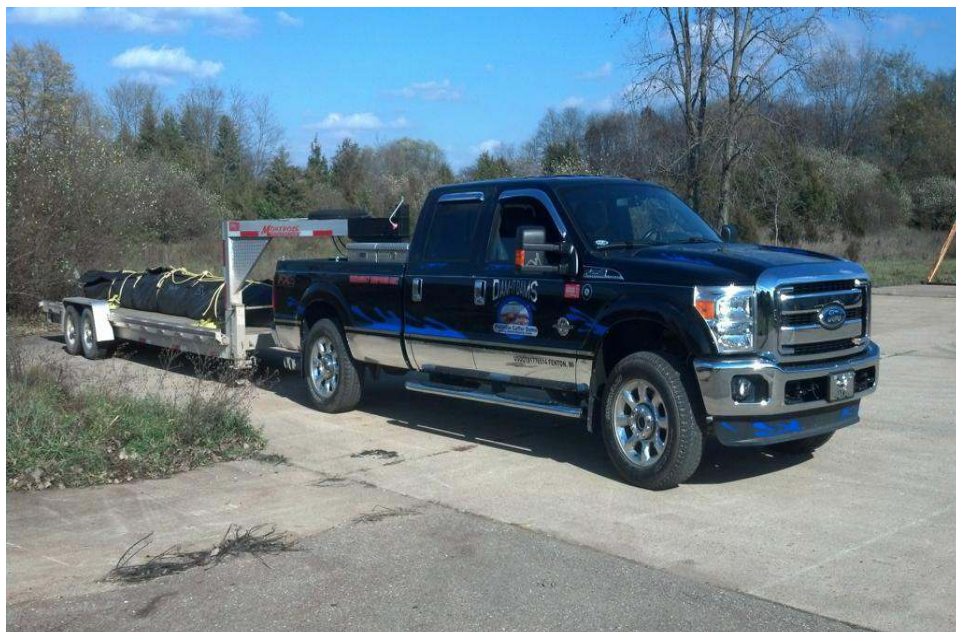
Step 6: The water is pumped from the dry side to the wet side of the Dam.



Step 7: The work for the project at hand can now get done on the dry side.



Step 8: Empty the dam, roll it up, put it on the trailer and move it to the next job.



Specifications

There are four key measurements you must know to make sure the cofferdam you order is right for your project – height, width, length and depth of the water to be contained/diverted.

Height, Width and Length

Dam-It Dams' Cofferdams are available in a wide range of heights and lengths:

- Inflated heights range from one foot to 12 feet
- Inflated widths range from two to 23 feet
- Standard lengths are 50 and 100 feet, although any length cofferdam can be fabricated to meet specific project needs

Height and Width Recommendations

The height and width of the cofferdam(s) you will need for your project depend on many factors, including water depth to be controlled, bank slope, waterbed slope and water velocity.

Water Depth

Depth of the water to be contained or diverted is a critical factor in determining correct cofferdam size. Use the following procedure to calculate water depth for your project:

- Step 1. Measure the **maximum** water depth at the installation site.
- Step 2. Calculate the **average** water depth at the installation site.
- Step 3. Calculate the **difference** in water level elevations between the installation site and the containment or diversion site.
- Step 4. Add these three numbers to find the projected maximum water depth after the cofferdam has been installed.

Knowing the projected maximum water depth will ensure your cofferdam is adequately sized for the project. Too often, this measurement is underestimated. The result can be a cofferdam this is too small, causing time delays, increased costs and avoidable unsafe working conditions.

The following chart provides guidelines for the height and width of a cofferdam from Dam-It Dams:

Height (inflated) (feet)	Width (inflated) (feet)	Maximum Water Depth (inches)
1	2	9
2	4	18
4	10	38
6	17	56
8	19	72
10	23	86
12	27	108

Note about Water Velocity

Water velocity must be taken into account when calculating the projected maximum water depth.

As a cofferdam fills with water and unrolls, the active water being diverted will begin to back up and rise. Water velocity at the end of the cofferdam increases. The water bed may erode at the end, increasing water depth at the spot. Faster-flowing water will exaggerate this condition.

Water Width

It only makes sense that a wide, shallow river is easier to dam than a narrow waterway. Wideness allows minimal fluctuations in water depth while narrowness encourages large increases.

As a general rule, the wider the water channel, the less water depth will increase.

Length

The longest cofferdam we have installed to date was 1,000 feet from end-to-end. It was accomplished by joining together individual cofferdams of varying lengths with coupling collar connections.

Using the same technique allows us to configure a Cofferdam System in a straight line, around corners and/or in a circle.



Figure 9 – A long cofferdam with coupling collar connections.

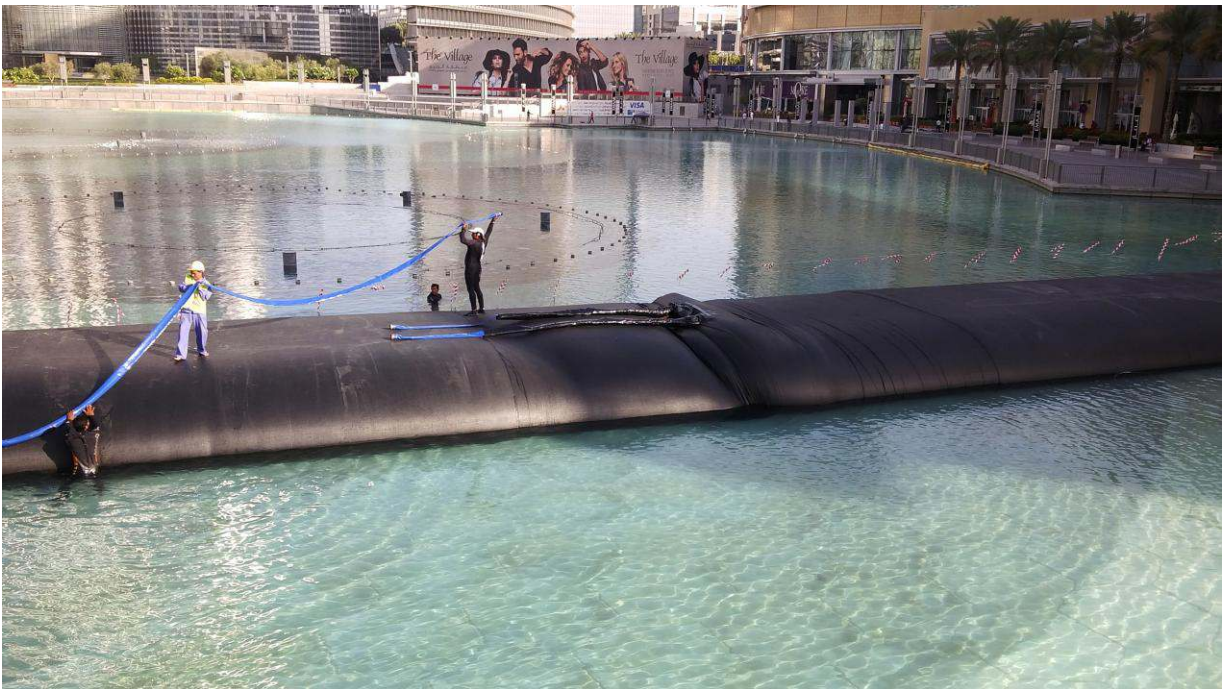


Figure 10 – Two cofferdams joined by a coupling collar.



Figure 11 – Cofferdams can accommodate several different angles to keep water out.



Figure 12 – Even in a circle...

Cofferdam Water Capacity

Finally, it is also important to know the water capacity of the cofferdam you will be using to determine project team size, equipment and the size and number of pumps needed.

The internal water capacity of a standard Dam-It Dams Cofferdam is 7.48 gallons per cubic foot. The following chart shows the water capacities of various-sized, fully filled cofferdams:

Dam-It Dams Cofferdams Water Capacity				
Height (feet)	Width (feet)	Length (feet)	Total Cubic Feet	Water Capacity (gallons)
1	2	50	100	748
		100	200	1,496
2	4	50	400	2,992
		100	800	5,984
4	10	50	2,000	14,960
		100	4,000	29,920
6	17	50	5,100	38,148
		100	10,200	76,296
8	19	50	7,600	56,848
		100	15,200	113,696
10	23	50	11,500	86,020
		100	23,000	172,040
12	27	50	16,200	121,176
		100		242,352

Dam-It Dams will gladly assist you in determining the Water Capacity of the specific cofferdam being used for your project.

Installation Guidelines

Overview

Dam-It Dams' cofferdams are typically fabricated at the factory and delivered – rolled and ready-to-use – to the project site. Larger cofferdams may be assembled at the site.

When delivered, the cofferdam comes on a solid core that aids installation and transportation and also allows for re-use.



Figure 13 – Workers guide the unrolling of a large cofferdam as it inflates.

Site Analysis and Preparation

In a perfect world, all cofferdam installations would occur on level water beds free of rocks, boulders and debris. In our world, these impediments must be addressed before a cofferdam can be properly installed.

Water beds with large boulders, jagged rocks and/or excessive debris must be cleared to ensure a good seal for the cofferdam. These impediments must be removed or relocated by hand or heavy equipment prior to installation.

Smaller rocks and debris may be removed or repositioned during installation. Rocks can be repositioned from the upstream side of the cofferdam to the downstream side to provide additional dam support.

Small Cofferdam Installations

Size

For purposes of this manual, a small cofferdam is no more than four feet high.

Equipment Needs

The following equipment is recommended for small cofferdam installations:

- Two portable 2"-3" water discharge pumps
- A discharge/suction hose for each pump
- (Other Equipment – Jack will provide list)

Project Personnel

Two to four workers are needed to install a small cofferdam. Individual project constraints (time, site availability, etc.) will dictate if additional workers are needed.

Site Preparation

Prepare the site by moving or removing boulders, rocks and debris that may interfere with proper installation of the cofferdam. If necessary, level the water bed. Keep excavation to a minimum. Also, do not install cofferdams on freshly removed materials.

Installation Procedures

The following procedures provide guidelines for installing a Small Cofferdam. Because each project is unique, contact Dam-It Dams if you have any questions about your specific project or need additional information.

Step 1. Delivery

Transport or have the Dam-It Dams' cofferdam(s) delivered to the project site.



Figure 14 – Rolled up cofferdams arrive on a flatbed at the project site.

Step 2. Position the Cofferdam

One end of the cofferdam has the long fill tubes. These are used to fill the cofferdam with water and for connecting multiple cofferdams, if necessary.



Figure 15 – Fill tubes carry water from the discharge pumps to inflate the cofferdam.

The actual cofferdam starts at the edge of the Casing that holds the fill tubes. Position the edge of the Casing on one bank of the project site at least as high as the cofferdam will be when fully inflated. This is called the Starting Point.

Taking into account the slope of the bank, make sure the Starting Point is higher than the water level inside the cofferdam after inflation. The cofferdam will be a maximum of three+ feet at the lowest point of installation.

(Note: If the bank is not steep enough to attain the needed Starting Point, use fill material to create a false bank.)



Figure 16 – A cofferdam is properly positioned at the Starting Point.

Step 3. Prepare the Cofferdam for Inflation

Place one end of a discharge hose inside each fill tube. Secure the hoses by wrapping the tubes with duct tape. If necessary, tie the end corners of the cofferdam to a stationary object (tree, boulder, etc.) to keep it from sliding down the bank.

Step 4. Initiate Cofferdam Inflation

Start pumping water into both fill tubes at the same time and at the same rate. Position workers at the rolled end of the cofferdam. As the cofferdam inflates and begins to unroll, the workers should wait for water pressure to build inside the cofferdam.



Figure 17 – A worker guides the cofferdam as it inflates and unrolls.

When the cofferdam reaches the desired height, the workers should take a step back, wait until the height is restored and take another step backward. Complete this process until the cofferdam is fully inflated.

The water level inside the cofferdam must be kept higher than the upstream water side. Remember, upstream water depth will increase as the cofferdam constricts water flow.

It is important that the workers step back in unison as the cofferdam unrolls to prevent injury.



Figure 18 – Workers work in unison as the cofferdam inflates and unrolls.

Step 5. Ensure a Good Seal

If you have not already removed boulders, rocks and debris from the project site, now is the time. These impediments oftentimes can only be located by feel. They must be removed before the cofferdam is unrolled or while it is unrolling to ensure a good seal, prevent leakage and avoid damage to the cofferdam.

Step 6. Inflate the Cofferdam

There are four important things to remember when inflating the cofferdam:

- Maintain water pressure inside the cofferdam at all times during inflation.
- A cofferdam that unrolls too quickly may not inflate above the surrounding water level and will move with the water flow.
- Move impediments to the downstream side of the cofferdam (they also may be used for support).
- Always inflate the cofferdam with the maximum amount of water to achieve desired height.



Figure 19 – A fully inflated cofferdam.

Large Cofferdam Installations

Size

For purposes of this manual, a large cofferdam is more than four feet high.

Equipment Needs

The following equipment is recommended for large cofferdam installations:

- Two portable 2"-3" water discharge pumps
- A discharge/suction hose for each pump
- In moving water, restraining ropes should be used to help control the cofferdam during installation. Every 100 feet of cofferdam requires 250 feet of ½-inch rope. The use of four ropes is highly recommended for the installation of cofferdam that are six feet or higher in rapidly flowing water.
- (Other Equipment – Jack will provide list)

Project Personnel

Stationary Water

Three to six workers are typically required to install large cofferdams in stationary water. Ropes are usually not needed but can be used to maneuver the cofferdam in deep water depths.

Moving Water

Three to seven workers are required to install large cofferdams in moving water. The following table shows personnel needs for typical installations of cofferdams that are four feet or higher:

Cofferdam Size (feet)	Ropes	Workers in the Water	Workers Manning Pumps
4	2	2-4	1
6	3	2-4	1
8	4	2-4	1
10+	4	2-6	1

Strong water currents require more personnel to ensure proper installation and the safety of all workers.

Site Preparation

Prepare the site by moving or removing boulders, rocks and debris that may interfere with proper installation of the cofferdam. If necessary, level the water bed. Keep excavation to a minimum. Also, do not install cofferdams on freshly removed materials.

Installation Procedures

Step 1. Delivery

Transport or have the Dam-It Dams' cofferdam(s) delivered to the project site.

Loading straps are provided for large Dam-It Dams Cofferdams. First, remove the cofferdam's protective wrapping by cutting the packing ropes. Then carefully attach the loading straps to the equipment being used to move the cofferdam from the transport vehicle to the project site.



Figure 20 – A large cofferdam is delivered to the project site using loading straps.

Step 2. Position the Cofferdam

One end of the cofferdam has the long fill tubes. These are used to fill the cofferdam with water and for connecting multiple cofferdams, if necessary.



Figure 21 – Fill tubes are inserted into a cofferdam resting on a bank.

The actual cofferdam starts at the edge of the Casing that holds the fill tubes. Position the edge of the Casing on one bank of the project site at least as high as the cofferdam will be when fully inflated. This is called the Starting Point.

Taking into account the slope of the bank, make sure the Starting Point is higher than the water level inside the cofferdam after inflation. The cofferdam will be a maximum of three+ feet at the lowest point of installation.

(Note: If the bank is not steep enough to attain the needed Starting Point, use fill material to create a false bank.)



Figure 22 – A large cofferdam properly positioned at the Starting Point.

Step 3. Prepare the Cofferdam for Inflation

Place one end of a discharge hose inside each fill tube. Secure the hoses by wrapping the tubes with duct tape. If necessary, tie the end corners of the cofferdam to a stationary object (tree, boulder, etc.) to keep it from sliding down the bank.



Step 4. Initiate Cofferdam Inflation

Start pumping water into both fill tubes at the same time and at the same rate. Position workers at the rolled end of the cofferdam. As the cofferdam inflates and begins to unroll, the workers should wait for water pressure to build inside the cofferdam.



Figure 23 – Workers standing against rolled end of a cofferdam as it inflates.

When the cofferdam reaches the desired height, the workers should take a step back, wait until the height is restored and take another step backward. Complete this process until the cofferdam is fully inflated.

The water level inside the cofferdam must be kept higher than the upstream water side. Remember, upstream water depth will increase as the cofferdam constricts water flow.

It is important that the workers step back in unison as the cofferdam unrolls to prevent injury.

Step 5. Ensure a Good Seal

If you have not already removed boulders, rocks and debris from the project site, now is the time. These impediments oftentimes can only be located by feel. They must be removed before the cofferdam is unrolled or while it is

unrolling to ensure a good seal, prevent leakage and avoid damage to the cofferdam.

Step 6. Use Restraining Ropes

Cofferdams that are higher than four feet typically require restraining ropes to control the unrolled portion during installation, especially in moving water. Without these ropes, the water pressure in the inner fill tubes could cause the cofferdam to prematurely unroll.

If restraining ropes are used, they should be positioned under the cofferdam prior to inflation. Attach one end of them to the base of a metal post or tree and run them over the top of the cofferdam and back to the metal post or tree.

During installation, the ropes should be held in a way that will allow them to be let out as the cofferdam unrolls.

Restraining ropes should be twice as long as the fully inflated cofferdam plus an additional 50 feet.



Figure 24 – Restraining ropes should be used to control large cofferdam installations.

Step 7. Inflate the Cofferdam

Project site conditions can quickly change in moving water. Water depths can widely fluctuate from one side of the cofferdam to the other side.

Large cofferdams should be unrolled at the rate of 2-3 feet at a time, waiting for inside water pressure to reach the desired level before continuing.

There are five important things to remember when inflating a large cofferdam:

- Large cofferdams using restraining ropes must be installed in a straight line. They can be properly positioned after full inflation.
- Maintain water pressure inside the cofferdam at all times during inflation.
- A cofferdam that unrolls too quickly may not inflate above the surrounding water level and will move with the water flow.
- Move impediments to the downstream side of the cofferdam (they also may be used for support).
- Always inflate the cofferdam with the maximum amount of water to achieve desired height.



Figure 25 – A fully inflated large cofferdam.

Cofferdam Connections

Many projects require the coupling of two or more cofferdams to form a longer continuous water barrier.

Dam-It Dams' cofferdams are available with coupling collars at the closed end (the other end has the fill tubes). The end with the fill tubes is designed to snugly fit into the coupling collar.

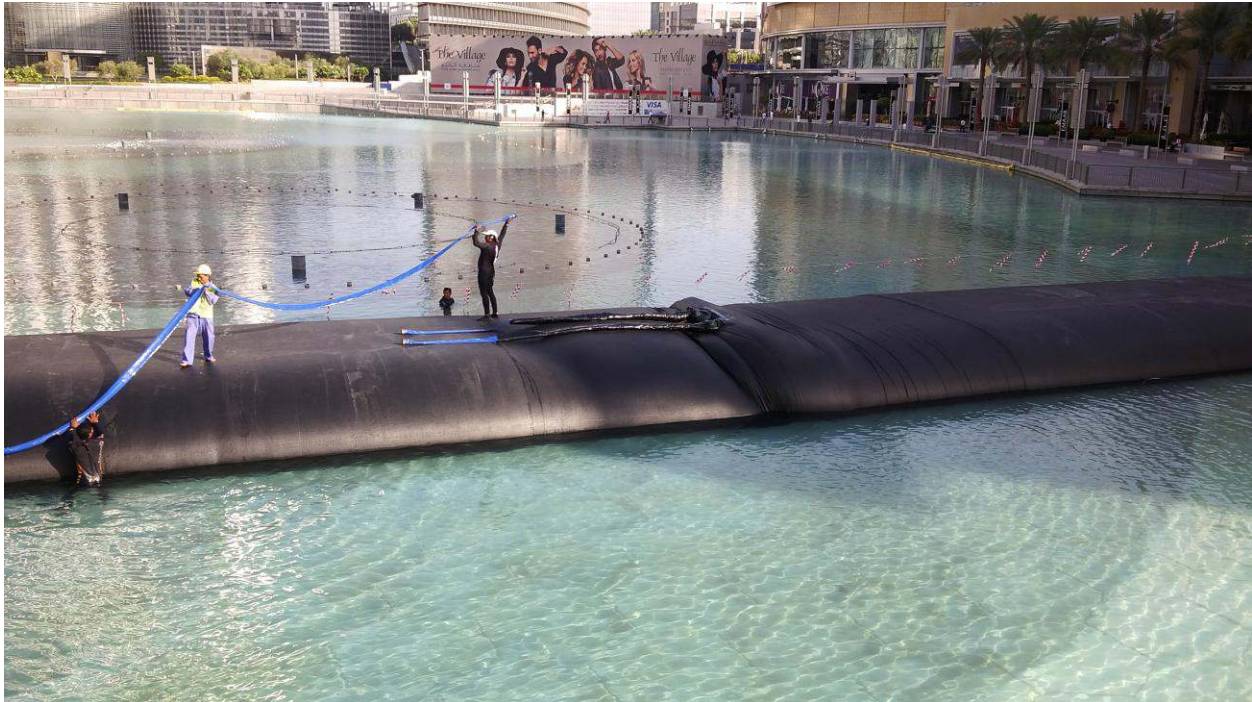


Figure 26 – Two cofferdams are connected with a coupling collar.

Connection Procedures

Follow these procedures to connect an additional cofferdam:

Step 1. Alignment

Position the additional cofferdam directly behind and in line with the already inflated cofferdam.

Unroll about 10 feet of the additional cofferdam plus the length of the inner fill tubes.



Figure 27 – An additional cofferdam is being prepared for coupling.

Step 2. Prepare Inner Fill Tubes

Gather the end of one fill tube on the additional cofferdam and twist. Wrap with duct tape. Perform the same procedure on the other inner fill tube.

The wrapped inner tubes can now easily be inserted into and pulled through the round holes on the top of the coupling collar.



Step 3. Cut Holes in Coupling Collar

Cut two round holes six inches in diameter in the top of the coupling collar attached to the Casing on the inflated cofferdam. The holes should be cut midway between the sides of the cofferdam.

The holes should be 1-2 feet apart on a four-foot high cofferdam and four feet apart on a six foot high cofferdam.

Each hole must be big enough to accept one of the wrapped inner fill tubes.

Step 4. Make the Coupling Connection

Insert the wrapped right inner tube through the hole on the right side of the coupling collar and the wrapped left inner tube through the hole on the left side of the coupling collar. To do this, work your way inside the coupling collar and push the inner tube toward the hole.

Have a second person reach through the hole from the outside, grab the tube and pull it through the hole. About four feet of the inner fill tube should be pulled through for a four foot high cofferdam.

Pull the Casing of the additional cofferdam inside the coupling collar and around the inner fill tubes to totally enclose it in the coupling collar. The Casing of the additional cofferdam should be pulled up to be in contact with the end of the inflated cofferdam.

Pull excess inner fill tube material through the holes.

Step 5. Insert Discharge Hoses

Remove the tape from around the bunched inner fill tubes and insert the discharge hoses deeply inside them. Make sure the discharge hoses extend past the coupling collar.

If necessary, remove any fittings on the discharge hoses. If they cannot be removed, cover metal ones with duct tape.

To keep the discharge hoses from sliding out, bunch the inner fill tubes around them and secure with duct tape.



Figure 28 – Discharge hoses are fully inserted into inner fill tubes.

Step 6. Inflate Additional Cofferdam

Inflate the additional cofferdam by following the same procedures used to inflate the original cofferdam.

***Step 7. Remove Discharge Hoses***

Remove the discharge hoses from the inner fill tubes on the additional cofferdam when fully inflated.

Tightly re-wrap the inner fill tubes with duct tape so the tubes will stand upright by themselves. You may wrap together the inner fill tubes to make them more stable and leak proof.

Step 8. Connect Additional Cofferdams

Follow the same procedures to connect each additional cofferdam.

Maintenance and Repairs

Maintenance Guidelines

Dam-It Dams' portable, water-filled Cofferdams are incredibly durable and will last a long time with minimal maintenance.

There are four important observations that should be made on a regular basis:

- Check for any leaks in the Cofferdam, especially in the Casing or inner fill tubes
- Check for seepage under the Cofferdam that could indicate a bad or failing seal
- Check to see if any inner fill tubes have fallen over and/or are draining water; make necessary adjustments
- Note any lateral movement of the Cofferdam and make necessary adjustments

Repair Procedures

Minor Leaks

Most minor leaks can be addressed by pumping additional water into the cofferdam on a periodic basis.

Identify which of the inner fill tubes is leaking, untie and unwrap the tube, insert the discharge hose from the water pump and fill as necessary.

Larger Leaks

Occasionally, a leak is large enough to require a patch.

To repair such a leak, first identify and isolate the area around it. Then, using a utility knife, cut an "X" through the Casing and pull the material apart to expose the leak, being careful not to further damage the inner fill tube.

Cover the leak with repair tape and cover the "X" cut in the Casing with the same repair tape.

In most cases, it's best to just add water on a regular basis until the cofferdam can be taken out of service and patched properly from the inside or the inner tubes replaced.

Removal

Small Cofferdam Removal

Most small cofferdams can be removed by pumping out or draining the water from the inner fill tubes and rolling up the empty cofferdam.

If two or more cofferdams are connected by coupling collars, drain the outermost or downstream cofferdam first and disassemble the coupling collar. Remove that cofferdam, roll it up and proceed to the next connection. Repeat until all cofferdams have been drained, removed and rolled up.



Figure 29 – Workers draining water during removal of a small cofferdam.

Large Cofferdam Removal

Large cofferdams should be removed using equipment such as an excavator or a backhoe to pull the cofferdam from the water.

Pump out or drain as much of the water as possible and put a loading strap around the closed end of the cofferdam. Place the strap as near to the closed end as possible or water will remain trapped inside.

Very slowly lift up on the strap. Drain water out the open end. If the fill tubes are not draining, they might need to be pulled further off the bank. Proceed slowly so that you do not lift the water any higher than is necessary for it to drain.

Remove the drained cofferdam from the water. Re-roll the cofferdam for storage and reuse.