STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

JAMES H. TROGDON, III
SECRETARY

January 14, 2020

US Army Corps of Engineers
3331 Heritage Trade Drive, Suite 105
Wake Forest, North Carolina 27587

ATTN: Mr. David E. Bailey
NCDOT Coordinator

Subject: **Application for Individual Section 404 Permit, Section 401 Water Quality Certification, and Riparian Buffer Certification 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, Debit $570 from WBS 36599.1.5.

Dear Sir:

The North Carolina Department of Transportation (NCDOT) proposes to replace on new location the existing deficient Bridge No. 360 that connects Reedy Fork Parkway (SR 4771) to SR 2526 (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 would 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 SR 2790 (Eckerson Road) to Summit Avenue. Please see the enclosed ENG 4345; North Carolina Division of Mitigation Services (NCDMS) Acceptance Letter, Meeting Minutes – Concurrence Points 4B and 4C; State Stormwater Management Plan (SMP); permit drawings; and Roadway plansheets.

Purpose and Need:

The purpose of the proposed project is to replace the structurally deficient bridge over US 29, improve the interchange to meet interstate standards and accommodate future traffic volumes from the Reedy Fork Ranch Mixed Use Development. The needs that the proposed project would address are summarized:

- Replacement of the structurally deficient bridge (No. 360) over US 29;
- Modification of the existing US 29/ Reedy Fork Parkway Interchange to meet interstate standards to accommodate for the future re-designation of US 29 to I-785;
- Accommodation of the future traffic volumes from the Reedy Fork Ranch development and other anticipated future developments in the study areas.

Mailing Address:
NC DEPARTMENT OF TRANSPORTATION
ENVIRONMENT ANALYSIS UNIT
1598 MAIL SERVICE CENTER
RALEIGH NC 27699-1598

Telephone: (919) 707-6000
Fax: (919) 212-5785
Customer Service: 1-877-368-4968
Website: www.ncdot.gov

Location:
1000 BIRCH RIDGE DRIVE
RALEIGH NC 27610

NEPA DOCUMENT STATUS

State Environmental Analysis (EA)/Finding of No Significant Impact was completed for R-4707 on February 20, 2018.

Copies of this document can be found on the NCDOT Website: https://xfer.services.ncdot.gov/pdea/EnvironmentalDocs/Documents/STIP_R-Projects/R4707%20SEA_FONSI_Final.pdf.

PROJECT SCHEDULE

This project has a letting date of June 16, 2020 and a review date April 28, 2020.

INDEPENDENT UTILITY

The Merger Team agreed on the purpose and need, logical termini, and independent utility of the proposed project at a meeting in 2006. The Study Area for the project extends approximately 5,000 feet north of the existing interchange along US 29 and approximately 3,000 feet south along US 29, Bryan Park Road and SR 2525 (Summit Avenue). The Study Area also extends approximately 3,000 feet south along SR 2790 (Reedy Fork Parkway).

RESOURCE STATUS

Water resources in the Study Area are part of the Cape Fear River basin [US Geological Survey (USGS) Hydrologic Unit 03030002] and are located within the Jordan Water Supply Buffer Protection. There are no Outstanding Resource Waters (ORW), High Quality Waters (HQW), Water Supply Waters (WS-I or WS-II) waters within 1.0 mile of the project area.

A Preliminary Jurisdictional Determination (PJD) was obtained on November 15, 2017 for the R-4707 project. David Bailey with the US Army Corps of Engineers (USACE) and April Norton with the NC Division of Water Resources (NCDWR) attended the field visit on October 17, 2017.

303(d) Impaired Waters:

The Final 2018 303(d) list includes Reedy Fork (Hardys Mill Pond) which is listed for benthos but not listed for turbidity or sedimentation. No other streams are listed within one mile of the project footprint.

IMPACTS TO WATERS OF THE U.S.

Tables 1 and 2 summarize the impacts to jurisdictional wetlands and streams, respectively. Site numbers correspond with the permit (hydraulic) drawings included in this application and with the PJD package, dated June 19, 2017, and with the updated PJD tables, dated November 15, 2017.

Table 1 – R-4707 Wetland Impacts*

Permit Site / Wetland ID[1/]	NC WAM Classification	Wetland Size (ac)	Perm. Fill in Wetlands (ac)	Excavation (ac)	Mechanized Clearing (ac)	Impact Description
2 / WF	Headwater Forest	0.02	<0.01	--	<0.01	A portion of wetland WF will be impacted by fill from the road widening. Mechanized clearing will be performed on a portion of the wetland outside of the fill boundary.
4/ WJ	Headwater Forest	0.55	0.34	0.02	0.15	Wetland WJ will be impacted by fill and excavation from the construction of the interchange along with the installation of a preformed scour hole. Mechanized clearing will be performed on a portion of the wetland outside of the fill boundary.
6/WI	Non-Tidal Freshwater Marsh	0.02	--	0.02	--	Wetland WI is being impacted by the channel relocation of the UT to Camp Herman and will be a total take.
Totals by Impact Type:			**0.35**	**0.04**	**0.16**	
Total Permanent Wetland Impacts:			**0.55**			

* Wetlands impacted are riparian.

Table 1A – R-4707 Utility Wetland Impacts*

Permit Site / Wetland ID[1/]	NC WAM Classification	Wetland Size (ac)	Perm. Fill in Wetlands (ac)	Excavation (ac)	Mechanized Clearing (ac)	Impact Description
4/ WJ	Headwater Forest	0.55	--	--	<0.01	Wetland WJ will be impacted by mechanized clearing from the installation of overhead utilities.
Totals by Impact Type:			--	--	**0.01**	
Total Permanent Wetland Impacts:			**0.01**			

* Wetlands impacted are riparian.

Table 2 – R-4707 Stream Impacts

Permit Site	Stream Name/ PJD ID	Stream Status*/ Class	Permanent Channel Impacts	Bank Stabilization	Temp. Channel Impacts	ACOE Required Mitigation	DWR Required Mitigation	Permanent Impacts Description
1	UT to UT at Camp Herman/SI	I/WS-V ;NSW	79	10	10	79	--	Stream will be impacted by roadway fill with the flow captured in a new 24" RCP III in the location of the original channel, with bank stabilization at the outlet of the pipe.
3A	UT at Camp Herman/SD	P/WS-V ;NSW	314	73	5	314	314	Stream will be impacted by the extension of a triple barrel 7'x 8' RCBC with bank stabilization and a low flow bench at the inlet.
3B	UT at Camp Herman/SD	P/WS-V ;NSW	1040	19	15	1,040	1,040	Stream will be impacted by the extension of a triple barrel 7'x 8' RCBC and by its relocation into a step pool system & a new four barrel 8'x10' RCBC.
3C	UT at Camp Herman/SD	P/WS-V ;NSW	--	--	8	--	--	Existing triple barrel RCBC will have sediment removal from all three barrels on the upstream side.
5	UT to UT at Camp Herman/SO	P/WS-V ;NSW	156	--	12	156	--	Stream will be impacted by roadway fill from a channel relocation and the installation of a step pool system.
Total Streams Impact:			**1,589**	**102**	**50**	**1,589 @ 2:1**	**1,354 @ 1:1**	
Total Permanent Impacts:			**1,691**					
Total Stream Impact Requiring Mitigation (Total Perm. Impacts – Bank Stabilization):						**1,589**		

* - I = Intermittent, P = Perennial.

Table 2A – R-4707 Utility Stream Impacts

Permit Site	Stream Name/ PJD ID	Stream Status*/ Class	Permanent Channel Impacts	Bank Stabilization	Temp. Channel Impacts	ACOE Required Mitigation	DWR Required Mitigation	Permanent Impacts Description
3B	UT at Camp Herman/SD	P/WS-V ;NSW	31	--	10	31	--	Stream will be impacted by channel restoration from the installation of a 30" sanitary sewer line.
Total Utility Stream Impacts:						**31**		

Table 3 – R-4707 Riparian Buffer Impacts

Permit Site	IMPACT TYPE			MITIGABLE IMPACTS		
	Road Crossing	Stream Channel Relocation	Parallel Impact	Zone 1 (ft2)	Zone 2 (ft2)	Total (ft2)
1	--	--	X	8,009	6,593	14,602
3A	X	--	--	23,468	15,429	38,897
3B	X	--	--	60,989	43,187	104,176
5	--	X	--	9,800	5,161	14,961
TOTALS				**102,226**	**70,370**	**172,636**

Table 3A – R-4707 Wetland Buffer Impacts

WETLANDS IN BUFFERS		
Permit Site	Zone 1 (ft2)	Zone 2 (ft2)
1	320	281
3A	--	--
3B	--	743
5	2,988	1,976
TOTAL	**3,308**	**3,000**

Table 4 – R-4707 Utility Riparian Buffer Impacts

Permit Site	IMPACT TYPE			MITIGABLE IMPACTS		
	Road Crossing	Stream Channel Relocation	Parallel Impact	Zone 1 (ft2)	Zone 2 (ft2)	Total (ft2)
3A	--	--	X	--	204	204
3B	--	--	X	4,162	1,932	6,094
5	--	--	X	509	1,424	1,933
TOTALS				**4,671**	**3,560**	**8,231**

Table 4A – R-4707 Utility Wetland Buffer Impacts

WETLANDS IN BUFFERS		
Permit Site	Zone 1 (ft2)	Zone 2 (ft2)
3A	--	--
3B	--	--
5	315	81
TOTAL	**315**	**81**

MORATORIUM

There are no moratoria for this project.

FEDERALLY PROTECTED SPECIES

Plants and animals with Federal classification of Endangered (E) or Threatened (T) are protected under provisions of Section 7 and Section 9 of the Endangered Species Act of 1973, as amended. As of October 4, 2019, the USFWS lists four federally protected species for Guilford County. Schweinitz's sunflower was surveyed for by NCDOT personnel on October 29, 2019. Suitable habitat for Schweinitz's sunflower is present in the project footprint but no specimens were observed. The project was surveyed for Small-whorled pogonia on May 22, 2016 with no species found. IPAC was checked on November 25, 2019 and the project was found to be outside of range of the Cape Fear shiner and Roanoke logperch.

Table 4 – Federally protected species listed for Guilford County

Scientific Name	Common Name	Federal Status*	Habitat	Biological Conclusion
Isotria medeoloide	Small-whorled pogonia	T	Yes	No Effect
Helianthus schweinitzii	Schweinitz's sunflower	E	Yes	No Effect
Notropis mekistocholas	Cape Fear shiner	E	--	No Effect
Percina rex	Roanoke logperch	E	--	No Effect

INDIRECT CUMULATIVE IMPACT ANALYSIS

NCDOT completed an Indirect and Cumulative Effects Screening Update for R-4707 in February 2017. The findings of this report state that the project is not expected to have an effect on future land use patterns in the Future Land Use Study Area (FLUSA). R-4707 is not expected to induce future growth or development which could result in impacts to wetlands or surface waters in or adjacent to the FLUSA. The effect of this project, when considered in the context of other past, present, and future actions, and the resulting impact to notable human and natural features, will not notably contribute to indirect and cumulative impacts to environmental resources in the FLUSA.

CULTURAL RESOURCES

In order to comply with Section 106 of the National Historic Preservation Act (1966, as amended), FHWA and NCDOT must evaluate the project's impact upon any extant architectural and archaeological resources and determine if additional measure will be necessary to mitigate any adverse effects of the project upon any significant properties and sites.

Archaeological Resources:

An archaeological survey was conducted by NCDOT of the APE in April 2017. A review of the APE found that no National Register listed or eligible Archaeological sites are present within the APE for this project, therefore no effect is anticipated on archaeological resources by implementation of this project.

Historic Architectural Resources:

On October 12, 2012 Historic Architecture reviewed the properties over 50 years of age in the Area of Potential Effects. None of these properties warranted evaluation for National Register eligibility. As of August 8, 2019, the conditions have not changed. This project was evaluated to comply with Section 106 of the National Historic Preservation Act and NC GS 121 (12)a.

Community Studies:

A community could be considered a potential EJ area of concern if the percentage of low-income or minority populations of a Block Group within 0.5-mile of the project corridor is at least 20 percent greater than those of the County. Based on the demographic analysis, there are no areas that would be considered an EJ area of concern within the Project Area.

FEMA COMPLIANCE

The project has been coordinated with appropriate state and local officials and the Federal Emergency Management Agency (FEMA) to assure compliance with FEMA, state, and local floodway regulations.

WILD AND SCENIC RIVER SYSTEM

The project will not impact any designated Wild and Scenic Rivers or any rivers included in the list of study rivers (Public Law 90-542, as amended).

MITIGATION OPTIONS

The NCDOT is committed to incorporating all reasonable and practicable design features to avoid and minimize jurisdictional impacts, and to provide full compensatory mitigation of all remaining, unavoidable jurisdictional impacts. Avoidance measures were taken during the planning and NEPA compliance stages, and minimization measures were incorporated as part of the project design.

Avoidance and Minimization

- 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 design 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.

Compensation:

The NCDOT has avoided and minimized impacts to jurisdictional resources to the greatest extent practicable as described above. Tables 1 through 4 summarize the wetland, stream, buffer, and utility impacts for this project. NCDOT has obtained compensatory mitigation for **0.56 acre of wetland impacts**; **1,620 linear feet of stream impacts** and **174,163 square feet of buffer impacts** from the NCDMS.

REGULATORY APPROVALS

Section 404 and Section 10: Application is hereby made for a USACE Individual 404 and Section 10 Permit as required for the above-described activities.

Section 401: We are hereby requesting a 401 Water Quality Certification from the N. C. Division of Water Resources. In compliance with Section 143 215.3D(e) of the NCAC, we will provide $570.00 to act as payment for processing the Section 401 permit application previously noted in this application (see Subject line).

Thank you for your assistance with this project. If you have any questions or need additional information, please contact Jeff Hemphill at jhemphill@ncdot.gov or (919) 707-6126. A copy of this application and distribution list will also be posted on the NCDOT website at: https://xfer.services.ncdot.gov/pdea/PermApps/.

Sincerely,

for Philip S. Harris, P.E., C.P.M.
Environmental Analysis Unit Head

cc:
NCDOT Permit Application Standard Distribution List.

U.S. ARMY CORPS OF ENGINEERS

APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT

33 CFR 325. The proponent agency is CECW-CO-R.

Form Approved - OMB No. 0710-0003 Expires: 30-SEPTEMBER-2015

Public reporting for this collection of information is estimated to average 11 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of the collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters, Executive Services and Communications Directorate, Information Management Division and to the Office of Management and Budget, Paperwork Reduction Project (0710-0003). Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. Please DO NOT RETURN your form to either of those addresses. Completed applications must be submitted to the District Engineer having jurisdiction over the location of the proposed activity.

PRIVACY ACT STATEMENT

Authorities: Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Programs of the Corps of Engineers; Final Rule 33 CFR 320-332. Principal Purpose: Information provided on this form will be used in evaluating the application for a permit. Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public and may be made available as part of a public notice as required by Federal law. Submission of requested information is voluntary, however, if information is not provided the permit application cannot be evaluated nor can a permit be issued. One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and/or instructions) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned.

(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)

1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETE

(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME	8. AUTHORIZED AGENT'S NAME AND TITLE (agent is not required)
First - Phil Middle - S Last - Harris	First - Middle - Last -
Company - NCDOT	Company -
E-mail Address - pharris@ncdot.gov	E-mail Address -
6. APPLICANT'S ADDRESS:	9. AGENT'S ADDRESS:
Address- 1598 Mail Service Center	Address-
City - Raleigh State - NC Zip - 27699 Country - USA	City - State - Zip - Country -
7. APPLICANT'S PHONE NOs. w/AREA CODE	10. AGENTS PHONE NOs. w/AREA CODE
a. Residence b. Business 91-707-6001 c. Fax	a. Residence b. Business c. Fax

STATEMENT OF AUTHORIZATION

11. I hereby authorize, _____ to act in my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.

_____ _____

SIGNATURE OF APPLICANT DATE

NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE (see instructions)

R-4707

13. NAME OF WATERBODY, IF KNOWN (if applicable)	14. PROJECT STREET ADDRESS (if applicable)
Cape Fear River	Address
15. LOCATION OF PROJECT Latitude: ◦N 36.17932 Longitude: ◦W 79.70841	City - State- Zip-

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions)

State Tax Parcel ID Municipality

Section - Township - Range -

17. DIRECTIONS TO THE SITE

Please see attached Vicinity Map and Cover Letter.

18. Nature of Activity (Description of project, include all features)

The North Carolina Department of Transportation (NCDOT) proposes to replace on new location the existing deficient Bridge No. 360 that connects Reedy Fork Parkway (SR 4771) to SR 2526 (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 would also include upgrades to Summit Avenue from 0.2 miles south of Bryan Park Road to the proposed interchange, and enhancements to Reedy Fork Parkway from SR 2790 (Eckerson Road) to Summit Avenue.

19. Project Purpose (Describe the reason or purpose of the project, see instructions)

The purpose of the proposed project is to replace the structurally deficient bridge over US 29, improve the interchange to meet interstate standards and accommodate future traffic volumes from the Reedy Fork Ranch Mixed Use Development.

USE BLOCKS 20-23 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED

20. Reason(s) for Discharge

- Replacement of the structurally deficient bridge (No. 360) over US 29;
- Modification of the existing US 29/ Reedy Fork Parkway Interchange to meet interstate standards to accommodate for the future re-designation of US 29 to I-785;
- Accommodation of the future traffic volumes from the Reedy Fork Ranch development and other anticipated future developments in the study areas.

21. Type(s) of Material Being Discharged and the Amount of Each Type in Cubic Yards:

Type Amount in Cubic Yards	Type Amount in Cubic Yards	Type Amount in Cubic Yards
see attached Cover Letter.		

22. Surface Area in Acres of Wetlands or Other Waters Filled (see instructions)

Acres

or

Linear Feet see attached Cover Letter.

23. Description of Avoidance, Minimization, and Compensation (see instructions)

see attached Cover Letter.

24. Is Any Portion of the Work Already Complete? ☐ Yes ☒ No IF YES, DESCRIBE THE COMPLETED WORK

25. Addresses of Adjoining Property Owners, Lessees, Etc., Whose Property Adjoins the Waterbody (if more than can be entered here, please attach a supplemental list).

a. Address- see attached Permit Drawings.

City - State - Zip -

b. Address-

City - State - Zip -

c. Address-

City - State - Zip -

d. Address-

City - State - Zip -

e. Address-

City - State - Zip -

26. List of Other Certificates or Approvals/Denials received from other Federal, State, or Local Agencies for Work Described in This Application.

AGENCY	TYPE APPROVAL*	IDENTIFICATION NUMBER	DATE APPLIED	DATE APPROVED	DATE DENIED

* Would include but is not restricted to zoning, building, and flood plain permits

27. Application is hereby made for permit or permits to authorize the work described in this application. I certify that this information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

Carla Brown 1/14/20

for Philip S. Harris, P.E., C.P.M.

SIGNATURE OF APPLICANT DATE SIGNATURE OF AGENT DATE

The Application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in block 11 has been filled out and signed.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than $10,000 or imprisoned not more than five years or both.

ROY COOPER
Governor
MICHAEL S. REGAN
Secretary
TIM BAUMGARTNER
Director

NORTH CAROLINA
Environmental Quality

December 5, 2019

Mr. Philip S. Harris, III, P.E.
Environmental Analysis Unit
North Carolina Department of Transportation
1598 Mail Service Center
Raleigh, North Carolina 27699-1598

Dear Mr. Harris:

Subject: Mitigation Acceptance Letter:

R-4707, US 29 / SR 4771 (Reedy Fork Parkway) Interchange Improvements in Greensboro, Guilford County

The purpose of this letter is to notify you that the Division of Mitigation Services (DMS) will provide the stream, wetland and buffer mitigation for the subject project. Based on the information supplied by you on December 5, 2019, the impacts are located in CU 03020002 of the Cape Fear River basin in the Central Piedmont (CP) Eco-Region, and are as follows:

Stream and Wetlands	River Basin	CU Location	Eco-Region	Stream			Wetlands		
				Cold	Cool	Warm	Riparian	Non-Riparian	Coastal Marsh
Impacts	Cape Fear	03030002	CP	0	0	1,620.0	0.56	0	0

*Some of the impacts may be proposed to be mitigated at a 1:1 mitigation ratio. See permit application for details.

All buffer mitigation requests and approvals are administrated through the Riparian Restoration Buffer Fund. The NCDOT will be responsible to ensure that appropriate compensation for the buffer mitigation will be provided in the agreed upon method of fund transfer. Upon receipt of the NCDWR's Buffer Authorization Certification, DMS will transfer funds from the NCDOT 2984 Fund into the Riparian Restoration Buffer Fund. Upon completion of transfer payment, NCDOT will have completed its riparian buffer mitigation responsibility for TIP Number R-4707. Subsequently, DMS will conduct a review of current NCDOT ILF Program mitigation projects in the river basin to determine if available buffer mitigation credits exist. If there are buffer mitigation credits available, then the Riparian Restoration Buffer Fund will purchase the appropriate amount of buffer mitigation credits from NCDOT ILF Program. If additional buffer credits are needed, then DMS will review all active private buffer mitigation banks that submitted a proposal to IFB 16-031819 (issued March 18, 2019).

Based on the information supplied by you on December 5, 2019, the buffer impacts are located in the Jordan watershed, Haw arm of the Cape Fear River basin, and are as follows:

Buffer	River Basin	CU	Eco-Region	Buffer Impacts		
				Zone 1	Zone 2	TOTAL
Impacts	Cape Fear – Jordan - Haw	03030002	CP	103,314.0	70,849.0	174,163.0

DMS commits to implementing sufficient compensatory stream, wetland and buffer mitigation credits to offset the impacts associated with this project as determined by the regulatory agencies in accordance with the In-Lieu Fee Instrument dated July 28, 2010. If the above referenced impact amounts are revised, then this mitigation acceptance letter will no longer be valid and a new mitigation acceptance letter will be required from DMS.

If you have any questions or need additional information, please contact Beth Harmon at 919-707-8420.

Sincerely,

James B. Stanfill
DMS Asset Management Supervisor

cc: Mr. Monte Matthews, USACE – Raleigh Regulatory Field Office
Ms. Amy Chapman, NCDWR
File: R-4707

4B Meeting Minutes

Subject: Project 36599.1.5 (R-4707) Guilford County
F.A. Project N/A
US 29 and SR 4771 (Reedy Fork Parkway) Interchange Improvements;
Improve Roadway, Modify Interchange and Replace Bridge 360

Location: Structure Design Conference Room

Date: August 15, 2018

Attendees	Representing	Email
Patty Eason	NCDOT - Division 7 (Phone)	peason@ncdot.gov
Mark Staley	NCDOT - EC Engineering (Phone)	mstaley@ncdot.gov
Laura Sutton	NCDOT - PMU	lsutton@ncdot.gov
Bill Elam	NCDOT - Hydraulics Unit	belam@ncdot.gov
Craig Lee	NCDOT - Hydraulics Unit	cjlee@ncdot.gov
Charles Smith	NCDOT - Hydraulics Unit/AECOM	Charles.smith2@aecom.com
Jeff Hemphill	NCDOT - EAU	jhemphill@ncdot.gov
April Norton	NC-DWR	april.norton@ncdenr.gov
Robert Patterson	NC-DWR	robert.patterson@ncdenr.gov
David Bailey	USACE	david.e.bailey2@usace.army.met
Roger Weadon	Mead & Hunt - Hydraulics	roger.weadon@meadhunt.com
Rick DeCola	Mead & Hunt - Project Manager	rick.decola@meadhunt.com
Carlas Sharpless	Mead & Hunt - Hydraulics	calras.sharpless@meadhunt.com

The meeting began at 10 AM. After a round of introductions, the meeting was turned over to Roger Weadon of Mead & Hunt to discuss jurisdictional site impacts sheet by sheet.

Sheet 4
No Comments

Sheet 5

Site 1:

- DWR asked if rip rap was in streambed at pipe outlet. It was stated that rip rap was placed on streambanks only at pipe outlet. Agencies are ok with rip rap in bed if velocities are high and it is needed for stability.
- The possibility of using a drop box and/or upsizing the last segment of pipe do reduce velocities was also discussed.

Site 2:

- USACE asked about the source of hydrology at this site getting impacted by the project. It was stated that future hydrology of this site would be addressed during the permitting process.

Sheet 6

Site 3A:

- USACE is agreeable to replacing the culvert beneath US 29 to correct any perching issues. It was noted that the existing culvert has a sufficiency rating of 80%.
- USACE requests to fix existing perching for the extension portions. Roger Weadon stated that the preliminary design shows the inlet end of the extension buried to prevent perching. However, NCDOT stated that proposed culvert extensions should not be buried 1' since existing culvert barrels are not buried and mostly free of sediment.

- DWR asked about baffles. No baffles or sills are proposed. It was stated that the culvert is already experiencing hydraulic capacity issues due to the flat slope and length of the culvert and adding a hard sill would further decrease hydraulic capacity. DWR and USACE would prefer a sill in the high flow barrel to maintain low flow channel but they can be omitted if justification by engineering necessity can be explained. It was noted that with the proposed extensions the US-29 culvert would be over 620' long so the requirement for aquatic passage may not be practical due to the enclosed length. USACE defers to WRC (Travis) to determine the needs for aquatic passage. It was also discussed if the new culvert under –Y- would need to be buried due to the culverts up and downstream not being buried. The culvert is approximately 400' long. USACE deferred to WRC (Travis) to get a determination. Post Meeting: In a follow-up email, Travis Wilson with WRC has confirmed that no burial of culvert barrels will be required. At the end of the meeting Charles Smith suggested that a rock vane on the bench may be an alternative to placing a hard sill in the barrel.
- Question was bought up about existing sewer line in culvert. NCDOT initially assumed that sewer line was abandoned therefore it could be removed from the culvert barrel. Division 7 expressed concerned about removing the abandoned sewer line out of the culvert barrel and was going to check with the city. Post Meeting: In and email received from Patty Eason she notes that the City of Greensboro has confirmed that the sewer line is still active but may be able to be relocated.
- It was stated that the new culvert beneath -Y- will be buried with 1' and have a sill to create a high flow barrel.

Site 3B:

- It was noted to take in account total meander length of stream when calculating impacts at the end of the new culvert.

Site 4:

- Narrow strip of wetlands could be a total take depending on depth of relocated channel.

Site 5:

- Discussion about tie-in with relocated channel. It was noted that there is a 3' drop to the new channel.
- USACE asked to consider using step-pools at a max of 12" drops to dissipate the 3' drop for the tie-in to the relocated channel.
- Roger Weadon stated that the use of step-pools could cause more impacts or drain the wetland. Roger Weadon also noted that the channel could be realigned to drop over a longer distance and minimize the linear impact of installing the step pools.

Site 6:

- Site would be candidate for total take since they could possibly lose their hydrology and drain out.

Sheet 7

- No Comments

Sheet 8

- It was noted that JS at approximately -Y- STA 30+00 Rt. begins downstream and off page before pipe outlet. Include the label "JS begins off sheet" for 4C permit drawings.

Sheet 9

Site 3C:

- USACE OK with culvert clean out beneath Reedy Fork Pkwy. Suggest cleanout from upstream side only to avoid conservation easement and private mitigation site on downstream side. Division 7 stated that culvert cleanout sounds reasonable and should not be a problem.
- If additional barrel or supplemental pipe is proposed, notify USACE early to begin coordination about the disturbing of the conservation easement downstream.

Stream Impacts: It was requested that these 4B notes include the difference in measured impacts vs. impacts listed in the EA/FONSI and an explanation explaining the difference.
The CP3 impacts were noted as 1558'. The permanent linear impacts for the current design are 1630'+/-. Note the final design is not complete so the 1630' value is an estimate and not the final number. Also, the 1630' value does not include any temporary stream impacts, indirect impacts, or non-mitigable impacts such as additional rip rap on channel banks.

Noted below is an Email sent out by Rick DeCola explaining the design changes that resulted in the increase in impacts:

The impacts in the EA/FONSI are based on the preliminary design, which had the proposed Reedy Fork Parkway interchange bridge placed directly over a sag in the US 29 profile. The bridge has vertical abutments at both end bents, which essentially creates a bucket when placed within the sag in the profile. If there would be a significant storm event and inlets became clogged, there would be no relief to the runoff in this scenario and water would begin to pool. This situation became apparent after we submitted 15% Plans for review.

Therefore, it was decided to shift the Reedy Fork Parkway alignment to the north in order to eliminate having the US 29 sag in the confines of the vertical abutments. Doing so also shifted the end of the proposed culvert under Reedy Fork Parkway to the north, where the channel meanders quite a bit. This resulted in approximately 170 LF of additional stream impacts.
It should be noted that we eliminated the culvert extension at the end of construction along Reedy Fork Parkway, which reduced linear stream and wetland impacts. Our design ends construction prior to that culvert, eliminating approximately 70 LF of impacts that would have been caused by the short culvert extension and channel realignment.

The explanation above aligns with the increase of linear stream impacts from CP3: 1558 LF at CP3 vs. approximately 1630 LF currently.

Respectfully submitted,
MEAD & HUNT, Inc.

ec: Attendees

Attachments

4C Meeting Minutes

Subject: Project 36599.1.5 (R-4707) Guilford County
F.A. Project N/A
US 29 and SR 4771 (Reedy Fork Parkway) Interchange Improvements;
Improve Roadway, Modify Interchange and Replace Bridge 360

Location: Structure Design Conference Room

Date: May 15, 2019

Attendees	Representing	Email
Patty Eason	NCDOT - Division 7 (Phone)	peason@ncdot.gov
Mark Staley	NCDOT - EC Engineering (Phone)	mstaley@ncdot.gov
Bryan Key	NCDOT - PMU	bckey@ncdot.gov
Craig Lee	NCDOT - Hydraulics Unit	cjlee@ncdot.gov
Charles Smith	NCDOT - Hydraulics Unit/AECOM	Charles.smith2@aecom.com
Susan Locklear	NCDOT - Hydraulics Unit	splocklear@ncdot.gov
Jeff Hemphill	NCDOT - ECAP	jhemphill@ncdot.gov
April Norton	NC-DWR	april.norton@ncdenr.gov
Robert Patterson	NC-DWR	Robert.patterson@ncdenr.gov
David Bailey	USACE	david.e.bailey2@usace.army.mil
Roger Weadon	Mead & Hunt - Hydraulics	roger.weadon@meadhunt.com
Rick DeCola	Mead & Hunt - Project Manager	rick.decola@meadhunt.com
Carlas Sharpless	Mead & Hunt - Hydraulics	carlas.sharpless@meadhunt.com
Jack Hobson	Mead & Hunt - Structures	jack.hobson@meadhunt.com

The meeting began at 1 PM. After a round of introductions, the meeting was turned over to Roger Weadon of Mead & Hunt to discuss jurisdictional site impacts sheet by sheet.

Sheet 4 (wetland impacts)
No Comments

Sheet 5 (wetland impacts)

Site 1:
- No Comments

Site 2:
- Comment was made addressing if site 2 should be a total take based on loss of hydrology. It was noted to check with Jeff for the status of this. It was also noted that Division will provide photo of the site for verification.

Sheet 6 (wetland impacts)

Site 3A:
- Comment was made that Travis with wildlife is ok with culvert inlet as shown with no sills.

Site 3B:
- It was noted that that permanent surface water impact hatching across entire stream should be extended to bottom of rip-rap with stream relocation tie-in point. Bank Stabilization should continue from that point to end of rip-rap on other side along streambank. Comment was also made that label for utilities can be removed.

Site 4:

- It was noted that site will not be total take since it will maintain hydrology from upstream pond.

Site 5:

- Comment was made to revise hatching angle/spacing to ensure that hatching is visible for the entire length of the stream impact. The usage of a step-pool avoids an environmental impact to entire stream.

Site 6:

- No Comments

Sheet 7 (wetland impacts)

No Comments

Sheet 8 (wetland impacts)

No Comments

Sheet 9 (wetland impacts)

No Comments

General Comments

- The comment was made to add avoidance and minimization statements into the stormwater management about not impacting the two existing culverts within the project area.

- **Site 3A**: There was discussion about the status and removal of the existing sewer line in the existing culvert beneath US 29. It was noted that the sewer line is abandoned, but it will remain in place. It was noted that removal would cause too much disturbance.

- It was noted that it is unknown if the proposed 30" Sanitary Sewer line at end of culvert will be trenchless or trenched through the stream.

Additional Comment from David Bailey regarding proposed 30" Sanitary Sewer line

Related to the proposed 30" Sanitary Sewer line: Is this sewer a relocation of an existing? If so, and if this line will be trenched in, and/or if there are any other impacts to streams and wetlands related to utilities, these impacts are typically included in the NCDOT permit package. This is because there is no purpose and need of utility relocations without the NCDOT project. If this is a new sewer project that would be done irrespective of the NCDOT project, then the utility company could apply for the impacts separately.

- **Site 3C:** There was discussion about sediment removal in the existing culvert barrels and ways to prevent it. Roger mentioned that it is no way of knowing why the sediment formed in the existing culvert barrels or if it will come back after removal. It was also mentioned that removal should take place from the inlet end of the culvert to avoid the mitigation site.

- It was noted that this could be an individual permit.

Additional Comment from David Bailey regarding Permit Requirements

Related to the type of permit required: at this time there is no way to permit the impacts proposed for R-4707 other than an Individual Permit. There has been speculation about whether or not General Permit 31 would cover such projects when it is re-authorized, but that wouldn't occur until well after NCDOT will apply for this permit.

Sheet 6 (buffer impacts)

Site 5:

- Revise buffer impacts to include small triangle between wetland and PUE borders. This will also match the wetland impact shown.

Sheet 6C (inset) (buffer impacts)

- Site 3B: label and arrows can be removed.

Respectfully submitted,
MEAD & HUNT, Inc.

ec: Attendees

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

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:	cjlee@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 undived 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 accomodate turn lanes in spots.
Annual Avg Daily Traffic (veh/hr/day):	Design/Future: 49,000 Year: 2040	Existing: 40,200 Year: 2020
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 busineses in the industiral area for increased truck traffic. BMPs were used thoughout 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 enviromentally sensitive areas. Rip Rap pads and Preformed Scour Holes have been placed at pipe outlets to dissapate 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 acommodate a widened roadway section. During final design, the proposed roadway was able to be tied into the existing roadway prior to the culvert, thus eliminiating 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)					

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

Swales

Sheet No.	Station & Coordinates (Road and Non Road Projects)	Surface Water Body	Base Width (ft)	Front Slope (H:1)	Back Slope (H:1)	Drainage Area (ac)	Recommended Treatm't Length (ft)	Actual Length (ft)	Longitudinal Slope (%)	Q2 (cfs)	V2 (fps)	Q10 (cfs)	V10 (fps)	Rock Checks Used	BMP Associated w/ Buffer Rules?
6	-RPB- 37+13 LT	(1)Unnamed Tributary at	5.0	3.0	3.0	27.6	2760	72	0.30%	56.8	2.7	72.6	2.9	No	Yes

Additional Comments

The velocity at this swale is 2.7 fps due to the amount of flowrate that it is conveying. It would takeover a 35' wide base swale to reach velocities below 2 fps which is not feasible to obtain.

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.08; Released April 2018)

WBS Element: **TIP No.:** R-4707 **County(ies):** Guilford

Preformed Scour Holes and Energy Dissipators

Sheet No.	Station & Coordinates (Road and Non Road Projects)	Surface Water Body	Energy Dissipator Type	Riprap Type	Drainage Area (ac)	Conveyance Structure	Pipe/Structure Dimensions (in)	Q10 (cfs)	V10 (fps)	BMP Associated w/ Buffer Rules?
5	-L- 36+90 LT	(1)Unnamed Tributary at	PSH	Class 'B'	0.5	Pipe	15	2.6	1.3	Yes
8	-Y- 28+50 RT	(1)Unnamed Tributary at	PSH	Class 'B'	0.1	Pipe	15	2.7	1.3	No
6	-Y- 36+00 RT	(1)Unnamed Tributary at	PSH	Class 'B'	0.4	Pipe	15	1.3	1.3	No
6	-RPC- 21+00 RT	(1)Unnamed Tributary at	PSH	Class 'B'	0.7	Pipe	15	3.3	1.0	Yes

Additional Comments

The Preformed Scour Holes placed at -L- 36+90 LT and -RPC- 21+00 are located at outlets in the vicinity of buffer zones near site 2 and site 4 respectively. Sites 2 and 4 are minor tributaries that eventually flow into the "Unnamed Tributary at Camp Herman." They will dissapate the stormwater flow at these pipe outlets before entering the buffer zone. Preformed Scour Holes located at -Y- 28+50 RT and -Y- 36+00 RT outlet to overland areas on the project that will eventually drain into the "Unnamed Tributary at Camp Herman" after overland flow and flowing through minor tributaries. The velocities listed in the table are velocities exiting the preformed scour holes.

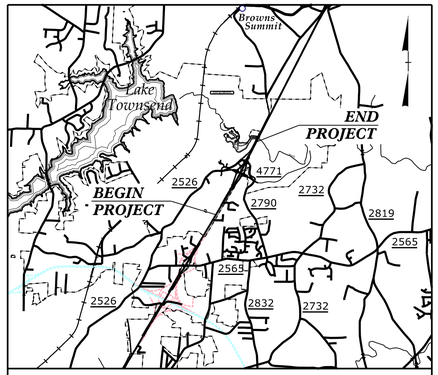
* Refer to the NCDOT Best Management Practices Toolbox (2014), NCDOT Standards, the Federal Highway Administration (FHWA) Hydraulic Engineering Circular No. 14 (HEC-14), Third Edition, Hydraulic Design of Energy Dissipators for Culverts and Channels (July 2006), as applicable, for design guidance and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

09/08/99

TIP PROJECT: R-4707

CONTRACT:

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



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-4707	1	

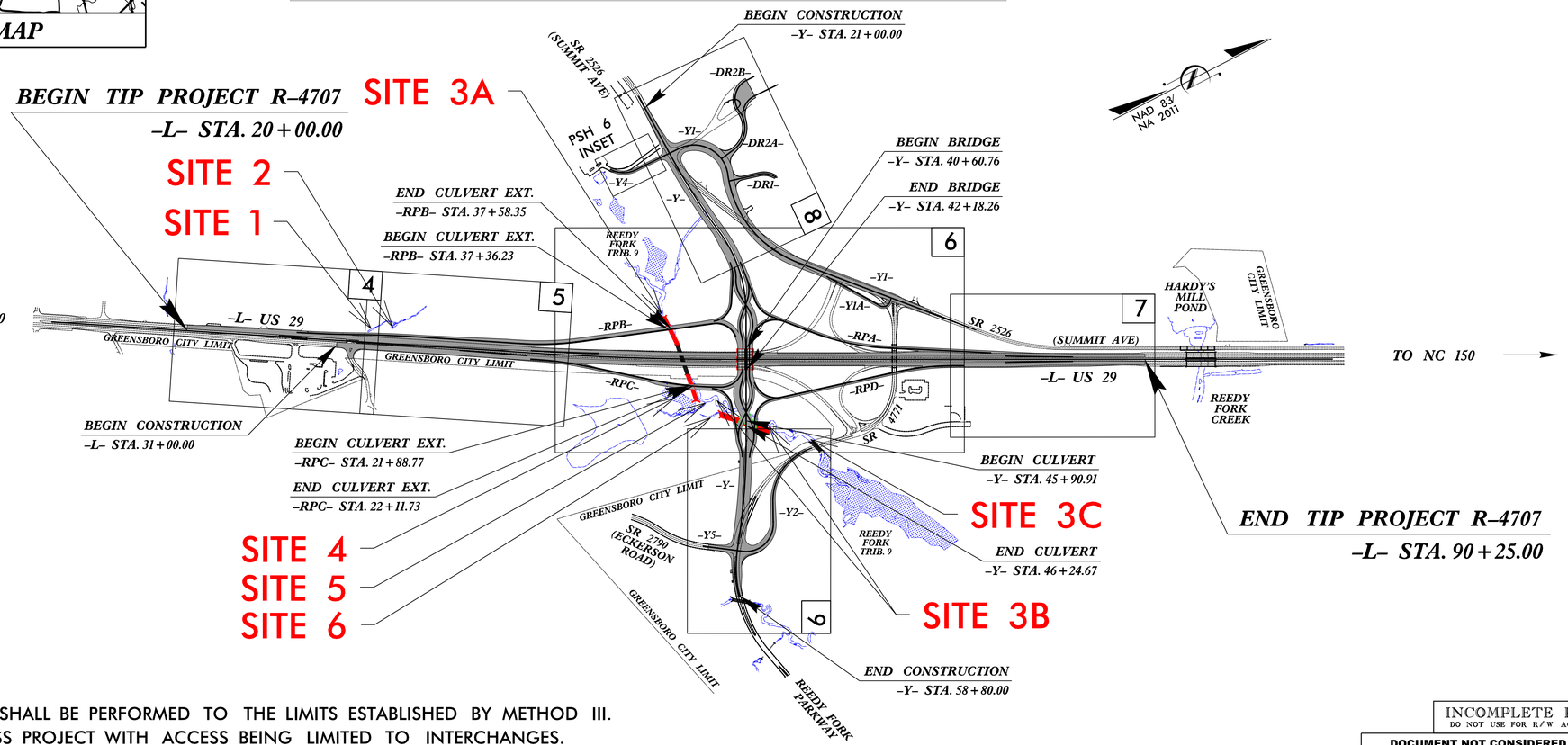
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
36599.1.5	NA	PE
36599.2.1	NA	R/W & UTILITY

PERMIT DRAWING
SHEET 1 OF 23

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



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

GRAPHIC SCALES

PLANS: 50 25 0 50 100
PROFILE (HORIZONTAL): 50 25 0 50 100
PROFILE (VERTICAL): 10 5 0 10 20

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

P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

P.E.
SIGNATURE:

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION ·

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PROJECT REFERENCE NO.	SHEET NO.
R-4707	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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PERMIT DRAWING SHEET 2 OF 23

S S DENOTES IMPACTS IN SURFACE WATER

NAD 832011

-RPB- PRC Sta. 14+42.32

4

STATE OF NORTH CAROLINA

SITE 1

24" RCP-III NOT BURIED

24" RCP-III

15" CAT-1 JB wMH

2GI

RETAIN

REMOVE

JB wMH

2GI (TYPE D)

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

1 MICHAEL DALE AND KIMBERLY B. LOFTIS

2 DALY MANAGEMENT COMPANY, LLC

2 DALY MANAGEMENT COMPANY, LLC

ISBLKBUS

ISBLKBUS

GRADE CUT DITCH TO DRAIN

GREU-TL-3

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

CITY OF GREENSBORO
GUILFORD COUNTY

THE GREATER STEPPING STONE CHURCH NONDENOMINATIONAL

LEWIS H. AND SHIRLEY R. EAST

FSH PROPERTIES, LLC

(PER GIS) FLEETA MAE AYERS SEAWELL (PER DEED) FLEETA MAE AYERS

BILLY C. AND FLEETA MAE AYERS

(PER GIS) FLEETA MAE AYERS SEAWELL (PER DEED) FLEETA MAE AYERS

ROBIN W. AND RENEE T. SAUL

DONALD L. VANEATON

JEFFREY I. AND DEBORAH HARRIS RICHARDSON

RAMON CUEVARA HERNANDEZ
ESTHER ARACELI WITRAGO REGALADO

BRASON PROPERTIES, LLC

STEVEN WAYNE AND MARGARET EVELYN

JANICE T. DAVIS

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

5

SEE SHEET 5

MATCHLINE -L- STA. 33 + 50.00

REVISIONS

8/17/99

25-JUN-2019 14:48
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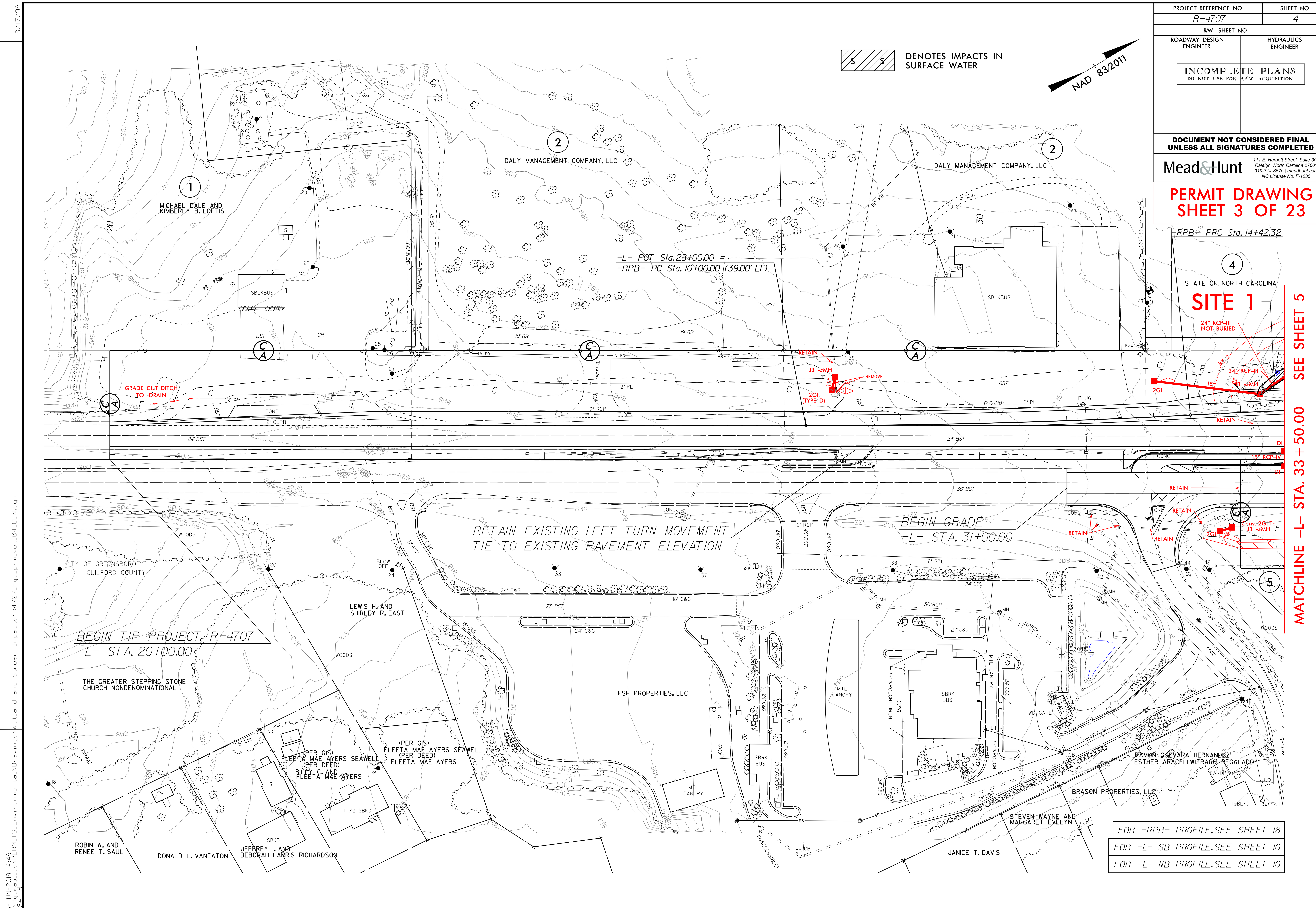
PROJECT REFERENCE NO.
R-4707
SHEET NO.
4
R/W SHEET NO.
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PERMIT DRAWING
SHEET 3 OF 23
DENOTES IMPACTS IN SURFACE WATER
NAD 83/2011
REVISIONS
MICHAEL DALE AND KIMBERLY B. LOFTIS
DALY MANAGEMENT COMPANY, LLC
DALY MANAGEMENT COMPANY, LLC
STATE OF NORTH CAROLINA
SITE 1
24" RCP-III NOT BURIED
-RPB- PRC Sta. 14+42.32
-L- POT Sta. 28+00.00 =
-RPB- PC Sta. 10+00.00 (39.00' LT)
GRADE CUT DITCH TO DRAIN
RETAIN
JB w/MH
REMOVE
2GI (TYPE D)
2GI
Conv. 2GI To JB w/MH
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
CITY OF GREENSBORO
GUILFORD COUNTY
LEWIS H. AND SHIRLEY R. EAST
THE GREATER STEPPING STONE CHURCH NONDENOMINATIONAL
FSH PROPERTIES, LLC
(PER GIS) FLEETA MAE AYERS SEAWELL (PER DEED) BILLY C. AND FLEETA MAE AYERS
(PER GIS) FLEETA MAE AYERS SEAWELL (PER DEED) FLEETA MAE AYERS
ROBIN W. AND RENEE T. SAUL
DONALD L. VANEATON
JEFFREY I. AND DEBORAH HARRIS RICHARDSON
RAMON GUEVARA HERNANDEZ
ESTHER ARACELI WITRAGO REGALADO
BRASON PROPERTIES, LLC
STEVEN WAYNE AND MARGARET EVELYN
JANICE T. DAVIS
MATCHLINE -L- STA. 33+50.00
SEE SHEET 5
FOR -RPB- PROFILE, SEE SHEET 18
FOR -L- SB PROFILE, SEE SHEET 10
FOR -L- NB PROFILE, SEE SHEET 10
8/17/99
25-JUN-2019 14:49
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PROJECT REFERENCE NO.	SHEET NO.
R-4707	5

R/W SHEET NO.

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

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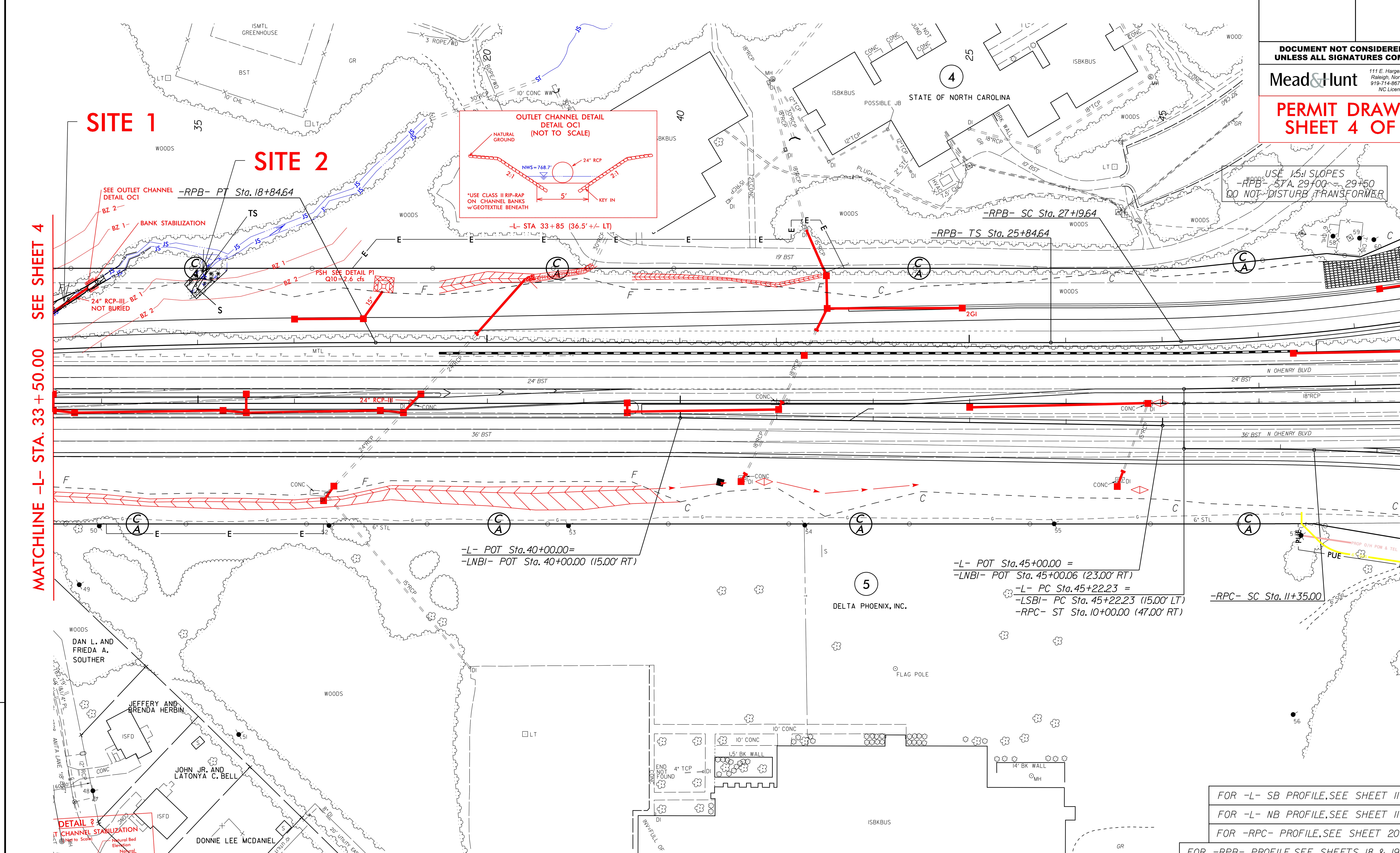
PERMIT DRAWING SHEET 4 OF 23

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING



NAD 83/2011
SITE 1
SITE 2
OUTLET CHANNEL DETAIL
DETAIL OC1
(NOT TO SCALE)
NATURAL GROUND
NWS=768.7'
24" RCP
2:1
5'
KEY IN
*USE CLASS II RIP-RAP ON CHANNEL BANKS w/GEOTEXTILE BENEATH
-L- STA 33+85 (36.5'+/- LT)
SEE OUTLET CHANNEL DETAIL OC1
BANK STABILIZATION
24" RCP-III, NOT BURIED
PSH SEE DETAIL P1 Q10 = 2.6 cfs
-RPB- PT Sta. 18+84.64
-RPB- TS Sta. 25+84.64
-RPB- SC Sta. 27+19.64
USE 1.5:1 SLOPES
-RPB- STA. 29+00 - 29+50
DO NOT DISTURB TRANSFORMER
STATE OF NORTH CAROLINA
DELTA PHOENIX, INC.
DAN L. AND FRIEDA A. SOUTHER
JEFFERY AND BRENDA HERBIN
JOHN JR. AND LATONYA C. BELL
DONNIE LEE MCDANIEL
N OHENRY BLVD
-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)
-RPC- SC Sta. 11+35.00
SEE SHEET 4
SEE SHEET 6
MATCHLINE -L- STA. 33+50.00
MATCHLINE -L- STA. 47+50.00

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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PROJECT REFERENCE NO.	SHEET NO.
R-4707	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
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PERMIT DRAWING SHEET 5 OF 23

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

F F DENOTES FILL IN WETLAND

DENOTES MECHANIZED CLEARING

NAD 83/2011

SITE 1

SITE 2

OUTLET CHANNEL DETAIL
DETAIL OC1
(NOT TO SCALE)

NATURAL GROUND
NWS=768.7'
24" RCP
2:1
2:1
5'
KEY IN
*USE CLASS II RIP-RAP ON CHANNEL BANKS w/GEOTEXTILE BENEATH

SEE OUTLET CHANNEL DETAIL OC1

-RPB- PT Sta. 18+84.64

BANK STABILIZATION

24" RCP-III- NOT BURIED

PSH SEE DETAIL P1
Q10 = 2.6 cfs

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

-RPB- SC Sta. 27+19.64

-RPB- TS Sta. 25+84.64

USE 1.5:1 SLOPES
-RPB- STA. 29+00 - 29+50
DO NOT DISTURB TRANSFORMER

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DELTA PHOENIX, INC.

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JEFFERY AND BRENDA HERBIN

JOHN JR. AND LATONYA C. BELL

DONNIE LEE MCDANIEL

-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)

-RPC- SC Sta. 11+35.00

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

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

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

REVISIONS

8/17/99

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PROJECT REFERENCE NO.	SHEET NO.
R-4707	INSET: 4,5

R/W SHEET NO.

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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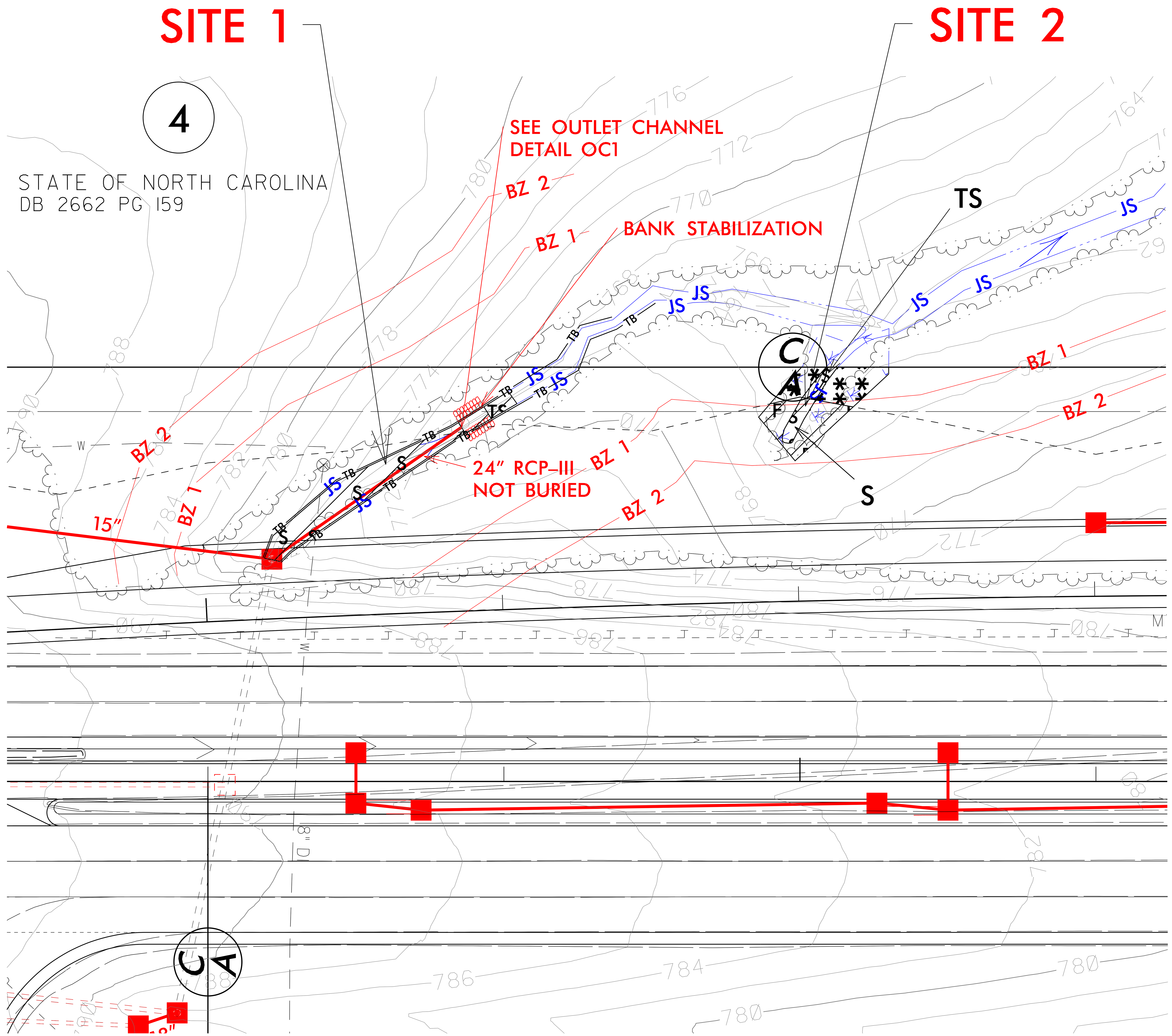
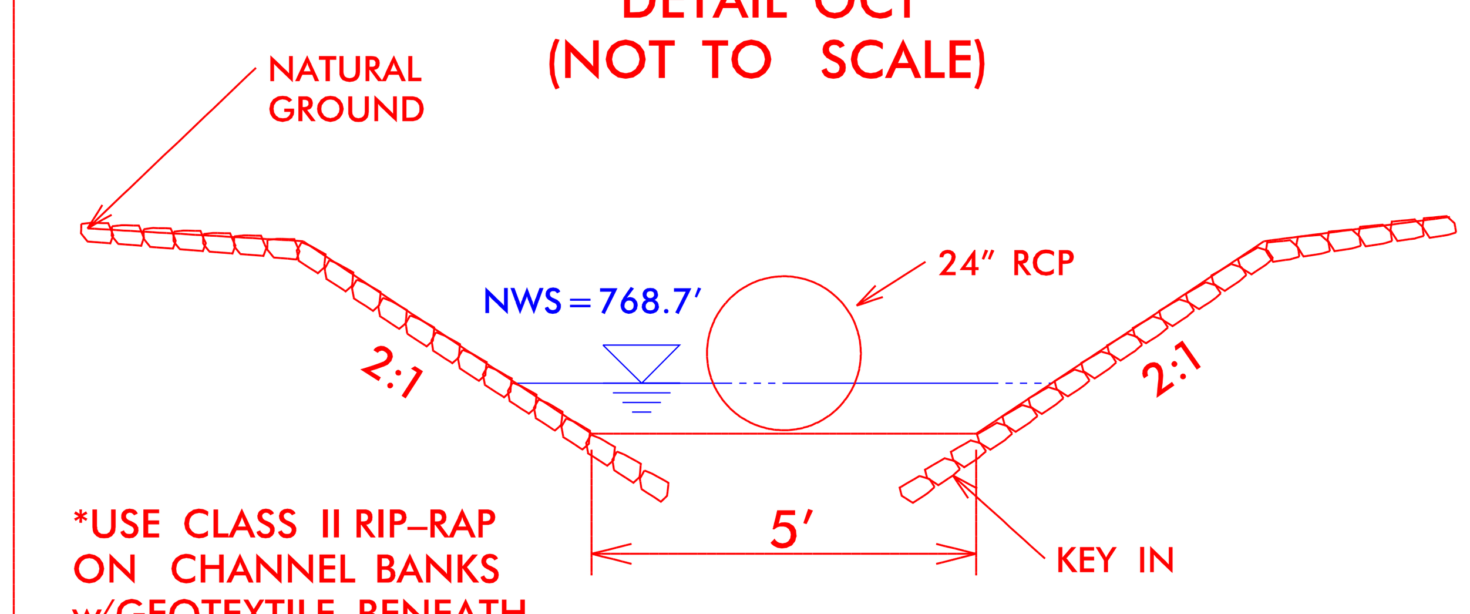


20' 0' 20' 40' 60'
GRAPHIC SCALE

Symbol	Description
S S (hatched)	DENOTES IMPACTS IN SURFACE WATER
TS TS (hatched)	DENOTES TEMPORARY IMPACTS IN SURFACE WATER
F F (hatched)	DENOTES FILL IN WETLAND
* * * (stippled)	DENOTES MECHANIZED CLEARING

OUTLET CHANNEL DETAIL
DETAIL OC1
(NOT TO SCALE)



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

REVISIONS

8/17/99

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PROJ. REFERENCE NO.	SHEET NO.
R-4707	X-7

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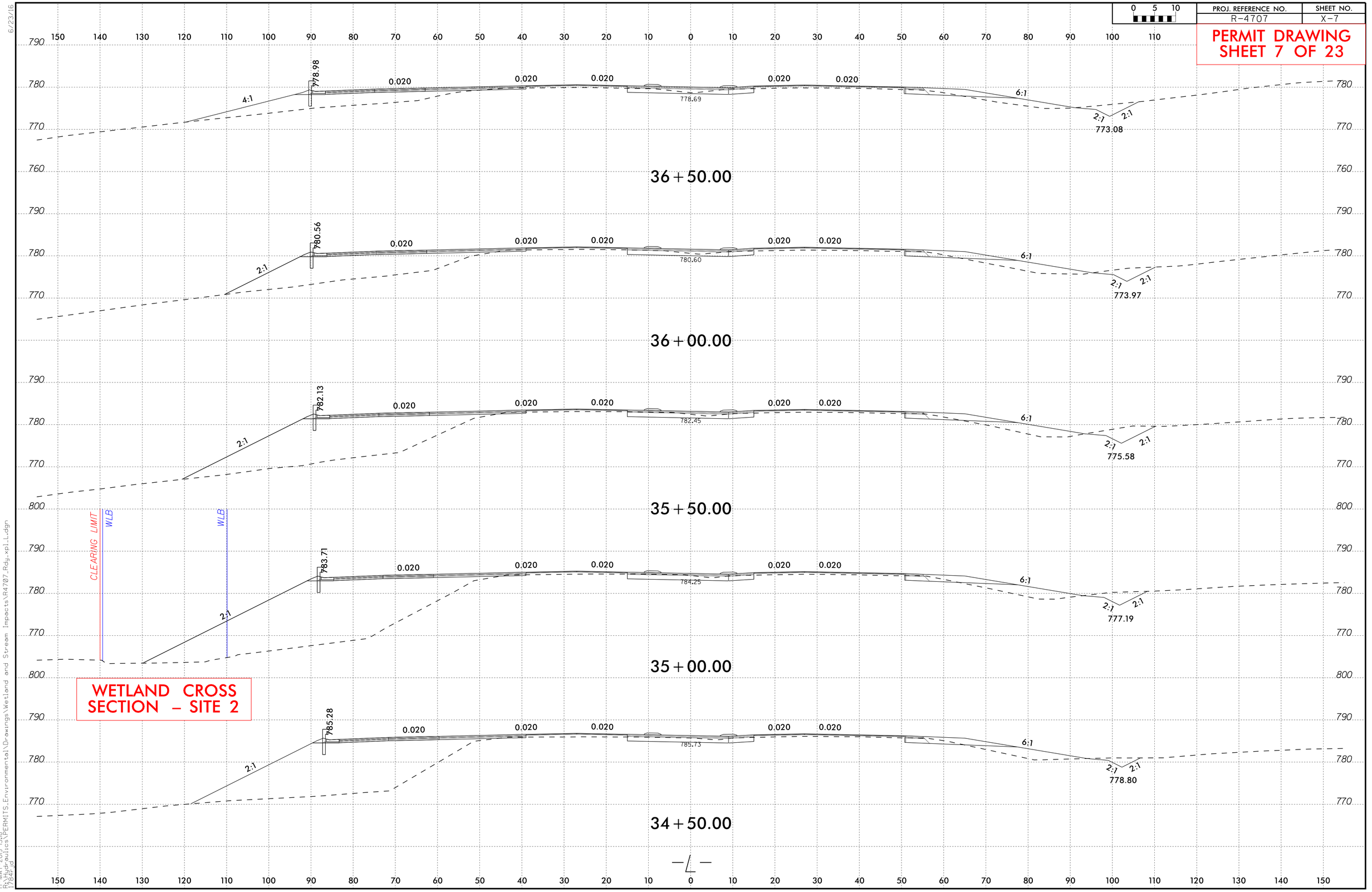
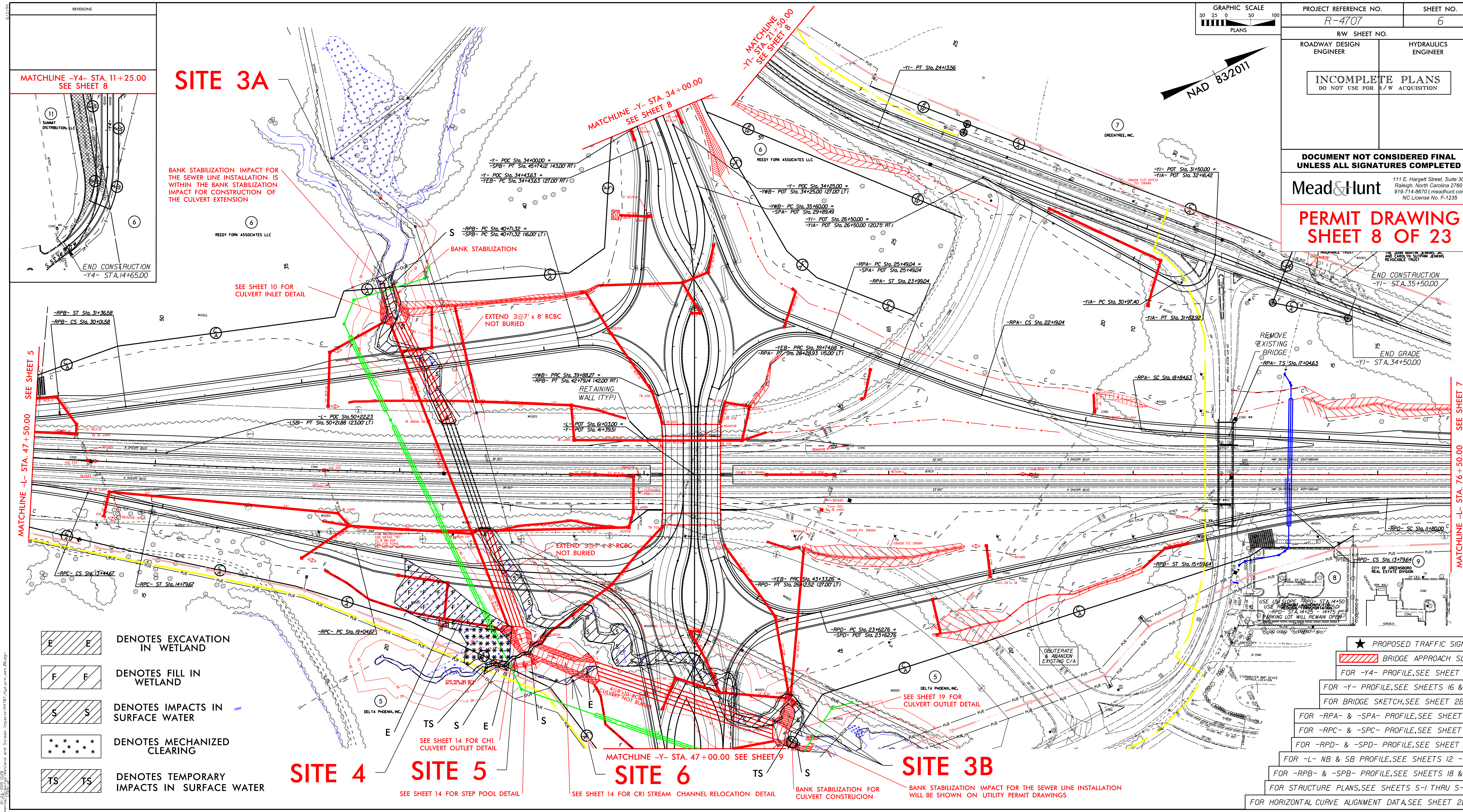
PERMIT DRAWING SHEET 7 OF 23



WETLAND CROSS SECTION – SITE 2



REVISIONS
MATCHLINE -Y4- STA. 11+25.00 SEE SHEET 8
SUMMIT DISTRIBUTION, LLC
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
REEDY FORK ASSOCIATES LLC
BANK STABILIZATION
SEE SHEET 10 FOR CULVERT INLET DETAIL
EXTEND 3@7' x 8' RCBC NOT BURIED
MATCHLINE -Y- STA. 34+00.00 SEE SHEET 8
MATCHLINE -Y1- STA. 21+50.00 SEE SHEET 8
-Y1- PT Sta. 24+13.56
GREENTREE, INC.
GRAPHIC SCALE
PLANS
NAD 83/2011
PROJECT REFERENCE NO.
R-4707
SHEET NO.
6
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
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PERMIT DRAWING
SHEET 8 OF 23
END CONSTRUCTION -Y1- STA.35+50.00
END GRADE -Y1- STA.34+50.00
REMOVE EXISTING BRIDGE
RETAINING WALL (TYP)
SEE SHEET 5
MATCHLINE -L- STA. 47+00.00
SEE SHEET 7
MATCHLINE -L- STA. 76+00.00
EXTEND 3@7' x 8' RCBC NOT BURIED
CITY OF GREENSBORO REAL ESTATE DIVISION
DELTA PHOENIX, INC.
OBLITERATE & ABANDON EXISTING C/A
SEE SHEET 19 FOR CULVERT OUTLET DETAIL
SEE SHEET 14 FOR CH1 CULVERT OUTLET DETAIL
DENOTES EXCAVATION IN WETLAND
DENOTES FILL IN WETLAND
DENOTES IMPACTS IN SURFACE WATER
DENOTES MECHANIZED CLEARING
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
SITE 4
SITE 5
SEE SHEET 14 FOR STEP POOL DETAIL
SITE 6
MATCHLINE -Y- STA. 47+00.00 SEE SHEET 9
SEE SHEET 14 FOR CR1 STREAM CHANNEL RELOCATION DETAIL
BANK STABILIZATION FOR CULVERT CONSTRUCION
SITE 3B
BANK STABILIZATION IMPACT FOR THE SEWER LINE INSTALLATION WILL BE SHOWN ON UTILITY PERMIT DRAWINGS
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

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

INCOMPLETE PLANS
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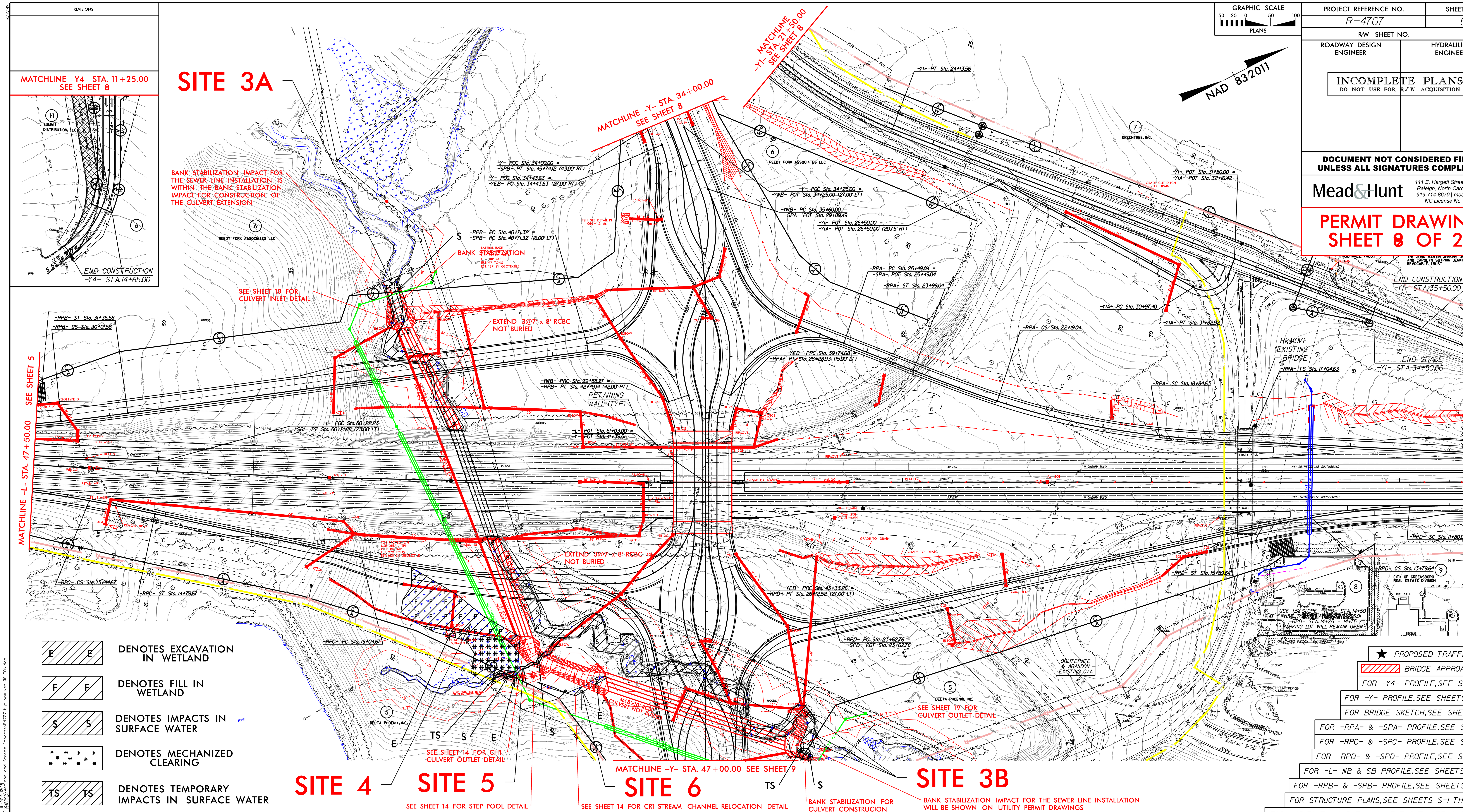
GRAPHIC SCALE
50 25 0 50 100
PLANS
NAD 83/2011
SITE 3A
SITE 3B
SITE 4
SITE 5
SITE 6
MATCHLINE -Y4- STA. 11+25.00 SEE SHEET 8
END CONSTRUCTION -Y4- STA.14+65.00
MATCHLINE -Y- STA. 34+00.00 SEE SHEET 8
MATCHLINE -Y1- STA. 21+50.00 SEE SHEET 8
MATCHLINE -L- STA. 47+50.00 SEE SHEET 5
MATCHLINE -L- STA. 76+50.00 SEE SHEET 7
MATCHLINE -Y- STA. 47+00.00 SEE SHEET 9
BANK STABILIZATION IMPACT FOR THE SEWER LINE INSTALLATION IS WITHIN THE BANK STABILIZATION IMPACT FOR CONSTRUCTION OF THE CULVERT EXTENSION
BANK STABILIZATION
SEE SHEET 10 FOR CULVERT INLET DETAIL
EXTEND 3@7' x 8' RCBC NOT BURIED
EXTEND 3@7' x 8' RCBC NOT BURIED
SEE SHEET 14 FOR CH1 CULVERT OUTLET DETAIL
SEE SHEET 19 FOR CULVERT OUTLET DETAIL
SEE SHEET 14 FOR STEP POOL DETAIL
SEE SHEET 14 FOR CR1 STREAM CHANNEL RELOCATION DETAIL
BANK STABILIZATION FOR CULVERT CONSTRUCION
BANK STABILIZATION IMPACT FOR THE SEWER LINE INSTALLATION WILL BE SHOWN ON UTILITY PERMIT DRAWINGS
REMOVE EXISTING BRIDGE
END CONSTRUCTION -Y1- STA.35+50.00
END GRADE -Y1- STA.34+50.00
RETAINING WALL (TYP)
OBLITERATE & ABANDON EXISTING C/A
REEDY FORK ASSOCIATES LLC
DELTA PHOENIX, INC.
GREENTREE, INC.
CITY OF GREENSBORO REAL ESTATE DIVISION
SUMMIT DISTRIBUTION, LLC

E — DENOTES EXCAVATION IN WETLAND

F — DENOTES FILL IN WETLAND

S — DENOTES IMPACTS IN SURFACE WATER

DENOTES MECHANIZED CLEARING

TS — 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

PROJECT REFERENCE NO.	SHEET NO.
R-4707	INSET:6A

R/W SHEET NO.

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

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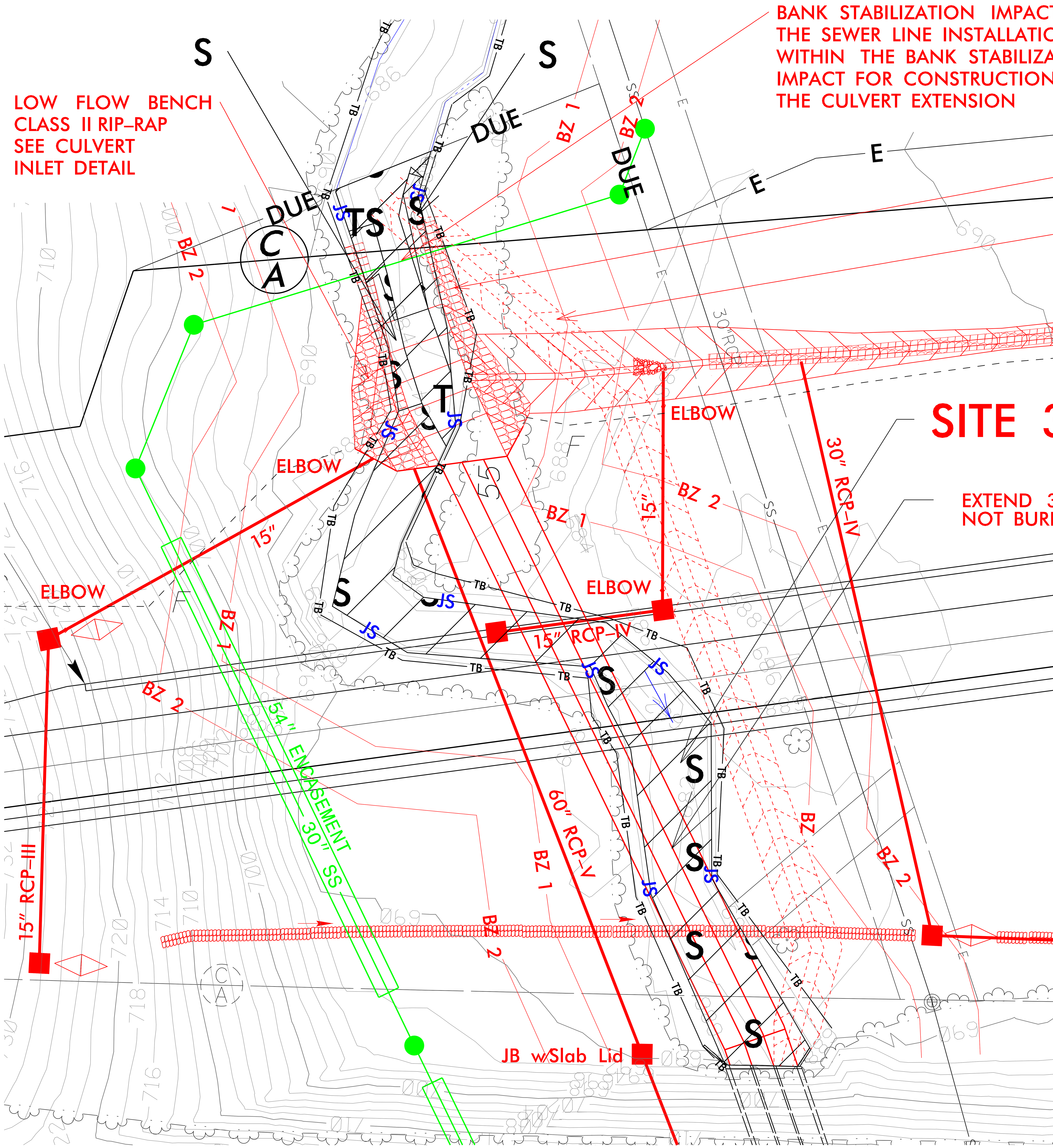
SHEET 10 OF 23

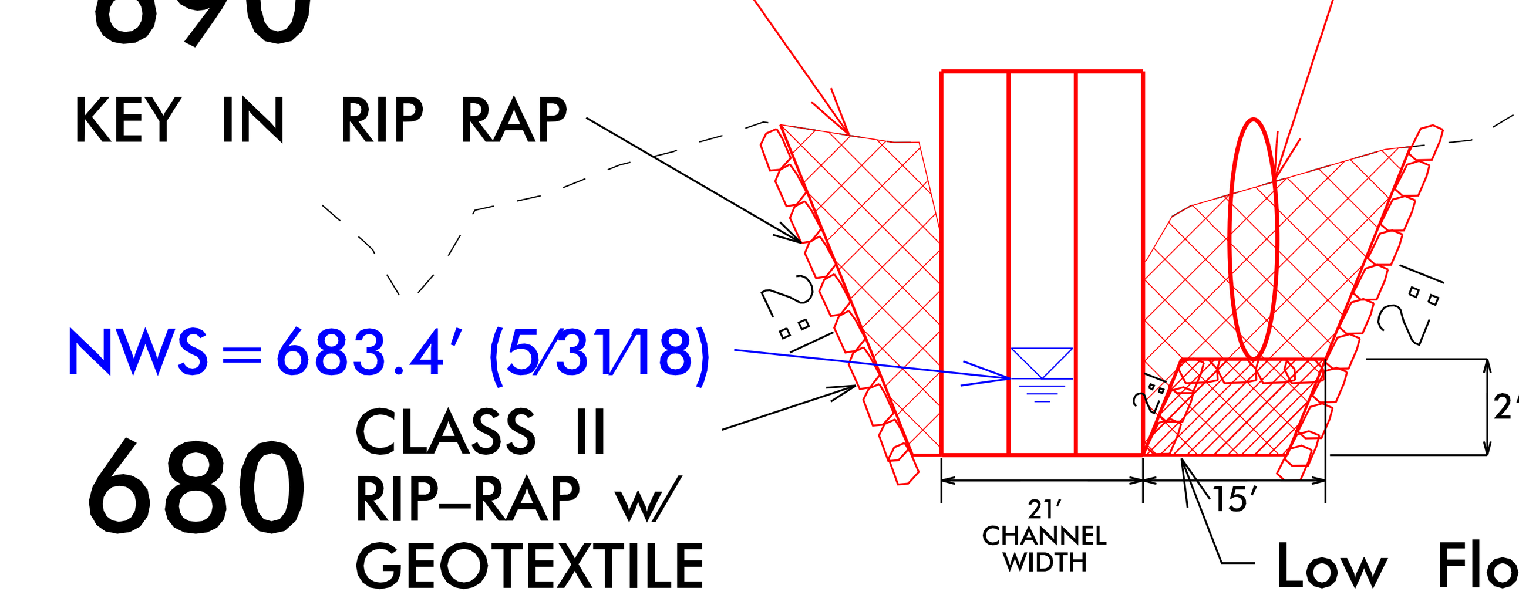


20' 0' 20' 40' 60'
GRAPHIC SCALE

S S — DENOTES IMPACTS IN SURFACE WATER

TS TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER

CULVERT INLET



*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.

REVISIONS

8/17/99

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PROJECT REFERENCE NO.	SHEET NO.
R-4707	19
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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PERMIT DRAWING SHEET 11 OF 23

-RPB-

FOR -RPB- PLAN, SEE SHEETS 5 & 6

LEFT DITCH

PI = 30+00.00
EL = 743.46'
VC = 200'
K = 238
V = 69 MPH

(-)3.1600%

(-)4.0000%

PI = 37+50.00
EL = 713.46'
VC = 600'
K = 67
V = 41 MPH

(-)4.0000%

(+)5.00%

3@7'x8' RCBC EXTENSION WITH 1@60°

NWS 683.4'

(+) 0.2989%

BEGIN LATERAL GRASS SWALE
-RPB- STA. 37+13 LT
EL = 683.78'

CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 1,700	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 691.4	FT
BASE DISCHARGE	= 2,100	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 695.2	FT
OVERTOPPING DISCHARGE	= 3,850	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 720.2	FT
DATE OF SURVEY	= 5/31/2018	
W.S. ELEVATION AT DATE OF SURVEY	= 683.4	FT

-RPB-

(+)5.0000%

(+)5.0000%

(+)2.0629%

PI = 42+20.00
EL = 736.96'
VC = 100'
K = 34
V = 37 MPH

-RPB- END GRADE
STA. 42+79.14
EL = 738.18'

(+) 8.8400%

(+) 4.2067%

-RPB- STA. 40+50.00 = -SPB- STA. 41+50 LT
EL = 699.19'

-RPB- STA. 39+50 LT
EL = 690.35'

END LATERAL GRASS SWALE
BEGIN LATERAL BASE DITCH
-RPB- STA. 38+00 LT
EL = 684.04'

LEFT DITCH

FOR -RPB- PLAN, SEE SHEET 6

-SPB-

BEGIN GRADE
-SPB- STA. 40+71.32
EL = 729.21'

PI = 41+40.00
EL = 732.64'
VC = 110'
K = 12
V = 25 MPH

(+)4.9942%

(-)4.1735%

PI = 44+80.00
EL = 718.45'
VC = 180'
K = 82
V = 45 MPH

END GRADE
-SPB- STA. 45+74.12
EL = 716.60'

(-)4.1735%

(-)11.9656%

(+) 3.9800%

BEGIN LATERAL V DITCH
-SPB- STA. 42+00 LT
EL = 707.29'

-SPB- STA. 41+50 LT = -RPB- STA. 40+50 LT
EL = 705.30'

FOR -SPB- PLAN, SEE SHEET 6

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PROJECT REFERENCE NO.	SHEET NO.
R-4707	L PFL
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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PERMIT DRAWING SHEET 12 OF 23

400′ LT | 300′ LT | 200′ LT | 100′ LT | ℄ | 100′ RT | 200′ RT | 300′ RT | 400′ RT

720 / 710 / 700 / 690 / 680

–RPB–
Sta.37+45.75
Elev. 720.19

–RPC–
Sta. 22+00.26
Elev. 725.84

℄ Station 56+34.9 –L–
G.P. Elev. (–L– SB) = 719.37′
3@7′x8′ RCBC
Extend Existing 3@7′x8′ and supplement with 1@60″
Skew=70

LSB | –L– | LNB

2.14:1 | 6.38:1 | 6.38:1 | 6.38:1 | 6.38:1 | 2.13:1

100 YR. WSEL=695.1
50 YR. WSEL=691.4
TB LT.
TB RT.
WSEL 05/31/2018=683.4
NAT. VEGETATION LINE
0.5′ ABOVE 5/31/2018 WSEL
NWS=683.9

Ext. Culvert Inlet
Inv. Elev 681.81

S=.002 FT./FT.

EXT CL
INV= 681.7′
S=.001 FT/FT
L=226′

Ext. Culvert Outlet
Inv. Elev 681.58

NG CL
PROPOSED
CULVERT

TB RT.
TB LT.
PROP TB LT
PROP TB RT.

S=.002 FT./FT.

REVISIONS 8/17/99

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PROJECT REFERENCE NO.	SHEET NO.
R-4707	INSET:6B

R/W SHEET NO.

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

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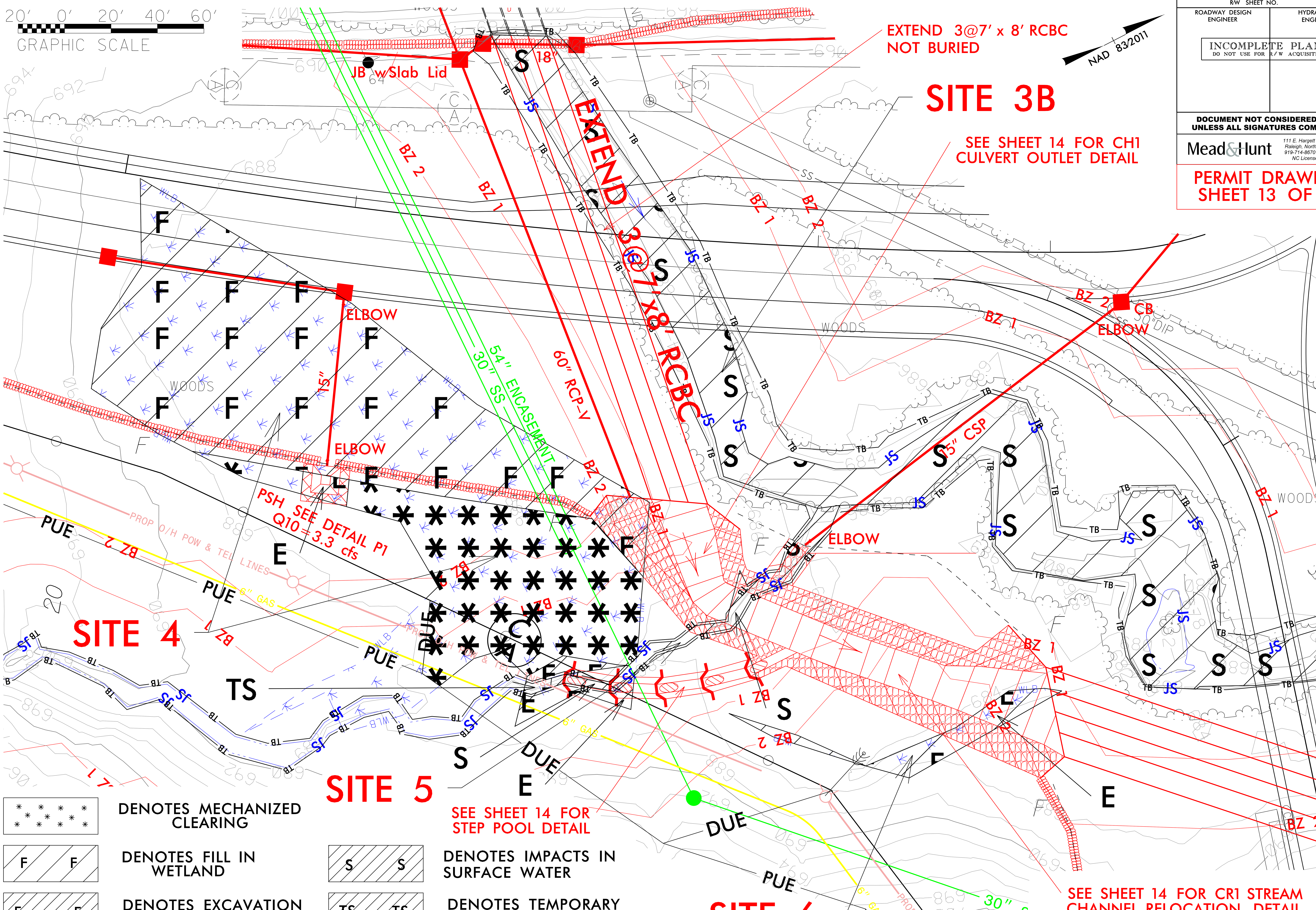
SHEET 13 OF 23



DENOTES MECHANIZED CLEARING

DENOTES FILL IN WETLAND

DENOTES EXCAVATION IN WETLAND

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

REVISIONS

8/17/99

R4707_Hyd_prm_wet_inset_03.dgn

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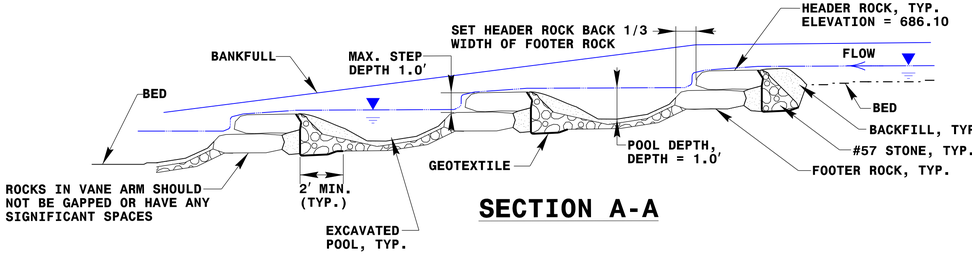
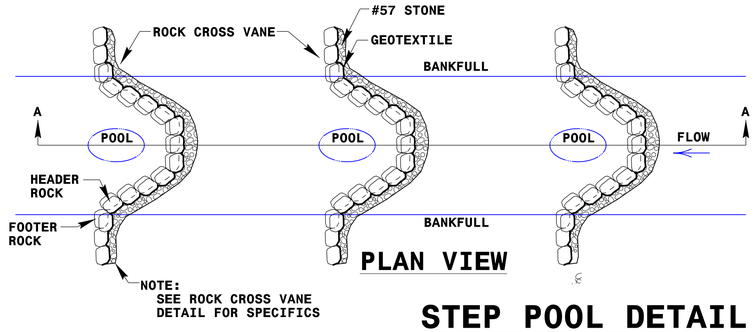


SECTION A-A

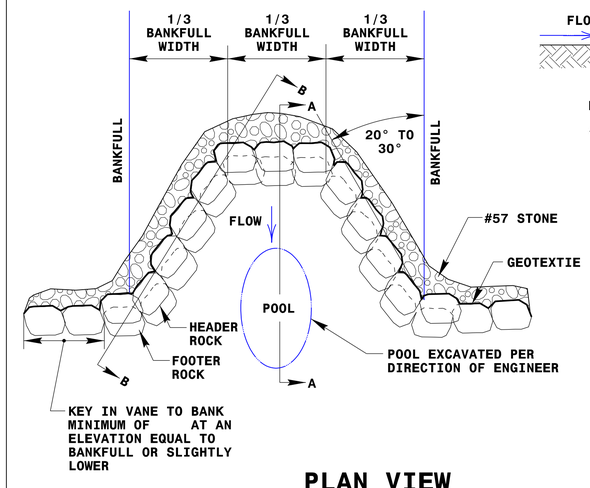


PLAN VIEW

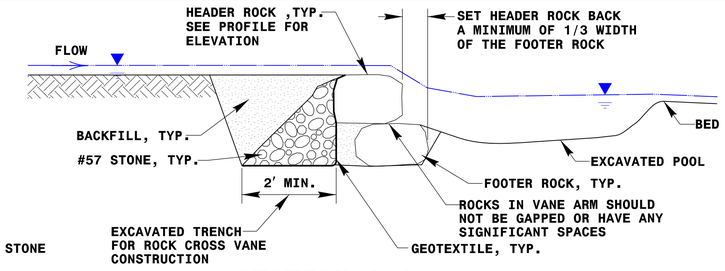
STEP POOL DETAIL

NOT TO SCALE

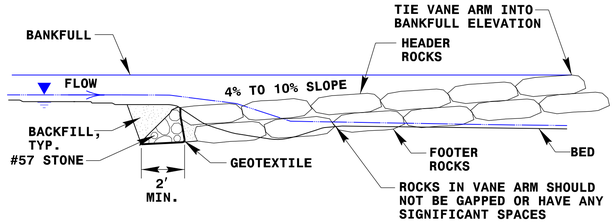
NOTES:
1. STEPS TO BE SPACED 18' TO 22' APART.
2. POOL SPACING SHALL BE INVERSELY PROPORTIONAL TO STREAM SLOPE, AND DIRECTLY PROPORTIONAL TO BANKFULL WIDTH.
3. POOL DEPTHS AT BANKFULL ELEVATION SHALL BE TYPICALLY 2 TIMES DEEPER THAN STEP DEPTHS AT BANKFULL ELEVATION.
4. ADEQUATE NUMBER OF FOOTER BOULDERS 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.



PLAN VIEW



SECTION A-A



SECTION B-B

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

ROCK CROSS VANE DETAIL FOR STEP POOLS

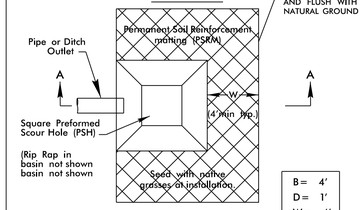
NOT TO SCALE

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.

DETAIL P1
PREFORMED SCOUR HOLE

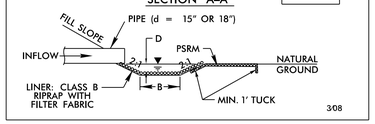
*NOT TO SCALE

PLAN VIEW



B = 4'
D = 1'
W = 4'

SECTION A-A

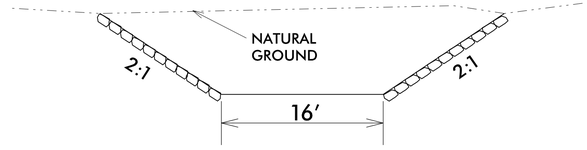


308

–L– STA 36+90 (LT)
–Y– STA 28+50 (RT)
–Y– STA 38+93 (RT)
–RPC– STA 21+00 (RT)

STREAM CHANNEL RELOCATION
DETAIL CR1

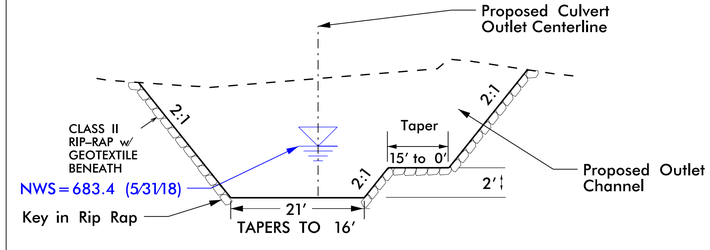
*USE CLASS II RIP-RAP
ON CHANNEL BANKS
w/GEOTEXTILE BENEATH



LONGITUDINAL SLOPE = .0045 FT/FT.

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

Channel Detail CH1
(Not to Scale)
Left to Right Looking Downstream



LONGITUDINAL SLOPE = .0045 FT/FT.

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

PROJECT REFERENCE NO.	SHEET NO.
R-4707	2D-2
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

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PERMIT DRAWING
SHEET 14 OF 23

PROJECT REFERENCE NO.	SHEET NO.
R-4707	20

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

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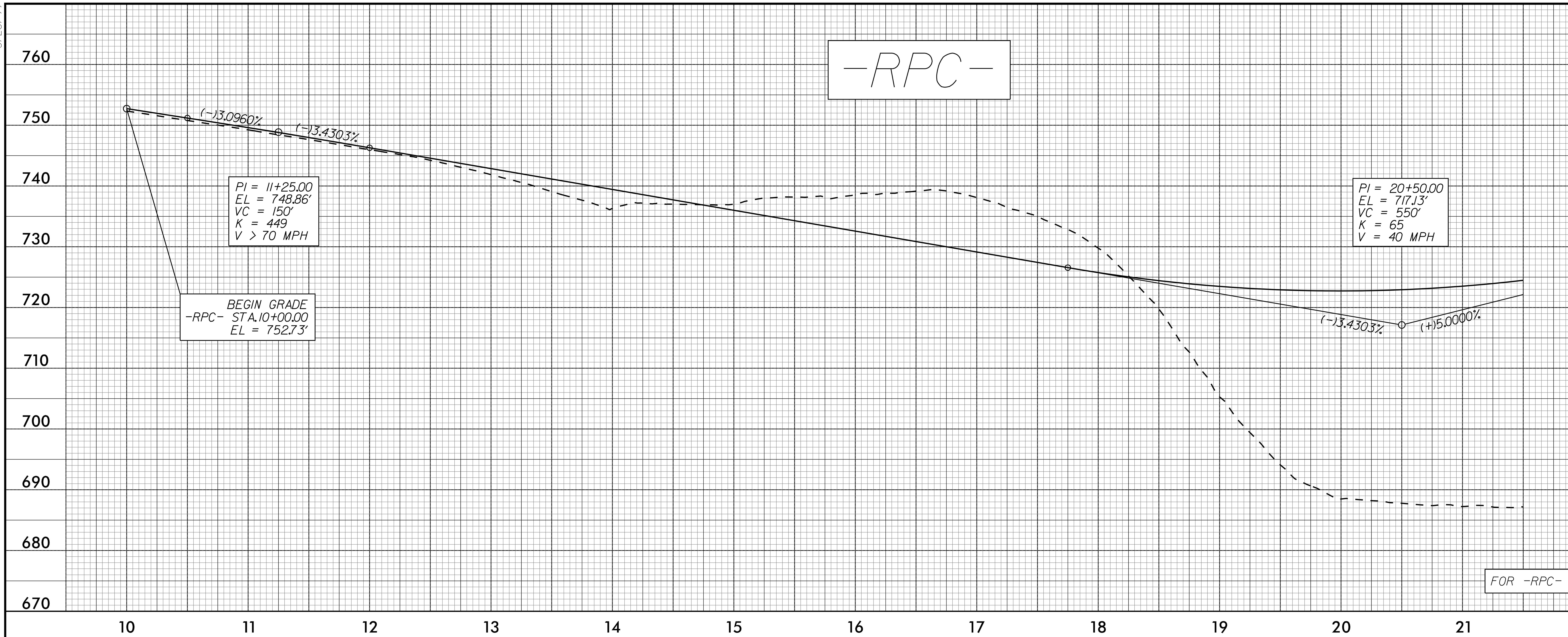
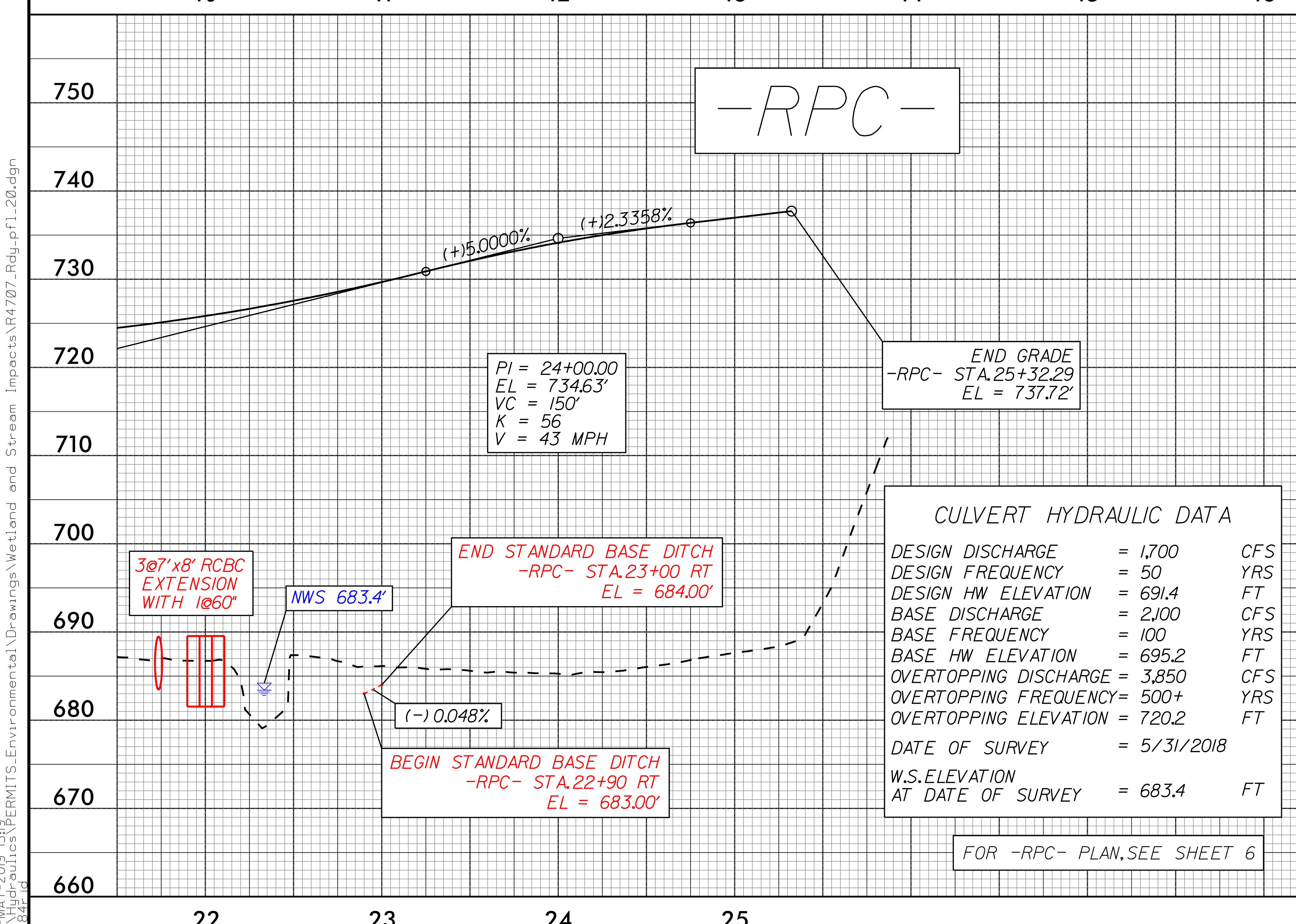
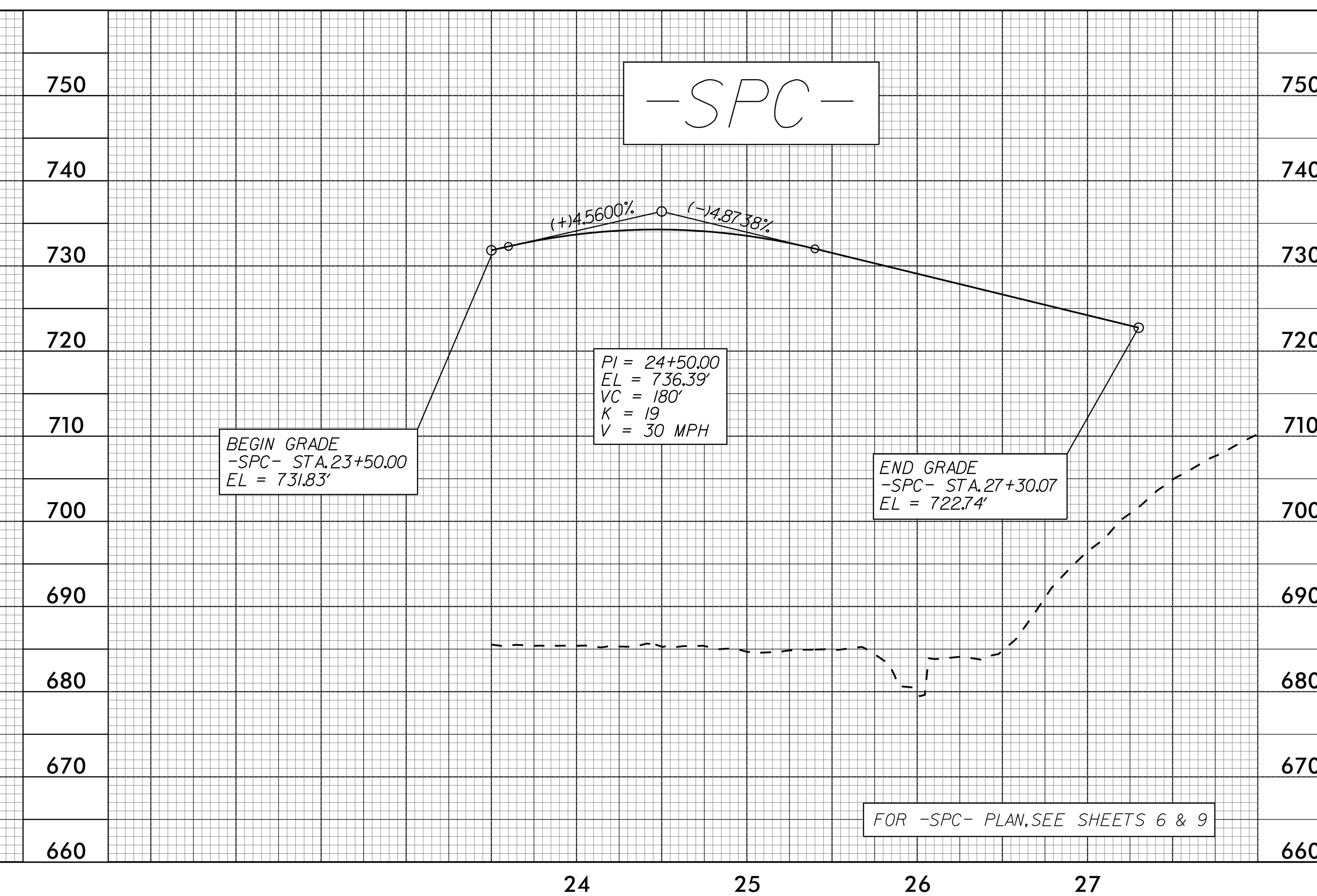




CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	=	1,700	CFS
DESIGN FREQUENCY	=	50	YRS
DESIGN HW ELEVATION	=	691.4	FT
BASE DISCHARGE	=	2,100	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	695.2	FT
OVERTOPPING DISCHARGE	=	3,850	CFS
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING ELEVATION	=	720.2	FT
DATE OF SURVEY	=	5/31/2018	
W.S. ELEVATION AT DATE OF SURVEY	=	683.4	FT



5/28/99

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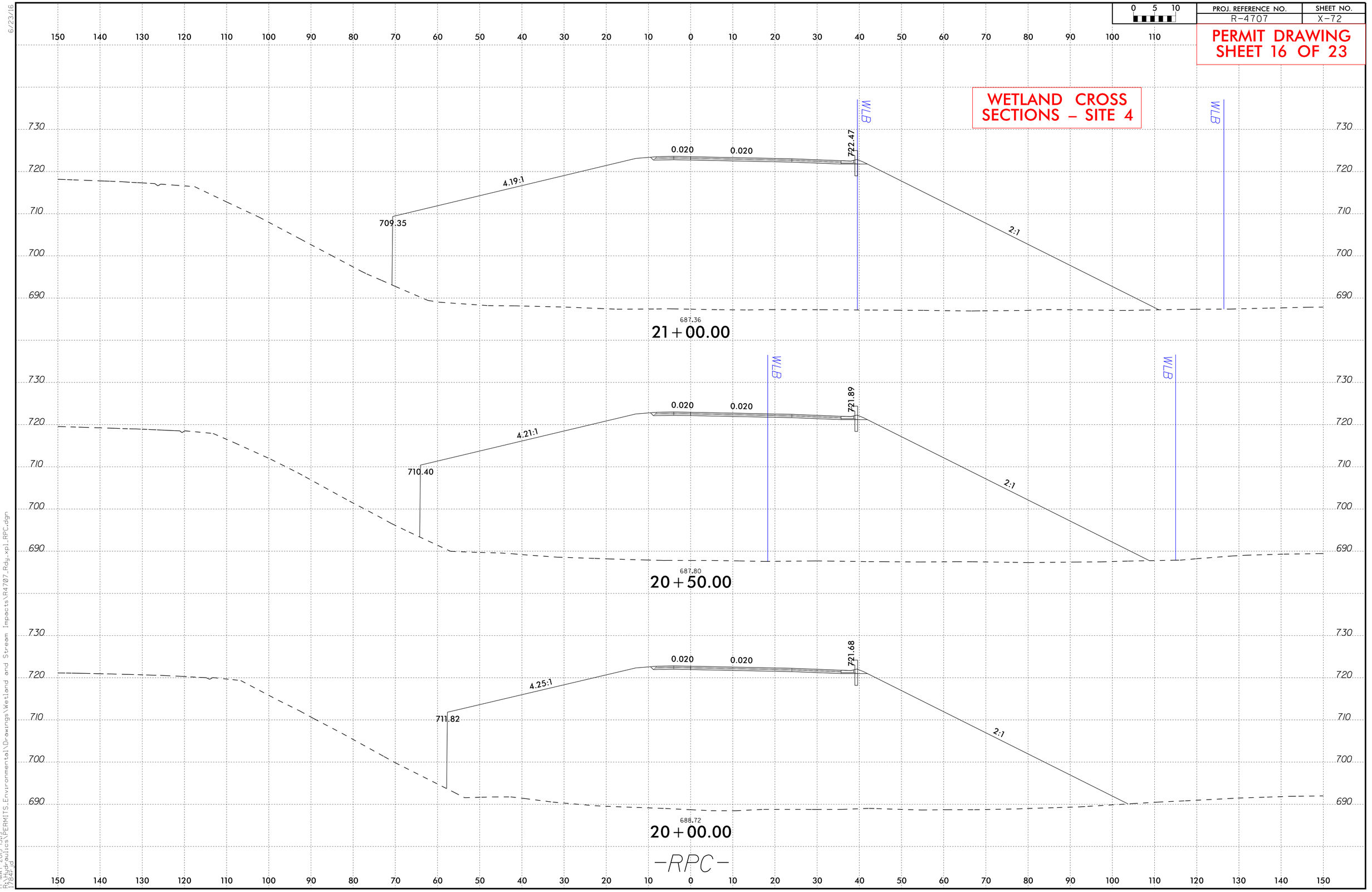
6/23/16

PROJ. REFERENCE NO.	SHEET NO.
R-4707	X-72

0 5 10

PERMIT DRAWING
SHEET 16 OF 23

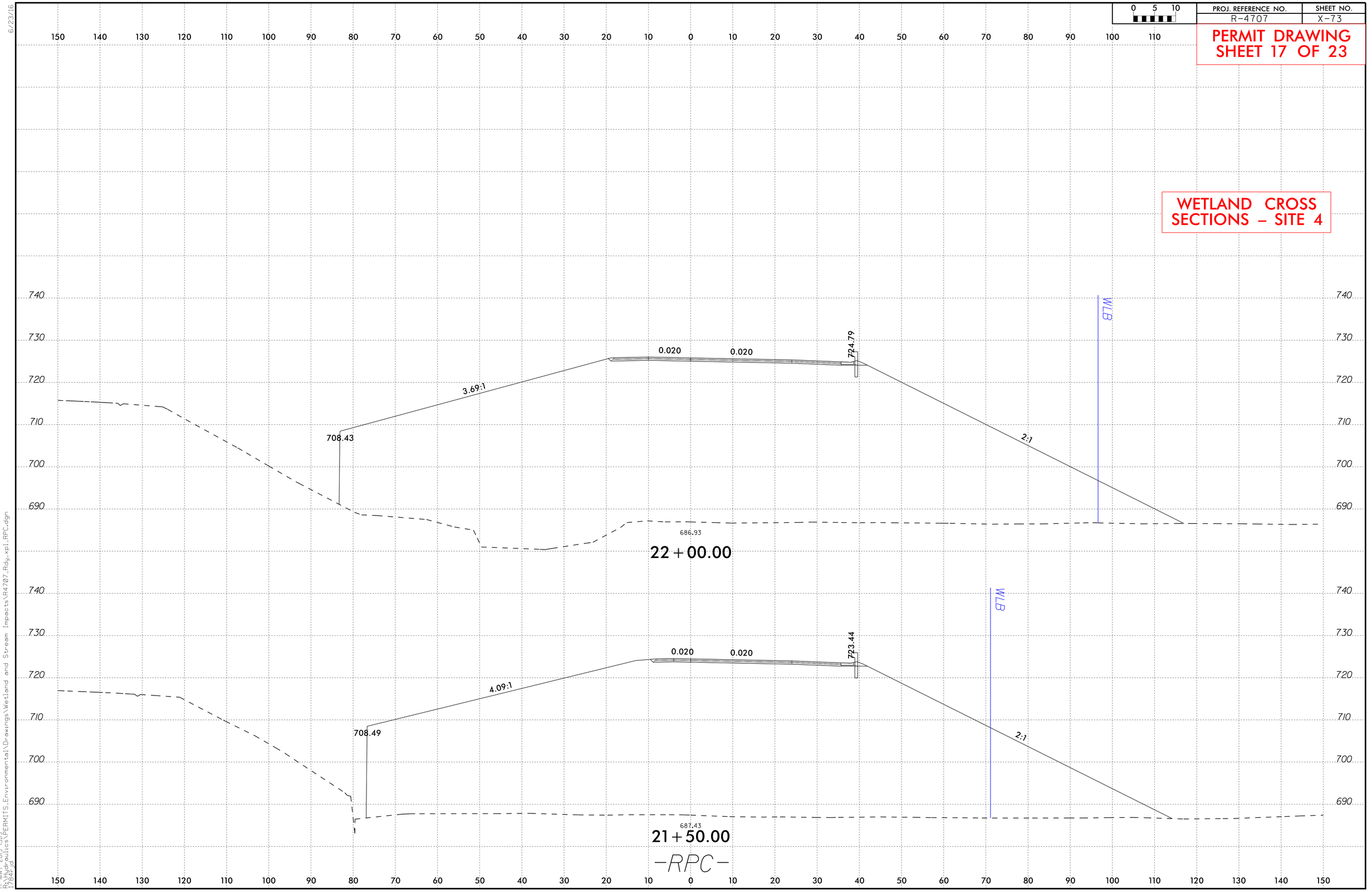
WETLAND CROSS SECTIONS – SITE 4



0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-4707	X-73

PERMIT DRAWING SHEET 17 OF 23

WETLAND CROSS SECTIONS – SITE 4



PROJECT REFERENCE NO.	SHEET NO.
R-4707	Y PFL
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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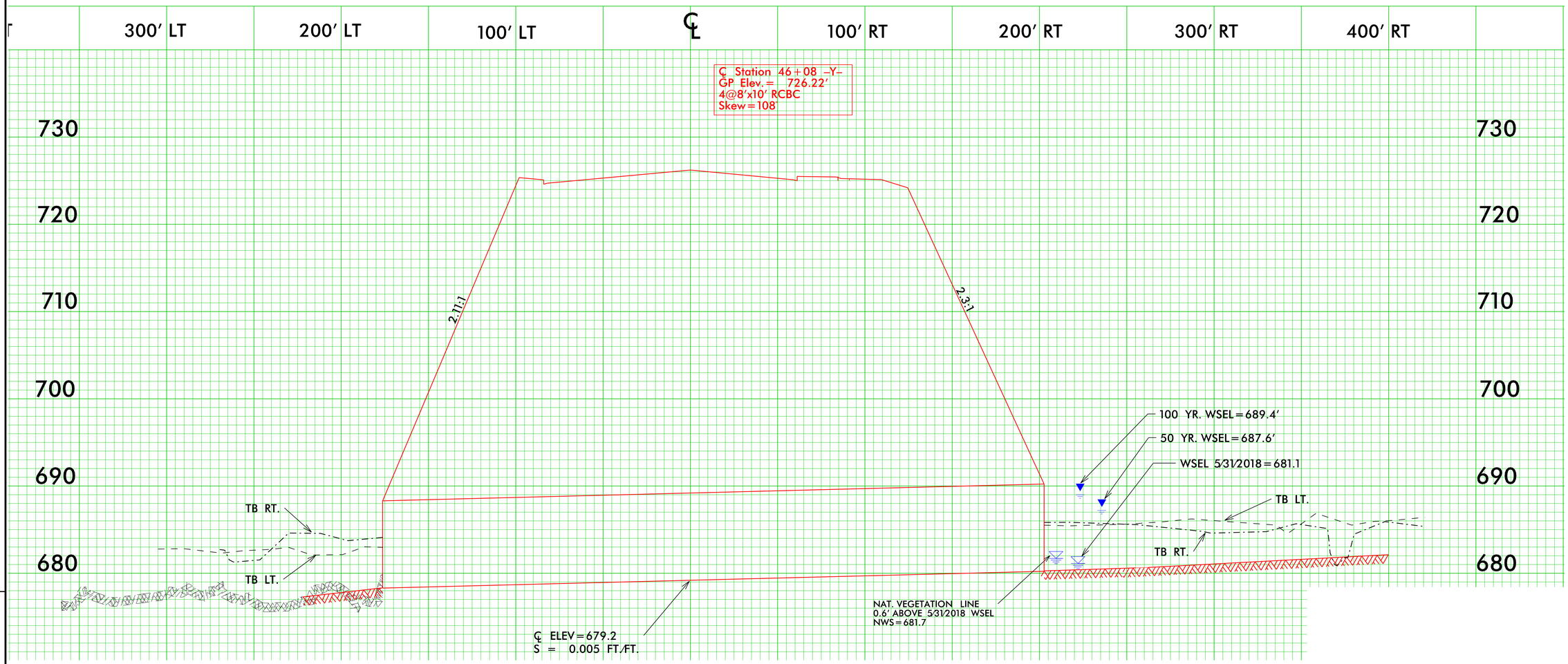
PERMIT DRAWING
SHEET 18 OF 23



REVISIONS

8/17/99

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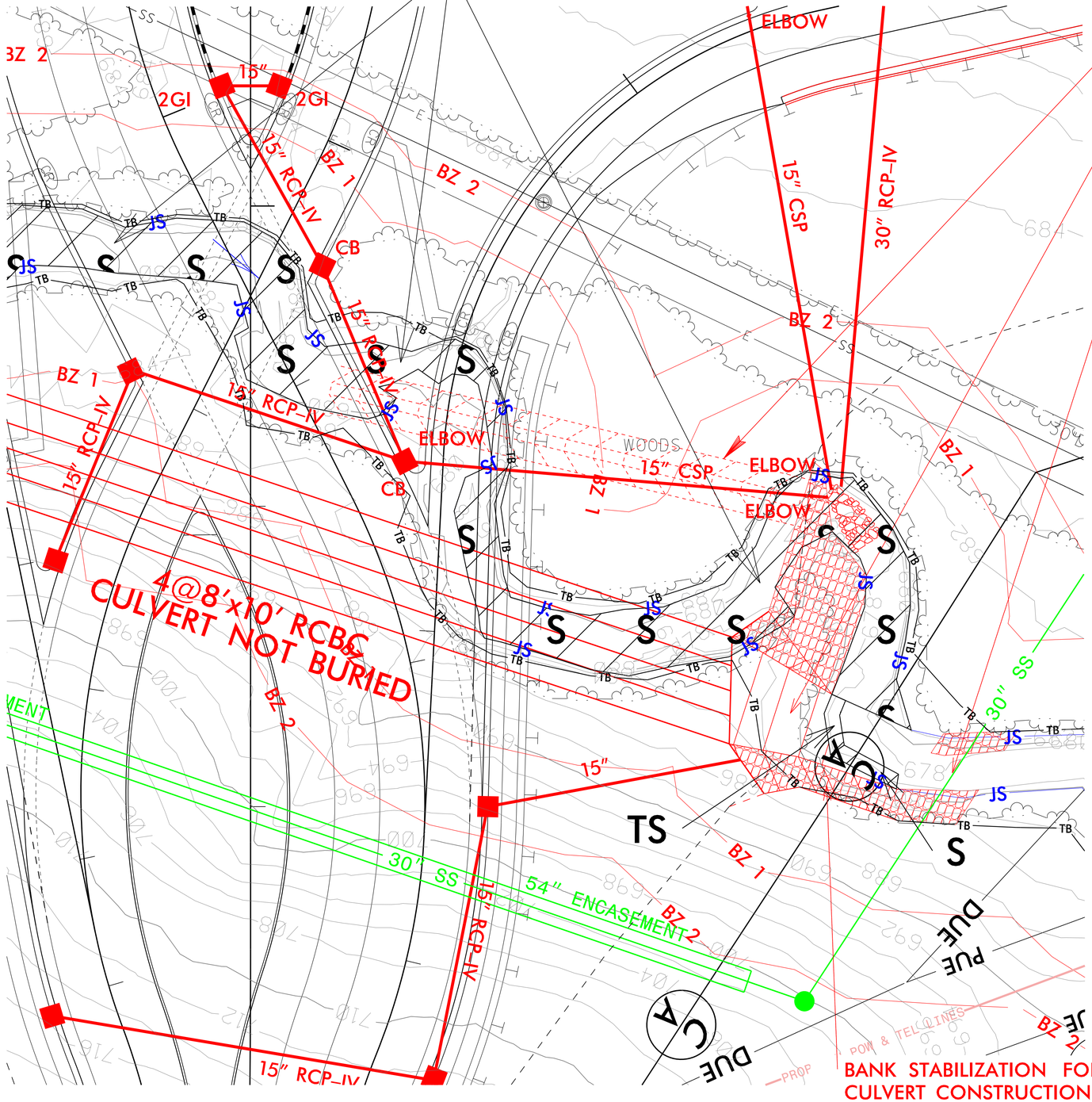
SITE 3B



DIVERSION CHANNEL FOR CULVERT CONSTRUCTION

SEE CULVERT OUTLET DETAIL

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

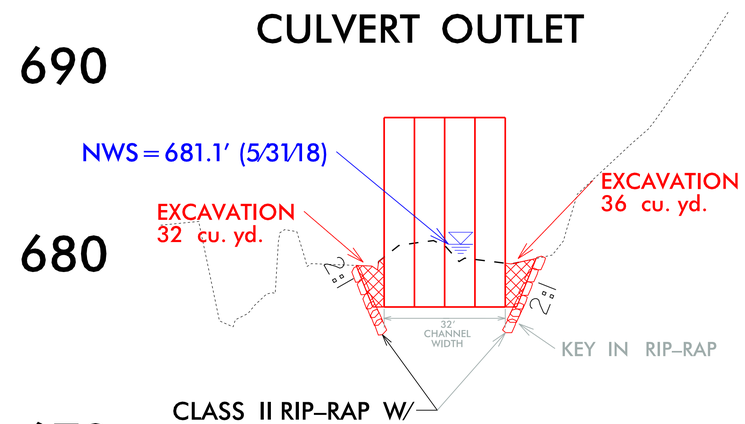
NAD 83/2011

20' 0' 20' 40' 60'
GRAPHIC SCALE

S S DENOTES IMPACTS IN SURFACE WATER

TS TS 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.	SHEET NO.
R-4707	INSET:6C
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
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PERMIT DRAWING
SHEET 19 OF 23

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5/28/99

—Y—

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.	SHEET NO.
R-4707	16
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
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PERMIT DRAWING SHEET 20 OF 23

BEGIN GRADE
-Y- STA. 21+00.00
EL = 733.40'

PI = 23+40.00
EL = 736.67'
VC = 230'
K = 61
V = 45 MPH

(+)1.3625%

(−)2.4000%

-Y- STA. 24+79.21 =
-Y1- STA. 10+00.00
-Y4- STA. 10+00.00

(−) 5.8300%

BEGIN LATERAL BASE DITCH
-Y- STA. 26+00 LT
EL = 725.24'

-Y- STA. 27+00 LT
EL = 719.41'

(−) 2.4142%

END LATERAL BASE DITCH
BEGIN LATERAL BASE DITCH
-Y- STA. 29+68 LT
EL = 712.94'

(+) 3.3049%

PI = 33+40.00
EL = 712.67'
VC = 450'
K = 65
V = 40 MPH

END LATERAL BASE DITCH
-Y- STA. 30+50 LT
EL = 715.65'

(+)4.5000%

(−)2.4000%

BEGIN LATERAL V DITCH
-Y- STA. 33+81 LT
EL = 709.60'

LEFT DITCH

FOR -Y- PLAN, SEE SHEETS 6 & 8

—Y—

BEGIN BRIDGE
-Y- STA. 40+60.76

PI = 41+50.00
EL = 749.12'
VC = 650'
K = 68
V = 46 MPH

END BRIDGE
-Y- STA. 42+18.26

(+)4.5000%

(−)5.0000%

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

(+) 1.4638%

(+) 3.1300%

(+) 3.1333%

-Y- STA. 34+50 LT
EL = 710.61'

END LATERAL V DITCH
BEGIN SPECIAL CUT DITCH W/HINGE
-Y- STA. 35+50 LT
EL = 713.74'

-Y- STA. 37+00 LT
EL = 718.44'

(−) 0.0583%

LATERAL V DITCH
-Y- STA. 39+53 LT =
-RPA- STA. 27+50 LT
EL = 722.23'

END LATERAL V DITCH
-Y- STA. 40+00 LT
EL = 718.80'

-Y- STA. 41+39.51 =
-L- STA. 61+03.00

PI = 50+00.00
EL = 706.62'
VC = 640'
K = 64
V = 40 MPH

4@8' x10'
RCBC

FOR -Y- PLAN, SEE SHEETS 6 & 9

PROJECT REFERENCE NO.	SHEET NO.
R-4707	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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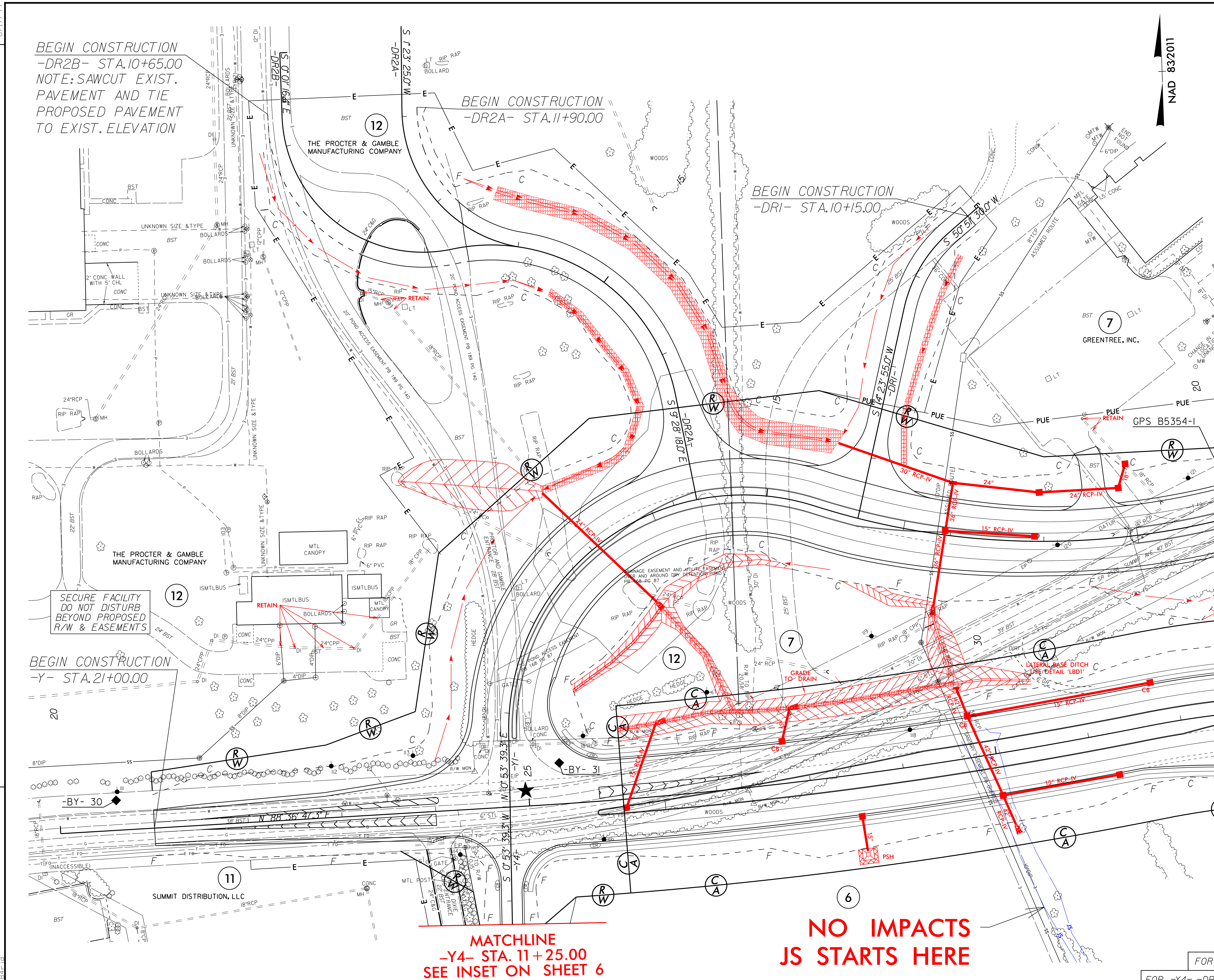


NAD 83/2011
BEGIN CONSTRUCTION -DR2B- STA.10+65.00
NOTE: SAWCUT EXIST. PAVEMENT AND TIE PROPOSED PAVEMENT TO EXIST. ELEVATION
BEGIN CONSTRUCTION -DR2A- STA.11+90.00
BEGIN CONSTRUCTION -DRI- STA.10+15.00
BEGIN CONSTRUCTION -Y- STA.21+00.00
THE PROCTER & GAMBLE MANUFACTURING COMPANY
GREENTREE, INC.
SUMMIT DISTRIBUTION, LLC
SECURE FACILITY DO NOT DISTURB BEYOND PROPOSED R/W & EASEMENTS
DO NOT DISTURB WATER VALVE VAULT
GPS B5354-I
RETAIN
LATERAL BASE DITCH USE DETAIL 'LBDI'
GRADE TO DRAIN
-BY- 30
-BY- 31
MATCHLINE -YI- STA. 21+50.00 SEE SHEET 6
MATCHLINE -Y- STA. 34+00.00 SEE SHEET 6
MATCHLINE -Y4- STA. 11+25.00 SEE INSET ON SHEET 6
NO IMPACTS JS STARTS HERE

★ PROPOSED TRAFFIC SIGNAL

FOR -Y- PROFILE, SEE SHEET 16
FOR -YI- 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

REVISIONS

31-MAY-2019 15:51
R4707_Hyd_prm_wet_08.dgn

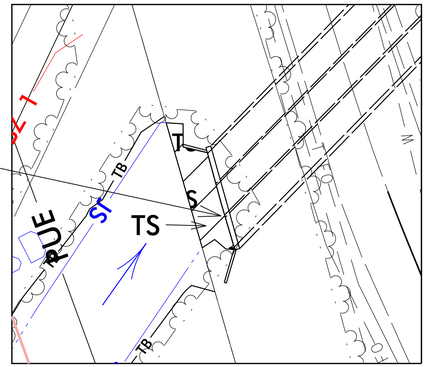
SITE 3C

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

BEGIN CONSTRUCTION
-Y2- STA.10+50.00

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.



NAD 83\2011

PROJECT REFERENCE NO.	SHEET NO.
R-4707	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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PERMIT DRAWING
SHEET 22 OF 23

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

5 DELTA PHOENIX, INC.

13 AF-REEDY FORK COMMERCIAL, LLC

14 AF-REEDY FORK COMMERCIAL, LLC

15 AF-REEDY FORK COMMERCIAL, LLC

END CONSTRUCTION
-Y5- STA.12+10.00

END CONSTRUCTION
-Y- STA.58+80.00

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

REVISIONS 8/17/99

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17784 jd

WETLAND AND SURACE WATER IMPACTS SUMMARY

			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	-L- Sta. 33+19 - 33+86	24" RCP III						0.01		79		
1	-L- Sta. 33+86 - 34+00	Bank Stabilization						< 0.01	< 0.01	10	10	
2	-L- Sta. 34+86 - 35+30	Fill	< 0.01			< 0.01		< 0.01	< 0.01	17	13	
3A	-RPB- Sta. 36+62 - 38+03	3 @ 7' x 8' RCBC Extension						0.15		314		
3A	-RPB- Sta. 36+82 - 37+16	Bank Stabilization						0.02	0.03	73	5	
3B	-RPC- Sta. 21+50	3 @ 7' x 8' RCBC Extension						0.47		1040		
	to -Y- Sta. 46+56	and 4 @ 8' x 10' RCBC										
3B	-Y- Sta. 45+89 - 46+95	Bank Stabilization						< 0.01	< 0.01	19	15	
3C	-Y2- Sta. 10+00	Sediment Removal (RCBC)							< 0.01		8	
4	-RPC- Sta. 20+01 - 22+35	Fill, PSH, Step Pool	0.34		0.02	0.15						
5	-RPC- Sta. 20+01 - 22+36	Channel Relocation, Step Pool						0.02	< 0.01	156	12	
6	-Y- Sta. 45+32 - 45+70	Channel Relocation			0.02							
TOTALS*:			0.35		0.04	0.16		0.67	0.04	1708	63	0

*Rounded totals are sum of actual impacts

NOTES:

3A - Temporary Surface Water Impact is within the Bank Stabilization Impact.

3A - Bank Stabilization Impact for the sewer line installation is within the Bank Stabilization Impact for construction of the culvert extension.

3B - Bank Stabilization Impact for the sewer line installation will be shown on Utility Permit Drawings.

6 - Total Take due to Excavation.

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
APRIL 3, 2019
GUILFORD
R-4707
36599.1.5

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

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	RW & UTILITY

BUFFER DRAWING
SHEET 1 OF 10

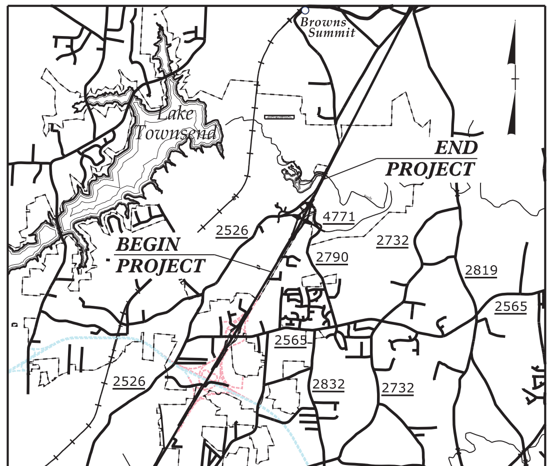
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY

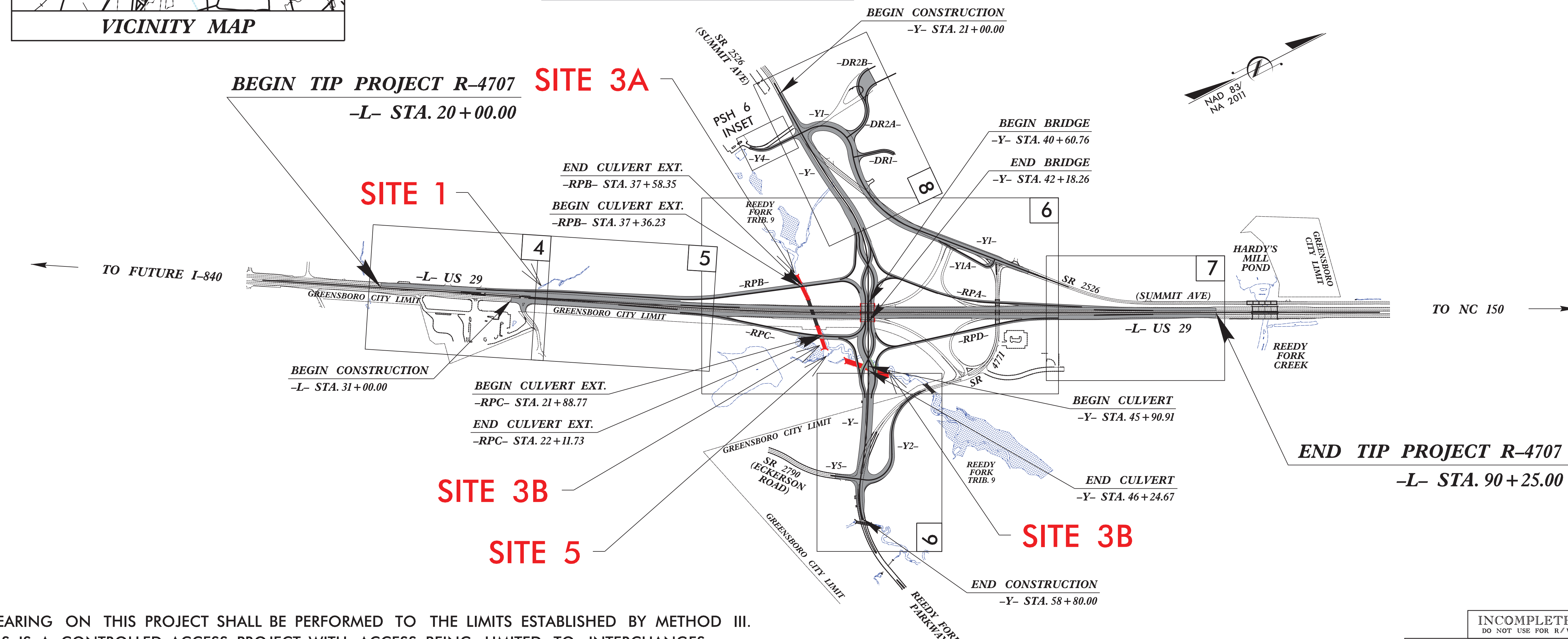
LOCATION: US 29 AND SR 4771 (REEDY FORK PARKWAY) INTERCHANGE IMPROVEMENTS; IMPROVE ROADWAY, MODIFY INTERCHANGE AND REPLACE BRIDGE 360

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

BUFFER IMPACTS PERMIT



VICINITY MAP



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
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GRAPHIC SCALES

50 25 0 50 100 — PLANS
50 25 0 50 100 — PROFILE (HORIZONTAL)
10 5 0 10 20 — PROFILE (VERTICAL)

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:

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Raleigh, North Carolina 27601
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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.

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION

TIP PROJECT: R-4707

CONTRACT:

09/08/99

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1784rjd

PROJECT REFERENCE NO.	SHEET NO.
R-4707	4

R/W SHEET NO.

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

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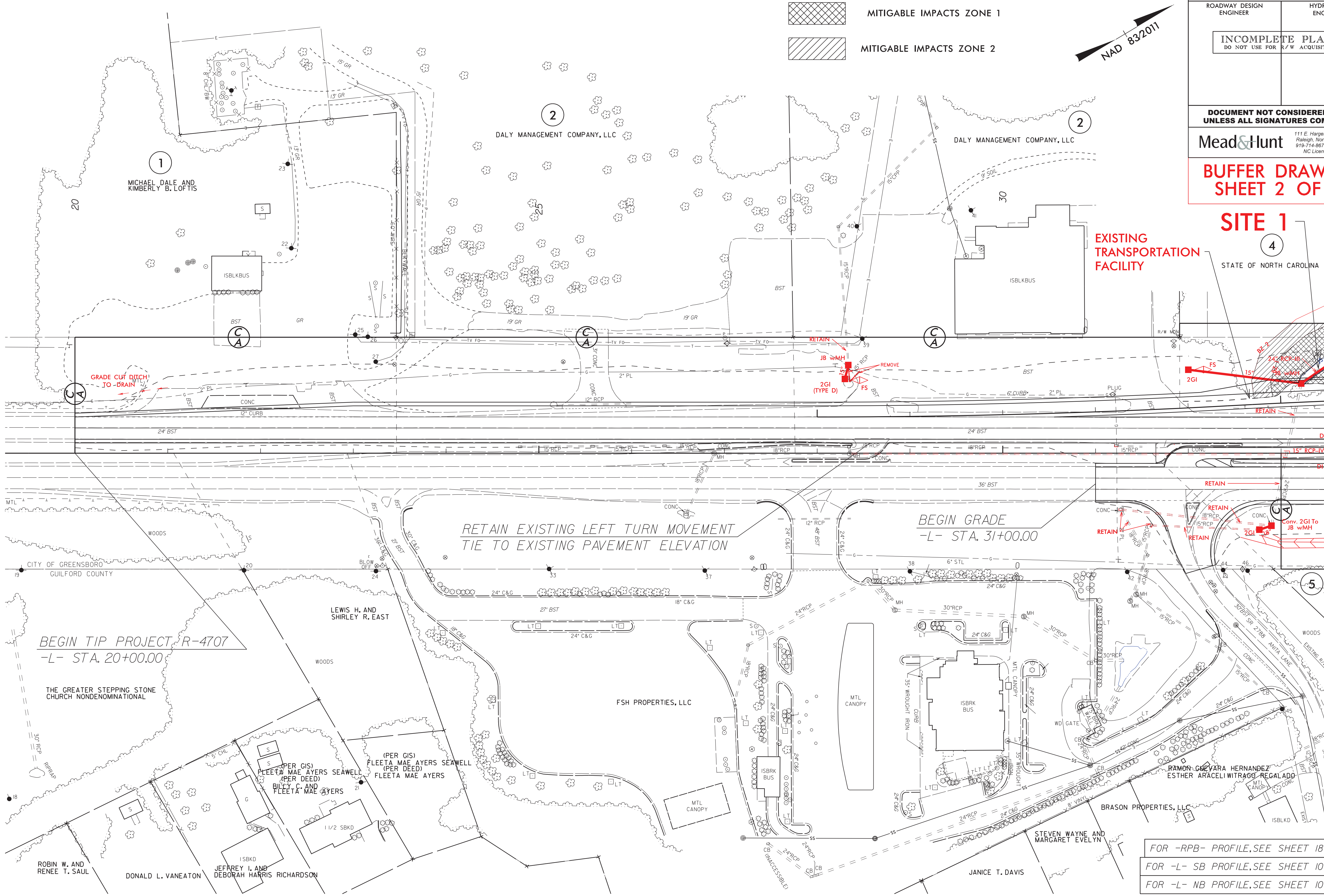
BUFFER DRAWING SHEET 2 OF 10

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2



NAD 83/2011
SITE 1
EXISTING TRANSPORTATION FACILITY
STATE OF NORTH CAROLINA
DALY MANAGEMENT COMPANY, LLC
MICHAEL DALE AND KIMBERLY B. LOFTIS
SEE SHEET 5
MATCHLINE -L- STA. 33+50.00
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
CITY OF GREENSBORO
GUILFORD COUNTY
(PER GIS) FLEETA MAE AYERS SEAWELL
(PER DEED) FLEETA MAE AYERS
(PER GIS) FLEETA MAE AYERS SEAWELL
(PER DEED) BILLY C. AND FLEETA MAE AYERS
ROBIN W. AND RENEE T. SAUL
DONALD L. VANEATON
JEFFREY I. AND DEBORAH HARRIS RICHARDSON
JANICE T. DAVIS
STEVEN WAYNE AND MARGARET EVELYN
BRASON PROPERTIES, LLC
RAMON GUEVARA HERNANDEZ ESTHER ARACELI WITRAGO REGALADO
RETAIN
REMOVE
2GI (TYPE D)
JB w/MH
Conv. 2GI To JB w/MH

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

REVISIONS

8/17/99

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PROJECT REFERENCE NO.	SHEET NO.
R-4707	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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919-714-8670 | meadhunt.com
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BUFFER DRAWING SHEET 3 OF 10

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

NAD 832011

REVISIONS

8/17/99

SITE 1

EXISTING TRANSPORTATION FACILITY

USE 2:1 SLOPES -RPB- STA. 29+00 - 29+50 DO NOT DISTURB TRANSFORMER

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

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

ISMTL GREENHOUSE

BST

10' CHL

ISBKBUS

POSSIBLE JB

STATE OF NORTH CAROLINA

ISBKBUS

DELTA PHOENIX, INC.

FLAG POLE

N OHENRY BLVD

DAN L. AND FRIEDA A. SOUTHER

JEFFERY AND BRENDA HERBIN

ISFD

JOHN JR. AND LATONYA C. BELL

ISFD

DONNIE LEE MCDANIEL

ANITA LANE

20' UTILITY EASEMENT

ISBKBUS

GR

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

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17841.id

PROJECT REFERENCE NO.	SHEET NO.
R-4707	INSET: 4,5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
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BUFFER DRAWING SHEET 4 OF 10

NAD 832011

SITE 1

4

STATE OF NORTH CAROLINA
DB 2662 PG 159

EXISTING TRANSPORTATION FACILITY

BZ 1
BZ 2
JS
TB
24" RCP-III
15"
JB wMH
WOODS
PSH
Q
2GI
15" RC
MTL
RETAIN
DI
15" RCP-IV
DI = 8'
Conv. 2GI To JB w/MH
REMOVE 13' +/-
24" RCP-IV
JB w

20' 0' 20' 40' 60'
GRAPHIC SCALE

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

REVISIONS 8/17/99

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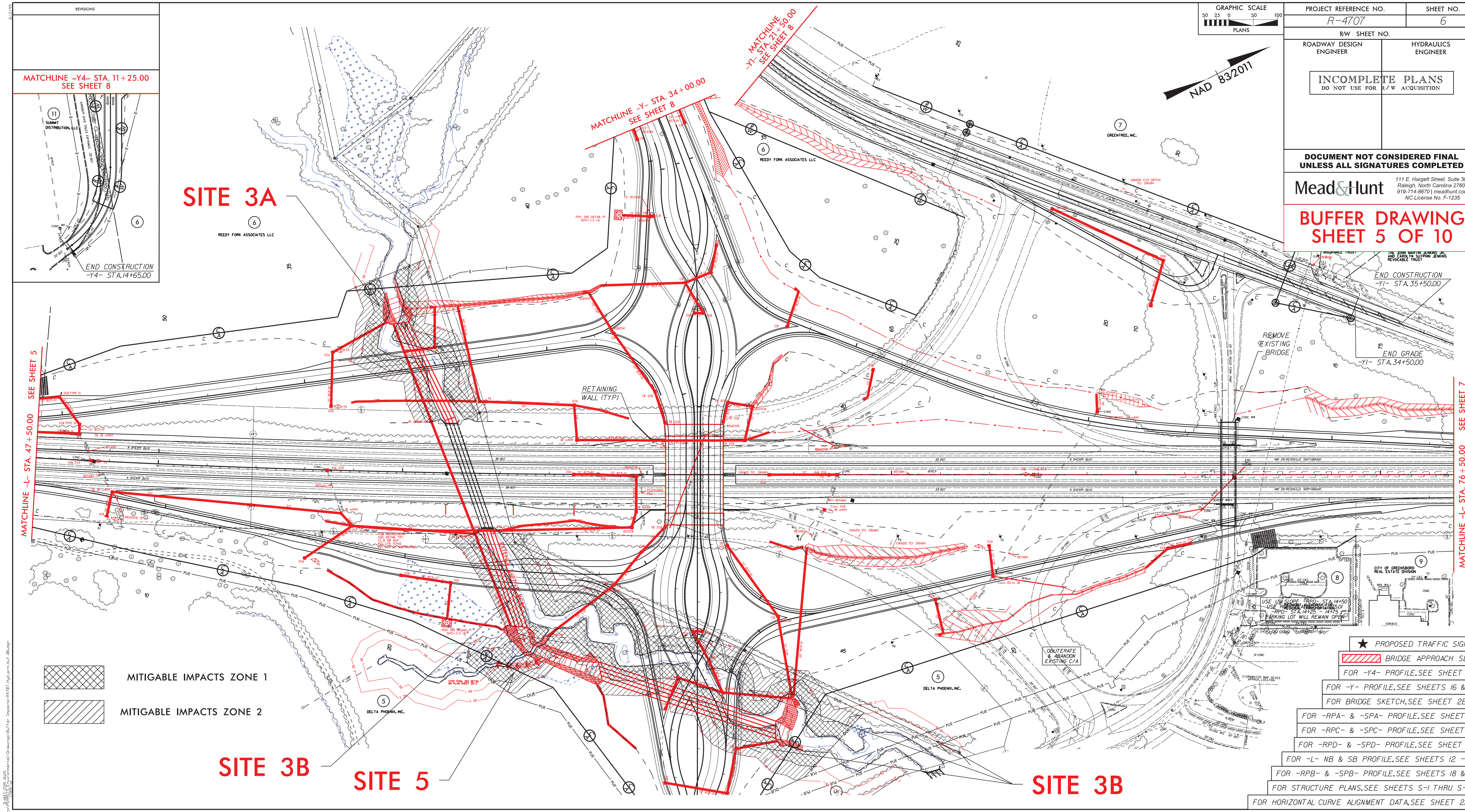
17841rjd



PROJECT REFERENCE NO.	SHEET NO.
R-4707	6

R/W SHEET NO.

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

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BUFFER DRAWING SHEET 5 OF 10

★ 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

SITE 3A

DIVERSION CHANNEL
FOR CULVERT EXTENSION
CONSTRUCTION

LATERAL
GRASSED SWALE
USE DETAIL 'S1'

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

NAD 83/2011

20' 0' 20' 40' 60'
GRAPHIC SCALE

MITIGABLE IMPACTS ZONE 1

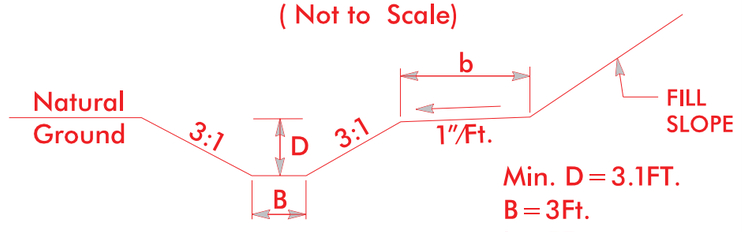
MITIGABLE IMPACTS ZONE 2

EXISTING
TRANSPORTATION
FACILITY

TRENCHLESS INSTALLATION
60" WELDED STEEL

DETAIL S1

LATERAL GRASSED SWALE
(Not to Scale)



Min. D = 3.1FT.
B = 3Ft.
b = 5Ft.

FROM –RPB– 37+13 STA. TO STA. 38+00

PROJECT REFERENCE NO.	SHEET NO.
R-4707	INSET: 6A

R/W SHEET NO.

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

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BUFFER DRAWING
SHEET 6 OF 10

8/17/99

REVISIONS

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tf84rjd

PROJECT REFERENCE NO.	SHEET NO.
R-4707	INSET:6B

R/W SHEET NO.

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

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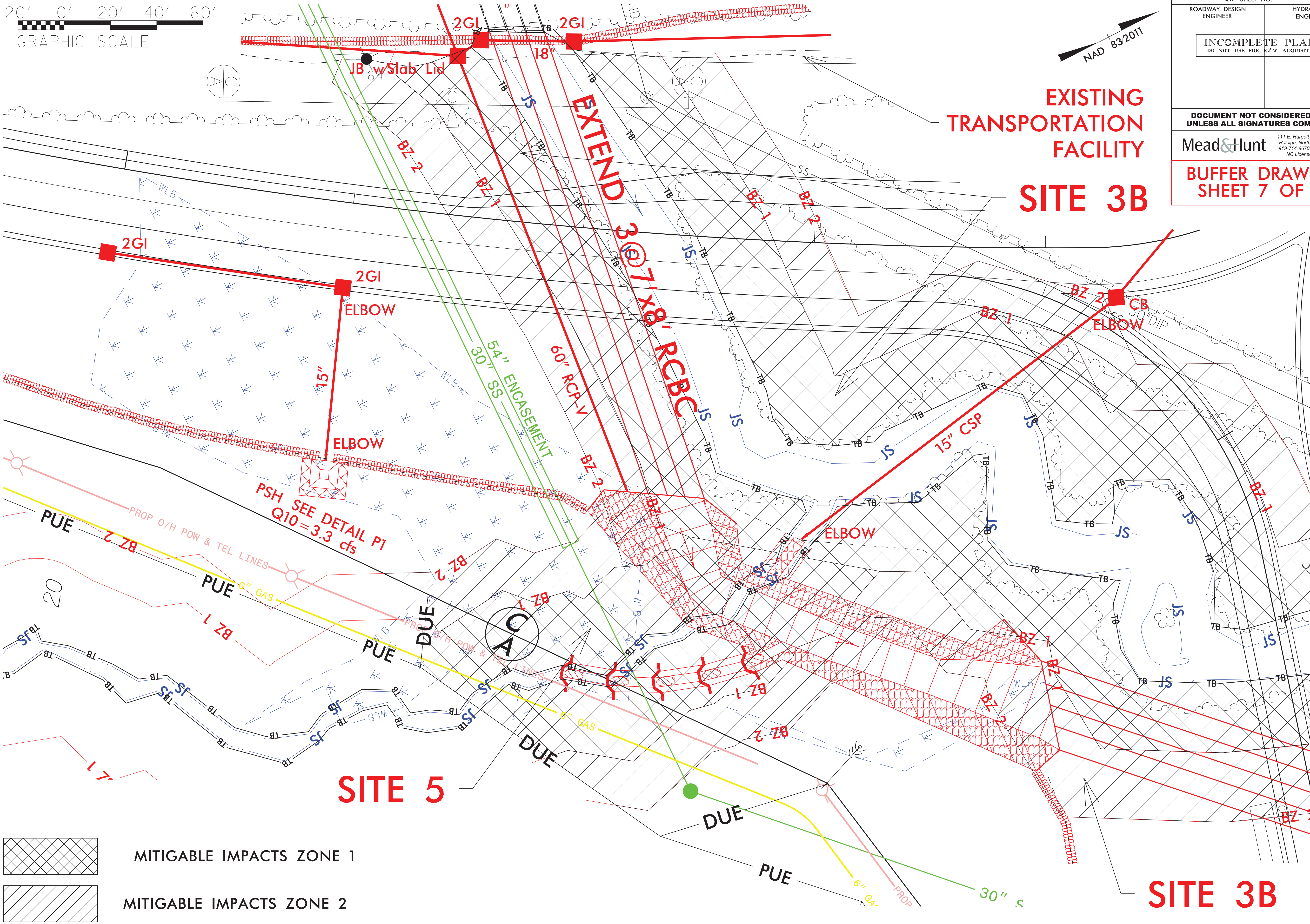
BUFFER DRAWING SHEET 7 OF 10



MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

8/17/99

REVISIONS

31-MAY-2019 16:21
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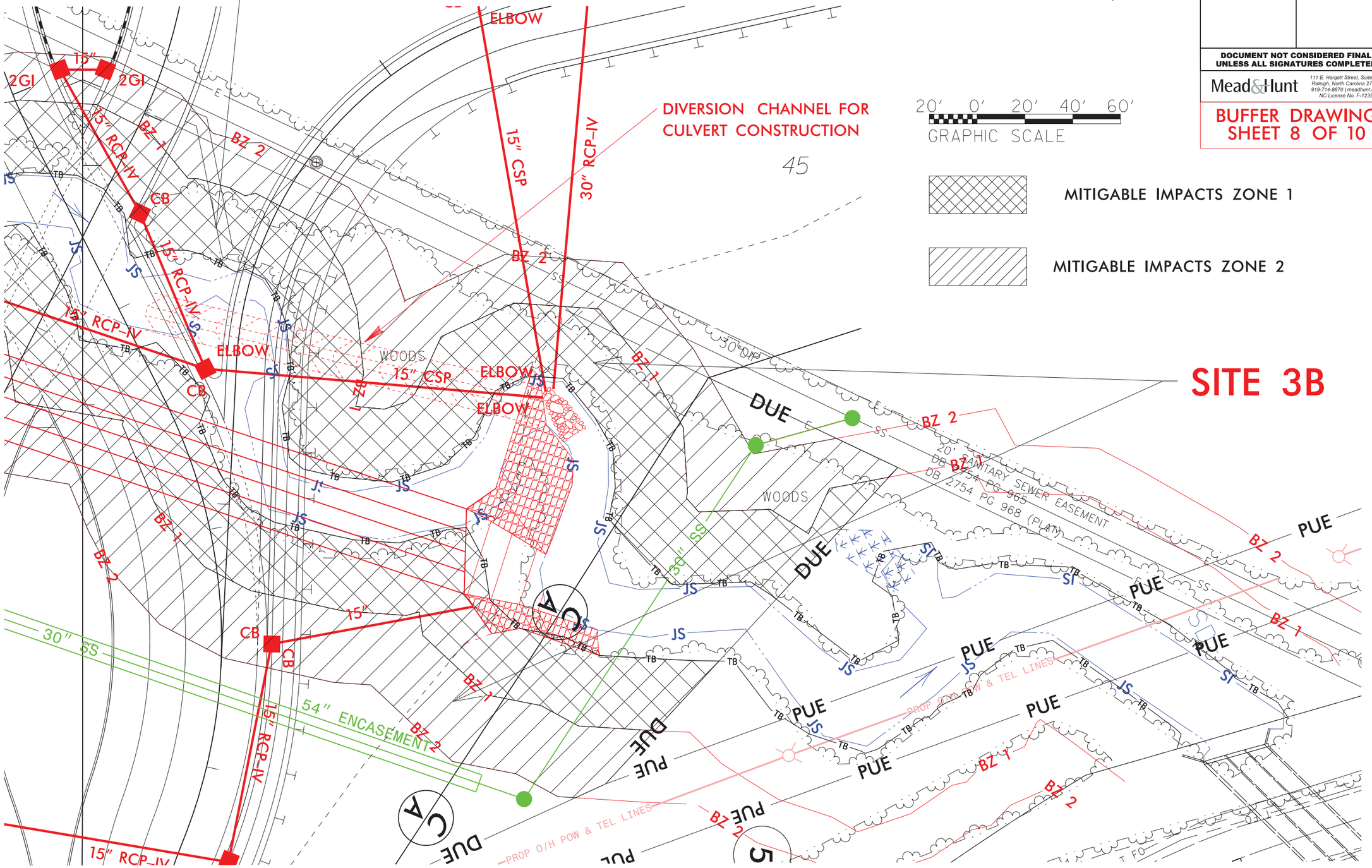
SITE 3B



SITE 3B

NAD 83/2011

20' 0' 20' 40' 60'
GRAPHIC SCALE

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

PROJECT REFERENCE NO.	SHEET NO.
R-4707	INSET: 6C
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

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BUFFER DRAWING
SHEET 8 OF 10

8/17/99
REVISIONS

31-MAY-2019 16:22
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17841jd

RIPARIAN BUFFER IMPACTS SUMMARY

Site No.	Station (From/To)	Structure Size / Type	IMPACTS									BUFFER REPLACEMENT	
			TYPE			ALLOWABLE			MITIGABLE				
			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)	ZONE 1 (ft^2)	ZONE 2 (ft^2)
1	-L- Sta. 32+68 - 36+30	Embankment, 24" RCP III			X				8009	6593	14602		
3A	-RPB- Sta. 35+11 - 38+40	3 @ 7' x 8' RCBC Extension	X						23468	15429	38897		
3B	-Y- Sta. 44+44 - 47+73 -RPC- Sta. 20+84 - 23+14	4 @ 8' x 10' RCBC 3 @ 7' x 8' RCBC Extension	X						60989	43187	104176		
5	-Y- Sta. 44+57 - 45+87	Channel Relocation, Step Pool		X					9800	5161	14961		
TOTALS*:						**0**	**0**	**0**	**102266**	**70370**	**172636**	**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
APRIL 3, 2019
GUILFORD COUNTY
R-4707
36599.1.5
SHEET 9 OF 10

Revised 2018 Feb

WETLANDS IN BUFFER IMPACTS SUMMARY

SITE NO.	STATION FROM	STATION TO	WETLANDS IN BUFFERS ZONE 1 (ft^2)	WETLANDS IN BUFFERS ZONE 2 (ft^2)
1	-L- 34+86	-L- 35+30	320	281
3B	-RPC- 22+11	-RPC- 22+35		520
3B	-Y- 45+31	-Y- 45+46		223
5	-RPC- 21+29	-RPC- 22+35	2675	1909
5	-RPC- 21+89	-RPC- 22+34	313	
5	-Y- 45+42	-Y- 45+53		67
TOTAL:			**3308**	**3000**

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
APRIL 3, 2019
GUILFORD COUNTY
R-4707
36599.1.5
SHEET 10 OF 10

Revised 2018 Feb

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

Rev. Jan 2009

UTILITY PERMIT DRAWINGS

REVISIONS

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

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 –Y– STA. 34+00.00 SEE SHEET 8

MATCHLINE –Y1– STA. 21+50.00 SEE SHEET 8

BANK STABILIZATION

EXTEND 3@7' x 8' RCBC NOT BURIED

RETAINING WALL (TYP)

EXTEND 3@7' x 8' RCBC NOT BURIED

CULVERT #3 RCBC NOT BURIED

CHANNEL RESTORATION

REMOVE EXISTING BRIDGE

OBLITERATE & ABANDON EXISTING C/A

END CONSTRUCTION –Y4– STA.14+65.00

END CONSTRUCTION –Y– STA.35+50.00

END GRADE –Y1– STA.34+50.00

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

MATCHLINE –L– STA. 76+50.00 SEE SHEET 7

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

BANK STABILIZATION FOR CULVERT CONSTRUCTION IS SHOWN ON HYDRAULICS PERMIT DRAWINGS

SITE 4

SITE 3B

NAD 83/2011

GRAPHIC SCALE 50 25 0 50 100 PLANS

PROJECT REFERENCE NO.	SHEET NO.
R-4707	6

R/W SHEET NO.

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

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DENOTES MECHANIZED CLEARING

DENOTES IMPACTS IN SURFACE WATER

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

REVISIONS

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

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 –Y– STA. 34+00.00
SEE SHEET 8

MATCHLINE –Y1– STA. 21+50.00
SEE SHEET 8

NAD 83/2011

GRAPHIC SCALE
50 25 0 50 100
PLANS

PROJECT REFERENCE NO.	SHEET NO.
R-4707	6

R/W SHEET NO.

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

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END CONSTRUCTION
–Y4– STA.14+65.00

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

MATCHLINE –L– STA. 76+50.00
SEE SHEET 7

EXTEND 3@7'x 8' RCBC NOT BURIED

EXTEND 3@7' x 8' RCBC NOT BURIED

RETAINING WALL (TYP)

REMOVE EXISTING BRIDGE

END GRADE
–Y1– STA.34+50.00

END CONSTRUCTION
–Y1– STA.35+50.00

CHANNEL RESTORATION

OBLITERATE & ABANDON EXISTING C/A

BANK STABILIZATION FOR CULVERT CONSTRUCTION IS SHOWN ON HYDRAULICS PERMIT DRAWINGS

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

DENOTES MECHANIZED CLEARING

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

SITE 4

SITE 3B

★ 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

REVISIONS

DENOTES MECHANIZED CLEARING

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S S DENOTES IMPACTS IN SURFACE WATER

NAD 83/2011

PROJECT REFERENCE NO.	SHEET NO.
R-4707	INSET: 6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
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40' 0' 40' 80' 120'
GRAPHIC SCALE

BANK STABILIZATION FOR CULVERT CONSTRUCTION IS SHOWN ON HYDRAULICS PERMIT DRAWINGS

SITE 4

SITE 3B

CHANNEL RESTORATION (SEE DETAIL ON NEXT SHEET)

DELTA PHOENIX, INC.
DB 7309, PG 2280
PB 115 PG 18

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I784rjd

PROJECT REFERENCE NO.	SHEET NO.
R-4707	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

NORTH CAROLINA PROFESSIONAL ENGINEER ANDREW P. LARRICK SEAL 26457

PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION

UTILITY CONSTRUCTION PLANS ONLY

UTILITY CONSTRUCTION

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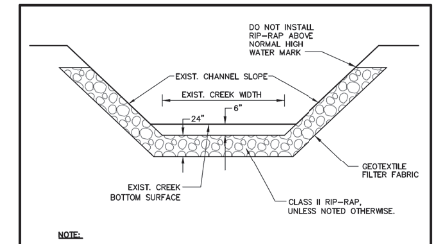
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

UTILITY AGREEMENT PLANS

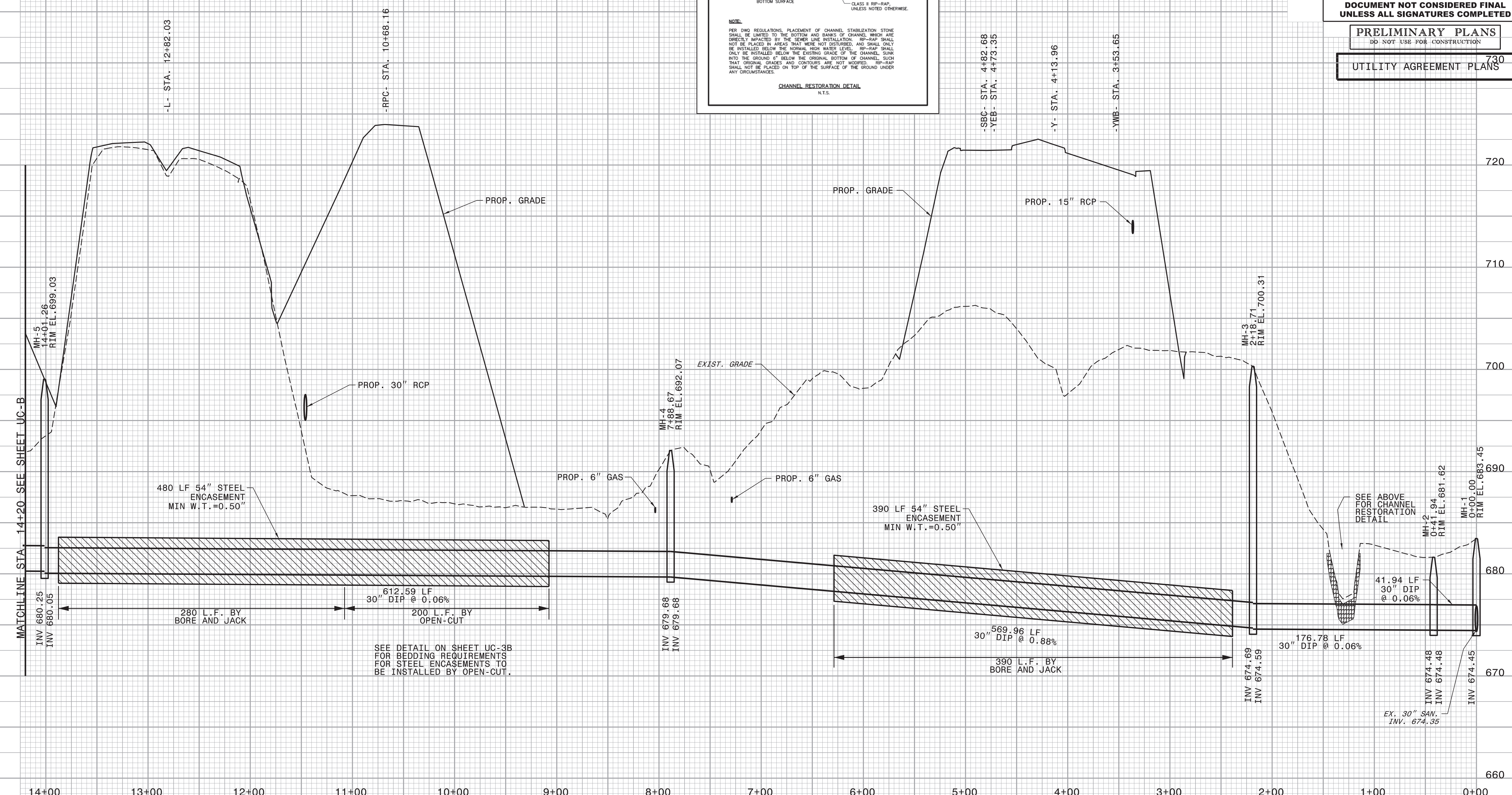
25 0 50
1"=50' H, 1"=5' V



NOTE:

PER DWQ REGULATIONS, PLACEMENT OF CHANNEL STABILIZATION STONE SHALL BE LIMITED TO THE BOTTOM AND BANKS OF CHANNEL WHICH ARE DIRECTLY IMPACTED BY THE SEWER LINE INSTALLATION. RIP-RAP SHALL NOT BE PLACED IN AREAS THAT WERE NOT DISTURBED, AND SHALL ONLY BE INSTALLED BELOW THE NORMAL HIGH WATER LEVEL. RIP-RAP SHALL ONLY BE INSTALLED BELOW THE EXISTING GRADE OF THE CHANNEL, SUNK INTO THE GROUND 6" BELOW THE ORIGINAL BOTTOM OF CHANNEL, SUCH THAT ORIGINAL GRADES AND CONTOURS ARE NOT MODIFIED. RIP-RAP SHALL NOT BE PLACED ON TOP OF THE SURFACE OF THE GROUND UNDER ANY CIRCUMSTANCES.

CHANNEL RESTORATION DETAIL
N.T.S.



REVISIONS

5/14/99

UTILITY CONSTRUCTION PLANS PREPARED BY:
DAVIS • MARTIN • POWELL
ENGINEERS & SURVEYORS
dmp
6415 OLD PLANK RD, HIGH POINT, NC 27265
PHONE: (336)886-4821 FAX: (336)886-4458
WWW.DMP-INC.COM LICENSE: F-0245

WETLAND AND SURACE WATER IMPACTS SUMMARY

			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
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

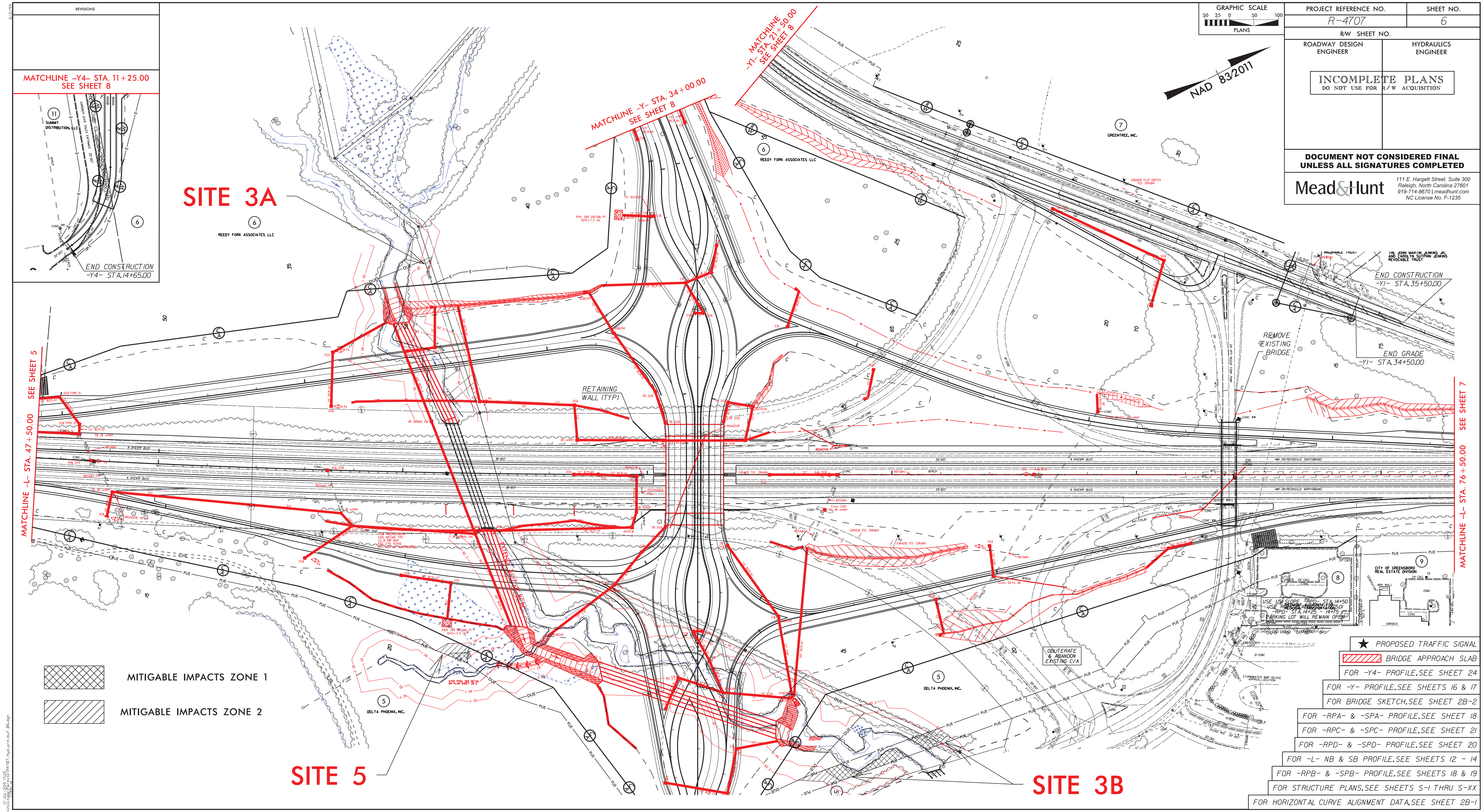
*Rounded totals are sum of actual impacts

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

Revised 2018 Feb



GRAPHIC SCALE
50 25 0 50 100
PLANS
PROJECT REFERENCE NO.
R-4707
SHEET NO.
6
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
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NAD 83/2011
REVISIONS
MATCHLINE -Y4- STA. 11+25.00
SEE SHEET 8
SUMMIT DISTRIBUTION, LLC
END CONSTRUCTION
-Y4- STA.14+65.00
SITE 3A
REEDY FORK ASSOCIATES LLC
MATCHLINE -Y- STA. 34+00.00
SEE SHEET 8
MATCHLINE -Y1- STA. 21+50.00
SEE SHEET 8
GREENTREE, INC.
END CONSTRUCTION
-Y1- STA.35+50.00
END GRADE
-Y1- STA.34+50.00
REMOVE EXISTING BRIDGE
RETAINING WALL (TYP)
SEE SHEET 5
MATCHLINE -L- STA. 47+50.00
SEE SHEET 7
MATCHLINE -L- STA. 76+50.00
CITY OF GREENSBORO REAL ESTATE DIVISION
DELTA PHOENIX, INC.
OBLITERATE & ABANDON EXISTING C/A
MITIGABLE IMPACTS ZONE 1
MITIGABLE IMPACTS ZONE 2
SITE 5
SITE 3B
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
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FOR HORIZONTAL CURVE ALIGNMENT DATA, SEE SHEET 2B-1

PROJECT REFERENCE NO.	SHEET NO.
R-4707	INSET:6A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

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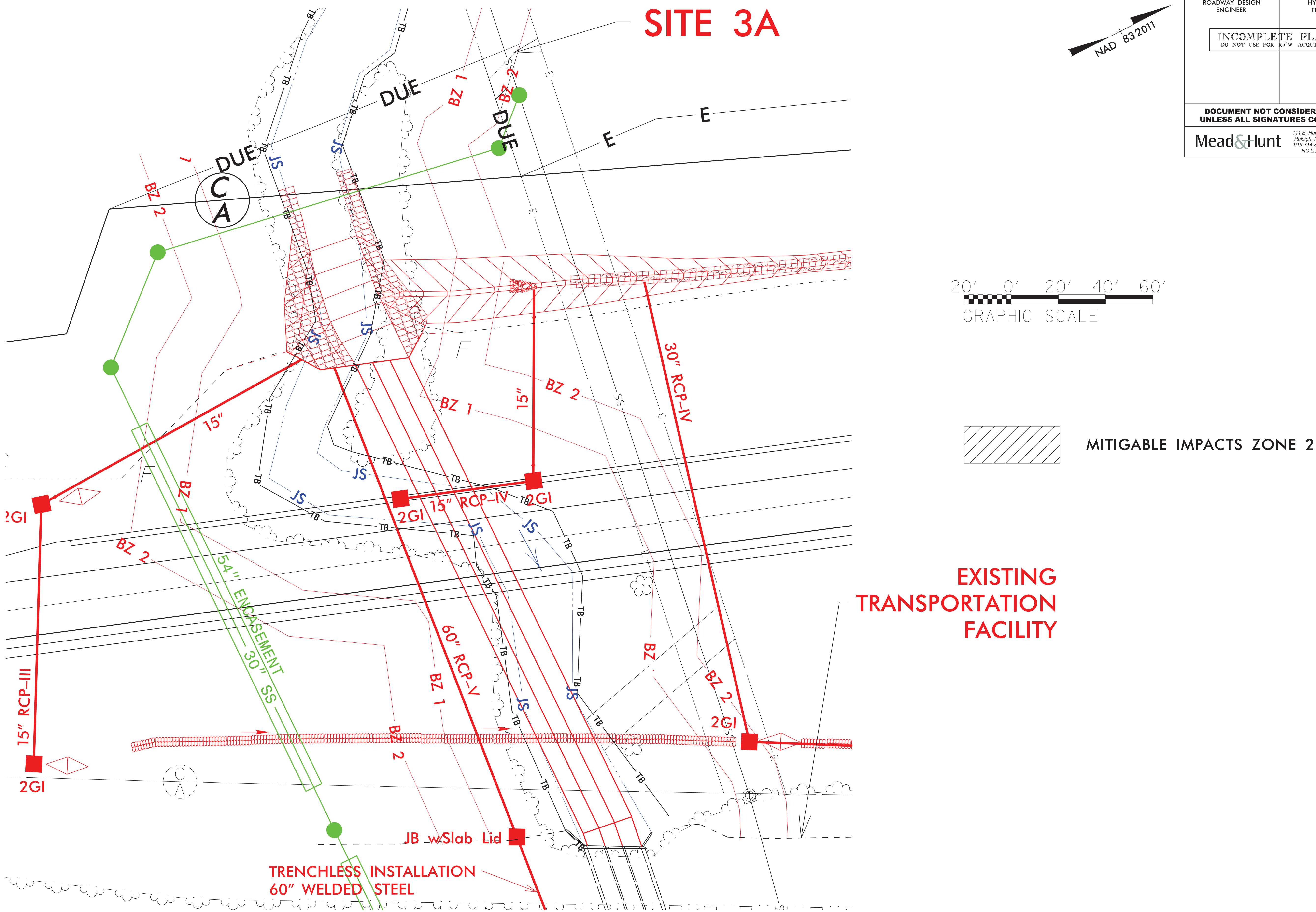

REVISIONS

8/17/99

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i784rjd

8/17/99

REVISIONS

20' 0' 20' 40' 60'
GRAPHIC SCALE

NAD 83/2011

PROJECT REFERENCE NO.	SHEET NO.
R-4707	INSET: 6B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

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EXISTING TRANSPORTATION FACILITY

EXTEND 3@7'x8' RCBC
60" RCP-V
54" ENCASEMENT
30" SS
18"
15"
15" CSP
50" DIP
JB w/Slab Lid
2GI
ELBOW
CB
PSH SEE DETAIL P1
Q10=3.3 cfs
PROP O/H POW & TEL LINES
6" GAS
PUE
DUE
BZ 1
BZ 2
JS
TB
WLB
SS
E
20

SITE 5

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

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PROJECT REFERENCE NO.	SHEET NO.
R-4707	INSET: 6C
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

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NAD 83/2011

20' 0' 20' 40' 60'
GRAPHIC SCALE

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

SITE 3B

EXISTING TRANSPORTATION FACILITY

REVISIONS
8/17/99

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RIPARIAN BUFFER IMPACTS SUMMARY

Site No.	Station (From/To)	Structure Size / Type	IMPACTS									BUFFER REPLACEMENT	
			TYPE			ALLOWABLE			MITIGABLE				
			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)	ZONE 1 (ft^2)	ZONE 2 (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

Revised 2018 Feb

WETLANDS IN BUFFER IMPACTS SUMMARY

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

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

Revised 2018 Feb

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

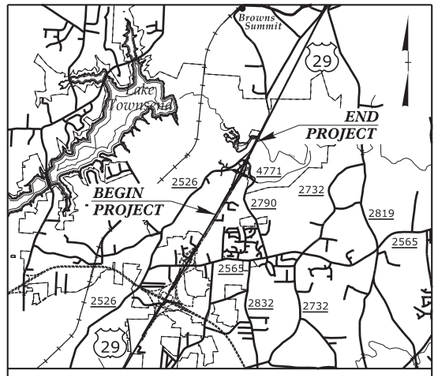
Rev. Jan 2009

09/08/99

TIP PROJECT: R-4707

CONTRACT: C204499

See Sheet 1A For Index of Sheets



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

GUILFORD COUNTY

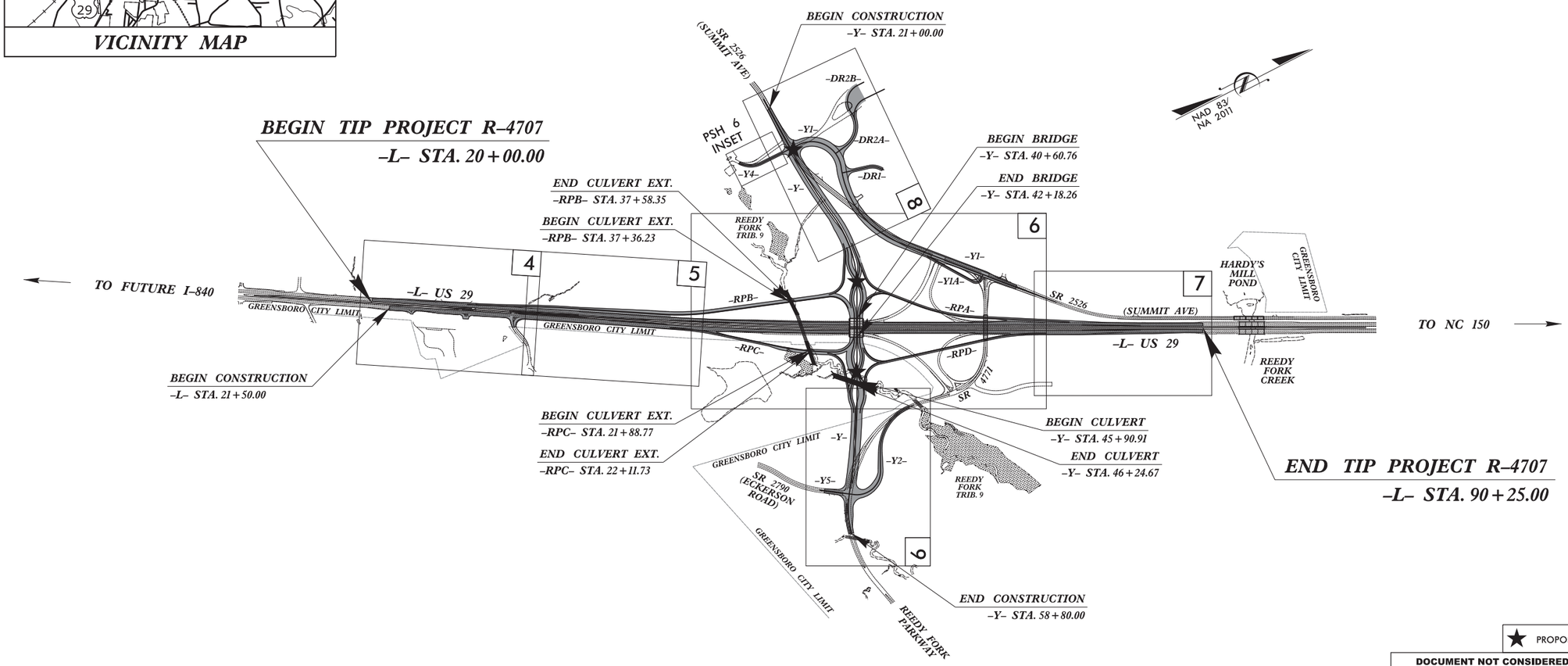
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-4707	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
36599.1.5	NA	PE
36599.2.1	NA	R/W & UTILITY
36599.3.1	NA	CONST

PLFI PLANS

LOCATION: US 29 AND SR 4771 (REEDY FORK PARKWAY) INTERCHANGE IMPROVEMENTS IN GREENSBORO; IMPROVE ROADWAY, MODIFY INTERCHANGE AND REPLACE BRIDGE 400360

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



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

★ PROPOSED SIGNAL

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GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

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:
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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.

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

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12/2/2016

PROJECT REFERENCE NO.	SHEET NO.
R-4707	1B

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale **S.U.E. = Subsurface Utility Engineering*

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin (EIP)
- Computed Property Corner
- Property Monument (ECM)
- Parcel/Sequence Number (123)
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary (WLB)
- Proposed Wetland Boundary (WLB)
- Existing Endangered Animal Boundary (EAB)
- Existing Endangered Plant Boundary (EPB)
- Existing Historic Property Boundary (HPB)
- Known Contamination Area: Soil (S)
- Potential Contamination Area: Soil (S)
- Known Contamination Area: Water (W)
- Potential Contamination Area: Water (W)
- Contaminated Site: Known or Potential

BUILDINGS AND OTHER CULTURE:

- Gas Pump Vent or U/G Tank Cap
- Sign (S)
- Well (W)
- Small Mine
- Foundation
- Area Outline
- Cemetery
- Building
- School
- Church
- Dam

HYDROLOGY:

- Stream or Body of Water
- Hydro, Pool or Reservoir
- Jurisdictional Stream (JS)
- Buffer Zone 1 (BZ 1)
- Buffer Zone 2 (BZ 2)
- Flow Arrow
- Disappearing Stream
- Spring
- Wetland
- Proposed Lateral, Tail, Head Ditch (FLOW)
- False Sump

RAILROADS:

- Standard Gauge (CSX TRANSPORTATION)
- RR Signal Milepost (MILEPOST 35)
- Switch (SWITCH)
- RR Abandoned
- RR Dismantled

RIGHT OF WAY & PROJECT CONTROL:

- Secondary Horiz and Vert Control Point
- Primary Horiz Control Point
- Primary Horiz and Vert Control Point
- Exist Permanent Easement Pin and Cap
- New Permanent Easement Pin and Cap
- Vertical Benchmark
- Existing Right of Way Marker
- Existing Right of Way Line
- New Right of Way Line (RW)
- New Right of Way Line with Pin and Cap (RW)
- New Right of Way Line with Concrete or Granite R/W Marker (RW)
- New Control of Access Line with Concrete C/A Marker (CA)
- Existing Control of Access (CA)
- New Control of Access (CA)
- Existing Easement Line (E)
- New Temporary Construction Easement (E)
- New Temporary Drainage Easement (TDE)
- New Permanent Drainage Easement (PDE)
- New Permanent Drainage / Utility Easement (DUE)
- New Permanent Utility Easement (PUE)
- New Temporary Utility Easement (TUE)
- New Aerial Utility Easement (AUE)

ROADS AND RELATED FEATURES:

- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut (C)
- Proposed Slope Stakes Fill (F)
- Proposed Curb Ramp (CR)
- Existing Metal Guardrail
- Proposed Guardrail
- Existing Cable Guiderail
- Proposed Cable Guiderail
- Equality Symbol
- Pavement Removal

VEGETATION:

- Single Tree
- Single Shrub
- Hedge
- Woods Line
- Orchard
- Vineyard (Vineyard)

EXISTING STRUCTURES:

MAJOR:

- Bridge, Tunnel or Box Culvert (CONC)
- Bridge Wing Wall, Head Wall and End Wall (CONC WW)

MINOR:

- Head and End Wall (CONC HW)
- Pipe Culvert
- Footbridge
- Drainage Box: Catch Basin, DI or JB (CB)
- Paved Ditch Gutter
- Storm Sewer Manhole (S)
- Storm Sewer (S)

UTILITIES:

POWER:

- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole (P)
- Power Line Tower
- Power Transformer
- U/G Power Cable Hand Hole
- H-Frame Pole
- U/G Power Line LOS B (S.U.E.*) (P)
- U/G Power Line LOS C (S.U.E.*) (P)
- U/G Power Line LOS D (S.U.E.*) (P)

TELEPHONE:

- Existing Telephone Pole
- Proposed Telephone Pole
- Telephone Manhole (T)
- Telephone Pedestal (T)
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole (HH)
- U/G Telephone Cable LOS B (S.U.E.*) (T)
- U/G Telephone Cable LOS C (S.U.E.*) (T)
- U/G Telephone Cable LOS D (S.U.E.*) (T)
- U/G Telephone Conduit LOS B (S.U.E.*) (TC)
- U/G Telephone Conduit LOS C (S.U.E.*) (TC)
- U/G Telephone Conduit LOS D (S.U.E.*) (TC)
- U/G Fiber Optics Cable LOS B (S.U.E.*) (T FO)
- U/G Fiber Optics Cable LOS C (S.U.E.*) (T FO)
- U/G Fiber Optics Cable LOS D (S.U.E.*) (T FO)

WATER:

- Water Manhole (W)
- Water Meter
- Water Valve
- Water Hydrant
- U/G Water Line LOS B (S.U.E*)
- U/G Water Line LOS C (S.U.E*)
- U/G Water Line LOS D (S.U.E*)
- Above Ground Water Line (A/G Water)

TV:

- TV Pedestal (C)
- TV Tower
- U/G TV Cable Hand Hole (HH)
- U/G TV Cable LOS B (S.U.E.*) (TV)
- U/G TV Cable LOS C (S.U.E.*) (TV)
- U/G TV Cable LOS D (S.U.E.*) (TV)
- U/G Fiber Optic Cable LOS B (S.U.E.*) (TV FO)
- U/G Fiber Optic Cable LOS C (S.U.E.*) (TV FO)
- U/G Fiber Optic Cable LOS D (S.U.E.*) (TV FO)

GAS:

- Gas Valve
- Gas Meter
- U/G Gas Line LOS B (S.U.E.*) (G)
- U/G Gas Line LOS C (S.U.E.*) (G)
- U/G Gas Line LOS D (S.U.E.*) (G)
- Above Ground Gas Line (A/G Gas)

SANITARY SEWER:

- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line (SS)
- Above Ground Sanitary Sewer (A/G Sanitary Sewer)
- SS Forced Main Line LOS B (S.U.E.*) (FSS)
- SS Forced Main Line LOS C (S.U.E.*) (FSS)
- SS Forced Main Line LOS D (S.U.E.*) (FSS)

MISCELLANEOUS:

- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box (S)
- Utility Unknown U/G Line LOS B (S.U.E.*) (?UTL)
- U/G Tank; Water, Gas, Oil
- Underground Storage Tank, Approx. Loc.
- A/G Tank; Water, Gas, Oil
- Geoenvironmental Boring
- U/G Test Hole LOS A (S.U.E.*)
- Abandoned According to Utility Records (AATUR)
- End of Information (E.O.I.)

PROJECT REFERENCE NO.	SHEET NO.
R-4707	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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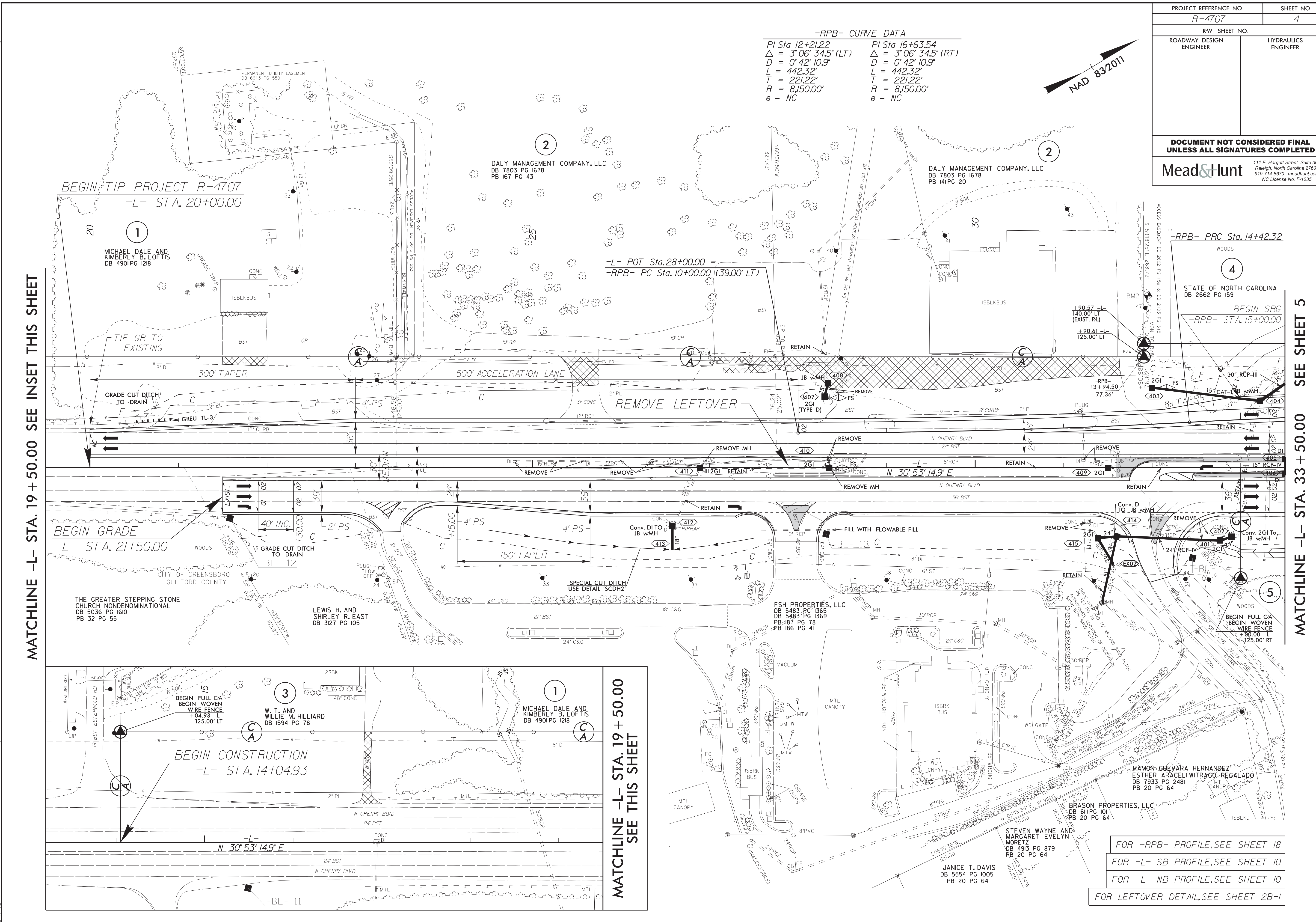
REVISIONS

DESIGN REVISION: EXTENDED -L- NB CONSTRUCTION BACK TO STA 21+50 TO REMOVE MEDIAN LEFTOVER, ADDED DRAINAGE STRUCTURES 409 TO 415.(RJD 10/4/2019)
R/W REVISION: FULL C/A EXTENDED ALONG SOUTHBOUND -L- TO INCLUDE NEW PARCEL 3 (HILLIARD PROPERTY), EXISTING R/W REVISED TO ACTUAL OFFSET.(RJD 9/19/2019)
R/W REVISION: PARCEL 3 ELIMINATED AND COMBINED WITH PARCEL 2, PROPERTY OWNERSHIP IS CONTINUOUS.(RJD 5/15/2019)

8/17/99

-RPB- CURVE DATA

PI Sta 12+21.22	PI Sta 16+63.54
△ = 3° 06' 34.5" (LT)	△ = 3° 06' 34.5" (RT)
D = 0° 42' 10.9"	D = 0° 42' 10.9"
L = 442.32'	L = 442.32'
T = 221.22'	T = 221.22'
R = 8,150.00'	R = 8,150.00'
e = NC	e = NC



NAD 83/2011
MATCHLINE -L- STA. 19+50.00 SEE INSET THIS SHEET
MATCHLINE -L- STA. 33+50.00 SEE SHEET 5
BEGIN TIP PROJECT R-4707
-L- STA. 20+00.00
MICHAEL DALE AND KIMBERLY B. LOFTIS
DB 4901 PG 1218
DALY MANAGEMENT COMPANY, LLC
DB 7803 PG 1678
PB 167 PG 43
DALY MANAGEMENT COMPANY, LLC
DB 7803 PG 1678
PB 141 PG 20
STATE OF NORTH CAROLINA
DB 2662 PG 159
PERMANENT UTILITY EASEMENT
DB 6613 PG 550
-L- POT Sta. 28+00.00 =
-RPB- PC Sta. 10+00.00 (39.00' LT)
-RPB- PRC Sta. 14+42.32
BEGIN SBG
-RPB- STA. 15+00.00
TIE GR TO EXISTING
300' TAPER
500' ACCELERATION LANE
GRADE CUT DITCH TO DRAIN
REMOVE LEFTOVER
N OHENRY BLVD
N 30° 53' 14.9" E
BEGIN GRADE
-L- STA. 21+50.00
40' INC.
150' TAPER
GRADE CUT DITCH TO DRAIN
SPECIAL CUT DITCH USE DETAIL 'SCDH2'
FILL WITH FLOWABLE FILL
CITY OF GREENSBORO
GUILFORD COUNTY
THE GREATER STEPPING STONE CHURCH NONDENOMINATIONAL
DB 5036 PG 1610
PB 32 PG 55
LEWIS H. AND SHIRLEY R. EAST
DB 3127 PG 105
FSH PROPERTIES, LLC
DB 5483 PG 1365
DB 5483 PG 1369
PB 187 PG 78
PB 186 PG 41
BEGIN FULL C/A
BEGIN WOVEN WIRE FENCE
+00.00 -L-
125.00' RT
RAMON GUEVARA HERNANDEZ
ESTHER ARACELI WITRAGO REGALADO
DB 7933 PG 2481
PB 20 PG 64
BRASON PROPERTIES, LLC
DB 6111 PG 101
PB 20 PG 64
STEVEN WAYNE AND MARGARET EVELYN MORETZ
DB 4913 PG 879
PB 20 PG 64
JANICE T. DAVIS
DB 5554 PG 1005
PB 20 PG 64
W. T. AND WILLIE M. HILLIARD
DB 1594 PG 78
BEGIN FULL C/A
BEGIN WOVEN WIRE FENCE
+04.93 -L-
125.00' LT
BEGIN CONSTRUCTION
-L- STA. 14+04.93
MATCHLINE -L- STA. 19+50.00 SEE THIS SHEET

FOR -RPB- PROFILE, SEE SHEET 18
FOR -L- SB PROFILE, SEE SHEET 10
FOR -L- NB PROFILE, SEE SHEET 10
FOR LEFTOVER DETAIL, SEE SHEET 2B-1

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PROJECT REFERENCE NO.	SHEET NO.
R-4707	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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REVISIONS

R/W REVISION: EXISTING R/W REVISED TO ACTUAL OFFSET.(RJD 9/19/2019)

8/17/99

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-L- CURVE DATA

PI Sta 52+64.99
Δ = 3° 42' 45.0" (LT)
D = 0° 15' 00.0"
L = 1,485.00'
T = 742.76'
R = 22,918.31'
e = NC

-LSBI- CURVE DATA

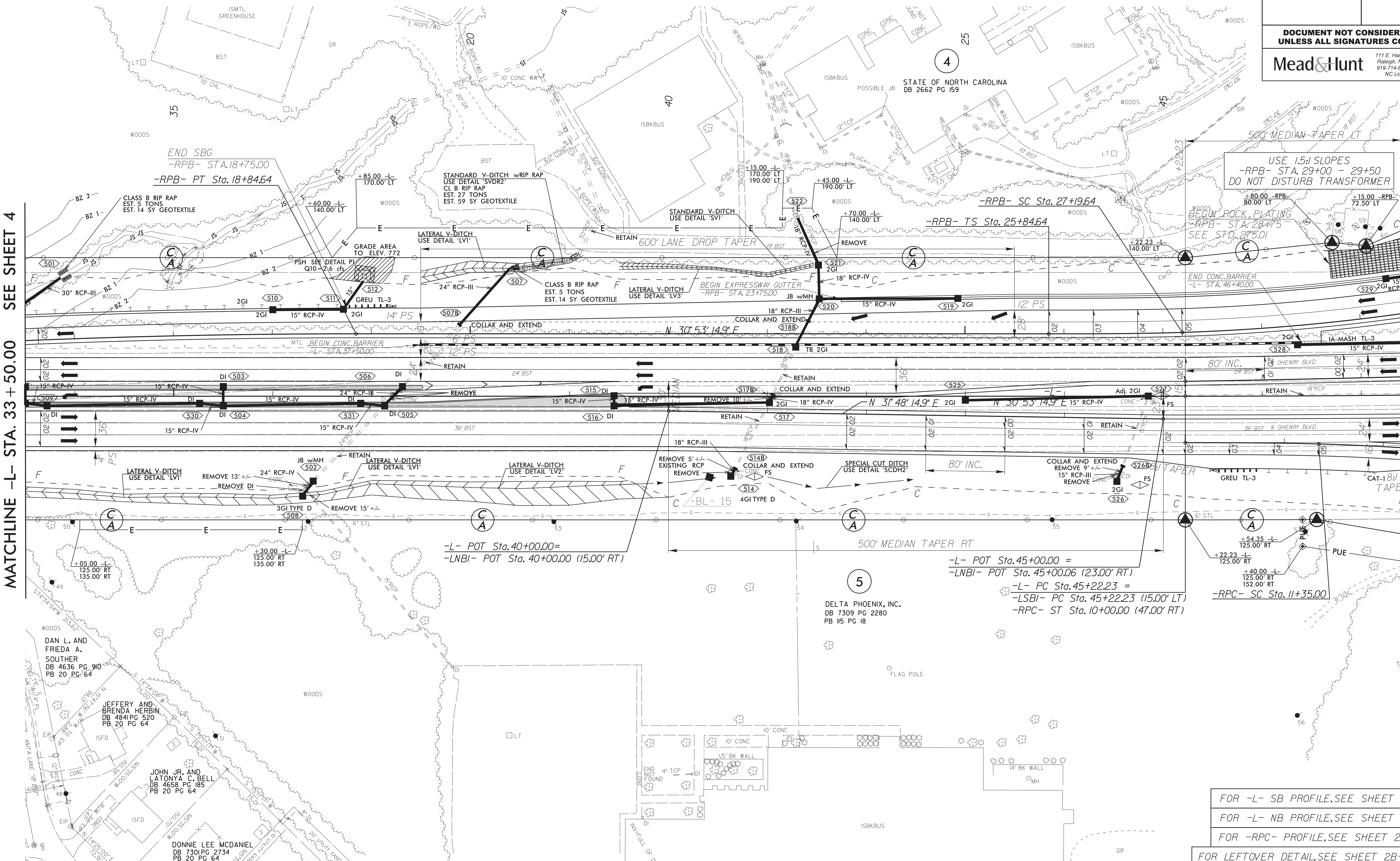
PI Sta 47+72.06
Δ = 1° 15' 00.6" (LT)
D = 0° 15' 00.7"
L = 499.65'
T = 249.83'
R = 22,899.31'
e = NC

-RPB- CURVE DATA

PI Sta 16+63.54	PIs Sta 26+74.65	PI Sta 28+60.83
Δ = 3° 06' 34.5" (RT)	Θs = 1° 50' 29.9"	Δ = 7° 41' 32.6" (LT)
D = 0° 42' 10.9"	Ls = 135.00'	D = 2° 43' 42.1"
L = 442.32'	LT = 90.00'	L = 281.94'
T = 221.22'	ST = 45.00'	T = 141.18'
R = 8,150.00'	INC = 45'	R = 2,100.00'
e = NC		e = 0.05

-RPC- CURVE DATA

PIs Sta 10+90.00	PI Sta 12+39.90
Θs = 1° 36' 41.2"	Δ = 5° 00' 20.0" (RT)
Ls = 135.00'	D = 2° 23' 14.4"
LT = 90.00'	L = 209.67'
ST = 45.00'	T = 104.90'
INC = 45'	R = 2,400.00'
	e = 0.05



FOR -L- SB PROFILE, SEE SHEET 11
FOR -L- NB PROFILE, SEE SHEET 11
FOR -RPC- PROFILE, SEE SHEET 20
FOR LEFTOVER DETAIL, SEE SHEET 2B-1
FOR -RPB- PROFILE, SEE SHEETS 18 & 19

REVISIONS

R/W REVISION: PLACED R/W ENTIRELY AROUND PARCEL 8.(RJD 9/24/2019)
R/W REVISION: EXISTING R/W REVISED TO ACTUAL OFFSET.(RJD 9/19/2019)
R/W REVISION: MONUMENTS AND R/W REVISED ALONG PROPERTY LINE OF PARCELS 6 AND 11(-Y4- INSET BELOW).(RJD 5/15/2019)

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

TRAFFIC VOLUME DATA

	9,200 / 13,000	REEDY FORK PARKWAY	
US 29 40,200 / 49,000	5,400 / 7,600	2,800 / 3,800	US29 35,000 / 39,800
	3,000 / 6,400	400 / 1,000	
2020 AADT / 2040 AADT	4,400 / 9,000	REEDY FORK PARKWAY	

-Y4- CURVE DATA
PI Sta 13+74.94
△ = 52° 40′ 40.7″ (RT)
D = 28° 38′ 52.4″
L = 183.88′
T = 99.02′
R = 200.00′

-Y1- CURVE DATA
PI Sta 20+29.91
△ = 61° 41′ 51.8″ (LT)
D = 7° 09′ 43.1″
L = 861.46′
T = 477.82′
R = 800.00′
e = 0.02

-Y1A- CURVE DATA
PI Sta 31+54.91
△ = 98° 00′ 00.0″ (LT)
D = 114° 35′ 29.6″
L = 85.52′
T = 57.52′
R = 50.00′
e = 0.02

PROJECT REFERENCE NO.	SHEET NO.
R-4707	6

R/W SHEET NO.

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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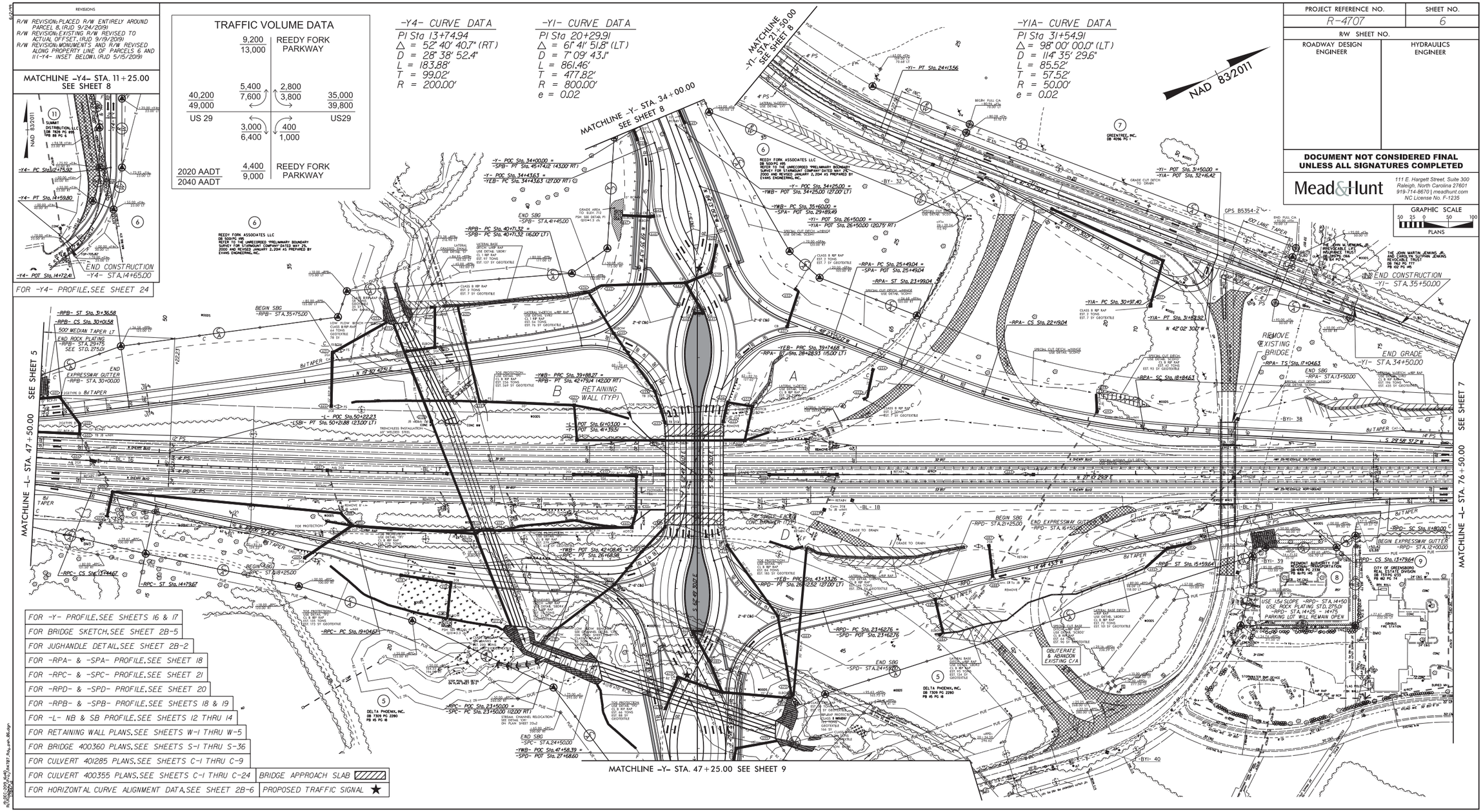

FOR -Y- PROFILE, SEE SHEETS 16 & 17	
FOR BRIDGE SKETCH, SEE SHEET 2B-5	
FOR JUGHANDLE DETAIL, SEE SHEET 2B-2	
FOR -RPA- & -SPA- PROFILE, SEE SHEET 18	
FOR -RPC- & -SPC- PROFILE, SEE SHEET 21	
FOR -RPD- & -SPD- PROFILE, SEE SHEET 20	
FOR -RPB- & -SPB- PROFILE, SEE SHEETS 18 & 19	
FOR -L- NB & SB PROFILE, SEE SHEETS 12 THRU 14	
FOR RETAINING WALL PLANS, SEE SHEETS W-1 THRU W-5	
FOR BRIDGE 400360 PLANS, SEE SHEETS S-1 THRU S-36	
FOR CULVERT 401285 PLANS, SEE SHEETS C-1 THRU C-9	
FOR CULVERT 400355 PLANS, SEE SHEETS C-1 THRU C-24	BRIDGE APPROACH SLAB ▨
FOR HORIZONTAL CURVE ALIGNMENT DATA, SEE SHEET 2B-6	PROPOSED TRAFFIC SIGNAL ★

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PROJECT REFERENCE NO.	SHEET NO.
R-4707	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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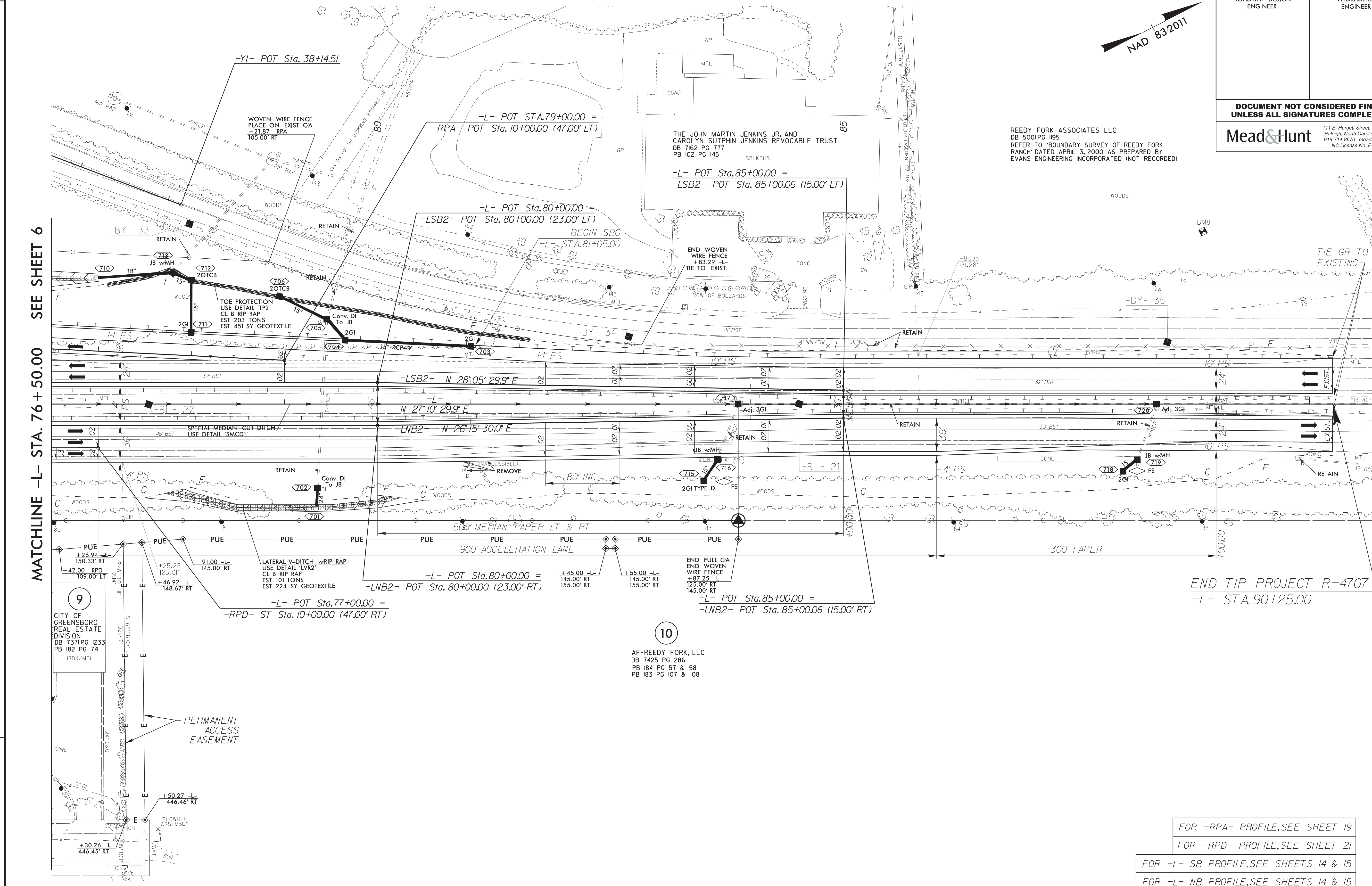
8/17/99

REVISIONS

R/W REVISION: EXISTING R/W REVISED TO ACTUAL OFFSET.(RJD 9/19/2019)
R/W REVISION: REVISED PERMANENT ACCESS EASEMENT AND MARKERS ON PARCEL 10 DUE TO UPDATED SURVEY.(RJD 5/15/2019)



NAD 83/2011
MATCHLINE -L- STA. 76+50.00 SEE SHEET 6
-Y1- POT Sta. 38+14.51
WOVEN WIRE FENCE PLACE ON EXIST. C/A +21.87 -RPA- 105.00' RT
-L- POT STA.79+00.00 = -RPA- POT Sta. 10+00.00 (47.00' LT)
THE JOHN MARTIN JENKINS JR. AND CAROLYN SUTPHIN JENKINS REVOCABLE TRUST DB 7162 PG 777 PB 102 PG 145
-L- POT Sta.85+00.00 = -LSB2- POT Sta. 85+00.06 (15.00' LT)
REEDY FORK ASSOCIATES LLC DB 5001 PG 1195 REFER TO 'BOUNDARY SURVEY OF REEDY FORK RANCH' DATED APRIL 3, 2000 AS PREPARED BY EVANS ENGINEERING INCORPORATED (NOT RECORDED)
-L- POT Sta.80+00.00 = -LSB2- POT Sta. 80+00.00 (23.00' LT)
BEGIN SBG -L- STA.81+05.00
END WOVEN WIRE FENCE +83.29 -L- TIE TO EXIST.
ROW OF BOLLARDS
TIE GR TO EXISTING
-BY- 33
-BY- 34
-BY- 35
TOE PROTECTION USE DETAIL 'TP2' CL B RIP RAP EST. 203 TONS EST. 451 SY GEOTEXTILE
Conv. DI To JB
-LSB2- N 28°05' 29.9" E
-L- N 27°10' 29.9" E
-LNB2- N 26°15' 30.0" E
-BL- 20
-BL- 21
SPECIAL MEDIAN CUT DITCH USE DETAIL 'SMCD1'
RETAIN
REMOVE
Adj. 3GI
JB w/MH
2GI TYPE D
80' INC
500' MEDIAN TAPER LT & RT
900' ACCELERATION LANE
300' TAPER
LATERAL V-DITCH w/RIP RAP USE DETAIL 'LVR2' CL B RIP RAP EST. 101 TONS EST. 224 SY GEOTEXTILE
-L- POT Sta.80+00.00 = -LNB2- POT Sta. 80+00.00 (23.00' RT)
-L- POT Sta.77+00.00 = -RPD- ST Sta. 10+00.00 (47.00' RT)
END FULL C/A END WOVEN WIRE FENCE +87.25 -L- 125.00' RT 145.00' RT
-L- POT Sta.85+00.00 = -LNB2- POT Sta. 85+00.06 (15.00' RT)
END TIP PROJECT R-4707 -L- STA.90+25.00
9
CITY OF GREENSBORO REAL ESTATE DIVISION DB 7371 PG 1233 PB 182 PG 74
10
AF-REEDY FORK, LLC DB 7425 PG 286 PB 184 PG 57 & 58 PB 183 PG 107 & 108
PERMANENT ACCESS EASEMENT
+50.27 -L- 446.46' RT
+30.26 -L- 446.45' RT
BLOWOFF ASSEMBLY

FOR -RPA- PROFILE, SEE SHEET 19
FOR -RPD- PROFILE, SEE SHEET 21
FOR -L- SB PROFILE, SEE SHEETS 14 & 15
FOR -L- NB PROFILE, SEE SHEETS 14 & 15

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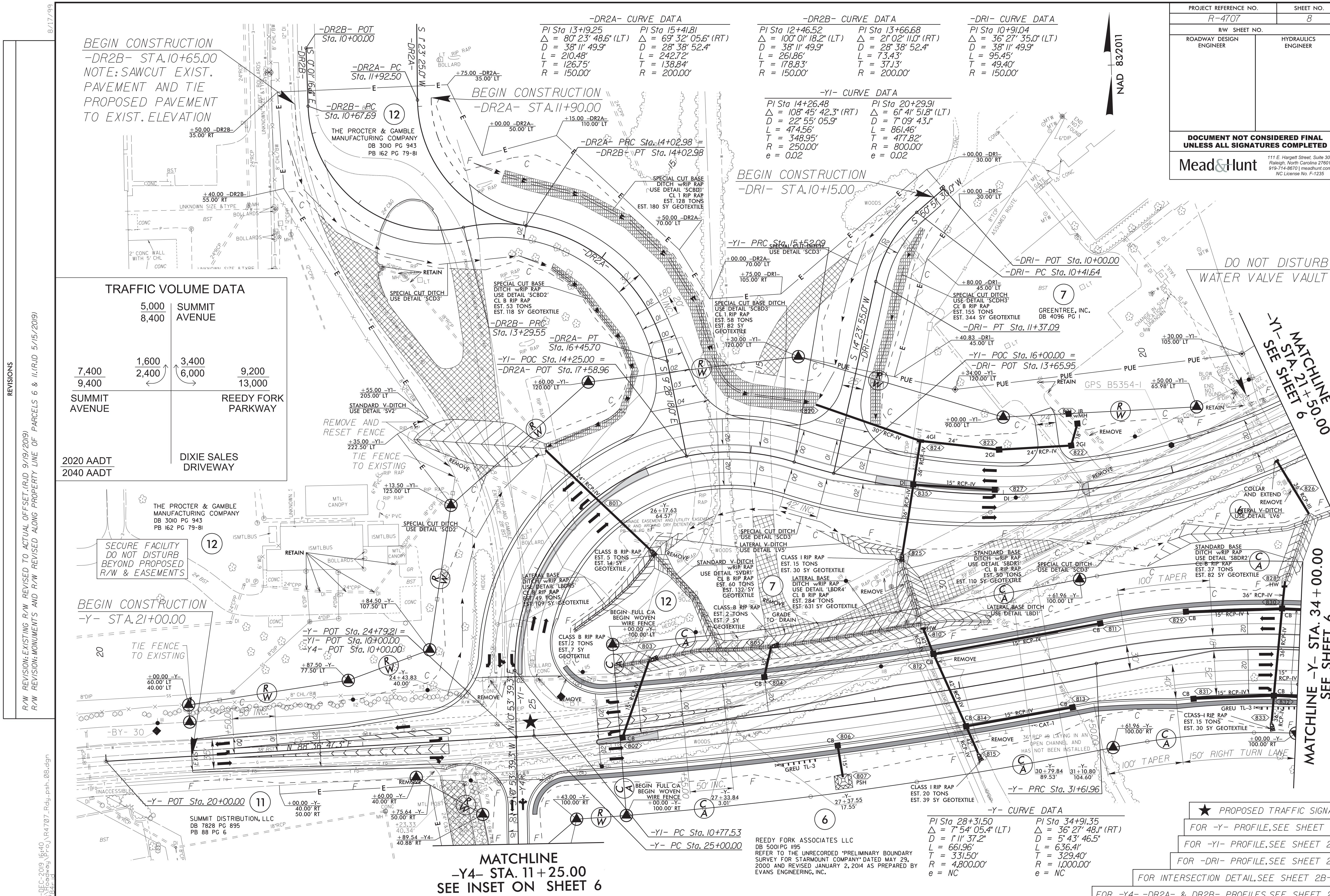
PROJECT REFERENCE NO. R-4707
SHEET NO. 8
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
Mead&Hunt
111 E. Hargett Street, Suite 300 Raleigh, North Carolina 27601 919-714-8670 | meadhunt.com NC License No. F-1235
NAD 83/2011
-DR2A- CURVE DATA
PI Sta 13+19.25 △ = 80° 23' 48.6" (LT) D = 38° 11' 49.9" L = 210.48' T = 126.75' R = 150.00'
PI Sta 15+41.81 △ = 69° 32' 05.6" (RT) D = 28° 38' 52.4" L = 242.72' T = 138.84' R = 200.00'
-DR2B- CURVE DATA
PI Sta 12+46.52 △ = 100° 01' 18.2" (LT) D = 38° 11' 49.9" L = 261.86' T = 178.83' R = 150.00'
PI Sta 13+66.68 △ = 21° 02' 11.0" (RT) D = 28° 38' 52.4" L = 73.43' T = 37.13' R = 200.00'
-DR1- CURVE DATA
PI Sta 10+91.04 △ = 36° 27' 35.0" (LT) D = 38° 11' 49.9" L = 95.45' T = 49.40' R = 150.00'
-Y1- CURVE DATA
PI Sta 14+26.48 △ = 108° 45' 42.3" (RT) D = 22° 55' 05.9" L = 474.56' T = 348.95' R = 250.00' e = 0.02
PI Sta 20+29.91 △ = 61° 41' 51.8" (LT) D = 7° 09' 43.1" L = 861.46' T = 477.82' R = 800.00' e = 0.02
-Y- CURVE DATA
PI Sta 28+31.50 △ = 7° 54' 05.4" (LT) D = 1° 11' 37.2" L = 661.96' T = 331.50' R = 4,800.00' e = NC
PI Sta 34+91.35 △ = 36° 27' 48.1" (RT) D = 5° 43' 46.5" L = 636.41' T = 329.40' R = 1,000.00' e = NC
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 -DR1- STA.10+15.00
BEGIN CONSTRUCTION -Y- STA.21+00.00
-DR2B- POT Sta. 10+00.00
-DR2A- PC Sta. 11+92.50
-DR2B- PC Sta. 10+67.69
-DR2A- PRC Sta. 14+02.98 = -DR2B- PT Sta. 14+02.98
-DR2B- PRC Sta. 13+29.55
-DR2A- PT Sta. 16+45.70
-Y1- POC Sta. 14+25.00 = -DR2A- POT Sta. 17+58.96
-Y1- PRC Sta. 15+52.09
-DR1- POT Sta. 10+00.00
-DR1- PC Sta. 10+41.64
-DR1- PT Sta. 11+37.09
-Y1- POC Sta. 16+00.00 = -DR1- POT Sta. 13+65.95
-Y- POT Sta. 24+79.21 = -Y1- POT Sta. 10+00.00 -Y4- POT Sta. 10+00.00
-Y- POT Sta. 20+00.00
-Y1- PC Sta. 10+77.53
-Y- PC Sta. 25+00.00
-Y- PRC Sta. 31+61.96
TRAFFIC VOLUME DATA
SUMMIT AVENUE 5,000 / 8,400
SUMMIT AVENUE 7,400 / 9,400
1,600 / 2,400
3,400 / 6,000
REEDY FORK PARKWAY 9,200 / 13,000
DIXIE SALES DRIVEWAY
2020 AADT
2040 AADT
THE PROCTER & GAMBLE MANUFACTURING COMPANY DB 3010 PG 943 PB 162 PG 79-81
GREENTREE, INC. DB 4096 PG 1
SUMMIT DISTRIBUTION, LLC DB 7828 PG 895 PB 88 PG 6
REEDY FORK ASSOCIATES LLC DB 5001 PG 1195 REFER TO THE UNRECORDED "PRELIMINARY BOUNDARY SURVEY FOR STARMOUNT COMPANY" DATED MAY 29, 2000 AND REVISED JANUARY 2, 2014 AS PREPARED BY EVANS ENGINEERING, INC.
SECURE FACILITY DO NOT DISTURB BEYOND PROPOSED R/W & EASEMENTS
DO NOT DISTURB WATER VALVE VAULT
REMOVE AND RESET FENCE
TIE FENCE TO EXISTING
MATCHLINE -Y1- STA. 21+50.00 SEE SHEET 6
MATCHLINE -Y- STA. 34+00.00 SEE SHEET 6
MATCHLINE -Y4- STA. 11+25.00 SEE INSET ON SHEET 6
100' TAPER
150' RIGHT TURN LANE
PROPOSED TRAFFIC SIGNAL
FOR -Y- PROFILE, SEE SHEET 16
FOR -Y1- PROFILE, SEE SHEET 22
FOR -DR1- PROFILE, SEE SHEET 23
FOR INTERSECTION DETAIL, SEE SHEET 2B-3
FOR -Y4-, -DR2A- & DR2B- PROFILES, SEE SHEET 24
REVISIONS
R/W REVISION: EXISTING R/W REVISED TO ACTUAL OFFSET. (RJD 9/19/2019)
R/W REVISION: MONUMENTS AND R/W REVISED ALONG PROPERTY LINE OF PARCELS 6 & 11. (RJD 5/15/2019)
8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-4707	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

NAD 83/2011

8/17/99

REVISIONS

R/W REVISION: REVISED PROPOSED DUE TO AVOID EXISTING EASEMENT ON PARCEL 14, REVISED PROPOSED TCE TO AVOID EXISTING EASEMENT ON PARCEL 15.(RJD 11/12/2019)
R/W REVISION: EXISTING R/W REVISED TO ACTUAL OFFSET. ADDED R/W TO PARCEL 13.(RJD 9/19/2019)

MATCHLINE -Y- STA. 47+25.00 SEE SHEET 6

-Y2- CURVE DATA

PI Sta 10+33.66	PI Sta 13+21.66	PI Sta 19+16.32
Δ = 4° 54' 06.8" (LT)	Δ = 64° 54' 25.0" (LT)	Δ = 98° 07' 07.4" (RT)
D = 7° 17' 06.1"	D = 14° 19' 26.2"	D = 28° 38' 52.4"
L = 67.29'	L = 453.14'	L = 342.50'
T = 33.66'	T = 254.37'	T = 230.56'
R = 786.49'	R = 400.00'	R = 200.00'
e = EXISTING	e = 0.04	e = 0.04

-Y- CURVE DATA

PI Sta 51+32.55	PI Sta 57+06.40
Δ = 9° 10' 26.7" (RT)	Δ = 22° 32' 57.8" (LT)
D = 1° 11' 37.2"	D = 5° 59' 58.4"
L = 768.57'	L = 375.85'
T = 385.11'	T = 190.39'
R = 4,800.00'	R = 955.00'
e = NC	e = EXISTING

TRAFFIC VOLUME DATA

		OLD REEDY FORK PARKWAY	
4,400 / 9,000			3,400 / 8,100
REEDY FORK PARKWAY	1,700 / 2,100	700 / 1,200	REEDY FORK PARKWAY
2020 AADT / 2040 AADT	2,400 / 3,300	ECKERSON ROAD	

-Y2- PC Sta. 10+00.00
BEGIN CONSTRUCTION
-Y2- STA. 10+50.00
-Y2- PCC Sta. 10+67.29

-Y2- PC Sta. 16+85.76
-Y2- PT Sta. 15+20.42

-YWB- PRC Sta. 48+32.89
-YEB- PRC Sta. 48+15.26
-Y- PC Sta. 47+47.44
-YEB- POC Sta. 47+81.23 = -SPC- POT Sta. 28+24.47
-Y- POC Sta. 48+58.58 = -YEB- PT Sta. 49+00.72 (27.00' RT)
-Y- POC Sta. 48+60.56 = -YWB- PT Sta. 49+13.58 (27.00' LT)

-Y- PRC Sta. 55+16.01
-Y- POC Sta. 55+46.24 = -Y2- POT Sta. 20+67.26 = -Y5- POT Sta. 10+00.00

-Y- PT Sta. 58+91.86
END CONSTRUCTION
-Y- STA. 58+80.00

-Y2- PT Sta. 20+28.26

-Y5- POT Sta. 12+54.62
END CONSTRUCTION
-Y5- STA. 12+10.00

S 63° 33' 59.6" E

1.300 ACRES DEDICATED TO THE CITY OF GREENSBORO AS DRAINAGEWAY AND OPEN SPACE PB 183 PG 109 AND 110

4.12± ACRES DEDICATED TO THE CITY OF GREENSBORO AS DRAINAGEWAY AND OPEN SPACE PB 183 PG 108 AND 110

(5) DELTA PHOENIX, INC.
DB 7309 PG 2280
PB 115 PG 18

(13) AF-REEDY FORK COMMERCIAL, LLC
DB 7425 PG 292
PB 183 PG 111 & 112

(14) AF-REEDY FORK COMMERCIAL, LLC
DB 7425 PG 292
PB 183 PG 109 & 110

(15) AF-REEDY FORK COMMERCIAL, LLC
DB 7425 PG 292
PB 183 PG 113 & 114

FOR -Y2- PROFILE, SEE SHEET 22
FOR -Y5- PROFILE, SEE SHEET 23
FOR -Y- PROFILE, SEE SHEETS 16 & 17
FOR INTERSECTION DETAIL, SEE SHEET 2B-4

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