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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

J.R. "JOEY" HOPKINS
SECRETARY

December 20, 2024

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

FROM: Patrick Norman, P.E.
NCTA Chief Engineer

DocuSigned by:
Patrick A. Norman
34F914AC31694A5...

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

Attached are the modified US Army Corps of Engineers (USACE) Phased Section 404 Individual Permit, NC Division of Water Resources (NCDWR) Section 401 Individual Water Quality Certification, Neuse Riparian Buffer Authorization, and Non-404 Jurisdictional Wetlands and Waters Permit for the construction of the Triangle Expressway Southeast Extension (Complete 540) from NC 55 Bypass in Apex to US 64/264 (I-87) in Knightdale, Wake and Johnston Counties. STIP Nos. R- 2721, R-2828, and R-2829. ***The changes are based on the November 13, 2024 revision submittal for the R-2829B section of the project.*** Subject to any requisite permit modifications, all environmental permits have been received for the construction of the final design sections of this project.

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

cc: w/o attachment (see website for attachments)
Mr. Ron Davenport, P.E. Contracts Management
Mr. Clarence Coleman, P.E., FHWA
Mrs. Heather Montague, Division 5
Mr. Mark Craig, P.E., Division 5
Mr. Boyd Tharrington, P.E., Deputy Chief Engineer
Mr. Bill Martin, P.E., Programming and TIP
Mr. Timothy Ritacco, Utilities Unit
Mr. Matt Lauffer, P.E., Hydraulics Unit
Mr. Brian Hanks, 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
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Location:
1 SOUTH WILMINGTON STREET
RALEIGH, NC 27601

PROJECT COMMITMENTS

Complete 540 – Triangle Expressway Southeast Extension
Wake and Johnston Counties, North Carolina

STIP Project Nos. R-2721, R-2828, and R-2829
State Project Nos. 6.401078, 6.401079, and 6.401080
Federal Aid Project Nos. STP-0540(19), STP-0540(20), and STP-0540(21)
WBS Nos. 37673.1.TA1, 35516.1.TA1, and 35517.1.TA1

COMMITMENTS FROM PROJECT DEVELOPMENT AND DESIGN

Item	Responsible Party	Resource	Project Commitment	Project Stage / Status	Applicable STIP Project
1	Environmental Analysis Unit, NCTA	Historic Architectural Resources	NCDOT will coordinate with the NC State Historic Preservation Office and the property owner(s) relative to potential retaining wall design to eliminate the need for permanent easement or right-of-way from the Panther Branch School.	Completed	R-2828
2	Environmental Analysis Unit, NCTA	Archaeological Resources	NCDOT will conduct an archaeological survey of the Preferred Alternative and will coordinate the results with the NC State Historic Preservation Office and the NC Office of State Archaeology.	Completed	R-2721, R-2828, and R-2829
3	Environmental Analysis Unit, NCTA	Archaeological Resources	NCDOT will establish a Memorandum of Agreement with the NC State Historic Preservation Office in order to take into account the project's effect on archaeological resources.	Completed	R-2828
4	Environmental Analysis Unit, NCTA	Archaeological Resources	NCDOT will coordinate with the NC Office of State Archaeology relative to data recovery of materials in the one site determined eligible for the National Register of Historic Places based on the information contained at the site.	Final Design and Construction	R-2828
5	NCTA	Community Resources & Section 4(f)	NCDOT will coordinate with the Town of Cary relative to a potential Section 4(f) de minimis use finding for the Middle Creek School Park.	Completed	R-2721
6	NCTA	Community Resources & Section 4(f)	NCDOT will coordinate with the City of Raleigh relative to a potential Section 4(f) de minimis use finding for the Neuse River Trail.	Completed	R-2829
7	Division 5, NCTA	Recreation Facility	During construction, NCDOT will accommodate trail users along the Neuse River Trail through the project construction zone.	Final Design and Construction	R-2829
8	Environmental Analysis Unit, NCTA	Noise	NCDOT will prepare Design Noise Reports for the Selected Alternative during final design. All feasible and reasonable noise abatement measures will be constructed.	Final Design and Construction	R-2721, R-2828, and R-2829

Item	Responsible Party	Resource	Project Commitment	Project Stage / Status	Applicable STIP Project
9	Hydraulics Unit, NCTA	Stormwater Management	NCDOT will utilize Design Standards in Sensitive Watersheds in the Swift Creek and ~~*in the Lower*~~ Middle Creek watersheds.	Construction and *Final Design	R-2721, R-2828, and R-2829*
10	Environmental Analysis Unit, NCTA	Migratory Birds	NCDOT will comply with requirements set forth in the Migratory Bird Treaty Act (MBTA) of 1918. *On December 22, 2017, after further analysis of the text, history, and purpose of the MBTA, the US Department of Interior issued Opinion M-37050. Opinion M-37050 permanently withdraws and replaces Opinion M-37041. Opinion 37050 concludes that the MBTA applies to only affirmative actions that have as their purpose to reduce migratory birds by taking or killing of migratory birds, their eggs, or their nest.*	Construction	R-2721, R-2828, and R-2829
11	Hydraulics Unit, NCTA	Major Drainage Structures	NCDOT will perform a more detailed hydrologic and hydraulic analysis for each major drainage crossing for the Selected Alternative.	Final Design	R-2721, R-2828, and R-2829
12	Utilities Unit, NCTA	Utilities	NCDOT will coordinate with the appropriate utility owners during design of the Selected Alternative for all utility conflicts, including means to avoid or minimize impacts to utilities.	Final Design	R-2721, R-2828, and R-2829
13	Environmental Analysis Unit, NCTA	Indirect Effects & Cumulative Impacts	NCDOT will prepare a quantitative assessment for indirect and cumulative effects and impacts for the Selected Alternative.	Completed	R-2721, R-2828, and R-2829
14	Environmental Analysis Unit, NCTA	Protected Species	NCDOT will carry out all activities for which it has been assigned responsibility in the Biological Assessment of Potential Impacts to Federally Listed Species (December 2017) and the USFWS Biological Opinion (April 2018) and as amended.	Construction and *Final Design	R-2721, R-2828, and R-2829*
15	Environmental Analysis Unit, NCTA	Protected Species	NCDOT will carry out all activities for which it has been assigned responsibility in the Biological Assessment for Atlantic Sturgeon Critical Habitat (December 2017) and the NMFS concurrence letter (May 2018) and as amended.	Final Design and Construction	R-2829
16	Environmental Analysis Unit, Division 5, NCTA	Protected Species	FHWA and NCDOT will update the 2017 Biological Assessment and coordinate with USFWS in accordance with ESA Section 7 for the Neuse River Waterdog, Carolina Madtom, Atlantic Pigtoe, and Atlantic Pigtoe Critical Habitats.	Completed	R-2721, R-2828, and R-2829
17	Environmental Analysis Unit, Division 5, NCTA	Protected Species	NCDOT will carry out all activities for which it has been assigned responsibility in the Revised Biological Assessment of Potential Impacts to Federally Listed Species (July 2019) and the USFWS Revised Biological/Conference Opinion (October 2019).	Construction and *Final Design	R-2721, R-2828, and R-2829*

COMMITMENTS FROM PERMITTING

Item	Responsible Party	Commitment Source	Project Commitment	Project Stage / Status	Applicable STIP Project
18	Division 5, NCTA	Recreation Facility	During construction, NCDOT will accommodate trail users along the Woodcreek Trail through the project construction zone.	Construction	R-2721A
19	Division 5, NCTA	404 Permit Condition 9 (2)	NCDOT will protect the Atlantic Sturgeon by not blocking greater than 50% of the Neuse River below the ordinary high-water mark with temporary causeways or work bridges. All causeways and work bridges will be removed at the end of the project.	Construction	R-2829B
20	Environmental Analysis Unit, Division 5, NCTA	404 Permit Condition 9 (3)	NCDOT will comply with the attached USFWS Biological Opinion-Revised (USFWS BO), dated October 15, 2019 and modified Addendum September 30, 2024.	Construction and *Final Design	R-2721, R-2828, and R-2829*
21	Division 5, NCTA	404 Permit Condition 3 (Attachment: USFWS Biological Opinion (BO) Section 2.4)	NCDOT will invite representatives of the USFWS NCWRC, and other agency personnel to preconstruction meetings prior to incurring impacts in jurisdictional features, as well as to preconstruction meetings associated with installation of structures within 0.25 mile of the Swift Creek crossing.	Completed	R-2828
22	Division 5, NCTA	404 Permit Condition 3 (Attachment: USFWS BO Section 2.4)	NCDOT will not allow any part of the bridging structure for Swift Creek to be within 10 feet of the top of bank on either side of the channel. No permanent structures or temporary structures will be placed in Swift Creek. All permanent and temporary structures will be installed and designed to maintain stability of the stream banks of Swift Creek.	Completed	R-2828
23	Roadside Environmental Unit, Division 5, NCTA	404 Permit Condition 3 (Attachment: USFWS BO Section 2.4)	NCDOT will require construction of two permanent hazardous spill basins (HSBs) at the crossing of Swift Creek. Road runoff from approximately 1.3 miles of road facility will be directed to the HSBs prior to discharge into Swift Creek or Swift Creek tributaries. The HSBs will be designed to contain a spill from a typical tanker truck. NCDOT will implement their standard protocols for upkeep and use of these HSBs.	Completed	R-2828

Item	Responsible Party	Commitment Source	Project Commitment	Project Stage / Status	Applicable STIP Project
24	Environmental Analysis Unit, Division 5, NCTA	404 Permit Condition 9 (3) (Attachment: USFWS BO Sections: 2.4, 8.2 & 8.3)	NCDOT will conduct a preconstruction survey (just prior to construction) at the Swift Creek crossing and remove mussels from a defined salvage area and relocate them to appropriate habitat within Swift Creek outside of the salvage area (relocation site) or if deemed appropriate, after coordination with the USFWS and NCWRC, Dwarf Wedgemussel and Yellow Lance individuals may be taken into captivity to use as brood stock for propagation efforts. The preconstruction survey will be incorporated into a Mussel Relocation Plan, which will identify the salvage area and relocation site, and be developed in coordination with USFWS/NCWRC.	Completed	R-2828
25	Environmental Analysis Unit, Division 5, NCTA	404 Permit Condition 3 (Attachment: USFWS BO Sections: 2.4, 8.2 & 8.3)	NCDOT will provide funding to Wake County and NCWRC, after receiving the Section 404 Permit, to be utilized for the retrofit and upgrade of the existing research facility in the A.E. Finley Center, at the Historic Yates Mill County Park for the purpose of research and propagation of aquatic species.	Completed	R-2721, R-2828, and R-2829
26	Division 5, NCTA	404 Permit Condition 9 (3) (Attachment: USFWS BO Section 8.4)	NCDOT will monitor the Action area for evidence of sediment loss. The USFWS will be contacted if project related sedimentation is occurring beyond 400 meters from the Action area.	Construction	R-2828
27	Environmental Analysis Unit, Division 5, NCTA	404 Permit Condition 17	NCDOT will implement the Memorandum of Agreement (MOA) between the USACE and SHPO dated March 11, 2018 and adhere to the specific Stipulations provided in the MOA attachment.	Construction	R-2721, R-2828, and R-2829
28	Roadside Environmental Unit, Division 5, NCTA	404 Permit Condition 23	NCDOT will segregate topsoil (6-12") in wetland areas where pipelines will be installed via trenching. The topsoil will be used to backfill the trench.	Completed	R-2828
29	Environmental Analysis Unit, Division 5, NCTA	404 Permit Condition 27	NCDOT will only complete construction activities on TIPs R-2721A and B under the Section 404 Permit dated October 24, 2019, R-2828 dated February 3,2020, R-2829A dated October 28, 2024 and R-2829B as authorized in Section 404 dated December 13, 2024.	Construction	R-2721, R-2828, and R-2829
30	Division 5, NCTA	National Marine Fisheries Service Consultation (Page 3)	NCDOT will stop in-water construction activities if a sturgeon is spotted within 50 feet of operations as per the Complete 540 NMFS Concurrence for Atlantic Sturgeon (dated January 2018).	Construction	R-2829B

Item	Responsible Party	Commitment Source	Project Commitment	Project Stage / Status	Applicable STIP Project
31	Division 5, NCTA	National Marine Fisheries Service Consultation (Page 3)	NCDOT will observe an in-water work moratorium of February 15-October 31. This includes installation/removal of causeways and temporary bridges. This will cover the WRC moratorium of February 15-September 30.	Construction	R-2829B
32	Division 5, NCTA	National Marine Fisheries Service Consultation (Page 4)	NCDOT will not blast within 50 feet of the Neuse River.	Construction	R-2829B
33	Division 5, NCTA	National Marine Fisheries Service Consultation (Page 4)	NCDOT will adhere to shoreline stabilization Project Design Criteria (PDCs) when installing new bridges and piers.	Construction	R-2829B
34	Division 5, NCTA	National Marine Fisheries Service Consultation (Attachment 1)	NCDOT will follow the PDCs outlined in Attachment 1 of the NMFS Consultation	Construction	R-2829B
35	Division 5	401 Modification Condition 1 (February 15, 2023)	All protective measures as described in the application received January 11, 2023 and additional information provided February 13, 2023, shall be required as a condition of this certification, including practices described in the bridge demolition plans. Measures stated included the use of geotextile fabric, straw bales and crane mats at the locations of jurisdictional impacts for the bridge demolitions, in order to prevent demolition materials from entering the stream. Once all non-native materials and demolition debris has been removed the sites will be matted, seeded, and revegetated as stated in the application. As stated in the application, in the event that too much demolition material accumulates on the mats and potential for rubble to spread into jurisdictional areas, the process will be paused to clear concrete from the mats.	Completed	R-2828
36	Environmental Analysis Unit, Division 5, NCTA	R-2829 Permit Conditions 9 (4 &5)	NCDOT will comply with the requirements set forth in the 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 and the Programmatic Conference Opinion (PCO) titled "NCDOT Program Effects on the Tricolored Bat in Divisions 1-8", dated November 20, 2023.	Construction	R-2829
37	Division 5, NCTA	R-2829B Permit Condition 30	NCDOT shall implement the Neuse River and Neuse River Greenway Trail User Safety Plan	Construction	R-2829B

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

December 13, 2024

Regulatory Program

Sent Via Email: ext-jhharris1@ncdot.gov

Patrick Norman, P.E.
Chief Engineer
North Carolina Turnpike Authority
1578 Mail Service Center
Raleigh, NC 27699-1578

Dear Mr. Norman:

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. At the time of permitting, only STIP R-2721 was authorized for construction because the other two sections (R-2828 and R-2829) had not gone through final design, completely minimized impacts to waters and wetlands, and submitted a final compensatory mitigation plan. R-2828 and R-2829A have since completed final design and were authorized by modification of the permit.

Also, please reference your November 13, 2024, letter, requesting modification (Mod 18) of the permit to authorize construction authorization for R-2829, Section B. Section R-2829B has recently completed the requirements necessary for construction authorization, including final designs.

The total waters of the U.S. impacts, including wetland, for the R-2829B section are 10.513 acres of wetlands (7.678 acres of permanent wetland loss impacts (riparian and non-riparian), 1.814 acres mechanized clearing in wetlands, 0.623 acre temporary wetland impacts, and 0.398 acre non-404 hand clearing in wetlands), 9,512 linear feet (lf) of tributaries (7,025 lf of permanent stream loss impacts, 834 lf of stream bank/structure stabilization, and 1,653 lf of temporary stream impacts), and 14.104 acres of permanent pond 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 – 112 of 112, and Mod Utility Permit Drawings, Sheets 1 – 7 of 7, submitted on November 13, 2024.

Additional compensatory mitigation of 18.98 acres wetland credits, and 14,050 warm water stream credits, is required, in accordance with the provisions outlined on the attached Compensatory Mitigation Responsibility Transfer Forms.

The special conditions for the permit are also enclosed, and have not changed from the original Special Conditions with the exceptions of Special Condition 9, which is revised to indicate the September 30, 2024 Addendum to the US Fish and Wildlife Service BIOLOGICAL/CONFERENCE OPINION, and Added Special Condition 30. Boater Safety Plan. The permit expiration date was previously extended to December 31, 2029.

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

Sincerely,

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

Enclosures

cc: Deanna Riffey, NCDOT (via driffey@ncdot.gov)

Revised SPECIAL CONDITIONS

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

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

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

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

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

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

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

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

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

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

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

9. Endangered Species

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

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

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

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

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

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

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

11. **Sediment and Erosion Control:**

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

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

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

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

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

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

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

ANADROMOUS FISH / AQUATIC LIFE

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

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

COMPENSATORY MITIGATION

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

CULTURAL RESOURCES

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

CULVERTS

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

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

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

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

PONDS

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

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

UTILITY LINES

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

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

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

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

NCDOT STANDARD PERMIT CONDITIONS

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

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

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

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

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ROY COOPER
Governor
MARY PENNY KELLEY
Secretary
RICHARD E. ROGERS, JR.
Director

NORTH CAROLINA
Environmental Quality

December 10, 2024

Patrick Norman, P.E., Chief Engineer
North Carolina Turnpike Authority
1578 Mail Service Center
Raleigh, NC 27699
pnorman@ncdot.gov

Subject: MODIFICATION of 401 Water Quality Certification Pursuant to Section 401 of the Federal Clean Water Act with ADDITIONAL CONDITIONS for Proposed construction of the Triangle Expressway Southeast Extension (NC 540) in Wake & Johnston Counties, Federal Aid Project No. 050047, State Project No. 35517.3.TA1, TIP Nos, R-2721, R-2828, & R-2829. (TIP R-2829B for This Modification) NCDWR Project No. 20181249 version 20.

Dear Mr. Norman:

Attached hereto is a copy of Modification to Certification No. 4179 issued to The North Carolina Department of Transportation (NCDOT), Turnpike Authority, originally dated February 15, 2019 and most recent modification dated December 10, 2024.

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

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

Sincerely,

Signed by:
Susan Locklear
04351F033762414...

Richard E. Rogers Jr, Director
Division of Water Resources

Attachments
Cc: Eric Alsmeyer, US Corps of Engineers, Raleigh Field Office (Eric.C.Alsmeyer@usace.army.mil)
Jennifer Harris, PE, NC Turnpike Authority (ext-jharris1@ncdot.gov)
Deanna Riffey, NCDOT Environmental Analysis (driffey@ncdot.gov)
Gary Jordan, US Fish & Wildlife Service (gary_jordan@fws.gov)
Travis Wilson, NC Wildlife Resources (travis.wilson@ncwildlife.org)
Amanetta Somerville, US EPA (Somerville.amanetta@epa.gov)
Beth Harmon, NC Division of Mitigation Services (beth.harmon@deq.nc.gov)
Amy Staley, RES (astaley@res.us)
Kae Hovater, Water & Land Solutions (Kae@waterlandsolutions.com)
Camden M. Brunick, Wildlands Engineering Mitigation Credit Sales (cbrunick@wildlandseng.com)
File Copy

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

THIS MODIFIED CERTIFICATION is issued in conformity with the requirements of Section 401 Public Laws 92-500 and 95-217 of the United States and subject to the North Carolina Division of Water Resources (NCDWR) Regulations in 15 NCAC 2H .0500. This certification modification authorizes the NC Turnpike Authority to impact 10.513 acres of jurisdictional wetlands and 9512 linear feet of jurisdictional streams in Wake County for section **R-2829B** of the Complete 540 project. The project shall be constructed pursuant to the modification application received November 14, 2024. The authorized impacts for this modification are as described below:

R-2829B Stream Impacts in the Neuse River Basin

Site	Permanent Fill in Intermittent Stream (linear ft)	Stabilization to Intermittent Stream (linear ft)	Temporary Impact to Intermittent Stream (linear ft)	Permanent Fill in Perennial Stream (linear ft)	Stabilization to Perennial Stream (linear ft)	Temporary Impact to Perennial Stream (linear ft)	Total Stream Impact (linear ft)	Stream Impacts Requiring NCDWR Mitigation (linear ft)
4	0	0	34	0	0	0	34	0
6	160	0	0	0	0	11	171	0
7	0	0	0	406	166	93	665	572
8	0	0	0	7	32	49	88	0
10	0	0	0	0	32	57	89	0
12	408	157	127	0	0	0	692	0
14	442	0	0	0	0	0	442	0
15	0	0	0	20	76	379	475	0
16	10	0	12	0	0	0	22	0
18	0	0	0	0	60	355	415	0
20	793	0	12	0	0	0	805	0
22	309	28	10	0	0	0	347	0
24	290	15	11	0	0	0	316	0
25	48	8	13	0	0	0	69	0
27	1804	10	10	0	0	0	1824	0
28	0	0	0	261	178	19	458	439
29	173	0	0	0	0	0	173	0
32	319	0	14	1222	0	280	1835	1222
33	127	0	11	0	0	0	138	0
35	0	0	16	0	0	0	16	0

36	0	0	0	13	37	10	60	0
37	0	0	0	0	26	37	63	0
38	0	0	0	77	65	78	220	0
39	0	0	0	55	25	15	95	0
Total	**4883**	**218**	**270**	**2061**	**697**	**1383**	**9512**	**2233**

R-2829B Total Stream Impacts: 9512 linear feet
R-2829B Total Perennial Stream Impacts Requiring DWR Mitigation: 2233 linear feet

R-2829B Wetland Impacts in the Neuse River Basin

Site	Permanent Fill (ac)	Temporary Fill (ac)	Excavation (ac)	Mechanized Clearing (ac)	Hand Clearing (ac)	Total Wetland Impact (ac)
1*	0.143	0	0	0	0	0.143
2	0	0	0.021	0.031	0	0.052
3	0.037	0	0	0	0	0.037
4	0.043	0	0.040	0	0	0.083
5	0.095	0	0	0	0	0.095
6	0.024	0	0	0.003	0	0.027
7	0.027	0	0	0	0	0.027
7A	0	0	0	0.038	0	0.038
9	0.052	0	0	0	0	0.052
10 (U)	0	0	0	0	0.002	0.002
11*	0.053	0	0	0	0	0.053
14*	0.044	0	0.013	0.011	0	0.068
17	0.118	0	0	0.031	0	0.149
18	0.615	0	0.028	0.113	0	0.756
19	0.066	0	0.133	0.115	0	0.314
20	0.001	0	0.001	0.021	0	0.023
21*	0.089	0	0	0.032	0	0.121
22	0.183	0	0.003	0.036	0	0.222
23	0	0	0	0.011	0	0.011

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24	0.357	0	0.028	0.054	0	0.439
25	1.439	0	0.073	0.268	0	1.780
27	0.271	0	0	0	0	0.271
31	0.612	0	0	0.002	0	0.614
31 (U)	0	0	0	0	0.006	0.006
32	1.004	0.623	0.171	0.607	0.390	2.795
33	0	0	0.052	0.083	0	0.135
34	1.052	0	0	0.120	0	1.172
35	0.151	0	0	0.005	0	0.156
38	0.128	0	0	0.091	0	0.219
39	0.508	0	0.003	0.142	0	0.653
Total	**7.112**	**0.623**	**0.566**	**1.814**	**0.398**	**10.513**

Sites marked with asterisk (*) = Non-Riparian Wetland. All other sites are Riparian Wetlands.
(U) = Utility Impact
R-2829B Total Wetland Impact: 10.516 acres.
R-2829B Total Wetland Mitigation Required: 9.492 acres (9.107 acres Riparian and 0.385 Non-riparian)

R-2829B Open Water (Ponds) Impacts in the Neuse River Basin

Site	Permanent Fill in Open Waters (ac)	Temporary Fill in Open Waters (ac)	Total Fill in Open Waters (ac)
3	7.078	0	7.078
22	1.679	0	1.679
23	4.543	0	4.543
29	0.106	0	0.106
35	0.698	0	0.698
Total	**14.104**	**0**	**14.104**

R-2829B Total Open Water Impact: 14.104 acres.

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

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This approval is only valid for the purpose and design that you submitted in your modification application received November 14, 2024. Should your project change, you are required to notify the NCDWR and submit a new application. If the property is sold, the new owner must be given a copy of this Certification and approval letter, and is thereby responsible for complying with all the conditions. If any additional wetland impacts, or stream impacts, for this project (now or in the future) exceed one acre or 150 linear feet, respectively, additional compensatory mitigation may be required as described in 15A NCAC 2H .0506 (h) (6) and (7).

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

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

Conditions of Certification:

1. Mitigation must be provided for the proposed impacts in phase R-2829B as specified in the table below.

	Mitigation Provider	**Compensatory Mitigation Required**	**River Basin & HUC Number**
Non-riparian Wetland	NC DMS	0.385 acres	Neuse Basin 03020201 HUC
Riparian Wetland	Private Bank	9.107 acres	Neuse Basin 03020201 HUC
Perennial Stream	Private Banks	2233 linear feet	Neuse Basin 03020201 HUC

[15A NCAC 02H .0506(c); 15A NCAC 02H .0507(c)]

We understand that you have chosen to perform compensatory mitigation for impacts to 0.385 acres of Nonriparian wetlands through the North Carolina Division of Mitigation Services (DMS), and that the DMS has agreed to implement this mitigation for the project. DMS has indicated in a letter dated November 7, 2024 that they will assume responsibility for satisfying the federal Clean Water Act compensatory mitigation requirements for the above-referenced project, in accordance with DMS's Mitigation Banking Instrument signed July 28, 2010.

For Mitigation of the 9.107 acres of Riparian Wetland impacts and the 2233 linear feet of Perennial Stream impacts, the ***attached*** Compensatory Mitigation Responsibility Acceptance Forms (Forms) shall be completed and provided to the Division prior to ***any*** impacts occurring. If the Mitigation Providers specified on the attached Forms for the proposed impacts changes after issuance of this Certificate, then the Permittee shall request a revised Compensatory Mitigation Responsibility Acceptance Form from the Division prior to conducting any impacts. ***If multiple mitigation banks are used for this project, it is the responsibility of the permittee to verify that the credits from the various banks add up to an amount equal to, or greater than, the amount required in this 401 certification.***

2. This 401 Water Quality Certification Modification is being issued for only the R-2829B phase. (Prior modifications were completed for the R-2721A, R-2721B, R-2828 and R-2829A phases.) If any modifications to impacts are needed on any other section, a new separate 401 modification must be acquired from the NC Division of Water Resources. [15A NCAC 02H.0506(b)]

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3. The final construction drawings shall be furnished to the NCDWR Transportation Permitting Branch prior to the pre-construction meeting. The permittee shall provide written verification that the final construction drawings comply with the permit drawings contained in the application received November 14, 2024. Any deviations from the approved drawings are not authorized unless approved by the NC Division of Water Resources.

4. DWR approves the stormwater drainage design as shown in the 401 application, under the assumption that it meets the requirements of the NCDOT NPDES permit #NCS000250. These plans are enforceable by DWR. Changes to the approved plans are prohibited without prior approval from DWR. If sediment or other pollutants are found to be discharged from the stormwater outfalls, DWR may take enforcement action. NCDOT and DWR shall assess the damage to water quality standards and implement an appropriate action plan to address the impacts. The action plan shall provide an appropriate timeline for implementation as agreed upon by both DWR and NCDOT. This may require NCDOT to obtain a modification to its current 401 and 404 permits.

5. 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. [15A NCAC 02H .0506(b)(2)]

6. As a condition of this 401 Water Quality Certification, the bridge demolition and construction must be accomplished in strict compliance with the most recent version of NCDOT's Best Management Practices for Construction and Maintenance Activities. [15A NCAC 02H .0507(d)(2) and 15A NCAC 02H .0506(b)(5)]

7. Bridge deck drains shall not discharge directly into the stream. Stormwater shall be directed across the bridge and pre-treated through site-appropriate means (grassed swales, pre-formed scour holes, vegetated buffers, etc.) before entering the stream. To meet the requirements of NCDOT's NPDES permit NCS0000250 , please refer to the most recent version of the *North Carolina Department of Transportation Stormwater Best Management Practices Toolbox* manual for approved measures. [15A NCAC 02H .0507(d)(2) and 15A NCAC 02H .0506(b)(5)]

8. 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 without prior written approval from the NCDWR first. [15A NCAC 02H.0506(b)(2)]

9. No drill slurry or water that has been in contact with uncured concrete shall be allowed to enter surface waters. This water shall be captured, treated, and disposed of properly. [15A NCAC 02H .0506(b)(3)]

10. A turbidity curtain will be installed in the stream if driving or drilling activities occur within the stream channel, on the stream bank, or within 5 feet of the top of bank, or during the removal of bents from an old bridge. This condition can be waived with prior approval from the NCDWR. [15A NCAC 02H .0506(b)(3)]

11. All bridge construction shall be performed from the existing bridge, temporary work bridges, temporary causeways, or floating or sunken barges. If work conditions require barges, they shall be floated into position and then sunk. The barges shall not be sunk and then dragged into position. Under no circumstances should barges be dragged along the bottom of the surface water. [15A NCAC 02H .0506(b)(3)]

12. Unless otherwise approved in this certification, placement of culverts and other structures in open waters and streams, shall be placed below the elevation of the streambed by one foot for all culverts with a diameter greater than 48 inches, and 20 percent of the culvert diameter for culverts having a diameter less than 48 inches, to allow low flow passage of water and aquatic life. Design and placement of culverts and other structures including temporary erosion control measures shall not be conducted in a manner that may result in dis-equilibrium of wetlands or streambeds or banks, adjacent to or upstream and down stream of the above structures. The applicant is required to provide evidence that the equilibrium is being maintained if requested in writing by the NCDWR. If this condition is unable to be met due to bedrock or other limiting features encountered during construction, please contact the NCDWR for guidance on how to proceed and to determine whether or not a permit modification will be required. [15A NCAC 02H.0506(b)(2)]

13. If multiple pipes or barrels are required, they shall be designed to mimic natural stream cross section as closely as possible including pipes or barrels at flood plain elevation and/or sills where appropriate. Widening the stream

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channel should be avoided. Stream channel widening at the inlet or outlet end of structures typically decreases water velocity causing sediment deposition that requires increased maintenance and disrupts aquatic life passage. [15A NCAC 02H.0506(b)(2)]

14. Riprap shall not be placed in the active thalweg channel or placed in the streambed in a manner that precludes aquatic life passage. Bioengineering boulders or structures should be properly designed, sized and installed. [15A NCAC 02H.0506(b)(2)]

15. For all streams being impacted due to site dewatering activities, the site shall be graded to its preconstruction contours and revegetated with appropriate native species. [15A NCAC 02H.0506(b)(2)]

16. The stream channels shall be excavated no deeper than the natural bed material of the stream, to the maximum extent practicable. Efforts must be made to minimize impacts to the stream banks, as well as to vegetation responsible for maintaining the stream bank stability. Any applicable riparian buffer impact for access to stream channel shall be temporary and be revegetated with native riparian species. [15A NCAC 02H.0506(b)(2)]

17. Pipes and culverts used exclusively to maintain equilibrium in wetlands, where aquatic life passage is not a concern, shall not be buried. These pipes shall be installed at natural ground elevation. [15A NCAC 02H.0506(b)]

18. All portions of the proposed project draining to 303(d) listed watersheds that are impaired due to turbidity shall be designed, constructed, and operated with sediment and erosion control measures that meet *Design Standards in Sensitive Watersheds* (15A NCAC 4B .0124). However, due to the size of the project, NC DOT shall not be required to meet 15A NCAC 4B .0124(a) regarding the maximum amount of uncovered acres.

19. All portions of the proposed project draining to 303(d) listed watersheds that are impaired due to biological criteria exceedances shall not discharge stormwater directly to surface waters. Stormwater shall be treated using appropriate best management practices (e.g., vegetated conveyances, constructed wetlands, detention ponds, etc.) prior to discharging to surface waters.

20. Channel relocations shall be completed and stabilized, and approved by NCDWR staff, prior to diverting water into the new channel. Stream banks shall be matted with coir-fiber matting. Vegetation used for bank stabilization shall be limited to native riparian vegetation, and should include establishment of a vegetated buffer on both sides of the relocated channel to the maximum extent practical. Also, rip-rap may be allowed if it is necessary to maintain the physical integrity of the stream, but the applicant must provide written justification and any calculations used to determine the extent of rip-rap coverage requested. Once the stream has been turned into the new channel, it may be necessary to relocate stranded fish to the new channel to prevent fish kills. [15A NCAC 02H .0506(b)(3)]

21. All clearing of vegetation for purpose of relocating overhead power lines within jurisdictional wetlands shall be performed without the use of mechanized equipment. [15A NCAC 02H.0506(b)(3)]

22. The permittee will need to adhere to any and all appropriate in-water work moratoria (including the use of pile driving or vibration techniques) prescribed by the NC Wildlife Resources Commission, the US Fish & Wildlife Service, and/or the NC Division of Marine Fisheries. [15A NCAC 2H.0506(b)(2) and 15A NCAC 4B.0125]

23. Prior to, and during the construction of project, the permittee shall coordinate with the North Carolina Wildlife Resources Commission and the US Fish & Wildlife Service to ensure that the construction will not result in negative impacts to threatened and endangered mussels. Should either of those agencies require changes to the proposed design or construction activities, a modification to this 401 Water Quality Certification may be required. Any changes to the design authorized by this certification will require approval from the NC Division of Water Resources. [15A NCAC 2H.0506(b)(2) and 15A NCAC 4B.0125]

24. If concrete is used during construction, a dry work area shall be maintained to prevent direct contact between curing concrete and stream water. 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. [15A NCAC 02B.0200]

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25. During the construction of the project, no staging of equipment of any kind is permitted in waters of the U.S., or protected riparian buffers. [15A NCAC 02H.0506(b)(2)]

26. The dimension, pattern and profile of the stream above and below the crossing shall not be modified. Disturbed floodplains and streams shall be restored to natural geomorphic conditions. [15A NCAC 02H.0506(b)(2)]

27. The use of rip-rap above the Normal High Water Mark shall be minimized. Any rip-rap placed for stream stabilization shall be placed in stream channels in such a manner that it does not impede aquatic life passage. [15A NCAC 02H.0506(b)(2)]

28. All work in or adjacent to stream waters shall be conducted in a dry work area. Approved BMP measures from the most current version of NCDOT Construction and Maintenance Activities manual such as sandbags, rock berms, cofferdams and other diversion structures shall be used to prevent excavation in flowing water. [15A NCAC 02H.0506(b)(3) and (c)(3)]

29. Heavy equipment shall be operated from the banks rather than in the stream channel in order to minimize sedimentation and reduce the introduction of other pollutants into the stream. [15A NCAC 02H.0506(b)(3)]

30. All mechanized equipment operated near surface waters must be regularly inspected and maintained to prevent contamination of stream waters from fuels, lubricants, hydraulic fluids, or other toxic materials. [15A NCAC 02H.0506(b)(3)]

31. No rock, sand or other materials shall be dredged from the stream channel except where authorized by this certification. [15A NCAC 02H.0506(b)(3)]

32. Discharging hydroseed mixtures and washing out hydroseeders and other equipment in or adjacent to surface waters is prohibited. [15A NCAC 02H.0506(b)(3)]

33. The permittee and its authorized agents shall conduct its 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. If the NCDWR determines that such standards or laws are not being met (including the failure to sustain a designated or achieved use) or that State or federal law is being violated, or that further conditions are necessary to assure compliance, the NCDWR may reevaluate and modify this certification. [15A NCAC 02B.0200]

34. All fill slopes located in jurisdictional wetlands shall be placed at slopes no flatter than 3:1, unless otherwise authorized by this certification. Wetland areas impacted by temporary clearing shall be stabilized and reseeded with native wetland seed. [15A NCAC 02H.0506(b)(2)]

35. A copy of this Water Quality Certification shall be maintained on the construction site at all times. In addition, the Water Quality Certification and all subsequent modifications, if any, shall be maintained with the Division Engineer and the on-site project manager. [15A NCAC 02H .0507(c) and 15A NCAC 02H .0506 (b)(2) and (c)(2)]

36. The outside buffer, wetland or water boundary located within the construction corridor approved by this authorization, including all non-commercial borrow and waste sites associated with the project, shall be clearly marked by highly visible fencing prior to any land disturbing activities. Impacts to areas within the fencing are prohibited unless otherwise authorized by this certification. [15A NCAC 02H.0501 and .0502]

37. The issuance of this certification does not exempt the Permittee from complying with any and all statutes, rules, regulations, or ordinances that may be imposed by other government agencies (i.e. local, state, and federal) having jurisdiction, including but not limited to applicable buffer rules, stormwater management rules, soil erosion and sedimentation control requirements, etc.

38. The Permittee shall report any violations of this certification to the Division of Water Resources within 24 hours of discovery. [15A NCAC 02B.0506(b)(2)]

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39. Upon completion of the project (including any impacts at associated borrow or waste sites), the NCDOT Division Engineer shall complete and return the enclosed "Certification of Completion Form" to notify the NCDWR when all work included in the 401 Certification has been completed. [15A NCAC 02H.0502(f)]

40. There shall be no excavation from, or waste disposal into, jurisdictional wetlands or waters associated with this permit without appropriate modification. Should waste or borrow sites, or access roads to waste or borrow sites, be located in wetlands or streams, compensatory mitigation will be required since that is a direct impact from road construction activities. [15A NCAC 02H.0506(b)(3) and (c)(3)]

41. Erosion and sediment control practices must be in full compliance with all specifications governing the proper design, installation and operation and maintenance of such Best Management Practices in order to protect surface waters standards [15A NCAC 02H.0506(b)(3) and (c)(3)]:

a. The erosion and sediment control measures for the project must be designed, installed, operated, and maintained in accordance with the most recent version of the *North Carolina Sediment and Erosion Control Planning and Design Manual*.
b. The design, installation, operation, and maintenance of the sediment and erosion control measures must be such that they equal, or exceed, the requirements specified in the most recent version of the *North Carolina Sediment and Erosion Control Manual*. The devices shall be maintained on all construction sites, borrow sites, and waste pile (spoil) projects, including contractor-owned or leased borrow pits associated with the project.
c. For borrow pit sites, the erosion and sediment control measures must be designed, installed, operated, and maintained in accordance with the most recent version of the *North Carolina Surface Mining Manual*.
d. The reclamation measures and implementation must comply with the reclamation in accordance with the requirements of the Sedimentation Pollution Control Act.

42. At locations where ponds will be drained, proper measures will be taken to drain the pond with limited impact to upstream and downstream channel stability as well as to native aquatic species. Proper measures will be taken to avoid sediment release and/or sediment accumulation downstream as a result of pond draining. If typical pond draining techniques will create significant disturbance to native aquatic species, additional measures such as collection and relocation may be necessary to prevent a significant fish kill. NCDOT shall consult with NC Wildlife Resources staff to determine if there are any sensitive species, and the most appropriate measures to limit impacts to these species. The permittee shall observe any natural channel re-establishment, to ensure that the jurisdictional stream channel above and below the drained pond (if applicable) remain stable, and that no additional impacts occur within the natural stream channel as a result of draining the pond. [15A NCAC 2H.0506(b)(3)]

43. Sediment and erosion control measures shall not be placed in wetlands or surface waters, or within 5 feet of the top of bank, without prior approval from DWR. [15A NCAC 02H.0506(b)(3) and (c)(3)]

44. When applicable, all construction activities shall be performed and maintained in full compliance with G.S. Chapter 113A Article 4 (Sediment and Pollution Control Act of 1973). Regardless of applicability of the Sediment and 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. [15A NCAC 02H .0506{b)(3) and (c)(3) and 15A NCAC 02B .0200]

45. 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 Sediment and Erosion Control Manual,* or for linear transportation projects, the *NCDOT Sediment and Erosion Control Manual.*
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

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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, Trout, WS-1, WS-11, High Quality Waters (HQW), Outstanding Resource Waters (ORW), Critical Area (CA), and/or 303(d) Impaired Waters, then the sedimentation and erosion control designs shall comply with the requirements set forth in 15A NCAC 04B .0124, *Design Standards in Sensitive Watersheds*. [15A NCAC 02H.0506(b)(3) and (c)(3)]

46. All prior conditions of the original 401 Water Quality Certification for this project issued February 15, 2019, and all subsequent modifications since, are still all applicable.

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

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

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

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

This the 10th of December 2024

DIVISION OF WATER RESOURCES

Signed by:
Susan Locklear
04351F033762414...

Richard E. Rogers, Jr, Director

WQC No. 4179

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ROY COOPER
Governor
MARY PENNY KELLEY
Secretary
RICHARD E. ROGERS, JR.
Director

NORTH CAROLINA
Environmental Quality

December 10, 2024

DWR #20181249 ver 20
Wake County

Patrick Norman, P.E., Chief Engineer
North Carolina Turnpike Authority
1578 Mail Service Center
Raleigh, NC 27699
pnorman@ncdot.gov

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

Dear Mr. Norman:

You have our approval for the impacts listed below for the purpose described in your application received by the Division of Water Resources (Division) on November 14, 2024. These impacts are covered by the Neuse Buffer Rules and the conditions listed below. Please note that you should get any other federal, state or local permits before proceeding with your project, including those required by (but not limited to) Sediment and Erosion Control, Non-Discharge, and Water Supply Watershed regulations.
The following impacts are hereby approved, provided that all of the Conditions listed below and all of the conditions of the Neuse Buffer Rules are met. No other impacts are approved, including incidental impacts. [15A NCAC 02B.0611(b)(2)]

R-2829B Neuse Riparian Buffer Impacts

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

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R-2829B Neuse Riparian Buffer Impacts

		Allowable		Mitigable		Wetlands in Buffer	
Buffer Drawing Site Number	**NRTR Label**	**Zone 1 (sq. ft.)**	**Zone 2 (sq. ft.)**	**Zone 1 (sq. ft.)**	**Zone 2 (sq. ft.)**	**Zone 1 (sq. ft.)**	**Zone 2 (sq. ft.)**
14	SGR	-	-	24,910	16,255	1,906	156
15	Neuse River	12,996	5,136	8,779	5,123	-	-
16	SGT	-	-	3,912	4,609	-	-
18	SGU (Hinton's Creek)	32,853	18,719	20,211	14,256	3,034 (WIW) 883 (WIV)	3,429 (WIW) 363 (WIV)
20	SGV	-	-	42,154	27,904	22	136
20	SGV	3,232	1,006	1,978	1,336	-	-
22	SGY	-	-	20,339	13,343	5,677	969
22	PAI	-	-	38,584	27,420		
24	SHA	-	-	19,269	13,337	3,215	2,327
25	SHB	-	-	9,054	7,487	6,932	2,763
27	SHD	-	-	16,565	8,783	3,905	5,107
27	SHD	-	-	74,775	42,097	-	-
28	SHC	-	-	25,651	14,793	-	-
29	SHE	-	-	14,071	12,463	-	-
30	PAAB	186	1,026	-	-	-	-
32	SHC	24,699	19,034	-	-	24,019	14,226
32	SHC	-	-	33,895	20,847	24,771	9,339
32	SHC	-	-	22,197	14,637	506	-
32	SHC	-		19,305	10,950	17,998	8,967
33	SHH	-	-	12,507	12,767	7,266	3,102
35	PAM	-	-	22,774	18,737	244	136
36	SAAJ	3,038	0	-	-	-	-
37	Neuse River	-	-	1,244	1,021	-	-
38	SHL	4,572	887	-	-	5,329	740
38	SAAL	1,859	733	-	-	-	-
39	SHL	4,797	3,241			4,797	3,241
Totals		**91,045**	**51,632**			**35,276**	**18,740**
Totals				**590,121**	**389,336**	**85,240**	**37,908**
Total Buffer Impacts Requiring Mitigation				**504,881**	**351,428**		

Total Buffer Impacts: 1,122,134 sq ft
Total Buffer Mitigation Required: 1,514,643 sq ft Zone 1 + 527,142 sq ft Zone 2 = 2,041,785 sq ft

This approval is for the purpose and design described in your application. The plans and specifications for this project are incorporated by reference as part of this Authorization Certificate. If you change your project, you must notify the Division and you may be required to submit a new application package. If the property is sold, the new owner must be given a copy of this Authorization Certificate

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and is responsible for complying with all conditions. [15A NCAC 02B.0611(b)]. If you are unable to comply with any of the conditions below, you must notify the DWR Transportation Permitting Branch within 24 hours (or the next business day if a weekend or holiday) from the time the permittee becomes aware of the circumstances.
The permittee shall report to the NC Division of Water Resources any noncompliance with the conditions of this Authorization Certificate and/or any violation of state regulated riparian buffer rules [15A NCAC 02B.0611(b)]. Information shall be provided orally within 24 hours (or the next business day if a weekend or holiday) from the time the applicant became aware of the circumstances.

Conditions of Approval:

1. Compensatory mitigation for impacts to 504,881 square feet of protected riparian buffers in Zone 1 and 351,428 square feet of protected riparian buffers in Zone 2 shall be required. We understand that you have chosen to perform compensatory mitigation for impacts to protected buffers through use of the North Carolina Division of Mitigation Services (DMS). Mitigation for unavoidable impacts to Neuse Riparian Buffers shall be provided in the Neuse River Basin and done in accordance with 15A NCAC 2B.0295**.** The DMS has indicated in a letter dated December 9, 2024 that they will assume responsibility for satisfying the compensatory mitigation requirements for the above-referenced project, in accordance with DMS's Mitigation Banking Instrument signed June 14, 2016.

2. This Neuse Buffer Authorization Modification is being issued for <u>only</u> the R-2829B phase. (Prior modifications were completed for the R-2721A, R-2721B, R-2828 and R-2829A phases.) If any modifications to impacts are needed on any other section, a new separate 401 modification and Buffer Authorization must be acquired from the NC Division of Water Resources. [15A NCAC 02H.0506(b)] & [15A NCAC 2B.0714]

3. All riparian buffers impacted by the placement of temporary fill or clearing activities shall be restored to the preconstruction contours and revegetated. Maintained buffers shall be permanently revegetated with non-woody species by the end of the growing season following completion of construction. For the purpose of this condition, maintained buffer areas are defined as areas within the transportation corridor that will be subject to regular NCDOT maintenance activities including mowing. The area with non-maintained buffers shall be permanently revegetated with native woody species before the next growing season following completion of construction. [15A NCAC 02B.0714]

4. Pursuant to 15A NCAC 2B.0714, sediment and erosion control devices shall not be placed in Zone 1 of any Neuse Buffer without prior approval by the NCDWR. At this time, the NCDWR has approved no sediment and erosion control devices in Zone 1, outside of the approved project impacts, anywhere on this project. Moreover, sediment and erosion control devices shall be allowed in Zone 2 of the buffers provided that Zone 1 is not compromised and that discharge is released as diffuse flow.

5. All stormwater runoff shall be directed as sheetflow through stream buffers at non-erosive velocities, unless otherwise approved by this certification. [15A NCAC 02B.0714]

4. Native riparian vegetation (i.e., trees and shrubs native to your geographic region) must be reestablished in the riparian areas within the construction limits of the project by the end of the growing season following completion of construction. [15A NCAC 02B.0714] & [15A NCAC 02B.0506(b)(2)]

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5. All prior conditions of the original 401 Water Quality Certification and Buffer Authorizaton for this project issued February 15, 2019, and all subsequent modifications since, are still all applicable.

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

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

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

Sincerely,

Signed by:
Susan Locklear
04351F033762414...

Richard E. Rogers, Jr., Director
Division of Water Resources

cc:
Eric Alsmeyer, US Corps of Engineers, Raleigh Field Office (Eric.C.Alsmeyer@usace.army.mil)
Jennifer Harris, PE, NC Turnpike Authority (ext-jharris1@ncdot.gov)
Deanna Riffey, NCDOT Environmental Analysis (driffey@ncdot.gov)
Gary Jordan, US Fish & Wildlife Service (gary_jordan@fws.gov)
Travis Wilson, NC Wildlife Resources (travis.wilson@ncwildlife.org)
Amanetta Somerville, US EPA (Somerville.amanetta@epa.gov)
Beth Harmon, NC Division of Mitigation Services (beth.harmon@deq.nc.gov)
Camden M. Brunick, Wildlands Engineering Mitigation Credit Sales (cbrunick@wildlandseng.com)
Amy Staley, RES (astaley@res.us)
Kae Hovater, Water & Land Solutions (Kae@waterlandsolutions.com)
File Copy

U.S. ARMY CORPS OF ENGINEERS
Wilmington District
Compensatory Mitigation Responsibility Transfer Form

Permittee: NCDOT Turnpike Authority **Action ID:** SAW-2009-02240
Project Name: Complete 540, R-2829B Mod **Counties:** Wake

Instructions to Permittee: The Permittee must provide a copy of this form to the Mitigation Sponsor, either an approved Mitigation Bank or the North Carolina Division of Mitigation Services (NCDMS), who will then sign the form to verify the transfer of the mitigation responsibility. Once the Sponsor has signed this form, it is the Permittee's responsibility to ensure that Wilmington District Project Manager identified on page two is in receipt of a signed copy of this form before conducting authorized impacts, unless otherwise specified below. If more than one Mitigation Sponsor will be used to provide the mitigation associated with the permit, or if the impacts and/or the mitigation will occur in more than one 8-digit Hydrologic Unit Code (HUC), multiple forms will be attached to the permit, and the separate forms for each Sponsor and/or HUC must be provided to the appropriate Mitigation Sponsors.

Instructions to Sponsor: The Sponsor verifies that the mitigation requirements (credits) shown below have been released and are available at the identified site. By signing below, the Sponsor is accepting full responsibility for the identified mitigation, regardless of whether they have received payment from the Permittee. Once the form is signed, the Sponsor must update the bank ledger and provide a copy of the signed form and the updated ledger to the Permittee, the Project Manager who issued the permit, the Bank Project Manager, and the District Mitigation Office (see contact information on page 2). The Sponsor must also comply with all reporting requirements established in their authorizing instrument.

Permitted Impacts and Compensatory Mitigation Requirements

Permitted Impacts Requiring Mitigation*: **8-digit HUC and Basin:** 03020201, Neuse River Basin

Stream Impacts (linear feet)			Wetland Impacts (acres)			
Warm	Cool	Cold	Riparian Riverine	Riparian Non-Riverine	Non-Riparian	Coastal
					0.385	

*If more than one mitigation sponsor will be used for the permit, only include impacts to be mitigated by this sponsor.

Compensatory Mitigation Requirements: **8-digit HUC and Basin:** 03020201, Neuse River Basin

Stream Mitigation (credits)			Wetland Mitigation (credits)			
Warm	Cool	Cold	Riparian Riverine	Riparian Non-Riverine	Non-Riparian	Coastal
					0.77	

Mitigation Site Debited: NCDMS
(List the name of the bank to be debited. For umbrella banks, also list the specific site. For NCDMS, list NCDMS. If the NCDMS acceptance letter identifies a specific site, also list the specific site to be debited).

Section to be completed by the Mitigation Sponsor

Statement of Mitigation Liability Acceptance: I, the undersigned, verify that I am authorized to approve mitigation transactions for the Mitigation Sponsor shown below, and I certify that the Sponsor agrees to accept full responsibility for providing the mitigation identified in this document (see the table above), associated with the USACE Permittee and Action ID number shown. I also verify that released credits (and/or advance credits for NCDMS), as approved by the Wilmington District, are currently available at the mitigation site identified above. Further, I understand that if the Sponsor fails to provide the required compensatory mitigation, the USACE Wilmington District Engineer may pursue measures against the Sponsor to ensure compliance associated with the mitigation requirements.

Mitigation Sponsor Name: NCDMS

Name of Sponsor's Authorized Representative: Beth Harmon

Elizabeth Harmon — 12/13/2024

Signature of Sponsor's Authorized Representative **Date of Signature**

USACE Wilmington District
Compensatory Mitigation Responsibility Transfer Form, Page 2

Conditions for Transfer of Compensatory Mitigation Credit:

- Once this document has been signed by the Mitigation Sponsor and the District is in receipt of the signed form, the Permittee is no longer responsible for providing the mitigation identified in this form, though the Permittee remains responsible for any other mitigation requirements stated in the permit conditions.
- Construction within jurisdictional areas authorized by the permit identified on page one of this form can begin only after the District is in receipt of a copy of this document signed by the Sponsor, confirming that the Sponsor has accepted responsibility for providing the mitigation requirements listed herein. When NCDMS provides mitigation for authorized impacts conducted by the North Carolina Department of Transportation (NCDOT), construction within jurisdictional areas may proceed upon permit issuance; however, a copy of this form signed by NCDMS must be provided to the District within 30 days of permit issuance. NCDOT remains fully responsible for the mitigation until the District has received this form, confirming that the Sponsor has accepted responsibility for providing the mitigation requirements listed herein.
- Signed copies of this document must be retained by the Permittee, Mitigation Sponsor, and in the USACE administrative records for both the permit and the Bank/ILF Instrument. It is the Permittee's responsibility to ensure that the District Project Manager (address below) is provided with a signed copy of this form.
- If changes are proposed to the type, amount, or location of mitigation after this form has been signed and returned to the District, the Sponsor must obtain case-by-case approval from the District Project Manager and/or North Carolina Interagency Review Team (NCIRT). If approved, higher mitigation ratios may be applied, as per current District guidance and a new version of this form must be completed and included in the District administrative records for both the permit and the Bank/ILF Instrument.

Comments/Additional Conditions:

This form is not valid unless signed below by the District Project Manager and by the Mitigation Sponsor on Page 1. ***Once signed, the Sponsor should provide copies of this form along with an updated bank ledger to: 1) the Permittee, 2) the District Project Manager at the address below, 3) the Bank Manager listed in RIBITS, and 4) the Wilmington District Mitigation Office, 3331 Heritage Trade Drive, Suite 105, Wake Forest, NC 27587 (or by email to SAWMIT@usace.army.mil).*** Questions regarding this form or any of the permit conditions may be directed to the District Mitigation Office.

USACE Project Manager: Eric Alsmeyer
US Army Corps of Engineers
3331 Heritage Trade Drive, Suite 105
Wake Forest, NC 27587
Email: **eric.c.alsmeyer@usace.army.mil**

Eric Alsmeyer

Wilmington District Project Manager Signature

December 12, 2024

Date of Signature

Current Wilmington District mitigation guidance, including information on mitigation ratios, functional assessments, and mitigation bank location and availability, and credit classifications (including stream temperature and wetland groupings) is available at http://ribits.usace.army.mil.

U.S. ARMY CORPS OF ENGINEERS
Wilmington District
Compensatory Mitigation Responsibility Transfer Form

Permittee: NCDOT Turnpike Authority **Action ID:** SAW-2009-02240
Project Name: Complete 540, R-2829B Mod **County:** Wake

Instructions to Permittee: The Permittee must provide a copy of this form to the Mitigation Sponsor, either an approved Mitigation Bank or the North Carolina Division of Mitigation Services (NCDMS), who will then sign the form to verify the transfer of the mitigation responsibility. Once the Sponsor has signed this form, it is the Permittee's responsibility to ensure that Wilmington District Project Manager identified on page two is in receipt of a signed copy of this form before conducting authorized impacts, unless otherwise specified below. If more than one Mitigation Sponsor will be used to provide the mitigation associated with the permit, or if the impacts and/or the mitigation will occur in more than one 8-digit Hydrologic Unit Code (HUC), multiple forms will be attached to the permit, and the separate forms for each Sponsor and/or HUC must be provided to the appropriate Mitigation Sponsors.

Instructions to Sponsor: The Sponsor verifies that the mitigation requirements (credits) shown below have been released and are available at the identified site. By signing below, the Sponsor is accepting full responsibility for the identified mitigation, regardless of whether they have received payment from the Permittee. Once the form is signed, the Sponsor must update the bank ledger and provide a copy of the signed form and the updated ledger to the Permittee, the Project Manager who issued the permit, the Bank Project Manager, and the District Mitigation Office (see contact information on page 2). The Sponsor must also comply with all reporting requirements established in their authorizing instrument.

Permitted Impacts and Compensatory Mitigation Requirements

Permitted Impacts Requiring Mitigation*: **8-digit HUC and Basin:** 03020201, Neuse River Basin

Stream Impacts (linear feet)			Wetland Impacts (acres)			
Warm	Cool	Cold	Riparian Riverine	Riparian Non-Riverine	Non-Riparian	Coastal
3,709.5						

*If more than one mitigation sponsor will be used for the permit, only include impacts to be mitigated by this sponsor.

Compensatory Mitigation Requirements: **8-digit HUC and Basin:** 03020201, Neuse River Basin

Stream Mitigation (credits)			Wetland Mitigation (credits)			
Warm	Cool	Cold	Riparian Riverine	Riparian Non-Riverine	Non-Riparian	Coastal
7,419						

Mitigation Site Debited: RES; LLC; NEU-CON Umbrella Bank; Selma Mill & Polecat sites
(List the name of the bank to be debited. For umbrella banks, also list the specific site. For NCDMS, list NCDMS. If the NCDMS acceptance letter identifies a specific site, also list the specific site to be debited).

Section to be completed by the Mitigation Sponsor

Statement of Mitigation Liability Acceptance: I, the undersigned, verify that I am authorized to approve mitigation transactions for the Mitigation Sponsor shown below, and I certify that the Sponsor agrees to accept full responsibility for providing the mitigation identified in this document (see the table above), associated with the USACE Permittee and Action ID number shown. I also verify that released credits (and/or advance credits for NCDMS), as approved by the Wilmington District, are currently available at the mitigation site identified above. Further, I understand that if the Sponsor fails to provide the required compensatory mitigation, the USACE Wilmington District Engineer may pursue measures against the Sponsor to ensure compliance associated with the mitigation requirements.

Mitigation Sponsor Name: EBX-Neuse I, LLC and Environmental Banc & Exchange, LLC

Name of Sponsor's Authorized Representative: Christopher C. Smith, PE

Signature of Sponsor's Authorized Representative

12/19/2024
Date of Signature

USACE Wilmington District
Compensatory Mitigation Responsibility Transfer Form, Page 2

Conditions for Transfer of Compensatory Mitigation Credit:

- Once this document has been signed by the Mitigation Sponsor and the District is in receipt of the signed form, the Permittee is no longer responsible for providing the mitigation identified in this form, though the Permittee remains responsible for any other mitigation requirements stated in the permit conditions.
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Comments/Additional Conditions:

This form is not valid unless signed below by the District Project Manager and by the Mitigation Sponsor on Page 1. ***Once signed, the Sponsor should provide copies of this form along with an updated bank ledger to: 1) the Permittee, 2) the District Project Manager at the address below, 3) the Bank Manager listed in RIBITS, and 4) the Wilmington District Mitigation Office, 3331 Heritage Trade Drive, Suite 105, Wake Forest, NC 27587 (or by email to SAWMIT@usace.army.mil).*** Questions regarding this form or any of the permit conditions may be directed to the District Mitigation Office.

USACE Project Manager: Eric Alsmeyer
US Army Corps of Engineers
3331 Heritage Trade Drive, Suite 105
Wake Forest, NC 27587
Email: **eric.c.alsmeyer@usace.army.mil**

Eric Alsmeyer — December 19, 2024

Wilmington District Project Manager Signature | **Date of Signature**

Current Wilmington District mitigation guidance, including information on mitigation ratios, functional assessments, and mitigation bank location and availability, and credit classifications (including stream temperature and wetland groupings) is available at http://ribits.usace.army.mil.

3600 Glenwood Avenue, Suite 100
Raleigh, NC 27612

Corporate Headquarters
6575 West Loop South, Suite 300
Bellaire, TX 77401
Main: 713.520.5400

November 13, 2024 – REVISED

Mr. Brad Chilton
North Carolina Department of Transportation
1000 Birch Ridge Drive
Raleigh, NC 27610

Subject: Mitigation Acceptance Letter – R-2829B

Dear Mr. Chilton:

RES has multiple sites that make up the Neu-Con Umbrella Wetland and Stream Mitigation Bank. NCDOT at this time has purchased 7,419.00 credits from RES to cover the impacts associated with projects located within the Neuse 03020201. The banks with credits that will apply to this project are as follows:

Neu-Con Umbrella Wetland and Stream Mitigation Bank

- Selma Mill site will debit their ledger 4,253.41 LF
- Polecat will debit their ledger 3,165.59 LF

NCDOT has acquired stream credits from RES to offset the impacts associated with this TIPs within 03020201. RES will be debiting their ledger for 7,419 linear feet to offset 3,709.5 impacts associate with R-2829B. The debit is shown below.

F_TIPDebits							
PO Number	**TIP**	**Debit Amount**	**Debit Type**	**Debit Sub Type**	**Permit Date**	**Notes**	**Links**
7700002500	R-2829B	7,419.00	Stream			3,709.5 linear feet of impacts @ 2:1 ratio	

If the above referenced impact amounts are revised, then this mitigation acceptance letter will no longer be valid and a new mitigation acceptance letter will be required from RES.

If you have any questions or need additional information, please contact me at 919-209-1055.

Sincerely,

Amy Staley
Credit Sales Manager
Bank Sponsors EBX-Neuse I, LLC and Environmental Banc & Exchange

U.S. ARMY CORPS OF ENGINEERS
Wilmington District
Compensatory Mitigation Responsibility Transfer Form

Permittee: NCDOT Turnpike Authority **Action ID:** SAW-2009-02240
Project Name: Complete 540, R-2829B Mod **County:** Wake

Instructions to Permittee: The Permittee must provide a copy of this form to the Mitigation Sponsor, either an approved Mitigation Bank or the North Carolina Division of Mitigation Services (NCDMS), who will then sign the form to verify the transfer of the mitigation responsibility. Once the Sponsor has signed this form, it is the Permittee's responsibility to ensure that Wilmington District Project Manager identified on page two is in receipt of a signed copy of this form before conducting authorized impacts, unless otherwise specified below. If more than one Mitigation Sponsor will be used to provide the mitigation associated with the permit, or if the impacts and/or the mitigation will occur in more than one 8-digit Hydrologic Unit Code (HUC), multiple forms will be attached to the permit, and the separate forms for each Sponsor and/or HUC must be provided to the appropriate Mitigation Sponsors.

Instructions to Sponsor: The Sponsor verifies that the mitigation requirements (credits) shown below have been released and are available at the identified site. By signing below, the Sponsor is accepting full responsibility for the identified mitigation, regardless of whether they have received payment from the Permittee. Once the form is signed, the Sponsor must update the bank ledger and provide a copy of the signed form and the updated ledger to the Permittee, the Project Manager who issued the permit, the Bank Project Manager, and the District Mitigation Office (see contact information on page 2). The Sponsor must also comply with all reporting requirements established in their authorizing instrument.

Permitted Impacts and Compensatory Mitigation Requirements

Permitted Impacts Requiring Mitigation*: **8-digit HUC and Basin:** 03020201, Neuse River Basin

Stream Impacts (linear feet)			Wetland Impacts (acres)			
Warm	Cool	Cold	Riparian Riverine	Riparian Non-Riverine	Non-Riparian	Coastal
2,229						

*If more than one mitigation sponsor will be used for the permit, only include impacts to be mitigated by this sponsor.

Compensatory Mitigation Requirements: **8-digit HUC and Basin:** 03020201, Neuse River Basin

Stream Mitigation (credits)			Wetland Mitigation (credits)			
Warm	Cool	Cold	Riparian Riverine	Riparian Non-Riverine	Non-Riparian	Coastal
4,458						

Mitigation Site Debited: RES; NEU-CON Umbrella Mitigation Bank; Bucher, Buffalo Branch, Cedar Grove, Uzzle, Stone Creek, Hannah Bridge, and Polecat sites

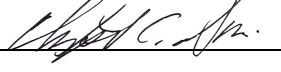
(List the name of the bank to be debited. For umbrella banks, also list the specific site. For NCDMS, list NCDMS. If the NCDMS acceptance letter identifies a specific site, also list the specific site to be debited).

Section to be completed by the Mitigation Sponsor

Statement of Mitigation Liability Acceptance: I, the undersigned, verify that I am authorized to approve mitigation transactions for the Mitigation Sponsor shown below, and I certify that the Sponsor agrees to accept full responsibility for providing the mitigation identified in this document (see the table above), associated with the USACE Permittee and Action ID number shown. I also verify that released credits (and/or advance credits for NCDMS), as approved by the Wilmington District, are currently available at the mitigation site identified above. Further, I understand that if the Sponsor fails to provide the required compensatory mitigation, the USACE Wilmington District Engineer may pursue measures against the Sponsor to ensure compliance associated with the mitigation requirements.

Mitigation Sponsor Name: EBX-Neuse I, LLC and Environmental Banc & Exchange

Name of Sponsor's Authorized Representative: Christopher C. Smith, PE



12/19/24

USACE Wilmington District
Compensatory Mitigation Responsibility Transfer Form, Page 2

Conditions for Transfer of Compensatory Mitigation Credit:

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Comments/Additional Conditions:

This form is not valid unless signed below by the District Project Manager and by the Mitigation Sponsor on Page 1. ***Once signed, the Sponsor should provide copies of this form along with an updated bank ledger to: 1) the Permittee, 2) the District Project Manager at the address below, 3) the Bank Manager listed in RIBITS, and 4) the Wilmington District Mitigation Office, 3331 Heritage Trade Drive, Suite 105, Wake Forest, NC 27587 (or by email to SAWMIT@usace.army.mil).*** Questions regarding this form or any of the permit conditions may be directed to the District Mitigation Office.

USACE Project Manager: Eric Alsmeyer
US Army Corps of Engineers
3331 Heritage Trade Drive, Suite 105
Wake Forest, NC 27587
Email: **eric.c.alsmeyer@usace.army.mil**

Eric Alsmeyer

Wilmington District Project Manager Signature

December 19, 2024

Date of Signature

Current Wilmington District mitigation guidance, including information on mitigation ratios, functional assessments, and mitigation bank location and availability, and credit classifications (including stream temperature and wetland groupings) is available at http://ribits.usace.army.mil.

3600 Glenwood Avenue, Suite 100
Raleigh, NC 27612

Corporate Headquarters
6575 West Loop South, Suite 300
Bellaire, TX 77401
Main: 713.520.5400

November 13, 2024 - REVISED

Mr. Brad Chilton
North Carolina Department of Transportation
1000 Birch Ridge Drive
Raleigh, NC 27610

Subject: Mitigation Acceptance Letter – R-2829B

Dear Mr. Chilton:

The Bucher Mitigation site is located at 3132 Redwood Road in Durham County NC. The mitigation site is adjacent to and within the Neuse River Basin, Hydrologic Unit Code 03020201. When NCDOT purchased credits for Bucher, RES subbed in the banks below to meet the NCDOT contract requirements. The additional sites below are also within the Neuse River Basin in the same Hydrologic Unit Code 03020201. The banks and credit amounts will make up the requested debit amount of 4,458 credits. NCDOT has acquired Stream Mitigation credit to offset the unavoidable impacts associated with R-2829B.

Neu-Con Umbrella Wetland and Stream Mitigation Bank.

- Bucher mitigation site will debit their ledger 2053.50 LF
- Buffalo Branch site will debit their ledger 287.27 LF
- Cedar Grove site will debit their ledger 182.97 LF
- Uzzle site will debit their ledger 108.00 LF
- Stone Creek will debit their ledger 394.61 LF
- Hannah Bridge will debit their ledger 446.60 LF
- Polecat will debit their ledger 985.05 LF

The ledger is shown below:

F_TIPDebits					
PO Number	**TIP**	**Debit Amount**	**Permit Date**	**Notes**	**Links**
7700002012	R-2829B	4,458	2024	2,229 ln ft impacts @ 2:1 ratio	

If the above referenced impact amounts are revised, then this mitigation acceptance letter will no longer be valid and a new mitigation acceptance letter will be required from RES. If you have any questions or need additional information, please contact me at 919-209-1055.

Sincerely,

Amy Staley
Credit Sales Manager
Bank Sponsors EBX-Neuse I, LLC and Environmental Banc & Exchange

U.S. ARMY CORPS OF ENGINEERS
Wilmington District
Compensatory Mitigation Responsibility Transfer Form

Permittee: NCDOT Turnpike Authority **Action ID:** SAW-2009-02240
Project Name: Complete 540, R-2829B Mod **County:** Wake

Instructions to Permittee: The Permittee must provide a copy of this form to the Mitigation Sponsor, either an approved Mitigation Bank or the North Carolina Division of Mitigation Services (NCDMS), who will then sign the form to verify the transfer of the mitigation responsibility. Once the Sponsor has signed this form, it is the Permittee's responsibility to ensure that Wilmington District Project Manager identified on page two is in receipt of a signed copy of this form before conducting authorized impacts, unless otherwise specified below. If more than one Mitigation Sponsor will be used to provide the mitigation associated with the permit, or if the impacts and/or the mitigation will occur in more than one 8-digit Hydrologic Unit Code (HUC), multiple forms will be attached to the permit, and the separate forms for each Sponsor and/or HUC must be provided to the appropriate Mitigation Sponsors.

Instructions to Sponsor: The Sponsor verifies that the mitigation requirements (credits) shown below have been released and are available at the identified site. By signing below, the Sponsor is accepting full responsibility for the identified mitigation, regardless of whether they have received payment from the Permittee. Once the form is signed, the Sponsor must update the bank ledger and provide a copy of the signed form and the updated ledger to the Permittee, the Project Manager who issued the permit, the Bank Project Manager, and the District Mitigation Office (see contact information on page 2). The Sponsor must also comply with all reporting requirements established in their authorizing instrument.

Permitted Impacts and Compensatory Mitigation Requirements

Permitted Impacts Requiring Mitigation*: **8-digit HUC and Basin:** 03020201, Neuse River Basin

Stream Impacts (linear feet)			Wetland Impacts (acres)			
Warm	Cool	Cold	Riparian Riverine	Riparian Non-Riverine	Non-Riparian	Coastal
1,086.5						

*If more than one mitigation sponsor will be used for the permit, only include impacts to be mitigated by this sponsor.

Compensatory Mitigation Requirements: **8-digit HUC and Basin:** 03020201, Neuse River Basin

Stream Mitigation (credits)			Wetland Mitigation (credits)			
Warm	Cool	Cold	Riparian Riverine	Riparian Non-Riverine	Non-Riparian	Coastal
2,173						

Mitigation Site Debited: Water and Land Solutions, LLC; WLS Neuse 01 Umbrella Mitigation Bank; Hollowell Mitigation Site
(List the name of the bank to be debited. For umbrella banks, also list the specific site. For NCDMS, list NCDMS. If the NCDMS acceptance letter identifies a specific site, also list the specific site to be debited).

Section to be completed by the Mitigation Sponsor

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Mitigation Sponsor Name: Water & Land Solutions, LLC

Name of Sponsor's Authorized Representative: Riane Welbourne

Riane Welbourne — 12/13/2024

Signature of Sponsor's Authorized Representative **Date of Signature**

USACE Wilmington District
Compensatory Mitigation Responsibility Transfer Form, Page 2

Conditions for Transfer of Compensatory Mitigation Credit:

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Comments/Additional Conditions:

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USACE Project Manager: Eric Alsmeyer
US Army Corps of Engineers
3331 Heritage Trade Drive, Suite 105
Wake Forest, NC 27587
Email: **eric.c.alsmeyer@usace.army.mil**

Eric Alsmeyer

Wilmington District Project Manager Signature

December 12, 2024

Date of Signature

Current Wilmington District mitigation guidance, including information on mitigation ratios, functional assessments, and mitigation bank location and availability, and credit classifications (including stream temperature and wetland groupings) is available at http://ribits.usace.army.mil.

U.S. ARMY CORPS OF ENGINEERS
Wilmington District
Compensatory Mitigation Responsibility Transfer Form

Permittee: NCDOT Turnpike Authority **Action ID:** SAW-2009-02240
Project Name: Complete 540, R-2829B Mod **County:** Wake

Instructions to Permittee: The Permittee must provide a copy of this form to the Mitigation Sponsor, either an approved Mitigation Bank or the North Carolina Division of Mitigation Services (NCDMS), who will then sign the form to verify the transfer of the mitigation responsibility. Once the Sponsor has signed this form, it is the Permittee's responsibility to ensure that Wilmington District Project Manager identified on page two is in receipt of a signed copy of this form before conducting authorized impacts, unless otherwise specified below. If more than one Mitigation Sponsor will be used to provide the mitigation associated with the permit, or if the impacts and/or the mitigation will occur in more than one 8-digit Hydrologic Unit Code (HUC), multiple forms will be attached to the permit, and the separate forms for each Sponsor and/or HUC must be provided to the appropriate Mitigation Sponsors.

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Permitted Impacts and Compensatory Mitigation Requirements

Permitted Impacts Requiring Mitigation*: **8-digit HUC and Basin:** 03020201, Neuse River Basin

Stream Impacts (linear feet)			Wetland Impacts (acres)			
Warm	Cool	Cold	Riparian Riverine	Riparian Non-Riverine	Non-Riparian	Coastal
				9.107		

*If more than one mitigation sponsor will be used for the permit, only include impacts to be mitigated by this sponsor.

Compensatory Mitigation Requirements: **8-digit HUC and Basin:** 03020201, Neuse River Basin

Stream Mitigation (credits)			Wetland Mitigation (credits)			
Warm	Cool	Cold	Riparian Riverine	Riparian Non-Riverine	Non-Riparian	Coastal
				18.21		

Mitigation Site Debited: Wildland Holdings III, LLC; Falling Creek Umbrella Mitigation Bank: Falling Creek Mitigation Site
(List the name of the bank to be debited. For umbrella banks, also list the specific site. For NCDMS, list NCDMS. If the NCDMS acceptance letter identifies a specific site, also list the specific site to be debited).

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Mitigation Sponsor Name: Daniel Johnson

Name of Sponsor's Authorized Representative: Wildlands Holdings III, LLC

Daniel Johnson — 12/16/2024

Signature of Sponsor's Authorized Representative **Date of Signature**

USACE Wilmington District
Compensatory Mitigation Responsibility Transfer Form, Page 2

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Comments/Additional Conditions:

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USACE Project Manager: Eric Alsmeyer
US Army Corps of Engineers
3331 Heritage Trade Drive, Suite 105
Wake Forest, NC 27587
Email: **eric.c.alsmeyer@usace.army.mil**

Eric Alsmeyer — December 12, 2024

Wilmington District Project Manager Signature | **Date of Signature**

Current Wilmington District mitigation guidance, including information on mitigation ratios, functional assessments, and mitigation bank location and availability, and credit classifications (including stream temperature and wetland groupings) is available at http://ribits.usace.army.mil.

Submitted November 13, 2024

TIP PROJECT: R-2829B

CONTRACT: C204825

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WAKE COUNTY

PERMIT DRAWING
SHEET 1 OF 112

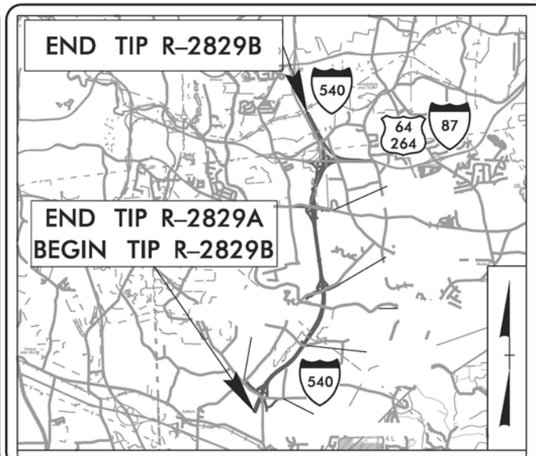
WETLAND AND SURFACE WATER IMPACTS PERMIT

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

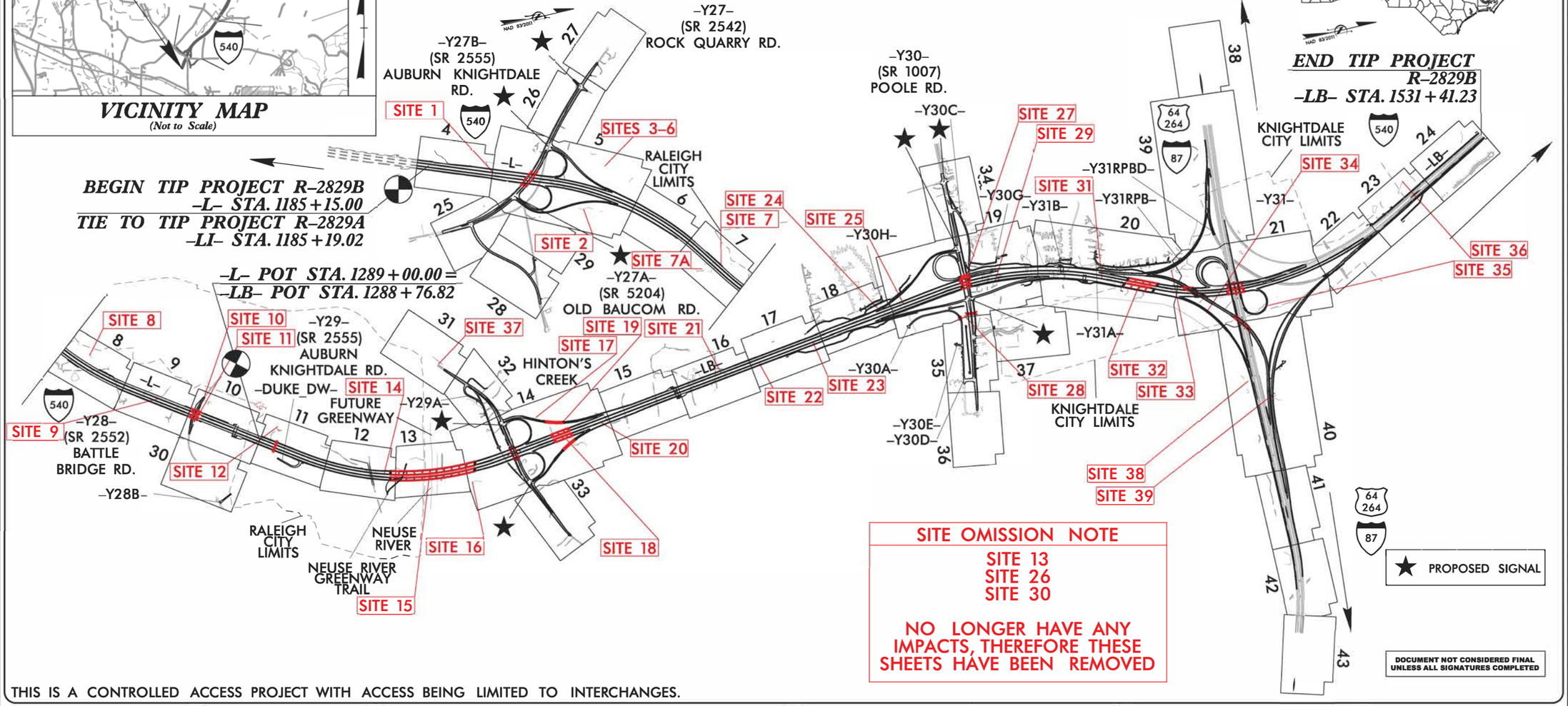
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
35517.3.TA2	N/A	DESIGN-BUILD
35517.3.TAGV2	0540048	DESIGN-BUILD

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

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



VICINITY MAP
(Not to Scale)



SITE OMISSION NOTE

SITE 13
SITE 26
SITE 30

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

GRAPHIC SCALES

PLANS: 50 25 0 50 100

PROFILE (HORIZONTAL): 50 25 0 50 100

PROFILE (VERTICAL): 20 10 0 10 20

DESIGN DATA

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

PROJECT LENGTH

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

Prepared in the Office of:
ICE of CAROLINAS, PLLC
ICE of Carolinas, PLLC
4505 Falls of Neuse Road, Suite 110
Raleigh, North Carolina 27609
Phone: 803-822-0333
License #: P-0656

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

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: 8/29/2023

LETTING DATE: 8/29/2023

BRIAN LUSK, P.E.
PROJECT ENGINEER

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

HYDRAULICS ENGINEER

_____ P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

_____ P.E.
SIGNATURE:

NORTH CAROLINA Turnpike Authority

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

29/28/59

Submitted November 13, 2024

8/17/99

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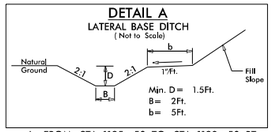
PROJECT REFERENCE NO.	SHEET NO.
R-2829B	2D-1
R/W SHEET NO.	

HYDRAULICS ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 2 OF 112

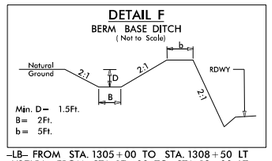
DETAIL A
LATERAL BASE DITCH
(Not to Scale)



Min. D= 1.5Ft.
B= 2Ft.
b= 5Ft.

–L– FROM STA. 1195+50 TO STA. 1198+50 RT
–L– FROM STA. 1249+04 TO STA. 1250+25 LT
–L– FROM STA. 1254+34 TO STA. 1256+00 LT
–L– FROM STA. 1264+10 TO STA. 1265+00 RT
–L– FROM STA. 1265+52 TO STA. 1267+00 RT
–LB– FROM STA. 1404+70 TO STA. 1405+77 LT
–LB– FROM STA. 1439+42 TO STA. 1441+00 LT
–LB– FROM STA. 1440+64 TO STA. 1445+00 RT
–LB– FROM STA. 1448+05 TO STA. 1450+50 LT
–LB– FROM STA. 1452+50 TO STA. 1454+00 RT
–LB– FROM STA. 1522+00 TO STA. 1523+75 RT
–LB– FROM STA. 1526+63 TO STA. 1529+00 RT
–Y27– FROM STA. 27+50 TO STA. 29+50 RT
–Y27– FROM STA. 44+00 TO STA. 45+00 RT
–Y27A– FROM STA. 15+50 TO STA. 17+00 LT
–Y27A– FROM STA. 26+00 TO STA. 30+00 LT
–Y27LPA– FROM STA. 19+00 TO STA. 21+19 RT
–Y27LPA– FROM STA. 19+00 TO STA. 21+00 LT
–Y27LPD– FROM STA. 20+70 TO STA. 22+07 RT
–Y29– FROM STA. 18+00 TO STA. 21+50 LT
–Y29A– FROM STA. 11+00 TO STA. 15+00 LT
–Y30A– FROM STA. 16+50 TO STA. 17+87 LT
–Y30A– FROM STA. 17+87 TO STA. 19+00 LT
–Y30RPB– FROM STA. 10+00 TO STA. 11+23 LT
–Y31– FROM STA. 92+44 TO STA. 94+00 RT
–Y31– FROM STA. 104+87 TO STA. 108+00 RT
–Y31FLYDB– FROM STA. 27+00 TO STA. 32+00 RT
–Y31FLYDB– FROM STA. 52+00 TO STA. 52+84 LT
–Y31LPB– FROM STA. 17+10 TO STA. 20+93 LT
–Y31LPD– FROM STA. 19+00 TO STA. 24+50 RT
–Y31RPB– FROM STA. 23+30 TO STA. 24+20 RT
–Y31RPB– FROM STA. 25+00 TO STA. 29+19 RT
–Y31RPC– FROM STA. 26+60 TO STA. 27+50 LT
–Y31RPC– FROM STA. 28+50 TO STA. 30+00 LT
–Y31RPC– FROM STA. 35+80 TO STA. 36+48 RT
–Y31RPD– FROM STA. 54+50 TO STA. 57+00 RT
–Y31RPD– FROM STA. 58+20 TO STA. 60+00 RT

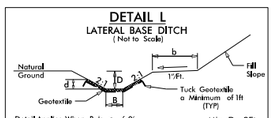
DETAIL F
BERM BASE DITCH
(Not to Scale)



Min. D= 1.5Ft.
B= 2Ft.
b= 5Ft.

–LB– FROM STA. 1305+00 TO STA. 1308+50 LT
–Y27LPA– FROM STA. 17+00 TO STA. 19+00 LT

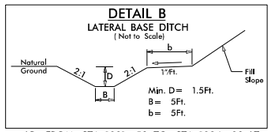
DETAIL L
LATERAL BASE DITCH
(Not to Scale)



Detail Applies When B is < 6.0'
for Class I and II Rip-Rap;
And All Widths for Class B Rip-Rap
Min. D=3Ft.
d= 3Ft.
B= 6Ft.
b= 5Ft.
Type of Liner= CL B Rip-Rap, Keyed-In

–L– FROM STA. 1230+00 TO STA. 1235+00 LT
–L– FROM STA. 1264+35 TO STA. 1269+60 LT
–Y29RPA– FROM STA. 19+00 TO STA. 21+00 RT

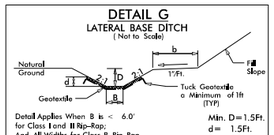
DETAIL B
LATERAL BASE DITCH
(Not to Scale)



Min. D= 1.5Ft.
B= 5Ft.
b= 5Ft.

–LB– FROM STA. 1391+50 TO STA. 1394+30 LT
–LB– FROM STA. 1447+00 TO STA. 1448+05 LT
–LB– FROM STA. 1454+00 TO STA. 1454+64 RT
–Y31– FROM STA. 88+90 TO STA. 90+20 RT
–Y31RPD– FROM STA. 41+75 TO STA. 45+00 RT

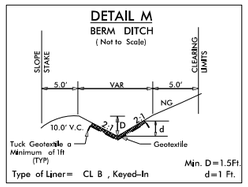
DETAIL G
LATERAL BASE DITCH
(Not to Scale)



Detail Applies When B is < 6.0'
for Class I and II Rip-Rap;
And All Widths for Class B Rip-Rap
Min. D=1.5Ft.
d= 1.5Ft.
B= 5Ft.
b= 5Ft.
Type of Liner= CL I Rip-Rap, Keyed-In

–L– FROM STA. 1278+50 TO STA. 1288+00 RT
–Y30– FROM STA. 26+30 TO STA. 27+80 LT
–Y31RPB– FROM STA. 19+50 TO STA. 23+30 RT

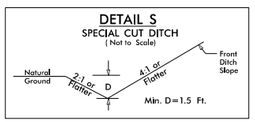
DETAIL M
BERM DITCH
(Not to Scale)



Min. D=1.5Ft.
d=1 Ft.
Type of Liner= CL B , Keyed–In

–LB– FROM STA. 1308+50 TO STA. 1309+60 LT
–Y29LPD– FROM STA. 10+00 TO STA. 18+50 RT

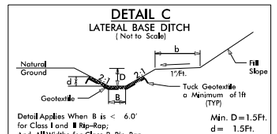
DETAIL S
SPECIAL CUT DITCH
(Not to Scale)



Min. D=1.5 Ft.

–L– FROM STA. 1255+60 TO STA. 1257+75 RT
–L– FROM STA. 1256+00 TO STA. 1259+52 LT
–LB– FROM STA. 1296+50 TO STA. 1299+00 LT
–LB– FROM STA. 1297+65 TO STA. 1300+29 RT
–LB– FROM STA. 1300+29 TO STA. 1302+50 LT
–LB– FROM STA. 1305+00 TO STA. 1305+50 LT
–LB– FROM STA. 1309+00 TO STA. 1309+60 LT
–LB– FROM STA. 1344+00 TO STA. 1344+40 LT
–LB– FROM STA. 1399+50 TO STA. 1403+00 LT
–LB– FROM STA. 1399+50 TO STA. 1402+50 RT
–LB– FROM STA. 1421+00 TO STA. 1421+50 LT
–LB– FROM STA. 1442+00 TO STA. 1445+00 LT
–LB– FROM STA. 1446+00 TO STA. 1446+75 LT
–Y27– FROM STA. 22+32 TO STA. 24+00 RT
–Y27A– FROM STA. 10+72 TO STA. 13+00 LT
–Y27C– FROM STA. 14+50 RT TO –Y27A– 24+50 LT
–Y27C– FROM STA. 14+50 LT TO –Y27A– 25+50 LT
–Y29– FROM STA. 21+50 TO STA. 22+00 LT
–Y29– FROM STA. 39+50 TO STA. 41+00 LT
–Y29– FROM STA. 49+00 TO STA. 51+50 RT
–Y30LPB– FROM STA. 7+50 TO STA. 9+00 RT
–Y30RPB– FROM STA. 12+23 TO STA. 13+73 LT
–Y30RPC– FROM STA. 12+78 TO STA. 14+27 RT
–Y30RPD– FROM STA. 27+56 TO STA. 28+22 LT
–Y30RPD– FROM STA. 27+56 TO STA. 28+75 RT
–Y31– FROM STA. 111+60 TO STA. 114+50 LT
–Y31FLYDB– FROM STA. 50+00 TO STA. 52+00 LT
–Y31RPD– FROM STA. 60+00 TO STA. 61+00 RT

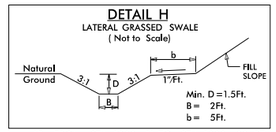
DETAIL C
LATERAL BASE DITCH
(Not to Scale)



Detail Applies When B is < 6.0'
for Class I and II Rip-Rap;
And All Widths for Class B Rip-Rap
Min. D=1.5Ft.
d= 1.5Ft.
B= 2Ft.
b= 5Ft.
Type of Liner= CL I Rip-Rap, Keyed-In

–L– FROM STA. 1274+82 TO STA. 1275+45 LT
–L– FROM STA. 1284+30 TO STA. 1288+20 LT
–LB– FROM STA. 1374+11 TO STA. 1375+00 LT
–LB– FROM STA. 1377+00 TO STA. 1378+50 RT
–LB– FROM STA. 1380+50 TO STA. 1381+22 LT
–LB– FROM STA. 1387+50 TO STA. 1388+90 LT
–LB– FROM STA. 1389+50 TO STA. 1390+00 LT
–Y27– FROM STA. 26+17 TO STA. 27+00 LT
–Y29– FROM STA. 21+00 TO STA. 22+00 RT
–Y30– FROM STA. 23+00 TO STA. 24+00 LT
–Y31– FROM STA. 94+00 TO STA. 95+00 RT
–Y31RPC– FROM STA. 27+50 TO STA. 28+50 LT

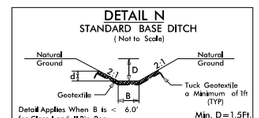
DETAIL H
LATERAL GRASSED SWALE
(Not to Scale)



Min. D=1.5Ft.
B= 2Ft.
b= 5Ft.

–LB– FROM STA. 1380+11 TO STA. 1383+00 RT

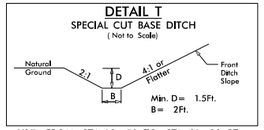
DETAIL N
STANDARD BASE DITCH
(Not to Scale)



Detail Applies When B is < 6.0'
for Class I and II Rip-Rap;
And All Widths for Class B Rip-Rap
Min. D=1.5Ft.
Max. d=1.5Ft.
B= 3Ft.
Type of Liner= B Rip-Rap, Keyed-In

–LB– FROM STA. 1329+00 TO STA. 1330+00 RT

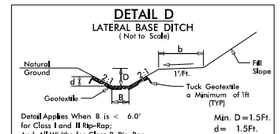
DETAIL T
SPECIAL CUT DITCH
(Not to Scale)



Min. D= 1.5Ft.
B= 2Ft.

–Y27– FROM STA. 18+50 TO STA. 21+22 RT
–Y27A– FROM STA. 21+50 TO STA. 24+50 LT
–Y27A– FROM STA. 30+00 TO STA. 30+50 LT
–Y29– FROM STA. 40+57 TO STA. 46+00 RT
–Y31RPD– FROM STA. 47+50 TO STA. 48+50 LT
–Y30RPB– FROM STA. 19+36 TO STA. 21+50 LT
–Y30RPB– FROM STA. 20+00 TO STA. 21+00 RT

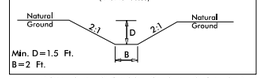
DETAIL D
LATERAL BASE DITCH
(Not to Scale)



Detail Applies When B is < 6.0'
for Class I and II Rip-Rap;
And All Widths for Class B Rip-Rap
Min. D=1.5Ft.
d= 1.5Ft.
B= 3Ft.
b= 5Ft.
Type of Liner= CL I Rip-Rap, Keyed-In

–LB– FROM STA. 1381+22 TO STA. 1383+00 LT
–LB– FROM STA. 1403+50 TO STA. 1404+70 RT
–Y30A– FROM STA. 22+03 TO STA. 23+50 LT
–Y30RPB– FROM STA. 18+48 TO STA. 19+36 LT
–Y31RPB– FROM STA. 14+50 TO STA. 19+50 RT
–Y31RPD– FROM STA. 45+00 TO STA. 48+50 RT

DETAIL I
STANDARD BASE DITCH
(Not to Scale)



Min. D=1.5 Ft.
B=2 Ft.

–L– FROM STA. 1216+00 TO STA. 1216+50 RT
–LB– FROM STA. 1372+49 RT
TOP EL=193.2, BOTTOM EL=193.0, 44 LF, S=0.4%
–LB– FROM STA. 1439+00 TO 1439+43 LT
–LB– FROM STA. 1523+72 TO STA. 1524+50 LT
TOP EL=240.8, BOTTOM EL=237.0 S=4.9%

–Y27– FROM STA. 29+50 TO STA. 30+77 RT
–Y27A– FROM STA. 30+50 TO STA. 31+50 LT
–Y29A– FROM STA. 12+18 RT
TOP EL=161.2, BOTTOM EL=160.5, 115 LF, S=0.6%

–Y29– FROM STA. 40+00 RT
TOP EL=194.5, BOTTOM EL=193.0, 58 LF, S=2.6%

–Y29– FROM STA. 40+57 RT
TOP EL=198.5, BOTTOM EL=198.0, 73 LF, S=0.7%

–Y30RPC– FROM STA. 26+00 RT
TOP EL=193.1, BOTTOM EL=192.5, 32 LF, S=2.0%

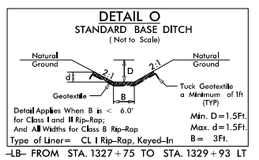
–Y31A– FROM STA. 27+00 LT
TOP EL=220.89, BOTTOM EL=217.0, 85 LF, S=4.7%

–Y31LPD– FROM STA. 27+00 RT
TOP EL=244.3, BOTTOM EL=244.0, 50 LF, S=0.5%

–Y31RPD– FROM STA. 39+00 RT
TOP EL=230.0, BOTTOM EL=230.0, 33 LF, S=0.0%

–Y31RPD– FROM STA. 55+10 LT
TOP EL=267.9, BOTTOM EL=265.7, 110 LF, S=2.0%

DETAIL O
STANDARD BASE DITCH
(Not to Scale)



Detail Applies When B is < 6.0'
for Class I and II Rip-Rap;
And All Widths for Class B Rip-Rap
Min. D=1.5Ft.
Max. d=1.5Ft.
B= 3Ft.
Type of Liner= CL I Rip-Rap, Keyed-In

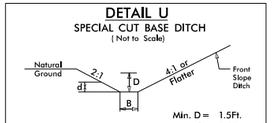
–LB– FROM STA. 1327+75 TO STA. 1329+93 LT

–Y27LPA– FROM STA. 19+00 RT
TOP EL=279.8, BOTTOM EL=278.4, 101 LF, S=1.2%

–Y29RPA– FROM STA. 21+60 RT
TOP EL=161.5, BOTTOM EL=158, 50 LF, S=7.5%

–Y31A– FROM STA. 22+50 RT
TOP EL=214.0, BOTTOM EL=209.5, 80 LF, S=5.6%

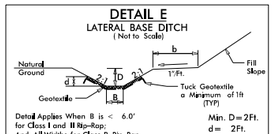
DETAIL U
SPECIAL CUT DITCH
(Not to Scale)



Min. D= 1.5Ft.
Max. d= 1.5Ft.
B= 3Ft.

–Y30A– FROM STA. 23+50 TO STA. 25+00 LT

DETAIL E
LATERAL BASE DITCH
(Not to Scale)

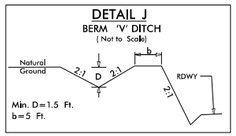


Detail Applies When B is < 6.0'
for Class I and II Rip-Rap;
And All Widths for Class B Rip-Rap
Min. D=2Ft.
d= 2Ft.
B= 5Ft.
b= 5Ft.
Type of Liner= CL I Rip-Rap, Keyed-In

–L– FROM STA. 1288+37 TO –LB– STA. 1291+50 LT
–L– FROM STA. 1288+13 TO –LB– STA. 1291+40 RT
–LB– FROM STA. 1310+50 TO STA. 1314+00 LT
–LB– FROM STA. 1524+50 TO STA. 1526+63 RT
–Y28– FROM STA. 14+75 TO STA. 16+90 RT

–Y30– FROM STA. 35+50 TO STA. 37+33 LT (d=2.6')
–Y30– FROM STA. 36+00 TO STA. 37+27 RT
–Y30– FROM STA. 37+59 TO STA. 41+00 LT
–Y31LPD– FROM STA. 19+50 TO STA. 24+00 LT
–Y31RPB– FROM STA. 19+50 TO STA. 22+00 LT
–Y31RPD– FROM STA. 40+50 TO STA. 41+75 RT

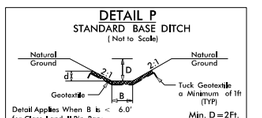
DETAIL J
BERM 'V' DITCH
(Not to Scale)



Min. D=1.5 Ft.
b=5 Ft.

–L– FROM STA. 1205+00 TO STA. 1206+48 RT
–LB– FROM STA. 1294+00 TO STA. 1299+50 LT
–LB– FROM STA. 1369+50 TO STA. 1371+50 LT
–Y27LPD– FROM STA. 14+00 TO STA. 16+50 RT

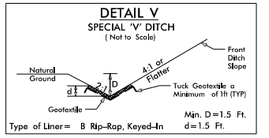
DETAIL P
STANDARD BASE DITCH
(Not to Scale)



Detail Applies When B is < 6.0'
for Class I and II Rip-Rap;
And All Widths for Class B Rip-Rap
Min. D=2Ft.
Max. d=1.5Ft.
B= 6Ft.
Type of Liner= CL II Rip-Rap, Keyed-In

–LB– FROM STA. 1304+74 RT
TOP EL=183.0, BOTTOM EL=182.0, 57 LF, S=1.8%

DETAIL V
SPECIAL 'V' DITCH
(Not to Scale)



Min. D=1.5 Ft.
Type of Liner= B Rip-Rap, Keyed-In

–Y27A– FROM STA. 20+50 TO STA. 21+50 RT
–Y28– FROM STA. 20+20 TO STA. 22+40 LT

DETAIL Q
STANDARD BASE DITCH
(Not to Scale)

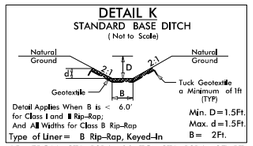
Detail Applies When B is < 6.0'
for Class I and II Rip-Rap;
And All Widths for Class B Rip-Rap
Min. D=1.5Ft.
Max. d=1.5Ft.
B= 5 Ft.
Type of Liner= CL I Rip-Rap, Keyed-In

–LB– FROM STA. 1439+30 LT
TOP EL=219.2, BOTTOM EL=211.0, 445 LF, S=1.8%
Y27 25+68 TO 26+17 LT of GW
–Y29RPA– FROM STA. 20+18 RT
TOP EL=161.0, BOTTOM EL=158.7, 65 LF, S=3.5%

–Y31LPD– FROM STA. 19+80 LT
TOP EL=255.0, BOTTOM EL=249.9, 235 LF, S=2.2%

–Y31RPB– FROM STA. 22+00 LT
TOP EL=222.0, BOTTOM EL=219.1, 102 LF, S=2.9%

DETAIL K
STANDARD BASE DITCH
(Not to Scale)

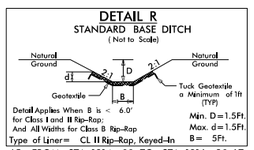


Detail Applies When B is < 6.0'
for Class I and II Rip-Rap;
And All Widths for Class B Rip-Rap
Min. D=1.5Ft.
Max. d=1.5Ft.
B= 2Ft.
Type of Liner= B Rip-Rap, Keyed-In

–LB– FROM STA. 1314+00 TO STA. 1314+87 RT
–Y28A– FROM STA. 14+19 TO STA. 14+60 RT
–Y27– FROM STA. 25+25 TO STA. 25+78 LT of GW
–Y27– FROM STA. 26+17 TO STA. 26+39 LT of GW
–Y30LPB– FROM STA. 17+50 TO STA. 18+00 RT
–Y31– FROM STA. 60+00 TO STA. 60+15 LT
–Y30RPC– FROM STA. 28+73 TO STA. 29+87 RT

–Y31RPC FROM STA. 21+00 RT
TOP EL=216.5, BOTTOM EL=216.1, 44 LF, S=1.0%

DETAIL R
STANDARD BASE DITCH
(Not to Scale)



Detail Applies When B is < 6.0'
for Class I and II Rip-Rap;
And All Widths for Class B Rip-Rap
Min. D=1.5Ft.
Max. d=1.5Ft.
B= 5Ft.
Type of Liner= CL II Rip-Rap, Keyed-In

–LB– FROM STA. 1314+00 TO STA. 1316+20 LT

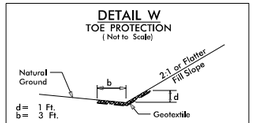
–L– FROM STA. 1249+04 LT
TOP EL=249.7, BOTTOM EL=249.0, 26 LF, S=2.7%

–L– FROM STA. 1269+60 LT
TOP EL=218.4, BOTTOM EL=218.0, 31 LF, S=1.3%

–Y31LPB– FROM STA. 16+24 TO STA. 16+38 LT
TOP EL=215.3, BOTTOM EL=215.1, 39 LF,
S=0.3% ALONG LENGTH OF DITCH

–Y31LPB– FROM 16+38 TO STA. 17+10 LT
TOP EL=219.6, BOTTOM EL=215.3, 150 LF,
S=2.9% ALONG LENGTH OF DITCH

DETAIL W
TOE PROTECTION
(Not to Scale)



d= 1 Ft.
b= 3 Ft.
Type of Liner= B Rip-Rap

–L– FROM STA. 1245+00 TO STA. 1247+50 RT
–L– FROM STA. 1272+00 TO STA. 1275+71 RT
–L– FROM STA. 1277+30 TO STA. 1278+50 RT
–LB– FROM STA. 1311+00 TO STA. 1313+50 RT
–LB– FROM STA. 1524+50 TO STA. 1527+20 LT
–Y29RPD– FROM STA. 20+00 TO STA. 24+30 LT
–Y30A– FROM STA. 11+00 TO STA. 11+75 RT
–Y30A– FROM STA. 11+90 TO STA. 13+00 RT
–Y30RPB– FROM STA. 16+95 TO STA. 18+40 LT
–Y30RPC– FROM STA. 19+95 TO STA. 20+60 RT
–Y31– FROM STA. 79+09 TO STA. 79+50 RT
–Y31LPB– FROM STA. 15+45 TO STA. 16+40 LT
–Y31RPB– FROM STA. 23+66 TO STA. 26+77 LT
–Y31RPC– FROM STA. 21+39 TO STA. 26+00 RT
–Y31RPC– FROM STA. 35+80 TO STA. 37+42 RT
–Y31RPC– FROM STA. 37+65 TO STA. 38+69 RT
–Y31RPD– FROM STA. 36+50 TO STA. 40+75 RT

$$$$SYSTIME$$$$
$$$$DESIGN$$$$
$$$$FILE$$$$
$$$$USERNAME$$$$

Submitted November 13, 2024

8/17/99

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PROJECT REFERENCE NO.	SHEET NO.
R-2829B	2D-2
R/W SHEET NO.	

HYDRAULICS ENGINEER

HYDRAULICS ENGINEER

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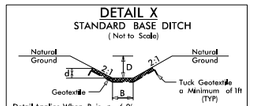
PERMIT DRAWING SHEET 3 OF 112

DETAIL X
STANDARD BASE DITCH
(Not to Scale)



Detail Applies When B is < 6.0' for Class I and II Rip-Rap; And All Widths for Class B Rip-Rap — Min. D=3Ft. Max. d=3Ft. B= 5Ft.

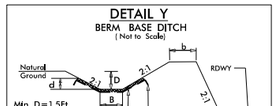
Type of Liner= CL II Rip-Rap, Keyed-In

–LB– FROM STA. 1317+05 TO STA. 1320+29 LT

–LB– FROM STA. 1380+16 RT
TOP EL=188.0, BOTTOM EL=179.3, 377 LF, S=2.3%

–LB– FROM STA. 1390+45 RT
TOP EL=196.4, BOTTOM EL=193.0, 83 LF, S=4.1%

DETAIL Y
BERM BASE DITCH
(Not to Scale)

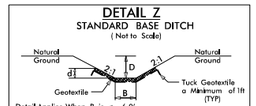


Min. D=1.5Ft.
Max. d=1.5Ft.
B= 2Ft.
b= 5Ft.

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

–Y29– FROM STA. 23+00 TO STA. 25+50 LT

DETAIL Z
STANDARD BASE DITCH
(Not to Scale)

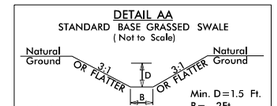


Detail Applies When B is < 6.0' for Class I and II Rip-Rap; And All Widths for Class B Rip-Rap — Min. D=2Ft. Max. d=2Ft. B=2Ft.

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

–LB– FROM STA. 1315+55 TO STA. 1319+87 RT

DETAIL AA
STANDARD BASE GRASSED SWALE
(Not to Scale)

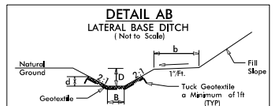


Min. D=1.5 Ft.
B= 2Ft.

*NOTES:
1) LONGITUDINAL SLOPES BETWEEN 0.3% AND 4.0%.
2) MODIFICATIONS MAY BE NEEDED, AS APPROVED BY ENGINEER.

–LB– FROM STA. 1378+50 TO STA. 1379+69 RT
–Y29RPA– FROM STA. 24+05 TO STA. 25+12 RT

DETAIL AB
LATERAL BASE DITCH
(Not to Scale)

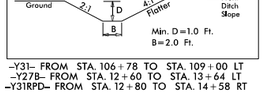


Detail Applies When B is < 6.0' for Class I and II Rip-Rap; And All Widths for Class B Rip-Rap — Min. D=1.5Ft. d= 1.5Ft. B= 5Ft. b= 5Ft.

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

–LB– FROM STA. 1390+00 TO STA. 1391+50 LT

DETAIL AC
LATERAL BASE DITCH
(Not to Scale)

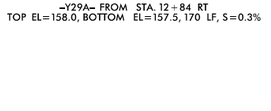


Detail Applies When B is < 6.0' for Class I and II Rip-Rap; And All Widths for Class B Rip-Rap — Min. D=1.5Ft. d= 1.5Ft. B= 2Ft. b= 5Ft.

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

–L– FROM STA. 1242+36 TO STA. 1244+95 RT
–L– FROM STA. 1244+33 TO STA. 1245+00 LT
–L– FROM STA. 1247+50 TO STA. 1249+04 LT
–L– FROM STA. 1247+50 TO STA. 1250+00 RT
–L– FROM STA. 1253+00 TO STA. 1255+60 RT
–L– FROM STA. 1267+00 TO STA. 1272+00 RT
–L– FROM STA. 1269+60 TO STA. 1271+00 LT
–L– FROM STA. 1276+65 TO STA. 1277+28 RT
–L– FROM STA. 1276+72 TO STA. 1277+46 LT
–LB– FROM STA. 1302+50 TO STA. 1304+50 LT
–LB– FROM STA. 1313+60 TO STA. 1314+00 RT
–LB– FROM STA. 1383+00 TO STA. 1385+50 RT
–Y27– FROM STA. 50+00 TO STA. 51+40 RT
–Y27A– FROM STA. 17+00 TO STA. 20+50 LT
–Y29LPA– FROM STA. 15+50 TO STA. 17+50 LT
–Y29RPD– FROM STA. 11+80 TO STA. 16+10 LT
–Y30– FROM STA. 33+50 TO STA. 34+00 LT
–Y30– FROM STA. 37+70 TO STA. 49+05 RT
–Y30A– FROM STA. 12+86 TO STA. 14+00 LT
–Y30A– FROM STA. 12+97 TO STA. 14+00 RT
–Y30A– FROM STA. 19+02 TO STA. 21+67 LT
–Y30RPC– FROM STA. 10+08 TO STA. 12+28 RT
–Y31RPB– FROM STA. 10+00 TO STA. 13+00 RT
–Y31RPBD– FROM STA. 21+50 TO STA. 23+06 RT

DETAIL AD
LATERAL BASE DITCH
(Not to Scale)



Min. D=2.5 Ft.
B=3 Ft.
b=5 Ft.

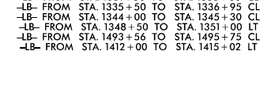
–LB– FROM STA. 1292+10 TO STA. 1296+50 RT
–Y30RPB– FROM STA. 19+09 TO STA. 20+00 RT
–Y30A– FROM STA. 25+00 TO STA. 26+20 LT

DETAIL AE
SPECIAL CUT DITCH
(Not to Scale)

Min. D=1.0 Ft.

–Y31– FROM STA. 112+52 TO STA. 113+50 RT

DETAIL AF
SPECIAL BACK OF CURB CUT DITCH
(NOT TO SCALE)



–Y29– FROM STA. 34+30 TO STA. 37+50 LT
–Y30RPD– FROM STA. 28+22 TO STA. 28+75 LT
–Y30LPB– FROM STA. 26+50 TO STA. 34+26 RT
–Y30– FROM STA. 29+11 TO STA. 29+90 RT

DETAIL AG
LATERAL BASE DITCH
(Not to Scale)

Detail Applies When B is < 6.0' for Class I and II Rip-Rap; And All Widths for Class B Rip-Rap — Min. D=2 Ft. d=2 Ft. B=3 Ft. b=5 Ft.

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

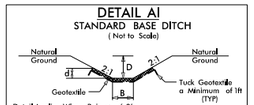
–L– FROM STA. 1263+50 TO STA. 1264+10 RT
–LB– FROM STA. 1292+00 TO STA. 1293+50 LT
–LB– FROM STA. 1329+93 TO STA. 1332+00 LT
–LB– FROM STA. 1330+00 TO STA. 1330+50 RT
–LB– FROM STA. 1386+50 TO STA. 1387+50 LT
–Y28– FROM STA. 14+85 TO STA. 16+85 LT
–Y31RPB– FROM STA. 17+00 TO STA. 19+50 LT
–Y31RPB– FROM STA. 13+00 TO STA. 14+50 RT

DETAIL AH
RIP RAP AT EMBANKMENT
(Not to Scale)

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

–L– STA. 1253+32 TO STA. 1253+39 LT
–L– STA. 1253+36 TO STA. 1253+43 LT
–Y28– STA. 14+65 TO STA. 14+85 RT
–Y28– STA. 14+79 TO STA. 14+95 LT
–LB– STA. 1320+29 TO STA. 1320+37 LT
–LB– STA. 1319+87 TO STA. 1320+04 RT
–LB– STA. 1321+81 TO STA. 1321+91 LT
–LB– STA. 1345+25 TO STA. 1345+46 LT
–LB– STA. 1346+17 TO STA. 1346+34 RT
–Y29– STA. 8+48 TO STA. 8+80 LT
–Y29RPA– STA. 24+01 TO STA. 24+11 RT

DETAIL AI
STANDARD BASE DITCH
(Not to Scale)

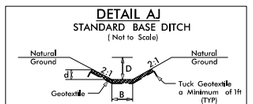


Detail Applies When B is < 6.0' for Class I and II Rip-Rap; — Min. D=1.5Ft. Max. d=1.5Ft. B= 3Ft.

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

–LB– FROM STA. 1327+00 TO STA. 1329+00 RT

DETAIL AJ
STANDARD BASE DITCH
(Not to Scale)

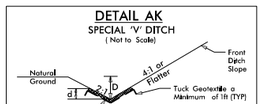


Min. D=2.5Ft.
Max. d=2.5Ft.
B= 6Ft.

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

–CH01– FROM STA. 10+00 TO STA. 18+90, EL=355.80 TO EL=332.66, S=2.6%
–CH01– FROM STA. 18+90 TO STA. 20+75, EL=332.7 TO EL=332.5, S=0.1%

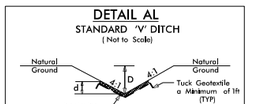
DETAIL AK
SPECIAL 'V' DITCH
(Not to Scale)



Min. D= 1.5Ft.
d= 1Ft.

–LB– FROM STA. 1375+00 TO STA. 1376+00 LT

DETAIL AL
STANDARD 'V' DITCH
(Not to Scale)



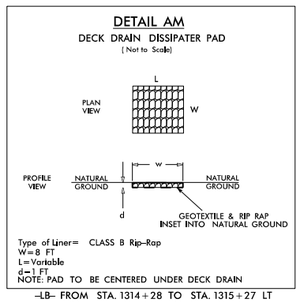
Min. D=1.5Ft.

Type of Liner= CL B Rip-Rap, Keyed-In d=1 Ft.

–LB– FROM STA. 1314+30 TO STA. 1316+06 CL
–LB– FROM STA. 1316+44 TO STA. 1319+79 CL

–Y29– FROM STA. 50+28 RT
TOP EL=207.5, BOTTOM EL=205.0, 59 LF, S=4.2%

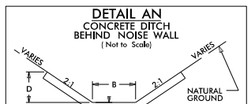
DETAIL AM
DECK DRAIN DISSIPATER PAD
(Not to Scale)



Type of Liner= CLASS B Rip-Rap
W=8 FT
L=Variable
d=1 FT
NOTE: PAD TO BE CENTERED UNDER DECK DRAIN

–LB– FROM STA. 1314+28 TO STA. 1315+27 LT
–LB– FROM STA. 1314+27 TO STA. 1315+14 RT
–LB– FROM STA. 1328+04 TO STA. 1329+56 LT

DETAIL AN
CONCRETE DITCH BEHIND NOISE WALL
(Not to Scale)



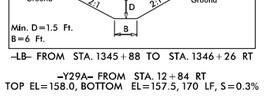
–LB– FROM STA. 1441+00 TO STA. 1441+50 LT (NO PFL, FOLLOW NG)
–LB– FROM STA. 1441+50 TO STA. 1445+00 LT
–LB– FROM STA. 1445+00 TO STA. 1447+00 LT (NO PFL, FOLLOW NG)
–LB– FROM STA. 1510+67 TO STA. 1515+99 RT (NO PFL, FOLLOW NG)
–Y30– FROM STA. 28+39 TO STA. 29+00 LT
–Y30– FROM STA. 28+39 TO STA. 29+40 LT
–Y30LPB– FROM STA. 9+10 TO STA. 15+18 RT
–Y30LPB– FROM STA. 17+70 TO STA. 18+72 RT

DETAIL AO
SPECIAL BASE DITCH
(Not to Scale)

Min. D=1.0 Ft.
B=2.0 Ft.

–Y31– FROM STA. 106+78 TO STA. 109+00 LT
–Y27B– FROM STA. 12+60 TO STA. 13+64 LT
–Y31RPD– FROM STA. 12+80 TO STA. 14+58 RT

DETAIL AP
STANDARD BASE DITCH
(Not to Scale)

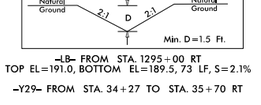


Min. D=1.5 Ft.
B=6 Ft.

–LB– FROM STA. 1345+88 TO STA. 1346+26 RT

–Y29A– FROM STA. 12+84 RT
TOP EL=158.0, BOTTOM EL=157.5, 170 LF, S=0.3%

DETAIL AQ
STANDARD 'V' DITCH
(Not to Scale)

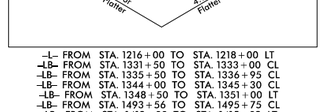


Min. D=1.5 Ft.

–LB– FROM STA. 1295+00 RT
TOP EL=191.0, BOTTOM EL=189.5, 73 LF, S=2.1%

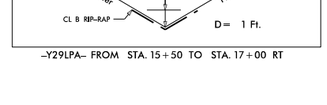
–Y29– FROM STA. 34+27 TO STA. 35+70 RT

DETAIL AR
MEDIAN V DITCH
(Not to Scale)



–L– FROM STA. 1216+00 TO STA. 1218+00 LT
–LB– FROM STA. 1331+50 TO STA. 1333+00 CL
–LB– FROM STA. 1335+50 TO STA. 1336+95 CL
–LB– FROM STA. 1344+00 TO STA. 1345+30 CL
–LB– FROM STA. 1348+50 TO STA. 1351+00 LT
–LB– FROM STA. 1493+56 TO STA. 1495+75 CL
–LB– FROM STA. 1412+00 TO STA. 1415+02 LT

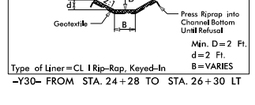
DETAIL AS
MEDIAN V DITCH w/RIP RAP
(Not to Scale)



D= 1 Ft.

–Y29LPA– FROM STA. 15+50 TO STA. 17+00 RT

DETAIL AT
EXIST CHANNEL LINING
(Not to Scale)



Min. D=2 Ft.
d=2 Ft.

Type of Liner=CL I Rip-Rap, Keyed-In B=VARIES

–Y30– FROM STA. 24+28 TO STA. 26+30 LT

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

Submitted November 13, 2024

8/17/99

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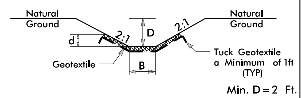
R-2829B	2D-3
R/W SHEET NO.	

HYDRAULICS ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 4 OF 112

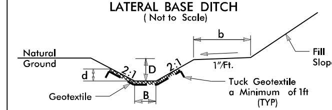
DETAIL AU
STANDARD BASE DITCH
(Not to Scale)



Min. D=2 Ft.
Max. d=2 Ft.
B= 4Ft.
Type of Liner= CL B Rip–Rap, Keyed–In

–Y27– 51+40 RT
TOP EL=389.6, BOTTOM EL=389.2, 121 LF, S=0.3%

DETAIL AV
LATERAL BASE DITCH
(Not to Scale)

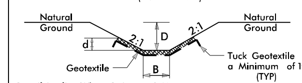


Detail Applies When B is < 6.0'
for Class I and II Rip–Rap;
And All Widths for Class B Rip–Rap

Min. D=3 Ft.
d=3 Ft.
B=6 Ft.
b=5 Ft.
Type of Liner= B Rip–Rap, Keyed–In

–Y29RPA– FROM STA. 14+44 TO STA. 15+50 RT

DETAIL AW
STANDARD BASE DITCH
(Not to Scale)

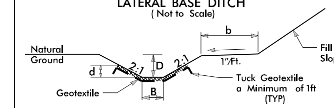


Detail Applies When B is < 6.0'
for Class I and II Rip–Rap;
And All Widths for Class B Rip–Rap

Min. D=3Ft.
d= 3Ft.
B= 6Ft.
Type of Liner= B Rip–Rap, Keyed–In

–Y29RPA– FROM STA. 21+00 RT TO OUTLET AT STREAM
TOP EL=158.0', BOTTOM EL=154.7', 289 LF, S=1.13%

DETAIL AX
LATERAL BASE DITCH
(Not to Scale)

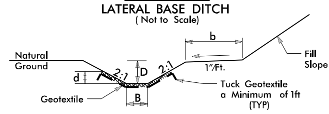


Detail Applies When B is < 6.0'
for Class I and II Rip–Rap;
And All Widths for Class B Rip–Rap

Min. D=2.5Ft.
d= 2.5Ft.
B= 5Ft.
b= 5Ft.
Type of Liner= CL I Rip–Rap, Keyed–In

–Y28– FROM STA. 20+00 TO STA. 21+00 RT

DETAIL AY
LATERAL BASE DITCH
(Not to Scale)

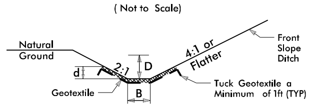


Detail Applies When B is < 6.0'
for Class I and II Rip–Rap;
And All Widths for Class B Rip–Rap

Min. D=1.5Ft.
d= 1.5Ft.
B= 4Ft.
b= 5Ft.
Type of Liner= CL B Rip–Rap, Keyed–In

–Y29– FROM STA. 14+50 TO STA. 18+00 LT

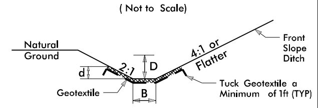
DETAIL AZ
SPECIAL BASE DITCH
(Not to Scale)



Min. D=3Ft.
d= 3Ft.
B= 6Ft.
Type of Liner= CL B Rip–Rap, Keyed–In

–Y29RPA– FROM STA. 15+50 TO STA. 19+00 RT

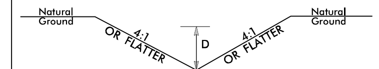
DETAIL BA
SPECIAL BASE DITCH
(Not to Scale)



Min. D=1.5Ft.
d= 1Ft.
B= 2Ft.
Type of Liner= CL B Rip–Rap, Keyed–In

–Y29A– FROM STA. 16+29 TO STA. 17+80 LT

DETAIL BB
STANDARD V GRASSED SWALE
(Not to Scale)

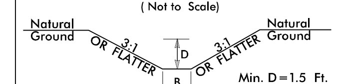


Min. D=1.5 Ft.

*NOTES:
1) LONGITUDINAL SLOPES BETWEEN 0.3% AND 4.0%.
2) MODIFICATIONS MAY BE NEEDED, AS APPROVED BY ENGINEER.

–Y27LPD– FROM 17+86 TO 18+40 RT
–Y29– FROM STA. 45+00 LT
TOP EL=202.3, BOTTOM EL=201.9, 100 LF, S=0.4%
–Y27RPD– FROM STA. 17+86 TO STA. 18+40 RT

DETAIL BC
STANDARD BASE GRASSED SWALE
(Not to Scale)



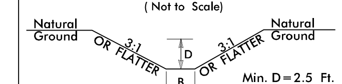
Min. D=1.5 Ft.
B=5 Ft.

*NOTES:
1) LONGITUDINAL SLOPES BETWEEN 0.3% AND 4.0%.
2) MODIFICATIONS MAY BE NEEDED, AS APPROVED BY ENGINEER.

–LB– FROM STA. 1323+44 TO STA. 1327+00 RT

–Y29– FROM STA. 50+02 LT
TOP EL=201.0, BOTTOM EL=200.7, 85 LF, S=0.4%

DETAIL BD
STANDARD BASE GRASSED SWALE
(Not to Scale)



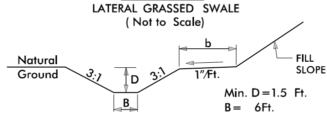
Min. D=2.5 Ft.
B= 6Ft.

*NOTES:
1) LONGITUDINAL SLOPES BETWEEN 0.3% AND 4.0%.
2) MODIFICATIONS MAY BE NEEDED, AS APPROVED BY ENGINEER.

–LB– FROM STA. 1321+91 TO STA. 1323+50 LT (4:1)
–LB– FROM STA. 1323+82 TO STA. 1327+75 LT (4:1)

–Y29– FROM STA. 8+80 TO STA. 12+00 LT

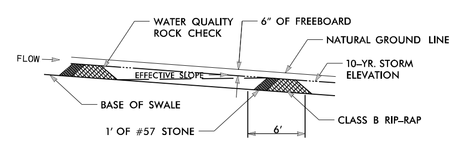
DETAIL BE
LATERAL GRASSED SWALE
(Not to Scale)



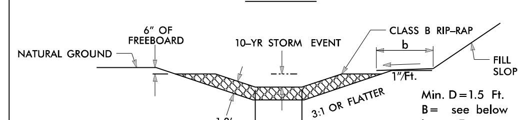
Min. D=1.5 Ft.
B= 6Ft.
b= 5Ft.

–Y29– FROM STA. 12+00 TO STA. 14+50 LT

DETAIL BF
TRAPEZOIDAL GRASSED SWALE
w/ROCK CHECK DAM
(Not to Scale)



PROFILE



Min. D=1.5 Ft.
B= see below
b= 5Ft.

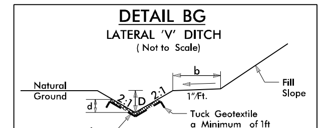
TYPICAL SECTION

NOTES:

1) DO NOT USE INSIDE CLEAR RECOVERY AREA.
2) NOT PRACTICAL TO USE ON SLOPES > 5%.
3) FOR PERMANENT STRUCTURES IN GRASS SWALE.
4) CHECK DAMS SHOULD BE SPACED SUCH THAT THE BASE OF THE UPSTREAM CHECK IS AT THE SAME ELEVATION AS THE TOP OF THE DOWNSTREAM CHECK.

–LB– FROM STA. 1377+50 TO STA. 1380+50 LT (B=2', Q10 FLOW D=0.5')
–LB– FROM STA. 1383+00 TO STA. 1386+50 LT (B=3', Q10 FLOW D=0.5')
–LB– FROM STA. 1390+50 TO STA. 1392+50 RT (B=5', Q10 FLOW D=1')

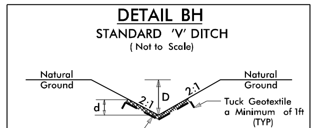
DETAIL BG
LATERAL 'V' DITCH
(Not to Scale)



Min. D=1.5Ft.
d= 1Ft.
b= 5Ft.
Type of Liner= CL B Rip–Rap, Keyed–In

–Y27A– FROM STA. 20+00 TO STA. 20+50 RT
–Y28A– FROM STA. 12+38 TO STA. 13+50 RT

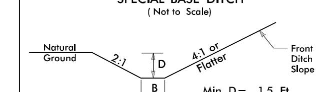
DETAIL BH
STANDARD 'V' DITCH
(Not to Scale)



Min. D=1.5Ft.
d= 1Ft.
Type of Liner= CL B Rip–Rap, Keyed–In

–Y28A– FROM STA. 13+08 TO STA. 13+50 LT
TOP EL=171.8, BOTTOM EL=165.5, 50 LF, S=12.6%

DETAIL BI
SPECIAL BASE DITCH
(Not to Scale)



Min. D= 1.5 Ft.
B= 4 Ft.

–Y27– FROM STA. 17+05 TO STA. 18+50 RT

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

Submitted November 13, 2024

8/17/99

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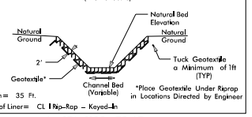
PROJECT REFERENCE NO.	SHEET NO.
R-2829B	2D-4
R/W SHEET NO.	

HYDRAULICS ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 5 OF 112

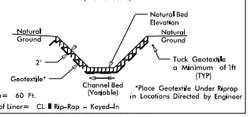
DETAIL BJ
PIPE OUTLET CHANNEL STABILIZATION
(Not to Scale)



Length = 35 Ft.
Type of Liner = CL II Rip-Rap – Keyed-In

–L– STA. 1195+75 LT

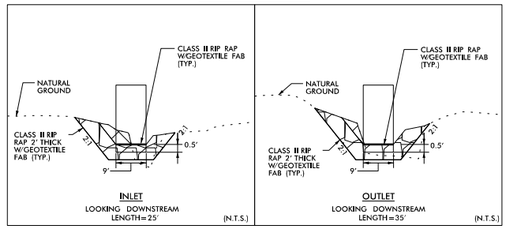
DETAIL BK
OUTLET CHANNEL STABILIZATION
(Not to Scale)



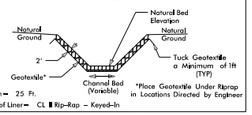
Length = 60 Ft.
Type of Liner = CL II Rip-Rap – Keyed-In

–L– STA. 1244+30 LT

–Y31RPD– 40+05



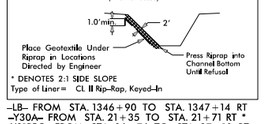
DETAIL BO
PIPE INLET CHANNEL STABILIZATION
(Not to Scale)



Length = 25 Ft.
Type of Liner = CL II Rip-Rap – Keyed-In

–LB– STA. 1381+20 LT

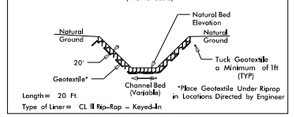
DETAIL BP
BANK STABILIZATION
(Not to Scale)



* DENOTES 2:1 SIDE SLOPE
Type of Liner = CL II Rip-Rap, Keyed-In

–LB– FROM STA. 1346+90 TO STA. 1347+14 RT
–Y30A– FROM STA. 21+35 TO STA. 21+71 RT *
–Y31RPC– FROM STA. 36+76 TO STA. 37+10 RT

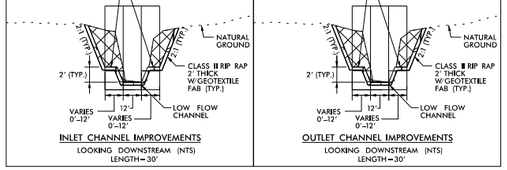
DETAIL BQ
PIPE INLET CHANNEL STABILIZATION
(Not to Scale)



Length = 20 Ft.
Type of Liner = CL II Rip-Rap – Keyed-In

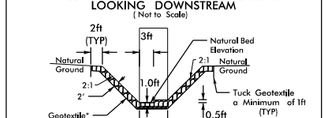
–Y30– STA. 22+80 RT

–Y30A– 21+80



–LB– 1404+74

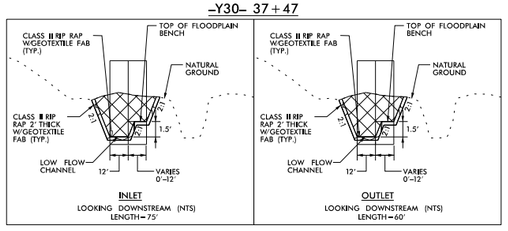
DETAIL
INLET/OUTLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM
(Not to Scale)



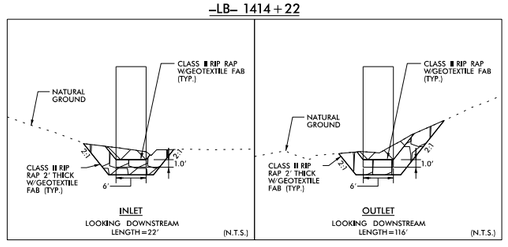
Type of Liner = CL II Rip-Rap – Keyed-In
EST. 327 TONS CLASS II RIP RAP
390 SY GEOTEXTILE
448 CY DDE

INLET LOOKING DOWNSTREAM LENGTH=38'
OUTLET LOOKING DOWNSTREAM LENGTH=70'

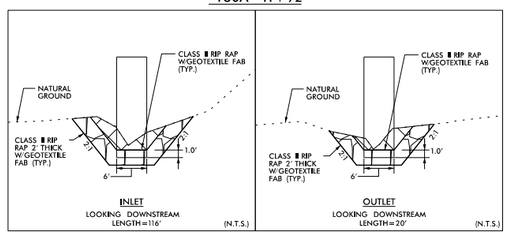
–Y30– 37+47



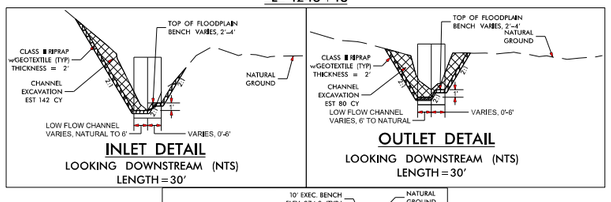
–LB– 1414+22

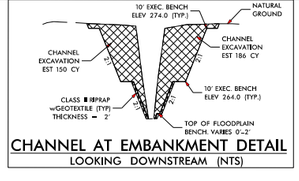


–Y30A– 11+92



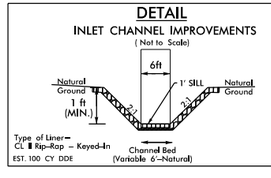
–L– 1243+18





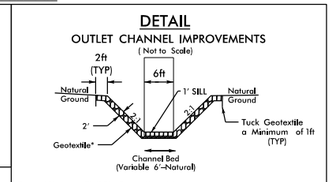
–LB– 1439+85

DETAIL
INLET CHANNEL IMPROVEMENTS
(Not to Scale)



EST. 100 CY DDE

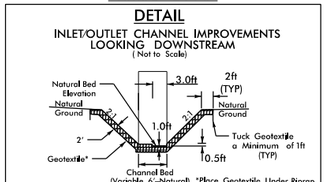
DETAIL
OUTLET CHANNEL IMPROVEMENTS
(Not to Scale)



Type of Liner = CL II Rip-Rap – Keyed-In
EST. 279 TONS
EST. 304 SY GEOTEXTILE
EST. 570 CY DDE
*Place Geotextile Under Riprap in Locations Directed by Engineer

–Y31RPB– 24+04

DETAIL
INLET/OUTLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM
(Not to Scale)



Type of Liner = CL II Rip-Rap – Keyed-In
EST. 324 TONS CLASS II RIP RAP
343 SY GEOTEXTILE

TOP EL=211.6, BOTTOM EL=210.8, 254 LF, S=0.3%

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

Submitted November 13, 2024

8/17/99

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PROJECT REFERENCE NO.	SHEET NO.
R-2829B	2D-5
R/W SHEET NO.	
HYDRAULICS ENGINEER	HYDRAULICS ENGINEER

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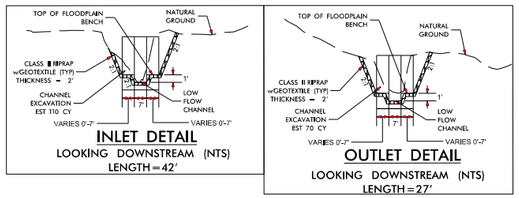
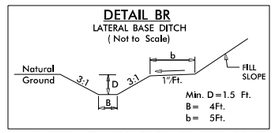
PERMIT DRAWING SHEET 6 OF 112

–L– 1288+18

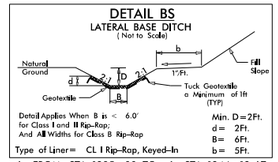


DETAIL BR
LATERAL BASE DITCH
(Not to Scale)



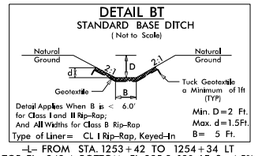
–L– FROM STA. 1195+75 TO STA. 1198+25 LT

DETAIL BS
LATERAL BASE DITCH
(Not to Scale)



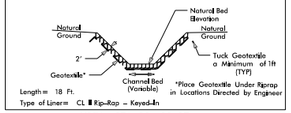
–L– FROM STA. 1235+00 TO –L– STA. 1244+12 LT

DETAIL BT
STANDARD BASE DITCH
(Not to Scale)



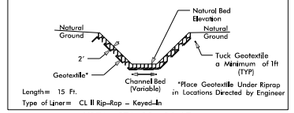
–L– FROM STA. 1253+42 TO 1254+34 LT
TOP EL = 243.4, BOTTOM EL 235.3, 180 LF, S = 4.5%

DETAIL BV
PIPE OUTLET CHANNEL STABILIZATION
(Not to Scale)



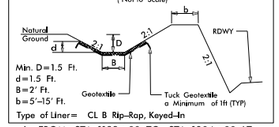
–Y27A– STA. 20+00 RT

DETAIL BW
PIPE INLET CHANNEL STABILIZATION
(Not to Scale)



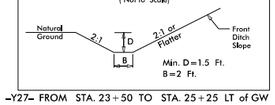
–Y27A– STA. 20+06 LT

DETAIL BX
BERM BASE DITCH
(Not to Scale)



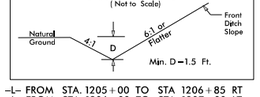
–L– FROM STA. 1199+00 TO STA. 1204+00 LT

DETAIL BY
SPECIAL BASE DITCH
(Not to Scale)



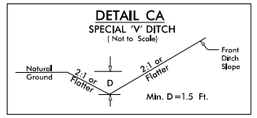
–Y27– FROM STA. 23+50 TO STA. 25+25 LT of GW

DETAIL BZ
SPECIAL CUT DITCH
(Not to Scale)



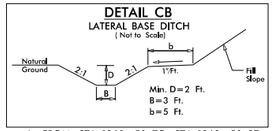
–L– FROM STA. 1205+00 TO STA 1206+85 RT
–L– FROM STA. 1206+00 TO STA 1207+00 LT
–Y27– FROM STA. 49+50 TO STA. 50+00 RT

DETAIL CA
SPECIAL 'V' DITCH
(Not to Scale)



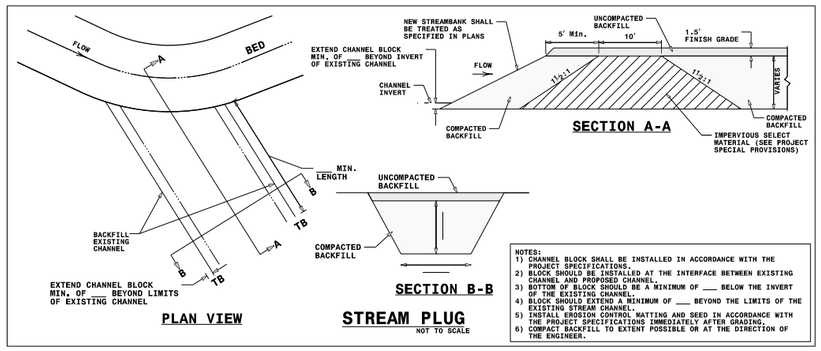
–Y27– FROM STA. 22+50 TO STA. 23+50 LT of GW
–Y27– FROM STA. 23+00 TO STA. 25+50 LT
–Y27 TEMP– FROM STA. 12+50 TO STA. 23+50 LT
–Y31A– FROM STA. 11+50 TO STA. 12+30 RT
–Y31A– FROM STA. 12+00 TO STA. 16+40 LT
–Y31A– FROM STA. 12+55 TO STA. 13+06 RT
–Y31A– FROM STA. 14+90 TO STA. 20+00 RT

DETAIL CB
LATERAL BASE DITCH
(Not to Scale)

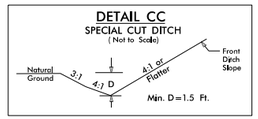


–L– FROM STA. 1260+50 TO STA. 1263+50 RT

DETAIL CF

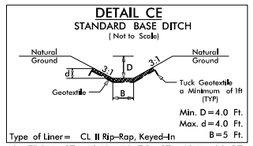


DETAIL CC
SPECIAL CUT DITCH
(Not to Scale)



–Y27LPD– FROM STA. 12+94 TO STA. 13+64 LT

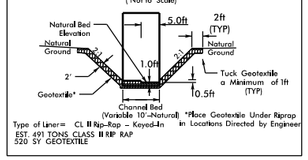
DETAIL CE
STANDARD BASE DITCH
(Not to Scale)



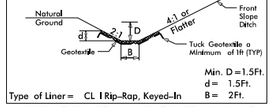
–L– FROM STA. 1240+78 TO STA. 1241+08 RT

–Y31FLYDB– 52+68

DETAIL
INLET/OUTLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM
(Not to Scale)

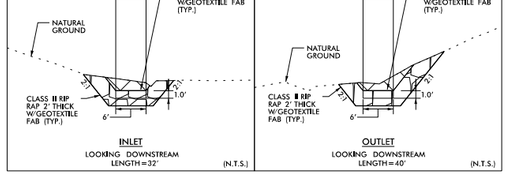


DETAIL CD
SPECIAL BASE DITCH
(Not to Scale)

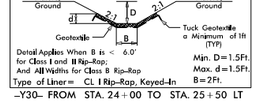


–Y27A– FROM STA. 20+50 TO STA. 21+50 LT

–Y31RPB– 29+13 /–Y31FLYDB– 54+63

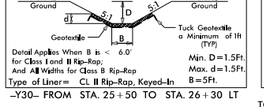


DETAIL CG
STANDARD BASE DITCH
(Not to Scale)



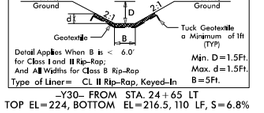
–Y30– FROM STA. 24+00 TO STA. 25+50 LT

DETAIL CH
STANDARD BASE DITCH
(Not to Scale)



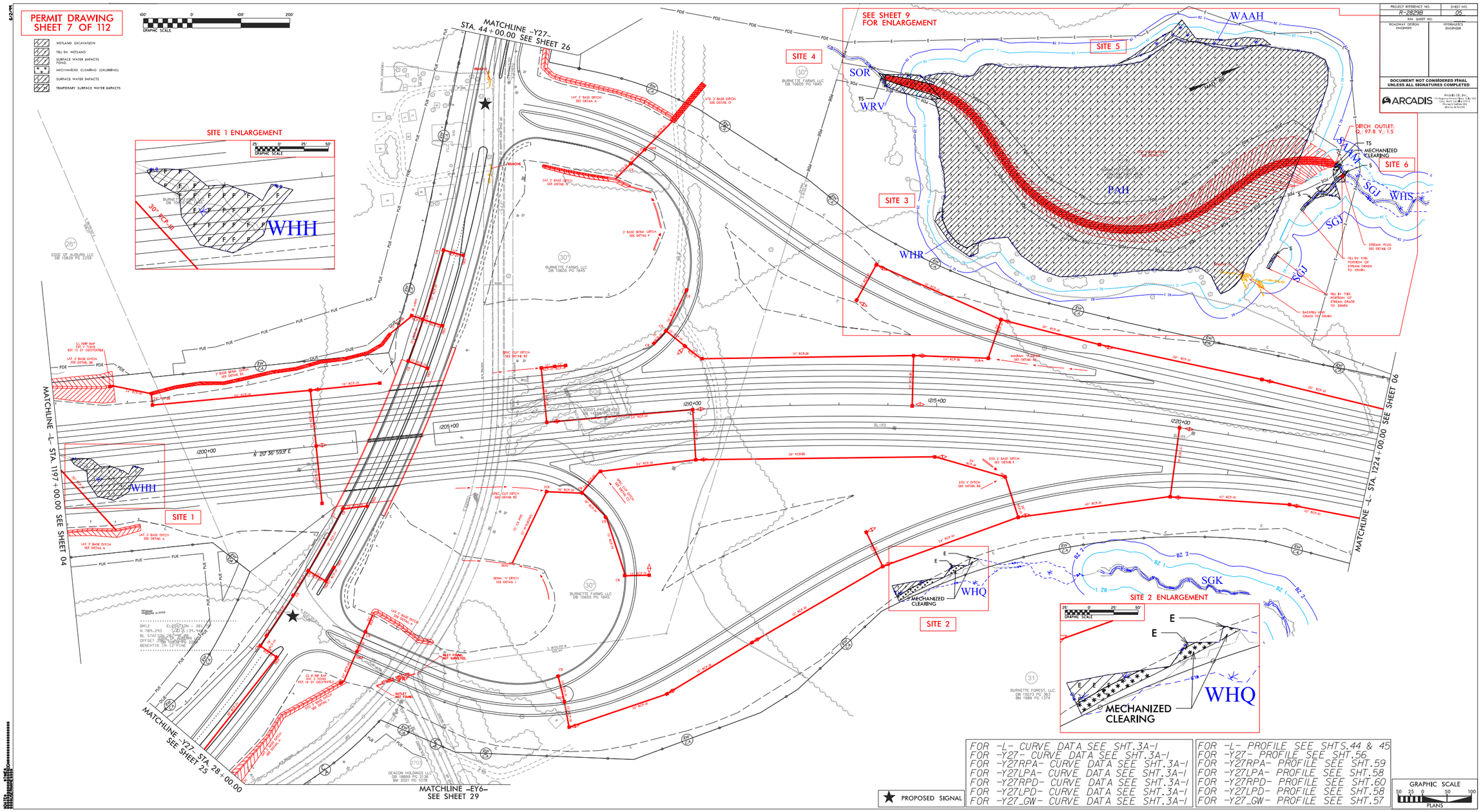
–Y30– FROM STA. 25+50 TO STA. 26+30 LT

DETAIL CI
STANDARD BASE DITCH
(Not to Scale)



–Y30– FROM STA. 24+65 LT
TOP EL = 224, BOTTOM EL = 216.5, 110 LF, S = 6.8%

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


PERMIT DRAWING
SHEET 7 OF 112
WETLAND EXCAVATION
FILL IN WETLAND
SURFACE WATER IMPACTS POND
MECHANIZED CLEARING (GRUBBING)
SURFACE WATER IMPACTS
TEMPORARY SURFACE WATER IMPACTS
GRAPHIC SCALE
MATCHLINE -Y27- STA. 44+00.00 SEE SHEET 26
SITE 1 ENLARGEMENT
WHH
SITE 1
SITE 2
WHQ
MECHANIZED CLEARING
SITE 2 ENLARGEMENT
SGK
SITE 3
WHR
SITE 4
SITE 5
WAAH
SOR
WRV
PAH
SITE 6
SGJ
WHS
DITCH OUTLET: Q: 97.8 V: 1.5
STREAM PLUG SEE DETAIL CF
FILL IN THIS PORTION OF STREAM GRADE TO DRAIN
BACKFILL AND GRADE TO DRAIN
SEE SHEET 9 FOR ENLARGEMENT
MATCHLINE -L- STA. 1197+00.00 SEE SHEET 04
MATCHLINE -L- STA. 1224+00.00 SEE SHEET 06
MATCHLINE -Y27- STA. 28+00.00 SEE SHEET 25
MATCHLINE -EY6- SEE SHEET 29
EDGE OF AUBURN LLC DB 10859 PG 2259
BURNETTE FARMS LLC DB 10605 PG 1845
BURNETTE FOREST, LLC. DB 15023 PG 362 BM 1989 PG 1374
DEACON HOLDINGS LLC DB 18889 PG 2106 BM 2021 PG 1078
PROJECT REFERENCE NO. R-2829B
SHEET NO. 02
RW SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
ARCADIS
FOR -L- CURVE DATA SEE SHT.3A-I
FOR -Y27- CURVE DATA SEE SHT.3A-I
FOR -Y27RPA- CURVE DATA SEE SHT.3A-I
FOR -Y27LPA- CURVE DATA SEE SHT.3A-I
FOR -Y27RPD- CURVE DATA SEE SHT.3A-I
FOR -Y27LPD- CURVE DATA SEE SHT.3A-I
FOR -Y27_GW- CURVE DATA SEE SHT.3A-I
FOR -L- PROFILE SEE SHTS.44 & 45
FOR -Y27- PROFILE SEE SHT.56
FOR -Y27RPA- PROFILE SEE SHT.59
FOR -Y27LPA- PROFILE SEE SHT.58
FOR -Y27RPD- PROFILE SEE SHT.60
FOR -Y27LPD- PROFILE SEE SHT.58
FOR -Y27_GW- PROFILE SEE SHT.57
PROPOSED SIGNAL
GRAPHIC SCALE
PLANS

PERMIT DRAWING
SHEET 8 OF 112

GRAPHIC SCALE 100' 0' 100' 200'

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

MATCHLINE -Y27- STA. 44+00.00 SEE SHEET 26

SITE 1 ENLARGEMENT
GRAPHIC SCALE 25' 0' 25' 50'
WHH
30" RCP-III

SITE 1
WHH

SITE 2
WHQ
MECHANIZED CLEARING

SITE 2 ENLARGEMENT
GRAPHIC SCALE 25' 0' 25' 50'
WHQ
MECHANIZED CLEARING

SITE 3
WHR

SITE 4
SOR
WRV

SITE 5
WAAH
PAH
SGI
SGJ
WHS

SITE 6
SGK

DITCH OUTLET
Q=97.8 V=7.5

MATCHLINE -L- STA. 1197+00.00 SEE SHEET 04

MATCHLINE -L- STA. 1224+00.00 SEE SHEET 06

MATCHLINE -Y27- STA. 28+00.00 SEE SHEET 25

MATCHLINE -EY6- SEE SHEET 29

PROPOSED SIGNAL

FOR -L- CURVE DATA SEE SHT.3A-I	FOR -L- PROFILE SEE SHTS.44 & 45
FOR -Y27- CURVE DATA SEE SHT.3A-I	FOR -Y27- PROFILE SEE SHT.56
FOR -Y27RPA- CURVE DATA SEE SHT.3A-I	FOR -Y27RPA- PROFILE SEE SHT.59
FOR -Y27LPA- CURVE DATA SEE SHT.3A-I	FOR -Y27LPA- PROFILE SEE SHT.58
FOR -Y27RPD- CURVE DATA SEE SHT.3A-I	FOR -Y27RPD- PROFILE SEE SHT.60
FOR -Y27LPD- CURVE DATA SEE SHT.3A-I	FOR -Y27LPD- PROFILE SEE SHT.58
FOR -Y27_GW- CURVE DATA SEE SHT.3A-I	FOR -Y27_GW- PROFILE SEE SHT.57

GRAPHIC SCALE 50 25 0 50 100 PLANS

PROJECT REFERENCE NO. R-2829B | SHEET NO. 05
RW SHEET NO.
ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

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ARCADIS

Submitted November 13, 2024

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PERMIT DRAWING SHEET 9 OF 112

80' 0' 80' 160'
GRAPHIC SCALE

NAD 83

E E	WETLAND EXCAVATION
F F	FILL IN WETLAND
P P	SURFACE WATER IMPACTS POND
* * *	MECHANIZED CLEARING (GRUBBING)
S S	SURFACE WATER IMPACTS
TS TS	TEMPORARY SURFACE WATER IMPACTS

SITE 3, SITE 4, SITE 5 AND SITE 6 ENLARGEMENT

ARCADIS
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575 Regency Woods Place Suite 350
Cary, North Carolina 27518
Phone: 919-854-1282
License #: F-0299

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

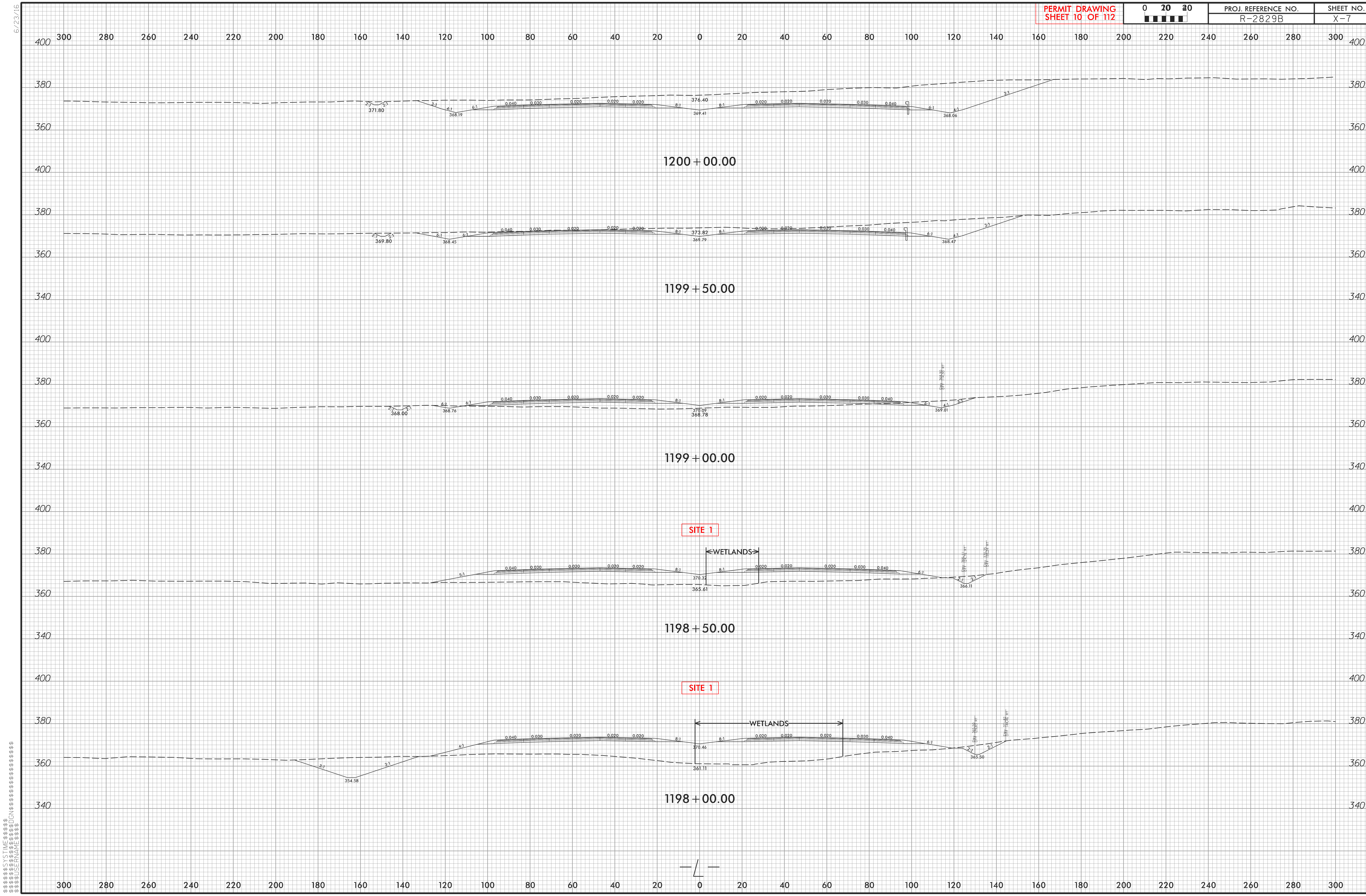
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SITE 5
WAAH
SITE 4
SOR
TS
WRV
SITE 3
WHR
PAH
SAAM
SGJ
WHS
SITE 6
TS
MECHANIZED CLEARING
DITCH OUTLET: Q_{10}: 97.8 V_{10}: 1.5
STD. 6' BASE DITCH SEE DETAIL AJ
STREAM PLUG SEE DETAIL CF
FILL IN THIS PORTION OF STREAM. GRADE TO DRAIN.
FILL IN THIS PORTION OF STREAM. GRADE TO DRAIN.
BACKFILL AND GRADE TO DRAIN
REMOVE
INV=356.71'
INV=356.40'
15" RCP-III
24" RCP-III
30" RCP-III
20+00
-Y27RPA-
2GI
2GI-A
0547
0546
0548
BURNETTE FOREST, LLC
DB 1958, PG 1353
BM 1999, PG 1374

Submitted November 13, 2024

PERMIT DRAWING SHEET 10 OF 112

PROJ. REFERENCE NO.	SHEET NO.
R-2829B	X-7



Submitted November 13, 2024

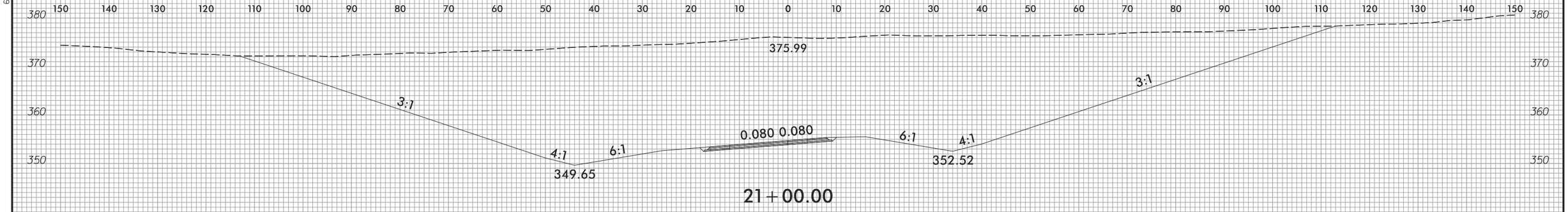
6/23/16

SITE 2

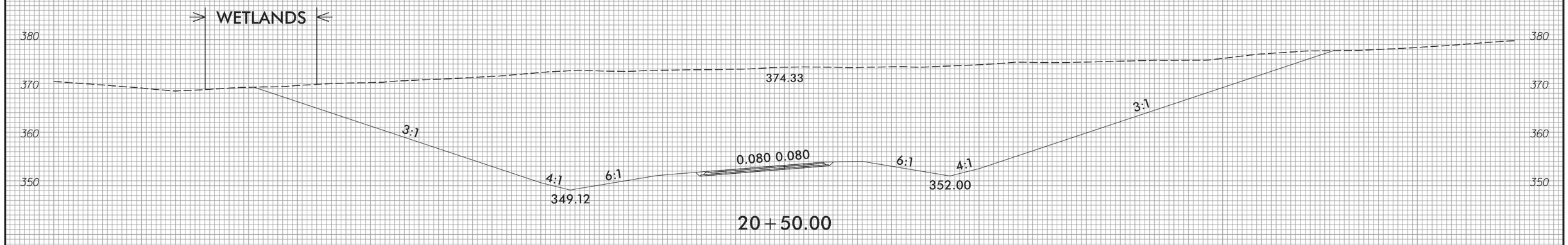
PERMIT DRAWING
SHEET 11 OF 112

0 10 20

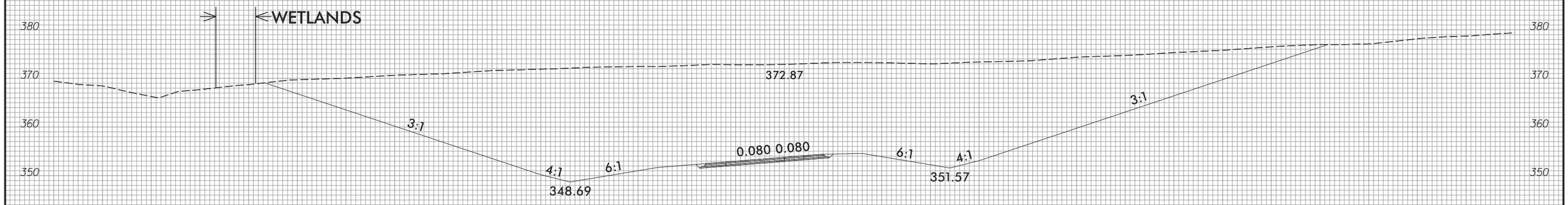
PROJ. REFERENCE NO.	SHEET NO.
R-2829B	X-207



21+00.00



20+50.00



20+00.00

19+50.00

-Y27RPD-

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

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6/23/16

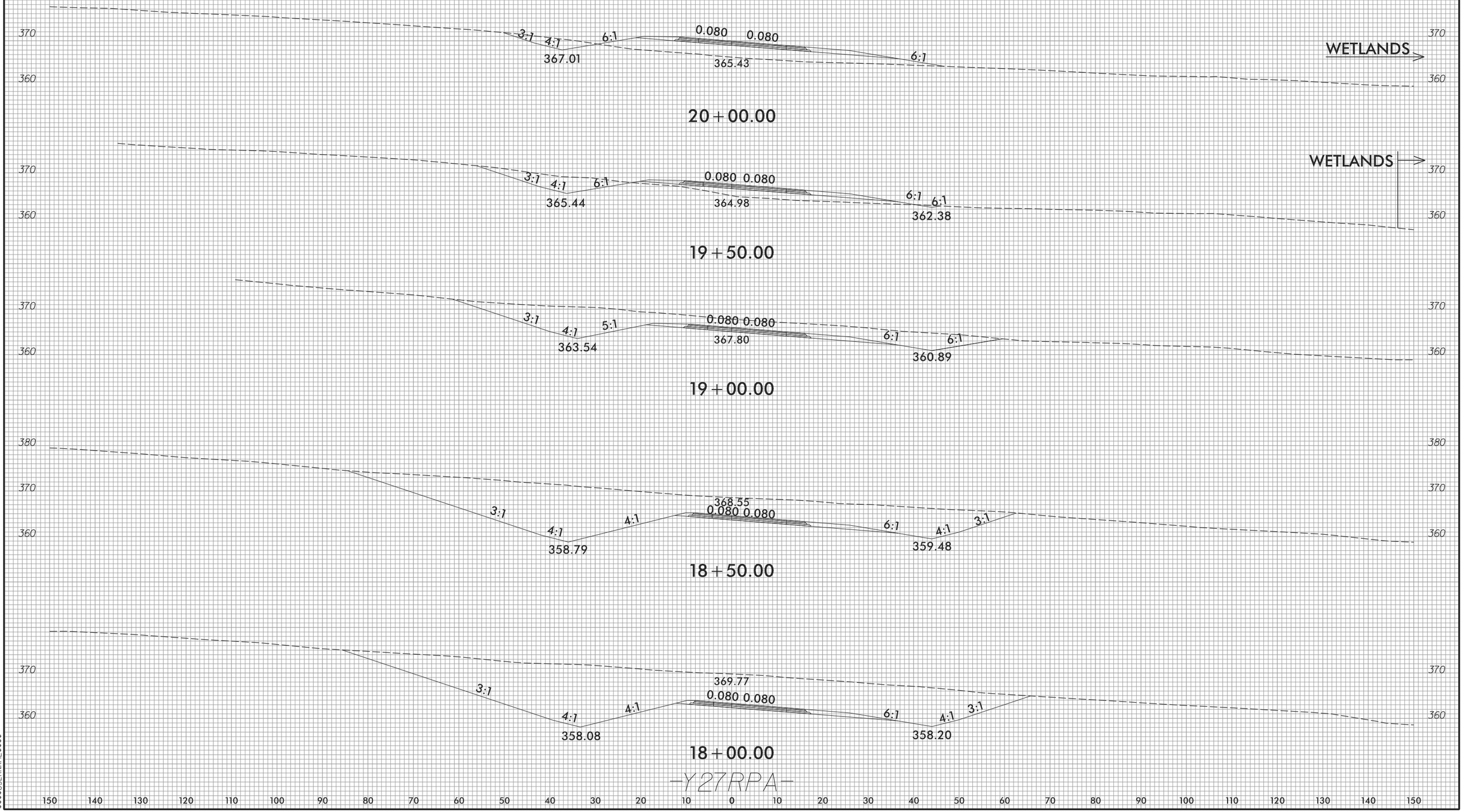
PERMIT DRAWING
SHEET 12 OF 112

0 10 20

PROJ. REFERENCE NO.	SHEET NO.
R-2829B	X-201

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

SITE 3

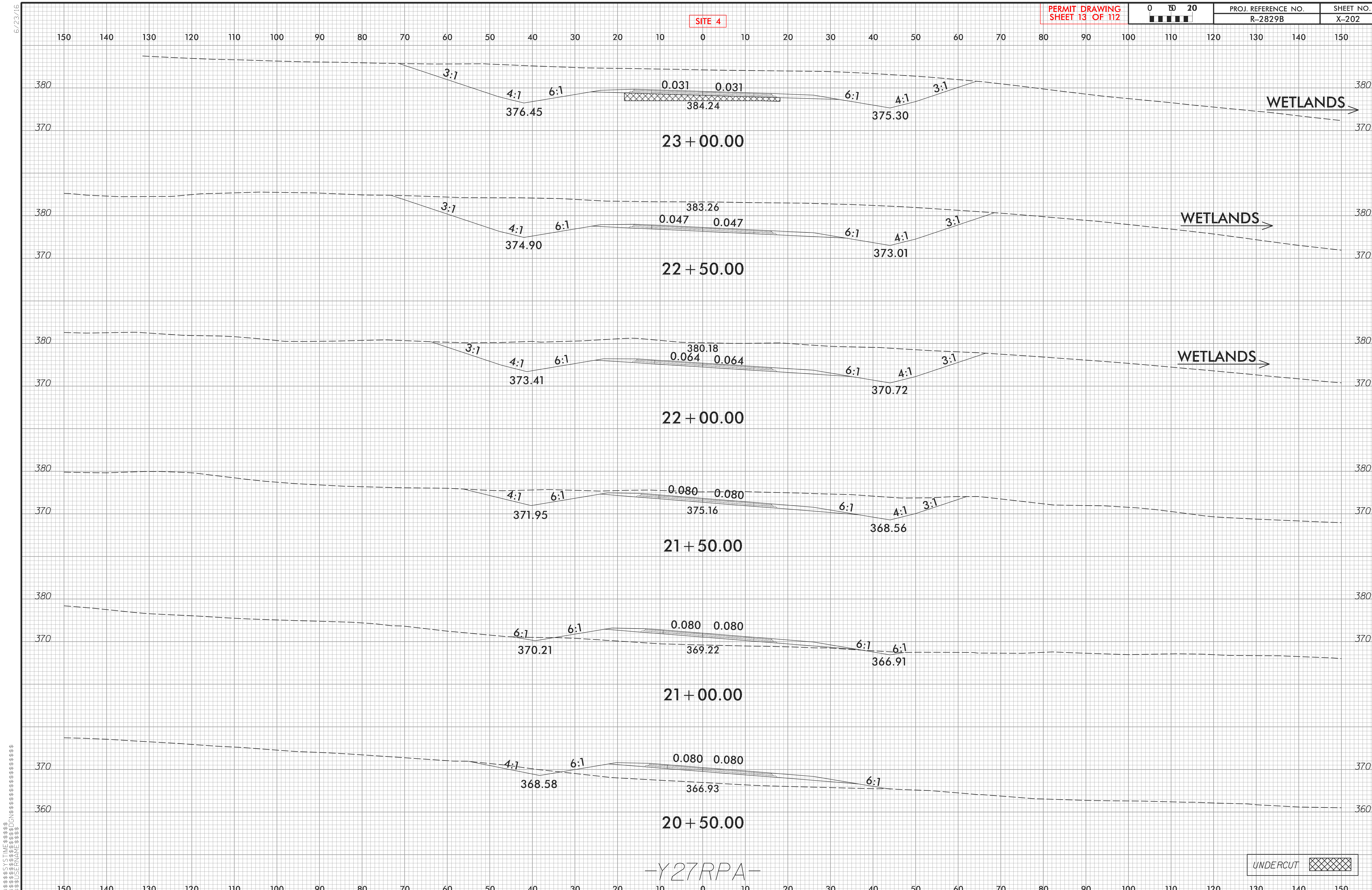


-Y27RPA-

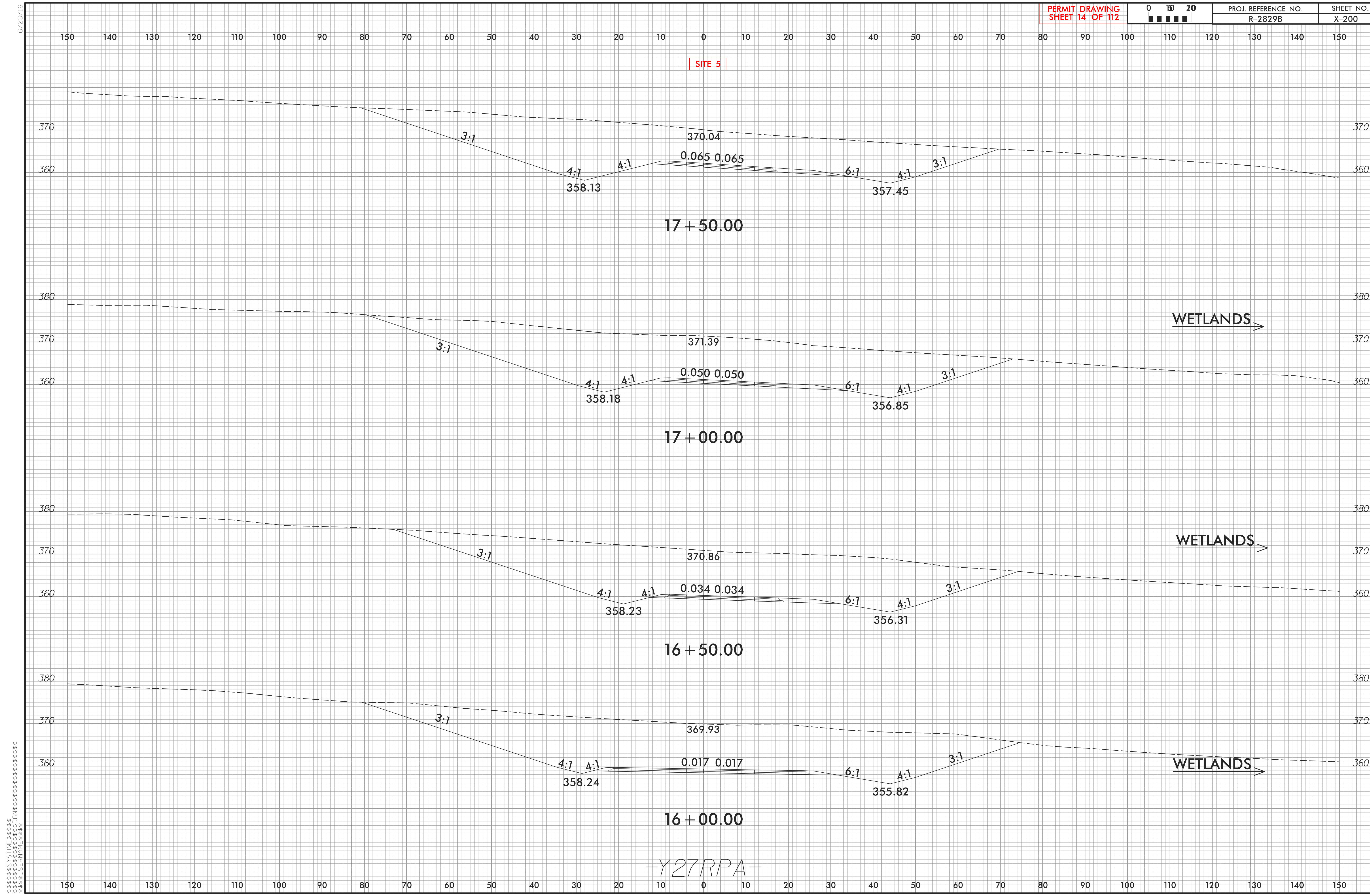
$$$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$$USERNAME$$$$

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

Submitted November 13, 2024



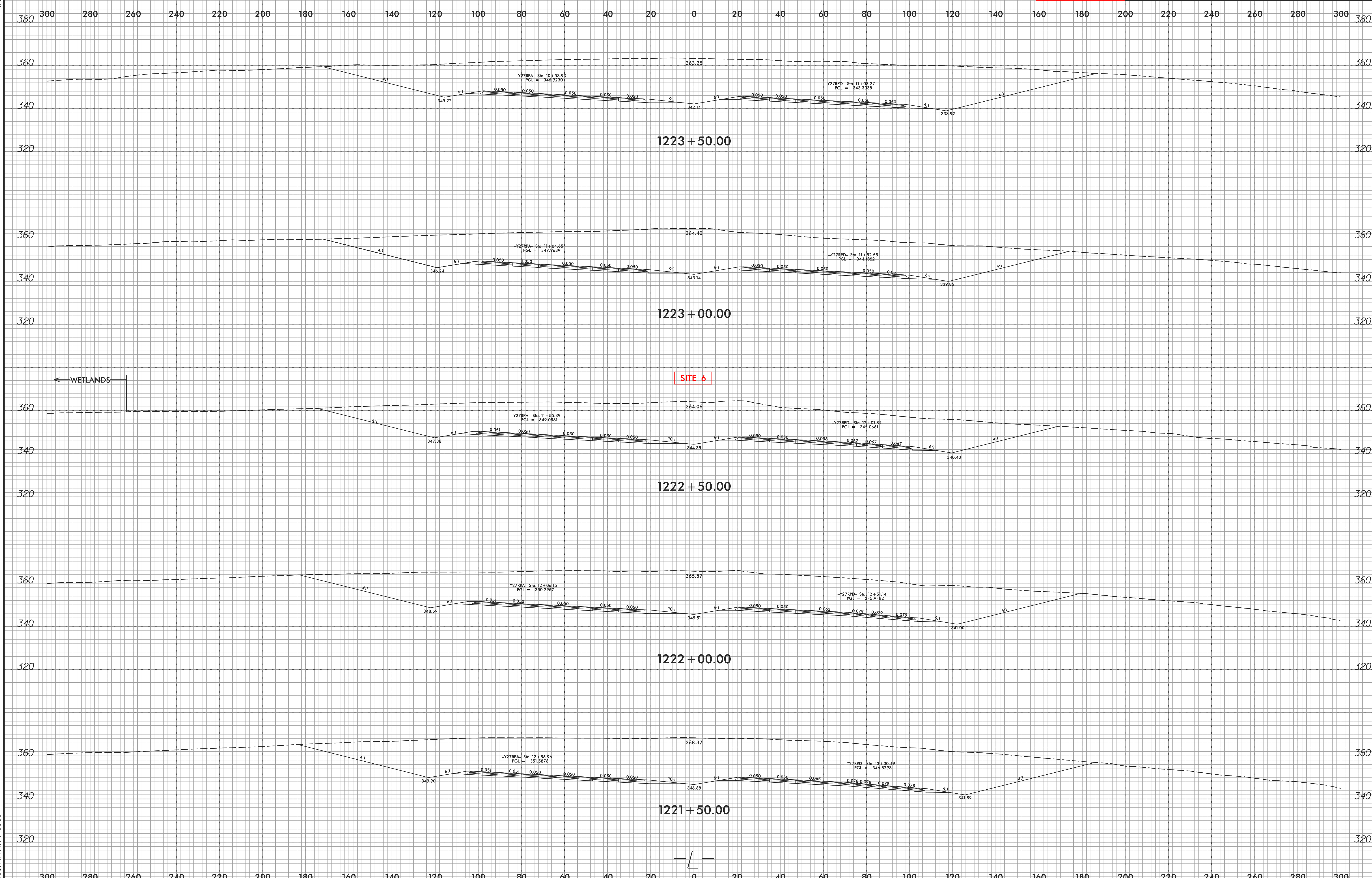
Submitted November 13, 2024



Submitted November 13, 2024

PERMIT DRAWING
SHEET 15 OF 112

PROJ. REFERENCE NO.	SHEET NO.
R-2829B	X-19



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PERMIT DRAWING
SHEET 16 OF 112

100' 0' 100' 200'
GRAPHIC SCALE

F F FILL IN WETLAND
S S SURFACE WATER IMPACTS
MECHANIZED CLEARING (GRUBBING)
TS TS TEMPORARY SURFACE WATER IMPACTS

ARCADIS
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Cary, North Carolina 27518
Phone: 919-854-1282
License #: F-0299

PROJECT REFERENCE NO.	SHEET NO.
R-2829B	07
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

35
CITY OF RALEIGH, COUNTY OF WAKE
DB 11637 PG 2770
BM 2005 PG 1481
BM 2007 PG 1372

31
BURNETTE FOREST, LLC.
DB 15073 PG 363
BM 1989 PG 1374

32
LONG BRANCH FARM LLC
DB 14261 PG 1125
BM 1999 PG 579

MATCHLINE -L- STA. 1236+00.00 SEE SHEET 06

MATCHLINE -L- STA. 1249+00.00 SEE SHEET 08

SITE 7

SITE 7A

WHP

SGK

SGJ

WHU

WHO

WHM

106 LF OF OUTLET CHANNEL AND EMBANKMENT IMPROVEMENTS SEE DITCH DETAIL -L- 1243+18
CLASS II RIPRAP EST 234 TONS
EST 208 SY GEOTEXTILE

LAT. 6' BASE DITCH SEE DETAIL BS
LAT. 2' BASE DITCH SEE DETAIL AC
TOE PROTECTION SEE DETAIL W
STD. BASE DITCH SEE DETAIL CE

15" W/ELBOWS
18" W/ELBOWS
2 @ 6'x8' RCBC WALLS AND BAFFLES
18" RCP-III
15" RCP-III
18" CSP
42" RCP-III
48" RCP-III
JB w/2GI
2GI
HW
RCBC INV 255.5
STRM INV 256.5

58 LF OF INLET CHANNEL AND EMBANKMENT IMPROVEMENTS SEE DITCH DETAIL -L- 1243+18
DITCH OUTLET:
Q : 91.7 V : 1.8
EXCAVATION OF OLD DAM EMBANKMENT SEE DETAIL -L- 1243+18
CLASS II RIPRAP EST 250 TONS
EST 222 SY GEOTEXTILE

1240+00
1245+00
-L- N 55°16' 30.9" E
BL-148
BL-149

TOP OF EMBANKMENT
TOE OF EMBANKMENT
TDE
PDE
RW CA
BZ 1
BZ 2
TS
S
F

SITE 7A ENLARGEMENT
25' 0' 25' 50'
GRAPHIC SCALE
JB w/2GI
0721
42" RCP-III
48" RCP-III
HW
0722
STD. BASE DITCH SEE DETAIL CE
L II RIP RAP EST. 108 TONS
EST. 101 SY GEOTEXTILE
WWF
+25.29

33
JOHN R & CYNTHIA L BAUCOM, III
DB 5556 PG 296
BM 2017 PG 1632
ELEVATION = 272.28'
E 2,142,802
STATION 256+51.00
349.8' RIGHT
TIE IN 22" POPLAR

FOR -L- CURVE DATA SEE SHT.3A-1
FOR -L- PROFILE SEE SHTS.45 & 46

$DATE$ $TIME$
$USERNAME$ DGN

Submitted November 13, 2024

8/17/99

PERMIT DRAWING
SHEET 17 OF 112

GRAPHIC SCALE 100' 0' 100' 200'

F F FILL IN WETLAND
S S SURFACE WATER IMPACTS
MECHANIZED CLEARING (GRUBBING)
TS TS TEMPORARY SURFACE WATER IMPACTS

ARCADIS
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License #: F-0299

PROJECT REFERENCE NO.	SHEET NO.
R-2829B	07
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

MATCHLINE -L- STA. 1236+00.00 SEE SHEET 06

MATCHLINE -L- STA. 1249+00.00 SEE SHEET 08

-L- N 55°16'30.9" E

SITE 7

SITE 7A

SGJ

SGK

WHP

WHU

WHO

WHM

BZ 1

BZ 2

CITY OF RALEIGH, COUNTY OF WAKE
DB 11637 PG 2770
BM 2005 PG 1481
BM 2007 PG 1372

BURNETTE FOREST, LLC.
DB 15073 PG 363
BM 1988 PG 1324

LONG BRANCH FARM LLC
DB 14281 PG 1125
BM 1999 PG 579

HN R & CYNTHIA L BAUGOM, III
DB 5556 PG 296
BM 2017 PG 1632

106 LF OF OUTLET CHANNEL AND EMBANKMENT IMPROVEMENTS SEE DITCH DETAIL -L- 1243+18
CLASS II RIPRAP
EST 234 TONS
EST 208 SY GEOTEXTILE

58 LF OF INLET CHANNEL AND EMBANKMENT IMPROVEMENTS SEE DITCH DETAIL -L- 1243+18
EXCAVATION OF OLD DAM EMBANKMENT SEE DETAIL -L- 1243+18
CLASS II RIPRAP
EST 250 TONS
EST 222 SY GEOTEXTILE

DITCH OUTLET:
Q: 91.7 V: 1.8

LAT. 6' BASE DITCH SEE DETAIL BS
LAT. 2' BASE DITCH SEE DETAIL AC
STD. BASE DITCH SEE DETAIL CE
TOE PROTECTION SEE DETAIL W

2 @ 6'x8' RCBC WINGS AND BARRELS
RCBC INV. 246
STRM INV 247.1
RCBC INV 255.5
STRM INV 256.5

15" W/ ELBOWS
18" W/ ELBOWS
18" RCP-III
42" RCP-III
48" RCP-III
18" CSP
2GI
JB w/2GI
HW
TDE
PDE
TS
S
RW CA

SITE 7A ENLARGEMENT
GRAPHIC SCALE 25' 0' 25' 50'

ELEVATION = 272.28'
E/2,142,802
AT ⌀ON 256.81.00
T/349.6' RIGHT
TIE IN 22" POPLAR

FOR -L- CURVE DATA SEE SHT.3A-I

FOR -L- PROFILE SEE SHTS.45 & 46

$DATE$ $TIME$
$USERNAME$ DGN

Submitted November 13, 2024

8/17/99

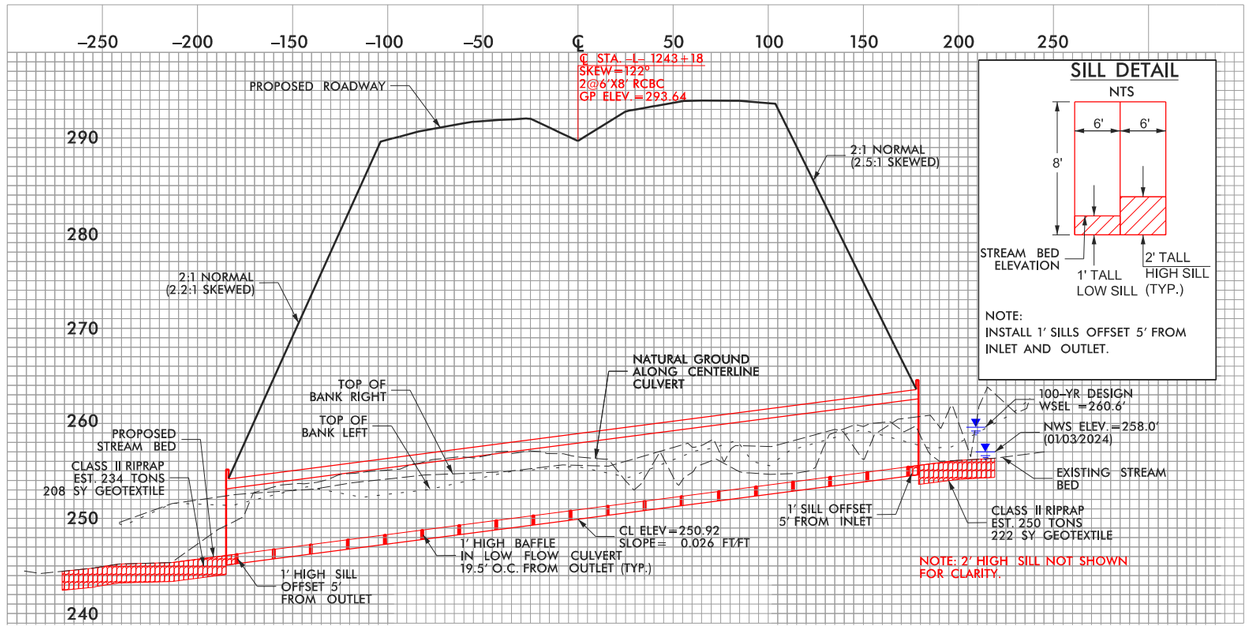
PERMIT DRAWING
SHEET 18 OF 112

ARCADIS
Arcadis CE, Inc.
175 Regency Woods Place, Suite 350
Cary, North Carolina 27518
Phone: 919-854-1282
License #: F-0299

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SITE 7



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

Submitted November 13, 2024

6/23/16

SITE 7

PERMIT DRAWING
SHEET 19 OF 112

0 10 20 40

PROJ. REFERENCE NO.	SHEET NO.
R-2829B	X-27

1244+50.00

1244+00.00

1243+50.00

1243+00.00

1242+50.00

WETLANDS

UNDERCUT

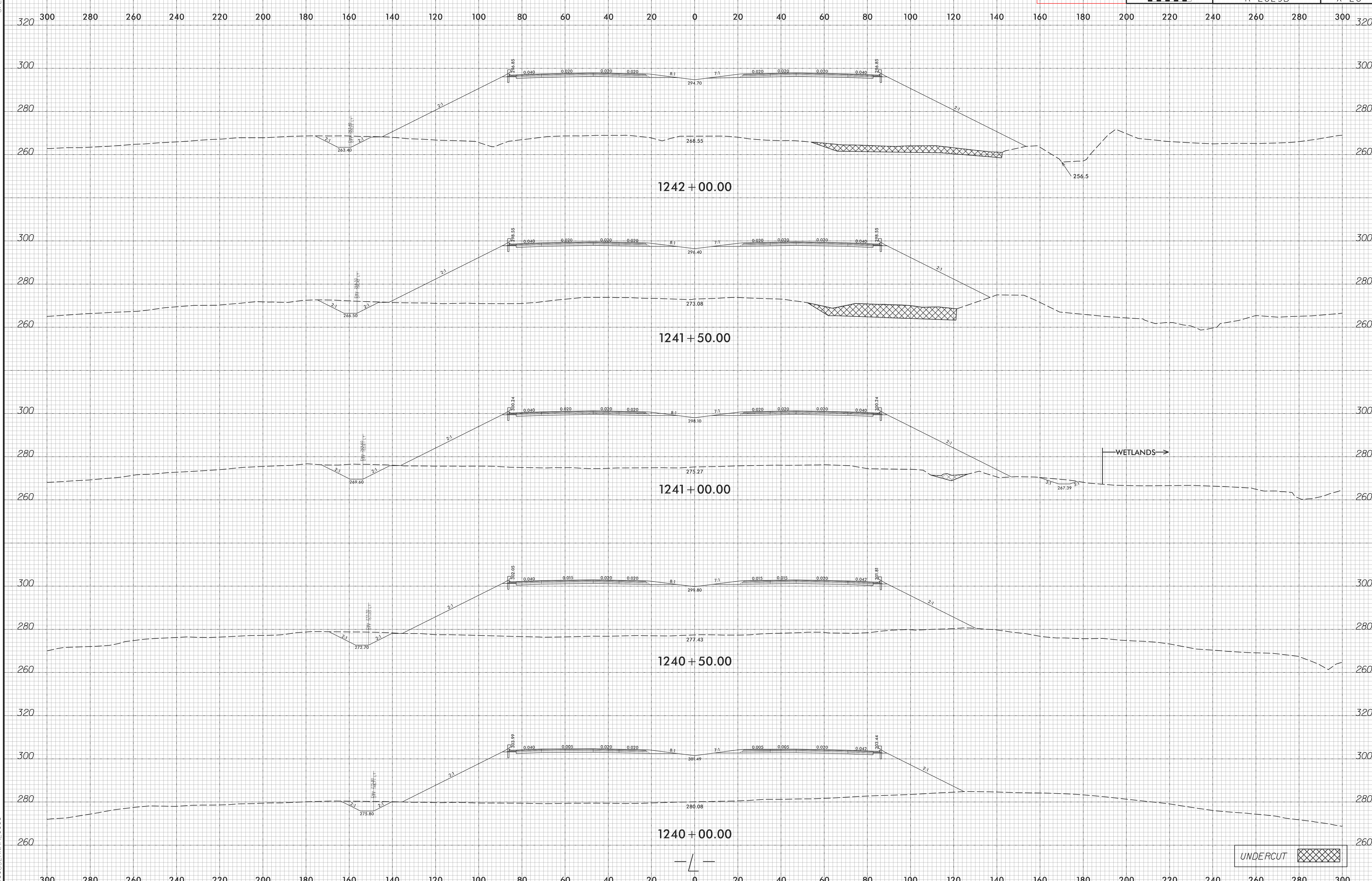
$$$$$$$$SYSTIME$$$$$$$$
$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$$$$$USERNAME$$$$

Submitted November 13, 2024

SITE 7A

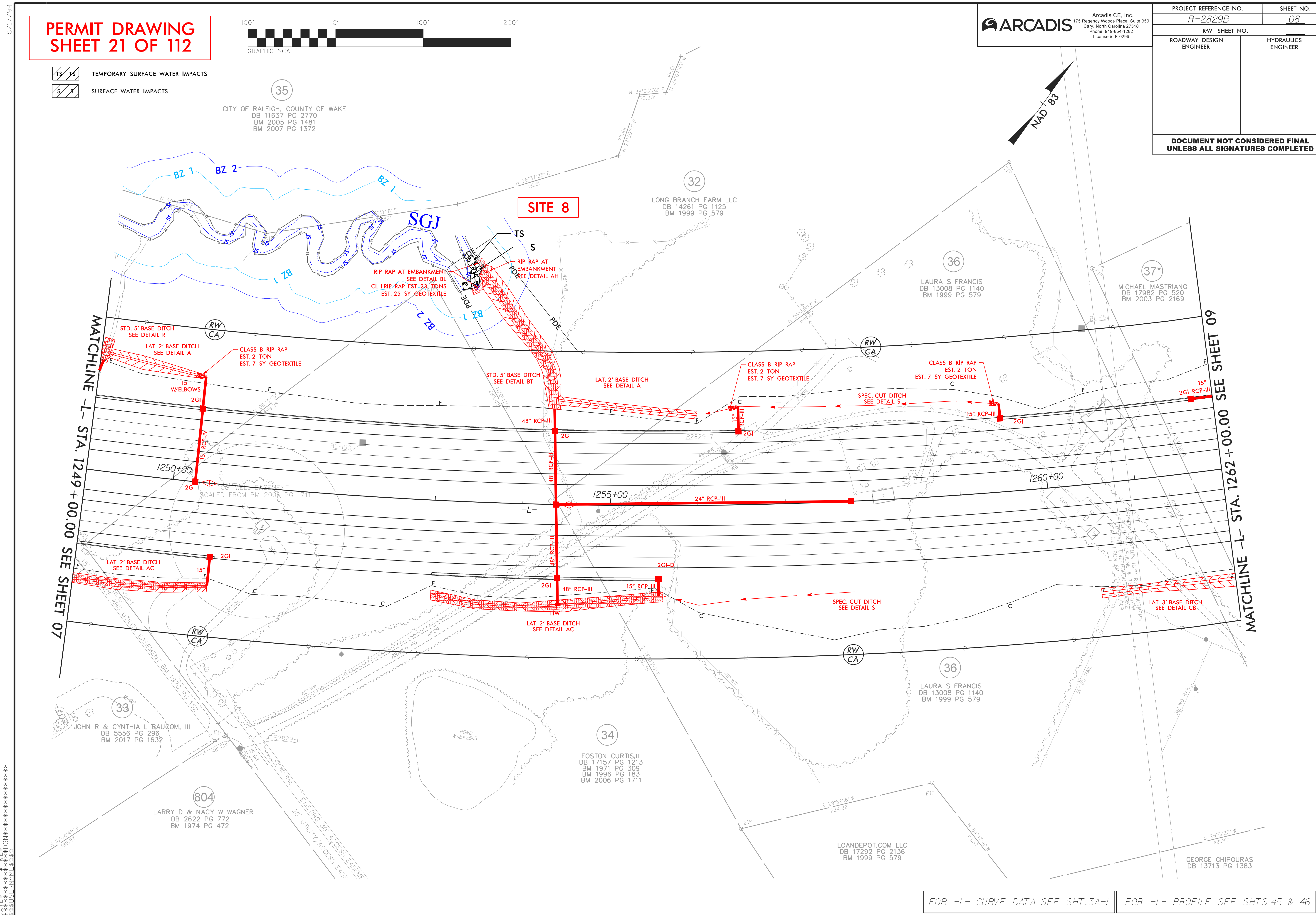
PERMIT DRAWING
SHEET 20 OF 112

PROJ. REFERENCE NO.	SHEET NO.
R-2829B	X-26

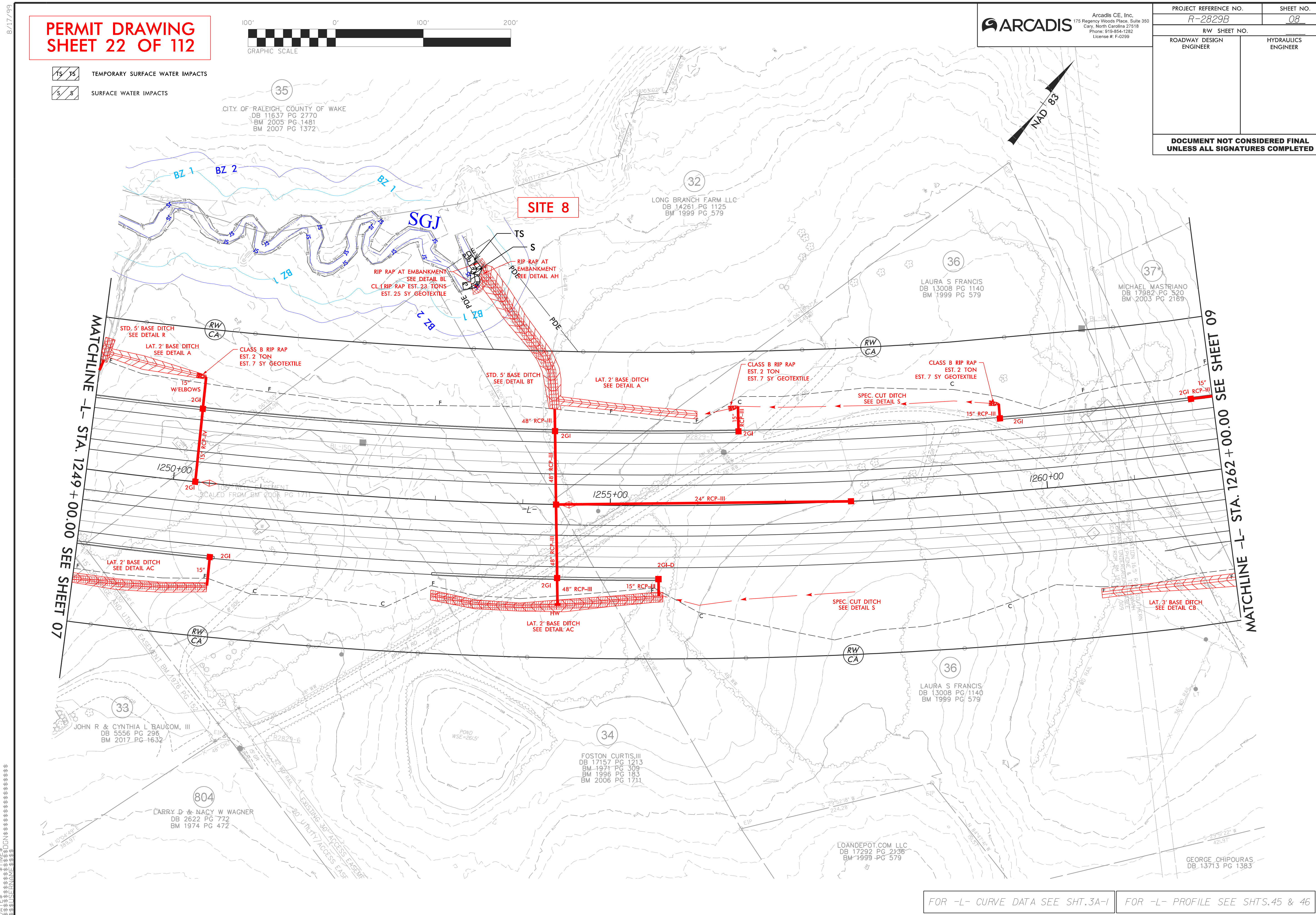


6/23/16

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


PERMIT DRAWING
SHEET 21 OF 112
TEMPORARY SURFACE WATER IMPACTS
SURFACE WATER IMPACTS
GRAPHIC SCALE
100' 0' 100' 200'
ARCADIS
Arcadis CE, Inc.
175 Regency Woods Place, Suite 350
Cary, North Carolina 27518
Phone: 919-854-1282
License #: F-0299
PROJECT REFERENCE NO.
R-2829B
SHEET NO.
08
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
NAD 83
SITE 8
SGJ
BZ 1
BZ 2
TS
S
PDE
35
CITY OF RALEIGH, COUNTY OF WAKE
DB 11637 PG 2770
BM 2005 PG 1481
BM 2007 PG 1372
32
LONG BRANCH FARM LLC
DB 14261 PG 1125
BM 1999 PG 579
36
LAURA S FRANCIS
DB 13008 PG 1140
BM 1999 PG 579
37*
MICHAEL MASTRIANO
DB 17982 PG 520
BM 2003 PG 2169
33
JOHN R & CYNTHIA L BAUCOM, III
DB 5556 PG 296
BM 2017 PG 1632
804
LARRY D & NACY W WAGNER
DB 2622 PG 772
BM 1974 PG 472
34
FOSTON CURTIS,III
DB 17157 PG 1213
BM 1971 PG 309
BM 1996 PG 183
BM 2006 PG 1711
LOANDEPOT.COM LLC
DB 17292 PG 2136
BM 1999 PG 579
GEORGE CHIPOURAS
DB 13713 PG 1383
RIP RAP AT EMBANKMENT
SEE DETAIL BL
CL I RIP RAP EST. 23 TONS
EST. 25 SY GEOTEXTILE
RIP RAP AT EMBANKMENT
SEE DETAIL AH
STD. 5' BASE DITCH
SEE DETAIL R
LAT. 2' BASE DITCH
SEE DETAIL A
CLASS B RIP RAP
EST. 2 TON
EST. 7 SY GEOTEXTILE
15" W/ELBOWS
2GI
15" RCP-IV
STD. 5' BASE DITCH
SEE DETAIL BT
48" RCP-III
24" RCP-III
15" RCP-III
SPEC. CUT DITCH
SEE DETAIL S
LAT. 2' BASE DITCH
SEE DETAIL AC
2GI-D
HW
LAT. 3' BASE DITCH
SEE DETAIL CB
1250+00
1255+00
1260+00
-L-
RW CA
100' WELL EASEMENT
SCALED FROM BM 2006 PG 1711
POND
WSE=261.5'
EXISTING 30' ACCESS EASEMENT
20' UTILITY/ACCESS EASEMENT
R2829-6
R2829-7
BL-150
BL-151
MATCHLINE -L- STA. 1249+00.00 SEE SHEET 07
MATCHLINE -L- STA. 1262+00.00 SEE SHEET 09
FOR -L- CURVE DATA SEE SHT.3A-I
FOR -L- PROFILE SEE SHTS.45 & 46

Submitted November 13, 2024



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PERMIT DRAWING
SHEET 23 OF 112

F F FILL IN WETLAND

100' 0' 100' 200'
GRAPHIC SCALE

ARCADIS
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175 Regency Woods Place, Suite 350
Cary, North Carolina 27518
Phone: 919-854-1282
License #: F-0299

PROJECT REFERENCE NO.	SHEET NO.
R-2829B	09
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

32
LONG BRANCH FARM LLC
DB 14261 PG 1125
BM 1999 PG 579

37*
MICHAEL MASTRIANO
DB 17982 PG 520
BM 2003 PG 2169

WIE
WID
WIC
SGQ
BZ 2
BZ 2

MATCHLINE -L- STA. 1262+00.00 SEE SHEET 08

MATCHLINE -L- STA. 1275+00.00 SEE SHEET 10

STD. 5' BASE DITCH CLASS II RIP RAP SEE DETAIL R

LAT. 2' BASE DITCH SEE DETAIL AC

LAT. 6' BASE DITCH SEE DETAIL L

CLASS B RIP RAP EST. 2 TON EST. 7 SY GEOTEXTILE

LAT. 2' BASE DITCH SEE DETAIL C

LAT. 3' BASE DITCH SEE DETAIL AG

LAT. 2' BASE DITCH SEE DETAIL A

LAT. 3' BASE DITCH SEE DETAIL CB

SITE 9

1265+00 1270+00 1275+00

N 34° 37' 28.0" E -L-

S 75°56'29" E 75.81'

42" RCP-IV 18" RCP-III 15" RCP-III 15" RCP-IV

18" w/ELBOWS 15" w/ELBOWS 15" W/ ELBOWS

2GI

BL-152 BL-153 BL-154

TDE PUE

RW CA

BM17 ELEVATION = 261.27'
N 714,301 E 2,144,042
BL STATION 276+05.00
OFFSET 313.1' RIGHT
BENCHTIE IN 10"PINE

N 29°51'37" E 1104.34'
S 29°51'29" W 1285.35'
N 29°50'45" E 256.36'
N 60°10'02" W 83.81'

166.80'

30' ACCESS EASEMENT BM 1999 PG 579

GEORGE CHIPOURAS
DB 13713 PG 1383

36

SOIL CONC

SITE 9 ENLARGEMENT

25' 0' 25' 50'
GRAPHIC SCALE

WIC

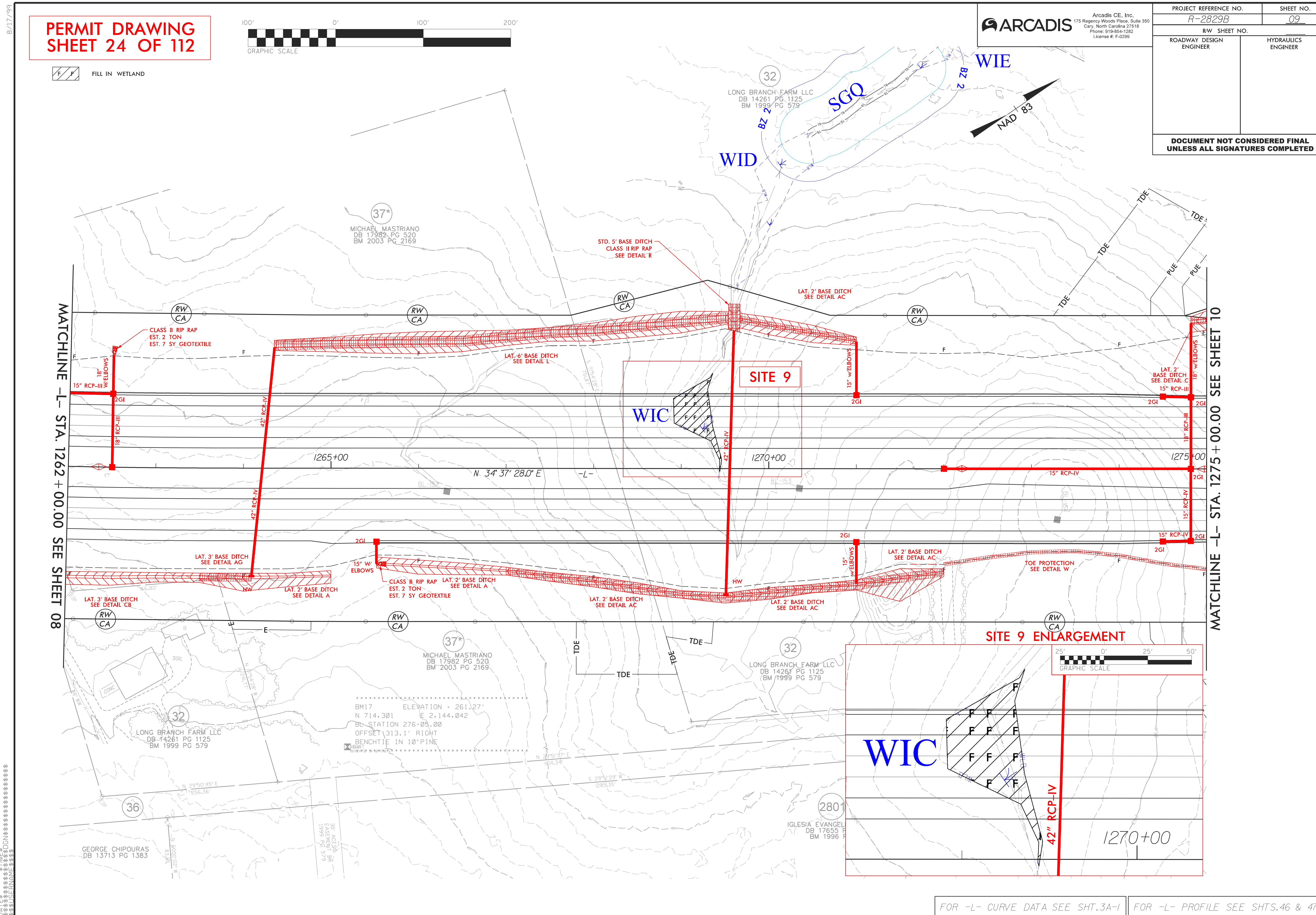
42" RCP-IV

1270+00

FOR -L- CURVE DATA SEE SHT.3A-I

FOR -L- PROFILE SEE SHTS.46 & 47

$DATE$ $TIME$ $USERNAME$ $DESIGN$

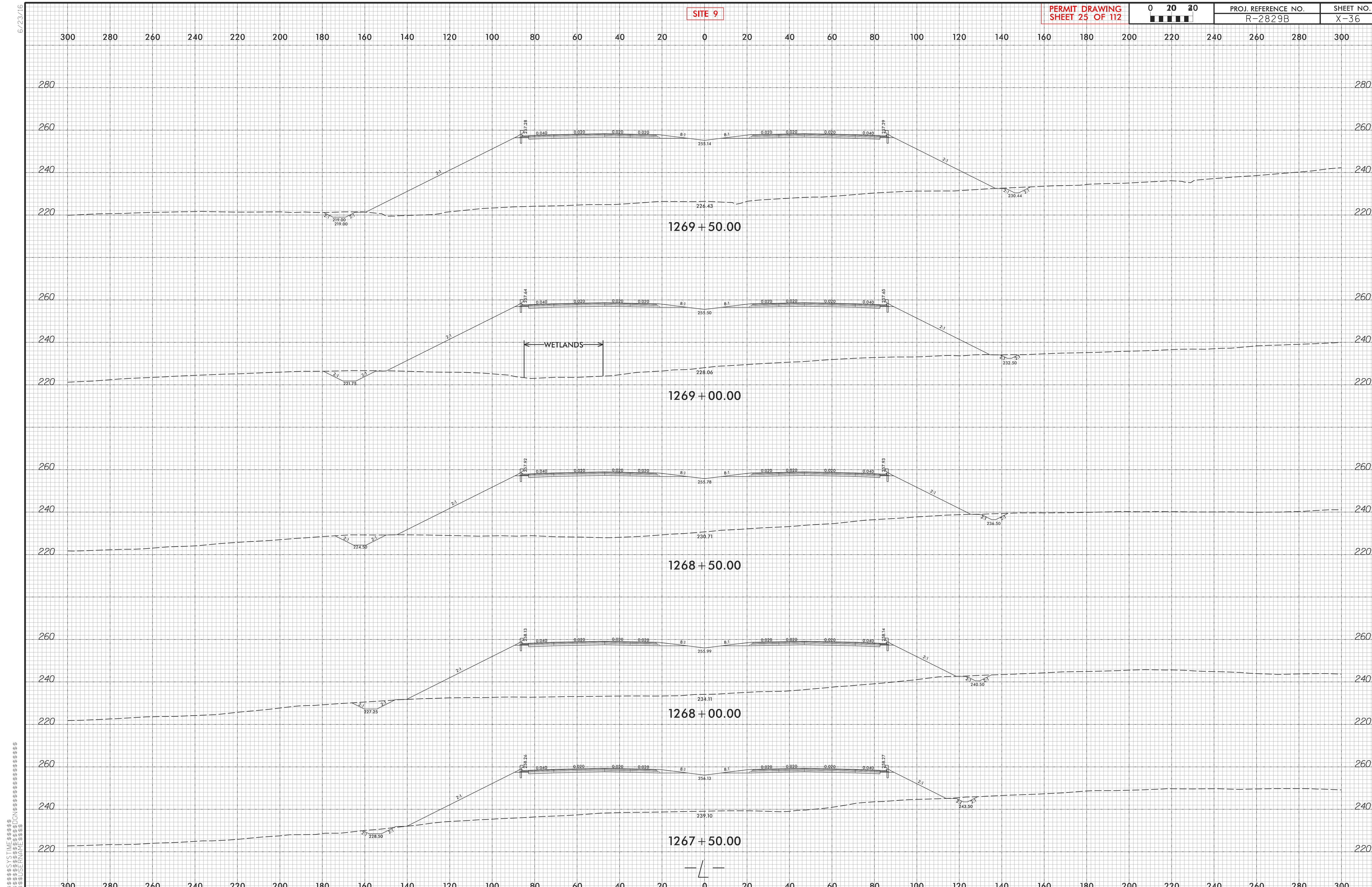

PERMIT DRAWING
SHEET 24 OF 112
FILL IN WETLAND
100' 0' 100' 200'
GRAPHIC SCALE
Arcadis CE, Inc.
175 Regency Woods Place, Suite 350
Cary, North Carolina 27518
Phone: 919-854-1282
License #: F-0299
PROJECT REFERENCE NO.
R-2829B
SHEET NO.
09
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
WIE
SGQ
WID
BZ 2
NAD 83
32
LONG BRANCH FARM LLC
DB 14261 PG 1125
BM 1999 PG 579
37*
MICHAEL MASTRIANO
DB 17982 PG 520
BM 2003 PG 2169
STD. 5' BASE DITCH
CLASS II RIP RAP
SEE DETAIL R
LAT. 2' BASE DITCH
SEE DETAIL AC
CLASS B RIP RAP
EST. 2 TON
EST. 7 SY GEOTEXTILE
LAT. 6' BASE DITCH
SEE DETAIL L
SITE 9
WIC
15" RCP-III
18" W/ELBOWS
18" RCP-III
2GI
42" RCP-IV
15" w/ELBOWS
1265+00
1270+00
1275+00
N 34° 37' 28.0" E
-L-
15" RCP-IV
LAT. 2' BASE DITCH
SEE DETAIL C
18" w/ELBOWS
15" RCP-IV
MATCHLINE -L- STA. 1262+00.00 SEE SHEET 08
MATCHLINE -L- STA. 1275+00.00 SEE SHEET 10
LAT. 3' BASE DITCH
SEE DETAIL AG
LAT. 3' BASE DITCH
SEE DETAIL CB
LAT. 2' BASE DITCH
SEE DETAIL A
15" W/ ELBOWS
HW
TOE PROTECTION
SEE DETAIL W
TDE
PUE
BM17 ELEVATION = 261.27'
N 714,301 E 2,144,042
BL STATION 276+05.00
OFFSET 313.1' RIGHT
BENCHTIE IN 10"PINE
SITE 9 ENLARGEMENT
25' 0' 25' 50'
GRAPHIC SCALE
36
GEORGE CHIPOURAS
DB 13713 PG 1383
2801
IGLESIA EVANGEL
DB 17655
BM 1996
30' ACCESS EASEMENT BM 1999 PG 579
FOR -L- CURVE DATA SEE SHT.3A-I
FOR -L- PROFILE SEE SHTS.46 & 47

Submitted November 13, 2024

SITE 9

PERMIT DRAWING
SHEET 25 OF 112

PROJ. REFERENCE NO.	SHEET NO.
R-2829B	X-36



8/17/99

ARCADIS
Arcadis GE, Inc.
175 Regency Woods Place, Suite 350
Cary, North Carolina 27518
Phone: 919-854-1282
License #: F-0299

PROJECT REFERENCE NO.	SHEET NO.
R-2829B	10
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 26 OF 112

100' 0' 100' 200'
GRAPHIC SCALE

F F FILL IN WETLAND
S S SURFACE WATER IMPACTS
TS TS TEMPORARY SURFACE WATER IMPACTS

NAD 83

SITE 10
SITE 11
SITE 12

RIP RAP AT EMBANKMENT SEE DETAIL AH CLASS II RIP RAP EST 26 TONS EST 27 SY GEOTEXTILE

RIP RAP AT EMBANKMENT SEE DETAIL AH CLASS II RIP RAP EST 28 TONS EST 40 SY GEOTEXTILE

LAT. 5' BASE DITCH SEE DETAIL E

LAT. 5' BASE DITCH SEE DETAIL AG

LAT. 2' BASE DITCH SEE DETAIL C

LAT. 2' BASE DITCH SEE DETAIL AC

TOE PROTECTION SEE DETAIL W

SPEC. CUT DITCH SEE DETAIL V

LAT. 5' BASE DITCH SEE DETAIL AK

LAT. 5' BASE DITCH SEE DETAIL G

CL I RIP RAP EST. 344 TONS EST. 384 SY GEOTEXTILE

BANK STABILIZATION SEE DITCH DETAIL BP CLASS II RIP RAP EST. 18 TONS EST. 20 SY GEOTEXTILE

42 LF OF INTLET CHANNEL IMPROVEMENTS SEE DITCH DETAIL -L- 1288+18

27 LF OF OUTLET CHANNEL IMPROVEMENTS SEE DITCH DETAIL -L- 1288+18 CLASS II RIP RAP EST. 118 TONS EST. 105 SY GEOTEXTILE

BANK STABILIZATION SEE DITCH DETAIL BP CLASS II RIP RAP EST. 55 TONS EST. 60 SY GEOTEXTILE

3 @ 7'x8' NCBC W/SILLS & BAFFLES

32 LONG BRANCH FARM LLC DB 14261 PG 1125 BM 1999 PG 579

39 CITY OF RALEIGH, COUNTY OF WAKE DB 11637 PG 2770 BM 1972 PG 225 BM 2007 PG 1372 BM 2005 PG 1481

2801 IGLESIA EVANGELICA MAP, INC DB 17655 PG 2676 BM 1996 PG 183

2803

SGI WIG WIH

18" RCP-III 15" RCP-III 30" RCP-III 15" w/ELBOWS 18" w/ELBOWS 2GI JB w/MH

1275+00 1280+00 1285+00 -L- N 34° 37' 28.0" E

MATCHLINE -L- STA. 1275+00.00 SEE SHEET 09

MATCHLINE -L- STA. 1289+00.00 SEE SHEET 11

SITE 10 ENLARGEMENT

25' 0' 25' 50'
GRAPHIC SCALE

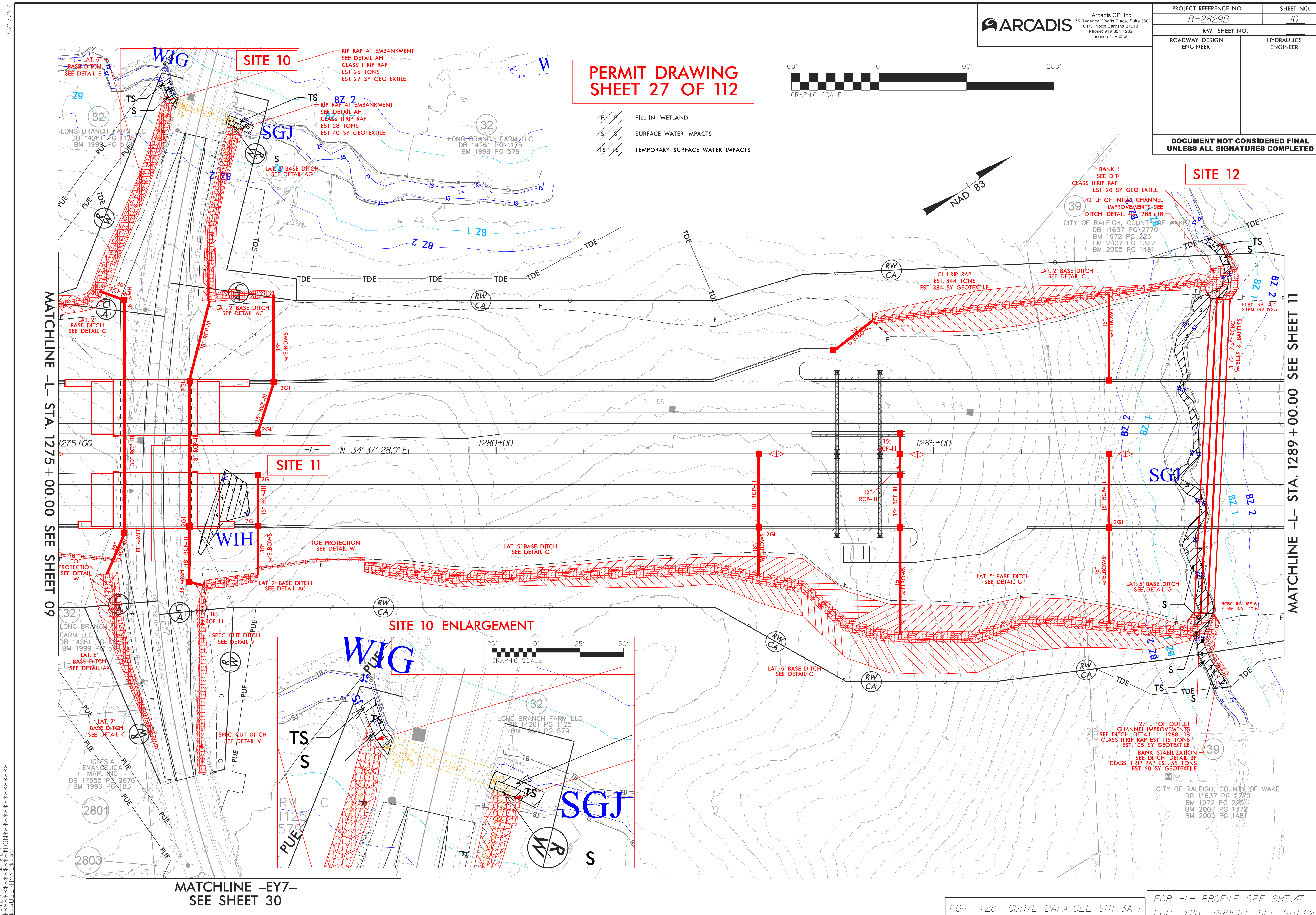
18" RCP-III 79" x 47" CMAP

MATCHLINE -EY7- SEE SHEET 30

FOR -Y28- CURVE DATA SEE SHT.3A-1

FOR -L- PROFILE SEE SHT.47
FOR -Y28- PROFILE SEE SHT.62

$DATE$ $TIME$ $USERNAME$ DGN


PERMIT DRAWING
SHEET 27 OF 112
FILL IN WETLAND
SURFACE WATER IMPACTS
TEMPORARY SURFACE WATER IMPACTS
ARCADIS
Arcadis CE, Inc.
175 Regency Woods Place, Suite 350
Cary, North Carolina 27518
Phone: 919-854-1282
License #: F-0299
PROJECT REFERENCE NO.
R-2829B
SHEET NO.
10
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
GRAPHIC SCALE
100' 0' 100' 200'
NAD 83
SITE 10
SITE 11
SITE 12
SITE 10 ENLARGEMENT
25' 0' 25' 50'
WIG
SGJ
WIH
RIP RAP AT EMBANKMENT
SEE DETAIL AH
CLASS II RIP RAP
EST 26 TONS
EST 27 SY GEOTEXTILE
RIP RAP AT EMBANKMENT
SEE DETAIL AH
CLASS II RIP RAP
EST 28 TONS
EST 40 SY GEOTEXTILE
LAT. 5' BASE DITCH
SEE DETAIL E
LAT. 3' BASE DITCH
SEE DETAIL AG
LONG BRANCH FARM LLC
DB 14261 PG 1125
BM 1999 PG 579
LAT. 2' BASE DITCH
SEE DETAIL AC
LAT. 2' BASE DITCH
SEE DETAIL C
TOE PROTECTION
SEE DETAIL W
LAT. 5' BASE DITCH
SEE DETAIL AX
SPEC. CUT DITCH
SEE DETAIL V
IGLESIA EVANGELICA MAP, INC
DB 17655 PG 2676
BM 1996 PG 183
LAT. 5' BASE DITCH
SEE DETAIL G
CL I RIP RAP
EST. 344 TONS
EST. 384 SY GEOTEXTILE
BANK
SEE DIT
CLASS II RIP RAP
EST. 20 SY GEOTEXTILE
42 LF OF INTLET CHANNEL
IMPROVEMENTS SEE
DITCH DETAIL -L- 1288+18
CITY OF RALEIGH, COUNTY OF WAKE
DB 11637 PG 2770
BM 1972 PG 225
BM 2007 PG 1372
BM 2005 PG 1481
3 @ 7'x8' RCBC
W/SILLS & BAFFLES
RCBC INV 171.7
STRM INV 172.7
RCBC INV 169.6
STRM INV 170.6
27 LF OF OUTLET
CHANNEL IMPROVEMENTS
SEE DITCH DETAIL -L- 1288+18
CLASS II RIP RAP EST. 118 TONS
EST. 105 SY GEOTEXTILE
BANK STABILIZATION
SEE DITCH DETAIL BP
CLASS II RIP RAP EST. 55 TONS
EST. 60 SY GEOTEXTILE
1275+00
1280+00
1285+00
N 34° 37' 28.0" E
MATCHLINE -L- STA. 1275+00.00 SEE SHEET 09
MATCHLINE -L- STA. 1289+00.00 SEE SHEET 11
MATCHLINE -EY7-
SEE SHEET 30
FOR -Y28- CURVE DATA SEE SHT.3A-I
FOR -L- PROFILE SEE SHT.47
FOR -Y28- PROFILE SEE SHT.62

Submitted November 13, 2024

6/23/16

SITE 11

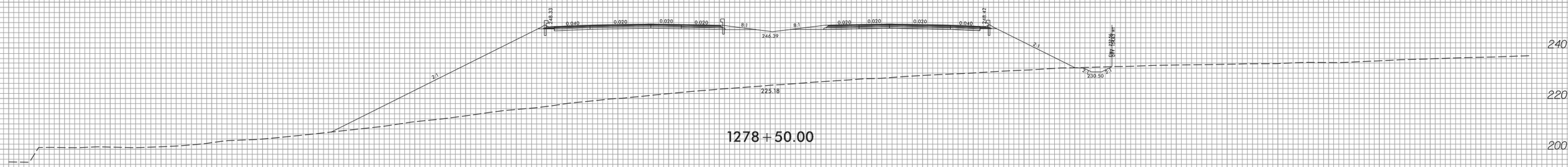
PERMIT DRAWING
SHEET 28 OF 112

0 20 40

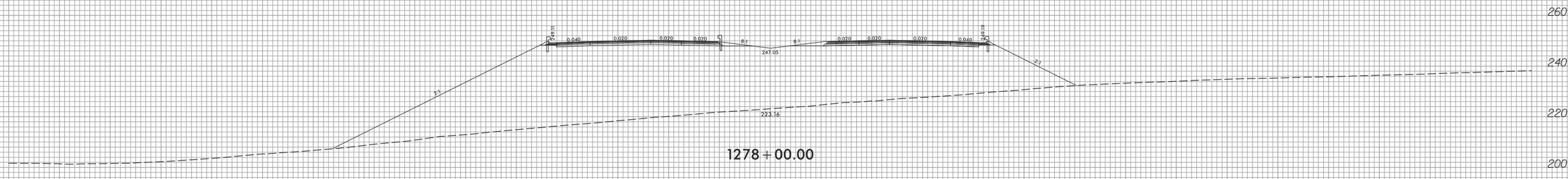
PROJ. REFERENCE NO.	SHEET NO.
R-2829B	X-40

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

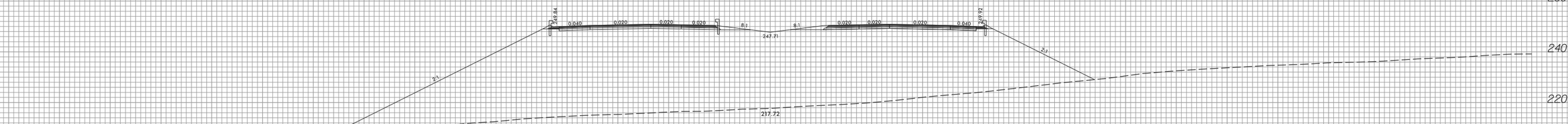
260 240 220 200



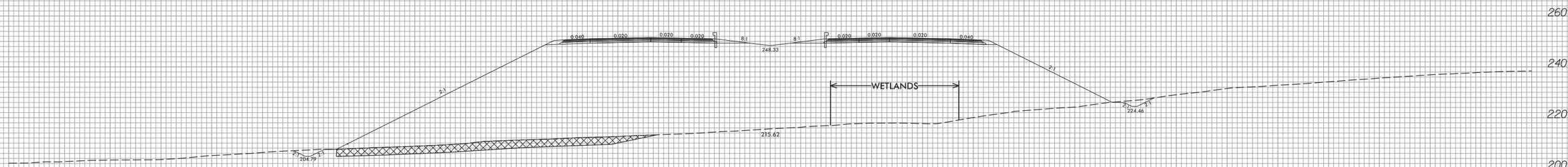
1278+50.00



1278+00.00



1277+50.00



1277+00.00

UNDERCUT

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

Submitted November 13, 2024

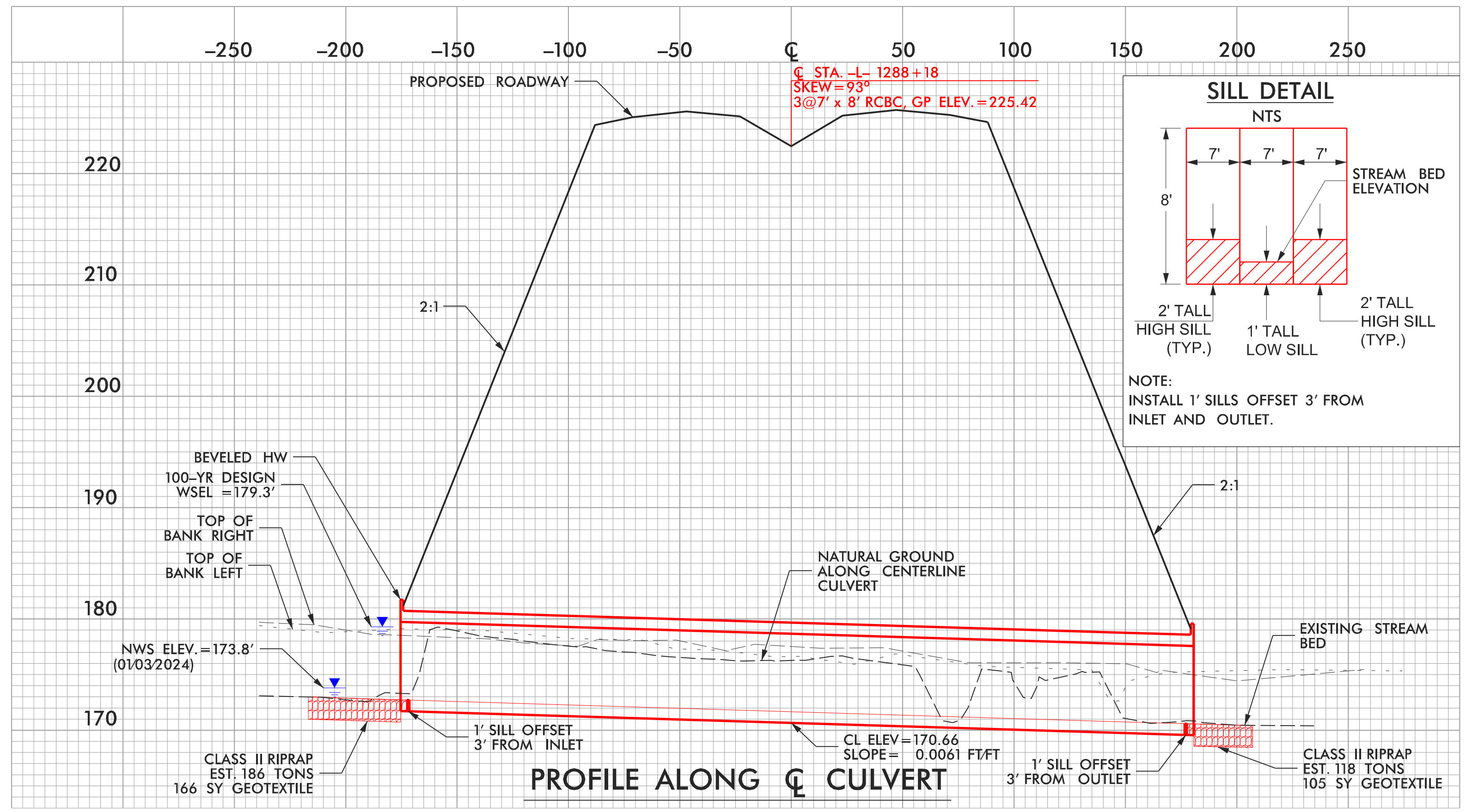
PERMIT DRAWING
SHEET 29 OF 112

ARCADIS
Arcadis CE, Inc.
175 Regency Woods Place, Suite 350
Cary, North Carolina 27518
Phone: 919-854-1282
License #: F-0299

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SITE 12



PROFILE ALONG ℄ CULVERT

8/17/99

$DATE$ $TIME$ DGN $USERNAME$

Submitted November 13, 2024

8/17/99

PERMIT DRAWING SHEET 30 OF 112

NO IMPACTS THIS SHEET

GRAPHIC SCALE 100′ 0′ 100′ 200′ 300′

TEMPORARY ACCESS FOR BRIDGE CONSTRUCTION ONLY

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

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SITE 14

SGR

WIO

SGR

WIP

BZ 1

BZ 2

DECK DRAINS REQUIRED
NINE 6" SCUPPERS ON 10' CENTERS
FROM STA. 1314+15 TO STA. 1314+95 LT.
FROM STA. 1314+15 TO STA. 1314+95 RT.
(FUTURE BRIDGE CONSTRUCTION)

DECK DRAINS REQUIRED
EIGHT 6" SCUPPERS ON 10' CENTERS
FROM STA. 1314+15 TO STA. 1314+85 LT.
FROM STA. 1314+15 TO STA. 1314+85 RT.
(FOR CURRENT BRIDGE CONSTRUCTION)
(DECK DRAIN DISSIPATOR PAD SEE DETAIL AM9)

39 CITY OF RALEIGH, COUNTY OF WAKE

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

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

-LB-

1305+00

1310+00

1315+00

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

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

15" RCP-III

BDO

15" W/ELBOWS

2GI

SPEC. CUT V DITCH SEE DETAIL S

2' BASE BERM DITCH SEE DETAIL F

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

SPECIAL CUT V DITCH SEE DETAIL S

2GI-D

15" 18" RCP-III

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

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

TEMPORARY ACCESS

24" W/ELBOWS

18" RCP-III

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

CL II RIP RAP

48" RCP-III (NOT BURIED)

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

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

REMOVE 15" W/ ELBOW

GRADE TO DRAIN

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

-Y28A-PC Sta. 13+77.77

TOE PROTECTION SEE DETAIL W

LAT. 'V' DITCH W/CL B RIP RAP SEE DETAIL BG

-Y28A-PT Sta. 14+81.04
S 67° 59' 35.6" E

-Y28A-PC Sta. 15+41.12

RETAIN DITCH

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

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

REMOVE

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

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

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

Submitted November 13, 2024

8/17/99

PERMIT DRAWING
SHEET 31 OF 112

NO IMPACTS
THIS SHEET

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

TEMPORARY ACCESS FOR BRIDGE CONSTRUCTION ONLY

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

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

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SITE 14

DECK DRAINS REQUIRED
NINE 6" SCUPPERS ON 10' CENTERS
FROM STA. 1314+15 TO STA. 1314+95 LT.
FROM STA. 1314+15 TO STA. 1314+95 RT.
(FUTURE BRIDGE CONSTRUCTION)

DECK DRAINS REQUIRED
EIGHT 6" SCUPPERS ON 10' CENTERS
FROM STA. 1314+15 TO STA. 1314+85 LT.
FROM STA. 1314+15 TO STA. 1314+85 RT.
(FOR CURRENT BRIDGE CONSTRUCTION)
(DECK DRAIN DISSIPATOR PAD SEE DETAIL AM9)

SGR
WIO
SGR
WIP
BZ 1
BZ 2
LT
RT
RLB
TDE
PDE
RW CA
39
CITY OF RALEIGH, COUNTY OF WAKE

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

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

LAT. 2' BASE DITCH W/CL B RIP RAP SEE DETAIL AC
HW
15" RCP-III
FES
BDO
15" W/ELBOWS
2GI
SPEC. CUT V DITCH SEE DETAIL S
2' BASE BERM DITCH SEE DETAIL F
BERM V DITCH W/CL B RIP RAP SEE DETAIL M
SPECIAL CUT V DITCH SEE DETAIL S
2GI-D
15" 18" RCP-III
CL B RIP RAP EST. 3 TONS EST. 10 SY GF
LAT. 5' BASE DITCH W/CL J RIP RAP SEE/DETAIL E
TEMPORARY ACCESS
24" W/ELBOWS
STD. 5' BASE DITCH W/CL J RIP RAP SEE DETAIL R
CL II RIP RAP
18" RCP-III
2GI-A
48" RCP-III (NOT BURIED)
1305+00
1310+00
1315+00
-LB-
STD. 6' BASE DITCH W/CL II RIP RAP SEE DETAIL P
LAT. 2' BASE DITCH W/CL B RIP RAP SEE DETAIL AC
REMOVE 15" W/ ELBOW
STD. 2' BASE DITCH W/CL B RIP RAP SEE DETAIL K
GRADE TO DRAIN
-Y28A-PC Sta. 13+77.77
TOE PROTECTION SEE DETAIL W
LAT. 'V' DITCH W/CL B RIP RAP SEE DETAIL BG
-Y28A-
S 20° 32' 46.5" E
RETAIN DITCH
STD. 'V' DITCH W/CL B RIP RAP SEE DETAIL BH
STD. 2' BASE DITCH W/CL B RIP RAP SEE DETAIL K
REMOVE
-Y28A-PT Sta. 14+81.04
S 67° 59' 35.6" E
-Y28A-PC Sta. 15+41.12
1500

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

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

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

PERMIT DRAWING SHEET 32 OF 112

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

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

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

- E E — WETLAND EXCAVATION
- S S — SURFACE WATER IMPACTS
- * * — MECHANIZED CLEARING (GRUBBING)
- TS TS — TEMPORARY SURFACE WATER IMPACTS
- F F — FILL IN WETLAND
- TEMPORARY ACCESS FOR BRIDGE CONSTRUCTION ONLY

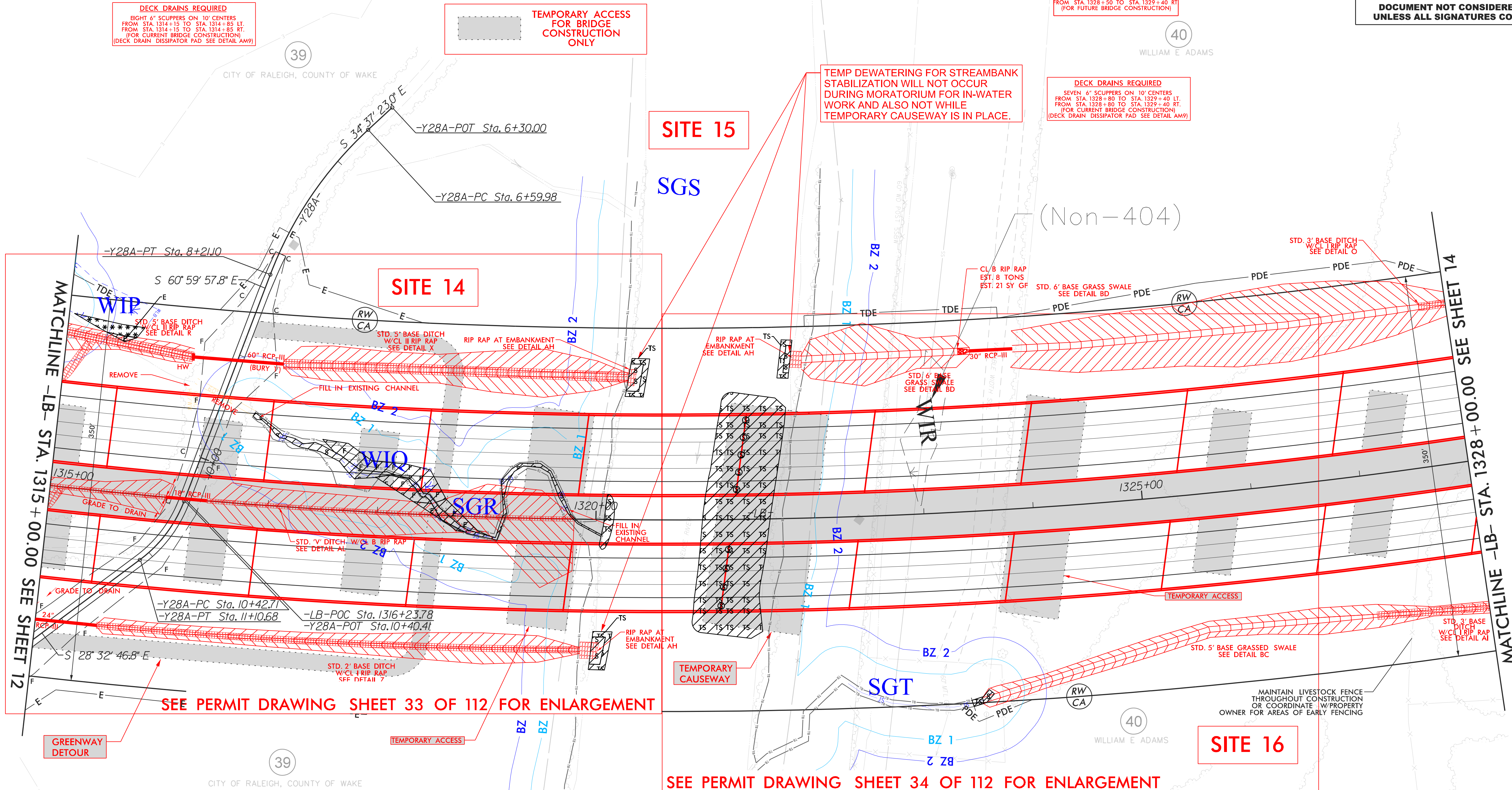
DECK DRAINS REQUIRED
NINE 6" SCUPPERS ON 10' CENTERS
FROM STA. 1314+15 TO STA. 1314+95 LT.
FROM STA. 1314+15 TO STA. 1314+95 RT.
(FOR FUTURE BRIDGE CONSTRUCTION)

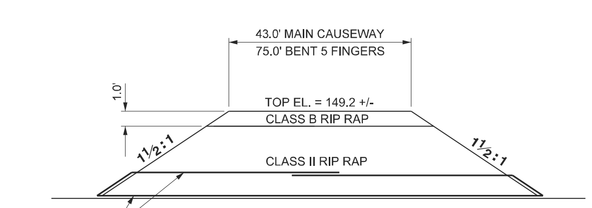
DECK DRAINS REQUIRED
EIGHT 6" SCUPPERS ON 10' CENTERS
FROM STA. 1314+15 TO STA. 1314+85 LT.
FROM STA. 1314+15 TO STA. 1314+85 RT.
(FOR CURRENT BRIDGE CONSTRUCTION)
(DECK DRAIN DISSIPATOR PAD SEE DETAIL AM9)

DECK DRAINS REQUIRED
TEN 6" SCUPPERS ON 10' CENTERS
FROM STA. 1328+50 TO STA. 1329+40 LT.
FROM STA. 1328+50 TO STA. 1329+40 RT.
(FOR FUTURE BRIDGE CONSTRUCTION)

DECK DRAINS REQUIRED
SEVEN 6" SCUPPERS ON 10' CENTERS
FROM STA. 1328+80 TO STA. 1329+40 LT.
FROM STA. 1328+80 TO STA. 1329+40 RT.
(FOR CURRENT BRIDGE CONSTRUCTION)
(DECK DRAIN DISSIPATOR PAD SEE DETAIL AM9)

TEMP DEWATERING FOR STREAMBANK STABILIZATION WILL NOT OCCUR DURING MORATORIUM FOR IN-WATER WORK AND ALSO NOT WHILE TEMPORARY CAUSEWAY IS IN PLACE.





CAUSEWAY DETAIL
NEUSE RIVER

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

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

Submitted November 13, 2024

8/17/99

NAD 83

PERMIT DRAWING
SHEET 33 OF 112

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

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Phone: 803-822-0333
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PROJECT REFERENCE NO.	SHEET NO.
R-2829B	
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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SITE 14

SITE 14 & 15 ENLARGEMENT

TEMPORARY ACCESS FOR BRIDGE CONSTRUCTION ONLY

E WETLAND EXCAVATION
S SURFACE WATER IMPACTS
MECHANIZED CLEARING (GRUBBING)
TS TEMPORARY SURFACE WATER IMPACTS
F FILL IN WETLAND

WIP

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

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

60" RCP-III
(BURY 1')
HW

REMOVE

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

RIP RAP AT EMBANKMENT
SEE DETAIL AH

FILL IN EXISTING CHANNEL

BZ 2
BZ 1

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

WIQ

SGR

350'

1315+00

18" RCP-III

GRADE TO DRAIN

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

1320+00

FILL IN EXISTING CHANNEL

GRADE TO DRAIN

24" CP-III

-Y28A-PC Sta. 10+42.71
-Y28A-PT Sta. 11+10.68

-LB-POC Sta. 1316+23.78
-Y28A-POT Sta.10+40.41

-S 28° 32' 46.8" E

GREENWAY DETOUR

STD. 2' BASE DITCH
W/CL I RIP RAP
SEE DETAIL Z

TEMPORARY ACCESS

1 RIP RAP AT EMBANKMENT
SEE DETAIL AH

EMBANK
SEE DET
SITE 15

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$USERNAME$ DGN

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PERMIT DRAWING
SHEET 34 OF 112

SITE 15 & 16
ENLARGEMENT

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

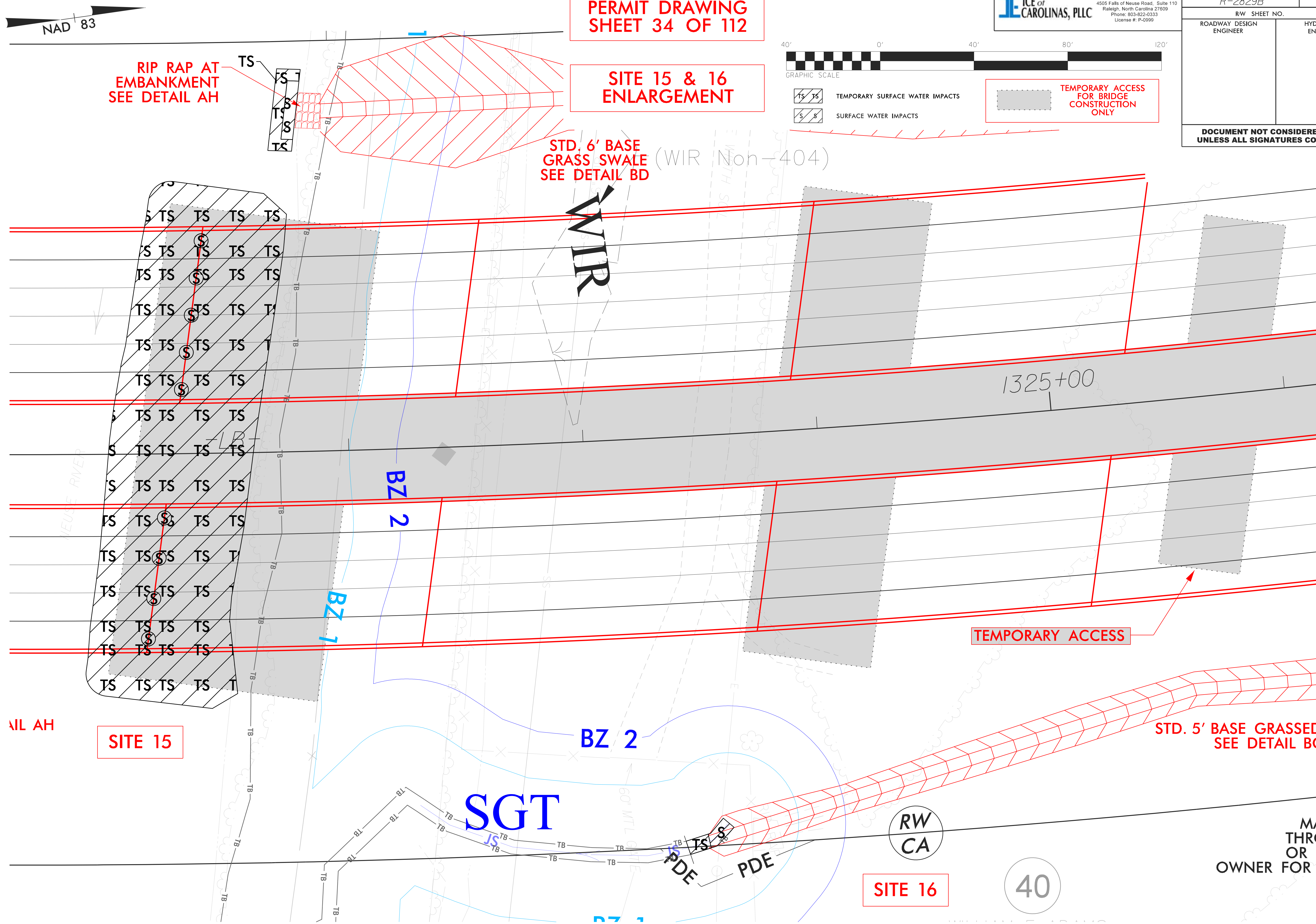
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

TS TS — TEMPORARY SURFACE WATER IMPACTS

S S — SURFACE WATER IMPACTS

TEMPORARY ACCESS FOR BRIDGE CONSTRUCTION ONLY



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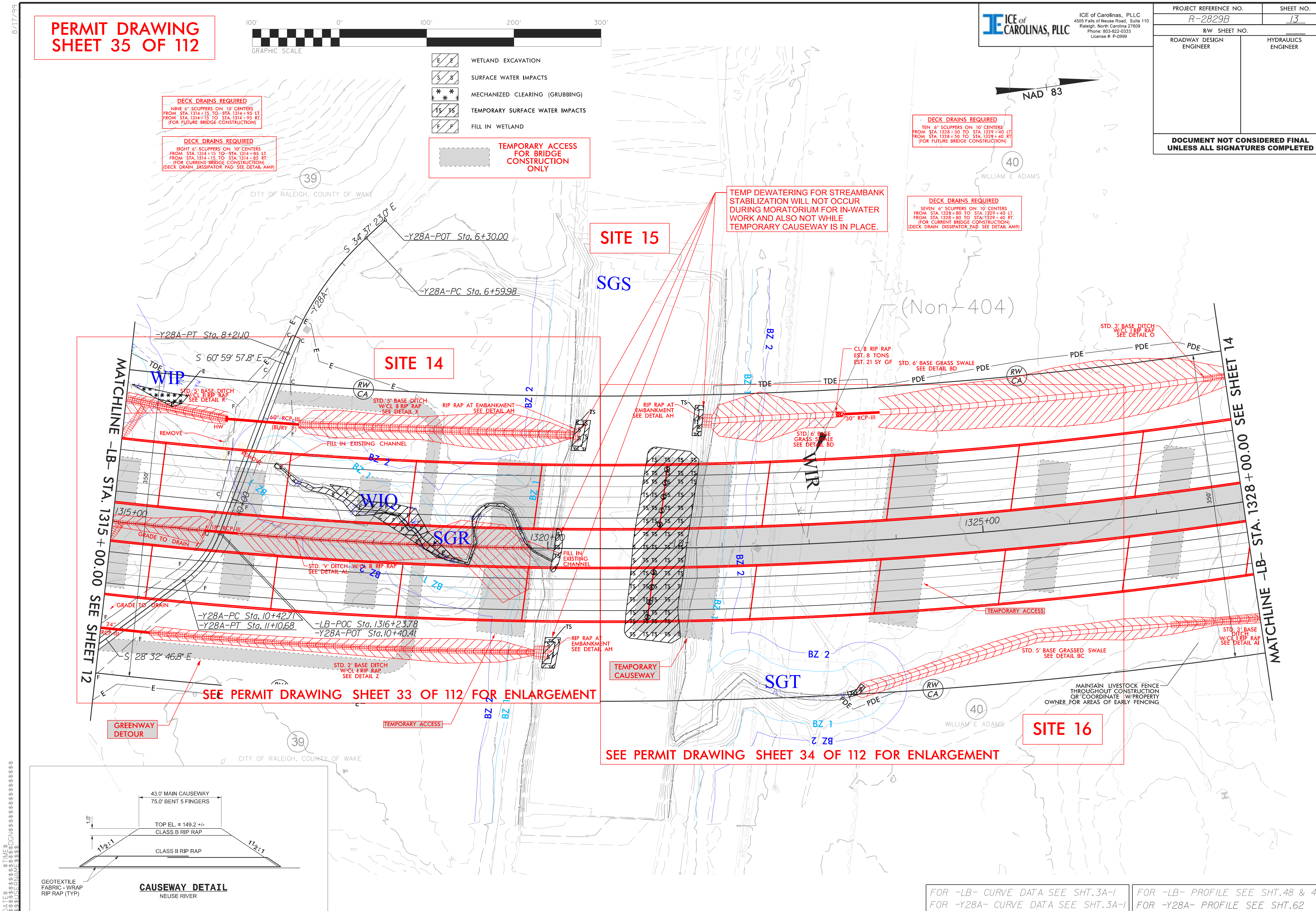

Submitted November 13, 2024

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-LB-

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PROJECT REFERENCE NO.	SHEET NO.
R-2829B	48
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING SHEET 36 OF 112

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PIPE HYDRAULIC DATA
48" RCP-III @ -LB- STA.1303+99

DRAINAGE AREA	= 15.5	AC
DESIGN DISCHARGE	= 61	CFS
DESIGN FREQUENCY	= 100	YRS
DESIGN HW ELEVATION	= 192.7	FT
100 YR. DISCHARGE	= 61	CFS
100 YR. HW ELEVATION	= 192.7	FT
OVERTOPPING DISCHARGE	= 110	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 197.6	FT

PI = 1297+70.00
EL = 198.90'
VC = 700'
K = 224
DS = 75mph

DITCH PI
STA.1296+00.00 LT
ELEV.= 210.25'

(-) 2.0303%

DITCH PI
STA.1297+65.00 LT
ELEV.= 206.90'

(+) 1.1351%

END BERM 'V' DITCH
STA.1299+50.00 LT
ELEV.= 209.00'

BEGIN SP.CUT DITCH
STA.1297+65.00 RT
ELEV.= 197.94'

END SP.CUT DITCH
STA.1300+29.00 RT
ELEV.= 198.73'

(+) 0.4042%

(-) 3.9957%

(-) 2.7201%

(+) 0.3000%

(+) 0.3000%

(+) 0.3000%

BEGIN SP.CUT DITCH
STA.1296+50.00 LT
ELEV.= 199.19'

DITCH PI
STA.1297+65.00 LT
ELEV.= 194.60'

END SP.CUT DITCH
STA.1299+00.00 LT
ELEV.= 195.00'

BEGIN SP.CUT DITCH
STA.1300+29.00 LT
ELEV.= 194.63'

(-) 1.2353%

END LAT.3' BASE DITCH
STA.1296+50.00 RT
ELEV.= 189.90'

END SP.CUT DITCH
BEGIN LAT.2' BASE DITCH
STA.1302+50.00 LT
ELEV.= 191.90'

PROP.GRADE

(-) 3.6145%

EXIST.GROUND

BEGIN BERM 2' BASE DITCH
STA.1305+00.00 LT
ELEV.= 196.00'

(+) 2.5214%

48" RCP-III

DITCH PI
STA.1303+33.00 LT
ELEV.= 188.90'

END LAT.2' BASE DITCH
STA.1304+50.00 LT
ELEV.= 191.85'

(+) 3.1000%

END SP.CUT DITCH
STA.1305+50.00 LT
ELEV.= 196.55'

BEGIN SP.CUT DITCH
STA.1305+00.00 LT
ELEV.= 195.00'

(+) 1.6571%

END BERM 2' BASE DITCH
BEGIN BERM 'V' DITCH
STA.1308+50.00 LT
ELEV.= 201.80'

(+) 0.4042%

PI = 1308+20.00
EL = 203.14'
VC = 460'
K = 317
DS = 75mph

END SP.CUT DITCH
STA.1309+60.00 LT
ELEV.= 194.50'

(-) 1.0455%

(-) 7.5455%

(-) 3.2500%

BEGIN SP.CUT DITCH
STA.1309+00.00 LT
ELEV.= 196.45'

END BERM 'V' DITCH
STA.1309+60.00 LT
ELEV.= 193.50'

FOR -LB- PLAN SEE SHTS.11 & 12

1296 1297 1298 1299 1300 1301 1302 1303 1304 1305 1306 1307 1308 1309 1310

BM#19 ELEVATION = 193.64'
LB STA 1312+08.87 408.15' RIGHT

PI = 1308+20.00
EL = 203.14'
VC = 460'
K = 317
DS = 75mph

PI = 1313+10.00
EL = 198.02'
VC = 320'
K = 212
DS = 75mph

BEGIN BRIDGE
-LB- STA.1314+05+/-

LOW POINT@ -LB- STA.1313+71.43
EL.198.53'

-LB- STA.1316+23.78=
Y-28A STA.10+40.41

-LB-

SITE 14

PROP.GRADE

(-) 1.0455%

(+) 0.4654%

(-) 1.0455%

END MED.'V' DITCH
STA.1316+06.00 CL
ELEV.= 159.00'

PI = 1320+56.00
EL = 201.49'
VC = 800'
K = 381
DS = 75mph

(+) 0.4654%

(-) 1.6364%

(-) 1.6364%

STRUCTURE HYDRAULIC DATA

DESIGN DISCHARGE	= 1930	CFS
DESIGN FREQUENCY	= 100	YRS
DESIGN HW ELEVATION	= 168.0	FT
BASE DISCHARGE	= 1930	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 168.0	FT
OVERTOPPING DISCHARGE	= 150,000	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 184.0	FT

END LAT.5' BASE DITCH
BEGIN 5' BASE DITCH
STA.1314+00.00 LT
ELEV.= 167.00'

CITY OF RALEIGH SEWER LINES

BEGIN LAT.5' BASE DITCH
STA.1310+50.00 LT
ELEV.= 189.00'

EXIST.GROUND

(-) 6.2857%

BEGIN MED.'V' DITCH
STA.1314+30.00 CL
ELEV.= 168.00'

DITCH PI
STA.1315+50.00 CL
ELEV.= 160.80'

BEGIN LAT.2' BASE DITCH
STA.1313+60.00 RT
ELEV.= 168.00'

(-) 5.7500%

(-) 6.0000%

(-) 18.0000%

(-) 5.9770%

END LAT.2' BASE DITCH
BEGIN 2' BASE DITCH
STA.1314+00.00 RT
ELEV.= 165.70'

(-) 4.0000%

END 2' BASE DITCH
STA.1314+87.00 RT
ELEV.= 160.50'

(-) 3.2143%

(-) 0.5787%

(-) 2.5000%

DITCH PI
STA.1315+00.00 LT
ELEV.= 159.00'

DITCH PI
STA.1315+50.00 LT
ELEV.= 157.00'

BEGIN 2' BASE DITCH
STA.1315+55.00 RT
ELEV.= 158.50'

BEGIN MED.'V' DITCH
STA.1316+44.00 CL
ELEV.= 158.50'

END 5' BASE DITCH
STA.1316+20.00 LT
ELEV.= 155.25'

(-) 1.0802%

(-) 4.6296%

BEGIN 5' BASE DITCH
STA.1317+05.00 LT
ELEV.= 155.00'

(-) 0.5787%

(-) 1.6807%

DITCH PI
STA.1318+60.00 CL
ELEV.= 148.50'

SITE 15

END 2' BASE DITCH
STA.1319+87.00 RT
ELEV.= 156.00'

END 5' BASE DITCH
STA.1320+29.00 LT
ELEV.= 151.50'

END MED.'V' DITCH
STA.1319+79.00 CL
ELEV.= 146.50'

TEMPORARY ACCESS

NWS EL.=147.2'

NEUSE RIVER

SITE 16

BEGIN 6' BASE GRASS SWALE
STA.1323+82.00 LT
ELEV.= 154.10'

END 6' BASE GRASS SWALE
STA.1323+50.00 LT
ELEV.= 154.00'

(+) 0.6289%

(+) 0.5000%

(+) 0.7000%

BEGIN 6' BASE GRASS SWALE
STA.1321+91.00 LT
ELEV.= 153.00'

BEGIN 5' BASE GRASS SWALE
STA.1323+44.00 RT
ELEV.= 151.90'

MEDIAN DITCH —— —— —— RIGHT DITCH - - - - - - - LEFT DITCH ——·——·—— FOR -LB- PLAN SEE SHTS.12 & 13

1310 1311 1312 1313 1314 1315 1316 1317 1318 1319 1320 1321 1322 1323 1324

$$$$$SYSTEM$$$$$
$$$$$USERNAME$$$$$
$$$$$DGN$$$$$

Submitted November 13, 2024

5/28/99

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PROJECT REFERENCE NO.	SHEET NO.
R-2829B	49
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 37 OF 112

-LB-

BM#20 ELEVATION = 167.79'
LB STA 1327 + 46.26 362.03' RIGHT

STRUCTURE HYDRAULIC DATA

DESIGN DISCHARGE	= 1930	CFS
DESIGN FREQUENCY	= 100	YRS
DESIGN HW ELEVATION	= 168.0	FT
BASE DISCHARGE	= 1930	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 168.0	FT
OVERTOPPING DISCHARGE	= 150,000	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 184.0	FT

PI = 1320+56.00
EL = 201.49'
VC = 800'
K = 381
DS = 75mph

(-)1.6364%

PROP. GRADE

END BRIDGE
-LB- STA.1329+58 +/-

SITE 16

DITCH PI
STA.1329+00.00 RT
ELEV.= 170.50'

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

EXIST. GROUND

(+) 0.5000%

(+) 0.7000%

(+) 8.0565%

(+) 2.0000%

(+) 5.0000%

(+) 4.5000%

END 6' BASE GRASS SWALE
BEGIN 3' BASE DITCH
STA.1327+75.00 LT
ELEV.= 156.07'

PI = 1330+35.00
EL = 185.47'
VC = 300'
K = 225
DS = 75mph

END 3' BASE DITCH
BEGIN LAT. 3' BASE DITCH
STA.1330+00.00 RT
ELEV.= 172.50'

END 3' BASE DITCH
BEGIN LAT. 3' BASE DITCH
STA.1329+93.00 LT
ELEV.= 165.88'

END LAT. 3' BASE DITCH
STA.1330+50.00 RT
ELEV.= 175.00'

END LAT. 3' BASE DITCH
STA.1332+00.00 LT
ELEV.= 173.10'

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

(-)0.3025%

(-)0.3533%

END MED. 'V' DITCH
STA.1333+00.00 CL
ELEV.= 182.00'

(-) 0.9400%

(+) 0.5263%

BEGIN MED. 'V' DITCH
STA.1335+50.00 CL
ELEV.= 180.97'

DITCH PI
STA.1336+00.00 CL
ELEV.= 180.50'

END MED. 'V' DITCH
STA.1336+95.00 CL
ELEV.= 181.00'

-LB- Sta.1337+44.27 =
-Y29- Sta.32+41.64

(-)0.3025%

FOR -LB- PLAN SEE SHTS.13 & 14

1324 1325 1326 1327 1328 1329 1330 1331 1332 1333 1334 1335 1336 1337 1338

-LB-

BM#23 ELEVATION = 159.76'
LB STA 1346+35.49 486.41' LEFT

STRUCTURE HYDRAULIC DATA

DESIGN DISCHARGE	= 4,323	CFS
DESIGN FREQUENCY	= 100	YRS
DESIGN HW ELEVATION	= 164.7	FT
BASE DISCHARGE	= 4,323	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 164.7	FT
OVERTOPPING DISCHARGE	= 34,000	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 179.3	FT

*BRIDGE & CALLOUTS SHOWN ALONG LEFT SIDE OF ALIGNMENT.

PI = 1352+10.00
EL = 178.89'
VC = 345'
K = 208
DS = 75mph

(-)0.3025%

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

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

(-) 1.1200%

(-) 2.6000%

(+) 0.3750%

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

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

TEMPORARY ACCESS

BEGIN BRIDGE
-LB- STA.1345+23.83 LT

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

PROP. GRADE

NWS EL. =155.4'

HINTON'S CREEK

TEMP PIPE TO CONVEY 50% OF CHANNEL FLOW AREA

(-) 0.5263%

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

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

EXIST. GROUND

END BRIDGE
-LB- STA.1348+23.83 LT

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

(-) 0.4000%

(+) 2.9500%

(-)0.3025%

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

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

RIGHT DITCH
LEFT DITCH
UNDERCUT
MEDIAN DITCH

FOR -LB- PLAN SEE SHT.14

1338 1339 1340 1341 1342 1343 1344 1345 1346 1347 1348 1349 1350 1351 1352

$$$$SYSTEM$$$$
$$$$USERNAME$$$$

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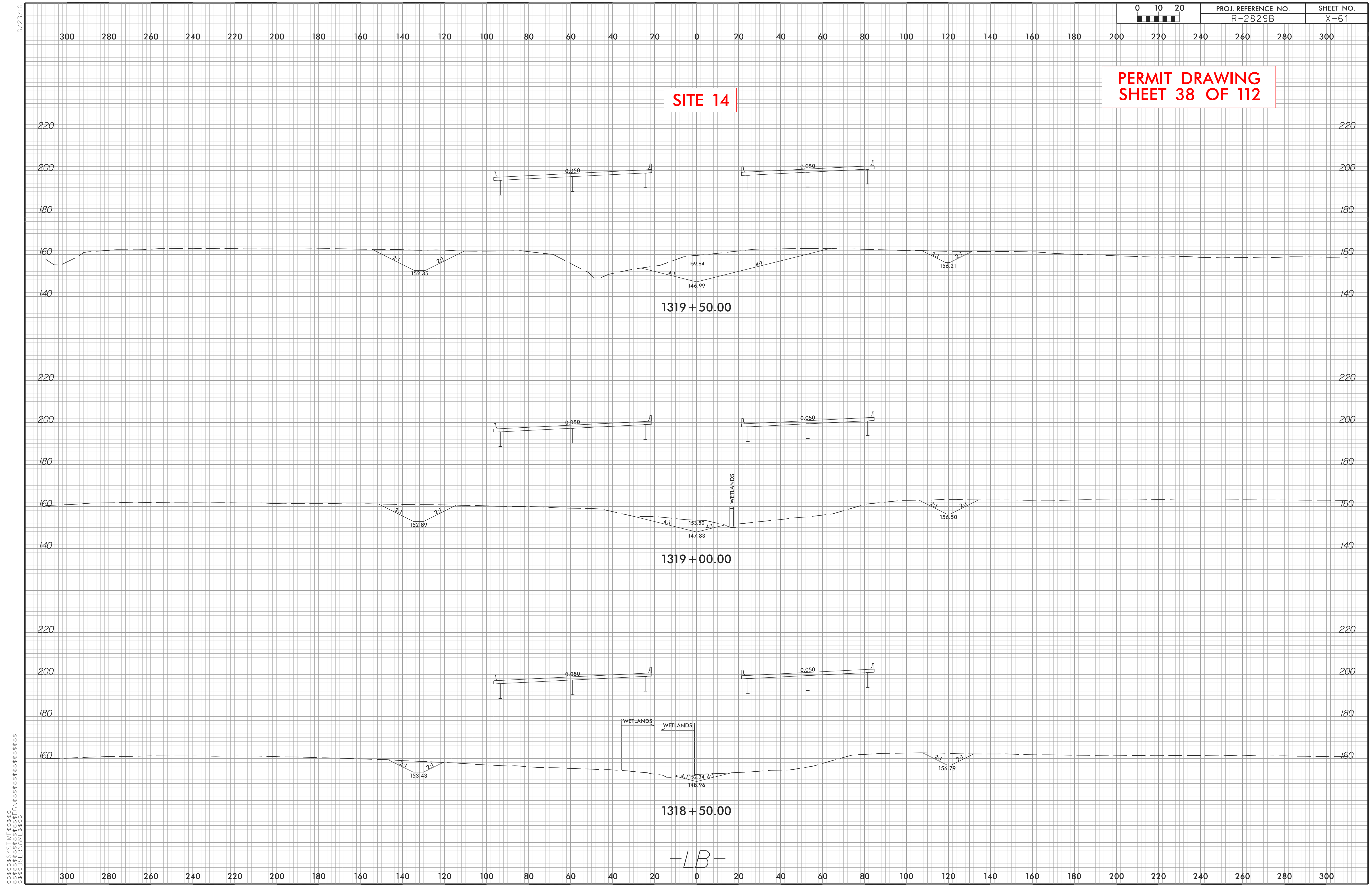


Submitted November 13, 2024

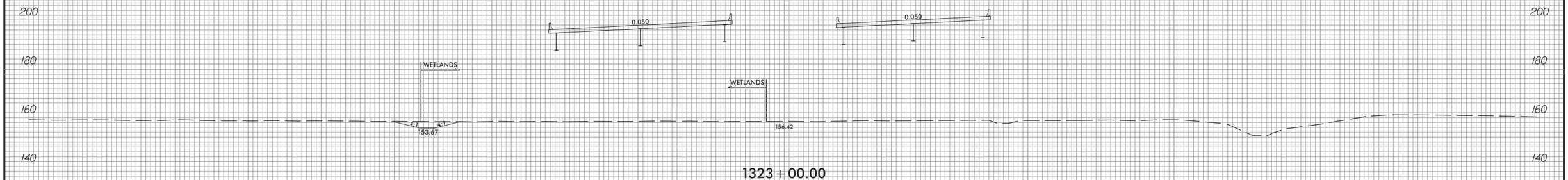
6/23/16

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

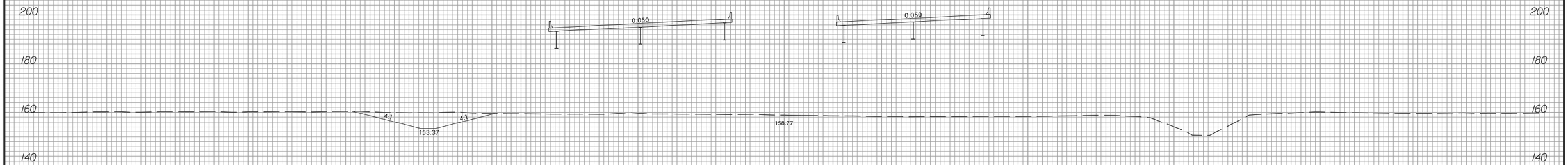
300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

PERMIT DRAWING
SHEET 39 OF 112

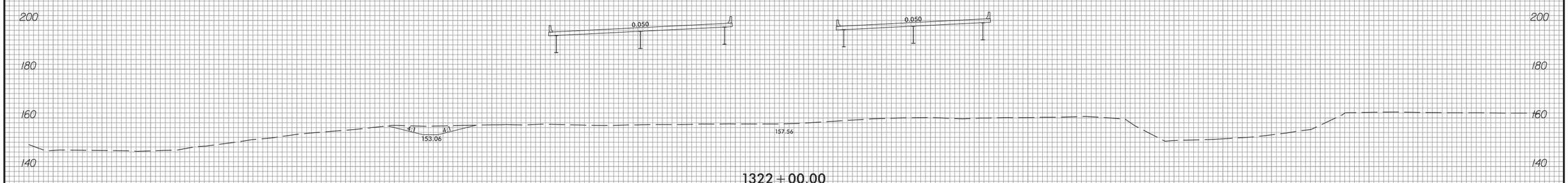
SITE 15



1323+00.00



1322+50.00

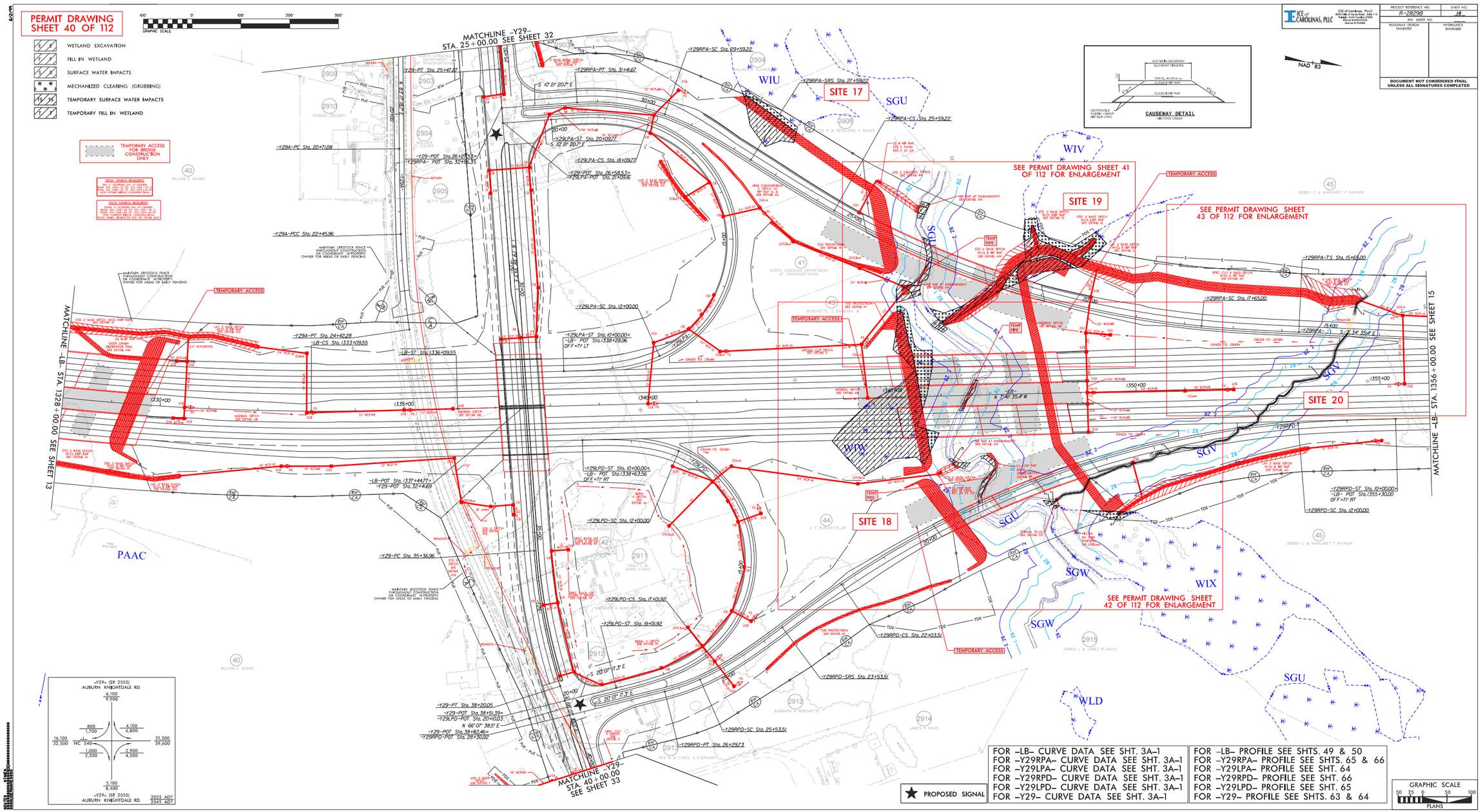


1322+00.00

—LB—

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

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


PERMIT DRAWING
SHEET 40 OF 112
GRAPHIC SCALE
WETLAND EXCAVATION
FILL IN WETLAND
SURFACE WATER IMPACTS
MECHANIZED CLEARING (GRUBBING)
TEMPORARY SURFACE WATER IMPACTS
TEMPORARY FILL IN WETLAND
TEMPORARY ACCESS FOR BRIDGE CONSTRUCTION ONLY
MATCHLINE -Y29- STA. 25+00.00 SEE SHEET 32
MATCHLINE -LB- STA. 1328+00.00 SEE SHEET 13
MATCHLINE -Y29- STA. 40+00.00 SEE SHEET 33
MATCHLINE -LB- STA. 1356+00.00 SEE SHEET 15
SITE 17
SITE 18
SITE 19
SITE 20
SEE PERMIT DRAWING SHEET 41 OF 112 FOR ENLARGEMENT
SEE PERMIT DRAWING SHEET 43 OF 112 FOR ENLARGEMENT
SEE PERMIT DRAWING SHEET 42 OF 112 FOR ENLARGEMENT
CAUSEWAY DETAIL
NAD 83
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
PROPOSED SIGNAL
FOR -LB- CURVE DATA SEE SHT. 3A-1
FOR -Y29RPA- CURVE DATA SEE SHT. 3A-1
FOR -Y29LPA- CURVE DATA SEE SHT. 3A-1
FOR -Y29RPD- CURVE DATA SEE SHT. 3A-1
FOR -Y29LPD- CURVE DATA SEE SHT. 3A-1
FOR -Y29- CURVE DATA SEE SHT. 3A-1
FOR -LB- PROFILE SEE SHTS. 49 & 50
FOR -Y29RPA- PROFILE SEE SHTS. 65 & 66
FOR -Y29LPA- PROFILE SEE SHT. 64
FOR -Y29RPD- PROFILE SEE SHT. 66
FOR -Y29LPD- PROFILE SEE SHT. 65
FOR -Y29- PROFILE SEE SHTS. 63 & 64
-Y29- (SR 2555) AUBURN KNIGHTDALE RD.
NC 540
2025 ADT
2045 ADT
PAAC
WIU
WIV
WIX
WLD
SGU
SGV
SGW

Submitted November 13, 2024

8/17/99

PERMIT DRAWING SHEET 41 OF 112

SITE 18 & 19 ENLARGEMENT

E E WETLAND EXCAVATION
F F FILL IN WETLAND
MECHANIZED CLEARING (GRUBBING)
TS TS TEMPORARY SURFACE WATER IMPACTS
S S SURFACE WATER IMPACTS

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

TEMPORARY ACCESS FOR BRIDGE CONSTRUCTION ONLY

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

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NAD 83

BZ 1
BZ 2
SGL
RIP RAP AT EMBANKMENT SEE DETAIL AH
TEMPORARY ACCESS
RW
CA
TEMP PIPE
STD. 6' BASE DITCH W/CL B RIP RAP SEE DETAIL AW
STD 3' BASE DITCH W/CL I RIP RAP SEE DETAIL O
STD 5' BASE DITCH W/CL I RIP RAP SEE DETAIL Q
SITE 19
SITE 18
PDE
TCB–4
4" RCP–III
PROTECTION DETAIL W
24"
FS
2GI–A
MEDIAN DITCH SEE DETAIL AR
30" RCP–III
2GI
15" RCP–III
24"
20+00
S 34°56'37" W
154.82'
68.08'
TB
SF
WLB
WLF
JR
3 & 4)
$DATE$ $TIME$
$$$$USERNAME$$$$

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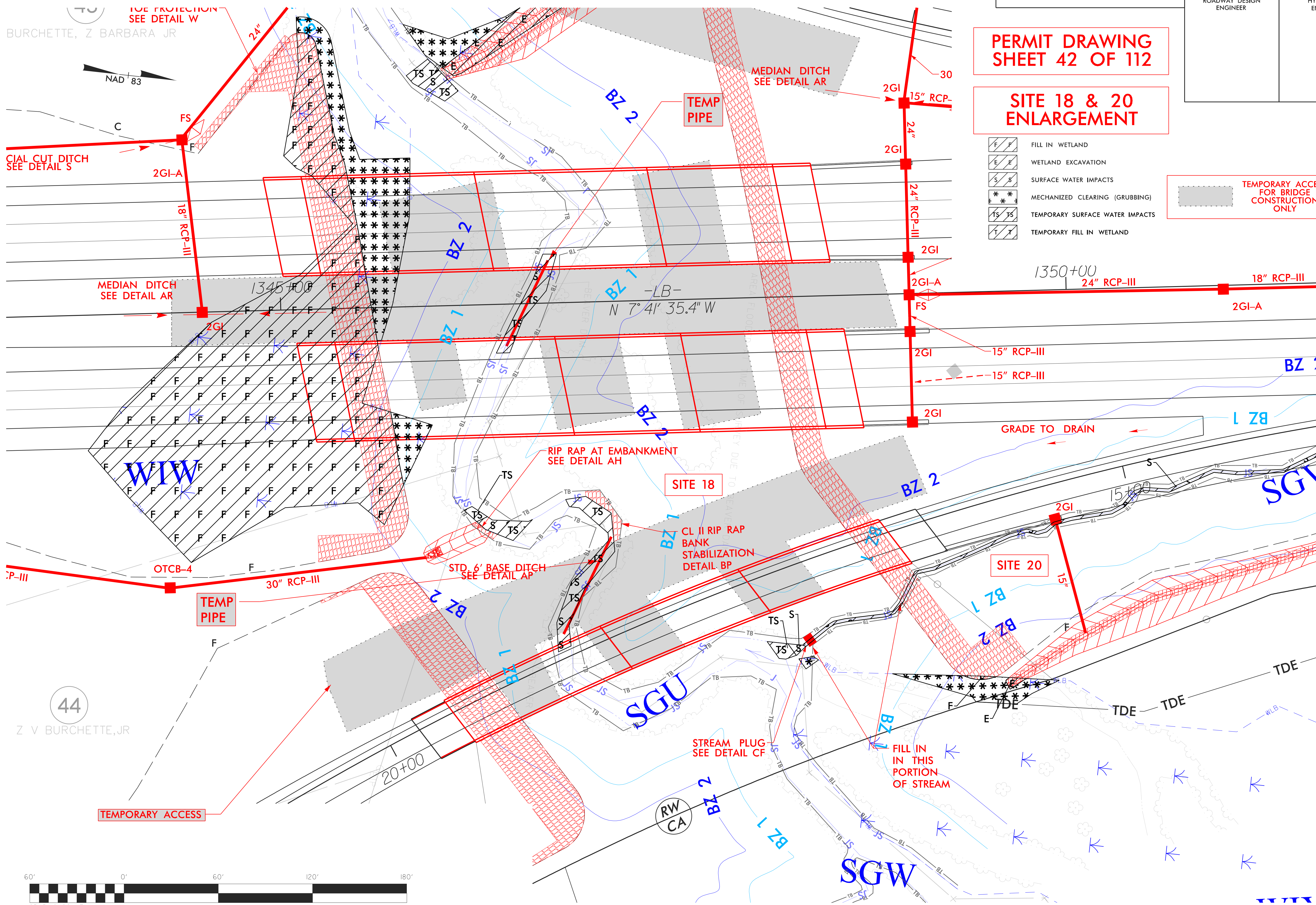
Raleigh, North Carolina 27609
Phone: 803-822-0333
License #: P-0999

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

PERMIT DRAWING SHEET 42 OF 112

SITE 18 & 20 ENLARGEMENT



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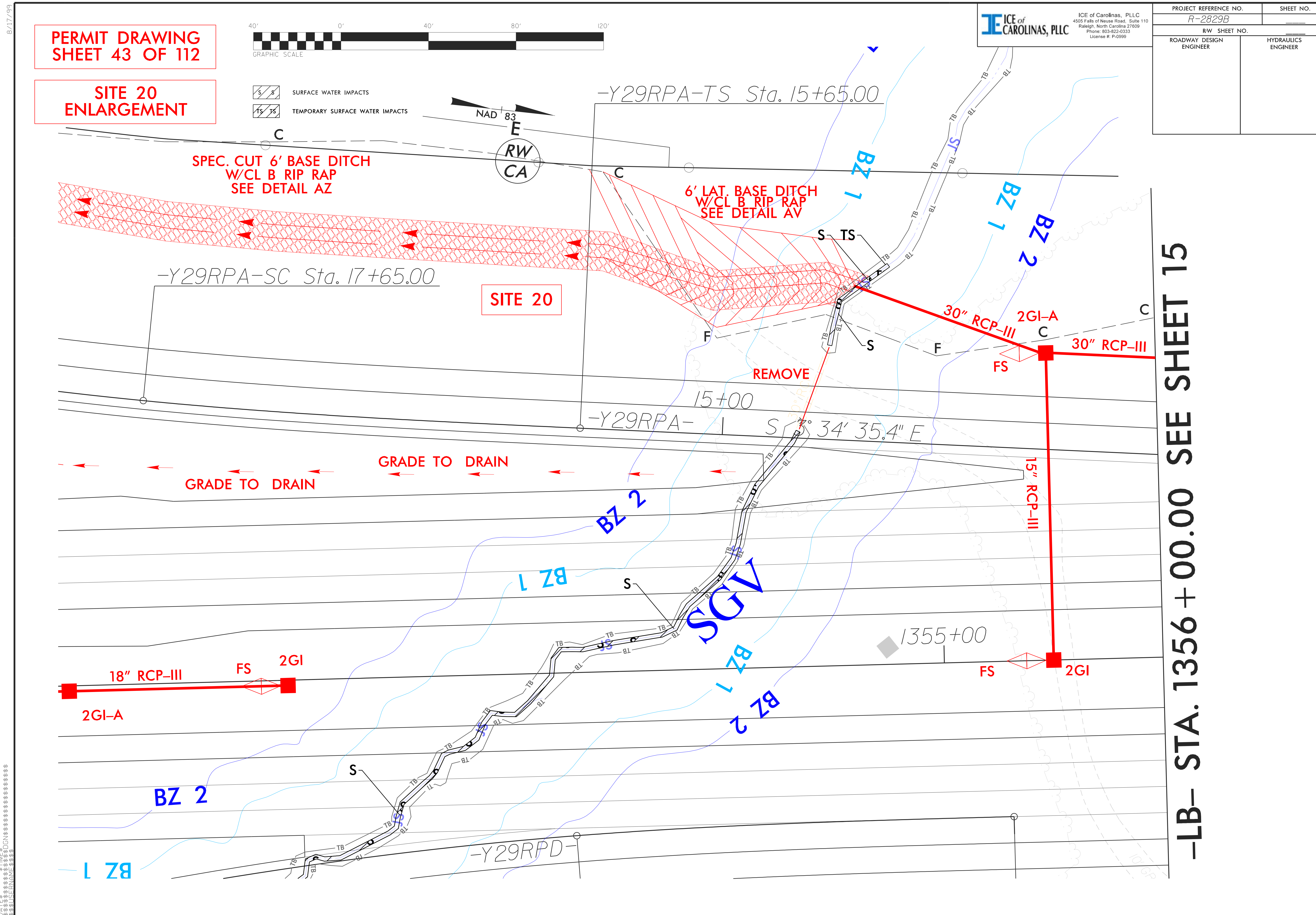

PERMIT DRAWING SHEET 44 OF 112

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

WETLAND EXCAVATION
FILL IN WETLAND
SURFACE WATER IMPACTS
SURFACE WATER IMPACTS POND
MECHANIZED CLEARING (GRUBBING)
TEMPORARY SURFACE WATER IMPACTS
TEMPORARY FILL IN WETLAND
TEMPORARY ACCESS FOR BRIDGE CONSTRUCTION ONLY

DECK DRAINS REQUIRED
DECK DRAINS REQUIRED

MATCHLINE –Y29– STA. 25+00.00 SEE SHEET 32

MATCHLINE –LB– STA. 1328+00.00 SEE SHEET 13

MATCHLINE –LB– STA. 1356+00.00 SEE SHEET 15

MATCHLINE –Y29– STA. 40+00.00 SEE SHEET 33

SITE 17
SITE 18
SITE 19
SITE 20

SEE PERMIT DRAWING SHEET 41 OF 112 FOR ENLARGEMENT
SEE PERMIT DRAWING SHEET 43 OF 112 FOR ENLARGEMENT
SEE PERMIT DRAWING SHEET 42 OF 112 FOR ENLARGEMENT

TEMPORARY ACCESS
TEMPORARY ACCESS FOR BRIDGE CONSTRUCTION ONLY

CAUSEWAY DETAIL
–BYPASS CHANNEL

NAD 83

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Office # 740888

PROJECT REFERENCE NO.	SHEET NO.
R-2829B	14
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PAAC

WIU
WIV
WIX
WLD
SGU
SGW

–Y29– (SR 2555) AUBURN KNIGHTDALE RD.
6,100 9,900
800 1,700
4,100 6,800
16,100 32,500
NC 540
21,300 39,600
1,000 2,300
2,900 4,500
5,100 8,400
–Y29– (SR 2555) AUBURN KNIGHTDALE RD.
2025 ADT
2045 ADT

PROPOSED SIGNAL

FOR –LB– CURVE DATA SEE SHT. 3A–1
FOR –Y29RPA– CURVE DATA SEE SHT. 3A–1
FOR –Y29LPA– CURVE DATA SEE SHT. 3A–1
FOR –Y29RPD– CURVE DATA SEE SHT. 3A–1
FOR –Y29LPD– CURVE DATA SEE SHT. 3A–1
FOR –Y29– CURVE DATA SEE SHT. 3A–1

FOR –LB– PROFILE SEE SHTS. 49 & 50
FOR –Y29RPA– PROFILE SEE SHTS. 65 & 66
FOR –Y29LPA– PROFILE SEE SHT. 64
FOR –Y29RPD– PROFILE SEE SHT. 66
FOR –Y29LPD– PROFILE SEE SHT. 65
FOR –Y29– PROFILE SEE SHTS. 63 & 64

GRAPHIC SCALE 50 25 0 50 100 PLANS

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PROJECT REFERENCE NO.	SHEET NO.
R-2829B	49
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 45 OF 112

-LB-

SITE 16

BM#20 ELEVATION = 167.79'
LB STA 1327+46.26 362.03' RIGHT

STRUCTURE HYDRAULIC DATA

DESIGN DISCHARGE	= 1930	CFS
DESIGN FREQUENCY	= 100	YRS
DESIGN HW ELEVATION	= 168.0	FT
BASE DISCHARGE	= 1930	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 168.0	FT
OVERTOPPING DISCHARGE	= 150,000	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 184.0	FT

PI = 1320+56.00
EL = 201.49'
VC = 800'
K = 381
DS = 75mph

PI = 1330+35.00
EL = 185.47'
VC = 300'
K = 225
DS = 75mph

-LB- Sta.1337+44.27 =
-Y29- Sta.32+41.64

(-)1.6364%
PROP.GRADE
END BRIDGE
-LB- STA.1329+58 +/-
(-)1.6364%
(-)0.3025%
(-)0.3533%
(-) 0.9400%
(+) 0.5263%
(-)0.3025%

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

END 3' BASE DITCH
BEGIN LAT.3' BASE DITCH
STA.1330+00.00 RT
ELEV.= 172.50'

END LAT.3' BASE DITCH
STA.1330+50.00 RT
ELEV.= 175.00'

END MED.'V' DITCH
STA.1333+00.00 CL
ELEV.= 182.00'

BEGIN MED.'V' DITCH
STA.1335+50.00 CL
ELEV.= 180.97'

DITCH PI
STA.1336+00.00 CL
ELEV.= 180.50'

END MED.'V' DITCH
STA.1336+95.00 CL
ELEV.= 181.00'

DITCH PI
STA.1329+00.00 RT
ELEV.= 170.50'

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

(+) 2.0000%
(+) 5.0000%
(+) 3.4903%
(+) 8.0565%
(+) 4.5000%
(+) 0.5000%
(+) 0.7000%
EXIST.GROUND

END 3' BASE DITCH
BEGIN LAT.3' BASE DITCH
STA.1329+93.00 LT
ELEV.= 165.88'

END LAT.3' BASE DITCH
STA.1332+00.00 LT
ELEV.= 173.10'

END 6' BASE GRASS SWALE
BEGIN 3' BASE DITCH
STA.1327+75.00 LT
ELEV.= 156.07'

FOR -LB- PLAN SEE SHTS.13 & 14

1324 1325 1326 1327 1328 1329 1330 1331 1332 1333 1334 1335 1336 1337 1338

-LB-

SITE 18

BM#23 ELEVATION = 159.76'
LB STA 1346+35.49 486.41' LEFT

STRUCTURE HYDRAULIC DATA

DESIGN DISCHARGE	= 4,323	CFS
DESIGN FREQUENCY	= 100	YRS
DESIGN HW ELEVATION	= 164.7	FT
BASE DISCHARGE	= 4,323	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 164.7	FT
OVERTOPPING DISCHARGE	= 34,000	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 179.3	FT

*BRIDGE & CALLOUTS SHOWN ALONG LEFT SIDE OF ALIGNMENT.

PI = 1352+10.00
EL = 178.89'
VC = 345'
K = 208
DS = 75mph

(-)0.3025%
PROP.GRADE
TEMPORARY ACCESS
END BRIDGE
-LB- STA.1348+23.83 LT
(-)0.3025%

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

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

BEGIN BRIDGE
-LB- STA.1345+23.83 LT

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

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

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

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

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

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

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

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

(-) 0.5263%
END 6' BASE DITCH
STA.1346+26.00 RT
ELEV.= 155.00'
EXIST.GROUND

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

RIGHT DITCH
LEFT DITCH
UNDERCUT
MEDIAN DITCH
FOR -LB- PLAN SEE SHT.14

1338 1339 1340 1341 1342 1343 1344 1345 1346 1347 1348 1349 1350 1351 1352

240 230 220 210 200 190 180 170 160 150 140

$$$$SYSTEM$$$$
$$$$USERNAME$$$$
$$$$LOGINS$$$$

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5/28/99

-Y29LPD-

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License #: P-0999

PROJECT REFERENCE NO.	SHEET NO.
R-2829B	66
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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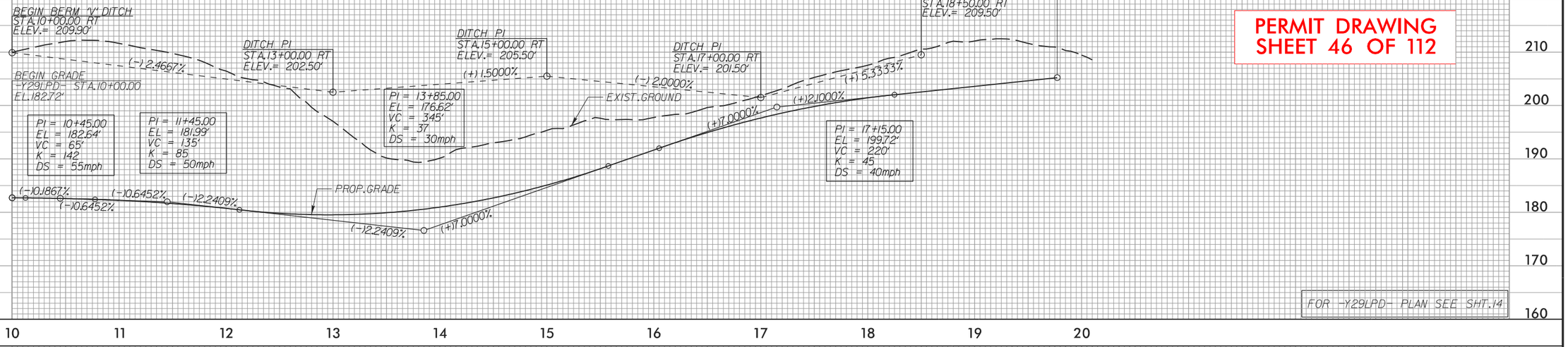
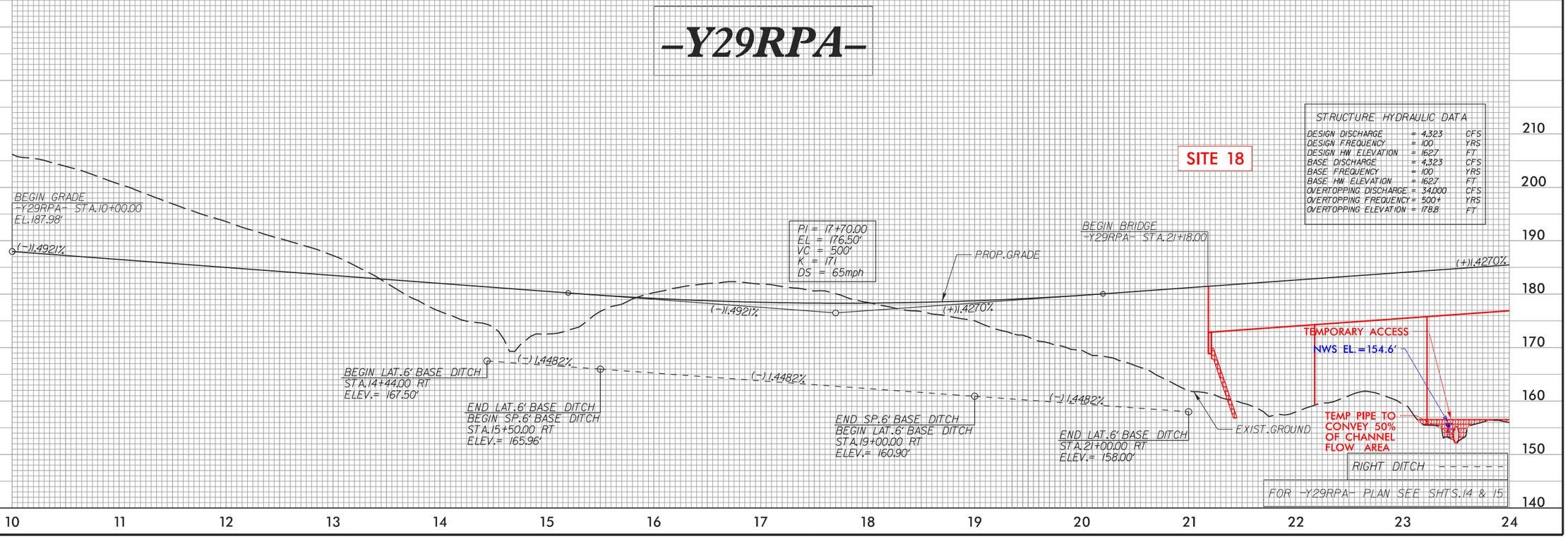
PERMIT DRAWING
SHEET 46 OF 112



-Y29RPA-



$$$$$$SYSTEM$$$$$$
$$$$$$USERNAME$$$$$$
$$$$$$DGN$$$$$$

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–Y29RPA–

PERMIT DRAWING
SHEET 47 OF 112

SITE 18

SITE 19

END BRIDGE
–Y29RPA– STA. 24+63.00

(+)1.4270%

TEMPORARY ACCESS

(+) 0.467%

END 2' BASE GRASS SWALE
STA. 25+12.00 RT
ELEV.= 154.50'

BEGIN 2' BASE GRASS SWALE
STA. 24+05.00 RT
ELEV.= 154.00'

PROP. GRADE

(+)1.4270%

(–)1.787%

PI = 31+20.00
EL = 195.76'
VC = 180'
K = 56
DS = 40mph

EXIST. GROUND

END GRADE
–Y29RPA– STA. 32+50.60=
–Y29– STA. 26+27.53
OFF.= 45.75' LT
EL. 193.43'

FOR –Y29RPA– PLAN SEE SHT. 14

–Y29RPD–

BEGIN GRADE
–Y29RPD– STA. 10+00.00
EL. 182.98'

PROP. GRADE

PI = 14+75.00
EL = 176.30'
VC = 360'
K = 98*
DS = 65mph

(–)1.4062%

*MEETS DRIVER COMFORT FOR 65 MPH (AASHTO EQ.3-52)

(–)1.4227%

EXIST. GROUND

BEGIN LAT. 2' BASE DITCH
STA. 11+80.00 LT
ELEV.= 172.30'

DITCH PI
STA. 14+00.00 LT
ELEV.= 163.00'

FOR –Y29RPD– PLAN SEE SHT. 14

–Y29RPD–

STRUCTURE HYDRAULIC DATA

DESIGN DISCHARGE	= 4,323	CFS
DESIGN FREQUENCY	= 100	YRS
DESIGN HW ELEVATION	= 165.1	FT
BASE DISCHARGE	= 4,323	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 165.1	FT
OVERTOPPING DISCHARGE	= 33,000	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 178.4	FT

PI = 14+75.00
EL = 176.30'
VC = 360'
K = 98*
DS = 65mph

BEGIN BRIDGE
–Y29RPD– STA. 16+55.00

(–)1.4062%

(+)2.2839%

*MEETS DRIVER COMFORT FOR 65 MPH (AASHTO EQ.3-52)

(–) 3.4286%

DITCH PI
STA. 14+00.00 LT
ELEV.= 163.00'

END LAT. 2' BASE DITCH
STA. 16+10.00 LT
ELEV.= 155.80'

SITE 18

E… 19+55.00

PI = 20+45.00
EL = 189.32'
VC = 150'
K = 680
DS = 80mph

(+)2.2839%

(+)2.0634%

TEMPORARY ACCESS

NWS EL.=156.9'

TEMP PIPE TO CONVEY 50% OF CHANNEL FLOW AREA

PROP. GRADE

EXIST. GROUND

END GRADE
–Y29RPD– STA. 27+97.30=
–Y29– STA. 38+84.66
OFF.= 33.55' LT
EL. 204.84'

(+)2.0634%

UNDERCUT

RIGHT DITCH

LEFT DITCH

FOR –Y29RPD– PLAN SEE SHT. 14

$$$$$$SYSTEM$$$$$$
$$$$$$USERNAME$$$$$$
$$$$$$DATE$$$$$$
$$$$$$TIME$$$$$$
$$$$$$DWG$$$$$$

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PROJECT REFERENCE NO.	SHEET NO.
R-2829B	67

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

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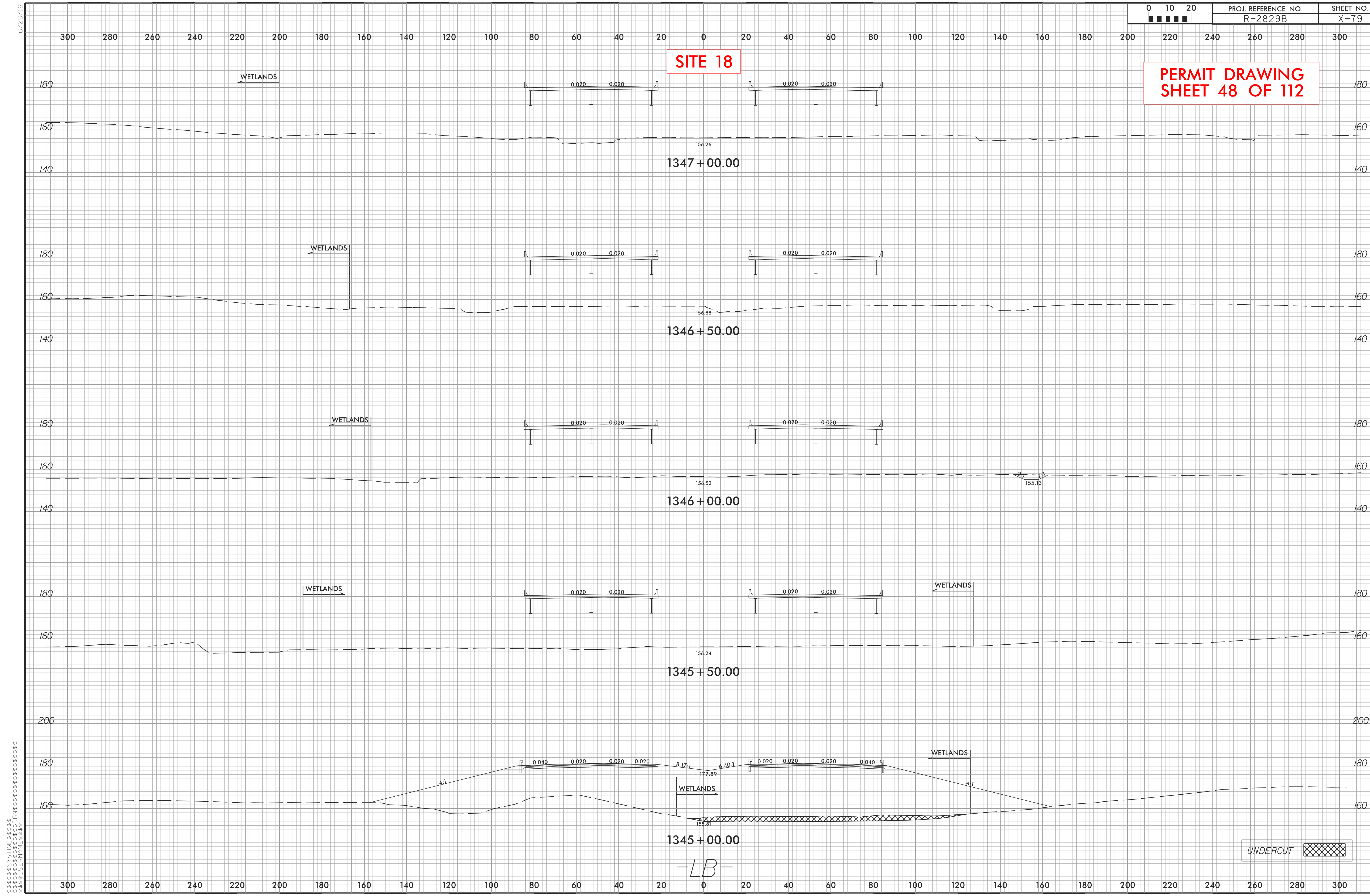

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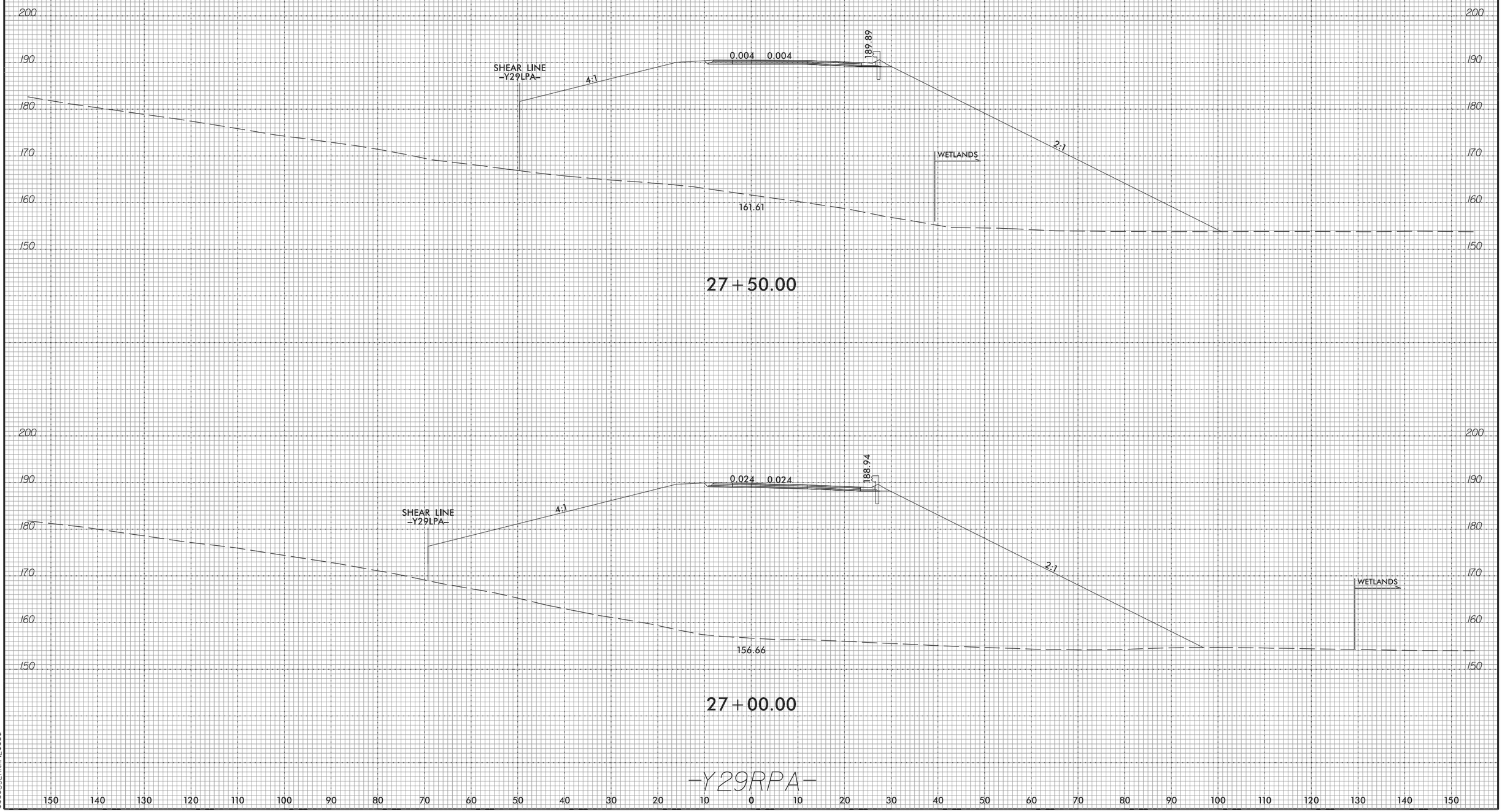
6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2829B	X-281

PERMIT DRAWING
SHEET 49 OF 112

SITE 17



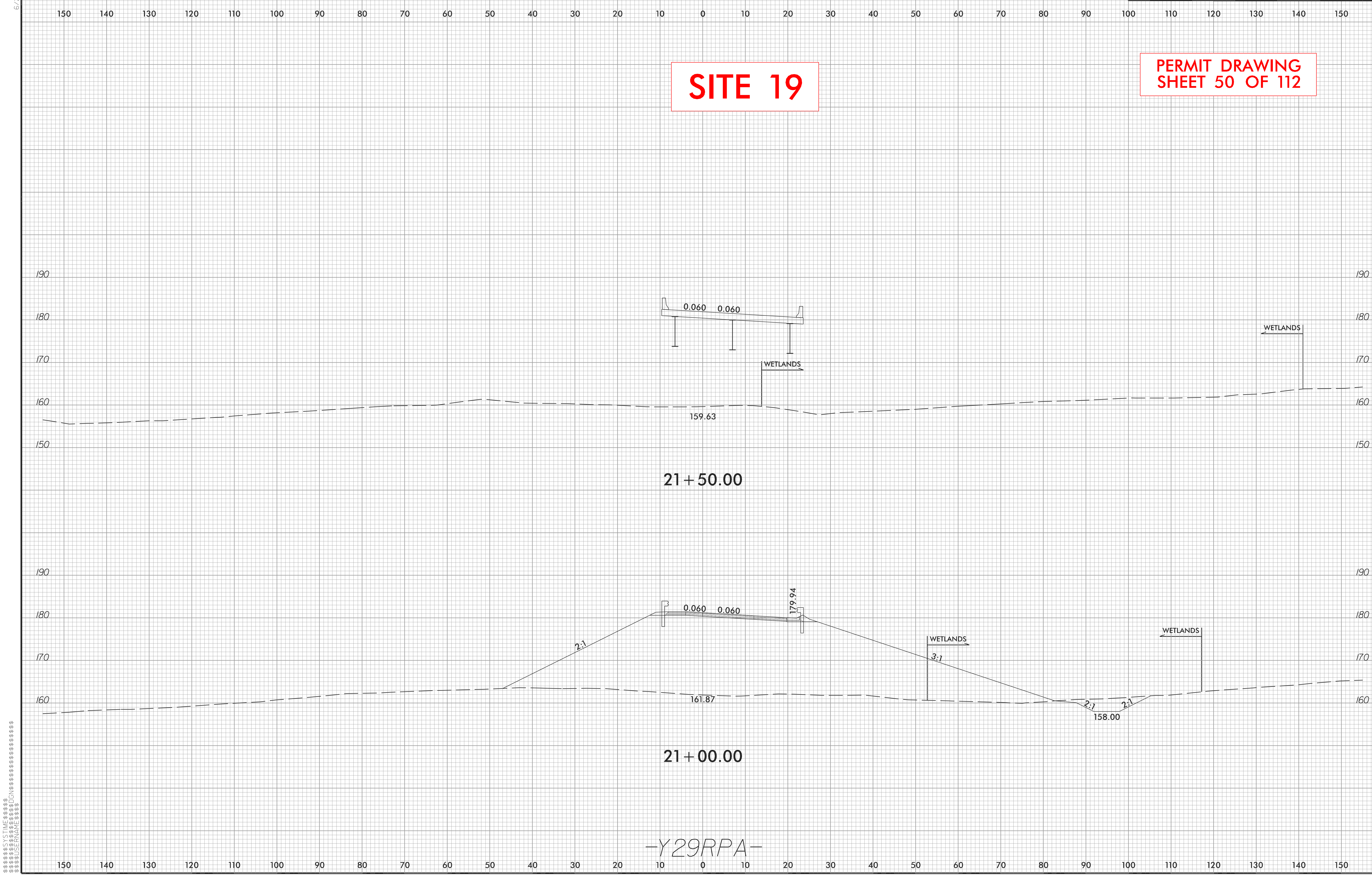
$$$$$$$$SYSTIME$$$$$$
$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$
$$$$$$USERNAME$$$$

Submitted November 13, 2024

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2829B	X-275

SITE 19

PERMIT DRAWING
SHEET 50 OF 112



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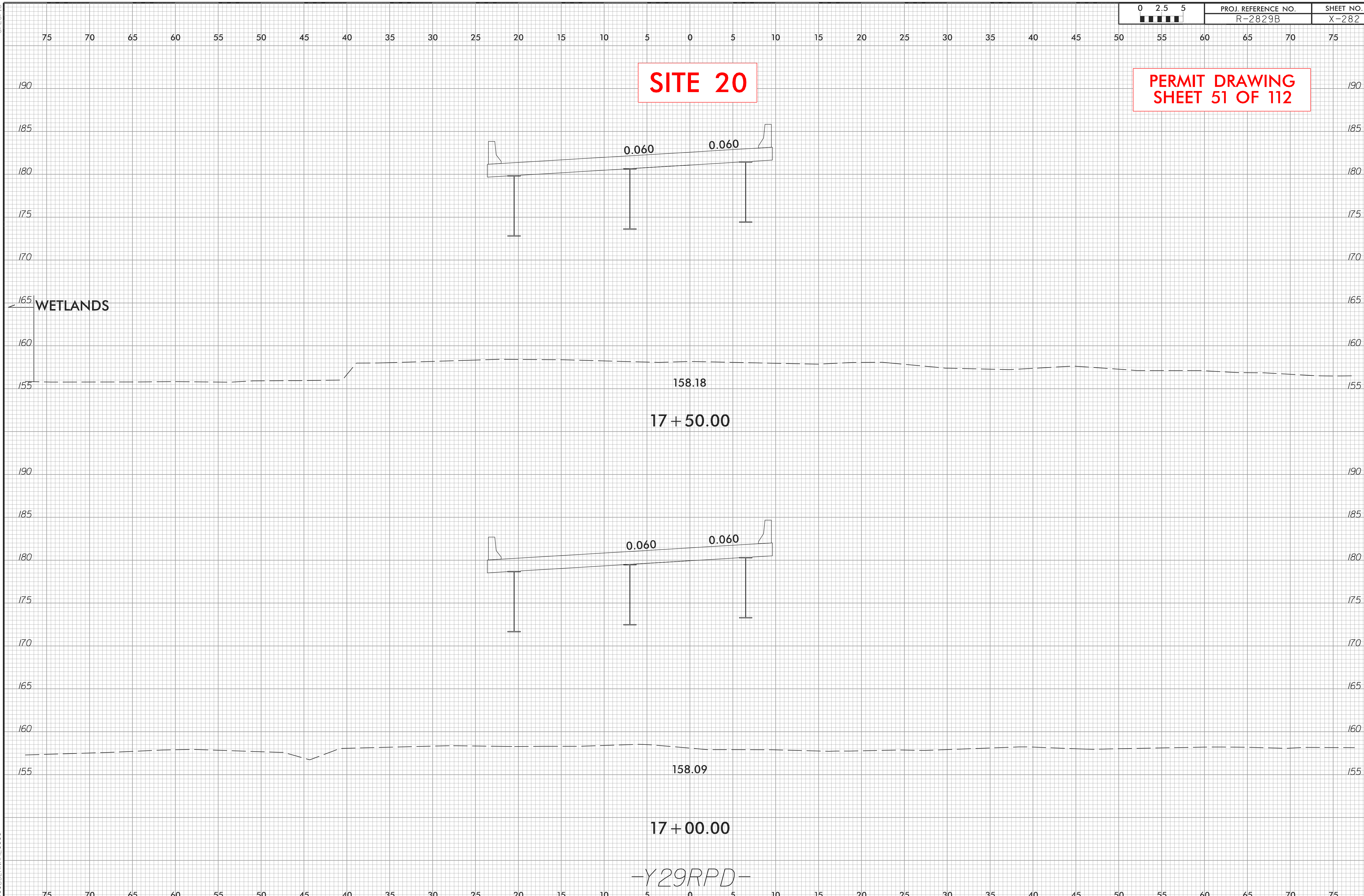
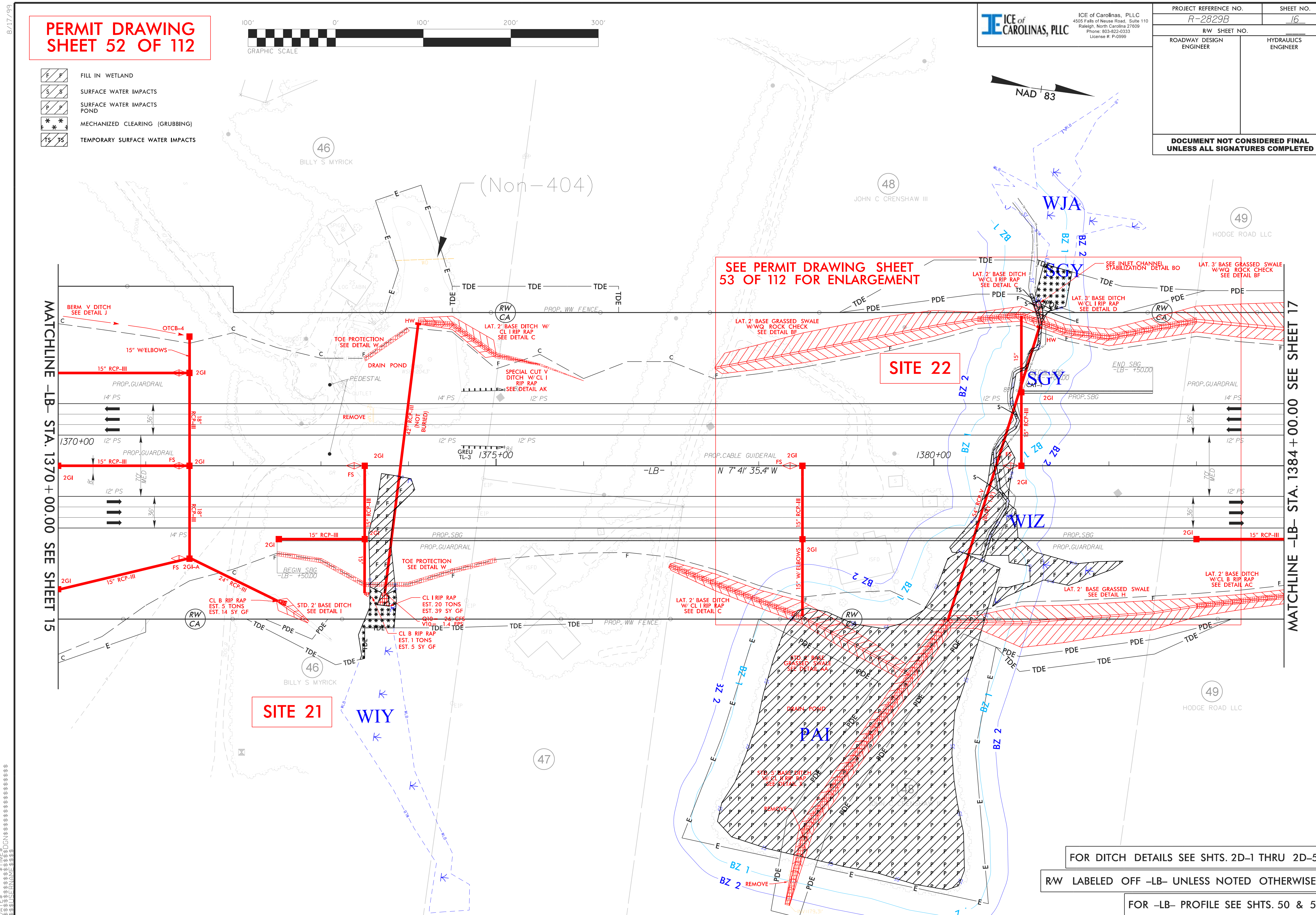
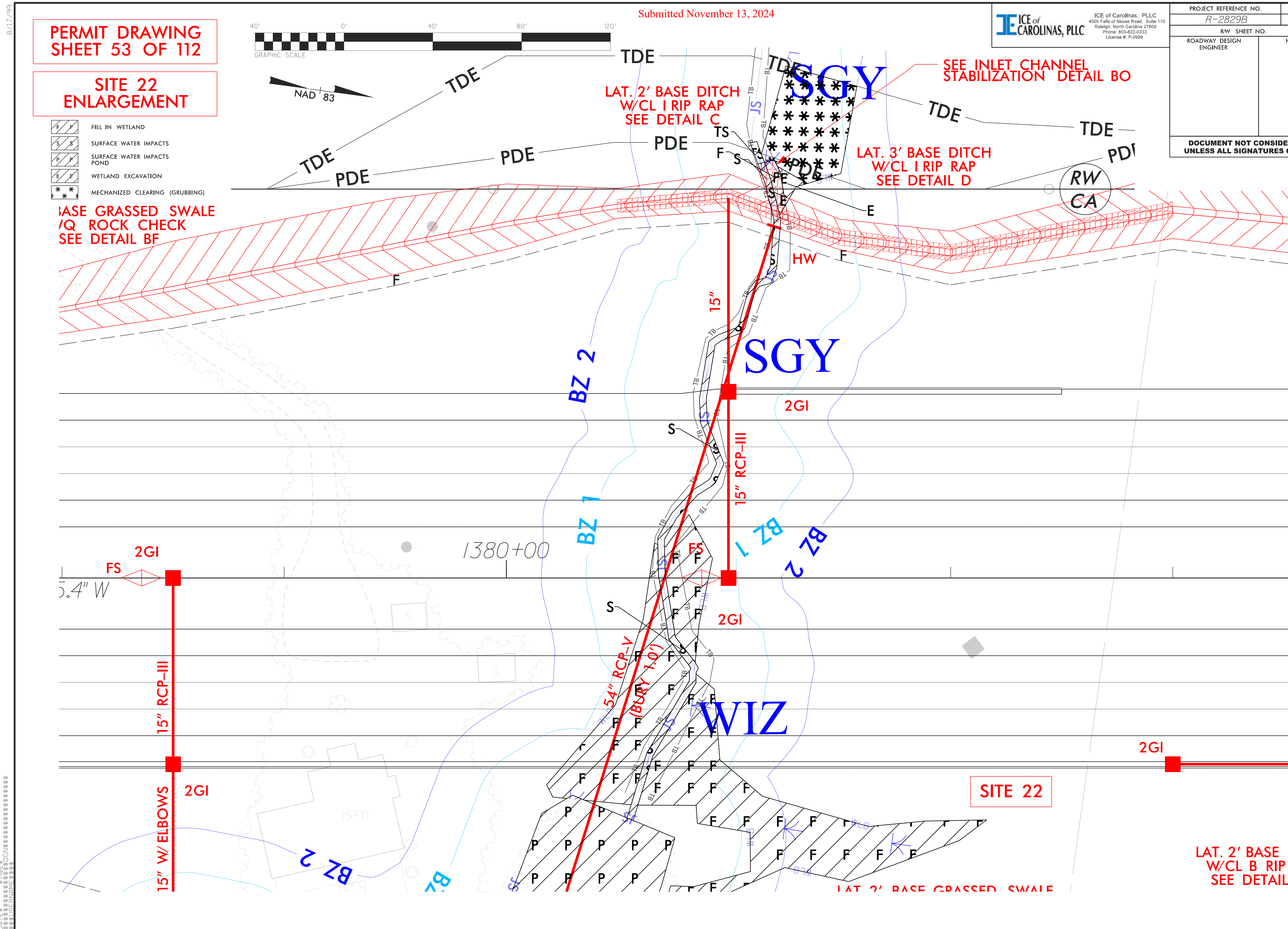


Submitted November 13, 2024





Submitted November 13, 2024
PERMIT DRAWING
SHEET 53 OF 112
SITE 22
ENLARGEMENT
FILL IN WETLAND
SURFACE WATER IMPACTS
SURFACE WATER IMPACTS POND
WETLAND EXCAVATION
MECHANIZED CLEARING (GRUBBING)
GRAPHIC SCALE
40′ 0′ 40′ 80′ 120′
NAD 83
ICE of CAROLINAS, PLLC
ICE of Carolinas, PLLC
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Raleigh, North Carolina 27609
Phone: 803-822-0333
License #: P-0999
PROJECT REFERENCE NO.
R-2829B
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
DOCUMENT NOT CONSIDERED
UNLESS ALL SIGNATURES COM
TDE
PDE
LAT. 2′ BASE DITCH
W/CL I RIP RAP
SEE DETAIL C
SEE INLET CHANNEL
STABILIZATION DETAIL BO
LAT. 3′ BASE DITCH
W/CL I RIP RAP
SEE DETAIL D
RW
CA
BASE GRASSED SWALE
WQ ROCK CHECK
SEE DETAIL BF
SGY
HW
15″
15″ RCP–III
2GI
FS
BZ 1
BZ 2
1380+00
5.4″ W
54″ RCP–V
(BURY 1.0′)
WIZ
15″ W/ ELBOWS
SITE 22
ISFD
LAT. 2′ BASE GRASSED SWALE
LAT. 2′ BASE DI
W/CL B RIP R
SEE DETAIL A
8/17/99
$$$$$$SYSTIME$$$$$$
$DATE$
$TIME$
$$$$$$$$$$$$DGN$$$$$$$$$$$$
$$$USERNAME$$$$

8/17/99

PERMIT DRAWING SHEET 54 OF 112

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

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

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License #: P-0999

PROJECT REFERENCE NO.	SHEET NO.
R-2829B	16
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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NAD 83

(Non-404)

WJA

SGY

WIZ

WIY

PAI

SEE PERMIT DRAWING SHEET 53 OF 112 FOR ENLARGEMENT

SITE 22

SITE 21

MATCHLINE –LB– STA. 1370+00.00 SEE SHEET 15

MATCHLINE –LB– STA. 1384+00.00 SEE SHEET 17

–LB– N 7° 41' 35.4" W

1370+00 1375+00 1380+00

BEAM V DITCH SEE DETAIL J

OTCB-4

15" W/ELBOWS

15" RCP-III

2GI

TOE PROTECTION SEE DETAIL W

DRAIN POND

REMOVE

42" RCP-III (NOT BURIED)

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

SPECIAL CUT V DITCH W/ CL I RIP RAP SEE DETAIL AK

LAT. 2' BASE GRASSED SWALE W/WQ ROCK CHECK SEE DETAIL BF

SEE INLET CHANNEL STABILIZATION DETAIL BO

LAT. 3' BASE GRASSED SWALE W/WQ ROCK CHECK SEE DETAIL BF

LAT. 3' BASE DITCH W/CL I RIP RAP SEE DETAIL D

FS 2GI-A

24" RCP-III

CL B RIP RAP EST. 5 TONS EST. 14 SY GF

STD. 2' BASE DITCH SEE DETAIL I

CL I RIP RAP EST. 20 TONS EST. 39 SY GF

CL B RIP RAP EST. 1 TONS EST. 5 SY GF

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

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

LAT. 2' BASE GRASSED SWALE SEE DETAIL H

STD. B RIP RAP GRASSED SWALE SEE DETAIL AA

STD. 2' BASE DITCH W/ CL II RIP RAP SEE DETAIL XP

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

RW LABELED OFF –LB– UNLESS NOTED OTHERWISE.

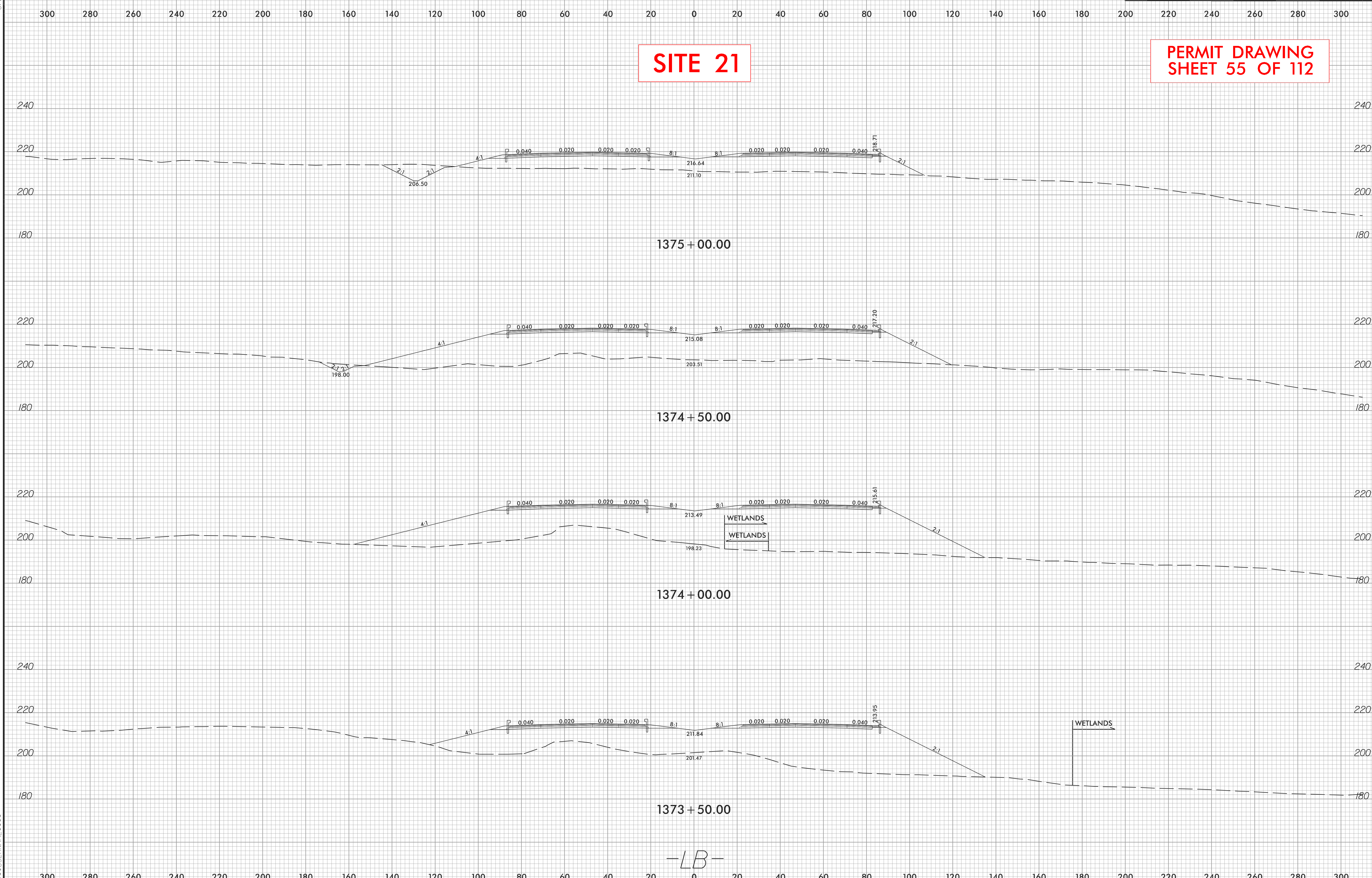
FOR –LB– PROFILE SEE SHTS. 50 & 51

$DATE$ $TIME$
$USERNAME$ DGN

PROJ. REFERENCE NO.	SHEET NO.
R-2829B	X-92

SITE 21

PERMIT DRAWING
SHEET 55 OF 112



Submitted November 13, 2024

6/23/16

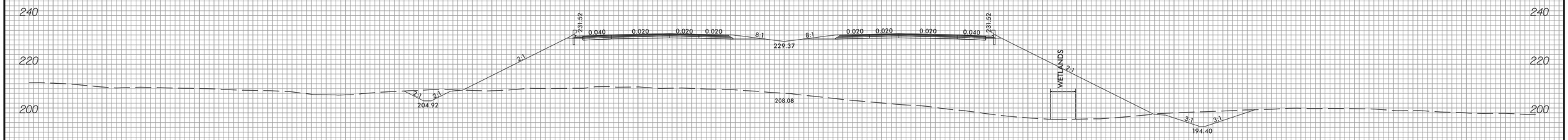
0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	R-2829B	X-96

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

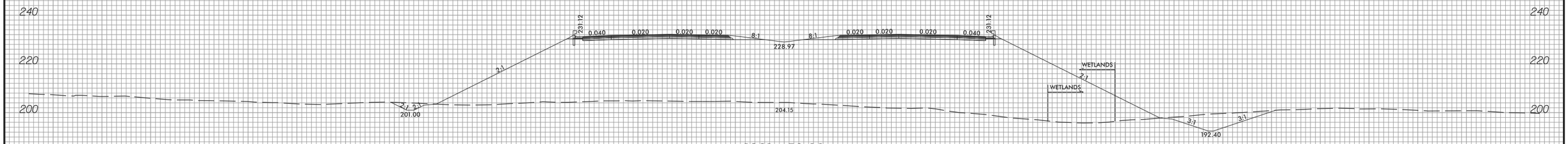
SITE 22

PERMIT DRAWING
SHEET 56 OF 112

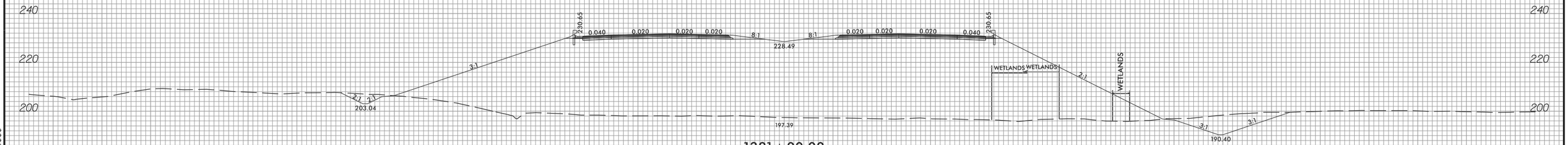
1382+50.00



1382+00.00



1381+50.00



1381+00.00

—LB—

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

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

8/17/99

PERMIT DRAWING SHEET 57 OF 112

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

WETLAND EXCAVATION
SURFACE WATER IMPACTS POND
MECHANIZED CLEARING (GRUBBING)

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	17
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

49 HODGE ROAD LLC

SITE 23

MATCHLINE –LB– STA. 1384+00.00 SEE SHEET 16

MATCHLINE –LB– STA. 1398+00.00 SEE SHEET 18

1385+00 1390+00 1395+00

LAT. 3' BASE GRASSED SWALE W/WQ ROCK CHECK SEE DETAIL BF

LAT. 3' BASE DITCH W/CL B RIP RAP SEE DETAIL AG

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

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

LAT. 5' BASE DITCH W/CL B RIP RAP SEE DETAIL AG

LAT. 3' BASE DITCH (SEE DETAIL BF)

DRAIN. POND

CL B RIP RAP ESP. 3 TONS PER SY OF

18" RCP-III

15" RCP-III

24" RCP-III

15" W/ELBOWS

2GI

2GI-A

FS

PROP. NOISE WALL *90

PROP. NOISE WALL *91

BEGIN NW*90 –LB– 187.57

N 7°41'35" W –LB–

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

GRADE TO DRAIN

TOE PROTECTION SEE DETAIL W

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

Q10= 60 CFS
V10= 2.0 FPS

WJB

SGZ

BZ 1

BZ 2

BZ

PAK

49 HODGE ROAD LLC

FOR DITCH DETAILS SEE SHTS. 2D–1 THRU 2D–5 | R/W LABELED OFF –LB– UNLESS NOTED OTHERWISE. | FOR –LB– PROFILE SEE SHT. 51

$DATE$ $TIME$
$USERNAME$ DGN

Submitted November 13, 2024

PERMIT DRAWING
SHEET 58 OF 112

PROJECT REFERENCE NO.	SHEET NO.
R-2829B	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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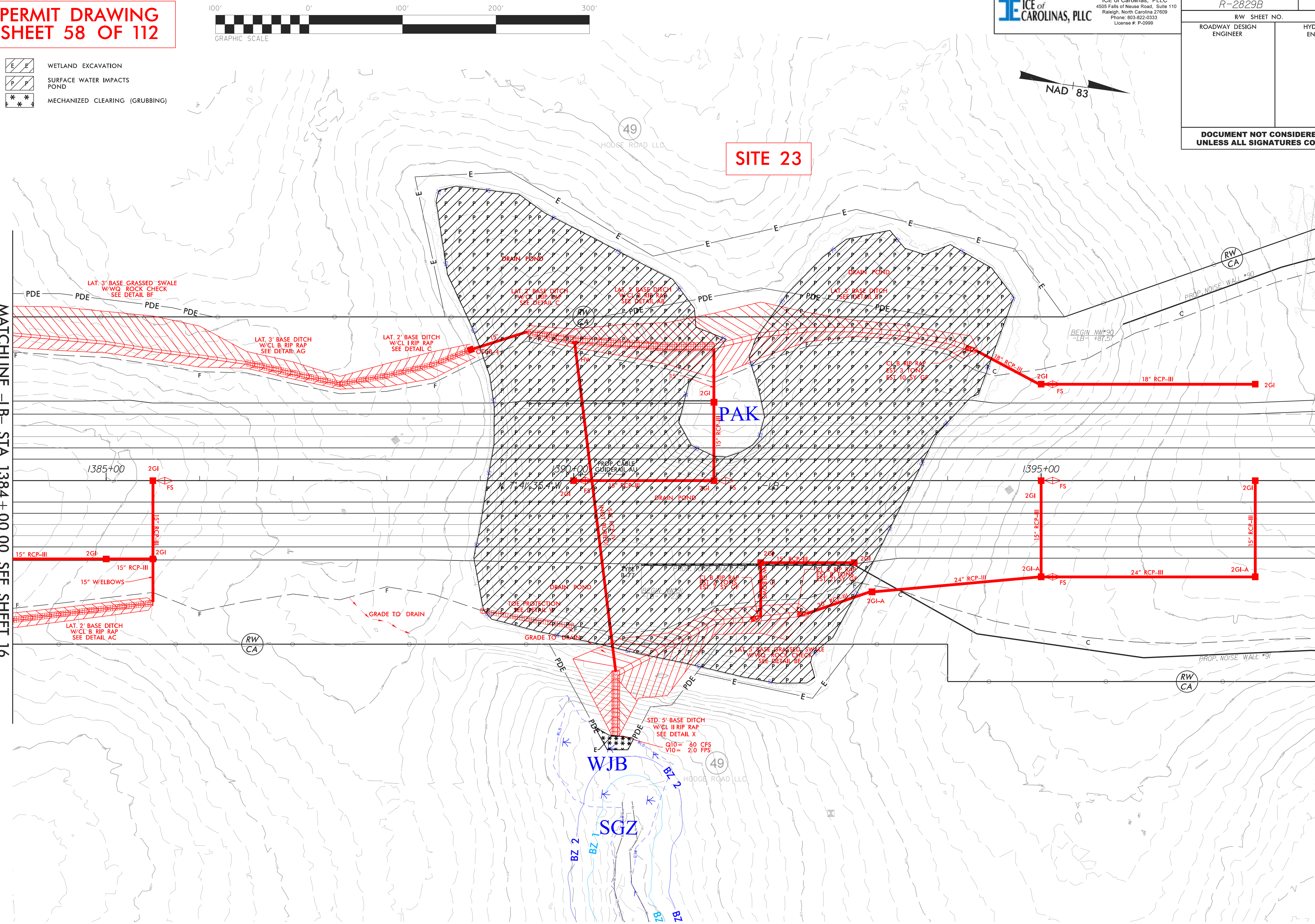
4505 Falls of Neuse Road, Suite 110
Raleigh, North Carolina 27609
Phone: 803-822-0333
License #: P-0999

WETLAND EXCAVATION
SURFACE WATER IMPACTS POND
MECHANIZED CLEARING (GRUBBING)



FOR DITCH DETAILS SEE SHTS. 2D-1 THRU 2D-5 | R/W LABELED OFF -LB- UNLESS NOTED OTHERWISE. | FOR -LB- PROFILE SEE SHT. 51

8/17/99
$$$$DATE$$$$ $$$$TIME$$$$ $$$$USERNAME$$$$ $$$$DGN$$$$

Submitted November 13, 2024

6/23/16

0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	R-2829B	X-100

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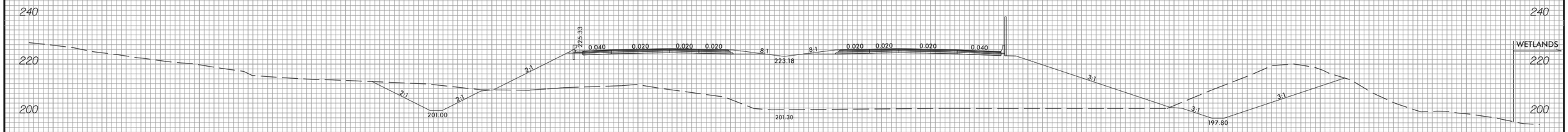
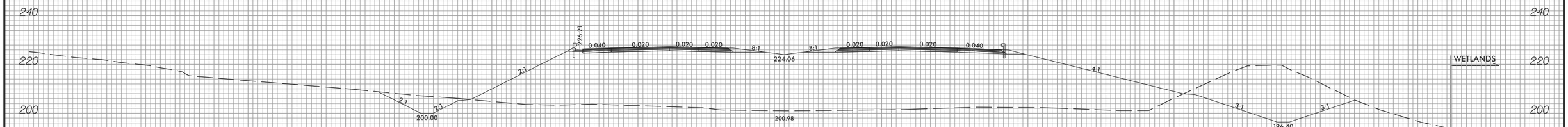
SITE 23

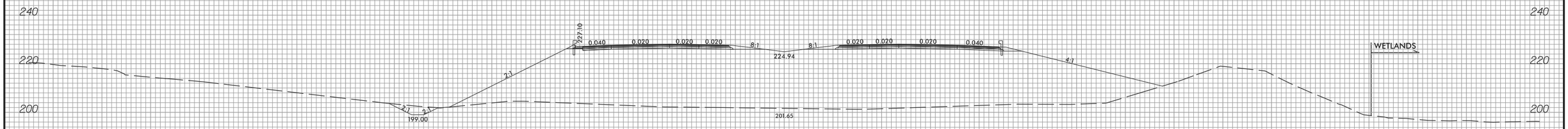
PERMIT DRAWING SHEET 59 OF 112



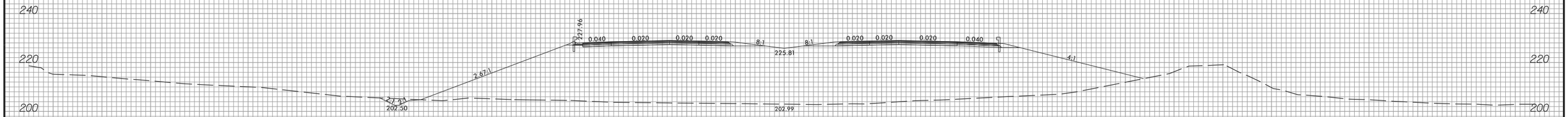
1391+00.00



1390+50.00



1390+00.00



1389+50.00

—LB—

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

Submitted November 13, 2024

8/17/99

PERMIT DRAWING SHEET 60 OF 112

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

F F	FILL IN WETLAND
S S	SURFACE WATER IMPACTS
* * *	MECHANIZED CLEARING (GRUBBING)
TS TS	TEMPORARY SURFACE WATER IMPACTS
E E	WETLAND EXCAVATION

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	18
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

WJE

(404, Non-buffered)

PAJ

SITE 24

-Y30RPB-ST Sta. 10+00.00=
-LB- POT Sta. 1405+77.34
RETAIN
OFF=71' LT

-Y30H-POT Sta. 10+00.00
BEGIN CONSTRUCTION

-Y30H-PC Sta. 10+76.98

-Y30H-PT Sta. 11+24.52

-Y30H-POT Sta. 15+28.93
S 82° 13' 35.1" W

-Y30H-PT Sta. 14+92.10

-Y30H-PC Sta. 14+11.09

-Y30H-PT Sta. 13+49.34

-Y30H-PC Sta. 12+82.67

-Y30H-
N 20° 13' 35.5" W

N 9° 19' 50.0" W

N 4° 56' 50.4" W

-Y30RPB-SC Sta. 12+03.00

-Y30RPB-

-Y30RPC-

N 3° 35' 35.9" W

-Y30RPC-PC Sta. 15+00.00

-Y30RPC-POT Sta. 10+00.00=
-LB- POT Sta. 1404+77.34
OFF=71' RT
△=4°06' 00"

WJC

WJD

SHA

N 7° 41' 35.4" W

-LB-

1400+00

1405+00

1410+00

15+00

CHARLES & GWENDOLYN CAPS

TANYIA REINA

JOSE CERVANTES-ISLAS

VALLEY WOODS MOBILE ESTATES

HODGE ROAD LLC

49

50

51

RW CA

PROP. NOISE WALL *90

PROP. NOISE WALL *91

48" WW FENCE

CL B RIP RAP
EST. 2 TONS
EST. 7 SY GF

Q10= 5.4 CFS
V10= 1.0 FPS

2GI

15" RCP-III

Q10= 1.3 CFS
V10= 0.6 FPS
TOE PROTECTION

SP. CUT DITCH
SEE DETAIL S

38 LF OF INLET
CHANNEL IMPROVEMENTS
SEE DETAIL NC540 1404+74
RETAIN

LAT. 2' BASE DITCH
SEE DETAIL A

GRADE TO DRAIN

Q10= 5.0 CFS
V10= 1.3 FPS

JB w/MH

18" RCP-III

15" WW GROOVE

LAT. 3' BASE DITCH
SEE DETAIL D

LAT. 2' BASE DITCH
SEE DETAIL AC

FILL IN EXISTING CHANNEL

70 LF OF OUTLET
CHANNEL IMPROVEMENTS
SEE DETAIL NC540 1404+74

PDE
TDE
TS

BZ 1
BZ 2

PUE

REMOVE

MATCHLINE -LB- STA. 1398+00.00 SEE SHEET 17

MATCHLINE -LB- STA. 1412+00.00 SEE SHEET 19

MATCHLINE -Y30RPC- STA. 17+00.00 SEE SHEET 19

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

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

FOR -Y30RPB- CURVE DATA SEE SHT. 3A-2
FOR -Y30RPC- CURVE DATA SEE SHT. 3A-2
FOR -Y30H- CURVE DATA SEE SHT. 3A-2

FOR -LB- PROFILE SEE SHTS. 51 & 52
FOR -Y30RPB- PROFILE SEE SHT. 71
FOR -Y30RPC- PROFILE SEE SHT. 72
FOR -Y30H- PROFILE SEE SHT. 76

$DATE$ $TIME$
$USERNAME$ DGN

Submitted November 13, 2024

8/17/99

PERMIT DRAWING SHEET 61 OF 112

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

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

ICE of CAROLINAS, PLLC
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Raleigh, North Carolina 27609
Phone: 803-822-0333
License #: P-0996

PROJECT REFERENCE NO.	SHEET NO.
R-2829B	18
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

WJE

(404, Non-buffered)

PAJ

SITE 24

SHA

WJD

WJC

-Y30H-POT Sta. 10+00.00
BEGIN CONSTRUCTION

-Y30H-PC Sta. 10+76.98

-Y30H-PT Sta. 11+24.52

-Y30H-POT Sta. 15+28.93
S 82° 13' 35.1" W

-Y30H-PT Sta. 14+92.10

-Y30H-PC Sta. 14+11.09

-Y30H-PT Sta. 13+49.34

-Y30H-PC Sta. 12+82.67

-Y30RPB-ST Sta. 10+00.00=
-LB- POT Sta. 1405+77.34
RETAIN
OFF=71' LT

-Y30RPB-SC Sta. 12+03.00

-Y30RPC-POT Sta. 10+00.00=
-LB- POT Sta. 1404+77.34
OFF=71' RT
Δ=406° 00'

-Y30RPC-PC Sta. 15+00.00

N 9° 19' 50.0" W

N 20° 13' 35.5" W

N 4° 56' 50.4" W

N 7° 41' 35.4" W

N 3° 35' 35.9" W

38 LF OF INLET CHANNEL IMPROVEMENTS SEE DETAIL NCS40 1404+74 RETAIN

70 LF OF OUTLET CHANNEL IMPROVEMENTS SEE DETAIL NCS40 1404+74

CL B RIP RAP EST. 2 TONS EST. 7 SY GF

SP. CUT DITCH SEE DETAIL S

LAT. 2' BASE DITCH SEE DETAIL A

LAT. 3' BASE DITCH SEE DETAIL D

LAT. 2' BASE DITCH SEE DETAIL AC

FILL IN EXISTING CHANNEL

GRADE TO DRAIN

REMOVE

Q10= 5.4 CFS V10= 1.0 FPS

Q10= 1.3 CFS V10= 0.6 FPS

Q10= 5.0 CFS V10= 1.3 FPS

TOE PROTECTION

JB w/MH

PROP. NOISE WALL #9

PROP. NOISE WALL #90

PROP. NOISE WALL #91

2GI

15" RCP-III

18" RCP-III

MATCHLINE -LB- STA. 1398+00.00 SEE SHEET 17

MATCHLINE -LB- STA. 1412+00.00 SEE SHEET 19

MATCHLINE -Y30RPC- STA. 17+00.00 SEE SHEET 19

1400+00

1410+00

15+00

CHARLES & GWENDOLYN TAPP

TANYIA REINA

VALLEY WOODS MOBILE ESTATES

RODGE ROAD LLC

50

51

49

$DATE$ $TIME$
$USERNAME$ DGN

	FOR DITCH DETAILS SEE SHTS. 2D-1 THRU 2D-5	R/W LABELED OFF -LB- UNLESS NOTED OTHERWISE.	FOR -Y30RPB- CURVE DATA SEE SHT. 3A-2 FOR -Y30RPC- CURVE DATA SEE SHT. 3A-2 FOR -Y30H- CURVE DATA SEE SHT. 3A-2	FOR -LB- PROFILE SEE SHTS. 51 & 52 FOR -Y30RPB- PROFILE SEE SHT. 71 FOR -Y30RPC- PROFILE SEE SHT. 72 FOR -Y30H- PROFILE SEE SHT. 76

ICE of Carolinas, PLLC
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Raleigh, North Carolina 27609
Phone: 803-822-0333
License #: P-0999

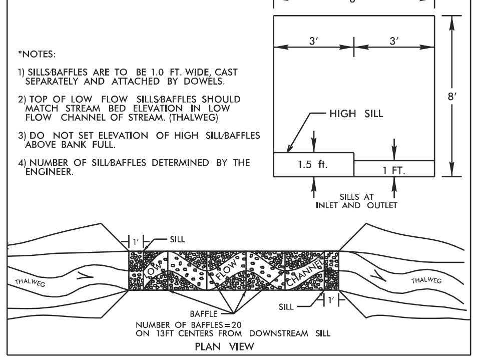
PROJECT REFERENCE NO. R-2829B
SHEET NO.
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 62 OF 112

SITE 24

DETAIL
(NOT TO SCALE)
SINGLE BARREL CULVERT LOW FLOW CHANNEL AND SILLS

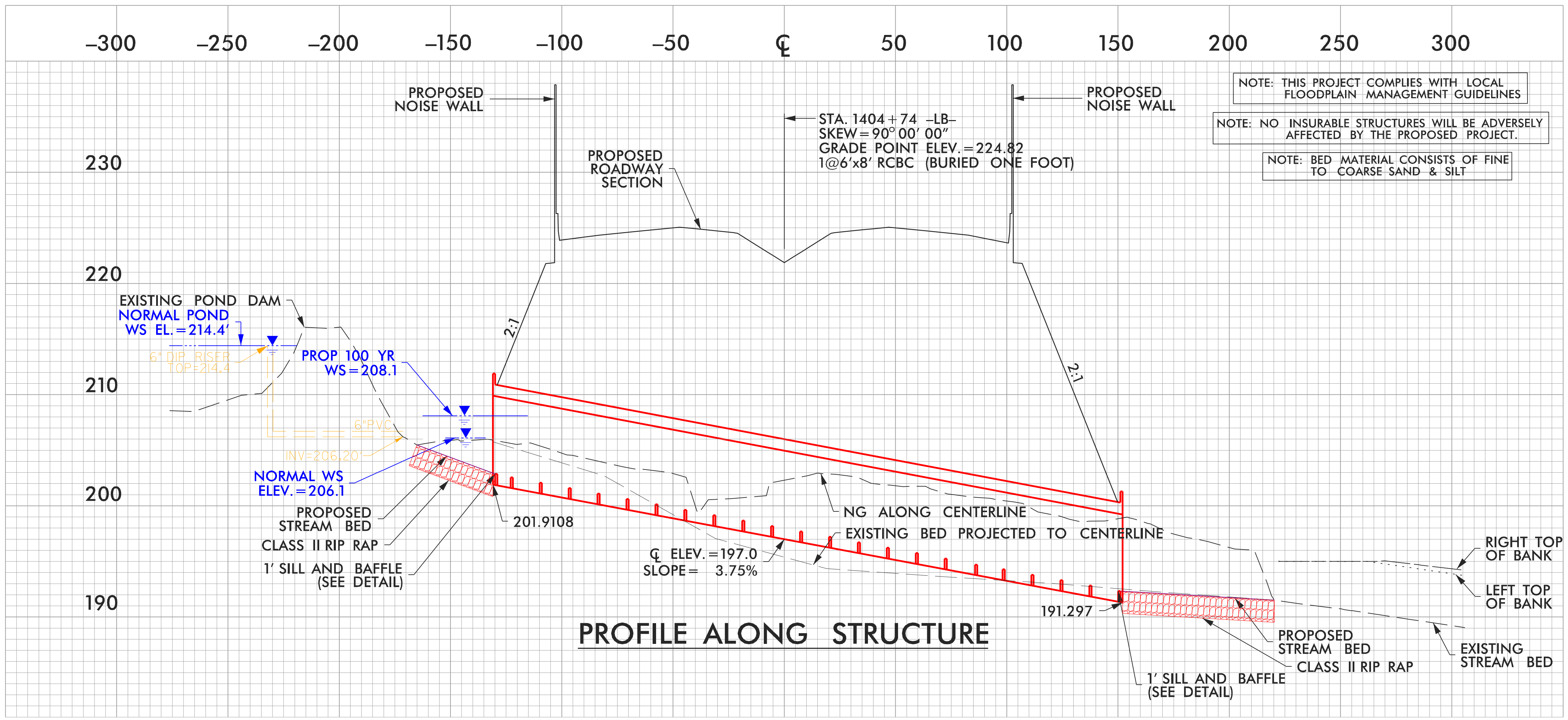
*NOTES:
1) SILLS/BAFFLES ARE TO BE 1.0 FT. WIDE, CAST SEPARATELY AND ATTACHED BY DOWELS.
2) TOP OF LOW FLOW SILLS/BAFFLES SHOULD MATCH STREAM BED ELEVATION IN LOW FLOW CHANNEL OF STREAM. (THALWEG)
3) DO NOT SET ELEVATION OF HIGH SILL/BAFFLES ABOVE BANK FULL.
4) NUMBER OF SILL/BAFFLES DETERMINED BY THE ENGINEER.



NOTE: THIS PROJECT COMPLIES WITH LOCAL FLOODPLAIN MANAGEMENT GUIDELINES

NOTE: NO INSURABLE STRUCTURES WILL BE ADVERSELY AFFECTED BY THE PROPOSED PROJECT.

NOTE: BED MATERIAL CONSISTS OF FINE TO COARSE SAND & SILT



PROFILE ALONG STRUCTURE

8/17/99
$$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$
$$$$USERNAME$$$$
$DATE$ $TIME$

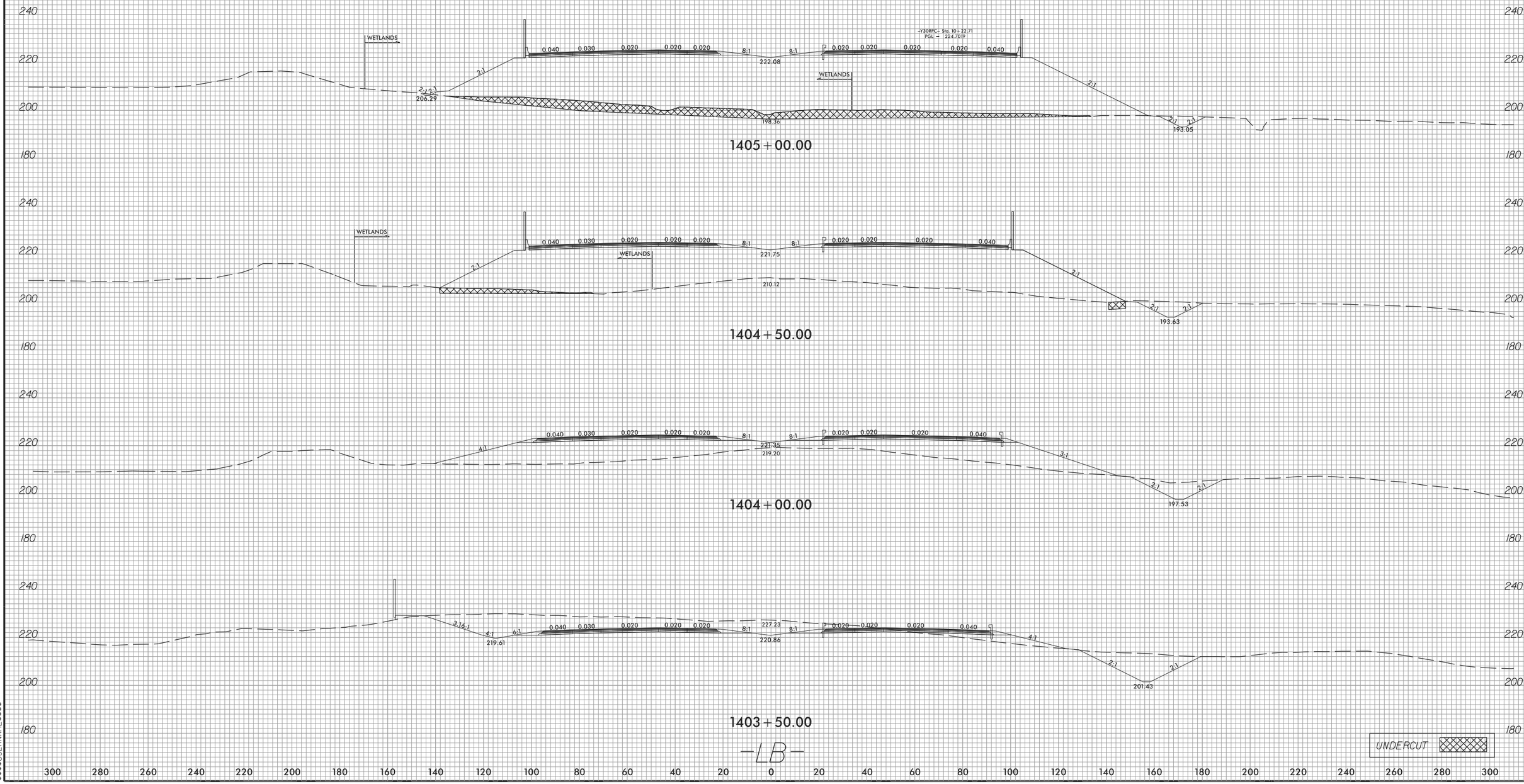
Submitted November 13, 2024

6/23/16

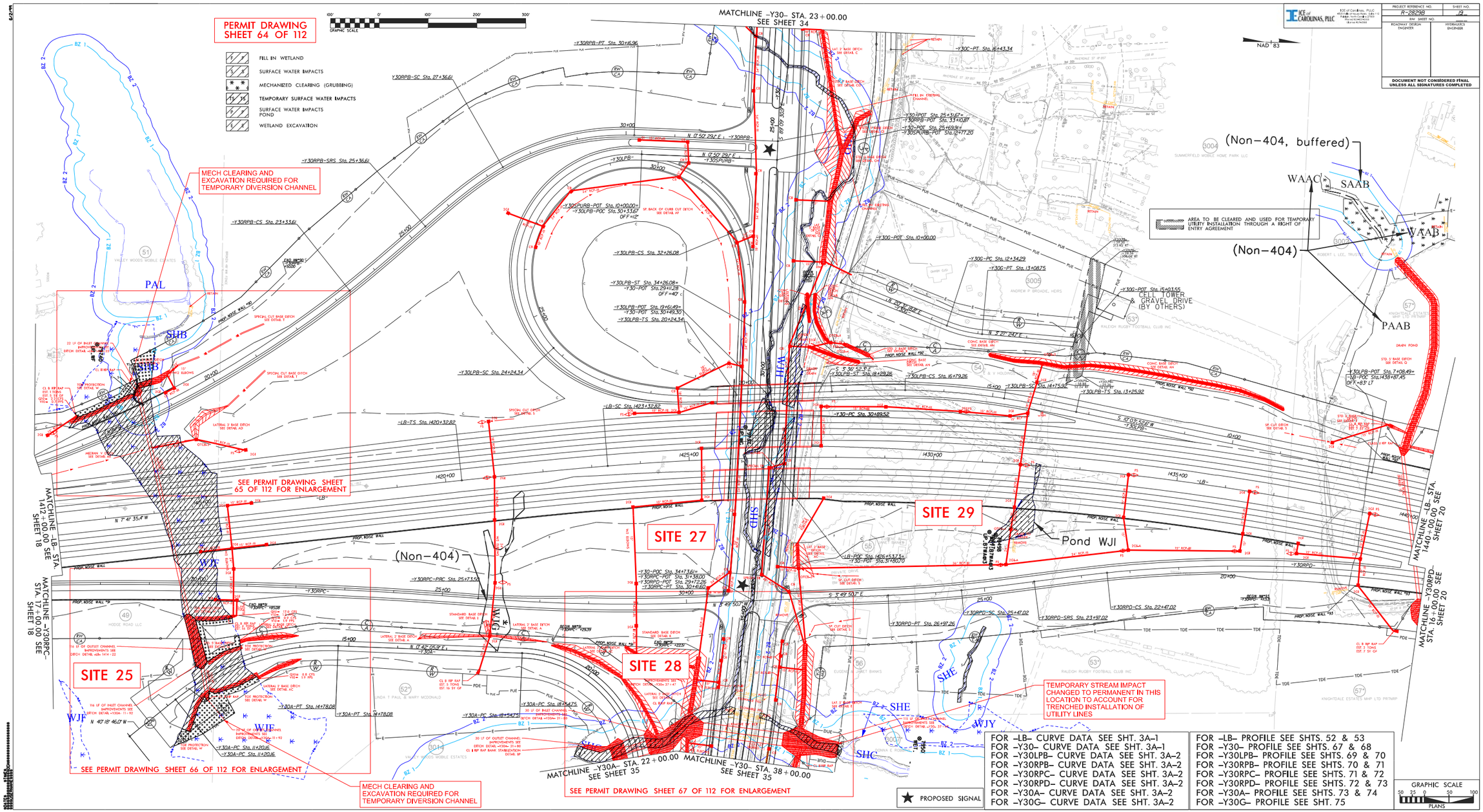
0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	R-2829B	X-107

SITE 24

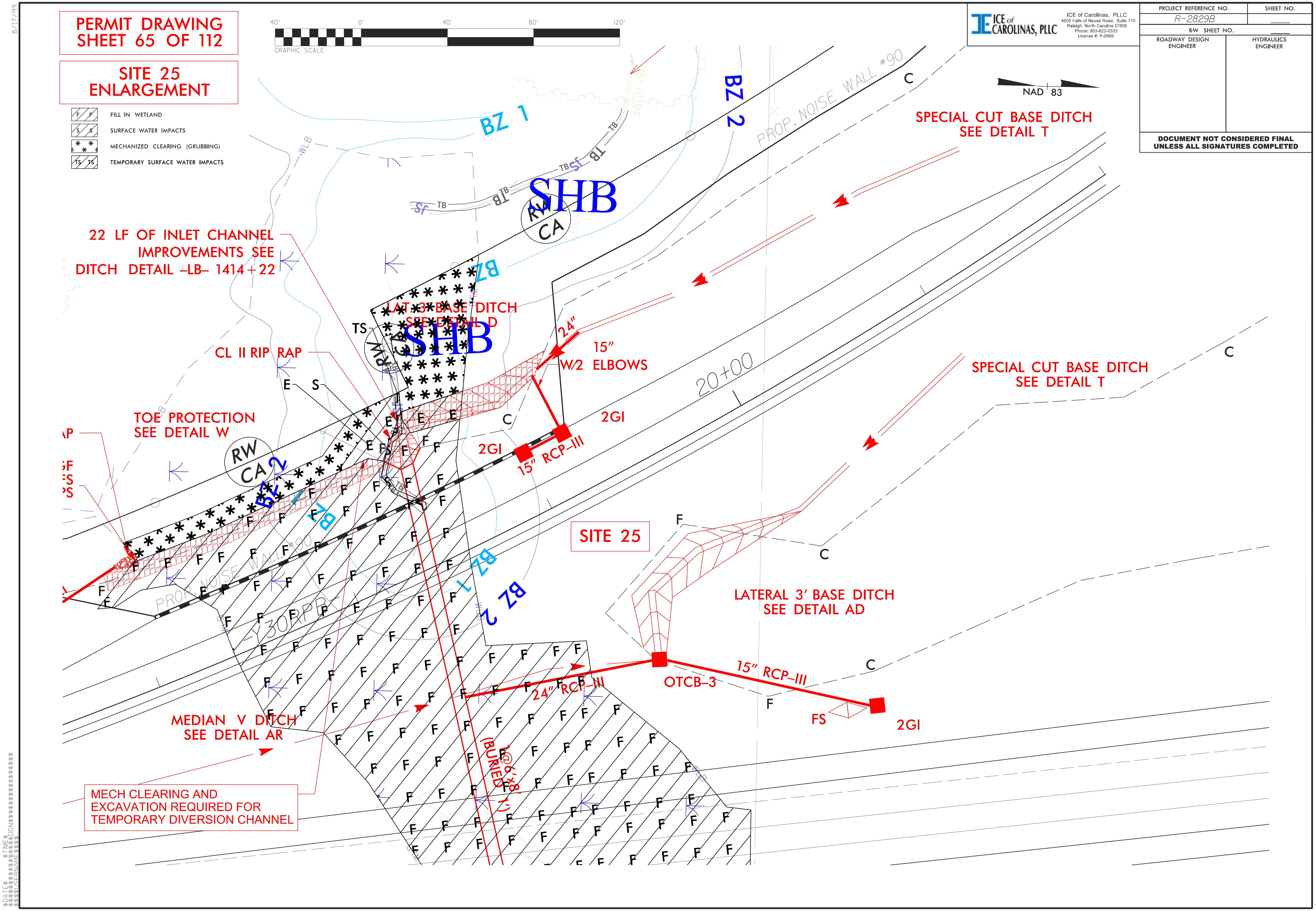
PERMIT DRAWING
SHEET 63 OF 112



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


PERMIT DRAWING
SHEET 64 OF 112
GRAPHIC SCALE
100' 0' 100' 200' 300'
FILL IN WETLAND
SURFACE WATER IMPACTS
MECHANIZED CLEARING (GRUBBING)
TEMPORARY SURFACE WATER IMPACTS
SURFACE WATER IMPACTS POND
WETLAND EXCAVATION
MATCHLINE -Y30- STA. 23+00.00 SEE SHEET 34
NAD 83
ICE of Carolinas, PLLC
PROJECT REFERENCE NO. R-2829B
SHEET NO. 12
RW SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
MECH CLEARING AND EXCAVATION REQUIRED FOR TEMPORARY DIVERSION CHANNEL
AREA TO BE CLEARED AND USED FOR TEMPORARY UTILITY INSTALLATION THROUGH A RIGHT OF ENTRY AGREEMENT
(Non-404, buffered)
(Non-404)
WAAC
SAAB
WAAB
PAAB
CELL TOWER & GRAVEL DRIVE (BY OTHERS)
SITE 25
SITE 27
SITE 28
SITE 29
Pond WJI
SEE PERMIT DRAWING SHEET 65 OF 112 FOR ENLARGEMENT
SEE PERMIT DRAWING SHEET 66 OF 112 FOR ENLARGEMENT
SEE PERMIT DRAWING SHEET 67 OF 112 FOR ENLARGEMENT
MATCHLINE -LB STA. 1417+00.00 SEE SHEET 18
MATCHLINE -Y30RPC- STA. 17+00.00 SEE SHEET 18
MATCHLINE -LB STA. 1440+00.00 SEE SHEET 20
MATCHLINE -Y30RPD- STA. 16+00.00 SEE SHEET 20
MATCHLINE -Y30A- STA. 22+00.00 SEE SHEET 35
MATCHLINE -Y30- STA. 38+00.00 SEE SHEET 35
TEMPORARY STREAM IMPACT CHANGED TO PERMANENT IN THIS LOCATION TO ACCOUNT FOR TRENCHED INSTALLATION OF UTILITY LINES
PROPOSED SIGNAL
FOR -LB- CURVE DATA SEE SHT. 3A-1
FOR -Y30- CURVE DATA SEE SHT. 3A-1
FOR -Y30LPB- CURVE DATA SEE SHT. 3A-2
FOR -Y30RPB- CURVE DATA SEE SHT. 3A-2
FOR -Y30RPC- CURVE DATA SEE SHT. 3A-2
FOR -Y30RPD- CURVE DATA SEE SHT. 3A-2
FOR -Y30A- CURVE DATA SEE SHT. 3A-2
FOR -Y30G- CURVE DATA SEE SHT. 3A-2
FOR -LB- PROFILE SEE SHTS. 52 & 53
FOR -Y30- PROFILE SEE SHTS. 67 & 68
FOR -Y30LPB- PROFILE SEE SHTS. 69 & 70
FOR -Y30RPB- PROFILE SEE SHTS. 70 & 71
FOR -Y30RPC- PROFILE SEE SHTS. 71 & 72
FOR -Y30RPD- PROFILE SEE SHTS. 72 & 73
FOR -Y30A- PROFILE SEE SHTS. 73 & 74
FOR -Y30G- PROFILE SEE SHT. 75
GRAPHIC SCALE
50 25 0 50 100
PLANS

Submitted November 13, 2024



Submitted November 13, 2024

8/17/99

PERMIT DRAWING SHEET 66 OF 112

SITE 25 ENLARGEMENT

E E WETLAND EXCAVATION

F F FILL IN WETLAND

* * * MECHANIZED CLEARING (GRUBBING)

40' 0' 40' 80' 120'

GRAPHIC SCALE

NAD 83

#91

49

HODGE ROAD LLC

F

20+00

4" RCP-III

2GI

2GI

15" RCP-III

15" W2 ELBOWS

END NW#91

-Y30RPC- +85.08

TOE PROTECTION SEE DETAIL W

Q10 = 17.0 CFS
V10 = 1.2 FPS
Q10 = 0.9 CFS
V10 = 1.9 FPS

CL B RIP RAP
EST. 4 TONS
EST. 16 SY GF

LATERAL 2' BASE DITCH SEE DETAIL AC

C A

RW CA

116 LF OF OUTLET CHANNEL IMPROVEMENTS SEE DITCH DETAIL -LB- 1414+22

SITE 25

TOE PROTECTION SEE DETAIL W

Q10 = 0.8 CFS
V10 = 1.9 FPS

LATERAL 2' BASE DITCH SEE DETAIL AC

MECH CLEARING AND EXCAVATION REQUIRED FOR TEMPORARY DIVERSION CHANNEL

116 LF OF INLET CHANNEL IMPROVEMENTS SEE DITCH DETAIL -Y30A- 11+92

WJF

N 40° 18' 46.0" W

CL B RIP RAP

TOE PROTECTION SEE DETAIL W

20 LF OF OUTLET CHANNEL IMPROVEMENTS SEE DITCH DETAIL -Y30A- 11+92

TOE PROTECTION SEE DETAIL W

-Y30A-PT Sta. 14+78.08

-Y30A-PC Sta. 11+20.16

WLB

PDE

RW

ICE of CAROLINAS, PLLC
ICE of Carolinas, PLLC
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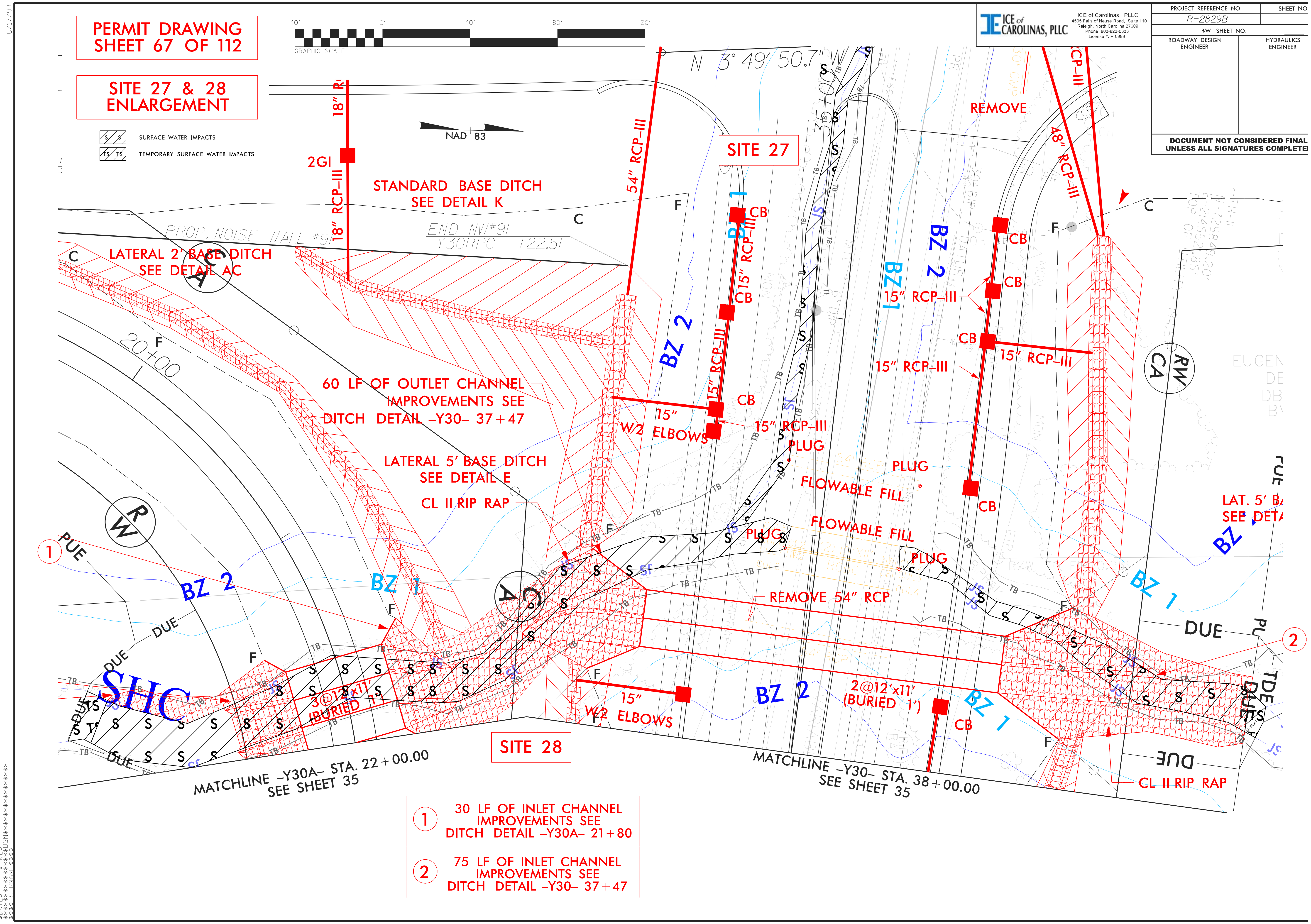
Raleigh, North Carolina 27609
Phone: 803-822-0333
License #: P-0999

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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


PERMIT DRAWING
SHEET 67 OF 112
SITE 27 & 28
ENLARGEMENT
SURFACE WATER IMPACTS
TEMPORARY SURFACE WATER IMPACTS
GRAPHIC SCALE
40' 0' 40' 80' 120'
NAD 83
ICE of CAROLINAS, PLLC
ICE of Carolinas, PLLC
4505 Falls of Neuse Road, Suite 110
Raleigh, North Carolina 27609
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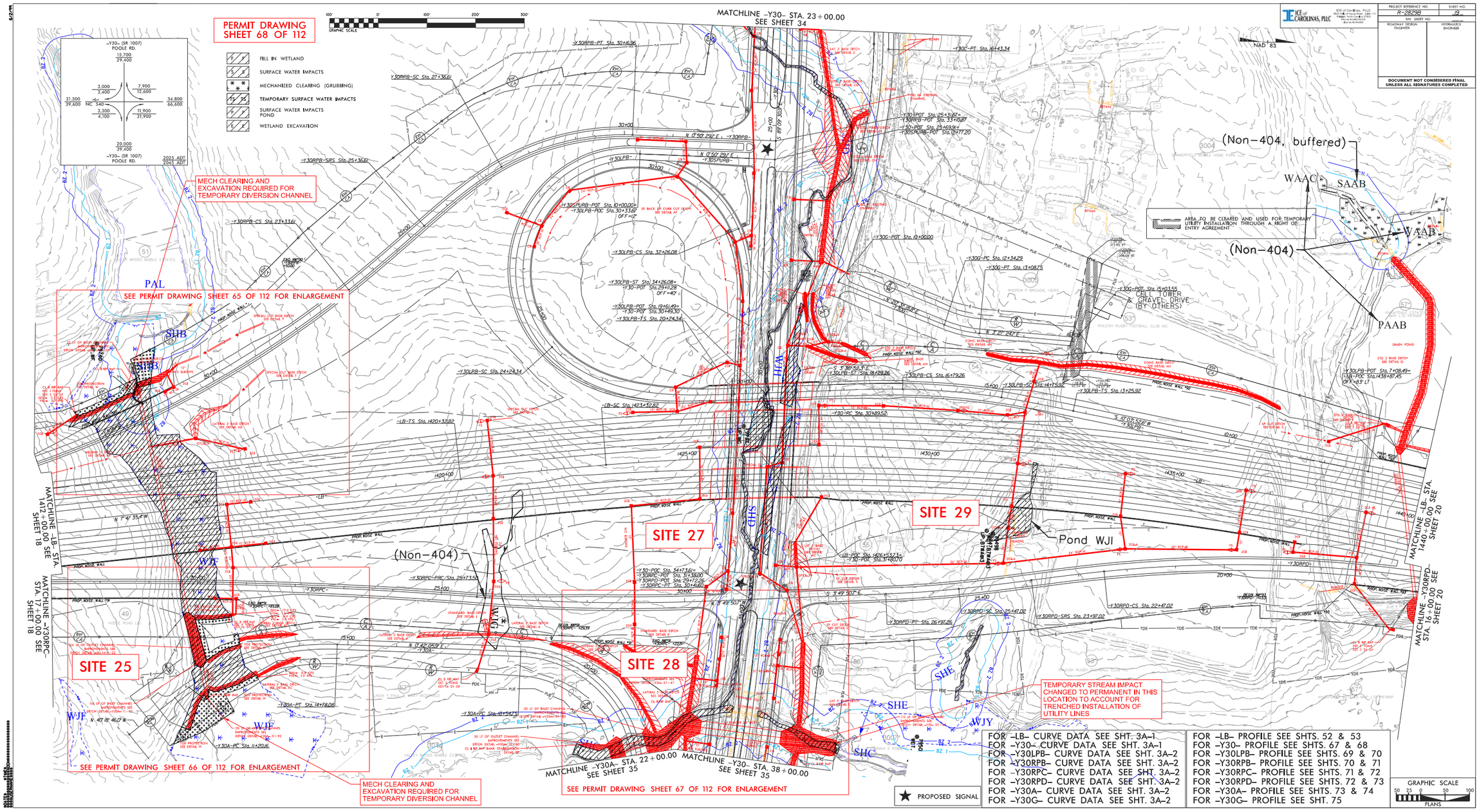
License #: P-0999
PROJECT REFERENCE NO.
R-2829B
SHEET NO
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
SITE 27
SITE 28
N 3° 49' 50.7" W
18" RCP-III
2GI
STANDARD BASE DITCH
SEE DETAIL K
54" RCP-III
48" RCP-III
REMOVE
PROP. NOISE WALL #91
END NW#91
-Y30RPC- +22.51
LATERAL 2' BASE DITCH
SEE DETAIL AC
60 LF OF OUTLET CHANNEL
IMPROVEMENTS SEE
DITCH DETAIL -Y30- 37+47
LATERAL 5' BASE DITCH
SEE DETAIL E
CL II RIP RAP
15" RCP-III
CB
15" W/2 ELBOWS
PLUG
FLOWABLE FILL
REMOVE 54" RCP
3@12'x11' (BURIED 1')
2@12'x11' (BURIED 1')
LAT. 5' BA
SEE DETA
BZ 1
BZ 2
SHC
PUE
DUE
TDE
MATCHLINE -Y30A- STA. 22+00.00
SEE SHEET 35
MATCHLINE -Y30- STA. 38+00.00
SEE SHEET 35
1 30 LF OF INLET CHANNEL IMPROVEMENTS SEE DITCH DETAIL -Y30A- 21+80
2 75 LF OF INLET CHANNEL IMPROVEMENTS SEE DITCH DETAIL -Y30- 37+47


PERMIT DRAWING
SHEET 68 OF 112
GRAPHIC SCALE
100' 0' 100' 200' 300'
FILL IN WETLAND
SURFACE WATER IMPACTS
MECHANIZED CLEARING (GRUBBING)
TEMPORARY SURFACE WATER IMPACTS
SURFACE WATER IMPACTS POND
WETLAND EXCAVATION
–Y30– (SR 1007) POOLE RD.
15,700 29,400
3,000 3,400
7,900 12,600
21,300 39,600
NC 540
34,800 66,600
3,300 4,100
11,900 21,900
20,000 39,400
2025 ADT 2045 ADT
MECH CLEARING AND EXCAVATION REQUIRED FOR TEMPORARY DIVERSION CHANNEL
PAL
SEE PERMIT DRAWING SHEET 65 OF 112 FOR ENLARGEMENT
SUB
SHB
SHC
SHE
WJF
WJE
WJY
WAA
MATCHLINE –Y30– STA. 23+00.00 SEE SHEET 34
MATCHLINE –LB– STA. 1417+00.00 SEE SHEET 18
MATCHLINE –Y30RPC– STA. 17+00.00 SEE SHEET 18
MATCHLINE –Y30– STA. 22+00.00 SEE SHEET 35
MATCHLINE –Y30– STA. 38+00.00 SEE SHEET 35
MATCHLINE –LB– STA. 1440+00.00 SEE SHEET 20
MATCHLINE –Y30RPD– STA. 16+00.00 SEE SHEET 20
SITE 25
SITE 27
SITE 28
SITE 29
(Non–404)
(Non–404, buffered)
WAAC
SAAB
WAAB
PAAB
Pond WJI
CELL TOWER & GRAVEL DRIVE (BY OTHERS)
AREA TO BE CLEARED AND USED FOR TEMPORARY UTILITY INSTALLATION THROUGH A RIGHT OF ENTRY AGREEMENT
TEMPORARY STREAM IMPACT CHANGED TO PERMANENT IN THIS LOCATION TO ACCOUNT FOR TRENCHED INSTALLATION OF UTILITY LINES
SEE PERMIT DRAWING SHEET 66 OF 112 FOR ENLARGEMENT
SEE PERMIT DRAWING SHEET 67 OF 112 FOR ENLARGEMENT
MECH CLEARING AND EXCAVATION REQUIRED FOR TEMPORARY DIVERSION CHANNEL
PROPOSED SIGNAL
NAD 83
ICE of Carolinas, PLLC
PROJECT REFERENCE NO. R-2829B
SHEET NO. 12
RW SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
FOR –LB– CURVE DATA SEE SHT. 3A–1
FOR –Y30– CURVE DATA SEE SHT. 3A–1
FOR –Y30LPB– CURVE DATA SEE SHT. 3A–2
FOR –Y30RPB– CURVE DATA SEE SHT. 3A–2
FOR –Y30RPC– CURVE DATA SEE SHT. 3A–2
FOR –Y30RPD– CURVE DATA SEE SHT. 3A–2
FOR –Y30A– CURVE DATA SEE SHT. 3A–2
FOR –Y30G– CURVE DATA SEE SHT. 3A–2
FOR –LB– PROFILE SEE SHTS. 52 & 53
FOR –Y30– PROFILE SEE SHTS. 67 & 68
FOR –Y30LPB– PROFILE SEE SHTS. 69 & 70
FOR –Y30RPB– PROFILE SEE SHTS. 70 & 71
FOR –Y30RPC– PROFILE SEE SHTS. 71 & 72
FOR –Y30RPD– PROFILE SEE SHTS. 72 & 73
FOR –Y30A– PROFILE SEE SHTS. 73 & 74
FOR –Y30G– PROFILE SEE SHT. 75
GRAPHIC SCALE
50 25 0 50 100
PLANS

Submitted November 13, 2024

8/17/99

ICE of Carolinas, PLLC
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Phone: 803-822-0333
License #: P-0999

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

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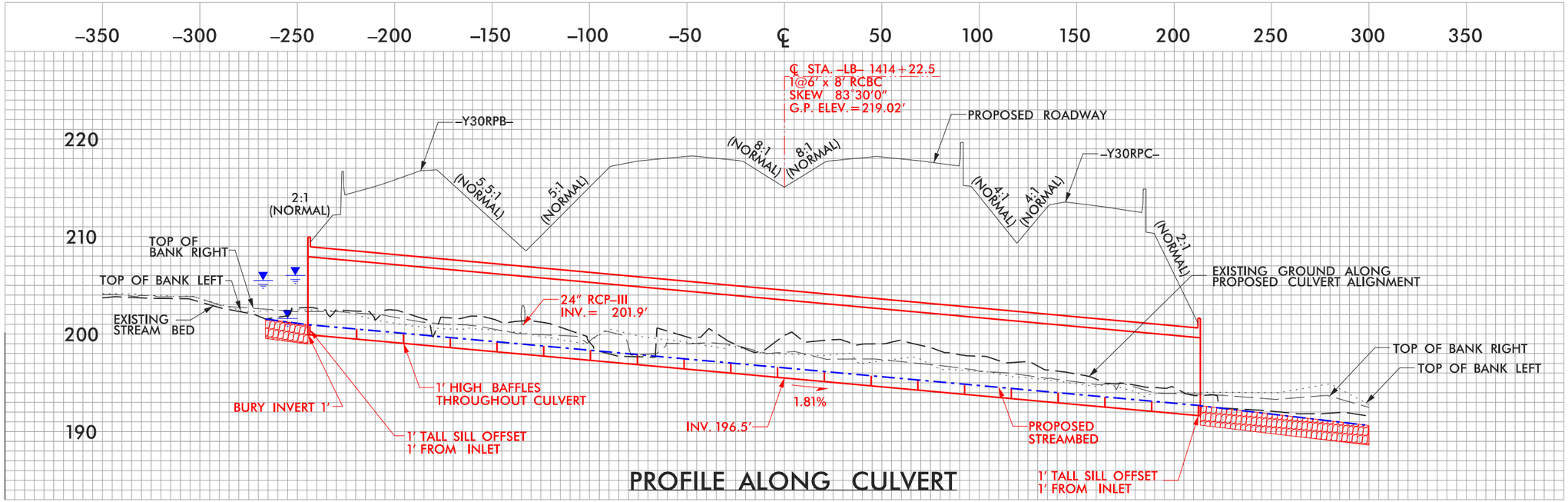
PERMIT DRAWING
SHEET 69 OF 112

SITE 25



PROFILE ALONG CULVERT

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

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4505 Falls of Neuse Road, Suite 110
Raleigh, North Carolina 27609
Phone: 803-822-0333
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PROJECT REFERENCE NO.	SHEET NO.
R-2829B	
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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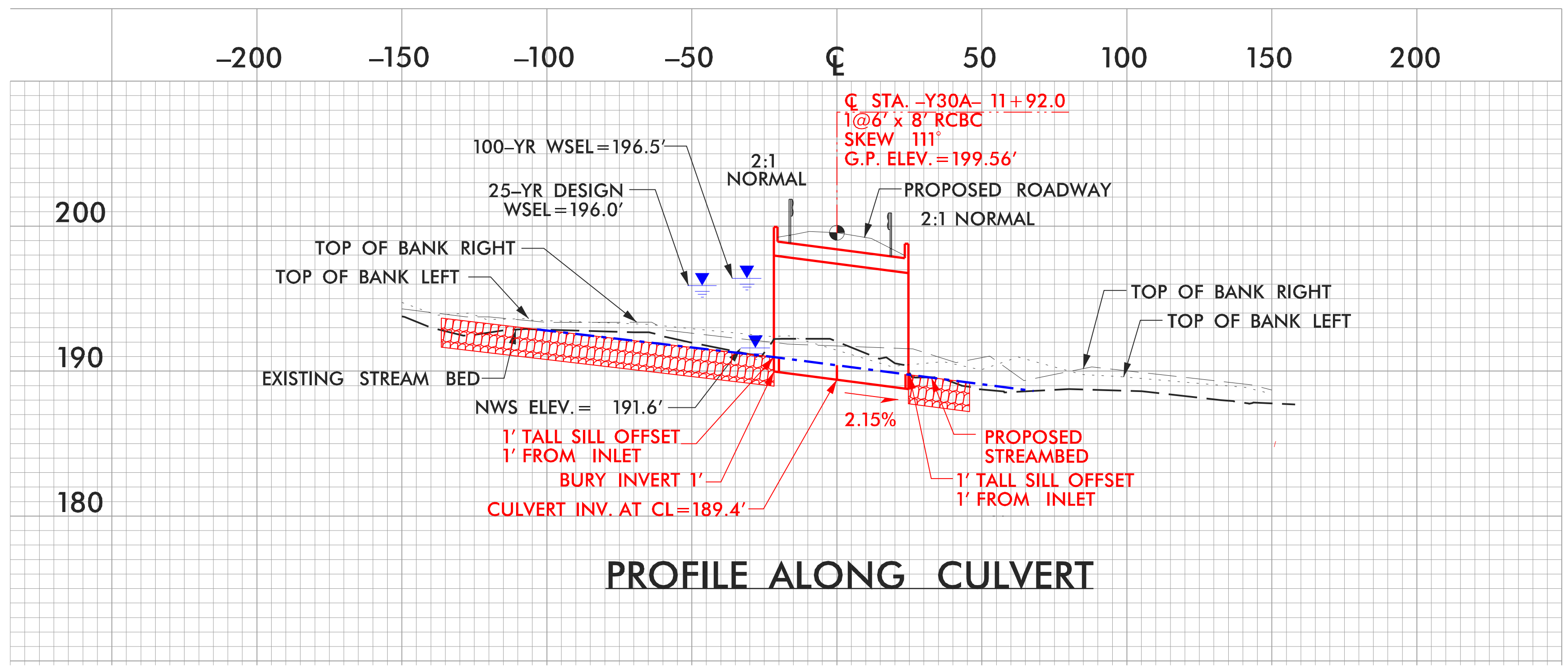
PERMIT DRAWING
SHEET 70 OF 112

SITE 25



PROFILE ALONG CULVERT

8/17/99
$DATE$ $TIME$ $$$$$$$$$DGN$$$$$$$$$$$$$$$$$ $$$$$$$USERNAME$$$$

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Raleigh, North Carolina 27609
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License #: P-0999

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

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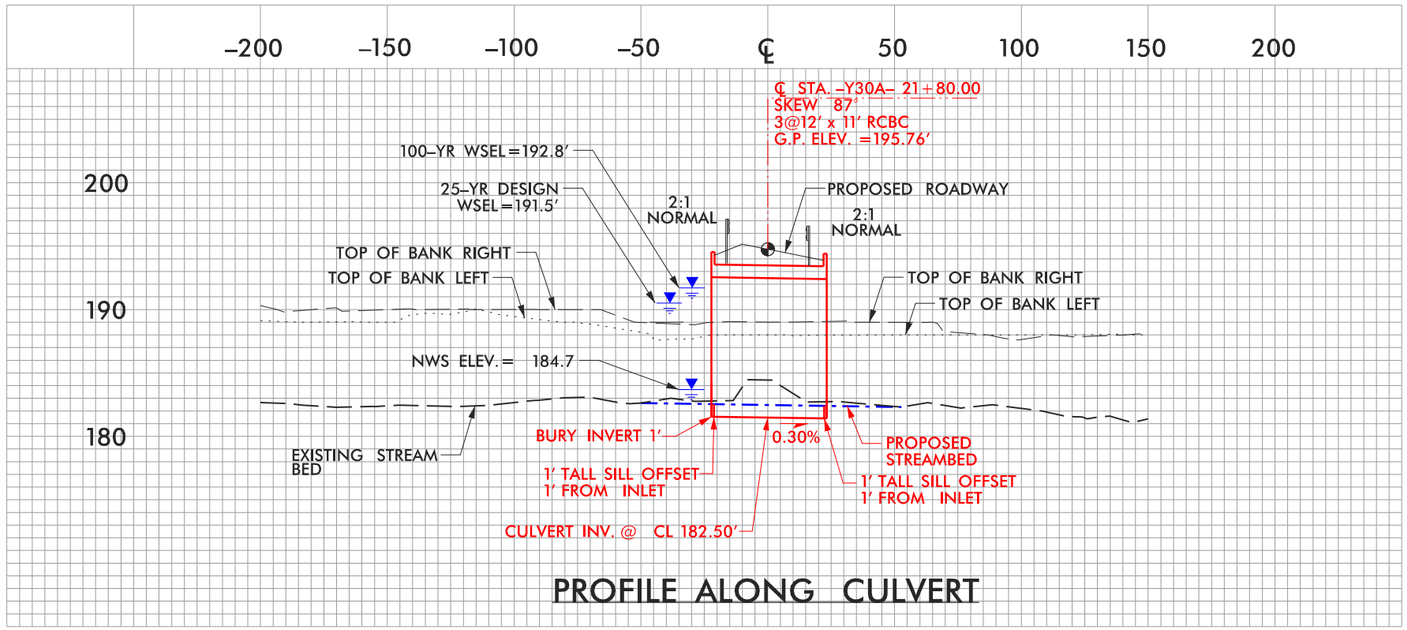
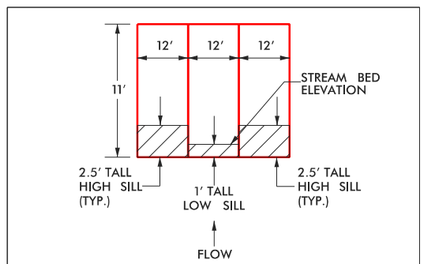
PERMIT DRAWING
SHEET 71 OF 112

SITE 28



PROFILE ALONG CULVERT



NOTES:
1. PLACE SILLS 1.0' INSIDE CULVERT AT INLET AND OUTLET PERPENDICULAR TO SIDEWALLS.

SILL DETAIL
(NTS)

$DATE$ $TIME$
$USERNAME$ DGN

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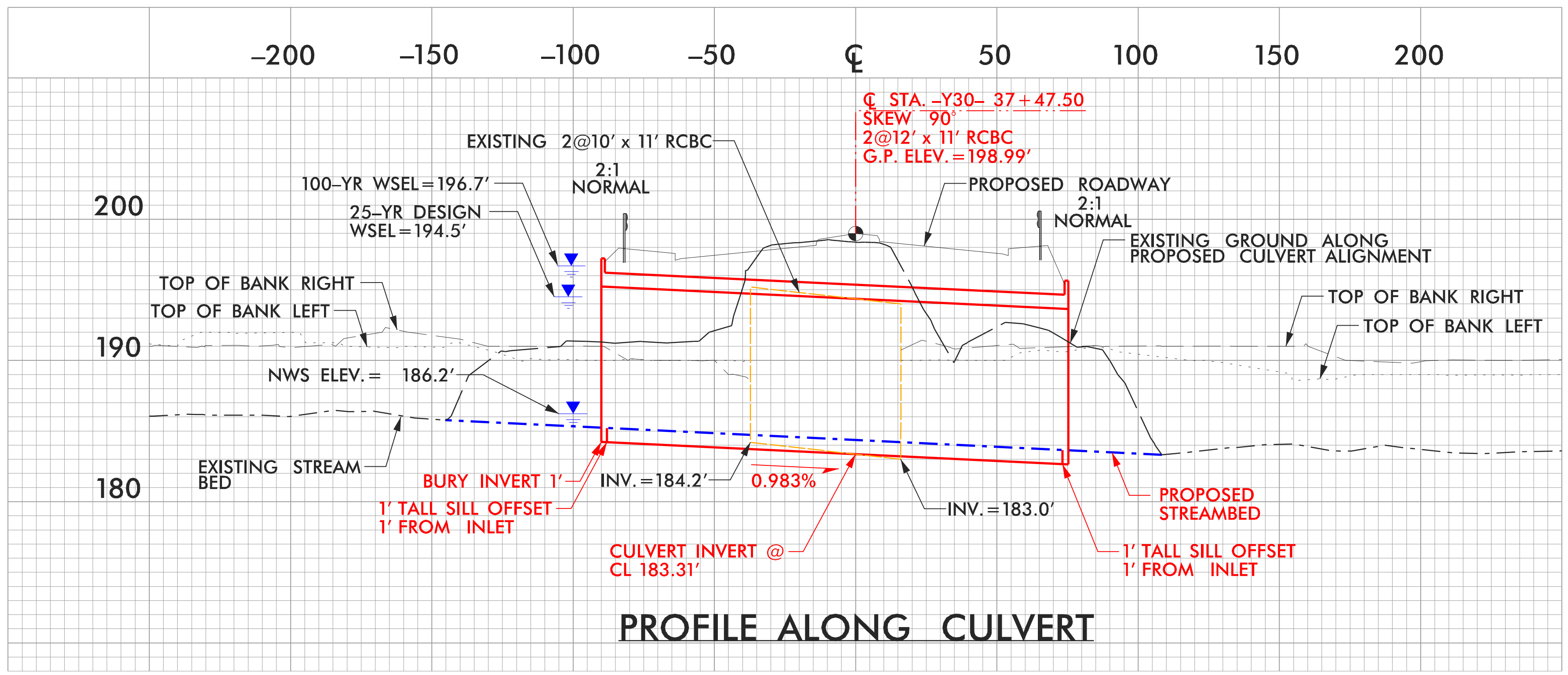
PROJECT REFERENCE NO.	SHEET NO.
R-2829B	____
R/W SHEET NO.	____
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

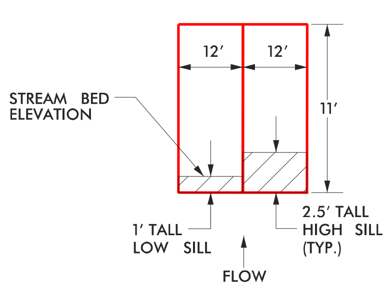
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 72 OF 112

SITE 28



PROFILE ALONG CULVERT



NOTES:
1. PLACE SILLS 1.0' INSIDE CULVERT AT INLET AND OUTLET PERPENDICULAR TO SIDEWALLS.

SILL DETAIL
(NTS)

8/17/99
$DATE$ $TIME$ $USERNAME$ DGN

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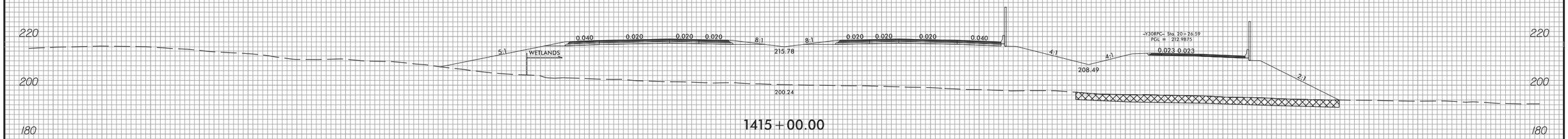
6/23/16

0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	R-2829B	X-112

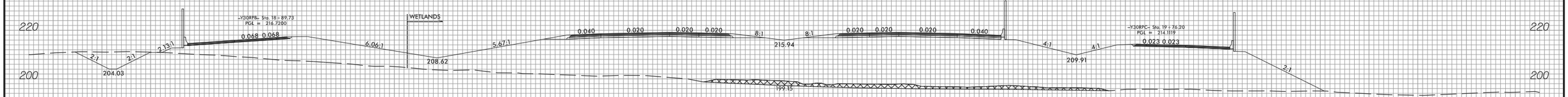
SITE 25

PERMIT DRAWING
SHEET 73 OF 112

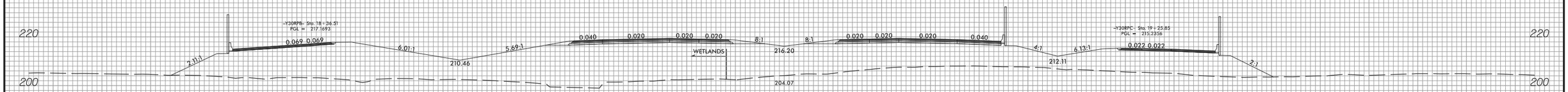
300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300



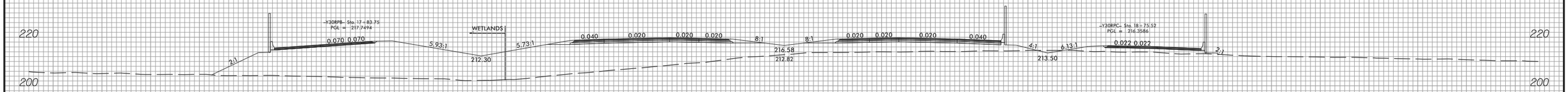
1415+00.00



1414+50.00



1414+00.00



1413+50.00

-LB-

UNDERCUT

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

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

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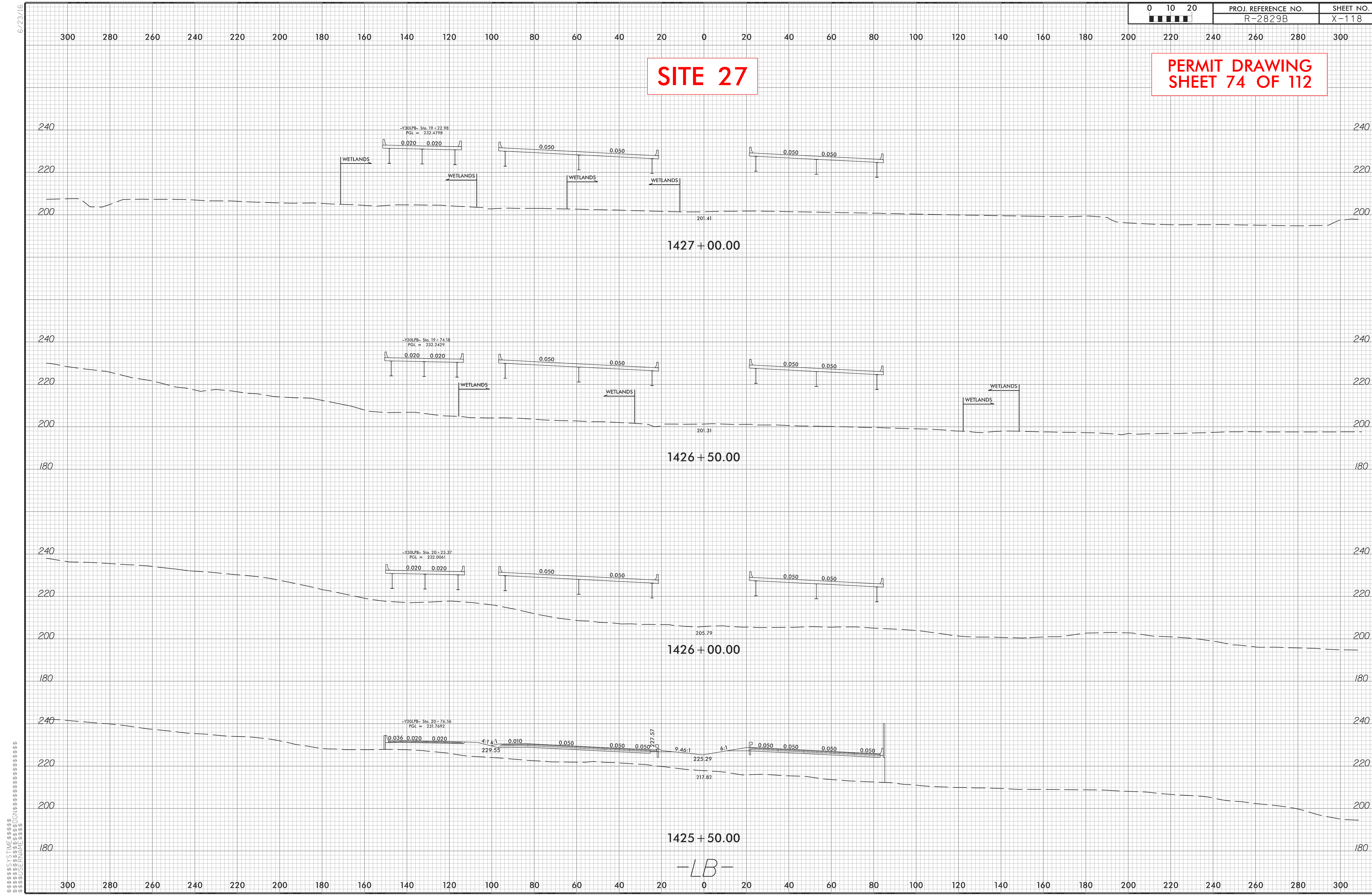

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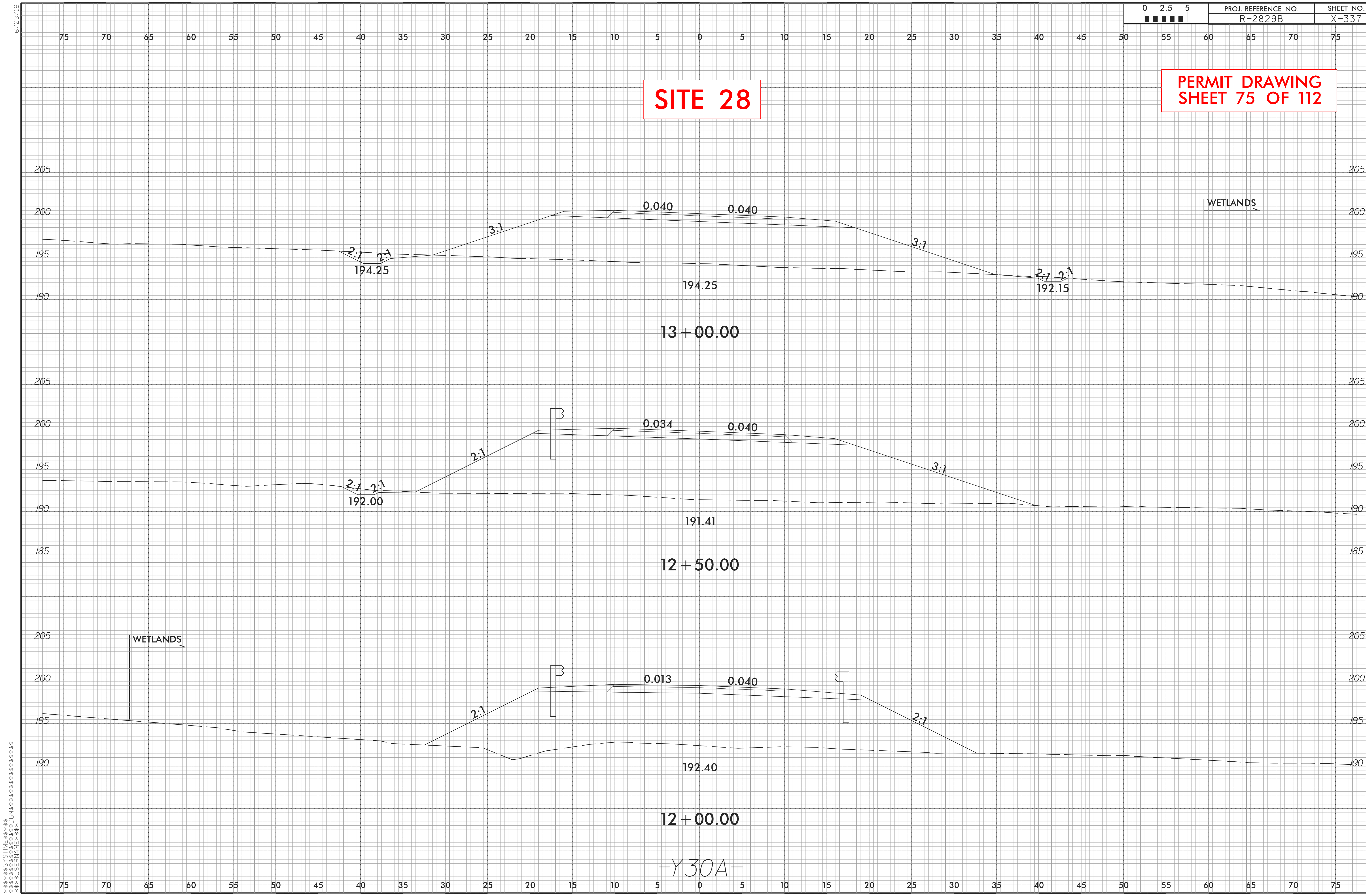


PERMIT DRAWING SHEET 76 OF 112

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

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

TEMPORARY ACCESS FOR BRIDGE CONSTRUCTION ONLY

ICE of Carolinas, PLLC
4925 Falls of Neuse Road, Suite 110
Raleigh, North Carolina 27609
Phone 919.872.5115
Office # 14068

PROJECT REFERENCE NO.	SHEET NO.
R-2829B	3D
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

SITE 33

SITE 32

SITE 31

SEE PERMIT DRAWING SHEET 79 OF 112 FOR ENLARGEMENT

SEE PERMIT DRAWING SHEET 77 OF 112 FOR ENLARGEMENT

SEE PERMIT DRAWING SHEET 78 OF 112 FOR ENLARGEMENT

MATCHLINE –Y31RPB– STA. 27+00.00 SEE SHEET 21

MATCHLINE –Y31FLYDB– STA. 44+00.00 SEE SHEET 21

MATCHLINE –LB– STA. 1440+00.00 SEE SHEET 19

MATCHLINE –Y30RPD– STA. 16+00.00 SEE SHEET 19

MATCHLINE –LB– STA. 1467+00.00 STA. 15+25.00 SEE SHEET 21

JURISDICTIONAL FEATURES WITHIN EXISTING RIGHT OF WAY EXTEND BEYOND THE LIMITS SHOWN

DESPITE BEING WITHIN NCDOT R/W, CONTRACTOR IS NOT PERMITTED TO USE THIS AREA FOR STAGING, AS THE STREAM AND WETLAND HAVE NOT BEEN PERMITTED FOR THIS

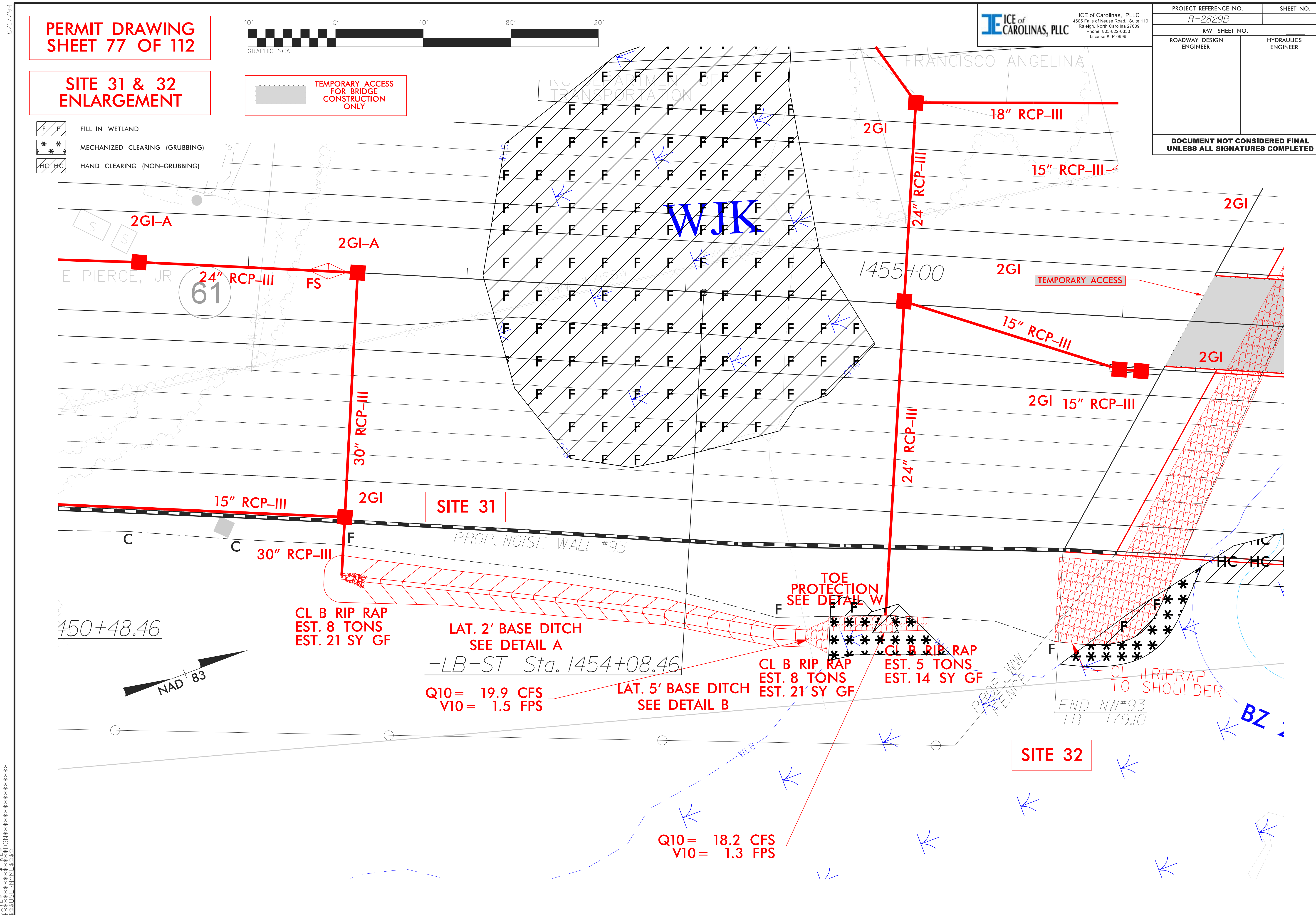
CAUSEWAY DETAIL

FOR –LB– CURVE DATA SEE SHT. 3A–1
FOR –Y30RPD– CURVE DATA SEE SHT. 3A–2
FOR –Y31RPB– CURVE DATA SEE SHT. 3A–2
FOR –Y31RPC– CURVE DATA SEE SHT. 3A–2
FOR –Y31FLYDB– CURVE DATA SEE SHT. 3A–2
FOR –Y31A– CURVE DATA SEE SHT. 3A–2

FOR –LB– PROFILE SEE SHTS. 53 & 54
FOR –Y30RPD– PROFILE SEE SHT. 72
FOR –Y31RPB– PROFILE SEE SHT. 78
FOR –Y31RPC– PROFILE SEE SHT. 78
FOR –Y31FLYDB– PROFILE SEE SHTS. 83 & 84
FOR –Y31A– PROFILE SEE SHT. 84
FOR –Y31B– PROFILE SEE SHT. 84

GRAPHIC SCALE 50 25 0 50 100 PLANS

Submitted November 13, 2024



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PERMIT DRAWING SHEET 78 OF 112

SITE 32 ENLARGEMENT

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

TEMPORARY ACCESS FOR BRIDGE CONSTRUCTION ONLY

F F	FILL IN WETLAND
S S	SURFACE WATER IMPACTS
* * *	MECHANIZED CLEARING (GRUBBING)
TS TS	TEMPORARY SURFACE WATER IMPACTS
T T	TEMPORARY FILL IN WETLAND
HC HC	HAND CLEARING (NON-GRUBBING)
E E	WETLAND EXCAVATION

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

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NAD 83

-Y3

-Y31FLYDB-PC Sta. 57+86.20

64

PROPOSED EXCAVATION

TEMPORARY ACCESS

40 LF OF OUTLET CHANNEL IMPROVEMENTS SEE DITCH DETAIL -Y31RPB- 29+13 / -Y31FLYDB- 54+63

116 LF OF OUTLET CHANNEL IMPROVEMENTS SEE DITCH DETAIL -Y31FLYDB- 52+68

TOE PROTECTION SEE DETAIL W

-Y31FLYDB-PC Sta. 57+86.20

2GI

N 24° 02' 04.1" E

BZ 1

BZ 2

SHC

SITE 32

WLB

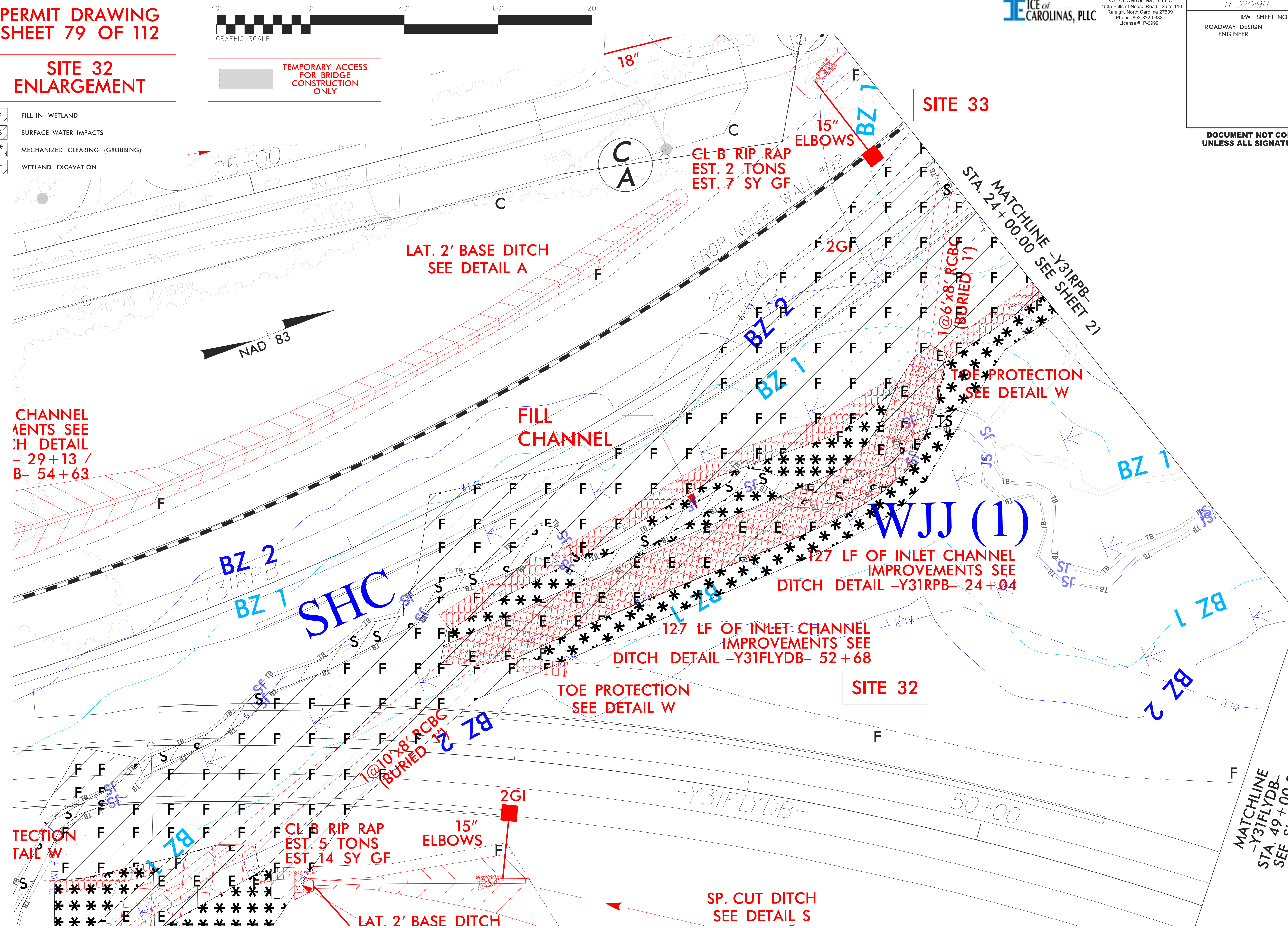
$DATE$ $TIME$
$USERNAME$ DGN

8/17/99

PERMIT DRAWING SHEET 79 OF 112

SITE 32 ENLARGEMENT

F F — FILL IN WETLAND
S S — SURFACE WATER IMPACTS
* * * — MECHANIZED CLEARING (GRUBBING)
E E — WETLAND EXCAVATION



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

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

PERMIT DRAWING
SHEET 80 OF 112

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

TEMPORARY ACCESS FOR BRIDGE CONSTRUCTION ONLY

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

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Fax 919.872.5118
License # C-4008

PROJECT REFERENCE NO.	SHEET NO.
R-2829B	80
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

SITE 33

SITE 32

SITE 31

SEE PERMIT DRAWING SHEET 79 OF 112 FOR ENLARGEMENT

SEE PERMIT DRAWING SHEET 77 OF 112 FOR ENLARGEMENT

SEE PERMIT DRAWING SHEET 78 OF 112 FOR ENLARGEMENT

MATCHLINE –LB– STA. 1440+00.00 SEE SHEET 19

MATCHLINE –Y30RPD– STA. 16+00.00 SEE SHEET 19

MATCHLINE –Y31RPB– STA. 10+00.00 SEE SHEET 21

MATCHLINE –Y31FLYDB– STA. 44+00.00 SEE SHEET 21

MATCHLINE –LB– STA. 1467+00.00 SEE SHEET 21

MATCHLINE –Y31RPC– STA. 15+25.00 SEE SHEET 21

JURISDICTIONAL FEATURES WITHIN EXISTING RIGHT OF WAY EXTEND BEYOND THE LIMITS SHOWN

DESPITE BEING WITHIN NCDOT R/W, CONTRACTOR IS NOT PERMITTED TO USE THIS AREA FOR STAGING, AS THE STREAM AND WETLAND HAVE NOT BEEN PERMITTED FOR THIS

TEMPORARY ACCESS

CAUSEWAY DETAIL

FOR –LB– CURVE DATA SEE SHT. 3A–1
FOR –Y30RPD– CURVE DATA SEE SHT. 3A–2
FOR –Y31RPB– CURVE DATA SEE SHT. 3A–2
FOR –Y31RPC– CURVE DATA SEE SHT. 3A–2
FOR –Y31FLYDB– CURVE DATA SEE SHT. 3A–2
FOR –Y31A– CURVE DATA SEE SHT. 3A–2

FOR –LB– PROFILE SEE SHTS. 53 & 54
FOR –Y30RPD– PROFILE SEE SHT. 72
FOR –Y31RPB– PROFILE SEE SHT. 78
FOR –Y31RPC– PROFILE SEE SHT. 78
FOR –Y31FLYDB– PROFILE SEE SHTS. 83 & 84
FOR –Y31A– PROFILE SEE SHT. 84
FOR –Y31B– PROFILE SEE SHT. 84

GRAPHIC SCALE 50 25 0 50 100 PLANS

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PROJECT REFERENCE NO.	SHEET NO.
R-2829B	
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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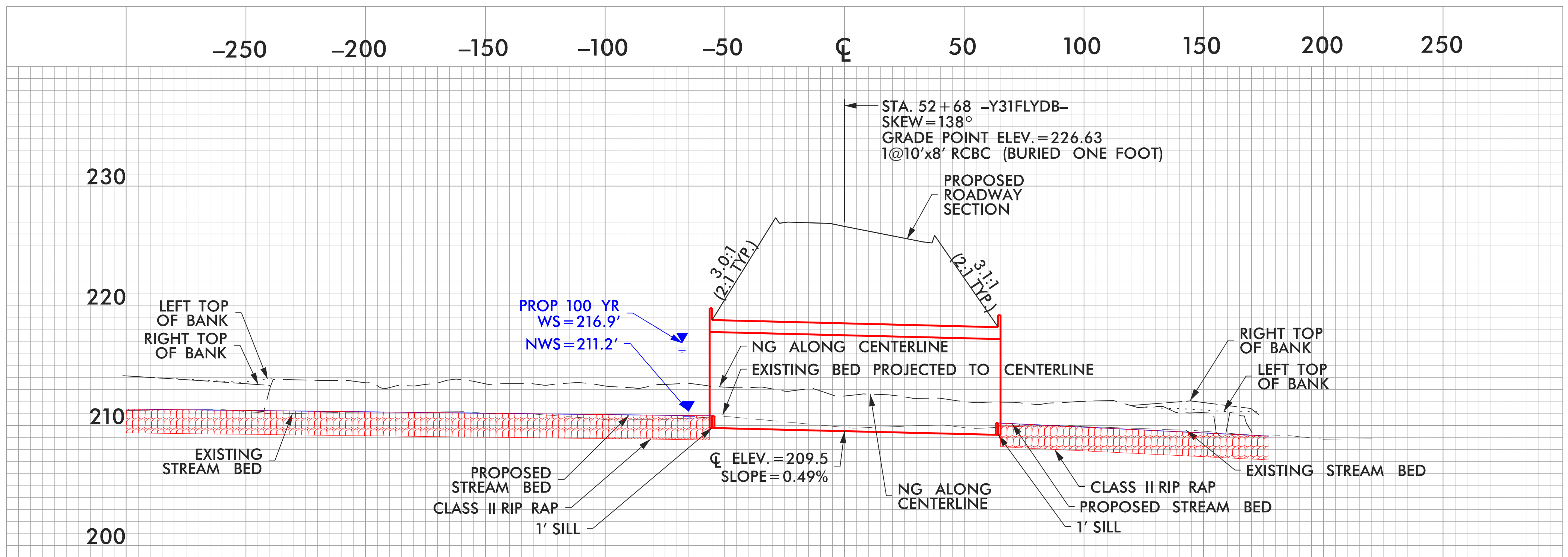
PERMIT DRAWING
SHEET 81 OF 112

SITE 32



PROFILE ALONG STRUCTURE

Submitted November 13, 2024

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Raleigh, North Carolina 27609
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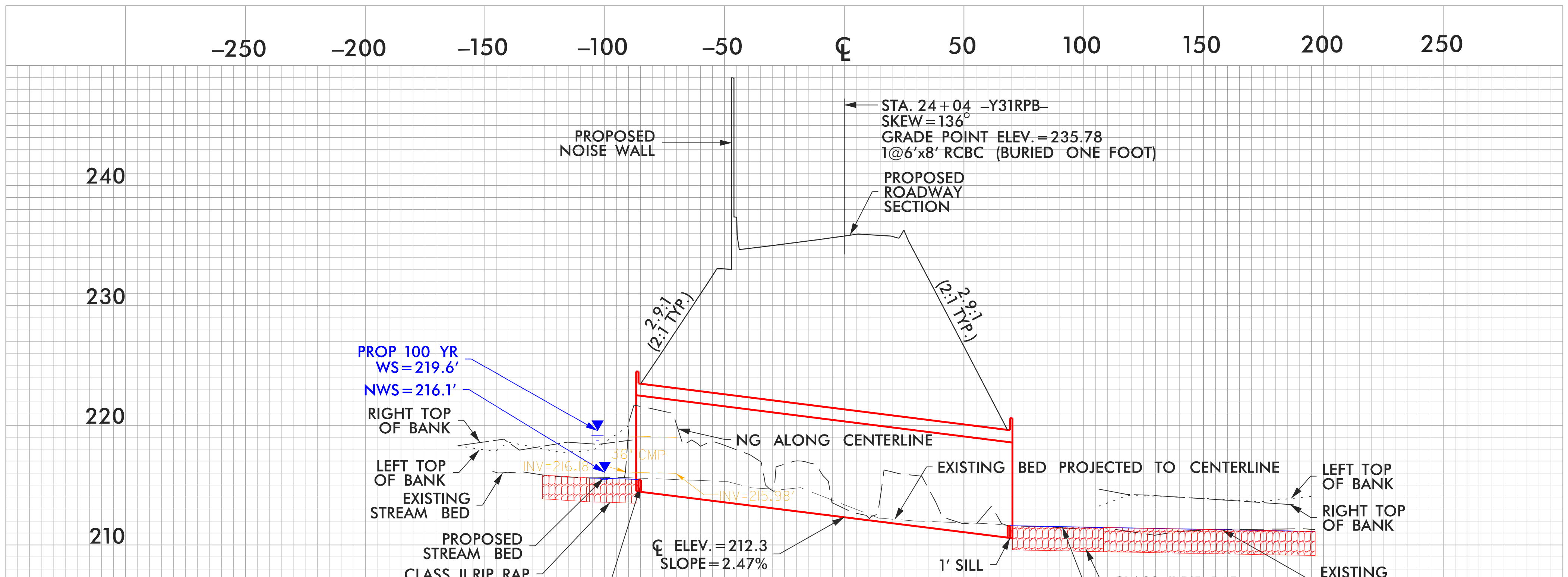
License #: P-0999

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 82 OF 112

SITE 33



PROFILE ALONG STRUCTURE

8/17/99

$DATE$ $TIME$ DGN $USERNAME$

Submitted November 13, 2024

5/28/99

PERMIT DRAWING
SHEET 83 OF 112

-LB-

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License #: P-0999

PROJECT REFERENCE NO.	SHEET NO.
R-2829B	53
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BM#29 ELEVATION = 228.40'
LB STA 1446+48.47 274.04' LEFT

STRUCTURE HYDRAULIC DATA
1 @ 6'X8' RCBC -LB- STA.1439+85

DESIGN DISCHARGE	= 240	CFS
DESIGN FREQUENCY	= 100	YRS
DESIGN HW ELEVATION	= 217.4	FT
BASE DISCHARGE	= 240	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 217.4	FT
OVERTOPPING DISCHARGE	= 530	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 221.5	FT

PIPE HYDRAULIC DATA
54" RCP-III -LB- STA.1447+98

DRAINAGE AREA	= 24.3	AC
DESIGN DISCHARGE	= 90	CFS
DESIGN FREQUENCY	= 100	YRS
DESIGN HW ELEVATION	= 217.0	FT
100 YEAR DISCHARGE	= 90	CFS
100 YEAR HW ELEVATION	= 217.0	FT
OVERTOPPING DISCHARGE	= 130	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 218.5	FT

PI = 1455+60.00
EL = 215.96'
VC = 1,480'
K = 404
DS = 80mph

END 2' BASE DITCH
STA.1439+43.00 LT
ELEV.= 212.30'

(-)10.4523%

(-) 0.6977%

BEGIN 2' BASE DITCH
STA.1439+00.00 LT
ELEV.= 212.60'

BEGIN LAT. 2' BASE DITCH
STA.1439+42.00 LT
ELEV.= 211.00'

PROP. CULVERT
@6'X8'
(BURIED 1.0')

(+) 0.4630%

DITCH PI
PI =1440+50.00 LT
ELEV.= 211.50'

(+) 1.0000%

END LAT. 2' BASE DITCH
STA.1441+00.00 LT
ELEV.= 212.00'

BEGIN LAT. 2' BASE DITCH
STA.1440+64.00 RT
ELEV.= 205.51'

BEGIN 2' CONC. BASE DITCH
STA.1441+50.00 LT
ELEV.= 224.00'

(+) 0.6514%

(+) 0.3333%
PROP. GRADE

BEGIN SP. CUT DITCH
STA.1442+00.00 LT
ELEV.= 221.40'

(+) 0.8000%

DITCH PI
PI =1443+50.00 LT
ELEV.= 221.90'

END LAT. 2' BASE DITCH
STA.1445+00.00 RT
ELEV.= 209.00'

END SP. CUT DITCH
STA.1445+00.00 LT
ELEV.= 220.59'

(-) 0.8733%

END 2' CONC. BASE DITCH
STA.1445+00.00 LT
ELEV.= 226.28'

EXIST. GROUND

BEGIN LAT. 5' BASE DITCH
STA.1447+00.00 LT
ELEV.= 214.00'

(-) 1.4286%

54" RCP-III

END LAT. 5' BASE DITCH
BEGIN LAT. 2' BASE DITCH
STA.1448+05.00 LT
ELEV.= 212.50'

(+) 0.4082%

(-)0.4523%

FOR -LB- PLAN SEE SHTS.19 & 20

-LB-

STRUCTURE HYDRAULIC DATA

DESIGN DISCHARGE	= 460	CFS
DESIGN FREQUENCY	= 100	YRS
DESIGN HW ELEVATION	= 213.9	FT
BASE DISCHARGE	= 460	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 213.9	FT
OVERTOPPING DISCHARGE	= 520	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 219.1	FT

SITE 32

BEGIN BRIDGE
-LB- STA.1456+54 +/-

PI = 1455+60.00
EL = 215.96'
VC = 1,480'
K = 404
DS = 80mph

PROP. GRADE

END BRIDGE
-LB- STA.1461+90 +/-

(+)3.2089%

(-)0.4523%

(+)0.4082%

(-)0.4523%

(+)3.2089%

TEMP. PIPE TO CONVEY 50% OF FLOW AREA

NWS EL. =209.5'

TEMPORARY ACCESS

EXIST. GROUND

END LAT. 2' BASE DITCH
STA.1450+50.00 LT
ELEV.= 213.50'

BEGIN LAT. 2' BASE DITCH
STA.1452+50.00 RT
ELEV.= 208.00'

(-) 0.6661%

END LAT. 2' BASE DITCH
BEGIN LAT. 5' BASE DITCH
STA.1454+00.00 RT
ELEV.= 207.00'

(-) 3.4375%

END LAT. 5' BASE DITCH
STA.1454+64.00 RT
ELEV.= 204.80'

UNDERCUT
RIGHT DITCH
LEFT DITCH

FOR -LB- PLAN SEE SHT.20

$$$$SYSTMES$$$$
$$$$LINES$$$$
$$$$USERNAME$$$$

Submitted November 13, 2024

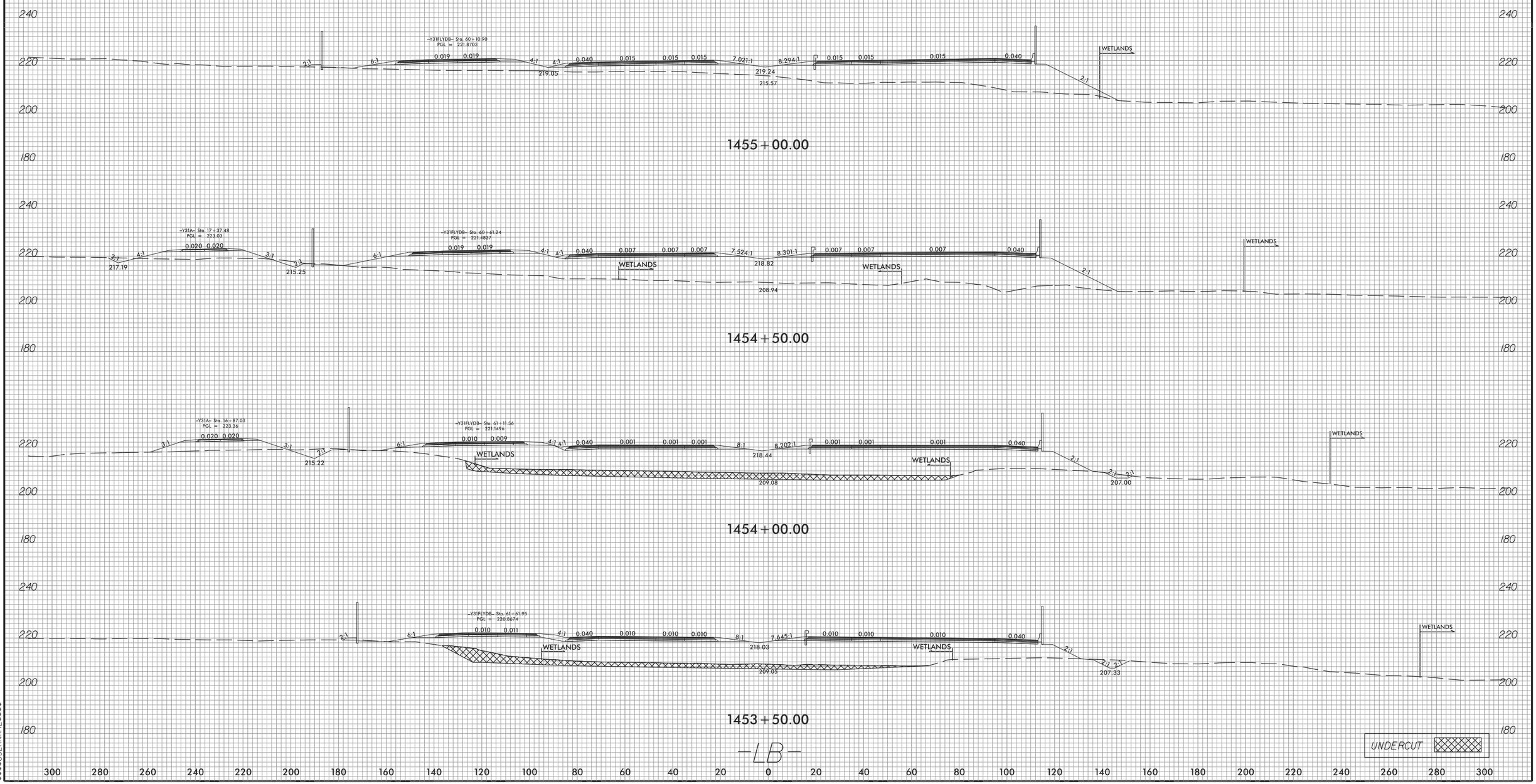
6/23/16

0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	R-2829B	X-132

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

SITE 31

PERMIT DRAWING
SHEET 84 OF 112



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

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6/23/16

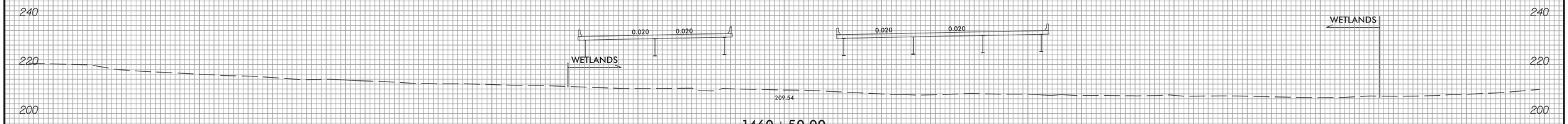
0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	R-2829B	X-135

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

SITE 32

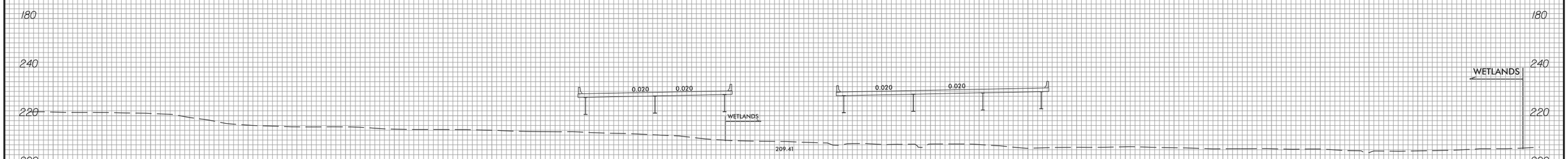
PERMIT DRAWING
SHEET 85 OF 112

1461+00.00



1460+50.00

1460+00.00



1459+50.00

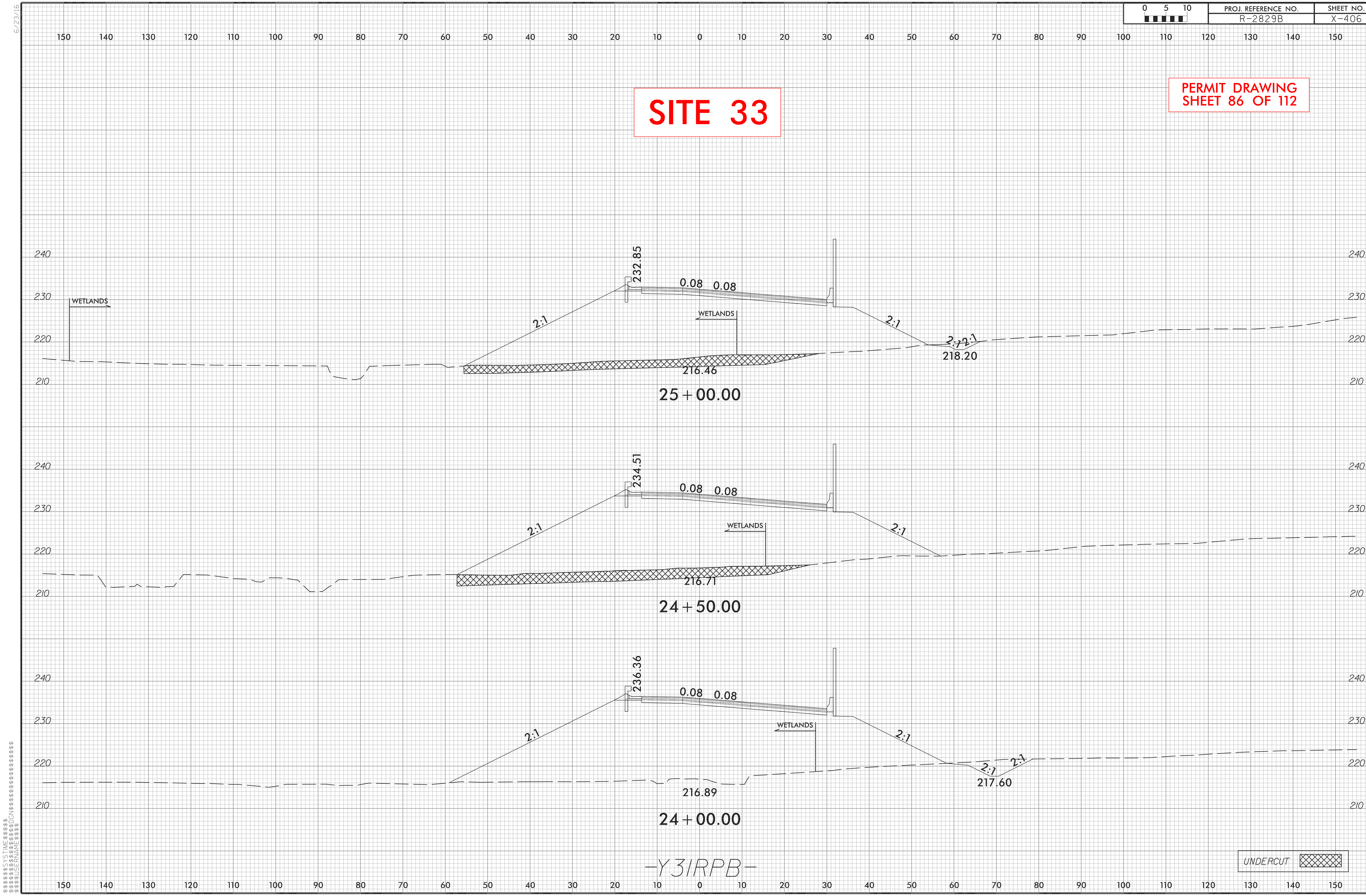
180

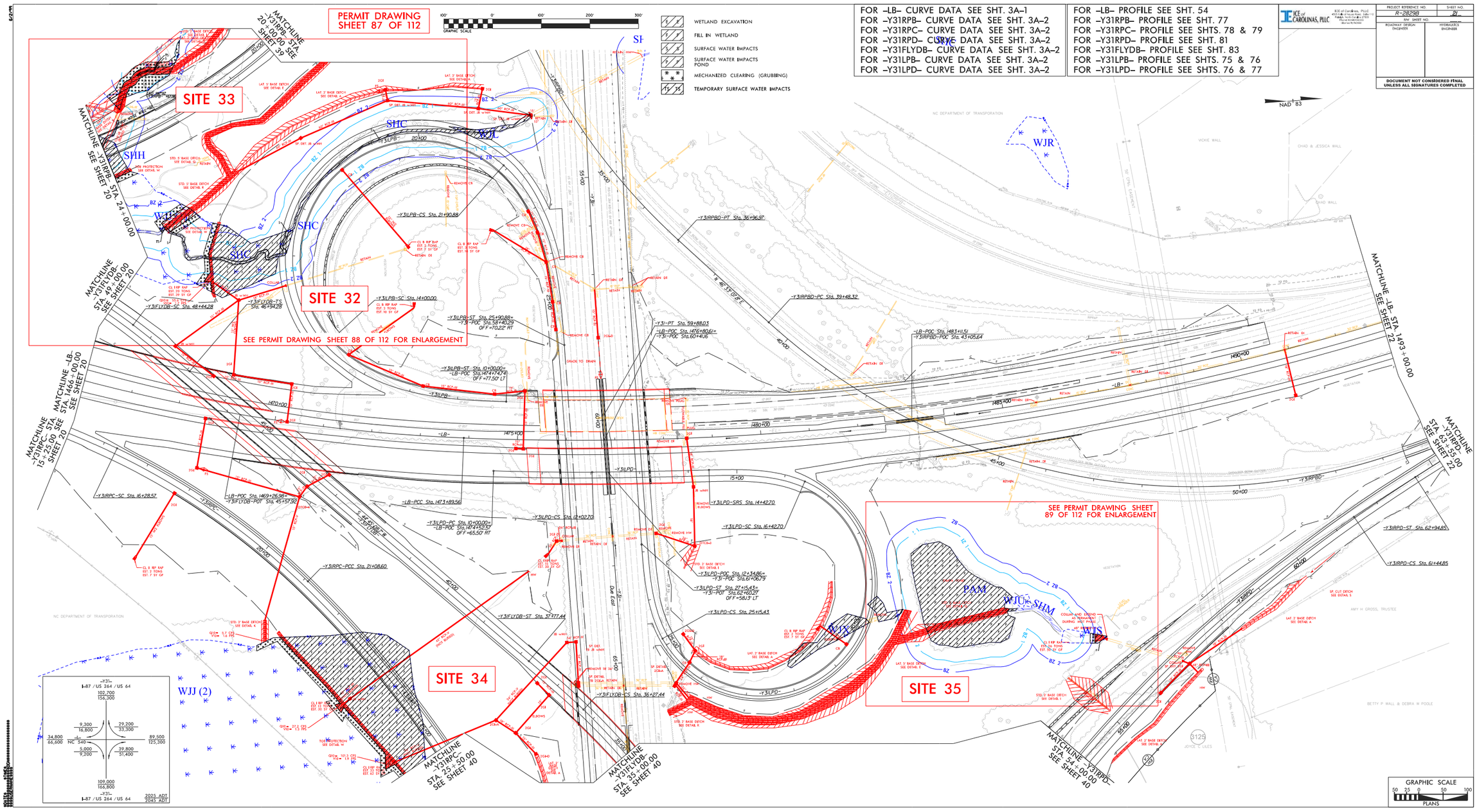
—LB—

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

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

Submitted November 13, 2024




PERMIT DRAWING SHEET 87 OF 112
SITE 33
SITE 32
SITE 34
SITE 35
SEE PERMIT DRAWING SHEET 88 OF 112 FOR ENLARGEMENT
SEE PERMIT DRAWING SHEET 89 OF 112 FOR ENLARGEMENT
GRAPHIC SCALE
WETLAND EXCAVATION
FILL IN WETLAND
SURFACE WATER IMPACTS
SURFACE WATER IMPACTS POND
MECHANIZED CLEARING (GRUBBING)
TEMPORARY SURFACE WATER IMPACTS
FOR –LB– CURVE DATA SEE SHT. 3A–1
FOR –Y31RPB– CURVE DATA SEE SHT. 3A–2
FOR –Y31RPC– CURVE DATA SEE SHT. 3A–2
FOR –Y31RPD– CURVE DATA SEE SHT. 3A–2
FOR –Y31FLYDB– CURVE DATA SEE SHT. 3A–2
FOR –Y31LPB– CURVE DATA SEE SHT. 3A–2
FOR –Y31LPD– CURVE DATA SEE SHT. 3A–2
FOR –LB– PROFILE SEE SHT. 54
FOR –Y31RPB– PROFILE SEE SHT. 77
FOR –Y31RPC– PROFILE SEE SHTS. 78 & 79
FOR –Y31RPD– PROFILE SEE SHT. 81
FOR –Y31FLYDB– PROFILE SEE SHT. 83
FOR –Y31LPB– PROFILE SEE SHTS. 75 & 76
FOR –Y31LPD– PROFILE SEE SHTS. 76 & 77
ICE of Carolinas, PLLC
PROJECT REFERENCE NO. R-2828B
SHEET NO. 2L
RW SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
NAD 83
MATCHLINE –Y31RPB– STA. 20+00.00 SEE SHEET 39
MATCHLINE –Y31RPB– STA. 24+00.00 SEE SHEET 20
MATCHLINE –Y31FLYDB– STA. 49+00.00 SEE SHEET 20
MATCHLINE –LB– STA. 1462+00.00 SEE SHEET 20
MATCHLINE –Y31RPC– STA. 15+25.00 SEE SHEET 20
MATCHLINE –LB– STA. 1493+00.00 SEE SHEET 22
MATCHLINE –Y31RPD– STA. 03+25.00 SEE SHEET 22
MATCHLINE –Y31RPC– STA. 25+50.00 SEE SHEET 40
MATCHLINE –Y31FLYDB– STA. 35+00.00 SEE SHEET 40
MATCHLINE –Y31RPD– STA. 54+00.00 SEE SHEET 40
WJJ (2)
WJR
WJX
WJU
SHM
PAM
WJS
SHC
SPIH
–Y31LPB– 20+00
–Y31LPB–CS Sta. 21+90.88
–Y31LPB–SC Sta. 14+00.00
–Y31LPB–ST Sta. 25+90.88=
–Y3I–POC Sta.58+40.29
OFF=70.22' RT
–Y31LPB–ST Sta. 10+00.00=
–LB–POC Sta.1474+47.49
OFF=71.50' LT
–Y31LPD– 15+00
–Y31LPD–SC Sta. 16+42.70
–Y31LPD–SRS Sta. 14+42.70
–Y31LPD–CS Sta. 12+10.70
–Y31LPD–PC Sta. 10+00.00=
–LB–POC Sta.1474+52.52
OFF=65.50' RT
–Y31LPD–PC Sta. 12+34.86=
–Y3I–POC Sta.61+06.79
–Y31LPD–ST Sta. 27+15.43=
–Y3I–POT Sta.62+60.29
OFF=58.13' LT
–Y31LPD–CS Sta. 25+15.43
–Y31FLYDB–ST Sta. 37+77.44
–Y31FLYDB–CS Sta. 36+27.44
–Y31RPBD–PT Sta. 36+96.97
–Y31RPBD–PC Sta. 39+48.32
–Y3I–PT Sta. 59+88.03
–LB–POC Sta. 1476+80.61=
–Y3I–POC Sta.60+41.26
–LB–POC Sta. 1483+11.51
–Y31RPBD–POC Sta. 43+05.64
–Y31RPBD–ST Sta. 62+94.85
–Y31RPBD–CS Sta. 61+44.85
–Y31RPC–SC Sta. 16+28.57
–LB–POC Sta. 1469+26.98=
–Y31FLYDB–POT Sta. 45+57.92
–LB–POC Sta. 1473+89.56
–Y31RPC–PCC Sta. 21+08.60
–Y31FLYDB–ST Sta. 37+77.44
N 46°33'07.8" E
1.5% GRADE
4.5% GRADE
2.5% GRADE
–Y3I– I-87 /US 264 /US 64
102,700 156,300
9,300 16,800
29,200 33,300
34,800 66,600
NC 540
89,500 125,300
5,000 9,200
39,800 31,400
109,000 166,800
2025 ADT
2045 ADT
NC DEPARTMENT OF TRANSPORATION
VICKIE WALL
CHAD & JESSICA WALL
CHAD WALL
AMY H. GROSS, TRUSTEE
BETTY P. WALL & DEBRA W. POOLE
JOYCE Y. LILES
3125
GRAPHIC SCALE
PLANS

8/17/99

PERMIT DRAWING SHEET 88 OF 112

SITE 32 & 33 ENLARGEMENT

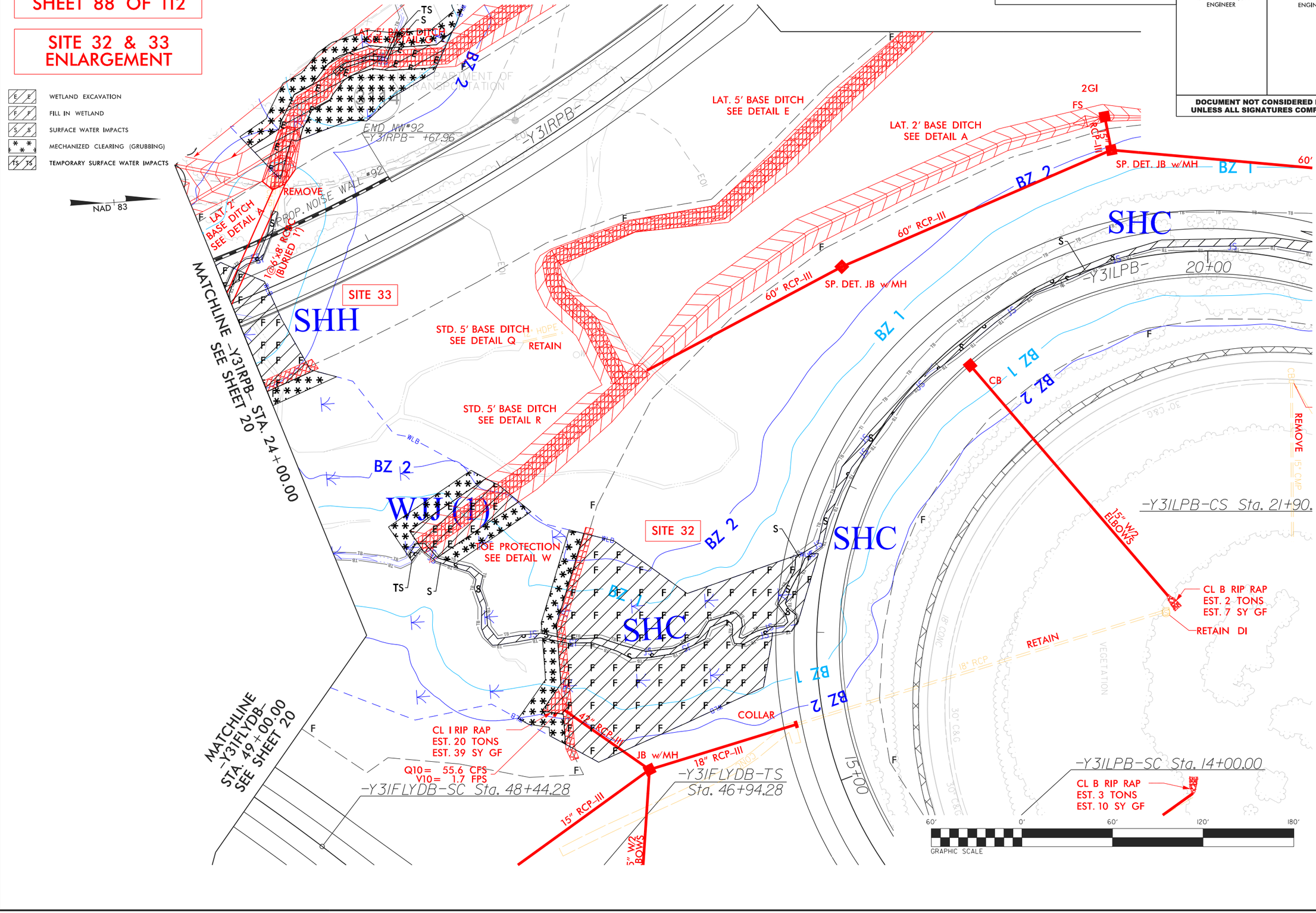
E E	WETLAND EXCAVATION
F F	FILL IN WETLAND
S S	SURFACE WATER IMPACTS
* * * * * *	MECHANIZED CLEARING (GRUBBING)
TS TS	TEMPORARY SURFACE WATER IMPACTS

NAD 83

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

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



$DATE$ $TIME$ DGN $USERNAME$

PERMIT DRAWING
SHEET 89 OF 112

SITE 35
ENLARGEMENT

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Phone: 803-822-0333
License #: P-0999

PROJECT REFERENCE NO.	SHEET NO.
R-2829B	
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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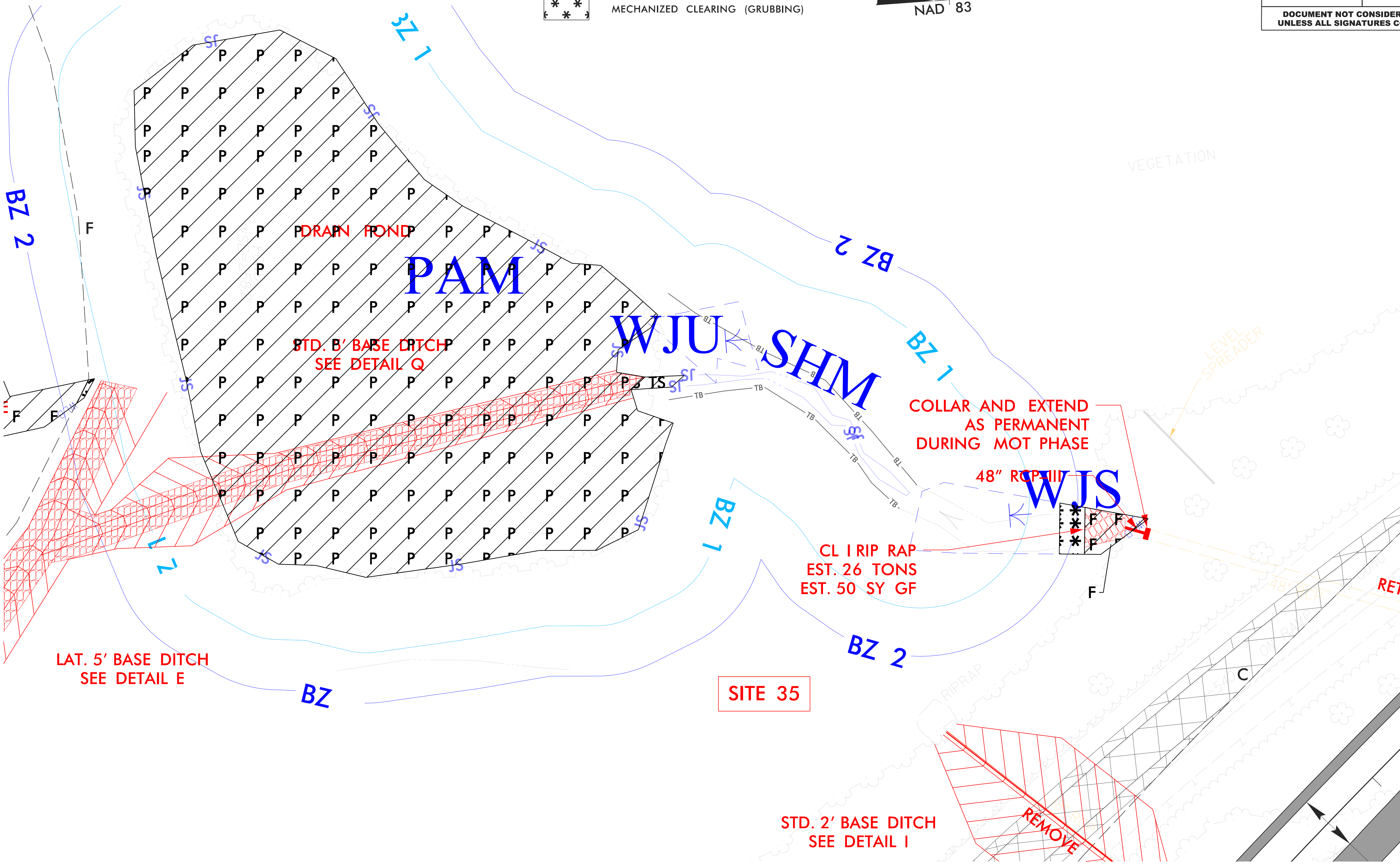
GRAPHIC SCALE: 40′ 0′ 40′ 80′ 120′

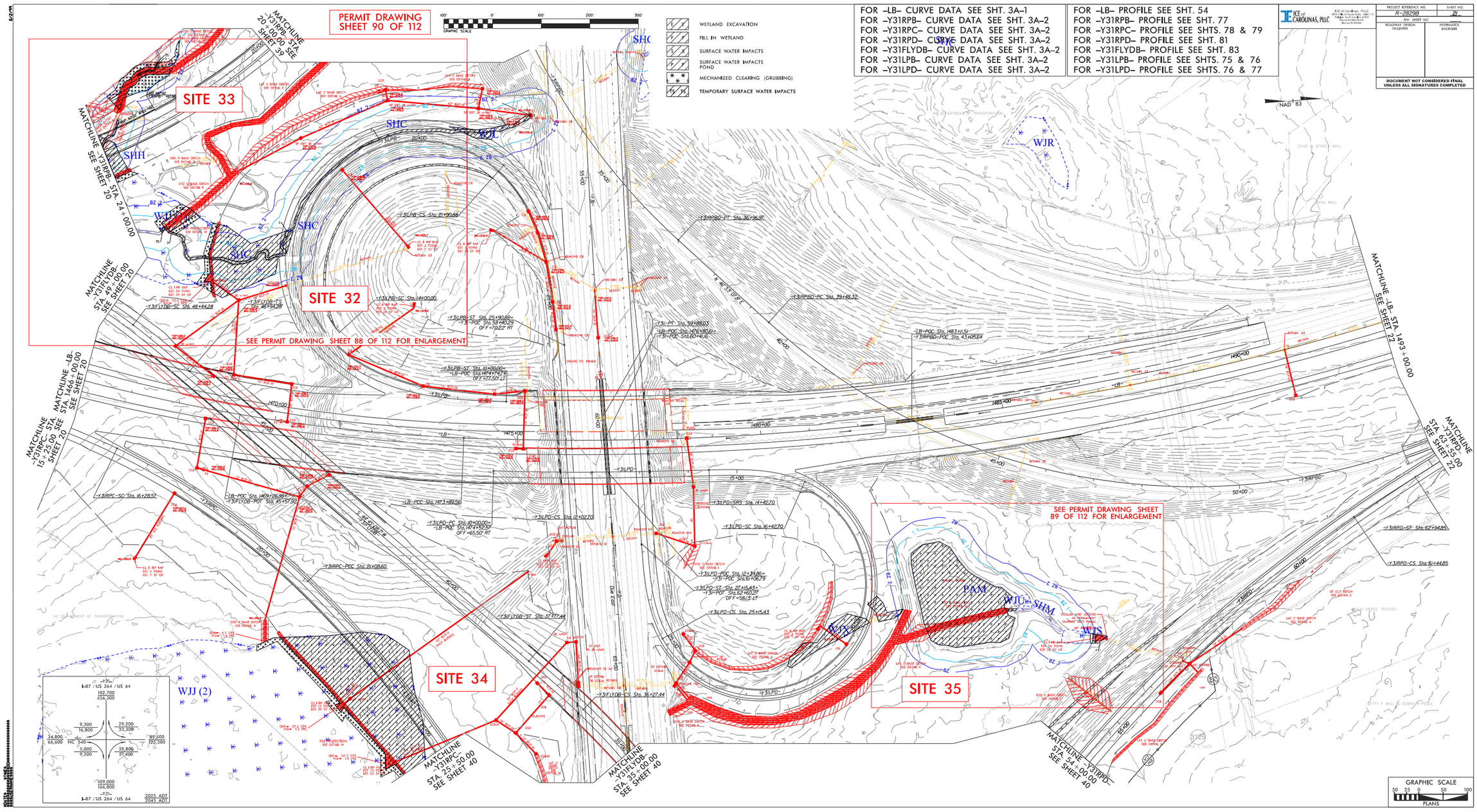
P P — SURFACE WATER IMPACTS POND

F F — FILL IN WETLAND

* * — MECHANIZED CLEARING (GRUBBING)



8/17/99
$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$TIME$$$
$DATE$$$$$$USERNAME$$$$


PERMIT DRAWING SHEET 90 OF 112
SITE 33
SITE 32
SITE 34
SITE 35
SEE PERMIT DRAWING SHEET 88 OF 112 FOR ENLARGEMENT
SEE PERMIT DRAWING SHEET 89 OF 112 FOR ENLARGEMENT
MATCHLINE -Y31RPB- STA. 20+00.00 SEE SHEET 39
MATCHLINE -Y31RPB- STA. 24+00.00 SEE SHEET 20
MATCHLINE -Y31FLYDB- STA. 49+00.00 SEE SHEET 20
MATCHLINE -LB- STA. 1462+00.00 SEE SHEET 20
MATCHLINE -Y31RPC- STA. 15+25.00 SEE SHEET 20
MATCHLINE -Y31RPC- STA. 25+50.00 SEE SHEET 40
MATCHLINE -Y31FLYDB- STA. 35+00.00 SEE SHEET 40
MATCHLINE -Y31RPD- STA. 54+00.00 SEE SHEET 40
MATCHLINE -LB- STA. 1493+00.00 SEE SHEET 22
MATCHLINE -Y31RPD- STA. 03+25.00 SEE SHEET 22
WETLAND EXCAVATION
FILL IN WETLAND
SURFACE WATER IMPACTS
SURFACE WATER IMPACTS POND
MECHANIZED CLEARING (GRUBBING)
TEMPORARY SURFACE WATER IMPACTS
GRAPHIC SCALE
100' 0' 100' 200' 300'
FOR –LB– CURVE DATA SEE SHT. 3A–1
FOR –Y31RPB– CURVE DATA SEE SHT. 3A–2
FOR –Y31RPC– CURVE DATA SEE SHT. 3A–2
FOR –Y31RPD– CURVE DATA SEE SHT. 3A–2
FOR –Y31FLYDB– CURVE DATA SEE SHT. 3A–2
FOR –Y31LPB– CURVE DATA SEE SHT. 3A–2
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FOR –LB– PROFILE SEE SHT. 54
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FOR –Y31LPD– PROFILE SEE SHTS. 76 & 77
ICE of Carolinas, PLLC
PROJECT REFERENCE NO. R-2828B
SHEET NO. 2L
RW SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
NAD 83
WJR
SHC
SHH
WJJ (2)
PAM
WJU
SHM
WJX
WJS
I-87 /US 264 /US 64
102,700
456,300
9,300
16,800
29,200
33,300
34,800
66,600
NC 540
89,500
125,300
5,000
9,200
39,800
57,400
109,000
166,800
2025 ADT
2045 ADT
GRAPHIC SCALE
50 25 0 50 100
PLANS

Submitted November 13, 2024

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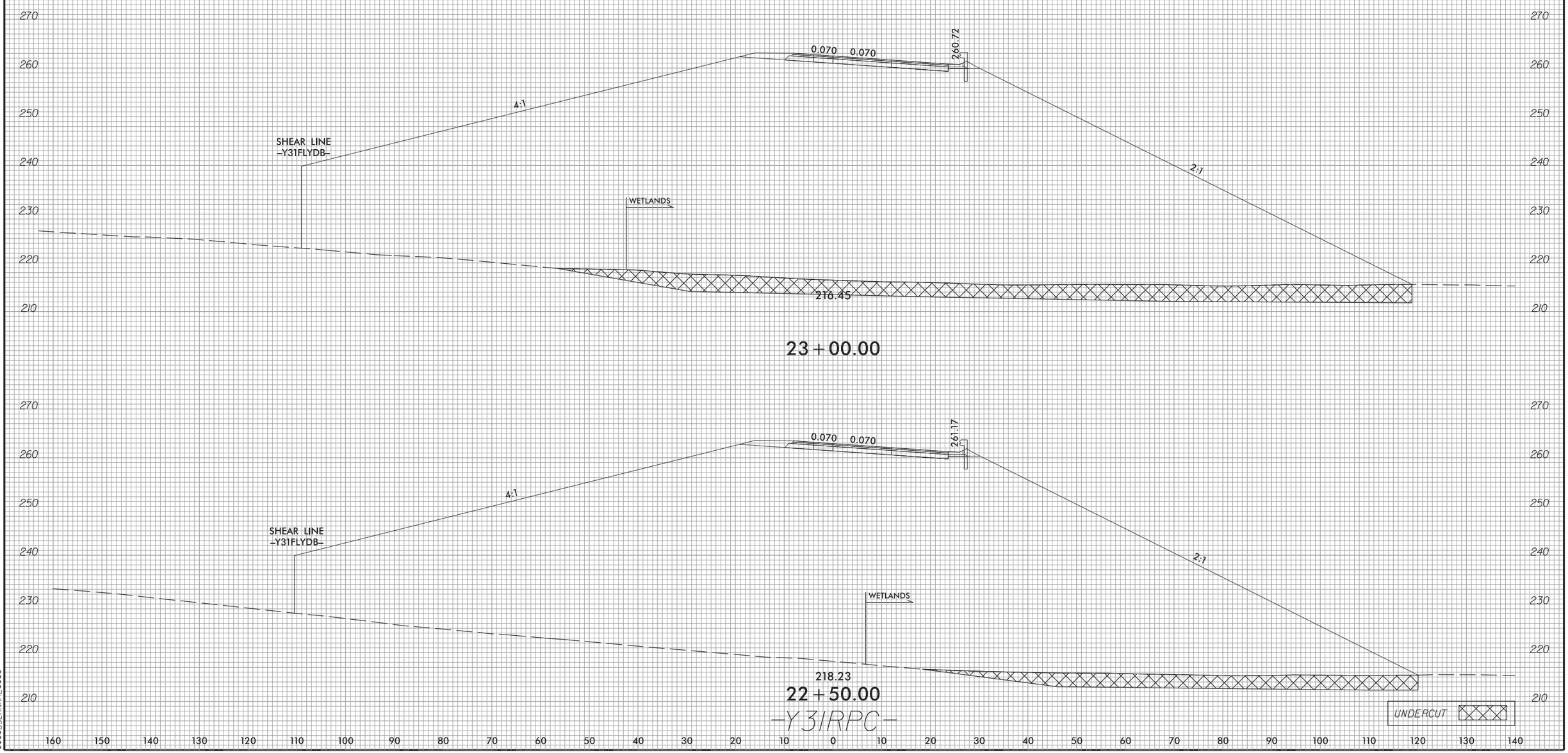
0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2829B	X-426

PERMIT DRAWING
SHEET 91 OF 112

SITE 34



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

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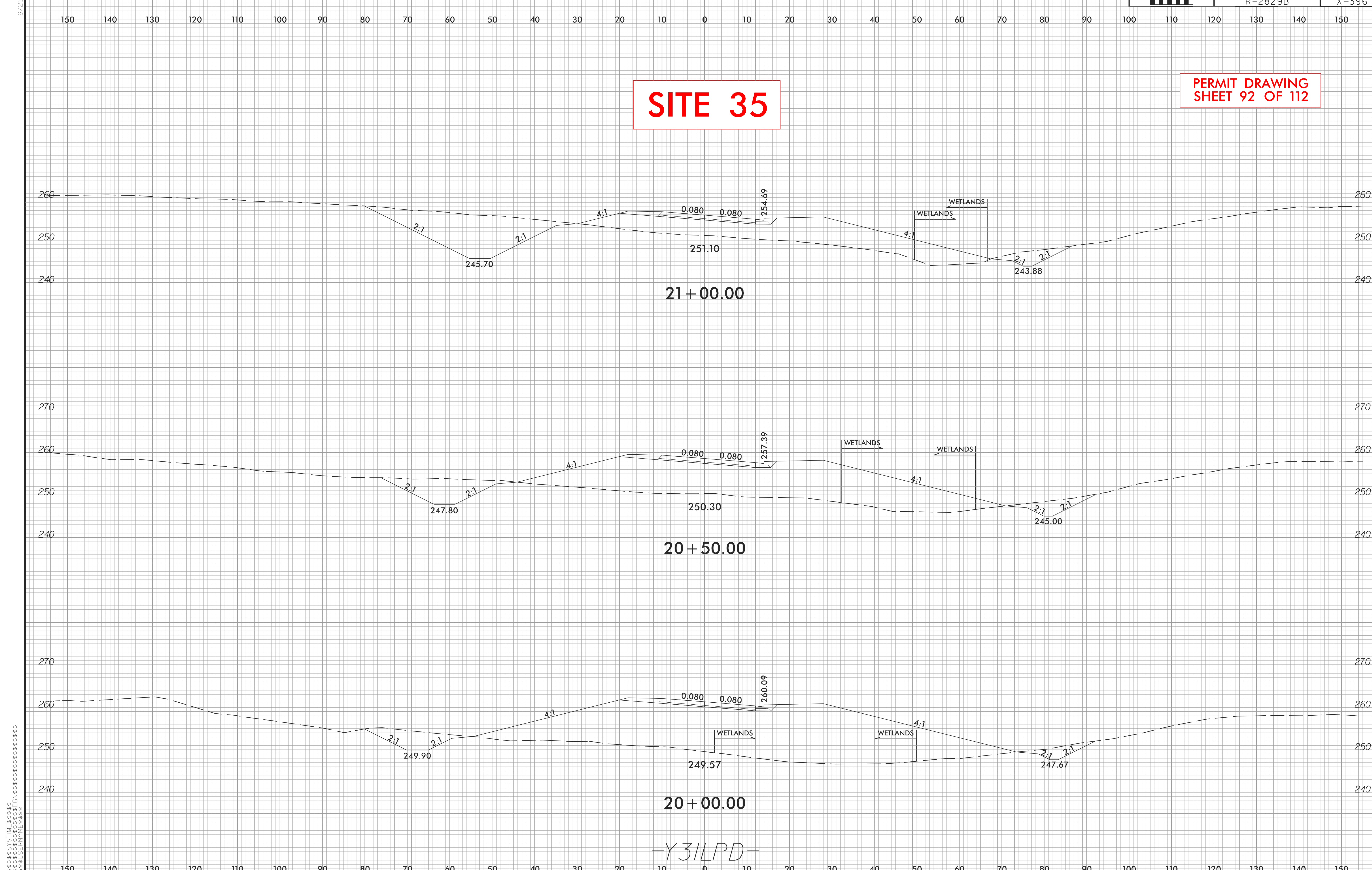
0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2829B	X-396

SITE 35

PERMIT DRAWING
SHEET 92 OF 112



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

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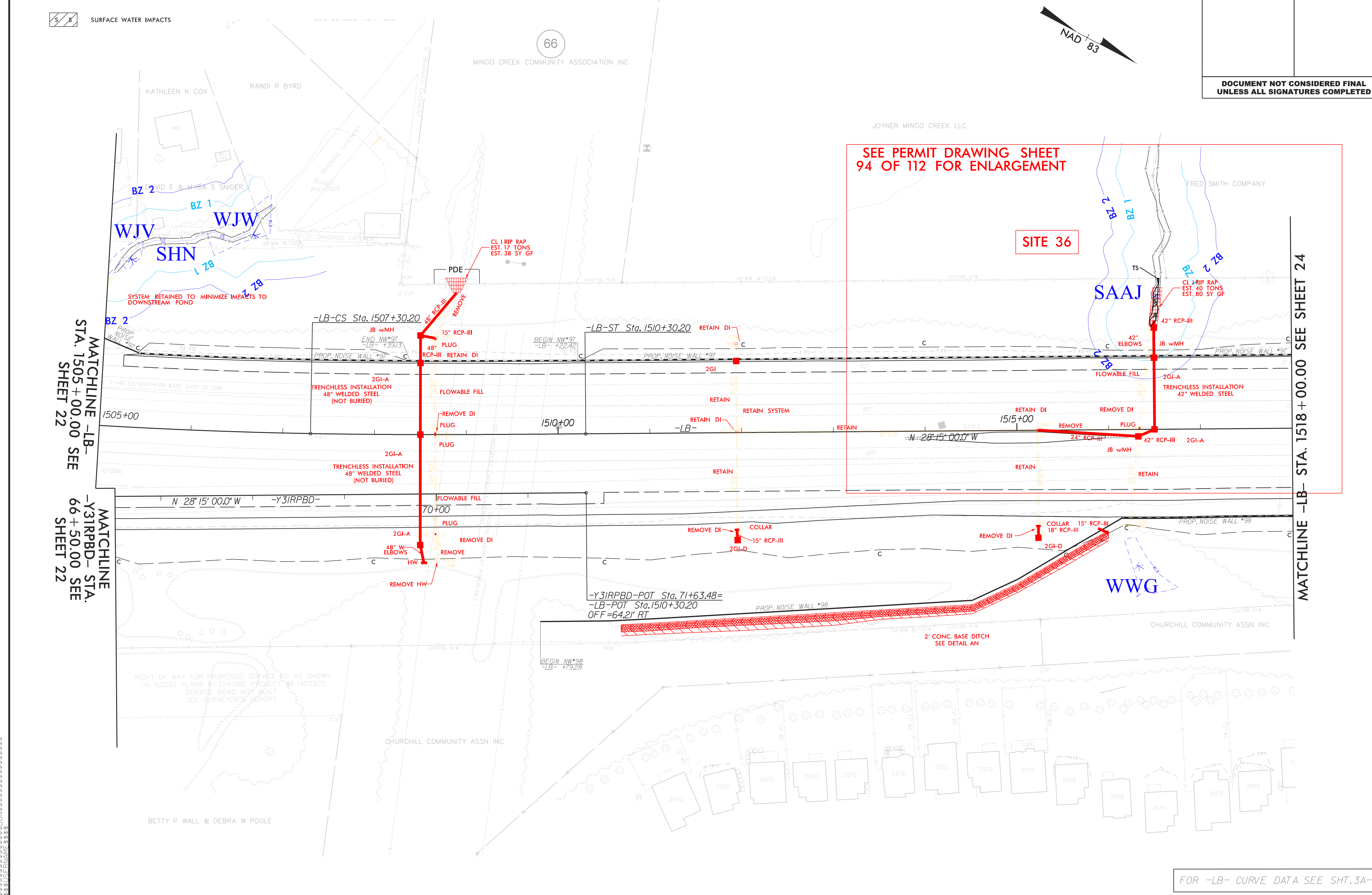

Submitted November 13, 2024

PERMIT DRAWING
SHEET 94 OF 112

SITE 36
ENLARGEMENT

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

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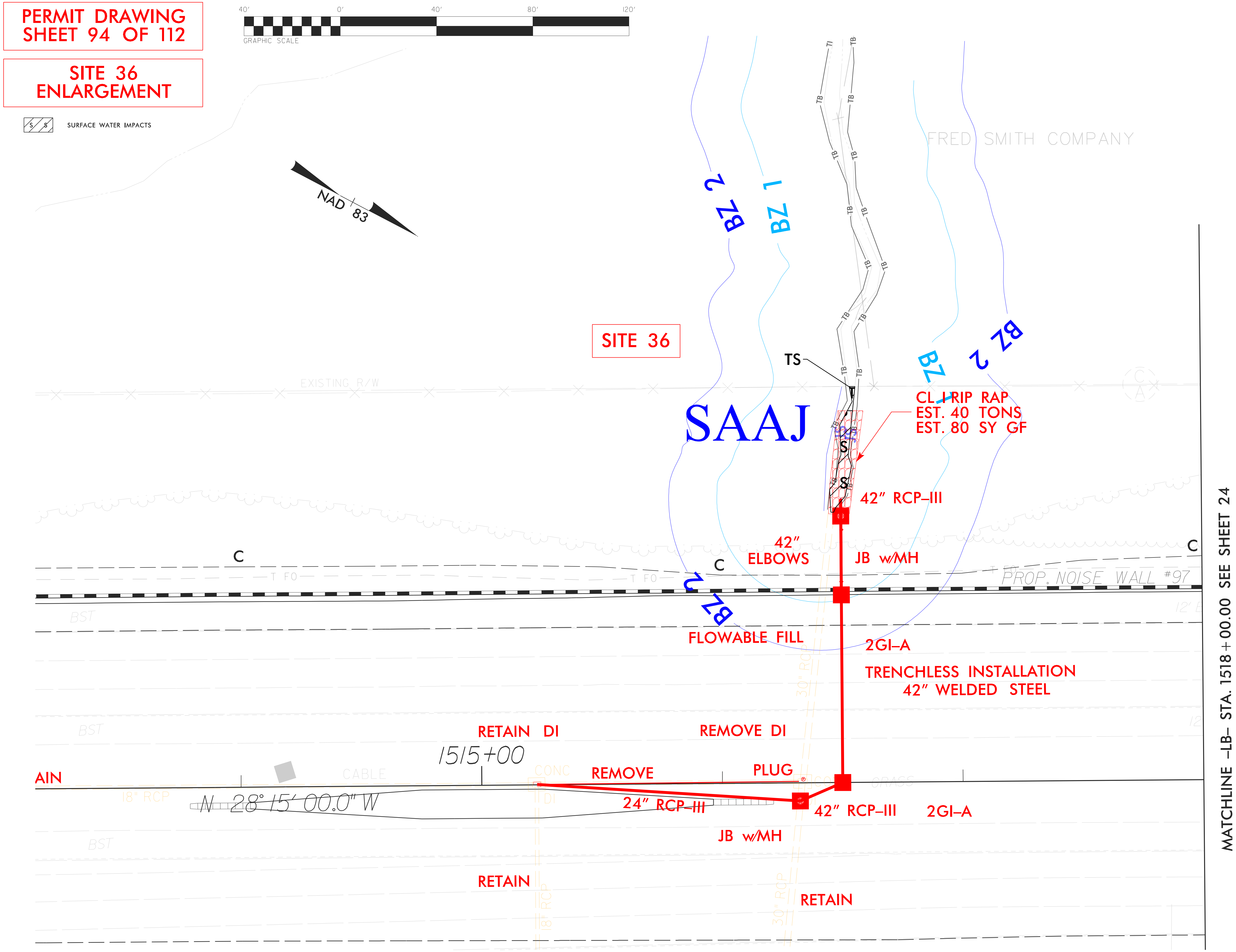

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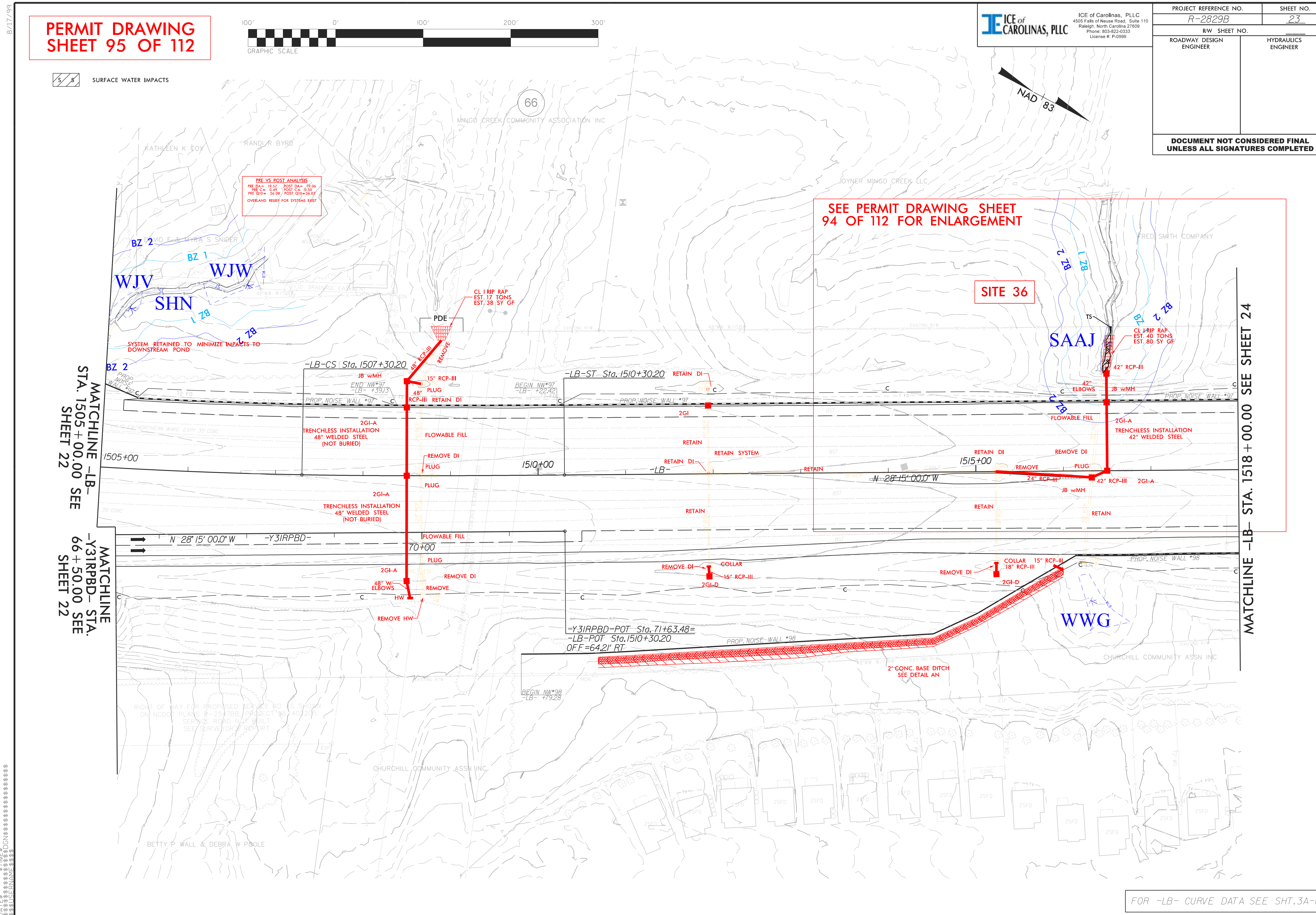

PERMIT DRAWING
SHEET 96 OF 112

100′ 0′ 100′ 200′ 300′
GRAPHIC SCALE

S S — SURFACE WATER IMPACTS
TS TS — TEMPORARY SURFACE WATER IMPACTS

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ICE of Carolinas, PLLC
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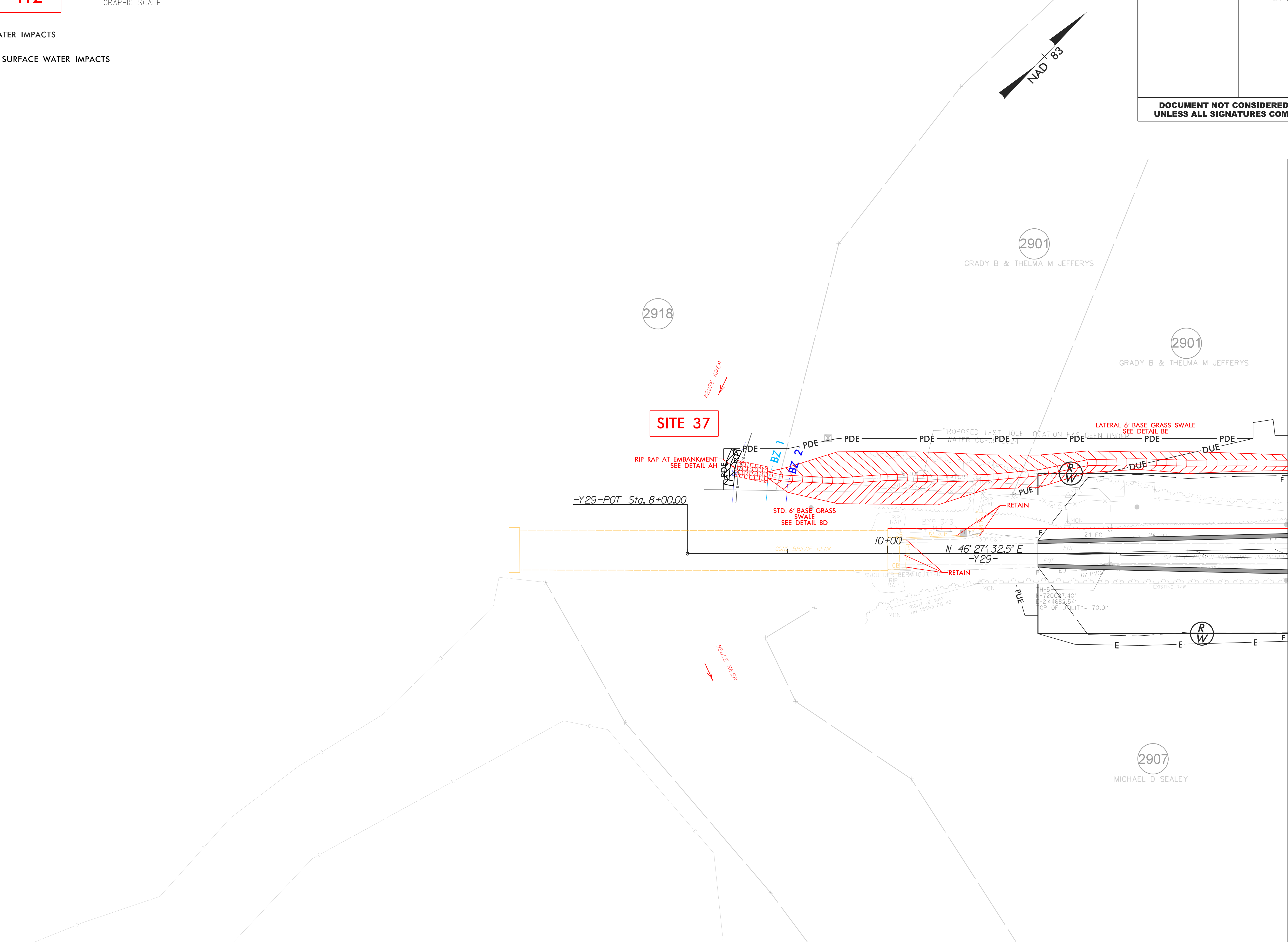
Raleigh, North Carolina 27609
Phone: 803-822-0333
License #: P-0999

PROJECT REFERENCE NO.	SHEET NO.
R-2829B	31
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



FOR -Y29- PROFILE SEE SHT.63

8/17/99

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

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PERMIT DRAWING SHEET 97 OF 112

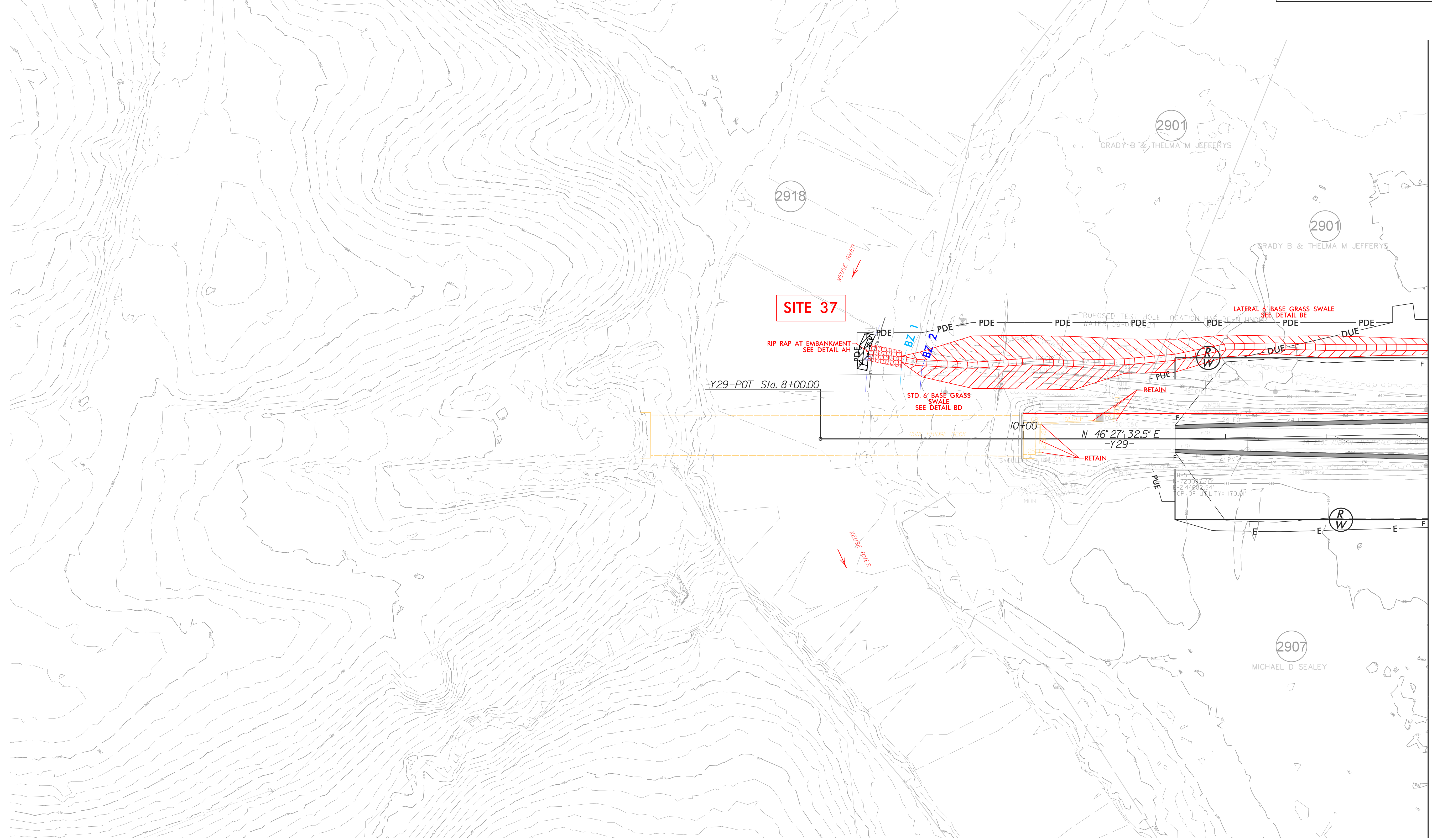
S S — SURFACE WATER IMPACTS

TS TS — TEMPORARY SURFACE WATER IMPACTS

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

ICE of Carolinas, PLLC 4505 Falls of Neuse Road, Suite 110 Raleigh, North Carolina 27609 Phone: 803-822-0333 License #: P-0999	PROJECT REFERENCE NO. R-2829B	SHEET NO. 31
	R/W SHEET NO.	
	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



MATCHLINE -Y29- STA. 14+00.00 SEE SHEET 32

FOR -Y29- PROFILE SEE SHT.63

8/17/99

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

Submitted November 13, 2024

8/17/99

PERMIT DRAWING SHEET 98 OF 112

NO IMPACTS THIS SHEET

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

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ICE of Carolinas, PLLC
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Raleigh, North Carolina 27609
Phone: 803-822-0333
License #: P-0999

PROJECT REFERENCE NO.	SHEET NO.
R-2829B	32
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

GRADY B & THELMA M JEFFERYS
2901
JACOB J & MARYLU SANOK
2902
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
2903
MICHAEL D SEALEY & NANCY F HILDEBRAND
2908
RONALD KURNEY
2909
MICHAEL D SEALEY
2907
COUNTY OF WAKE
4106

MATCHLINE -Y29- STA. 14+00.00 SEE SHEET 31

MATCHLINE -Y29- STA. 25+00.00 SEE SHEET 14

-29DRI-PC Sta. 10+99.29
N 43° 32' 27.5" W
-29DRI-PT Sta. 11+84.68
N 54° 18' 22.5" E
-29DRI-PC Sta. 14+30.74
15+00
N 27° 14' 03.8" W
-29DRI-POT Sta. 15+62.86
-29DRI-PT Sta. 15+01.90
-Y29-POT Sta. 16+49.61=
-29DRI-POT Sta. 10+00.00
-Y29-POT Sta. 16+48.84=
-Y29A-POT Sta. 10+00.00
-Y29-PC Sta. 18+52.84
20+00
15+00
N 46° 27' 32.5" E
S 47° 39' 31.6" E
N 39° 12' 43.6" E
-Y29A-PC Sta. 10+45.43
-Y29A-PC Sta. 13+99.81
-Y29A-PT Sta. 12+40.48
-Y29A-PT Sta. 16+30.60
-Y29- STA. 25+00.00
N 83° 17' 18.7" E

CL B RIP RAP EST. 5 TONS EST. 14 SY GF
CL B RIP RAP EST. 2 TONS EST. 7 SY GF
CL B RIP RAP EST. 3 TONS EST. 10 SY GF
CL B RIP RAP EST. 5 TONS EST. 14 SY GF
LATERAL 2' BASE DITCH SEE DETAIL A
LATERAL 4' BASE DITCH W/CL B RIP RAP SEE DETAIL AY
STD. 2' BASE DITCH SEE DETAIL I
STD. 6' BASE DITCH SEE DETAIL AP
SPECIAL CUT V DITCH SEE DETAIL S
2' BASE BERM DITCH SEE DETAIL Y
SP. 2' BASE DITCH W/CL B RIP RAP SEE DETAIL BA
24" RCP-III
18" RCP-III
15" RCP-III
15" RCP-IV
18" W/ELBOWS
REMOVE
REMOVE 24" RCP-III (NOT BURIED)
RETAIN
GRADE TO DRAIN
DRAIN POND
(Non-404) WIT
DUE
PUE
PDE
BDO
FS
2GI
DI
RW
CA

FOR -Y29- CURVE DATA SEE SHT.3A-I	FOR -Y29- PROFILE SEE SHT.63
FOR -Y29A- CURVE DATA SEE SHT.3A-I	FOR -Y29A- PROFILE SEE SHT.67
FOR -29DRI- CURVE DATA SEE SHT.3A-I	FOR -29DRI- PROFILE SEE SHT.67

$DATE$ $TIME$
$USERNAME$ DGN

Submitted November 13, 2024

8/17/99

PERMIT DRAWING
SHEET 99 OF 112

NO IMPACTS
THIS SHEET

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

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	32
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

GRADY B & THELMA M JEFFERYS
JACOB J & MARYLU SANOK
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
MICHAEL D SEALEY
MICHAEL D SEALEY & NANCY F HILDEBRAND
RONALD KURNEY
COUNTY OF WAKE

-29DRI-PC Sta. 10+99.29
N 43° 32' 27.5" W
-29DRI-PT Sta. 11+84.68
-29DRI-PC Sta. 14+30.74
-29DRI-POT Sta. 15+62.86
-29DRI-PT Sta. 15+01.90
N 54° 18' 22.5" E
N 27° 14' 03.8" W
-Y29-POT Sta. 16+49.61=
-29DRI-POT Sta. 10+00.00
-Y29-POT Sta. 16+48.84=
-Y29A-POT Sta. 10+00.00
-Y29-PC Sta. 18+52.84
-Y29A-PC Sta. 10+45.43
-Y29A-PC Sta. 13+99.81
-Y29A-PT Sta. 12+40.48
-Y29A-PT Sta. 16+30.60
N 46° 27' 32.5" E
S 47° 39' 31.6" E
N 39° 12' 43.6" E
N 83° 17' 18.7" E

MATCHLINE -Y29- STA. 14+00.00 SEE SHEET 31
MATCHLINE -Y29- STA. 25+00.00 SEE SHEET 14

CL B RIP RAP EST. 5 TONS EST. 14 SY GF
CL B RIP RAP EST. 7 SY GF
CL B RIP RAP EST. 3 TONS EST. 10 SY GF
CL B RIP RAP EST. 5 TONS EST. 14 SY GF
LATERAL 7' BASE DITCH SEE DETAIL G
LATERAL 4' BASE DITCH W/CL B RIP RAP SEE DETAIL AY
LAT. 2' BASE DITCH F SEE DETAIL A
SPECIAL CUT V DITCH SEE DETAIL S
2' BASE BERM DITCH SEE DETAIL Y
SP. 2' BASE DITCH W/CL B RIP RAP SEE DETAIL BA
STD. 2' BASE DITCH SEE DETAIL I
STD. 6' BASE DITCH SEE DETAIL AP
GRADE TO DRAIN
DRAIN POND
24" RCP-III
18" RCP-III
15" RCP-III
15" RCP-IV
18" W/ELBOWS
18" RCP-III (NOT BURIED)
REMOVE
RETAIN
(Non-404) WIT

FOR -Y29- CURVE DATA SEE SHT.3A-I	FOR -Y29- PROFILE SEE SHT.63
FOR -Y29A- CURVE DATA SEE SHT.3A-I	FOR -Y29A- PROFILE SEE SHT.67
FOR -29DRI- CURVE DATA SEE SHT.3A-I	FOR -29DRI- PROFILE SEE SHT.67

$DATE$ $TIME$
$USERNAME$ DGN

Submitted November 13, 2024

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PERMIT DRAWING SHEET 100 OF 112

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

S S SURFACE WATER IMPACTS

TS TS TEMPORARY SURFACE WATER IMPACTS

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PROJECT REFERENCE NO.	SHEET NO.
R-2829B	34
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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NAD 83

3001 SUNLIGHT HOLDINGS, LLC

3002 ROBERT L LEE, TRUSTEE

3003 CHRISTINE B & IRA G FLOYD

3004 SUMMERFIELD MOBILE HOME PARK LLC

52* LINDA T PAUL & MARY MCDONALD

-Y30C-PT Sta. 11+70.32

N 74° 03' 39.5" E

-Y30C-PC Sta. 12+60.09

-Y30C-PC Sta. 10+42.53

S 89° 09' 30.9" E -Y30-

10+00 15+00 20+00

N 0° 50' 29.1" E

-Y30C-POT Sta. 10+00.00=
-Y30-POT Sta.18+00.00

RETAIN SYSTEM

RETAIN

RETAIN AND ADJUST

COLLAR 15" RCP-IV

15" RCP-IV

2GI

REMOVE

DO NOT DISTURB

15" RCP-III

18" RCP-III

CB

STREAM INLET PROTECTION SEE DETAIL BQ

BZ 2 BZ 1 Z2

SEE PERMIT DRAWING SHEET 101 OF 112 FOR ENLARGEMENT

MATCHLINE -Y30- STA. 23+00.00 SEE SHEET 19

SITE 27

(SR 2516) HODGE RD.
15,500 / 30,000

16,100 / 28,700 -Y30- (SR 1007) POOLE RD. 15,700 / 29,400

7,400 / 10,300 | 7,000 / 12,100

400 / 2,000 | 400 / 900

1,900 / 10,500
(SR 2516) HODGE RD.

2025 ADT
2045 ADT

FOR -Y30- CURVE DATA SEE SHT.3A-1
FOR -Y30C- CURVE DATA SEE SHT.3A-2

FOR -Y30- PROFILE SEE SHT.67
FOR -Y30C- PROFILE SEE SHT.74

$DATE$ $TIME$
$USERNAME$ DGN

Submitted November 13, 2024

PERMIT DRAWING
SHEET 101 OF 112

SITE 27
ENLARGEMENT

S S SURFACE WATER IMPACTS

TS TS TEMPORARY SURFACE WATER IMPACTS

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

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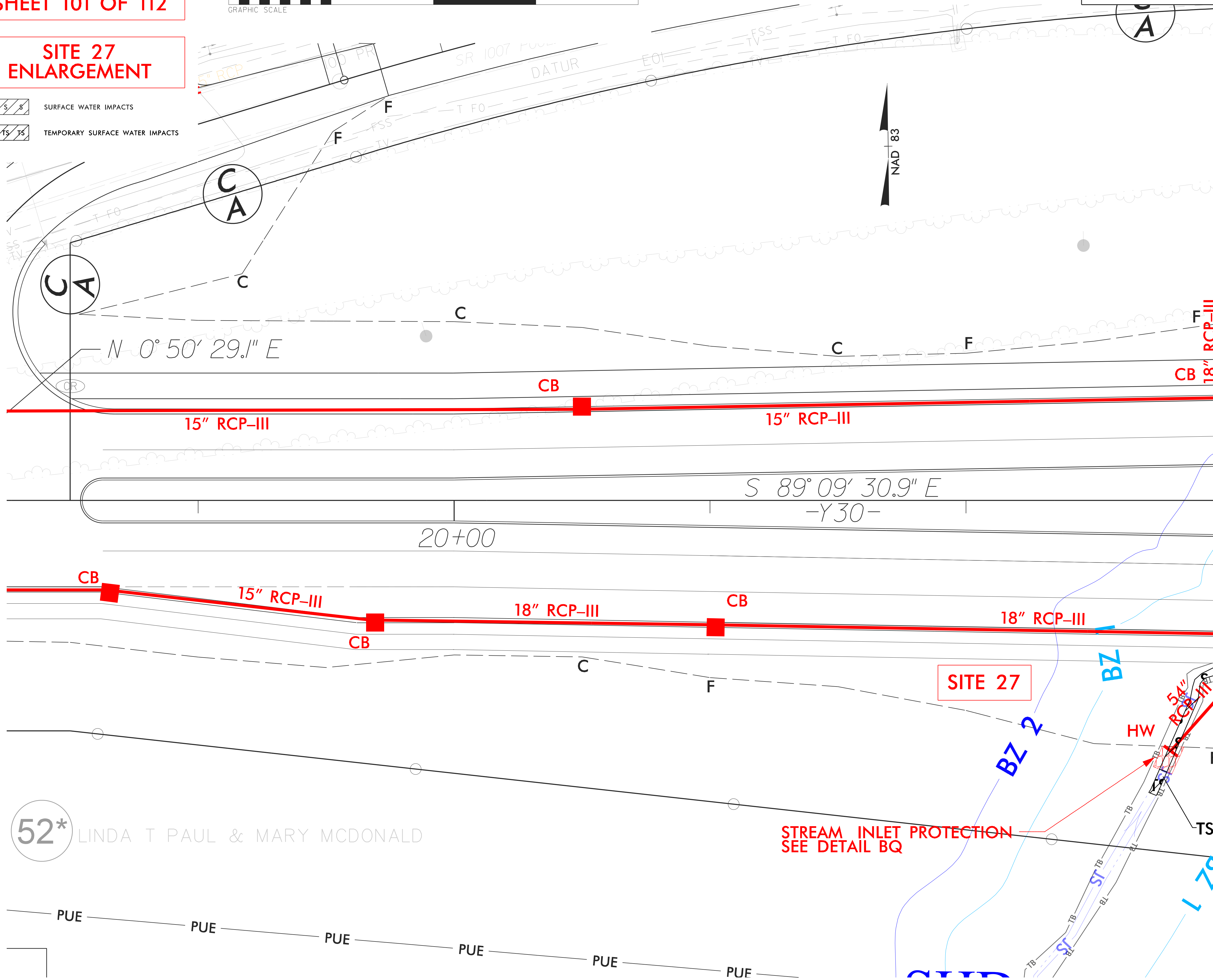
PROJECT REFERENCE NO.	SHEET NO.
R-2829B	____
R/W SHEET NO.	____
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



MATCHLINE -Y30- STA. 23+00.00 SEE SHEET 19

8/17/99

$DATE$ $TIME$ DGN $USERNAME$

Submitted November 13, 2024

8/17/99

PERMIT DRAWING SHEET 102 OF 112

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

S/S SURFACE WATER IMPACTS

TS/TS TEMPORARY SURFACE WATER IMPACTS

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R-2829B	34
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

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3002 ROBERT L LEE, TRUSTEE

3003 CHRISTINE B & IRA G FLOYD

3004 SUMMERFIELD MOBILE HOME PARK LLC

52* LINDA T PAUL & MARY MCDONALD

-Y30C-PT Sta. 11+70.32

-Y30C-PC Sta. 12+60.09

N 74° 03' 39.5" E

-Y30C-PC Sta. 10+42.53

15+00

20+00

S 89° 09' 30.9" E
-Y30-

10+00

15+00

N 0° 50' 29.1" E

-Y30C-PT Sta. 10+00.00=
-Y30-POT Sta.18+00.00

-Y30-POT Sta. 7+00.00

RETAIN SYSTEM

RETAIN

RETAIN AND ADJUST

DO NOT DISTURB

REMOVE

COLLAR 15" RCP-IV

15" RCP-III

18" RCP-III

2GI

CB

STREAM INLET PROTECTION SEE DETAIL BQ

BZ 2

BZ

HW

TS

INV=233.10'

INV=231.46'

30" CMP

INSET 'A'

INSET 'A'

MATCHLINE –Y30– STA. 23+00.00 SEE SHEET 19

SEE PERMIT DRAWING SHEET 101 OF 112 FOR ENLARGEMENT

SITE 27

(SR 2516) HODGE RD.
15,500 / 30,000

16,100 / 28,700 –Y30– (SR 1007) POOLE RD. 15,700 / 29,400

7,400 / 10,300 | 7,000 / 12,100

400 / 2,000 | 400 / 900

1,900 / 10,500
(SR 2516) HODGE RD.

2025 ADT / 2045 ADT

PAVEMENT REMOVAL

PROPOSED SIGNAL

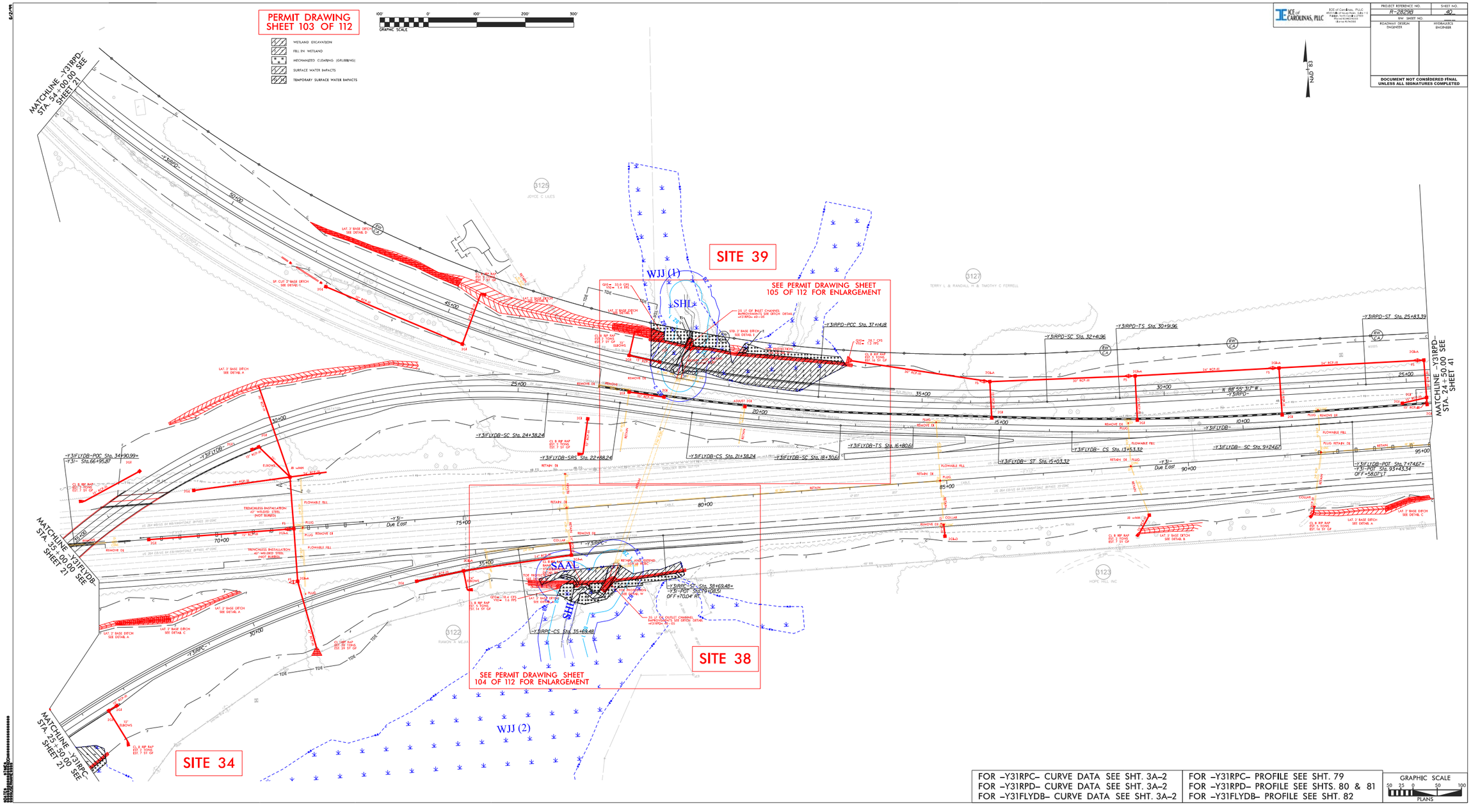
* ADVANCED ACQUISITION

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

FOR –Y30– CURVE DATA SEE SHT. 3A–1
FOR –Y30C– CURVE DATA SEE SHT. 3A–2

FOR –Y30– PROFILE SEE SHT. 68
FOR –Y30C– PROFILE SEE SHT. 75

$DATE$ $TIME$ $USERNAME$ DGN


PERMIT DRAWING
SHEET 103 OF 112
GRAPHIC SCALE
WETLAND EXCAVATION
FILL IN WETLAND
MECHANIZED CLEARING (GRUBBING)
SURFACE WATER IMPACTS
TEMPORARY SURFACE WATER IMPACTS
NAD 83
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
MATCHLINE -Y31RPD- STA. 54+00.00 SEE SHEET 21
SITE 39
SEE PERMIT DRAWING SHEET 105 OF 112 FOR ENLARGEMENT
WJJ (1)
SHL
SAAL
SITE 38
SEE PERMIT DRAWING SHEET 104 OF 112 FOR ENLARGEMENT
WJJ (2)
SITE 34
MATCHLINE -Y31RPC- STA. 25+50.00 SEE SHEET 21
MATCHLINE -Y31FLYDB- STA. 35+00.00 SEE SHEET 21
MATCHLINE -Y31RPD- STA. 24+50.00 SEE SHEET 41
-Y31RPD-PCC Sta. 37+14.18
-Y31RPD-SC Sta. 32+41.96
-Y31RPD-TS Sta. 30+91.96
-Y31RPD-ST Sta. 25+83.39
-Y31FLYDB-SC Sta. 24+38.24
-Y31FLYDB-SRS Sta. 22+88.24
-Y31FLYDB-CS Sta. 21+38.24
-Y31FLYDB-SC Sta. 18+30.61
-Y31FLYDB-TS Sta. 16+80.61
-Y31FLYDB- CS Sta. 13+53.32
-Y31FLYDB- ST Sta. 15+03.32
-Y31FLYDB- SC Sta. 9+24.67
-Y31FLYDB-POT Sta. 7+74.67 -Y31-POT Sta. 93+43.34 OFF=58.07' LT
-Y31RPC- ST Sta. 38+69.48 -Y31-POT Sta. 219+08.51 OFF=70.04' RT
-Y31RPC-CS Sta. 35+69.48
-Y31FLYDB-POC Sta. 34+90.99 -Y31- Sta. 66+95.87
-Y31RPC-
-Y31-
Due East
N 88°55'31" W
-Y31RPD-
-Y31FLYDB-
-Y31RPD-
-Y31RPC-
FOR -Y31RPC- CURVE DATA SEE SHT. 3A-2
FOR -Y31RPD- CURVE DATA SEE SHT. 3A-2
FOR -Y31FLYDB- CURVE DATA SEE SHT. 3A-2
FOR -Y31RPC- PROFILE SEE SHT. 79
FOR -Y31RPD- PROFILE SEE SHTS. 80 & 81
FOR -Y31FLYDB- PROFILE SEE SHT. 82
GRAPHIC SCALE
PLANS

Submitted November 13, 2024

8/17/99

PERMIT DRAWING SHEET 104 OF 112

SITE 38 ENLARGEMENT

GRAPHIC SCALE 40′ 0′ 40′ 80′ 120′

F/F FILL IN WETLAND

/ MECHANIZED CLEARING (GRUBBING)

S/S SURFACE WATER IMPACTS

TS/TS TEMPORARY SURFACE WATER IMPACTS

ICE of CAROLINAS, PLLC
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PROJECT REFERENCE NO.	SHEET NO.
R-2829B	
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

80+00

NAD 83

CABLE

MTL

CONCRETE

DI

24" RCP

RETAIN 24" RCP-III COLLAR

REMOVE DI

SHOULDER BERM GUTTER

-Y31RPC-

24" RCP-III

2GI-A

CL II RIP RAP BANK STABILIZATION DETAIL BP-1

TOE PROTECTION SEE DETAIL W

SAAL

BZ 1

BZ 2

RETAIN AND EXTEND 1@9'x6' RCBC

WLP

SHL

RPBL

TOE PROTECTION SEE DETAIL W

-Y31RPC-ST Sta. 38+69.48=
-Y31-POT Sta.79+08.51
OFF=70.04' RT

WLB

Q10= 18.4 CFS
V10= 1.6 FPS

RAP
ONS
Y GF

E

LAT. 2' BASE DITCH SEE DETAIL A

-Y31RPC-CS Sta. 35+69.48

35 LF OF OUTLET CHANNEL IMPROVEMENTS SEE DITCH DETAIL -Y31RPD- 40+05

SITE 38

SR 2601 ON RD

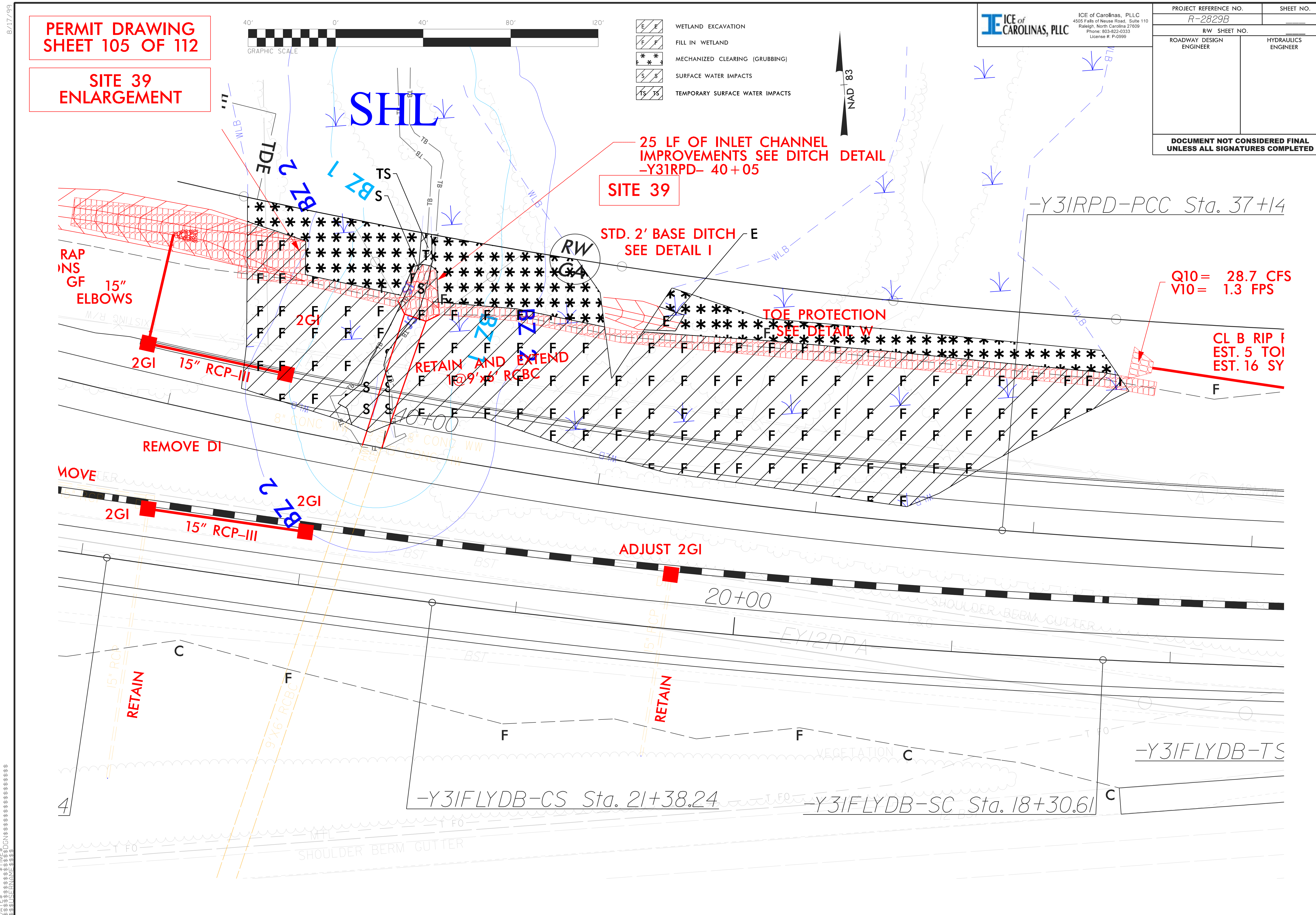
EXISTING R/W

19 BST

EIP

NOW

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


PERMIT DRAWING
SHEET 105 OF 112
SITE 39
ENLARGEMENT
GRAPHIC SCALE
40'
0'
40'
80'
120'
WETLAND EXCAVATION
FILL IN WETLAND
MECHANIZED CLEARING (GRUBBING)
SURFACE WATER IMPACTS
TEMPORARY SURFACE WATER IMPACTS
NAD 83
ICE of CAROLINAS, PLLC
ICE of Carolinas, PLLC
4505 Falls of Neuse Road, Suite 110
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Phone: 803-822-0333
License #: P-0999
PROJECT REFERENCE NO.
R-2829B
SHEET NO.
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED
SHL
25 LF OF INLET CHANNEL
IMPROVEMENTS SEE DITCH DETAIL
-Y31RPD- 40+05
SITE 39
STD. 2' BASE DITCH
SEE DETAIL I
TOE PROTECTION
SEE DETAIL W
-Y31RPD-PCC Sta. 37+14
Q10 = 28.7 CFS
V10 = 1.3 FPS
CL B RIP
EST. 5 TO
EST. 16 SY
RAP
NS
GF
15" ELBOWS
2GI
15" RCP-III
RETAIN AND EXTEND
1@9'x6' RCBC
REMOVE DI
MOVE
2GI
15" RCP-III
2GI
ADJUST 2GI
20+00
40+00
-EY12RPA
RETAIN
RETAIN
-Y31FLYDB-CS Sta. 21+38.24
-Y31FLYDB-SC Sta. 18+30.61
-Y31FLYDB-TS
TDE
TS
S
BZ 2
BZ 1
RW
GA

PERMIT DRAWING
SHEET 106 OF 112

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

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

ICE of Carolinas, PLLC

PROJECT REFERENCE NO.	SHEET NO.
R-2829B	42
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

MATCHLINE -Y31RPD- STA. 54+00.00 SEE SHEET 21

-Y31RPD-

SITE 39

SEE PERMIT DRAWING SHEET 105 OF 112 FOR ENLARGEMENT

WJJ (1)

SHL

-Y31RPD-PCC Sta. 37+14.18

-Y31RPD-SC Sta. 32+41.96

-Y31RPD-TS Sta. 30+19.96

-Y31RPD-ST Sta. 25+85.39

MATCHLINE -Y31RPD- STA. 24+50.00 SEE SHEET 41

-Y31FLYDB-POC Sta. 34+90.99=
-Y31- Sta.66+95.87

-Y31FLYDB-SC Sta. 24+38.24

-Y31FLYDB-SRS Sta. 22+88.24

-Y31FLYDB-CS Sta. 21+38.24

-Y31FLYDB-SC Sta. 18+30.61

-Y31FLYDB-TS Sta. 16+80.61

-Y31FLYDB- CS Sta. 13+53.32

-Y31FLYDB- ST Sta. 11+03.32

-Y31FLYDB- SC Sta. 9+24.67

-Y31FLYDB-POT Sta. 7+74.67=
-Y31-POT Sta. 93+45.34
OFF=58.07' LT

-Y31-
Due East

MATCHLINE -Y31FLYDB- STA. 35+00.00 SEE SHEET 21

-Y31RPC-

SAAL

SHL

-Y31RPC-ST Sta. 38+69.48=
-Y31-POT Sta. 279+08.51
OFF=70.04' RT

-Y31RPC-CS Sta. 35+69.48

SEE PERMIT DRAWING SHEET 104 OF 112 FOR ENLARGEMENT

SITE 38

WJJ (2)

MATCHLINE -Y31RPC- STA. 25+50.00 SEE SHEET 21

SITE 34

PAVEMENT REMOVAL

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

FOR -Y31RPC- CURVE DATA SEE SHT. 3A-2
FOR -Y31RPD- CURVE DATA SEE SHT. 3A-2
FOR -Y31FLYDB- CURVE DATA SEE SHT. 3A-2

FOR -Y31RPC- PROFILE SEE SHT. 80
FOR -Y31RPD- PROFILE SEE SHTS. 81 & 82
FOR -Y31FLYDB- PROFILE SEE SHT. 83
FOR -Y31- PROFILE SEE SHT. 86

GRAPHIC SCALE
50 25 0 50 100
PLANS

ICE of CAROLINAS, PLLC
ICE of Carolinas, PLLC
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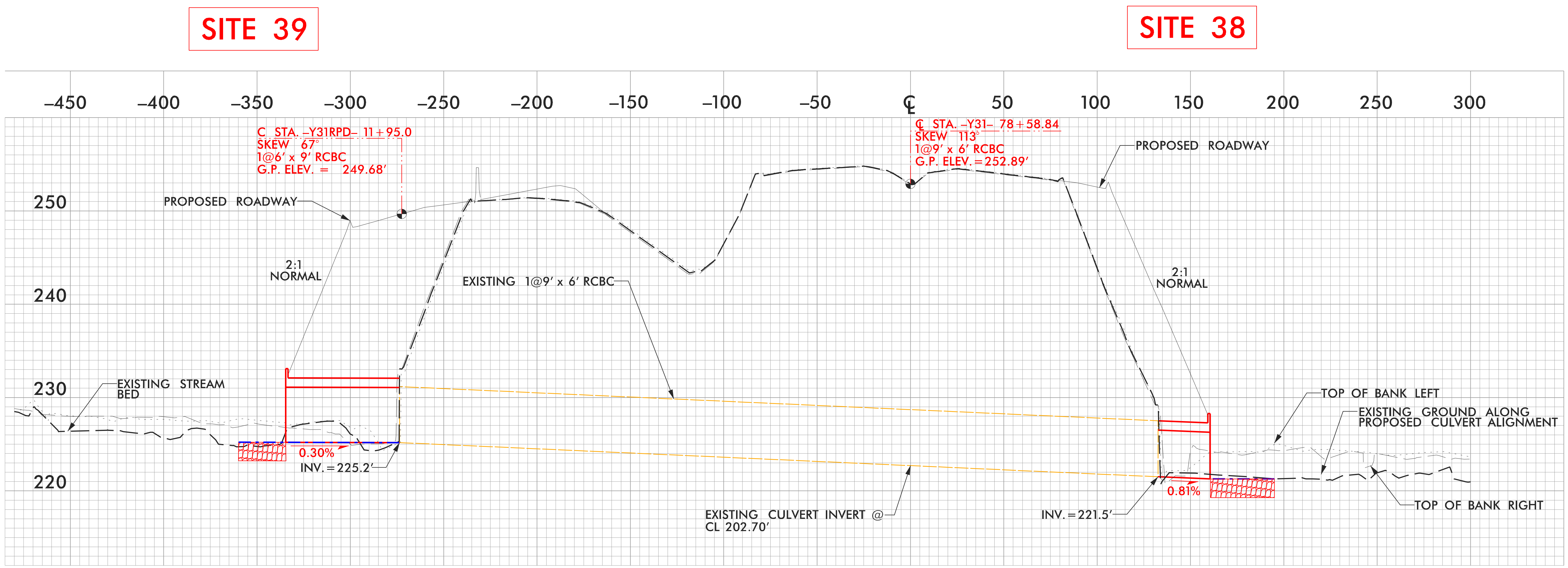
PROJECT REFERENCE NO.	SHEET NO.
R-2829B	____
R/W SHEET NO.	____
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 107 OF 112



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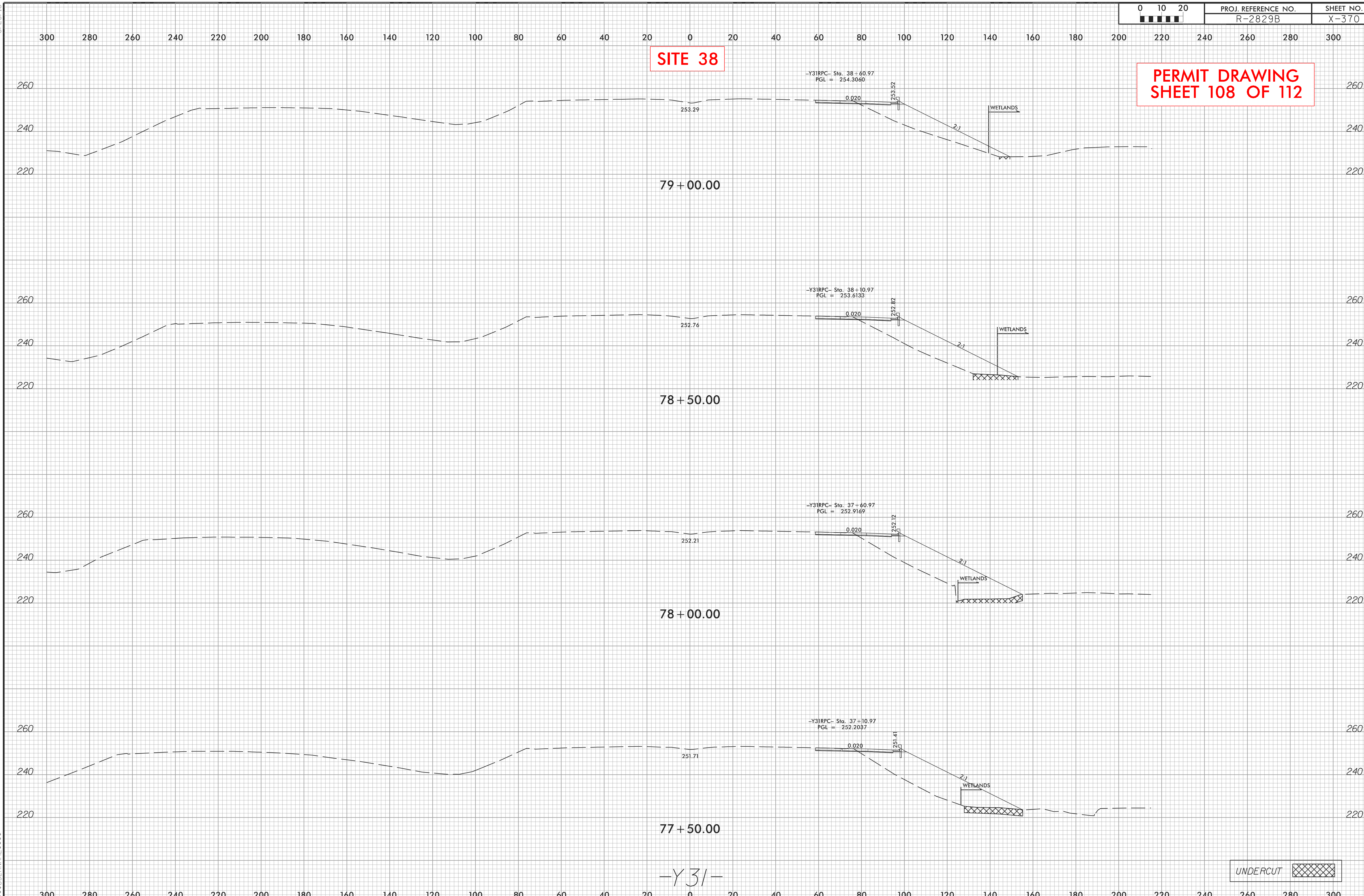
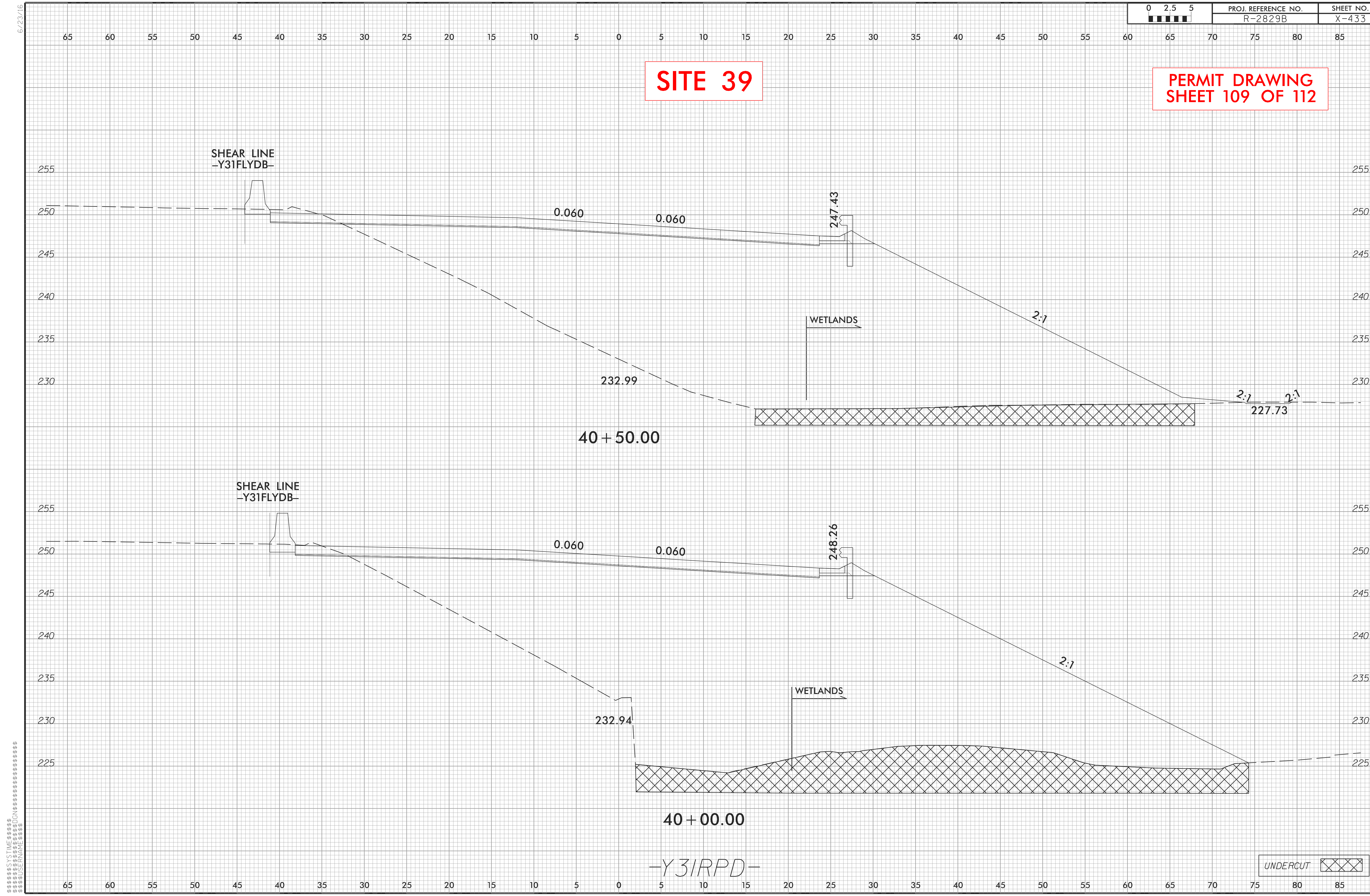
$DATE$ $TIME$ DGN $USERNAME$



0 10 20
PROJ. REFERENCE NO.
R-2829B
SHEET NO.
X-370
SITE 38
PERMIT DRAWING
SHEET 108 OF 112
-Y31RPC- Sta. 38+60.97
PGL = 254.3060
0.020
253.52
253.29
WETLANDS
2:1
79+00.00
-Y31RPC- Sta. 38+10.97
PGL = 253.6133
0.020
252.82
252.76
WETLANDS
2:1
78+50.00
-Y31RPC- Sta. 37+60.97
PGL = 252.9169
0.020
252.12
252.21
WETLANDS
2:1
78+00.00
-Y31RPC- Sta. 37+10.97
PGL = 252.2037
0.020
251.41
251.71
WETLANDS
2:1
77+50.00
UNDERCUT
-Y31-
6/23/16
$$$$$$$$SYSTIME$$$$
$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$


PROJ. REFERENCE NO.
R-2829B
SHEET NO.
X-433
0 2.5 5
SITE 39
PERMIT DRAWING
SHEET 109 OF 112
SHEAR LINE
-Y31FLYDB-
0.060
0.060
247.43
2:1
WETLANDS
232.99
2:1
2:1
227.73
40 + 50.00
SHEAR LINE
-Y31FLYDB-
0.060
0.060
248.26
2:1
WETLANDS
232.94
40 + 00.00
-Y3IRPD-
UNDERCUT
6/23/16
$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$$$
$$$$$USERNAME$$$$

Submitted November 13, 2024

WETLAND AND SURACE WATER IMPACTS SUMMARY

Site No.	Station (From/To)	Structure Size / Type	Wetland and/or Stream ID	WETLAND IMPACTS: Permanent Fill In Wetlands (ac)	WETLAND IMPACTS: Temp. Fill In Wetlands (ac)	WETLAND IMPACTS: Excavation in Wetlands (ac)	WETLAND IMPACTS: Mechanized Clearing in Wetlands (ac)	WETLAND IMPACTS: Hand Clearing in Wetlands (ac)	SURFACE WATER IMPACTS: Permanent SW impacts (ac)	SURFACE WATER IMPACTS: Temp. SW impacts (ac)	SURFACE WATER IMPACTS: Existing Channel Impacts Permanent (ft)	SURFACE WATER IMPACTS: Existing Channel Impacts Temp. (ft)	SURFACE WATER IMPACTS: Natural Stream Design (ft)
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	COUNTERSUNK RIPRAP	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	COUNTERSUNK RIPRAP	SGK						0.013		55		
7	-L- 1244+19/1244+91, LT	COUNTERSUNK RIPRAP	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	COUNTERSUNK RIPRAP	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	COUNTERSUNK RIPRAP	SGI						0.007		26		
12	-L- 1288+06/1288+28, RT	BANK STABILIZATION	SGI						0.014	0.002	61	5	
14	-LB- 1315+04 TO 1315+72 LT	CHANNEL REALIGNMENT	WIP			0.002	0.011						
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						0.016	0.019	76	108	
16	-LB- 1323+35 TO 1323+55 RT	DITCH	SGT						0.002	0.001	10	12	
TOTALS*:				0.518	0.000	0.074	0.083	0.000	7.375	0.395	1916	762	

*Rounded totals are sum of actual impacts

NOTES:

SITE 13 CONTAINS NO WET IMPACTS AND HAS BEEN OMITTED FROM WETLAND IMPACT SUMMARY
SITE 15 WETLAND WIR IS NON-404

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
10/14/2024
WAKE COUNTY

R-2829B

WETLAND AND SURACE WATER IMPACTS SUMMARY

Site No.	Station (From/To)	Structure Size / Type	Wetland and/or Stream ID	WETLAND IMPACTS: Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	SURFACE WATER IMPACTS: 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			0.053		285	
18	-LB- 1345+30 TO 1346+41 M	BANK STABILIZATION	SGU						0.019	0.022	60	70	
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		0.028	0.054		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	0.207		0.034	0.166						
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*:				3.139	0.000	0.266	0.681	0.000	6.782	0.088	3977	430	

*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
WAKE COUNTY

R-2829B

WETLAND AND SURACE WATER IMPACTS SUMMARY

Site No.	Station (From/To)	Structure Size / Type	Wetland and/or Stream ID	WETLAND IMPACTS: Permanent Fill In Wetlands (ac)	WETLAND IMPACTS: Temp. Fill In Wetlands (ac)	WETLAND IMPACTS: Excavation in Wetlands (ac)	WETLAND IMPACTS: Mechanized Clearing in Wetlands (ac)	WETLAND IMPACTS: Hand Clearing in Wetlands (ac)	SURFACE WATER IMPACTS: Permanent SW impacts (ac)	SURFACE WATER IMPACTS: Temp. SW impacts (ac)	SURFACE WATER IMPACTS: Existing Channel Impacts Permanent (ft)	SURFACE WATER IMPACTS: Existing Channel Impacts Temp. (ft)	SURFACE WATER IMPACTS: Natural Stream Design (ft)
31	-LB- 1453+07 TO 1454+88 M	ROADWAY FILL	WJK	0.612			0.002						
32	-LB- 1456+41 TO 1461+83 M	BRIDGE	SHC, WJJ(1)	0.008	0.623		0.270	0.39		0.030		269	
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)	0.212		0.040	0.115		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			0.518		0.074	0.083		7.375	0.395	1916	762	
	PAGE 111 TOTALS			3.139		0.266	0.681		6.782	0.088	3977	430	
TOTALS*:				7.112	0.623	0.566	1.814	0.390	15.097	0.547	7859	1653	

*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
WAKE COUNTY

R-2829B

Submitted November 13, 2024

09/08/69

TIP PROJECT: R-2829B

CONTRACT: C204825

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WAKE COUNTY

BUFFER DRAWING
SHEET 1 OF 34

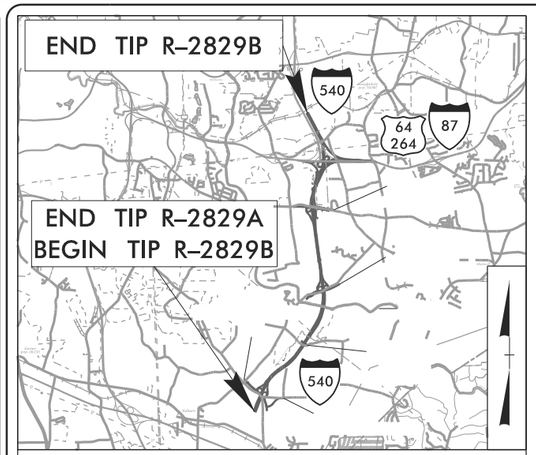
BUFFER IMPACTS PERMIT

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

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

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

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



VICINITY MAP
(Not to Scale)

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

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

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

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

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

★ PROPOSED SIGNAL

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

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

DESIGN DATA

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

PROJECT LENGTH

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

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

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

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
8/29/2023

LETTING DATE:
8/29/2023

BRIAN LUSK, P.E.
PROJECT ENGINEER

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

HYDRAULICS ENGINEER

_____ P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

_____ P.E.
SIGNATURE:

NORTH CAROLINA
Turnpike Authority

Submitted November 13, 2024

8/17/99

ARCADIS
Arcadis CE, Inc.
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License #: F-0299

ICE of CAROLINAS, PLLC
ICE of Carolinas, PLLC
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Raleigh, North Carolina 27609
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License #: P-0999

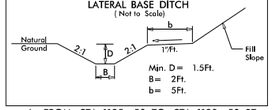
PROJECT REFERENCE NO.	SHEET NO.
R-2829B	2D-1
R/W SHEET NO.	

HYDRAULICS ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 2 OF 34

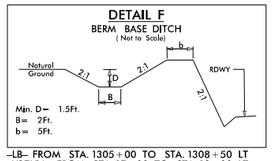
DETAIL A
LATERAL BASE DITCH
(Not to Scale)



Min. D= 1.5Ft.
B= 2Ft.
b= 5Ft.

–L– FROM STA. 1195+50 TO STA. 1198+50 RT
–L– FROM STA. 1249+04 TO STA. 1250+25 LT
–L– FROM STA. 1254+34 TO STA. 1256+00 LT
–L– FROM STA. 1264+10 TO STA. 1265+00 RT
–L– FROM STA. 1265+52 TO STA. 1267+00 RT
–LB– FROM STA. 1404+70 TO STA. 1405+77 LT
–LB– FROM STA. 1439+42 TO STA. 1441+00 LT
–LB– FROM STA. 1440+64 TO STA. 1445+00 RT
–LB– FROM STA. 1448+05 TO STA. 1450+50 LT
–LB– FROM STA. 1452+50 TO STA. 1454+00 RT
–LB– FROM STA. 1522+00 TO STA. 1523+75 RT
–LB– FROM STA. 1526+63 TO STA. 1529+00 RT
–Y27– FROM STA. 27+50 TO STA. 29+50 RT
–Y27– FROM STA. 44+00 TO STA. 45+00 RT
–Y27A– FROM STA. 15+50 TO STA. 17+00 LT
–Y27A– FROM STA. 26+00 TO STA. 30+00 LT
–Y27LPA– FROM STA. 19+00 TO STA. 21+19 RT
–Y27LPA– FROM STA. 19+00 TO STA. 21+00 LT
–Y27LPD– FROM STA. 20+70 TO STA. 22+07 RT
–Y29– FROM STA. 18+00 TO STA. 21+50 LT
–Y29A– FROM STA. 11+00 TO STA. 15+00 LT
–Y30A– FROM STA. 16+50 TO STA. 17+87 LT
–Y30A– FROM STA. 17+87 TO STA. 19+00 LT
–Y30RPB– FROM STA. 10+00 TO STA. 11+23 LT
–Y31– FROM STA. 92+44 TO STA. 94+00 RT
–Y31– FROM STA. 104+87 TO STA. 108+00 RT
–Y31FLYDB– FROM STA. 27+00 TO STA. 32+00 RT
–Y31FLYDB– FROM STA. 52+00 TO STA. 52+84 LT
–Y31LPB– FROM STA. 17+10 TO STA. 20+93 LT
–Y31LPD– FROM STA. 19+00 TO STA. 24+50 RT
–Y31RPB– FROM STA. 23+30 TO STA. 24+20 RT
–Y31RPB– FROM STA. 25+00 TO STA. 29+19 RT
–Y31RPC– FROM STA. 26+60 TO STA. 27+50 LT
–Y31RPC– FROM STA. 28+50 TO STA. 30+00 LT
–Y31RPC– FROM STA. 35+80 TO STA. 36+48 RT
–Y31RPD– FROM STA. 54+50 TO STA. 57+00 RT
–Y31RPD– FROM STA. 58+20 TO STA. 60+00 RT

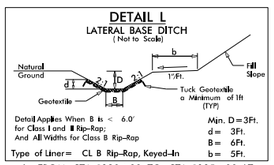
DETAIL F
BERM BASE DITCH
(Not to Scale)



Min. D= 1.5Ft.
B= 2Ft.
b= 5Ft.

–LB– FROM STA. 1305+00 TO STA. 1308+50 LT
–Y27LPA– FROM STA. 17+00 TO STA. 19+00 LT

DETAIL L
LATERAL BASE DITCH
(Not to Scale)



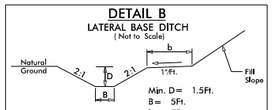
Detail Applies When B is < 6.0'
for Class I and II Rip-Rap;
And All Widths for Class B Rip-Rap

Min. D=3Ft.
d= 3Ft.
B= 6Ft.
b= 5Ft.

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

–L– FROM STA. 1230+00 TO STA. 1235+00 LT
–L– FROM STA. 1264+35 TO STA. 1269+60 LT
–Y29RPA– FROM STA. 19+00 TO STA. 21+00 RT

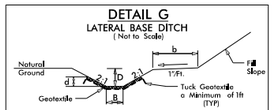
DETAIL B
LATERAL BASE DITCH
(Not to Scale)



Min. D= 1.5Ft.
B= 5Ft.
b= 5Ft.

–LB– FROM STA. 1391+50 TO STA. 1394+30 LT
–LB– FROM STA. 1447+00 TO STA. 1448+05 LT
–LB– FROM STA. 1454+00 TO STA. 1454+64 RT
–Y31– FROM STA. 88+90 TO STA. 90+20 RT
–Y31RPD– FROM STA. 41+75 TO STA. 45+00 RT

DETAIL G
LATERAL BASE DITCH
(Not to Scale)



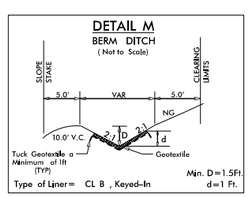
Detail Applies When B is < 6.0'
for Class I and II Rip-Rap;
And All Widths for Class B Rip-Rap

Min. D=1.5Ft.
d= 1.5Ft.
B= 5Ft.
b= 5Ft.

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

–L– FROM STA. 1278+50 TO STA. 1288+00 RT
–Y30– FROM STA. 26+30 TO STA. 27+80 LT
–Y31RPB– FROM STA. 19+50 TO STA. 23+30 RT

DETAIL M
BERM DITCH
(Not to Scale)

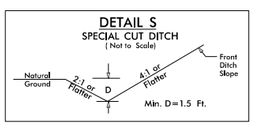


Min. D=1.5Ft.
d=1 Ft.

Type of Liner= CL B , Keyed-In

–LB– FROM STA. 1308+50 TO STA. 1309+60 LT
–Y29LPD– FROM STA. 10+00 TO STA. 18+50 RT

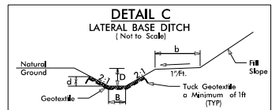
DETAIL S
SPECIAL CUT DITCH
(Not to Scale)



Min. D=1.5 Ft.

–L– FROM STA. 1255+60 TO STA. 1257+75 RT
–L– FROM STA. 1256+00 TO STA. 1259+52 LT
–LB– FROM STA. 1296+50 TO STA. 1299+00 LT
–LB– FROM STA. 1297+65 TO STA. 1300+29 RT
–LB– FROM STA. 1300+29 TO STA. 1302+50 LT
–LB– FROM STA. 1305+00 TO STA. 1305+50 LT
–LB– FROM STA. 1309+00 TO STA. 1309+60 LT
–LB– FROM STA. 1344+00 TO STA. 1344+40 LT
–LB– FROM STA. 1399+50 TO STA. 1403+00 LT
–LB– FROM STA. 1399+50 TO STA. 1402+50 RT
–LB– FROM STA. 1421+00 TO STA. 1421+50 LT
–LB– FROM STA. 1442+00 TO STA. 1445+00 LT
–LB– FROM STA. 1446+00 TO STA. 1446+75 LT
–Y27– FROM STA. 22+32 TO STA. 24+00 RT
–Y27A– FROM STA. 10+72 TO STA. 13+00 LT
–Y27C– FROM STA. 14+50 RT TO –Y27A– 24+50 LT
–Y27C– FROM STA. 14+50 LT TO –Y27A– 25+50 LT
–Y29– FROM STA. 21+50 TO STA. 22+00 LT
–Y29– FROM STA. 39+50 TO STA. 41+00 LT
–Y29– FROM STA. 49+00 TO STA. 51+50 RT
–Y30LPB– FROM STA. 7+50 TO STA. 9+00 RT
–Y30RPB– FROM STA. 12+23 TO STA. 13+73 LT
–Y30RPC– FROM STA. 12+78 TO STA. 14+27 RT
–Y30RPD– FROM STA. 27+56 TO STA. 28+22 LT
–Y30RPD– FROM STA. 27+56 TO STA. 28+75 RT
–Y31– FROM STA. 111+60 TO STA. 114+50 LT
–Y31FLYDB– FROM STA. 50+00 TO STA. 52+00 LT
–Y31RPD– FROM STA. 60+00 TO STA. 61+00 RT

DETAIL C
LATERAL BASE DITCH
(Not to Scale)



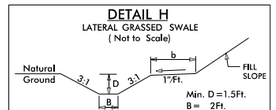
Detail Applies When B is < 6.0'
for Class I and II Rip-Rap;
And All Widths for Class B Rip-Rap

Min. D=1.5Ft.
d= 1.5Ft.
B= 2Ft.
b= 5Ft.

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

–L– FROM STA. 1274+82 TO STA. 1275+45 LT
–L– FROM STA. 1284+30 TO STA. 1288+20 LT
–LB– FROM STA. 1374+11 TO STA. 1375+00 LT
–LB– FROM STA. 1377+00 TO STA. 1378+50 RT
–LB– FROM STA. 1380+50 TO STA. 1381+22 LT
–LB– FROM STA. 1387+50 TO STA. 1388+90 LT
–LB– FROM STA. 1389+50 TO STA. 1390+00 LT
–Y27– FROM STA. 26+17 TO STA. 27+00 LT
–Y29– FROM STA. 21+00 TO STA. 22+00 RT
–Y30– FROM STA. 23+00 TO STA. 24+00 LT
–Y31– FROM STA. 94+00 TO STA. 95+00 RT
–Y31RPC– FROM STA. 27+50 TO STA. 28+50 LT

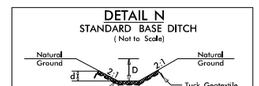
DETAIL H
LATERAL GRASSED SWALE
(Not to Scale)



Min. D=1.5Ft.
B= 2Ft.
b= 5Ft.

–LB– FROM STA. 1380+11 TO STA. 1383+00 RT

DETAIL N
STANDARD BASE DITCH
(Not to Scale)



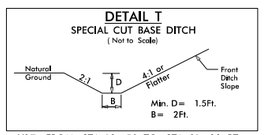
Detail Applies When B is < 6.0'
for Class I and II Rip-Rap;
And All Widths for Class B Rip-Rap

Min. D=1.5Ft.
Max. d=1.5Ft.
B= 3Ft.

Type of Liner= B Rip-Rap, Keyed-In

–LB– FROM STA. 1329+00 TO STA. 1330+00 RT

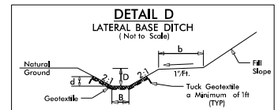
DETAIL T
SPECIAL CUT DITCH
(Not to Scale)



Min. D= 1.5Ft.
B= 2Ft.

–Y27– FROM STA. 18+50 TO STA. 21+22 RT
–Y27A– FROM STA. 21+50 TO STA. 24+50 LT
–Y27A– FROM STA. 30+00 TO STA. 30+50 LT
–Y29– FROM STA. 40+57 TO STA. 46+00 RT
–Y31RPD– FROM STA. 47+50 TO STA. 48+50 LT
–Y30RPB– FROM STA. 19+36 TO STA. 21+50 LT
–Y30RPB– FROM STA. 20+00 TO STA. 21+00 RT

DETAIL D
LATERAL BASE DITCH
(Not to Scale)



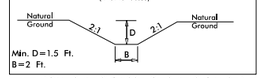
Detail Applies When B is < 6.0'
for Class I and II Rip-Rap;
And All Widths for Class B Rip-Rap

Min. D=1.5Ft.
d= 1.5Ft.
B= 3Ft.
b= 5Ft.

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

–LB– FROM STA. 1381+22 TO STA. 1383+00 LT
–LB– FROM STA. 1403+50 TO STA. 1404+70 RT
–Y30A– FROM STA. 22+03 TO STA. 23+50 LT
–Y30RPB– FROM STA. 18+48 TO STA. 19+36 LT
–Y31RPB– FROM STA. 14+50 TO STA. 19+50 RT
–Y31RPD– FROM STA. 45+00 TO STA. 48+50 RT

DETAIL I
STANDARD BASE DITCH
(Not to Scale)



Min. D=1.5 Ft.
B=2 Ft.

–L– FROM STA. 1216+00 TO STA. 1216+50 RT
–LB– FROM STA. 1372+49 RT
TOP EL=193.2, BOTTOM EL=193.0, 44 LF, S=0.4%
–LB– FROM STA. 1439+00 TO 1439+43 LT
–LB– FROM STA. 1523+72 TO STA. 1524+50 LT
TOP EL=240.8, BOTTOM EL=237.0 S=4.9%

–Y27– FROM STA. 29+50 TO STA. 30+77 RT
–Y27A– FROM STA. 30+50 TO STA. 31+50 LT
–Y29A– FROM STA. 12+18 RT
TOP EL=161.2, BOTTOM EL=160.5, 115 LF, S=0.6%

–Y29– FROM STA. 40+00 RT
TOP EL=194.5, BOTTOM EL=193.0, 58 LF, S=2.6%

–Y29– FROM STA. 40+57 RT
TOP EL=198.5, BOTTOM EL=198.0, 73 LF, S=0.7%

–Y30RPC– FROM STA. 26+00 RT
TOP EL=193.1, BOTTOM EL=192.5, 32 LF, S=2.0%

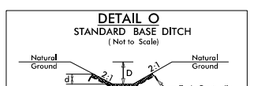
–Y31A– FROM STA. 27+00 LT
TOP EL=220.89, BOTTOM EL=217.0, 85 LF, S=4.7%

–Y31LPD– FROM STA. 27+00 RT
TOP EL=244.3, BOTTOM EL=244.0, 50 LF, S=0.5%

–Y31RPD– FROM STA. 39+00 RT
TOP EL=230.0, BOTTOM EL=230.0, 33 LF, S=0.0%

–Y31RPD– FROM STA. 55+10 LT
TOP EL=267.9, BOTTOM EL=265.7, 110 LF, S=2.0%

DETAIL O
STANDARD BASE DITCH
(Not to Scale)



Detail Applies When B is < 6.0'
for Class I and II Rip-Rap;
And All Widths for Class B Rip-Rap

Min. D=1.5Ft.
Max. d=1.5Ft.
B= 3Ft.

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

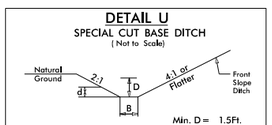
–LB– FROM STA. 1327+75 TO STA. 1329+93 LT

–Y27LPA– FROM STA. 19+00 RT
TOP EL=279.8, BOTTOM EL=278.4, 101 LF, S=1.2%

–Y29RPA– FROM STA. 21+60 RT
TOP EL=161.5, BOTTOM EL=158, 50 LF, S=7.5%

–Y31A– FROM STA. 22+50 RT
TOP EL=214.0, BOTTOM EL=209.5, 80 LF, S=5.6%

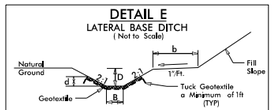
DETAIL U
SPECIAL CUT BASE DITCH
(Not to Scale)



Min. D= 1.5Ft.
Max. d= 1.5Ft.
B= 3Ft.

–Y30A– FROM STA. 23+50 TO STA. 25+00 LT

DETAIL E
LATERAL BASE DITCH
(Not to Scale)



Detail Applies When B is < 6.0'
for Class I and II Rip-Rap;
And All Widths for Class B Rip-Rap

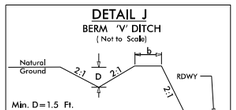
Min. D=2Ft.
d= 2Ft.
B= 5Ft.
b= 5Ft.

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

–L– FROM STA. 1288+37 TO –LB– STA. 1291+50 LT
–L– FROM STA. 1288+13 TO –LB– STA. 1291+40 RT
–LB– FROM STA. 1310+50 TO STA. 1314+00 LT
–LB– FROM STA. 1524+50 TO STA. 1526+63 RT
–Y28– FROM STA. 14+75 TO STA. 16+90 RT

–Y30– FROM STA. 35+50 TO STA. 37+33 LT (d=2.6')
–Y30– FROM STA. 36+00 TO STA. 37+27 RT
–Y30– FROM STA. 37+59 TO STA. 41+00 LT
–Y31LPD– FROM STA. 19+50 TO STA. 24+00 LT
–Y31RPB– FROM STA. 19+50 TO STA. 22+00 LT
–Y31RPD– FROM STA. 40+50 TO STA. 41+75 RT

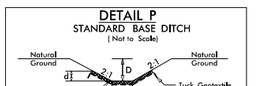
DETAIL J
BERM 'V' DITCH
(Not to Scale)



Min. D=1.5 Ft.
b=5 Ft.

–L– FROM STA. 1205+00 TO STA. 1206+48 RT
–LB– FROM STA. 1294+00 TO STA. 1299+50 LT
–LB– FROM STA. 1369+50 TO STA. 1371+50 LT
–Y27LPD– FROM STA. 14+00 TO STA. 16+50 RT

DETAIL P
STANDARD BASE DITCH
(Not to Scale)



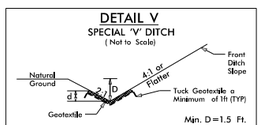
Detail Applies When B is < 6.0'
for Class I and II Rip-Rap;
And All Widths for Class B Rip-Rap

Min. D=2Ft.
Max. d=1.5Ft.
B= 6Ft.

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

–LB– FROM STA. 1304+74 RT
TOP EL=183.0, BOTTOM EL=182.0, 57 LF, S=1.8%

DETAIL V
SPECIAL 'V' DITCH
(Not to Scale)

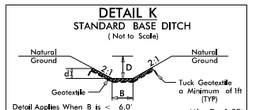


Min. D=1.5 Ft.
d=1.5 Ft.

Type of Liner= B Rip-Rap, Keyed-In

–Y27A– FROM STA. 20+50 TO STA. 21+50 RT
–Y28– FROM STA. 20+20 TO STA. 22+40 LT

DETAIL K
STANDARD BASE DITCH
(Not to Scale)



Detail Applies When B is < 6.0'
for Class I and II Rip-Rap;
And All Widths for Class B Rip-Rap

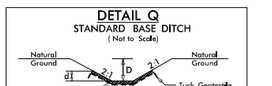
Min. D=1.5Ft.
Max. d=1.5Ft.
B= 2Ft.

Type of Liner= B Rip-Rap, Keyed-In

–LB– FROM STA. 1314+00 TO STA. 1314+87 RT
–Y28A– FROM STA. 14+19 TO STA. 14+60 RT
–Y27– FROM STA. 25+25 TO STA. 25+78 LT of GW
–Y27– FROM STA. 26+17 TO STA. 26+39 LT of GW
–Y30LPB– FROM STA. 17+50 TO STA. 18+00 RT
–Y31– FROM STA. 60+00 TO STA. 60+15 LT
–Y30RPC– FROM STA. 28+73 TO STA. 29+87 RT

–Y31RPC FROM STA. 21+00 RT
TOP EL=216.5, BOTTOM EL=216.1, 44 LF, S=1.0%

DETAIL Q
STANDARD BASE DITCH
(Not to Scale)



Detail Applies When B is < 6.0'
for Class I and II Rip-Rap;
And All Widths for Class B Rip-Rap

Min. D=1.5Ft.
Max. d=1.5Ft.
B= 5 Ft.

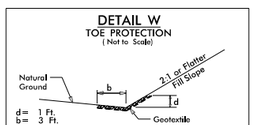
Type of Liner= CL I Rip-Rap, Keyed-In

–LB– FROM STA. 1439+30 LT
TOP EL=219.2, BOTTOM EL=211.0, 445 LF, S=1.8%
Y27 25+68 TO 26+17 LT of GW
–Y29RPA– FROM STA. 20+18 RT
TOP EL=161.0, BOTTOM EL=158.7, 65 LF, S=3.5%

–Y31LPD– FROM STA. 19+80 LT
TOP EL=255.0, BOTTOM EL=249.9, 235 LF, S=2.2%

–Y31RPB– FROM STA. 22+00 LT
TOP EL=222.0, BOTTOM EL=219.1, 102 LF, S=2.9%

DETAIL W
TOE PROTECTION
(Not to Scale)



d= 1 Ft.
b= 3 Ft.

Type of Liner= B Rip-Rap

–L– FROM STA. 1245+00 TO STA. 1247+50 RT
–L– FROM STA. 1272+00 TO STA. 1275+71 RT
–L– FROM STA. 1277+30 TO STA. 1278+50 RT
–LB– FROM STA. 1311+00 TO STA. 1313+50 RT
–LB– FROM STA. 1524+50 TO STA. 1527+20 LT
–Y29RPD– FROM STA. 20+00 TO STA. 24+30 LT
–Y30A– FROM STA. 11+00 TO STA. 11+75 RT
–Y30A– FROM STA. 11+90 TO STA. 13+00 RT
–Y30RPB– FROM STA. 16+95 TO STA. 18+40 LT
–Y30RPC– FROM STA. 19+95 TO STA. 20+60 RT
–Y31– FROM STA. 79+09 TO STA. 79+50 RT
–Y31LPB– FROM STA. 15+45 TO STA. 16+40 LT
–Y31RPB– FROM STA. 23+66 TO STA. 26+77 LT
–Y31RPC– FROM STA. 21+39 TO STA. 26+00 RT
–Y31RPC– FROM STA. 35+80 TO STA. 37+42 RT
–Y31RPC– FROM STA. 37+65 TO STA. 38+69 RT
–Y31RPD– FROM STA. 36+50 TO STA. 40+75 RT

$$$$SYSTIME$$$$
$$$$DESIGN$$$$
$$$$USERNAME$$$$
$$$$FILE$$$$

Submitted November 13, 2024

8/17/99

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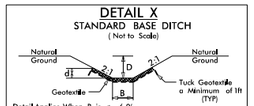
PROJECT REFERENCE NO.	SHEET NO.
R-2829B	2D-2
R/W SHEET NO.	
HYDRAULICS ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 3 OF 34

DETAIL X
STANDARD BASE DITCH
(Not to Scale)



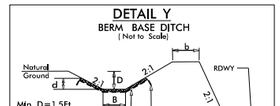
Detail Applies When B is < 6.0' for Class I and II Rip-Rap; And All Widths for Class B Rip-Rap
Min. D=3Ft.
Max. d=3Ft.
B= 5Ft.
Type of Liner= CL II Rip-Rap, Keyed-In

–LB– FROM STA. 1317+05 TO STA. 1320+29 LT

–LB– FROM STA. 1380+16 RT
TOP EL=188.0, BOTTOM EL=179.3, 377 LF, S=2.3%

–LB– FROM STA. 1390+45 RT
TOP EL=196.4, BOTTOM EL=193.0, 83 LF, S=4.1%

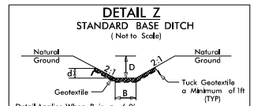
DETAIL Y
BERM BASE DITCH
(Not to Scale)



Min. D=1.5Ft.
Max. d=1.5Ft.
B= 2Ft.
b= 5Ft.
Type of Liner= CL I Rip-Rap, Keyed-In

–Y29– FROM STA. 23+00 TO STA. 25+50 LT

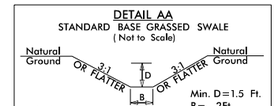
DETAIL Z
STANDARD BASE DITCH
(Not to Scale)



Detail Applies When B is < 6.0' for Class I and II Rip-Rap; And All Widths for Class B Rip-Rap
Min. D=2Ft.
Max. d=2Ft.
B=2Ft.
Type of Liner= CL I Rip-Rap, Keyed-In

–LB– FROM STA. 1315+55 TO STA. 1319+87 RT

DETAIL AA
STANDARD BASE GRASSED SWALE
(Not to Scale)

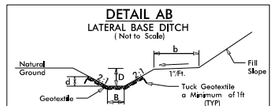


Min. D=1.5 Ft.
B= 2Ft.

*NOTES:
1) LONGITUDINAL SLOPES BETWEEN 0.3% AND 4.0%.
2) MODIFICATIONS MAY BE NEEDED, AS APPROVED BY ENGINEER.

–LB– FROM STA. 1378+50 TO STA. 1379+69 RT
–Y29RPA– FROM STA. 24+05 TO STA. 25+12 RT

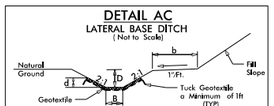
DETAIL AB
LATERAL BASE DITCH
(Not to Scale)



Detail Applies When B is < 6.0' for Class I and II Rip-Rap; And All Widths for Class B Rip-Rap
Min. D=1.5Ft.
d= 1.5Ft.
B= 5Ft.
b= 5Ft.
Type of Liner= CL B Rip-Rap, Keyed-In

–LB– FROM STA. 1390+00 TO STA. 1391+50 LT

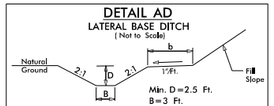
DETAIL AC
LATERAL BASE DITCH
(Not to Scale)



Detail Applies When B is < 6.0' for Class I and II Rip-Rap; And All Widths for Class B Rip-Rap
Min. D=1.5Ft.
d= 1.5Ft.
B= 2Ft.
b= 5Ft.
Type of Liner= CL B Rip-Rap, Keyed-In

–L– FROM STA. 1242+36 TO STA. 1244+95 RT
–L– FROM STA. 1244+33 TO STA. 1245+00 LT
–L– FROM STA. 1247+50 TO STA. 1249+04 LT
–L– FROM STA. 1247+50 TO STA. 1250+50 RT
–L– FROM STA. 1253+00 TO STA. 1255+60 RT
–L– FROM STA. 1267+00 TO STA. 1272+00 RT
–L– FROM STA. 1269+60 TO STA. 1271+00 LT
–L– FROM STA. 1276+65 TO STA. 1277+28 RT
–L– FROM STA. 1276+72 TO STA. 1277+46 LT
–LB– FROM STA. 1302+50 TO STA. 1304+50 LT
–LB– FROM STA. 1313+60 TO STA. 1314+00 RT
–LB– FROM STA. 1383+00 TO STA. 1385+50 RT
–Y27– FROM STA. 50+00 TO STA. 51+40 RT
–Y27A– FROM STA. 17+00 TO STA. 20+50 LT
–Y29LPA– FROM STA. 15+50 TO STA. 17+50 LT
–Y29RPD– FROM STA. 11+80 TO STA. 16+10 LT
–Y30– FROM STA. 33+50 TO STA. 34+00 LT
–Y30– FROM STA. 37+70 TO STA. 49+05 RT
–Y30A– FROM STA. 12+86 TO STA. 14+00 LT
–Y30A– FROM STA. 12+97 TO STA. 14+00 RT
–Y30A– FROM STA. 19+02 TO STA. 21+67 LT
–Y30RPC– FROM STA. 10+08 TO STA. 12+28 RT
–Y31RPB– FROM STA. 10+00 TO STA. 13+00 RT
–Y31RPBD– FROM STA. 21+50 TO STA. 23+06 RT

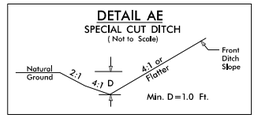
DETAIL AD
LATERAL BASE DITCH
(Not to Scale)



Min. D=2.5 Ft.
B=3 Ft.
b=5 Ft.

–LB– FROM STA. 1292+10 TO STA. 1296+50 RT
–Y30RPB– FROM STA. 19+09 TO STA. 20+00 RT
–Y30A– FROM STA. 25+00 TO STA. 26+20 LT

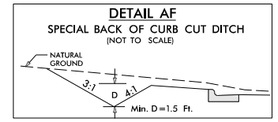
DETAIL AE
SPECIAL CUT DITCH
(Not to Scale)



Min. D=1.0 Ft.

–Y31– FROM STA. 112+52 TO STA. 113+50 RT

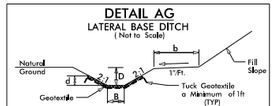
DETAIL AF
SPECIAL BACK OF CURB CUT DITCH
(NOT TO SCALE)



Min. D=1.5 Ft.

–Y29– FROM STA. 34+30 TO STA. 37+50 LT
–Y30RPD– FROM STA. 28+22 TO STA. 28+75 LT
–Y30LPB– FROM STA. 26+50 TO STA. 34+26 RT
–Y30– FROM STA. 29+11 TO STA. 29+90 RT

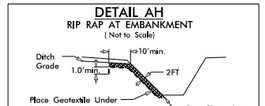
DETAIL AG
LATERAL BASE DITCH
(Not to Scale)



Detail Applies When B is < 6.0' for Class I and II Rip-Rap; And All Widths for Class B Rip-Rap
Min. D=2 Ft.
d=2 Ft.
B=3 Ft.
b=5 Ft.
Type of Liner= CL B Rip-Rap, Keyed-In

–L– FROM STA. 1263+50 TO STA. 1264+10 RT
–LB– FROM STA. 1292+00 TO STA. 1293+50 LT
–LB– FROM STA. 1329+93 TO STA. 1332+00 LT
–LB– FROM STA. 1330+00 TO STA. 1330+50 RT
–LB– FROM STA. 1386+50 TO STA. 1387+50 LT
–Y28– FROM STA. 14+85 TO STA. 16+85 LT
–Y31RPB– FROM STA. 17+00 TO STA. 19+50 LT
–Y31RPB– FROM STA. 13+00 TO STA. 14+50 RT

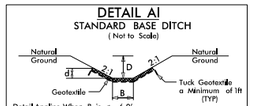
DETAIL AH
RIP RAP AT EMBANKMENT
(Not to Scale)



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

–L– STA. 1253+32 TO STA. 1253+39 LT
–L– STA. 1253+36 TO STA. 1253+43 LT
–Y28– STA. 14+65 TO STA. 14+85 RT
–Y28– STA. 14+79 TO STA. 14+95 LT
–LB– STA. 1320+29 TO STA. 1320+37 LT
–LB– STA. 1319+87 TO STA. 1320+04 RT
–LB– STA. 1321+81 TO STA. 1321+91 LT
–LB– STA. 1345+25 TO STA. 1345+46 LT
–LB– STA. 1346+17 TO STA. 1346+34 RT
–Y29– STA. 8+48 TO STA. 8+80 LT
–Y29RPA– STA. 24+01 TO STA. 24+11 RT

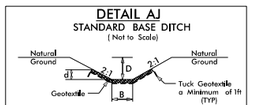
DETAIL AI
STANDARD BASE DITCH
(Not to Scale)



Detail Applies When B is < 6.0' for Class I and II Rip-Rap; And All Widths for Class B Rip-Rap
Min. D=1.5Ft.
Max. d=1.5Ft.
B= 3Ft.
Type of Liner= CL I Rip-Rap, Keyed-In

–LB– FROM STA. 1327+00 TO STA. 1329+00 RT

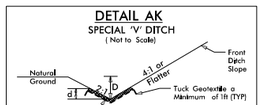
DETAIL AJ
STANDARD BASE DITCH
(Not to Scale)



Min. D=2.5Ft.
Max. d=2.5Ft.
B= 6Ft.
Type of Liner= CL B Rip-Rap, Keyed-In

–CH01– FROM STA. 10+00 TO STA. 18+90, EL=355.80 TO EL=332.66, S=2.6%
–CH01– FROM STA. 18+90 TO STA. 20+75, EL=332.7 TO EL=332.5, S=0.1%

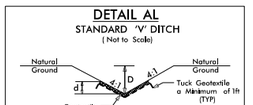
DETAIL AK
SPECIAL 'V' DITCH
(Not to Scale)



Min. D= 1.5Ft.
d= 1Ft.
Type of Liner= CL B Rip-Rap, Keyed-In

–LB– FROM STA. 1375+00 TO STA. 1376+00 LT

DETAIL AL
STANDARD 'V' DITCH
(Not to Scale)

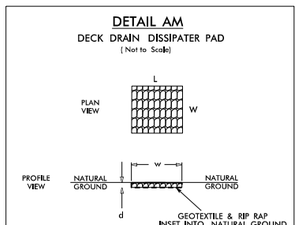


Min. D=1.5Ft.
Type of Liner= CL B Rip-Rap, Keyed-In d=1 Ft.

–LB– FROM STA. 1314+30 TO STA. 1316+06 CL
–LB– FROM STA. 1316+44 TO STA. 1319+79 CL

–Y29– FROM STA. 50+28 RT
TOP EL=207.5, BOTTOM EL=205.0, 59 LF, S=4.2%

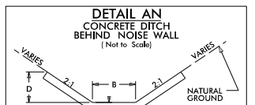
DETAIL AM
DECK DRAIN DISSIPATER PAD
(Not to Scale)



Type of Liner= CLASS B Rip-Rap
W=8 FT
L=Variable
d=1 FT
NOTE: PAD TO BE CENTERED UNDER DECK DRAIN

–LB– FROM STA. 1314+28 TO STA. 1315+27 LT
–LB– FROM STA. 1314+27 TO STA. 1315+14 RT
–LB– FROM STA. 1328+04 TO STA. 1329+56 LT

DETAIL AN
CONCRETE DITCH BEHIND NOISE WALL
(Not to Scale)



D= 1.5'
B= 2.0'

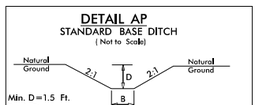
–LB– FROM STA. 1441+00 TO STA. 1441+50 LT (NO PFL, FOLLOW NG)
–LB– FROM STA. 1441+50 TO STA. 1445+00 LT
–LB– FROM STA. 1445+00 TO STA. 1447+00 LT (NO PFL, FOLLOW NG)
–LB– FROM STA. 1510+67 TO STA. 1515+99 RT (NO PFL, FOLLOW NG)
–Y30– FROM STA. 28+39 TO STA. 29+00 LT
–Y30– FROM STA. 28+39 TO STA. 29+40 LT
–Y30LPB– FROM STA. 9+10 TO STA. 15+18 RT
–Y30LPB– FROM STA. 17+70 TO STA. 18+72 RT

DETAIL AO
SPECIAL BASE DITCH
(Not to Scale)

Min. D=1.0 Ft.
B=2.0 Ft.

–Y31– FROM STA. 106+78 TO STA. 109+00 LT
–Y27B– FROM STA. 12+60 TO STA. 13+64 LT
–Y31RPD– FROM STA. 12+80 TO STA. 14+58 RT

DETAIL AP
STANDARD BASE DITCH
(Not to Scale)

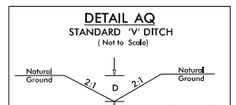


Min. D=1.5 Ft.
B=6 Ft.

–LB– FROM STA. 1345+88 TO STA. 1346+26 RT

–Y29A– FROM STA. 12+84 RT
TOP EL=158.0, BOTTOM EL=157.5, 170 LF, S=0.3%

DETAIL AQ
STANDARD 'V' DITCH
(Not to Scale)

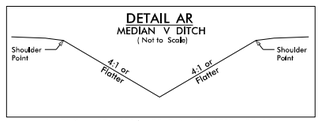


Min. D=1.5 Ft.

–LB– FROM STA. 1295+00 RT
TOP EL=191.0, BOTTOM EL=189.5, 73 LF, S=2.1%

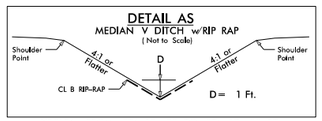
–Y29– FROM STA. 34+27 TO STA. 35+70 RT

DETAIL AR
MEDIAN V DITCH
(Not to Scale)



–L– FROM STA. 1216+00 TO STA. 1218+00 LT
–LB– FROM STA. 1331+50 TO STA. 1333+00 CL
–LB– FROM STA. 1335+50 TO STA. 1336+95 CL
–LB– FROM STA. 1344+00 TO STA. 1345+30 CL
–LB– FROM STA. 1348+50 TO STA. 1351+00 LT
–LB– FROM STA. 1493+56 TO STA. 1495+75 CL
–LB– FROM STA. 1412+00 TO STA. 1415+02 LT

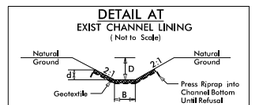
DETAIL AS
MEDIAN V DITCH w/RIP RAP
(Not to Scale)



D= 1 Ft.

–Y29LPA– FROM STA. 15+50 TO STA. 17+00 RT

DETAIL AT
EXIST CHANNEL LINING
(Not to Scale)



Min. D=2 Ft.
d=2 Ft.
B=VARIES
Type of Liner=CL I Rip-Rap, Keyed-In

–Y30– FROM STA. 24+28 TO STA. 26+30 LT

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

Submitted November 13, 2024

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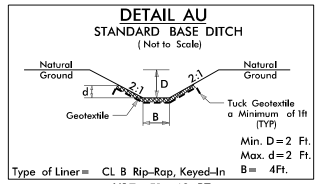
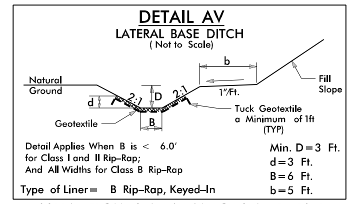
PROJECT REFERENCE NO.	SHEET NO.
R-2829B	2D-3
R/W SHEET NO.	
HYDRAULICS ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

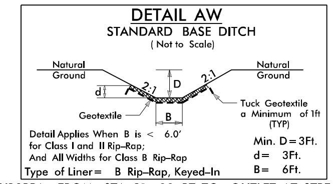
PERMIT DRAWING
SHEET 4 OF 34



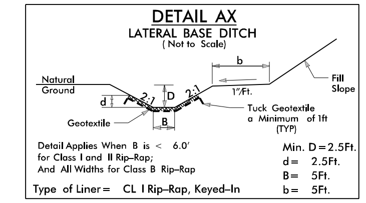
–Y27– 51+40 RT
TOP EL=389.6, BOTTOM EL=389.2, 121 LF, S=0.3%



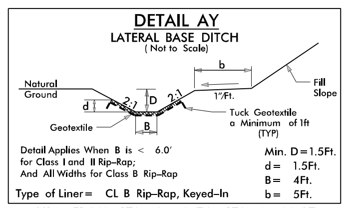
–Y29RPA– FROM STA. 14+44 TO STA. 15+50 RT



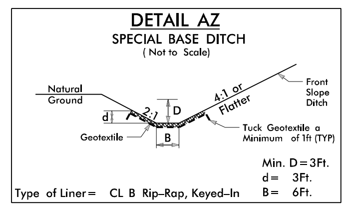
–Y29RPA– FROM STA. 21+00 RT TO OUTLET AT STREAM
TOP EL=158.0', BOTTOM EL=154.7', 289 LF, S=1.13%



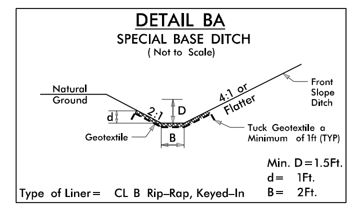
–Y28– FROM STA. 20+00 TO STA. 21+00 RT



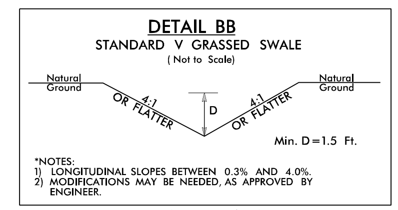
–Y29– FROM STA. 14+50 TO STA. 18+00 LT



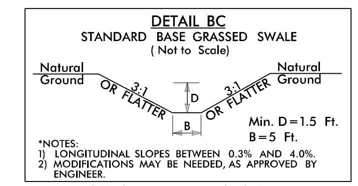
–Y29RPA– FROM STA. 15+50 TO STA. 19+00 RT



–Y29A– FROM STA. 16+29 TO STA. 17+80 LT

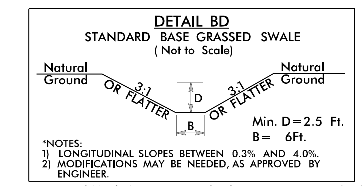


–Y27LPD– FROM 17+86 TO 18+40 RT
–Y29– FROM STA. 45+00 LT
TOP EL=202.3, BOTTOM EL=201.9, 100 LF, S=0.4%
–Y27RPD– FROM STA. 17+86 TO STA. 18+40 RT



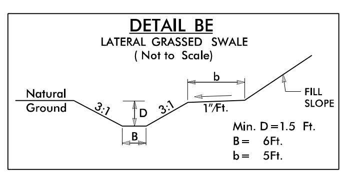
–LB– FROM STA. 1323+44 TO STA. 1327+00 RT

–Y29– FROM STA. 50+02 LT
TOP EL=201.0, BOTTOM EL=200.7, 85 LF, S=0.4%

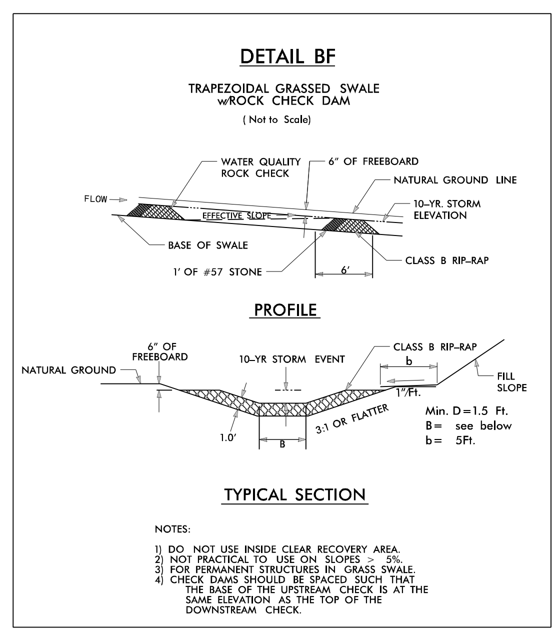


–LB– FROM STA. 1321+91 TO STA. 1323+50 LT (4:1)
–LB– FROM STA. 1323+82 TO STA. 1327+75 LT (4:1)

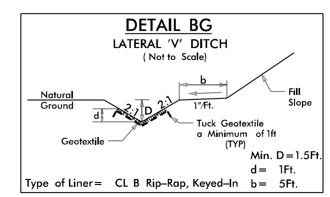
–Y29– FROM STA. 8+80 TO STA. 12+00 LT



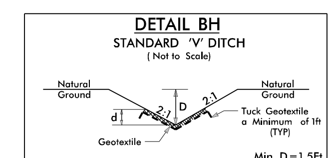
–Y29– FROM STA. 12+00 TO STA. 14+50 LT



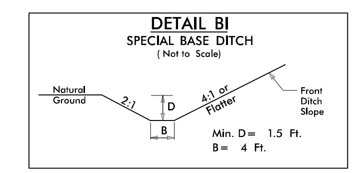
–LB– FROM STA. 1377+50 TO STA. 1380+50 LT (B=2', Q10 FLOW D=0.5')
–LB– FROM STA. 1383+00 TO STA. 1386+50 LT (B=3', Q10 FLOW D=0.5')
–LB– FROM STA. 1390+50 TO STA. 1392+50 RT (B=5', Q10 FLOW D=1')



–Y27A– FROM STA. 20+00 TO STA. 20+50 RT
–Y28A– FROM STA. 12+38 TO STA. 13+50 RT



–Y28A– FROM STA. 13+08 TO STA. 13+50 LT
TOP EL=171.8, BOTTOM EL=165.5, 50 LF, S=12.6%



–Y27– FROM STA. 17+05 TO STA. 18+50 RT

8/17/99

$$$$SYSTIME$$$$
$$$$DGN$$$$$$$$$$$$$$$$$$$$
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Submitted November 13, 2024

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PROJECT REFERENCE NO.	SHEET NO.
R-2829B	2D-4
R/W SHEET NO.	____
HYDRAULICS ENGINEER	HYDRAULICS ENGINEER

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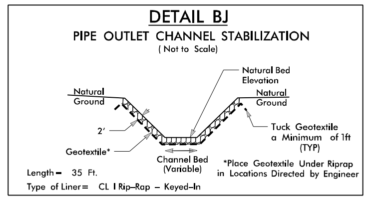
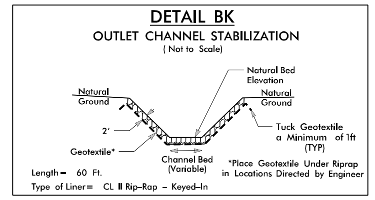
PERMIT DRAWING
SHEET 5 OF 34

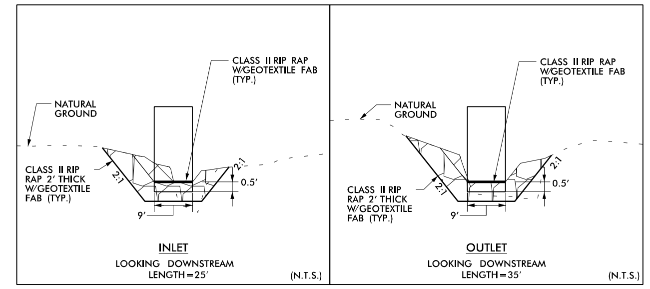


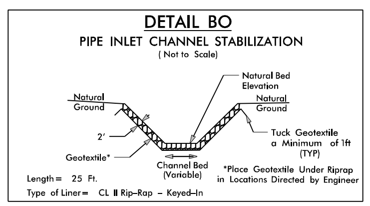
–L– STA. 1195+75 LT



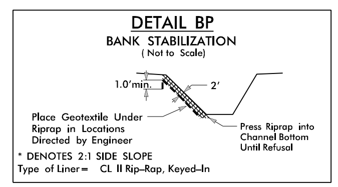
–L– STA. 1244+30 LT

–Y31RPD– 40+05

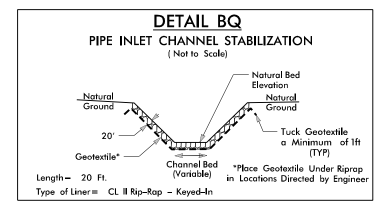




–LB– STA. 1381+20 LT

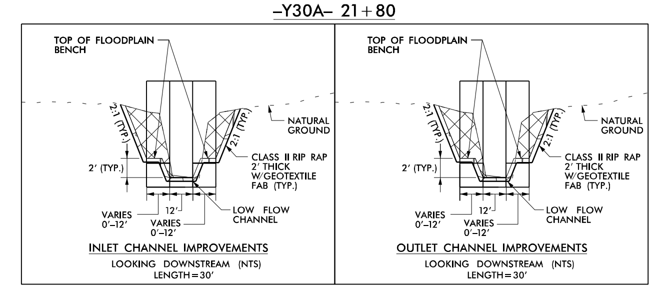


–LB– FROM STA. 1346+90 TO STA. 1347+14 RT
–Y30A– FROM STA. 21+35 TO STA. 21+71 RT *
–Y31RPC– FROM STA. 36+76 TO STA. 37+10 RT

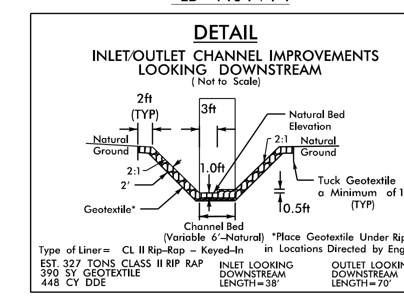


–Y30– STA. 22+80 RT

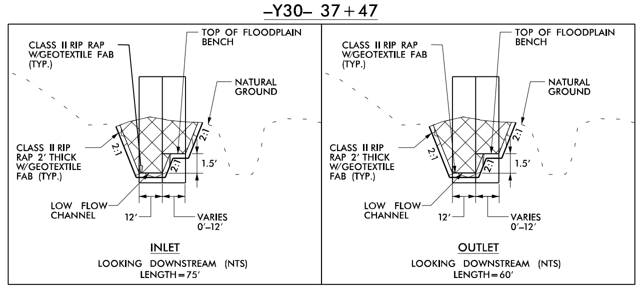
–Y30A– 21+80



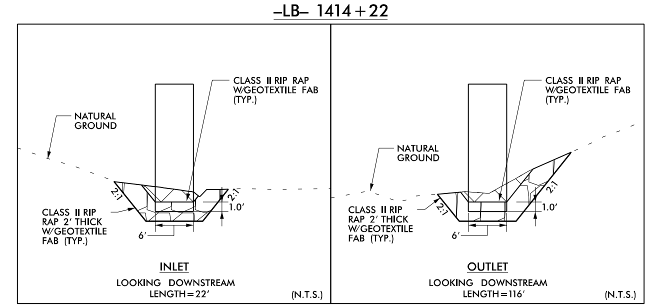
–LB– 1404+74



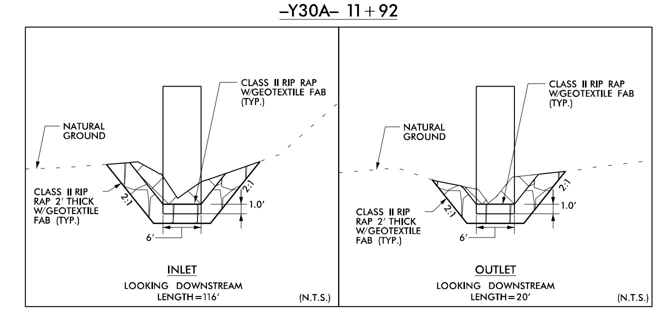
–Y30– 37+47



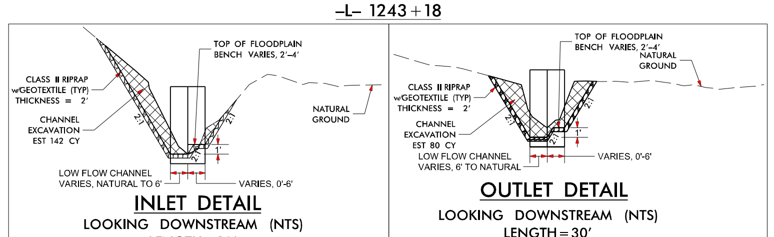
–LB– 1414+22

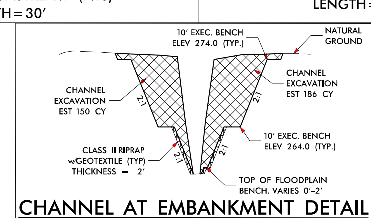


–Y30A– 11+92

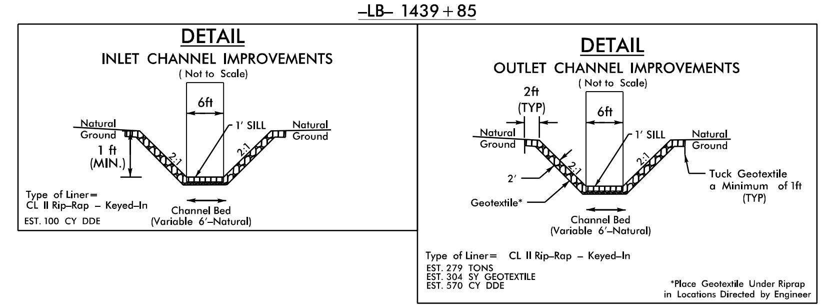


–L– 1243+18

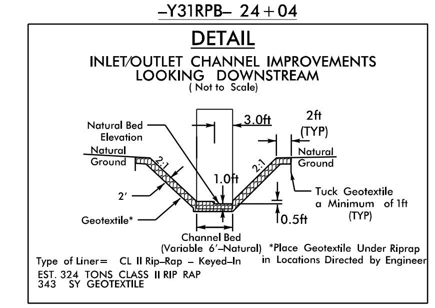




–LB– 1439+85



–Y31RPB– 24+04



TOP EL=211.6, BOTTOM EL=210.8, 254 LF, S=0.3%

8/17/99
$$$$$SYSTIME$$$$
$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

Submitted November 13, 2024

8/17/99

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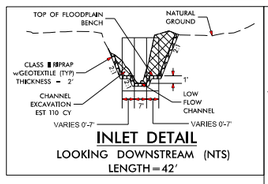
4505 Falls of Neuse Road, Suite 110
Raleigh, North Carolina 27609
Phone: 803-822-0333
License #: P-0999

PROJECT REFERENCE NO.	SHEET NO.
R-2829B	2D-5
R/W SHEET NO.	
HYDRAULICS ENGINEER	HYDRAULICS ENGINEER

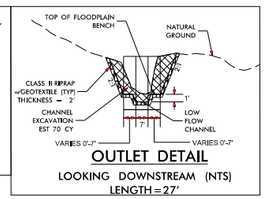
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 6 OF 34

–L– 1288+18

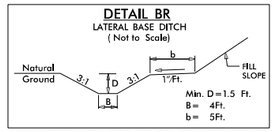


INLET DETAIL
LOOKING DOWNSTREAM (NTS)
LENGTH = 42'



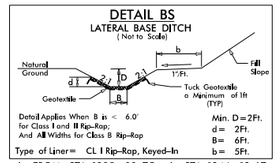
OUTLET DETAIL
LOOKING DOWNSTREAM (NTS)
LENGTH = 27'

DETAIL BR
LATERAL BASE DITCH
(Not to Scale)



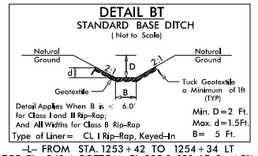
–L– FROM STA. 1195+75 TO STA. 1198+25 LT

DETAIL BS
LATERAL BASE DITCH
(Not to Scale)



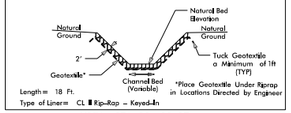
–L– FROM STA. 1235+00 TO –L– STA. 1244+12 LT

DETAIL BT
STANDARD BASE DITCH
(Not to Scale)



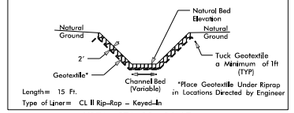
–L– FROM STA. 1253+42 TO 1254+34 LT
TOP EL = 243.4, BOTTOM EL 235.3, 180 LF, S = 4.5%

DETAIL BV
PIPE OUTLET CHANNEL STABILIZATION
(Not to Scale)



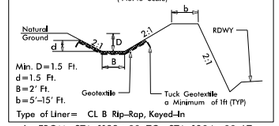
–Y27A– STA. 20+00 RT

DETAIL BW
PIPE INLET CHANNEL STABILIZATION
(Not to Scale)



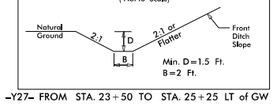
–Y27A– STA. 20+06 LT

DETAIL BX
BERM BASE DITCH
(Not to Scale)



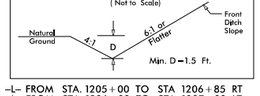
–L– FROM STA. 1199+00 TO STA. 1204+00 LT

DETAIL BY
SPECIAL BASE DITCH
(Not to Scale)



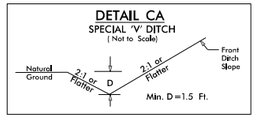
–Y27– FROM STA. 23+50 TO STA. 25+25 LT of GW

DETAIL BZ
SPECIAL CUT DITCH
(Not to Scale)



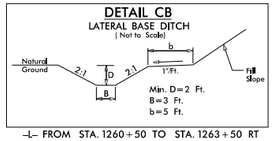
–L– FROM STA. 1205+00 TO STA 1206+85 RT
–L– FROM STA. 1206+00 TO STA 1207+00 LT
–Y27– FROM STA. 49+50 TO STA. 50+00 RT

DETAIL CA
SPECIAL 'V' DITCH
(Not to Scale)



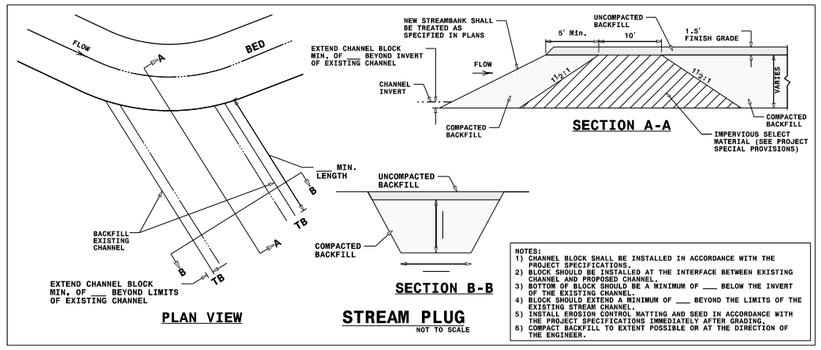
–Y27– FROM STA. 22+50 TO STA. 23+50 LT of GW
–Y27– FROM STA. 23+00 TO STA. 25+50 LT
–Y27 TEMP– FROM STA. 12+50 TO STA. 23+50 LT
–Y31A– FROM STA. 11+50 TO STA. 12+30 RT
–Y31A– FROM STA. 12+00 TO STA. 16+40 LT
–Y31A– FROM STA. 12+55 TO STA. 13+06 RT
–Y31A– FROM STA. 14+90 TO STA. 20+00 RT

DETAIL CB
LATERAL BASE DITCH
(Not to Scale)

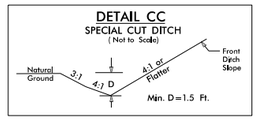


–L– FROM STA. 1260+50 TO STA. 1263+50 RT

DETAIL CF

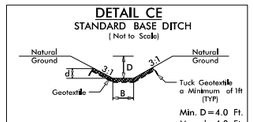


DETAIL CC
SPECIAL CUT DITCH
(Not to Scale)



–Y27LPD– FROM STA. 12+94 TO STA. 13+64 LT

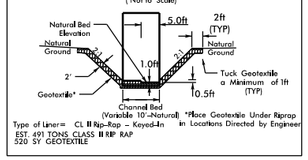
DETAIL CE
STANDARD BASE DITCH
(Not to Scale)



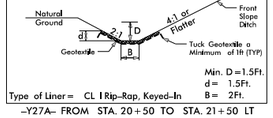
–L– FROM STA. 1240+78 TO STA. 1241+08 RT

–Y31FLYDB– 52+68

DETAIL
INLET/OUTLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM
(Not to Scale)

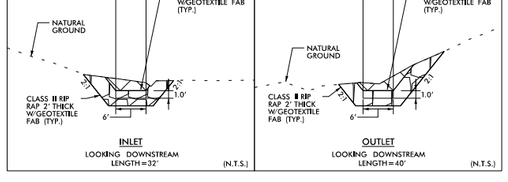


DETAIL CD
SPECIAL BASE DITCH
(Not to Scale)

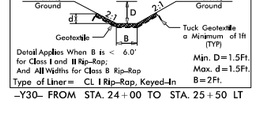


–Y27A– FROM STA. 20+50 TO STA. 21+50 LT

–Y31RPB– 29+13 /–Y31FLYDB– 54+63

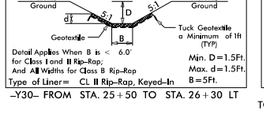


DETAIL CG
STANDARD BASE DITCH
(Not to Scale)



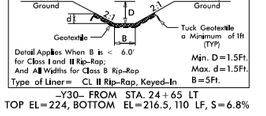
–Y30– FROM STA. 24+00 TO STA. 25+50 LT

DETAIL CH
STANDARD BASE DITCH
(Not to Scale)



–Y30– FROM STA. 25+50 TO STA. 26+30 LT

DETAIL CI
STANDARD BASE DITCH
(Not to Scale)



–Y30– FROM STA. 24+65 LT
TOP EL = 224, BOTTOM EL = 216.5, 110 LF, S = 6.8%

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

8/17/99

BUFFER DRAWING SHEET 7 OF 34

100' 0' 100' 200'
GRAPHIC SCALE

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

ARCADIS
Arcadis CE, Inc.
175 Regency Woods Place, Suite 350
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Phone: 919-854-1282
License #: F-0299

PROJECT REFERENCE NO.	SHEET NO.
R-2829B	04
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

SGH

EDGE OF AUBURN LLC
DB 10839 PG 2259
26*

RW CA

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

CL I RIP RAP
EST. 36 TONS
EST. 50 SY GEOTEXTILE

SITE 1

BZ 1
BZ 2
I BZ

LAT. 4' BASE DITCH
SEE DETAIL BR

PDE
F
B
18" RCP-III
30" RCP-III
15" RCP-III
-L-

1185+00 1190+00 1195+00

BL-138 BL-139 BL-140

N 20° 36' 59.9" E

MATCHLINE -L- STA. 1197+00.00 SEE SHEET 05

SITE 1 ENLARGEMENT

LAT. 2' BASE DITCH
SEE DETAIL A

PROP PUE BY OTHERS
PUE

WHF

SGG

S 11°12'00" W
126.14'

S 37°06'18" W
338.11'

25' 0' 25' 50'
GRAPHIC SCALE

30"

FOR -L- PROFILE SEE SHT.44

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

BUFFER DRAWING
SHEET 8 OF 34

GRAPHIC SCALE 100' 0' 100' 200'

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

MATCHLINE -Y27- STA. 44+00.00 SEE SHEET 26

MATCHLINE -L- STA. 1197+00.00 SEE SHEET 04

MATCHLINE -Y27- STA. 28+00.00 SEE SHEET 25

MATCHLINE -EY6- SEE SHEET 29

MATCHLINE -L- STA. 1224+00.00 SEE SHEET 06

SEE PERMIT DRAWING SHEET 9 OF 34 FOR ENLARGEMENT

SITE 6

SITE 3

SITE 2

WAAH

SOR

WRV

PAH

WHR

WHH

WHQ

SGI

SGK

NAD 83

PROJECT REFERENCE NO. R-2829B

SHEET NO. 05

RW SHEET NO.

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

ARCADIS

PROPOSED SIGNAL

FOR -L- CURVE DATA SEE SHT.3A-I	FOR -L- PROFILE SEE SHTS.44 & 45
FOR -Y27- CURVE DATA SEE SHT.3A-I	FOR -Y27- PROFILE SEE SHT.56
FOR -Y27RPA- CURVE DATA SEE SHT.3A-I	FOR -Y27RPA- PROFILE SEE SHT.59
FOR -Y27LPA- CURVE DATA SEE SHT.3A-I	FOR -Y27LPA- PROFILE SEE SHT.58
FOR -Y27RPD- CURVE DATA SEE SHT.3A-I	FOR -Y27RPD- PROFILE SEE SHT.60
FOR -Y27LPD- CURVE DATA SEE SHT.3A-I	FOR -Y27LPD- PROFILE SEE SHT.58
FOR -Y27_GW- CURVE DATA SEE SHT.3A-I	FOR -Y27_GW- PROFILE SEE SHT.57

GRAPHIC SCALE 50 25 0 50 100 PLANS

Submitted November 13, 2024

8/17/99

BUFFER DRAWING SHEET 9 OF 34

80' 0' 80' 160'
GRAPHIC SCALE

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

NAD 83

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License #: F-0299

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

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SITE 3 THROUGH SITE 6 ENLARGEMENT

WAAH
SOR
WRV
PAH
SAAM
SGJ
WHS
WHR
SGJ
SGJ

SITE 6
SITE 3

STD. 6' BASE DITCH
SEE DETAIL AJ

31
BURNETTE FOREST, LLC.
DB 15073 PG 363
BM 1989 PG 1374

STREAM PLUG
SEE DETAIL CF

FILL IN THIS PORTION OF STREAM. GRADE TO DRAIN.

FILL IN THIS PORTION OF STREAM. GRADE TO DRAIN.

BACKFILL AND GRADE TO DRAIN

REMOVE

15" RCP-III

15" RCP-III

24" RCP-III

30" RCP-III

POND
WSE=356.7'

$DATE$ $TIME$
$DESIGNER$
$USERNAME$

8/17/99

BUFFER DRAWING SHEET 10 OF 34

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

MITIGABLE IMPACTS ZONE 1
MITIGABLE IMPACTS ZONE 2

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Cary, North Carolina 27518
Phone: 919-854-1282
License #: F-0299

PROJECT REFERENCE NO.	SHEET NO.
R-2829B	07
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

35
CITY OF RALEIGH, COUNTY OF WAKE
DB 11637 PG 2770
BM 2005 PG 1481
BM 2007 PG 1372

31
BURNETTE FOREST, LLC.
DB 15073 PG 363
BM 1989 PG 1374

32
LONG BRANCH FARM LLC
DB 14281 PG 1125
BM 1999 PG 579

33
JOHN R & CYNTHIA L BAUCOM, III
DB 5556 PG 296
BM 2017 PG 1632

SGJ
SGK
WHP
WHU
WHO
WHM

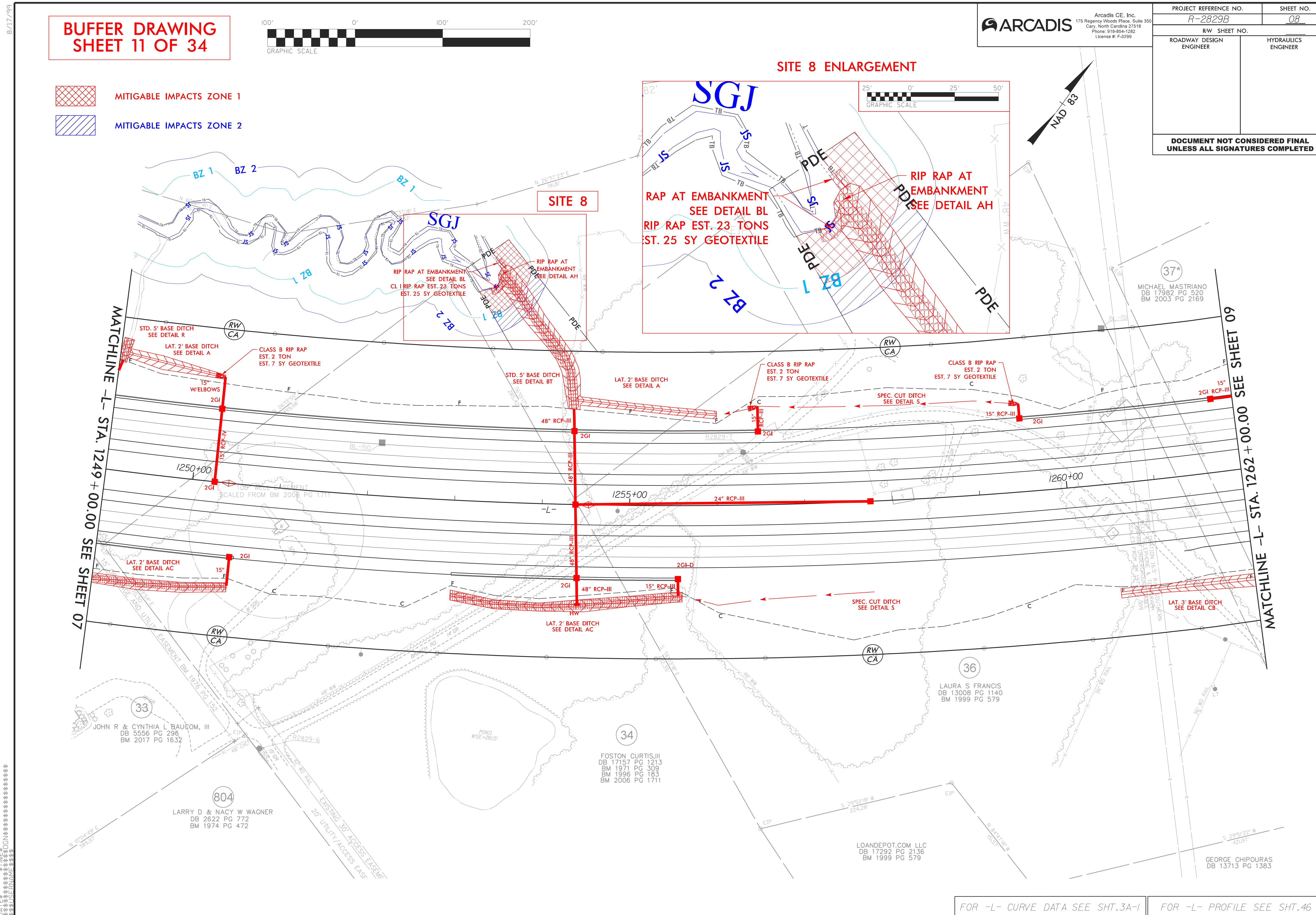
106 LF OF OUTLET CHANNEL AND EMBANKMENT IMPROVEMENTS SEE DITCH DETAIL -L- 1243+18
CLASS II RIPRAP EST 234 TONS EST 208 SY GEOTEXTILE
DO NOT CLEAR THIS SIDE OF STREAM
58 LF OF INLET CHANNEL AND EMBANKMENT IMPROVEMENTS SEE DITCH DETAIL -L- 1243+18
CLASS II RIPRAP EST 250 TONS EST 222 SY GEOTEXTILE
LAT. 6' BASE DITCH SEE DETAIL BS
LAT. 2' BASE DITCH SEE DETAIL AC
STD. BASE DITCH SEE DETAIL CE
TOE PROTECTION SEE DETAIL W
SITE 7

MATCHLINE -L- STA. 1236+00.00 SEE SHEET 06
MATCHLINE -L- STA. 1249+00.00 SEE SHEET 08

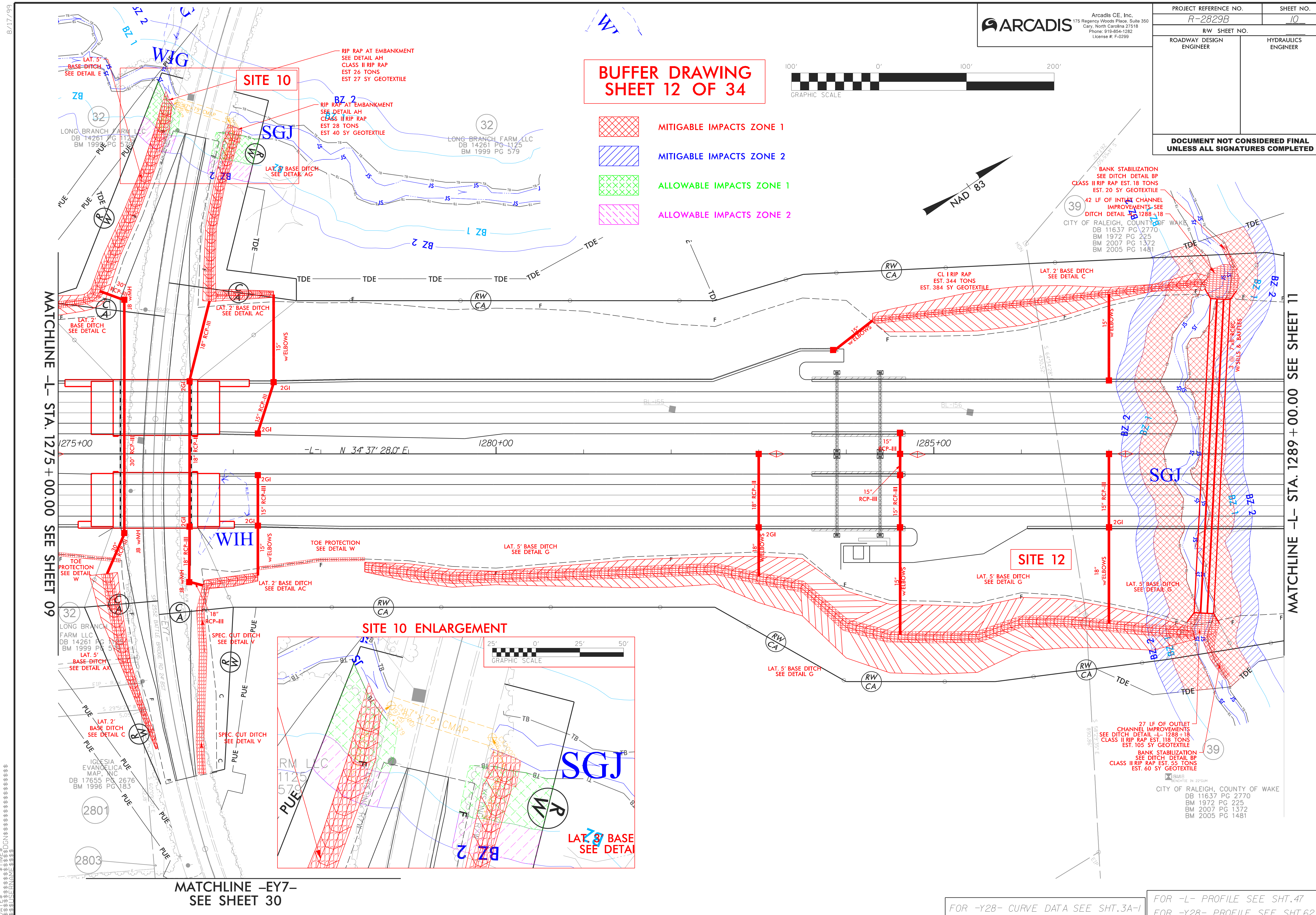
-L- N 55°16' 30.9" E

FOR -L- CURVE DATA SEE SHT.3A-I
FOR -L- PROFILE SEE SHTS.45 & 46

$DATE$ $TIME$
$USERNAME$ DGN


BUFFER DRAWING
SHEET 11 OF 34
GRAPHIC SCALE
100' 0' 100' 200'
MITIGABLE IMPACTS ZONE 1
MITIGABLE IMPACTS ZONE 2
Arcadis CE, Inc.
175 Regency Woods Place, Suite 350
Cary, North Carolina 27518
Phone: 919-854-1282
License #: F-0299
PROJECT REFERENCE NO.
R-2829B
SHEET NO.
08
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED
NAD 83
SITE 8 ENLARGEMENT
25' 0' 25' 50'
GRAPHIC SCALE
SGJ
RIP RAP AT EMBANKMENT
SEE DETAIL BL
RIP RAP EST. 23 TONS
EST. 25 SY GEOTEXTILE
RIP RAP AT
EMBANKMENT
SEE DETAIL AH
PDE
BZ 1
BZ 2
SITE 8
CL I RIP RAP EST. 23 TONS
MATCHLINE -L- STA. 1249+00.00 SEE SHEET 07
MATCHLINE -L- STA. 1262+00.00 SEE SHEET 09
STD. 5' BASE DITCH
SEE DETAIL R
LAT. 2' BASE DITCH
SEE DETAIL A
CLASS B RIP RAP
EST. 2 TON
EST. 7 SY GEOTEXTILE
15" W/ELBOWS
2GI
15" RCP-IV
1250+00
100' WELL EASEMENT
SCALED FROM BM 2006 PG 1711
STD. 5' BASE DITCH
SEE DETAIL BT
48" RCP-III
1255+00
-L-
24" RCP-III
15" RCP-III
SPEC. CUT DITCH
SEE DETAIL S
1260+00
15" 2GI RCP-III
LAT. 2' BASE DITCH
SEE DETAIL AC
2GI-D
HW
LAT. 3' BASE DITCH
SEE DETAIL CB
RW CA
BL-150
BL-151
R2829-7
R2829-6
37*
MICHAEL MASTRIANO
DB 17982 PG 520
BM 2003 PG 2169
36
LAURA S FRANCIS
DB 13008 PG 1140
BM 1999 PG 579
33
JOHN R & CYNTHIA L BAUCOM, III
DB 5556 PG 296
BM 2017 PG 1632
34
FOSTON CURTIS,III
DB 17157 PG 1213
BM 1971 PG 309
BM 1996 PG 183
BM 2006 PG 1711
804
LARRY D & NACY W WAGNER
DB 2622 PG 772
BM 1974 PG 472
LOANDEPOT.COM LLC
DB 17292 PG 2136
BM 1999 PG 579
GEORGE CHIPOURAS
DB 13713 PG 1383
POND
WSE=261.5'
EXISTING 30' ACCESS EASEMENT
20' UTILITY/ACCESS EASEMENT
FOR -L- CURVE DATA SEE SHT.3A-1
FOR -L- PROFILE SEE SHT.46

Submitted November 13, 2024



Submitted November 13, 2024

8/17/99

BUFFER DRAWING SHEET 13 OF 34

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

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

TEMPORARY ACCESS FOR BRIDGE CONSTRUCTION ONLY

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

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

SGR

WIO

WIP

DECK DRAINS REQUIRED
NINE 6" SCUPPERS ON 10' CENTERS FROM STA. 1314+15 TO STA. 1314+95 LT. FROM STA. 1314+15 TO STA. 1314+95 RT. (FOR FUTURE BRIDGE CONSTRUCTION)

DECK DRAINS REQUIRED
EIGHT 6" SCUPPERS ON 10' CENTERS FROM STA. 1314+15 TO STA. 1314+85 LT. FROM STA. 1314+15 TO STA. 1314+85 RT. (FOR CURRENT BRIDGE CONSTRUCTION) (DECK DRAIN DISSIPATOR PAD SEE DETAIL AM9)

SEE PERMIT DRAWING SHEET 14 OF 34 FOR ENLARGEMENT

SITE 14

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

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

39 CITY OF RALEIGH, COUNTY OF WAKE

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

HW

15" RCP-III

BDO

15" W/ELBOWS

FS

2GI

SPEC. CUT V DITCH SEE DETAIL S

2' BASE BERM DITCH SEE DETAIL F

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

SPECIAL CUT V DITCH SEE DETAIL S

2GI-D

18" RCP-III

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

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

TEMPORARY ACCESS

24" W/ELBOWS

STD. 5' BASE DITCH W/CL I RIP RAP SEE DETAIL R

CL B RIP RAP

BZ 2

BZ 1

TDE

PDE

1305+00

1310+00

1315+00

-LB-

48" RCP-III (NOT BURIED)

2GI-A

STD. 6' BASE DITCH W/CL B RIP RAP SEE DETAIL P

18" RCP-III

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

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

REMOVE 15" W/ ELBOW

GRADE TO DRAIN

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

-Y28A-PC Sta. 13+77.77

TOE PROTECTION SEE DETAIL W

LAT. 'V' DITCH W/CL B RIP RAP SEE DETAIL BG

-Y28A-PT Sta. 14+81.04
S 67° 59' 35.6" E

-Y28A-PC Sta. 15+41.12

RETAIN DITCH

REMOVE

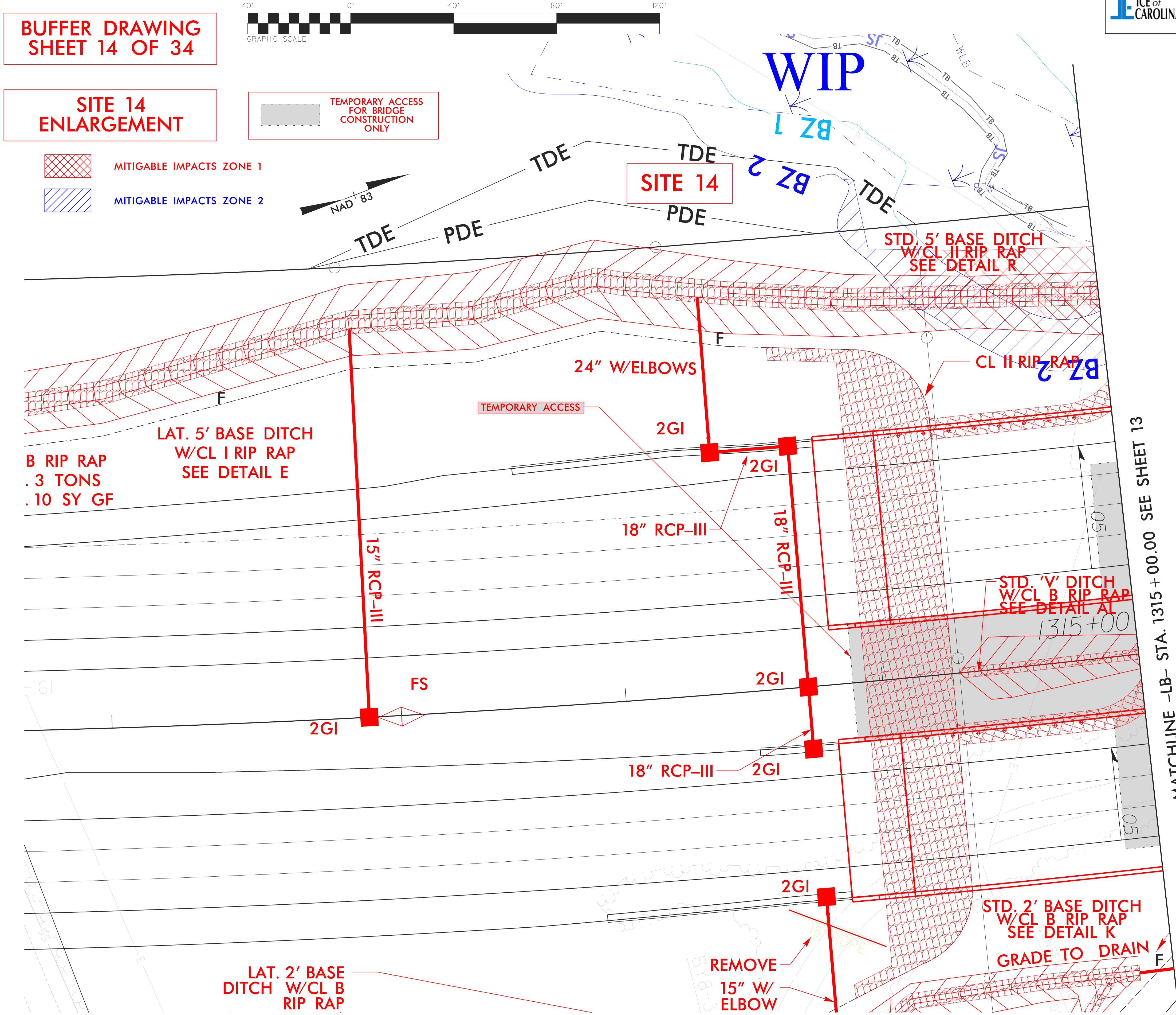
	FOR DITCH DETAILS SEE SHTS. 2D-1 THRU 2D-5	RW LABELED OFF -LB- UNLESS NOTED OTHERWISE.	FOR -LB- CURVE DATA SEE SHT. 3A-1 FOR -Y28A- CURVE DATA SEE SHT. 3A-1	FOR -LB- PROFILE SEE SHT. 48 FOR -Y28A- PROFILE SEE SHT. 63

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

Submitted November 13, 2024

BUFFER DRAWING
SHEET 14 OF 34

SITE 14
ENLARGEMENT



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

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

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

8/17/99

$DATE$ $TIME$ DGN $USERNAME$

8/17/99

BUFFER DRAWING SHEET 15 OF 34

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

TEMPORARY ACCESS FOR BRIDGE CONSTRUCTION ONLY

- MITIGABLE IMPACTS ZONE 1
- MITIGABLE IMPACTS ZONE 2
- ALLOWABLE IMPACTS ZONE 1
- ALLOWABLE IMPACTS ZONE 2

ICE of CAROLINAS, PLLC
ICE of Carolinas, PLLC
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Phone: 803-822-0333
License #: P-0999

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

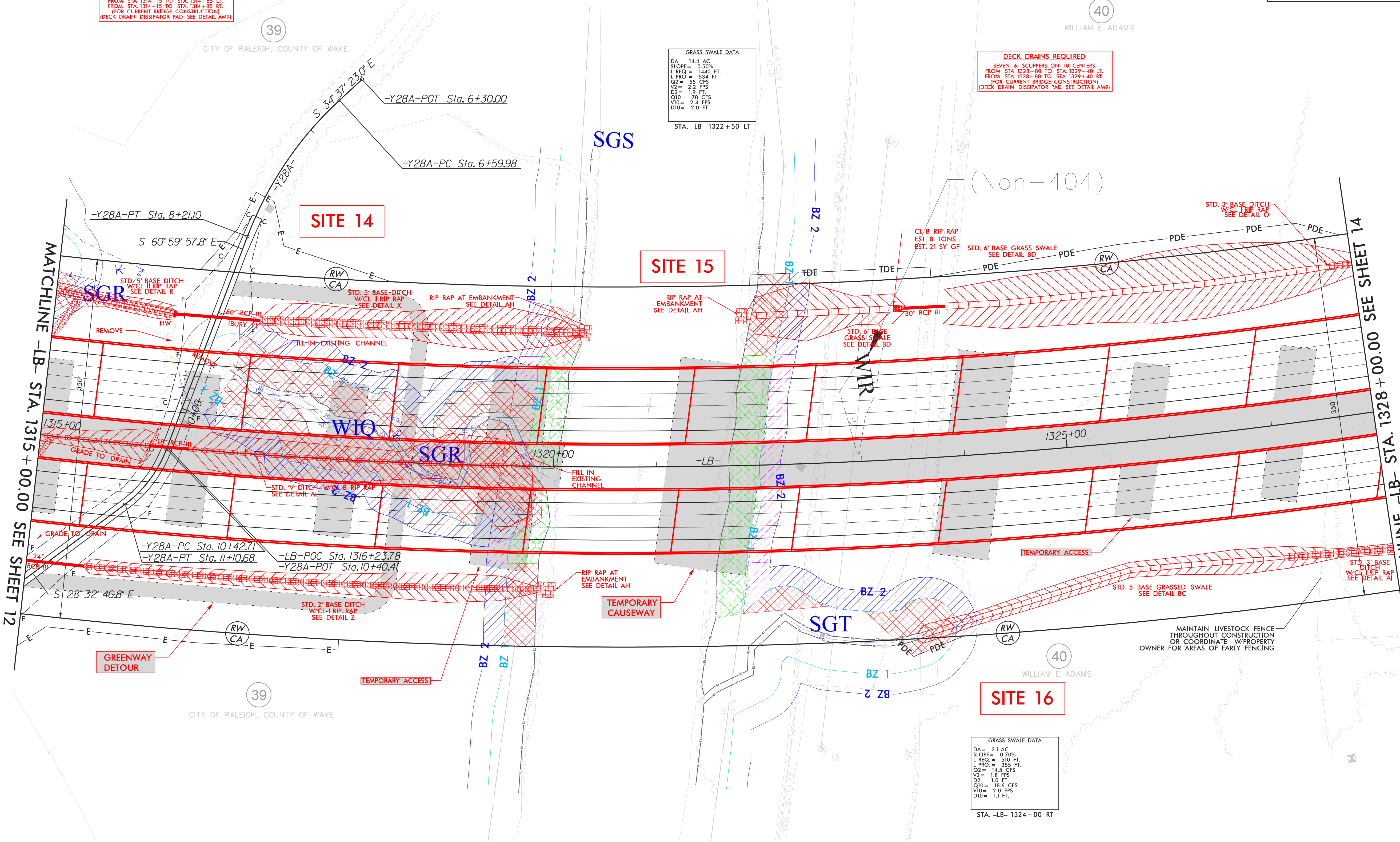
DECK DRAINS REQUIRED
NINE 6" SCUPPERS ON 10' CENTERS
FROM STA. 1314+15 TO STA. 1314+95 LT.
FROM STA. 1314+15 TO STA. 1314+95 RT.
(FOR FUTURE BRIDGE CONSTRUCTION)

DECK DRAINS REQUIRED
EIGHT 6" SCUPPERS ON 10' CENTERS
FROM STA. 1314+15 TO STA. 1314+85 LT.
FROM STA. 1314+15 TO STA. 1314+85 RT.
(FOR CURRENT BRIDGE CONSTRUCTION)
(DECK DRAIN DISSIPATOR PAD SEE DETAIL AM9)

DECK DRAINS REQUIRED
TEN 6" SCUPPERS ON 10' CENTERS
FROM STA. 1328+50 TO STA. 1329+40 LT.
FROM STA. 1328+50 TO STA. 1329+40 RT.
(FOR FUTURE BRIDGE CONSTRUCTION)

DECK DRAINS REQUIRED
SEVEN 6" SCUPPERS ON 10' CENTERS
FROM STA. 1328+80 TO STA. 1329+40 LT.
FROM STA. 1328+80 TO STA. 1329+40 RT.
(FOR CURRENT BRIDGE CONSTRUCTION)
(DECK DRAIN DISSIPATOR PAD SEE DETAIL AM9)

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



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

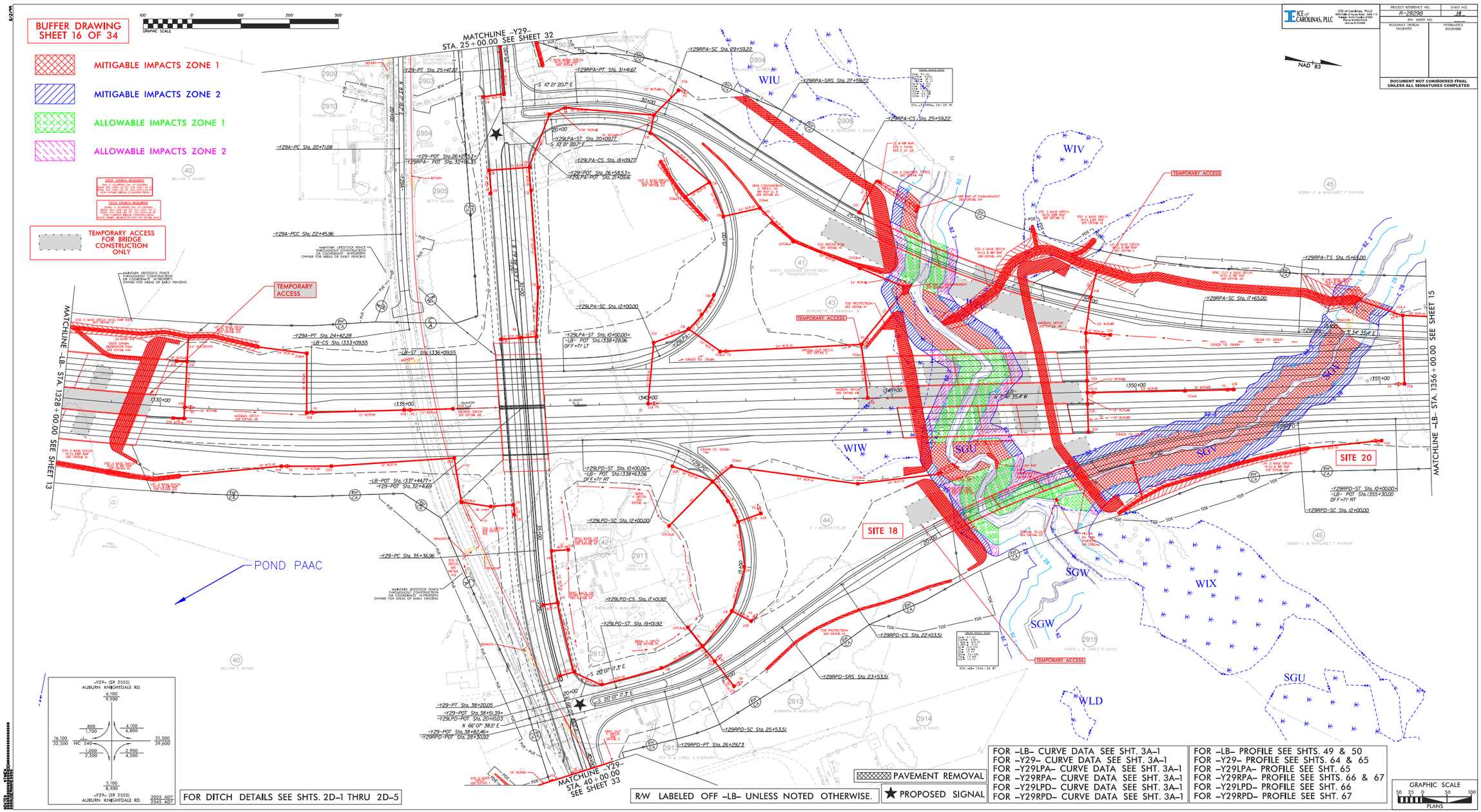
FOR DITCH DETAILS SEE SHTS. 2D-1 THRU 2D-5

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

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

FOR -LB- PROFILE SEE SHT. 48 & 49
FOR -Y28A- PROFILE SEE SHT. 63

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


BUFFER DRAWING
SHEET 16 OF 34
GRAPHIC SCALE
100' 0' 100' 200' 300'
MITIGABLE IMPACTS ZONE 1
MITIGABLE IMPACTS ZONE 2
ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2
TEMPORARY ACCESS FOR BRIDGE CONSTRUCTION ONLY
DECK DRAINS REQUIRED
DECK DRAINS REQUIRED
TEMPORARY ACCESS
MATCHLINE -Y29- STA. 25+00.00 SEE SHEET 32
MATCHLINE -LB- STA. 1328+00.00 SEE SHEET 13
MATCHLINE -LB- STA. 1356+00.00 SEE SHEET 15
MATCHLINE -Y29- STA. 40+00.00 SEE SHEET 33
POND PAAC
SITE 18
SITE 20
WIU
WIV
WIX
WIW
WLD
SGU
SGW
-Y29A-PC Sta. 20+71.08
-Y29A-PT Sta. 25+47.87
-Y29A-PCC Sta. 22+45.96
-Y29A-PT Sta. 24+42.28
-LB-CS Sta. 1333+09.55
-LB-ST Sta. 1336+09.55
-Y29-PC Sta. 35+36.96
-Y29-PT Sta. 38+20.05
-Y29-POT Sta. 38+45.39=
-Y29APD-POT Sta. 20+10.03
N 66° 07' 38.5" E
-Y29-POT Sta. 38+82.46=
-Y29RPD-POT Sta. 28+30.92
-Y29RPA-SC Sta. 29+59.22
-Y29RPA-PT Sta. 31+41.67
-Y29RPA-SRS Sta. 27+59.22
-Y29RPA-CS Sta. 25+59.22
-Y29RPA-TS Sta. 15+65.00
-Y29RPA-SC Sta. 17+65.00
-Y29RPA-ST Sta. 10+00.00=
-LB- POT Sta. 1355+30.00
OFF=7= RT
-Y29RPD-SC Sta. 12+00.00
-Y29RPD-CS Sta. 22+03.51
-Y29RPD-SRS Sta. 23+53.51
-Y29RPD-PT Sta. 26+29.73
-Y29LPA-SC Sta. 12+00.00
-Y29LPA-ST Sta. 10+00.00=
-LB- POT Sta. 1338+28.96
OFF=7= LT
-Y29LPA-CS Sta. 18+09.77
-Y29LPD-SC Sta. 12+00.00
-Y29LPD-ST Sta. 10+00.00=
-LB- POT Sta. 1338+63.56
OFF=7= RT
-Y29LPD-CS Sta. 17+01.92
-Y29LPD-ST Sta. 13+01.92
-LB-POT Sta. 1337+44.77=
-Y29-POT Sta. 32+41.69
-Y29-POT Sta. 26+58.53=
-Y29LPA-POT Sta. 21+09.16
-Y29-POT Sta. 26+29.53=
-Y29RPA- POT Sta. 32+59.35
-Y29-(SR 2555)
AUBURN KNIGHTDALE RD.
6,100
9,900
800
1,700
4,100
6,800
16,100
32,500
NC 540
21,300
39,600
1,000
2,500
2,900
4,500
5,100
8,400
2025 ADT
2045 ADT
FOR DITCH DETAILS SEE SHTS. 2D-1 THRU 2D-5
R/W LABELED OFF -LB- UNLESS NOTED OTHERWISE.
PAVEMENT REMOVAL
PROPOSED SIGNAL
FOR -LB- CURVE DATA SEE SHT. 3A-1
FOR -Y29- CURVE DATA SEE SHT. 3A-1
FOR -Y29LPA- CURVE DATA SEE SHT. 3A-1
FOR -Y29RPA- CURVE DATA SEE SHT. 3A-1
FOR -Y29LPD- CURVE DATA SEE SHT. 3A-1
FOR -Y29RPD- CURVE DATA SEE SHT. 3A-1
FOR -LB- PROFILE SEE SHTS. 49 & 50
FOR -Y29- PROFILE SEE SHTS. 64 & 65
FOR -Y29LPA- PROFILE SEE SHT. 65
FOR -Y29RPA- PROFILE SEE SHTS. 66 & 67
FOR -Y29LPD- PROFILE SEE SHT. 66
FOR -Y29RPD- PROFILE SEE SHT. 67
GRAPHIC SCALE
50 25 0 50 100
PLANS
ICE of CAROLINAS, PLLC
NAD 83
PROJECT REFERENCE NO.
R-2828B
SHEET NO.
14
RW SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Submitted November 13, 2024

8/17/99

BUFFER DRAWING SHEET 17 OF 34

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

100′ 0′ 100′ 200′ 300′

GRAPHIC SCALE

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	16
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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NAD 83

MATCHLINE –LB– STA. 1370+00.00 SEE SHEET 15

MATCHLINE –LB– STA. 1384+00.00 SEE SHEET 17

(Non–404)

46 BILLY S MYRICK

48 JOHN C CRENSHAW III

49 HODGE ROAD LLC

47

GRASS SWALE DATA
DA= 1.6 AC.
SLOPE= 3.20%
L REQ.= 160 FT.
L PRO.= 305 FT.
Q2= 3.9 CFS
V2= 2.8 FPS
D2= 0.4 FT.
Q10= 5.0 CFS
V10= 3.0 FPS
D10= 0.5 FT.
STA. –LB– 1380+50 LT

GRASS SWALE DATA
DA= 1.5 AC.
SLOPE= 1.40%
L REQ.= 150 FT.
L PRO.= 134 FT.
Q2= 4.7 CFS
V2= 1.9 FPS
D2= 0.6 FT.
Q10= 6.0 CFS
V10= 2.0 FPS
D10= 0.7 FT.
STA. –LB– 1379+68 RT

GRASS SWALE DATA
DA= 1.6 AC.
SLOPE= 4.00%
L REQ.= 160 FT.
L PRO.= 282 FT.
Q2= 4.1 CFS
V2= 3.2 FPS
D2= 0.4 FT.
Q10= 5.2 CFS
V10= 3.5 FPS
D10= 0.4 FT.
STA. –LB– 1380+20 RT

WJA
SGY
WIZ
PAI
WIY

BZ 1
BZ 2

BERM V DITCH SEE DETAIL J
OTCB–4
15" W/ELBOWS
15" RCP–III
2GI
18" RCP–III
FS 2GI–A
24" RCP–III
CL B RIP RAP EST. 5 TONS EST. 14 SY GF
STD. 2' BASE DITCH SEE DETAIL I
TOE PROTECTION SEE DETAIL W
DRAIN POND
REMOVE
42" RCP–III (NOT BURIED)
CL I RIP RAP EST. 20 TONS EST. 39 SY GF
CL B RIP RAP EST. 1 TONS EST. 5 SY GF
LAT. 2' BASE DITCH W/ CL I RIP RAP SEE DETAIL C
SPECIAL CUT V DITCH W/CL I RIP RAP SEE DETAIL AK
GREU TL–3
LAT. 2' BASE GRASSED SWALE W/WQ ROCK CHECK SEE DETAIL BF
SEE INLET CHANNEL STABILIZATION DETAIL BO
LAT. 3' BASE GRASSED SWALE W/WQ ROCK CHECK SEE DETAIL BF
LAT. 2' BASE DITCH W/CL I RIP RAP SEE DETAIL D
LAT. 2' BASE DITCH W/CL B RIP RAP SEE DETAIL AC
LAT. 2' BASE GRASSED SWALE SEE DETAIL H
STD. 2' BASE GRASSED SWALE SEE DETAIL AA
STD. 5' BASE DITCH W/ CL II RIP RAP SEE DETAIL X
TOE PROTECTION SEE DETAIL W
CL I RIP RAP EST. 20 TONS EST. 39 SY GF
CL B RIP RAP EST. 1 TONS EST. 5 SY GF
LAT. 2' BASE DITCH W/ CL I RIP RAP SEE DETAIL C
–LB– N 7° 41' 35.4" W
1370+00
1375+00
1380+00
TDE
PDE
RW CA

SITE 22

SITE 22

SEE INSET 17–1 FOR CONTINUATION

INSET 17–1

100′ 0′ 100′
GRAPHIC SCALE

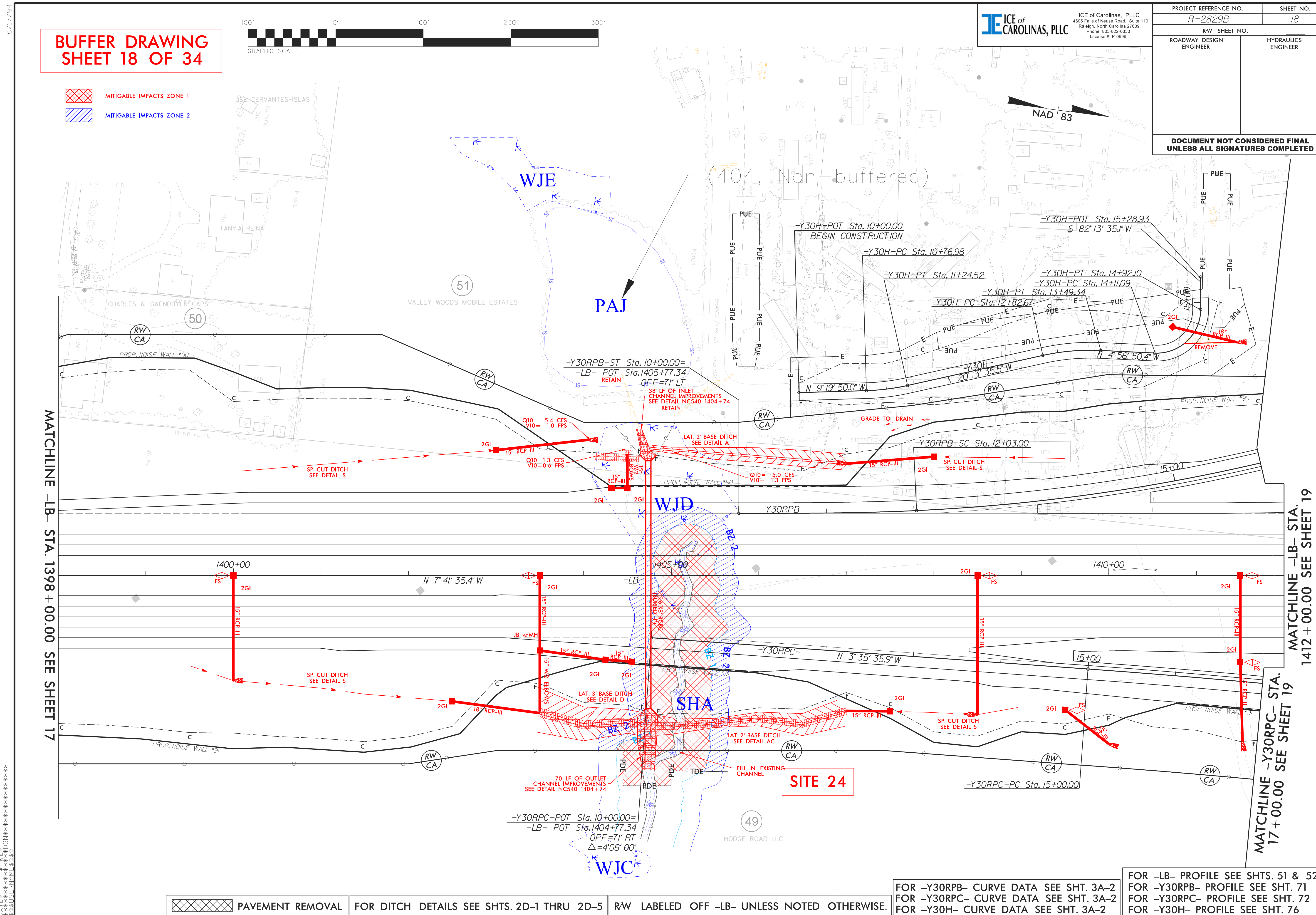
FOR DITCH DETAILS SEE SHTS. 2D–1 THRU 2D–5

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

FOR –LB– PROFILE SEE SHTS. 50 & 51

$DATE$ $TIME$ $USERNAME$ DGN

Submitted November 13, 2024



BUFFER DRAWING
SHEET 19 OF 34

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

MITIGABLE IMPACTS ZONE 1
MITIGABLE IMPACTS ZONE 2
ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2

POOLE RD. 15,700 29,400
21,300 39,600 –Y30– (SR 1007) NC 540 34,800 66,600
20,000 39,400 POOLE RD.
3,000 3,400 | 7,900 12,600 | 3,300 4,100 | 11,900 21,900
2025 ADT 2045 ADT

MATCHLINE –Y30– STA. 23+00.00 SEE SHEET 34

NAD 83

SEE PERMIT DRAWING SHEET 21 OF 34 FOR ENLARGEMENT

AREA TO BE CLEARED AND USED FOR TEMPORARY UTILITY INSTALLATION THROUGH A RIGHT OF ENTRY AGREEMENT

WAAC SAAB WAAB

(Non–404)
(Non–404, buffered)

SITE 30

CELL TOWER & GRAVEL DRIVE (BY OTHERS)

SITE 25

SITE 27

SITE 28

SITE 29

POND WJI

MATCHLINE –LB– STA. 1417+00.00 SEE SHEET 18

MATCHLINE –Y30RPC– STA. 17+00.00 SEE SHEET 18

MATCHLINE –LB– STA. 1440+00.00 SEE SHEET 20

MATCHLINE –Y30RPD– STA. 16+00.00 SEE SHEET 20

MATCHLINE –Y30A– STA. 22+00.00 SEE SHEET 35

MATCHLINE –Y30– STA. 38+00.00 SEE SHEET 35

SEE PERMIT DRAWING SHEET 20 OF 34 FOR ENLARGEMENT

REFER TO UTILITY BUFFER IMPACT DRAWINGS FOR REMAINDER OF BUFFER IMPACTS

REFER TO UTILITY BUFFER IMPACT DRAWINGS FOR REMAINDER OF BUFFER IMPACTS

* ADVANCED ACQUISITION | PAVEMENT REMOVAL | FOR DITCH DETAILS SEE SHTS. 2D–1 THRU 2D–5 | R/W LABELED OFF –LB– UNLESS NOTED OTHERWISE. | ★ PROPOSED SIGNAL

FOR –LB– CURVE DATA SEE SHT. 3A–1
FOR –Y30– CURVE DATA SEE SHT. 3A–1
FOR –Y30LPB– CURVE DATA SEE SHT. 3A–2
FOR –Y30RPB– CURVE DATA SEE SHT. 3A–2
FOR –Y30RPC– CURVE DATA SEE SHT. 3A–2
FOR –Y30RPD– CURVE DATA SEE SHT. 3A–2
FOR –Y30A– CURVE DATA SEE SHT. 3A–2
FOR –Y30G– CURVE DATA SEE SHT. 3A–2

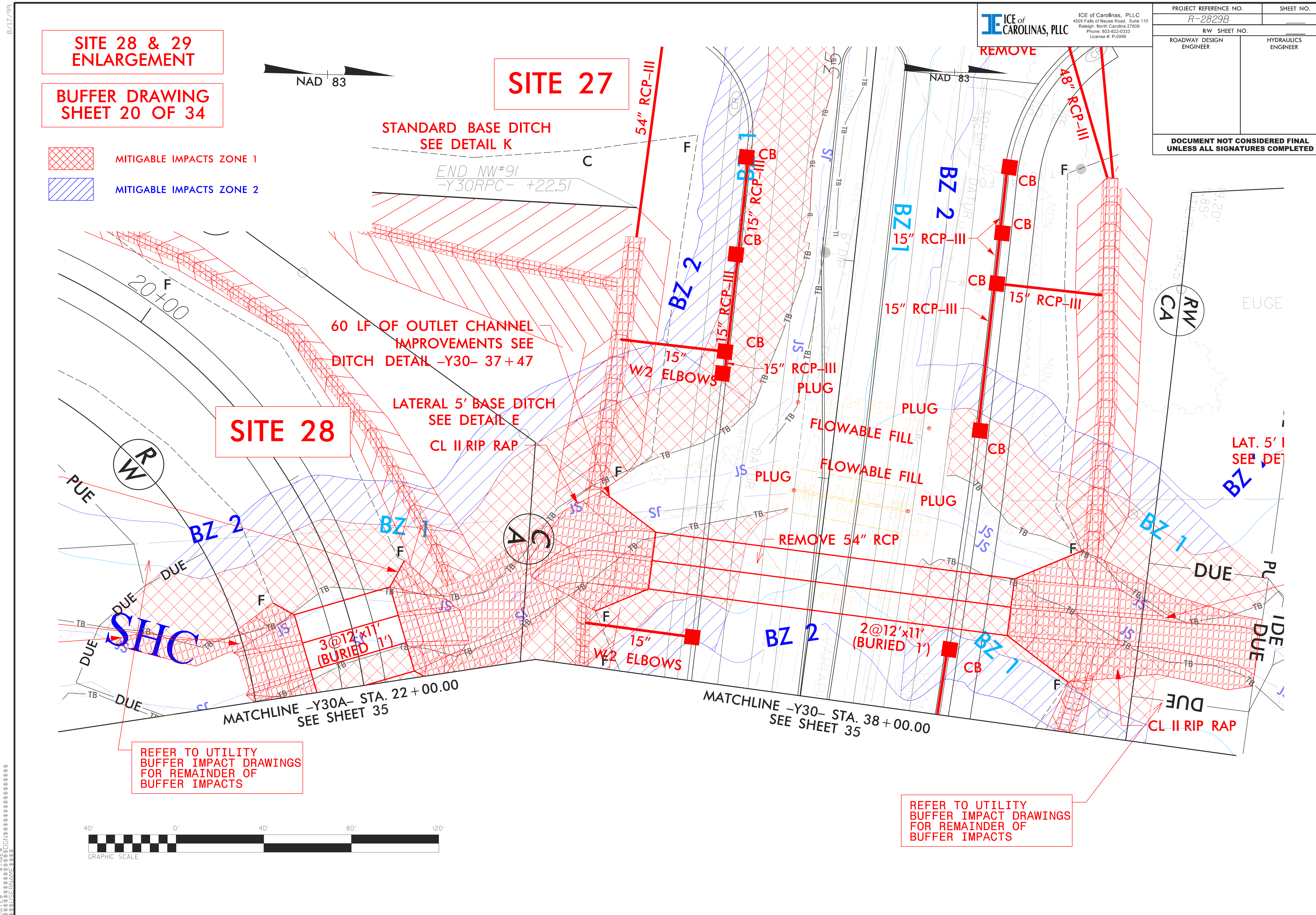
FOR –LB– PROFILE SEE SHTS. 52 & 53
FOR –Y30– PROFILE SEE SHTS. 68 & 69
FOR –Y30LPB– PROFILE SEE SHTS. 70 & 71
FOR –Y30RPB– PROFILE SEE SHTS. 71 & 72
FOR –Y30RPC– PROFILE SEE SHTS. 72 & 73
FOR –Y30RPD– PROFILE SEE SHTS. 73 & 74
FOR –Y30SPURB– PROFILE SEE SHT. 74
FOR –Y30A– PROFILE SEE SHTS. 74 & 75
FOR –Y30G– PROFILE SEE SHT. 76

GRAPHIC SCALE 50 25 0 50 100 PLANS

ICE of CAROLINAS, PLLC
4925 Falls of Neuse Road, Suite 110
Raleigh, North Carolina 27609
Phone 919.872.5115
License # C-4065

PROJECT REFERENCE NO. R-2829B | SHEET NO. 19
RW SHEET NO.
ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED


SITE 28 & 29 ENLARGEMENT
BUFFER DRAWING SHEET 20 OF 34
MITIGABLE IMPACTS ZONE 1
MITIGABLE IMPACTS ZONE 2
ICE of CAROLINAS, PLLC
ICE of Carolinas, PLLC
4505 Falls of Neuse Road, Suite 110
Raleigh, North Carolina 27609
Phone: 803-822-0333
License #: P-0999
PROJECT REFERENCE NO.
SHEET NO.
R-2829B
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
NAD 83
SITE 27
SITE 28
STANDARD BASE DITCH
SEE DETAIL K
END NW#91
-Y30RPC- +22.51
54" RCP-III
48" RCP-III
REMOVE
60 LF OF OUTLET CHANNEL
IMPROVEMENTS SEE
DITCH DETAIL -Y30- 37+47
LATERAL 5' BASE DITCH
SEE DETAIL E
CL II RIP RAP
15" RCP-III
CB
15" W/2 ELBOWS
PLUG
FLOWABLE FILL
REMOVE 54" RCP
3@12'x11' (BURIED 1')
2@12'x11' (BURIED 1')
BZ 1
BZ 2
SHC
PUE
DUE
20+00
LAT. 5'
SEE DET
MATCHLINE -Y30A- STA. 22+00.00
SEE SHEET 35
MATCHLINE -Y30- STA. 38+00.00
SEE SHEET 35
REFER TO UTILITY BUFFER IMPACT DRAWINGS FOR REMAINDER OF BUFFER IMPACTS
REFER TO UTILITY BUFFER IMPACT DRAWINGS FOR REMAINDER OF BUFFER IMPACTS
GRAPHIC SCALE
40' 0' 40' 80' 120'

BUFFER DRAWING
SHEET 21 OF 34

SITE 30
ENLARGEMENT

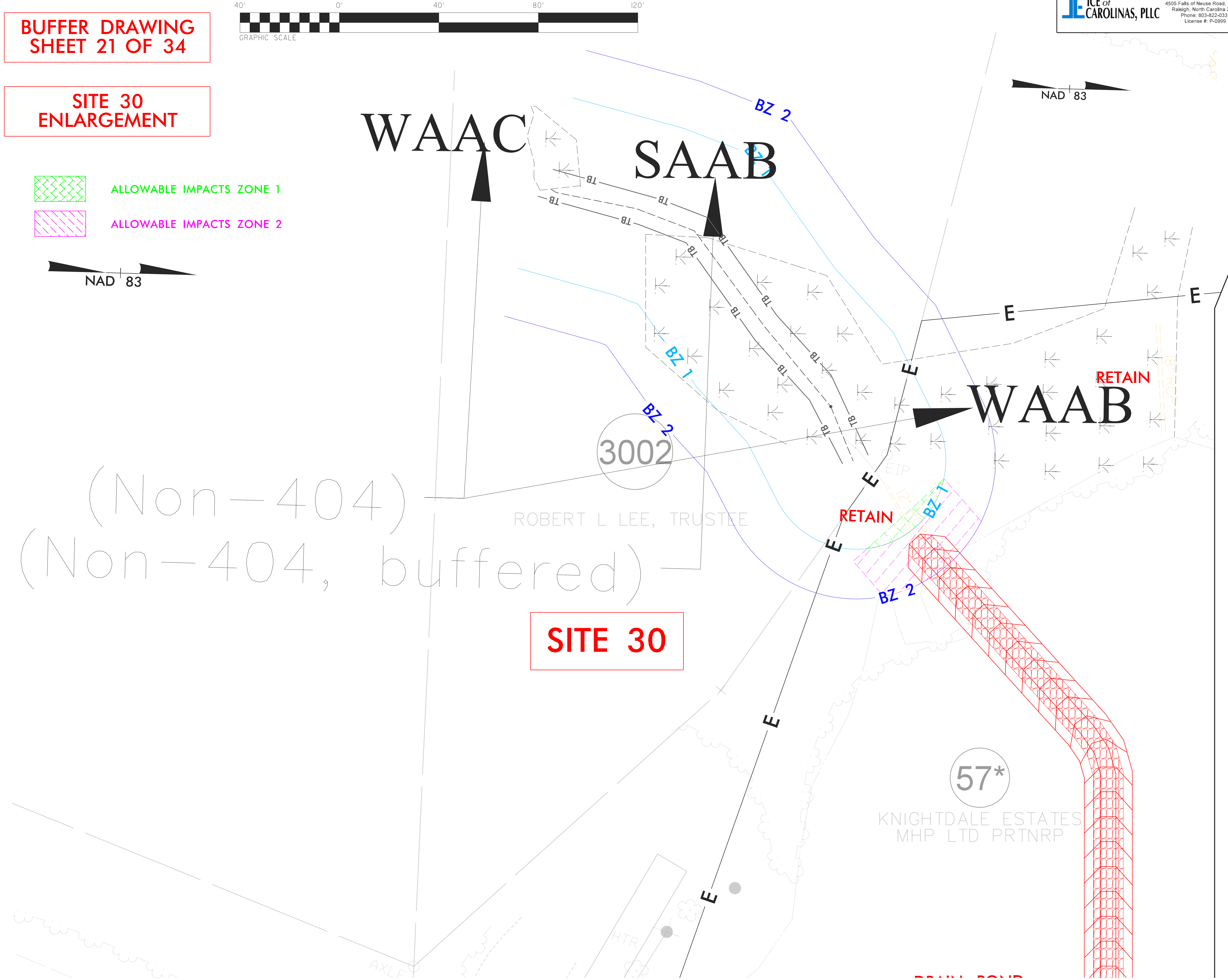
ICE of CAROLINAS, PLLC

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

PROJECT REFERENCE NO.	SHEET NO.
R-2829B	___
R/W SHEET NO.	___

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



8/17/99

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

BUFFER DRAWING
SHEET 22 OF 34

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

TEMPORARY ACCESS FOR BRIDGE CONSTRUCTION ONLY

MITIGABLE IMPACTS ZONE 1
MITIGABLE IMPACTS ZONE 2
ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2

NAD 83

ICE of Carolinas, PLLC
4929 Falls of Neuse Road, Suite 110
Raleigh, North Carolina 27609
Phone 919.872.5115
License # C-4068

PROJECT REFERENCE NO.	SHEET NO.
R-2828B	22
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SITE 33
SITE 32
TEMPORARY ACCESS

JURISDICTIONAL FEATURES WITHIN EXISTING RIGHT OF WAY EXTEND BEYOND THE LIMITS SHOWN

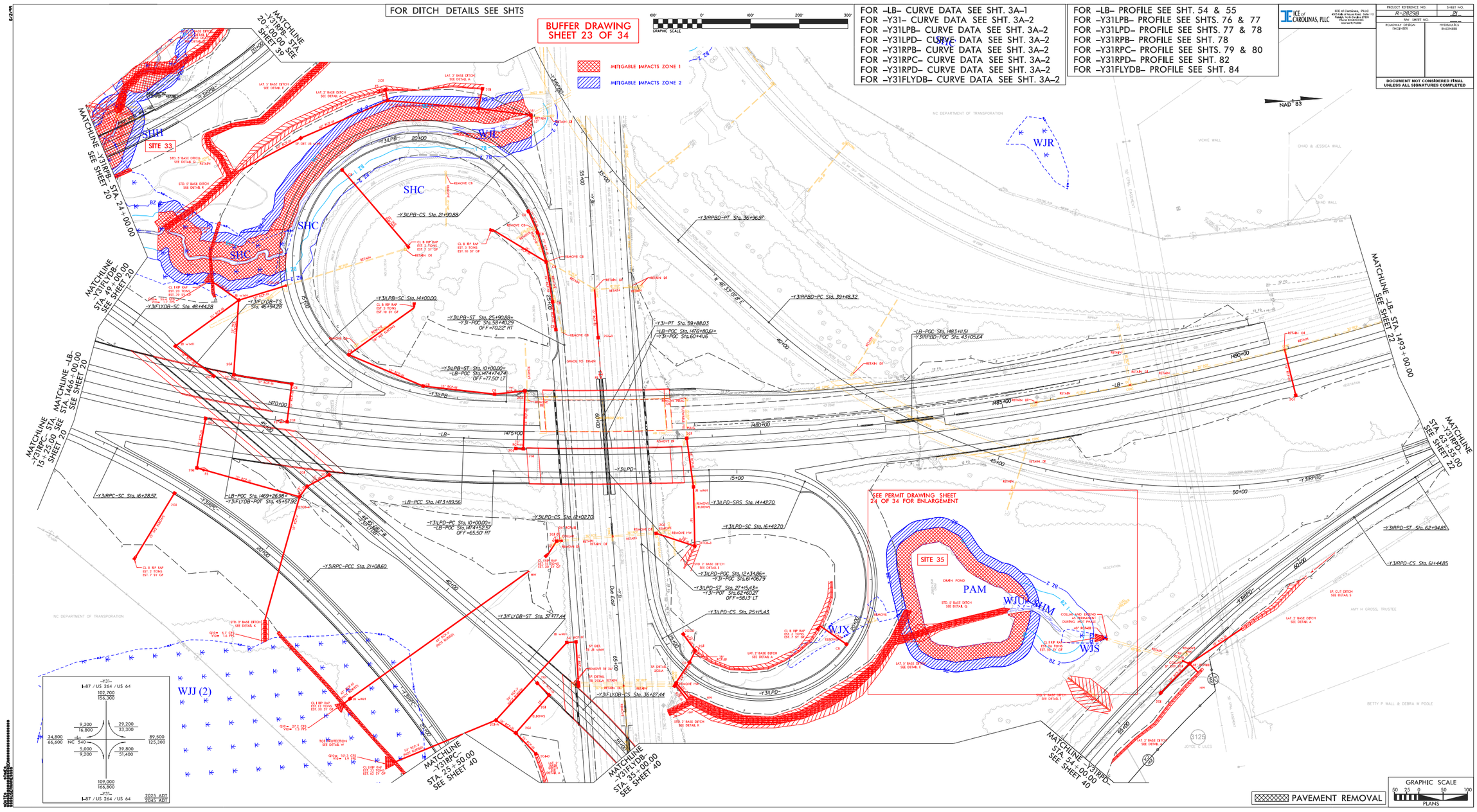
* ADVANCED ACQUISITION
PAVEMENT REMOVAL

FOR DITCH DETAILS SEE SHTS. 2D-1 THRU 2D-5
R/W LABELED OFF -LB- UNLESS NOTED OTHERWISE.

FOR -LB- CURVE DATA SEE SHT. 3A-1
FOR -Y30RPD- CURVE DATA SEE SHT. 3A-2
FOR -Y31RPB- CURVE DATA SEE SHT. 3A-2
FOR -Y31RPC- CURVE DATA SEE SHT. 3A-2
FOR -Y31FLYDB- CURVE DATA SEE SHT. 3A-2
FOR -Y31A- CURVE DATA SEE SHT. 3A-2

FOR -LB- PROFILE SEE SHTS. 53 & 54
FOR -Y30RPD- PROFILE SEE SHT. 73
FOR -Y31RPB- PROFILE SEE SHT. 79
FOR -Y31RPC- PROFILE SEE SHT. 79
FOR -Y31FLYDB- PROFILE SEE SHTS. 84 & 85
FOR -Y31A- PROFILE SEE SHT. 85
FOR -Y31B- PROFILE SEE SHT. 85

GRAPHIC SCALE 50 25 0 50 100 PLANS


FOR DITCH DETAILS SEE SHTS
BUFFER DRAWING SHEET 23 OF 34
MITIGABLE IMPACTS ZONE 1
MITIGABLE IMPACTS ZONE 2
FOR –LB– CURVE DATA SEE SHT. 3A–1
FOR –Y31– CURVE DATA SEE SHT. 3A–2
FOR –Y31LPB– CURVE DATA SEE SHT. 3A–2
FOR –Y31LPD– CURVE DATA SEE SHT. 3A–2
FOR –Y31RPB– CURVE DATA SEE SHT. 3A–2
FOR –Y31RPC– CURVE DATA SEE SHT. 3A–2
FOR –Y31RPD– CURVE DATA SEE SHT. 3A–2
FOR –Y31FLYDB– CURVE DATA SEE SHT. 3A–2
FOR –LB– PROFILE SEE SHT. 54 & 55
FOR –Y31LPB– PROFILE SEE SHTS. 76 & 77
FOR –Y31LPD– PROFILE SEE SHTS. 77 & 78
FOR –Y31RPB– PROFILE SEE SHT. 78
FOR –Y31RPC– PROFILE SEE SHTS. 79 & 80
FOR –Y31RPD– PROFILE SEE SHT. 82
FOR –Y31FLYDB– PROFILE SEE SHT. 84
ICE of CAROLINAS, PLLC
PROJECT REFERENCE NO. R-2828B
SHEET NO. 2I
RW SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
NAD 83
MATCHLINE –Y31RPB– STA. 20+00.00 SEE SHEET 39
MATCHLINE –Y31RPB– STA. 24+00.00 SEE SHEET 20
MATCHLINE –Y31FLYDB– STA. 49+00.00 SEE SHEET 20
MATCHLINE –LB– STA. 1460+00.00 SEE SHEET 20
MATCHLINE –Y31RPC– STA. 15+25.00 SEE SHEET 20
MATCHLINE –LB– STA. 1493+00.00 SEE SHEET 22
MATCHLINE –Y31RPD– STA. 03+25.00 SEE SHEET 22
MATCHLINE –Y31RPC– STA. 25+50.00 SEE SHEET 40
MATCHLINE –Y31FLYDB– STA. 35+00.00 SEE SHEET 40
MATCHLINE –Y31RPD– STA. 54+00.00 SEE SHEET 40
SITE 33
SITE 35
SHH
SHC
WJR
WJJ
WJX
WJS
WJJ (2)
PAM
WJJ SHIM
SEE PERMIT DRAWING SHEET 24 OF 34 FOR ENLARGEMENT
–Y31– I-87 /US 264 /US 64 102,700 156,300 9,300 16,800 29,200 33,300 34,800 66,600 NC 540 89,500 125,300 5,000 9,200 39,800 31,400 109,000 166,800 2025 ADT 2045 ADT
PAVEMENT REMOVAL
GRAPHIC SCALE 50 25 0 50 100 PLANS

8/17/99

SITE 35 ENLARGEMENT

BUFFER DRAWING SHEET 24 OF 34

GRAPHIC SCALE 40′ 0′ 40′ 80′ 120′

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

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

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

SITE 35

BZ 1

BZ 2

BZ

SF

JS

TB

F

DRAIN POND

POND WSE=258.2′

PAM

WJU

SHM

WJS

STD. 5′ BASE DITCH
SEE DETAIL Q

LAT. 5′ BASE DITCH
SEE DETAIL E

REMOVE

COLLAR AND EXTEND AS PERMANENT DURING MOT PHASE

48″ RCP–III

CL I RIP RAP
EST. 26 TONS
EST. 50 SY GF

VEGETATION

LEVEL SPREADER

RIPRAP

C

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

BUFFER DRAWING SHEET 25 OF 34

ALLOWABLE IMPACTS ZONE 1

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

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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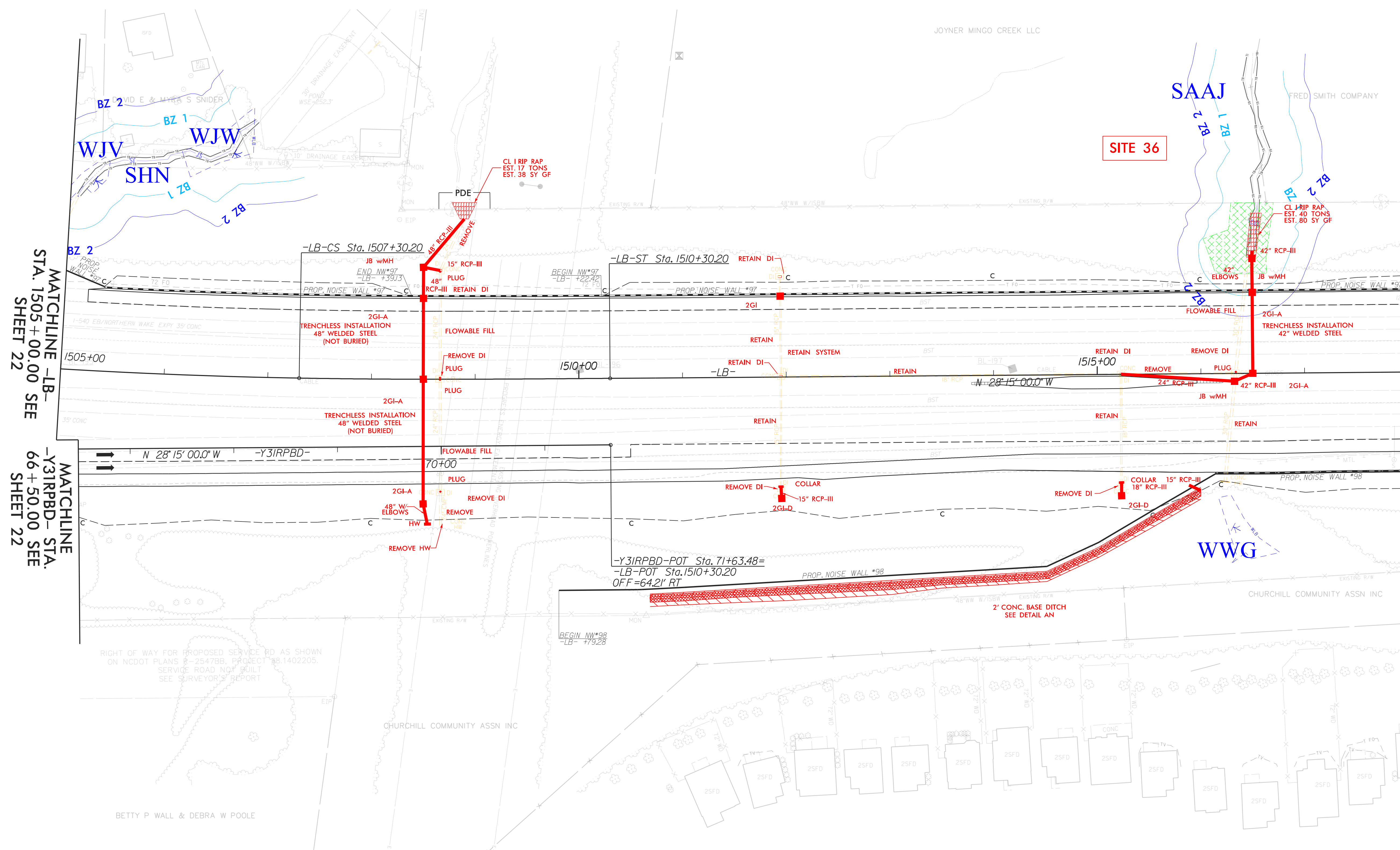
4505 Falls of Neuse Road, Suite 110
Raleigh, North Carolina 27609
Phone: 803-822-0333
License #: P-0999

NAD 83



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

Submitted November 13, 2024

8/17/99

BUFFER DRAWING SHEET 26 OF 34

100′ 0′ 100′ 200′ 300′

GRAPHIC SCALE

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

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

PROJECT REFERENCE NO.	SHEET NO.
R-2829B	31
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

2901
GRADY B & THELMA M JEFFERYS

2918

2901
GRADY B & THELMA M JEFFERYS

NEUSE RIVER

SITE 37

PROPOSED TEST HOLE LOCATION HAS BEEN UNDER WATER 06-08-24

LATERAL 6' BASE GRASS SWALE SEE DETAIL BE

RIP RAP AT EMBANKMENT SEE DETAIL AH

PDE

DUE

PUE

RETAIN

STD. 6' BASE GRASS SWALE SEE DETAIL BD

-Y29-POT Sta. 8+00.00

10+00

N 46° 27' 32.5" E
-Y29-

CONC BRIDGE DECK

SHOULDER BERM GUTTER

RIP RAP

MON

EOT

16" PVC

EXISTING R/W

48" CMP

PERMANENT UTILITY EASEMENT DB 15649 PG 816

PERMANENT DRAINAGE EASEMENT

24 FO

BY9-343

-Y29- STA. 14+00.00 SEE SHEET 32

NEUSE RIVER

2907
MICHAEL D SEALEY

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

FOR -Y29- PROFILE SEE SHT. 64

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

Submitted November 13, 2024

8/17/99

BUFFER DRAWING SHEET 27 OF 34

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

100' 0' 100' 200' 300'

GRAPHIC SCALE

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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	34
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

INSET 'A'

3001 SUNLIGHT HOLDINGS, LLC

3002 ROBERT L LEE, TRUSTEE

3003 CHRISTINE B & IRA G FLOYD

3004 SUMMERFIELD MOBILE HOME PARK LLC

52* LINDA T PAUL & MARY MCDONALD

-Y30C-PT Sta. 11+70.32

N 74° 03' 39.5" E

-Y30C-PC Sta. 12+60.09

-Y30C-PC Sta. 10+42.53

N 0° 50' 29.1" E

S 89° 09' 30.9" E
-Y30-

10+00

15+00

20+00

-Y30C-POT Sta. 10+00.00=
-Y30-POT Sta.18+00.00

MATCHLINE -Y30- STA. 23+00.00 SEE SHEET 19

SEE SHEET 19

SITE 27

RETAIN SYSTEM

RETAIN

RETAIN AND ADJUST

REMOVE

DO NOT DISTURB

COLLAR

STREAM INLET PROTECTION SEE DETAIL BQ

SID

BZ-2

INSET 'A'

-Y30-POT Sta. 7+00.00

RIVERVIEW LAND HOLDINGS, LP
DB 15546 PG 2307
BM 2011 PG 332
BM 2022 PG 2137

3000

(SR 2516) HODGE RD.

15,500 / 30,000

16,100 / 28,700 -Y30- (SR 1007) POOLE RD.

7,400 / 10,300

7,000 / 12,100

15,700 / 29,400 -Y30- (SR 1007) POOLE RD.

400 / 2,000

400 / 900

1,900 / 10,500 (SR 2516) HODGE RD.

2025 ADT
2045 ADT

* ADVANCED ACQUISITION

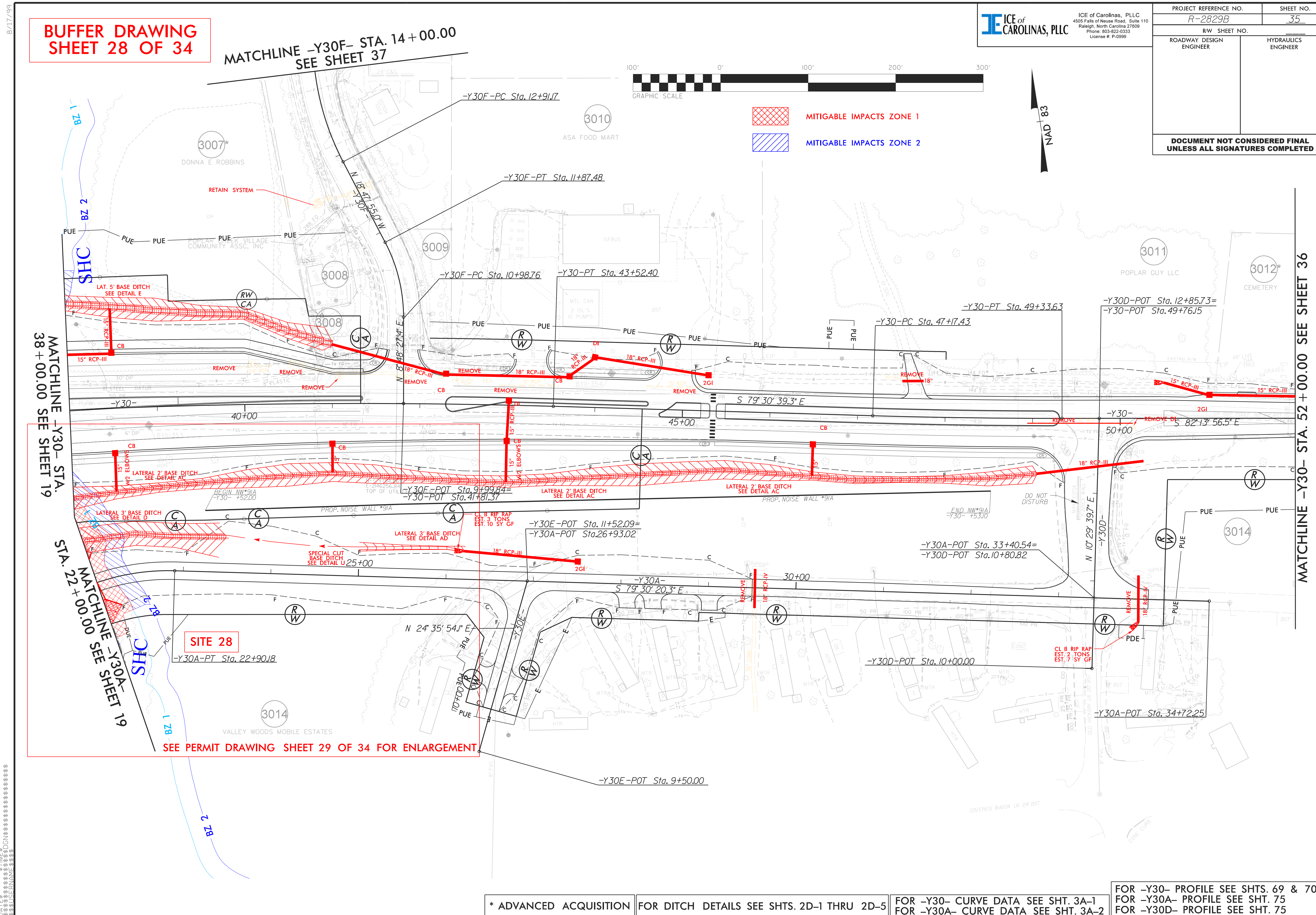
FOR DITCH DETAILS SEE SHTS. 2D-1 THRU 2D-5

FOR -Y30- CURVE DATA SEE SHT. 3A-1
FOR -Y30C- CURVE DATA SEE SHT. 3A-2

FOR -Y30- PROFILE SEE SHT. 68
FOR -Y30C- PROFILE SEE SHT. 75

$DATE$ $TIME$
$USERNAME$ DGN

Submitted November 13, 2024



Submitted November 13, 2024

8/17/99

BUFFER DRAWING SHEET 29 OF 34

SITE 28 ENLARGEMENT

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

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

MATCHLINE -Y30- STA. 38+00.00 SEE SHEET 19

CB 15" W/2 ELBOWS

LATERAL 2' BASE DITCH SEE DETAIL AC

BEGIN NW#91A -Y30- +52.00

N 729784.96
E 2146256.84
TOP OF UTILITY 30.68'

-Y30E-POT Sta.9
-Y30-POT Sta.41+

PROP. NOISE WALL #91A

LATERAL 3' BASE DITCH SEE DETAIL D

LATERAL 3' BASE DITCH SEE DETAIL AD

SPECIAL CUT BASE DITCH SEE DETAIL U

25+00

BZ 1

BZ 2

SHC

MATCHLINE -Y30A- STA. 22+00.00 SEE SHEET 19

SITE 28

-Y30A-PT Sta. 22+90.18

N 24° 35' 54.1" E

NAD 83

3014

VALLEY WOODS MOBILE ESTATES

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

BUFFER DRAWING SHEET 30 OF 34

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

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

NAD 83

ICE of CAROLINAS, PLLC

PROJECT REFERENCE NO.	SHEET NO.
R-2829B	40
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MATCHLINE –Y31RPD– STA. 54+00.00 SEE SHEET 21

MATCHLINE –Y31RPD– STA. 24+50.00 SEE SHEET 41

MATCHLINE –Y31FLYDB– STA. 35+00.00 SEE SHEET 21

MATCHLINE –Y31RPC– STA. 25+50.00 SEE SHEET 21

WJJ (1)

WJJ (2)

SHL

SAAL

SITE 39

SITE 38

SEE PERMIT DRAWING SHEET 31 OF 34 FOR ENLARGEMENT

PAVEMENT REMOVAL

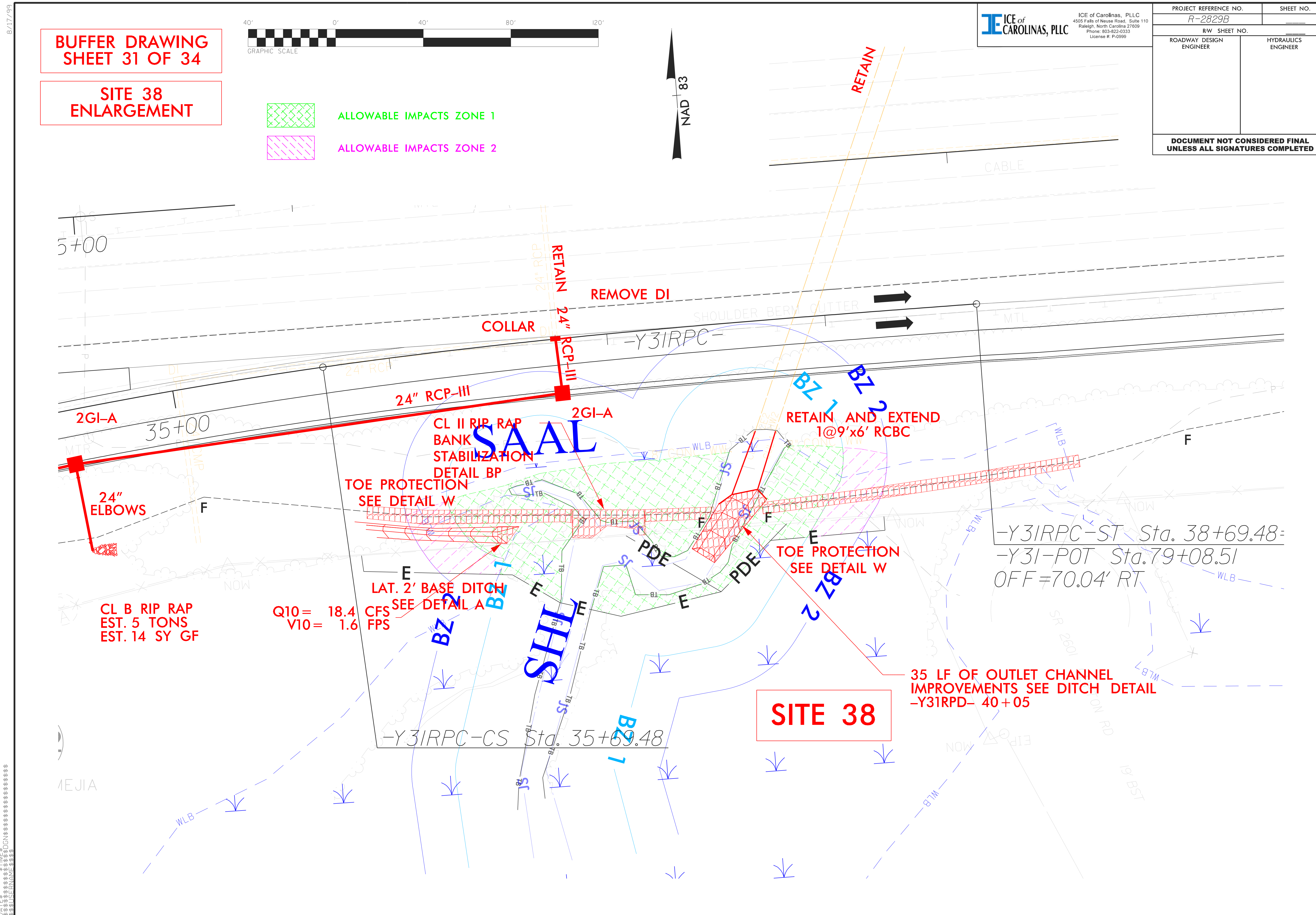
FOR DITCH DETAILS SEE SHTS. 2D–1 THRU 2D–5

FOR –Y31RPC– CURVE DATA SEE SHT. 3A–2
FOR –Y31RPD– CURVE DATA SEE SHT. 3A–2
FOR –Y31FLYDB– CURVE DATA SEE SHT. 3A–2

FOR –Y31RPC– PROFILE SEE SHT. 80
FOR –Y31RPD– PROFILE SEE SHTS. 81 & 82
FOR –Y31FLYDB– PROFILE SEE SHT. 83
FOR –Y31– PROFILE SEE SHT. 86

GRAPHIC SCALE 50 25 0 50 100 PLANS

Submitted November 13, 2024



RIPARIAN BUFFER IMPACTS SUMMARY

Site No.	Station (From/To)	Structure Size / Type	Stream ID	IMPACTS									BUFFER REPLACEMENT	
				TYPE			ALLOWABLE			MITIGABLE				
				ROAD CROSSING	BRIDGE	PARALLEL IMPACT	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)
1	-L- 1195+47/1196+04 , LT	DITCH EXCAVATION	SGH			X				1571	2334	3905		
3	-Y27-RPA- 12+22/22+93, RT	POND REMOVAL	PAH			X				74171	48230	122401		
6	-Y27-RPA- 22+78/23+28, RT	DITCH EXCAVATION	SAAM			X				1574	180	1754		
6	-Y27-RPA- 22+78/23+28, RT	POND REMOVAL	SGJ			X				10462	5253	15715		
7	-L- 1241+20/1245+56	2 @ 6'x8' RCBC	SGK	X						34491	21916	56407		
8	-L- 1253+17/1253+96, LT	DITCH EXCAVATION	SGJ			X				2484	1462	3946		
10	-Y28- 15+00	ROAD CROSSING	SGJ			X	2813	1850	4663					
12	-L- 1287+08/1288+88	3 @ 7'x8' RCBC	SGI	X						33194	21796	54990		
14	-LB- 1313+98 TO 1319+64 M	CHANNEL REALIGNMENT	SGR		X					24910	16255	41165		
15	-LB- 1319+37 TO 1322+40 M	BRIDGE	Neuse River		X		12996	5136	18132					
15	-LB- 1319+35 TO 1322+57 M	DITCH EXCAVATION	Neuse River		X					8779	5123	13902		
16	-LB- 1321+75 TO 1324+01 RT	BRIDGE	SGT		X					3912	4609	8521		
18	-LB- 1344+83 TO 1348+34 M	BRIDGES	SGU		X		32853	18719	51572	20211	14256	34467		
20	-LB- 1348+68 TO 1355+27 M	ROADWAY FILL	SGV	X						42154	27904	70058		
20	-LB- 1348++13 TO 1349+37 RT	BRIDGE	SGV		X		3232	1006	4238	1978	1336	3314		
22	-LB- 1380+15 TO 1381+80 M	ROADWAY FILL	SGY	X						20339	13343	33682		
22	-LB- 1377+04 TO 1381+28 RT	ROADWAY FILL (POND)	PAI	X						38584	27420	66004		
24	-LB- 1404+17 TO 1405+90 M	1 @ 6'x8' RCBC	SHA	X						19269	13337	32606		
25	-Y30RPB- 17+72 TO 20+71 M	1 @ 6'x8'	SHB	X						9054	7487	16541		
27	-Y30- 22+34 TO 24+77 M	ROADWAY FILL	SHD	X						16565	8783	25348		
27	-Y30- 23+31 TO 36+68 M	ROADWAY FILL	SHD			X				74775	42097	116872		
28	-Y30- 36+45 TO 38+85 M	2@12'X11', 3@12'X11'	SHC	X						25651	14793	40444		
29	-Y30RPD- 24+55 TO 26+22 LT	ROADWAY FILL	SHE	X						14071	12463	26534		
30	-LB- 1438+31 TO 1438+74 LT	DITCH EXCAVATION	SAAB	X			186	1026	1212					
32	-LB- 1456+26 TO 1461+73 M	BRIDGE	SHC		X		24699	19034	43733					
32	-Y31FLYDB- 50+22 TO 54+90 M	1@10'x8' RCBC	SHC	X						33895	20847	54742		
32	-Y31LPB- 16+32 TO 22+05 LT	ROADWAY FILL	SHC			X				22197	14637	36834		
32	-Y31LPB- 15+66 TO 16+52 LT	ROADWAY FILL	SHC	X						19305	10950	30255		
33	-Y31RPB- 21+02 TO 24+50 M	1 @ 6'x8' RCBC	SHH	X						12507	12767	25274		
35	-Y31LPD- 18+30 TO 20+14 LT	ROADWAY FILL	Pond PAM	X						22774	18737	41511		
TOTALS*:							**76779**	**46771**	**123550**	**588877**	**388315**	**977192**	**0**	**0**

NOTES:

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
12/4/2024
WAKE COUNTY
R-2829B

RIPARIAN BUFFER IMPACTS SUMMARY

Site No.	Station (From/To)	Structure Size / Type	Stream ID	IMPACTS									BUFFER REPLACEMENT	
				TYPE			ALLOWABLE			MITIGABLE				
				ROAD CROSSING	BRIDGE	PARALLEL IMPACT	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)
36	-LB- 1516+21 TO 1516+72 LT	ROADWAY FILL	SAAJ	X			3038		3038					
37	-Y29- 8+50 TO 9+10 LT	DITCH EXCAVATION	Neuse River	X						1244	1021	2265		
38	-Y31RPC- 36+27 TO 38+23 RT	1@9'x6' RCBC EXTENSION	SHL	X			4572	887	5459					
38	-Y31RPC- 35+98 TO 37+05 RT	ROADWAY FILL	SAAL	X			1859	733	2592					
39	-Y31RPD- 39+41 TO 40+67 RT	1@9'x6' RCBC EXTENSION	SHL	X			4797	3241	8038					
	SHEET 32 TOTALS						76779	46771	123550	588877	388315	977192		
TOTALS*:							**91045**	**51632**	**142677**	**590121**	**389336**	**979457**	**0**	**0**

NOTES:

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
12/4/2024
WAKE COUNTY
R-2829B

WETLANDS IN BUFFER IMPACTS SUMMARY

SITE NO.	STATION (FROM/TO)	WETLAND ID	WETLANDS IN BUFFERS	
			ZONE 1 (ft^2)	ZONE 2 (ft^2)
3	-Y27-RPA- 19+09/20+33, RT	WHR	1615	0
3	-Y27-RPA- 21+68/22+86, RT	WRV	1682	894
3	-Y27-RPA- 13+90/17+08, RT	WAAH	4036	97
6	-Y27-RPA- 13+88/17+08, RT	WHS	185	0
6	-Y27-RPA- 13+88/17+08, RT	WHS	1002	0
7	-L- 1243+20/1243+59, LT	WHP	994	45
7	-L- 1241+20/1241+68, RT	WHM	498	611
14	-LB- 1314+05/1315+42 LT	WIP	40	156
14	-LB- 1316+56/1319+94 M	WIQ	1866	0
18	-LB- 1345+15/1345+94 M	WIW	3034	3429
18	-Y29RPA- 22+33/23+00 LT	WIV	883	363
20	-LB- 1348+33/1355+30 RT	WIX	22	136
22	-LB-1380+18/1381+26 RT	WIZ	4161	856
22	-LB-1381+16/1381+57 LT	WJA	1516	113
24	-LB- 1404+63/1405+58 M	WJD	3215	2327
25	-Y30RPB- 17+72/19+05 M	WJF	6932	2763
27	-Y30- 28+62/33+72 M	WJH	3905	5107
32	-LB- 1456+60/1461+72 M	WJJ(1)	24019	14226
32	-Y31FLYDB- 50+23/54+62 M	WJJ(1)	24771	9339
32	-Y31LPB- 45+35/45+81 RT	WJL	506	0
32	-Y31LPB- 15+68/16+45 LT	WJJ(1)	17998	8967
33	-Y31RPB- 21+60/24+46 M	WJJ(1)	7266	3102
35	-Y31LPD- 19+19/19+25 LT	WJU	130	39
35	-Y31LPD- 19+50/19+61 M	WJX	0	97
35	-Y31LPD- 19+43/19+51 LT	WJS	114	0
38	-Y31RPC- 36+06/38+24 RT	WJJ(2)	5329	740
39	-Y31RPD- 39+39/40+67 RT	WJJ(1)	4797	3241
TOTAL:			**120516**	**56648**

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
12/4/2024
WAKE COUNTY
R-2829B

Submitted November 13, 2024

09/08/69

TIP PROJECT: R–2829B

CONTRACT: C204825

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WAKE COUNTY

WETLAND UTILITY PERMIT DRAWING SHEET 1 OF 7

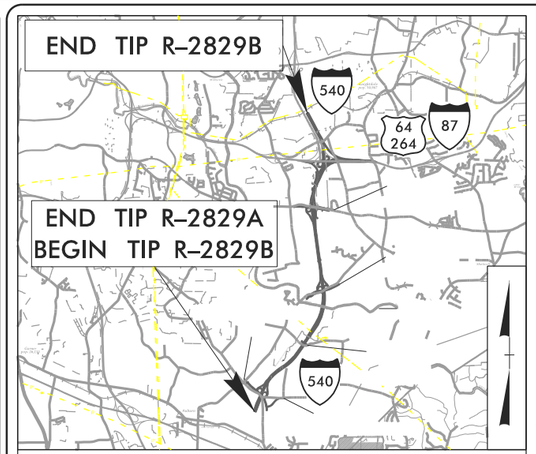
UTILITY WETLAND IMPACTS PERMIT

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

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

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

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



VICINITY MAP
(Not to Scale)

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

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

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

–Y27–
(SR 2542)
ROCK QUARRY RD.

–Y27B–
(SR 2555)
AUBURN KNIGHTDALE RD.

–Y27A–
(SR 5204)
OLD BAUCOM RD.

RALEIGH CITY LIMITS

SITE 10

–Y29–
(SR 2555)
AUBURN KNIGHTDALE RD.

–DUKE_DW–

FUTURE GREENWAY

–Y29A–

HINTON'S CREEK

–Y28–
(SR 2552)
BATTLE BRIDGE RD.

–Y28B–

RALEIGH CITY LIMITS

NEUSE RIVER

NEUSE RIVER GREENWAY TRAIL

–Y30–
(SR 1007)
POOLE RD.

–Y30C–

SITE 31

–Y31RPBD–

–Y31RPB–

–Y31B–

–Y31–

–Y30G–

–Y30H–

–Y31A–

–Y30A–

–Y30E–

–Y30D–

KNIGHTDALE CITY LIMITS

KNIGHTDALE CITY LIMITS

–LB–

PROPOSED SIGNAL

CLEARING AND GRUBBING ON THIS PROJECT WILL BE METHOD III.
A PORTION OF THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF GARNER, KNIGHTDALE, AND RALEIGH.
THIS IS A CONTROLLED ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

20 10 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

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

PROJECT LENGTH

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

Prepared In the Office of:
ICE of CAROLINAS, PLLC
ICE of Carolinas, PLLC
4505 Falls of Neuse Road, Suite 110
Raleigh, North Carolina 27609
Phone: 803-422-0333
License #: P-0999

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

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
8/29/2023

LETTING DATE:
8/29/2023

BRIAN LUSK, P.E.
PROJECT ENGINEER

RON McCOLLUM, P.E.
NCTA CONTACT
DEPUTY CHIEF ENGINEER FOR PRECONSTRUCTION, NCTA

HYDRAULICS ENGINEER

_____ *P.E.*
SIGNATURE:

ROADWAY DESIGN ENGINEER

_____ *P.E.*
SIGNATURE:

NORTH CAROLINA
Turnpike Authority

Submitted November 13, 2024

8/17/99

WETLAND UTILITY PERMIT DRAWING SHEET 2 OF 7

ARCADIS
Arcadis CE, Inc.
175 Regency Woods Place, Suite 350
Cary, North Carolina 27518
Phone: 919-854-1282
License #: F-0299

PROJECT REFERENCE NO.	SHEET NO.
R-2829B	10
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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SITE 10

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

HC HC HAND CLEARING (NON-GRUBBING)

NAD 83

MATCHLINE -L- STA. 1275+00.00 SEE SHEET 09

MATCHLINE -L- STA. 1289+00.00 SEE SHEET 11

MATCHLINE -EY7- SEE SHEET 30

SITE 10 ENLARGEMENT

GRAPHIC SCALE 25' 0' 25' 50'

FOR -Y28- CURVE DATA SEE SHT.3A-1

FOR -L- PROFILE SEE SHT.47
FOR -Y28- PROFILE SEE SHT.62

$DATE$ $TIME$ $DGNFILENAME$

Submitted November 13, 2024

8/17/99

WETLAND UTILITY PERMIT DRAWING SHEET 3 OF 7

ARCADIS
Arcadis CE, Inc.
175 Regency Woods Place, Suite 350
Cary, North Carolina 27518
Phone: 919-854-1282
License #: F-0299

PROJECT REFERENCE NO.	SHEET NO.
R-2829B	10
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SITE 10

WIG

SGJ

RIP RAP AT EMBANKMENT
SEE DETAIL AH
CLASS II RIP RAP
EST 26 TONS
EST 27 SY GEOTEXTILE

RIP RAP AT EMBANKMENT
SEE DETAIL AH
CLASS II RIP RAP
EST 28 TONS
EST 40 SY GEOTEXTILE

LAT. 5' BASE DITCH SEE DETAIL E

LAT. 2' BASE DITCH SEE DETAIL C

LAT. 2' BASE DITCH SEE DETAIL AC

LAT. 5' BASE DITCH SEE DETAIL AG

LAT. 5' BASE DITCH SEE DETAIL AX

TOE PROTECTION SEE DETAIL W

SPEC. CUT DITCH SEE DETAIL V

LAT. 5' BASE DITCH SEE DETAIL G

GL I RIP RAP
EST. 344 TONS
EST. 384 SY GEOTEXTILE

CLASS II RIP RAP
EST. 186 TONS
EST. 166 SY GEOTEXTILE

42 LF OF INTER CHANNEL IMPROVEMENTS SEE DITCH DETAIL 1288+18

27 LF OF OUTLET CHANNEL IMPROVEMENTS SEE DITCH DETAIL 1288+18

CLASS II RIP RAP
EST. 118 TONS
EST. 105 SY GEOTEXTILE

HC HC HAND CLEARING (NON-GRUBBING)

NAD 83

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

SITE 10 ENLARGEMENT
25' 0' 25' 50'
GRAPHIC SCALE

MATCHLINE -L- STA. 1275+00.00 SEE SHEET 09

MATCHLINE -L- STA. 1289+00.00 SEE SHEET 11

MATCHLINE -EY7- SEE SHEET 30

FOR -Y28- CURVE DATA SEE SHT.3A-1

FOR -L- PROFILE SEE SHT.47
FOR -Y28- PROFILE SEE SHT.62

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

WETLAND UTILITY PERMIT DRAWING SHEET 4 OF 7

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

HAND CLEARING (NON-GRUBBING)

SITE 31

SEE PERMIT DRAWING SHEET 5 OF 7 FOR ENLARGEMENT

-Y31A-POT Sta. 10+00.00

-Y31B-POT Sta. 10+00.00

-Y31B-POT Sta. 12+00.70

-Y31A-PC Sta. 141+96.34

-Y31A-PT Sta. 141+40.28

-Y31A-POT Sta. 27+37.85

-Y31A-POT Sta. 19+80.76

-Y31FLYDB-ST Sta. 67+81.12= -LB-POC Sta. 141+39.17 OFF=83' LT

-Y31FLYDB-SRS Sta. 66+31.12

-Y31FLYDB-CS Sta. 64+81.12

-Y31FLYDB-PC Sta. 57+86.20

-Y31FLYDB-ST Sta. 55+04.96

-Y31FLYDB-CS Sta. 53+54.96

-Y31RPB-ST Sta. 32+12.50= -Y31FLYDB-POC Sta. 57+78.00

-Y31RPB-CS Sta. 30+23.50

-Y31RPB-

-Y30RPD-

-Y30RPD-ST Sta. 10+00.00= -LB-POC Sta. 146+44.26 OFF=83' RT

-Y30RPD-SC Sta. 12+00.00

-Y31RPC-

-Y31RPC-ST Sta. 10+00.00= -LB-POT Sta. 146+18.39 OFF=83' RT

-Y31RPC-TS Sta. 13+28.57

-LB-CS Sta. 1450+48.46

-LB-ST Sta. 1454+08.46

-LB-SC Sta. 1464+67.03

-LB-TS Sta. 1461+07.03

MATCHLINE -Y31RPB- STA. 27+00.00 SEE SHEET 21

MATCHLINE -Y31FLYDB- STA. 49+00.00 SEE SHEET 21

MATCHLINE -LB- STA. 1467+00.00 SEE SHEET 21

MATCHLINE -LB- STA. 1440+00.00 SEE SHEET 19

MATCHLINE -Y30RPD- STA. 16+00.00 SEE SHEET 19

PROP. NOISE WALL #2

PROP. NOISE WALL #3

PROP. NOISE WALL #4

PROP. NOISE WALL #5

PROVIDE EXCAVATION

6' RIPRAP TO SHOULDER

4' RIPRAP TO SHOULDER

BZ 1

BZ 2

ZB

N 24°02'04" E

S 66°17'14.5" E

N 15°28'33.5" E

N 19°48'22.2" E

S 16°17'25.8" W

N 15°08'21.3" E

KNIGHTDALE ESTATES MHP LTD PRTNRP

PRESTLY E PIERCE JR

FRANCISCO N GONZALES & CARTINA B ANGELINA

POPLAR CREEK VILLAGE COMMUNITY ASSC, INC

NC DEPARTMENT OF TRANSPORATION

* ADVANCED ACQUISITION | PAVEMENT REMOVAL

FOR DITCH DETAILS SEE SHTS. 2D-1 THRU 2D-5 | R/W LABELED OFF –LB– UNLESS NOTED OTHERWISE.

FOR –LB– CURVE DATA SEE SHT. 3A–1
FOR –Y30RPD– CURVE DATA SEE SHT. 3A–2
FOR –Y31RPB– CURVE DATA SEE SHT. 3A–2
FOR –Y31RPC– CURVE DATA SEE SHT. 3A–2
FOR –Y31FLYDB– CURVE DATA SEE SHT. 3A–2
FOR –Y31A– CURVE DATA SEE SHT. 3A–2

FOR –LB– PROFILE SEE SHTS. 53 & 54
FOR –Y30RPD– PROFILE SEE SHT. 73
FOR –Y31RPB– PROFILE SEE SHT. 79
FOR –Y31RPC– PROFILE SEE SHT. 79
FOR –Y31FLYDB– PROFILE SEE SHTS. 84 & 85
FOR –Y31A– PROFILE SEE SHT. 85
FOR –Y31B– PROFILE SEE SHT. 85

GRAPHIC SCALE 50 25 0 50 100 PLANS

ICE of Carolinas, PLLC

PROJECT REFERENCE NO.	SHEET NO.
R-2829B	3D
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Submitted November 13, 2024

8/17/99

WETLAND UTILITY PERMIT DRAWING SHEET 5 OF 7

100′ 0′ 100′ 200′ 300′
GRAPHIC SCALE

HC HC HAND CLEARING (NON-GRUBBING)

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SITE 31

-Y31A-PT Sta. 14+40.28

15+00

N 20° 49′ 22.6″ E

-Y31A-

15496.34

N 84°12′21″ W 277.51′

N 84°12′21″ W 149.25′

N 84°12′21″ W 152.43′

N 84°12′21″ W 638.08′

PUE

PROP O/H POW & CATV LINES

PROP O/H POW LINES

PROP U/G POW CABLES

SP. V DITCH
SEE DETAIL CA

HCP

WLB

C F F 15″

HW

F 15″ F

54″ RCP-III

REMOVE

JB w/MH

RW

RW CA

C F

F REMOVE

2GI

2GI-D

15″ RCP-III

18″ RCP-III

2GI

60+00

-Y31RPB-ST Sta. 32+

-Y31FLYDB-POC Sta. 5

62 63 64

MARIE T VATER

ALEJANDRA ALCARAZ

MISTY M TF

NC DEPARTMENT OF TRANSPORTATION

FRANCISCO ANGELINA

KEMP DR

EXISTING R/W

$DATE$ $TIME$
$USERNAME$ DGN

WETLAND UTILITY PERMIT DRAWING SHEET 6 OF 7

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

HC HC HAND CLEARING (NON-GRUBBING)

ICE of Carolinas, PLLC

PROJECT REFERENCE NO.	SHEET NO.
R-2828B	3D
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83

SITE 31

SEE PERMIT DRAWING SHEET 5 OF 7 FOR ENLARGEMENT

-Y31A-POT Sta. 10+00.00

-Y31B-POT Sta. 12+00.70

-Y31A-POT Sta. 27+37.85

-Y31A-PC Sta. 19+96.34

-Y31A-PT Sta. 14+40.28

-Y31FLYDB-ST Sta. 67+81.12= -LB-POC Sta. 141+39.71 OFF=83' LT

-Y31FLYDB-SRS Sta. 66+30

-Y31FLYDB-CS Sta. 64+81.12

-Y31FLYDB-

-Y31RPB-CS Sta. 30+23.50

-Y31RPB-ST Sta. 32+23.50=

-Y31FLYDB-POC Sta. 57+78.00

-Y31FLYDB-ST Sta. 55+04.96

-Y31FLYDB-PC Sta. 57+86.20

-Y31FLYDB-CS Sta. 53+54.96

-LB-SC Sta. 1464+67.03

-LB-TS Sta. 1461+07.03

-Y31RPC-

-Y31RPC-TS Sta. 13+28.57

-Y31RPC-ST Sta. 10+00.00= -LB-POT Sta. 1462+18.39 OFF=83' RT

-Y30RPD-

-Y30RPD-ST Sta. 12+00.00= -LB-POC Sta. 1461+44.81 OFF=83' RT

-Y30RPD-SC Sta. 12+00.00

-LB-CS Sta. 1450+48.46

-LB-ST Sta. 1454+08.46

MATCHLINE -Y31RPB- STA. 27+00.00 SEE SHEET 21

MATCHLINE -Y31FLYDB- STA. 49+00.00 SEE SHEET 21

MATCHLINE -LB- STA. 1467+00.00 SEE SHEET 21

MATCHLINE -Y31RPC- STA. 15+25.00 SEE SHEET 21

MATCHLINE -LB- STA. 1440+00.00 SEE SHEET 19

MATCHLINE -Y30RPD- STA. 16+00.00 SEE SHEET 19

* ADVANCED ACQUISITION | PAVEMENT REMOVAL

FOR DITCH DETAILS SEE SHTS. 2D-1 THRU 2D-5 | R/W LABELED OFF -LB- UNLESS NOTED OTHERWISE.

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FOR -Y31RPB- CURVE DATA SEE SHT, 3A-2
FOR -Y31RPC- CURVE DATA SEE SHT. 3A-2
FOR -Y31FLYDB- CURVE DATA SEE SHT. 3A-2
FOR -Y31A- CURVE DATA SEE SHT. 3A-2

FOR -LB- PROFILE SEE SHTS. 53 & 54
FOR -Y30RPD- PROFILE SEE SHT. 73
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FOR -Y31FLYDB- PROFILE SEE SHTS. 84 & 85
FOR -Y31A- PROFILE SEE SHT. 85
FOR -Y31B- PROFILE SEE SHT. 85

GRAPHIC SCALE 50 25 0 50 100 PLANS

Submitted November 13, 2024

WETLAND AND SURACE WATER IMPACTS SUMMARY

Site No.	Station (From/To)	Structure Size / Type	Wetland and/or Stream ID	WETLAND IMPACTS Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	SURFACE WATER IMPACTS Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
10	-L- 1276+19 TO 1276+31 LT	O/H POWER LINES	WIG					0.002					
31	-Y31A- 16+85 to 17+07 LT	O/H POWER LINES	WJK					0.006					
TOTALS*:								0.008					

*Rounded totals are sum of actual impacts

NOTES:

All surface water impacts due to trenched installation of utilities at site 28 are accounted for by roadway's wetland and surface water permit drawings

Revised 2018 Feb

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
9/18/2024
WAKE COUNTY

R-2829B

SHEET 7 OF 7

Submitted November 13, 2024

09/08/69

TIP PROJECT: R–2829B

CONTRACT: C204825

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS
WAKE COUNTY

BUFFER UTILITY PERMIT DRAWING SHEET 1 OF 9

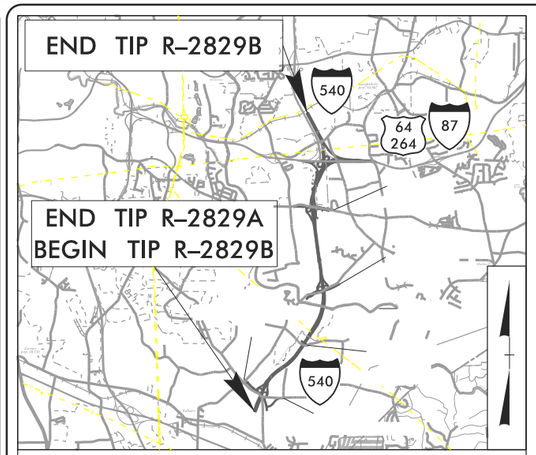
UTILITY RIPARIAN BUFFER IMPACTS PERMIT

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

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

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

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



VICINITY MAP
(Not to Scale)

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

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

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

–Y27– (SR 2542) ROCK QUARRY RD.

–Y27B– (SR 2555) AUBURN KNIGHTDALE RD.

–Y27A– (SR 5204) OLD BAUCOM RD.

RALEIGH CITY LIMITS

SITE 10

–Y29– (SR 2555) AUBURN KNIGHTDALE RD.

–DUKE_DW–

FUTURE GREENWAY

–Y29A–

HINTON'S CREEK

–Y28– (SR 2552) BATTLE BRIDGE RD.

–Y28B–

RALEIGH CITY LIMITS

NEUSE RIVER

NEUSE RIVER GREENWAY TRAIL

–Y30– (SR 1007) POOLE RD.

–Y30C–

SITE 27

–Y30H–

–Y30G–

–Y31B–

–Y31RPBD–

–Y31RPB–

–Y31–

–Y31A–

–Y30A–

SITE 28

–Y30E–

–Y30D–

KNIGHTDALE CITY LIMITS

KNIGHTDALE CITY LIMITS

PROPOSED SIGNAL

CLEARING AND GRUBBING ON THIS PROJECT WILL BE METHOD III.
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GRAPHIC SCALES

PLANS: 50 25 0 50 100

PROFILE (HORIZONTAL): 50 25 0 50 100

PROFILE (VERTICAL): 20 10 0 10 20

DESIGN DATA

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

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LENGTH ROADWAY TIP PROJECT R–2829B = 5.967 MILES
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License #: P-0999

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

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: 8/29/2023

LETTING DATE: 8/29/2023

BRIAN LUSK, P.E.
PROJECT ENGINEER

RON McCOLLUM, P.E.
NCTA CONTACT
DEPUTY CHIEF ENGINEER FOR PRECONSTRUCTION, NCTA

HYDRAULICS ENGINEER

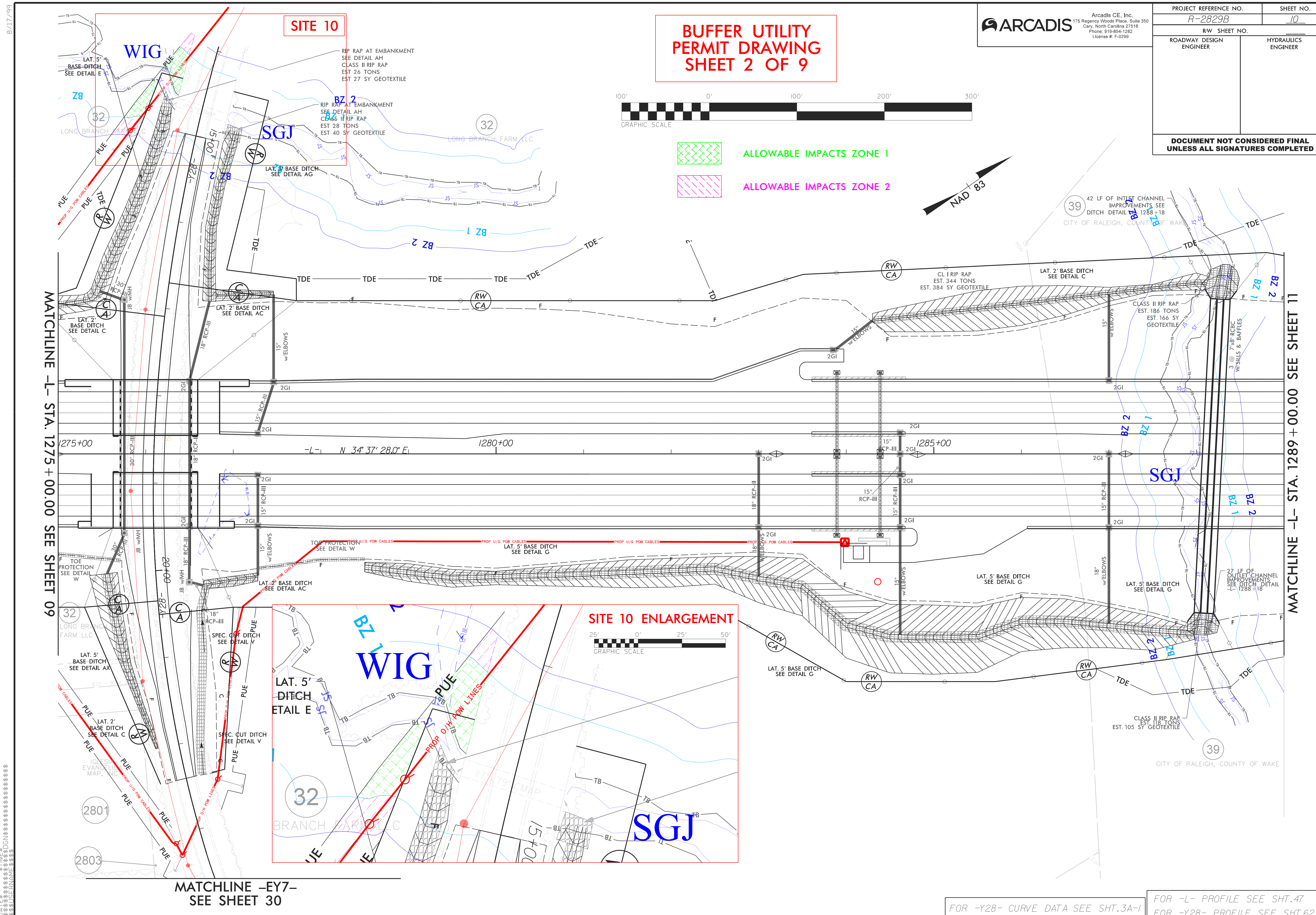
P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

P.E.
SIGNATURE:

NORTH CAROLINA Turnpike Authority

Submitted November 13, 2024



Submitted November 13, 2024

BUFFER UTILITY PERMIT DRAWING SHEET 3 OF 9

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

ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2
MITIGATABLE IMPACTS ZONE 1
MITIGATABLE IMPACTS ZONE 2

MATCHLINE -Y30- STA. 23+00.00 SEE SHEET 34

SITE 27

SEE PERMIT DRAWING SHEET 4 OF 9 FOR ENLARGEMENT

THIS IMPACT IS COVERED BY ROADWAY BUFFER IMPACT DUE TO TEMPORARY DIVERSION

AREA TO BE CLEARED AND USED FOR TEMPORARY UTILITY INSTALLATION THROUGH A RIGHT OF ENTRY AGREEMENT

SITE 28

SEE PERMIT DRAWING SHEET 5 OF 9 FOR ENLARGEMENT

REFER TO ROADWAY BUFFER IMPACT DRAWINGS FOR REMAINDER OF IMPACTS

REFER TO ROADWAY BUFFER IMPACT DRAWINGS FOR REMAINDER OF IMPACTS

PROP. ACCESS GATE

CELL TOWER & GRAVEL DRIVE (BY OTHERS)

WAAB

SAAB

WAAC

WJI

SHC

PVL

MATCHLINE -LB- STA. 141+00.00 SEE SHEET 18

MATCHLINE -LB- STA. 140+00.00 SEE SHEET 20

MATCHLINE -Y30RPD- STA. 16+00.00 SEE SHEET 20

MATCHLINE -Y30A- STA. 22+00.00 SEE SHEET 35

MATCHLINE -Y30- STA. 38+00.00 SEE SHEET 35

TRENCH DETAIL

EXIST. GRADE

11.5'

7

30" WATER LINE

* ADVANCED ACQUISITION | PAVEMENT REMOVAL | FOR DITCH DETAILS SEE SHTS. 2D-1 THRU 2D-5 | R/W LABELED OFF -LB- UNLESS NOTED OTHERWISE. | ★ PROPOSED SIGNAL

FOR -LB- CURVE DATA SEE SHT. 3A-1
FOR -Y30- CURVE DATA SEE SHT. 3A-1
FOR -Y30LPB- CURVE DATA SEE SHT. 3A-2
FOR -Y30RPB- CURVE DATA SEE SHT. 3A-2
FOR -Y30RPC- CURVE DATA SEE SHT. 3A-2
FOR -Y30RPD- CURVE DATA SEE SHT. 3A-2
FOR -Y30A- CURVE DATA SEE SHT. 3A-2
FOR -Y30G- CURVE DATA SEE SHT. 3A-2

FOR -LB- PROFILE SEE SHTS. 52 & 53
FOR -Y30- PROFILE SEE SHTS. 68 & 69
FOR -Y30LPB- PROFILE SEE SHTS. 70 & 71
FOR -Y30RPB- PROFILE SEE SHTS. 71 & 72
FOR -Y30RPC- PROFILE SEE SHTS. 72 & 73
FOR -Y30RPD- PROFILE SEE SHTS. 73 & 74
FOR -Y30SPURB- PROFILE SEE SHT. 74
FOR -Y30A- PROFILE SEE SHTS. 74 & 75
FOR -Y30G- PROFILE SEE SHT. 76

GRAPHIC SCALE 50 25 0 50 100 PLANS

ICE of CAROLINAS, PLLC

PROJECT REFERENCE NO. R-2828BB | SHEET NO. 72

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

8/17/99

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

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SITE 27

MATCHLINE –Y30– STA. 23+00.00
SEE SHEET 34

NAD 83

SHD

PUE
PUE
PUE
H POW TEL & CATV LINES
RW CA
RW CA
C
C
C
F
F
F
F
CB
CB
54" RCP-III
54" RCP-III
18" RCP-III
CB
JS
JS
JS
JS
JS
JS
TB
PROP O/H POW & CATV LINES
–Y30–
CR
25+00
S 89° 09' 30.9" E
N 0° 50' 29.1" E
–Y30RPB–
DI
15" RCP-III
DI
15" RCP
N 0° 50' 29.1" E
LAT. 2' BASE DITCH
SEE DETAIL C
BZ 2
BZ 2
BZ 1
BZ 1
BZ 1
THIS IMPACT IS COVERED BY ROADWAY BUFFER IMPACT DUE TO DITCH RIPRAP
STD. 2' BASE DITCH
SEE DETAIL CG
RPL
RETAIN
TEL CABLES
PROP U/G TEL CABLES
STD. 5' BASE DITCH
SEE DETAIL CI
CA
STD. 5' BASE DITCH
SEE DETAIL CH
PROP U/G TEL CABLES
PUE
PUE
CB
–Y30
–Y30
–Y30
–Y30

SITE 27 ENLARGEMENT

BUFFER UTILITY PERMIT DRAWING SHEET 4 OF 9

ALLOWABLE IMPACTS ZONE 2

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

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

0

Submitted November 13, 2024

ICE of CAROLINAS, PLLC
ICE of Carolinas, PLLC
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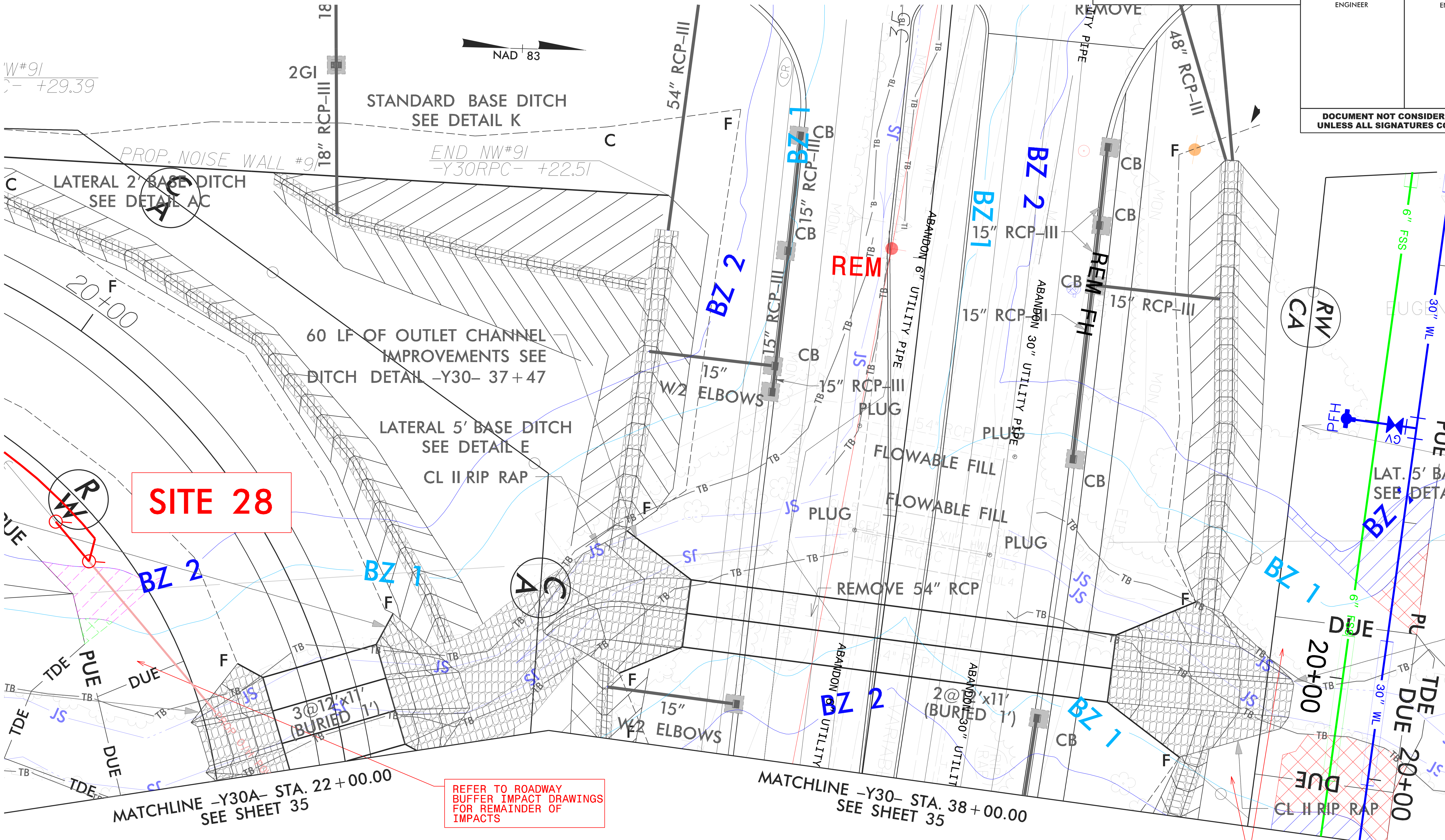
Raleigh, North Carolina 27609
Phone: 803-822-0333
License #: P-0999

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

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



SITE 28
ENLARGEMENT

BUFFER UTILITY
PERMIT DRAWING
SHEET 5 OF 9

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

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

Submitted November 13, 2024

BUFFER UTILITY PERMIT DRAWING SHEET 6 OF 9

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PROJECT REFERENCE NO.	SHEET NO.
R-2829B	34
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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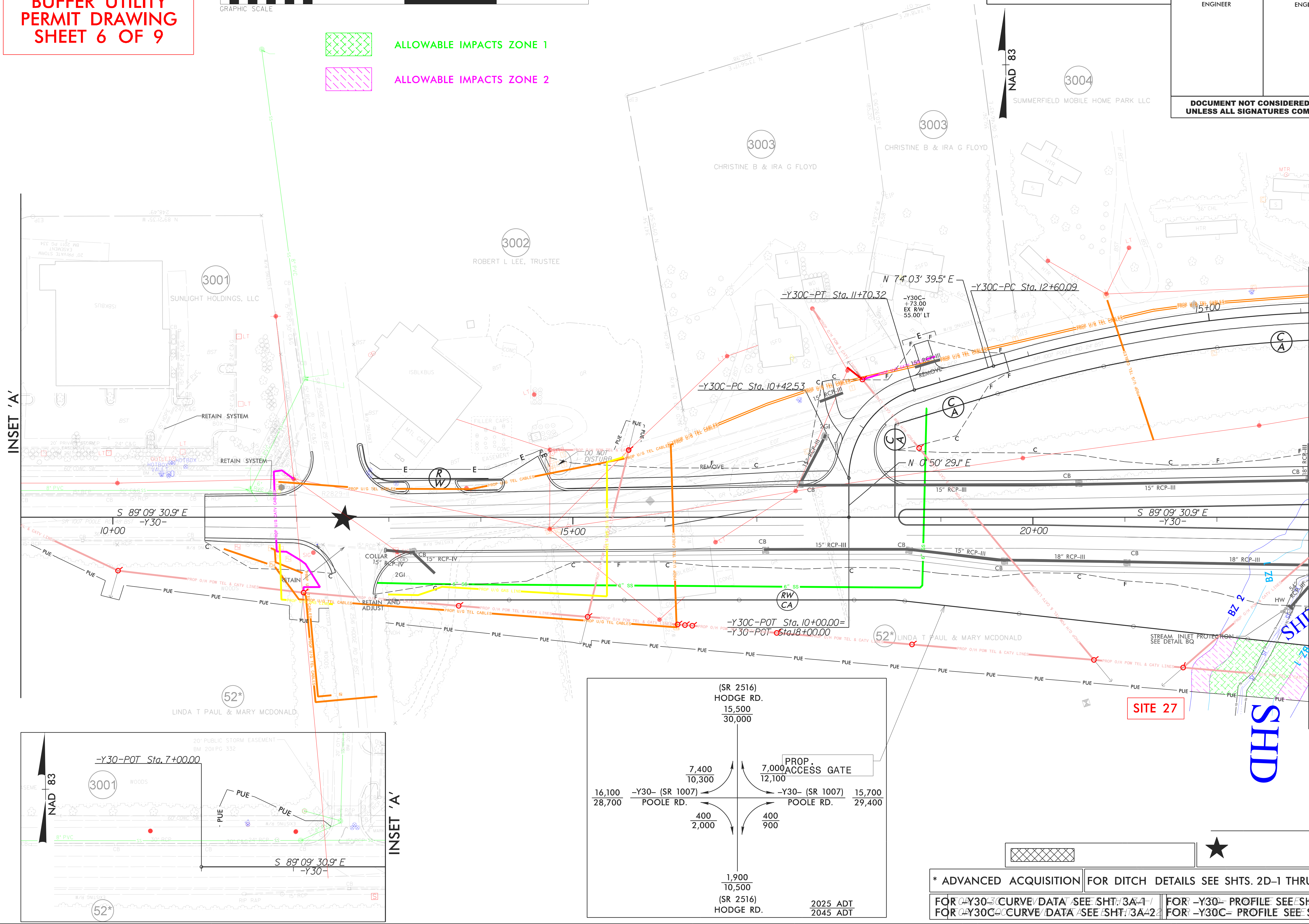
GRAPHIC SCALE 100' 0' 100' 200' 300'

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2



* ADVANCED ACQUISITION

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

FOR -Y30- CURVE DATA SEE SHT. 3A-1
FOR -Y30C- CURVE DATA SEE SHT. 3A-2

FOR -Y30- PROFILE SEE SHT. 68
FOR -Y30C- PROFILE SEE SHT. 75

Submitted November 13, 2024

PROJECT REFERENCE NO.	SHEET NO.
R-2829B	35
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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4505 Falls of Neuse Road, Suite 110
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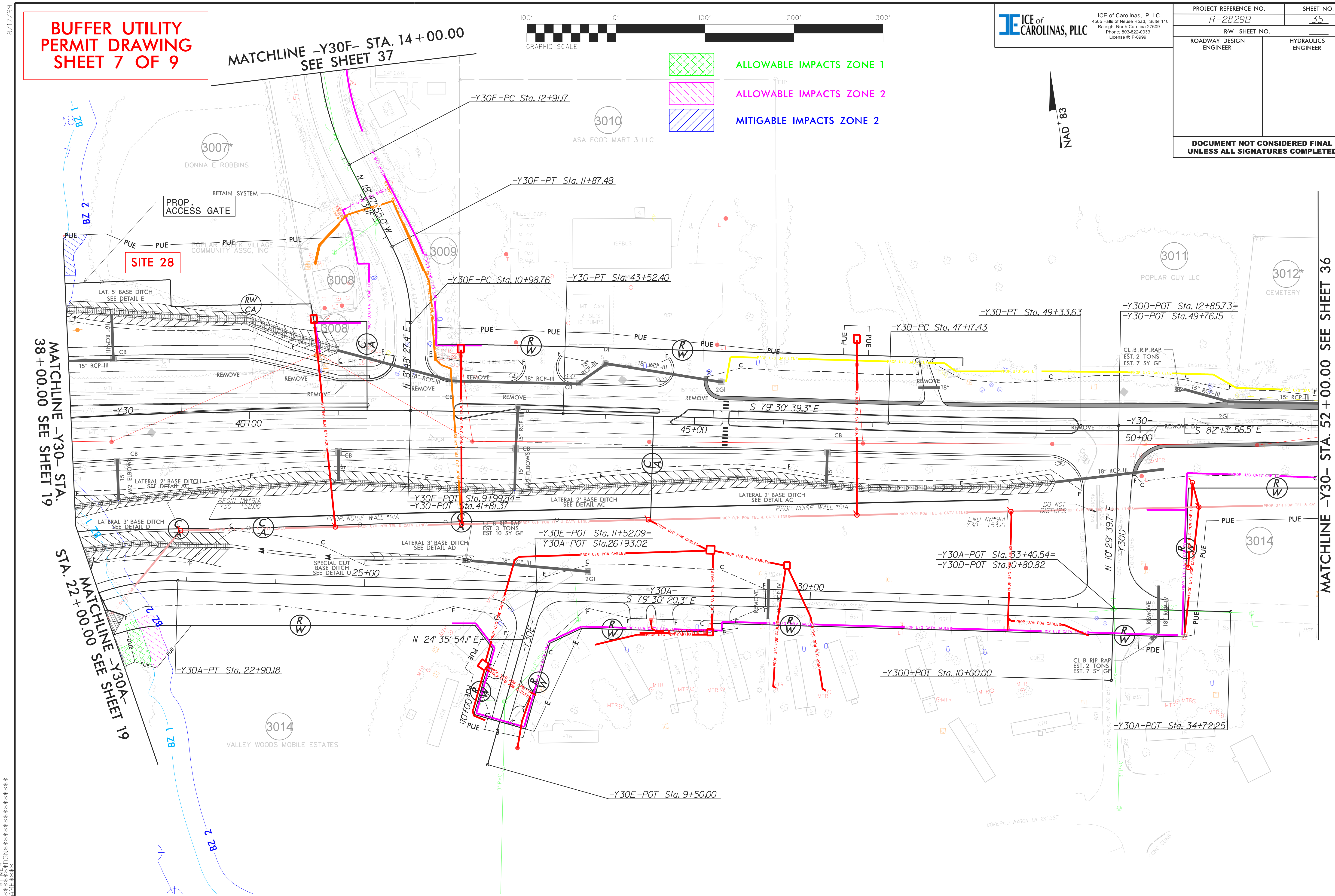


* ADVANCED ACQUISITION

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

FOR -Y30- CURVE DATA SEE SHT. 3A-1
FOR -Y30A- CURVE DATA SEE SHT. 3A-2

FOR -Y30- PROFILE SEE SHTS. 69 & 70
FOR -Y30A- PROFILE SEE SHT. 75
FOR -Y30D- PROFILE SEE SHT. 75

RIPARIAN BUFFER IMPACTS SUMMARY

Site No.	Station (From/To)	Structure Size / Type	Wetland and/or Stream ID	IMPACTS: TYPE: ROAD CROSSING	IMPACTS: TYPE: BRIDGE	IMPACTS: TYPE: PARALLEL IMPACT	IMPACTS: ALLOWABLE*: ZONE 1 (ft^2)	IMPACTS: ALLOWABLE*: ZONE 2 (ft^2)	IMPACTS: ALLOWABLE*: TOTAL (ft^2)	IMPACTS: MIITIGABLE: ZONE 1 (ft^2)	IMPACTS: MIITIGABLE: ZONE 2 (ft^2)	IMPACTS: MIITIGABLE: TOTAL (ft^2)	BUFFER REPLACEMENT: ZONE 1 (ft^2)	BUFFER REPLACEMENT: ZONE 2 (ft^2)
10	-L- 1275+60 TO 1276+56 LT	O/H POWER LINES	SGJ			X	1421	729	2150					
27	-Y30- 21+72 TO 23+25 RT	O/H POWER LINES	SHD			X	4199	2971	7170					
28	-Y30- 36+62 TO 39+00 M	O/H POWER LINES	SHC	X			1147	1639	2786	1704	1868	3572		
TOTALS*:							**6767**	**5339**	**12106**	**1704**	**1868**	**3572**	**0**	**0**

NOTES:
*Impacts within this column are tehcnically classified exempt. They have been shown as allowable hatching on permits for the purpose of review

Revised 2018 Feb

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
10/30/2024
WAKE COUNTY
R-2829B

SHEET 8 OF 9

WETLANDS IN BUFFER IMPACTS SUMMARY

SITE NO.	STATION (FROM/TO)		WETLAND ID	WETLANDS IN BUFFERS ZONE 1 (ft²)	WETLANDS IN BUFFERS ZONE 2 (ft²)
10	-L- 1276+25	1276+31 LT	WIG	66	0
TOTAL:				**66**	**0**

Revised 2018 Feb

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
9/18/2024
WAKE COUNTY
R-2829

SHEET 9 OF 9

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 9/16/2024

Submitted by

FLATIRON

FRED SMITH COMPANY CONSTRUCTION

In partnership with

ICE of CAROLINAS, PLLC

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

Neuse River and Neuse River Greenway Trail Safety Plan

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

General Safety Procedures and Precautions:

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

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

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

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

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

- Contractor 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, the contractor 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 SIP 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, the Contractor will remove all materials and equipment in advance of the storm.

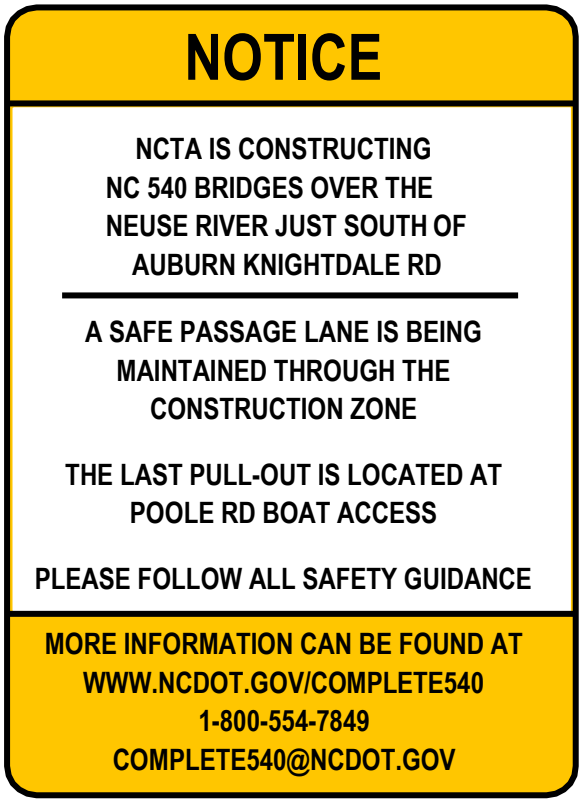
Neuse River Specific Safety Precautions:

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 (120 N Rogers Ln, 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)
    - Johnston County Water Plant (600 Clear Water Dr, 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 or metal stay in place form installation. A portage route will be cleared and signed to allow for safe portage around the active construction. In addition, during these closed times, the Contractor will have monitors and flaggers further directing river users of the proper portage route.

- The Flatiron-Fred Smith JV will communicate when the portage route is required at least forty-five (45) days in advance of any construction activities to NCDOT Division 5 and NCTA staff and any other appropriate representatives that need this information.

Neuse River Greenway Trail Specific Safety Precautions:

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

- 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.

- During the first phase of the bridge construction, trail traffic can be maintained on the existing trail while Bridge Spans 4 through 11 are completed. The temporary greenway trail alignment and permanent greenway alignment revisions will be constructed during this phase of bridge construction.

- Once Span 4 of the bridge is completed, the orange safety fencing will be added to the temporary trail alignment and greenway trail traffic will be switched to the temporary detour route under completed Span 4.

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

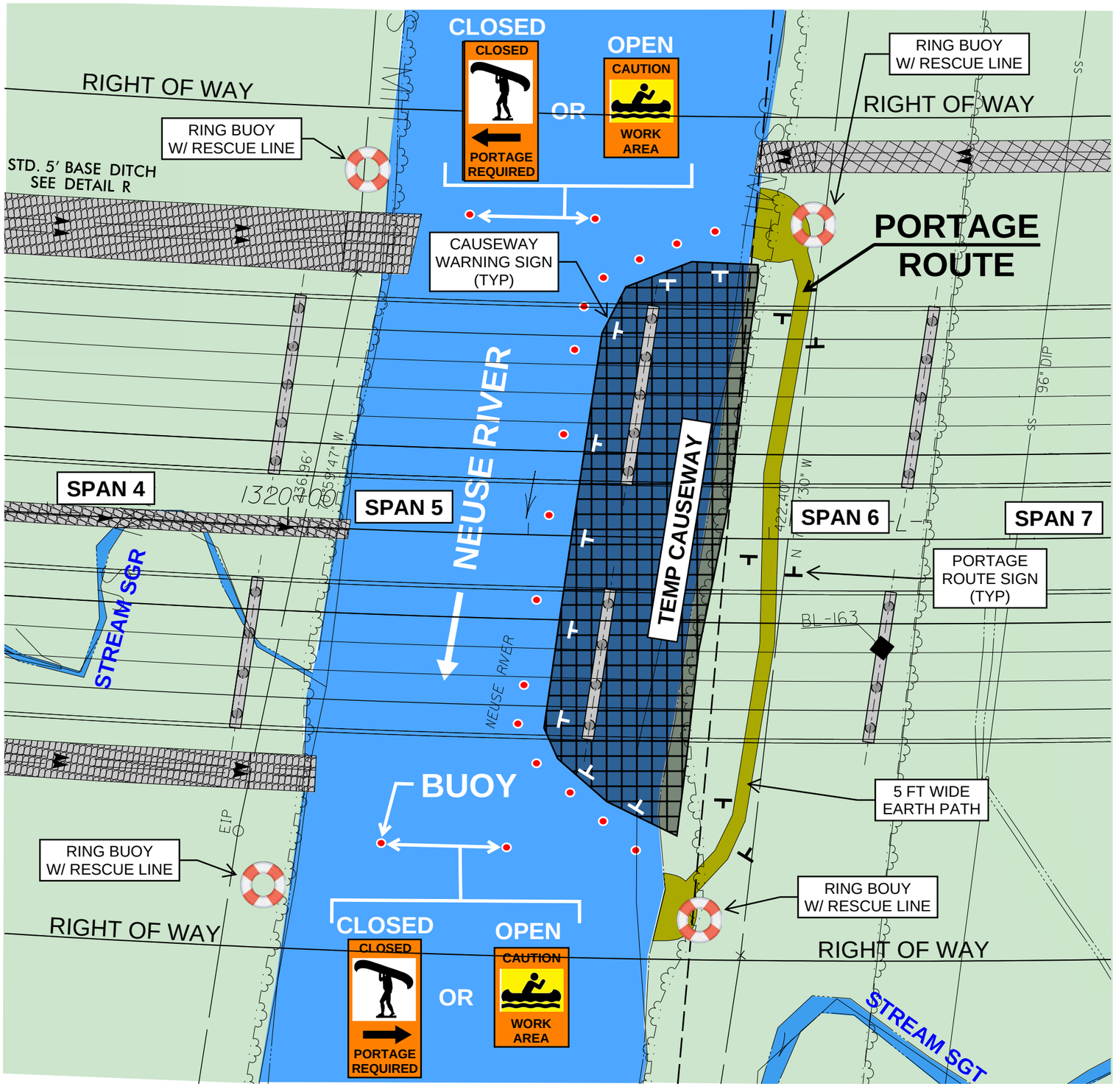
- With the greenway traffic relocated, the construction of Bridge Spans 1 through 3 can be completed and the final greenway trail traffic will be shifted back to the permanent alignment.

- The Design-Build Team 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 pages.

SAFETY PLAN
R-2829B

NEUSE-01



PADDLE ACCESS:

1. PRIOR TO CONSTRUCTION OF BRIDGE SPAN 5, PADDLER TRAFFIC WILL BE ROUTED THROUGH THE SOUTHERN SIDE OF THE RIVER USING FLOATING BOUYS AND CAUTION SIGNAGE AS SHOWN BELOW.

2. DURING LIFTING OF SPAN 5 BEAMS OR OTHER OVERHEAD OPERATIONS FOR SPAN 5, THE RIVER WILL BE CLOSED TO PADDLERS USING THE "PORTAGE REQUIRED" SIGNAGE. NO CONSTRUCTION ACTIVITY IN SPAN 6 IS ALLOWED WHEN THE PORTAGE ROUTE IS IN USE.

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

CAUTION SIGNAGE:

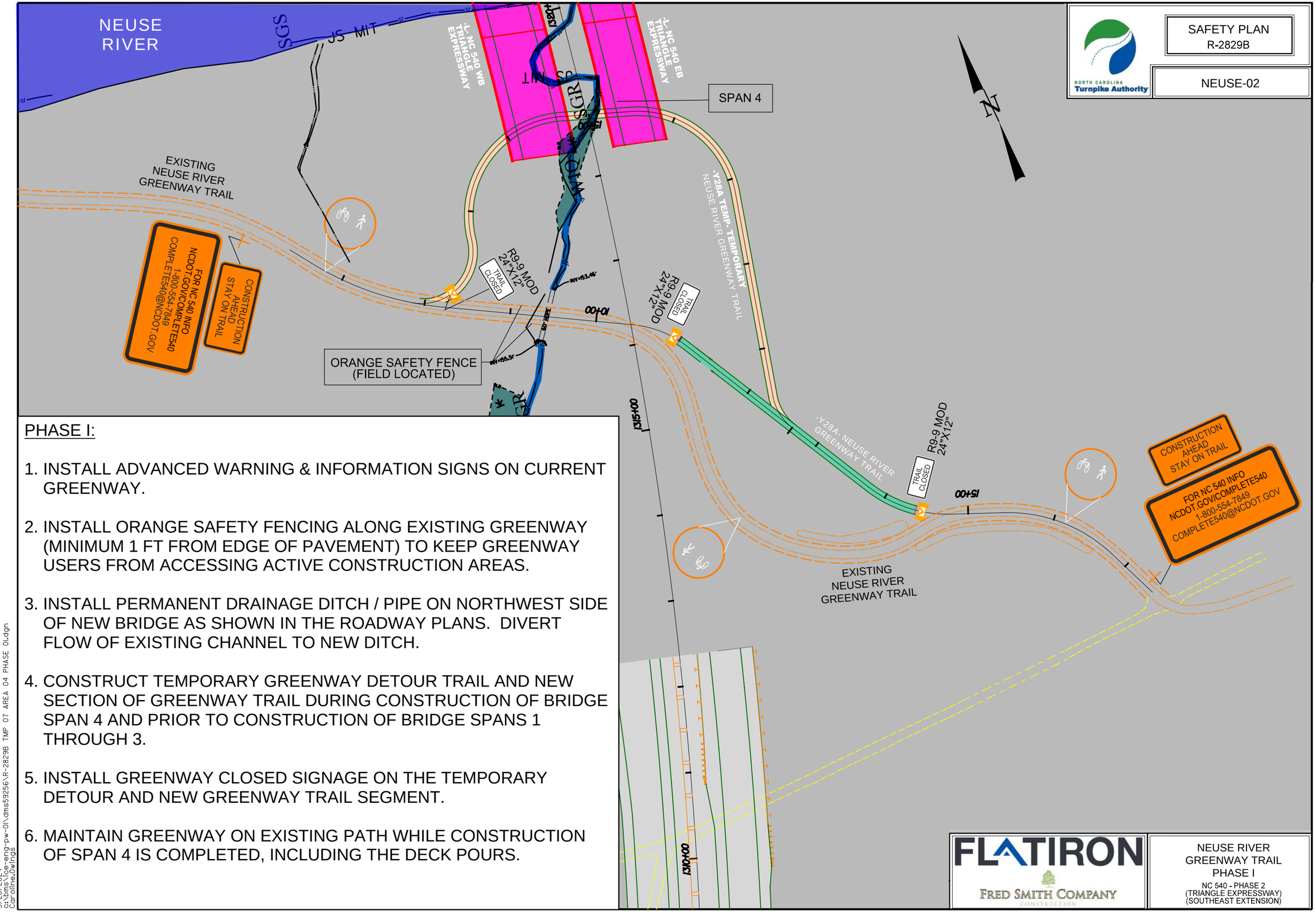
CAUSEWAY WARNING SIGN

PORTAGE ROUTE SIGN

FLATIRON
FRED SMITH COMPANY
CONSTRUCTION

NEUSE RIVER ACCESS

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



PHASE I:

1. INSTALL ADVANCED WARNING & INFORMATION SIGNS ON CURRENT GREENWAY.

2. INSTALL ORANGE SAFETY FENCING ALONG EXISTING GREENWAY (MINIMUM 1 FT FROM EDGE OF PAVEMENT) TO KEEP GREENWAY USERS FROM ACCESSING ACTIVE CONSTRUCTION AREAS.

3. INSTALL PERMANENT DRAINAGE DITCH / PIPE ON NORTHWEST SIDE OF NEW BRIDGE AS SHOWN IN THE ROADWAY PLANS. DIVERT FLOW OF EXISTING CHANNEL TO NEW DITCH.

4. CONSTRUCT TEMPORARY GREENWAY DETOUR TRAIL AND NEW SECTION OF GREENWAY TRAIL DURING CONSTRUCTION OF BRIDGE SPAN 4 AND PRIOR TO CONSTRUCTION OF BRIDGE SPANS 1 THROUGH 3.

5. INSTALL GREENWAY CLOSED SIGNAGE ON THE TEMPORARY DETOUR AND NEW GREENWAY TRAIL SEGMENT.

6. MAINTAIN GREENWAY ON EXISTING PATH WHILE CONSTRUCTION OF SPAN 4 IS COMPLETED, INCLUDING THE DECK POURS.

NORTH CAROLINA Turnpike Authority

SAFETY PLAN
R-2829B

NEUSE-02

FLATIRON
FRED SMITH COMPANY
CONSTRUCTION

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

3/28/2024
c:\bms\ice-eng-pw-01\dms59256\R-2829B TMP 07 AREA 04 PHASE 01.dgn
Caroline.Owings

NEUSE RIVER

SAFETY PLAN
R-2829B

NORTH CAROLINA Turnpike Authority

NEUSE-03

-L- NC 540 WB TRIANGLE EXPRESSWAY

-L- NC 540 EB TRIANGLE EXPRESSWAY

ORANGE SAFETY FENCE (FIELD LOCATED)

SPAN 4

SPAN 3

SPAN 2

SPAN 1

-Y28A TEMP.- TEMPORARY NEUSE RIVER GREENWAY TRAIL

EXISTING NEUSE RIVER GREENWAY TRAIL

FOR NC 540 INFO
NCDOT.GOV/COMPLETE540
1-800-554-7849
COMPLETE540@NCDOT.GOV

CONSTRUCTION AHEAD
STAY ON TRAIL

TRAIL CLOSED

R9-9 MOD
24"X12"

-Y28A- NEUSE RIVER GREENWAY TRAIL

COMPLETE TIE-IN WHILE GREENWAY IS CLOSED FROM DUSK TILL DAWN

R9-9 MOD
24"X12"

CLOSE AND REMOVE EXISTING GREENWAY

CONSTRUCTION AHEAD
STAY ON TRAIL

FOR NC 540 INFO
NCDOT.GOV/COMPLETE540
1-800-554-7849
COMPLETE540@NCDOT.GOV

PHASE II:

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

2. UPON COMPLETION OF SPAN 4 OF THE BRIDGE, INCLUDING THE DECK POURS, RE-ROUTE GREENWAY ONTO TEMPORARY GREENWAY DETOUR TRAIL AND NEW GREENWAY TRAIL SEGMENT.

2. INSTALL GREENWAY CLOSED SIGNAGE ON THE EXISTING GREENWAY TRAIL.

4. MAINTAIN GREENWAY ON TEMPORARY DETOUR TRAIL AND NEW GREENWAY TRAIL SEGMENT WHILE CONSTRUCTION OF SPANS 1 THROUGH 3 ARE COMPLETED, INCLUDING THE DECK POURS.

FLATIRON
FRED SMITH COMPANY
CONSTRUCTION

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

3/28/2024
c:\dms\tce-eng-pw-01\dms59256\R-2829B TMP 07A AREA 04 PHASE 02.dgn
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NEUSE RIVER

SAFETY PLAN
R-2829B

NORTH CAROLINA Turnpike Authority

NEUSE-04

-L- NC 540 WB TRIANGLE EXPRESSWAY

-L- NC 540 EB TRIANGLE EXPRESSWAY

SPAN 4

SPAN 3

SPAN 2

SPAN 1

CLOSE AND REMOVE TEMPORARY GREENWAY

-Y28A TEMP- TEMPORARY NEUSE RIVER GREENWAY TRAIL

-Y28A- NEUSE RIVER GREENWAY TRAIL

R9-9 MOD 24"X12"

TRAIL CLOSED

COMPLETE TIE-IN WHILE GREENWAY IS CLOSED FROM DUSK TILL DAWN

ORANGE SAFETY FENCE (FIELD LOCATED)

FOR NC 540 INFO
NCDOT.GOV/COMPLETE540
1-800-554-7849
COMPLETE540@NCDOT.GOV

CONSTRUCTION AHEAD
STAY ON TRAIL

PHASE III:

1. UPON COMPLETION OF SPANS 1, 2 AND 3 BRIDGE, RE-ROUTE GREENWAY ONTO PERMANENT GREENWAY TRAIL ALIGNMENT.

2. REMOVE TEMPORARY GREENWAY TRAIL AND TRAIL CLOSED SIGNAGE.

3. AFTER PROJECT COMPLETION, REMOVE ADVANCED WARNING AND INFORMATION SIGNS FROM TRAIL.

FLATIRON
FRED SMITH COMPANY CONSTRUCTION

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

3/28/2024
c:\bms\ice-eng-pw-01\dms59256\R-2829B TMP 07B AREA 04 PHASE 03.dgn
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