



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

J. ERIC BOYETTE
SECRETARY

April 17, 2020

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

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

SUBJECT: 404 Nationwide Permit, 401 Water Quality Certification, and Buffer Certification for the Improvements to the Interchange with US 29 and SR 4771 (Reedy Fork Parkway), Guilford County, Division 7; WBS No 36599.1.5, **TIP: R-4707**.

Enclosed are the US Army Corps of Engineers Permit, NC Division of Water Resources Water Quality Certification, Buffer Certification, and Project Commitments ("greensheet") for the above-referenced project. All environmental permits have been received for the construction of this project.

The permit package has been posted on the NCDOT website at:
<https://xfer.services.ncdot.gov/pdea/PermIssued/>

ec:

Mr. Ron Davenport, P.E. Contracts Management
Mr. Jerry Parker, Division Environmental Officer
Dr. Majed Al-Ghandour, P.E., Programming and TIP
Mr. Stephen Morgan, P.E., Hydraulics
Mr. Brian Hanks, P.E., Structure Design
Mr. Mark Staley, Roadside Environmental
Mr. Lamar Sylvester, P.E., State Roadway Construction Engineer

PROJECT COMMITMENTS

T.I.P Project No. R-4707
Interchange Improvements at US 29 and SR 2790 (Eckerson Road)/SR 2526 (Summit Avenue)
Guilford County
WBS Element 36599.1.5

COMMITMENTS FROM PROJECT DEVELOPMENT AND DESIGN

Geotechnical Unit

NCDOT-GeoEnvironmental will re-evaluate potential hazardous waste sites near the proposed project prior to right of way acquisition.

Hydraulics Unit

The Hydraulics Unit will coordinate with the North Carolina Floodplain Mapping Program (FMP), to determine the status of the project with regard to applicability of North Carolina Department of Transportation (NCDOT) Memorandum of Agreement (MOA) (Dated August 12, 2016), or approval of a Conditional Letter of Map Revision (CLOMR) and subsequent final Letter of Map Revision (LOMR).

This project is located within the Jordan Lake Water Supply Watershed and is subject to the Jordan Lake Water Supply Watershed Buffer Rules (15A NCAC 02B .0267). The buffer rules will be met.

Division 7

This project involves construction activities on or adjacent to FEMA-regulated stream(s). Therefore, NCDOT Division 7 shall submit sealed as-built construction plans to the Hydraulics Unit upon completion of the project construction, certifying that the drainage structure(s) and roadway embankment that are located within the 100-year floodplain were built as shown on the construction plans, both horizontally and vertically.

The Division will coordinate with the Guilford County School System, Guilford County Emergency Services, and Greensboro Fire Department prior to construction.

Division 7 will coordinate with local media during the construction of the project to alert the public of traffic restrictions and construction related activities.

Special Design Section

Mast lighting will be evaluated during the final design if required.

Project Management Unit

The project is located in the vicinity of the stream mitigation site at Reedy Fork. Final design of the proposed improvements will ensure this site will not be impacted.

NCDOT – Project Management will coordinate with the City of Greensboro in the development of a municipal agreement regarding cost sharing for pedestrian accommodation during the design development process

COMMITMENTS FROM PERMITTING

No additional commitments were developed during project permitting.

DEPARTMENT OF THE ARMY PERMIT

Permittee **NORTH CAROLINA DEPARTMENT OF TRANSPORTATION**
ATTN: MR. PHILIP S. HARRIS III, P.E., C.P.M.

Permit No. **SAW-2016-00981**

Issuing Office **CESAW-RG-R**

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below.

Project Description: The project involves construction of TIP R-4707, U.S. 29 Interchange Improvements at SR 2790 (Eckerson Road)/SR 2526 (Summit Avenue) in Greensboro, Guilford County, including replacing on new location the existing deficient Bridge No. 360 that connects Reedy Fork Parkway (SR 4771) to Summit Avenue, west of US 29 and construct a new interchange for Reedy Fork Parkway over US 29 on new location to the south of the existing interchange. The improvements also include upgrades to Summit Avenue from 0.2 mile south of Bryan Park Road to the proposed interchange, and enhancements to Reedy Fork Parkway from Eckerson Road to Summit Avenue. The project involves the permanent discharge of dredged or fill material into 1,691 linear feet of stream channel (1,589 linear feet of permanent loss and 102 linear feet of bank stabilization) and 0.56 acre of wetlands (0.35 acre of permanent fill, 0.04 acre of excavation, and 0.17 acre of mechanized clearing), as well as the temporary discharge of fill material into 60 linear feet of stream channel.

Project Location: The project area is located approximately 8 miles northeast of downtown Greensboro, in northeastern Guilford County, North Carolina. (36.173055° N, -79.713599° W)

Permit Conditions:

General Conditions:

1. The time limit for completing the work authorized ends on **December 31, 2025**. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.
2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in

compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.

3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and state coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

4. If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.

5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.

6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit,

Special Conditions:

SEE ATTACHED SPECIAL CONDITIONS

Further Information:

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:

() Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).

(X) Section 404 of the Clean Water Act (33 U.S.C. 1344).

() Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1413).

2. Limits of this authorization.

a. This permit does not obviate the need to obtain other Federal, state, or local authorizations required by law.

b. This permit does not grant any property rights or exclusive privileges.

- c. This permit does not authorize any injury to the property or rights of others.
 - d. This permit does not authorize interference with any existing or proposed Federal project.
3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:
- a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.
 - b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.
 - c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.
 - d. Design or construction deficiencies associated with the permitted work.
 - e. Damage claims associated with any future modification, suspension, or revocation of this permit.
4. Reliance on Applicant's Data: The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.
5. Reevaluation of Permit Decision. This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:
- a. You fail to comply with the terms and conditions of this permit.
 - b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (See 4 above).
 - c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you to comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. Extensions. General condition 1 establishes a time limit for the completion of the activity authorized by this permit, Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interest decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.

Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.

Carla Dagnino

April 15, 2020

For/

(PERMITTEE) NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
for **MR. PHILIP S. HARRIS III, P.E., C.P.M.**

(DATE)

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.

*Monte
Matthews*

Date: 2020.04.15 15:46:57 -04'00'

For/

(DISTRICT COMMANDER) ROBERT J. CLARK, COLONEL

(DATE)

When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

(TRANSFEEE)

(DATE)

SPECIAL CONDITIONS
ACTION ID: SAW-2016-00981
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R-4707, U.S. 29 INTERCHANGE IMPROVEMENTS AT SR 2790 (ECKERSON
ROAD)/SR 2526 (SUMMIT AVENUE)
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WORK LIMITS / NOTIFICATION

1. **Work Limits:** All work authorized by this permit shall be performed in strict compliance with the attached permit plans entitled Permit Drawing Sheets 1 through 23 and Utility Permit Drawings Sheet No. 6, Inset:6, UC-XX-A, and Wetland and Surface Water Impacts Summary. The Permittees shall ensure that the construction design plans for this project do not deviate from the permit plans attached to this authorization. Any modification to the attached permit plans must be approved by the U.S. Army Corps of Engineers (Corps) prior to any active construction in waters or wetlands.
2. **Unauthorized Dredge and/or Fill:** Except as authorized by this permit or any Corps approved modification to this permit, no excavation, fill, or mechanized land-clearing activities shall take place at any time in the construction or maintenance of this project, within waters or wetlands, or shall any activities take place that cause the degradation of waters or wetlands. There shall be no excavation from, waste disposal into, or degradation of, jurisdictional wetlands or waters associated with this permit without appropriate modification of this permit, including appropriate compensatory mitigation. This prohibition applies to all borrow and waste activities connected with this project. In addition, except as specified in the plans attached to this permit, no excavation, fill or mechanized land-clearing activities shall take place at any time in the construction or maintenance of this project, in such a manner as to impair normal flows and circulation patterns within, into, or out of waters or wetlands or to reduce the reach of waters or wetlands.
3. **Permit Distribution:** The Permittees shall require its contractors and/or agents to comply with the terms and conditions of this permit in the construction and maintenance of this project, and shall provide each of its contractors and/or agents associated with the construction or maintenance of this project with a copy of this permit. A copy of this permit, including all conditions and drawings shall be available at the project site during construction and maintenance of this project.
4. **Preconstruction Meeting:** The Permittee shall schedule and attend a preconstruction meeting between its representatives, the contractors representatives, and the Corps, Raleigh Field Office, NCDOT Regulatory Project Manager, prior to any work within jurisdictional waters and wetlands to ensure that there is a mutual understanding of all the terms and conditions contained with this Department of Army Permit. The Permittee shall provide the Corps, Raleigh Field Office, NCDOT Project Manager, with a copy of the final permit plans at least two weeks prior to the preconstruction meeting along with a

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description of any changes that have been made to the project's design, construction methodology or construction timeframe. The Permittee shall schedule the preconstruction meeting for a time frame when the Corps and North Carolina Division of Water Resources (NCDWR) Project Managers can attend. The Permittee shall invite the Corps and NCDWR Project Managers a minimum of thirty (30) days in advance of the scheduled meeting in order to provide those individuals with ample opportunity to schedule and participate in the required meeting. The thirty (30) day requirement can be waived with the concurrence of the Corps.

5. **Notification of Construction Commencement and Completion:** The Permittees shall notify the Corps in writing prior to beginning the work authorized by this permit and again upon completion of the work authorized by this permit.
6. **Reporting Address:** All reports, documentation, and correspondence required by the conditions of this permit shall be submitted to the following: U.S. Army Corps of Engineers, Wilmington District Raleigh Field Office, Attn: David E. Bailey at 919-554-4884 Ext. 30 / David.E.Bailey2@usace.army.mil. The Permittees shall reference the following permit number, SAW-2017-00103, on all submittals.
7. **Permit Revocation:** The Permittees, upon receipt of a notice of revocation of this permit or upon its expiration before completion of the work will, without expense to the United States and in such time and manner as the Secretary of the Army or his authorized representative may direct, restore the water or wetland to its pre-project condition.
8. **Reporting Violations:** Violation of these permit conditions or violation of Section 404 of the Clean Water Act shall be reported to the Corps in writing and by telephone at: 919-554-4884 Ext. 30 / David.E.Bailey2@usace.army.mil within 24 hours of the Permittee's discovery of the violation.
9. **Endangered Species Act:** The Permittees shall implement all necessary measures to ensure the authorized activity does not kill, injure, capture, harass, or otherwise harm any federally-listed threatened or endangered species. While accomplishing the authorized work, if the Permittees discover or observe an injured or dead threatened or endangered species, the U.S. Army Corps of Engineers, Wilmington District Raleigh Field Office, Attn: David E. Bailey at 919-554-4884 Ext. 30 / David.E.Bailey2@usace.army.mil will be immediately notified to initiate the required Federal coordination.
10. The U.S. Fish and Wildlife Service's (USFWS's) Programmatic Biological Opinion (BO) titled "Northern Long-eared Bat (NLEB) Programmatic Biological Opinion for

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North Carolina Department of Transportation (NCDOT) Activities in Eastern North Carolina (Divisions 1-8),” dated March 25, 2015, and adopted on April 10, 2015, contains mandatory terms and conditions to implement the reasonable and prudent measures that are associated with “incidental take” that are specified in the BO. Your authorization under this Department of the Army permit is conditional upon your compliance with all the mandatory terms and conditions associated with incidental take of the BO, which terms and conditions are incorporated by reference in this permit. Failure to comply with the terms and conditions associated with incidental take of the BO, where a take of the listed species occurs, would constitute an unauthorized take, and it would also constitute non-compliance with your Department of the Army permit. The USFWS is the appropriate authority to determine compliance with the terms and conditions of its BO, and with the ESA.

11. National Historic Preservation Act: While accomplishing the authorized work, if the Permittees discover any previously unknown cultural resources, the District Engineer will be immediately notified so that required coordination can be initiated with the North Carolina Division of Natural and Cultural Resources.

12. Culverts:

- a. Unless otherwise requested in the application and depicted on the approved permit plans, culverts greater than 48 inches in diameter shall be buried at least one foot below the bed of the stream. Culverts 48 inches in diameter and less shall be buried or placed on the stream bed as practicable and appropriate to maintain aquatic passage, and every effort shall be made to maintain existing channel slope. The bottom of the culvert shall be placed at a depth below the natural stream bottom to provide for passage during drought or low flow conditions. Culverts shall be designed and constructed in a manner that minimizes destabilization and head cutting.
- b. Measures shall be included in the construction/installation that will promote the safe passage of fish and other aquatic organisms. The dimension, pattern, and profile of the stream above and below a pipe or culvert shall not be modified by widening the stream channel or by reducing the depth of the stream in connection with the construction activity. The width, height, and gradient of a proposed opening shall be such as to pass the average historical low flow and spring flow without adversely altering flow velocity. Spring flow should be determined from gauge data, if available. In the absence of such data, bankfull flow can be used as a comparable level.

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- c. The Permittee shall implement all reasonable and practicable measures to ensure that equipment, structures, fill pads, work, and operations associated with this project do not adversely affect upstream and/or downstream reaches. Adverse effects include, but are not limited to, channel instability, flooding, and/or stream bank erosion. The Permittee shall routinely monitor for these effects, cease all work when detected, take initial corrective measures to correct actively eroding areas, and notify this office immediately. Permanent corrective measures may require additional authorization by the Corps.
 - d. Culverts placed within wetlands must be installed in a manner that does not restrict the flows and circulation patterns of waters of the United States. Culverts placed across wetland fills purely for the purposes of equalizing surface water shall not be buried, but the culverts must be of adequate size and/or number to ensure unrestricted transmission of water.
- 13. Maintain Flows and Circulation Patterns of Waters:** Except as specified in the plans attached to this permit, no excavation, fill or mechanized land-clearing activities shall take place at any time in the construction or maintenance of this project, in such a manner as to impair normal flows and circulation patterns within waters or wetlands or to reduce the reach of waters and/or wetlands.
- 14. Sediment and Erosion Control:**
- a. During the clearing phase of the project, heavy equipment shall not be operated in surface waters or stream channels. Temporary stream crossings will be used to access the opposite sides of stream channels. All temporary diversion channels and stream crossings will be constructed of non-erodible materials. Grubbing of riparian vegetation will not occur until immediately before construction begins on a given segment of stream channel.
 - b. No fill or excavation impacts for the purposes of sedimentation and erosion control shall occur within jurisdictional waters, including wetlands, unless the impacts are included on the plan drawings and specifically authorized by this permit. This includes, but is not limited to, sediment control fences and other barriers intended to catch sediment losses.
 - c. The Permittees shall remove all sediment and erosion control measures placed in waters and/or wetlands, and shall restore natural grades on those areas, prior to project completion.

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- d. The Permittees shall use appropriate sediment and erosion control practices which equal or exceed those outlined in the most recent version of the "North Carolina Sediment and Erosion Control Planning and Design Manual" to ensure compliance with the appropriate turbidity water quality standard. Erosion and sediment control practices shall be in full compliance with all specifications governing the proper design, installation and operation and maintenance of such Best Management Practices in order to ensure compliance with the appropriate turbidity water quality standards. This shall include, but is not limited to, the immediate installation of silt fencing or similar appropriate devices around all areas subject to soil disturbance or the movement of earthen fill, and the immediate stabilization of all disturbed areas. Additionally, the project shall remain in full compliance with all aspects of the Sedimentation Pollution Control Act of 1973 (North Carolina General Statutes Chapter 113A Article 4). Adequate sedimentation and erosion control measures shall be implemented prior to any ground disturbing activities to minimize impacts to downstream aquatic resources. These measures shall be inspected and maintained regularly, especially following rainfall events. All fill material shall be adequately stabilized at the earliest practicable date to prevent sediment from entering adjacent waters or wetlands.
15. **Clean Fill:** The Permittees shall use only clean fill material for this project. The fill material shall be free of items such as trash, construction debris, metal and plastic products, and concrete block with exposed metal reinforcement bars. Soils used for fill shall not be contaminated with any toxic substance in concentrations governed by Section 307 of the Clean Water Act. Unless otherwise authorized by this permit, all fill material placed in waters or wetlands shall be generated from an upland source.
16. **Temporary Fills:** Within thirty (30) days of the date of completing the authorized work, the Permittee shall remove all temporary fills in waters of the United States and restore the affected areas to pre-construction contours and elevations. The affected areas shall be re-vegetated with native, non-invasive vegetation as necessary to minimize erosion and ensure site stability.
17. **Borrow and Waste:** To ensure that all borrow and waste activities occur on high ground and do not result in the degradation of adjacent waters and wetlands, except as authorized by this permit, the Permittee shall require its contractors and/or agents to identify all areas to be used as borrow and/or waste sites associated with this project. The Permittee shall provide the Corps with appropriate maps indicating the locations of proposed borrow and/or waste sites as soon as such information is available. The Permittee shall submit to the Corps site-specific information needed to ensure that borrow and/or waste sites

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

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

AQUATIC LIFE

19. **Aquatic Life Movement:** No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area. All discharges of dredged or fill material within waters of the United States shall be designed and constructed, except as authorized as indirect impacts, to maintain low flows to sustain the movement of aquatic species.
20. **Prohibitions on Concrete:** The Permittees shall take measures necessary to prevent live or fresh concrete, including bags of uncured concrete, from coming into contact with any water in or entering waters of the United States. Water

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inside coffer dams or casings that has been in contact with concrete shall only be returned to waters of the United States when it no longer poses a threat to aquatic organisms (concrete is set and cured).

COMPENSATORY MITIGATION

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

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

Permittee: North Carolina Department of Transportation
Project Name: R-4707

Action ID: SAW-2016-00981
County: Guilford

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

Instructions to Sponsor: The Sponsor must verify that the mitigation requirements (credits) shown below are available at the identified site. By signing below, the Sponsor is accepting full responsibility for the identified mitigation, regardless of whether or not they have received payment from the Permittee. Once the form is signed, the Sponsor must update the bank ledger and provide a copy of the signed form and the updated bank ledger to the Permittee, the USACE Project Manager, and the Wilmington District Mitigation Office (see contact information on page 2). The Sponsor must also comply with all reporting requirements established in their authorizing instrument.

Permitted Impacts and Compensatory Mitigation Requirements

Permitted Impacts Requiring Mitigation*: **8-digit HUC and Basin: 03030002, Cape Fear River Basin**

Stream Impacts (linear feet)			Wetland Impacts (acres)			
Warm	Cool	Cold	Riparian Riverine	Riparian Non-Riverine	Non-Riparian	Coastal
1,589				0.56		

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

Compensatory Mitigation Requirements: **8-digit HUC and Basin: 03030002, Cape Fear River Basin**

Stream Mitigation (credits)			Wetland Mitigation (credits)			
Warm	Cool	Cold	Riparian Riverine	Riparian Non-Riverine	Non-Riparian	Coastal
3,178				1.12		

Mitigation Site Debited: NCDMS

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

Section to be completed by the Mitigation Sponsor

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

Mitigation Sponsor Name: _____

Name of Sponsor's Authorized Representative: _____

Signature of Sponsor's Authorized Representative

Date of Signature

**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:

- The stream credits required correspond to 1,589 linear feet of impacts at 2:1.
- The wetland credits required correspond to 0.56 linear feet of impacts at 2:1.

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



Date: 2020.04.09
10:39:33 -04'00'

USACE Project Manager Signature

April 9, 2020

Date of Signature

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



NORTH CAROLINA
Environmental Quality

ROY COOPER

Governor

MICHAEL S. REGAN

Secretary

S. DANIEL SMITH

Director

March 19, 2020

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 and Jordan Lake Buffer Rules with ADDITIONAL CONDITIONS for U.S. 29 Interchange Improvements at SR 2790 (Eckerson Road)/SR 2526 (Summit Avenue) in Greensboro, Guilford County, Federal Aid Project No. NHS-2526(3), Division 7, TIP No. R-4707; WBS No. 36599.1.5. NCDWR Project No. 20200065**

Dear Mr. Harris:

Attached hereto is a copy of Certification No. WQC004220 issued to the North Carolina Department of Transportation (NCDOT) dated March 19, 2020.

If additional assistance is requested, please contact April Norton at april.norton@ncdenr.gov.

Sincerely,

DocuSigned by:

Amy Chapman

9C9886312D6D474
Daniel Smith, Director

Division of Water Resources

Electronic copy only distribution:

Carla Dagnino, NCDOT, Environmental Analysis Unit
Michael Turchy, NCDOT, Environmental Analysis Unit
April Norton, Division of Water Resource, Central Office
David Bailey, US Army Corps of Engineers, Raleigh Field Office
Jerry Parker, Division 7 Environmental Supervisor
Gary Jordan, US Fish and Wildlife Service
Travis Wilson, NC Wildlife Resource Commission
Beth Harmon, Ecosystem Enhancement Program



401 Water Quality Certification Pursuant to Section 401 of the Federal Clean Water Act and Jordan Lake Buffer Rules 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 and 15A NCAC 2B .0267. This certification authorizes the NCDOT to impact 0.88 acres of jurisdictional wetlands, 1,741 linear feet of jurisdictional streams and 106,937 (Zone 1) and 73,930 (Zone 2) square feet of protected riparian buffers in Guilford County. The project shall be constructed pursuant to the application dated and received January 14, 2020. The authorized impacts are as described below:

Stream Impacts in the Cape Fear River Basin

Site	Permanent Fill in Perennial Stream (linear ft)	Temporary Fill in Perennial Stream (linear ft)	Permanent Fill in Intermittent Stream (linear ft)	Temporary Fill in Intermittent Stream (linear ft)	Bank Stabilization (linear ft)	Total Stream Impact (linear ft)	Stream Impacts Requiring Mitigation (linear ft)
1	0	0	79	10	10	99	0
3A	314	5	0	0	73	392	314
3B	1040	15	0	0	19	1074	1040
3B (Utilities)	31	10	0	0	0	0	0
3C	0	8	0	0	0	8	0
5	156	12	0	0	0	168	0
TOTAL	1510	40	79	10	102	1741	1354

Total Stream Impacts for Project: 1,741 linear feet.

Wetland Impacts in the Cape Fear River Basin

Site	Fill (ac)	Excavation (ac)	Mechanized Clearing (ac)	Total Wetland Impact (ac)
2/WF	0.01	0	0.01	0.02
4/WJ	0.34	0.02	0.15	0.51
6/WI	0	0.02	0	0.02
4/WJ (Utilities)	0	0	0.01	0.01
TOTAL	0.35	0.04	0.17	0.56

Total Wetland Impact for Project: 0.88 acres.



Jordan Lake Riparian Buffer Impacts

Site	Zone 1 Impact (sq ft)	<i>minus</i> Wetlands in Zone 1 (sq ft)	= Zone 1 Buffers (not wetlands) (sq ft)	Zone 1 Buffer Mitigation Required (3:1 ratio)	Zone 2 Impact (sq ft)	<i>minus</i> Wetlands in Zone 2 (sq ft)	= Zone 2 Buffers (not wetlands) (sq ft)	Zone 2 Buffer Mitigation Required (1.5:1 ratio)
1	8009	320	7689	23067	6593	281	6312	9468
3A	23468	0	23468	70404	15429	0	15429	23144
3A (Utilities)	0	0	0	0	204	0	204	306
3B	60989	0	60989	182967	43187	743	42444	63666
3B (Utilities)	4162	0	4162	12486	1932	0	1932	2898
5	9800	2988	6812	20436	5161	1976	3185	4778
5 (Utilities)	509	315	194	582	1424	81	1343	2015
TOTAL	106937	3623	103314	309942	73930	3081	70849	106275

Total Buffer Impact for Project: 106,937 for Zone 1 and 73,930 for Zone 2

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 application dated and received January 14, 2020. 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). Additional buffer impacts may require additional compensatory mitigation as described in 15A NCAC 2B .0267. 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.

Condition(s) of Certification:**Project Specific Conditions**

1. All stormwater runoff shall be directed as sheet flow through stream buffers at non-erosive velocities, unless otherwise approved by this certification. [15A NCAC 2B .0267]
2. All riparian buffers impacted by the placement of temporary fill or clearing activities shall be restored to the preconstruction contours and revegetated. Maintained buffers shall be permanently revegetated with non-woody species by the end of the growing season following completion of construction. For the purpose of this condition, maintained buffer areas are defined as areas within the transportation corridor that will be subject to regular NCDOT maintenance activities including mowing. The area with non-maintained buffers



shall be permanently revegetated with native woody species before the next growing season following completion of construction.

3. Pursuant to 15A NCAC 2B.067 sediment and erosion control devices shall not be placed in Zone 1 of any Jordan Lake Buffer without prior approval by the NCDWR. At this time, the NCDWR has approved no sediment and erosion control devices in Zone 1, outside of the approved project impacts, anywhere on this project. Moreover, sediment and erosion control devices shall be allowed in Zone 2 of the buffers if Zone 1 is not compromised, and that discharge is released as diffuse flow.
4. Any modifications to this 401 Water Quality Certification that propose additional stream impacts or increased impervious surface requiring additional stormwater management may be subject the Jordan Water Supply Nutrient Strategy (15A NCAC 2B .0267). The NCDOT shall coordinate with the NCDWR prior to submitting a modification request to determine the applicability of the Jordan Water Supply Nutrient Strategy. This condition does not apply to major modifications for additional sections of the project that were covered under the Finding of No Significant Impact or approved in the Avoidance and Minimization stage of the project.

General Conditions

1. 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 NCDWR. If this condition is unable to be met due to bedrock or other limiting features encountered during construction, please contact NCDWR for guidance on how to proceed and to determine whether a permit modification will be required. [15A NCAC 02H.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 protected riparian buffers. [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)]
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 always be maintained on the construction site. 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 any and all statutes, rules, regulations, or ordinances that may be imposed by other government agencies (i.e. local, state, and federal) having jurisdiction, including but not limited to applicable buffer rules, stormwater management rules, soil erosion and sedimentation control requirements, etc.
17. 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)]
18. Upon completion of the project (including any impacts at associated borrow or waste sites), NCDOT or authorized agent 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)]
19. 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 02B. 0267]
20. There shall be no excavation from, or waste disposal into, jurisdictional wetlands or waters associated with this permit without appropriate modification. Should waste or borrow sites, or access roads to waste or borrow sites, be located in wetlands or streams, compensatory mitigation will be required since that is a direct impact from road construction activities.[15A NCAC 02H.0506(b)(3) and (c)(3)]



21. Erosion and sediment control practices must be in full compliance with all specifications governing the proper design, installation and operation and maintenance of such Best Management Practices in order to protect surface waters standards [15A NCAC 02H.0506(b)(3) and (c)(3)]:
 - a. The erosion and sediment control measures for the project must be designed, installed, operated, and maintained in accordance with the most recent version of the *North Carolina Sediment and Erosion Control Planning and Design Manual*.
 - b. The design, installation, operation, and maintenance of the sediment and erosion control measures must be such that they equal, or exceed, the requirements specified in the most recent version of the *North Carolina Sediment and Erosion Control Manual*. The devices shall be maintained on all construction sites, borrow sites, and waste pile (spoil) projects, including contractor-owned or leased borrow pits associated with the project.
 - c. For borrow pit sites, the erosion and sediment control measures must be designed, installed, operated, and maintained in accordance with the most recent version of the *North Carolina Surface Mining Manual*.
 - d. The reclamation measures and implementation must comply with the reclamation in accordance with the requirements of the Sedimentation Pollution Control Act.

22. 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)]

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

19th day of March 2020
DIVISION OF WATER RESOURCES

Sincerely,

DocuSigned by:

S. Daniel Smith, Director
Division of Water Resources

WQC004220



R-4707 Stream Impact Total Revision (WBS 36599.1.5)

Norton, April R <april.norton@ncdenr.gov>

Sat 3/21/2020 10:33 AM

To: Turchy, Michael A <maturchy@ncdot.gov>

Cc: David.E.Bailey2@usace.army.mil <david.e.bailey2@usace.army.mil>; Carpenter, Kristi <kristilynn.carpenter@ncdenr.gov>

Hi Michael. The stream impacts listed on R-4707 are correct, however, the totals did not include the Utility impacts. Please see the below table with the correct total impacts. The below changes do not impact mitigation requirements. Please let me know if you have any questions, or if you prefer a complete revision to the 401.

Site	Permanent Fill in Perennial Stream (linear ft)	Temporary Fill in Perennial Stream (linear ft)	Permanent Fill in Intermittent Stream (linear ft)	Temporary Fill in Intermittent Stream (linear ft)	Bank Stabilization (linear ft)	Total Stream Impact (linear ft)	Stream Impacts Requiring Mitigation (linear ft)
1	0	0	79	10	10	99	0
3A	314	5	0	0	73	392	314
3B	1040	15	0	0	19	1074	1040
3B (Utilities)	31	10	0	0	0	41	0
3C	0	8	0	0	0	8	0
5	156	12	0	0	0	168	0
TOTAL	1541	50	79	10	102	1782	1354

Total Stream Impacts for Project: 1,782



NORTH CAROLINA
Environmental Quality

ROY COOPER

Governor

MICHAEL S. REGAN

Secretary

S. DANIEL SMITH

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 _____





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



(Version 2.08; Released April 2018)

WBS Element: 36599.1.5 **TIP No.:** R-4707 **County(ies):** Guilford **Page** 1 **of** 3

General Project Information

WBS Element:	36599.1.5	TIP Number:	R-4707	Project Type:	Other	Date:	4/3/2019
NCDOT Contact:	Craig Lee, PE			Contractor / Designer:	Mead & Hunt/Roger Weadon, PE		
Address:	1590 Mail Service Center Raleigh, NC 27699-1590			Address:	111 E. Hargett Street, Suite 300 Raleigh, NC 27601		
Phone:	919-707-6708			Phone:	(919) 714-8669		
Email:	cilee@ncdot.gov			Email:	roger.weadon@meadhunt.com		
City/Town:	Greensboro			County(ies):	Guilford		
River Basin(s):	Cape Fear			CAMA County?	No		
Wetlands within Project Limits?	Yes						

Project Description

Project Length (lin. miles or feet):	1.36	Surrounding Land Use:	Residential, Industrial				
	Proposed Project			Existing Site			
Project Built-Upon Area (ac.)	36.3	ac.	26.7	ac.			
Typical Cross Section Description:	US-29 will remain the same typical section with minor widening and realignment to accommodate interchange improvements. SR 4771 (Reedy Fork Pkwy) is to be realigned with a proposed DDI interchange over US-29 south of its current location. A section of SR 2526 (Summit Ave) will be upgraded from a 2-lane undivided facility to a 4-lane facility with a concrete median.			US-29 is a 4-lane divided highway with a grassed median and shoulder section. SR 4771 (Reedy Fork Pkwy) is an existing 2-lane facility with shoulder section with various widths to accommodate turn lanes. SR 2526 (Summit Ave) is also a 2-lane undivided facility with a shoulder section and variable widths to accommodate turn lanes in spots.			

Annual Avg Daily Traffic (veh/hr/day):	Design/Future:	49,000	Year:	2040	Existing:	40,200	Year:	2020
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General Project Narrative:
(Description of Minimization of Water Quality Impacts)

This project involves improving the interchange of US 29 and SR 4771 (Reedy Fork Pkwy) including the removal of the existing interchange bridge and realigning SR 4771 (Reedy Fork Pkwy) to cross US 29 over new location. The proposed DDI interchange will be located south of the current interchange. The project also involves improving a section of SR 2526 (Summit Ave.) and reconfiguring the intersection with SR 4771 (Reedy Fork Pkwy.) along with improving driveway connections to businesses in the industrial area for increased truck traffic. BMPs were used throughout the project for stormwater treatment and to minimize erosion. Sheet flow across grassed median and shoulder sections will also provide treatment of stormwater before entering environmentally sensitive areas. Rip Rap pads and Preformed Scour Holes have been placed at pipe outlets to dissipate stormwater energy. This will slow stormwater velocities and minimize erosion at pipe outlets. A swale was used when applicable to slow conveyed stormwater to an acceptable velocity as it enters and passes through the buffer zones. A step pool is also used for the transition of an existing minor tributary into a relocated channel between the culverts. Roadway grade changes were kept to a minimum over existing to help minimize impacts. Stream impacts were also minimized during the construction of the culverts and relocation channel. Additional avoidance and minimization efforts include elimination of impacts to two existing culverts within the project area. Initially, the existing 2@ 8'x8' RCBC located on -Y- just beyond the end of the project was to be extended on the outlet end to accommodate a widened roadway section. During final design, the proposed roadway was able to be tied into the existing roadway prior to the culvert, thus eliminating the extension and any impacts to the stream. There was a potential need to replace the 3@7'x8' RCBC located on -Y2- just beyond the end of construction (Site 3C) due to a possible CLOMR with the overall project improvements. However, a supplemental 60" pipe was placed parallel to the culvert extensions under US 29 to provide additional hydraulic capacity and eliminate the need to permanently impact Site 3C.

Waterbody Information

Surface Water Body (1):	Unnamed Tributary at Camp Herman		NCDWR Stream Index No.:	16-11-10-(2)			
NCDWR Surface Water Classification for Water Body	Primary Classification:	Water Supply V (WS-V)					
	Supplemental Classification:	Nutrient Sensitive Waters (NSW)					
Other Stream Classification:							
Impairments:							
Aquatic T&E Species?	Comments:						
NRTR Stream ID:				Buffer Rules in Effect:	Jordan Lake		
Project Includes Bridge Spanning Water Body?	No	Deck Drains Discharge Over Buffer?	N/A	Dissipator Pads Provided in Buffer?	No		
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)						

09.08/99

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY

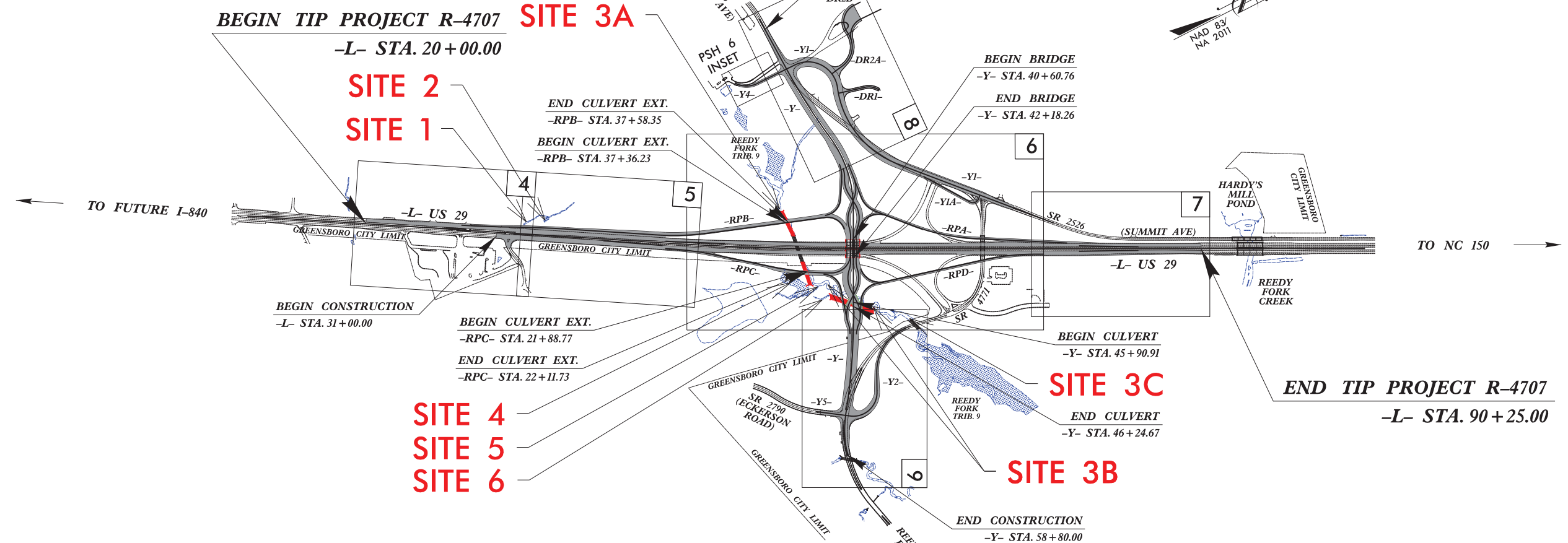
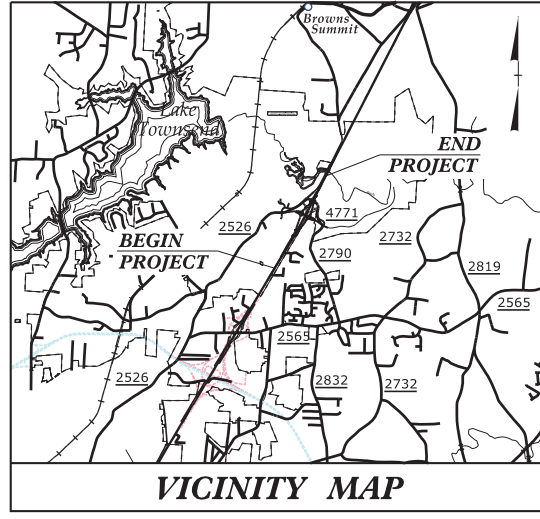
LOCATION: US 29 AND SR 4771 (REEDY FORK PARKWAY)
INTERCHANGE IMPROVEMENTS; IMPROVE ROADWAY, MODIFY INTERCHANGE AND REPLACE BRIDGE 360
TYPE OF WORK: GRADING, PAVING, DRAINAGE, SIGNALS AND STRUCTURE

WETLAND AND SURFACE WATER IMPACTS PERMIT

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-4707	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
36599.1.5	NA	PE	
36599.2.1	NA	R/W & UTILITY	

**PERMIT DRAWING
SHEET 1 OF 23**

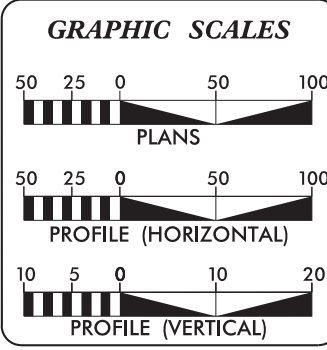
TIP PROJECT: R-4707



CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.
THIS IS A CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.
A PORTION OF THIS PROJECT IS LOCATED WITHIN THE MUNICIPAL BOUNDARIES OF THE CITY OF GREENSBORO.

**INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION**
**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

CONTRACT:



DESIGN DATA

ADT 2020 =	40,200
ADT 2040 =	49,000
K =	9 %
D =	60 %
T =	18 % *
V =	60 MPH
* TTST = 9% + DUAL 9%	
FUNC CLASS = FUTURE INTERSTATE	
STATEWIDE TIER	

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-4707	=	1.330 MILES
LENGTH STRUCTURE TIP PROJECT R-4707	=	0.000 MILES
TOTAL LENGTH TIP PROJECT R-4707	=	1.330 MILES

-L- USED TO DETERMINE PROJECT LENGTH

Prepared for NCDOT in the Office of:

Mead&Hunt
111 E. Hargett Street, Suite 300
Raleigh, North Carolina 27601
919-714-8670 | meadhunt.com
NC License No. F-1235

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
MARCH 28, 2019

LETTING DATE:
JUNE 16, 2020

RICK DECOLA, PE
PROJECT ENGINEER

TRAVIS COOK, PE
PROJECT DESIGN ENGINEER

LAURA SUTTON, PE
NCDOT CONTACT

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: _____ P.E.



17-MAY-2019 15:18
R:\Hydraulics\PERMITS_Environmental\Drawings\Wetland and Stream Impacts\R4707_Hyd-prm_wet_tsh.dgn
1784F1D

8/17/99

PROJECT REFERENCE NO. R-4707	SHEET NO. 4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	

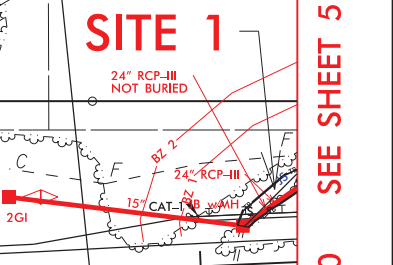
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

Mead&Hunt
111 E. Hargett Street, Suite 300
Raleigh, North Carolina 27601
919-714-8870 | meadandhunt.com
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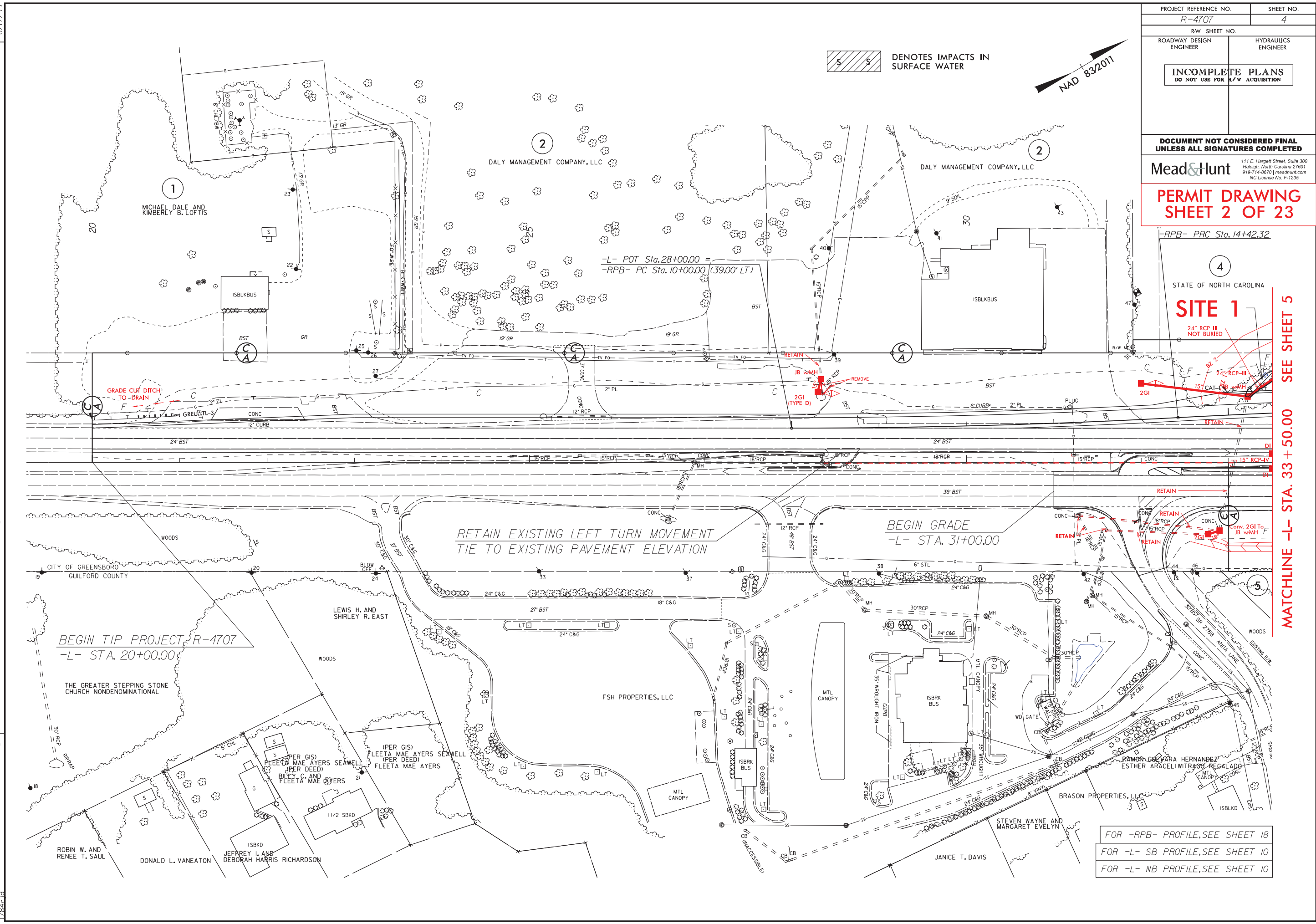
PERMIT DRAWING SHEET 2 OF 23

RPB- PRC Sta. 14+42.32

STATE OF NORTH CAROLINA



REVISIONS



SEE SHEET 5

MATCHLINE -L- STA. 33 + 50.00

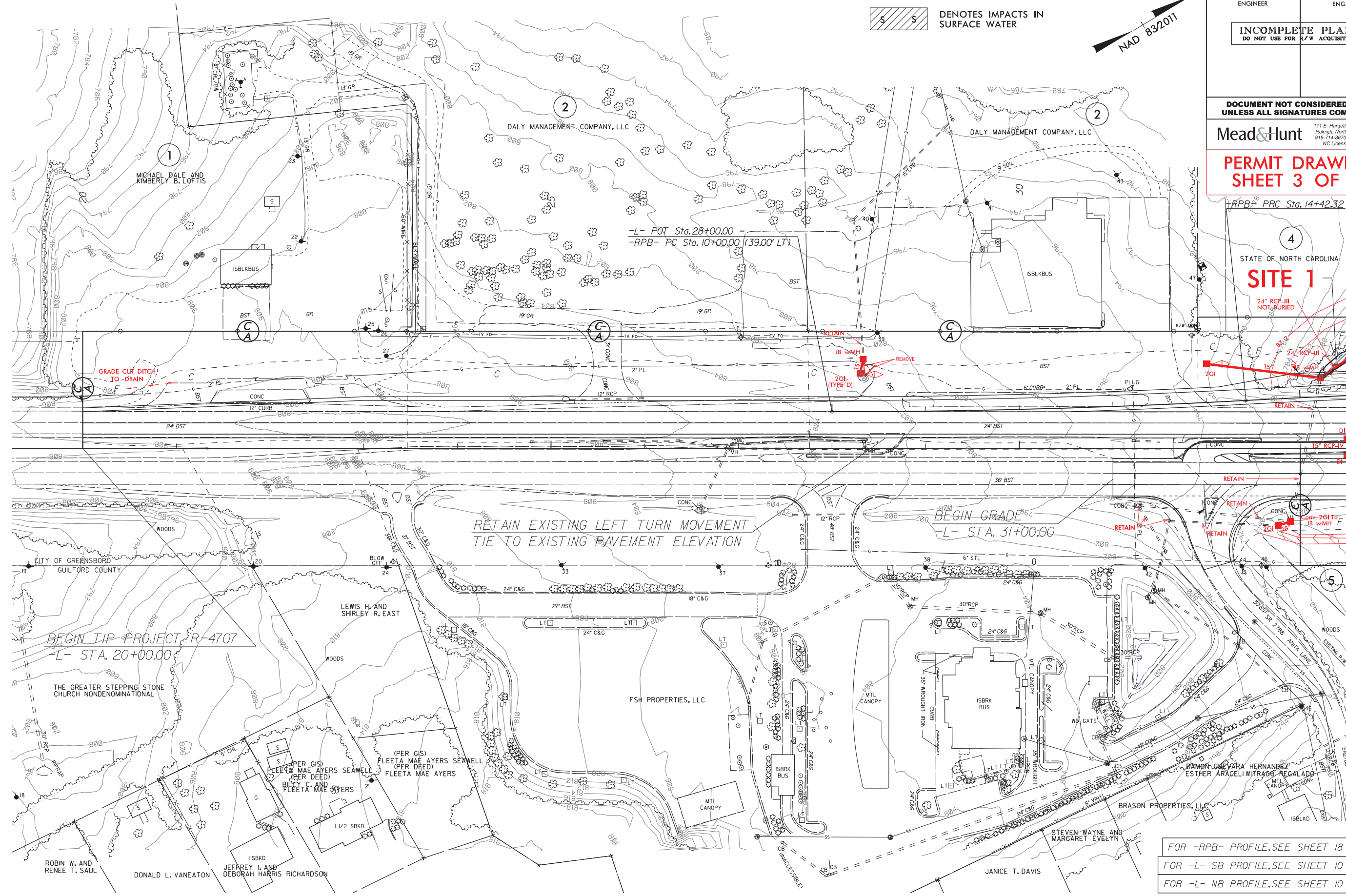
FOR -RPB- PROFILE, SEE SHEET 18
FOR -L- SB PROFILE, SEE SHEET 10
FOR -L- NB PROFILE, SEE SHEET 10

25 JUN 2019 14:48
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178.dwg

8/17/99

REVISIONS

25 JUN 2019 14:48
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1784



DENOTES IMPACTS IN SURFACE WATER

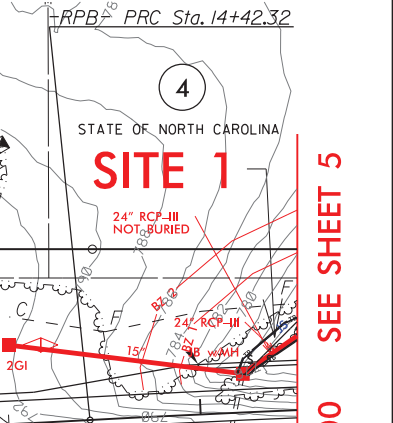


PROJECT REFERENCE NO. R-4707	SHEET NO. 4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	

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**PERMIT DRAWING
SHEET 3 OF 23**



1
MICHAEL DALE AND
KIMBERLY B. LOFTIS

2
DALY MANAGEMENT COMPANY, LLC

2
DALY MANAGEMENT COMPANY, LLC

-L- POT Sta. 28+00.00 =
-RPB- PC Sta. 10+00.00 (39.00' LT)

4
STATE OF NORTH CAROLINA
SITE 1

GRADE CUT DITCH
TO DRAIN

RETAIN EXISTING LEFT TURN MOVEMENT
TIE TO EXISTING PAVEMENT ELEVATION

BEGIN GRADE
-L- STA. 31+00.00

BEGIN TIP PROJECT R-4707
-L- STA. 20+00.00

THE GREATER STEPPING STONE
CHURCH NONDENOMINATIONAL

LEWIS H. AND
SHIRLEY R. EAST

FSH PROPERTIES, LLC

MTL
CANOPY

ISBRK
BUS

BRASON PROPERTIES, LLC

ROBIN W. AND
RENEE T. SAUL

DONALD L. VANEATON

JEFFREY I. AND
DEBORAH HARRIS RICHARDSON

MTL
CANOPY

JANICE T. DAVIS

FOR -RPB- PROFILE, SEE SHEET 18
FOR -L- SB PROFILE, SEE SHEET 10
FOR -L- NB PROFILE, SEE SHEET 10

MATCHLINE -L- STA. 33 + 50.00 SEE SHEET 5

8/17/99
 17 MAY 2018 15:18 PERMITS_Environmental_Drawings\Wetland and Stream_Impacts\4707_Hyd_prm_wet_05.dgn
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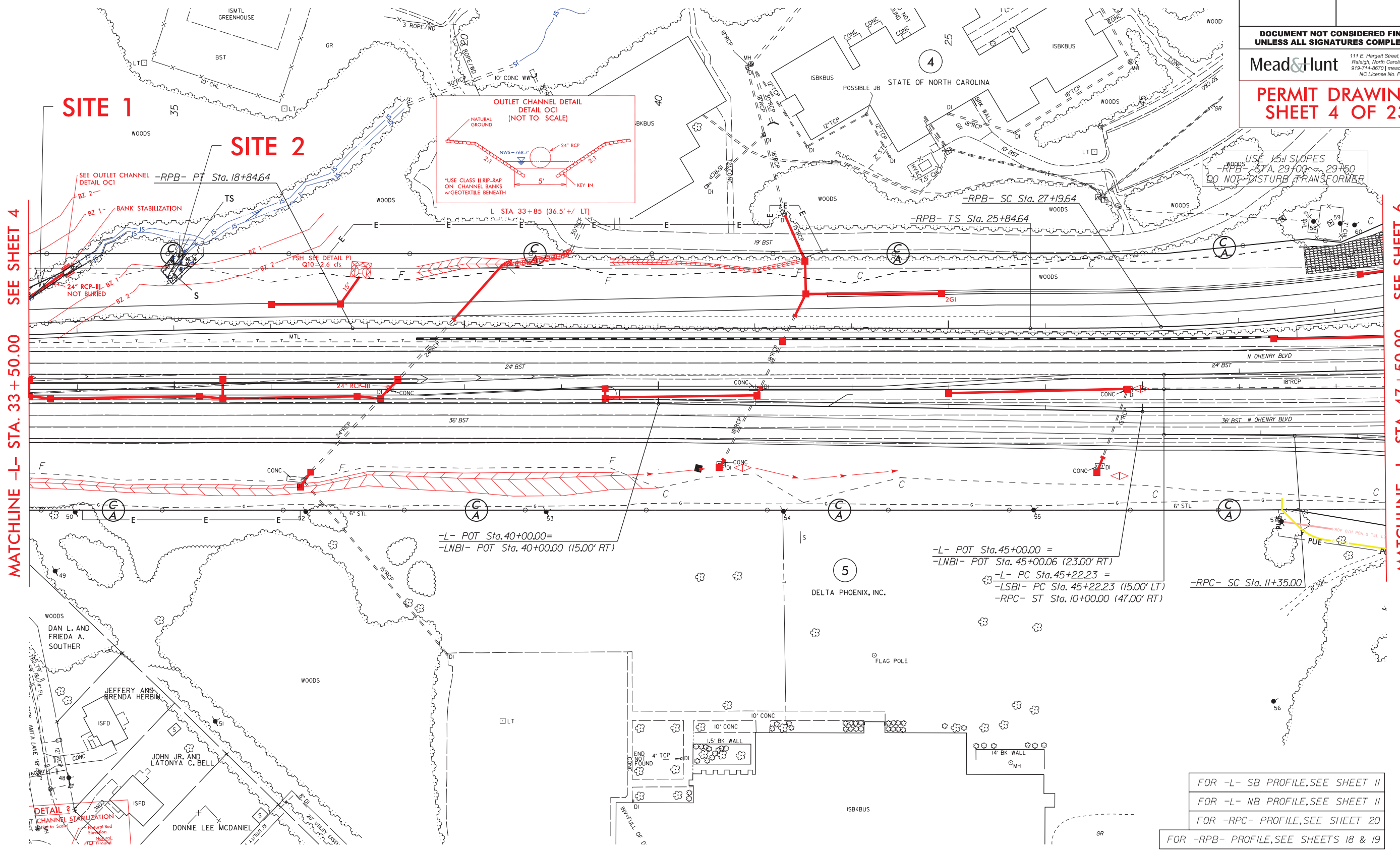
	DENOTES IMPACTS IN SURFACE WATER		DENOTES FILL IN WETLAND
	DENOTES TEMPORARY IMPACTS IN SURFACE WATER		DENOTES MECHANIZED CLEARING



PROJECT REFERENCE NO. R-4707	SHEET NO. 5
RW SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION	

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PERMIT DRAWING
 SHEET 4 OF 23



MATCHLINE -L- STA. 33 + 50.00 SEE SHEET 4

MATCHLINE -L- STA. 47 + 50.00 SEE SHEET 6

FOR -L- SB PROFILE, SEE SHEET 11
 FOR -L- NB PROFILE, SEE SHEET 11
 FOR -RPC- PROFILE, SEE SHEET 20
 FOR -RPB- PROFILE, SEE SHEETS 18 & 19

8/17/99
 17 MAY 2018 15:18
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 DENOTES IMPACTS IN SURFACE WATER	 DENOTES FILL IN WETLAND
 DENOTES TEMPORARY IMPACTS IN SURFACE WATER	 DENOTES MECHANIZED CLEARING



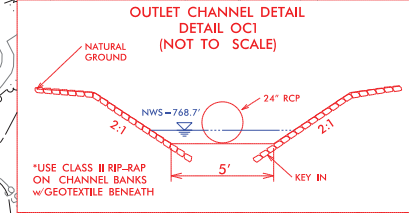
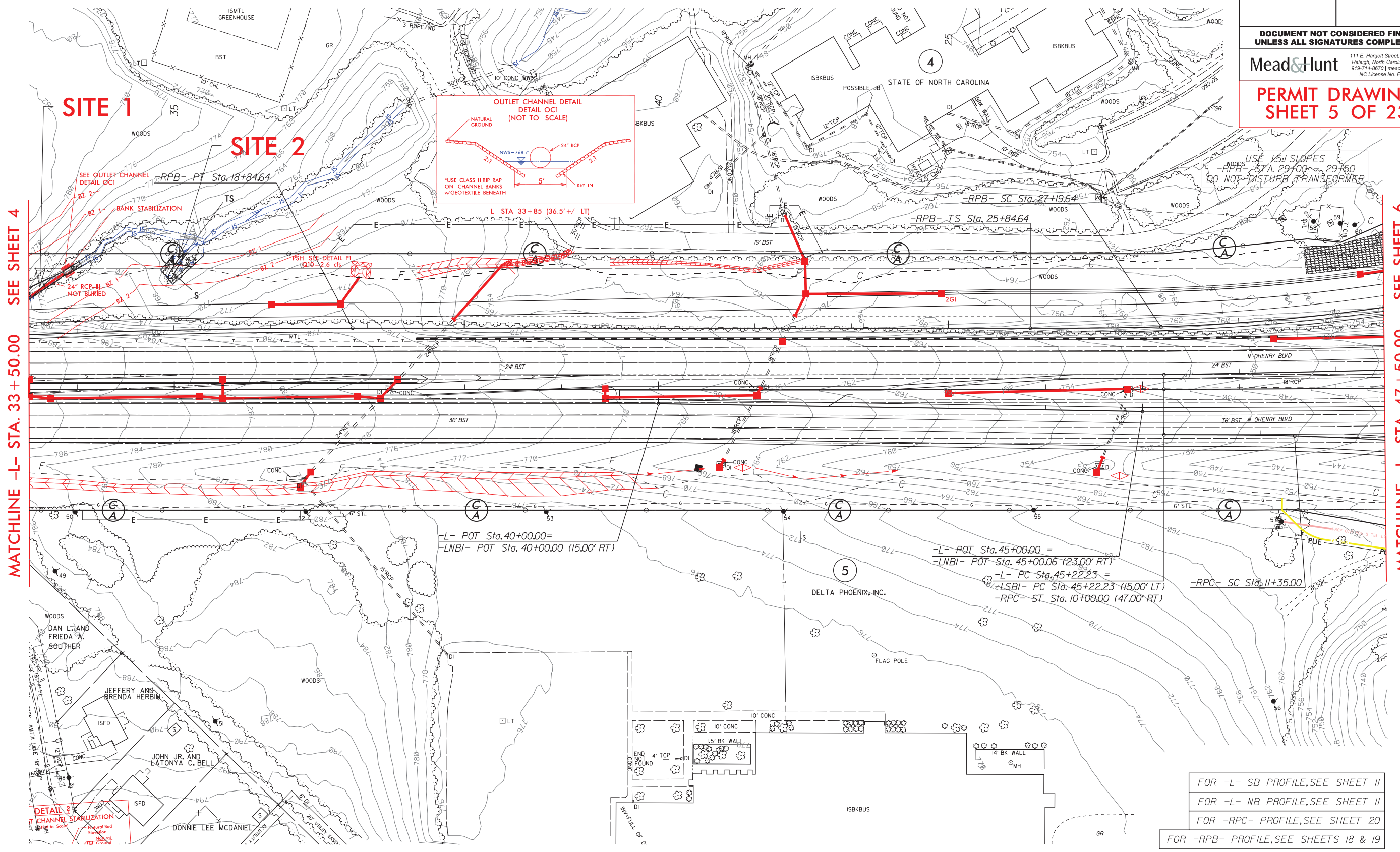
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RW SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION	

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PERMIT DRAWING
SHEET 5 OF 23



USE 1.5:1 SLOPES
 -RPB- STA. 29+00 ~ 29+60
 DO NOT DISTURB TRANSFORMER

MATCHLINE -L- STA. 33 + 50.00 SEE SHEET 4

MATCHLINE -L- STA. 47 + 50.00 SEE SHEET 6

-L- POT Sta. 40+00.00 =
 -LNBI- POT Sta. 40+00.00 (15.00' RT)

-L- POT Sta. 45+00.00 =
 -LNBI- POT Sta. 45+00.06 (23.00' RT)
 -L- PC Sta. 45+22.23 =
 -LSBI- PC Sta. 45+22.23 (15.00' LT)
 -RPC- ST Sta. 10+00.00 (47.00' RT)

FOR -L- SB PROFILE, SEE SHEET 11
 FOR -L- NB PROFILE, SEE SHEET 11
 FOR -RPC- PROFILE, SEE SHEET 20
 FOR -RPB- PROFILE, SEE SHEETS 18 & 19

REVISIONS

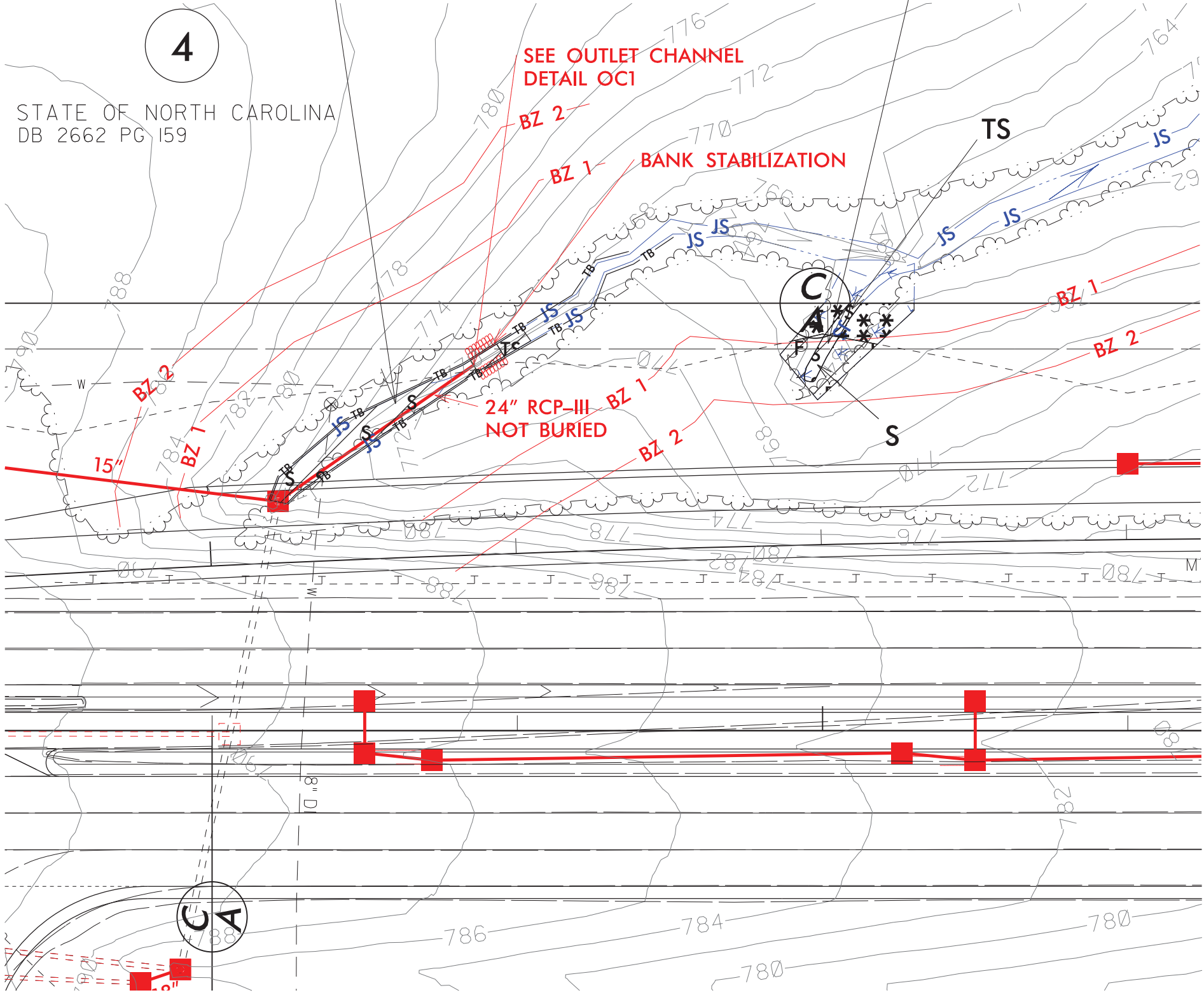
8/17/99




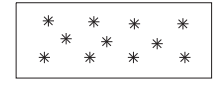
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RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
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PERMIT DRAWING SHEET 6 OF 23	

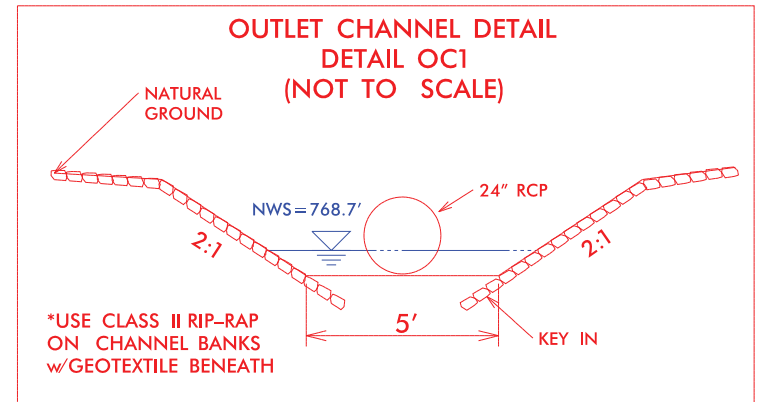


SITE 1

SITE 2



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



-L- STA 33+85 (36.5' +/- LT)

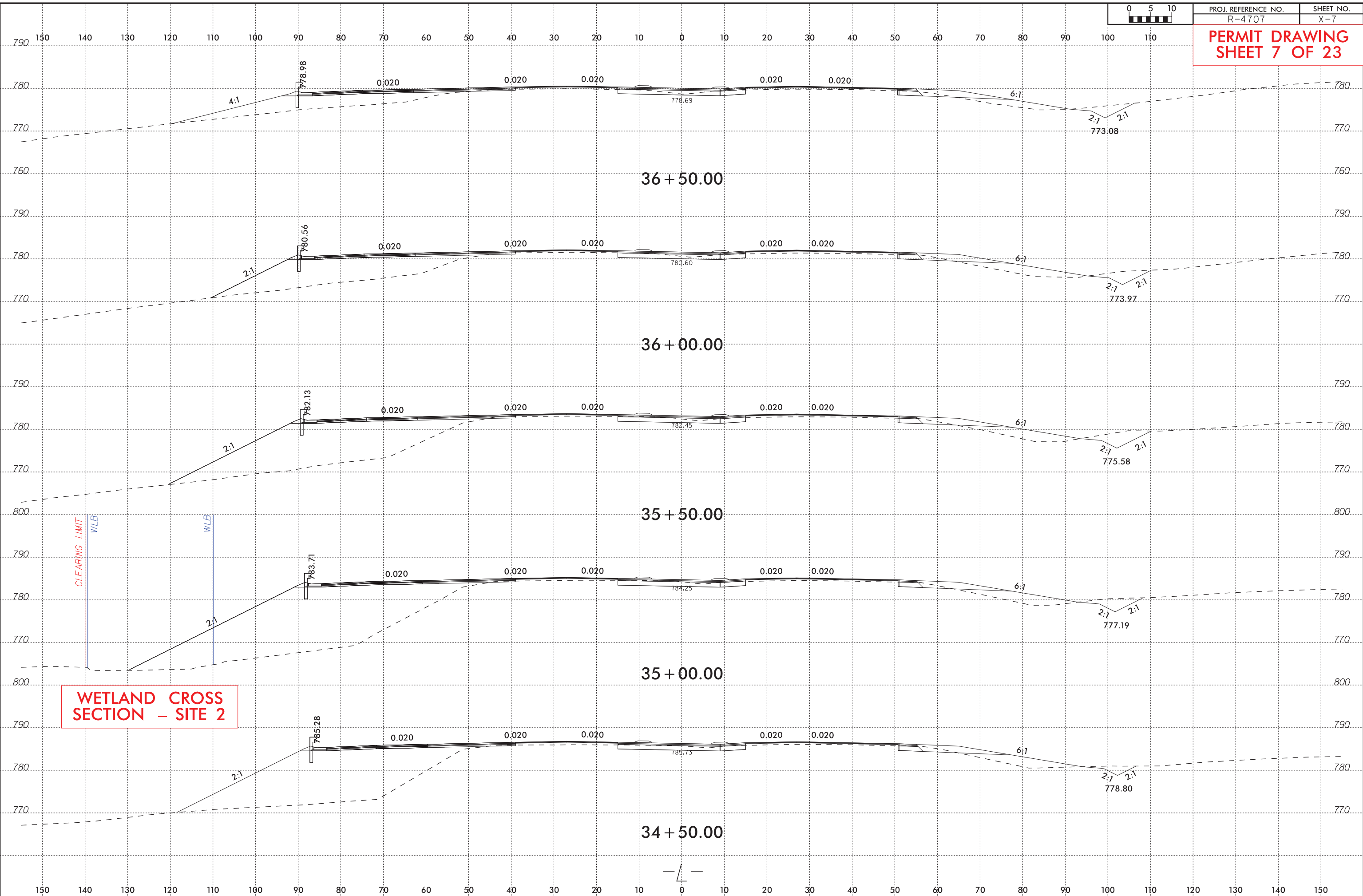
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6/23/16
IT-MAY-2019 1518
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PROJ. REFERENCE NO. R-4707	SHEET NO. X-7
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**PERMIT DRAWING
SHEET 7 OF 23**



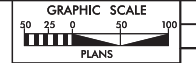
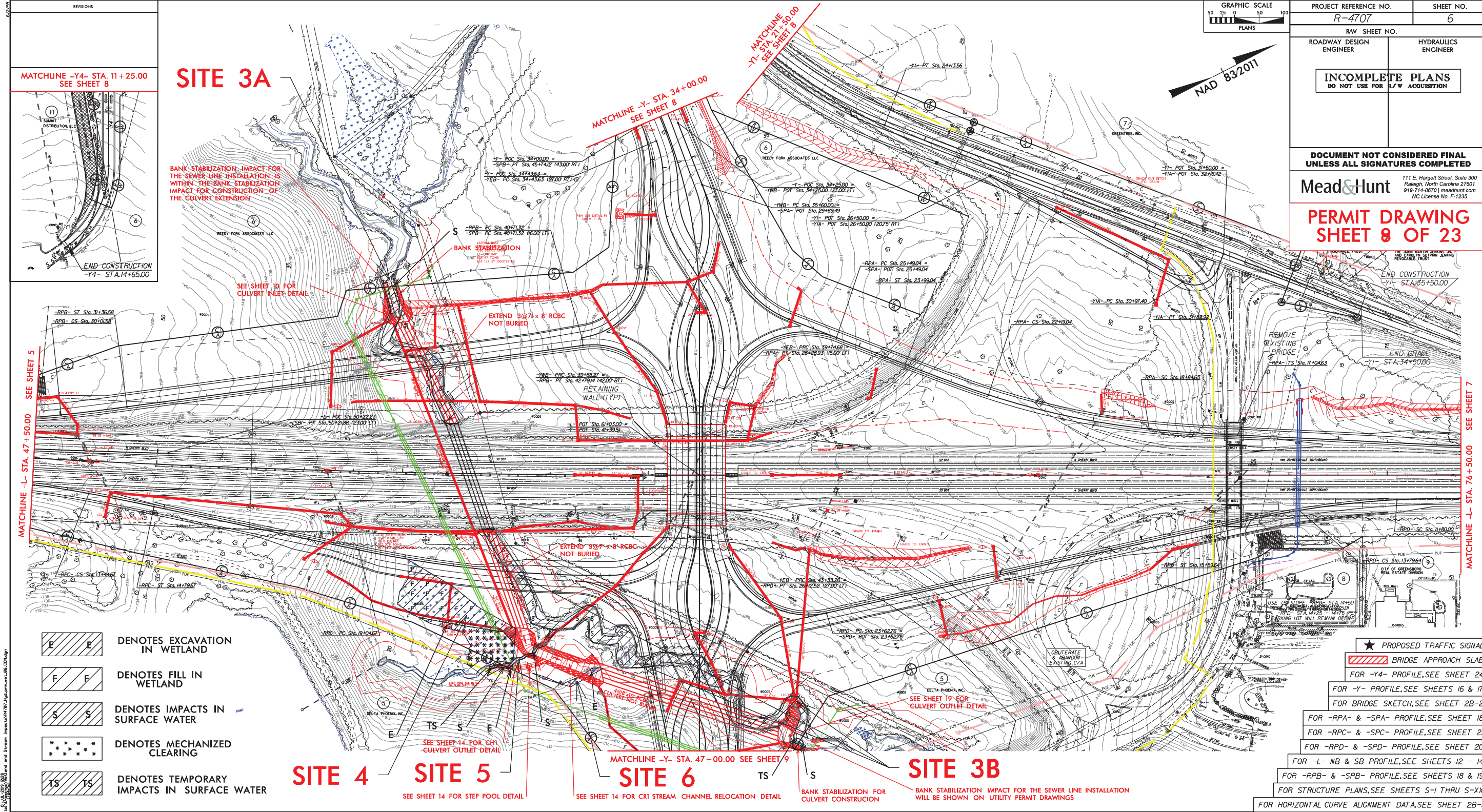
REVISIONS

MATCHLINE -Y4- STA. 11+25.00
SEE SHEET 8

END CONSTRUCTION
-Y4- STA.14+65.00

SITE 3A

BANK STABILIZATION IMPACT FOR THE SEWER LINE INSTALLATION IS WITHIN THE BANK STABILIZATION IMPACT FOR CONSTRUCTION OF THE CULVERT EXTENSION



PROJECT REFERENCE NO. R-4707	SHEET NO. 6
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
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PERMIT DRAWING SHEET 8 OF 23	



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

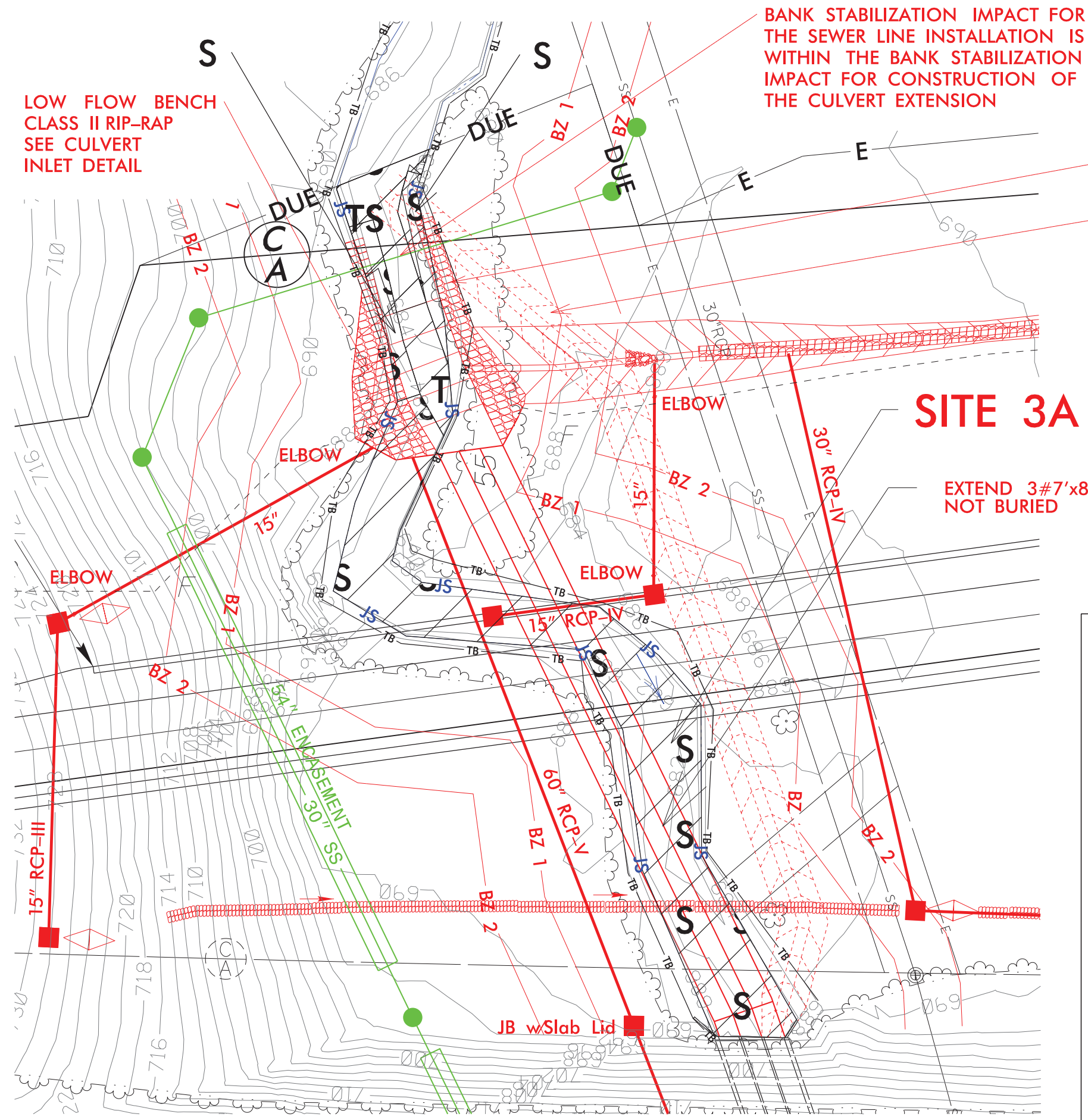
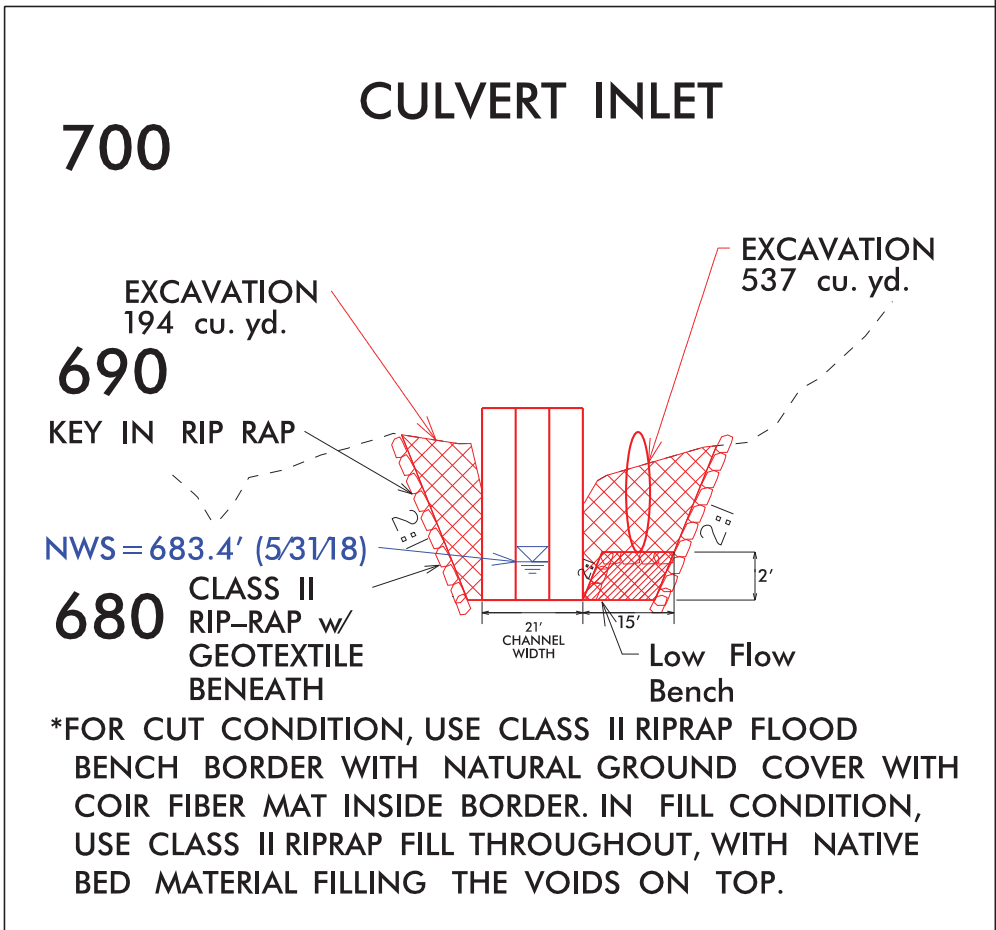
- PROPOSED TRAFFIC SIGNAL
- BRIDGE APPROACH SLAB
FOR -Y4- PROFILE, SEE SHEET 24
- FOR -Y- PROFILE, SEE SHEETS 16 & 17
FOR BRIDGE SKETCH, SEE SHEET 2B-2
- FOR -RPA- & -SPA- PROFILE, SEE SHEET 18
- FOR -RPC- & -SPC- PROFILE, SEE SHEET 21
- FOR -RPD- & -SPD- PROFILE, SEE SHEET 20
- FOR -L- NB & SB PROFILE, SEE SHEETS 12 - 14
- FOR -RPB- & -SPB- PROFILE, SEE SHEETS 18 & 19
- FOR STRUCTURE PLANS, SEE SHEETS S-1 THRU S-XX
- FOR HORIZONTAL CURVE ALIGNMENT DATA, SEE SHEET 2B-1

DELTA POWER, INC. Environmental & Stream Assessment Services
 10000 W. Hargett Street, Suite 300, Raleigh, NC 27601
 Phone: 919.714.8870 | Fax: 919.714.8871 | www.meadandhunt.com

PROJECT REFERENCE NO. R-4707	SHEET NO. INSET: 6A
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
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PERMIT DRAWING SHEET 10 OF 23	



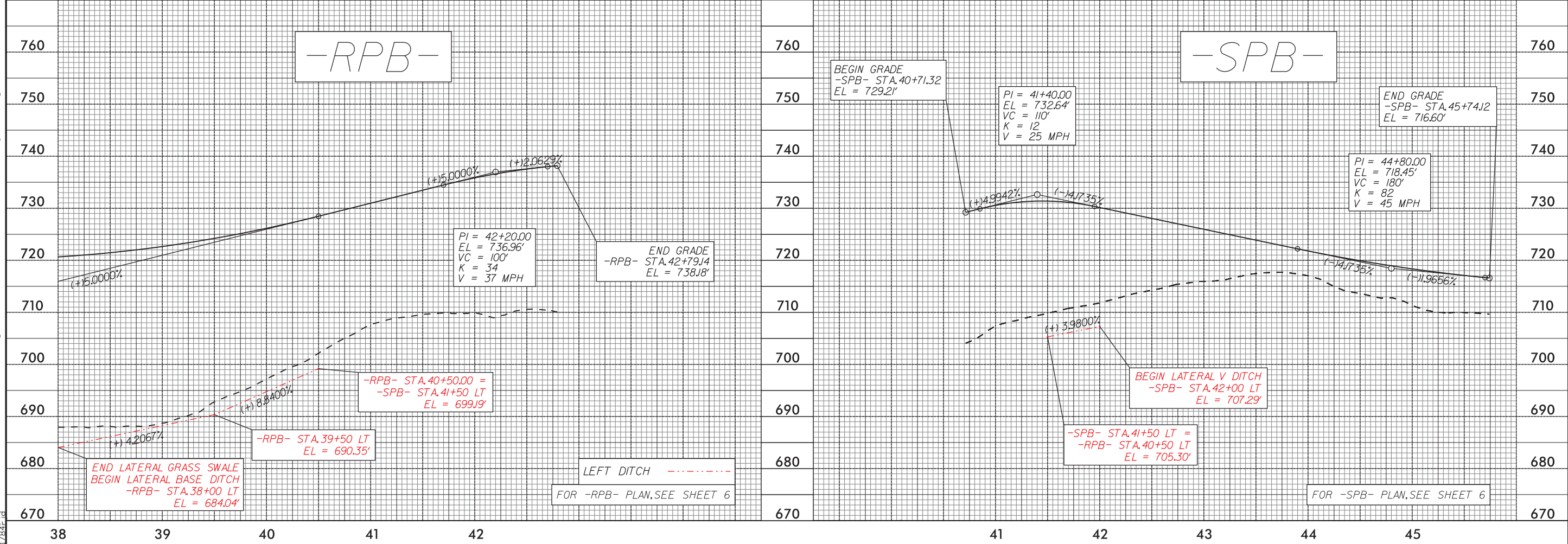
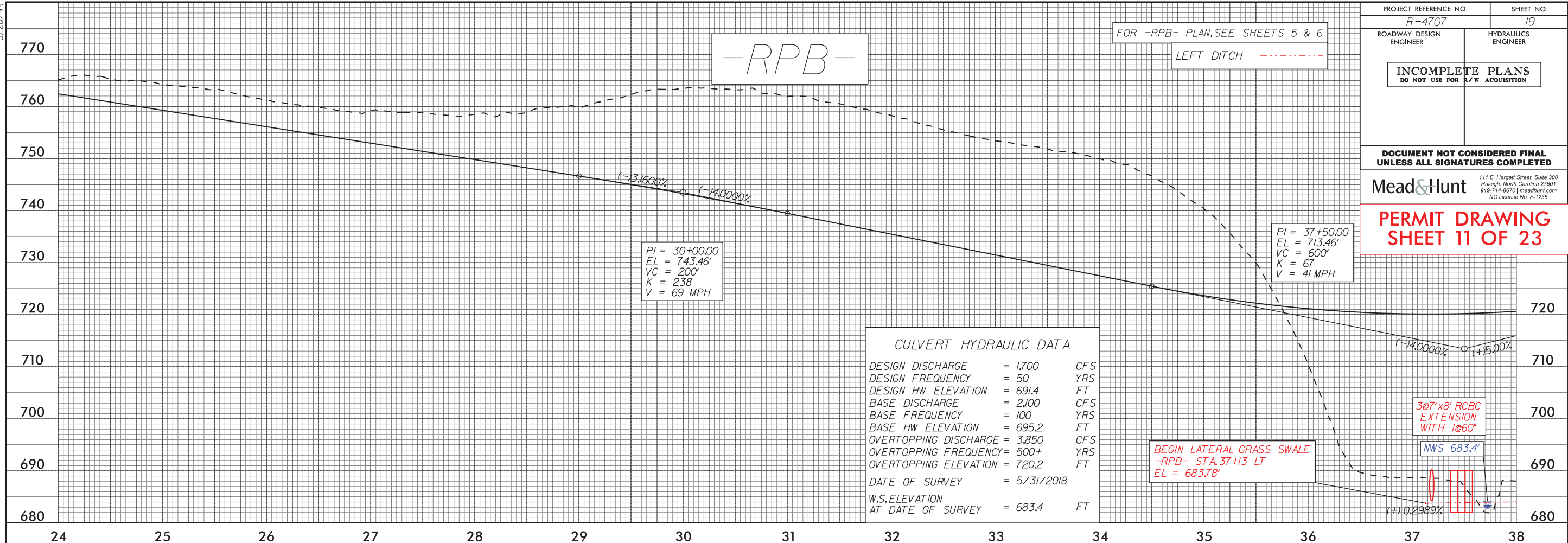
-  DENOTES IMPACTS IN SURFACE WATER
-  DENOTES TEMPORARY IMPACTS IN SURFACE WATER



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5/28/99

PROJECT REFERENCE NO. R-4707	SHEET NO. 19
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
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PERMIT DRAWING SHEET 11 OF 23	

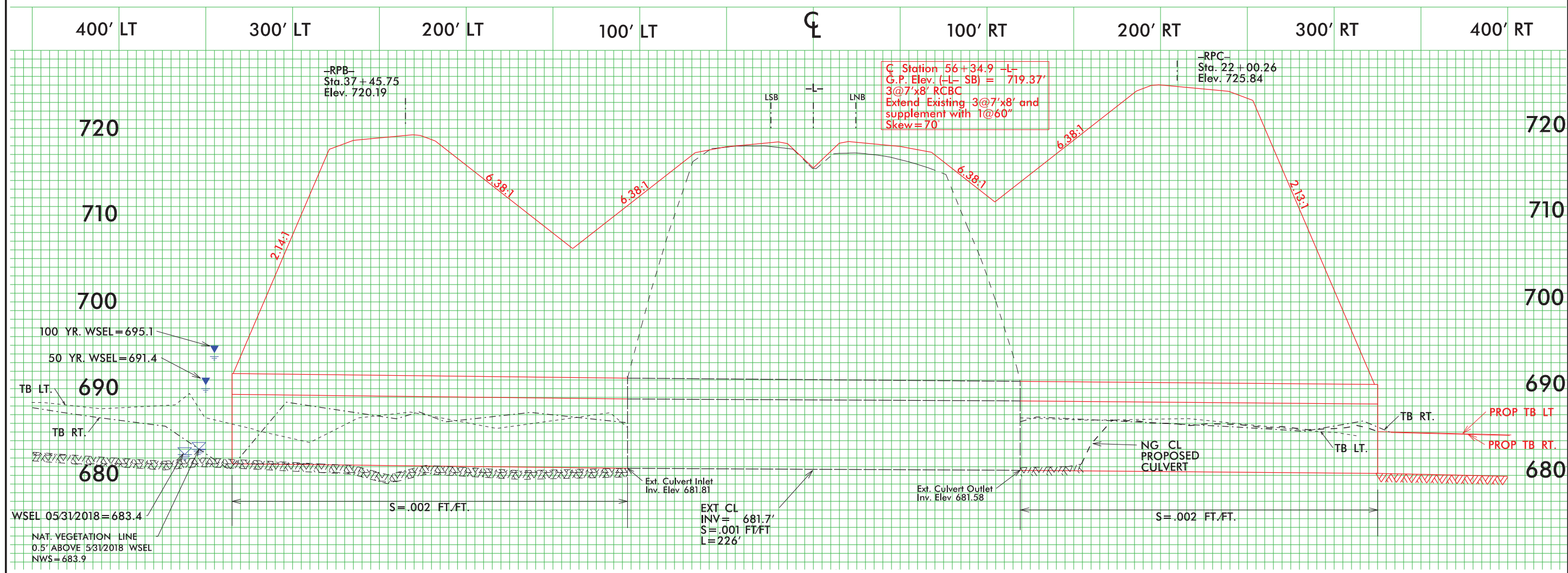


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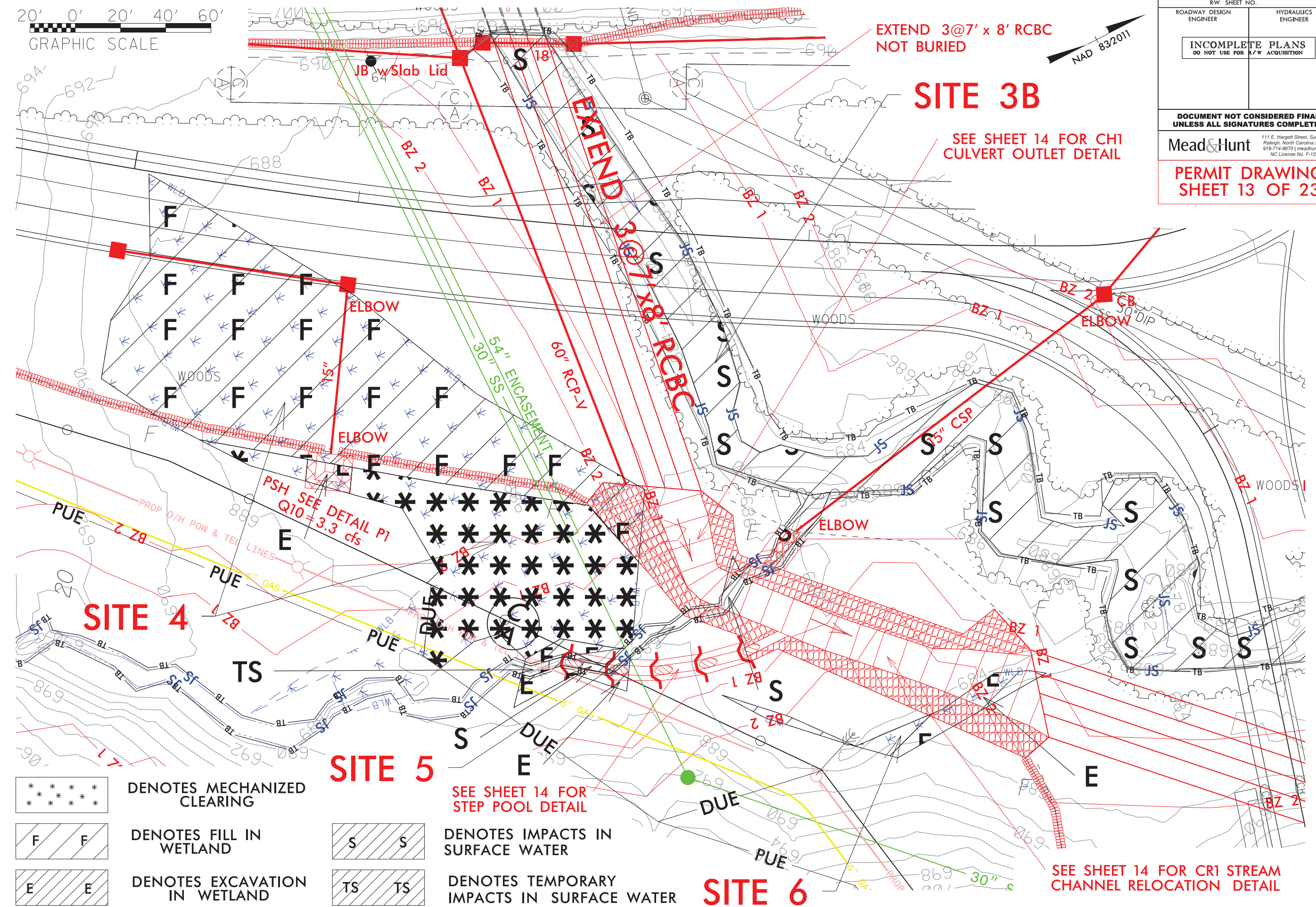
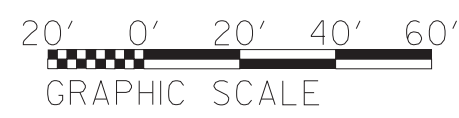
PROJECT REFERENCE NO. R-4707	SHEET NO. L PFL
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
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PERMIT DRAWING SHEET 12 OF 23	

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 17841.d



100 YR. WSEL=695.1
 50 YR. WSEL=691.4
 TB LT. 690
 TB RT. 690
 WSEL 05/31/2018=683.4
 NAT. VEGETATION LINE
 0.5' ABOVE 5/31/2018 WSEL
 NWS=683.9
 S=.002 FT./FT.
 Ext. Culvert Inlet
 Inv. Elev. 681.81
 EXT CL
 INV= 681.7'
 S=.001 FT/FT
 L=226'
 Ext. Culvert Outlet
 Inv. Elev. 681.58
 S=.002 FT./FT.
 NG CL
 PROPOSED
 CULVERT
 TB LT. 680
 TB RT. 680
 PROP TB LT.
 PROP TB RT.

PROJECT REFERENCE NO. R-4707	SHEET NO. INSET: 6B
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	
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PERMIT DRAWING SHEET 13 OF 23	

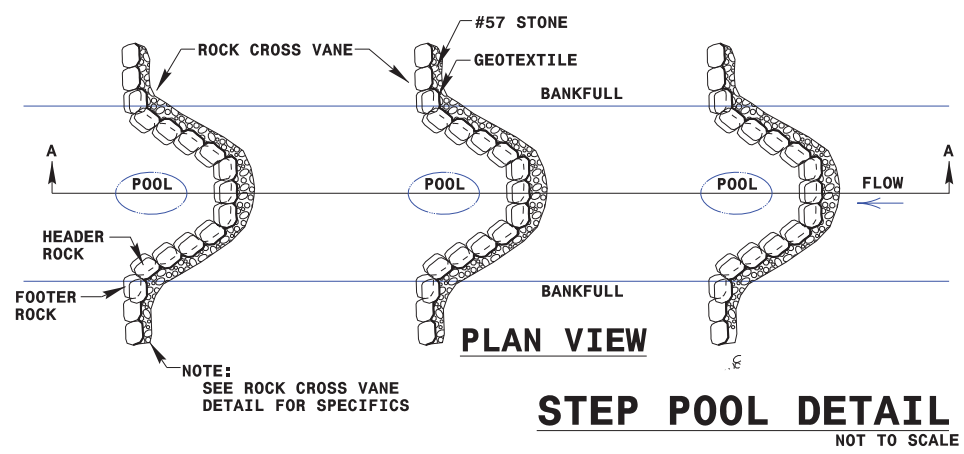
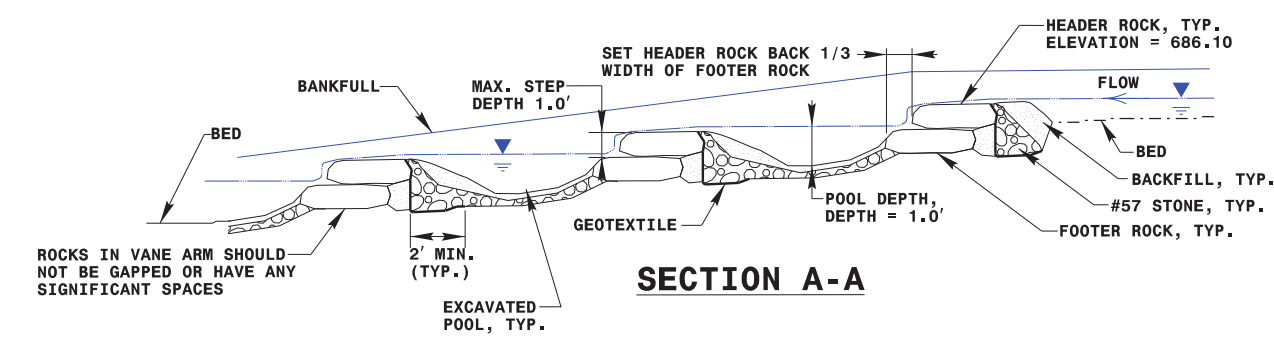


- DENOTES MECHANIZED CLEARING
- DENOTES FILL IN WETLAND
- DENOTES EXCAVATION IN WETLAND

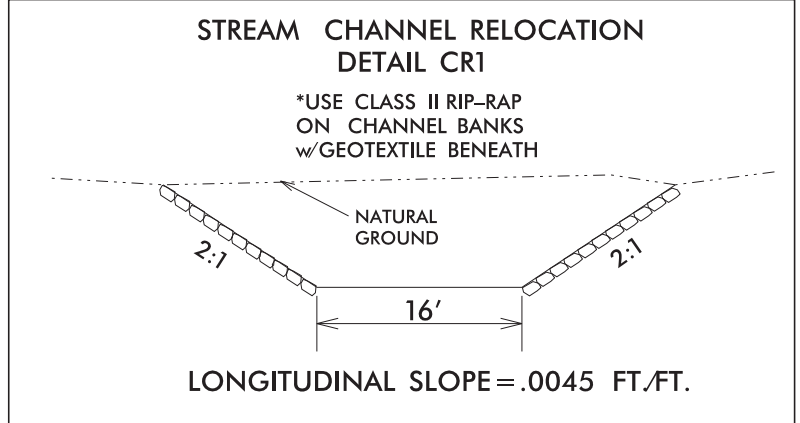
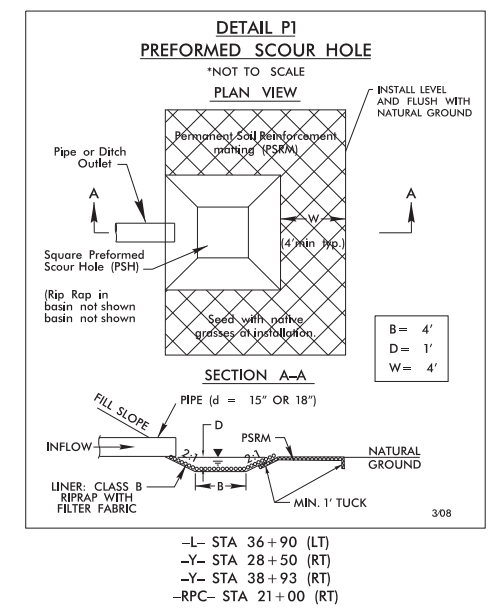
- DENOTES IMPACTS IN SURFACE WATER
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER

SITE 6

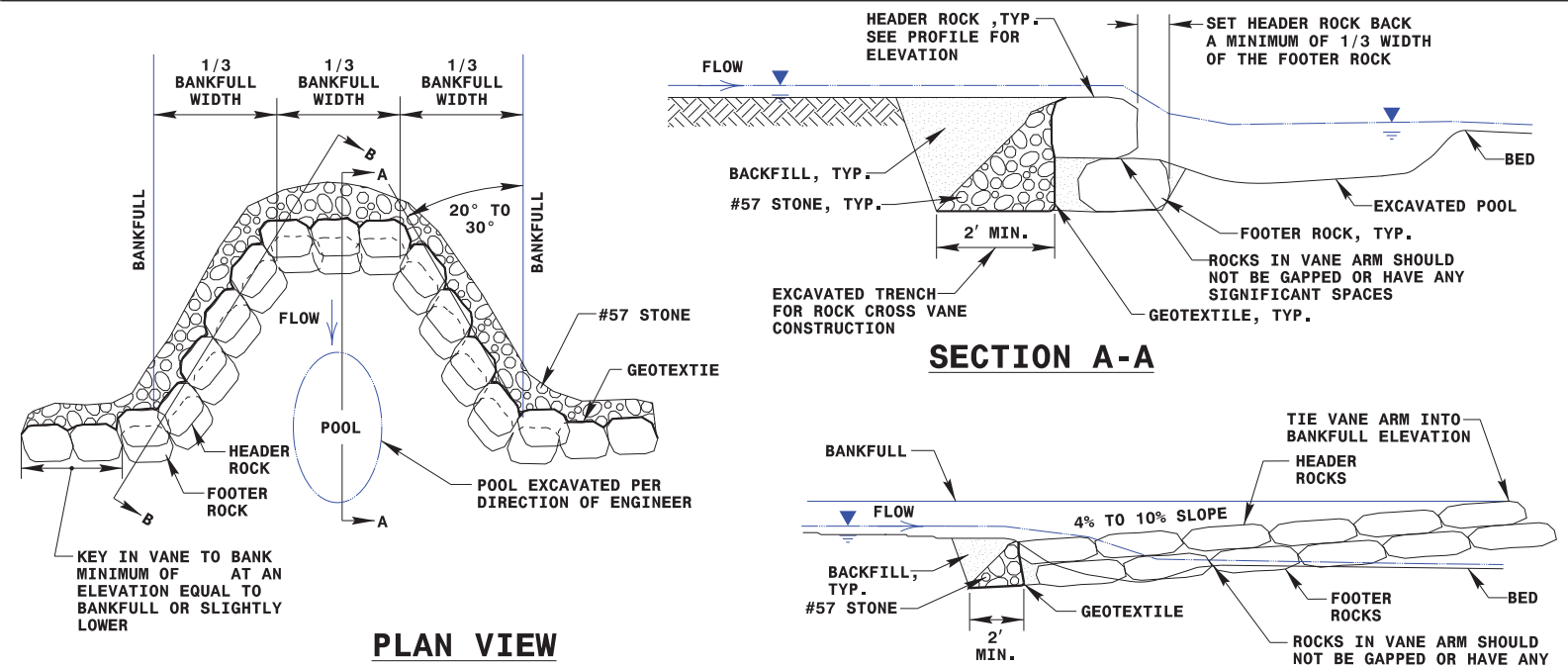
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 T784rjd



- NOTES:**
1. STEPS TO BE SPACED 18' TO 22' APART.
 2. POOL SPACING SHALL BE INVERSELY PROPORTIONAL TO STREAM SLOPE, AND DIRECTLY PROPORTIONAL TO BANKFULL WIDTH.
 3. POOL DEPTHS AT BANKFULL ELEVATION SHALL BE TYPICALLY 2 TIMES DEEPER THAN STEP DEPTHS AT BANKFULL ELEVATION.
 4. ADEQUATE NUMBER OF FOOTER BOULDERS TO BE USED IN ORDER TO HOLD UP THE BOULDERS AT HEAD OF STEPS DURING HIGH ENERGY/HIGH FLOW EVENTS.
 5. STEP POOL DEPTH SHOULD BE 2 TO 3 TIMES BANKFULL DEPTH.



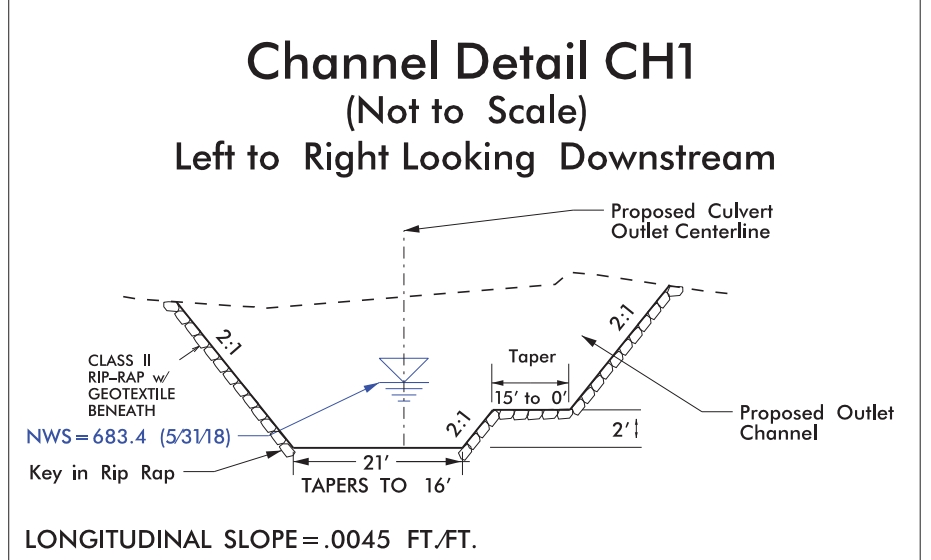
FROM -L- STA. 57+58 (350' RT +/-)
TO -L- 59+15 (405' RT +/-)



STATION	BOULDER DIMENSIONS (FT)		
	HEIGHT	LENGTH	WIDTH
-	2.0'	3.0'	2.5'

ROCK CROSS VANE DETAIL FOR STEP POOLS
NOT TO SCALE

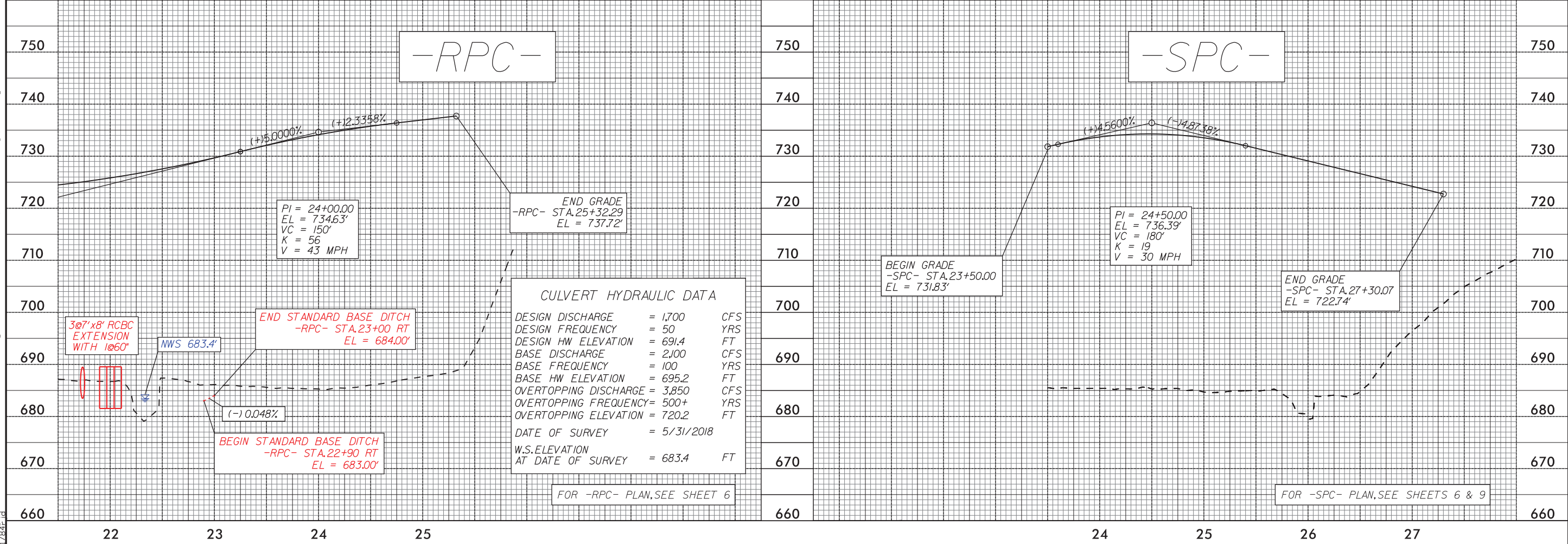
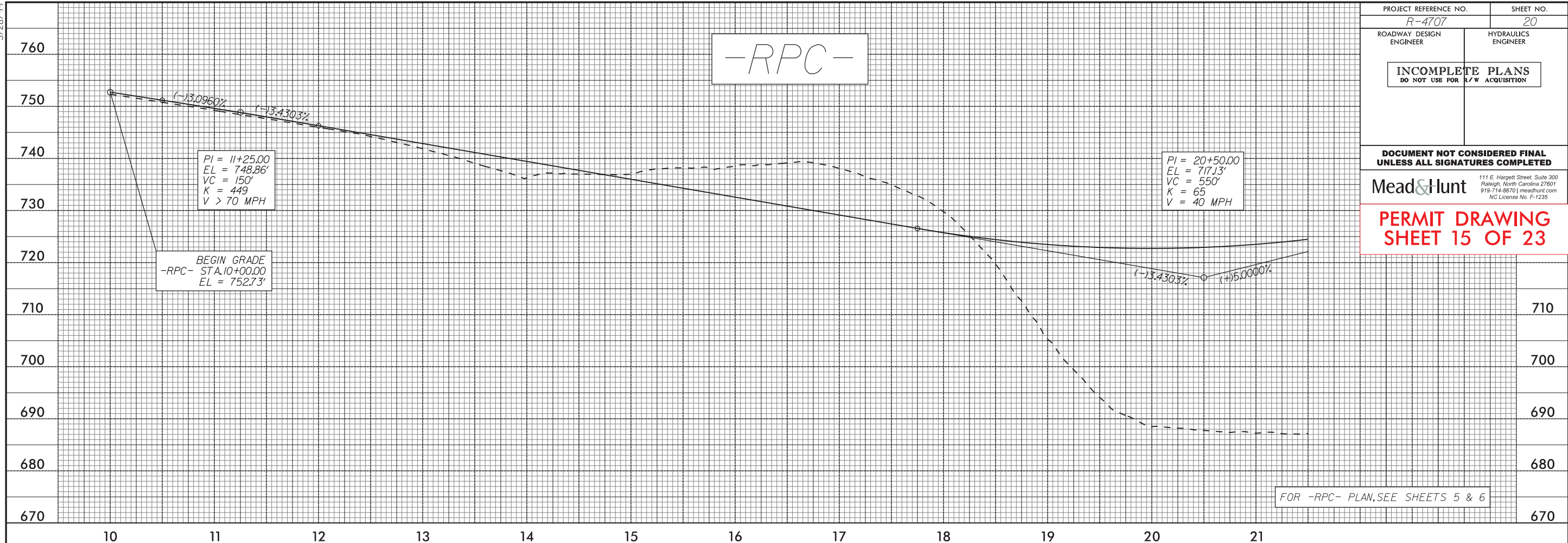
- NOTES:**
1. DEEPEST PART OF POOL TO BE IN LINE WITH WHERE VANE ARM TIES INTO BANKFULL.
 2. DO NOT EXCAVATE POOL TOO CLOSE TO FOOTER BOULDERS.
 3. CLASS "A" STONE CAN BE USED TO REDUCE VOIDS BETWEEN HEADERS AND FOOTERS.
 4. COMPACT BACKFILL TO EXTENT POSSIBLE OR AT THE DIRECTION OF THE ENGINEER.
 5. POOL DEPTH SHOULD BE 2 TO 3 TIMES BANKFULL DEPTH.



FROM -L- STA. 57+54 (@ CULVERT OUTLET 306' RT)
TO -L- STA. 57+58 (350' RT +/-)

5/28/99

PROJECT REFERENCE NO. R-4707	SHEET NO. 20
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
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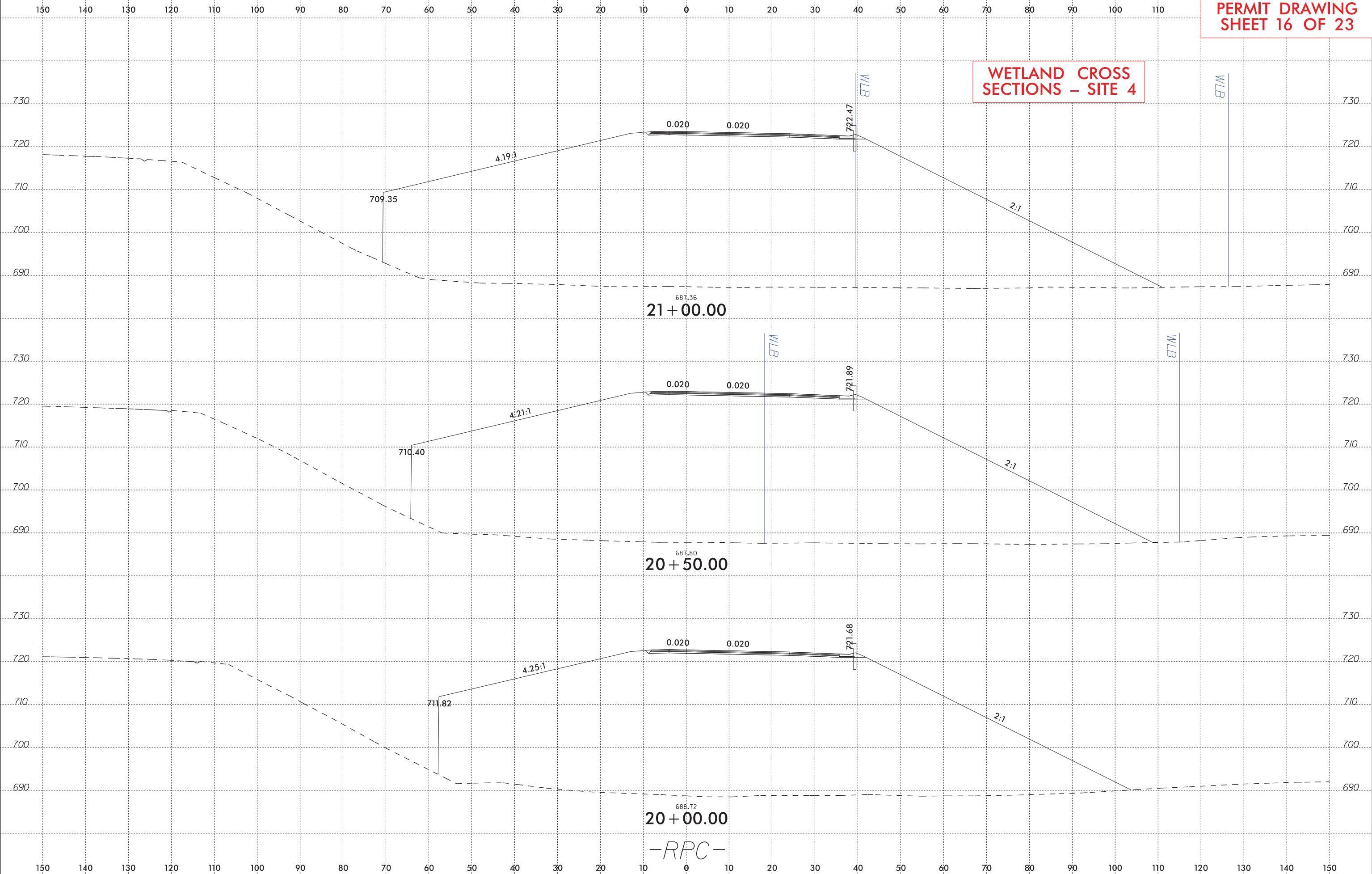
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17/24/16



PROJ. REFERENCE NO. R-4707	SHEET NO. X-72
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**PERMIT DRAWING
SHEET 16 OF 23**

**WETLAND CROSS
SECTIONS - SITE 4**



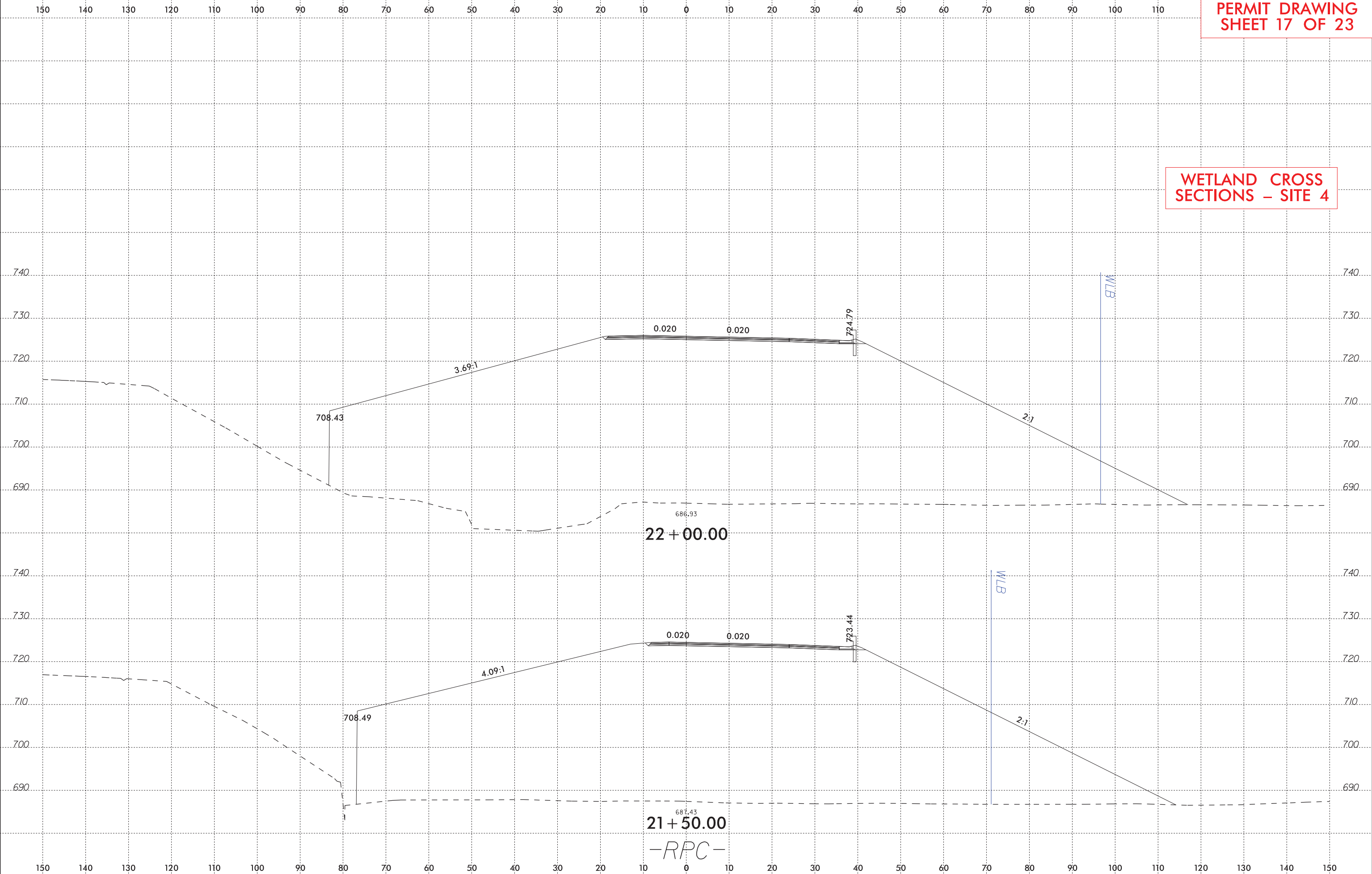
6/23/16



PROJ. REFERENCE NO. R-4707 SHEET NO. X-73

PERMIT DRAWING SHEET 17 OF 23

WETLAND CROSS SECTIONS - SITE 4



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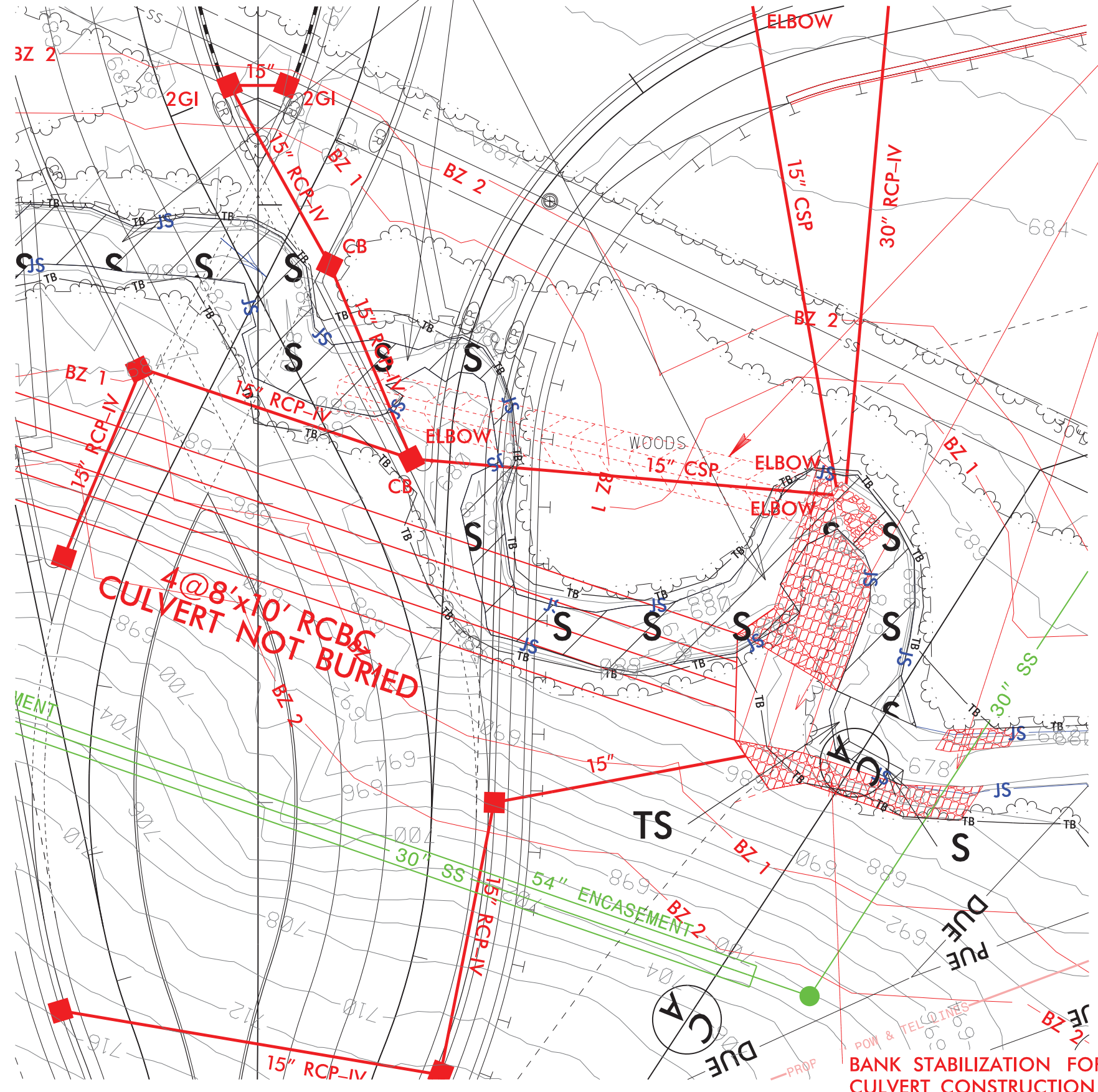
-RPC-

8/17/99

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1784rjd

REVISIONS

SITE 3B





DIVERSION CHANNEL FOR
CULVERT CONSTRUCTION

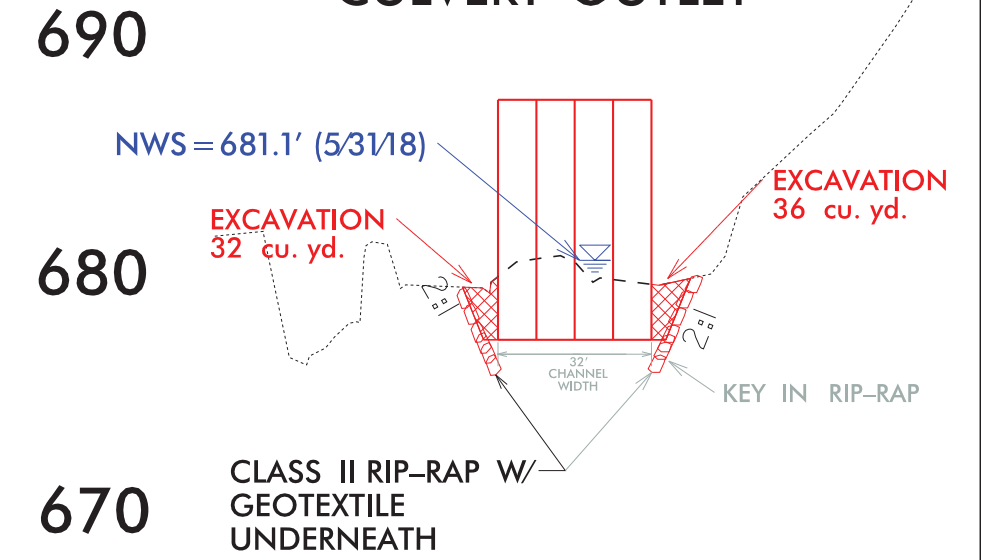
SEE CULVERT OUTLET DETAIL

BANK STABILIZATION IMPACT
FOR THE SEWER LINE
INSTALLATION WILL BE SHOWN
ON UTILITY PERMIT DRAWINGS



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

CULVERT OUTLET

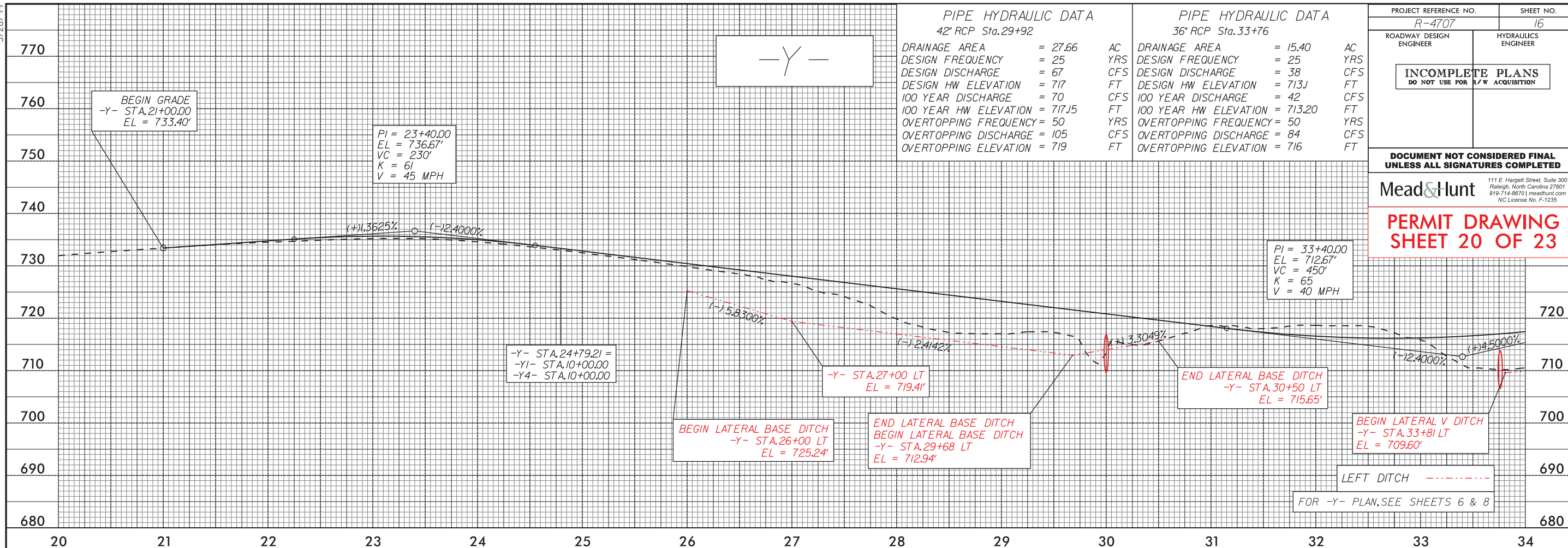


*FOR CUT CONDITION, USE CLASS II RIPRAP FLOOD BENCH BORDER WITH NATURAL GROUND COVER WITH COIR FIBER MAT INSIDE BORDER. IN FILL CONDITION, USE CLASS II RIPRAP FILL THROUGHOUT, WITH NATIVE BED MATERIAL FILLING THE VOIDS ON TOP.

PROJECT REFERENCE NO. R-4707	SHEET NO. INSET:6C
RW SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
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PIPE HYDRAULIC DATA
42" RCP Sta.29+92

DRAINAGE AREA	= 27.66	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 67	CFS
DESIGN HW ELEVATION	= 717	FT
100 YEAR DISCHARGE	= 70	CFS
100 YEAR HW ELEVATION	= 717.15	FT
OVERTOPPING FREQUENCY	= 50	YRS
OVERTOPPING DISCHARGE	= 105	CFS
OVERTOPPING ELEVATION	= 719	FT

PIPE HYDRAULIC DATA
36" RCP Sta.33+76

DRAINAGE AREA	= 15.40	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 38	CFS
DESIGN HW ELEVATION	= 713.1	FT
100 YEAR DISCHARGE	= 42	CFS
100 YEAR HW ELEVATION	= 713.20	FT
OVERTOPPING FREQUENCY	= 50	YRS
OVERTOPPING DISCHARGE	= 84	CFS
OVERTOPPING ELEVATION	= 716	FT

PROJECT REFERENCE NO. **R-4707** SHEET NO. **16**

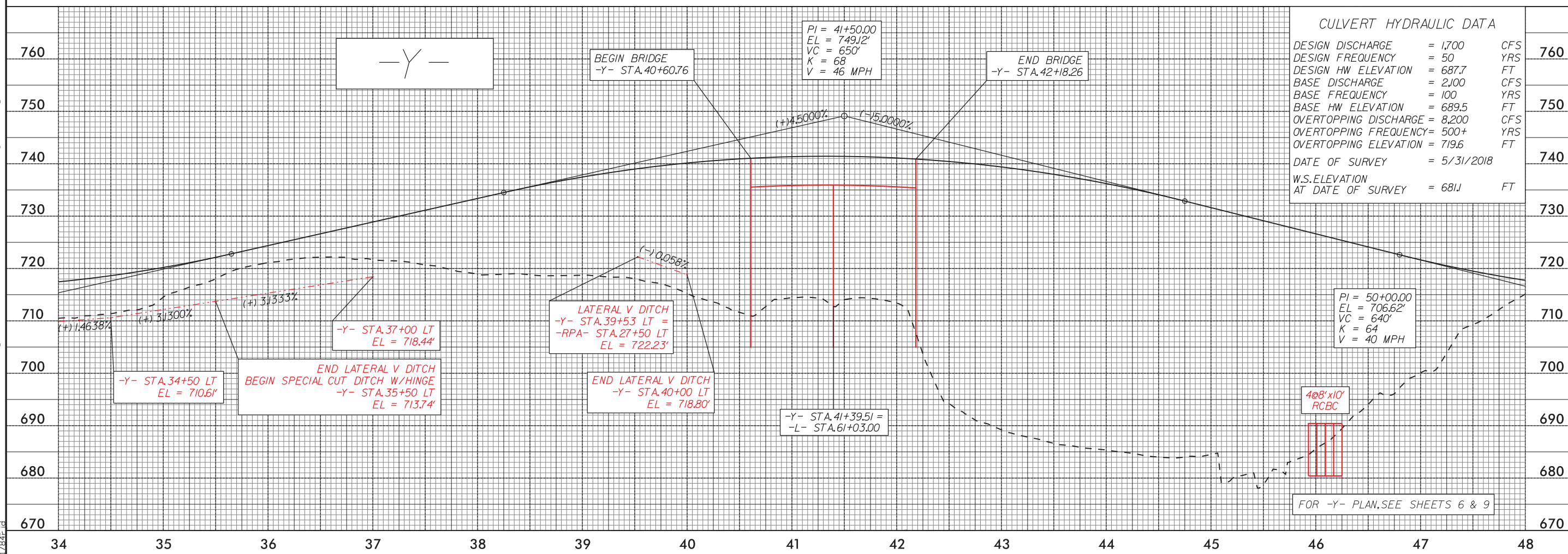
ROADWAY DESIGN ENGINEER: **MEAD & HUNT** HYDRAULICS ENGINEER: **MEAD & HUNT**

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

MEAD & HUNT
111 E. Hargett Street, Suite 300
Raleigh, North Carolina 27601
919-714-8670 | meadhunt.com
NC License No. F-1235

PERMIT DRAWING
SHEET 20 OF 23



CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 1,700	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 687.7	FT
BASE DISCHARGE	= 2,100	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 689.5	FT
OVERTOPPING DISCHARGE	= 8,200	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 719.6	FT
DATE OF SURVEY	= 5/31/2018	
W.S. ELEVATION AT DATE OF SURVEY	= 681.1	FT

FOR -Y- PLAN, SEE SHEETS 6 & 8

FOR -Y- PLAN, SEE SHEETS 6 & 9

PROJECT REFERENCE NO. R-4707	SHEET NO. 8
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	

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PERMIT DRAWING SHEET 21 OF 23

DO NOT DISTURB WATER VALVE VAULT

MATCHLINE -Y1- STA. 21 + 50.00
SEE SHEET 6

MATCHLINE -Y- STA. 34 + 00.00
SEE SHEET 6

- ★ PROPOSED TRAFFIC SIGNAL
- FOR -Y- PROFILE, SEE SHEET 16
- FOR -Y1- PROFILE, SEE SHEET 22
- FOR -DRI- PROFILE, SEE SHEET 23
- FOR INTERSECTION DETAIL, SEE SHEET 2B-1
- FOR -Y4-, -DR2A- & DR2B- PROFILES, SEE SHEET 24

NO IMPACTS JS STARTS HERE

MATCHLINE -Y4- STA. 11 + 25.00
SEE INSET ON SHEET 6

BEGIN CONSTRUCTION -DR2B- STA. 10 + 65.00
NOTE: SAWCUT EXIST. PAVEMENT AND TIE PROPOSED PAVEMENT TO EXIST. ELEVATION

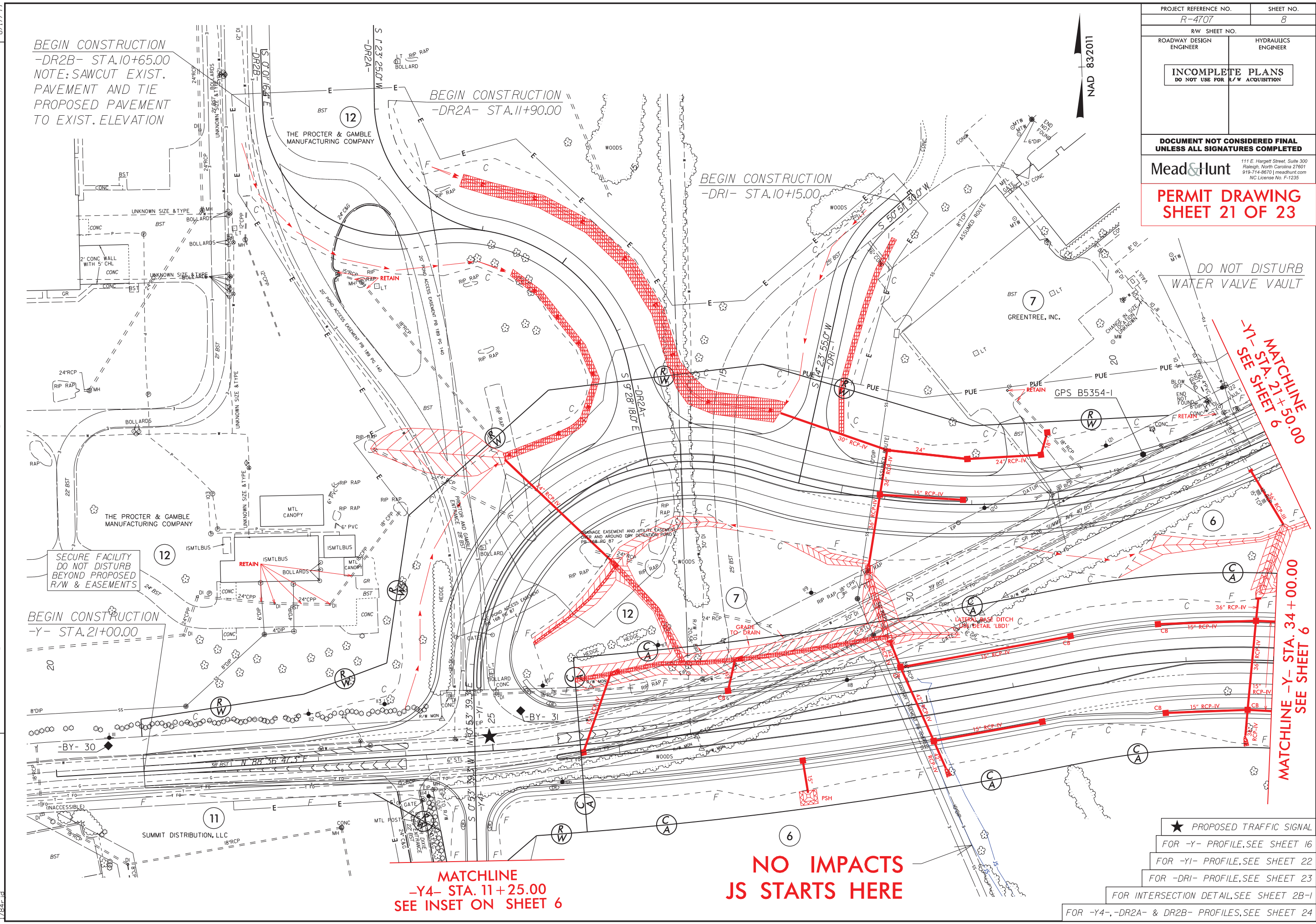
BEGIN CONSTRUCTION -DR2A- STA. 11 + 90.00

BEGIN CONSTRUCTION -DRI- STA. 10 + 15.00

BEGIN CONSTRUCTION -Y- STA. 21 + 00.00

NAD 83 2011

REVISIONS
 8/17/99
 31 MAY 2018 15:51
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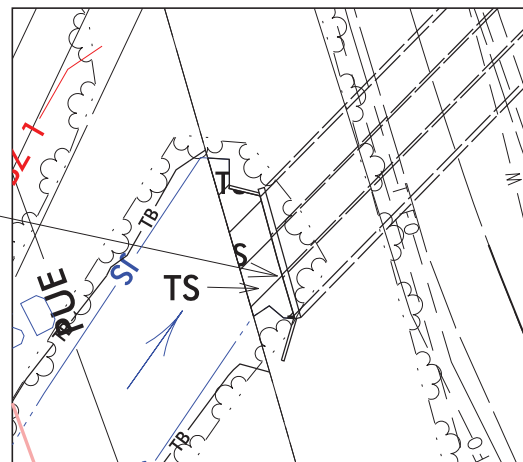
8/17/99

SITE 3C

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

SITE 3C

Existing Culvert Barrel has 5' ± of Blockage in right barrel (looking downstream) due to sediment.
Recommend:
Removal of Sediment in left and center barrels from upstream side only and leaving 1' of sediment in right barrel.

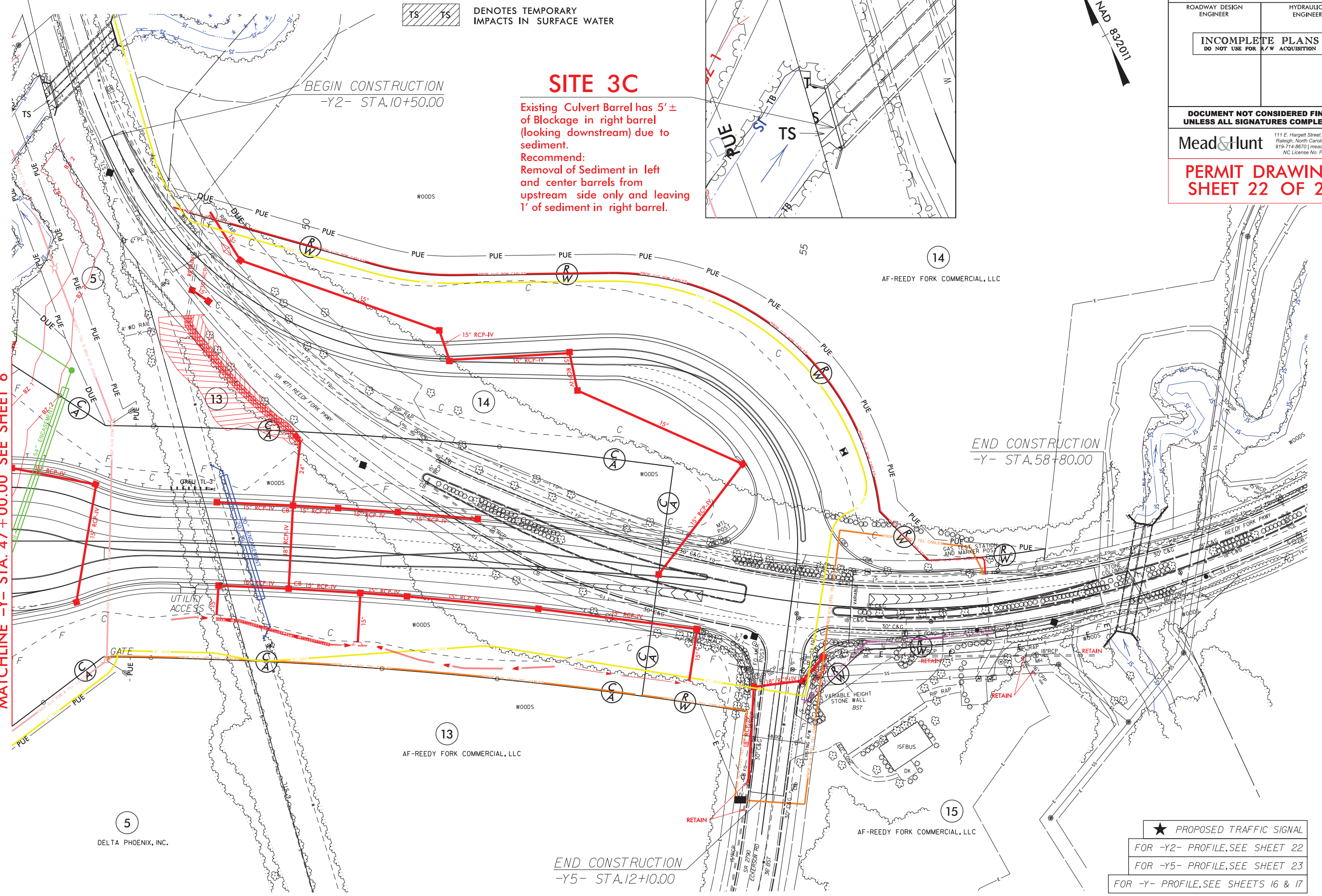


PROJECT REFERENCE NO. R-4707	SHEET NO. 9
RW SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
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PERMIT DRAWING SHEET 22 OF 23	

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17841d

MATCHLINE -Y- STA. 47 + 00.00 SEE SHEET 6



- ★ PROPOSED TRAFFIC SIGNAL
- FOR -Y2- PROFILE, SEE SHEET 22
- FOR -Y5- PROFILE, SEE SHEET 23
- FOR -Y- PROFILE, SEE SHEETS 16 & 17

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

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

GUILFORD COUNTY

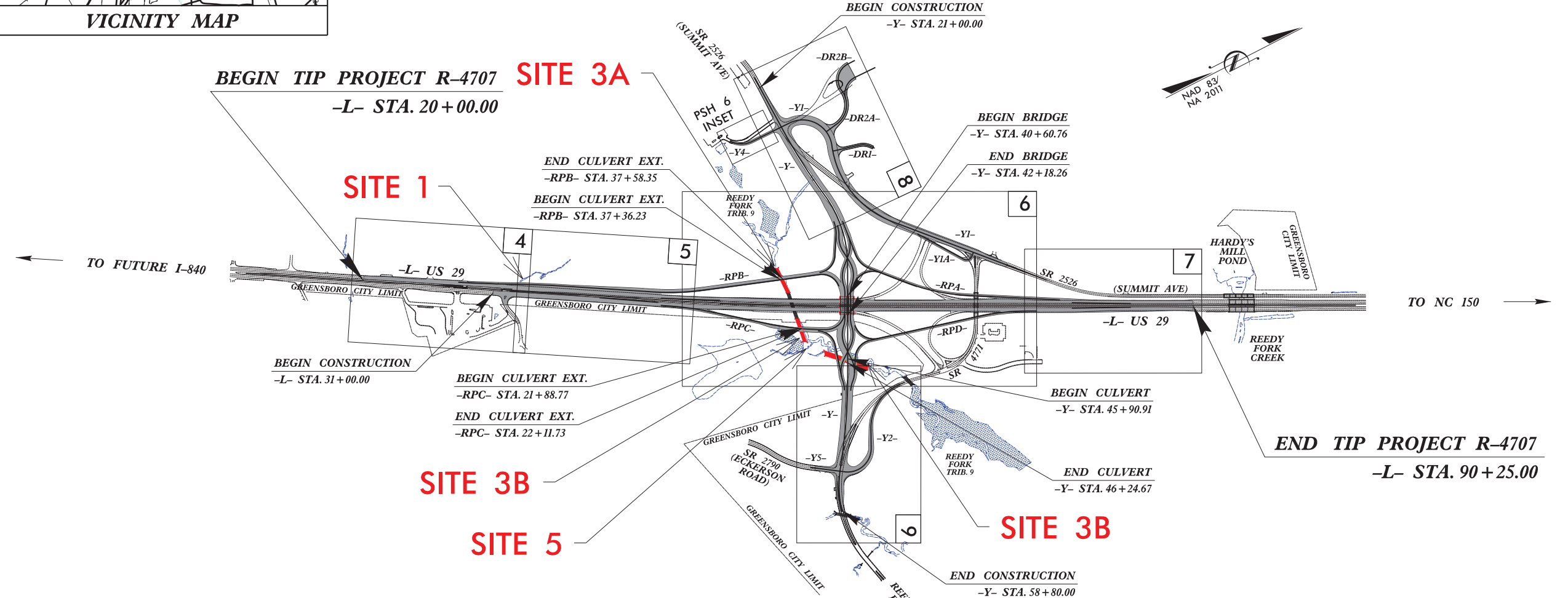
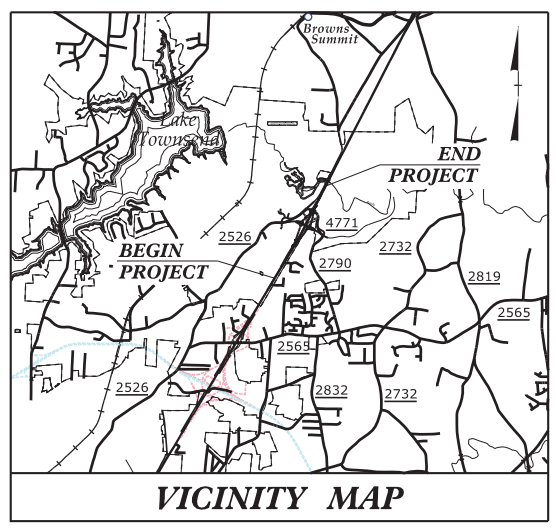
LOCATION: US 29 AND SR 4771 (REEDY FORK PARKWAY)
**INTERCHANGE IMPROVEMENTS; IMPROVE ROADWAY,
MODIFY INTERCHANGE AND REPLACE BRIDGE 360**
TYPE OF WORK: GRADING, PAVING, DRAINAGE, SIGNALS AND STRUCTURE

BUFFER IMPACTS PERMIT

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-4707	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
36599.1.5	NA	PE	
36599.2.1	NA	R/W & UTILITY	

**BUFFER DRAWING
SHEET 1 OF 10**

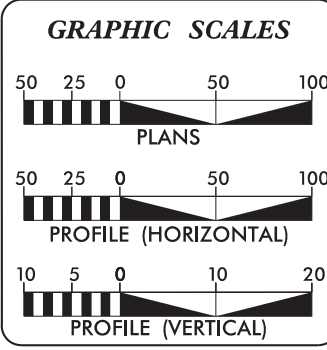
TIP PROJECT: R-4707



CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.
THIS IS A CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.
A PORTION OF THIS PROJECT IS LOCATED WITHIN THE MUNICIPAL BOUNDARIES OF THE CITY OF GREENSBORO.

**INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION**
**DOCUMENT NOT CONSIDERED FINAL
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CONTRACT:



DESIGN DATA

ADT 2020 = 40,200
ADT 2040 = 49,000
K = 9 %
D = 60 %
T = 18 % *
V = 60 MPH
* TTST = 9% + DUAL 9%
FUNC CLASS = FUTURE INTERSTATE
STATEWIDE TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-4707 = 1.330 MILES
LENGTH STRUCTURE TIP PROJECT R-4707 = 0.000 MILES
TOTAL LENGTH TIP PROJECT R-4707 = 1.330 MILES

-L- USED TO DETERMINE PROJECT LENGTH

Prepared for NCDOT in the Office of:

Mead&Hunt
111 E. Hargett Street, Suite 300
Raleigh, North Carolina 27601
919-714-8670 | meadhunt.com
NC License No. F-1235

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
MARCH 28, 2019

LETTING DATE:
JUNE 16, 2020

RICK DECOLA, PE
PROJECT ENGINEER

TRAVIS COOK, PE
PROJECT DESIGN ENGINEER

LAURA SUTTON, PE
NCDOT CONTACT

HYDRAULICS ENGINEER

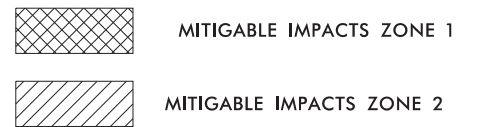
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ROADWAY DESIGN ENGINEER

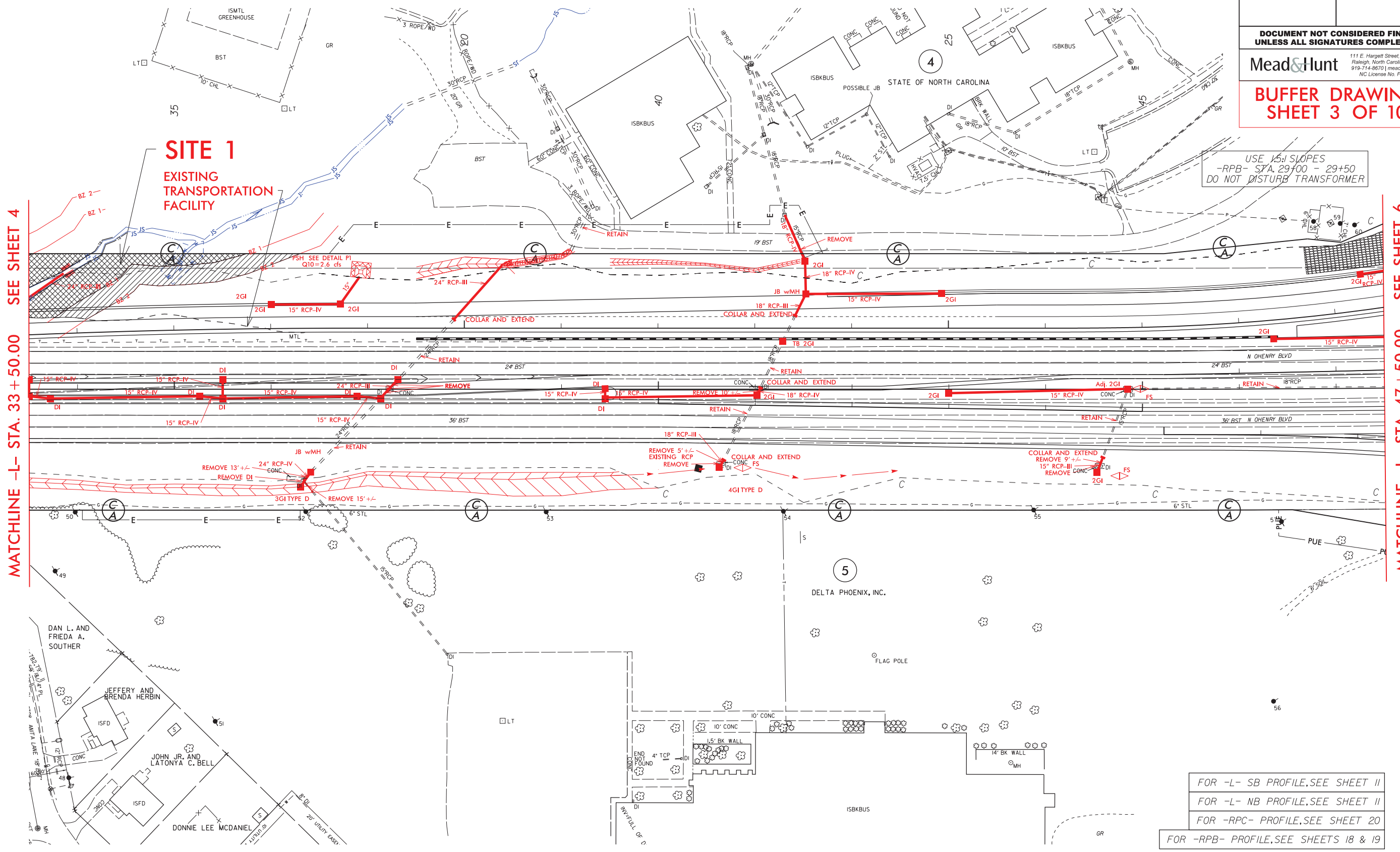
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 17831.dwg



PROJECT REFERENCE NO. R-4707	SHEET NO. 5
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
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BUFFER DRAWING SHEET 3 OF 10	



MATCHLINE -L- STA. 33 + 50.00 SEE SHEET 4

MATCHLINE -L- STA. 47 + 50.00 SEE SHEET 6

FOR -L- SB PROFILE, SEE SHEET 11
 FOR -L- NB PROFILE, SEE SHEET 11
 FOR -RPC- PROFILE, SEE SHEET 20
 FOR -RPB- PROFILE, SEE SHEETS 18 & 19

REVISIONS

8/17/99

PROJECT REFERENCE NO. R-4707	SHEET NO. INSET: 4,5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
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BUFFER DRAWING SHEET 4 OF 10	

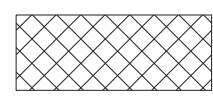
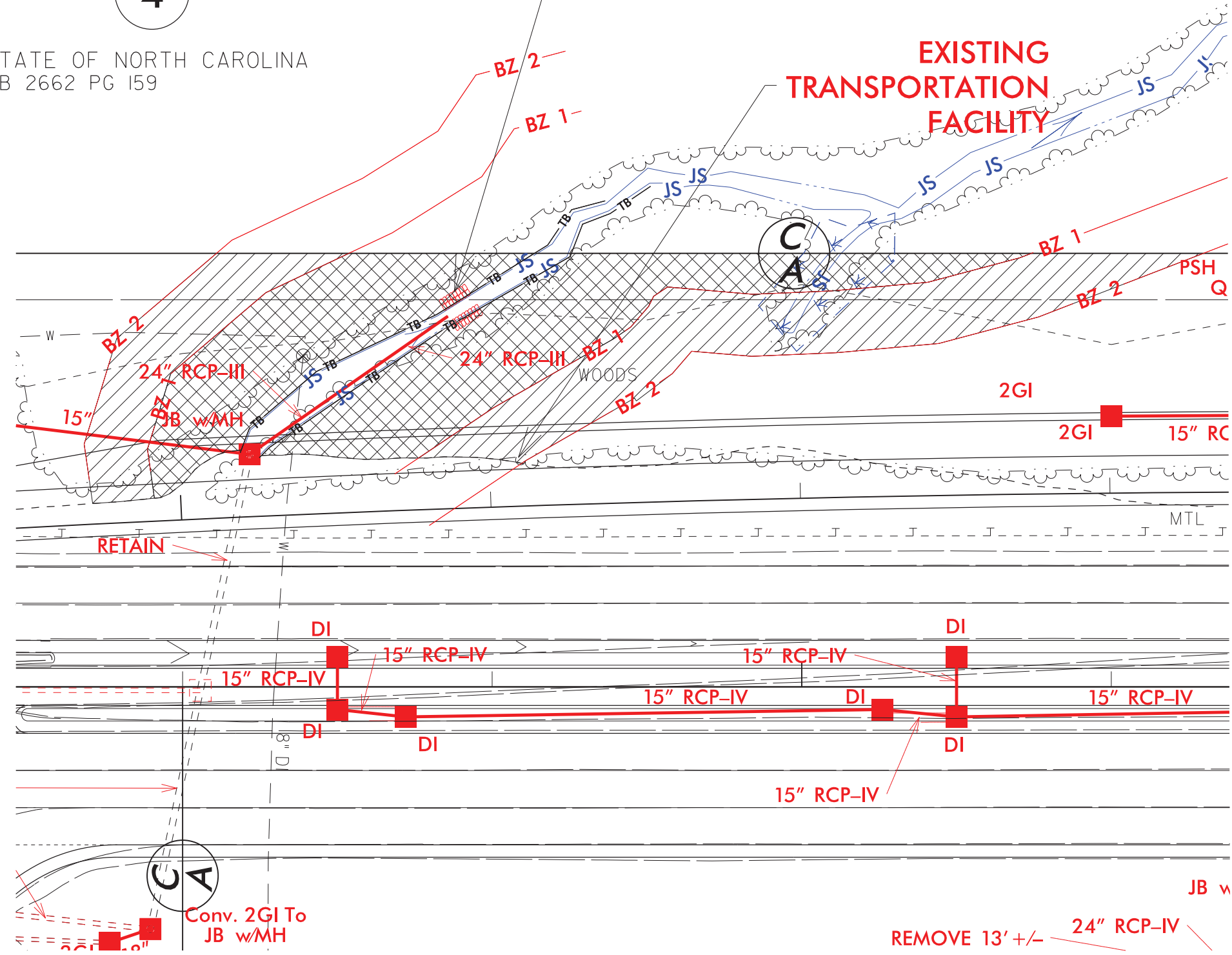


4

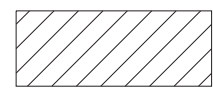
STATE OF NORTH CAROLINA
DB 2662 PG 159

SITE 1

EXISTING TRANSPORTATION FACILITY



MITIGABLE IMPACTS ZONE 1



MITIGABLE IMPACTS ZONE 2

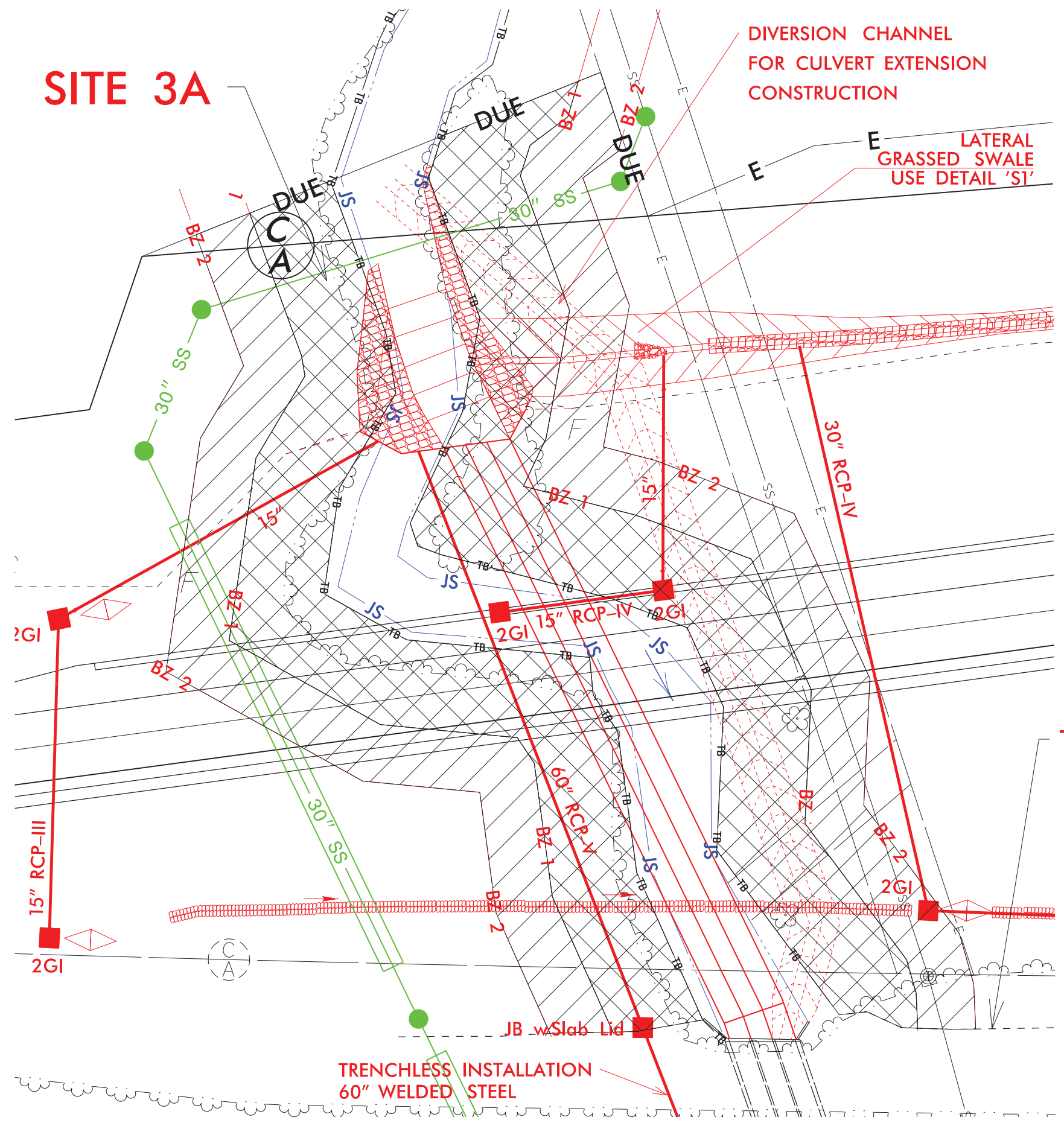
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 1784rjd

8/17/99

PROJECT REFERENCE NO. R-4707	SHEET NO. INSET:6A
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION	
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BUFFER DRAWING SHEET 6 OF 10	



SITE 3A

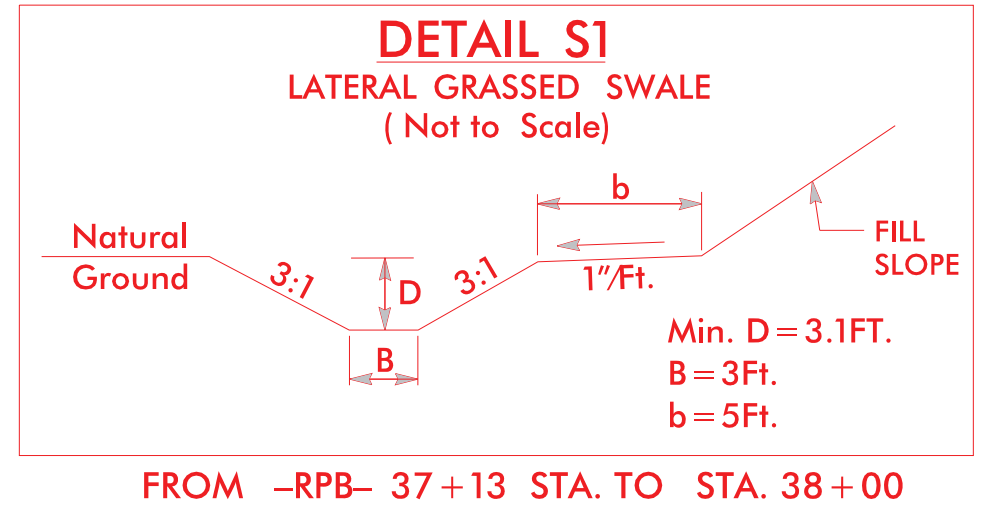


Q2 = 56.8 cfs
V2 = 2.7 fps
Q10 = 72.6 cfs
V10 = 2.9 fps



- MITIGABLE IMPACTS ZONE 1
- MITIGABLE IMPACTS ZONE 2

EXISTING TRANSPORTATION FACILITY



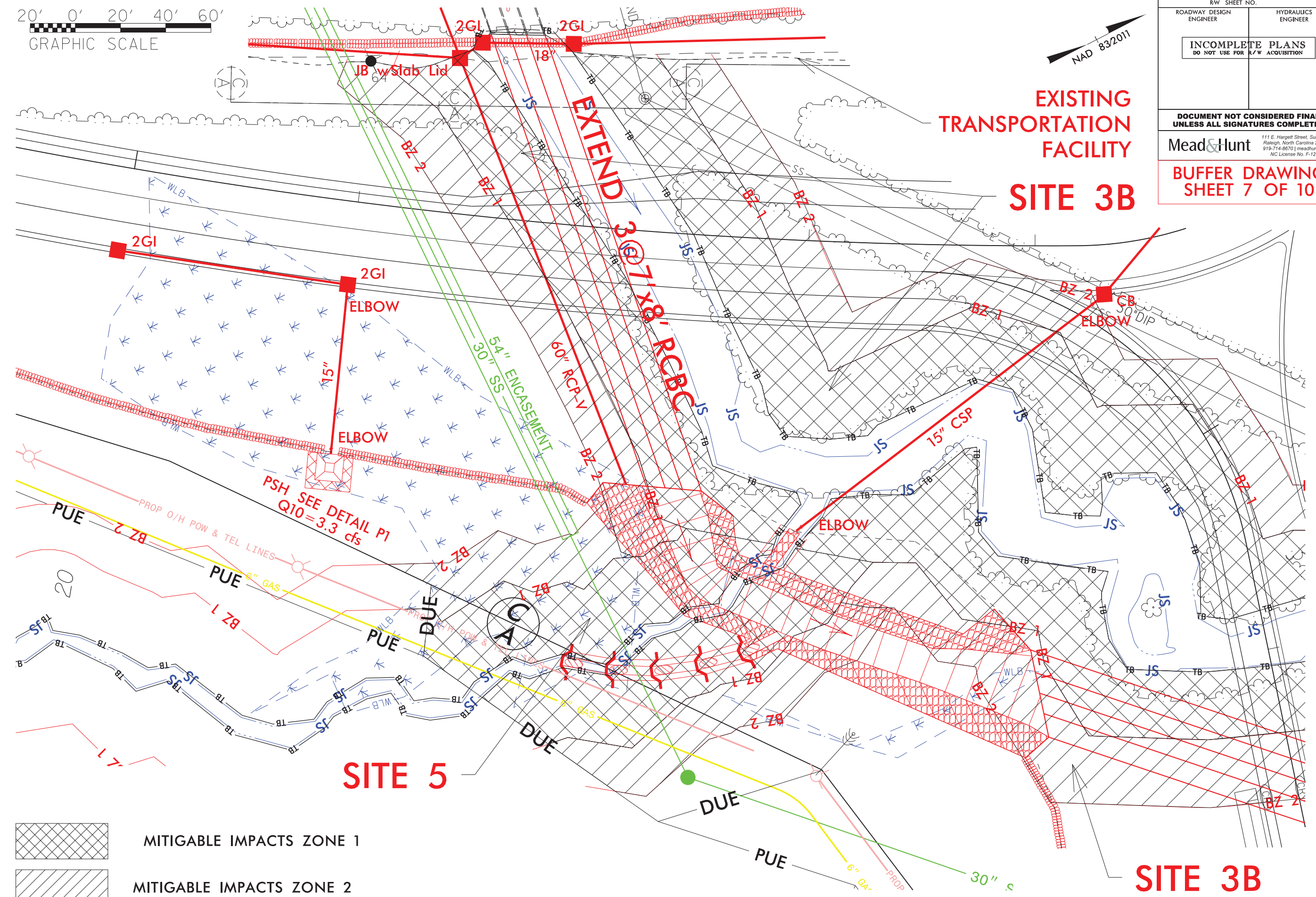
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PROJECT REFERENCE NO. R-4707	SHEET NO. INSET: 6B
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION	
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BUFFER DRAWING SHEET 7 OF 10	



**EXISTING
TRANSPORTATION
FACILITY**

SITE 3B



- MITIGABLE IMPACTS ZONE 1
- MITIGABLE IMPACTS ZONE 2

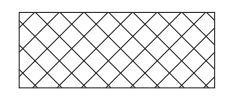
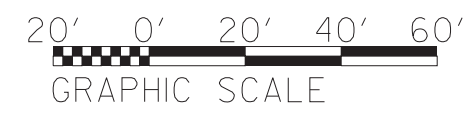
SITE 3B

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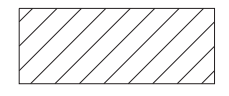
PROJECT REFERENCE NO. R-4707	SHEET NO. INSET: 6C
RW SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
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BUFFER DRAWING SHEET 8 OF 10	



SITE 3B

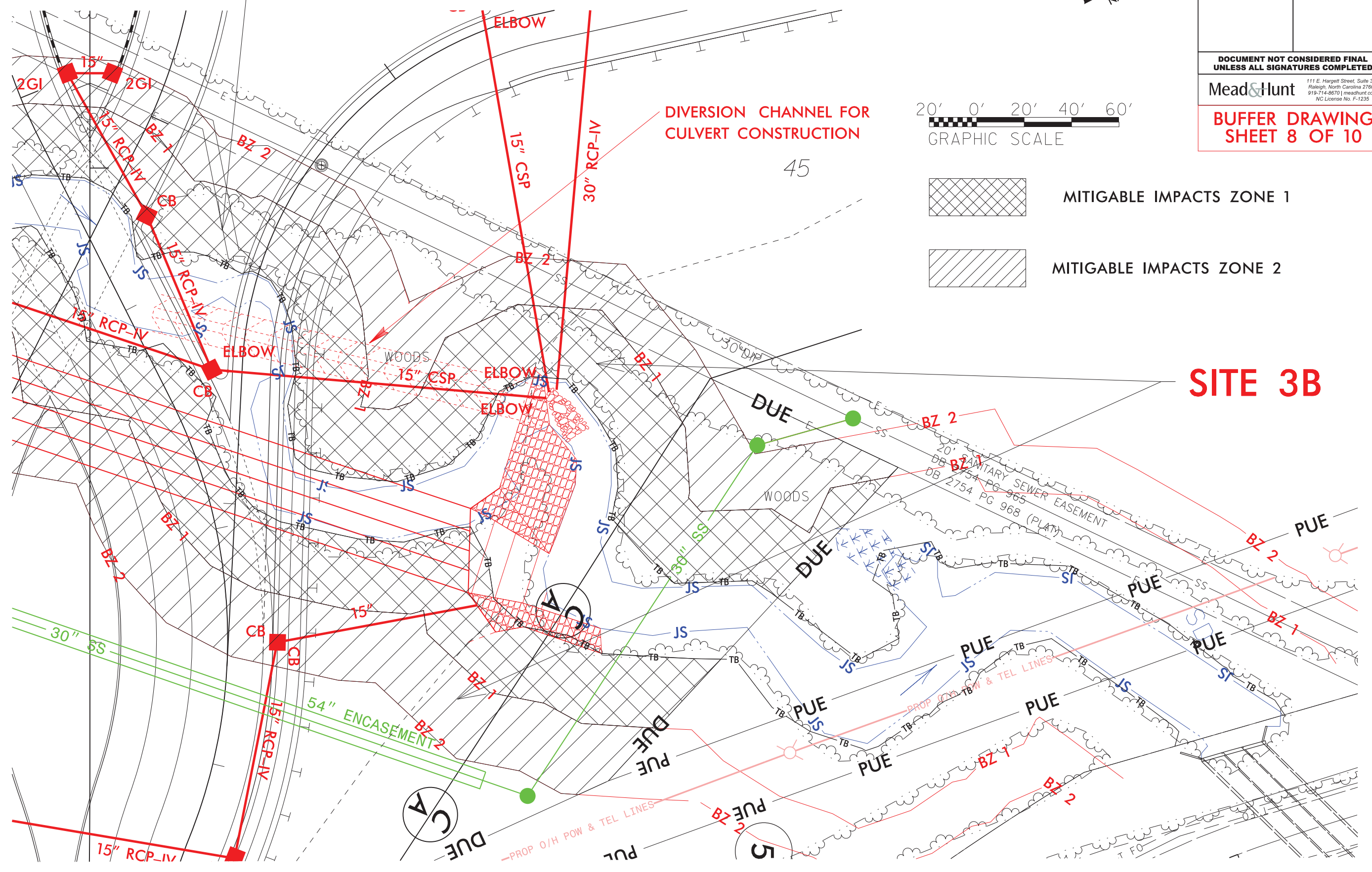


MITIGABLE IMPACTS ZONE 1



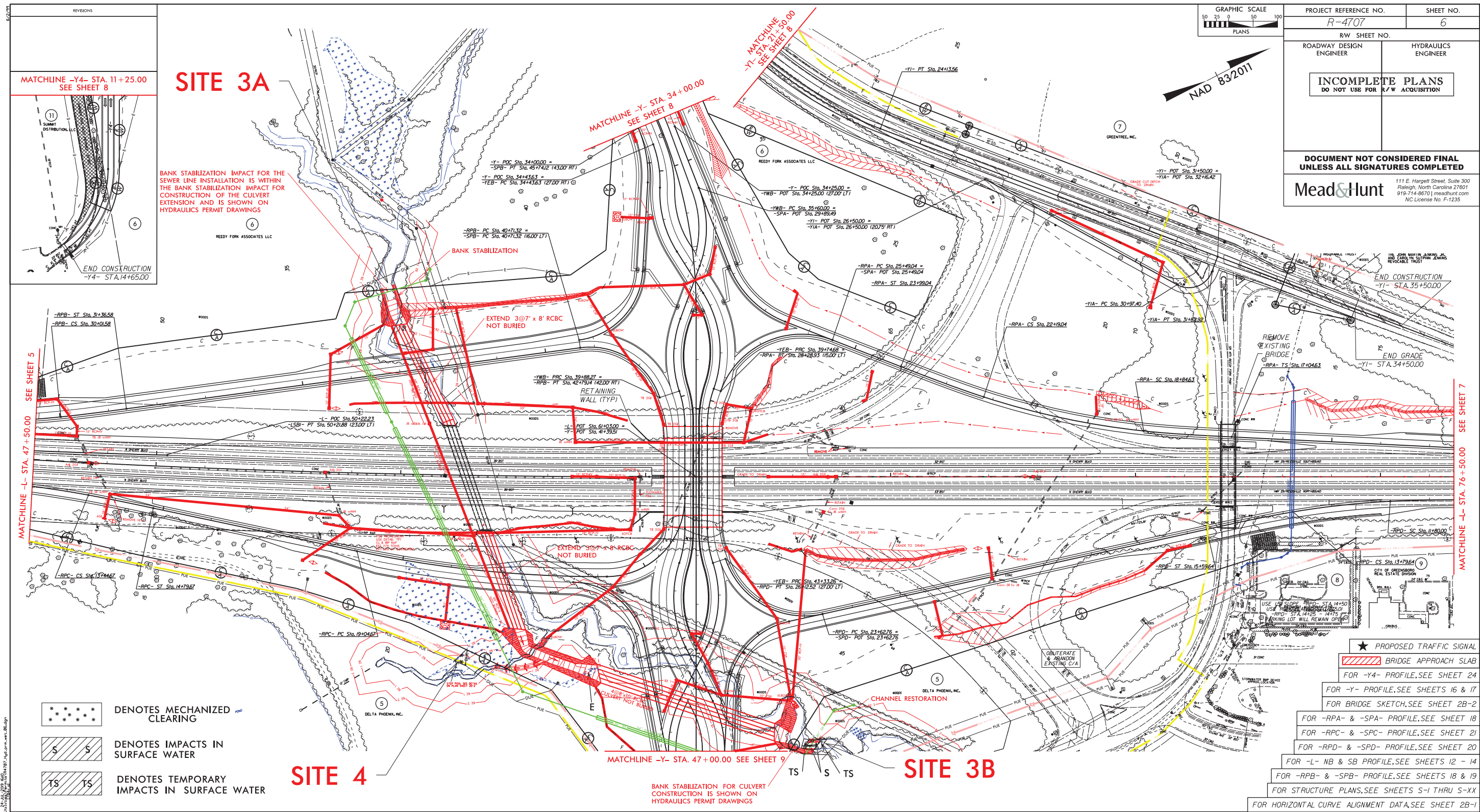
MITIGABLE IMPACTS ZONE 2

SITE 3B



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UTILITY PERMIT DRAWINGS



REVISIONS



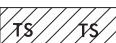
MATCHLINE -Y4- STA. 11+25.00
SEE SHEET 8

END CONSTRUCTION
-Y4- STA. 14+65.00

SITE 3A

BANK STABILIZATION IMPACT FOR THE SEWER LINE INSTALLATION IS WITHIN THE BANK STABILIZATION IMPACT FOR CONSTRUCTION OF THE CULVERT EXTENSION AND IS SHOWN ON HYDRAULICS PERMIT DRAWINGS

MATCHLINE -L- STA. 47+50.00
SEE SHEET 5

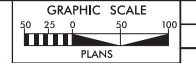
-  DENOTES MECHANIZED CLEARING
-  DENOTES IMPACTS IN SURFACE WATER
-  DENOTES TEMPORARY IMPACTS IN SURFACE WATER

SITE 4

MATCHLINE -Y- STA. 47+00.00
SEE SHEET 9

BANK STABILIZATION FOR CULVERT CONSTRUCTION IS SHOWN ON HYDRAULICS PERMIT DRAWINGS

SITE 3B




PROJECT REFERENCE NO.	R-4707	SHEET NO.	6
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RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

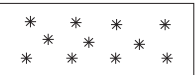
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL
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- ★ PROPOSED TRAFFIC SIGNAL
-  BRIDGE APPROACH SLAB
- FOR -Y4- PROFILE, SEE SHEET 24
- FOR -Y- PROFILE, SEE SHEETS 16 & 17
- FOR BRIDGE SKETCH, SEE SHEET 2B-2
- FOR -RPA- & -SPA- PROFILE, SEE SHEET 18
- FOR -RPC- & -SPC- PROFILE, SEE SHEET 21
- FOR -RPD- & -SPD- PROFILE, SEE SHEET 20
- FOR -L- NB & SB PROFILE, SEE SHEETS 12 - 14
- FOR -RPB- & -SPB- PROFILE, SEE SHEETS 18 & 19
- FOR STRUCTURE PLANS, SEE SHEETS S-1 THRU S-XX
- FOR HORIZONTAL CURVE ALIGNMENT DATA, SEE SHEET 2B-1

8/17/99



DENOTES MECHANIZED CLEARING



DENOTES TEMPORARY IMPACTS IN SURFACE WATER



DENOTES IMPACTS IN SURFACE WATER



PROJECT REFERENCE NO. R-4707	SHEET NO. INSET:6
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
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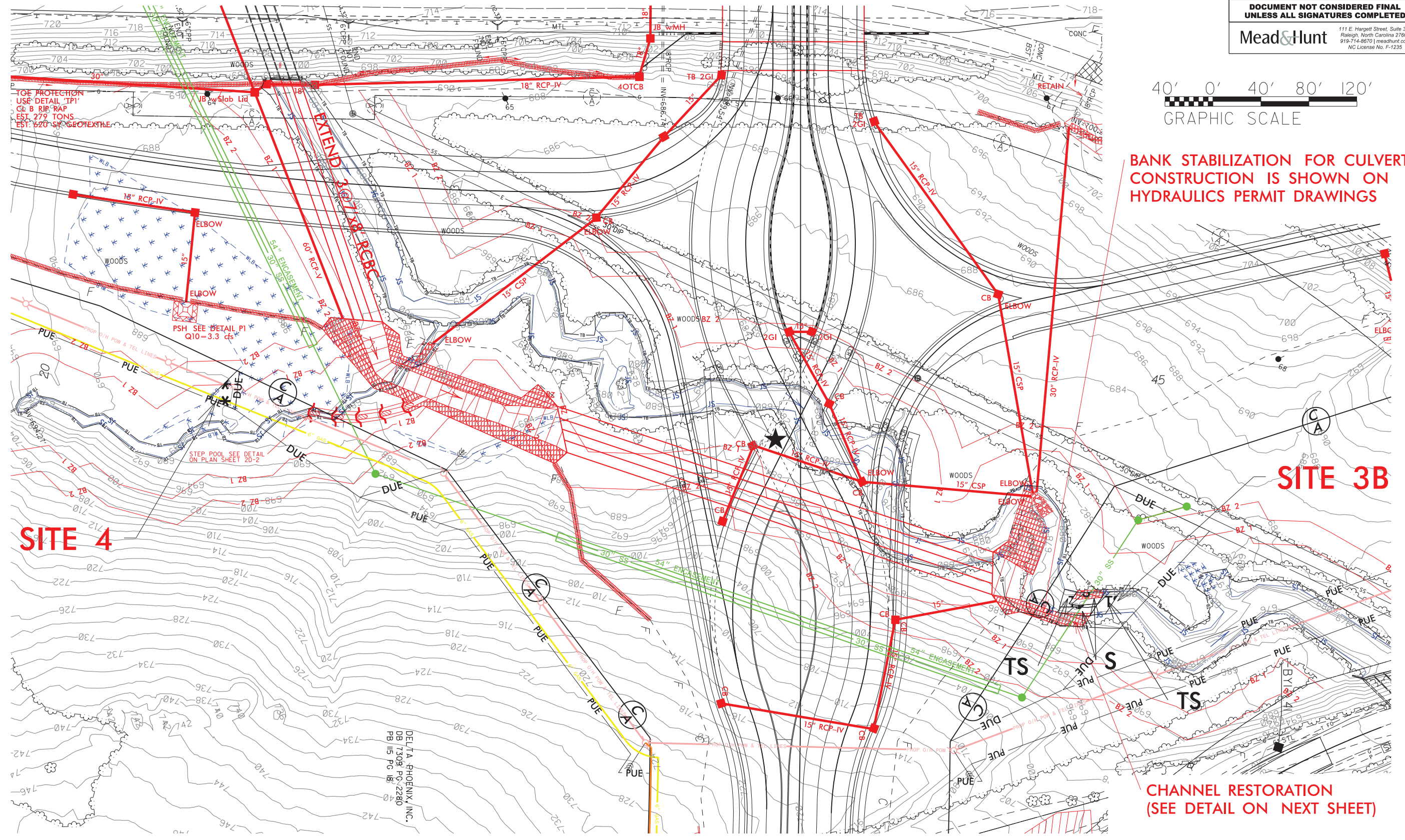


BANK STABILIZATION FOR CULVERT CONSTRUCTION IS SHOWN ON HYDRAULICS PERMIT DRAWINGS

SITE 3B

SITE 4

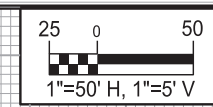
CHANNEL RESTORATION (SEE DETAIL ON NEXT SHEET)



REVISIONS

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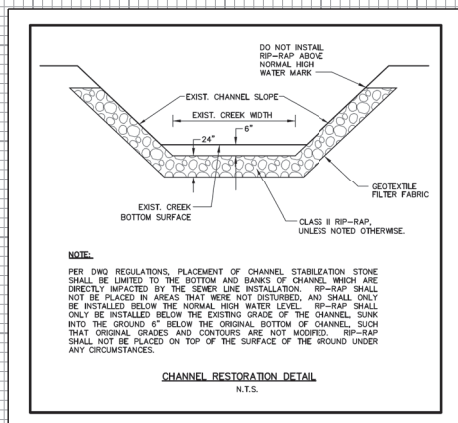
PROJECT REFERENCE NO. R-4707	SHEET NO. UC-XX-A
DESIGNED BY: DMP	
DRAWN BY: DMP	
CHECKED BY: DMP	
APPROVED BY:	
REVISED:	
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION UTILITIES ENGINEERING SEC. PHONE: (919) 707-6690 FAX: (919) 250-4151	
UTILITY CONSTRUCTION PLANS ONLY	

UTILITY CONSTRUCTION

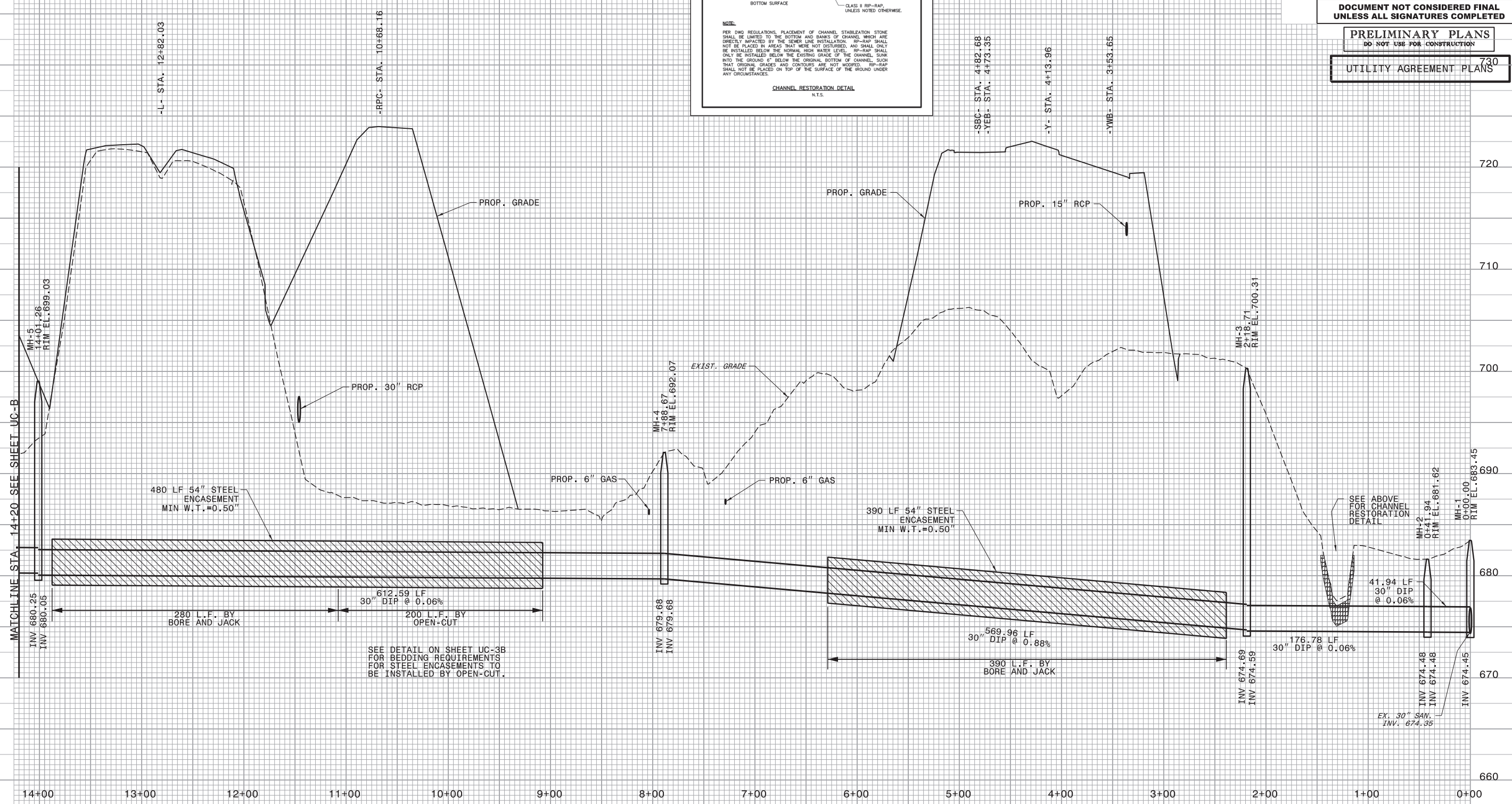
**DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED**

**PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION**

UTILITY AGREEMENT PLANS



REVISIONS



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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)
3B	-Y- Sta. 46+75 - 46+97	Channel Restoration						< 0.01	< 0.01	31	10	
4	-RPC- Sta. 21+40	Overhead Utilities				< 0.01						
TOTALS*:						< 0.01		< 0.01	< 0.01	31	10	0

*Rounded totals are sum of actual impacts

NOTES:
 3A - Bank Stabilization Impact for the sewer line installation is within the Bank Stabilization Impact for construction of the culvert and is shown on Hydraulics Permit Drawings.

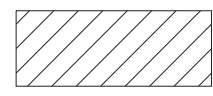
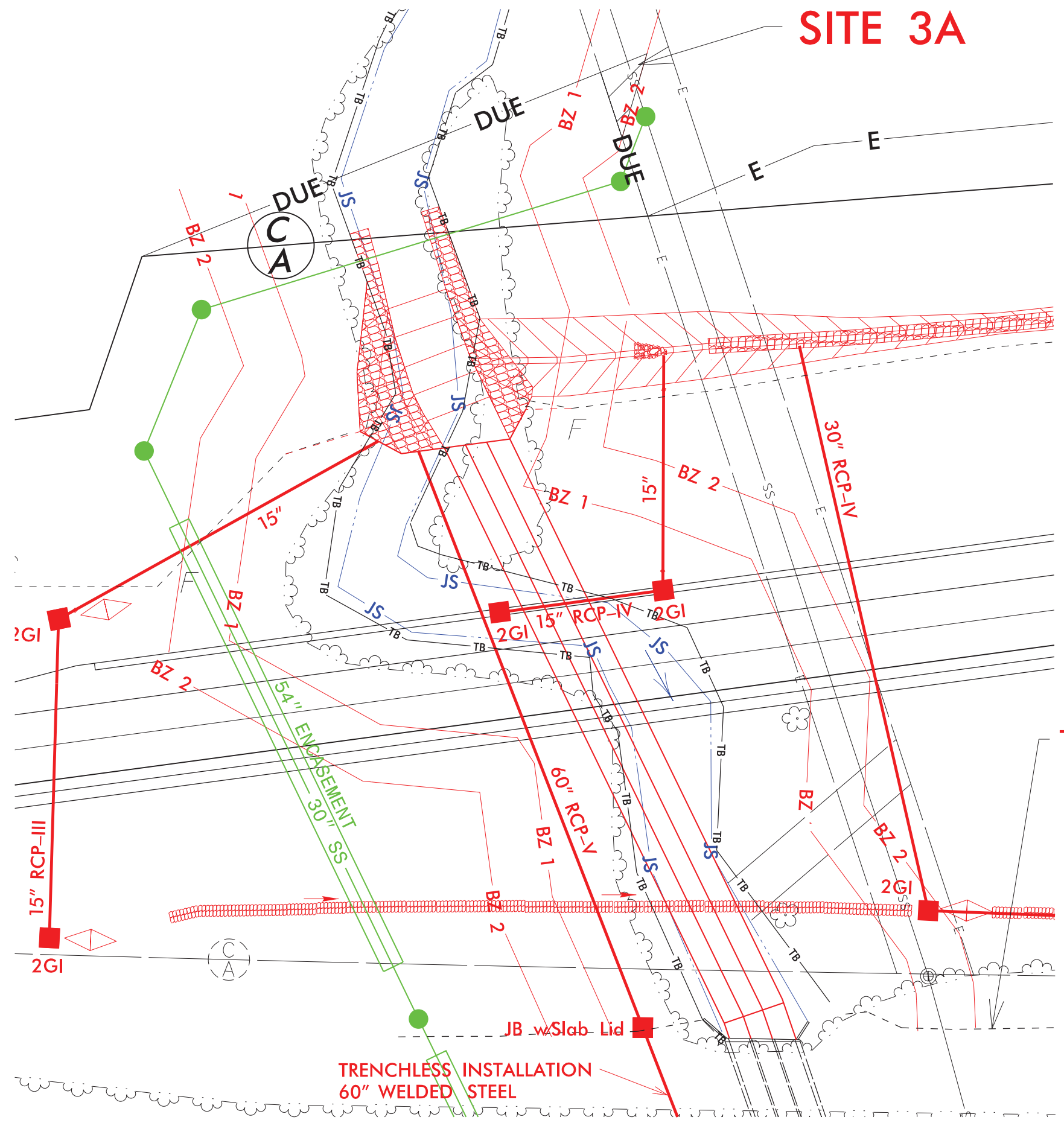
NC DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 JULY 17, 2019
 GUILFORD
 R-4707
 36599.1.5

8/17/99

REVISIONS

17-JUL-2019 17:25
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1784rjd

SITE 3A



MITIGABLE IMPACTS ZONE 2

**EXISTING
TRANSPORTATION
FACILITY**

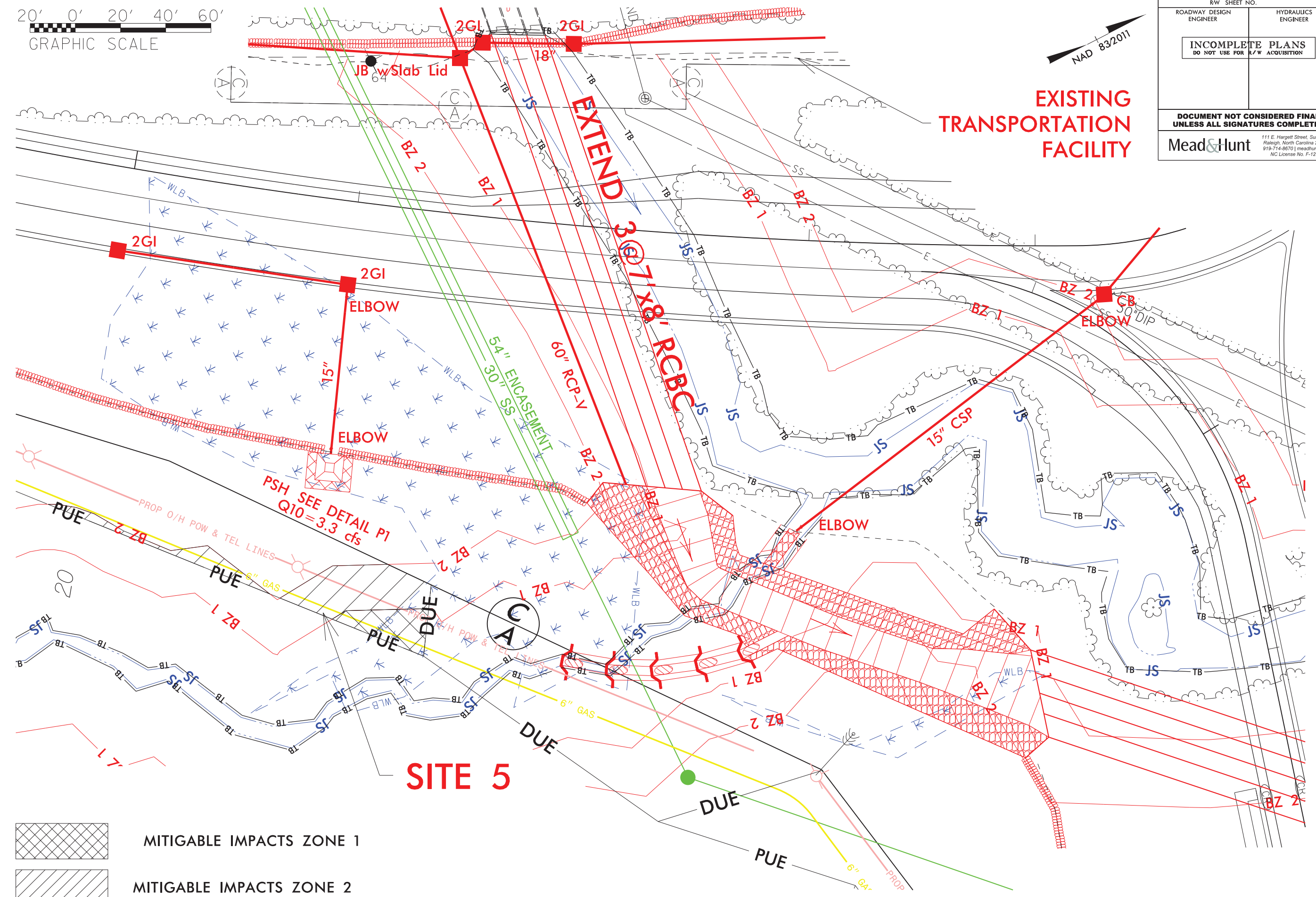
PROJECT REFERENCE NO. <i>R-4707</i>	SHEET NO. <i>INSET:6A</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
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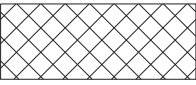
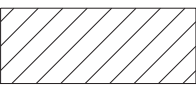
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1784rjd



PROJECT REFERENCE NO. R-4707	SHEET NO. INSET:6B
RW SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	ENGINEER
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
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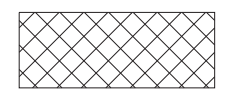
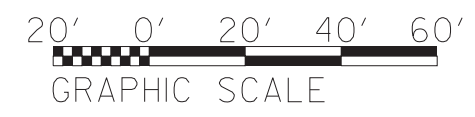
**EXISTING
TRANSPORTATION
FACILITY**



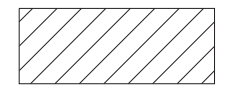
-  MITIGABLE IMPACTS ZONE 1
-  MITIGABLE IMPACTS ZONE 2

SITE 5

PROJECT REFERENCE NO. R-4707	SHEET NO. INSET:6C
RW SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
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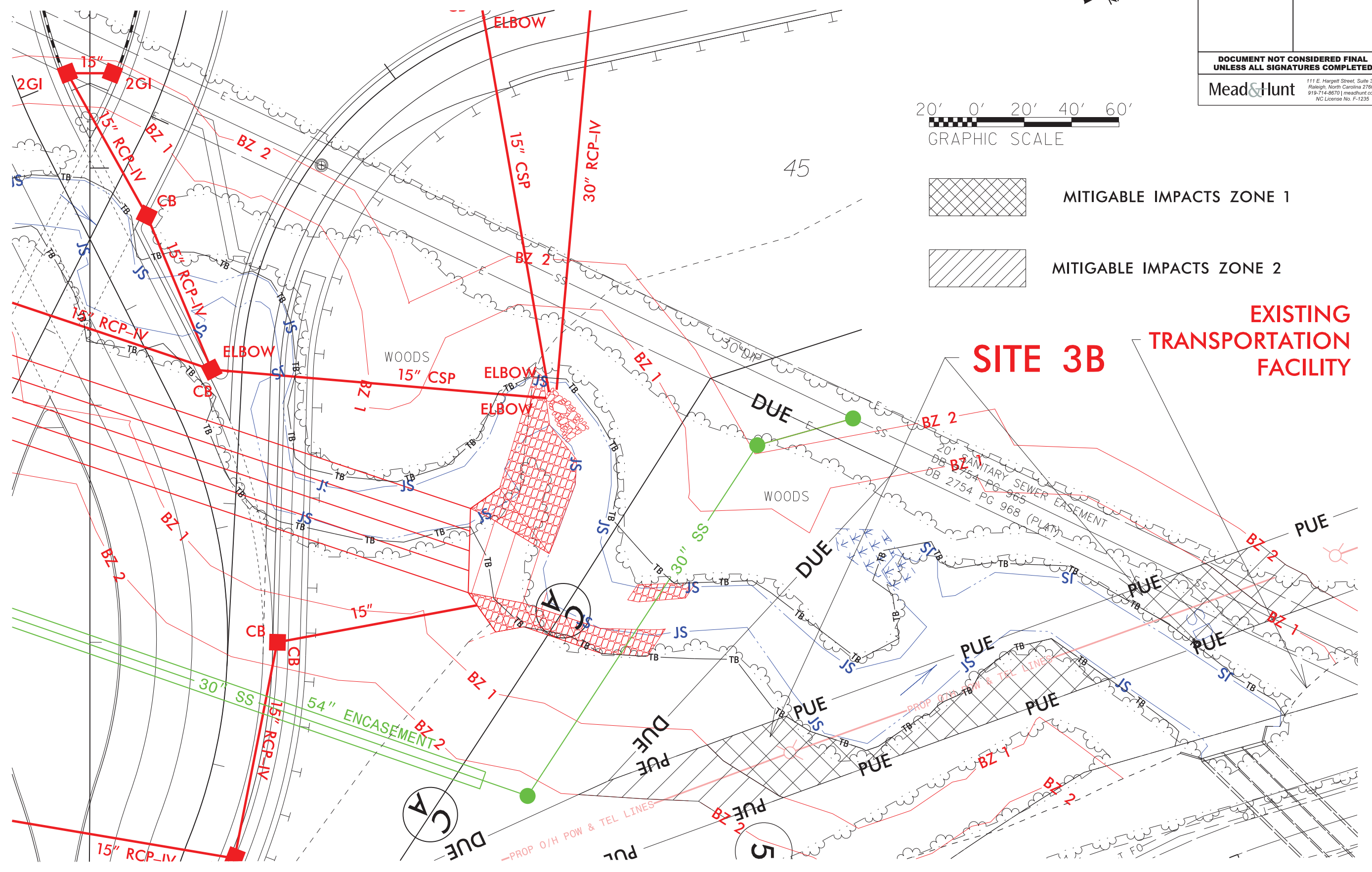
MITIGABLE IMPACTS ZONE 1



MITIGABLE IMPACTS ZONE 2

**EXISTING
TRANSPORTATION
FACILITY**

SITE 3B



REVISIONS

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RIPARIAN BUFFER IMPACTS SUMMARY

Site No.	Station (From/To)	Structure Size / Type	IMPACTS									BUFFER REPLACEMENT			
			TYPE			ALLOWABLE			MITIGABLE			ZONE 1 (ft ²)	ZONE 2 (ft ²)		
			ROAD CROSSING	STREAM CHANNEL RELOCATION	PARALLEL IMPACT	ZONE 1 (ft ²)	ZONE 2 (ft ²)	TOTAL (ft ²)	ZONE 1 (ft ²)	ZONE 2 (ft ²)	TOTAL (ft ²)				
3A	-RPB- Sta. 37+80	30" Gravity Sewer			X							204	204		
3B	-Y- Sta. 46+58 - 47+73	Overhead Utilities			X				4162	1932	6094				
5	-Y- Sta. 44+57 - 45+25	Overhead Utilities			X				509	1424	1933				
TOTALS*:						0	0	0	4671	3560	8231	0	0		

NOTES: Site numbers match wetland sites. Wetland site numbers that are not shown do not have buffers.

NC DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 JULY 17, 2019
 GUILFORD COUNTY
 R-4707
 36599.1.5

WETLANDS IN BUFFER IMPACTS SUMMARY

SITE NO.	STATION FROM	STATION TO	WETLANDS IN BUFFERS	
			ZONE 1 (ft ²)	ZONE 2 (ft ²)
5	-Y- 44+92	-Y- 45+25	315	81
TOTAL:			315	81

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Revised 2018 Feb

NOTES: Site numbers match wetland sites. wetland site numbers that are not shown do not have buffers.