



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

JOSH STEIN
GOVERNOR

DANIEL H. JOHNSON
SECRETARY

November 6, 2025

MEMORANDUM TO: Division Environmental and Construction Units

FROM: *mat* Michael A. Turchy, ECAP Group Leader
Environmental Analysis Unit

SUBJECT: Environmental Permits for the Replacement of Bridge 289 on SR 4000
over US 52 in Forsyth County, Division 9, **TIP: BR-0168**.

Please find enclosed the following permits for this project:

Agency	Permit Type	Permit Expiration
US Army Corps of Engineers Section 404 Clean Water Act Permit	Regional General Permit 50	May 25, 2030
NC Division of Water Resources Section 401 Water Quality Certification	General Certification No. 7679 [RGP50] [non-notifying]	May 25, 2030

Work is authorized by the above referenced permit provided it is accomplished in strict accordance with the permitted plans. The Environmental Coordination and Permitting Group or the Division Environmental Office must be consulted if any deviation from the permit(s) is required.

The General Conditions and Certifications for Nationwide and Regional Permits can be referenced at:
https://xfer.services.ncdot.gov/pdea/PermIssued/_General_Conditions_and_Certifications/

The Project Commitments "Greensheet" is located on the Preconstruction SharePoint Dashboard at:
<https://connect.ncdot.gov/site/preconstruction>



DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, WILMINGTON DISTRICT
WILMINGTON REGULATORY OFFICE
69 DARLINGTON AVENUE
WILMINGTON NORTH CAROLINA 28403

October 22, 2025

Regulatory Program/Division
SAW-2024-01681

Sent Via Email: recrowther@ncdot.gov

Robert Crowther, Environmental Program Consultant
NC Dept. of Transportation, ECAP
1598 Mail Service Center
Raleigh, NC 27699-1598

Dear Mr. Crowther:

This letter is in response to the application you submitted to the Wilmington District, WRDA/Transportation Branch on September 18, 2025, for a Department of the Army general permit verification. This project has been assigned the file number SAW-2024-01681 and is known as NCDOT / BR-0168 / Br 289 / SR 4000 / Forsyth / Div 9. This file number should be referenced in all correspondence concerning this project.

A review of the information provided indicates that the proposed work would replace the existing SR 4000 (University Parkway) Bridge #289 across US 52, include improvements to SR 4000 roadway improvements, and SR 4000 & US 52 Interchange. These improvements would include the permanent placement of culvert extensions in a total of 173 linear feet (lf) (0.12 acre) and include a total of 108 lf (0.03 acre) temporary stream impact from dewatering activities in Mill Creek and a tributary to Mill Creek. In addition, this project will include permanent place of fill in 0.09 acre of open water, permanent placement of fill in 0.01 acre in a wetland, and include mechanical land clearing of 0.02 acre of wetlands. The project area for this determination includes approximately 5.1 acres area which is illustrated on the enclosed site plans/maps. The project/review area is located across Mill Creek, Tributaries to Mill Creek and adjacent wetlands in and around Exit 115 on US 52 at the SR 4000 and US 52 Interchange, at Latitude 36.181350 and Longitude -80.275810; in Winston Salem, Forsyth County, North Carolina.

We have determined that the proposed work is authorized by Regional General Permit 50 (RGP-50) pursuant to authorities under Section 404 of the Clean Water Act (33 U.S.C § 1344). The proposed work must be accomplished in strict accordance with the enclosed general permit conditions, any regional conditions, the special conditions listed in this letter, the application materials, and the enclosed plans Sheets 1-16 of 16, entitled, "TIP Project BR-0168 Replace Bridge 330289 on SR 4000 (University Parkway) over US 52 in Forsyth County". If the extent of the project area and/or nature

of the authorized impacts to waters are modified, a revised application must be submitted to this office for written approval before work is initiated. Any deviation from the terms and conditions of the permit, or your submitted plans, may subject the permittee to enforcement action.

This verification is valid until May 25, 2030, unless the subject general permit(s) is suspended, revoked, or is modified prior to that date such that the activity no longer complies with the terms and conditions of the general permit.

Project Specific Special Conditions:

1. All work must be performed in strict compliance with (a) the description of work in the PCN and (b) the Wetlands and Surface Water Impact Permit Drawing(s) (Permit Plans) in the application dated September 18, 2025. Any modification to the description of work and/or the permit plans must be approved by the USACE prior to implementation.
2. The permittee shall require its contractors and/or agents to comply with the terms and conditions of this authorization letter 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 authorization letter, all conditions, and any authorized modifications. A copy of this authorization letter, all conditions, and any authorized modifications, shall be available at the project site during construction and maintenance of this project.
3. The U.S. Fish and Wildlife Service's (USFWS's) Programmatic Biological (PBO) and Conference Opinion (PCO) and Programmatic Conference Report titled "Five Imperiled Bat Species in Western North Carolina" dated April 1, 2025, contains mandatory terms and conditions to implement the reasonable and prudent measures that are associated with "incidental take" that are specified in the PBO/PCO. The USFWS adopted the PBO/PCO as the Programmatic Biological Opinion (PBO) for the effects of this action on August 22, 2025. Your authorization under this Corps permit is conditional upon your compliance with all the mandatory terms and conditions associated with incidental take of the PBO, 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 PBO, 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 PBO, and with the ESA.
4. 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 Forms.

The requirements of these forms, including any special conditions listed on these forms, are hereby incorporated as special conditions of this permit authorization.

This general permit verification and any associated authorizations does not preclude the necessity to obtain any other Federal, State, or local permits, licenses, and/or certifications, which may be required.

If you have any questions related to this verification or have issues accessing documents referenced in this letter, please contact Stephen Brumagin, WRDA Project manager of the WRDA/Transportation Branch at 704-798-6471, by mail at the above address, or by email at stephen.a.brumagin@usace.army.mil. Please take a moment to complete our customer satisfaction survey located at <https://regulatory.ops.usace.army.mil/customer-service-survey/>.

Sincerely,

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

M. Scott Jones, PWS
WRDA/Transportation Branch Chief

Enclosures

Project Plans
401 WQC GC #7679
RGP-50

cc (w/enclosures):

Jim Mason, Three Oaks Eng., Inc. (via james.mason@threeoaksengineering.com)
Erin Cheely, NCDOT ECAP (via ekcheely@ncdot.gov)
Amy Euliss, PDEA Eng. Div. 9 (via aeuliss@ncdot.gov)

U.S. Army Corps of Engineers (USACE) CERTIFICATION OF COMPLIANCE WITH DEPARTMENT OF THE ARMY PERMIT For use of this form, see Section 404 of the Clean Water Act, Section 10 of the Rivers and Harbors Act of 1899, and Section 103 of the Marine Protection, Research, and Sanctuaries Act; the proponent agency is CECW-COR.		<i>Form Approved -</i> OMB No. 0710-0003 <i>Expires 2027-10-31</i>
The Agency Disclosure Notice (ADN)		
The Public reporting burden for this collection of information, 0710-0003, is estimated to average 10 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or burden reduction suggestions to the Department of Defense, Washington Headquarters Services, at whs.mc-alex.esd.mbx.dd-dod-information-collections@mail.mil. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.		
PURPOSE: This form is used by recipients of U.S. Army Corps of Engineer Regulatory permits to certify compliance with the permit terms and conditions. Your permitted activity is subject to a compliance inspection by a U.S. Army Corps of Engineers representative. If you fail to comply with this permit, you are subject to permit suspension, modification, or revocation.		
Upon completion of the activity authorized by this permit and any mitigation required by the permit, sign this certification and return it to the U.S. Army Corps of Engineers, Wilmington District, Regulatory Office. The certification can be submitted by email at stephen.a.brumagin@usace.army.mil or by mail at the below address: U.S. Army Corps of Engineers Wilmington District Office Street Address: 69 Darlington Avenue City: Wilmington State: North Carolina Zip Code: 28403		
COMPLETED BY THE CORPS		
Corps Action Number: SAW-2024-01681 Permit Type: General Permit General Permit Number and Name (if applicable): RGP-50 Name of Permittee: Robert Crowther Project Name: NCDOT / BR-0168 / Br 289 / SR 4000 / Forsyth / Div 9 Project Location (physical address): Exit 115 on US 52 at the SR 4000 and US 52 Interchange in Winston Salem, North Carolina		
PERMITTEE'S CERTIFICATION		
Date Work Started: Date Work Completed: Enclose photographs showing the completed project (if available). I _____ hereby certify that the work authorized by the above referenced permit has been completed in accordance with all of the permit terms and conditions, and that any required compensatory mitigation has been completed in accordance with the permit conditions.		
Name	Date	Signature

US Army Corps of Engineers – Wilmington District
Compensatory Mitigation Responsibility Transfer Form

Permittee: Robert Crowther, NCDOT

Project Name: NCDOT / BR-0168 / Br 289 / SR 4000 / Forsyth / Div 9

Action ID: SAW-2024-01681

County: Forsyth

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: 03040101, Yadkin River Basin

Stream Impacts (linear feet)			Wetland Impacts (acres)			
Warm	Cool	Cold	Riparian Riverine	Riparian Non-Riverine	Non-Riparian	Coastal
			0.03			

*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: 03040101, Yadkin River Basin

Stream Mitigation (credits)			Wetland Mitigation (credits)			
Warm	Cool	Cold	Riparian Riverine	Riparian Non-Riverine	Non-Riparian	Coastal
			0.06			

Mitigation Site Debited: Restoration Systems (RS)-Brushy Mountain Mitigation Bank

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: _____

Name of Sponsor's Authorized Representative: _____

Signature of Sponsor's Authorized Representative

Date of Signature

Conditions for Transfer of Compensatory Mitigation Credit:

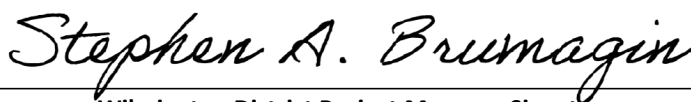
- Once this document has been signed by the Mitigation Sponsor and the District is in receipt of the signed form, the Permittee is no longer responsible for providing the mitigation identified in this form, though the Permittee remains responsible for any other mitigation requirements stated in the permit 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: Restoration Systems (RS)-Brushy Mountain Mitigation Bank provided a letter dated August 6, 2025, indicating ability to provide NCDOT Project BR-0168 mitigation for 0.3 acres of impact.

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: Stephen Brumagin
USACE Field Office: Charlotte Field Office
US Army Corps of Engineers
8430 University Executive Park Drive
Charlotte
Email: stephen.a.brumagin@usace.army.mil



Wilmington District Project Manager Signature

October 22, 2025

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: Rob Crowther, NCDOT

Action ID: SAW-2024-01681

Project Name: NCDOT / BR-0168 / Br 289 / SR 4000 / Forsyth / Div 9

County: Forsyth

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: 03040101, Yadkin River Basin

Stream Impacts (linear feet)			Wetland Impacts (acres)			
Warm	Cool	Cold	Riparian Riverine	Riparian Non-Riverine	Non-Riparian	Coastal
173						

*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: 03040101, Yadkin River Basin

Stream Mitigation (credits)			Wetland Mitigation (credits)			
Warm	Cool	Cold	Riparian Riverine	Riparian Non-Riverine	Non-Riparian	Coastal
346						

Mitigation Site Debited: RES Yadkin 01 Umbrella Mitigation Bank-Scout Mitigation Site

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: _____

Name of Sponsor's Authorized Representative: _____

Signature of Sponsor's Authorized Representative

Date of Signature

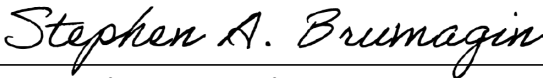
Conditions for Transfer of Compensatory Mitigation Credit:

- 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.
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- 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: RES Yadkin 01 Umbrella Mitigation Bank-Scout Mitigation Site provided a letter dated August 6, 2025, indicating ability to provide NCDOT Project BR-0168 mitigation for 173 lf of impact.

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: Stephen A. Brumagin
USACE Field Office: Charlotte Regulatory Office
US Army Corps of Engineers
8430 University Executive Park Drive, Suite 615
Charlotte, North Carolina 28262
Email: stephen.a.brumagin@usace.army.mil



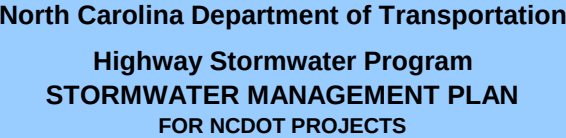
USACE Project Manager Signature

10/22/2025

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>

		North Carolina Department of Transportation Highway Stormwater Program STORMWATER MANAGEMENT PLAN FOR NCDOT PROJECTS													
(Version 3.02; Released April 23, 2024)															
WBS Element:		50603.1.1		TIP/Proj No:		BR-0168		County(ies):		Forsyth		Page 1 of 3			
General Project Information															
WBS Element:		50603.1.1		TIP Number:		BR-0168		Project Type:		Bridge Replacement		Date: 3/17/2025			
NCDOT Contact:		Matthew York				Contractor / Designer:		Brenna Copeland							
		Address:		NCDOT Hydraulics Unit 1590 Mail Service Center Raleigh, NC 27699-1590						Address:		NCDOT Hydraulics Unit 1590 Mail Service Center Raleigh, NC 27699-1590			
		Phone:		919-707-6765						Phone:		919-707-6716			
		Email:		mjyork@ncdot.gov						Email:		brcopeland@ncdot.gov			
City/Town:		Winston-Salem				County(ies):		Forsyth							
River Basin(s):		Yadkin-Pee Dee				CAMA County?		No							
Wetlands within Project Limits?		Yes													
Project Description															
Project Length (lin. miles or feet):		0.365 miles		Surrounding Land Use:		Urban									
		Proposed Project						Existing Site							
Project Built-Upon Area (ac.)		5.1		ac.				4.5		ac.					
Typical Cross Section Description:		On Bridge: Four 12' lanes with 17' center turn lane, 5' bike lanes on both sides, 2' "gutters" on both sides, and 5'-6" sidewalks on both sides. Total width 90' On Approaches: Four 12' lanes with 17' center turn lane, 5' bike lanes on both sides, 2' gutter pan on both sides, and 10' berms on both sides (14' with guardrail). Total width 99' (49.5' each side)						Four lane undivided with center turn lane with width of 66 ft plus 2 ft wide left shoulder and 4 ft wide right shoulder							
Annual Avg Daily Traffic (veh/hr/day):		Design/Future:		31550		Year:		2046		Existing:		32800		Year: 2026	
General Project Narrative: (Description of Minimization of Water Quality Impacts)		This project replaces an existing grade separation interchange bridge (#330289) on University Parkway (SR 4000) with a bridge that will be wider to accommodate alternate modes of transportation and will be higher to provide the required minimum clearance for traffic on US 52. The overall increase in project built-upon area is 0.6 acres. The project has wetlands in two areas. One small area will be a total take due to the roadway fill and mechanized clearing. Another wetland area will be retained with minor mechanized clearing to plug and fill an existing stormwater pipe. An energy dissipator basin was utilized at the pipe outlet of the jurisdictional stream to replace the existing energy dissipator. The SELDM Catalog was used for the stream and a BMP from the BMP toolbox was recommended to treat stormwater runoff at this stream. The BMP decision support matrix showed that an infiltration basin provided the highest removal efficiency for nutrients and suspended solids and was considered as a potential treatment option. However, the gore area where the basin would go was an existing maintenance issue. The existing area was a deep depression with a fully clogged cross pipe and contained standing water. The existing pipe was severely clogged with trash and soil and will not be easily accessible for maintenance once the project is completed. Due to the high maintenance needs of the area, a decision was made to fill the existing area and promote vegetated conveyance to the maximum extent before systemizing overland flow. Grass swales were analyzed, but due to the steep grade, the proposed ditches did not meet swale criteria. Where feasible, grass shoulders were maintained along with the existing vegetated ditches.													



(Version 3.02; Released April 23, 2024)

WBS Element:	TIP/Proj No.: BR-0168	County(ies): Forsyth	Page	3	of	3
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Preformed Scour Holes and Energy Dissipators

[illegible]

Additional Comments

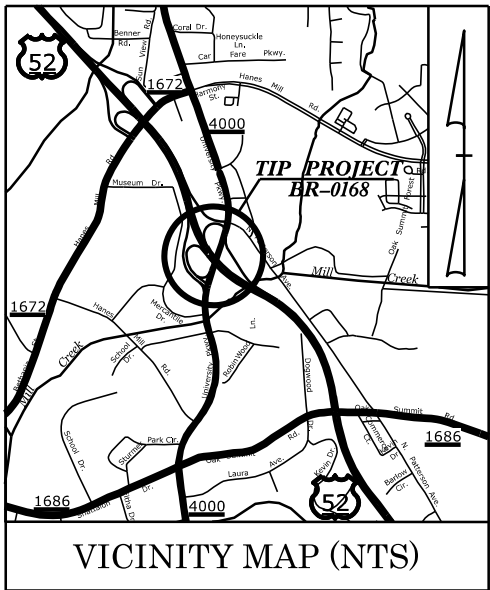
^a Refer to the NCDOT Best Management Practices Toolbox (2014), NCDOT Standards, the Federal Highway Administration (FHWA) Hydraulic Engineering Circular No. 14 (HEC-14), Third Edition, Hydraulic Design of Energy Dissipators for Culverts and Channels (July 2006), as applicable, for design guidance and criteria.

NCDOT Highway Stormwater PROGRAM North Carolina Department of Transportation Highway Stormwater Program STORMWATER MANAGEMENT PLAN FOR NCDOT PROJECTS STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION									
(Version 3.02; Released April 23, 2024)									
WBS Element: 50603.1.1		TIP/Proj No.: BR-0168		County(ies): Forsyth		Page 2 of 3			
General Project Information									
Waterbody Information									
Surface Water Body (1):		Mill Creek		NCDWR Stream Index No.:		12-94-7			
NCDWR Surface Water Classification for Water Body		Primary Classification:		Class C					
		Supplemental Classification:		None					
Other Stream Classification:		None							
Impairments:		None							
Aquatic T&E Species?		No		Comments:					
NRTR Stream ID:		Mill Creek				Buffer Rules in Effect:		N/A	
Project Includes Bridge Spanning Water Body?		No		Deck Drains Discharge Over Buffer?		N/A		Dissipator Pads Provided in Buffer?	
Deck Drains Discharge Over Water Body?		N/A		(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)			
(If yes, provide justification in the General Project Narrative)									
Surface Water Body (2):									
NCDWR Surface Water Classification for Water Body		Primary Classification:							
		Supplemental Classification:							
Other Stream Classification:									
Impairments:									
Aquatic T&E Species?				Comments:					
NRTR Stream ID:						Buffer Rules in Effect:			
Project Includes Bridge Spanning Water Body?				Deck Drains Discharge Over Buffer?				Dissipator Pads Provided in Buffer?	
Deck Drains Discharge Over Water Body?				(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)			
(If yes, provide justification in the General Project Narrative)									
Surface Water Body (3):									
NCDWR Surface Water Classification for Water Body		Primary Classification:							
		Supplemental Classification:							
Other Stream Classification:									
Impairments:									
Aquatic T&E Species?				Comments:					
NRTR Stream ID:						Buffer Rules in Effect:			
Project Includes Bridge Spanning Water Body?				Deck Drains Discharge Over Buffer?				Dissipator Pads Provided in Buffer?	
Deck Drains Discharge Over Water Body?				(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)			
(If yes, provide justification in the General Project Narrative)									

TIP PROJECT: BR-0168

CONTRACT:

See Sheet 1A For Index of Sheets
See Sheet 1B For Conventional Symbols



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

FORSYTH COUNTY

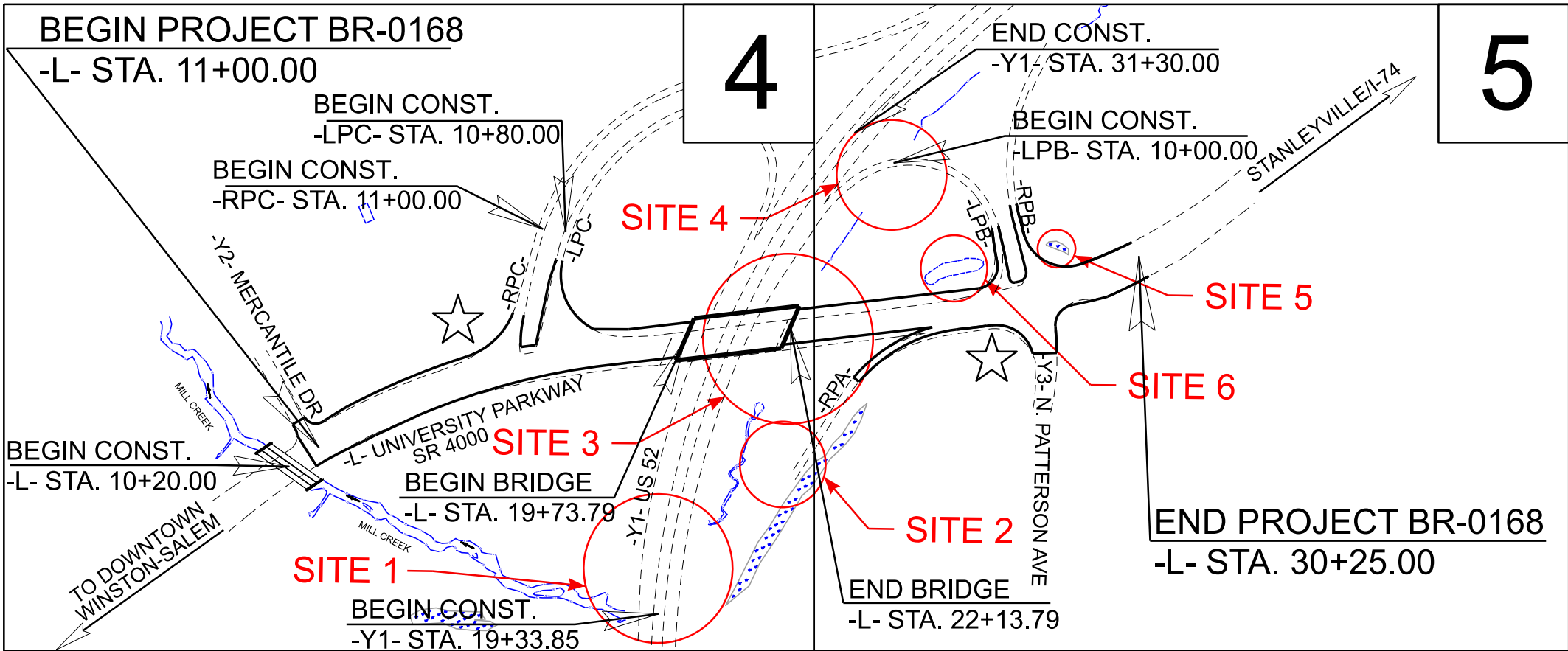
LOCATION: REPLACE BRIDGE 330289 ON SR 4000 (UNIVERSITY PARKWAY) OVER US 52

TYPE OF WORK: GRADING, PAVING, DRAINAGE, SIGNALS, AND STRUCTURE

WETLAND AND SURFACE WATER IMPACTS PERMIT

PERMIT DRAWING
SHEET 1 OF 16

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	BR-0168	11	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
67168.1.1		P.E.	
67168.2.1		ROW	
67168.2.2		UTILITIES	

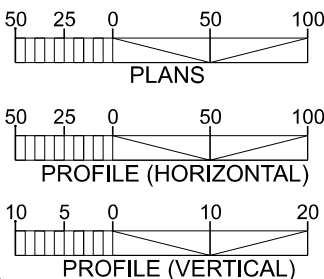


★ REVISED SIGNAL

THIS PROJECT HAS FULL CONTROLLED ACCESS THROUGH THE INTERCHANGE.
THIS PROJECT IS WITHIN MUNICIPAL BOUNDARIES OF WINSTON-SALEM.
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES



DESIGN DATA

ADT 2026 = 32800
ADT 2046 = 31550
K = 9 %
D = 65 %
T = 4 % *
V = 50 MPH
* TTST = 1% DUAL 3%
FUNC CLASS =
PRINCIPAL ARTERIAL
REGIONAL TIER

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT BR-0168 = 0.320 MILES
LENGTH OF STRUCTURE TIP PROJECT BR-0168 = 0.045 MILES
TOTAL LENGTH OF TIP PROJECT BR-0168 = 0.365 MILES

Prepared in the Office of:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh NC, 27610

2024 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
NOVEMBER 22, 2024

LETTING DATE:
MAY 19, 2026

JOEL P. PERLIN
PROJECT MANAGER

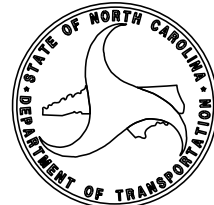
DAVID J. CLODGO, PE
PROJECT ENGINEER

PIOTR J. STOJDA
PROJECT TEAM LEAD

HYDRAULICS ENGINEER

SIGNATURE: P.E.
ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.



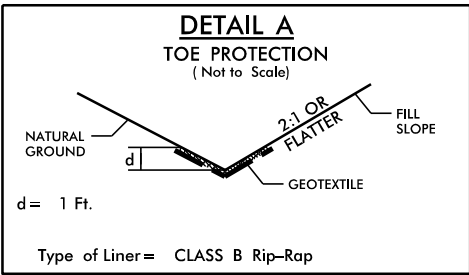
BR-0168

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
FORSTH COUNTY

ROADWAY DESIGN UNIT
ROADWAY DESIGN
ENGINEER

HYDRAULICS
ENGINEER

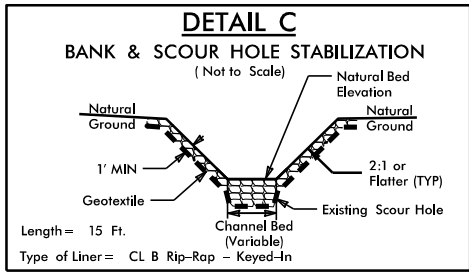
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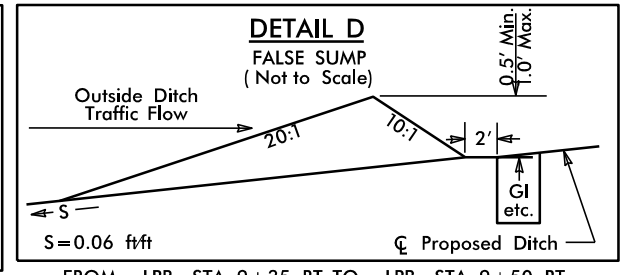
FROM -LPCA- STA. 10+40 LT TO -L- STA. 19+00 LT
EST. 100 TONS CLASS B RIP RAP
EST. 222 SY GEOTEXTILE

FROM -RPC- STA. 13+00 RT TO -RPC- STA. 13+60 RT
EST. 38.5 TONS CLASS B RIP RAP
EST. 86 SY GEOTEXTILE

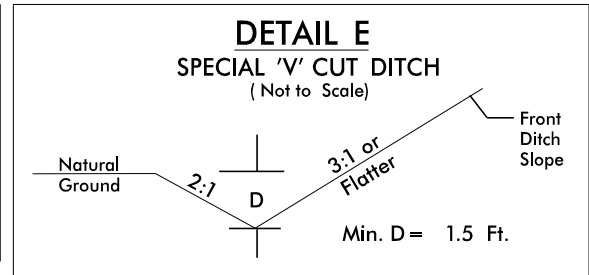
FROM -RPB- STA. 14+00 LT TO -RPB- STA. 14+45 LT
EST. 40 TONS CLASS B RIP RAP
EST. 90 SY GEOTEXTILE



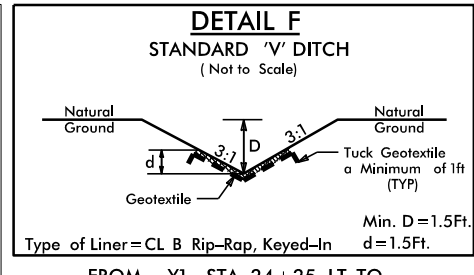
FROM -Y1- STA. 21+65 RT TO
-Y1- STA. 21+80 RT
EST. 100 TONS CLASS B RIP RAP
EST. 225 SY GEOTEXTILE



FROM -LPB- STA. 9+35 RT TO -LPB- STA. 9+50 RT



FROM -RPB- STA. 13+50 LT TO
-RPB- STA. 14+10 LT



FROM -Y1- STA. 24+25 LT TO
-Y1- STA. 26+50 LT
EST. 102 TONS CLASS B RIP RAP
EST. 225 SY GEOTEXTILE

DETAIL B
RIP-RAPPED ENERGY DISSIPATOR BASIN

SECTION

NOTE A: WARP BASIN TO CONFORM TO NATURAL STREAM CHANNEL. TOP OF RIP-RAP IN FLOOR OF BASIN SHOULD BE AT SAME ELEVATION OR LOWER THAN NATURAL CHANNEL BOTTOM AT SEC. A-A. PROVIDE SMOOTH TRANSITION FROM END OF APRON TO NATURAL CHANNEL WIDTH.

HALF PLAN

RIP RAP BASIN #

DIM.	1	2	3	4	5	6	7	8
A	3.0'							
B	2.3'							
C	1.0'							
D	2.4'							
E	13.6'							
F	15.0'							
G	24.0'							
H	12.0'							
I	3.3'							

*ALL DIMENSIONS APPROXIMATE IN FT

BASIN # LOCATION (AT OUTLET)

BASIN #	LOCATION (AT OUTLET)
1	10+87 -RPA-
2	
3	
4	
5	
6	
7	
8	

SEC. A-A
GEOTEXTILE

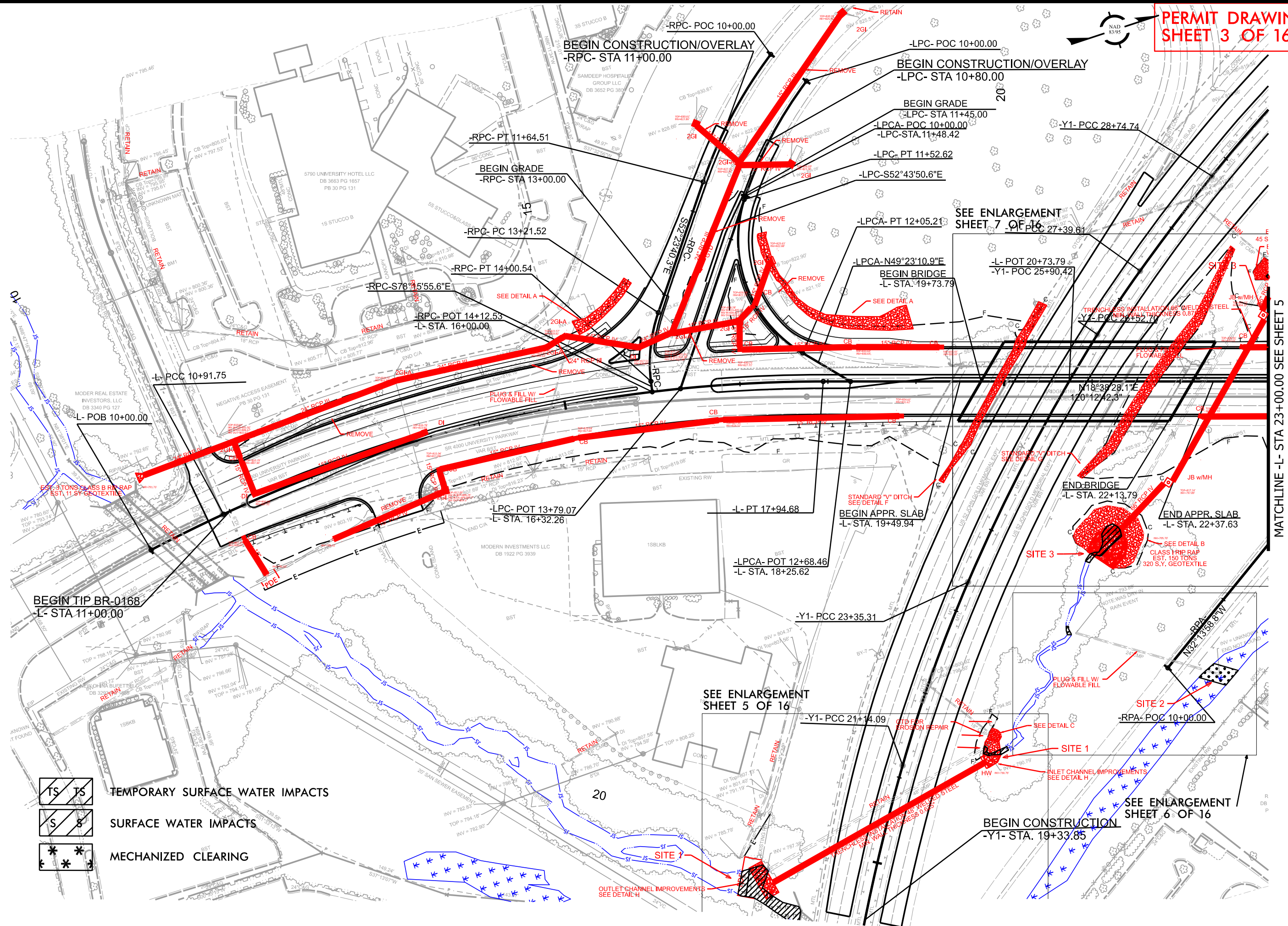
SEC. B-B
GEOTEXTILE
EXCAVATE TO THIS LINE BACKFILL w/CLASS I RIP-RAP

SEC. C-C
GEOTEXTILE
EXCAVATE TO THIS LINE BACKFILL w/CLASS I RIP-RAP

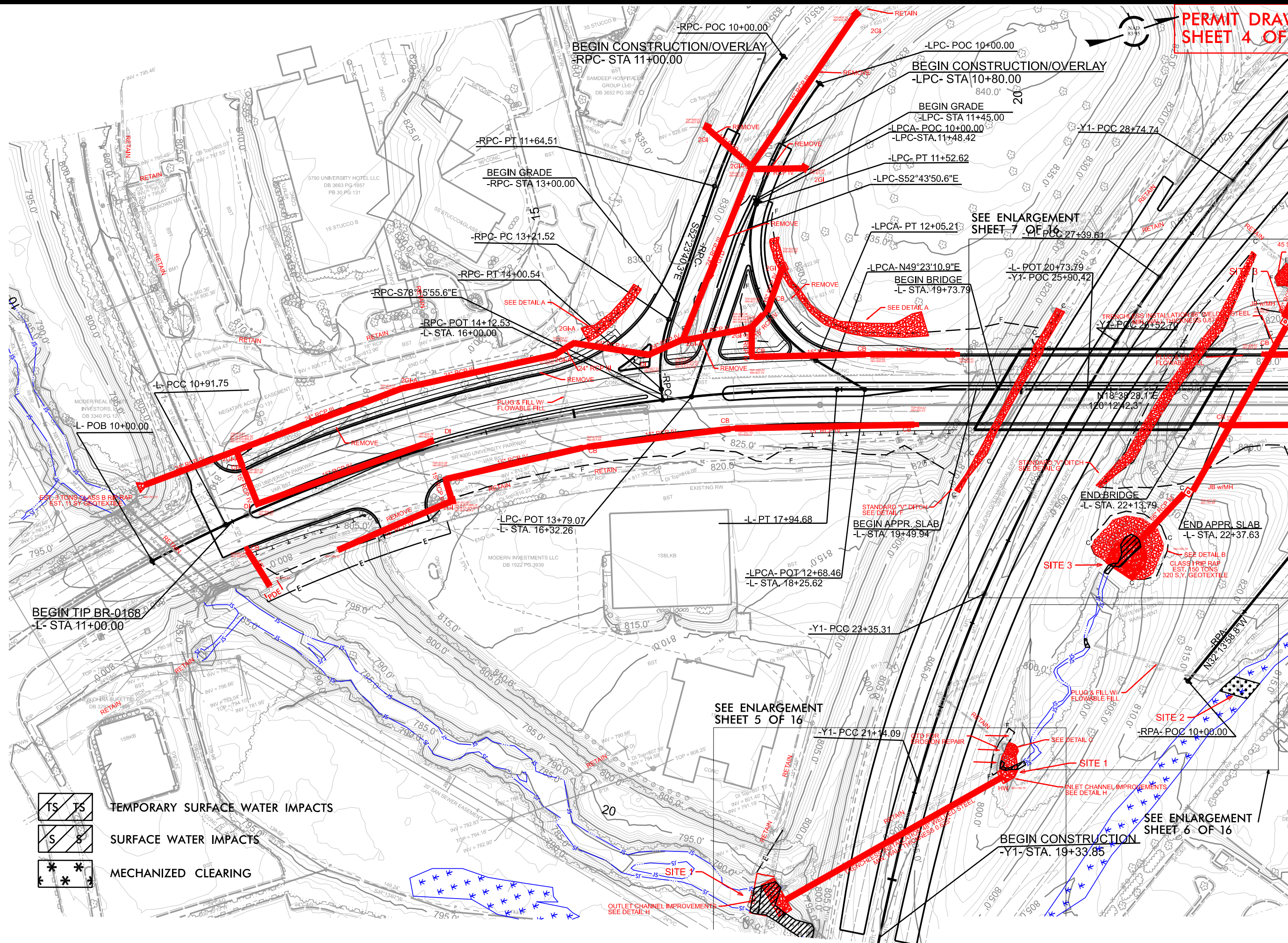
SEC. D-D
GEOTEXTILE
BERM AS REQUIRED TO SUPPORT RIP-RAP

NOTE: W₀ = 66"

FROM -RPA- STA. 10+50 LT TO -RPA- STA. 10+90 LT



REVISIONS



PERMIT DRAWING
SHEET 5 OF 16

BR-0168

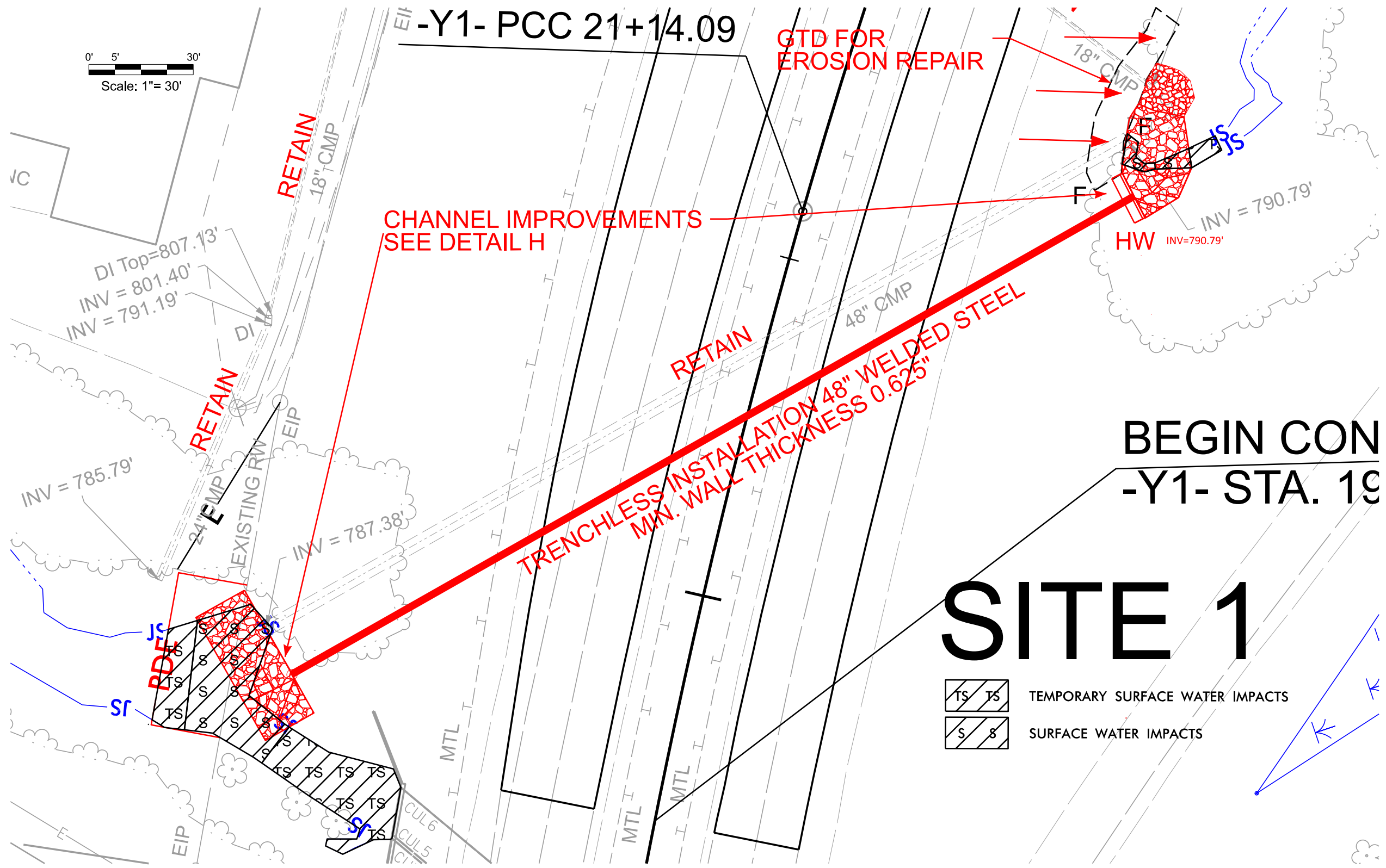
SITE 1

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
FORSYTH COUNTY

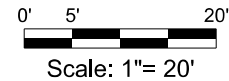

ROADWAY DESIGN UNIT
ROADWAY DESIGN
ENGINEER

HYDRAULICS
ENGINEER

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



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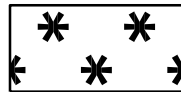


INV
NOTE: WAS DRY
RAIN EVENT

PERMIT DRAWING
SHEET 6 OF 16

PLUG & FILL W/
FLOWABLE FILL

SITE 2



MECHANIZED CLEARING

-RPA- POC 10+00.00

N32°13'58.8"W

INV = UNKNOWN
END NOT FOUND

24" CMP

60"

EIP

RW

BR-0168

SITE 2

NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

FORSYTH COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN

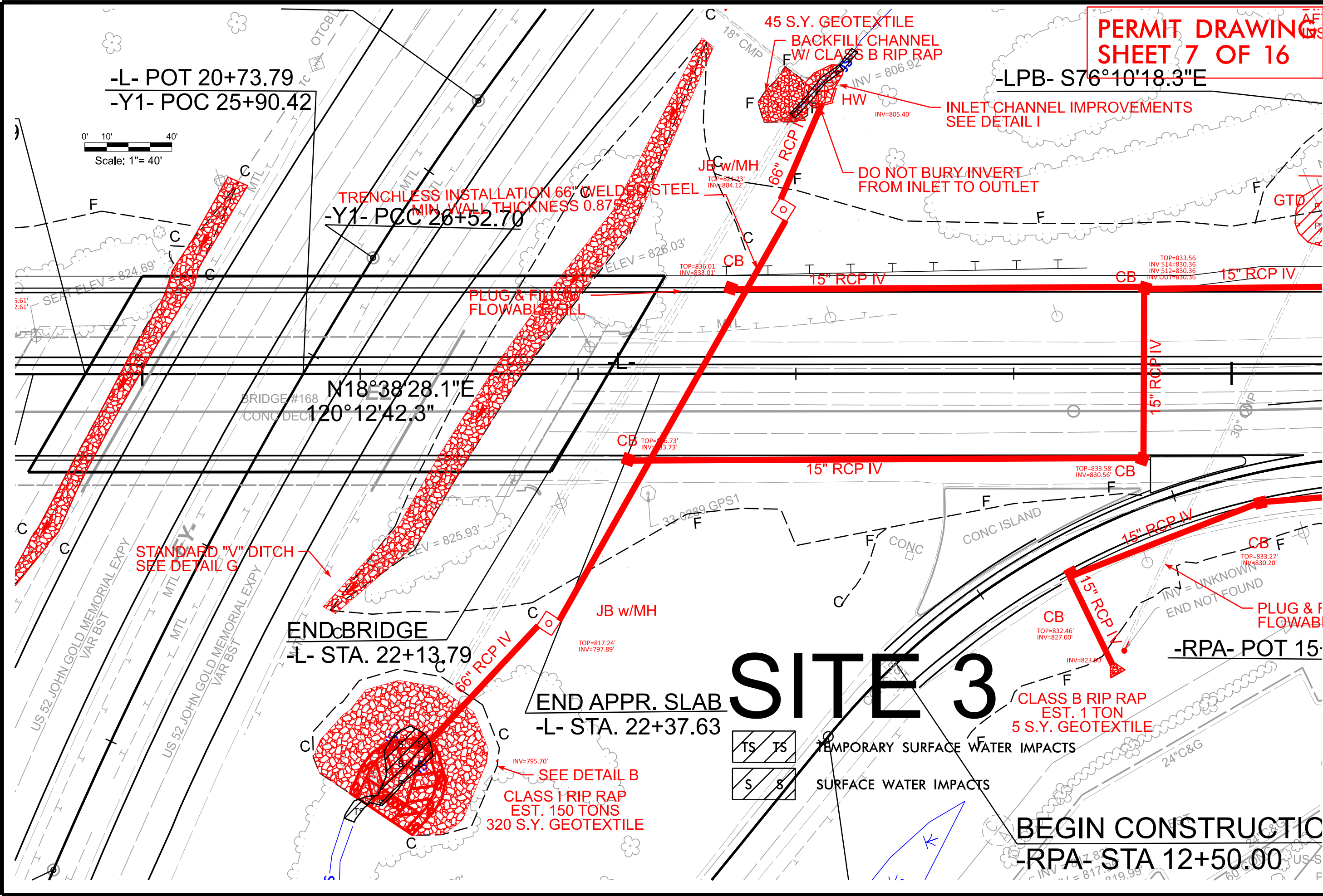
ENGINEER

HYDRAULICS

ENGINEER

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BR-0168

Site 3

NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

FORSYTH COUNTY

ROADWAY DESIGN UNIT

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

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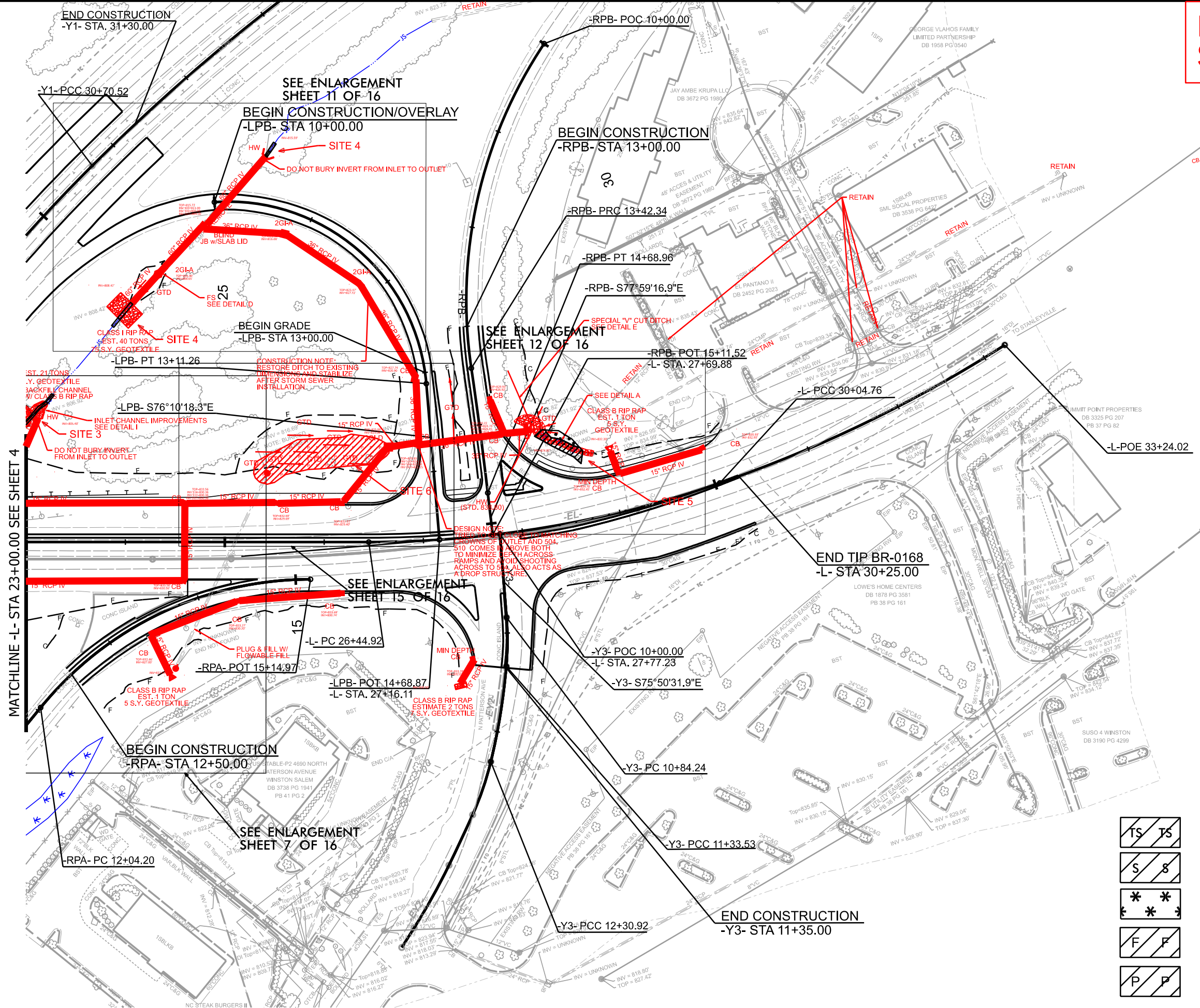
PERMIT DRAWING
SHEET 9 OF 16

BR-0168
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NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
FORSYTH COUNTY
ROADWAY DESIGN UNIT
ROADWAY DESIGN
ENGINEER

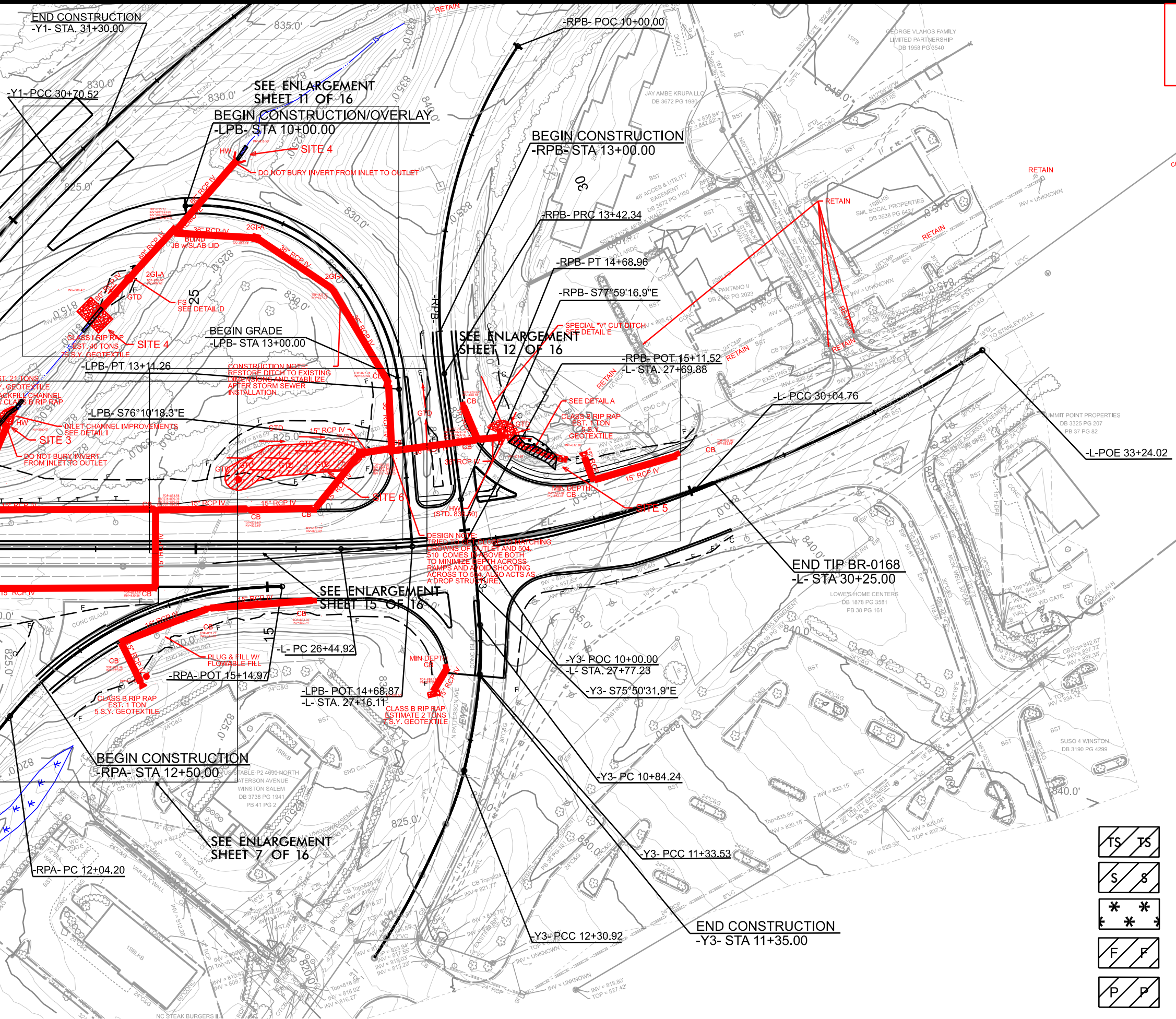
HYDRAULICS
ENGINEER

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REVISIONS



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



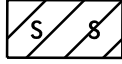
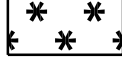
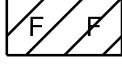
PERMIT DRAWING SHEET 10 OF 16

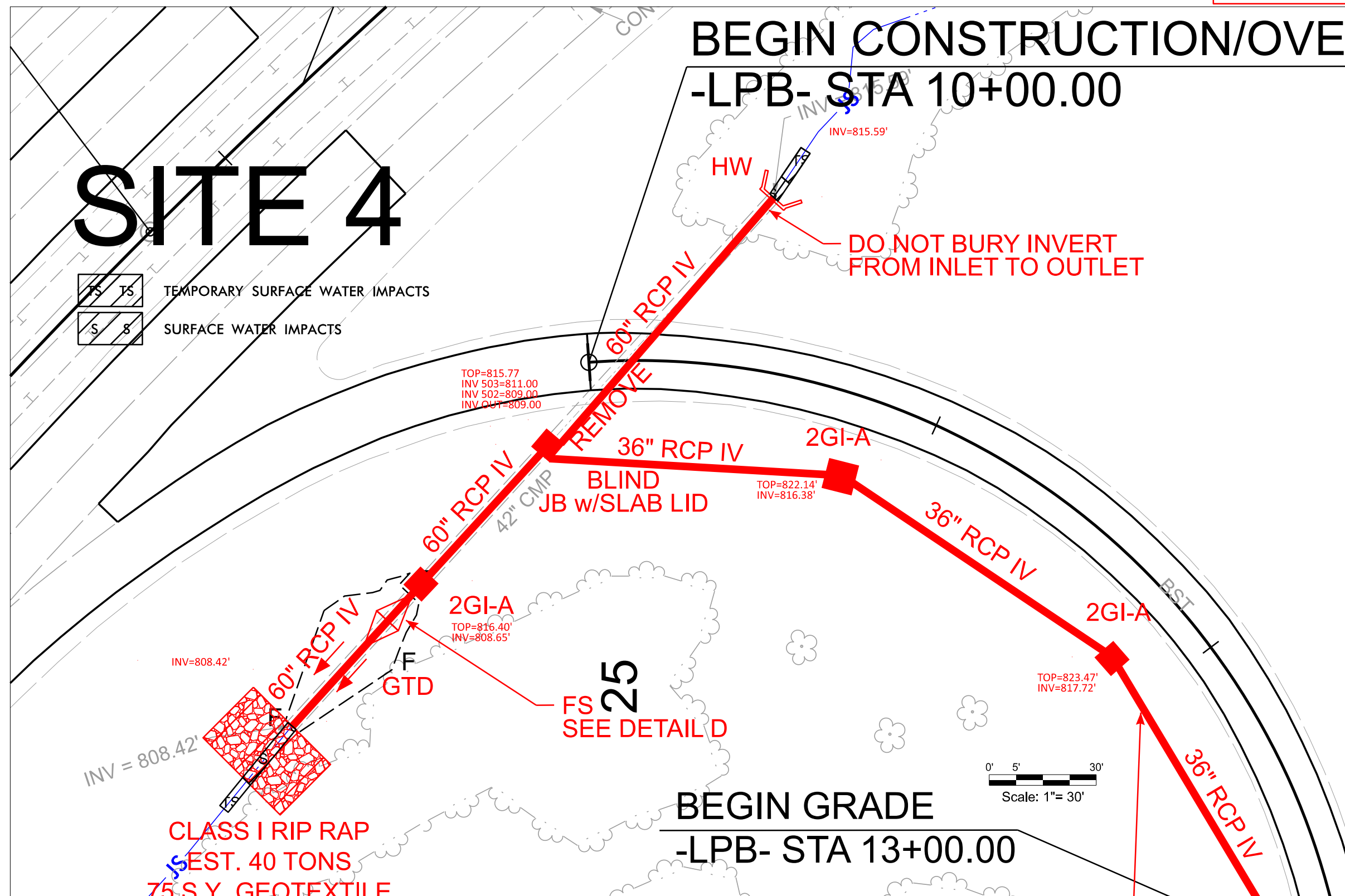
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NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
FORSYTH COUNTY
ROADWAY DESIGN UNIT
ROADWAY DESIGN
ENGINEER

HYDRAULICS
ENGINEER

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UNLESS ALL SIGNATURES COMPLETED

REVISIONS

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



5/26/20

PERMIT DRAWING
SHEET 12 OF 16

BR-0168

SITE 4

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
FORSTH COUNTY

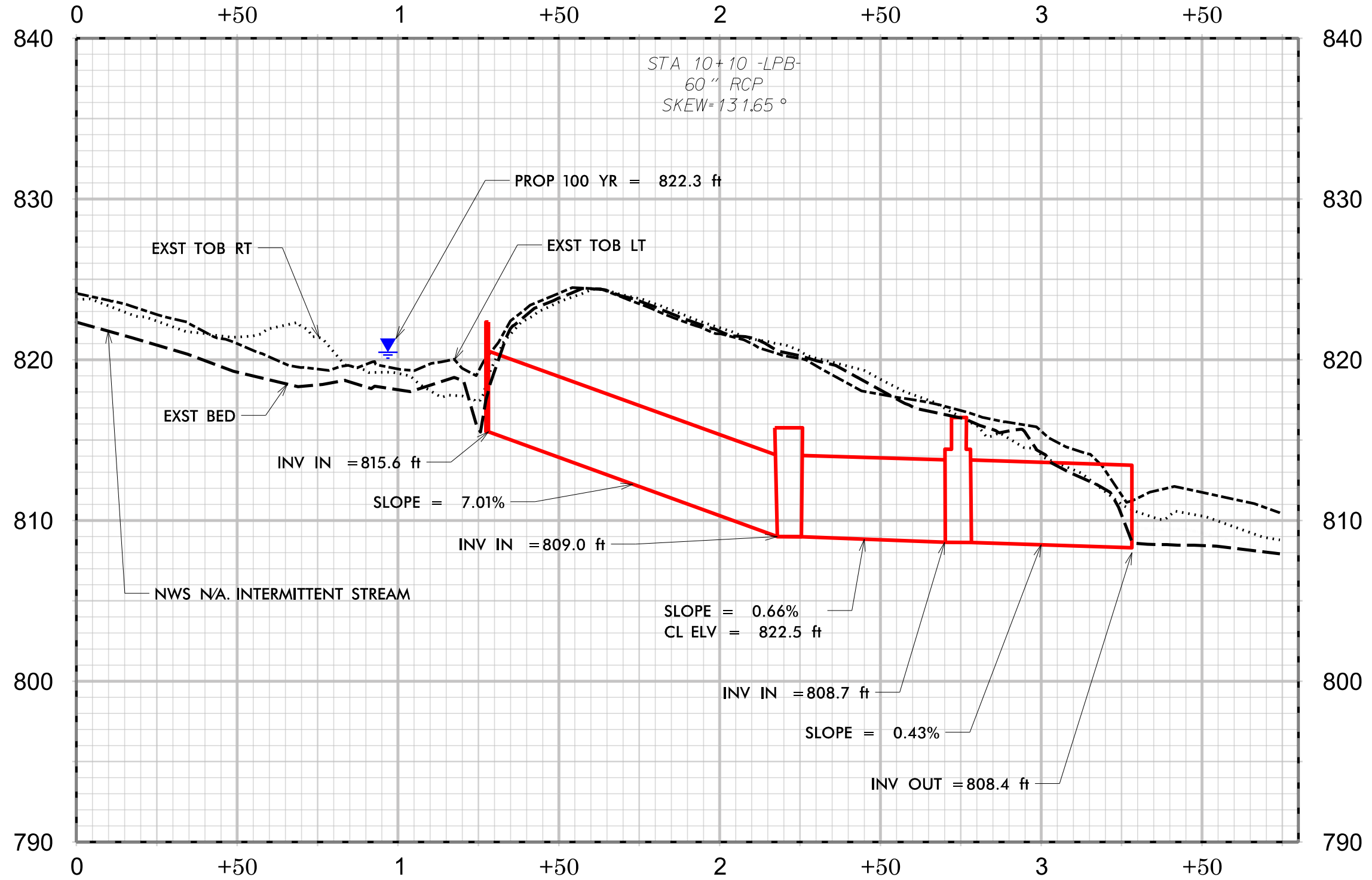


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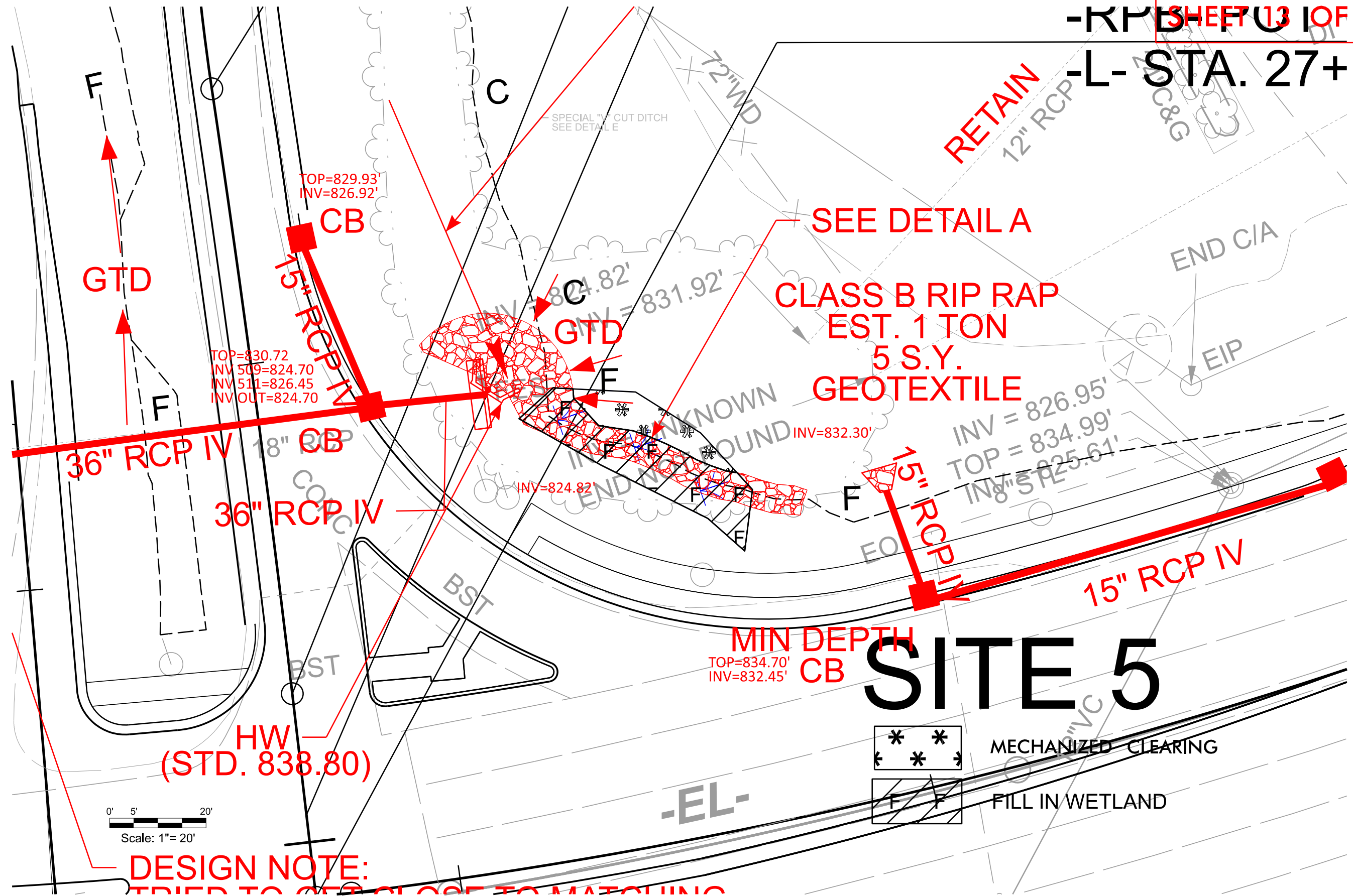
ROADWAY DESIGN
ENGINEER

HYDRAULICS
ENGINEER

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REVISIONS



DESIGN NOTE:
TRIED TO GET CLOSER TO MATCHING

PERMIT DRAWING
SHEET 14 OF 16

BR-0168

Site 5

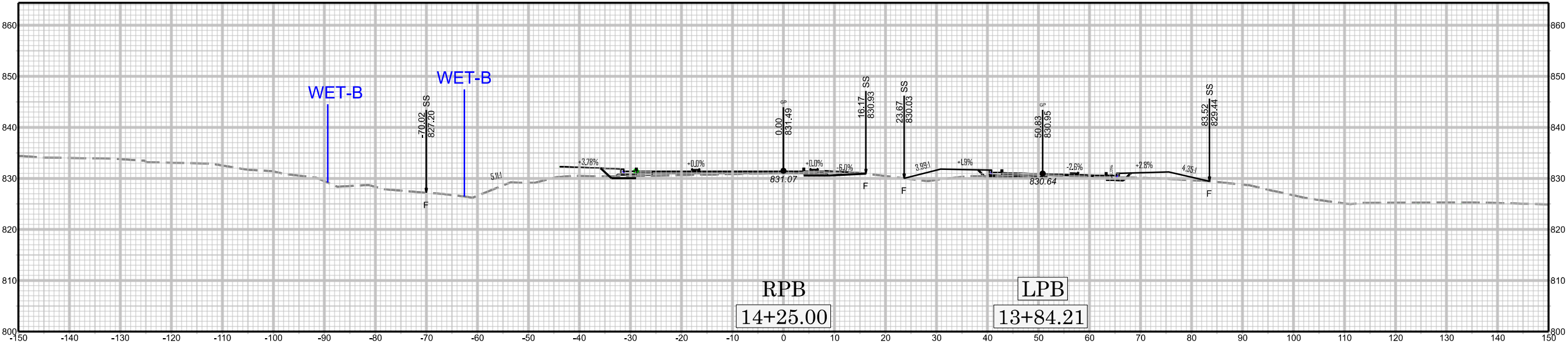
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FORSYTH COUNTY



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ROADWAY DESIGN
ENGINEER

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REVISIONS

SITE 6



SURFACE WATER IMPACTS (POND)

18.3"E
VENTS

RESTORE DITCH TO EXISTING
DIMENSIONS AND STABILIZE
AFTER STORM SEWER
INSTALLATION

PERMIT DRAWING
SHEET 15 OF 16

BR-0168

SITE 6

NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
FORSYTH COUNTY

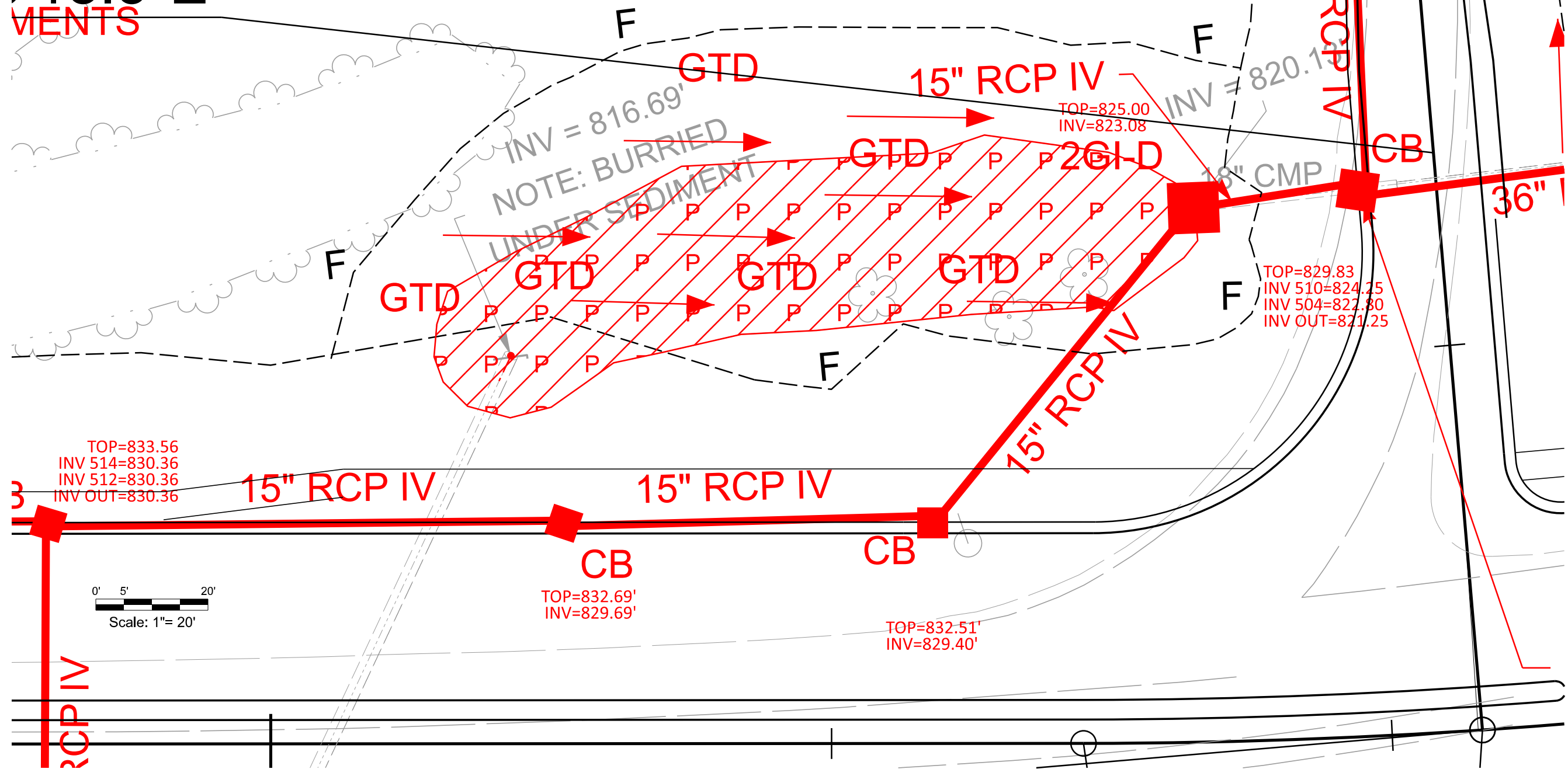


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WETLAND AND SURACE WATER IMPACTS SUMMARY												
			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1A	-Y1- 21+54 to 21+65	48" Welded Steel Pipe Inlet						< 0.01	< 0.01	20	10	
1B	-Y1- 19+08 to 19+70	48" Welded Steel Pipe Outlet						0.02	0.02	44	48	
2	-RPA- 10+31	Plug & Fill 24" CMP				0.01			< 0.01		10	
3	-Y1- 24+14 to 28+55	66" RCP, Energy Disspator Basin						0.01	< 0.01	83	20	
4	-Y1- 29+63 to 32+24	60" RCP						< 0.01	< 0.01	26	20	
5	-L- 28+28 to 28+76	Rip Rap Toe Protection	0.01			< 0.01						
6	-L- 25+29 to 26+67	Fill in Pond						0.09				
TOTALS*:			0.01			0.02		0.12	0.03	173	108	0

*Rounded totals are sum of actual impacts

NOTES:

NC DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

7/24/2025

Forsyth

BR-0168

WBS # 67168.1.1

SHEET15OF15