



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION


ROY COOPER
GOVERNOR

JAMES H. TROGDON, III
SECRETARY

June 1, 2018

MEMORANDUM TO: Mr. Mike Mills, P.E.
Division 7 Engineer

FROM: Philip S. Harris, III, P.E., Manager
Environmental Analysis Unit

DocuSigned by:

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SUBJECT: The proposed relocation of NC 119 from Interstate 40/85 to south of SR 1918 (Mrs. White Lane) in Mebane (Mebane Bypass), Alamance County, North Carolina, Division 7. Federal Aid Project No. STP-119 (1), TIP No. U-3109, WBS 34900.1.2

Attached are the U.S. Army Corps of Engineers Section 404 Individual Permit and the N.C. Division of Water Resources Section 401 Permit for U-3109B and the modification of U-3109A. All environmental permits have been received for the construction of this project.

A copy of this permit package will be posted on the NCDOT website at:

<https://connect.ncdot.gov/resources/Environmental/Pages/default.aspx>

Quick Links>Permit Documents> Issued Permits.

cc: w/o attachment (see website for attachments)

Mr. Ron Davenport, P.E. Contracts Management
Ms. Jerry Parker, Division 7 Environmental Officer
Dr. Majed Al-Ghandour, P.E., Programming and TIP
Mr. Carl Barclay, P.E., Utilities Unit
Mr. Matt Lauffer, P.E., Hydraulics Unit
Mr. Brian Hanks, P.E., Structures Management Unit
Mr. Mark Staley, Roadside Environmental Unit
Mr. Lamar Sylvester, P.E., State Roadway Construction Engineer
Ms. Laura Sutton, P.E., Project Delivery
Ms. Beth Harmon, Division of Mitigation Services
Ms. Cheterra Sheff, Single Audit Compliance

PROJECT COMMITMENTS

T.I.P. Project No. U-3109
NC 119 Relocation from I-85/I-40 to South of SR 1918 (Mrs. White Lane) in Mebane –
Mebane Bypass
Alamance County
Federal Aid Project No. STP – 119(1)
WBS Element No. 34900.1.1
State Project No. 8.1470901

COMMITMENTS FROM PROJECT DEVELOPMENT AND DESIGN

Project Development & Environmental Analysis Branch / Right of Way Branch

The NCDOT will continue to coordinate with St. Luke's Christian Church throughout the project and work with the church to develop a detailed plan on the timing and means of the relocation prior to right-of-way acquisition.

Advanced acquisition of the church has been completed. The church plans to relocate to and build on property on US 70 approximately ¼ mile from its current location.

Project Development & Environmental Analysis Branch / Highway Division 7 Office

This project involves an environmentally sensitive area, identified on the preliminary design plans. No earthwork, staging, or storage of any kind should occur within this environmentally sensitive area.

The environmentally sensitive area will be identified on the final design plans for Section B of the project, which will be designed at a later date.

NCDOT has purchased sufficient right of way to protect the environmentally sensitive area (formerly Swathmore Farm) from construction activities.

Project Development & Environmental Analysis Branch – Human Environment Unit

The NCDOT, in consultation with the North Carolina State Historic Preservation Officer (HPO), the Eloise W. Cates Estate, and the Marsha A. Ritchie Trust, will develop and implement a landscape plan for the portion of the historic Cates Farm directly impacted by the project.

No action at this time. The photo-documentation of the Cates Farm will be completed prior to construction. The landscape plan will be prepared in coordination with the property owners when the Section B design is prepared.

The landscape plan will be implemented once construction is completed.

Hydraulics Unit / Roadway Design Unit

Investigate a spanning (three-sided) bottomless culvert at major stream crossing Site 2 (Unnamed Tributary to Mill Creek [UT14]).

This stream is located in Section B of the project. The final design has not been prepared for Section B at this time. However, a bottomless culvert will be investigated once final design for Section B is underway.

It was determined that a 4-sided culvert will be needed at this site.

Hydraulics Unit

Hazardous spill protection measures will be provided at stream crossings within ½ mile of the water supply watershed critical area of the Graham-Mebane Reservoir during final design of Alternative 9.

Hazardous spill basin(s) will be included in the design of the project.

Hazardous spill basins are included in Section A and in Section B.

Coordinate with the NC Floodplain Mapping Program (FMP), the delegated state agency for administering the Federal Emergency Management Agency's (FEMA) National Flood Insurance Program, to determine status of project with regard to applicability of NCDOT'S Memorandum of Agreement with FMP (dated 6/5/08), or approval of a Conditional Letter of Map Revision (CLOMR) and subsequent final Letter of Map Revision (LOMR).

NCDOT is coordinating with the NCFMP regarding a CLOMR due to floodplain impacts resulting from two crossings of MoAdams (McAdams) Creek.

The CLOMR was approved on May 16, 2018.

Highway Division 7 Office

This project involves construction activities on or adjacent to FEMA-regulated streams. Therefore, the Division shall submit sealed as-built construction plans to the Hydraulics Unit upon completion of project construction, certifying that the drainage structures and roadway embankment that are located within the 100-year floodplain were built as shown on the construction plans, both horizontally and vertically.

No action to date. This commitment will be fulfilled after construction is completed.

Geotechnical Unit

A re-evaluation of the two facilities containing potential hazardous materials/waste sites located along Alternative 9 will be completed once right-of-way plans are complete.

Right of Way Plans are approaching completion. The Geotechnical Unit will follow through with the evaluation in the coming months.

This re-evaluation has been completed.

Geotechnical Unit/ Contract Standards and Development

The GeoEnvironmental Section will provide a Project Special Provision with the let package notifying the contractor that contaminated soil may be encountered during construction. In the event that contaminated soil is encountered, the contaminated soil will be properly disposed at a facility licensed to accept it.

This commitment was added as of 11/03/2014. Action will be taken prior to let.

It was determined that contaminated soil does not exist on the project site, therefore, a Special Provision is not required.

COMMITMENTS FROM PERMITTING

Highway Division 7

NCDOT shall design, construct, and operate and maintain four hazardous spill catch basins (HSCBs) adjacent to streams that drain to the water supply critical areas (WS CA) of Forest Lake and Graham-Mebane Reservoir. The HSCBs shall be located as shown in the Table below:

Locations of Hazardous Spill Catch Basins on Section A

| Station | Coordinates | | Surface Water |
|-----------------|-------------|----------|------------------|
| 161+92-L-RT | 36.1028 | -79.2946 | Back Creek |
| 179+68-L-RT | 36.1058 | -79.2901 | Back Creek |
| 20+90-Y16RPA-LT | 36.1084 | -79.2838 | Back Creek |
| 32+55-Y20-LT | 36.1018 | -79.2932 | UT to Mill Creek |

Location of Hazardous Spill Catch Basins on Section B

Six hazardous spill basins are proposed to protect against the accidental release of hazardous material into receiving jurisdictional waters. Hazardous Spill Basins will be installed at the following locations:

- -L- 199+50 LT to -L- 206+00 LT
- -L- 198+50 RT to -L- 205+00 RT
- -L- 206+00 LT to -L- 210+00 LT
- -L- 220+50 RT to -L- 228+50 RT
- -L- 232+00 RT to -L- 228+50 RT
- -L- 267+00 LT to -L- 256+50 LT



DEPARTMENT OF THE ARMY
WILMINGTON DISTRICT, CORPS OF ENGINEERS
69 DARLINGTON AVENUE
WILMINGTON, NORTH CAROLINA 28403-1343

May 30, 2018

Regulatory Division/1200A

Action ID No. SAW-2002-20667

Mr. Philip S. Harris III, P.E., C.P.M.
Natural Environment Section Head
North Carolina Department of Transportation
Division of Highways
1598 Mail Service Center
Raleigh, North Carolina 27699-1598

Dear Mr. Harris:

Reference the Department of the Army (DA) permit dated June 27, 2017, to Mr. Philip S. Harris, of the North Carolina Department of Transportation (NCDOT) for impacts associated with the widening and new location project identified as U-3109A&B. The 4.8 mile project includes widening NC 119 to six-lanes from the I-40/I-85 interchange north to the existing 3rd Street Extension, improvements to a portion of SR 1997 (Corrigidor Road), including realignment to the east of its existing location and connecting it to SR 1973 (Tate Avenue) near the Mebane Wastewater Treatment Plant (WWTP), and tying-in SR 1970 (Roosevelt Street) into the proposed Corrigidor Road realignment just north of the City of Mebane Maintenance Yard. The project also constructs NC 119 on new location as a four-lane, median-divided facility from the existing 3rd Street Extension north until tying into existing NC 119 just south of Mrs. White Lane. The project area contains McAdams Creek and 12 unnamed tributaries (UTs), Mill Creek and 4 UTs, UT to Mill Creek (Forest Lake), 5 UTs to Back Creek (Graham-Mebane Reservoir), 3 impoundments (ponds), and several adjacent wetland areas in the Cape Fear River Basin (8-Digit Cataloging Unit 03030003).

Total impacts authorized by the permit include: 1) the permanent discharge of dredged or fill material into 6,232 linear feet of stream channel (6,065 linear feet of permanent loss and 167 linear feet of bank stabilization), 0.89 acre of riparian wetlands (0.78 acre of permanent fill, 0.02 acre of excavation, and 0.09 acre of mechanized clearing), and 0.32 acre of open water, and 2) the temporary discharge of dredged or fill material into 461 linear feet of stream channel. Compensatory mitigation was implemented for the unavoidable impacts by debits from the NCDOT South Buffalo Creek Mitigation Site (I-2402, U-2525A, and I-2201F/E) as well as payment into the North Carolina Division of Mitigation Services. However, NCDOT did not provide mitigation for U-3109B at that time. Per Special Condition 2 of the DA permit, Construction may commence on U-3109B only after: 1) final design has been completed; 2) the

permittee has minimized impacts to waters and wetlands to the maximum extent practicable; and 3) any modifications to the plans and a compensatory mitigation plan have been approved by the U.S. Army Corps of Engineers, Wilmington District (Corps).

Also reference your permit modification request letter and attachments received via email dated May 4, 2018, additional dewatering information received via email dated May 15, 2018, as well as your revised information received via two emails, both dated May 21, 2018 (herein referred to as the "Modification Request Letters"), proposing the following:

- 1) Modification to U-3109A Permit Sites 18, 19, and 20:
 - a. Site 18: Culvert alignment change resulting in no changes to previously authorized impact amounts;
 - b. Site 19: Proposed change of Y-10 roadway design from a shoulder section to curb and gutter. Since the curb and gutter typical section is wider than a shoulder typical section, the skew of the culvert was reduced to make it shorter. Although stream impacts stayed the same, proposed wetland impacts increased by 0.01 acre due to taking the impacts out to the edge of the easement;
 - c. Site 20: Culvert alignment change resulting in reduction of previously authorized mechanized clearing in wetlands impacts by less than 0.01 acre;
- 2) Release of U-3109B for construction per Special Condition 2 of the DA permit dated June 27, 2017;
- 3) Authorization of permanent discharge of fill material into 647 linear feet of stream channel related to:
 - a. Placing 562 linear feet of stream channel in culverts, and;
 - b. Adding rip rap bank stabilization to 85 linear feet of stream channel;
- 4) Authorization of permanent discharge of fill material into 0.27 acre of wetlands related to:
 - a. Filling 0.23 acre of wetlands due to fill slopes;
 - b. Excavating 0.01 acre of wetlands due to grading;
 - c. Mechanized clearing in 0.03 acre of wetlands due to installation of erosion control features.
- 5) Authorization of temporary discharge of fill material in 90 linear feet of stream channel related to temporary construction access and dewatering for culvert installation.

Following evaluation of the information submitted in your modification request, the U.S. Army Corps of Engineers, Wilmington District (Corps) has determined that it is appropriate and reasonable, is not contrary to the public interest, and no public notice is required for this

modification. Furthermore, the requirements of Special Condition 2 of the DA permit dated June 27, 2017 have been completed as follows:

- All appropriate and practicable avoidance and minimization measures have been approved, as discussed during the 4B and 4C Merger Meetings for U-3109B, held October 19, 2017 and February 16, 2018, respectively, and documented in the Modification Request Letters;
- A permit modification request for U-3109B including final plan design and compensatory mitigation plan was completed per submittal of the Modification Request Letters, and approved by the District Commander via this document.

Therefore, the permit is modified to include changes to U-3109A Sites 18-20, and to release U-3109B for construction, including the requested modified stream and wetland impacts. For U-3109A Permit Sites 18-20, this work must be constructed as shown on the U-3109A Permit Drawing Sheets 31-36 and 40-43, submitted via email on May 4, 2018, as well as the dewatering phasing plan for the revised culvert at Site 18, titled "2@10'X8' CONSTRUCTION SEQUENCE STA. 19+77 -Y10- McADAMS CREEK", submitted via email on May 15, 2018. For all U-3109B Permit Sites, this work must be constructed as shown on the Wetland and Surface Water Impacts Permit drawings for U-3109B (Permit Drawing Sheets 1-22) submitted via email on May 21, 2018.

In addition, the following special conditions regarding additional compensatory mitigation are hereby incorporated into the permit:

x) 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 authorization.

xx) In order to compensate for wetland impacts associated with U-3109A Permit Site 19, mitigation shall be provided from the NCDOT South Buffalo Creek Mitigation Site (I-2402, U-2525A, and I-2201F/E). The NCDOT will debit 0.01 acre of Riparian Wetland Restoration credits from the site. NCDOT will provide a copy of the ledger to the Corps of Engineers, Raleigh Regulatory Field Office, prior to initiation of permitted wetland impacts.

All other conditions of the permit, including the permit expiration date of December 31, 2022, remain in effect as written. The U-3109A&B project now totals 1) the permanent discharge of dredged or fill material into 5,573 linear feet of stream channel (5,321 linear feet of permanent loss and 252 linear feet of bank stabilization), 0.66 acre of riparian wetlands (0.51 acre of permanent fill, 0.03 acre of excavation, and 0.12 acre of mechanized clearing), and 0.32 acre of open water, and 2) the temporary discharge of dredged or fill material into 551 linear feet

of stream channel. Should you have questions, please contact Mr. David E. Bailey, Raleigh Regulatory Field Office at telephone (919) 554-4884, Extension 30, or at David.E.Bailey2@usace.army.mil.

FOR THE DISTRICT ENGINEER

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Robert J. Clark
Colonel, U.S. Army
District Commander

Copies Furnished (w/enclosure):

Ms. April Norton
Transportation Permitting Unit
Division of Water Resources
North Carolina Department of
Environmental Quality
1617 Mail Service Center
Raleigh, North Carolina 27699-1617

Ms. Carla Dagnino
North Carolina Department of Transportation
Division of Highways
1598 Mail Service Center
Raleigh, North Carolina 27699-1598

Mr. Jerry Parker
Division Environmental Supervisor, Division 7
North Carolina Department of Transportation
Post Office Box 14996
Greensboro, North Carolina 27415

Copies Furnished (w/o enclosure):

U.S. Fish and Wildlife Services
Fish and Wildlife Enhancement
Post Office Box 33726
Raleigh, North Carolina 28516

Ms. Amanetta Somerville
U.S. Environmental Protection Agency
Region 4 NEPA Program Office
61 Forsyth Street, SW
Atlanta, Georgia 30303

Mr. Travis Wilson
North Carolina Wildlife Resources Commission
1718 Hwy 56 West
Creedmoor, North Carolina 27522

**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 USACE 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 USACE 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. 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 the Sponsor must be provided to the USACE within 30 days of permit issuance. NCDOT remains fully responsible for the mitigation until the USACE 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 USACE 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 USACE, the Sponsor must obtain case-by-case approval from the USACE 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 USACE administrative records for both the permit and the Bank/ILF Instrument.

Comments/Additional Conditions:

- **Note that only compensatory mitigation required for stream and wetland impacts authorized for U-3109B are included on the above form.**
- **NCDMS accepted responsibility for providing the mitigation required for U-3109A via signature, on July 11, 2017, of the Compensatory Mitigation Responsibility Transfer Form included with the Department of the Army (DA) permit dated June 27, 2017.**

This form is not valid unless signed below by the USACE 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 USACE Project Manager at the address below, and 3) the Wilmington District Mitigation Office, Attn: Todd Tugwell, 3331 Heritage Trade Drive, Suite 105, Wake Forest, NC 27587 (email: todd.tugwell@usace.army.mil).** Questions regarding this form or any of the permit conditions may be directed to the USACE Project Manager below.

USACE Project Manager: David Bailey
USACE Field Office: Raleigh Regulatory Field Office
US Army Corps of Engineers
3331 Heritage Trade Drive, Suite 105
Wake Forest, NC 27587

Email: David.E.Bailey2@usace.army.mil



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ou=USA, cn=BAILEY.DAVID.E.1379283736
Date: 2018.05.30 14:57:38 -04'00'

USACE Project Manager Signature

May 30, 2018

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>.

South Buffalo Creek Mitigation Site
ONEID 041-009

The South Buffalo Creek mitigation site is located in Guilford County within the USGS hydrologic unit 03030002 of the Cape Fear River. NCDOT acquired a 31.73 acres parcel to mitigate for unavoidable, jurisdictional impacts associated with TIP I-2402, U-2525 and I-2201F/E. This parcel produced 16.2 acres of Riparian Wetland Preservation and 15.53 acres of Riparian Wetland Restoration. Monitoring requirements were performed from 1999 to 2003 and the site was closed out in 2004. Table 1 shows the final mitigation quantities approved for the site. The site has been placed on the NCDOT On-site Debit Ledger for use within HUC 03030002. Table 2 indicates all mitigation debits that have occurred per regulatory agency approval.

In order to offset an additional 0.01 acres of unavoidable impacts on U-3109A at Site 19, NCDOT will be debiting the South Buffalo Creek Mitigation Site at for 0.01 acres of impact at a 2:1 ratio, totaling 0.02 acres of mitigation.

Table 1. Mitigation Quantities Approved

| HUC | Mitigation Type | Starting Amount (AC) | Additional Notes |
|---------|-------------------------------|----------------------|------------------|
| 3030002 | Riparian Wetland Preservation | 16.2 | |
| 3030002 | Riparian Wetland Restoration | 15.53 | |

Table 2. Mitigation Debits –

| Mitigation Type | Debit Amount (Ac) | Status | SITE TIP | Action ID# | Notes |
|-------------------------------|-------------------|-----------|-------------------|------------|-------|
| Riparian Wetland Preservation | 3.36 | Close Out | I-2201F | | |
| Riparian Wetland Preservation | 1.23 | Close Out | I-2402D mod | 199502886 | |
| Riparian Wetland Preservation | 9.4 | Close Out | U-2525A & I-2402D | 199300243 | |

| TYPE | Debit Amount (Ac) | Status | SITE TIP | Action ID# | Notes |
|------------------------------|-------------------|-----------|-------------------|------------|--|
| Riparian Wetland Restoration | 0.96 | Close Out | I-2201F | | |
| Riparian Wetland Restoration | 0.35 | Close Out | I-2402D mod | 199502886 | |
| Riparian Wetland Restoration | 0.14 | Close Out | Mit Work | | |
| Riparian Wetland Restoration | 0.95 | Close Out | R-2000AA/AB | | |
| Riparian Wetland Restoration | 9.1 | Close Out | U-2525A & I-2402D | 199300243 | |
| Riparian Wetland Restoration | 0.71 | Close Out | U-3109A | 200220667 | Impacts were 0.33 acres with 2:1 ratio and 0.05 acres at 1:1 |
| Riparian Wetland Restoration | 0.01 | Close Out | U-3109A mod | 200220667 | Impacts were 0.01 acres with 1:1 ratio |



ROY COOPER
Governor

MICHAEL S. REGAN
Secretary

LINDA CULPEPPER
Interim Director

May 24, 2018

Mr. Philip S. Harris, III, P.E., CPM
Natural Environment Section Head
Project Development and Environmental Analysis
North Carolina Department of Transportation
1598 Mail Service Center
Raleigh, North Carolina, 27699-1598

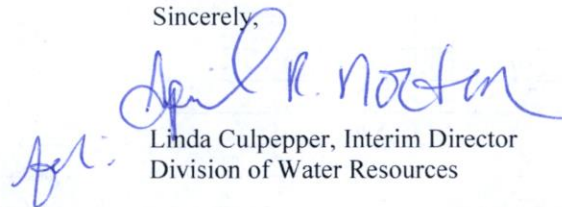
Subject: 401 Water Quality Certification Pursuant to Section 401 of the Federal Clean Water Act with ADDITIONAL CONDITIONS for the proposed relocation of NC 119 from Interstate 40/85 to north of SR 1918 (Mrs. White Lane) in Mebane (Mebane Bypass), Alamance County; Federal Aid Project No. STP-119(1); TIP U-3109A&B. NCDWR Project No. 20170239 v.2

Dear Mr. Harris:

Attached hereto is a modification of Certification No. WQ004111 issued to The North Carolina Department of Transportation (NCDOT) dated March 24, 2017.

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

Sincerely,

A handwritten signature in blue ink, appearing to read 'April R. Norton', is written over the typed name 'Linda Culpepper, Interim Director, Division of Water Resources'.

Electronic copy only distribution:

Dave Bailey, US Army Corps of Engineers, Raleigh Field Office
Jerry Parker, Division 7 Environmental Officer
Carla Dagnino, NC Department of Transportation
Gary Jordan, US Fish and Wildlife Service
Travis Wilson, NC Wildlife Resources Commission
Beth Harmon, Division of Mitigation Services
April Norton, NC Division of Water Resources
File Copy



State of North Carolina | Environmental Quality

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Governor

MICHAEL S. REGAN
Secretary

LINDA CULPEPPER
Interim Director

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

THIS 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 authorizes the NCDOT to impact 0.39 acres (Section A) and 0.37 acres (Section B) of jurisdictional wetlands; and, 5,387 linear feet (Section A) and 737 linear feet (Section B) of jurisdictional streams; and 0.32 acres of open water impacts in Alamance County. The project shall be constructed pursuant to the application dated May 4, 2018. The authorized impacts are as described below:

Stream Impacts in the Cape Fear River Basin for U-3109A

| Site | Temporary Fill in Perennial Stream (linear ft.) | Permanent Fill in Perennial Stream (linear ft.) | | Temporary Fill in Intermittent Stream (linear ft.) | Permanent Fill in Intermittent Stream (linear ft.) | Total Stream Impact (linear ft.) | Stream Impacts Requiring Mitigation (linear ft.) |
|---------------|---|---|--------------------|--|--|----------------------------------|--|
| | | Fill | Bank Stabilization | | | | |
| 1 | 16 | 117 | - | - | 235 | 368 | - |
| 2 | - | - | - | 17 | 348 | 365 | - |
| 3 | 10 | 320 | - | - | - | 330 | 320 |
| 5 | - | - | - | 16 | - | 16 | - |
| 6 | - | - | - | 35 | 257 | 292 | - |
| 7 | 52 | 501 | 63 | - | - | 616 | 564 |
| 7a | - | - | - | 20 | 18 | 38 | - |
| 8a | 19 | 463 | - | - | - | 482 | 463 |
| 8b | 21 | 82 | - | - | - | 103 | - |
| 10 | 25 | 396 | - | - | - | 421 | 396 |
| 10a | - | 74 | - | - | - | 74 | - |
| 11 | 25 | 270 | - | - | - | 295 | 270 |
| 12b | 7 | 105 | - | - | - | 112 | - |
| 12c | 13 | - | - | - | - | 13 | - |
| 13 | 21 | 183 | - | - | - | 204 | 183 |
| 14 | 19 | - | - | - | - | 19 | - |
| 15 | 44 | 447 | - | - | - | 491 | 447 |
| 16 | 32 | 494 | - | - | - | 526 | 494 |
| 17 | - | - | 35 | - | - | 35 | 35* |
| 18 | 45 | 122 | 69 | - | - | 236 | 191 |
| 20 | 24 | 327 | - | - | - | 351 | 327 |
| Totals | 373 | 3,901 | 167 | 88 | 858 | 5,387 | 3,690 |

Note: *Stream at Site 17 is the same stream in Section B (Site 1) of which impacts (all totaled) exceed mitigation thresholds.

Total Stream Impact for Project: 5,387 linear feet.



State of North Carolina | Environmental Quality

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Wetland Impacts in the Cape Fear River Basin (Riparian) U-3109A

| Site | Fill (ac) | Fill (temporary) (ac) | Excavation (ac) | Mechanized Clearing (ac) | Hand Clearing (ac) | Total Wetland Impact (ac) |
|---------------|-------------|-----------------------|-----------------|--------------------------|--------------------|---------------------------|
| 9 | <0.01 | - | - | 0.01 | - | <0.02 |
| 12 | 0.08 | - | - | - | - | 0.08 |
| 12a | 0.03 | - | - | - | - | 0.03 |
| 13 | 0.07 | - | - | 0.01 | - | 0.08 |
| 19 | 0.05 | - | - | 0.01 | - | 0.06 |
| 20 | 0.05 | - | 0.02 | 0.06 | - | 0.13 |
| Totals | 0.28 | - | 0.02 | 0.09 | - | 0.39 |

Total Wetland Impact for Project: 0.39 acres.

Open Water (Ponds) Impacts in the Cape Fear River Basin for U-3109A

| Site | Permanent Fill in Open Waters (ac) | Temporary Fill in Open Waters (ac) | Total Fill in Open Waters (ac) |
|--------------|------------------------------------|------------------------------------|--------------------------------|
| 4 | 0.10 | - | 0.10 |
| 12 | 0.13 | - | 0.13 |
| 13 | 0.09 | - | 0.09 |
| Total | 0.32 | - | 0.32 |

Total Open Water Impact for Project: 0.32 acres.

Final Stream Impacts in the Cape Fear River Basin for U-3109B

| Site | Temporary Fill in Perennial Stream (linear ft.) | Permanent Fill in Perennial Stream (linear ft.) | | Permanent Fill in Intermittent Stream (linear ft.) | | Temporary Fill in Intermittent Stream (linear ft.) | Total Stream Impact (linear ft.) | Stream Impacts Requiring Mitigation (linear ft.) |
|---------------|---|---|---------------|--|---------------|--|----------------------------------|--|
| | | Fill | Stabilization | Fill | Stabilization | | | |
| 1 | 50 | 120 | 78 | - | - | - | 248 | - |
| 2 | - | - | 22 | - | - | - | 22 | - |
| 3 | - | - | - | 268 | 42 | 20 | 330 | - |
| 4-5 | - | - | - | 127 | - | 10 | 137 | - |
| Totals | 50 | 120 | 100 | 395 | 42 | 30 | 737 | - |

Total Stream Impact for Project: 737 linear feet.



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Secretary

LINDA CULPEPPER
Interim Director

Final Wetland Impacts in the Cape Fear River Basin (Riparian) U-3109B

| Site | Fill (ac) | Fill (temporary) (ac) | Excavation (ac) | Mechanized Clearing (ac) | Hand Clearing (ac) | Total Wetland Impact (ac) |
|---------------|-------------|-----------------------|-----------------|--------------------------|--------------------|---------------------------|
| 4-5 | <0.01 | - | <0.01 | <0.01 | - | 0.02 |
| 6 | 0.06 | - | <0.01 | 0.01 | - | 0.08 |
| 7 | 0.17 | - | <0.01 | 0.02 | - | 0.20 |
| Totals | 0.23 | - | <0.01 | 0.04 | - | 0.27 |

Total Wetland Impact for Project: 0.27 acres.

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

This approval is only valid for the purpose and design that you submitted in your modified application dated and received May 4, 2018. All the authorized activities and conditions of certification associated with the original Water Quality Certification dated March 24, 2017 still apply except where superseded by this certification. 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 300 linear feet, respectively, additional compensatory mitigation may be required as described in 15A NCAC 2H .0506 (h) (6) and (7). For this approval to remain valid, you are required to comply with all the conditions listed below. In addition, you should obtain all other federal, state or local permits before proceeding with your project including (but not limited to) Sediment and Erosion control, Coastal Stormwater, Non-discharge and Water Supply watershed regulations. This Certification shall expire on the same day as the expiration date of the corresponding Corps of Engineers Permit.



ROY COOPER
Governor

MICHAEL S. REGAN
Secretary

LINDA CULPEPPER
Interim Director

Condition(s) of Certification:

1. This modification is applicable only to the additional proposed activities. All the authorized activities and conditions of certification associated with the original Water Quality Certification dated March 24, 2017 still apply except where superseded by this certification.
2. NCDOT shall design, construct, and operate and maintain four (4) hazardous spill catch basins (HSCBs) adjacent to streams that drain to the water supply critical areas (WS CA) of Forest Lake and Graham-Mebane Reservoir. The HSCBs shall be located as shown in the Table below.

Locations of Hazardous Spill Catch Basins.

| Station | Coordinates | | Surface Water |
|-----------------|-------------|----------|------------------|
| 161+92-L-RT | 36.1028 | -79.2946 | Back Creek |
| 179+68-L-RT | 36.1058 | -79.2901 | Back Creek |
| 20+90-Y16RPA-LT | 36.1084 | -79.2838 | Back Creek |
| 32+55-Y20-LT | 36.1018 | -79.2932 | UT to Mill Creek |

3. 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 downstream 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 if a permit modification will be required. [15A NCAC 02H.0506(b)(2)]
4. For sites where multiple pipes or barrels will be utilized, 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 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)]
5. 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)]
6. For segments of 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)]
7. The stream channel 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 riparian impacts for access to the stream channel shall be temporary and be revegetated with native riparian species. [15A NCAC 02H.0506(b)(2)]
8. NCDOT shall comply with NPDES Permit NCS000250 issued to the NCDOT, including the applicable requirements of General Permit for Construction Activities - NCG010000. Please note the extra protections for sensitive watersheds where applicable.



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Interim Director

9. Erosion control measures that NCDOT employs in areas that drain to streams classified as High-Quality Waters (HQW), Water Supply (WS-II) or are listed for turbidity on the 2014 Final 303(d) List of Impaired Waters for North Carolina, shall be based on Design Standards in Sensitive Watersheds (15A NCAC 4B.0124[a]-[e]).

Off-Site Stream Mitigation

10. Compensatory mitigation for 3,690 linear feet (Section A) and 280 linear feet (Section B) of impact to streams is required. We understand that you have chosen to perform compensatory mitigation for impacts to streams through the North Carolina Division of Mitigation Service (DMS) (formerly NCEEP), and that the DMS has agreed to implement the mitigation for the project. The DMS has indicated in a letter dated February 16, 2017 that they will assume responsibility for satisfying the federal Clean Water Act compensatory mitigation requirements for the above-referenced project, in accordance with the DMS Mitigation Banking Instrument signed July 28, 2010.

Phased Projects [15A NCAC 02H. 0506(b)]

11. When final design plans are completed for U-3109 Section B, a modification to the 401 Water Quality Certification and shall be submitted with five copies and fees to the NC Division of Water Resources. Final designs shall reflect all appropriate avoidance, minimization, and mitigation for impacts to wetlands, streams, and other surface waters. No construction activities that impact any wetlands, streams, surface waters located in U-3109 Section B shall begin until after the permittee applies for, and receives a written modification of the 401 Water Quality Certification from the NC Division of Water Resources.

General Conditions

1. 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)]
2. 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]
3. During the construction of the project, no staging of equipment of any kind is permitted in waters of the U.S., or riparian areas. [15A NCAC 02H.0506(b)(2)]
4. 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)]
5. 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)]
6. The Permittee shall ensure that the final design drawings adhere to the permit and to the permit drawings submitted for approval. [15A NCAC 02H .0507(c) and 15A NCAC 02H .0506 (b)(2) and (c)(2)]
7. 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)]
8. 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)]
9. 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)]



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MICHAEL S. REGAN
Secretary

LINDA CULPEPPER
Interim Director

10. 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)]
11. Discharging hydroseed mixtures and washing out hydroseeders and other equipment in or adjacent to surface waters is prohibited. [15A NCAC 02H.0506(b)(3)]
12. 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]
13. All fill slopes located in jurisdictional wetlands shall be placed at slopes no flatter than 3:1, unless otherwise authorized by this certification. [15A NCAC 02H.0506(b)(2)]
14. A copy of this Water Quality Certification shall be maintained on the construction site always. 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)]
15. The outside buffer, wetland or water boundary located within the construction corridor approved by this authorization 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]
16. The issuance of this certification does not exempt the Permittee from complying with 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.
17. Upon completion of the project (including any impacts at associated borrow or waste sites), the NCDOT Division Engineer (or appointee) 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)]
18. Native riparian vegetation 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 02H.506(B)(3)]
19. 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 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)]
20. 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 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*.



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Interim Director

- 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.
21. Sediment and erosion control measures shall not be placed in wetlands or waters unless otherwise approved by this Certification. [15A NCAC 02H.0506(b)(3) and (c)(3)]

Violations of any condition herein set forth may result in revocation of this Certification and may result in criminal and/or civil penalties. This Certification shall become null and void unless the above conditions are made conditions of the Federal 404 and/or Coastal Area Management Act Permit. This Certification shall expire upon the expiration of the 404 or CAMA permit.

If you wish to contest any statement in the attached Certification you must file a petition for an administrative hearing. You may obtain the petition form from the office of Administrative hearings. You must file the petition with the office of Administrative Hearings within sixty (60) days of receipt of this notice. A petition is considered filed when it is received in the office of Administrative Hearings during normal office hours. The Office of Administrative Hearings accepts filings Monday through Friday between the hours of 8:00am and 5:00pm, except for official state holidays. The original and one (1) copy of the petition must be filed with the Office of Administrative Hearings.

The petition may be faxed-provided the original and one copy of the document is received by the Office of Administrative Hearings within five (5) business days following the faxed transmission. The mailing address for the Office of Administrative Hearings is:

Office of Administrative Hearings
6714 Mail Service Center
Raleigh, NC 27699-6714
Telephone: (919) 431-3000, Facsimile: (919) 431-3100

A copy of the petition must also be served on DEQ as follows:

Mr. Bill F. Lane, General Counsel
Department of Environmental Quality
1601 Mail Service Center

This letter completes the review of the Division of Water Resources under Section 401 of the Clean Water Act. If you have any questions, please contact April Norton at (919) 707-9111 or April.Norton@ncdenr.gov.

The 24th day of May 2018
DIVISION OF WATER RESOURCES

WQC No. WQ004111

Linda Culpepper, Interim Director



ROY COOPER
Governor

MICHAEL S. REGAN
Secretary

LINDA CULPEPPER
Interim Director

NCDWR Project No.: _____ County: _____

Applicant: _____

Project Name: _____

Date of Issuance of 401 Water Quality Certification: _____

Certificate of Completion

Upon completion of all work approved within the 401 Water Quality Certification or applicable Buffer Rules, and any subsequent modifications, the applicant is required to return this certificate to the 401 Transportation Permitting Unit, North Carolina Division of Water Resources, 1617 Mail Service Center, Raleigh, NC, 27699-1617. This form may be returned to NCDWR by the applicant, the applicant's authorized agent, or the project engineer. It is not necessary to send certificates from all of these.

Applicant's Certification

I, _____, hereby state that, to the best of my abilities, due care and diligence was used in the observation of the construction such that the construction was observed to be built within substantial compliance and intent of the 401 Water Quality Certification and Buffer Rules, the approved plans and specifications, and other supporting materials.

Signature: _____ Date: _____

Agent's Certification

I, _____, hereby state that, to the best of my abilities, due care and diligence was used in the observation of the construction such that the construction was observed to be built within substantial compliance and intent of the 401 Water Quality Certification and Buffer Rules, the approved plans and specifications, and other supporting materials.

Signature: _____ Date: _____

Engineer's Certification

_____ Partial _____ Final

I, _____, as a duly registered Professional Engineer in the State of North Carolina, having been authorized to observe (periodically, weekly, full time) the construction of the project for the Permittee hereby state that, to the best of my abilities, due care and diligence was used in the observation of the construction such that the construction was observed to be built within substantial compliance and intent of the 401 Water Quality Certification and Buffer Rules, the approved plans and specifications, and other supporting materials.

Signature _____ Registration No. _____

Date _____

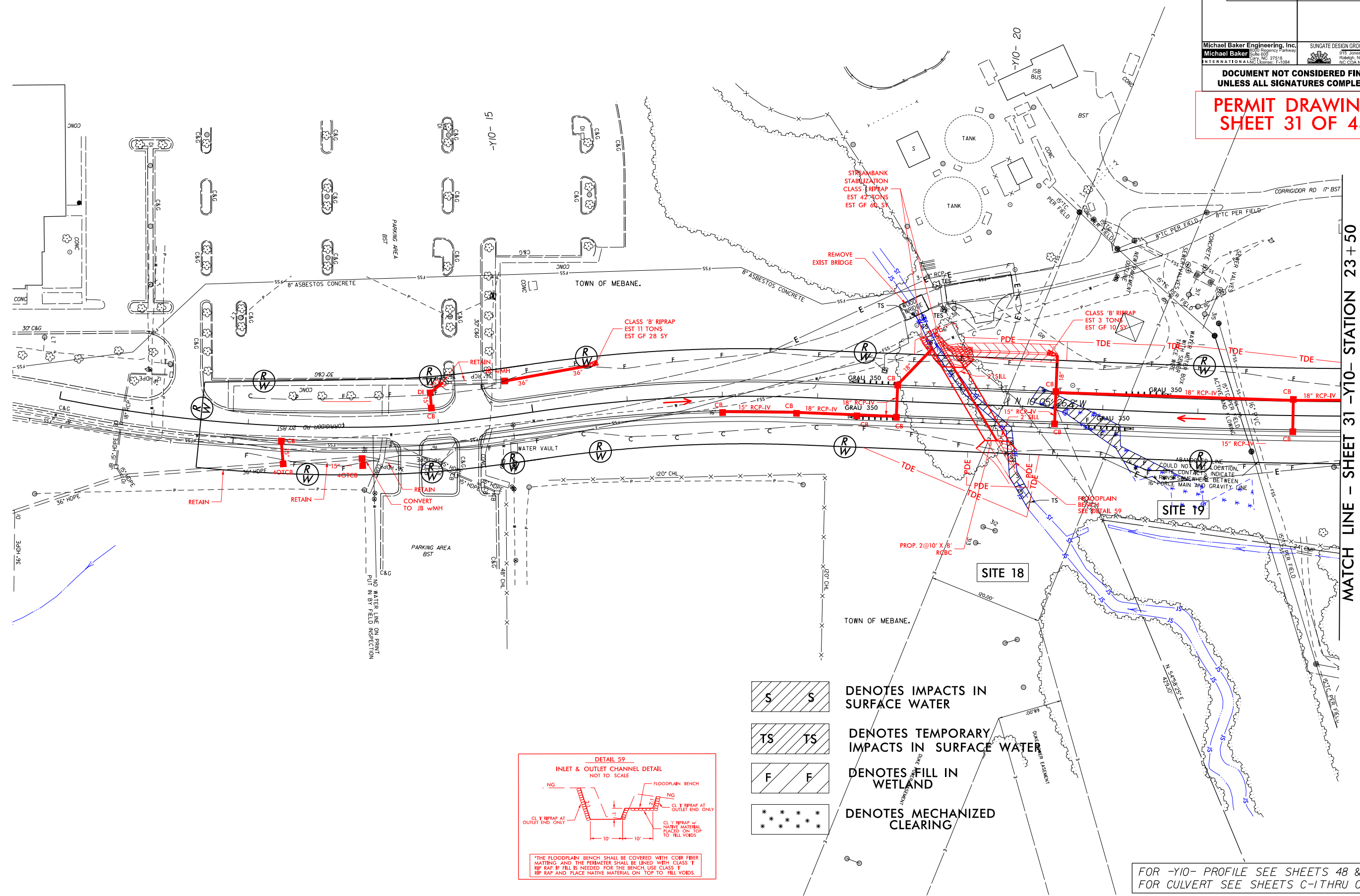
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| | |
|--|---|
| PROJECT REFERENCE NO. U-3109A | SHEET NO. 30 |
| RW SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
| PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION | |
| Michael Baker Engineering, Inc. 1500 Regency Parkway Raleigh, NC 27608 Licenses: T-1084 | SUNGATE DESIGN GROUP, P.A. 915 Jones Franklin Road Raleigh, NC 27608 NC CCA No. C-2899 |

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

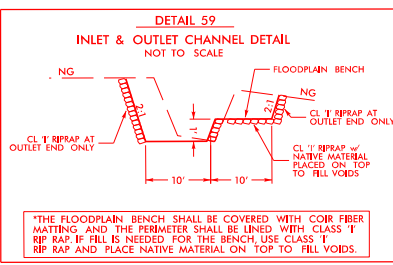
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SHEET 31 OF 43

NAD 83/95



REVISIONS

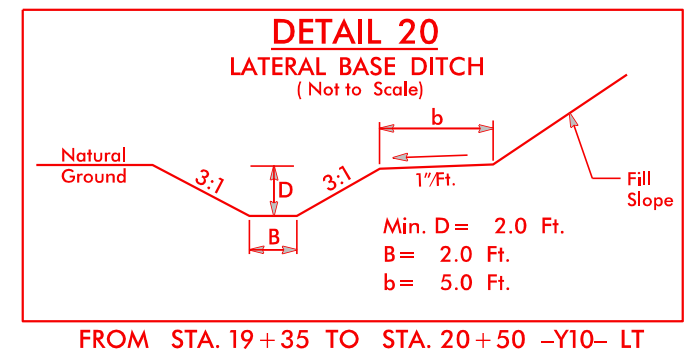
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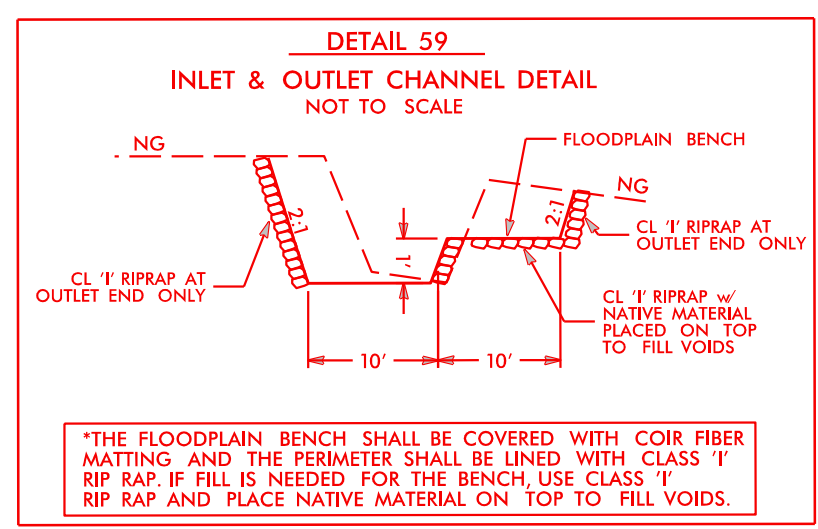
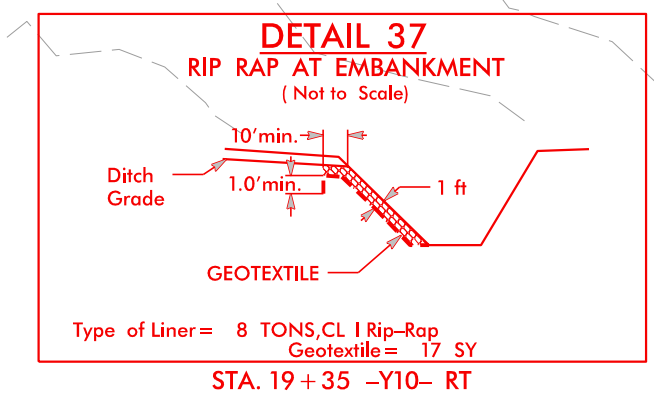
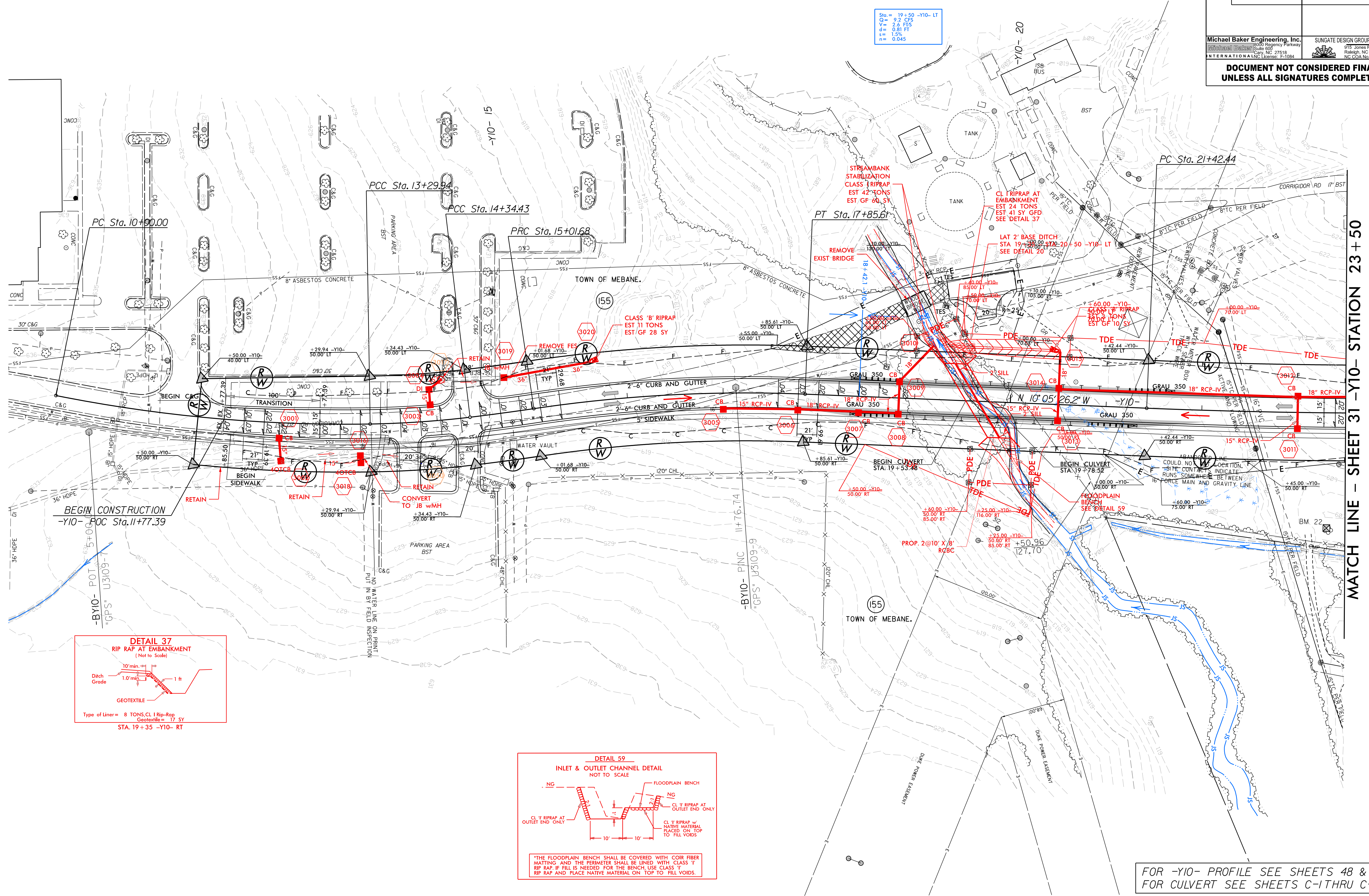
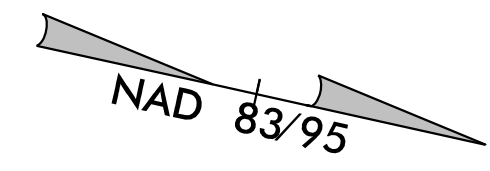
- DENOTES IMPACTS IN SURFACE WATER
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER
- DENOTES FILL IN WETLAND
- DENOTES MECHANIZED CLEARING

FOR -Y10- PROFILE SEE SHEETS 48 & 49
FOR CULVERT SEE SHEETS C-1 THRU C-15

| | |
|--|---|
| PROJECT REFERENCE NO. U-3109A | SHEET NO. 30 |
| RW SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
| PRELIMINARY PLANS PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION | |
| Michael Baker Engineering, Inc. 10000 Regency Parkway Suite 200 Raleigh, NC 27608 INTERNATIONAL LIC. License: F-1084 | SUNGATE DESIGN GROUP, P.A. 915 Jones Franklin Road Raleigh, NC 27608 NC COA No. C-0890 |
| DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED | |



Sta. = 19+50 -Y10- LT
Q = 9.2 CFS
V = 2.6 FPS
d = 0.81 FT
s = 1.5%
n = 0.045



FOR -Y10- PROFILE SEE SHEETS 48 & 49
FOR CULVERT SEE SHEETS C-1 THRU C-15

REVISIONS

8/17/99

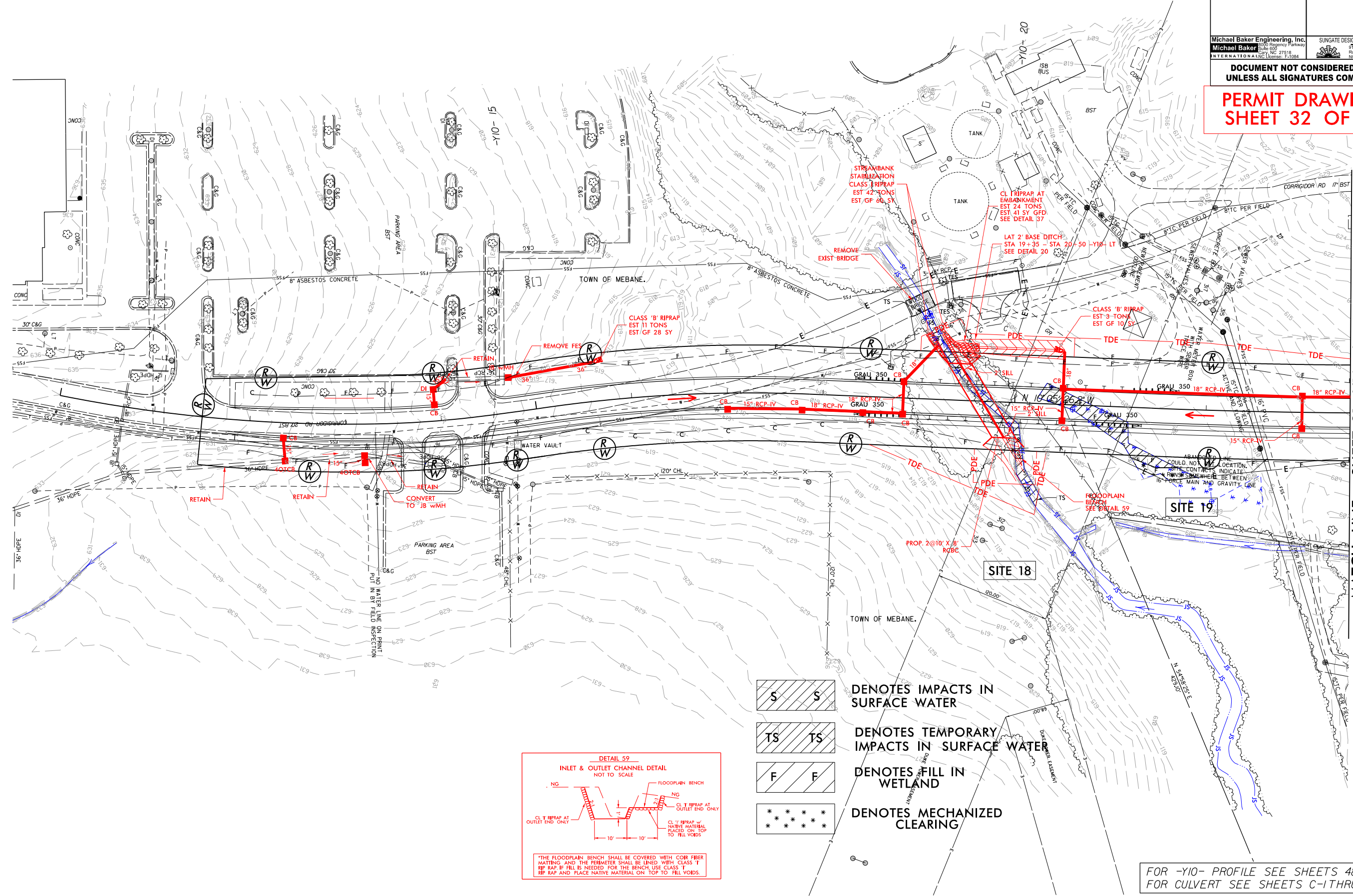
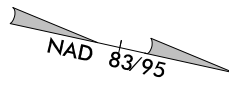
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11/13/08

MATCH LINE - SHEET 31 -Y10- STATION 23+50

| | |
|---|---|
| PROJECT REFERENCE NO. <i>U-3109A</i> | SHEET NO. 30 |
| RW SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
| PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION | |
| Michael Baker Engineering, Inc. 10100 Regency Parkway Raleigh, NC 27619 INTERNATIONAL LIC. License: F-1084 | SUNGATE DESIGN GROUP, P.A. 915 Jones Franklin Road Raleigh, NC 27608 NC CCA No. C-0890 |

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

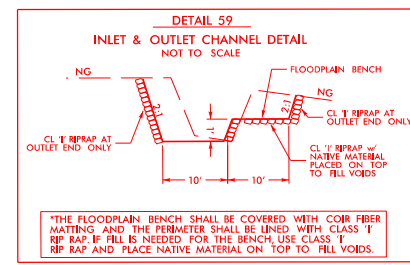
PERMIT DRAWING SHEET 32 OF 43



REVISIONS

MATCH LINE - SHEET 31 -Y10- STATION 23+50

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- DENOTES TEMPORARY IMPACTS IN SURFACE WATER
- DENOTES FILL IN WETLAND
- DENOTES MECHANIZED CLEARING

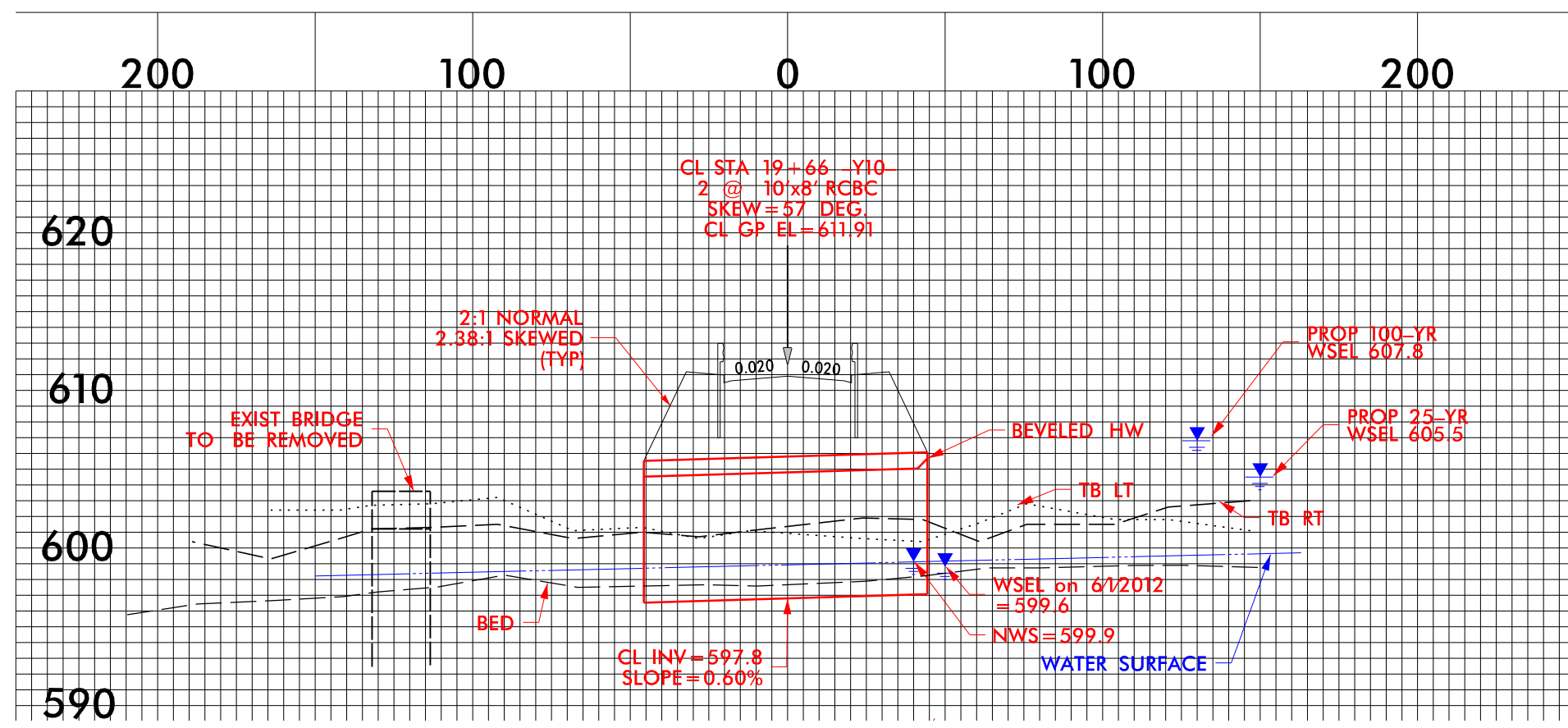


FOR -Y10- PROFILE SEE SHEETS 48 & 49
FOR CULVERT SEE SHEETS C-1 THRU C-15

| | |
|---|---------------------|
| PROJECT REFERENCE NO. | SHEET NO. |
| RW SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
| INCOMPLETE PLANS DO NOT USE FOR ACQUISITION | |
| PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION | |

PERMIT DRAWING
SHEET 33 OF 43

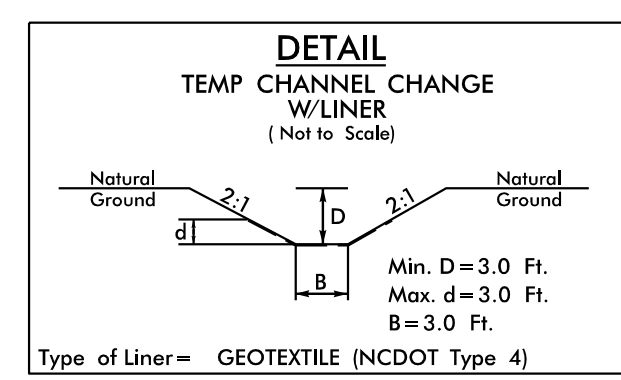
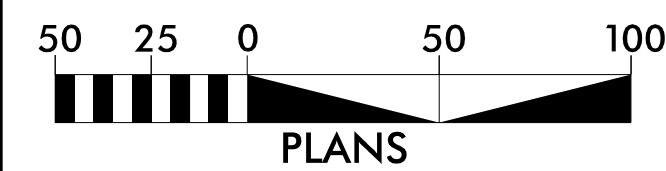
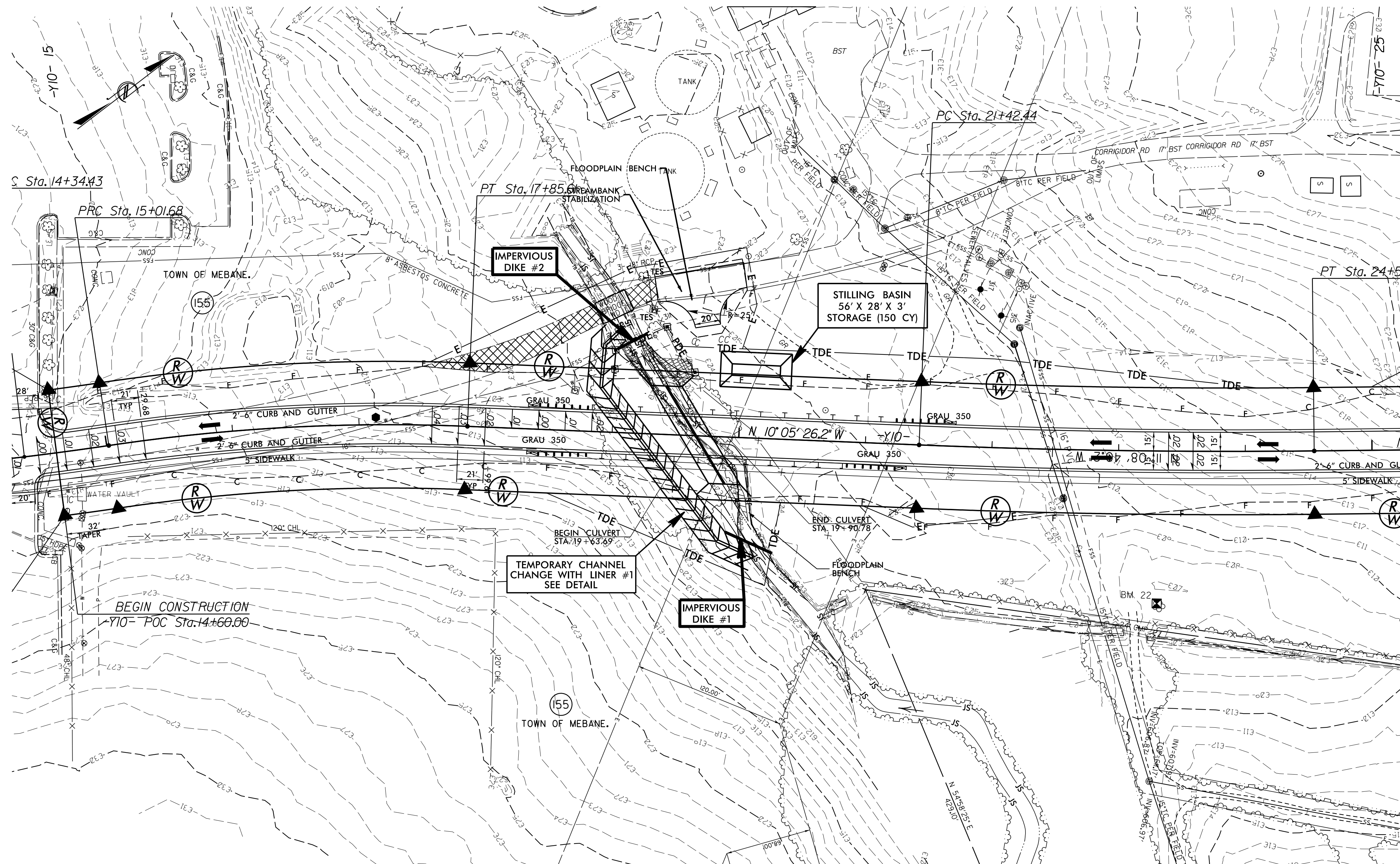
SITE 18



2@10'X8' CONSTRUCTION SEQUENCE STA. 19+77 -Y10- McADAMS CREEK

| | |
|-------------------------|---------------------|
| PROJECT REFERENCE NO. | SHEET NO. |
| U-3109A | EC-30A/CONST.30 |
| RW SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

- 1.) CONSTRUCT STILLING BASIN (MIN. CAPACITY=150 CY).
- 2.) CONSTRUCT TEMPORARY CHANNEL CHANGE #1 WITH LINER. (SEE DETAIL)
- 3.) INSTALL IMPERVIOUS DIKES #1, #2 AND DIVERT FLOW THROUGH TEMPORARY CHANNEL #1.
- 4.) DEWATER CONSTRUCTION AREA, UTILIZING STILLING BASIN FOR PUMPED EFFLUENT.
- 5.) CONSTRUCT PROPOSED 2@10'X8' RCBC, WING WALLS, FLOOD PLAIN BENCHES AND BANK STABILIZATION IN ACCORDANCE WITH THE PLANS.
- 6.) REMOVE IMPERVIOUS DIKES #1 AND #2, TEMPORARY CHANNEL AND DIRECT FLOW THROUGH CULVERT.
- 7.) REMOVE STILLING BASIN.
- 8.) COMPLETE ROADWAY.

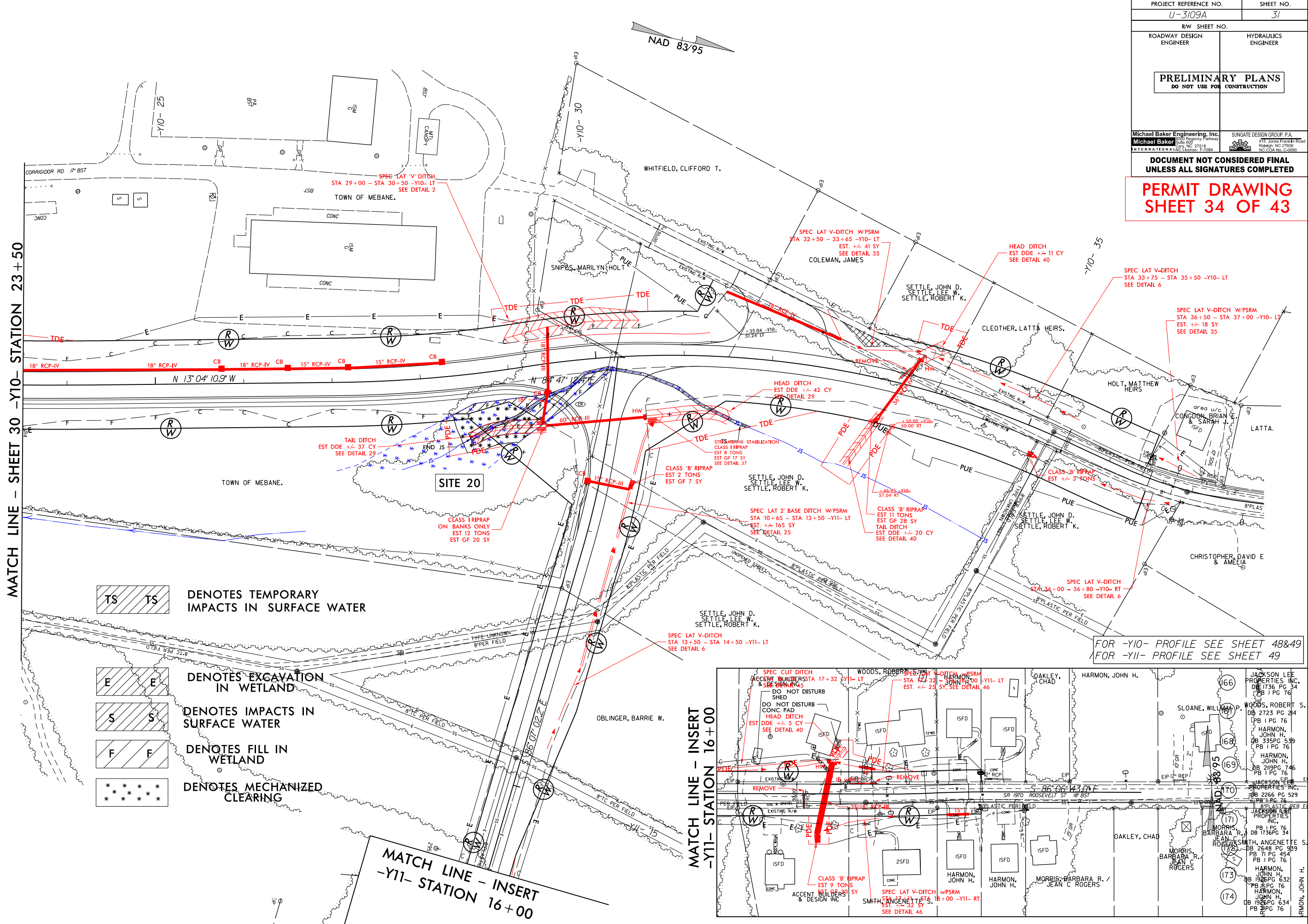


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|--|---|
| PROJECT REFERENCE NO. | SHEET NO. |
| U-3109A | 31 |
| RW SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
| PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION | |
| Michael Baker Engineering, Inc. 1000 Regency Parkway Suite 600 Raleigh, NC 27609 Tel: 919-875-0000 Fax: 919-875-0001 INTERNATIONAL LICENSE: T-1084 | SUNGATE DESIGN GROUP, P.A. 915 Jones Franklin Road Raleigh, NC 27609 Tel: 919-875-0000 Fax: 919-875-0001 NC CCA No. C-2890 |
| DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED | |

PERMIT DRAWING
SHEET 34 OF 43



MATCH LINE - SHEET 30 -Y10- STATION 23+50

MATCH LINE - INSERT -Y11- STATION 16+00

MATCH LINE - INSERT -Y11- STATION 16+00

- DENOTES TEMPORARY IMPACTS IN SURFACE WATER
- DENOTES EXCAVATION IN WETLAND
- DENOTES IMPACTS IN SURFACE WATER
- DENOTES FILL IN WETLAND
- DENOTES MECHANIZED CLEARING

FOR -Y10- PROFILE SEE SHEET 48&49
FOR -Y11- PROFILE SEE SHEET 49

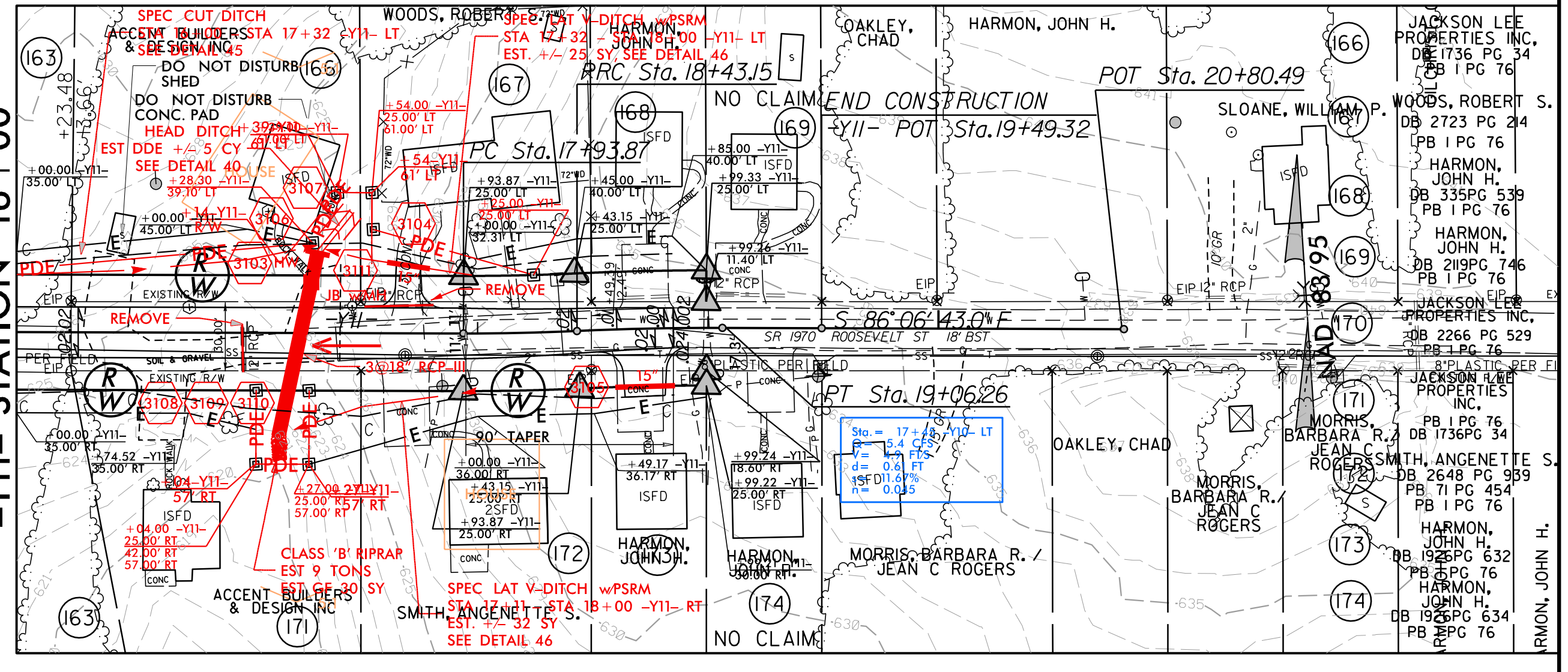
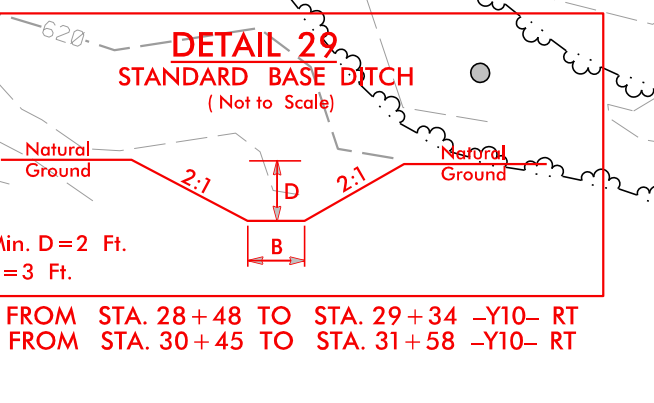
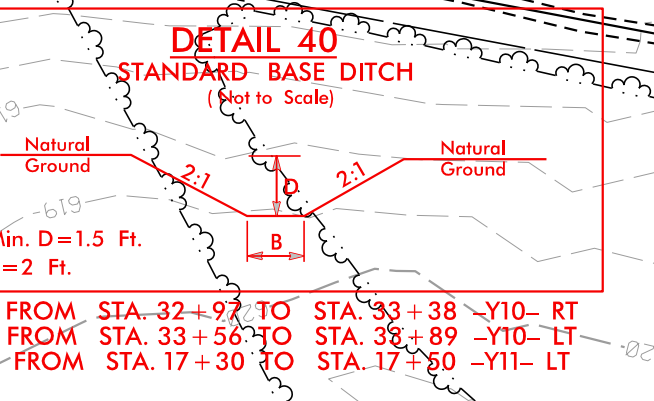
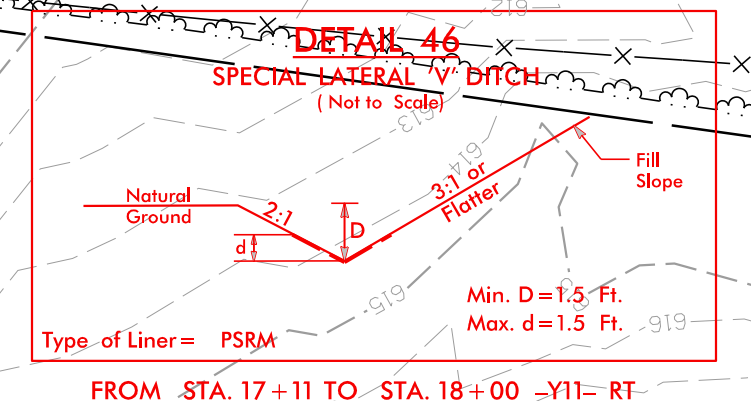
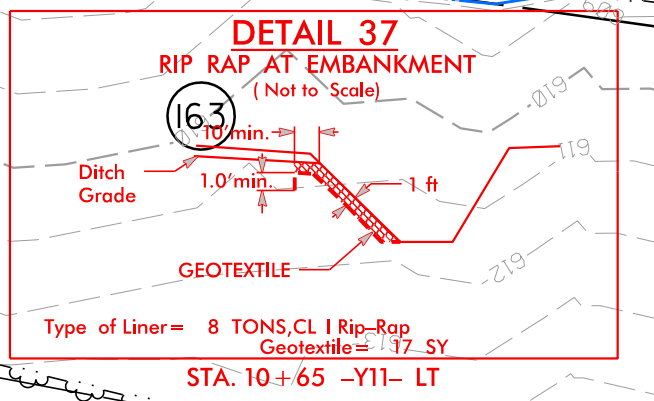
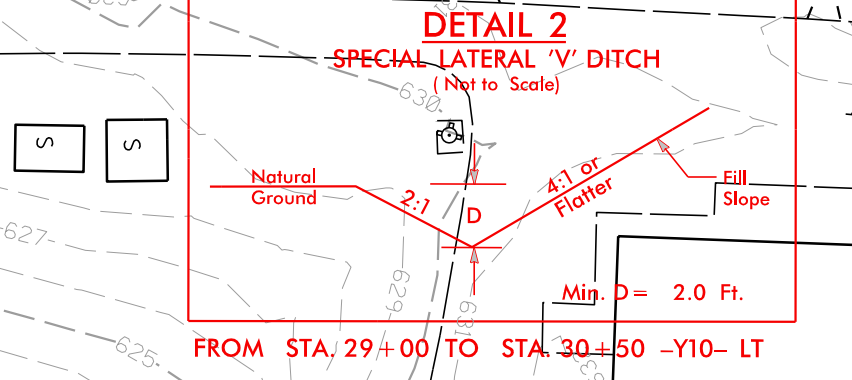
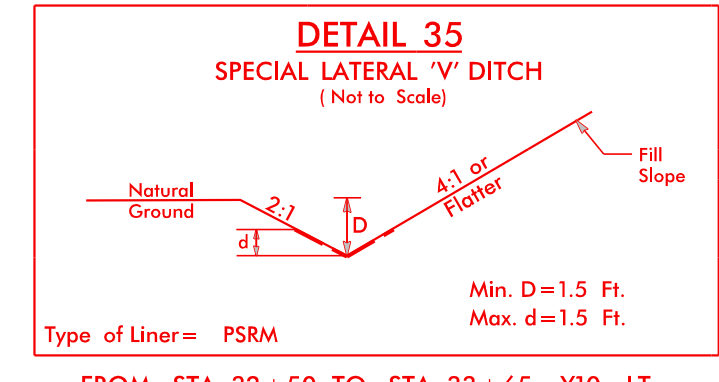
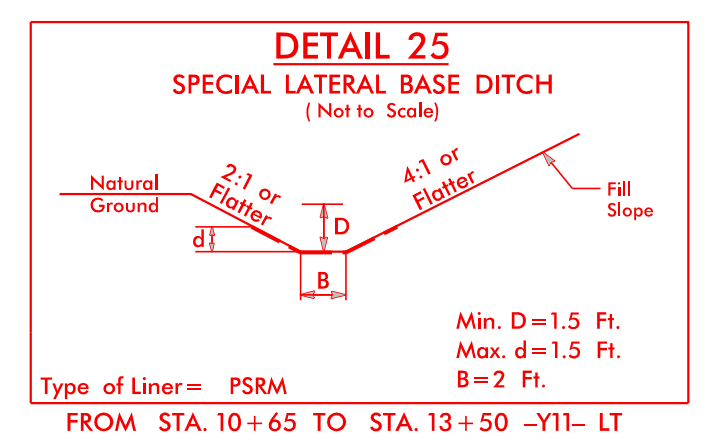
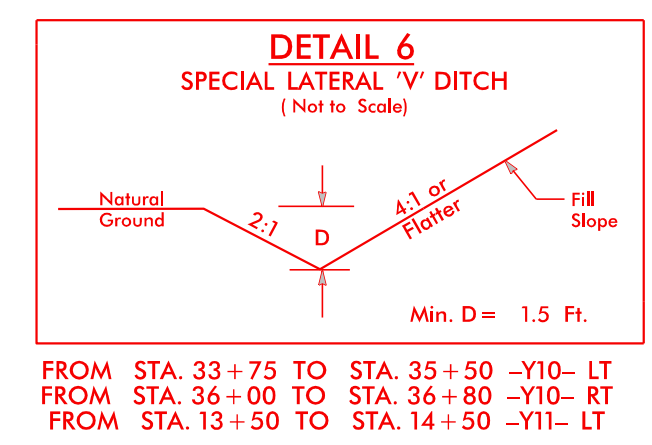
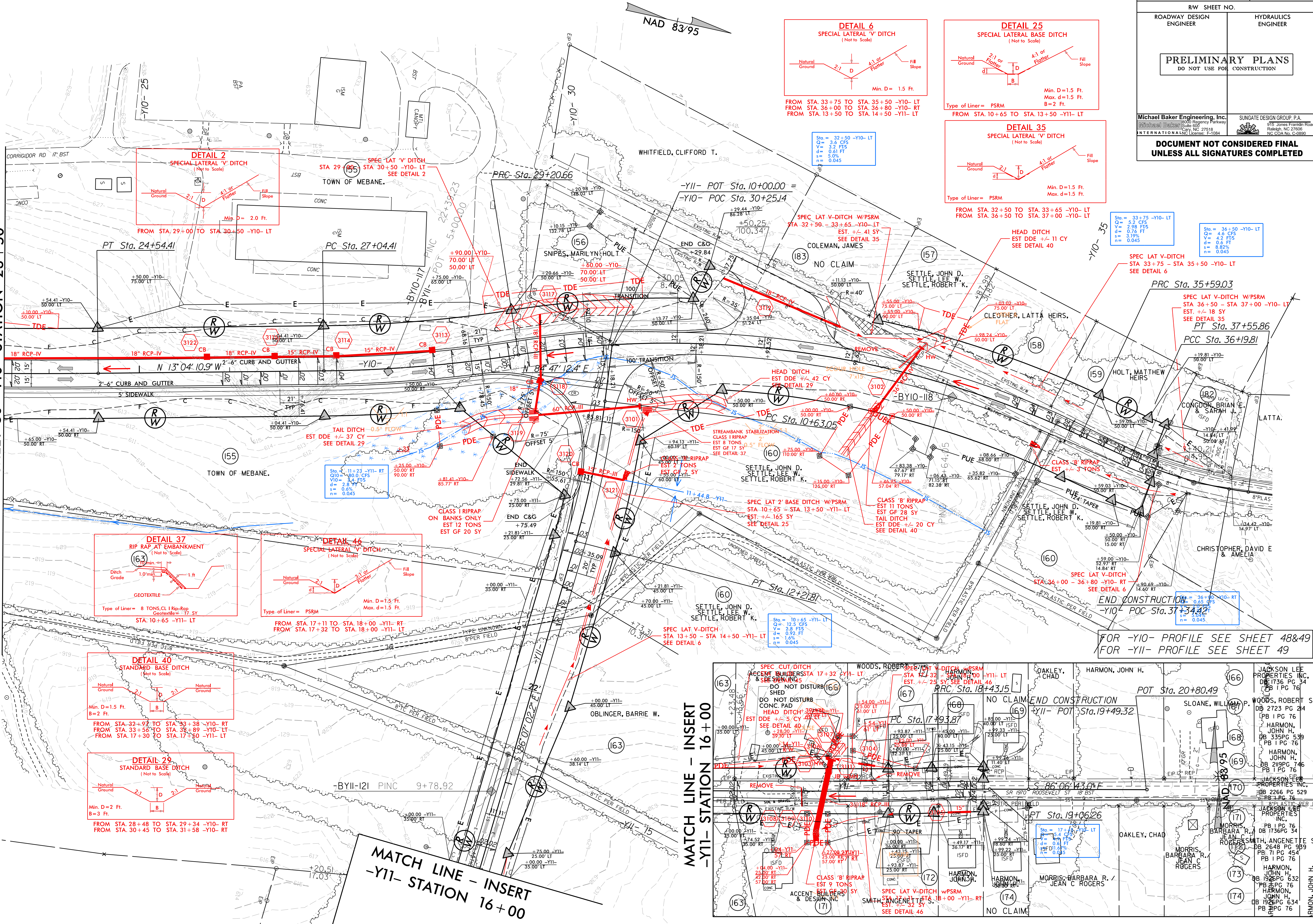
REVISIONS

| | |
|---|---|
| PROJECT REFERENCE NO. U-3109A | SHEET NO. 31 |
| RW SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
| PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION | |
| Michael Baker Engineering, Inc. 1000 Gregory Parkway Suite 200 Raleigh, NC 27608 INTERNATIONAL LIC. License: F-1084 | SUNGATE DESIGN GROUP, P.A. 915 Jones Franklin Road Raleigh, NC 27608 NC COA No. C-0890 |
| DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED | |

REVISIONS

MATCH LINE - SHEET 30 -Y10- STATION 23+50

NAD 83/95



FOR -Y10- PROFILE SEE SHEET 48&49
FOR -Y11- PROFILE SEE SHEET 49

5/14/99

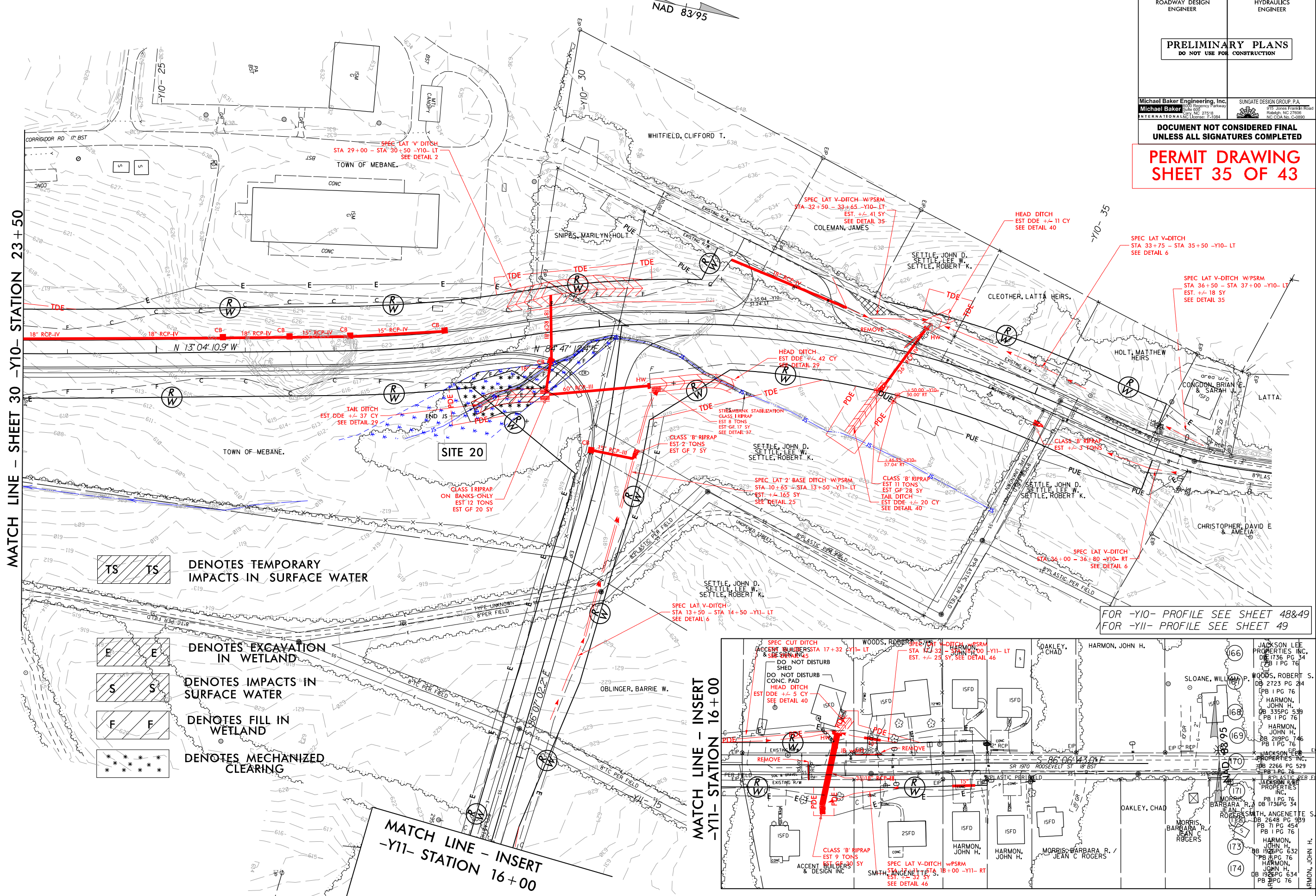
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|--|--|
| PROJECT REFERENCE NO. U-3109A | SHEET NO. 31 |
| RW SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
| PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION | |
| Michael Baker Engineering, Inc. 1000 Regency Parkway Raleigh, NC 27609 Licenses: T-1084 | SUNGATE DESIGN GROUP, P.A. 915 Jones Franklin Road Raleigh, NC 27609 Licenses: T-1084 |

**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

**PERMIT DRAWING
SHEET 35 OF 43**

MATCH LINE - SHEET 30 -Y10- STATION 23+50

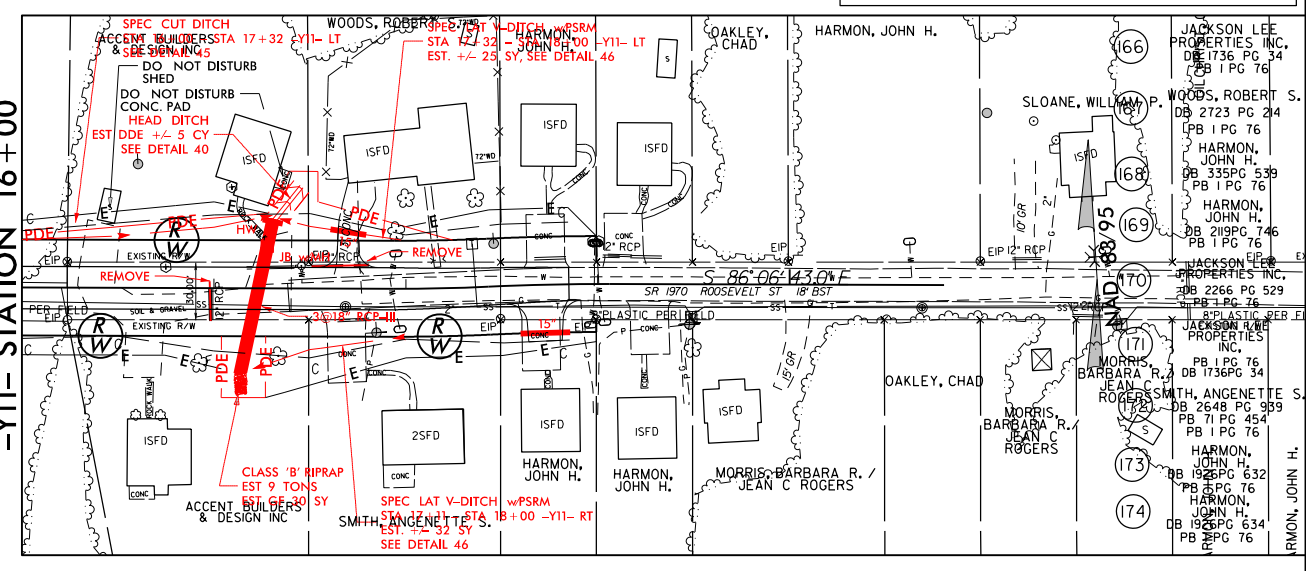
MATCH LINE - INSERT
-Y11- STATION 16+00



- DENOTES TEMPORARY IMPACTS IN SURFACE WATER
- DENOTES EXCAVATION IN WETLAND
- DENOTES IMPACTS IN SURFACE WATER
- DENOTES FILL IN WETLAND
- DENOTES MECHANIZED CLEARING

MATCH LINE - INSERT
-Y11- STATION 16+00

FOR -Y10- PROFILE SEE SHEET 48&49
FOR -Y11- PROFILE SEE SHEET 49



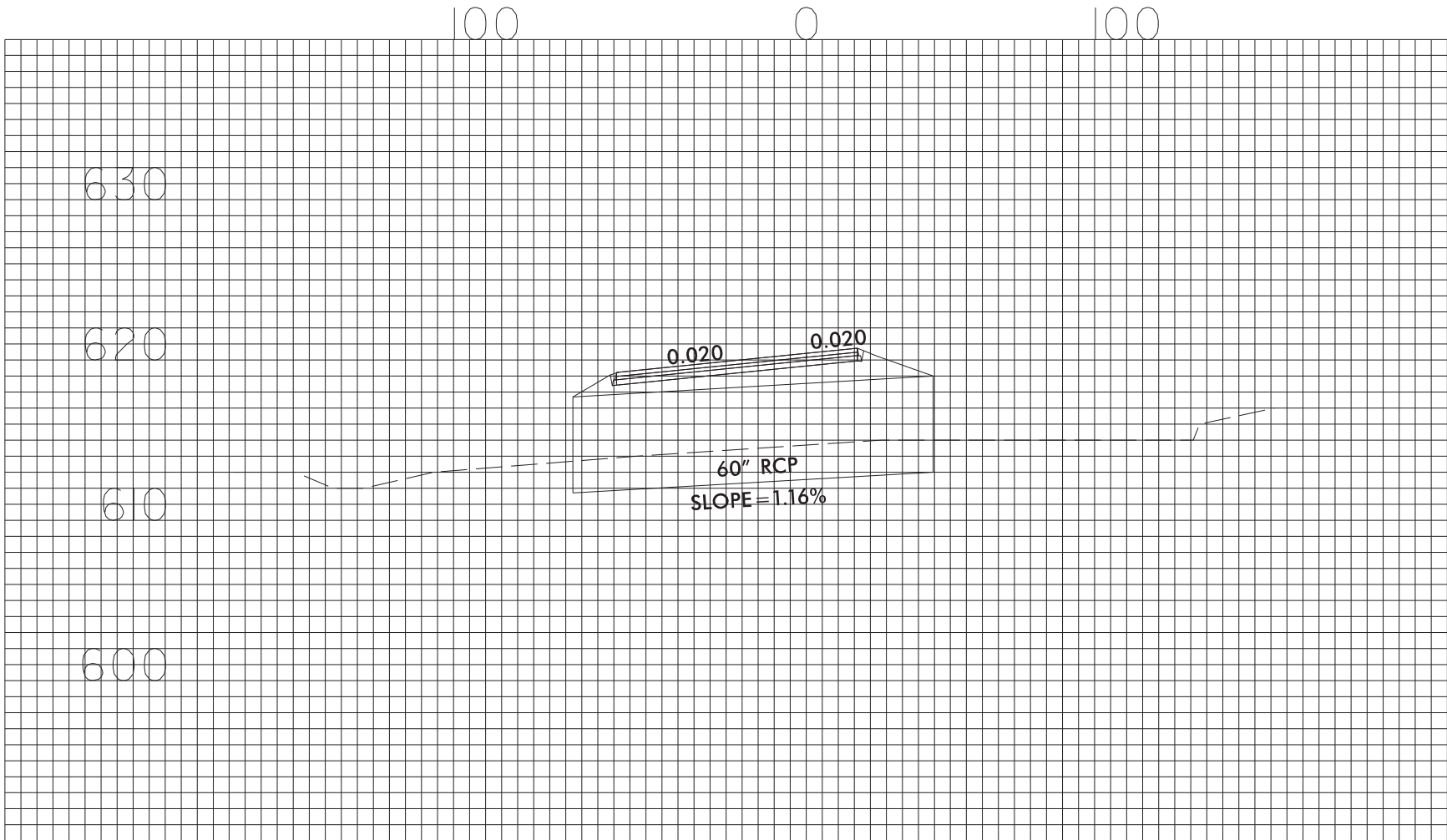
REVISIONS

U3109A_010-prm_wet_psh_31_con.dgn

REVISIONS

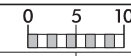
| | |
|---|---------------------|
| PROJECT REFERENCE NO. | SHEET NO. |
| RW SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
| INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION | |
| PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION | |

SITE 20



PERMIT DRAWING
SHEET 36 OF 43

8/23/99

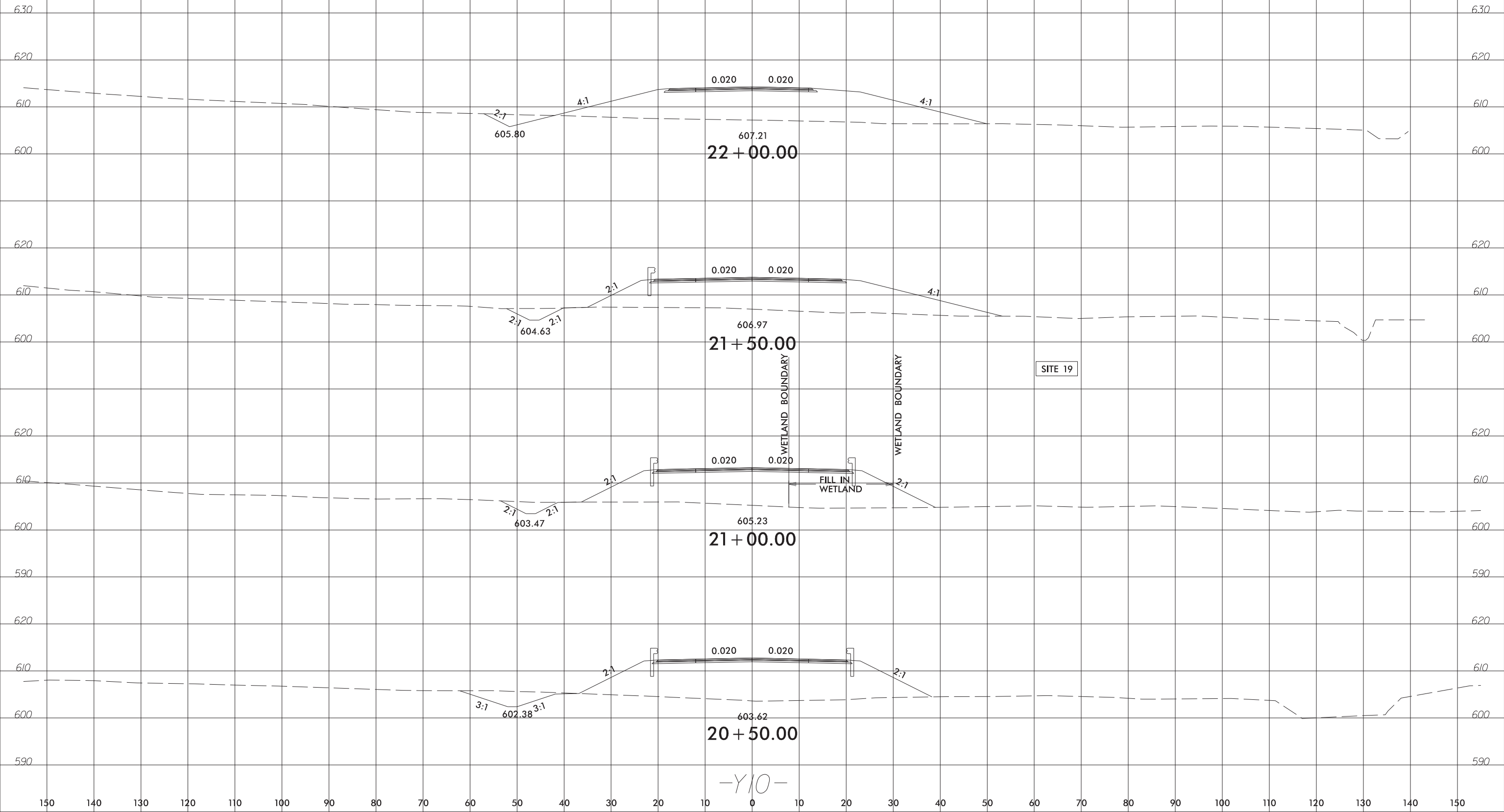


PROJ. REFERENCE NO.
U-3109A

SHEET NO.
X-175

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

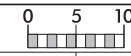
**PERMIT DRAWING
SHEET 40 OF 43**



2/29/2016
U3109A_Hyd_prm_wet_xpl_Y10_175.dgn
jharvey

-Y10-

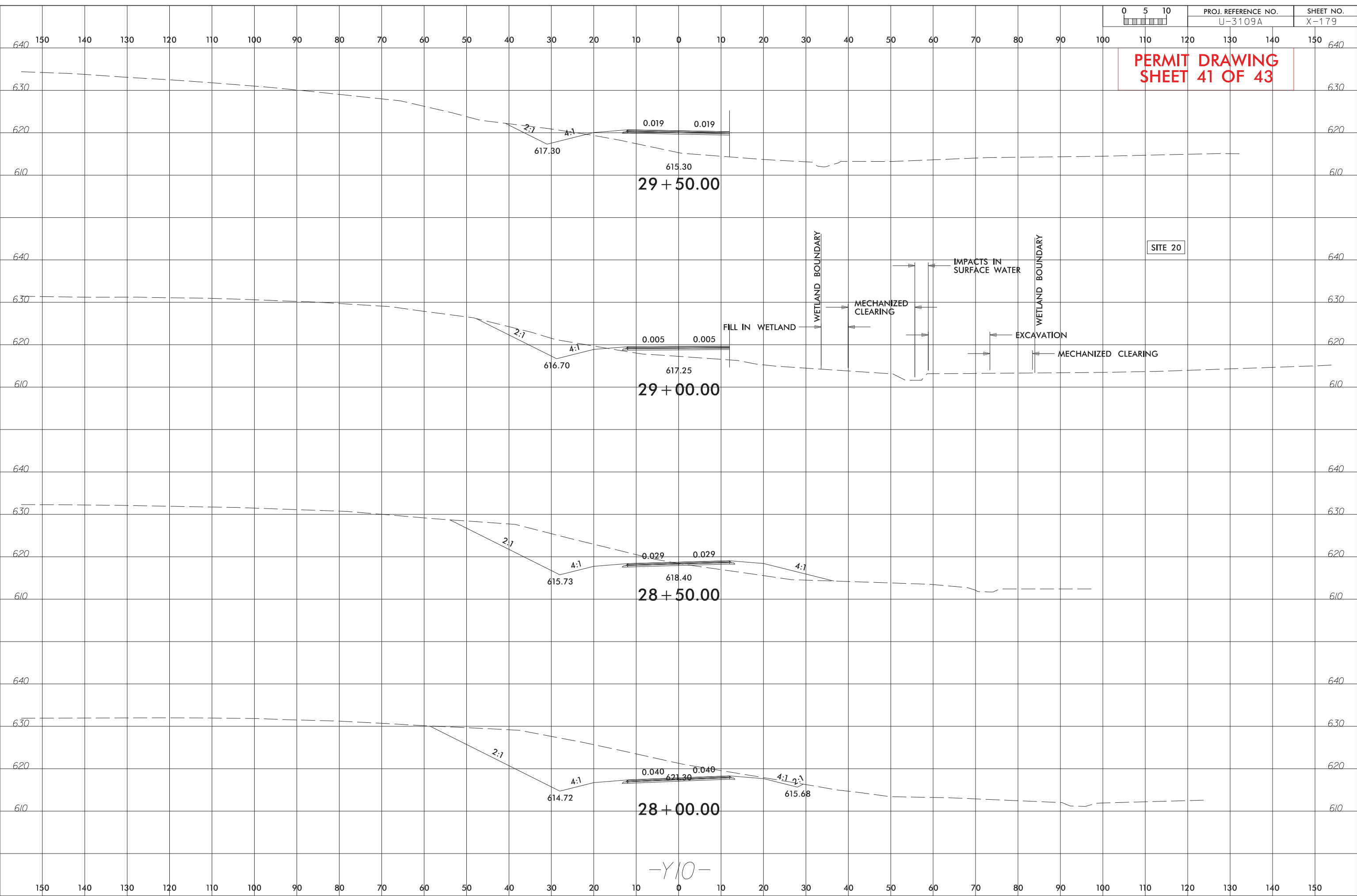
8/23/99



PROJ. REFERENCE NO.
U-3109A

SHEET NO.
X-179

**PERMIT DRAWING
SHEET 41 OF 43**



SITE 20

29 + 50.00

29 + 00.00

28 + 50.00

28 + 00.00

-Y10-

2/29/2016
U3109A_Hyd_prm_wet_xpl_Y10_179.dgn
jharvey

WETLAND PERMIT IMPACT SUMMARY

| Site No. | Station (From/To) | Structure Size / Type | WETLAND IMPACTS | | | | | SURFACE WATER IMPACTS | | | | |
|---------------|----------------------|--------------------------|---------------------------------|-----------------------------|-----------------------------|--------------------------------------|--------------------------------|---------------------------|-----------------------|---|-------------------------------------|----------------------------|
| | | | Permanent Fill In Wetlands (ac) | Temp. Fill In Wetlands (ac) | Excavation in Wetlands (ac) | Mechanized Clearing in Wetlands (ac) | Hand Clearing in Wetlands (ac) | Permanent SW impacts (ac) | Temp. SW impacts (ac) | Existing Channel Impacts Permanent (ft) | Existing Channel Impacts Temp. (ft) | Natural Stream Design (ft) |
| 1 | 63+59-65+75 -L- | 48" RCP | | | | | | 0.03 | | 235 | | |
| | | 48" RCP | | | | | | 0.01 | < 0.01 | 117 | 16 | |
| 2 | 69+92-70+95 -L- | 54" RCP | | | | | | 0.04 | < 0.01 | 348 | 17 | |
| 3 | 11+61 -Y7A- | 66" RCP | | | | | | 0.04 | < 0.01 | 320 | 10 | |
| 4 | 78+10-79+64 -L-LT | ROAD FILL | | | | | | 0.10 | | | | |
| 5 | 78+25 -L- RT | 3 AT 30" RCP | | | | | | | < 0.01 | | 16 | |
| 6 | 85+02-86+67 -L- | 54" RCP | | | | | | 0.02 | < 0.01 | 257 | 35 | |
| 7 | 93+65-97+92 -L- | 3 @ 11'x9' RCBC | | | | | | 0.15 | 0.02 | 501 | 52 | |
| | | STREAMBANK STABILIZATION | | | | | | 0.02 | | 63 | | |
| 7A | 94+25 -L- RT | CHANNEL REALIGNMENT | | | | | | < 0.01 | < 0.01 | 18 | 20 | |
| 8A | 108+00-111+82 -L- | 48" RCP | | | | | | 0.04 | < 0.01 | 463 | 19 | |
| 8B | 110+64-111+10 -L- RT | 48" RCP | | | | | | < 0.01 | < 0.01 | 82 | 21 | |
| 9 | 113+72-114+35 -L-RT | ROAD FILL | < 0.01 | | | 0.01 | | | | | | |
| 10 | 125+99-127+49 -L- | 72" RCP | | | | | | 0.04 | < 0.01 | 396 | 25 | |
| 10A | 127+41-127+99 -L- LT | ROAD FILL | | | | | | < 0.01 | | 74 | | |
| 11 | 133+53 -L- | 48" RCP | | | | | | 0.02 | < 0.01 | 270 | 25 | |
| 12 | 155+09-157+67 -L- | 30" RCP | 0.08 | | | | | 0.13 | | | | |
| 12A | 156+91-157+54 -L-LT | | 0.03 | | | | | | | | | |
| 12B | 157+25-157+73 -L-LT | | | | | | | < 0.01 | < 0.01 | 105 | 7 | |
| 12C | 157+55-L-LT | | | | | | | | < 0.01 | | 13 | |
| 13 | 162+01-162+68-L- | 66" RCP | 0.07 | | | 0.01 | | 0.09 | < 0.01 | 183 | 21 | |
| 14 | 26+00 -Y16RPA- LT | 36" RCP | | | | | | | < 0.01 | | 19 | |
| 15 | 178+79-180+22 -L- | 1 @ 10'x7' RCBC | | | | | | 0.06 | < 0.01 | 447 | 44 | |
| SUB TOTALS *: | | | 0.18 | | | 0.02 | | 0.82 | 0.05 | 3879 | 360 | |

*Rounded totals are sum of actual impacts

NOTES:

NC DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 5-1-18
 ALAMANCE COUNTY
 U-3109A
 34900.1.1

WETLAND AND SURFACE WATER IMPACTS SUMMARY

| Site No. | Station (From/To) | Structure Size / Type | WETLAND IMPACTS | | | | | SURFACE WATER IMPACTS | | | | |
|----------|-------------------|---------------------------------|---------------------------------|-----------------------------|-----------------------------|--------------------------------------|--------------------------------|---------------------------|-----------------------|---|-------------------------------------|----------------------------|
| | | | Permanent Fill In Wetlands (ac) | Temp. Fill In Wetlands (ac) | Excavation in Wetlands (ac) | Mechanized Clearing in Wetlands (ac) | Hand Clearing in Wetlands (ac) | Permanent SW impacts (ac) | Temp. SW impacts (ac) | Existing Channel Impacts Permanent (ft) | Existing Channel Impacts Temp. (ft) | Natural Stream Design (ft) |
| 1 | -L- 207+00/208+15 | 12'X6' RCBC | | | | | | 0.02 | < 0.01 | 120 | 50 | |
| 1 | -L- 206+99/207+50 | Bank stabilization | | | | | | < 0.01 | | 51 | | |
| 1 | -L- 207+98/208+14 | Outlet Scour Hole Stabilization | | | | | | < 0.01 | | 27 | | |
| 2 | -L- 226+82/227+21 | Bank stabilization | | | | | | < 0.01 | < 0.01 | 12 | 10 | |
| 3 | -L- 233+50/235+77 | 42" RCP-III | | | | | | 0.02 | < 0.01 | 268 | 20 | |
| 3 | -L- 235+55/235+78 | Bank stabilization | | | | | | < 0.01 | | 22 | | |
| 3 | -L- 233+44/233+64 | Outlet Scour Hole Stabilization | | | | | | < 0.01 | | 20 | | |
| 4-5 | -L- 246+16/246+70 | 30" RCP-III | < 0.01 | | < 0.01 | < 0.01 | | 0.02 | < 0.01 | 127 | 10 | |
| 6 | -L- 250+61/251+17 | 30" RCP-III | 0.06 | | < 0.01 | 0.01 | | | | | | |
| 7 | -L- 255+17/256+42 | 36" RCP-III | 0.17 | | < 0.01 | 0.02 | | | | | | |
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| | | | | | | | | | | | | |
| TOTALS*: | | | 0.23 | | 0.01 | 0.03 | | 0.07 | 0.01 | 647 | 90 | 0 |

*Rounded totals are sum of actual impacts

NOTES:

NC DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 04/10/2018
 ALAMANCE COUNTY
 U-3109B
 WBS #: 34900.1.FR3
 SHEET 22 OF 22



North Carolina Department of Transportation
 Highway Stormwater Program
STORMWATER MANAGEMENT PLAN
 FOR NCDOT PROJECTS



(Version 2.07; Released October 2016)

WBS Element: 34900.1.FR3 **TIP No.:** U-3109B **County(ies):** Alamance **Page** 1 **of** 5

General Project Information

| | | | | | | | |
|--|---|--|---------|-------------------------------|---|--|-----------|
| WBS Element: | 34900.1.FR3 | TIP Number: | U-3109B | Project Type: | New Location | Date: | 1/24/2018 |
| NCDOT Contact: | William H Elam, Jr. | | | Contractor / Designer: | DRMP / Ryan Mitchell, P.E. | | |
| Address: | NCDOT 1590 Mail Service Center Raleigh, NC 27699-1590 | | | Address: | 8000 Regency Parkway Suite 175 Cary, NC 27518 | | |
| | Phone: | 919-707-6718 | | | Phone: | 919.650.1038 | |
| | Email: | belam@ncdot.gov | | | Email: | rmitchell@drmp.com | |
| City/Town: | Mebane | | | County(ies): | Alamance | | |
| River Basin(s): | Cape Fear | | | CAMA County? | No | | |
| Wetlands within Project Limits? | Yes | | | | | | |

Project Description

| | | | | | | | | |
|--|--|------------------------------|-----------------------|----------------------|------------------|-------|--------------|------|
| Project Length (lin. miles or feet): | 1.424 miles | Surrounding Land Use: | Undeveloped/Open Land | | | | | |
| | Proposed Project | | | Existing Site | | | | |
| Project Built-Upon Area (ac.) | 6.5 | ac. | N/A | | | | ac. | |
| Typical Cross Section Description: | One (1) 12' travel lanes each direction. 4' paved shoulders with grass roadway ditches, both sides. 10' paved shoulders with guardrail. | | | | | | | |
| Annual Avg Daily Traffic (veh/hr/day): | Design/Future: | 10,983 vpd | Year: | 2038 | Existing: | 8,809 | Year: | 2018 |
| General Project Narrative: (Description of Minimization of Water Quality Impacts) | The U-3109B project is a new alignment between SR 1921 (Mebane Rogers/ Stage Coach Rd) and SR 1918 (Mrs. White Ln). Approximately 5,800 linear feet of grass swales have been incorporated in roadside ditches, where possible, to reduce the velocity and promote the infiltration of runoff. Five hazardous spill basins are proposed to protect against the accidental release of hazardous material into receiving jurisdictional waters. Riprap at pipe outlets, ditches, and streambanks has been incorporated to minimize erosion on slopes where vegetation will not be adequate. Storm drainage discharging directly to wetlands has been designed to meet non-erosive velocity requirements. NCDOT standards for ground cover, vegetation, and slope stabilization will be adhered to during the life of this project, and will be specified in the NCDOT Erosion and Sediment Control Plan for the project. | | | | | | | |

Waterbody Information

| | | | | | | | |
|--|--|--|----|--|--|--|--|
| Surface Water Body (1): | Mill Creek | | | NCDWR Stream Index No.: | 16-18-3-(1.5) | | |
| NCDWR Surface Water Classification for Water Body | Primary Classification: | Water Supply II (WS-II) | | | | | |
| | Supplemental Classification: | High Quality Waters (HQW) | | (NSW) | CA | | |
| Other Stream Classification: | | | | | | | |
| 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? | Yes | Deck Drains Discharge Over Buffer? | No | Dissipator Pads Provided in Buffer? | N/A | | |
| Deck Drains Discharge Over Water Body? | No | (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) | | | | | | |



North Carolina Department of Transportation
 Highway Stormwater Program
STORMWATER MANAGEMENT PLAN
 FOR NCDOT PROJECTS



(Version 2.07; Released October 2016)

WBS Element: 34900.1.FR3 **TIP No.:** U-3109B **County(ies):** Alamance **Page** 2 **of** 5

Additional Waterbody Information

| | | | | |
|--|--|--|--------------------------------|--|
| Surface Water Body (2): | UT to Mill Creek (SA) | | NCDWR Stream Index No.: | |
| NCDWR Surface Water Classification for Water Body | Primary Classification: | | | |
| | Supplemental Classification: | | | |
| Other Stream Classification: | | | | |
| Impairments: | | | | |
| Aquatic T&E Species? | Comments: | | | |
| NRTR Stream ID: | SA | | Buffer Rules in Effect: | |
| 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 (3): | UT to Mill Creek (SB) | | NCDWR Stream Index No.: | |
| NCDWR Surface Water Classification for Water Body | Primary Classification: | | | |
| | Supplemental Classification: | | | |
| Other Stream Classification: | | | | |
| Impairments: | | | | |
| Aquatic T&E Species? | Comments: | | | |
| NRTR Stream ID: | SB | | Buffer Rules in Effect: | |
| 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 (4): | UT to Mill Creek (SB) | | NCDWR Stream Index No.: | |
| NCDWR Surface Water Classification for Water Body | Primary Classification: | | | |
| | Supplemental Classification: | | | |
| Other Stream Classification: | | | | |
| Impairments: | | | | |
| Aquatic T&E Species? | Comments: | | | |
| NRTR Stream ID: | SC | | Buffer Rules in Effect: | |
| 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) | | | |



North Carolina Department of Transportation
 Highway Stormwater Program
STORMWATER MANAGEMENT PLAN
 FOR NCDOT PROJECTS



(Version 2.07; Released October 2016)

WBS Element: 34900.1.FR3 **TIP No.:** U-3109B **County(ies):** Alamance **Page** 3 **of** 5

Swales

| Sheet No. | Station & Coordinates (Road and Non Road Projects) | Surface Water Body | Base Width (ft) | Front Slope (H:1) | Back Slope (H:1) | Drainage Area (ac) | Recommended Treatm't Length (ft) | Actual Length (ft) | Longitudinal Slope (%) | Q2 (cfs) | V2 (fps) | Q10 (cfs) | V10 (fps) | Rock Checks Used | BMP Associated w/ Buffer Rules? |
|-----------|--|--------------------------|-----------------|-------------------|------------------|--------------------|----------------------------------|--------------------|------------------------|----------|----------|-----------|-----------|------------------|---------------------------------|
| 4 | -L- 199+50 LT. -L- 196+50 LT. | (2)UT to Mill Creek (SA) | 0.0 | 6.0 | 3.0 | 0.7 | 71 | 300 | 0.50% | 1.6 | 1.6 | 2.0 | 1.7 | | No |
| 4 | -L- 199+50 LT. -L- 205+50 LT. | (2)UT to Mill Creek (SA) | 0.0 | 6.0 | 3.0 | 1.2 | 115 | 600 | 1.50% | 1.9 | 1.9 | 2.4 | 2.0 | | No |
| 5 | -L- 210+08 LT. -L- 213+00 LT. | | 0.0 | 6.0 | 4.0 | 0.5 | 46 | 292 | 1.43% | 0.8 | 1.3 | 1.0 | 1.4 | | No |
| 6 | -L- 220+50 LT. -L- 224+60 LT. | (1)Mill Creek | 0.0 | 3.0 | 3.0 | 0.5 | 49 | 410 | 1.34% | 0.9 | 1.7 | 1.2 | 1.8 | | No |
| 6 | -L- 233+00 LT. -L- 229+90 LT. | (1)Mill Creek | 0.0 | 4.0 | 3.0 | 0.6 | 64 | 310 | 2.80% | 1.1 | 1.8 | 1.4 | 1.9 | | No |
| 7 | -L- 233+00 LT. -L- 235+50 LT. | (3)UT to Mill Creek (SB) | 0.0 | 3.0 | 3.0 | 0.7 | 73 | 250 | 2.46% | 0.7 | 1.7 | 0.9 | 1.8 | | No |
| 7 | -L- 243+05.37 LT. -L- 237+50 LT. | (3)UT to Mill Creek (SB) | 0.0 | 6.0 | 4.0 | 0.9 | 92 | 555 | 1.16% | 0.9 | 1.5 | 1.1 | 1.6 | | No |
| 7 | -L- 243+05.37 LT. -L- 245+00 LT. | (4)UT to Mill Creek (SB) | 0.0 | 6.0 | 3.0 | 0.6 | 55 | 245 | 0.32% | 0.8 | 0.8 | 1.0 | 0.8 | | No |
| 8 | -L- 249+78 LT. -L- 248+00 LT. | | 0.0 | 6.0 | 4.0 | 0.3 | 26 | 178 | 1.16% | 0.5 | 1.1 | 0.6 | 1.2 | | No |
| 8 | -L- 251+50 LT. -L- 251+00 LT. | | 0.0 | 3.0 | 3.0 | 0.3 | 34 | 50 | 2.00% | 0.7 | 1.6 | 0.9 | 1.7 | | No |
| 8 | -L- 253+76.14 LT. -L- 253+00 LT. | | 0.0 | 6.0 | 6.0 | 0.1 | 9 | 76 | 1.16% | 0.2 | 0.8 | 0.3 | 0.9 | | No |
| 9 | -L- 263+00 LT. -L- 259+00 LT. | | 0.0 | 6.0 | 4.0 | 2.2 | 215 | 400 | 1.18% | 2.9 | 1.8 | 3.7 | 1.9 | | No |
| 9 | -L- 271+92 LT. -L- 267+00 LT. | | 0.0 | 6.0 | 4.0 | 2.0 | 201 | 492 | 1.38% | 3.1 | 2.0 | 3.9 | 2.1 | | No |
| 8 | -L- 255+00 LT. -L- 255+50 LT. | | 0.0 | 3.0 | 3.0 | 0.3 | 27 | 50 | 2.00% | 1.0 | 1.8 | 1.0 | 1.8 | | No |
| 4 | -L- 198+50 RT. -L- 196+00 RT. | | 0.0 | 6.0 | 3.0 | 0.5 | 46 | 250 | 0.51% | 0.4 | 0.8 | 0.5 | 0.8 | | No |
| 4 | -L- 198+50 RT. -L- 205+00 RT. | (2)UT to Mill Creek (SA) | 0.0 | 6.0 | 4.0 | 1.3 | 134 | 650 | 1.98% | 2.2 | 2.0 | 2.7 | 2.1 | | No |
| 5 | -L- 211+00 RT. -L- 209+00 RT. | (2)UT to Mill Creek (SA) | 0.0 | 6.0 | 3.0 | 0.4 | 35 | 200 | 0.30% | 0.6 | 0.7 | 0.7 | 0.7 | | No |
| 5 | -L- 211+00 RT. -L- 212+50 RT. | | 0.0 | 6.0 | 4.0 | 0.2 | 21 | 150 | 1.40% | 0.4 | 1.1 | 0.5 | 1.2 | | No |
| 5 | -L- 214+00 RT. -L- 217+50 RT. | | 0.0 | 6.0 | 4.0 | 0.4 | 44 | 350 | 1.40% | 0.8 | 1.3 | 1.0 | 1.4 | | No |

Additional Comments

| | | | | | | | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| | | | | | | | | | | | | | | | |
|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|



North Carolina Department of Transportation
Highway Stormwater Program
STORMWATER MANAGEMENT PLAN
FOR NCDOT PROJECTS



(Version 2.07; Released October 2016)

WBS Element: 34900.1.FR3 TIP No.: U-3109B County(ies): Alamance Page 4 of 5

Swales

| Sheet No. | Station & Coordinates (Road and Non Road Projects) | Surface Water Body | Base Width (ft) | Front Slope (H:1) | Back Slope (H:1) | Drainage Area (ac) | Recommended Treatm't Length (ft) | Actual Length (ft) | Longitudinal Slope (%) | Q2 (cfs) | V2 (fps) | Q10 (cfs) | V10 (fps) | Rock Checks Used | BMP Associated w/ Buffer Rules? |
|-----------|--|--------------------------|-----------------|-------------------|------------------|--------------------|----------------------------------|--------------------|------------------------|----------|----------|-----------|-----------|------------------|---------------------------------|
| 6 | -L- 218+00 RT. -L- 220+00 RT. | | 0.0 | 6.0 | 3.0 | 0.2 | 23 | 200 | 0.30% | 0.4 | 0.6 | 0.5 | 0.7 | | No |
| 6 | -L- 220+00 RT. -L- 222+00 RT. | (1)Mill Creek | 0.0 | 6.0 | 4.0 | 0.6 | 58 | 200 | 1.40% | 0.9 | 1.4 | 1.2 | 1.5 | | No |
| 7 | -L- 243+00 RT. -L- 237+50 RT. | (3)UT to Mill Creek (SB) | 0.0 | 6.0 | 4.0 | 1.2 | 115 | 550 | 1.45% | 2.4 | 2.0 | 3.0 | 2.1 | | No |
| 7 | -L- 243+00 RT. -L- 245+50 RT. | (4)UT to Mill Creek (SB) | 0.0 | 6.0 | 3.0 | 0.5 | 50 | 250 | 0.30% | 0.9 | 0.8 | 1.2 | 0.8 | | No |
| 5 | -L- 208+00 RT. -L- 207+33.29 RT. | (2)UT to Mill Creek (SA) | 0.0 | 3.0 | 3.0 | 0.2 | 22 | 67 | 0.75% | 1.0 | 0.9 | 1.2 | 0.9 | | No |
| 8 | -L- 253+69 RT. -L- 252+00 RT. | | 0.0 | 3.0 | 3.0 | 0.2 | 20 | 169 | 3.70% | 0.5 | 1.9 | 0.6 | 2.0 | | No |
| 8 | -Y21- 14+00 RT. -Y21- 11+90 RT. | | 0.0 | 3.0 | 3.0 | 0.4 | 35 | 210 | 2.91% | 0.9 | 1.4 | 1.1 | 1.6 | | No |
| 8 | -Y21- 14+27 RT. -Y21- 16+00 RT. | | 0.0 | 6.0 | 4.0 | 0.2 | 22 | 173 | 3.90% | 0.6 | 1.9 | 0.8 | 2.0 | | No |
| 10 | -Y21- 20+50 RT. -Y21- 19+50 RT. | | 0.0 | 6.0 | 4.0 | 0.2 | 15 | 100 | 1.24% | 0.4 | 1.1 | 0.5 | 1.0 | | No |
| 10 | -Y21- 20+50 RT. -Y21- 21+50 RT. | | 0.0 | 6.0 | 4.0 | 0.1 | 11 | 100 | 1.20% | 0.2 | 0.6 | 0.3 | 0.7 | | No |
| 8 | -Y21- 11+00 LT. -Y21- 13+30 LT. | | 0.0 | 3.0 | 3.0 | 0.4 | 39 | 230 | 0.30% | 1.0 | 0.9 | 1.2 | 1.0 | | No |
| 8 | -Y21- 13+50 LT. -Y21- 15+00 LT. | | 0.0 | 6.0 | 4.0 | 0.2 | 19 | 150 | 3.28% | 0.5 | 1.7 | 0.5 | 1.8 | | No |
| 10 | -Y21- 18+00 LT. -Y21- 20+00 LT. | | 0.0 | 6.0 | 6.0 | 0.5 | 53 | 200 | 1.24% | 0.7 | 1.5 | 0.9 | 1.6 | | No |
| | | | | | | | | | | | | | | | |
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Additional Comments

05/30/17

See Sheet 1A For Index of Sheets
See Sheet 1B For Conventional Symbols
See 1C Sheet Series For Survey Control

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

ALAMANCE COUNTY

LOCATION: NC 119 RELOCATION FROM NORTH OF
SR 1921 (MEBANE ROGERS/STAGE COACH ROAD)
TO SOUTH OF SR 1918 (MRS. WHITE LANE)

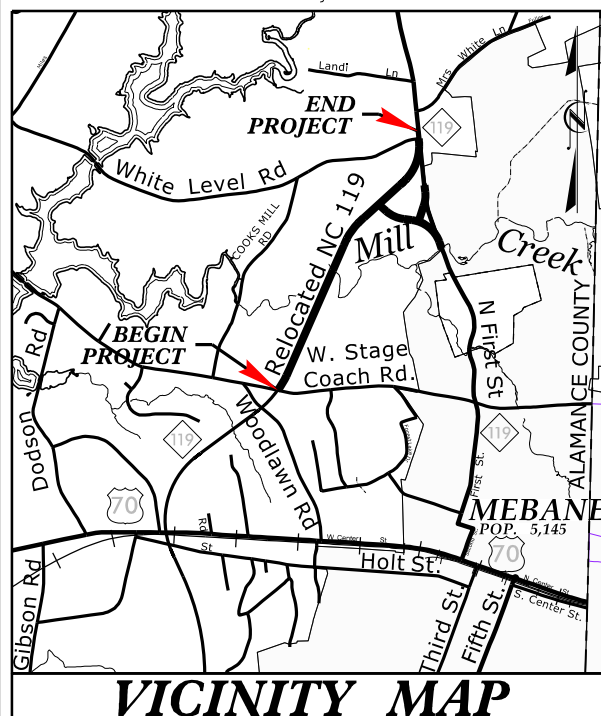
TYPE OF WORK: GRADING, PAVING, DRAINAGE, SIGNALS, AND STRUCTURE

WETLAND AND SURFACE WATER IMPACTS PERMIT

| STATE | STATE PROJECT REFERENCE NO. | SHEET NO. | TOTAL SHEETS |
|-----------------|-----------------------------|-------------|--------------|
| N.C. | U-3109B | 1 | |
| STATE PROJ. NO. | F.A. PROJ. NO. | DESCRIPTION | |
| 34900.1.FR3 | STP-0119(11) | PE | |
| 34900.2.3 | STP-0119(8) | R/W | |
| 34900.2.3 | STP-0119(8) | UTILITIES | |

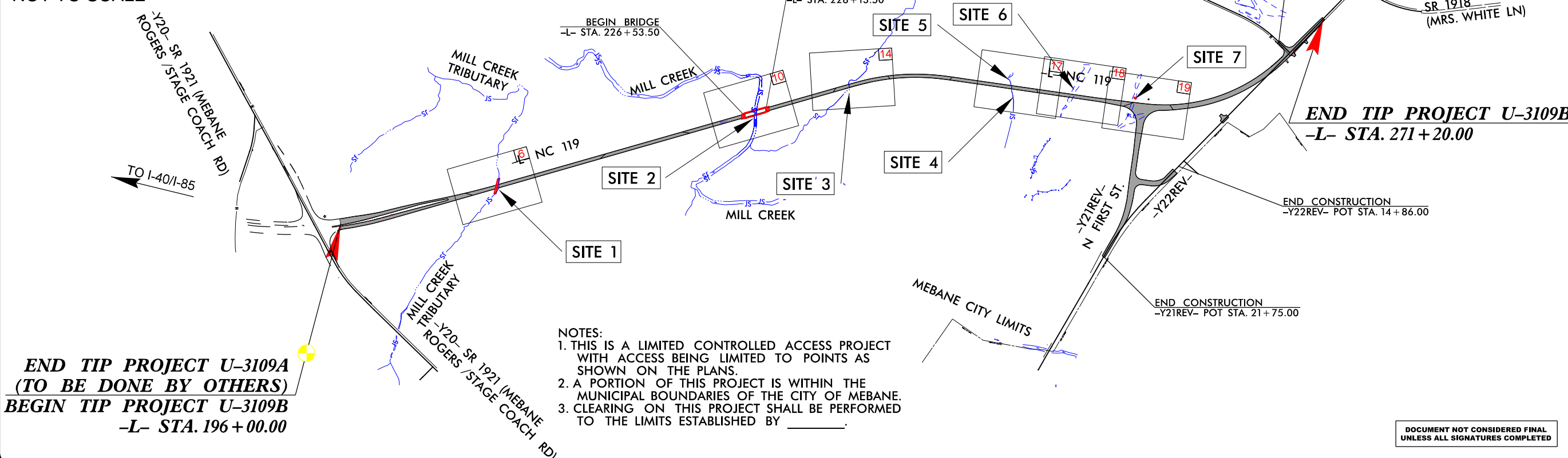
**PERMIT DRAWING
SHEET 1 OF 22**

TIP PROJECT: U-3109B



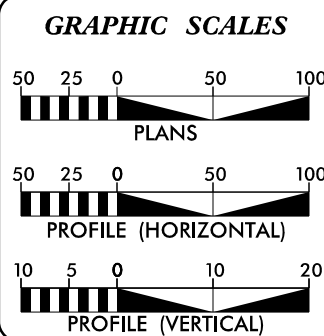
ROW/CFI PLANS

NOT TO SCALE



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

CONTRACT:



DESIGN DATA

| | |
|-------------------------|-------------------------------|
| ADT 2018 = | 8,809 |
| ADT 2038 = | 10,983 |
| K = | 9 % |
| D = | 65 % |
| T = | 5 % * |
| V = | 50 MPH |
| (* TTST = 4% + DUAL 1%) | |
| FUNC CLASS = | MAJOR COLLECTOR REGIONAL TIER |

PROJECT LENGTH

| | |
|--------------------------------------|----------|
| LENGTH ROADWAY TIP PROJECT U-3109B | 1.394 mi |
| LENGTH STRUCTURE TIP PROJECT U-3109B | 0.030 mi |
| TOTAL LENGTH OF TIP PROJECT U-3109B | 1.424 mi |

PLANS PREPARED BY:

DRMP
ENGINEERS PLANNERS SCIENTISTS

DRMP, INC.
5950 FAIRVIEW ROAD, SUITE 320
CHARLOTTE, NORTH CAROLINA 28210
(704) 333-2289
NC LICENSE NO. C-2213

FOR DIVISION OF HIGHWAYS

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
AUGUST 30, 2017

LETTING DATE:
JULY 17, 2018

CHRISTOPHER K. HAIRE, PE
PROJECT ENGINEER

MICHAEL D. HAGE, PE
PROJECT DESIGN ENGINEER

TATIA L. WHITE, PE, PLS
SENIOR PROJECT MANAGER

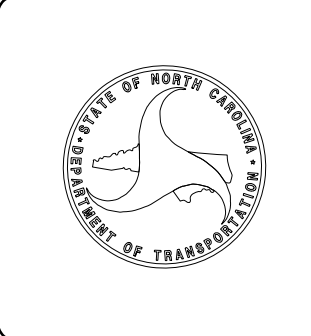
NCDOT CONTACT:
TATIA L. WHITE, PE, PLS

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.

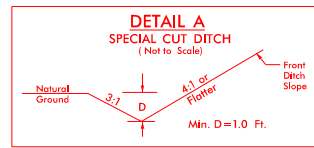
ROADWAY DESIGN ENGINEER

SIGNATURE: _____ P.E.

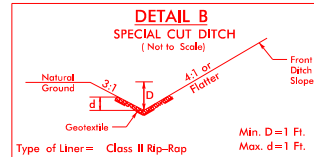


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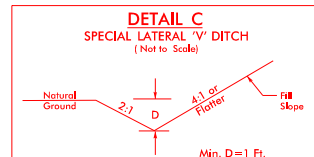
REVISIONS



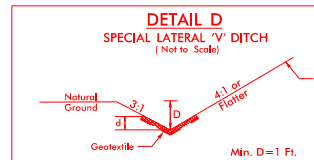
FROM STA. 196+50 TO STA. 199+50 -L- LT
 FROM STA. 196+00 TO STA. 198+50 -L- RT
 FROM STA. 203+00 TO STA. 205+00 -L- RT
 FROM STA. 203+50 TO STA. 205+97 -L- LT
 FROM STA. 208+71 TO STA. 211+00 -L- RT
 FROM STA. 212+50 TO STA. 213+50 -L- RT
 FROM STA. 213+65 TO STA. 214+00 -L- RT
 FROM STA. 218+00 TO STA. 220+00 -L- RT
 FROM STA. 222+00 TO STA. 224+40 -L- RT
 FROM STA. 224+00 TO STA. 224+60 -L- LT
 FROM STA. 229+90 TO STA. 230+50 -L- LT
 FROM STA. 230+00 TO STA. 232+00 -L- RT
 FROM STA. 233+50 TO STA. 234+50 -L- LT
 FROM STA. 243+00 TO STA. 245+50 -L- RT
 FROM STA. 246+54 TO STA. 249+00 -L- RT
 FROM STA. 249+00 TO STA. 250+50 -L- RT
 FROM STA. 243+06 TO STA. 246+23 -L- LT
 FROM STA. 253+76 TO STA. 21+75 -Y21REV- LT
 FROM STA. 17+50 TO STA. 18+00 -Y21REV- RT
 FROM STA. 19+50 TO STA. 21+50 -Y21REV- RT



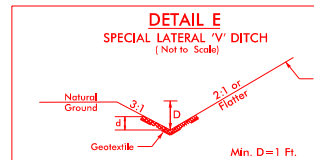
FROM STA. 235+65 TO STA. 237+00 -L- LT



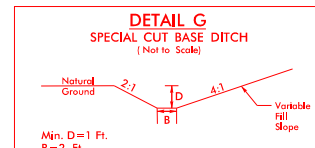
FROM STA. 251+50 TO STA. 252+50 -L- RT



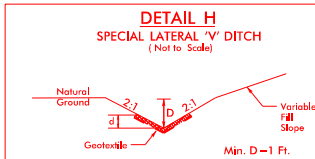
FROM STA. 249+50 TO STA. 250+50 -L- RT



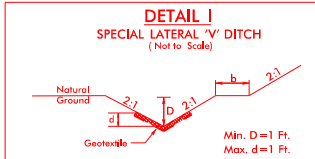
FROM STA. 245+50 TO STA. 246+54 -L- RT



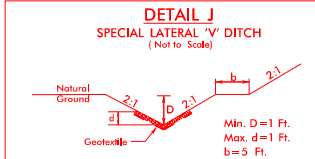
FROM STA. 16+50 TO STA. 17+50 -Y21REV- LT
 FROM STA. 18+00 TO STA. 19+50 -Y21REV- RT
 FROM STA. 11+00 TO STA. 12+00 -Y22REV- RT



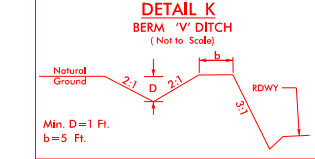
FROM STA. 257+11 TO STA. 259+00 -L- LT



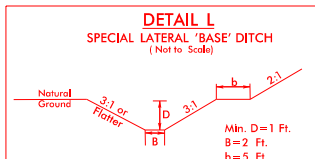
FROM STA. 208+00 TO STA. 209+00 -L- LT



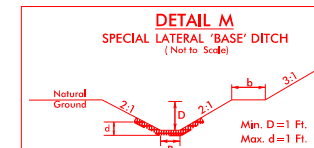
FROM STA. 207+00 TO STA. 208+00 -L- LT



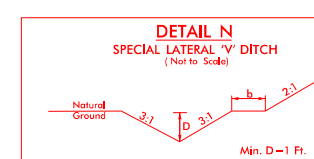
FROM STA. 231+82 TO STA. 234+00 -L- LT
 FROM STA. 237+00 TO STA. 243+06 -L- LT
 FROM STA. 243+06 TO STA. 246+00 -L- LT



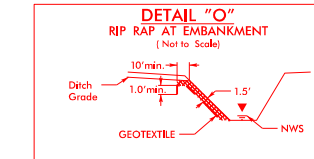
FROM STA. 206+00 TO STA. 207+17 -L- RT
 FROM STA. 226+00 TO STA. 226+86 -L- RT
 FROM STA. 227+22 TO STA. 227+41 -L- RT
 FROM STA. 234+50 TO STA. 237+00 -L- RT



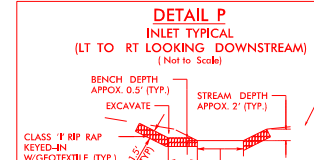
FROM STA. 235+65 TO STA. 237+00 -L- LT



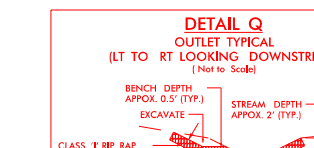
FROM STA. 207+34 TO STA. 208+71 -L- RT
 FROM STA. 234+50 TO STA. 235+50 -L- LT
 FROM STA. 249+78 TO STA. 251+00 -L- LT
 FROM STA. 251+00 TO STA. 253+00 -L- LT
 FROM STA. 253+77 TO STA. 255+50 -L- LT
 FROM STA. 250+50 TO STA. 253+69 -L- RT
 FROM STA. 253+69 TO STA. 255+28 -L- RT
 FROM STA. 11+90 TO STA. 14+00 -Y21REV- RT
 FROM STA. 10+50 TO STA. 13+50 -Y21REV- LT



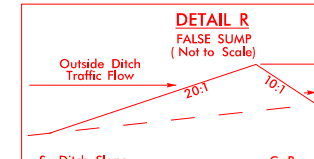
See plans for quantities
 STA. 207+00 -L- RT NWS=581.2
 STA. 207+38 -L- RT NWS=581.2
 STA. 207+99 -L- LT NWS=578.1
 STA. 208+20 -L- LT NWS=578.1
 STA. 226+87 -L- RT NWS=539.9
 STA. 227+24 -L- RT NWS=539.9



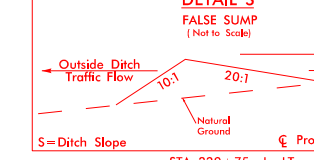
EST TON CLASS I RIP RAP=27 TONS EXCAVATION=26 CY
 EST GEOTEXTILE=34 SY
 STA. 207+44 -L- RT NWS 581.2



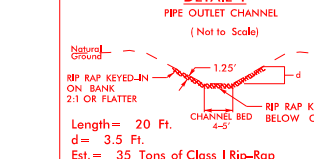
EST TON CLASS I RIP RAP=59 TONS EXCAVATION=49 CY
 EST GEOTEXTILE=74 SY
 STA. 208+00 -L- LT NWS=578.1



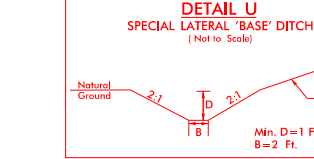
FROM STA. 213+10 -L- LT
 STA. 224+70 -L- LT
 STA. 19+43 -Y21REV- LT



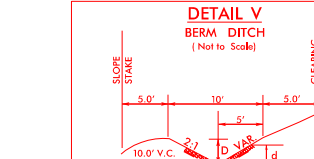
FROM STA. 229+75 -L- LT



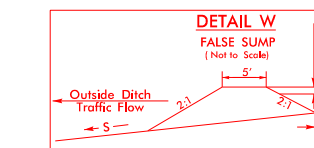
FROM STA. 233+62 -L- RT



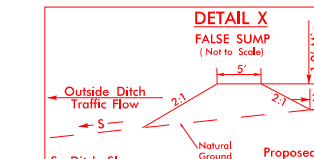
FROM STA. 246+23 TO STA. 248+00 -L- LT



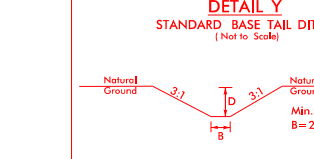
FROM STA. 237+00 TO STA. 239+00 -L- LT



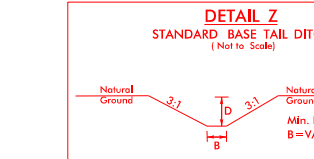
FROM STA. 262+50 -L- LT



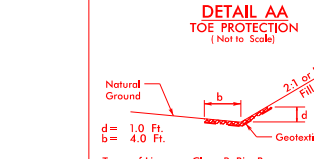
FROM STA. 12+00 -Y22- RT



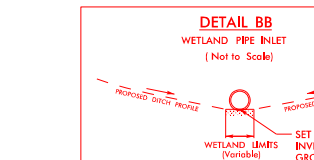
FROM STA. 262+74 TO STA. 262+84 -L- RT



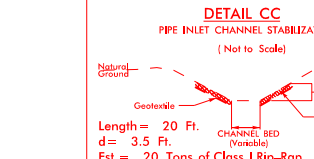
FROM STA. 19+50 TO STA. 20+00 -Y21REV- RT



FROM STA. 256+75.00 TO STA. 258+50 -L- RT



FROM STA. 246+25 -L- LT
 STA. 251+00 -L- LT
 STA. 255+51 -L- LT



FROM STA. 235+58 -L- LT

| | |
|----------------------------------|------------------------|
| PROJECT REFERENCE NO. U-3109B | SHEET NO. DETAILS-1 |
| RW SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

DOCUMENT NOT CONSIDERED FINAL
 UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED BY:
DRMP DRMP INC. 5950 FAIRVIEW ROAD, SUITE 320 CHARLOTTE, NC 28210 NC LICENSE NO. C-2213 (704) 332-2289

PERMIT DRAWING
 SHEET 2 OF 22

8/17/99

REVISIONS

2/23/2018 3:54:07 PM
 R:\03098\Hydraulics\CADD\U3109B_Hyd_ddsh_02.dgn
 Meca

HAZARDOUS SPILL BASIN DETAIL

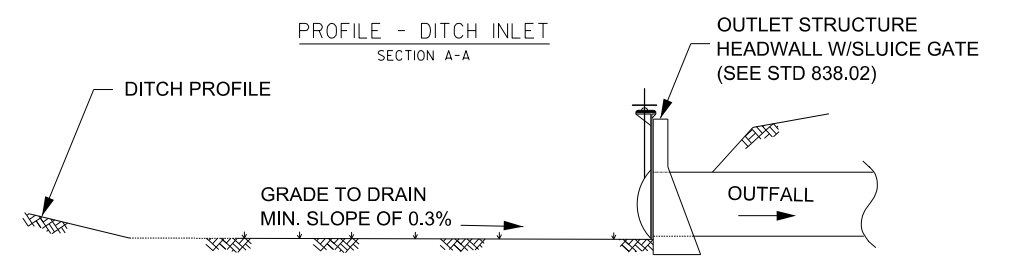
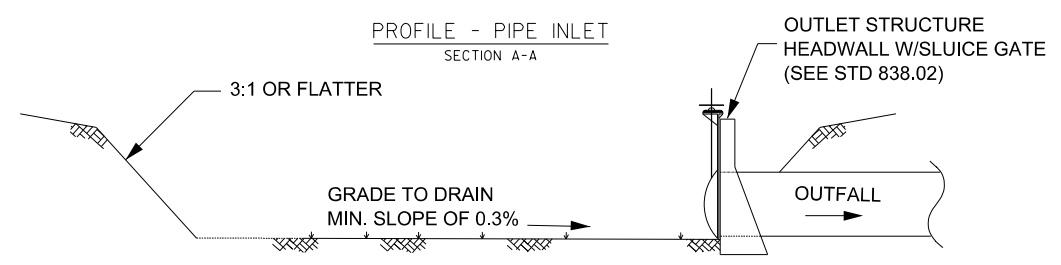
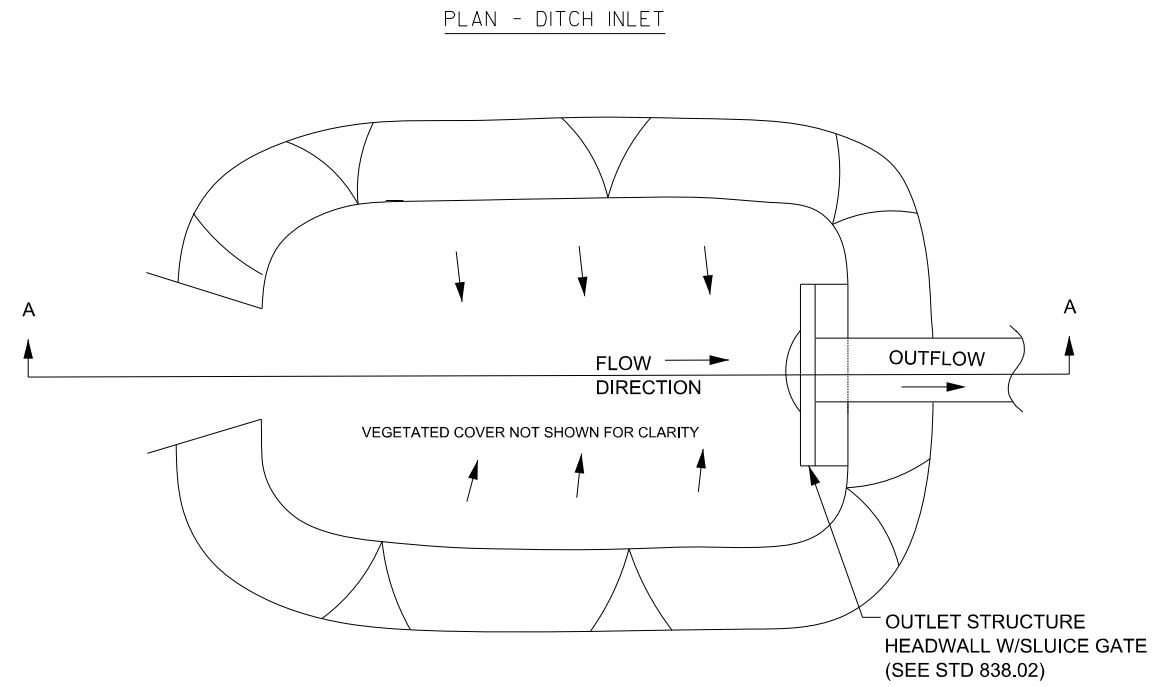
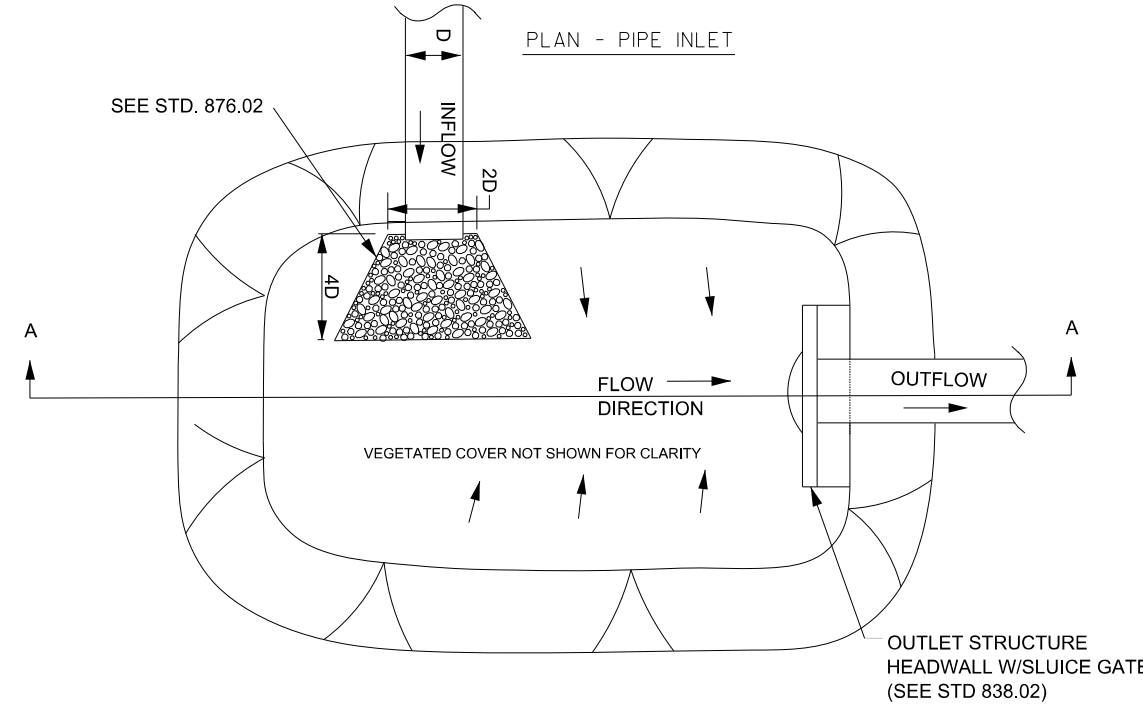
NOT TO SCALE

| | |
|--|---------------------|
| PROJECT REFERENCE NO. U-3109B | SHEET NO. 2D-2 |
| R/W SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
| DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED | |



PLANS PREPARED BY:
DRMP DRMP, INC.
 5950 FAIRVIEW ROAD, SUITE 320
 CHARLOTTE, NC 28210
 NC LICENSE NO. 52213 (704) 332-2289

PERMIT DRAWING
SHEET 3 OF 22

| POINT LOCATION | HSB1: Station 206+00 LT | | | HSB2: Station 205+00 RT | | | HSB3: Station 210+00 LT | | | HSB4: Station 224+50 RT | | | HSB5: Station 229+50 RT | | | HSB6: Station 256+50 | | |
|--------------------------|-------------------------|--------------|--------------------------|-------------------------|--------------|--------------------------|-------------------------|--------------|--------------------------|-------------------------|--------------|--------------------------|-------------------------|--------------|--------------------------|----------------------|--------------|--------|
| | NORTH | EAST | RADIUS | NORTH | EAST | RADIUS | NORTH | EAST | RADIUS | NORTH | EAST | RADIUS | NORTH | EAST | RADIUS | NORTH | EAST | RADIUS |
| 1 | 859,689.08 | 1,915,820.16 | 1.0' | 859,560.97 | 1,915,873.55 | 1.0' | 860,029.51 | 1,915,971.64 | 5.0' | 861,330.71 | 1,916,666.15 | 4.0' | 861,783.71 | 1,916,853.70 | 4.0' | 863,900.08 | 1,918,445.04 | 8.0' |
| 2 | 859,683.87 | 1,915,832.07 | 1.0' | 859,555.75 | 1,915,885.46 | 1.0' | 860,027.50 | 1,915,976.21 | 5.0' | 861,323.42 | 1,916,682.76 | 4.0' | 861,777.34 | 1,916,868.21 | 4.0' | 863,891.81 | 1,918,463.99 | 8.0' |
| 3 | 859,733.04 | 1,915,839.45 | 1.0' | 859,604.93 | 1,915,892.84 | 1.0' | 860,056.98 | 1,915,983.69 | 5.0' | 861,368.32 | 1,916,675.01 | 4.0' | 861,845.42 | 1,916,882.17 | 4.0' | 863,935.33 | 1,918,479.52 | 8.0' |
| 4 | 859,726.33 | 1,915,850.41 | 1.0' | 859,727.82 | 1,915,851.35 | 1.0' | 860,054.97 | 1,915,988.27 | 5.0' | 861,358.22 | 1,916,698.03 | 4.0' | 861,839.59 | 1,916,893.90 | 4.0' | 863,927.05 | 1,918,498.47 | 8.0' |
| INLET/BASE ELEV = 595.0' | | | INLET/BASE ELEV = 596.0' | | | INLET/BASE ELEV = 589.0' | | | INLET/BASE ELEV = 566.0' | | | INLET/BASE ELEV = 571.0' | | | INLET/BASE ELEV = 612.0' | | | |
| STORAGE ELEV = 596.8' | | | STORAGE ELEV = 596.8' | | | STORAGE ELEV = 591.1' | | | STORAGE ELEV = 567.6' | | | STORAGE ELEV = 572.2' | | | STORAGE ELEV = 613.4' | | | |
| BERM/TOP ELEV = 598.0' | | | BERM/TOP ELEV = 599.0' | | | BERM/TOP ELEV = 593.0' | | | BERM/TOP ELEV = 569.0' | | | BERM/TOP ELEV = 576.0' | | | BERM/TOP ELEV = 615.0' | | | |
| OUTLET ELEV = 594.8 | | | OUTLET ELEV = 595.8 | | | OUTLET ELEV = 588.8' | | | OUTLET ELEV = 565.8' | | | OUTLET ELEV = 570.8' | | | OUTLET ELEV = 610.8' | | | |



8/17/99

 DENOTES TEMPORARY IMPACTS IN SURFACE WATER
 DENOTES IMPACTS IN SURFACE WATER

| | |
|---|---------------------|
| PROJECT REFERENCE NO. <i>U-3109B</i> | SHEET NO. 5 |
| RW SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED BY:
 **DRMP**
DRMP, INC. 9550 FAIRVIEW ROAD, SUITE 320 CHARLOTTE, NC 28215 NC LICENSE NO. C-213 (704) 332-2209

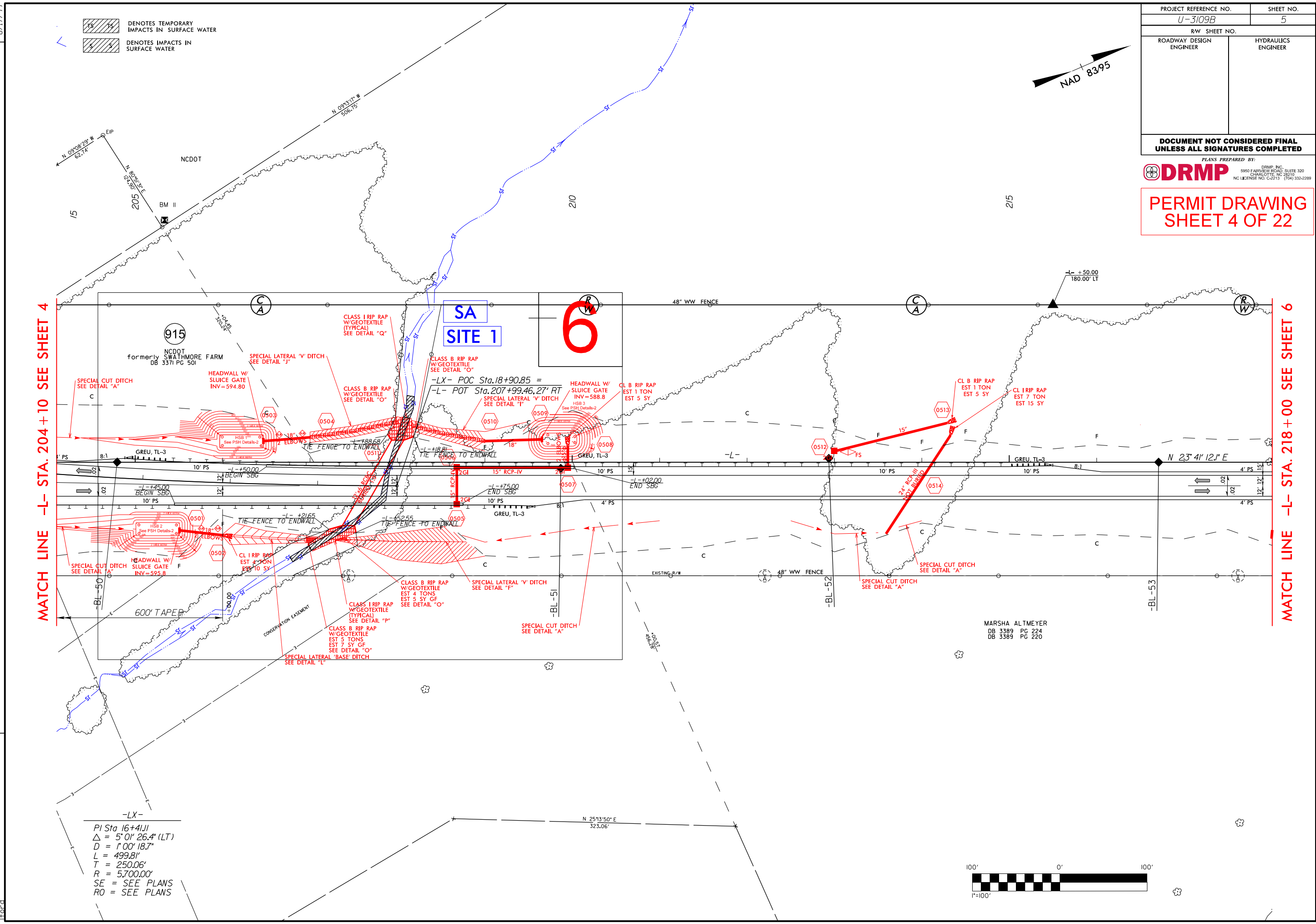
PERMIT DRAWING SHEET 4 OF 22



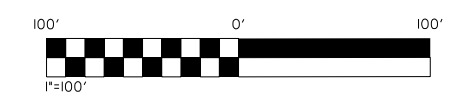
MATCH LINE -L- STA. 204+10 SEE SHEET 4

MATCH LINE -L- STA. 218+00 SEE SHEET 6

REVISIONS
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 8/17/99



-LX-
 PI Sta 16+41.1
 $\Delta = 5^{\circ} 01' 26.4''$ (LT)
 $D = 1^{\circ} 00' 18.7''$
 $L = 499.81'$
 $T = 250.06'$
 $R = 5,700.00'$
 SE = SEE PLANS
 RO = SEE PLANS



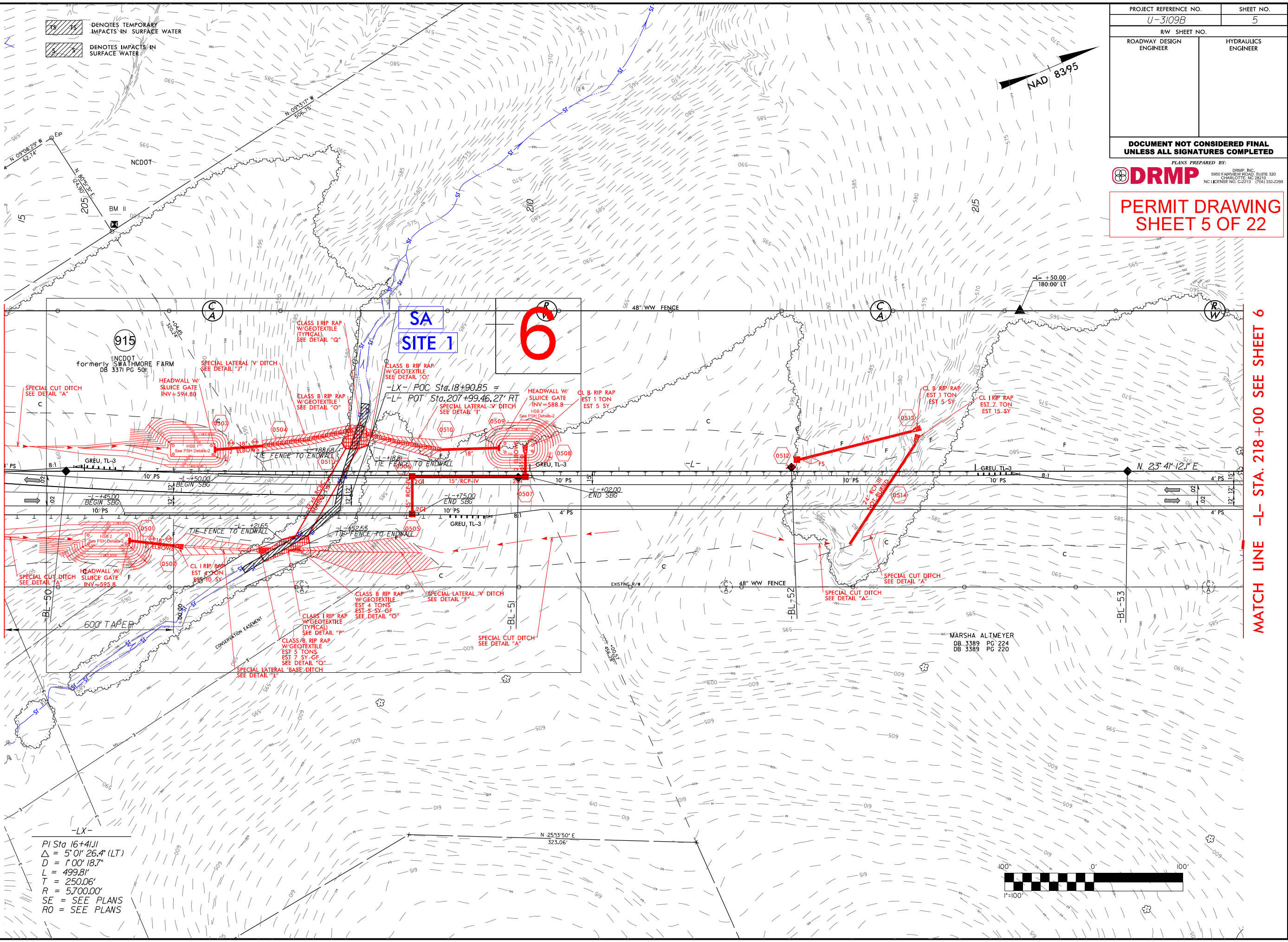
MARSHA ALTMAYER
 DB 3389 PC 224
 DB 3389 PG 220

| | |
|----------------------------------|---------------------|
| PROJECT REFERENCE NO. U-3109B | SHEET NO. 5 |
| RW SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED BY:
DRMP
DRMP, INC. 5950 FAIRVIEW ROAD, SUITE 320
CHARLOTTE, NC 28215
NC LICENSE NO. C-2213 (704) 332-2209

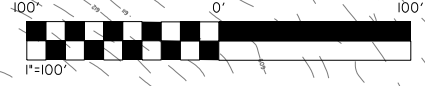
PERMIT DRAWING
SHEET 5 OF 22



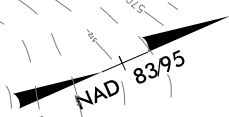
MATCH LINE -L- STA. 204+10 SEE SHEET 4

MATCH LINE -L- STA. 218+00 SEE SHEET 6

-LX-
PI Sta 16+41.11
Δ = 5° 01' 26.4" (LT)
D = 1' 00" 18.7"
L = 499.81'
T = 250.06'
R = 5,700.00'
SE = SEE PLANS
RO = SEE PLANS



MARSHA ALTMeyer
DB 3389 PC 224
DB 3389 PG 220



- DENOTES TEMPORARY IMPACTS IN SURFACE WATER
- DENOTES IMPACTS IN SURFACE WATER

REVISIONS

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8/17/99

8/17/99

20' 0' 20'
SCALE 1"=20'

915

C
A
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER

SA
SITE 1

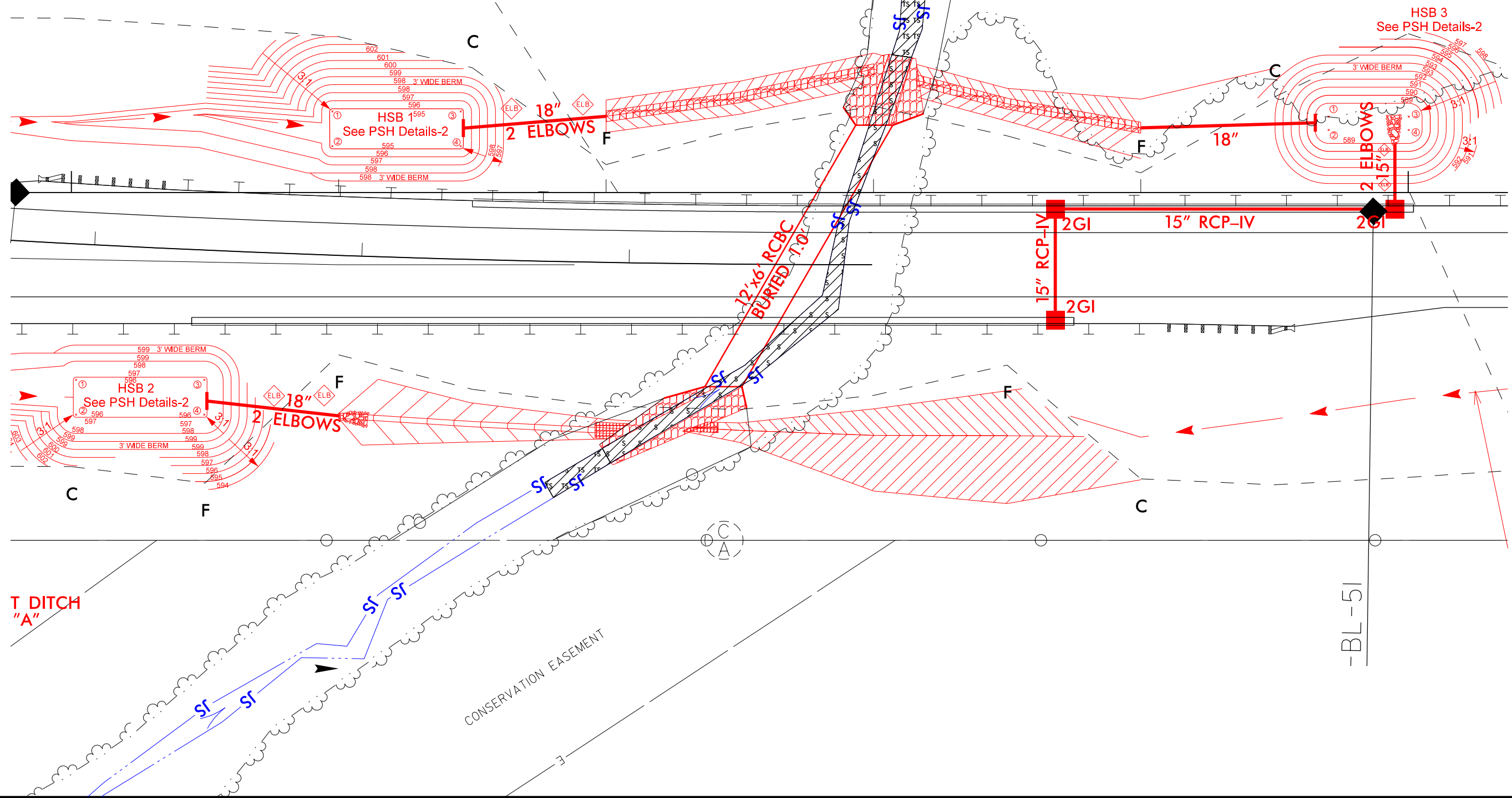


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|---|---------------------|
| PROJECT REFERENCE NO. U-3109B | SHEET NO. |
| R/W SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
| INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION | |
| DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED | |
| PLANS PREPARED BY: DRMP | |
| <small>DRMP INC. 5950 FAIRVIEW ROAD, SUITE 320 CHARLOTTE, NC 28210 NC LICENSE NO. C-2213 (704) 332-2289</small> | |

PERMIT DRAWING
SHEET 6 OF 22

REVISIONS

DITCH



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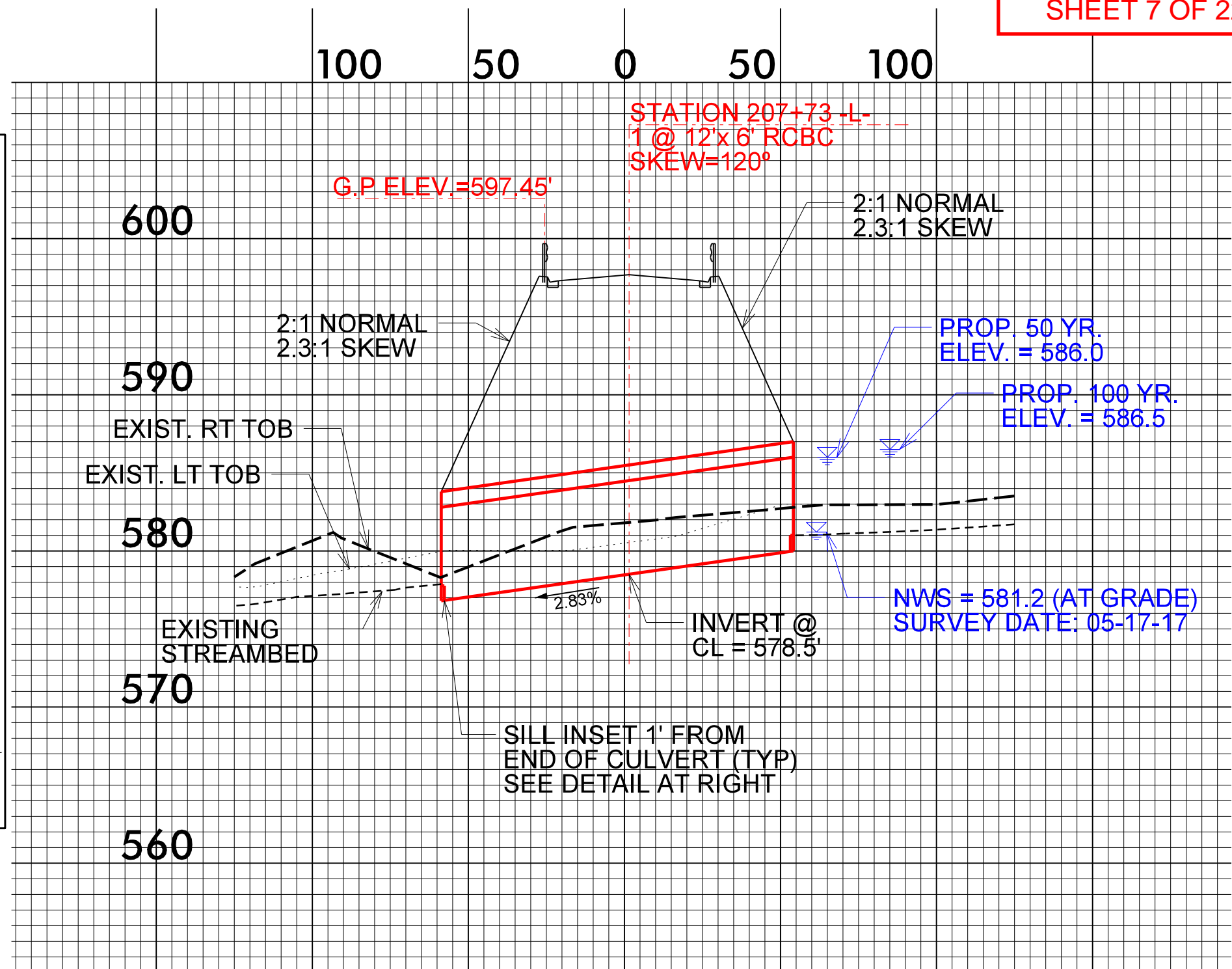
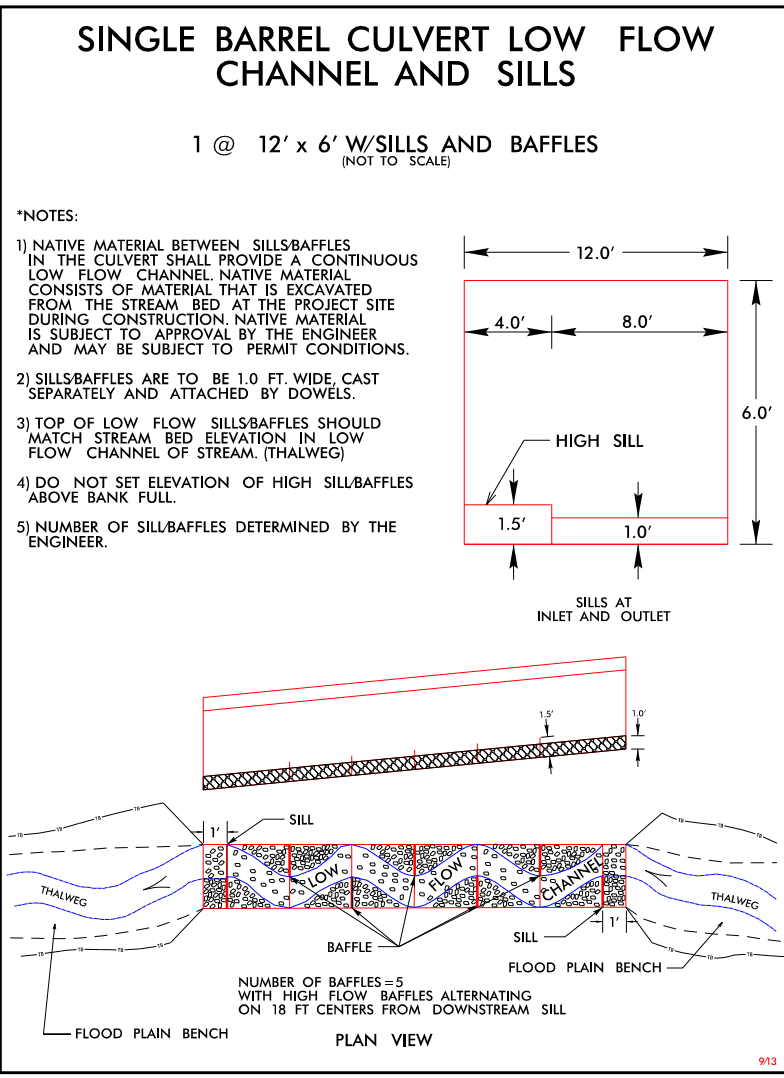
8/17/99

REVISIONS

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|--|------------------------|-----------|--|
| PROJECT REFERENCE NO. U-3109B | | SHEET NO. | |
| RW SHEET NO. | | | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER | | |
| INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION | | | |
| DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED | | | |
| PLANS PREPARED BY: DRMP | | | |
| <small>DRMP, INC. 9550 FAIRVIEW ROAD, SUITE 320 CHARLOTTE, NC 28215 NC LICENSE NO. C-2213 (704) 332-2209</small> | | | |

PERMIT DRAWING
SHEET 7 OF 22

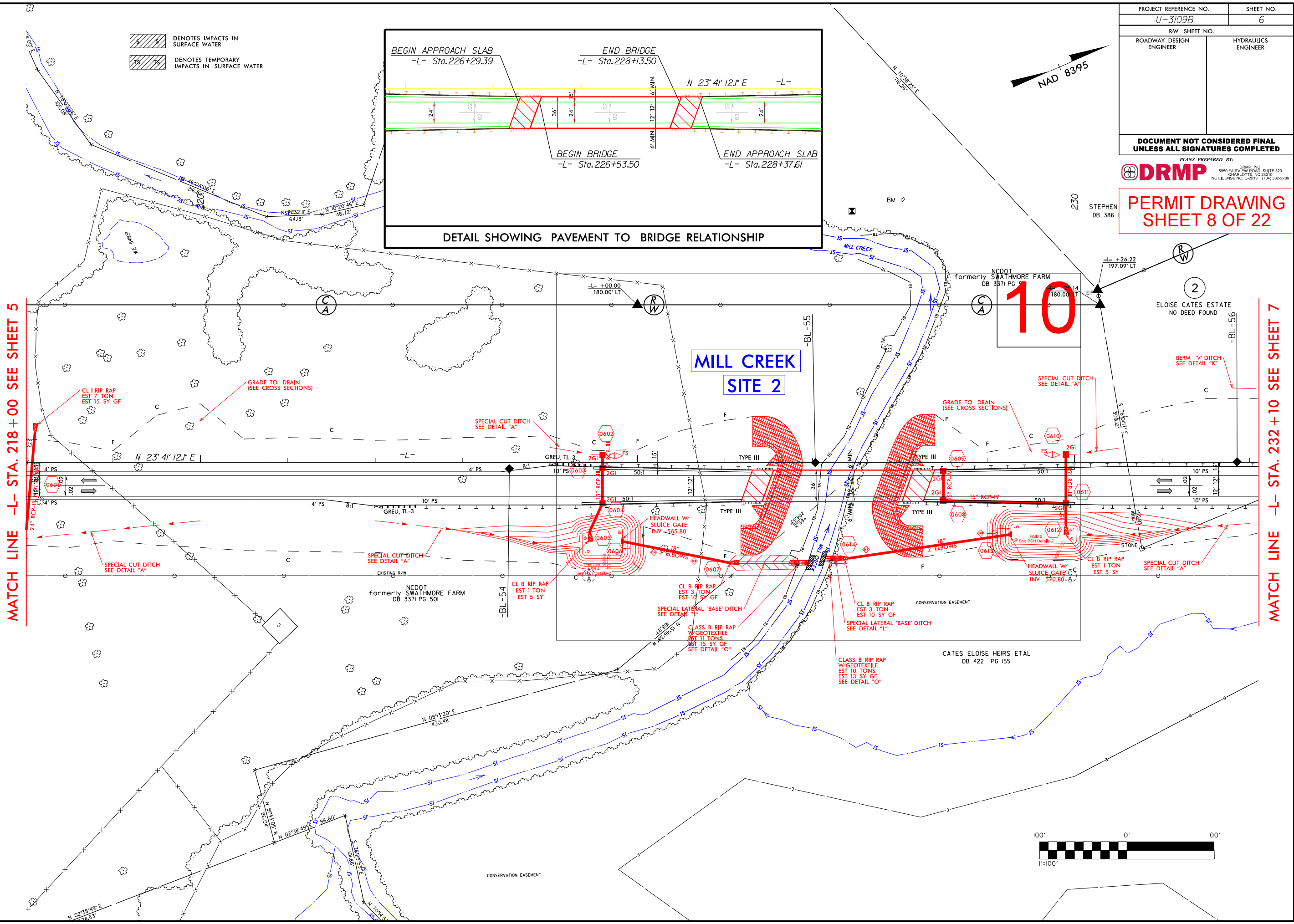
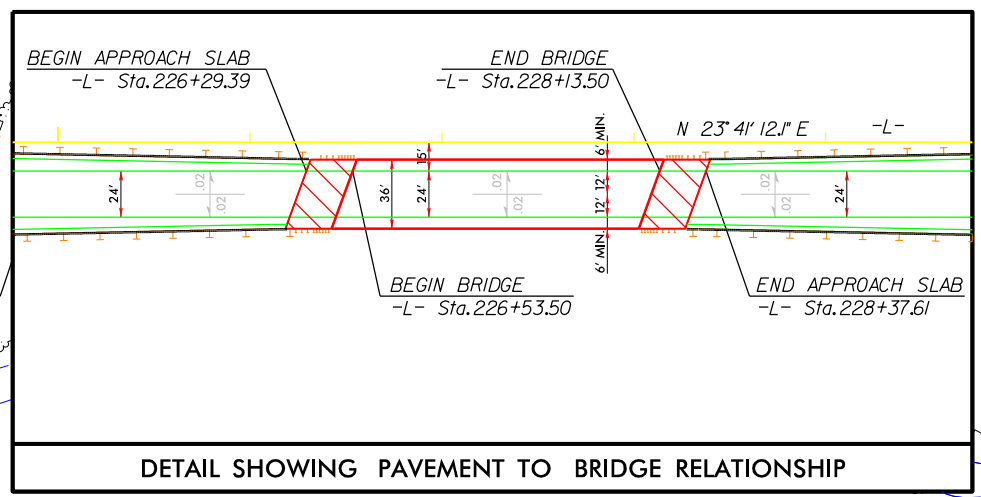


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| PROJECT REFERENCE NO. U-3109B | SHEET NO. 6 |
| RW SHEET NO. | HYDRAULICS ENGINEER |
| ROADWAY DESIGN ENGINEER | |

**DOCUMENT NOT CONSIDERED FINAL
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PLANS PREPARED BY:
DRMP
DRMP, INC.
9550 FAIRVIEW ROAD, SUITE 320
CHARLOTTE, NC 28215
NC LICENSE NO. C-2213 (704) 332-2209

**PERMIT DRAWING
SHEET 8 OF 22**



DENOTES IMPACTS IN SURFACE WATER
 DENOTES TEMPORARY IMPACTS IN SURFACE WATER

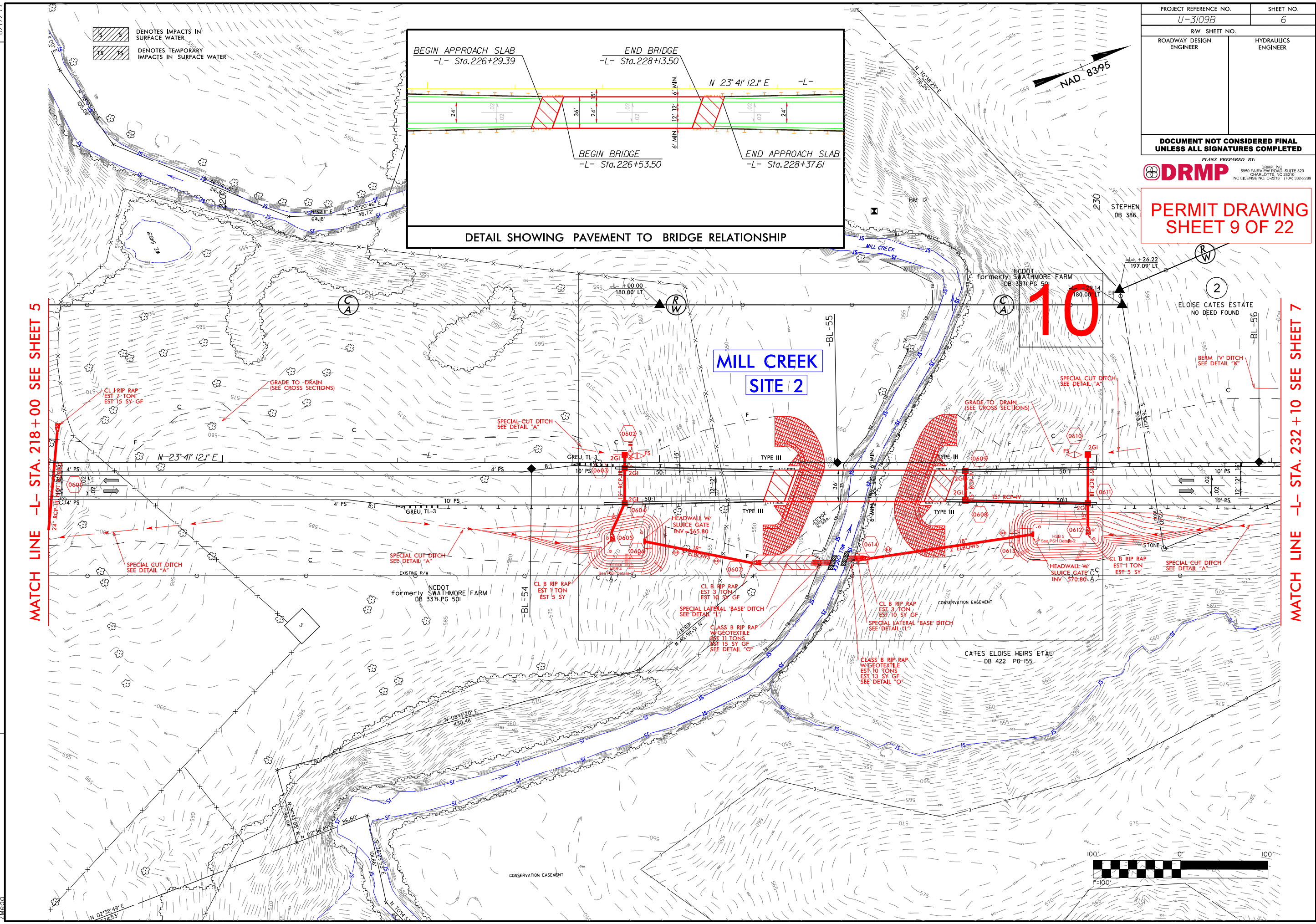
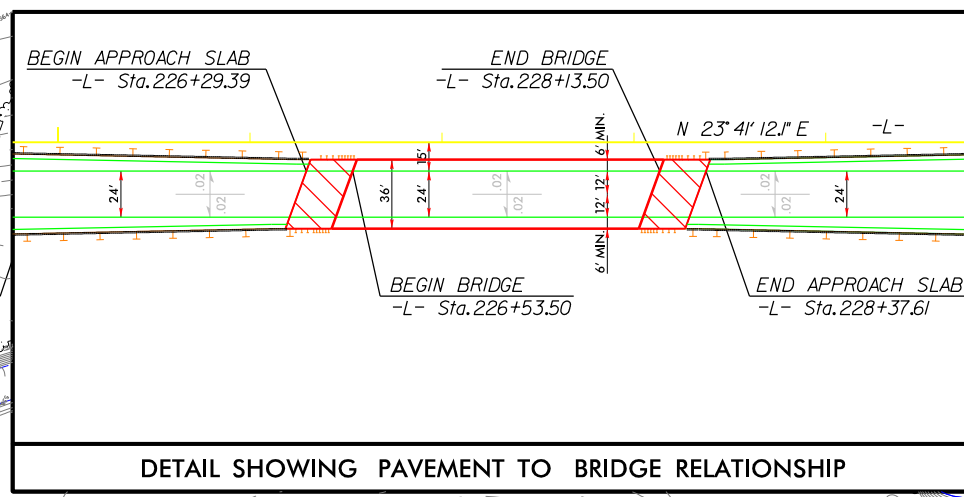
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|----------------------------------|---------------------|
| PROJECT REFERENCE NO. U-3109B | SHEET NO. 6 |
| RW SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

DOCUMENT NOT CONSIDERED FINAL
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PLANS PREPARED BY:
DRMP
DRMP, INC. SUITE 320
5950 FAIRVIEW ROAD
CHARLOTTE, NC 28215
NC LICENSE NO. C-215 (T)433-2299

**PERMIT DRAWING
SHEET 9 OF 22**



DENOTES IMPACTS IN SURFACE WATER
 DENOTES TEMPORARY IMPACTS IN SURFACE WATER

REVISIONS

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8/17/99

-L- +00.00
180.00' LT

DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER

20' 0' 20'
SCALE 1"=20'

8/3/2011

| | |
|---|---------------------|
| PROJECT REFERENCE NO. | SHEET NO. |
| R/W SHEET NO. | HYDRAULICS ENGINEER |
| ROADWAY DESIGN ENGINEER | |
| INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION | |
| DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED | |

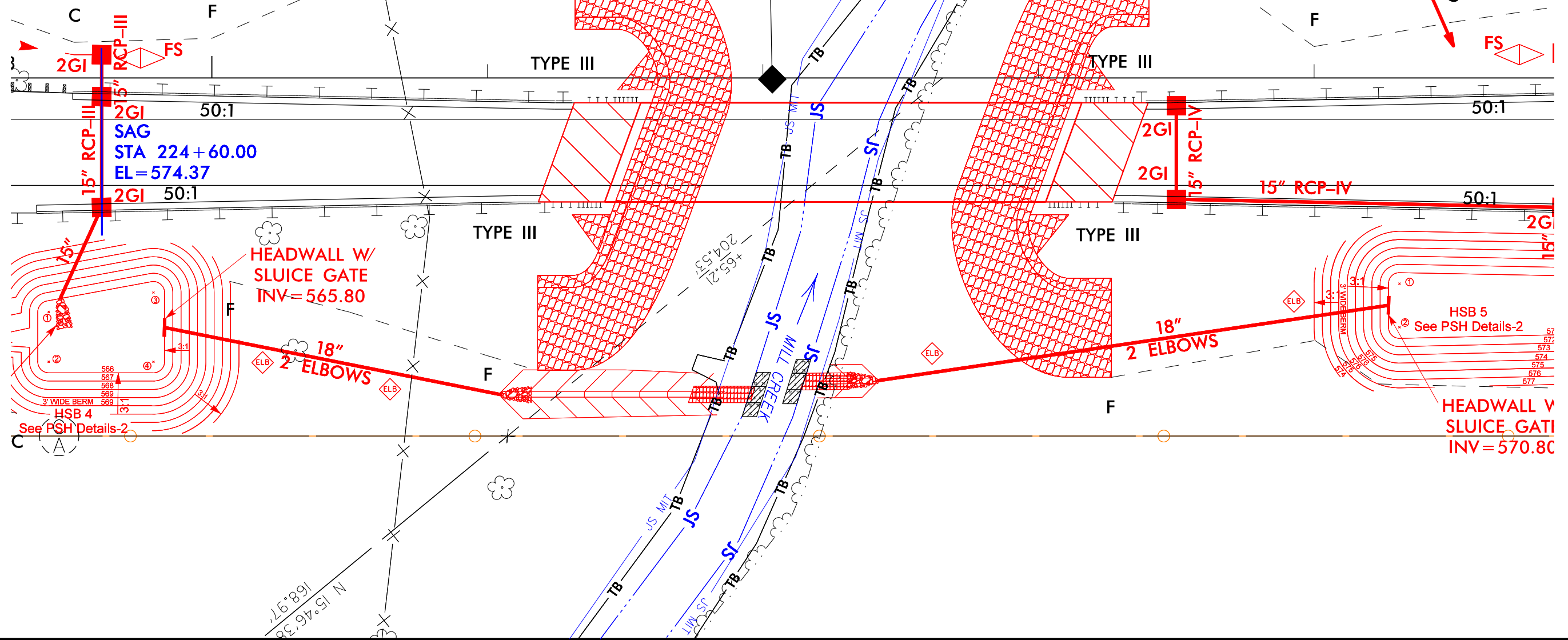
PLANS PREPARED BY:
DRMP DRMP, INC. 5950 FAIRVIEW ROAD, SUITE 320 CHARLOTTE, NC 28210 NC LICENSE NO. C-22113 (794) 332-2289

PERMIT DRAWING
SHEET 10 OF 22

SPECIAL
SEE DATA

MILL CREEK SITE 2

GRADE TO DRAIN
(SEE CROSS SECTIONS)



2GI
15" RCP-III
2GI
SAG
STA 224+60.00
EL=574.37
2GI
50:1

HEADWALL W/
SLUICE GATE
INV=565.80

2GI
15" RCP-IV
2GI
50:1

HSB 5
See PSH Details-2
57
57.2
57.3
57.4
57.6
57.7

HEADWALL V
SLUICE GATE
INV=570.80

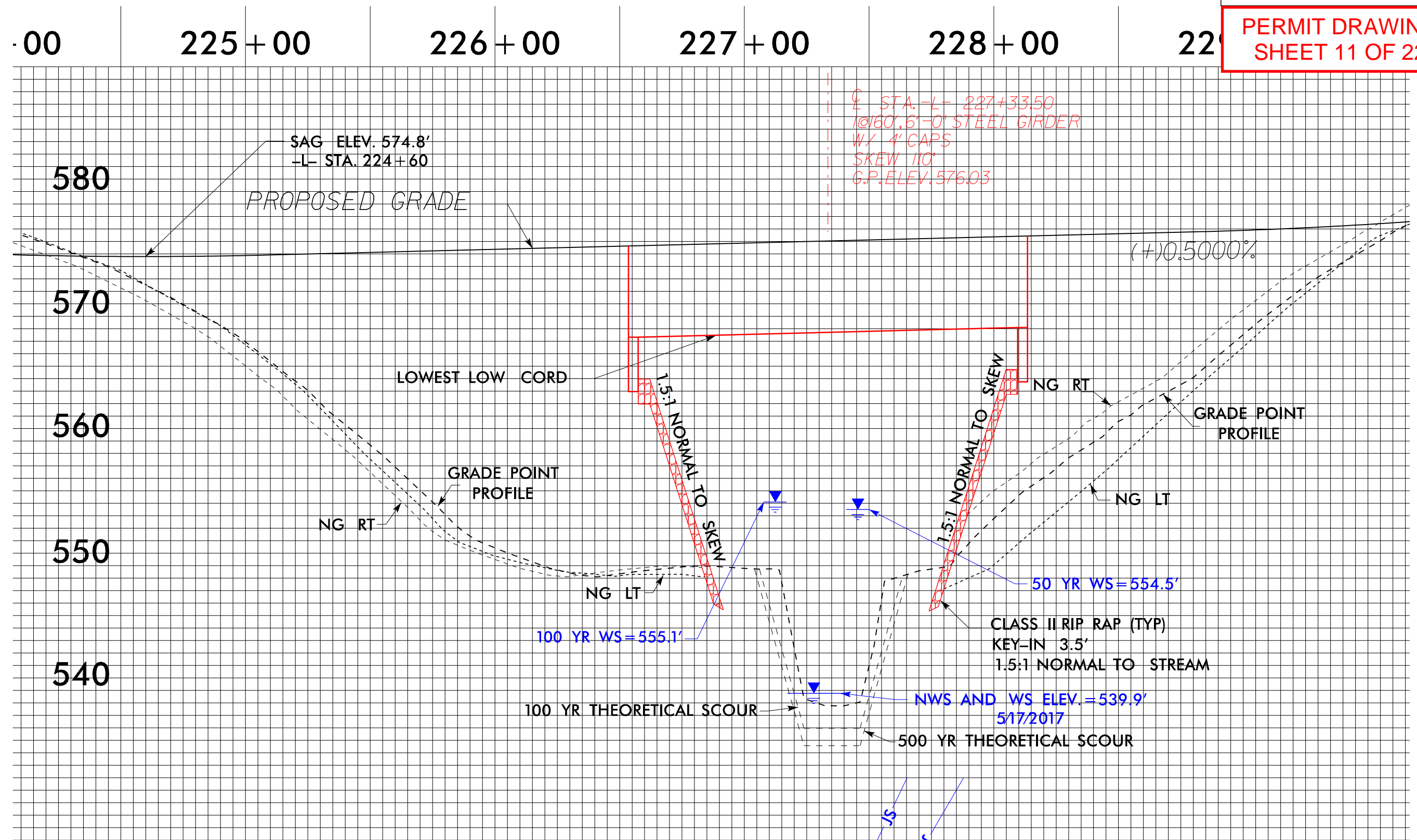
REVISIONS

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Meca

| | |
|---|---------------------|
| PROJECT REFERENCE NO. <i>U-3109B</i> | SHEET NO. |
| RW SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
| INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION | |
| DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED | |

PLANS PREPARED BY:
 **DRMP** DRMP, INC.
 9550 FAIRVIEW ROAD, SUITE 320
 CHARLOTTE, NC 28215
 NC LICENSE NO. C-2113 (704) 332-2289

PERMIT DRAWING
SHEET 11 OF 22



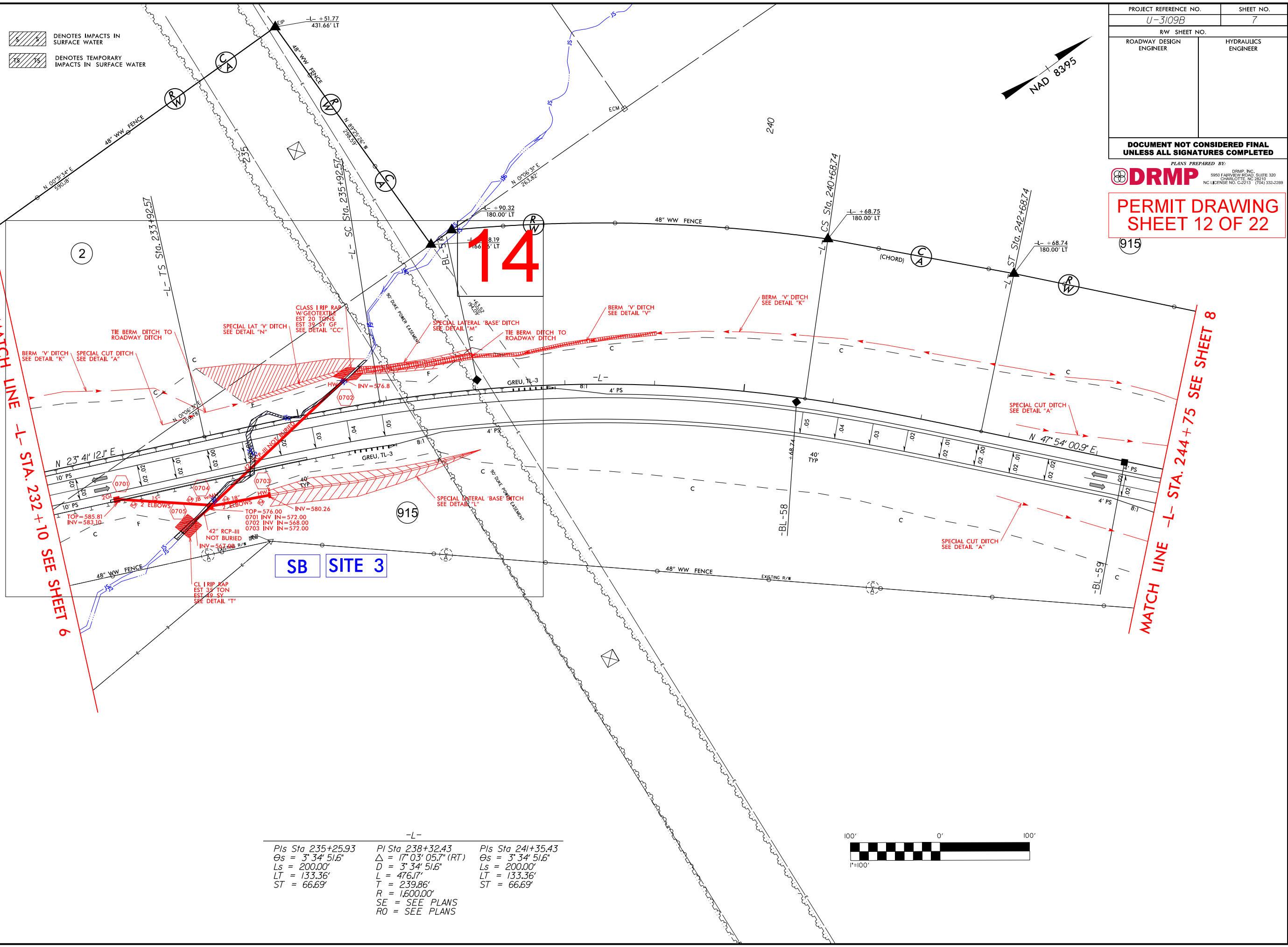
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 7/16/08
 7/16/08

| | |
|-------------------------|---------------------|
| PROJECT REFERENCE NO. | SHEET NO. |
| U-3109B | 7 |
| RW SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

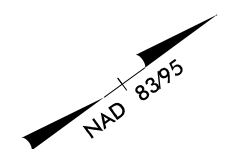
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED BY:
DRMP
DRMP, INC.
9550 FAIRVIEW ROAD, SUITE 300
CHARLOTTE, NC 28215
NC LICENSE NO. C-2213 (704) 332-2209

PERMIT DRAWING
SHEET 12 OF 22



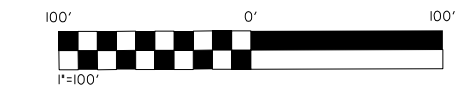
DENOTES IMPACTS IN SURFACE WATER
 DENOTES TEMPORARY IMPACTS IN SURFACE WATER



MATCH LINE -L- STA. 232+10 SEE SHEET 6

MATCH LINE -L- STA. 244+75 SEE SHEET 8

| | | |
|-----------------------------------|---------------------------------------|-----------------------------------|
| -L- | | |
| Pls Sta 235+25.93 | Pl Sta 238+32.43 | Pls Sta 241+35.43 |
| $\Delta s = 3^{\circ} 34' 51.6''$ | $\Delta = 17^{\circ} 03' 05.7''$ (RT) | $\Delta s = 3^{\circ} 34' 51.6''$ |
| $Ls = 200.00'$ | $D = 3^{\circ} 34' 51.6''$ | $Ls = 200.00'$ |
| $LT = 133.36'$ | $L = 476.17'$ | $LT = 133.36'$ |
| $ST = 66.69'$ | $T = 239.86'$ | $ST = 66.69'$ |
| | $R = 1,600.00'$ | |
| | $SE = \text{SEE PLANS}$ | |
| | $RO = \text{SEE PLANS}$ | |



REVISIONS

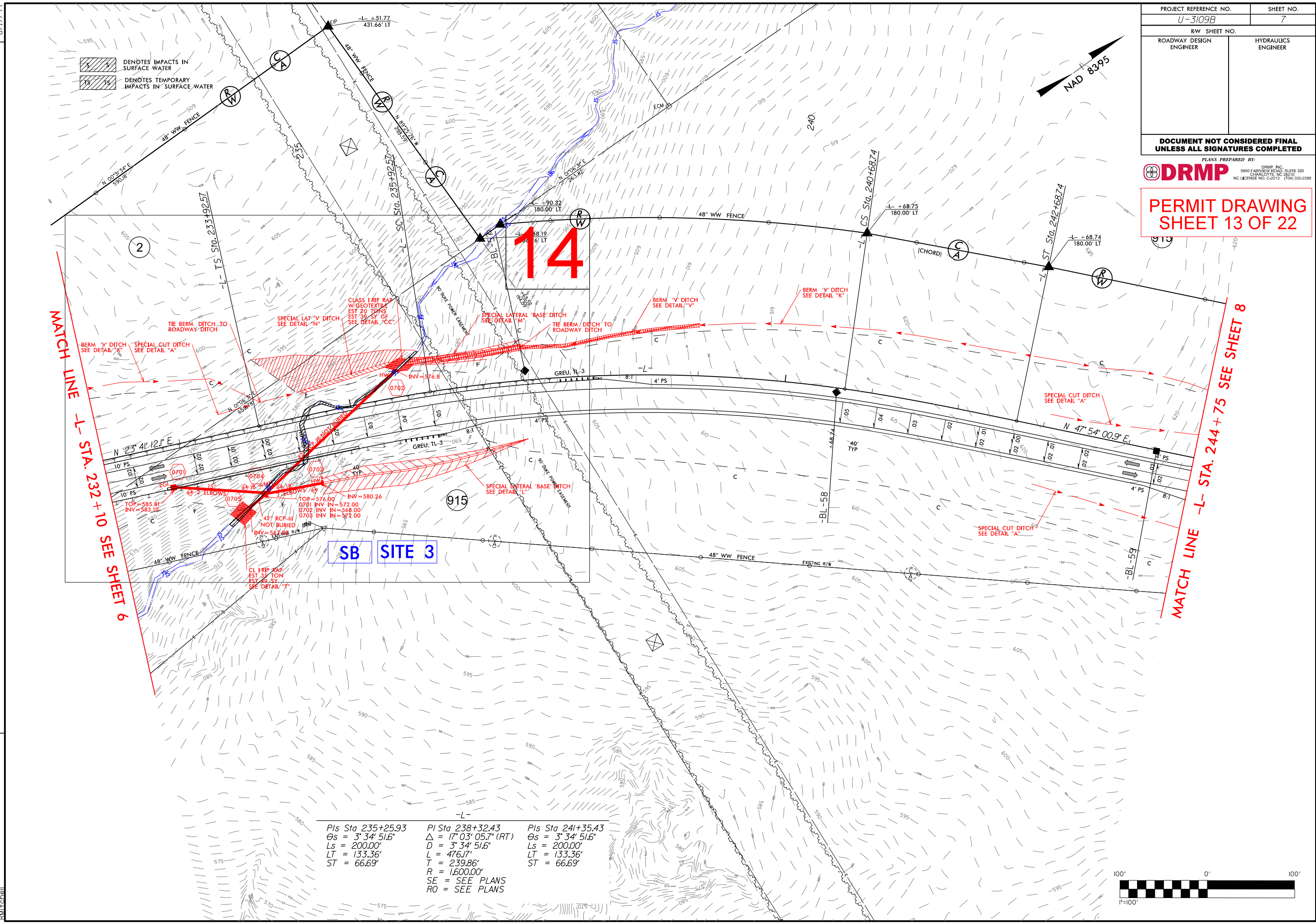
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| | |
|----------------------------------|---------------------|
| PROJECT REFERENCE NO. U-3109B | SHEET NO. 7 |
| RW SHEET NO. | HYDRAULICS ENGINEER |
| ROADWAY DESIGN ENGINEER | |

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

PLANS PREPARED BY:
DRMP
DRMP, INC.
9550 FAIRVIEW ROAD, SUITE 320
CHARLOTTE, NC 28215
NC LICENSE NO. C-2213 (704) 332-2209

PERMIT DRAWING
SHEET 13 OF 22



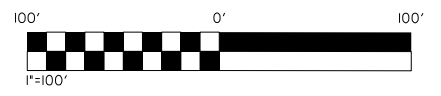
MATCH LINE -L- STA. 232 + 10 SEE SHEET 6

MATCH LINE -L- STA. 244 + 75 SEE SHEET 8

14

SB SITE 3

8/17/99
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| | |
|---|---------------------|
| PROJECT REFERENCE NO. | SHEET NO. |
| 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 | |

PLANS PREPARED BY:
DRMP
 DRMP, INC. 5950 FAIRVIEW ROAD, SUITE 320
 CHARLOTTE, NC 28210
 NC LICENSE NO. C-2213 (T&E) 332-2289

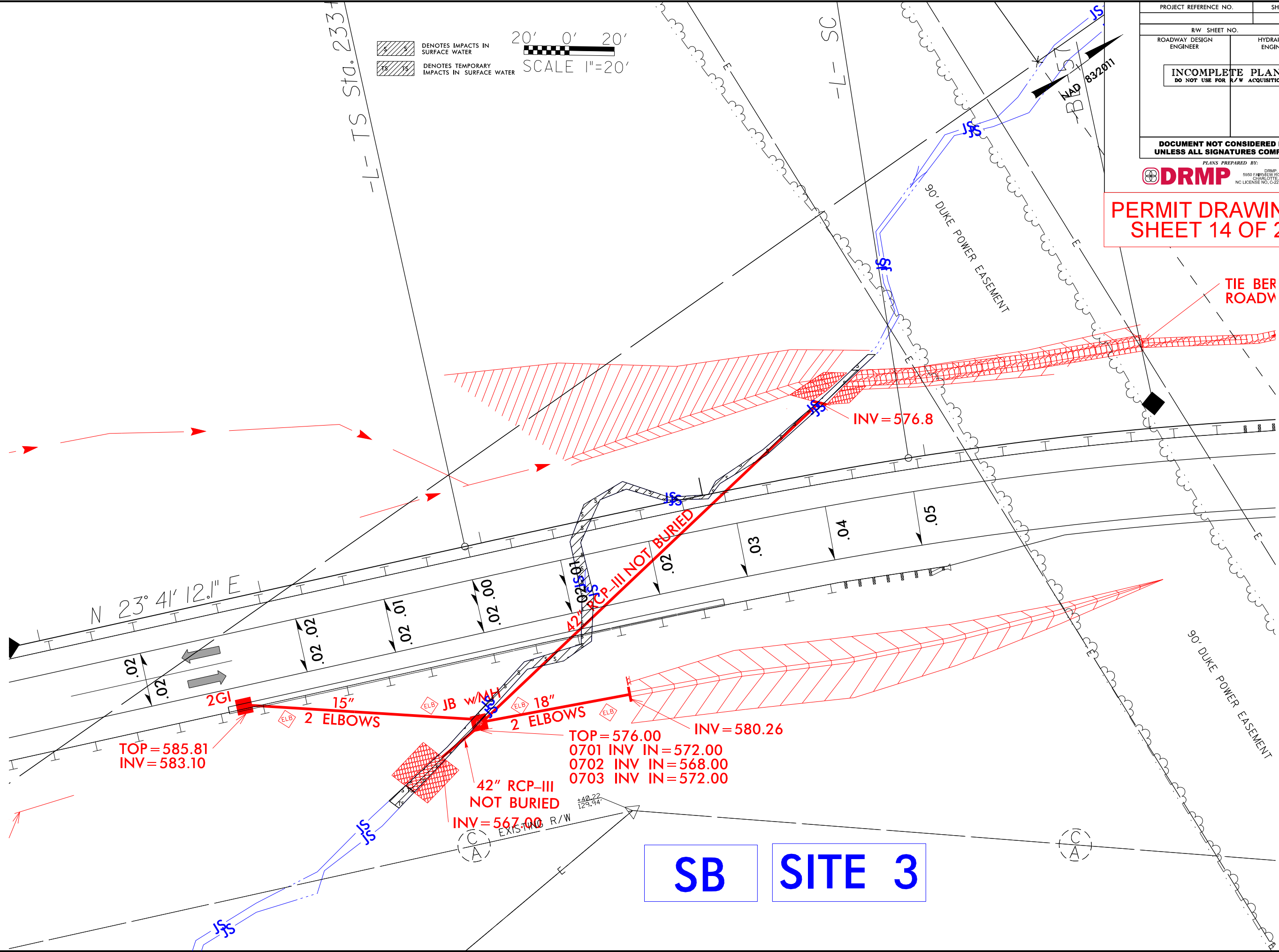
PERMIT DRAWINGS
SHEET 14 OF 22

DENOTES IMPACTS IN SURFACE WATER
 DENOTES TEMPORARY IMPACTS IN SURFACE WATER



REVISIONS

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 SMH:chell



SB SITE 3

TOP = 585.81
INV = 583.10

TOP = 576.00
 0701 INV IN = 572.00
 0702 INV IN = 568.00
 0703 INV IN = 572.00

INV = 576.8

INV = 567.00

+48.22
129.94

N 23° 41' 12.1" E

-L- TS STA. 233-

-L- SC

90° DUKE POWER EASEMENT

90° DUKE POWER EASEMENT

TIE BER ROADY

| | |
|----------------------------------|---------------------|
| PROJECT REFERENCE NO. U-3109B | SHEET NO. 8 |
| RW SHEET NO. | HYDRAULICS ENGINEER |
| ROADWAY DESIGN ENGINEER | |

**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

PLANS PREPARED BY:
DRMP
DRMP, INC.
9550 FAIRVIEW ROAD, SUITE 320
CHARLOTTE, NC 28215
NC LICENSE NO. C-2113 (T)041332-2209

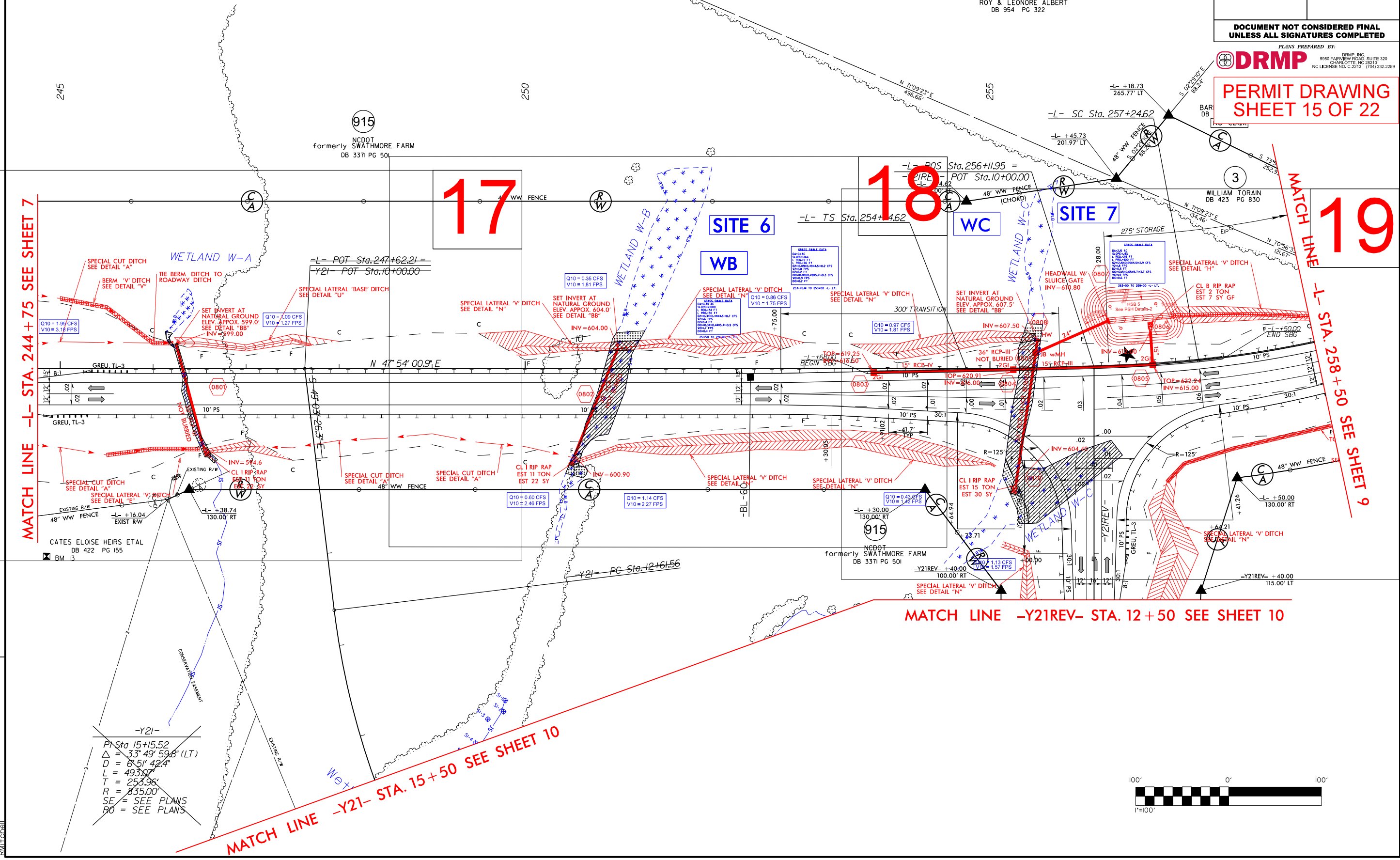
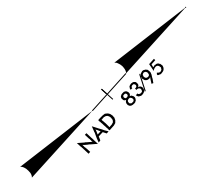
**PERMIT DRAWING
SHEET 15 OF 22**

-L-
PI Sta 256+41.38
Os = 5' 58" 05.9"
Ls = 250.00'
LT = 166.76'
ST = 83.42'

PI Sta 261+84.00
Δ = 4' 53" 43.2" (LT)
D = 4' 46" 28.7"
L = 877.45'
T = 459.38'
R = 1,200.00'
SE = SEE PLANS
RO = SEE PLANS

- DENOTES EXCAVATION IN WETLAND
- DENOTES FILL IN WETLAND
- DENOTES IMPACTS IN SURFACE WATER
- DENOTES MECHANIZED CLEARING
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER

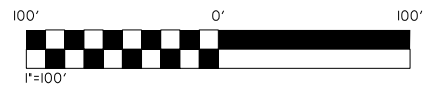
ROY & LEONORE ALBERT
DB 954 PG 322



REVISIONS
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 R:\18\2018-HYDRAULICS\PERMITS\Environmental\Drawings\Full Sheets\U3109B-Hyd_psh_08.dgn

-Y21-
PI Sta 15+15.52
Δ = 33' 49" 59.8" (LT)
D = 6' 51" 42.4"
L = 493.97'
T = 253.96'
R = 835.00'
SE = SEE PLANS
RO = SEE PLANS

MATCH LINE -Y21- STA. 15 + 50 SEE SHEET 10



| | |
|----------------------------------|---------------------|
| PROJECT REFERENCE NO. U-3109B | SHEET NO. 8 |
| RW SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

DOCUMENT NOT CONSIDERED FINAL
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PLANS PREPARED BY:
DRMP
DRMP, INC.
9550 FAIRVIEW ROAD, SUITE 320
CHARLOTTE, NC 28215
NC LICENSE NO. C-2213 (704) 332-2289

PERMIT DRAWING
SHEET 16 OF 22

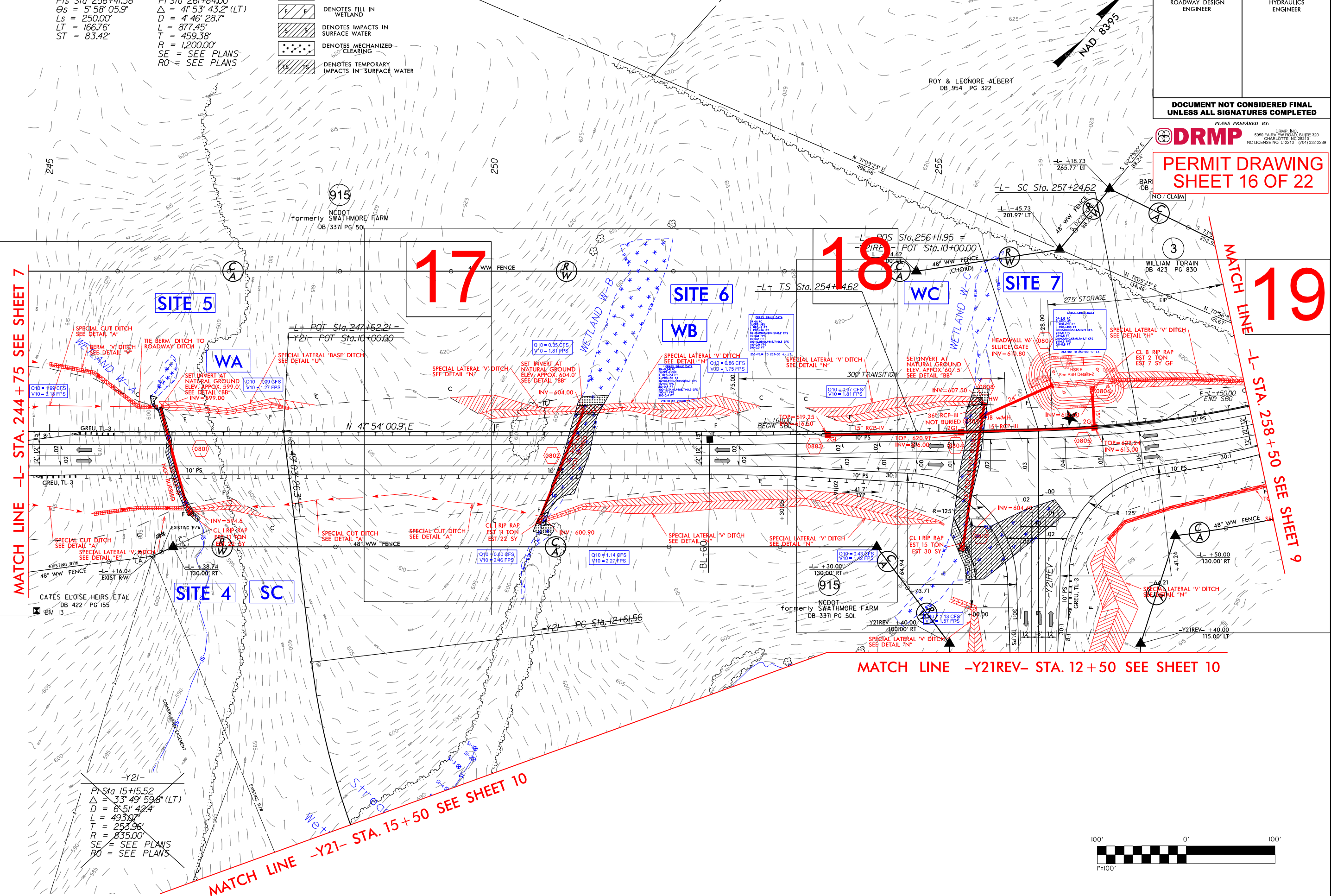
-L-
PI Sta 256+41.38
Os = 5' 58" 05.9"
Ls = 250.00'
LT = 166.76'
ST = 83.42'

PI Sta 261+84.00
Δ = 4' 53" 43.2" (LT)
D = 4' 46" 28.7"
L = 877.45'
T = 459.38'
R = 1,200.00'
SE = SEE PLANS
RO = SEE PLANS

- DENOTES EXCAVATION IN WETLAND
- DENOTES FILL IN WETLAND
- DENOTES IMPACTS IN SURFACE WATER
- DENOTES MECHANIZED CLEARING
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER

MATCH LINE -L- STA. 244+75 SEE SHEET 7

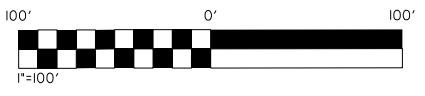
MATCH LINE -L- STA. 258+50 SEE SHEET 9



-Y21-
PI Sta 15+15.52
Δ = 33' 49" 59.8" (LT)
D = 6' 51" 42.4"
L = 493.07'
T = 253.96'
R = 835.00'
SE = SEE PLANS
RO = SEE PLANS

MATCH LINE -Y21- STA. 15+50 SEE SHEET 10

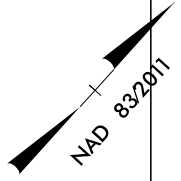
MATCH LINE -Y21REV- STA. 12+50 SEE SHEET 10



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 8.17/99






8/17/99

20' 0' 20'
SCALE 1"=20'



| | | | |
|---|---------------------|-----------|--|
| PROJECT REFERENCE NO. | | SHEET NO. | |
| 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 | | | |

PERMIT DRAWING
SHEET 17 OF 22

-  DENOTES IMPACTS IN SURFACE WATER
-  DENOTES FILL IN WETLAND
-  DENOTES MECHANIZED CLEARING
-  DENOTES TEMPORARY IMPACTS IN SURFACE WATER
-  DENOTES EXCAVATION IN WETLAND

SITE 5

WA

Q10 = 1.99 CFS
V10 = 3.18 FPS

Q10 = 1.09 CFS
V10 = 1.27 FPS

INV = 599.00

N 47° 54' 00.9" E

GREU, TL-3

4' PS

.02

.02

12'

12'

15'

12'

12'

.02

GREU, TL-3

8' PS

8:1

10' PS

NOT BURIED
30" R/C PIPE

S 49° 03' 26.3" E

INV = 594.6

48" WW FENCE

EXISTING R/W
48" WW FENCE

EXISTING R/W




SITE 4

SC

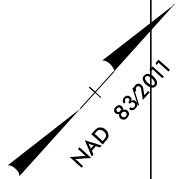
REVISIONS

5/18/2018
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R Mitchell

8/17/99

-  DENOTES FILL IN WETLAND
-  DENOTES EXCAVATION IN WETLAND
-  DENOTES MECHANIZED CLEARING

20' 0' 20'
SCALE 1"=20'



| | |
|---|---------------------|
| PROJECT REFERENCE NO. | SHEET NO. |
| 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 | |

PERMIT DRAWING
SHEET 18 OF 22

SITE 6

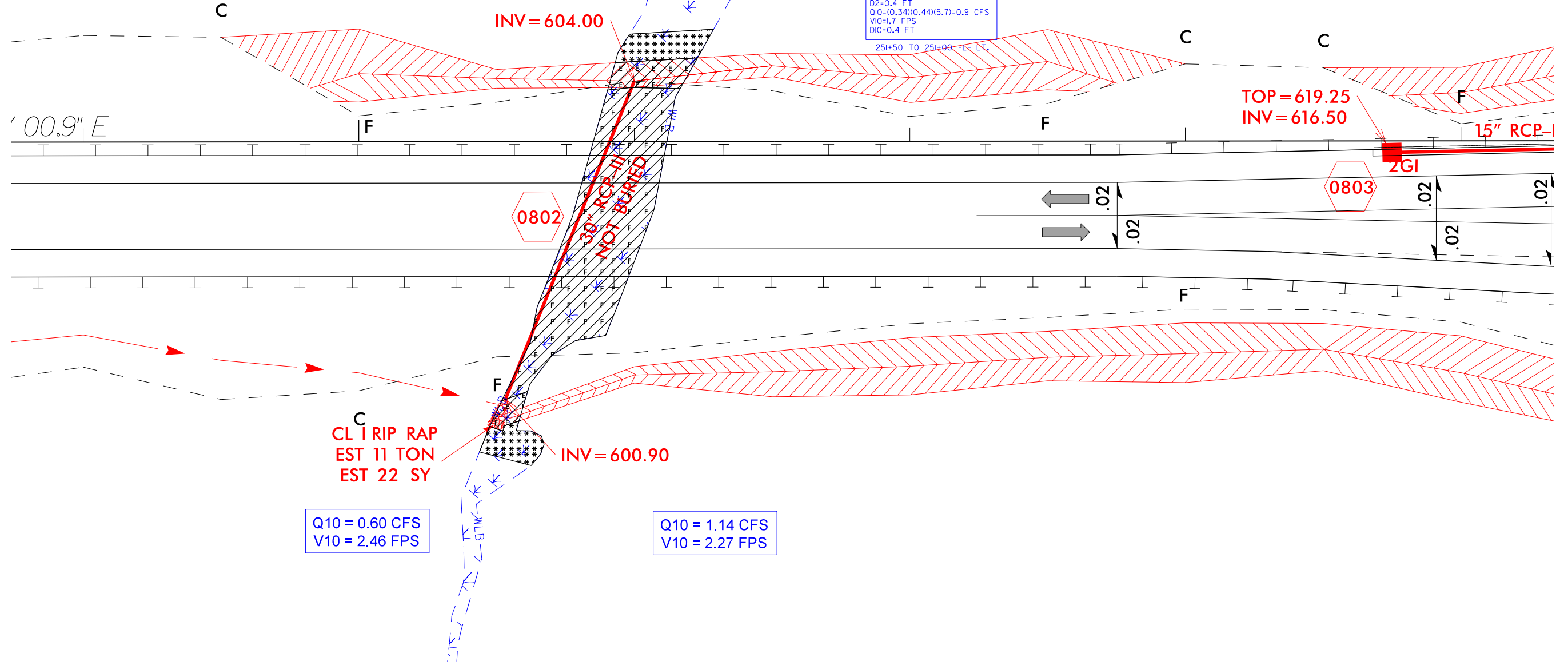
WB

GRASS_SWALE_DATA
DA=0.1 AC
SLOPE=1.16%
L REQ.=76 FT
L PRO.=76 FT
Q2=(0.09)(0.49)(4.5)=0.2 CFS
V2=0.8 FPS
D2=0.2 FT
Q10=(0.09)(0.49)(5.7)=0.3 CFS
V10=0.9 FPS
D10=0.2 FT
253+76.14 TO 253+00 -L- LT.

Q10 = 0.35 CFS
V10 = 1.81 FPS

GRASS_SWALE_DATA
DA=0.34 AC
SLOPE=2.00%
L REQ.=34 FT
L PRO.=50 FT
Q2=(0.34)(0.44)(4.5)=0.7 CFS
V2=1.6 FPS
D2=0.4 FT
Q10=(0.34)(0.44)(5.7)=0.9 CFS
V10=1.7 FPS
D10=0.4 FT
251+50 TO 251+00 -L- LT.

Q10 = 0.86 CFS
V10 = 1.75 FPS



REVISIONS

5/18/2018
R:\U3109B\Hydraulics\PERMITS-Environmental\Drawings\U3109B_Hyd_perm_wet_psh05.dgn
Mitchell

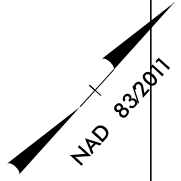
8/17/99

20' 0' 20'
SCALE 1"=20'

- DENOTES FILL IN WETLAND
- DENOTES EXCAVATION IN WETLAND
- DENOTES MECHANIZED CLEARING

WC

SITE 7

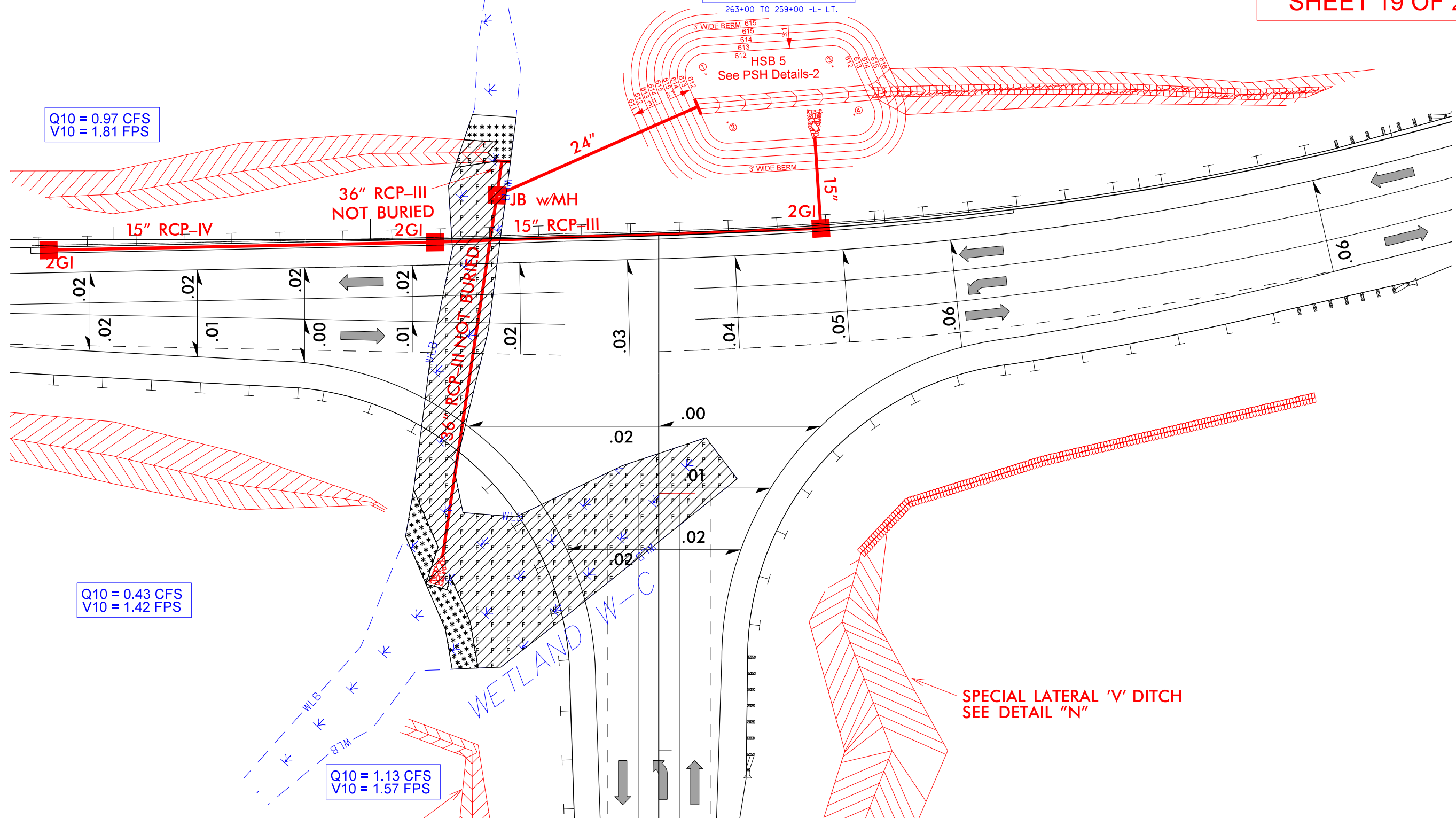


| | |
|---|---------------------|
| PROJECT REFERENCE NO. | SHEET NO. |
| R/W SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
| INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION | |
| DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED | |

PERMIT DRAWING
SHEET 19 OF 22

GRASS SWALE DATA
 DA=2.15 AC
 SLOPE=1.18%
 L REQ.=215 FT
 L PRO.=400 FT
 Q2=(2.15)(0.65)(4.5)=2.9 CFS
 V2=1.8 FPS
 D2=0.5 FT
 Q10=(2.15)(0.65)(5.7)=3.7 CFS
 V10=1.9 FPS
 D10=0.6 FT

Q10 = 0.97 CFS
V10 = 1.81 FPS



Q10 = 0.43 CFS
V10 = 1.42 FPS

Q10 = 1.13 CFS
V10 = 1.57 FPS

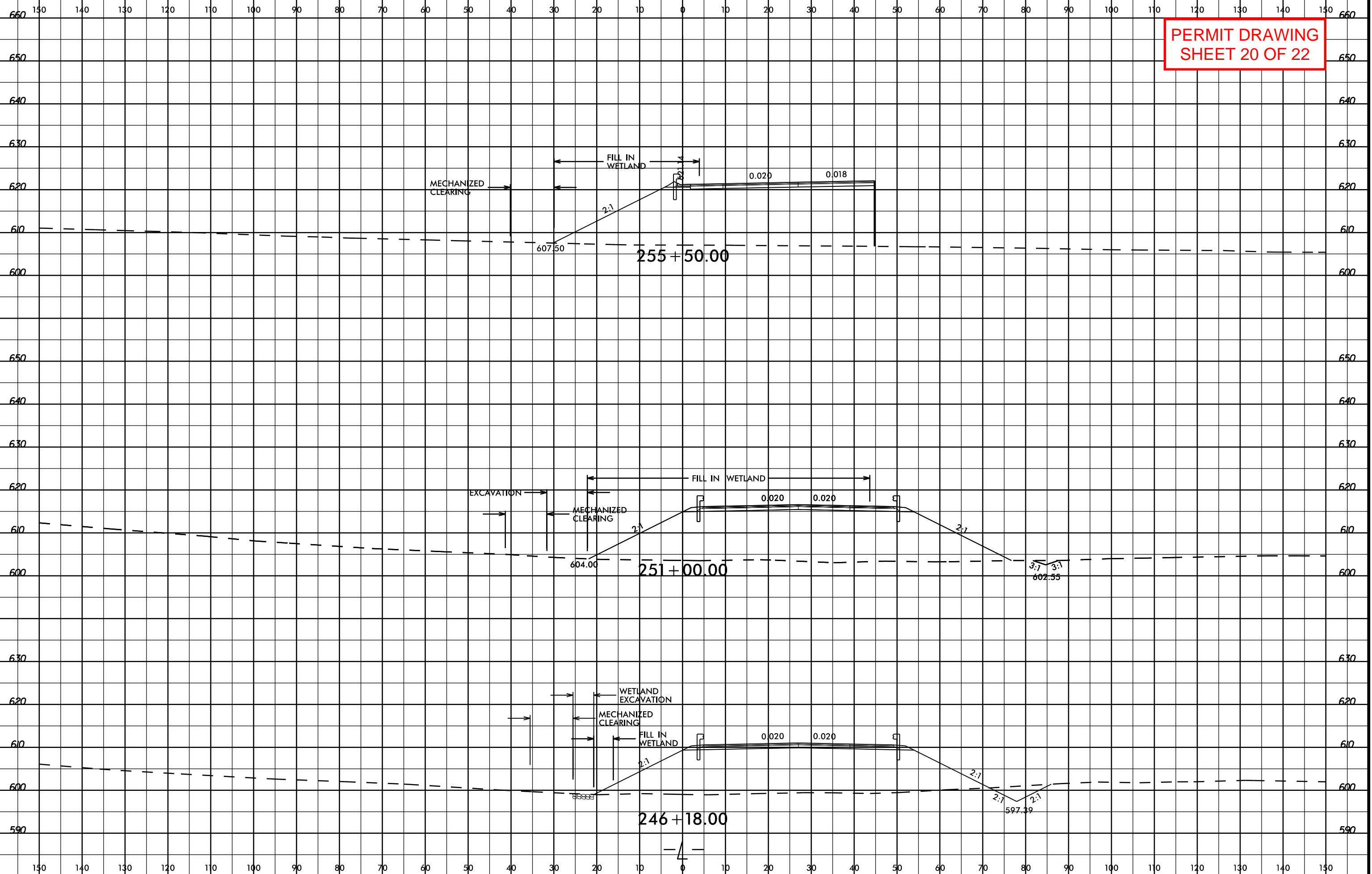
SPECIAL LATERAL 'V' DITCH
SEE DETAIL "N"

REVISIONS

5/18/2018
R:\U3109B\Hydraulics\PERMITS-Environmental\Drawings\U3109B_Hyd_perm_wet_psh06.dgn
Mitchell



PERMIT DRAWING
SHEET 20 OF 22



6/23/16

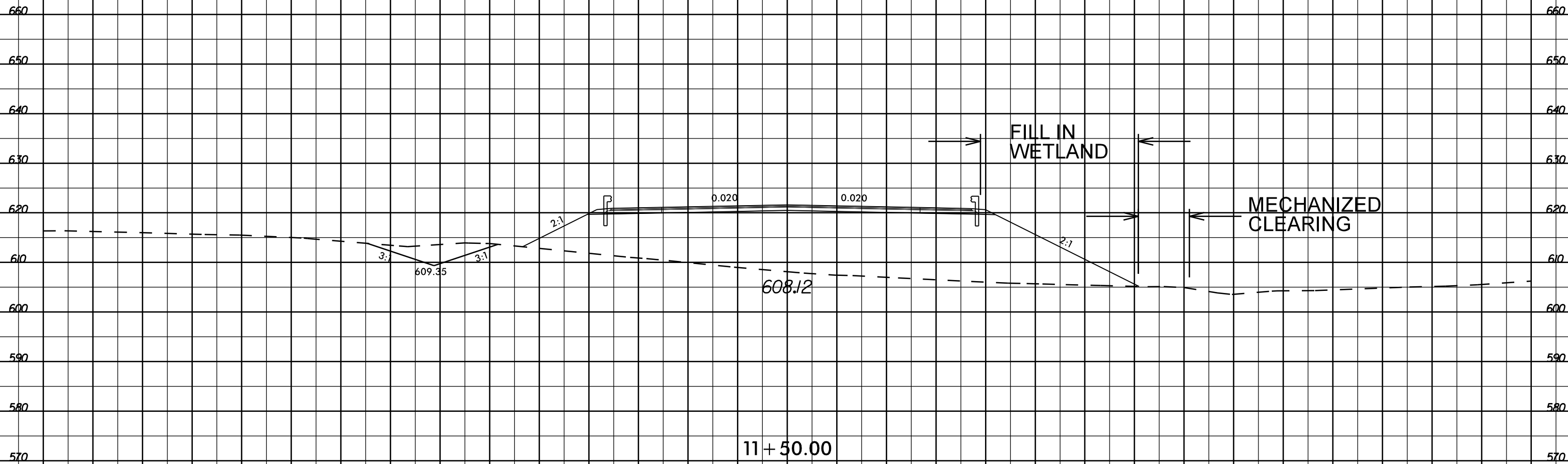


PROJ. REFERENCE NO.
U-3109B

SHEET NO.
X-19

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

PERMIT DRAWING
SHEET 21 OF 22



11+50.00
-Y2I REV-

2:17:00 PM 3:55:20 PM 2/17/09 U:\3109B_Hydro\3109B_Hyd...wet_xpl_Y2I REV.dgn

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

WETLAND AND SURFACE WATER IMPACTS SUMMARY

| Site No. | Station (From/To) | Structure Size / Type | WETLAND IMPACTS | | | | | SURFACE WATER IMPACTS | | | | |
|-----------------|-------------------|---------------------------------|---------------------------------|-----------------------------|-----------------------------|--------------------------------------|--------------------------------|---------------------------|-----------------------|---|-------------------------------------|----------------------------|
| | | | Permanent Fill In Wetlands (ac) | Temp. Fill In Wetlands (ac) | Excavation in Wetlands (ac) | Mechanized Clearing in Wetlands (ac) | Hand Clearing in Wetlands (ac) | Permanent SW impacts (ac) | Temp. SW impacts (ac) | Existing Channel Impacts Permanent (ft) | Existing Channel Impacts Temp. (ft) | Natural Stream Design (ft) |
| 1 | -L- 207+00/208+15 | 12'X6' RCBC | | | | | | 0.02 | < 0.01 | 120 | 50 | |
| 1 | -L- 206+99/207+50 | Bank stabilization | | | | | | < 0.01 | | 51 | | |
| 1 | -L- 207+98/208+14 | Outlet Scour Hole Stabilization | | | | | | < 0.01 | | 27 | | |
| 2 | -L- 226+82/227+21 | Bank stabilization | | | | | | < 0.01 | < 0.01 | 12 | 10 | |
| 3 | -L- 233+50/235+77 | 42" RCP-III | | | | | | 0.02 | < 0.01 | 268 | 20 | |
| 3 | -L- 235+55/235+78 | Bank stabilization | | | | | | < 0.01 | | 22 | | |
| 3 | -L- 233+44/233+64 | Outlet Scour Hole Stabilization | | | | | | < 0.01 | | 20 | | |
| 4-5 | -L- 246+16/246+70 | 30" RCP-III | < 0.01 | | < 0.01 | < 0.01 | | 0.02 | < 0.01 | 127 | 10 | |
| 6 | -L- 250+61/251+17 | 30" RCP-III | 0.06 | | < 0.01 | 0.01 | | | | | | |
| 7 | -L- 255+17/256+42 | 36" RCP-III | 0.17 | | < 0.01 | 0.02 | | | | | | |
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| | | | | | | | | | | | | |
| TOTALS*: | | | 0.23 | | 0.01 | 0.03 | | 0.07 | 0.01 | 647 | 90 | 0 |

*Rounded totals are sum of actual impacts

NOTES:

NC DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 04/10/2018
 ALAMANCE COUNTY
 U-3109B
 WBS #: 34900.1.FR3

SHEET 22 OF 22

Revised 2016 09 09