



Pre-Construction Notification (PCN) Form

For Nationwide Permits and Regional General Permits
(along with corresponding Water Quality Certifications)

September 29, 2018 Ver 3

Please note: fields marked with a red asterisk * below are required. You will not be able to submit the form until all mandatory questions are answered.

Also, if at any point you wish to print a copy of the E-PCN, all you need to do is right-click on the document and you can print a copy of the form.

Below is a link to the online help file.

<https://edocs.deq.nc.gov/WaterResources/0/edoc/624704/PCN%20Help%20File%202018-1-30.pdf>

A. Processing Information

County (or Counties) where the project is located: *

Wake

Is this project a public transportation project? *

☒ Yes ☐ No

This is any publicly funded by municipal, state or federal funds road, rail, airport transportation project.

Is this a NCDOT Project? *

☒ Yes ☐ No

(NCDOT only) T.I.P. or state project number:

U-2719

WBS # *

35868.3.4

(for NCDOT use only)

1a. Type(s) of approval sought from the Corps: *

☒ Section 404 Permit (wetlands, streams and waters, Clean Water Act)

☐ Section 10 Permit (navigable waters, tidal waters, Rivers and Harbors Act)

1b. What type(s) of permit(s) do you wish to seek authorization? *

☐ Nationwide Permit (NWP)

☒ Regional General Permit (RGP)

☐ Standard (IP)

This form may be used to initiate the standard/individual permit process with the Corps. Please contact your Corps representative concerning submittals for standard permits. All required items that are not provided in the E-PCN can be added to the miscellaneous upload area located at the bottom of this form.

1c. Has the NWP or GP number been verified by the Corps? *

☒ Yes ☐ No

Regional General Permit (RGP) Number:

198200031 - NCDOT Bridges, Widening Projects 2015

RGP Numbers (for multiple RGPs):

List all RGP numbers you are applying for not on the drop down list.

1d. Type(s) of approval sought from the DWR: *

check all that apply

☒ 401 Water Quality Certification - Regular

☐ Non-401 Jurisdictional General Permit

☐ Individual Permit

☐ 401 Water Quality Certification - Express

☒ Riparian Buffer Authorization

1e. Is this notification solely for the record because written approval is not required?

*

For the record only for DWR 401 Certification:

☐ Yes ☒ No

For the record only for Corps Permit:

☐ Yes ☒ No

1f. Is this an after-the-fact permit application? *

☐ Yes

☒ No

1g. Is payment into a mitigation bank or in-lieu fee program proposed for mitigation of impacts?

If so, attach the acceptance letter from mitigation bank or in-lieu fee program

☒ Yes ☐ No

Acceptance Letter Attachment

Click the upload button or drag and drop files here to attach document

U-2719 - STR - Buffer - NS 01.pdf

116.72KB

FILETYPE MUST BE PDF

1h. Is the project located in any of NC's twenty coastal counties? *

☐ Yes ☒ No

1j. Is the project located in a designated trout watershed? *

☐ Yes ☒ No

Link to trout information: <http://www.saw.usace.army.mil/Missions/Regulatory-Permit-Program/Agency-Coordination/Trout.aspx>

B. Applicant Information

1a. Who is the Primary Contact? *

Jason Dilday

1b. Primary Contact Email: *

jldilday@ncdot.gov

1c. Primary Contact Phone: *

(xxx)xxx-xxxx

(919)707-6111

1d. Who is applying for the permit? *

☒ Owner

(Check all that apply)

☐ Applicant (other than owner)

1e. Is there an Agent/Consultant for this project? *

☐ Yes ☒ No

2. Owner Information

2a. Name(s) on recorded deed: *

North Carolina Department of Transportation

2b. Deed book and page no.:

2c. Responsible party:

(for Corporations)

2d. Address *

Street Address

1598 Mail Service

Address Line 2

City

Raleigh

Postal / Zip Code

27699

State / Province / Region

NC

Country

United States of America

2e. Telephone Number: *

(xxx)xxx-xxxx

(919)707-6111

2f. Fax Number:

(xxx)xxx-xxxx

2g. Email Address: *

jldilday@ncdot.gov

C. Project Information and Prior Project History

1. Project Information

1a. Name of project: *

I-440/US 1 from south of Walnut Street to north of Wade Avenue - U-2719 (Central)

1b. Subdivision name:

(if appropriate)

1c. Nearest municipality / town: *

Raleigh

2. Project Identification

2a. Property Identification Number:

(tax PIN or parcel ID)

See attached mapping

2b. Property size:

(in acres)

2c. Project Address

Street Address

Address Line 2

City

State / Province / Region

Postal / Zip Code

Country

2d. Site coordinates in decimal degrees

Please collect site coordinates in decimal degrees. Use between 4-6 digits (unless you are using a survey-grade GPS device) after the decimal place as appropriate, based on how the location was determined. (For example, most mobile phones with GPS provide locational precision in decimal degrees to map coordinates to 5 or 6 digits after the decimal place.)

Latitude: *

35.781366
ex: 34.208504

Longitude: *

-78.702782
-77.796371

3. Surface Waters

3a. Name of the nearest body of water to proposed project: *

Walnut Creek, Lake Johnson, Simmons Branch, Bushy Creek, Rocky Branch, and House Creek

3b. Water Resources Classification of nearest receiving water: *

Walnut Creek: C; NSW, Walnut Creek (Lake Johnson): B; NSW, Simmons Branch: C; NSW, Bushy Creek: C; NSW, Rocky Branch: C; NSW, and House Creek: C; NSW

[Surface Water Lookup](#)

3c. What river basin(s) is your project located in? *

Neuse

3d. Please provide the 12-digit HUC in which the project is located. *

030202011101, 030202010803, and 030202010804

[River Basin Lookup](#)

4. Project Description and History

4a. Describe the existing conditions on the site and the general land use in the vicinity of the project at the time of this application: *

Land use within the vicinity is residential, institutional/commercial development, forested, and existing I-440/US 1.

4b. Have Corps permits or DWR certifications been obtained for this project (including all prior phases) in the past? *

☐ Yes ☒ No ☐ Unknown

4d. Attach an 8 1/2 X 11 excerpt from the most recent version of the USGS topographic map indicating the location of the project site. (for DWR)

[Click the upload button or drag and drop files here to attach document](#)
File type must be pdf

4e. Attach an 8 1/2 X 11 excerpt from the most recent version of the published County NRCS Soil Survey map depicting the project site. (for DWR)

[Click the upload button or drag and drop files here to attach document](#)
File type must be pdf

4f. List the total estimated acreage of all existing wetlands on the property:

3.14 (study area)

4g. List the total estimated linear feet of all existing streams on the property:

(intermittent and perennial)
20,770 (study area)

4h. Explain the purpose of the proposed project: *

The purpose of the project is to improve traffic flow, make the roadway operate more efficiently, and enhance mobility on this segment of I-440. The project will address the need to increase capacity, improve the layout of the roadway and interchanges, and fix poor conditions along this segment of I-440.

4i. Describe the overall project in detail, including indirect impacts and the type of equipment to be used: *

The project involves widening I-440 from Walnut Street to Wade Avenue, upgrading an existing partial clover at Jones Franklin Road, replacing a bridge in place at Athens Drive and Melbourne Road, a double crossover diamond at Western Boulevard, constructing a bridge to the North at Ligon Street, and creating a slight detour alternative-revised with Reedy Creek Greenway adjacent to I-440 at Wade Avenue and Hillsborough Street. Standard road building equipment, such as trucks, dozers, and cranes will be used.

4j. Please upload project drawings for the proposed project.

[Click the upload button or drag and drop files here to attach document](#)

U2719_BufferImpacts_20190627.pdf

12.55MB

U2719_PermitDrawings_20190627.pdf

29.55MB

File type must be pdf

5. Jurisdictional Determinations

5a. Have the wetlands or streams been delineated on the property or proposed impact areas? *

☒ Yes ☐ No ☐ Unknown

Comments:

5b. If the Corps made a jurisdictional determination, what type of determination was made? *

☒ Preliminary ☐ Approved ☐ Not Verified ☐ Unknown ☐ N/A

Corps AID Number:

Example: SAW-2017-99999
SAW-2012-01414

5c. If 5a is yes, who delineated the jurisdictional areas?

Name (if known): Adam Efird
Agency/Consultant Company: Atkins Engineering
Other:

5d. List the dates of the Corp jurisdiction determination or State determination if a determination was made by the Corps or DWR.

September 26, 2013 with USACE (E. Alsmeyer)
October 1, 2013 with NCDWR (R. Ridings)

5d1. Jurisdictional determination upload

Click the upload button or drag and drop files here to attach document

17-06-21-NCDOT_U-2719-PJD.pdf	43.96KB
19-06-26_AJD_Non-JD Pond OWD_U-2719_I-440_Wake.pdf	266.07KB
SAW-2012-01414-JD.pdf	295.82KB

File type must be PDF

6. Future Project Plans

6a. Is this a phased project? *

☐ Yes ☒ No

Are any other NWP(s), regional general permit(s), or individual permits(s) used, or intended to be used, to authorize any part of the proposed project or related activity? This includes other separate and distant crossing for linear projects that require Department of the Army authorization but don't require pre-construction notification.

City of Raleigh: White Oak Lake Reconstruction (35.78, -78.71)
Project number: 20061565
See attached information from City of Raleigh Website on Permitting and Schedule

D. Proposed Impacts Inventory

1. Impacts Summary

1a. Where are the impacts associated with your project? (check all that apply):

☒ Wetlands ☒ Streams-tributaries ☒ Buffers
☒ Open Waters ☐ Pond Construction

2. Wetland Impacts

If there are wetland impacts proposed on the site, then complete this question for each wetland area impacted.

"W." will be used in the table below to represent the word "wetland".

2a. Site # * (?)	2a1 Reason * (?)	2b. Impact type * (?)	2c. Type of W. *	2d. W. name *	2e. Forested *	2f. Type of Jurisdiction * (?)	2g. Impact area *
2,6,10,11	Fill, Excavation, Mech Clearing	P	Bottomland Hardwood Forest	WK,WF, WJ, WI	Yes	Corps	0.040 (acres)

2g. Total Temporary Wetland Impact

0.000

2g. Total Permanent Wetland Impact

0.040

2g. Total Wetland Impact

0.040

2h. Comments:

See the Attached Table for detailed wetland impacts as well as the permit summary impact table located within the Wetland/Stream Permit Site Plans.

3. Stream Impacts

If there are perennial or intermittent stream impacts (including temporary impacts) proposed on the site, then complete this question for all stream sites impacted.

"S." will be used in the table below to represent the word "stream".

	3a. Reason for impact [*] (?)	3b. Impact type [*]	3c. Type of impact [*]	3d. S. name [*]	3e. Stream Type [*] (?)	3f. Type of Jurisdiction [*]	3g. S. width [*]	3h. Impact length [*]
S1	Construction	Permanent	Other	Varies	Perennial	Both	1 Average (feet)	1,499 (linear feet)
S2	Construction	Temporary	Other	Varies	Intermittent	Both	1 Average (feet)	699 (linear feet)

** All Perennial or Intermittent streams must be verified by DWR or delegated local government.

3i. Total jurisdictional ditch impact in square feet:

0

3i. Total permanent stream impacts:

1,499

3i. Total temporary stream impacts:

699

3i. Total stream and ditch impacts:

700

3j. Comments:

See the Attached Table for Stream Impacts for detailed stream impacts as well as the permit summary impact table located within the Wetland/Stream Permit Site Plans. Numbers above represent total permanent and temporary impacts for the project. Please Note item 3i above is calculating incorrectly from the table. Total permanent and temporary stream impacts are 2,198 lf.

4. Open Water Impacts

If there are proposed impacts to lakes, ponds, estuaries, tributaries, sounds, the Atlantic Ocean, or any other open water of the U.S. then individually list all open water impacts below.

4a. Site # [*] (?)	4a1. Impact Reason	4b. Impact type [*] (?)	4c. Name of waterbody (?)	4d. Activity type [*]	4e. Waterbody type [*]	4f. Impact area [*]
5	Draining/Filling Pond	P	OWD	Drainage	Pond	1.25 (acres)

4g. Total temporary open water impacts:

0.00

4g. Total permanent open water impacts:

1.25

4g. Total open water impacts:

1.25

4h. Comments:

6. Buffer Impacts (for DWR)

If project will impact a protected riparian buffer, then complete the chart below. Individually list all buffer impacts below.

6a. Project is in which protect basin(s)? ^{*}

Check all that apply.

☒ Neuse

☐ Catawba

☐ Goose Creek

☐ Other

☐ Tar-Pamlico

☐ Randleman

☐ Jordan Lake

6b. Impact Type [*] (?)	6c. Per or Temp [*] (?)	6d. Stream name [*]	6e. Buffer mitigation required? [*]	6f. Zone 1 impact [*]	6g. Zone 2 impact [*]
1, 3, 4, 7, 12, 14, 15, 16, 17, 19, 20	P	SAK, SX, SW, ST, SS, SO, SP, SN, SC, SE, SW	No	41,206 (square feet)	19,358 (square feet)
4, 7, 9, 13, 14, 16, 18, 21	P	SW, ST, SU, SR, SO, SN, SAN, SC	Yes	36,666 (square feet)	20,060 (square feet)

6h. Total buffer impacts:

	Zone 1	Zone 2
Total Temporary impacts:	0.00	0.00

	Zone 1	Zone 2
Total Permanent impacts:	77,872.00	39,418.00

	Zone 1	Zone 2
Total combined buffer impacts:	77,872.00	39,418.00

6i. Comments:

See the Attached Table for Stream Impacts for detailed stream impacts as well as the Riparian Buffer Impacts Summary Table located with the plan sheets for additional information.

Supporting Documentation - i.e. Impact Maps, Plan Sheet, etc.

Click the upload button or drag and drop files here to attach document
File must be PDF

E. Impact Justification and Mitigation

1. Avoidance and Minimization

1a. Specifically describe measures taken to avoid or minimize the proposed impacts in designing the project:*

See attached Site Specific Avoidance and Minimization Efforts in the Miscellaneous Section.

1b. Specifically describe measures taken to avoid or minimize the proposed impacts through construction techniques:*

Erosion and sedimentation BMPs will be installed prior to construction. Water will be diverted around the work area to prevent sedimentation of downstream aquatic resources. Impacts will be minimized by strict enforcement of Best Management Practices for the protection of surface waters, restrictions against the staging of equipment in or adjacent to waters of the US and coordination (including a pre-construction meeting) with the Division Environmental Supervisor. Additionally, the outside buffer wetland and/or water boundary located within the construction corridor will be clearly marked by highly visible fencing prior to any land disturbing activities.

2. Compensatory Mitigation for Impacts to Waters of the U.S. or Waters of the State

2a. Does the project require Compensatory Mitigation for impacts to Waters of the U.S. or Waters of the State?

☒ Yes ☐ No

2c. If yes, mitigation is required by (check all that apply):

☒ DWR ☒ Corps

2d. If yes, which mitigation option(s) will be used for this project?

☐ Mitigation bank ☒ Payment to in-lieu fee program ☐ Permittee Responsible Mitigation

4. Complete if Making a Payment to In-lieu Fee Program

4a. Approval letter from in-lieu fee program is attached.

☒ Yes ☐ No

4b. Stream mitigation requested:

(linear feet)
860

4c. If using stream mitigation, what is the stream temperature:

warm

NC Stream Temperature Classification Maps can be found under the Mitigation Concepts tab on the Wilmington District's RIBITS website.

4d. Buffer mitigation requested (DWR only):

(square feet)
56,726

4e. Riparian wetland mitigation requested:

(acres)
0

4f. Non-riparian wetland mitigation requested:

(acres)

4g. Coastal (tidal) wetland mitigation requested:

(acres)

4h. Comments

Please see attached summary from the onsite mitigation ratio meeting held on March 28th, 2019. Please note 664 If of stream impact did not require mitigation due to bank stabilization. No mitigation is proposed for wetlands due to the minimal impact of 0.04 ac.

6. Buffer mitigation (State Regulated Riparian Buffer Rules) - required by DWR

6a. Will the project result in an impact within a protected riparian buffer that requires buffer mitigation? If yes, you must fill out this entire form - please contact DWR for more information.

☒ Yes ☐ No

6b. If yes, then identify the square feet of impact to each zone of the riparian buffer that requires mitigation calculate the amount of mitigation required in the table below.

	6c. Reason for impact	6d. Total impact (square feet)	Multiplier	6e. Required mitigation (square feet)	
Zone 1	Roadway Construction	36,610	3	109,830	

Zone 2	Roadway Construction	20,035	1.5	30,053
--------	----------------------	--------	-----	--------

6f. Total buffer mitigation required

139,883

6g. If buffer mitigation is required, is payment to a mitigation bank or NC Division of Mitigation Services proposed?

☒ Yes ☐ No

6h. Attach the acceptance letter from the mitigation bank or NC Division of Mitigation Services.

(PDF only)

6j. Comments:

Please see the Riparian Buffer Impacts Summary Table located with the plan sheets for additional information. Impact mitigation has been requested from DMS for 860 lf at 2:1 ratio.

F. Stormwater Management and Diffuse Flow Plan (required by DWR)

*** Recent changes to the stormwater rules have required updates to this section .***

1. Diffuse Flow Plan

1a. Does the project include or is it adjacent to protected riparian buffers identified within one of the NC Riparian Buffer Protection Rules?

☒ Yes ☐ No

1b. All buffer impacts and high ground impacts require diffuse flow or other form of stormwater treatment. If the project is subject to a state implemented riparian buffer protection program, include a plan that fully documents how diffuse flow will be maintained.

All Stormwater Control Measures (SCM)s must be designed in accordance with the [NC Stormwater Design Manual](#). Associated supplement forms and other documentation shall be provided.

What type of SCM are you providing?

- ☐ Level Spreader
☐ Vegetated Conveyance (lower SHWT)
☐ Wetland Swale (higher SHWT)
☐ Other SCM that removes minimum 30% nitrogen
☐ Proposed project will not create concentrated stormwater flow through the buffer
(check all that apply)

For a list of options to meet the diffuse flow requirements, click [here](#).

Diffuse Flow Documentation

Click the upload button or drag and drop files here to attach document

File type must be PDF

2. Stormwater Management Plan

2a. Is this a NCDOT project subject to compliance with NCDOT's Individual NPDES permit NCS000250? *

☒ Yes ☐ No

Comments:

See attached Stormwater Management Plan.

G. Supplementary Information

1. Environmental Documentation

1a. Does the project involve an expenditure of public (federal/state/local) funds or the use of public (federal/state) land? *

☒ Yes ☐ No

1b. If you answered "yes" to the above, does the project require preparation of an environmental document pursuant to the requirements of the National or State (North Carolina) Environmental Policy Act (NEPA/SEPA)? *

☒ Yes ☐ No

1c. If you answered "yes" to the above, has the document review been finalized by the State Clearing House? (If so, attach a copy of the NEPA or SEPA final approval letter.) *

☒ Yes ☐ No

NEPA or SEPA Final Approval Letter

Click the upload button or drag and drop files here to attach document

FILETYPE MUST BE PDF

2. Violations (DWR Requirement)

2a. Is the site in violation of DWR Water Quality Certification Rules (15A NCAC 2H .0500), Isolated Wetland Rules (15A NCAC 2H .1300), or DWR Surface Water or Wetland Standards or Riparian Buffer Rules (15A NCAC 2B .0200)? *

☐ Yes

☒ No

3. Cumulative Impacts (DWR Requirement)

3a. Will this project (based on past and reasonably anticipated future impacts) result in additional development, which could impact nearby downstream water quality? *

☐ Yes

☒ No

3b. If you answered "no," provide a short narrative description.

Per the NC DWQ April 10, 2004 Version 2.1 Cumulative Impacts policy, small scale public transportation projects- such as widening projects, bridge replacements and intersection improvements- have a "low potential for cumulative impact since little (if any) new impervious surface is added and the projects are usually in already developed locales." This proposed project is within a developed landscape (i.e. project site is existing I-440 corridor, existing businesses and industrial buildings in the vicinity), this is not a road on a new location (i.e. there is an existing road thus the area already contains impervious surfaces) and the project drains to Walnut Creek: C; NSW, Walnut Creek (Lake Johnson): B; NSW, Simmons Branch: C; NSW, Bushy Creek: C; NSW, Rocky Branch: C; NSW, and House Creek: C; NSW, which are not HWQ or ORW. We anticipate the NC DWR will advise us if a qualitative or quantitative analysis is needed.

4. Sewage Disposal (DWR Requirement)

4a. Is sewage disposal required by DWR for this project? *

☐ Yes ☒ No ☐ NA

5. Endangered Species and Designated Critical Habitat (Corps Requirement)

5a. Will this project occur in or near an area with federally protected species or habitat? *

☒ Yes

☐ No

5b. Have you checked with the USFWS concerning Endangered Species Act impacts? *

☒ Yes

☐ No

5c. If yes, indicate the USFWS Field Office you have contacted.

Raleigh

5d. Is another Federal agency involved? *

☐ Yes

☒ No

☐ Unknown

5e. Is this a DOT project located within Division's 1-8? *

☒ Yes ☐ No

5j. What data sources did you use to determine whether your site would impact Endangered Species or Designated Critical Habitat? *

The USFWS county list and NCNHP database were consulted for Wake County on April 16, 2019. Also, the project was surveyed on June and July 2017, and January 2018 for the extended area around Moore Drive. A survey for species listed on May 3, 2018 was conducted on May 15 and 16, 2018.

May 15, 16, 2018 – Yellow lance, Tar River spiny mussel, dwarf wedgemussel – all were no effect.

No surveys for Cape Fear shiner as the project is not in the Cape Fear Basin

June, July 2017 – bald eagle and Michaux's sumac (Michaux's sumac around Moore Dr. in Jan. 2018)

May 2013 - RCW - USFWS did not require NCDOT to conduct further surveys for RCW due to the urban nature of the project.

Consultation Documentation Upload

Click the upload button or drag and drop files here to attach document

File type must be PDF

6. Essential Fish Habitat (Corps Requirement)

6a. Will this project occur in or near an area designated as an Essential Fish Habitat? *

☐ Yes

☒ No

6b. What data sources did you use to determine whether your site would impact an Essential Fish Habitat? *

Essential Fish Habitat (EFH) Mapper

This project takes place in Wake County which is not near any coastal or tidal habitat that would support EFH (i.e. salt marshes, oyster reefs, etc.).

7. Historic or Prehistoric Cultural Resources (Corps Requirement)

Link to the State Historic Preservation Office Historic Properties Map (does not include archaeological data: <http://gis.ncdcr.gov/hpweb/>)

7a. Will this project occur in or near an area that the state, federal or tribal governments have designated as having historic or cultural preservation status (e.g., National Historic Trust designation or properties significant in North Carolina history and archaeology)? *

☒ Yes

☐ No

7b. What data sources did you use to determine whether your site would impact historic or archeological resources? *

The North Carolina State Historic Preservation Office (HPO) review and concurrence.

7c. Historic or Prehistoric Information Upload

Click the upload button or drag and drop files here to attach document

U2719EffectsMay2017.pdf

1.11MB

U2719MeredithRevisedEffectsSept2017.pdf

1.06MB

File must be PDF

8. Flood Zone Designation (Corps Requirement)

Link to the FEMA Floodplain Maps: <https://msc.fema.gov/portal/search>

8a. Will this project occur in a FEMA-designated 100-year floodplain? *

☒ Yes

☐ No

8b. If yes, explain how project meets FEMA requirements:

NCDOT Hydraulics Unit coordination with FEMA.

8c. What source(s) did you use to make the floodplain determination? *

NC Floodmaps and FEMA's National Flood Hazard Layer

Miscellaneous

Comments

Attached are the avoidance and minimization list, mitigation ratio meeting summary, wetland and stream impact tables, 4B and 4C meeting minutes, and other relative information as noted above.

Miscellaneous attachments not previously requested.

[Click the upload button or drag and drop files here to attach document](#)

U-2719 Onsite Mitigation Review Meeting Minutes.pdf	61.24KB
White Oak Lake Recon Project Info.pdf	137.06KB
U-2719 & U-4437_4B_Meeting Minutes_Final.pdf	336.05KB
Avoidance and Minimization.pdf	472.72KB
U-2719 Permit Tables.pdf	39.95KB
U2719_Hydro_4C_Meeting_Minutes.pdf	443.9KB

File must be PDF or KMZ

Signature

*

☒ By checking the box and signing below, I certify that:

- I have given true, accurate, and complete information on this form;
- I agree that submission of this PCN form is a "transaction" subject to Chapter 66, Article 40 of the NC General Statutes (the "Uniform Electronic Transactions Act");
- I agree to conduct this transaction by electronic means pursuant to Chapter 66, Article 40 of the NC General Statutes (the "Uniform Electronic Transactions Act");
- I understand that an electronic signature has the same legal effect and can be enforced in the same way as a written signature; AND
- I intend to electronically sign and submit the PCN form.

Full Name: *

Mack Christopher Rivenbark III

Signature

Mack C. Rivenbark, III

Date

7/23/2019

**U.S. ARMY CORPS OF ENGINEERS
WILMINGTON DISTRICT**

Action Id. SAW-2012-01414

County: Wake U.S.G.S. Quad: Cary

NOTIFICATION OF JURISDICTIONAL DETERMINATION

Applicant: Philip Harris, III, P.E.,
Project Development and Environmental Analysis Branch
North Carolina Department of Transportation
1598 Mail Service Center
Raleigh, NC, 27699-1598

Telephone Number: 919-707-6111 (Jason Dilday)

Size (acres) N/A

Nearest Waterway Walnut Creek

USGS HUC 03020201

Nearest Town Raleigh

River Basin Neuse

Coordinates Latitude: 35.778; Longitude: -78.717

Location description: Study Area for existing I-440 Beltline, from south of SR 1313 (Walnut Street) to north of SR 1728 (Wade Avenue), west of downtown Raleigh, NC

Indicate Which of the Following Apply:

A. Preliminary Determination

☒ There are waters, including wetlands, on the above described project area, that may be subject to Section 404 of the Clean Water Act (CWA)(33 USC § 1344) and/or Section 10 of the Rivers and Harbors Act (RHA) (33 USC § 403). The waters, including wetlands, have been delineated, and the delineation has been verified by the Corps to be sufficiently accurate and reliable. Therefore this preliminary jurisdiction determination may be used in the permit evaluation process, including determining compensatory mitigation. For purposes of computation of impacts, compensatory mitigation requirements, and other resource protection measures, a permit decision made on the basis of a preliminary JD will treat all waters and wetlands that would be affected in any way by the permitted activity on the site as if they are jurisdictional waters of the U.S. This preliminary determination is not an appealable action under the Regulatory Program Administrative Appeal Process (Reference 33 CFR Part 331). However, you may request an approved JD, which is an appealable action, by contacting the Corps district for further instruction.

B. Approved Determination

☐ There are waters of the U.S., including wetlands, on the above described project area subject to the permit requirements of Section 404 of the Clean Water Act (CWA) (33 USC § 1344). Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.

☐ We recommend you have the waters of the U.S. on your property delineated. As the Corps may not be able to accomplish this wetland delineation in a timely manner, you may wish to obtain a consultant to conduct a delineation that can be verified by the Corps.

☐ The waters of the U.S., including wetlands, on your project area have been delineated and the delineation has been verified by the Corps. If you wish to have the delineation surveyed, the Corps can review and verify the survey upon completion. Once verified, this survey will provide an accurate depiction of all areas subject to CWA and/or RHA jurisdiction on your property which, provided there is no change in the law or our published regulations, may be relied upon for a period not to exceed five years.

☐ The waters of the U.S., including wetlands, have been delineated and surveyed and are accurately depicted on the plat signed by the Corps Regulatory Official identified below on _____. Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.

☐ There are no waters of the U.S., to include wetlands, present on the above described project area which are subject to the permit requirements of Section 404 of the Clean Water Act (33 USC 1344). Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.

Placement of dredged or fill material within waters of the US, including wetlands, without a Department of the Army permit may constitute a violation of Section 301 of the Clean Water Act (33 USC § 1311). Placement of dredged or fill material, construction or placement of structures, or work within navigable waters of the United States without a Department of the Army permit may constitute a violation of Sections 9 and/or 10 of the Rivers and Harbors Act (33 USC § 401 and/or 403). If you have any questions regarding this determination and/or the Corps regulatory program, please contact **Eric Alsmever at (919) 554-4884 X 23 or Eric.C.Alsmever@usace.army.mil.**

C. Basis For Determination: The study area contains jurisdictional waters of the US, Swift, Walnut and Horse Creeks, Simmons Branch, and tributaries, with ordinary high water marks, impoundments, and adjacent wetlands. These waters are tributaries of the Neuse River, a Section 10 Water.

D. Remarks: This JD was confirmed by field inspection on 9/26/2013, and desktop review on 6/20/2017 (Features in Addendum). The drawings on the attached Figures "I-440, U-2719, Wake County, North Carolina, Jurisdictional Features", 3A through 3M, dated NOV 2013, and Figures 1, 3A, and 3N, dated February 2017, generally depict the approximate boundaries and locations of potential jurisdictional waters of the US within the subject study area.

E. Attention USDA Program Participants

This delineation/determination has been conducted to identify the limits of Corps' Clean Water Act jurisdiction for the particular site identified in this request. The delineation/determination may not be valid for the wetland conservation provisions of the Food Security Act of 1985. If you or your tenant are USDA Program participants, or anticipate participation in USDA programs, you should request a certified wetland determination from the local office of the Natural Resources Conservation Service, prior to starting work.

****It is not necessary to submit an RFA form to the Division Office if you do not object to the determination in this correspondence.****

MATTHEWS.MONTE.K.1284867633

Digitally signed by MATTHEWS.MONTE.K.1284867633
DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=MATTHEWS.MONTE.K.1284867633
Date: 2017.06.21 10:04:30 -04'00'

Corps Regulatory Official: _____

Date: **June 21, 2017** Expiration Date: **N/A**

The Wilmington District is committed to providing the highest level of support to the public. To help us ensure we continue to do so, please complete our Customer Satisfaction Survey, located online at http://corpsmapu.usace.army.mil/cm_apex/f?p=136:4:0.

Copy Furnished: **Atkins North America Inc.**

Jill Gurak
1616 East Millbrook Road, Suite 310
Raleigh, NC, 27607-4968

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: Philip Harris, III, P.E. NC Department of Transportation	File Number: SAW-2012-01414	Date: June 21, 2017
Attached is:		See Section below
<input type="checkbox"/> INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A	
<input type="checkbox"/> PROFFERED PERMIT (Standard Permit or Letter of permission)	B	
<input type="checkbox"/> PERMIT DENIAL	C	
<input type="checkbox"/> APPROVED JURISDICTIONAL DETERMINATION	D	
<input checked="" type="checkbox"/> PRELIMINARY JURISDICTIONAL DETERMINATION	E	

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at <http://www.usace.army.mil/Missions/CivilWorks/RegulatoryProgramandPermits.aspx> or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- **ACCEPT:** If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- **OBJECT:** If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- **ACCEPT:** If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- **APPEAL:** If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- **ACCEPT:** You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- **APPEAL:** If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the district engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact:

**District Engineer, Wilmington Regulatory Division,
Attn: Eric Alsmeyer
Raleigh Regulatory Field Office
3331 Heritage Trade Drive, Suite 105
Wake Forest, NC 27587**

If you only have questions regarding the appeal process you may also contact:

Mr. Jason Steele, Administrative Appeal Review Officer
CESAD-PDO
U.S. Army Corps of Engineers, South Atlantic Division
60 Forsyth Street, Room 10M15
Atlanta, Georgia 30303-8801
Phone: (404) 562-5137

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

Date:

Telephone number:

Signature of appellant or agent.

U.S. ARMY CORPS OF ENGINEERS
WILMINGTON DISTRICT

Action Id. **SAW-2012-01414**

County: **Wake County** U.S.G.S. Quad: **Cary**

NOTIFICATION OF JURISDICTIONAL DETERMINATION

Applicant: **North Carolina Department of Transportation**
Philip Harris III

Address: **1598 Mail Service Center**
Raleigh, NC, 27699

Telephone Number: **919.707.6111**

Size (acres) **N/A**

Nearest Waterway **Walnut Creek**

USGS HUC **03020201**

Nearest Town **Raleigh**

River Basin **Neuse**

Coordinates Latitude: **35.77275** Longitude: **-78.72057**

Location description: **Approved JD is limited to vicinity of Feature OWD as indicated on the attached revised Figure 3H, I-440, U-2719, Approved JD – Non 404 Feature, revised on 6/26/2019; Overall project area is the existing I-440 Beltline corridor, from south of SR 1313 (Walnut Street) to north of SR 1728 (Wade Avenue), west of downtown Raleigh, NC**

Indicate Which of the Following Apply:

A. Preliminary Determination

- ☐ There are waters, including wetlands, on the above described project area, that may be subject to Section 404 of the Clean Water Act (CWA)(33 USC § 1344) and/or Section 10 of the Rivers and Harbors Act (RHA) (33 USC § 403). The waters, including wetlands, have been delineated, and the delineation has been verified by the Corps to be sufficiently accurate and reliable. Therefore this preliminary jurisdiction determination may be used in the permit evaluation process, including determining compensatory mitigation. For purposes of computation of impacts, compensatory mitigation requirements, and other resource protection measures, a permit decision made on the basis of a preliminary JD will treat all waters and wetlands that would be affected in any way by the permitted activity on the site as if they are jurisdictional waters of the U.S. This preliminary determination is not an appealable action under the Regulatory Program Administrative Appeal Process (Reference 33 CFR Part 331). However, you may request an approved JD, which is an appealable action, by contacting the Corps district for further instruction.

B. Approved Determination

- ☐ There are waters of the U.S., including wetlands, on the above described project area subject to the permit requirements of Section 404 of the Clean Water Act (CWA) (33 USC § 1344). Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.
- ☐ We recommend you have the waters of the U.S. on your property delineated. As the Corps may not be able to accomplish this wetland delineation in a timely manner, you may wish to obtain a consultant to conduct a delineation that can be verified by the Corps.
- ☐ The waters of the U.S., including wetlands, on your project area have been delineated and the delineation has been verified by the Corps. We strongly suggest you have this delineation surveyed. Upon completion, this survey should be reviewed and verified by the Corps. Once verified, this survey will provide an accurate depiction of all areas subject to CWA jurisdiction on your property which, provided there is no change in the law or our published regulations, may be relied upon for a period not to exceed five years.
- ☐ The waters of the U.S., including wetlands, have been delineated and surveyed and are accurately depicted on the plat signed by the Corps Regulatory Official identified below on _____. Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.
- ☒ There are no waters of the U.S., to include wetlands, present on the above described Approved JD area, which are subject to the permit requirements of Section 404 of the Clean Water Act (33 USC 1344). Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.

Placement of dredged or fill material within waters of the US, including wetlands, without a Department of the Army permit may constitute a violation of Section 301 of the Clean Water Act (33 USC § 1311). Placement of dredged or fill material, construction or placement of structures, or work within navigable waters of the United States without a Department of the Army permit may constitute a violation of Sections 9 and/or 10 of the Rivers and Harbors Act (33 USC § 401 and/or 403). If you have any questions regarding this determination and/or the Corps regulatory program, please contact **Eric Alsmeyer at (919) 554-4884 X 23 or Eric.C.Alsmeier@usace.army.mil**.

C. Basis For Determination: See attached Approved JD forms.

D. Remarks: Desktop JD is based on a based on a 9/26/2013 JD site inspection.

E. Attention USDA Program Participants

This delineation/determination has been conducted to identify the limits of Corps' Clean Water Act jurisdiction for the particular site identified in this request. The delineation/determination may not be valid for the wetland conservation provisions of the Food Security Act of 1985. If you or your tenant are USDA Program participants, or anticipate participation in USDA programs, you should request a certified wetland determination from the local office of the Natural Resources Conservation Service, prior to starting work.

F. Appeals Information for Approved Jurisdiction Determinations (as indicated in Section B. above)

If you object to this determination, you may request an administrative appeal under Corps regulations at 33 CFR Part 331. Enclosed you will find a Notification of Appeal Process (NAP) fact sheet and Request for Appeal (RFA) form. If you request to appeal this determination you must submit a completed RFA form to the following address:

US Army Corps of Engineers
South Atlantic Division
Attn: Jason Steele, Review Officer
60 Forsyth Street SW, Room 10M15
Atlanta, Georgia 30303-8801

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 CFR part 331.5, and that it has been received by the Division Office within 60 days of the date of the NAP. Should you decide to submit an RFA form, it must be received at the above address by **8/23/2019**. **It is not necessary to submit an RFA form to the Division Office if you do not object to the determination in this correspondence.**

Corps Regulatory Official:

Date: **June 26, 2019** Expiration Date: **June 26, 2014**

The Wilmington District is committed to providing the highest level of support to the public. To help us ensure we continue to do so, please complete our Customer Satisfaction Survey, located online at http://corpsmapu.usace.army.mil/cm_apex/f?p=136:4:0.

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: Philip Harris III, PhD, NCDOT	File Number: SAW-2012-01414	Date: June 26, 2019
Attached is:		See Section below
<input type="checkbox"/> INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A	
<input type="checkbox"/> PROFFERED PERMIT (Standard Permit or Letter of permission)	B	
<input type="checkbox"/> PERMIT DENIAL	C	
<input checked="" type="checkbox"/> APPROVED JURISDICTIONAL DETERMINATION	D	
<input type="checkbox"/> PRELIMINARY JURISDICTIONAL DETERMINATION	E	

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision.

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C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

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E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

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POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact:
District Engineer, Wilmington Regulatory Division, Attn: Eric Alsmeyer
Eric Alsmeyer
Raleigh Regulatory Field Office
3331 Heritage Trade Drive, Suite 105
Wake Forest, NC 27587
Phone: (919) 554-4884, ext. 23

If you only have questions regarding the appeal process you may also contact:

**Mr. Jason Steele, Administrative Appeal Review Officer
CESAD-PDO
U.S. Army Corps of Engineers, South Atlantic Division
60 Forsyth Street, Room 10M15
Atlanta, Georgia 30303-8801
Phone: (404) 562-5137**

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

_____ Signature of appellant or agent.	Date:	Telephone number:
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For appeals on Initial Proffered Permits send this form to:

District Engineer, Wilmington Regulatory Division, Attn: Eric Alsmeyer, 69 Darlington Avenue, Wilmington, North Carolina 28403

For Permit denials, Proffered Permits and approved Jurisdictional Determinations send this form to:

**Division Engineer, Commander, U.S. Army Engineer Division, South Atlantic, Attn: Mr. Jason Steele, Administrative Appeal Officer, CESAD-PDO, 60 Forsyth Street, Room 10M15, Atlanta, Georgia 30303-8801
Phone: (404) 562-5137**

APPROVED JURISDICTIONAL DETERMINATION FORM

U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD): June 26, 2019

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: Wilmington District, *, SAW-2012-01414

C. PROJECT LOCATION AND BACKGROUND INFORMATION: I-440 corridor from Walnt Street to Lake Boone Trail;, in Raleigh, NC; Non JD Pond OWD in high ground.

State: North Carolina

County/parish/borough: Wake

City: Raleigh

Center coordinates of site (lat/long in degree decimal format): Lat. 35.77275° **N**, Long. -78.72057° **W**.

Universal Transverse Mercator:

Name of nearest waterbody: Walnut Creek

Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Lake Johnson

Name of watershed or Hydrologic Unit Code (HUC): 03020201

☒ Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.

☐ Check if other sites (e.g., offsite mitigation sites, disposal sites, etc...) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

☒ Office (Desk) Determination. Date: June 26, 2019 (based on a 9/26/2013 JD site inspection).

☐ Field Determination. Date(s):

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There **Are no** "navigable waters of the U.S." within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [Required]

☐ Waters subject to the ebb and flow of the tide.

☐ Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce. Explain: .

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There **Are no** "waters of the U.S." within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [Required]

1. Waters of the U.S.

a. Indicate presence of waters of U.S. in review area (check all that apply): ¹

- ☐ TNWs, including territorial seas
- ☐ Wetlands adjacent to TNWs
- ☐ Relatively permanent waters² (RPWs) that flow directly or indirectly into TNWs
- ☐ Non-RPWs that flow directly or indirectly into TNWs
- ☐ Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
- ☐ Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
- ☐ Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
- ☐ Impoundments of jurisdictional waters
- ☐ Isolated (interstate or intrastate) waters, including isolated wetlands

b. Identify (estimate) size of waters of the U.S. in the review area:

Non-wetland waters: linear feet: width (ft) and/or acres.

Wetlands: acres.

c. Limits (boundaries) of jurisdiction based on: 1987 Delineation Manual

Elevation of established OHWM (if known): .

2. Non-regulated waters/wetlands (check if applicable):³

☒ Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional.

Explain: Pond OWD was consturcted in uplands, and has no outlet or other connections to 404 waters.

¹ Boxes checked below shall be supported by completing the appropriate sections in Section III below.

² For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).

³ Supporting documentation is presented in Section III.F.

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. TNW

Identify TNW: _____.

Summarize rationale supporting determination: _____.

2. Wetland adjacent to TNW

Summarize rationale supporting conclusion that wetland is “adjacent”: _____.

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are “relatively permanent waters” (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody⁴ is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. Characteristics of non-TNWs that flow directly or indirectly into TNW

(i) General Area Conditions:

Watershed size: **Pick List**

Drainage area: **Pick List**

Average annual rainfall: _____ inches

Average annual snowfall: _____ inches

(ii) Physical Characteristics:

(a) Relationship with TNW:

☐ Tributary flows directly into TNW.

☐ Tributary flows through **Pick List** tributaries before entering TNW.

Project waters are **Pick List** river miles from TNW.

Project waters are **Pick List** river miles from RPW.

Project waters are **Pick List** aerial (straight) miles from TNW.

Project waters are **Pick List** aerial (straight) miles from RPW.

Project waters cross or serve as state boundaries. Explain: _____.

Identify flow route to TNW⁵: _____.

Tributary stream order, if known: _____.

(b) General Tributary Characteristics (check all that apply):

Tributary is: ☐ Natural

☐ Artificial (man-made). Explain: _____.

☐ Manipulated (man-altered). Explain: _____.

⁴ Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.

⁵ Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

Tributary properties with respect to top of bank (estimate):

Average width: feet

Average depth: feet

Average side slopes: **Pick List**.

Primary tributary substrate composition (check all that apply):

☐ Silts

☐ Sands

☐ Concrete

☐ Cobbles

☐ Gravel

☐ Muck

☐ Bedrock

☐ Vegetation. Type/% cover:

☐ Other. Explain: .

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: .

Presence of run/riffle/pool complexes. Explain: .

Tributary geometry: **Pick List**

Tributary gradient (approximate average slope): %

(c) Flow:

Tributary provides for: **Pick List**

Estimate average number of flow events in review area/year: **Pick List**

Describe flow regime: .

Other information on duration and volume: .

Surface flow is: **Pick List**. Characteristics: .

Subsurface flow: **Pick List**. Explain findings: .

☐ Dye (or other) test performed: .

Tributary has (check all that apply):

☐ Bed and banks

☐ OHWM⁶ (check all indicators that apply):

☐ clear, natural line impressed on the bank

☐ changes in the character of soil

☐ shelving

☐ vegetation matted down, bent, or absent

☐ leaf litter disturbed or washed away

☐ sediment deposition

☐ water staining

☐ other (list):

☐ Discontinuous OHWM.⁷ Explain: .

☐ the presence of litter and debris

☐ destruction of terrestrial vegetation

☐ the presence of wrack line

☐ sediment sorting

☐ scour

☐ multiple observed or predicted flow events

☐ abrupt change in plant community

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):

☐ High Tide Line indicated by:

☐ oil or scum line along shore objects

☐ fine shell or debris deposits (foreshore)

☐ physical markings/characteristics

☐ tidal gauges

☐ other (list):

☐ Mean High Water Mark indicated by:

☐ survey to available datum;

☐ physical markings;

☐ vegetation lines/changes in vegetation types.

(iii) Chemical Characteristics:

Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.). Explain: .

Identify specific pollutants, if known: .

⁶A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.

⁷Ibid.

(iv) **Biological Characteristics. Channel supports (check all that apply):**

- ☐ Riparian corridor. Characteristics (type, average width): .
- ☐ Wetland fringe. Characteristics: .
- ☐ Habitat for:
 - ☐ Federally Listed species. Explain findings: .
 - ☐ Fish/spawn areas. Explain findings: .
 - ☐ Other environmentally-sensitive species. Explain findings: .
 - ☐ Aquatic/wildlife diversity. Explain findings: .

2. **Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW**

(i) **Physical Characteristics:**

(a) General Wetland Characteristics:

Properties:

Wetland size: . acres

Wetland type. Explain: .

Wetland quality. Explain: .

Project wetlands cross or serve as state boundaries. Explain: .

(b) General Flow Relationship with Non-TNW:

Flow is: **Pick List**. Explain: .

Surface flow is: **Pick List**

Characteristics: .

Subsurface flow: **Pick List**. Explain findings: .

☐ Dye (or other) test performed: .

(c) Wetland Adjacency Determination with Non-TNW:

- ☐ Directly abutting
- ☐ Not directly abutting
 - ☐ Discrete wetland hydrologic connection. Explain: .
 - ☐ Ecological connection. Explain: .
 - ☐ Separated by berm/barrier. Explain: .

(d) Proximity (Relationship) to TNW

Project wetlands are **Pick List** river miles from TNW.

Project waters are **Pick List** aerial (straight) miles from TNW.

Flow is from: **Pick List**.

Estimate approximate location of wetland as within the **Pick List** floodplain.

(ii) **Chemical Characteristics:**

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain: .

Identify specific pollutants, if known: .

(iii) **Biological Characteristics. Wetland supports (check all that apply):**

- ☐ Riparian buffer. Characteristics (type, average width): .
- ☐ Vegetation type/percent cover. Explain: .
- ☐ Habitat for:
 - ☐ Federally Listed species. Explain findings: .
 - ☐ Fish/spawn areas. Explain findings: .
 - ☐ Other environmentally-sensitive species. Explain findings: .
 - ☐ Aquatic/wildlife diversity. Explain findings: .

3. **Characteristics of all wetlands adjacent to the tributary (if any)**

All wetland(s) being considered in the cumulative analysis: **Pick List**

Approximately () acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

Directly abuts? (Y/N)

Size (in acres)

Directly abuts? (Y/N)

Size (in acres)

Summarize overall biological, chemical and physical functions being performed: .

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D: .
2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .
3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:
☐ TNWs: linear feet width (ft), Or, acres.
☐ Wetlands adjacent to TNWs: acres.
2. **RPWs that flow directly or indirectly into TNWs.**
☐ Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial: .
☐ Tributaries of TNW where tributaries have continuous flow “seasonally” (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally: .

Provide estimates for jurisdictional waters in the review area (check all that apply):

☐ Tributary waters: linear feet width (ft).

☐ Other non-wetland waters: acres.

Identify type(s) of waters: .

3. Non-RPWs⁸ that flow directly or indirectly into TNWs.

- ☐ Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional waters within the review area (check all that apply):

☐ Tributary waters: linear feet width (ft).

☐ Other non-wetland waters: acres.

Identify type(s) of waters: .

4. Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.

- ☐ Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.
- ☐ Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .
- ☐ Wetlands directly abutting an RPW where tributaries typically flow “seasonally.” Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

5. Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.

- ☐ Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

6. Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.

- ☐ Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional wetlands in the review area: acres.

7. Impoundments of jurisdictional waters.⁹

As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.

- ☐ Demonstrate that impoundment was created from “waters of the U.S.,” or
- ☐ Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
- ☐ Demonstrate that water is isolated with a nexus to commerce (see E below).

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):¹⁰

- ☐ which are or could be used by interstate or foreign travelers for recreational or other purposes.
- ☐ from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
- ☐ which are or could be used for industrial purposes by industries in interstate commerce.
- ☐ Interstate isolated waters. Explain: .
- ☐ Other factors. Explain: .

Identify water body and summarize rationale supporting determination: .

Provide estimates for jurisdictional waters in the review area (check all that apply):

☐ Tributary waters: linear feet width (ft).

☐ Other non-wetland waters: acres.

Identify type(s) of waters: .

☐ Wetlands: acres.

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):

⁸See Footnote # 3.

⁹To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.

¹⁰ Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA Memorandum Regarding CWA Act Jurisdiction Following Rapanos.

- ☐ If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
- ☐ Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
- ☐ Prior to the Jan 2001 Supreme Court decision in “*SWANCC*,” the review area would have been regulated based solely on the “Migratory Bird Rule” (MBR).
- ☐ Waters do not meet the “Significant Nexus” standard, where such a finding is required for jurisdiction. Explain: _____.
- ☒ Other: (explain, if not covered above): **Pond OWD was constructed in uplands, and has no outlet or other connections to 404 waters.**

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):

- ☐ Non-wetland waters (i.e., rivers, streams): _____ linear feet _____ width (ft).
- ☐ Lakes/ponds: _____ acres.
- ☐ Other non-wetland waters: _____ acres. List type of aquatic resource: _____.
- ☐ Wetlands: _____ acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the “Significant Nexus” standard, where such a finding is required for jurisdiction (check all that apply):

- ☐ Non-wetland waters (i.e., rivers, streams): _____ linear feet, _____ width (ft).
- ☐ Lakes/ponds: _____ acres.
- ☐ Other non-wetland waters: _____ acres. List type of aquatic resource: _____.
- ☐ Wetlands: _____ acres.

SECTION IV: DATA SOURCES.

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):

- ☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: _____.
- ☐ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
- ☐ Office concurs with data sheets/delineation report.
- ☐ Office does not concur with data sheets/delineation report.
- ☐ Data sheets prepared by the Corps: _____.
- ☐ Corps navigable waters’ study: _____.
- ☐ U.S. Geological Survey Hydrologic Atlas: _____.
- ☐ USGS NHD data.
- ☐ USGS 8 and 12 digit HUC maps.
- ☒ U.S. Geological Survey map(s). Cite scale & quad name: _____.
- ☒ USDA Natural Resources Conservation Service Soil Survey. Citation: Web Soil Survey.
- ☒ National wetlands inventory map(s). Cite name: GIS.
- ☐ State/Local wetland inventory map(s): _____.
- ☐ FEMA/FIRM maps: _____.
- ☐ 100-year Floodplain Elevation is: _____ (National Geodetic Vertical Datum of 1929)
- ☐ Photographs: ☐ Aerial (Name & Date): _____.
- or ☐ Other (Name & Date): _____.
- ☐ Previous determination(s). File no. and date of response letter: _____.
- ☐ Applicable/supporting case law: _____.
- ☐ Applicable/supporting scientific literature: _____.
- ☐ Other information (please specify): _____.

B. ADDITIONAL COMMENTS TO SUPPORT JD: _____.



NORTH CAROLINA
Environmental Quality

ROY COOPER
Governor

MICHAEL S. REGAN
Secretary

TIM BAUMGARTNER
Director

July 3, 2019

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

Dear Mr. Harris:

Subject: DMS Mitigation Acceptance Letter:

U-2719, Raleigh – I-440 / US 1 Widening from South of SR 1313 (Walnut Street) to North of SR 1728 (Wade Avenue) in Raleigh, Wake County

The purpose of this letter is to notify you that the Division of Mitigation Services (DMS) will provide the stream and buffer mitigation for the subject project. Based on the information supplied by you on July 3, 2019, the impacts are located in CU 03020201 of the Neuse 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	Neuse	03020201	CP	0	0	860.0	0	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 U-2719. 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).



Mr. Harris
July 3, 2019
Page Two
NCDOT TIP U-2719

Buffer	River Basin	CU	Eco-Region	Buffer Impacts		
				Zone 1	Zone 2	TOTAL
Impacts	Neuse	03020201	CP	36,666.0	20,060.0	56,726.0

The impacts and associated mitigation needs were not projected by the NCDOT in the 2019 impact data. DMS will commit to implement sufficient compensatory stream and wetland mitigation credits to offset the impacts associated with this project as determined by the regulatory agencies using the delivery timeline listed in Section F.3.c.iii of the In-Lieu Fee Instrument dated July 28, 2010. If the above referenced impact amounts increase, 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 Ms. 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, NC Division of Water Resources
File: U-2719



Meeting Minutes

Project: U-2719 I-440 Widening

Subject: Determination of Mitigation Ratios

Date: Thursday, March 28, 2019

Location: Raleigh, NC

Attendees: Eric Alsmeyer (USACE)
Jason Dilday (NCDOT)
Nikki Thompson (Kleinfelder)
Mitch Wimberly (Kleinfelder)
Vickie Miller (HDR)

Attendees Column 2 (Tab to add more rows)

The meeting was held onsite to determine the mitigation ratios for the future permitting of U-2719. Mapping and impact locations were provided prior to the meeting. The following list details the mitigation ratios by site.

- SW – 2:1 – site was not reviewed but Eric recalls a nice system at the impact location
- ST – 2:1 – perennial stream with forested buffer
- SV – ratio not determined in the field – Eric suggested a SAM form be completed to see if impacts would be at a 1:1 ratio rather than 2:1. Jason shared that he will complete the form and provide to the USACE. Vickie was to review what the plans were for this channel and get back to everyone – *Update: following SAM Form submittal. Mitigation ratio determined to be a 1:1. The D-B Team is evaluating ways to minimize impacts to the stream, park and utilities at this location*
- SR – 2:1 – Perennial stream at Western Blvd. (old Kmart)
- SO – 2:1 – Perennial and looked better than was previously recalled.
- SP – 2:1 – Jurisdiction started lower than illustrated on the mapping. Requested HDR look at options for the driveway to avoid and minimize impacts.
- SN – No mitigation required – had a lot of water in it at the time of visit but was not normal conditions. Was noted as having no function to require mitigation.
- SE – No mitigation required – appears to carry only stormwater.
- SC – 2:1 – House Creek
- SAN – No mitigation required due to existing impacts at the channel tie with SC.

The remaining sites were not field reviewed but it was assumed the mitigation ratio would be 2:1.

Discussion of permitting items needed was had at the end. An EPCN will be completed. A cover letter was determined unnecessary. A table detailing which pipes will be buried/not buried will be attached. Reference and attach to the permit application the field review meeting and corresponding minutes to detail the mitigation ratios.

Table 2. U-2719 Wetland Impacts

[illegible]

Table 3. U-2719 Stream Impacts

Permit Site No.	Stream Name	Perennial (P) or Intermittent (I)	Type of Jurisdiction	Type of Impact	Average Stream Width (feet)	Impact Type	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temporary (ft)
1	SAK	I	Both	Rip Rap at 18” Outlet	3	P/T	7	10
3	SX	P	Both	Culvert Clean Out	13	P/T	9	41
				Bank Stabilization			93	97
4	SW	P	Both	Rip Rap in Stream	10	T	0	112
7	ST	P	Both	Outlet Stabilization	13	P/T	35	50
8	SV	P	Both	Bank Stabilization	4	P	244	0
9	SU	P	Both	Bank Stabilization	4	P	62	0
12	SS	P	Both	Channel Improvement/Bank Stabilization	5	P/T	34	65
13	SR	P	Both	Fill/Outlet Stabilization	18	P/T	117	50
14	SO	P	Both	Roadway Fill/Outlet Stabilization	6	P/T	388	40
				Bank Stabilization			85	70
15	SP	P	Both	30” CSP	8	P	56	10
16	SN	I	Both	36” WSP and 36” CSP	13	P/T	70	24
17	SC	P	Both	8’ x 8’ Culvert Extension/Stab.	8	P/T	97	40
18	SAN	P	Both	Lateral Ditch	8	P/T	31	39
19	SE	I	Both	48” RCP Extension	4	P/T	29	22
20	SW	P	Both	14’ x 7’ RCBC	10	P	92	20
				Bank Stabilization		P/T	50	9
Total Jurisdictional Ditch Impact in Square Feet							0	
Total Permanent Stream Impacts							1,499	
Total Temporary Stream Impacts							699	
Total Stream and Ditch Impacts							2,198	

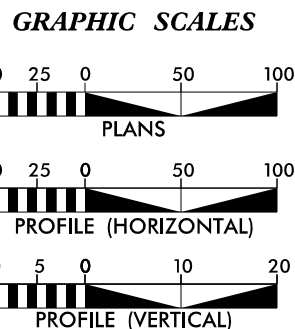
Table 4. U-2719 Buffer Impacts

Site No.	Impact Type	Per or Temp	Stream name	Buffer mitigation required?	Zone 1 impact (ft2)	Zone 2 impact (ft2)
1	Rip Rap at 18" Outlet, allowable	P	SAK	No	1272	0
3	Culvert Clean Out, allowable	P	SX	No	1,753	212
3	Bank Stabilization, allowable	P	SX	No	3,612	1,923
4	Rip Rap in Stream, allowable	P	SW	No	2,985	2,221
4	Rip Rap in Stream, allowable w/ mitigation	P	SW	Yes	3,711	0
7	Outlet Stabilization 24" CSP, allowable	P	ST	No	408	0
7	Outlet Stabilization 24" CSP, allowable w/ mitigation	P	ST	Yes	1,052	871
9	Bank Stabilization, allowable w/ mitigation	P	SU	Yes	3,931	1,346
12	Channel Imp./Bank Stab., allowable	P	SS	No	6,199	3,968
13	Roadway Fill/Outlet Stabilization, allowable w/ mitigation	P	SR	Yes	8,902	7,738
14	Roadway Fill, allowable	P	SO	No	6,846	1,384
14	Roadway Fill, allowable w/ mitigation	P	SO	Yes	14,827	7,423
15	30" CSP, allowable	P	SP	No	3,767	3,730
16	36" WSP & 36" CSP, allowable	P	SN	No	3,379	367
16	36" WSP & 36" CSP, allowable w/ mitigation	P	SN	Yes	775	206
17	8'x8' Culvert Extension/Stab., allowable	P	SC	No	3,660	1,592
18	2' Base Lateral Ditch, allowable w/ mitigation	P	SAN	Yes	3,035	2,070
19	48" RCP Extension, allowable	P	SE	No	2,179	926
20	14' x 7' RCBC, allowable	P	SW	No	5,146	3,035
21	Bank Stabilization, allowable w/ mitigation	P	SC	Yes	433	406

Site No.	Impact Type	Per or Temp	Stream name	Buffer mitigation required?	Zone 1 impact (ft2)	Zone 2 impact (ft2)
Total Allowable Buffer Impact					41,206	19,358
Total Mitigable Buffer Impact					36,666	20,060
TOTAL COMBINED BUFFER IMPACT					77,872	39,418

CONTRACT: C204157

TIP PROJECT: U-2719 /U-4437

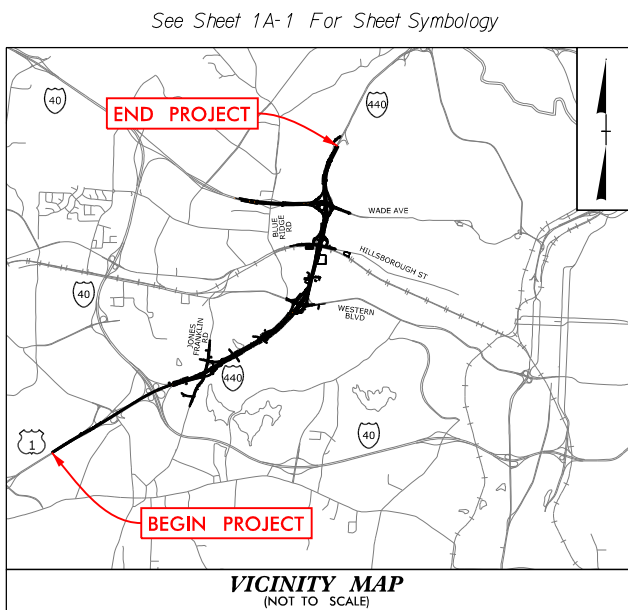
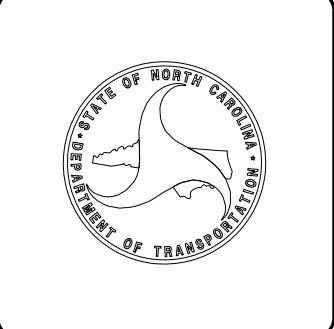


DESIGN DATA	
ADT 2018 =	144,810
ADT 2040 =	183,700
K =	10 %
D =	55 %
T =	9 % *
V =	70 MPH
* TTST =	5% DUAL = 4%
FUNC CLASS =	
INTERSTATE	
STATEWIDE TIER	

PROJECT LENGTH	
LENGTH ROADWAY TIP PROJECT U-2719 /U-4437 =	6.087 MILES
LENGTH STRUCTURES TIP PROJECT U-2719 /U-4437 =	0.162 MILES
TOTAL LENGTH TIP PROJECT U-2719 /U-4437 =	6.249 MILES
NCDOT CONTACT: DAVID HERING, PE DESIGN-BUILD UNIT - PROJECT ENGINEER	

Prepared for the Office of: DIVISION OF HIGHWAYS 1000 Birch Ridge Dr., Raleigh NC, 27610	
2018 STANDARD SPECIFICATIONS	
RIGHT OF WAY DATE: OCTOBER 2, 2018	PAUL MEEHAN, PE PROJECT ENGINEER
LETTING DATE: OCTOBER 2, 2018	ERSKINE BROOKS, PE PROJECT DESIGN ENGINEER

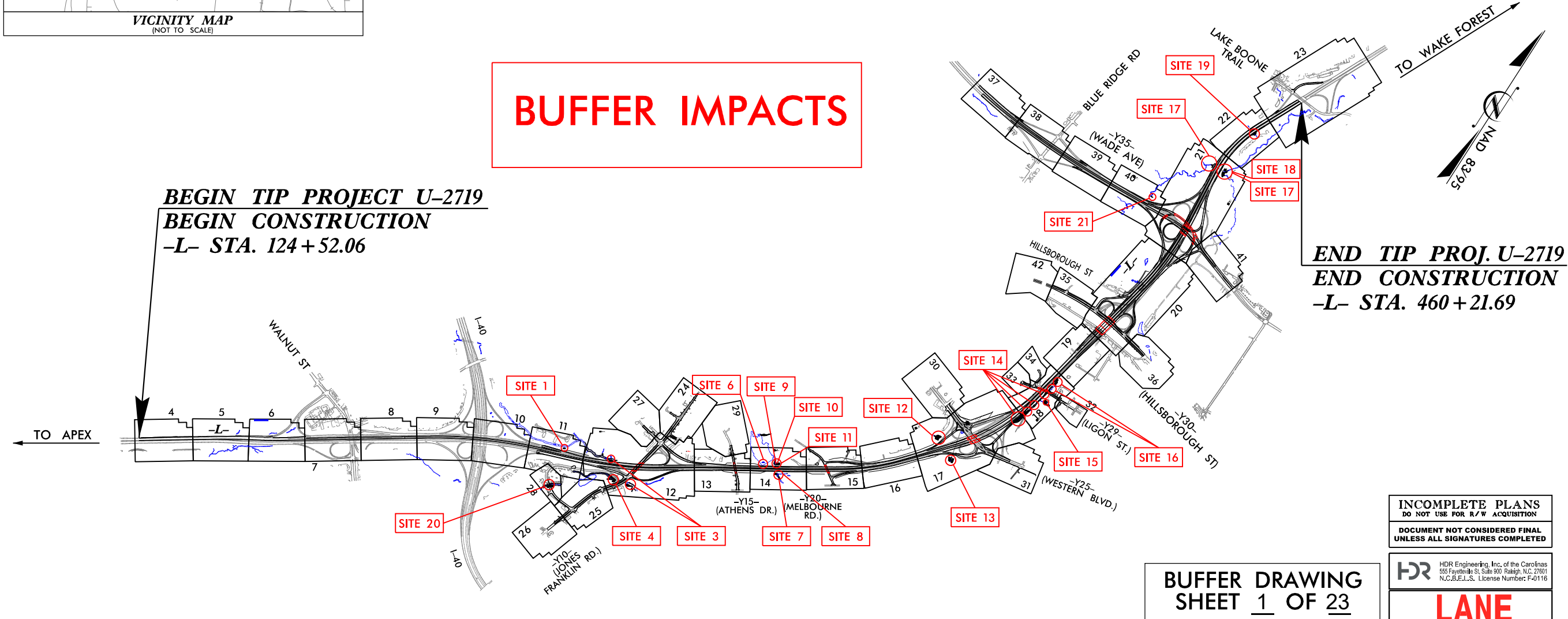
HYDRAULICS ENGINEER	
SIGNATURE:	P.E.
ROADWAY DESIGN ENGINEER	
SIGNATURE:	P.E.



**LOCATION: I-440 /US 1 FROM SOUTH OF SR 1313 (WALNUT STREET)
TO NORTH OF SR 1728 (WADE AVENUE)**

**TYPE OF WORK: DESIGN-BUILD AS SPECIFIED IN THE SCOPE OF WORK
CONTAINED IN THE REQUEST FOR PROPOSALS**

BUFFER IMPACTS



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

**BUFFER DRAWING
SHEET 1 OF 23**

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, NC 27601
N.C.B.E.L.S. License Number: F-0116

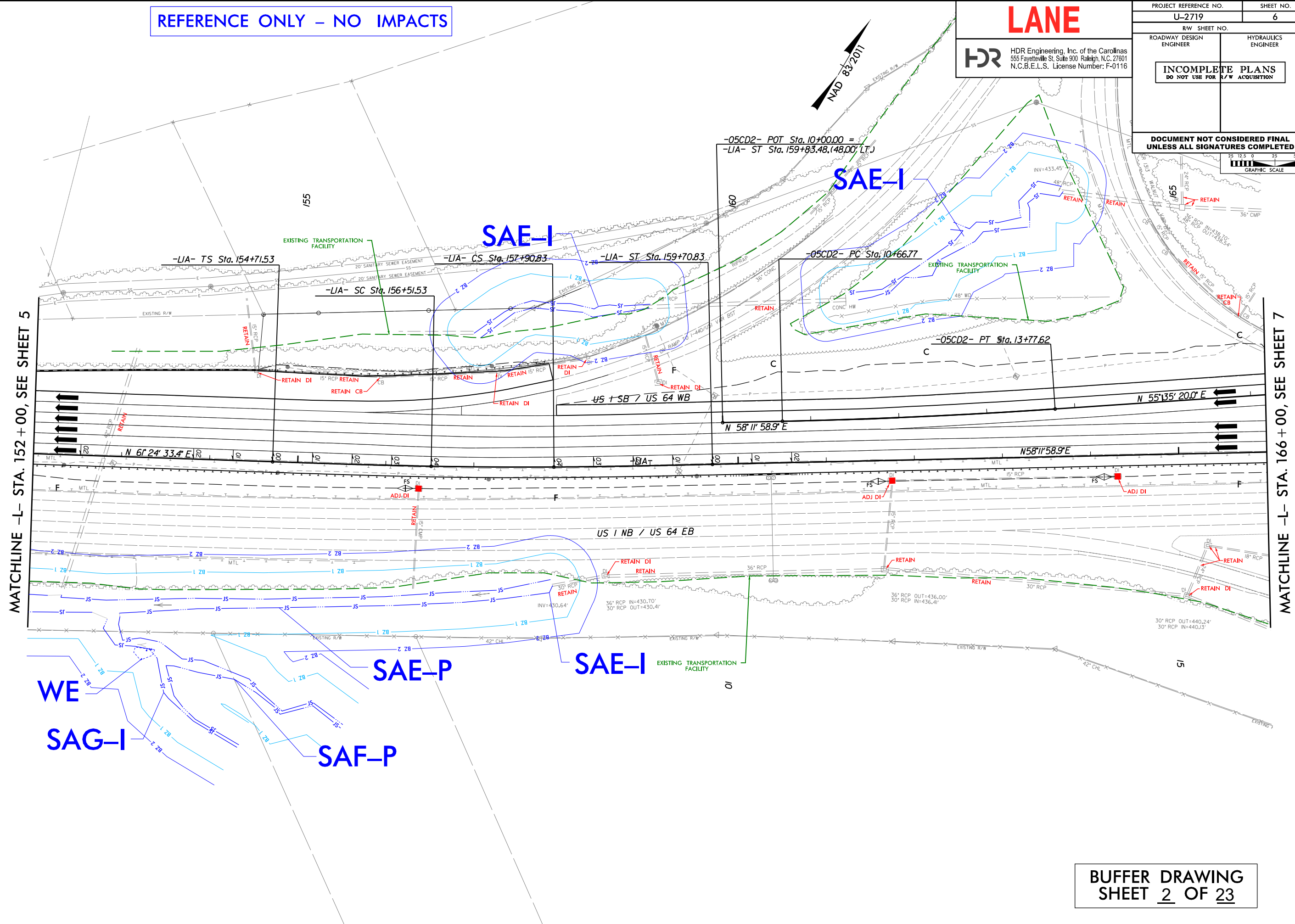
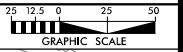
LANE

LANE

HDR HDR Engineering, Inc. of the Carolinas
555 Fayetteville St. Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

PROJECT REFERENCE NO.		SHEET NO.	
U-2719		6	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
<div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION</p> </div>			

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



BUFFER DRAWING
SHEET 2 OF 23

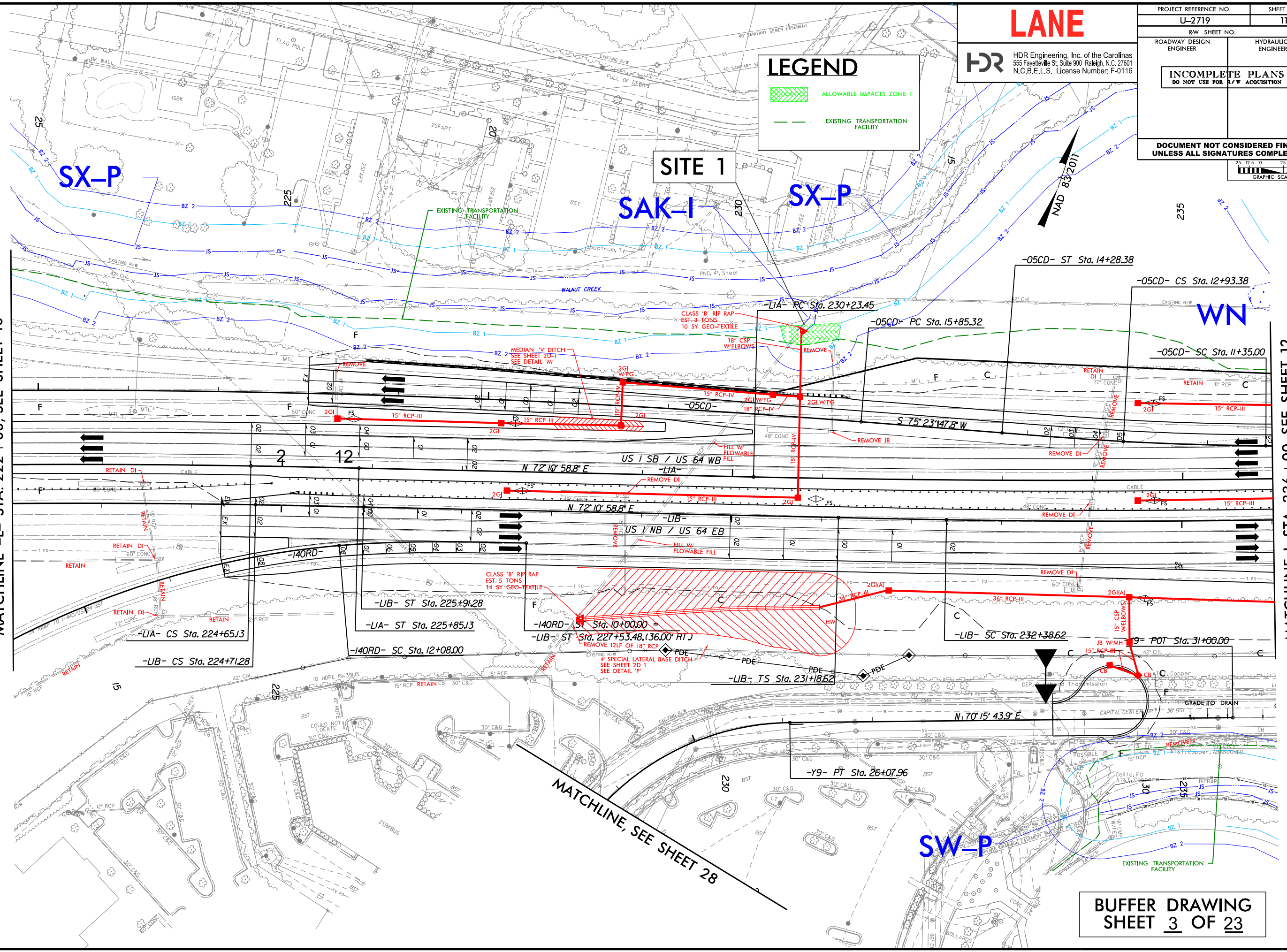
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DATE: 6/25/2019
TIME: 10:24:57 AM
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REVISIONS

PLOT DRIVER: NCDOT.pdf_color_eng_100.plt
USER: CMYERS
PENTABLE: NCDOT_permit.s_ncon.tbl
TIME: 10/25/2013
DATE: 6/25/2013
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REVISIONS

MATCHLINE -L- STA. 222+00, SEE SHEET 10



LANE

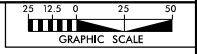


HDR Engineering, Inc. of the Carolinas
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

LEGEND

- ALLOWABLE IMPACTS ZONE 1
- EXISTING TRANSPORTATION FACILITY

PROJECT REFERENCE NO.	SHEET NO.
U-2719	11
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	

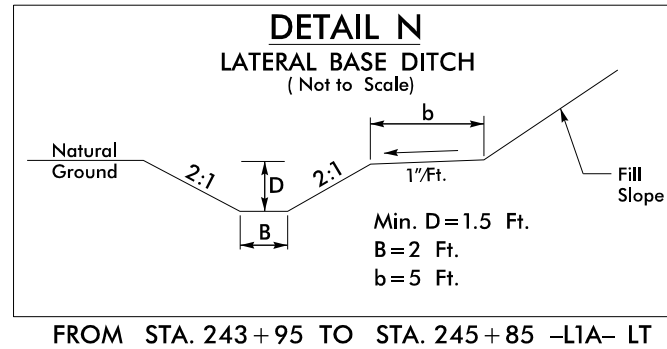
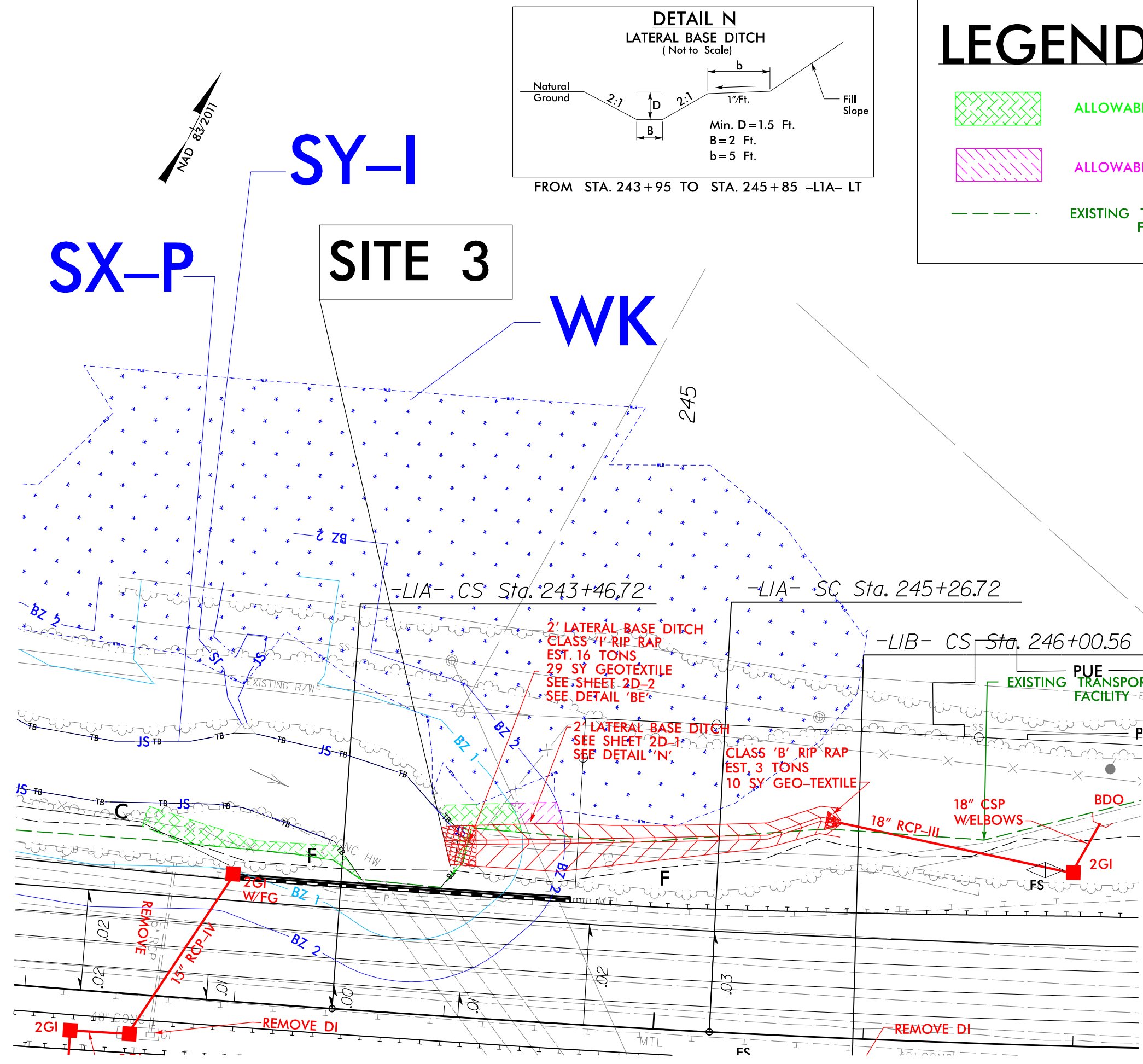


BUFFER DRAWING
SHEET 3 OF 23

MATCHLINE-L-STA. 236+00, SEE SHEET 12

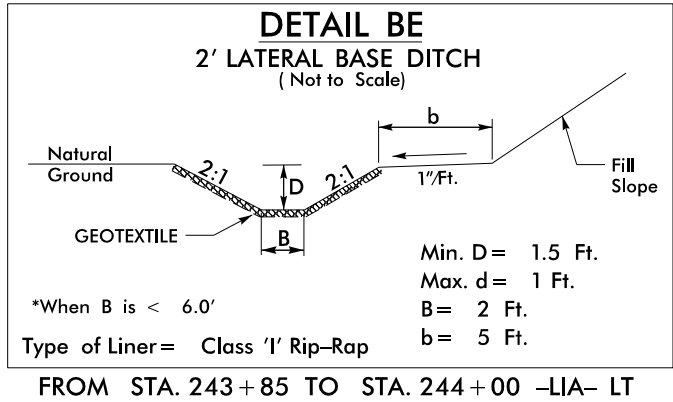
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DATE: 6/25/2019

REVISIONS



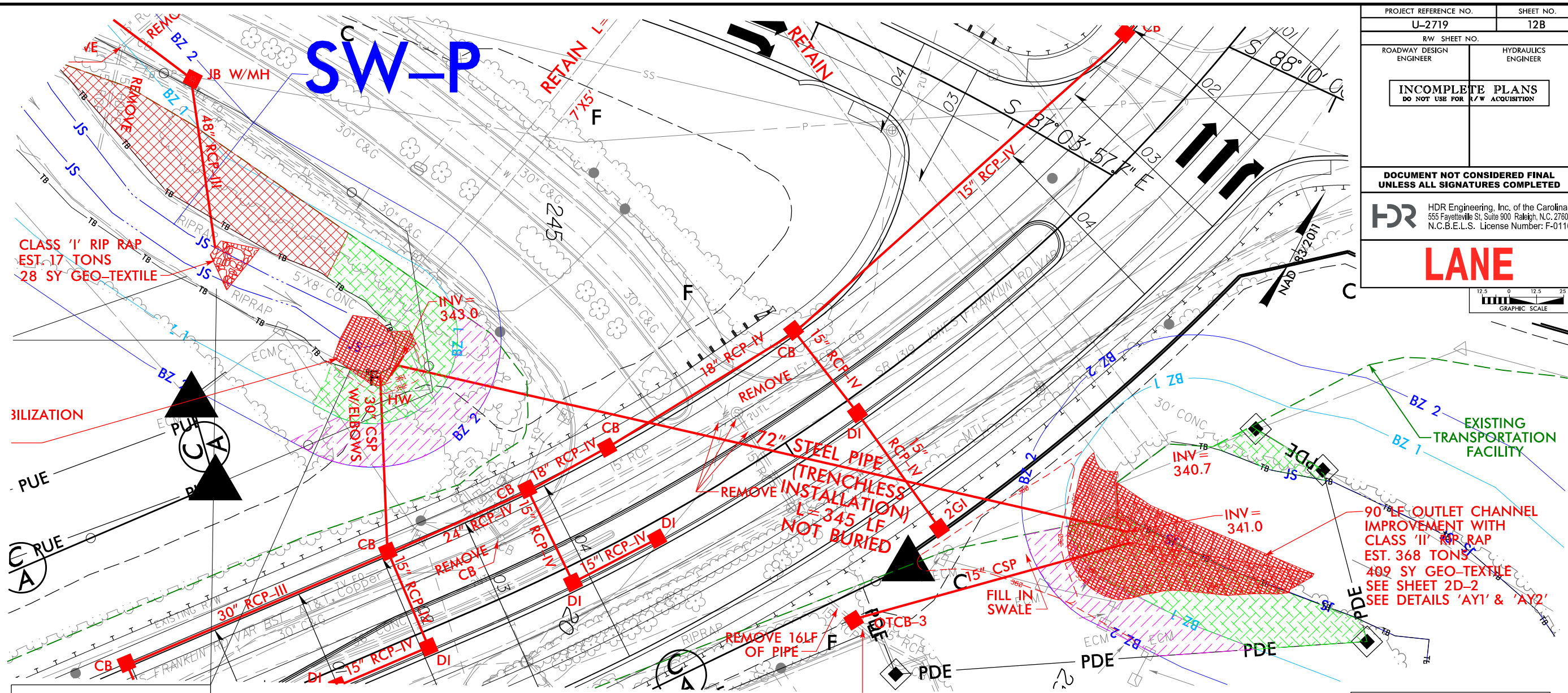
LEGEND

- ALLOWABLE IMPACTS ZONE 1
- ALLOWABLE IMPACTS ZONE 2
- EXISTING TRANSPORTATION FACILITY



PROJECT REFERENCE NO.	SHEET NO.
U-2719	12A
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	
HDR Engineering, Inc. of the Carolinas 555 Fayetteville St, Suite 900 Raleigh, N.C. 27601 N.C.B.E.L.S. License Number: F-0116	
LANE	
12.5 0 12.5 25 GRAPHIC SCALE	

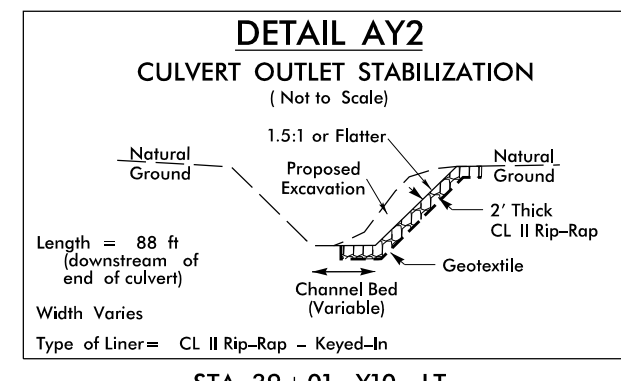
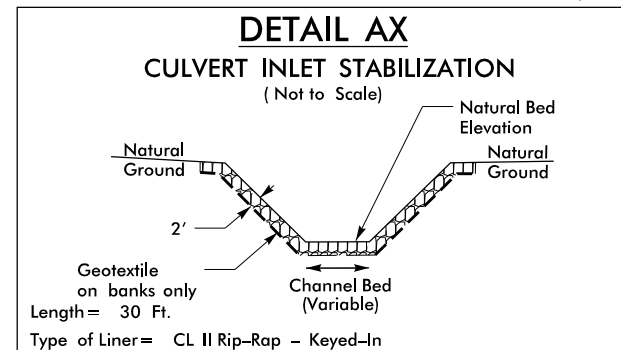
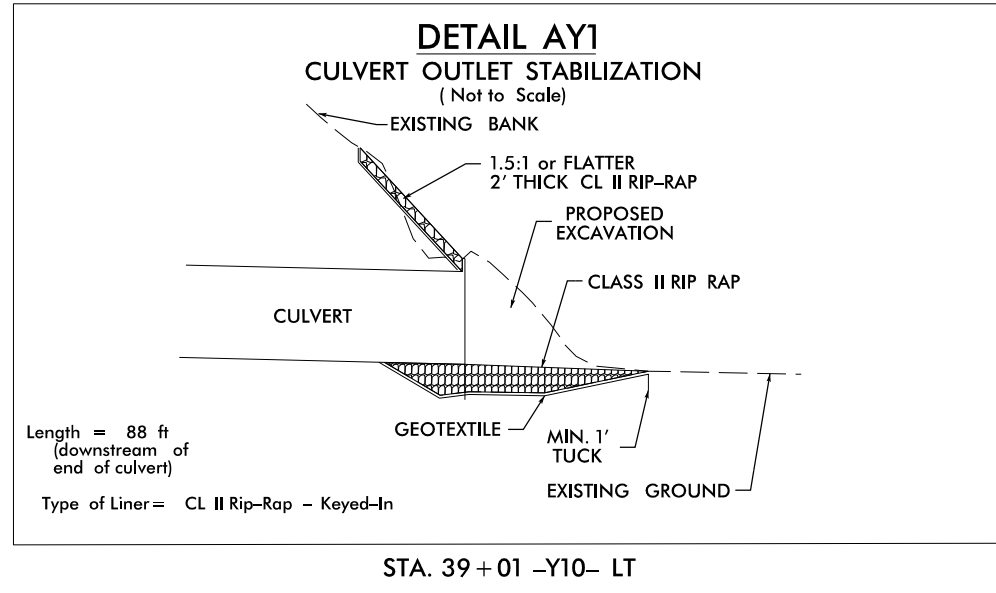
REVISIONS



PROJECT REFERENCE NO. U-2719		SHEET NO. 12B	
RW SHEET NO. ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION			
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			
HDR Engineering, Inc. of the Carolinas 555 Fayetteville St, Suite 900 Raleigh, N.C. 27601 N.C.B.E.L.S. License Number: F-0116			
LANE			
12.5 0 12.5 25 GRAPHIC SCALE			

SITE 4

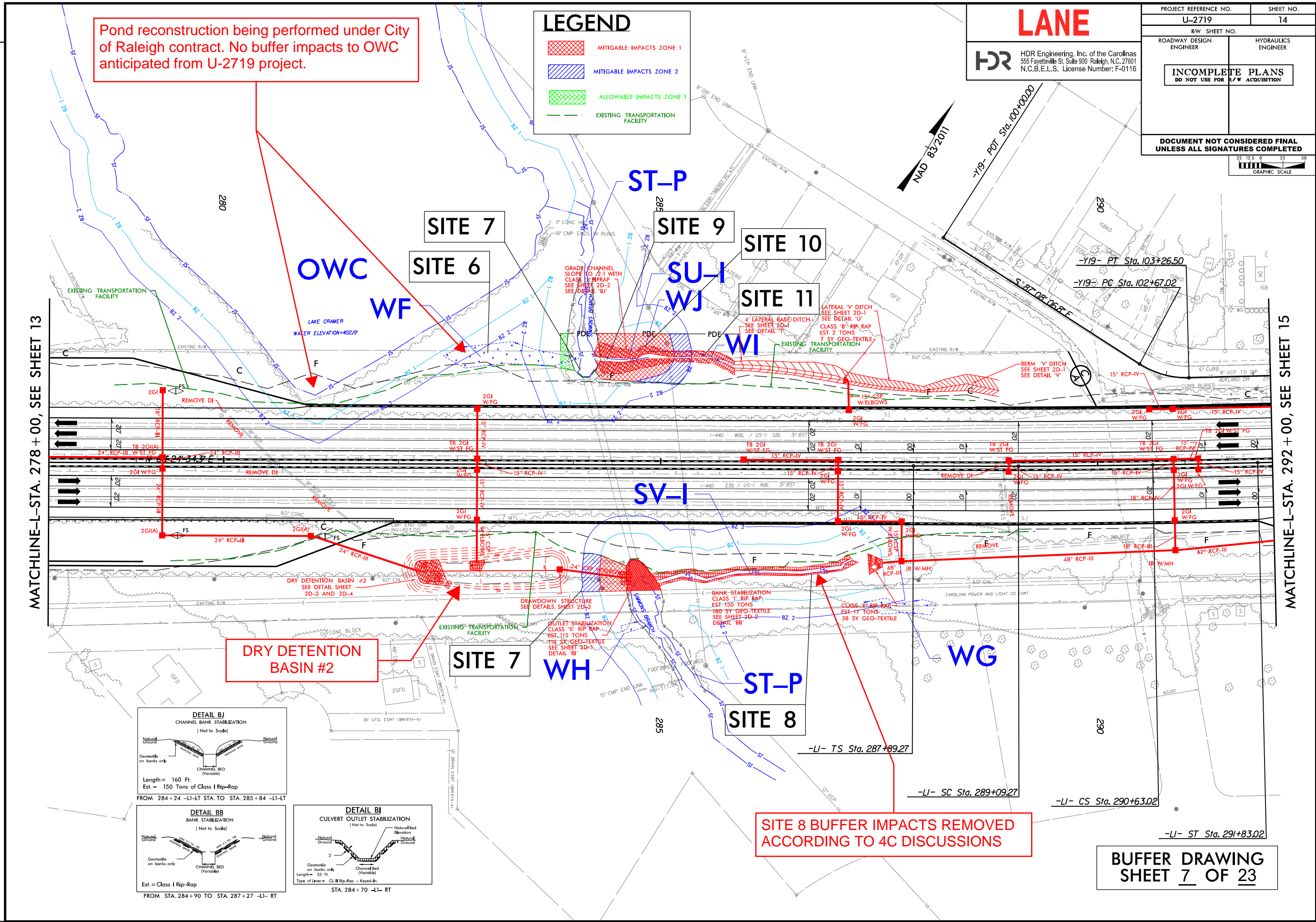
SITE 3



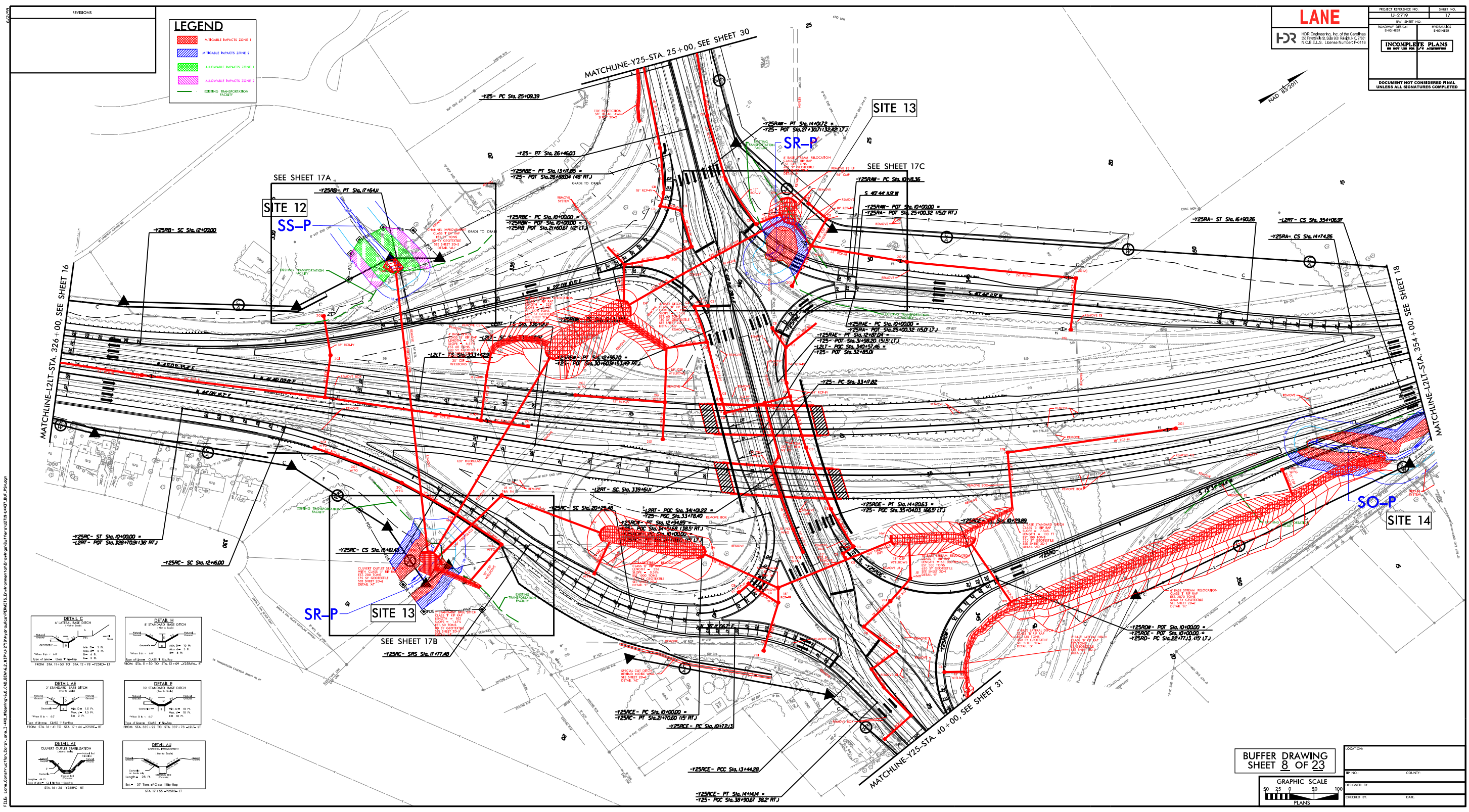
LEGEND

- MITIGABLE IMPACTS ZONE 1
- ALLOWABLE IMPACTS ZONE 1
- ALLOWABLE IMPACTS ZONE 2
- EXISTING TRANSPORTATION FACILITY

REVISIONS



SITE 8 BUFFER IMPACTS REMOVED
ACCORDING TO 4C DISCUSSIONS



REVISIONS	

LEGEND

- MITIGABLE IMPACTS ZONE 1
- MITIGABLE IMPACTS ZONE 2
- ALLOWABLE IMPACTS ZONE 1
- ALLOWABLE IMPACTS ZONE 2
- EXISTING TRANSPORTATION FACILITY

LANE

PROJECT REFERENCE NO.
U-2719

SHEET NO.
17

ROADWAY DESIGN
INCHES

HYDRAULICS
INCHES

INCOMPLETE PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

DETAIL C
6" STANDARD BASE DECH
(10' to 12' Base)

Grade: 1.5%
Length: 10' to 12'
From: STA. 11+53 TO STA. 12+78 -Y25RC-LT

DETAIL H
6" STANDARD BASE DECH
(10' to 12' Base)

Grade: 1.5%
Length: 10' to 12'
From: STA. 11+53 TO STA. 12+78 -Y25RC-LT

DETAIL AE
2" STANDARD BASE DECH
(10' to 12' Base)

Grade: 1.5%
Length: 10' to 12'
From: STA. 11+53 TO STA. 12+78 -Y25RC-LT

DETAIL E
10' STANDARD BASE DECH
(10' to 12' Base)

Grade: 1.5%
Length: 10' to 12'
From: STA. 11+53 TO STA. 12+78 -Y25RC-LT

DETAIL AT
CULVERT CULVERT STABILIZATION
(10' to 12' Base)

Grade: 1.5%
Length: 10' to 12'
From: STA. 11+53 TO STA. 12+78 -Y25RC-LT

DETAIL AU
CULVERT CULVERT STABILIZATION
(10' to 12' Base)

Grade: 1.5%
Length: 10' to 12'
From: STA. 11+53 TO STA. 12+78 -Y25RC-LT

GRAPHIC SCALE
0 25 50 100
PLANS

LOCATION:
TP NO.: COUNTY:
DESIGNED BY:
CHECKED BY: DATE:

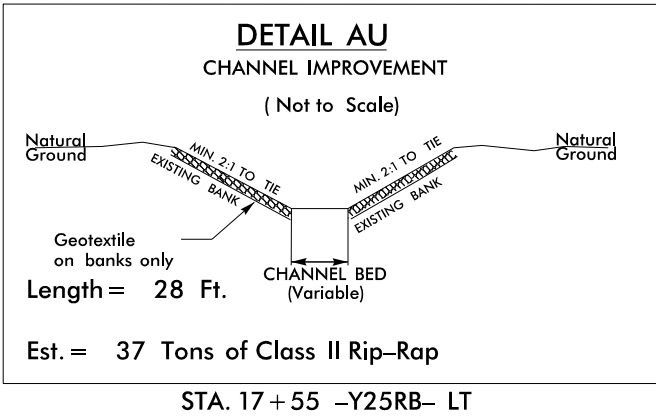
BUFFER DRAWING
SHEET 8 OF 23

DATE:
10/1/2019

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DATE: 10/1/2019
TIME: 10:10 AM
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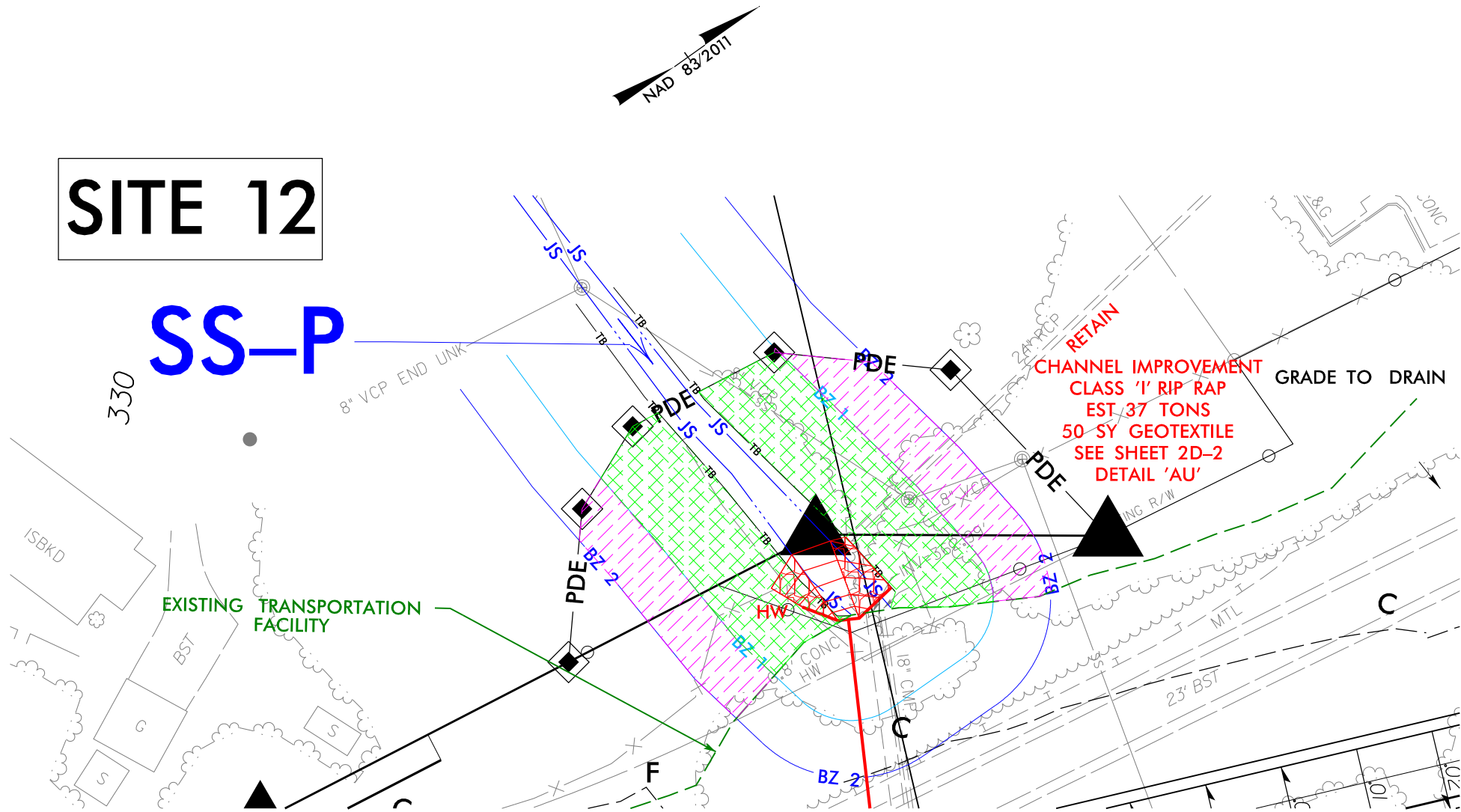
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TIME: 6/24/2019 3:52:03 PM

REVISIONS



LEGEND

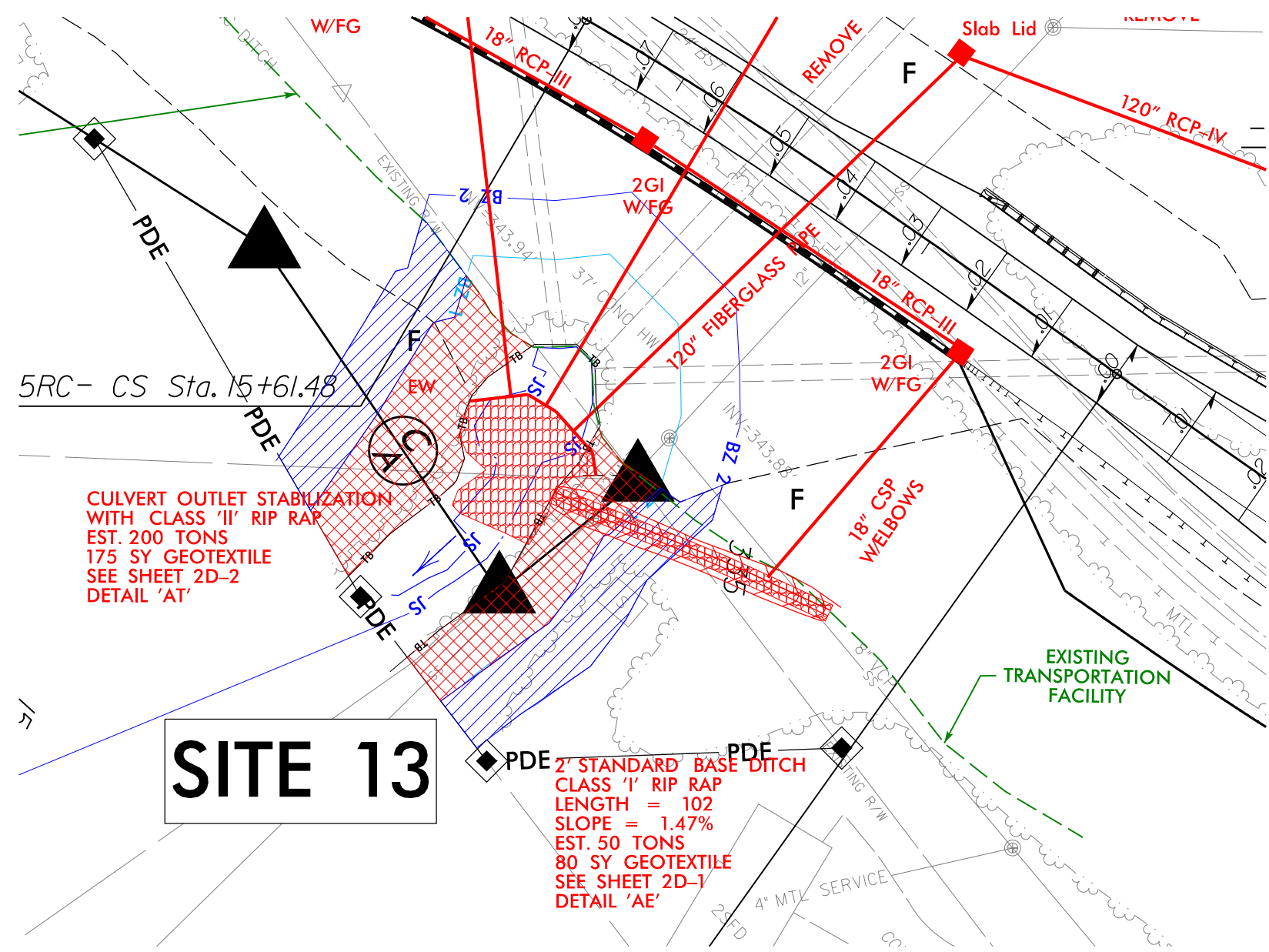
- ALLOWABLE IMPACTS ZONE 1
- ALLOWABLE IMPACTS ZONE 2
- EXISTING TRANSPORTATION FACILITY



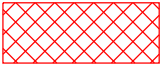
PROJECT REFERENCE NO. U-2719		SHEET NO. 17A	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION			
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			
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LANE			
 GRAPHIC SCALE			

PLOT DRIVER: NCDOT_pdf_color_eng-100.plt
USER: CMYERS
FILE: Lane_Construction_Corp\Lane_I-440_Widening\6.0_CAD\BIM\6.2_WIP\U-2719\Hydraulics\PERMITS\Environmental\Drawings\Buffer s\U2719-U4437_BUF_PSH.dgn
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TIME: 3:52:08 PM

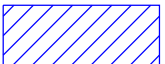
REVISIONS




LEGEND



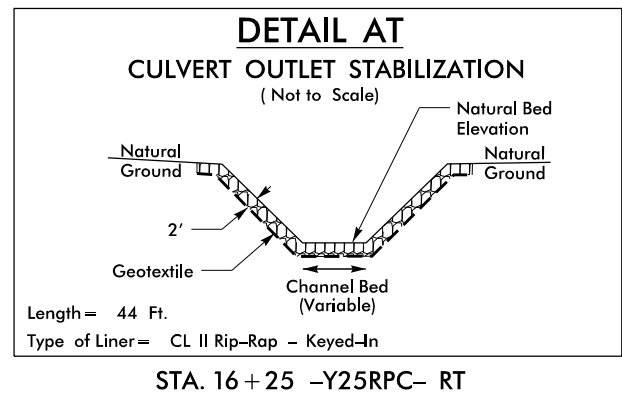
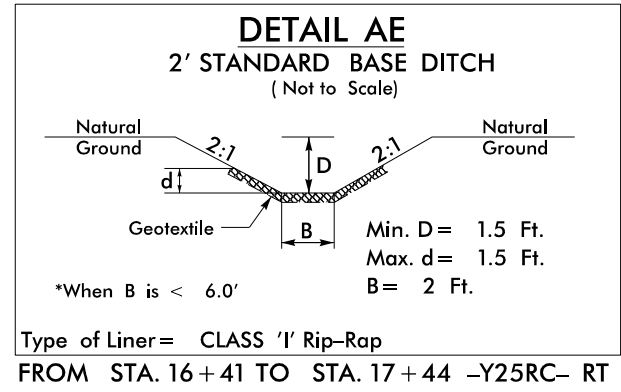
MITIGABLE IMPACTS ZONE 1



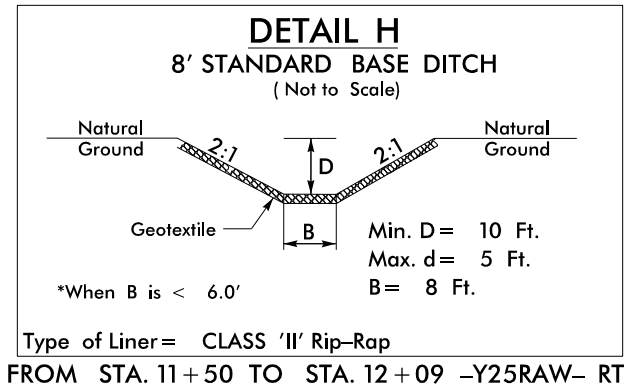
MITIGABLE IMPACTS ZONE 2



EXISTING TRANSPORTATION FACILITY



REVISIONS




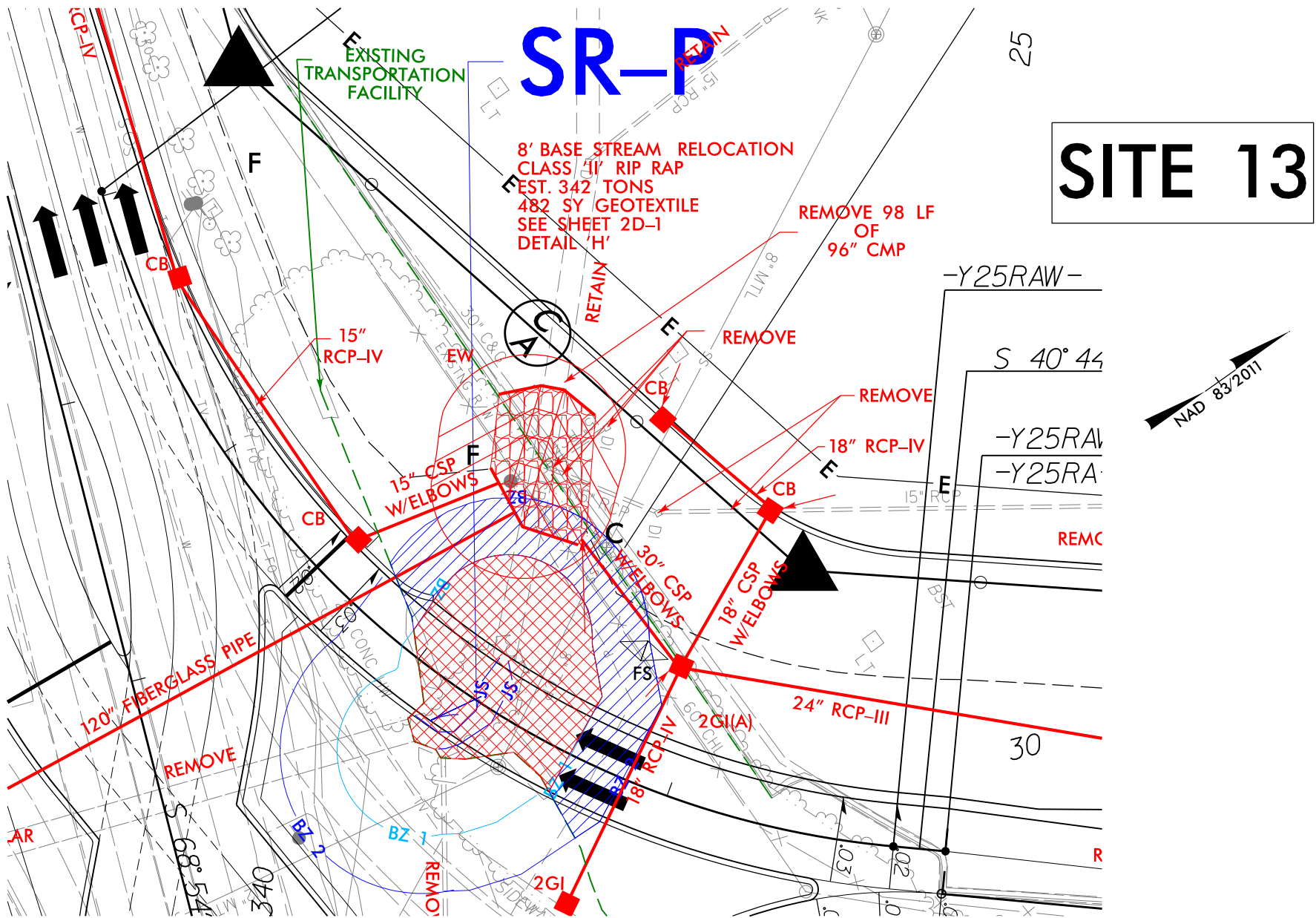
LEGEND

MITIGABLE IMPACTS ZONE 1

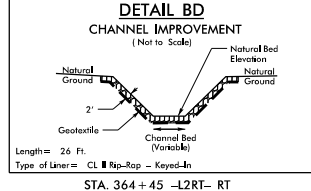
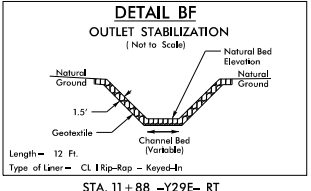
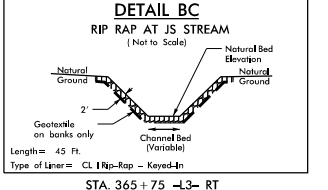
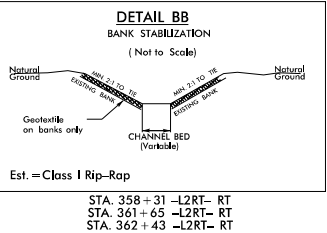
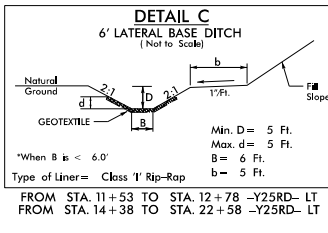
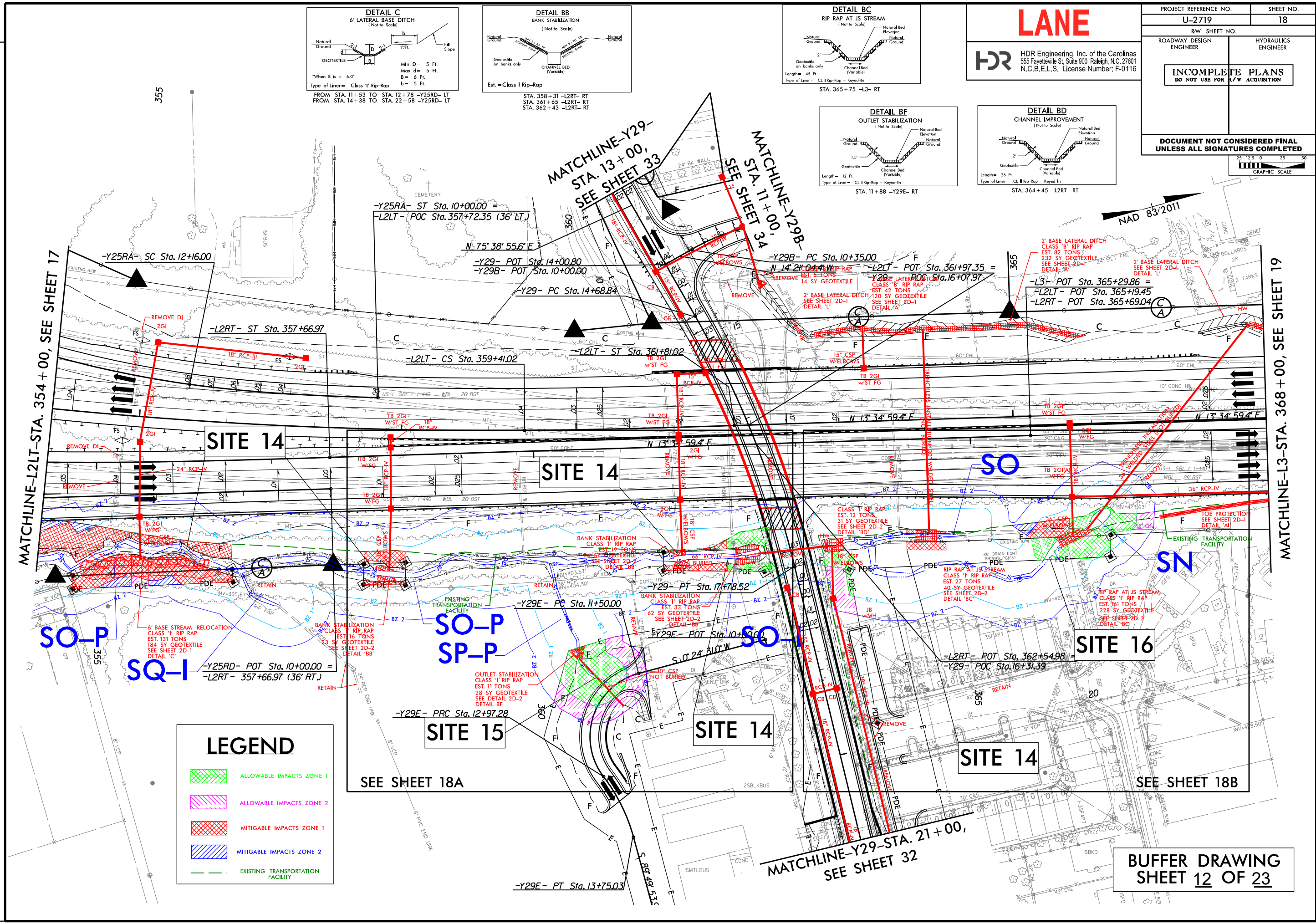
MITIGABLE IMPACTS ZONE 2

EXISTING TRANSPORTATION FACILITY

PROJECT REFERENCE NO.		SHEET NO.	
U-2719		17C	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
<div>INCOMPLETE PLANS</div> <div>DO NOT USE FOR R/W ACQUISITION</div>			
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			
<div> HDR Engineering, Inc. of the Carolinas 555 Fayetteville St, Suite 900 Raleigh, N.C. 27601 N.C.B.E.L.S. License Number: F-0116</div>			
LANE			
<div><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div><div>12.50 0 12.50 25</div><div>GRAPHIC SCALE</div></div>			




REVISIONS



LANE

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N.C.B.E.L.S. License Number: F-0116

PROJECT REFERENCE NO.		SHEET NO.	
U-2719		18	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
<div>INCOMPLETE PLANS</div> <div>DO NOT USE FOR R/W ACQUISITION</div>			
<div>DOCUMENT NOT CONSIDERED FINAL</div> <div>UNLESS ALL SIGNATURES COMPLETED</div>			
<div>2512.502550</div> <div></div> <div>GRAPHIC SCALE</div>			

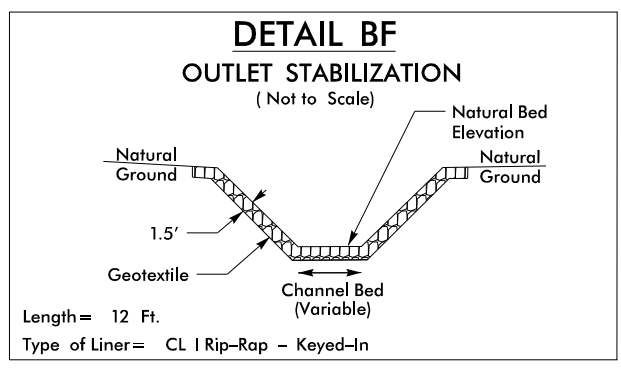
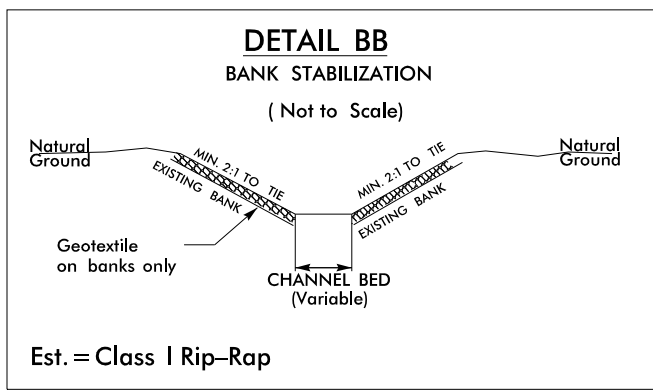
LEGEND

- ALLOWABLE IMPACTS ZONE 1
- ALLOWABLE IMPACTS ZONE 2
- MITIGABLE IMPACTS ZONE 1
- MITIGABLE IMPACTS ZONE 2
- EXISTING TRANSPORTATION FACILITY

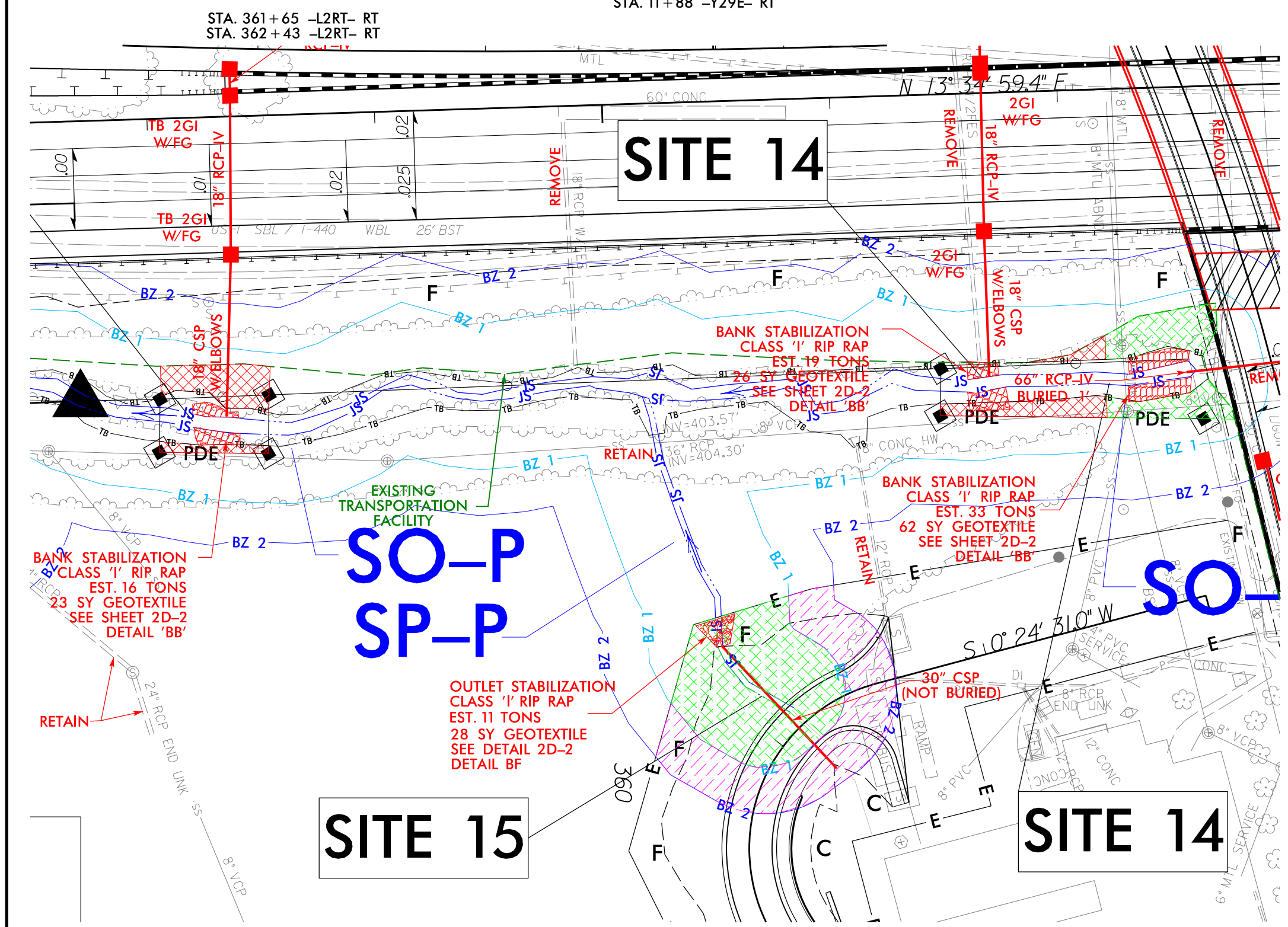
BUFFER DRAWING
SHEET 12 OF 23

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REVISIONS

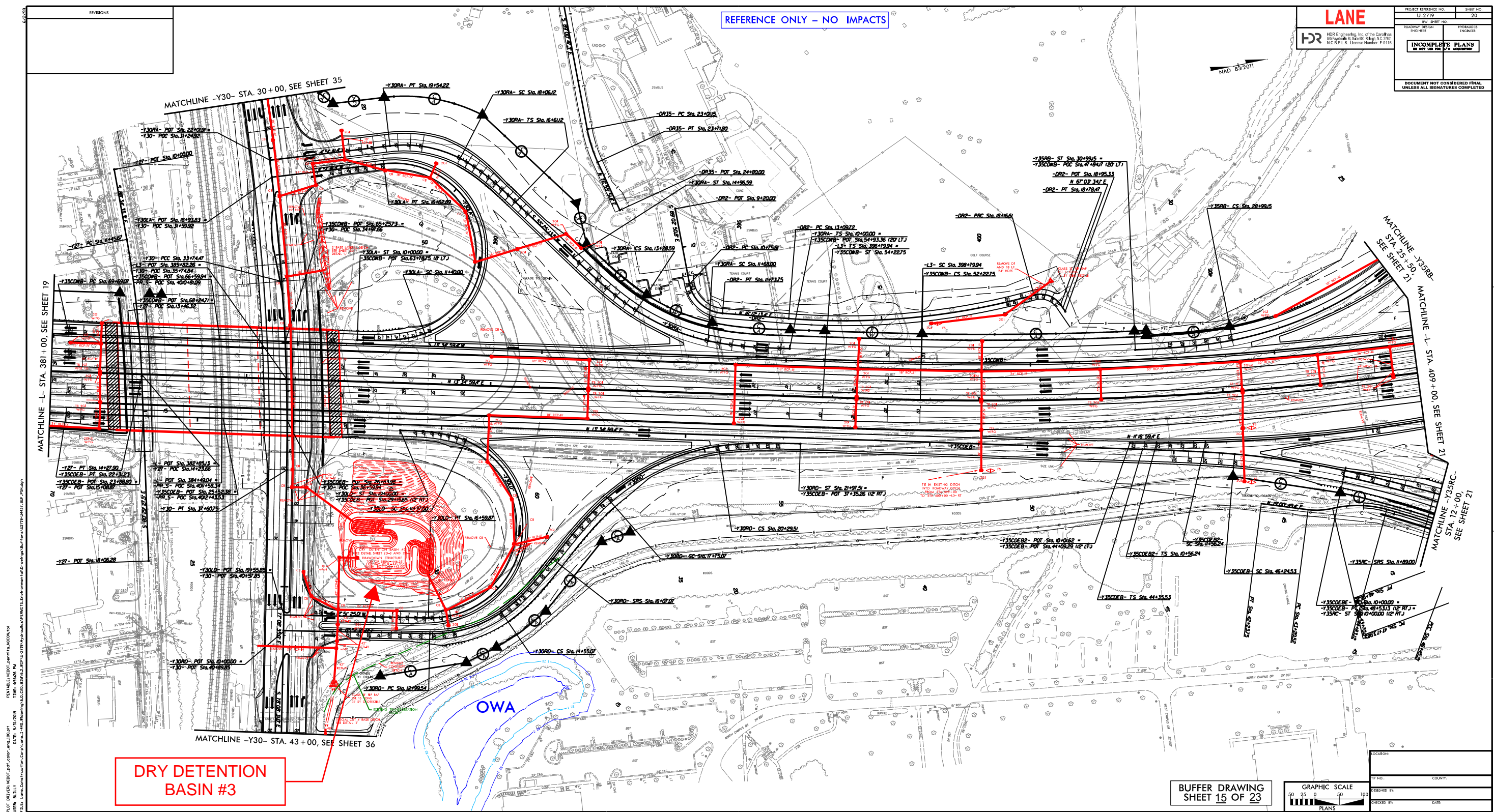


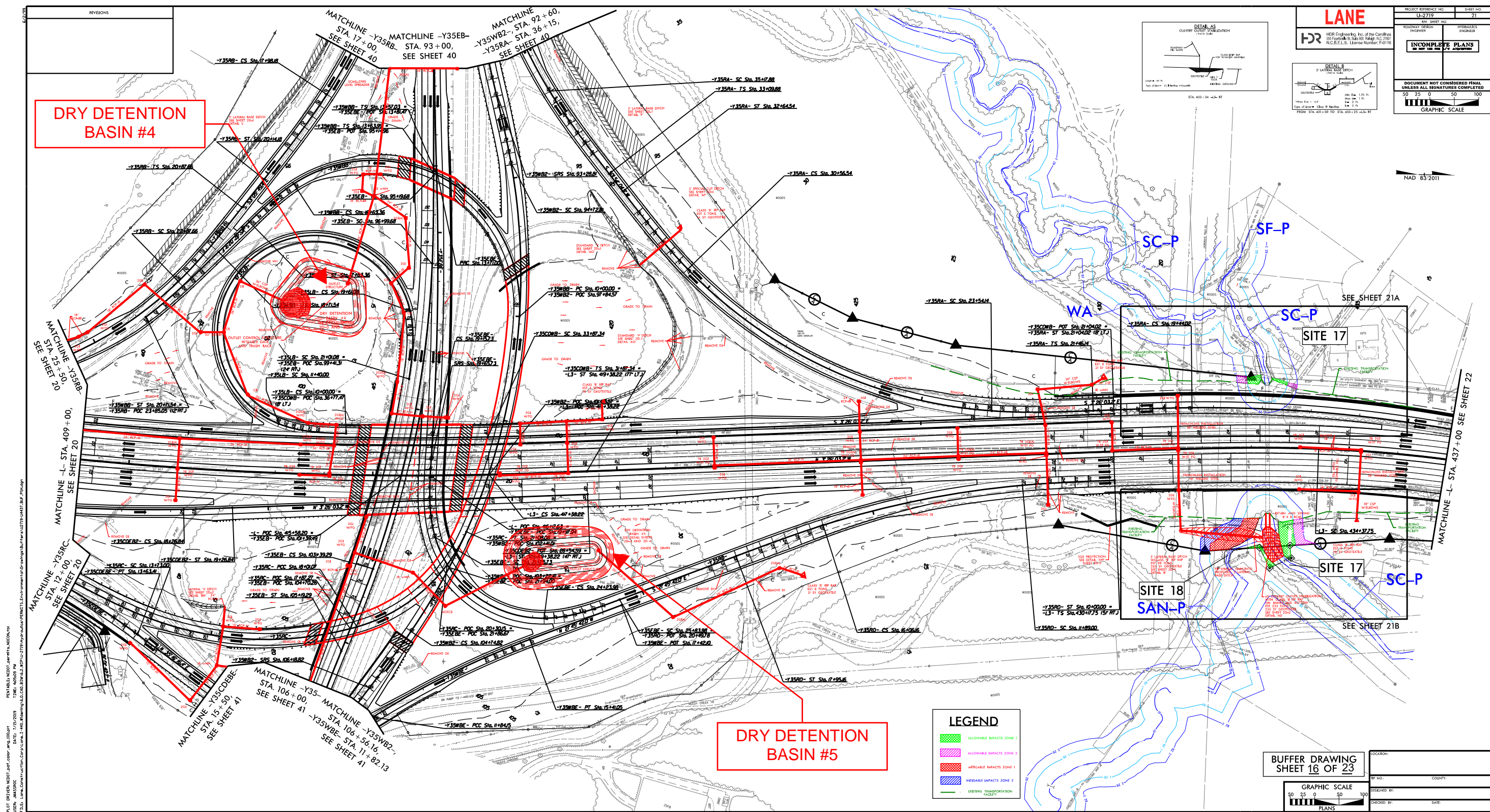
PROJECT REFERENCE NO.		SHEET NO.	
U-2719		18A	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION			
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			
HDR Engineering, Inc. of the Carolinas 555 Fayetteville St, Suite 900 Raleigh, N.C. 27601 N.C.B.E.L.S. License Number: F-0116			
LANE			



LEGEND

- ALLOWABLE IMPACTS ZONE 1
- ALLOWABLE IMPACTS ZONE 2
- MITIGABLE IMPACTS ZONE 1
- EXISTING TRANSPORTATION FACILITY



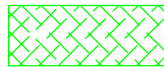


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TIME: 3:52:49 PM
DATE: 6/24/2019

REVISIONS

LEGEND



ALLOWABLE IMPACTS ZONE 1





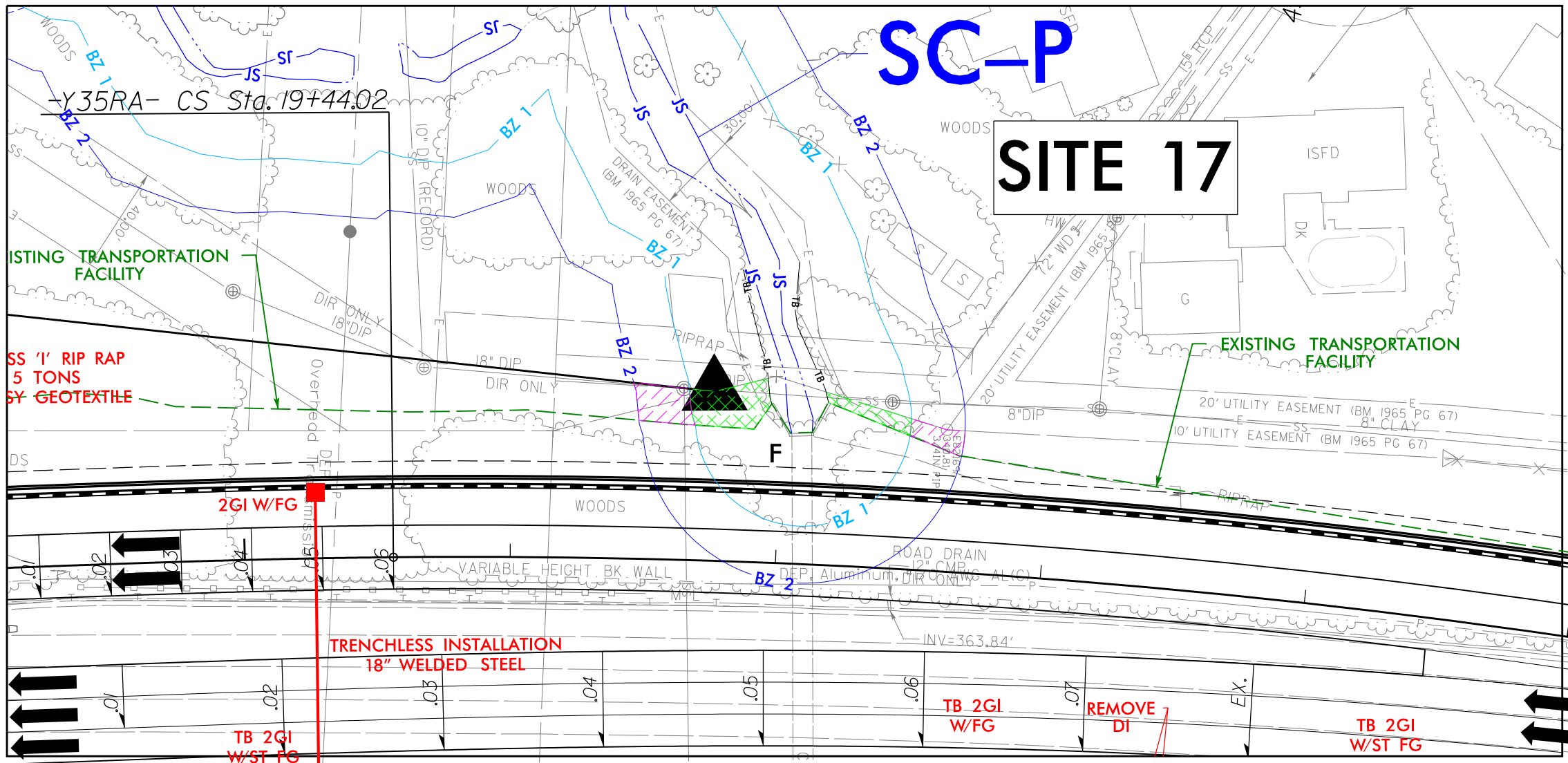
ALLOWABLE IMPACTS ZONE 2



EXISTING TRANSPORTATION FACILITY

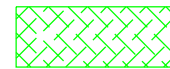
NAD 83/2011

PROJECT REFERENCE NO.		SHEET NO.	
U-2719		21A	
R/W SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
<div>INCOMPLETE PLANS</div> <div>DO NOT USE FOR R/W ACQUISITION</div>			
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			
		HDR Engineering, Inc. of the Carolinas 555 Fayetteville St, Suite 900 Raleigh, N.C. 27601 N.C.B.E.L.S. License Number: F-0116	
<div>LANE</div>			
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BUFFER DRAWING
SHEET 17 OF 23

LEGEND



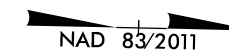
ALLOWABLE IMPACTS ZONE 1



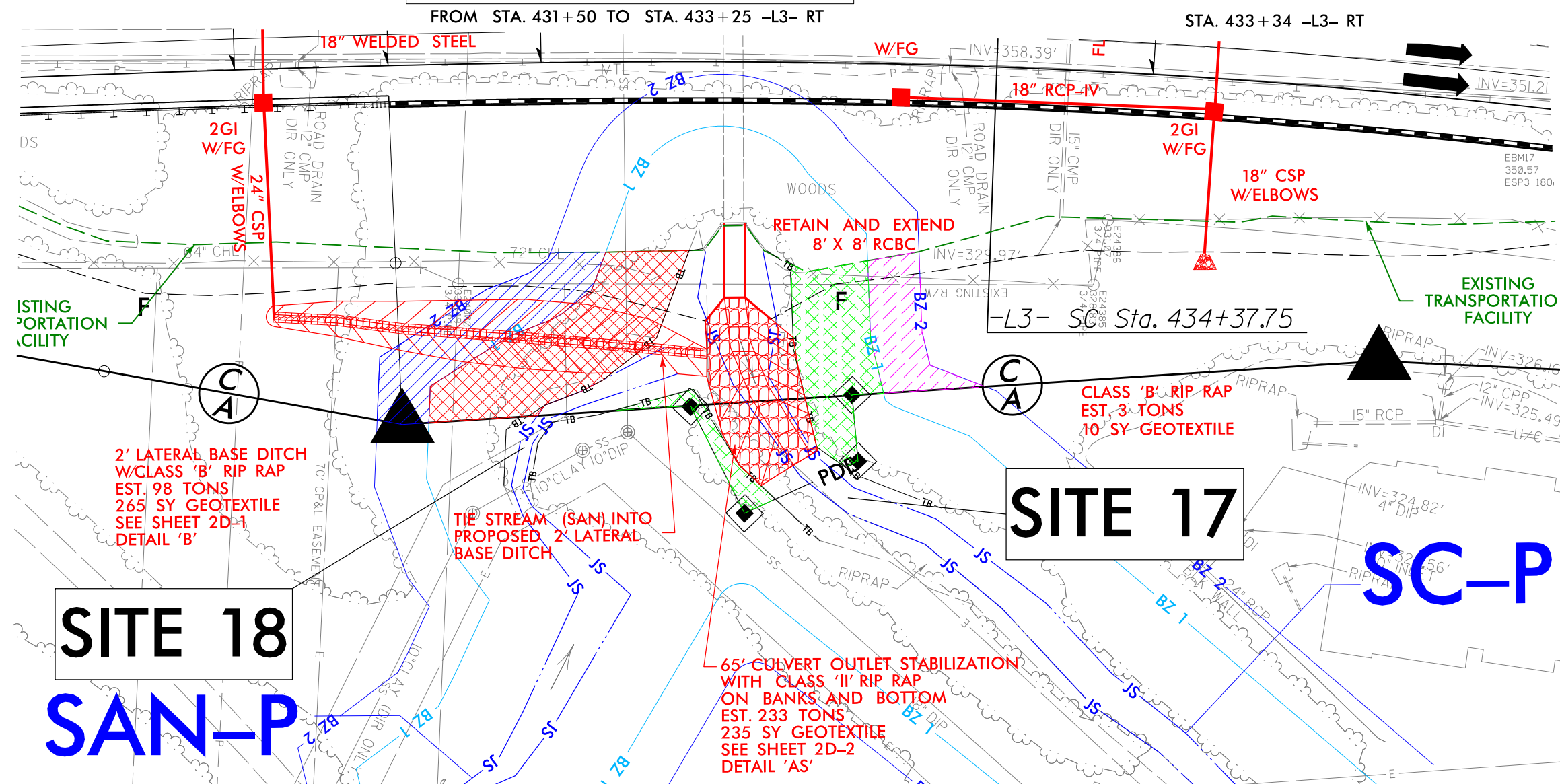
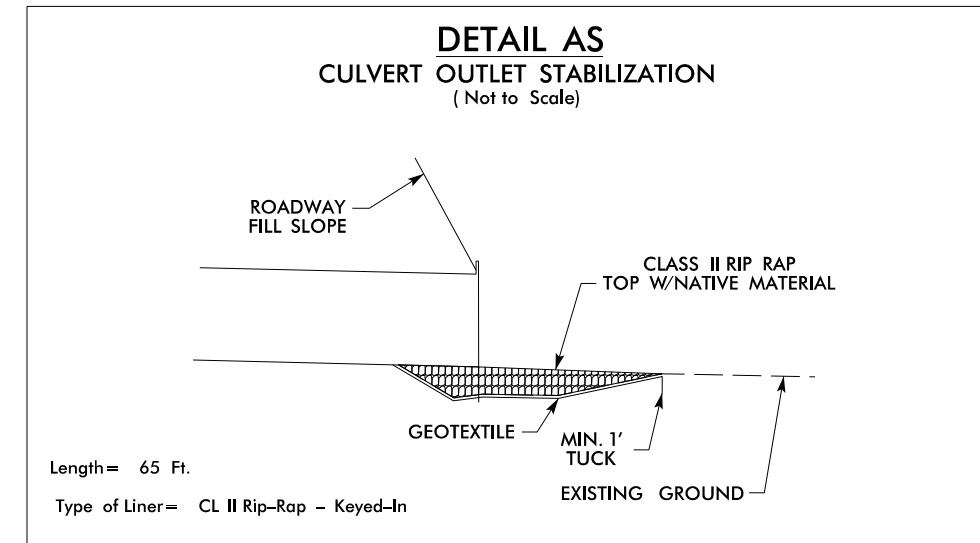
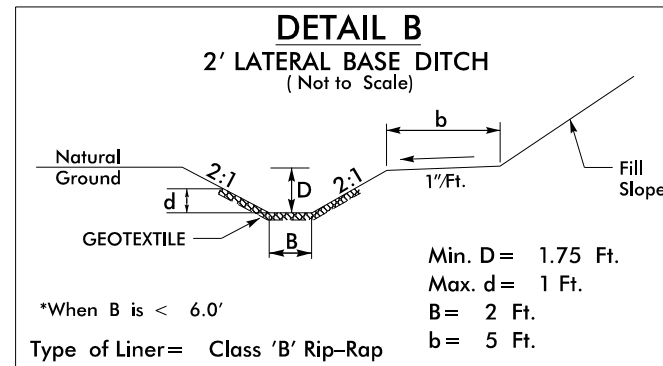
ALLOWABLE IMPACTS ZONE 2



EXISTING TRANSPORTATION FACILITY



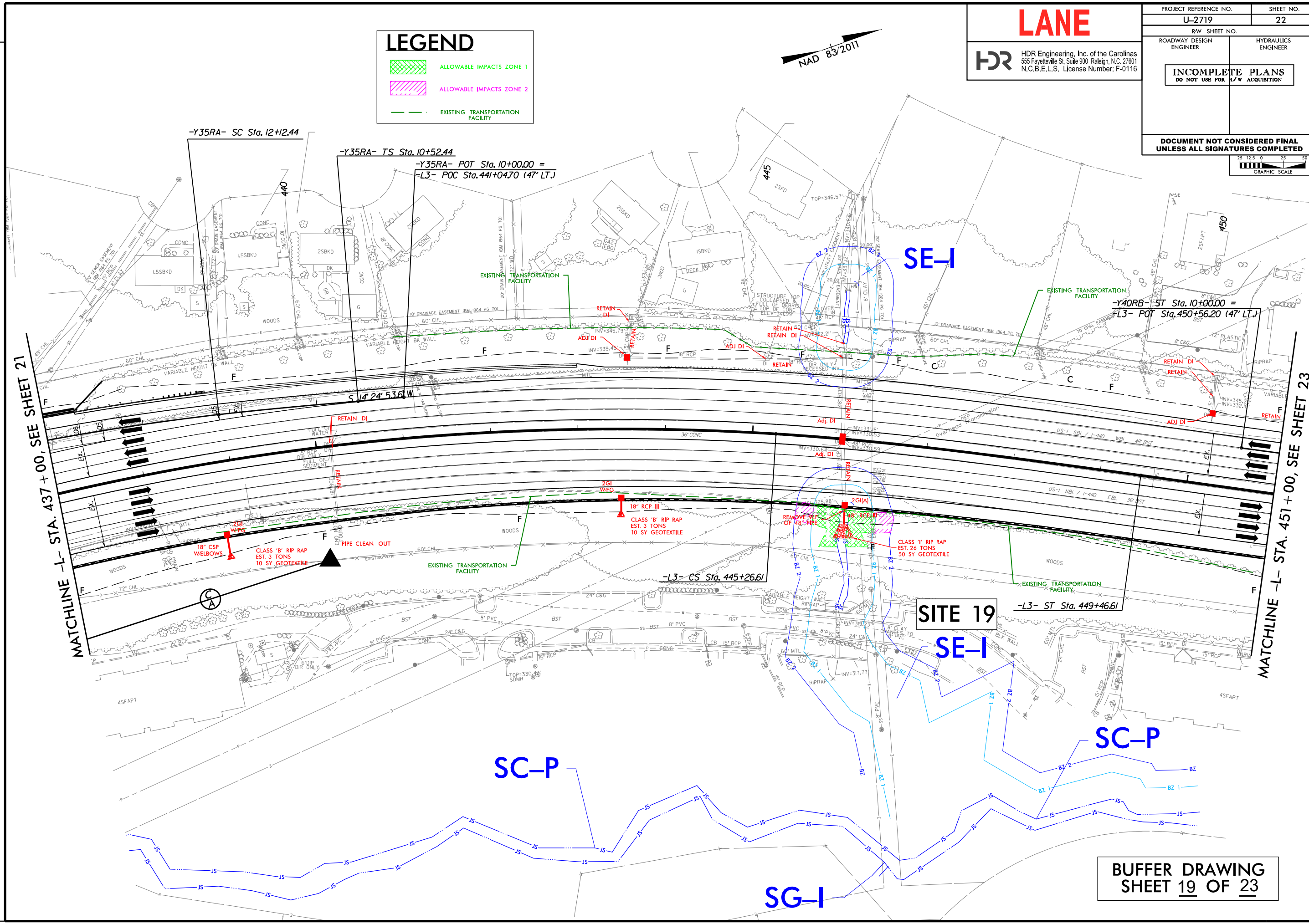
NAD 83/2011



BUFFER DRAWING
SHEET 18 OF 23

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TIME: 6/4/2019 3:18:40 PM

REVISIONS



LANE

HDR

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

PROJECT REFERENCE NO.
U-2719

SHEET NO.
22

R/W SHEET NO.

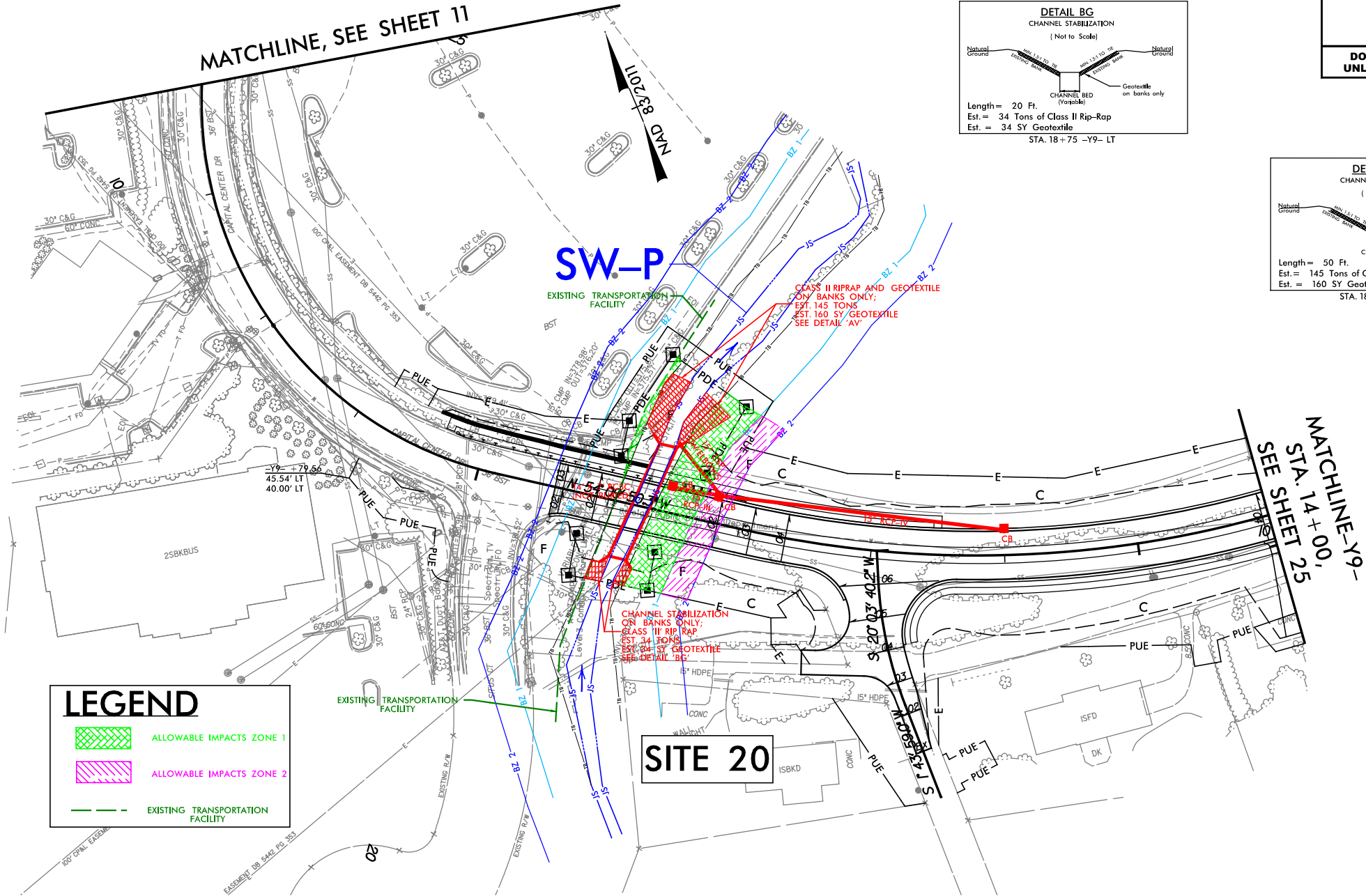
ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR A/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALE
25 12.5 0 25 50
Feet

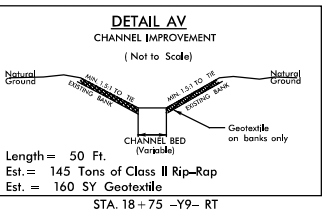
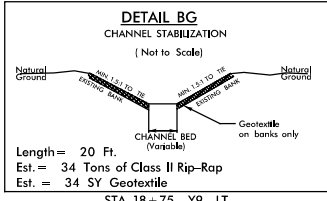
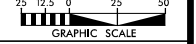


LANE

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555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

PROJECT REFERENCE NO.	SHEET NO.
U-2719	28
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION	

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



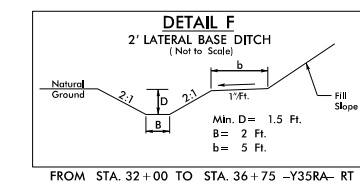
LEGEND

- ALLOWABLE IMPACTS ZONE 1
- ALLOWABLE IMPACTS ZONE 2
- EXISTING TRANSPORTATION FACILITY

SITE 20

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TIME: 4:03:52 PM
DATE: 7/15/2019

MATCHLINE-Y35- STA. 79+00, SEE SHEET 39



LEGEND

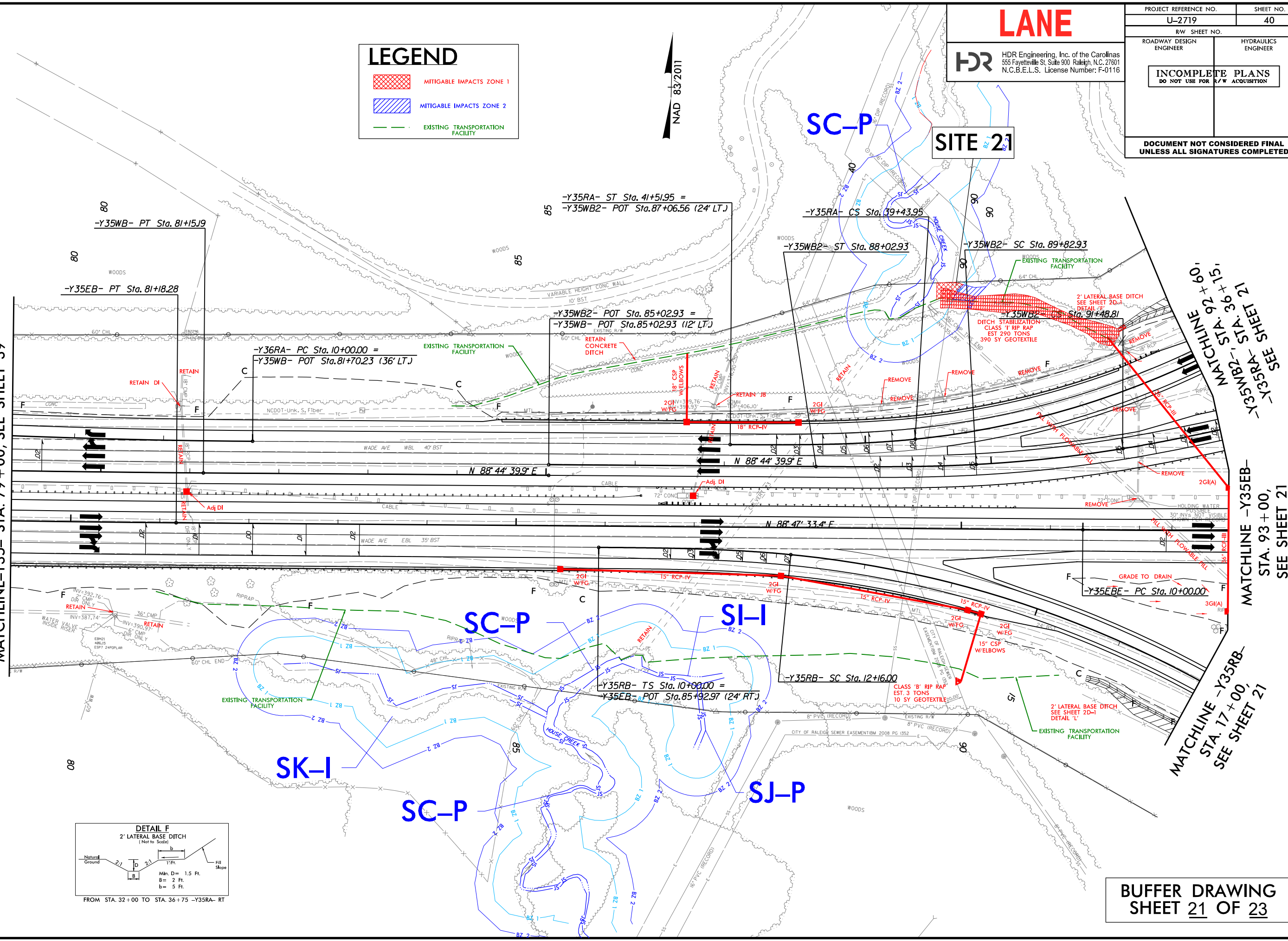
- MITIGABLE IMPACTS ZONE 1
- MITIGABLE IMPACTS ZONE 2
- EXISTING TRANSPORTATION FACILITY

NAD 83/2011

LANE

HDR HDR Engineering, Inc. of the Carolinas
555 Fayetteville St. Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

PROJECT REFERENCE NO.		SHEET NO.	
U-2719		40	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION			
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			



BUFFER DRAWING
SHEET 21 OF 23

RIPARIAN BUFFER IMPACTS SUMMARY													
Site No.	Station (From/To)	Structure Size / Type	IMPACTS									BUFFER REPLACEMENT	
			TYPE			ALLOWABLE			MITIGABLE				
			ROAD CROSSING	BRIDGE	PARALLEL IMPACT	ZONE 1 (ft²)	ZONE 2 (ft²)	TOTAL (ft²)	ZONE 1 (ft²)	ZONE 2 (ft²)	TOTAL (ft²)	ZONE 1 (ft²)	ZONE 2 (ft²)
1	SAK - 230+75 -L1A- Lt	Rip Rap at 18" Outlet	X			1272		1272					
3	SX - 245+72 -L1A-	Culvert Clean Out	X			1753	212	1965					
		Bank Stabilization	X			3612	1923	5535					
4	SW - 41+85 -Y10- Rt	Rip Rap in Stream			X	2985	2221	5206	3711		3711		
6*					X								
7	ST - 284+75 -L1- Rt	Outlet Stabilizat	X		X	408		408	1052	871	1923		
8**	SV - 286+00 -L1- Rt												
9	SU - 284+50 -L1- Lt	Bank Stabilization			X				3931	1346	5277		
12	SS - 17+50 -Y25RB- Lt	Channel Imp./Bank Stab.	X			6199	3968	10167					
13	SR -16+20 -Y25RC- Rt	Roadway Fill/Outlet Stabilization	X						8902	7738	16640		
14	SO - 15+79 -Y25RD-	Roadway Fill	X		X	6846	1384	8230	14827	7423	22250		
15	SP - 11+90 -Y29E-	30" CSP	X			3767	3730	7497					
16	SN - 365+75 -L3- Rt	36" WSP & 36" CSP	X		X	3379	367	3746	775	206	981		
17	SC - 433+33 -L3-	8' x 8' Culvert Extension/Stab.	X			3660	1592	5252					
18	SAN - 433+00 -L3- Rt	2' Base Lateral Ditch			X				3035	2070	5105		
19	SE - 466+00 -L3-	48" RCP Extension	X			2179	926	3105					
20	SW - 18+75 -Y9-	14' x 7' RCBC	X			5146	3035	8181					
21	SC - 38+70 -Y35RA- Rt	Bank Stabilization			X				433	406	839		
TOTALS*:						41206	19358	60564	36666	20060	56726	0	0

NOTES:

* POND OWC BUFFER IMPACTS REMOVED DUE TO CITY OF RALEIGH CONTRACT

** SITE 8 BUFFER IMPACTS REMOVED DUE TO UTILITY EASEMENT MAINTENANCE AND 4C DISCUSSION

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
06/24/2019
WAKE COUNTY
U-2719
35869.3.1
SHEET 22 OF 23

WETLANDS IN BUFFER IMPACTS SUMMARY

			WETLANDS IN BUFFERS	
SITE NO.	STATION (FROM/TO)		ZONE 1 (ft ²)	ZONE 2 (ft ²)
10	WJ		36	
11	WI		14	25
TOTAL:			50	25

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

Avoidance and Minimization

All jurisdictional features were delineated, field verified and surveyed within the right of way for U-2719. Using these surveyed features, preliminary designs were adjusted to avoid and/or minimize impacts to jurisdictional areas. NCDOT employs many strategies to avoid and minimize impacts to jurisdictional areas in all of its designs. Many of these strategies have been incorporated into BMP documents that have been reviewed and approved by the resource agencies and will be followed throughout construction. All wetland areas not affected by the project will be protected from unnecessary encroachment. Individual avoidance and minimization efforts are detailed below for the project. Site specific measures are detailed by name and impact sheet number for ease in identification in the plan set.

General Avoidance and Minimization Efforts

- NCDOT will minimize long-term water quality impacts using the most recent Best Management Practices for Protection of Surface Waters, as identified in the Federal Aid Highway Program (FHPM) and North Carolina Administrative Code, Chapter 4.
- Sediment and erosion control measures will accommodate a 25- year storm event.
- NCDOT will avoid placing erosion control devices in wetlands.
- Special sediment control fence will be used at wetlands and low areas along the standard silt fence.
- Guardrail with 2:1 slopes was utilized throughout the project to minimize impacts to streams and wetlands.
- Riprap will only be placed in the bed of the channels during stabilization of outlet structures as necessary to prevent further degradation of the stream systems. These locations are illustrated on the attached plans.
- Dry detention basins have been proposed at specific locations along the project.
- Ditches have been designed to meet grass swale criteria to the maximum extent practical. These are summarized in the Stormwater Management Plan.
- Ditches and pipes that outlet adjacent to wetlands have been designed to have non-erosive velocities.
- Provided larger rock (Class I/ Class II) at ditch tie-ins with jurisdictional features to provide increased stability at locations with greater volumes and high velocities.
- Interchanges were reconfigured to minimize the overall footprint as much as possible and therefore reduce jurisdictional and right of way impacts.

Avoidance of Jurisdictional Resources

- Impacts have been avoided for SA, SB, SD, SC, SG, SF, SH, SU, SV, SN, SQ, SY, SZ, SAA, SK, SI, SJ, SM, SAP, SAO, WA, WB, WD, WE, WL, WM, WG, WN, WQ, WS, WT, OWF, OWE
- Impacts to buffers of SAE, SAF, SAG, SAH, SAI, and SAI are avoided.
- Pond OWC is being impacted by a City of Raleigh project. NCDOT does not anticipate impacts to OWC due to roadway construction.

Avoidance/Minimization of Impacts to Stormwater Control Measures

- Existing Stormwater Control Measures (SCM) were avoided to the extent practical throughout the project.
- New stormwater management controls were added to meet the requirements where existing SCM were impacted due to construction.

Site Specific Minimization Efforts to Jurisdictional Resources

- At SE, a box was used to dissipate energy flows in the system (Permit Drawing Sheet 11 of 48).
- SO will be daylighted for 825lf with slopes and guardrails used to minimize impacts (Permit Drawing Sheet 17 of 48).
- The Ligon Street Bridge alignment along with retaining walls, and noise walls have been incorporated to minimize impacts to the apartment complex adjacent to Ligon Street and stream SO and SN. (Permit Drawing Sheet 18 of 48).
- 2:1 slopes with barriers will be used to minimize impacts to SC, with outlet protection embedded to natural stream elevation (Permit Drawing Sheet 21 of 48).
- The interchange was reconfigured north of Wade Avenue to avoid a culvert extension on SC (House Creek), therefore minimizing the overall footprint and reducing jurisdictional impacts (Plan Sheet 40).
- Retaining walls have been designed to eliminate permanent impacts for SX (Walnut Creek), as well as a Class "I" Rip Rap in the stream bed for SAK to minimize stream erosion (Permit Drawing Sheet 11 and 12 of 48).
- Included a retaining wall at the Jones Franklin Road interchange quadrant D to avoid encroachment on Lake Johnson Park and Walnut Creek and to minimize impacts to WL (Permit Drawing Sheet 12 of 48).
- Steepened and reinforced 1.5:1 slopes and barriers in the vicinity (Permit Drawing Sheet 14 of 48) of ST (Simmons Branch) will be used to minimize impacts to:
 - Utilities
 - Kaplan Park
 - ST, WF, and OWC; impacts to SV were eliminated

Avoidance/Minimization of Human Environment Impacts

- NCDOT chose a best-fit alignment for the widening of I-440 that avoids encroaching on Kaplan Park, Method Community Park, the Berry O' Kelly School Historic District, and the historic Oak Grove Cemetery.
- Five residential relocations were avoided by replacing the Athens Drive bridge at its current location.
- Melbourne Road:
 - Three residential relocations were avoided by replacing the Melbourne Road interchange at its current location.
 - Revised design of the Melbourne Road bridge from three lanes to two lanes at request of City of Raleigh to be more context-sensitive to the surrounding neighborhood.

- Included retaining wall along westbound I-440 and the Melbourne Road off ramp to avoid impacting several apartment buildings.
- Right of way impacts to Meredith College, University Club, and greenway have been reduced by revising the design of the Wade Avenue Interchange. On Meredith College's main campus, the commuter parking lot is avoided and impacts to the athletic field are reduced.
- Included retaining walls to avoid impacting existing noise walls located on cut slopes along southbound US 1/64 south of Walnut St and along westbound 1-440 between Lake Boone Trail and Wade Avenue.
- Shifted the Ligon Street alignment to avoid encroachment to historic Oak Grove Cemetery.
- Included retaining walls for the bridge approaches east of I-440 for the Ligon Street Bridge to minimize impacts to adjacent NCSU research facility and Method Townes townhome development.
- Included a retaining wall at Museum Park to minimize encroachment onto this Section 4(f) resource.
- Extended a wall along Jones Franklin Ramp A to minimize impacts to the Waters Edge Business Park.
- Boring large culverts/pipes at Jones Franklin and Western Boulevard reduces the need for multiple traffic shifts and improves safety during construction in lieu of doing construction phase boring.

Project: U-2719/ U-4437 I-440 Design Build
TO: Merger Team
From: James Rice, PE
Meeting Location: NCDOT Century Center
Date: March 13, 2019
Subject: U-2719/ U-4437 4B Meeting Minutes April 5, 2019 - **FINAL**

Attendees:

Eric Alsmeyer – USACE
Rob Ridings – NC DWR
Robert Patterson – NCDWR
Nikki Thomson – Division 5 Environmental
Heather Montague - Division 5 Environmental
Mitchell Wimberly – KLF
Jason Dilday – NCDOT EAU
Paul Atkinson – NCDOT Hydraulics
Josh Dalton – Sungate
David Hering – NCDOT DB
Byron Kyle – NCDOT DB
Mark Staley – REU (attended via Phone)
Jeff Moore – Lane
Meagan Sylvia – Lane
Jeremy Hogan – Lane
Troy Carter – Lane
Heath Wadsworth – Gradient, PLLC
Paul Meehan - HDR
James Rice – HDR
Erskine Brooks – HDR
Pete Thompson – HDR
Vickie Miller – HDR
Eanas Alia – HDR
James Heaton – HDR
Josh Massrock - HDR

General

- Introductions and sign-in sheet
- U-2719 - I-440 / US 1 from South of SR 1313 (Walnut Street) to North of SR 1728 (Wade Avenue). Approx. 6.3 miles of widening to a six-lane divided facility. Major interchanges: Jones Franklin Rd, Melbourne Rd, Western Blvd, Hillsborough St, and Wade Avenue.

- U-4437 - Grade separation at Hillsborough Street and Blue Ridge Road. – No Jurisdictional features and separate funding, so no environmental permit is expected.
- Drainage design and analysis incorporate the future land use developed by the City of Raleigh. Land use through the project corridor ranges from low density residential to high density commercial facilities.
- Project located within the Neuse River Basin, buffer rules are in effect.
- Stormwater Basin locations are preliminary and still under review. Steep terrain and proximity to water table may limit use in some cases. Soil borings are currently being conducted.
- Due to steep terrain, some outlets of large pipes and culverts have high velocities. We tried to mitigate with additional rip rap and placed rip rap in the bed of the jurisdictional streams, and rip rap in streams will be embedded flush with existing stream bed.
- We have also assumed that many of the steep pipes will not be buried.
- All pipe/culvert sizes are preliminary and may change.
- We have photos of many of the sites, but not all field work is complete yet.
- Jurisdictional features are shown in Blue. Stream and Wetland labels have been added from the NRTR and the streams were further labeled with intermittent or perennial label.
- We are still working with the traffic control group to identify any temporary impacts needed due to traffic control.
- There was a requirement in the RFP to replace all existing pipes on the project

James Rice mentioned that the Team would like to pursue the GP 31 permit for this project. In the event that the Team would be required to submit an IP then the Team would pursue early works packages for portions of the project and these would be identified in the 4C meeting.

Eric Alsmeyer mentioned that a meeting would need to be set up to discuss the mitigation ratios for the project and this would be done prior to the 4C meeting in June.

Nikki Thomson identified existing pipes that were not labeled to be retained or removed. The Team will label existing pipes for the 4C meeting.

U-2719

PSH 4

- First part of the project will be replacing concrete shoulders and extending acceleration lanes on US1. Minor work on the outsides.
- No jurisdictional features

PSH 5

- Jurisdictional streams
 - Streams SAE, SAI, SAH, and SAJ run along the southern portion of the project.
 - Project does not directly impact any jurisdictional features or buffers.
- Wetland
 - WQ – no impacts to wetland

PSH 6

- Jurisdictional streams
 - Streams SAE, SAF, and SAG

- Roadway Impacts: Replacement of guardrail with minimal grading. Tie side slopes within Existing Transportation Facility (ETF) from 156+00 to 158+00 – L1- LT. Impacts to the buffers are not anticipated.
- Wetland Impacts
 - WE – no impacts to wetlands
- SCMS – Permitted Stormwater Control Measures
 - 1767 (Preformed Scour Hole) – no impact
 - 1925 (Swale) – no impact
 - 1768 (Swale) – no impact
 - 2625 (Swale) – Project will relocate swale

James stated that SCMS measures that are impacted as part of the project will be replaced.

PSH 7-9

- No jurisdictional features

PSH 10

- Jurisdictional streams
 - Stream SX – project does not directly impact stream
- SCMS
 - 3039 (Forebay) – no impact
 - 3040 (Energy Dissipator Basin) – no impact
 - 2530 (Filtration Basin) – no impact

PSH 11

- Jurisdictional streams
 - SX – utilizing retaining wall to eliminate impacts.
 - SAK – Proposing Class ‘I’ Rip Rap in stream bed to minimize stream erosion.
 - SW – no impacts
- Wetland
 - WN – no impacts to wetland

James indicated that the Team would look at adjusting the pipe outlet location impacting stream SAK.

PSH 12

- Jurisdictional streams
 - SW
 - Existing stream channel is lined with rip rap in stream bed. Additional outlet protection is being proposed in stream bed
 - Proposing to supplement existing box culvert with 72” pipe under Jones Franklin Rd.

Team will provide clarity at 4C to identify low flow barrel as part of the 72” supplemental pipe. The Team will also provide more detail on the outlet of the 72” pipe and how the Team plans to tie in the new pipe in relation to the existing box culverts.

- SX – Walnut Creek
 - Retaining wall is being proposed to avoid extending triple 9’ x 10’ RCBC conveying Walnut Creek.
 - RFP directs the Team to clean out and remove all accumulated sediment from existing barrels.

Discussion was had on whether culverts will be cleaned out to the culvert bottom or if any sediment was going to remain in the barrels. NCDOT indicated the intent in the RFP was to clean out the sediment completely from the box culvert.

- Bank stabilization at outlet of 72" supplemental pipe
- Dry detention basin in D quadrant
- SY – no impacts
- SZ – no impacts
- SAA – no impacts
- Wetlands
 - WK – There is an existing ditch adjacent to the wetlands, will try to utilize the existing ditch to avoid impacts, but existing ditch will need to be evaluated.
 - WL – no impacts. Retaining wall being proposed to avoid wetland impacts
 - WM – no impacts
- Ponds
 - OWF – no impacts
 - OWD – pond is being completely drained as part of this project. Pond draining plan will be discussed in the permit.

Discussion was had as to whether pond OWD and OWF are jurisdictional. If they are not jurisdictional then an AJD will need to be completed to remove them. Jason Dilday stated that he would verify notes from the site visit for further clarification.

Nikki Thomson stated that inset boxes would need to be added to all interchange sheets for the 4C plans.

PSH 13

- No jurisdictional features

PSH 14

- Jurisdictional streams
 - ST
 - Retaining and extending existing 8' x 7' RCBC at inlet and outlet.
 - The existing culvert is not buried and the extension is not proposed to be buried.
 - Embankment Rip-Rap for inlet of culvert and fill in scour hole at outlet of culvert.
 - Proposed location of stormwater basin, waiting on soil borings
 - Roadway Impacts: 2:1 slopes with barrier used to minimize impacts
 - SU
 - Roadway Impacts: 2:1 slopes with barrier used to minimize impacts
 - Potential Impacts due to culvert construction
 - SV
 - Roadway Impacts: 2:1 slopes with barrier used to minimize impacts
 - Approx. 243 lf of stream relocation

Eric Alsmeyer inquired about the proposed channel geometry for relocated stream SV. James stated that this relocation would be the standard trapezoidal ditch geometry based on the hydraulic analysis. The channel relocation was not intended to be mitigation.

- Wetlands
 - WF
 - Roadway Impacts: 2:1 slopes with barrier to minimize impacts
 - Potential Impacts due to culvert construction

- WG – no impacts
- WH
 - Potential impacts due to culvert construction
- WI
 - Potential impacts due to culvert construction
 - Non-erosive velocities for ditch entering wetland
- Pond
 - OWC – White Oak Lake
 - City of Raleigh has current plans to relocate pond outside of NCDOT ROW prior to U-2719 construction.

Team asked for clarification on whether impacts should be shown for Pond OWC (White Oak Lake). It was determined that the Team would show impacts for the 4C permit drawings but these impacts would be removed if White Oak Lake is under construction when the permit gets submitted. Team will provide an update on the lake reconstruction during 4C.

The Team will also look at revising the drainage layout to incorporate as much roadway drainage as practical into the detention basin.

PSH 15 - 16

- No jurisdictional features

PSH 17

- Jurisdictional streams
 - SS
 - Potential impacts due to culvert construction
 - Replacing existing 54” pipe with 90” pipe
 - SR – Bushy Branch
 - Stream starts at outlet of existing 96” CMP flows to existing RCBC under Western/I-440
 - Replacing existing 8’X5’ Box culvert with 120” pipe
 - Large scour hole located at culvert outlet – proposing to fill scour hole w/ Class ‘II’ Rip Rap to natural channel elevation
 - SO
 - Approx. 825 lf of stream relocation to maximize amount of daylighted stream.
 - Replacing existing 66” pipe with 108” pipe
 - Approx. 168 lf of stream being filled by roadway: 2:1 slopes with guardrail used to minimize impacts.

Eric Alsmeyer inquired about the proposed channel geometry for the daylighted portion of stream SO. James stated that this relocation would be the standard trapezoidal ditch geometry based on the hydraulic analysis and may require rip rap to stabilize channel. The channel relocation was not intended for mitigation. The pipe at this location also has a 3% slope and very long. It is anticipated that this pipe will not be buried at this time. It was indicated that streams SO and SP may not require mitigation.

PSH 18

- Jurisdictional streams
 - SN
 - No impacts

- SO
 - Roadway Impacts: 2:1 slopes with barrier used to minimize impacts
 - Stream being relocated in two places: 354+84 to 356+25 –L2RT and 364+35 to 365+15 –L2RT-
 - 66” RCP buried 1’ under Ligon Street. Pipe slope is approx. 4.5%, is burying pipe beneficial.
 - Outlet protection embedded to natural stream elevation @ outlet of 36” bore and jack pipe.

Nikki Thomson stated that a portion of the relocated stream SO was not in ROW or easement. Team will add any required ROW or easement to the 4C plans to account for the stream relocation.

- SP
 - Proposing to relocate driveway over stream
- SQ
 - Stream is lined with rip rap
 - No impacts
- Ligon Street realignment is being considered along with retaining walls to minimize impacts to the apartment complex adjacent to Ligon Street. The retaining wall option will potentially reduce impacts to stream SO.

Eric Alsmeyer mentioned that SO would likely not require mitigation as the stream does not have much function. The proposed field meeting will verify the mitigation ratios.

PSH 19

- No impacts

PSH 20

- Pond
 - OWC – no impacts
- Stormwater basins are being proposed interior to the interchange loops

PSH 21

- Jurisdictional streams
 - SC (House Creek)
 - Retaining and extending existing 8’ x 8’ RCBC on the outlet end, existing culvert is not buried.
 - Outlet protection embedded to natural stream elevation due to scour hole at outlet of existing culvert.
 - Roadway Impacts: 2:1 slopes with barrier used to minimize impacts
 - SF
 - No impacts
 - SAN
 - Stream has rip rap in bed of stream.
 - Potential temporary impacts due to culvert construction
- Wetland
 - WA – no impacts
- SCMS
 - The following existing SCMS devices will be impacted by the proposed project
 - 2550 (Filtration Basin), 2980 (Level Spreader), 2982 (Swale), 2705 (Filtration Basin), 2981 (Level Spreader), 2983 (Swale), 2706 (DDB), and 2707 (DDB).

- Treating the same or more impervious area with proposed stormwater basins interior to loops.

It was identified that one of the SCMS devices was a filtration basin and that the Team will look at options to include some type of filtration into the proposed basin inside of –Y35LPB-.

PSH 22

- Jurisdictional Streams
 - SC
 - No impacts
 - SE
 - Extending 48” RCP on the outlet end. 2:1 slopes being proposed to minimize impact.
 - SG
 - No impacts

PSH 23

- Jurisdictional Streams
 - SA
 - No impacts
 - SB
 - No impacts
 - SC
 - No impacts
 - SD
 - No impacts

PSH 24

- No jurisdictional features

PSH 25

- Pond
 - OWF – no impacts

PSH 26-27

- No jurisdictional features

PSH 28

- Jurisdictional Streams
 - SW
 - 12’ x 9’ RCBC being proposed. Site visit indicated visible bedrock in the area and Team is getting additional borings in this area.
 - Stream SW is lined with large rip rap in bed and on banks

Eric Alsmeyer mentioned if a bottomless culvert is proposed then it needs to match stream width if possible or Team needs to line banks with rip rap to prevent bank erosion.

PSH 29-35

- No jurisdictional features

PSH 36

- Jurisdictional Stream
 - SM
 - No impacts
- Wetlands
 - WB
 - No impacts
 - WD
 - No impacts
- Pond
 - OWE
 - No impacts
- Field investigation showed a large amount of debris in stream SM outside of the project limits where the stream flows into the culvert under Hillsborough Street. Cleaning stream in this area would result in additional impacts but would greatly benefit hydraulic flow to the stream.

Question was asked about why stream SM looks the way it does and if this stream would require buffers, Team will also update easement area. This stream will be further investigated and the Team will provide any finds during 4C. Team needs to determine if stream is jurisdictional prior to 4C.

PSH 37

- Jurisdictional Stream
 - SH
 - No impacts

PSH 38-39

- No jurisdictional features

PSH 40

- Jurisdictional Streams
 - SC
 - The RFP called to repair the existing drainage ditch at approx. 37+00 – Y365RPA- due to slope failures. Impacts to buffers and potential stream impacts to repair the existing slope failure.
 - SK
 - No impacts
 - SI
 - No impacts
 - SJ
 - No impacts

PSH 41

- Jurisdictional Streams
 - SAP
 - No impacts
 - SAO
 - No impacts
- Wetland

- WS
 - No impacts
- WT
 - No impacts

PSH 42

- No jurisdictional features

U-4437

PSH 1004-1011

- No jurisdictional features

Discussion on Utilizing General Permit

The permit type will be decided on in the next week or so after further discussion is had on whether or not the project meets the GP 31 criteria.

HDR provided additional information to the USACE on Friday March 15th consisting of a table of preliminary impacts per jurisdictional resource and graphics of the Western Blvd and Wade Ave.

A field meeting to determine mitigation ratios has been scheduled for March 28th.

4C will tentatively be scheduled for June 19, 2019

**TO: Paul Atkinson, PE
NCDOT Hydraulics Unit**

FROM: Josh Massrock, PE / James Rice, PE (HDR)

DATE: June 24, 2019

SUBJECT: U-2719 – 4C Meeting Minutes (07/16/2019)

Merger Team Attendees:

Eric Alsmeyer	US Army Corps of Engineers
Rob Ridings	NC DWR
Robert Patterson	NC DWR

Support Staff and Meeting Attendees:

Paul Atkinson	NCDOT - Hydraulics
Josh Dalton	Sungate
Mark Staley	NCDOT – REU (via phone)
Nikki Thomson	NCDOT - Division 5 Division Environmental
Mitchell Wimberly	NCDOT - Division 5 Division Environmental
Chris Rivenbark	NCDOT – ECAP (via phone)
Heath Wadsworth	Gradient
Troy Carter	The Lane Construction Corporation
Jeff Moore	The Lane Construction Corporation
Jeremy Hogan	The Lane Construction Corporation
Ethan Marshburn	The Lane Construction Corporation
Vickie Miller	HDR
Eanas Alia	HDR
Taylor Carter	HDR
James Rice	HDR
Pete Thompson	HDR
Josh Massrock	HDR

The meeting was opened with introductions and turned over to Josh Massrock. The PDF drawings were projected on the screen and the following agenda items were presented to all in attendance.

The *italicized* text indicates notes from the meeting discussion.

General

- 4C Meeting held on June 20, 2019
- I-440/US 1 widening from south of SR 1313 (Walnut St.) to north of SR 1728 (Wade Ave.). Approx. 6.0 miles.
- 4 major interchanges: Jones Franklin Rd, Western Blvd, Hillsborough St, and Wade Ave. 2 FEMA streams: Walnut Creek and House Creek.
- Located within the Neuse River Basin, buffer rules will apply to jurisdictional streams and ponds.
- Five proposed Stormwater BMPs – dry detention basins
- Ditches have been designed to meet grass swale criteria to the maximum extent practical.
- Team is proposing that many of the steep pipes and culverts will not be buried, pipes being buried will be identified on plans.
- DB Team proposes to perform early clearing, no grubbing, in non-jurisdictional areas (interior to interchange).

STORMWATER MANAGEMENT PLAN

- Page 5 of 5 was revised to show a single dry detention basin on plan sheet 20 (Hillsborough Street)
 - Comments:
 - *The 1" orifice on dry detention basin #5 was noted as possibly being a maintenance issue, a 2" minimum orifice is desirable. The Design Team will revisit the dry detention basin design to try and get a 2" minimum orifice.*

WETLAND/STREAM PERMIT SET

PSH 11 – SITE 1

- **Site 1 (SAK-1)**
 - Assumed this impact as a total take due to the existing 24" being filled and flow being redirected downstream.
 - Comments:
 - *Eric Alsmeyer indicated that stream SAK appears to be affected by Walnut Creek and would most likely stay jurisdictional post construction. HDR will revise impacts to call for permanent impacts to riprap, TS 10' past riprap.*

PSH 12 – SITES 2-5

- **Site 2 (WK)**
 - Mechanized clearing due to proposed 2' lateral base ditch.
 - Comments:
 - *It was noted to be cautious during construction to avoid excavation through wetland area.*

- **Site 3 at Inlet (SX-P; Walnut Creek)**
 - Temporary impact due to culvert clean out. Retaining wall used to minimize impacts
 - Comments:
 - *No comments*
- **Site 3 at Outlet (SX-P; Walnut Creek)**
 - Temporary impact due to culvert clean out. Permanent impact due to bank stabilization for the outlet of the 72" supplemental pipe. Retaining wall used to minimize impacts
 - Comments
 - *No comments*
- **Site 4 (SW-P)**
 - Temporary and permanent impact due to riprap in stream at 72" inlet and 48" outlet.
 - 72" culvert is not buried, inlet/outlet protection uses class 'II' riprap for stabilization purposes, to convey normal flow
 - Receives 48" RCP system
 - Geotextile on banks only, riprap flush with streambed
 - Comments:
 - *Eric asked if all the rip rap was needed in stream SW. Team stated that the rip rap was needed for stabilizing the stream in the impact areas and that the stream is currently filled with rip rap. Eric mentioned that stream impacts should be temporary surface water impacts since stream is currently lined with rip rap.*
 - *It was noted the inlet of the 72" culvert was labeled as "Culvert Outlet Stabilization", HDR will change label to "Culvert Inlet Stabilization".*
- **Site 5 (OWD)**
 - Proposed ramp -Y10RPA- and roadway fill
 - Pond to be drained; isolated non jurisdictional therefore no buffers
 - Comments:
 - *Eric asked if an ADJ was needed for pond OWD. Chris Rivenbark said he would check with Jason Dilday if this would be required.*

Basin

- **L1B 252+00 RT – Dry Detention Basin #1**
 - Receiving drainage from mainline, Jones Franklin Road, inside Loop A and inside Ramp D
 - No existing stormwater control measure in current location; proposed basin detains 16 acres with built upon area totaling 7.6 acres (2.9 acres of which are new pavement).
 - Comments:
 - *Eric Alsmeyer asked if an ADJ was needed for pond OWD. Chris Rivenbark said he would check with Jason Dilday to verify.*
 - *Question was asked to the design team if bioretention was considered for water quality along project. HDR indicated that the basins treated large areas and that bioretention basins were unlikely to fit within current project footprint.*

PSH 14 – SITES 6-11

- **Site 6 (WF)**
 - Roadway impacts of fill and mechanized clearing: 2:1 sides slopes with barrier wall used to minimize impacts
 - Comments:
 - *No comments*
- **Site 7 (ST-P)**
 - Culvert cleanout temporary impact; outlet stabilization – stabilizing scour hole
 - Proposed 1.5:1 reinforced slopes to minimize impacts
 - Comments
 - *No comments*
- **Site 8 (SV-I)**
 - Bank stabilization due to existing stream erosion along banks
 - Steepened slopes to 1.5:1 to avoid relocating stream SV and impacts to Kaplan Park
 - Comments:
 - *No comments*
- **Site 9 (SU-I)**
 - Bank stabilization due to existing stream erosion along banks
 - Grade channel banks to 2:1 with class 'I' riprap and geotextile only on proposed banks
 - Comments:
 - *No comments*
- **Site 10 (WJ)**
 - Grade channel banks to 2:1 with class 'I' riprap and geotextile only on proposed banks
 - Comments:
 - *No comments*
- **Site 11 (WI)**
 - Grade channel banks to 2:1 with class 'I' riprap and geotextile only on proposed banks
 - Stream entering WI with $Q_{10} = 4.96$ cfs and $V_{10} = 1.45$ fps
 - Comments:
 - *No comments*

Basin

- L1 283+00 RT – Dry Detention Basin #2
 - Receiving drainage from mainline, discharging to Simmons Branch (ST-P)
 - No existing stormwater control measure in current location; proposed basin detains 7.3 acres with total BUA being 3.1 acres (NBUA = 1.1 acre).
 - Drainage has been revised from the 4B meeting to direct more water into DDB #2.

- Pond reconstruction being performed under City of Raleigh contract. No surface water impacts to White Oak Lake (Pond OWC) anticipated from U-2719 project.
- Comments:
 - *Question was asked if the project team was aware of LET date for the White Oak Lake pond reconstruction. The Team was given dates from the City of Raleigh as the bid opening in July 2019 and a project duration to last approximately 16 months.*
 - *Question was asked if we could divert more water into DDB #2. It was mentioned that the DB Team has directed more water into this basin since the 4B meeting but the roadway grade flows away from the basin and directing more water to this basin is not feasible.*

PSH 17 – SITE 12-14

- **Site 12 (SS-P)**
 - Channel improvement for 90” fiberglass pipe (not buried) at inlet and bank stabilization
 - Comments:
 - *Question was presented to the Team with regards to maintaining the water flow while tunneling the proposed culvert. Jeff Moore said that water will flow through the existing culvert since the proposed culvert is being tunneled off line.*
- **Site 13 (SR-P)**
 - Outlet (90” Fiberglass(not buried), 120” Fiberglass (not buried), 120” Fiberglass (not buried) , 2’ standard base ditch) channel stabilization with class ‘II’ riprap
 - Y25RA and roadway fill. 98 LF of existing 96” CMP removed further upstream to daylight the stream before reentering the proposed 120” fiberglass pipe
 - Open channel through Ramp B gore area
 - Comments:
 - *It was noted that there were numerous utilities in this area and if the permits incorporated any impacts due to utilities. James Rice stated that most utilities are being designed in this area and no additional impacts to jurisdictional resources due to utilities are anticipated. Most utilities will be relocated using very deep bores.*
- **Site 14 (SO-P)**
 - Y25RD and roadway fill. 6’ base stream relocation with class ‘I’ liner placed flush with natural ground.
 - Stream SO is being daylighted for approximately 825 LF that was previously being pipes through a 66” RCP (not buried)
 - Comments
 - *No comments*

PSH 18 – SITES 14-16

- **Site 14 (SO-P)**
 - Roadway fill 1.5:1 and guardrail for minimization. 6’ base stream relocation

- 18" CSP W/ELBOWS bank stabilization with geotextile and class 'I' riprap only on the banks.
- 18" CSP W/ELBOWS bank stabilization with geotextile and class 'I' riprap only on the banks.
- 66" RCP (buried 1') slope at 4.85% bank stabilization and removal of existing 42" RCP
- Retaining walls used on both sides of Ligon Street to reduce impacts to stream, NCSU property (south), and residential properties (north)
- Channel improvement at 66" RCP inlet
- Riprap at stream on banks and bed, keyed-in, for trenchless installation 30" welded steel
- Comments:
 - *Vickie Miller asked if the agencies would prefer to label the pieces to the Site 14 impacts as A,B,C, etc to help clarify the impacts. It was preferred to keep the impacts to Site 14 lumped together as currently shown.*
- **Site 15 (SP-P)**
 - Proposed road and roadway fill. 30" CSP (not buried).
 - Jurisdictional limits adjusted to no longer include length of ditch filled with rock and debris
 - Comments:
 - *No Comments.*
- **Site 16 (SN)**
 - Outlet protection for 36" welded steel pipe and 36" CSP
 - Comments:
 - *No Comments*

PSH 20

Basin

- Y30LD 16+82 RT – Dry Detention Basin #3
 - Receiving drainage from mainline, Hillsborough St, Ramp A, Loop A, and Loop D, discharging to a 4' base ditch running along Hillsborough Street.
 - No existing stormwater control measure in current location; proposed basin detains 18.4 acres with total BUA being 5.6 acres (NBUA = 1.3 acre).
 - DDB combined with basin originally located at Y30 32+50 LT in order to increase the drawdown orifice size.
- No impacts to pond OWA.
- Comments:
 - *OWA – question of jurisdiction and the AJD. Stream was outside of project limits and will not be impacted.*

PSH 21 – SITES 17 and 18

- **Site 17 (SC-P)**
 - 8x8 culvert extension and 65 LF culvert outlet stabilization with class 'II' riprap keyed-in
 - Dewatering impacts at inlet

- Comments:
 - *No Comments*
- **Site 18 (SAN-P)**
 - 2' lateral base ditch tying into SAN-P and SC-P. Lateral ditch receiving water from 24" CSP W/ELBOWS
 - Comments:
 - *Question was raised of how the stream and ditch tie into each other. Josh explained that the stream and the proposed ditch are approx. the same elevations the two would confluence together before flow gets to House Creek.*

Basin

- Y35LP 15+40 RT – Dry Detention Basin #4
 - Receiving drainage from mainline, Ramp B, and Loop B, discharging to existing 36" CMP crossing under Wade Ave and into House Creek (SC-P)
 - Proposed basin detains 19.3 acres with total BUA being 11.2 acres (NBUA = 5.6 acre).
 - DDB is heavily constrained by both inlet and outlet elevations due to connection to the existing 36" CMP.
 - Comments:
 - *No Comments*

Basin

- Y35RD 18+50 RT – Dry Detention Basin #5
 - Receiving drainage from Wade Ave, Ramp C gore areas, and Ramp D gore areas, discharging to natural draw where existing 30" RCP is being replaced.
 - No existing stormwater control measure in current location; proposed basin detains 18.4 acres with total BUA being 5.6 acres (NBUA = 1.3 acre).
- Dry Detention Basins 4 and 5 replace four existing measures according to the Preliminary Hydraulic Report (8-26-2017). BMP#1 (R-4436ED) treats 6.2 acres with 1.1 acres impervious. BMP#2 (R-4436ED) treats 4.0 acres with 0.8 acres impervious. BMP#3 (R-4436ED) treats 2.0 acres with 1.1 acres impervious. BMP#4 (R-4436ED) treats 1.6 acres with 0.6 acres impervious.
- Comments:
 - *No Comments*

PSH 22

- **Site 19 (SE-I)**
 - 48" RCP (not buried) extension and outlet stabilization
 - Comments:
 - *The type of impact at the inlet is unclear. Josh explained that the inlet was temporary surface water impacts for dewatering, Team will shift TS to make more visible at inlet.*

PSH 28

- **Site 20 (SW-P)**
 - 14x7 Culvert (not buried) and bank stabilization, riprap and geotextile on banks only
 - Comments:
 - *Label culvert box size on plansheets*

BUFFER PERMIT SET

- Intent was to keep the same Site numbers as the wetland and stream permit drawings

PSH 6

- No buffers – included for reference as resources are nearby but not impacted.
 - Comments:
 - *No Comments*

PSH 11

Jurisdictional Stream

- **Site 1 (SAK)**
 - Temporary Impact
 - Proposed 18” CSP Outlet
 - Comments:
 - *Buffers may reduce due to shortening of the impact area.*

PSH 12

- **Site 2**
 - Wetland - No buffers
 - Comments:
 - *No Comments*
- **Site 3 (SX)**
 - Allowable Impact - Ditch tie in and access for culvert clean out and bank stabilization at outlet.
 - Comments:
 - *No Comments*
- **Site 4 (SW)**
 - Allowable Impact - 72” supplemental culvert and 48” culvert outlet
 - Comments:
 - *No Comments*
- **Site 5**
 - Pond - No buffers
 - Comments:
 - *No Comments*

PSH 14

- **Site 6**
 - Wetland - No buffer impacts anticipated from U-2719 project
 - Comments:
 - *No Comments*
- **Site 7 (ST)**
 - Allowable Impact for dewatering/construction
 - Permanent impact for ditch tie in and installation of DDB outlet pipe.
 - Comments:
 - *No Comments*
- **Site 8 (SV)**
 - Mitigable Impact for re-grading and stabilizing stream banks
 - Comments:
 - *Vickie mentioned that this area is currently being maintained and mowed. It was decided that the Team did not have to take impacts for those areas being maintained Areas where no vegetative buffer currently exists we can subtract from buffer impact.*
- **Site 9 (SU)**
 - Mitigable Impact for re-grading and stabilizing stream banks
 - Comments:
 - *No Comments*
- **Site 10**
 - Wetland - No buffers
 - Comments:
 - *Identified as a wetland within a buffer*
- **Site 11**
 - Wetland - No buffers
 - Comments:
 - *Identified as a wetland within a buffer*

PSH 17

- **Site 12 (SS)**
 - Allowable Impact – Installation of 90” culvert. Area needed for tunneling operation
 - Comments:
 - *No Comments*
- **Site 13 (SR)**
 - Allowable Impact – Installation of 120” culvert. Area needed for tunneling operation and outlet stabilization
 - Comments:

- *Needs to be mitigable because over 1/3 acre rather than allowable as shown.*

PSH 18

- **Site 14 (SO)**
 - Mitigable Impact – Stream relocation due to roadway fill.
 - Allowable Impacts for culvert outlets, we considered this a perpendicular impact
 - Ligon St. impacts are allowable because it is a perpendicular crossing.
 - Comments:
 - *Revise pipe outlets as mitigable rather than allowable as shown. These are stormwater outlets.*
 - *Ligon stays as allowable because stream is in perpendicular crossing*
- **Site 15 (SP)**
 - Mitigable Impact – new 30” Culvert new driveway location
 - Comments:
 - *Allowable impact because it is perpendicular crossing and under 1/3 acre impact.*
- **Site 16 (SN)**
 - Allowable Impact for 36” Welded Steel Pipe and 36” CSP
 - Mitigable Impact - Roadway fill adjacent to buffer
 - Comments:
 - *No Comments*

PSH 20

- Reference only to show no buffer impacts to pond OWA

PSH 21

- **Site 17 (SC)**
 - Allowable Impact – 8x8 RCBC extension and outlet stabilization
 - Comments:
 - *No Comments*
- **Site 18 (SAN)**
 - Mitigable Impact - 2’ base lateral ditch
 - Comments:
 - *No Comments*

PSH 22

- **Site 19 (SE)**
 - Allowable Impact - 48” RCP extension and outlet stabilization
 - Comments:
 - *No Comments*

PSH 28

- **Site 20 (SW)**
 - Mitigable Impact - 14x7 RCBC new location
 - Comments:
 - *Revise as allowable because less than 1/3 acre and perpendicular.*

PSH 40

- **Site 21 (SC)**
 - Mitigable Impact - Bank stabilization as directed in RFP
 - Comments:
 - *No Comments*



North Carolina Department of Transportation

Highway Stormwater Program
STORMWATER MANAGEMENT PLAN
FOR NCDOT PROJECTS

(Version 2.08; Released April 2018)

WBS Element: 35869.3.1 TIP No.: U-2719 County(ies): Wake Page 1 of 5

General Project Information

WBS Element:		35869.3.1	TIP Number:		U-2719	Project Type:		Roadway Widening	Date:		5/31/2019
NCDOT Contact:		Paul Atkinson, PE				Contractor / Designer:		HDR Engineering / Joshua Massrock, P.E.			
	Address:	1020 Birch Ridge Dr. Raleigh, NC 27610					Address:	555 Fayetteville Street, Suite 900 Raleigh, NC 27601			
	Phone:	(919)707-6707					Phone:	(919) 232-6631			
	Email:	patkinson@ncdot.gov					Email:	joshua.massrock@hdrinc.com			
City/Town:		Raleigh				County(ies):		Wake			
River Basin(s):		Neuse				CAMA County?		No			
Wetlands within Project Limits?		Yes									

Project Description

Project Length (lin. miles or feet):	6.25	Surrounding Land Use:	Urbanized/ mostly developed
		Proposed Project	Existing Site
Project Built-Up Area (ac.)	270.0 ac.	137.0 ac.	
Typical Cross Section Description:	6 lane divided freeway w/ a 22 foot variable median: (2) 12 foot outside paved shoulders, (3) 12 foot travel lanes, (2) 11 foot paved median shoulders - total width of 118'.	4 lane divided freeway w/ a 28 foot grass median: (2) 5 foot outside paved shoulders, (2) 12 foot travel lanes, (2) 4 foot paved median shoulders - total width of 94'.	
Annual Avg Daily Traffic (veh/hr/day):	Design/Future: 183,700 Year: 2040	Existing: 144,810 Year: 2018	
General Project Narrative: (Description of Minimization of Water Quality Impacts)	Project Description: The proposed project (U-2719) widens I-440 / US 1 from south of SR 1313 (Walnut St.) to north of SR 1728 (Wade Ave.). The project will construct approximately 6 miles of 6-lane divided freeway. The project includes 4 major interchanges: Jones Franklin Rd., Western Blvd., Hillsborough St., and Wade Ave. Walnut Creek and House Creek are the two FEMA streams located within the project corridor. Box culverts and circular pipe culverts are used to convey all jurisdictional stream crossings through the project. Wetlands and buffer zones are also located throughout the entire length of the project. Impact Minimization Efforts: Guardrail with 2:1 slopes were utilized throughout the project to minimize impacts to streams and wetlands. The Team has elected to use reinforced 1.5 :1 slopes from Sta 283+50 -L1- to Sta. 287+50 -L1- to avoid impacts to Simmons Branch as well as right of way impacts to Kaplan Park. Ditches and pipes that outlet adjacent to wetlands have been designed to have non-erosive velocities. Stormwater BMP Measures: Dry detention basins have been proposed at specific locations along the project. Ditches have been designed to meet grass swale criteria to the maximum extent practical.		

Waterbody Information

Surface Water Body (1):	House Creek	NCDWR Stream Index No.:	27-33-13
NCDWR Surface Water Classification for Water Body	Primary Classification:	Class C	
	Supplemental Classification:	Nutrient Sensitive Waters (NSW)	
Other Stream Classification:	None		
Impairments:	None		
Aquatic T&E Species?	No	Comments:	
NRTR Stream ID:	SC	Buffer Rules in Effect:	Neuse
Project Includes Bridge Spanning Water Body?	No	Deck Drains Discharge Over Buffer?	N/A
Deck Drains Discharge Over Water Body?	N/A	Dissipator Pads Provided in Buffer?	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)	



North Carolina Department of Transportation

Highway Stormwater Program
STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS



(Version 2.08; Released April 2018)

WBS Element: 35869.3.1 TIP No.: U-2719 County(ies): Wake Page 2 of 5

Additional Waterbody Information

Surface Water Body (2):	UT to House Creek		NCDWR Stream Index No.:	27-33-13	
NCDWR Surface Water Classification for Water Body	Primary Classification:		Class C		
	Supplemental Classification:		Nutrient Sensitive Waters (NSW)		
Other Stream Classification:	None				
Impairments:	None				
Aquatic T&E Species?	No		Comments:		
NRTR Stream ID:	SA, SD, SE, SK, SAN		Buffer Rules in Effect:		Neuse
Project Includes Bridge Spanning Water Body?	No	Deck Drains Discharge Over Buffer?	N/A	Dissipator Pads Provided in Buffer?	N/A
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)	
(If yes, provide justification in the General Project Narrative)					

Surface Water Body (3):	Bushy Creek		NCDWR Stream Index No.:	27-34-3	
NCDWR Surface Water Classification for Water Body	Primary Classification:		Class C		
	Supplemental Classification:		Nutrient Sensitive Waters (NSW)		
Other Stream Classification:	None				
Impairments:	None				
Aquatic T&E Species?	No		Comments:		
NRTR Stream ID:	SR		Buffer Rules in Effect:		Neuse
Project Includes Bridge Spanning Water Body?	No	Deck Drains Discharge Over Buffer?	N/A	Dissipator Pads Provided in Buffer?	N/A
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)	
(If yes, provide justification in the General Project Narrative)					

Surface Water Body (4):	UT to Bushy Creek		NCDWR Stream Index No.:	27-34-3	
NCDWR Surface Water Classification for Water Body	Primary Classification:		Class C		
	Supplemental Classification:		Nutrient Sensitive Waters (NSW)		
Other Stream Classification:	None				
Impairments:	None				
Aquatic T&E Species?	No		Comments:		
NRTR Stream ID:	SN, SO, SP, SS		Buffer Rules in Effect:		Neuse
Project Includes Bridge Spanning Water Body?	No	Deck Drains Discharge Over Buffer?	N/A	Dissipator Pads Provided in Buffer?	N/A
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)	
(If yes, provide justification in the General Project Narrative)					

Surface Water Body (5):	Simmons Branch, including pond OWC		NCDWR Stream Index No.:	27-34-2	
NCDWR Surface Water Classification for Water Body	Primary Classification:		Class C		
	Supplemental Classification:		Nutrient Sensitive Waters (NSW)		
Other Stream Classification:	None				
Impairments:	None				
Aquatic T&E Species?	No		Comments:		
NRTR Stream ID:	ST		Buffer Rules in Effect:		Neuse
Project Includes Bridge Spanning Water Body?	No	Deck Drains Discharge Over Buffer?	N/A	Dissipator Pads Provided in Buffer?	N/A
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: 35869.3.1 TIP No.: U-2719 County(ies): Wake Page 3 of 5

Additional Waterbody Information

Surface Water Body (6):	UT to Simmons Branch		NCDWR Stream Index No.:	27-34-2	
NCDWR Surface Water Classification for Water Body	Primary Classification:		Class C		
	Supplemental Classification:		Nutrient Sensitive Waters (NSW)		
Other Stream Classification:	None				
Impairments:	None				
Aquatic T&E Species?	No		Comments:		
NRTR Stream ID:	SU, SV		Buffer Rules in Effect:		Neuse
Project Includes Bridge Spanning Water Body?	No	Deck Drains Discharge Over Buffer?	N/A	Dissipator Pads Provided in Buffer?	N/A
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)	
(If yes, provide justification in the General Project Narrative)					

Surface Water Body (7):	Walnut Creek		NCDWR Stream Index No.:	27-34-(1)	
NCDWR Surface Water Classification for Water Body	Primary Classification:		Class C		
	Supplemental Classification:		Nutrient Sensitive Waters (NSW)		
Other Stream Classification:	None				
Impairments:	None				
Aquatic T&E Species?	No		Comments:		
NRTR Stream ID:	SX		Buffer Rules in Effect:		Neuse
Project Includes Bridge Spanning Water Body?	No	Deck Drains Discharge Over Buffer?	N/A	Dissipator Pads Provided in Buffer?	N/A
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)	
(If yes, provide justification in the General Project Narrative)					

Surface Water Body (8):	UT to Walnut Creek		NCDWR Stream Index No.:	27-34-(1)	
NCDWR Surface Water Classification for Water Body	Primary Classification:		Class C		
	Supplemental Classification:		Nutrient Sensitive Waters (NSW)		
Other Stream Classification:	None				
Impairments:	None				
Aquatic T&E Species?	No		Comments:		
NRTR Stream ID:	SW, SAA, SAI, SAJ, SAK		Buffer Rules in Effect:		Neuse
Project Includes Bridge Spanning Water Body?	No	Deck Drains Discharge Over Buffer?	N/A	Dissipator Pads Provided in Buffer?	N/A
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)	
(If yes, provide justification in the General Project Narrative)					

Surface Water Body (9):	UT to Lynn Branch		NCDWR Stream Index No.:	27-43-3	
NCDWR Surface Water Classification for Water Body	Primary Classification:		Water Supply III (WS-III)		
	Supplemental Classification:		Nutrient Sensitive Waters (NSW)		
Other Stream Classification:	None				
Impairments:	None				
Aquatic T&E Species?	No		Comments:		
NRTR Stream ID:	SAE		Buffer Rules in Effect:		Neuse
Project Includes Bridge Spanning Water Body?	No	Deck Drains Discharge Over Buffer?	N/A	Dissipator Pads Provided in Buffer?	N/A
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
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WBS Element: 35869.3.1 **TIP No.:** U-2719 **County(ies):** Wake **Page** 4 **of** 5

Additional Waterbody Information

Surface Water Body (10):	UT to Richlands Creek		NCDWR Stream Index No.:	27-33-11	
NCDWR Surface Water Classification for Water Body	Primary Classification:		Class C		
	Supplemental Classification:		Nutrient Sensitive Waters (NSW)		
Other Stream Classification:	None				
Impairments:	None				
Aquatic T&E Species?	No	Comments:			
NRTR Stream ID:	SH		Buffer Rules in Effect:		Neuse
Project Includes Bridge Spanning Water Body?		Deck Drains Discharge Over Buffer?		Dissipator Pads Provided in Buffer?	
Deck Drains Discharge Over Water Body?		(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)	
(If yes, provide justification in the General Project Narrative)					

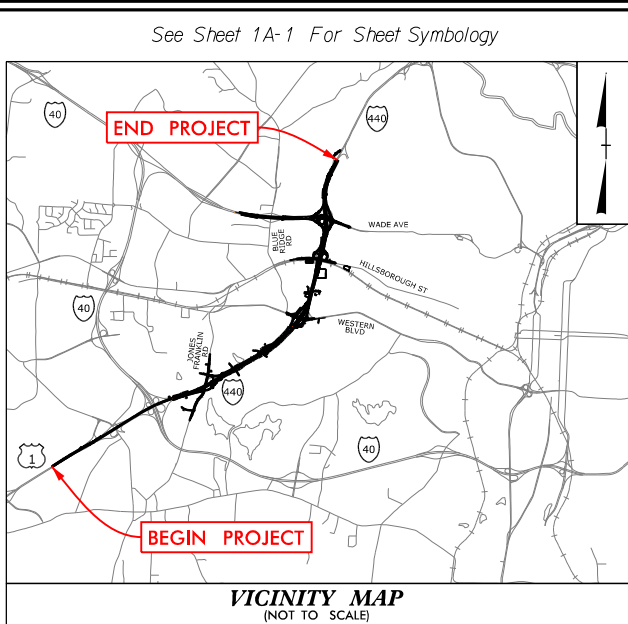
Surface Water Body (11):	Rocky Branch, including pond OWA and OWE		NCDWR Stream Index No.:	27-34-6	
NCDWR Surface Water Classification for Water Body	Primary Classification:		Class C		
	Supplemental Classification:		Nutrient Sensitive Waters (NSW)		
Other Stream Classification:	None				
Impairments:	None				
Aquatic T&E Species?	No	Comments:			
NRTR Stream ID:	SM		Buffer Rules in Effect:		Neuse
Project Includes Bridge Spanning Water Body?	No	Deck Drains Discharge Over Buffer?	N/A	Dissipator Pads Provided in Buffer?	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)	
(If yes, provide justification in the General Project Narrative)					



Additional Comments

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PENTABLE: NCDOT_TSH.tbl
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CONTRACT: C204157
TIP PROJECT: U-2719 /U-4437



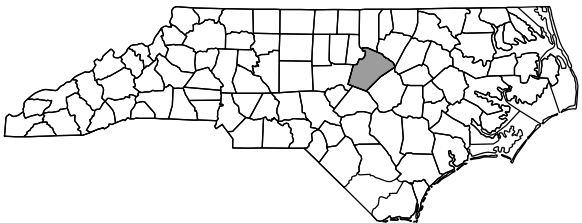
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WAKE COUNTY

LOCATION: I-440 /US 1 FROM SOUTH OF SR 1313 (WALNUT STREET)
TO NORTH OF SR 1728 (WADE AVENUE)

TYPE OF WORK: DESIGN-BUILD AS SPECIFIED IN THE SCOPE OF WORK
CONTAINED IN THE REQUEST FOR PROPOSALS

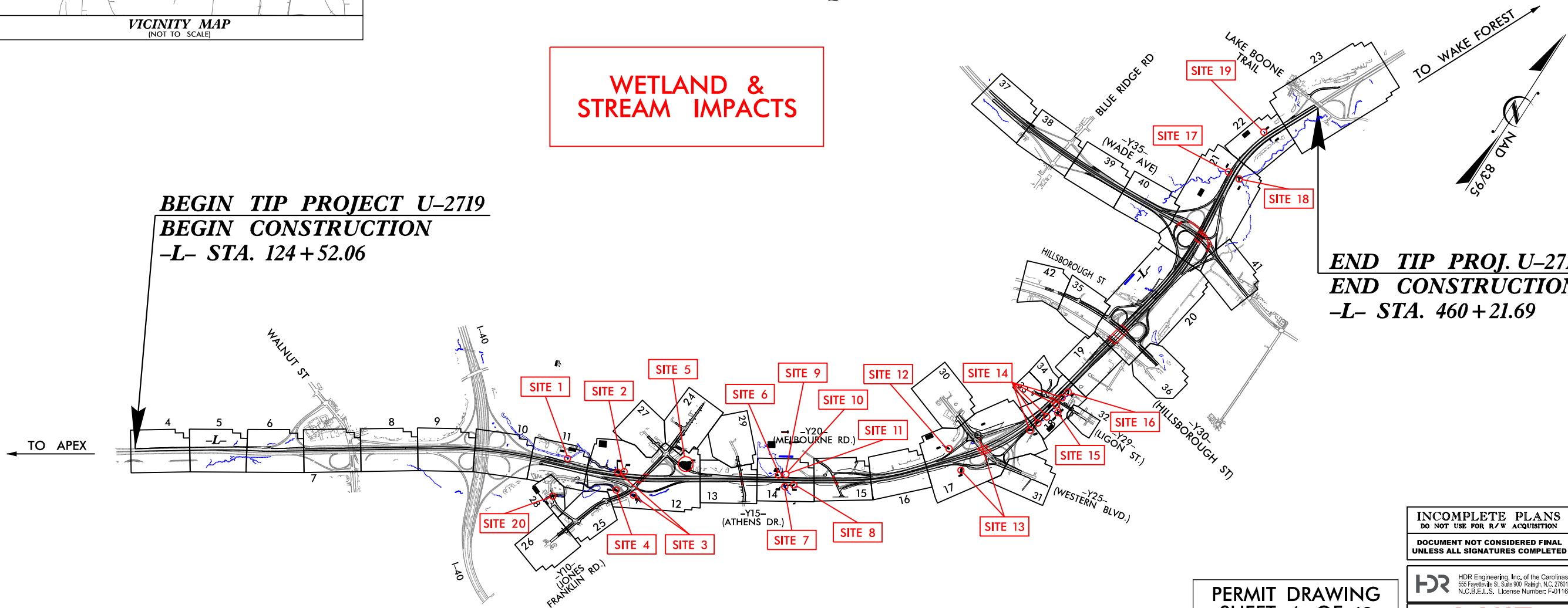
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N.C.	U-2719	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
35869.3.1	IMSNHS-0440(10)	PE, ROW, UTILITIES	
35868.3.4	STBG-0054(030)	& CONSTR.	



WETLAND &
STREAM IMPACTS

BEGIN TIP PROJECT U-2719
BEGIN CONSTRUCTION
-L- STA. 124 + 52.06

END TIP PROJ. U-2719
END CONSTRUCTION
-L- STA. 460 + 21.69



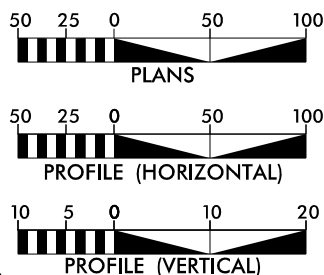
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, NC 27601
N.C.B.E.L.S. License Number: F-0116

PERMIT DRAWING
SHEET 1 OF 48

LANE

GRAPHIC SCALES



DESIGN DATA

ADT 2018 = 144,810
ADT 2040 = 183,700
K = 10 %
D = 55 %
T = 9 % *
V = 70 MPH
* TTST = 5% DUAL = 4%
FUNC CLASS =
INTERSTATE
STATEWIDE TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-2719 /U-4437 = 6.087 MILES
LENGTH STRUCTURES TIP PROJECT U-2719 /U-4437 = 0.162 MILES
TOTAL LENGTH TIP PROJECT U-2719 /U-4437 = 6.249 MILES

NCDOT CONTACT: DAVID HERING, PE
DESIGN-BUILD UNIT - PROJECT ENGINEER

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

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
OCTOBER 2, 2018

LETTING DATE:
OCTOBER 2, 2018

PAUL MEEHAN, PE
PROJECT ENGINEER

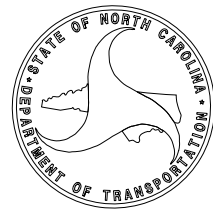
ERSKINE BROOKS, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN
ENGINEER

SIGNATURE: P.E.



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TIME: 3:57:01 PM
DATE: 6/4/2019

REVISIONS

DRY DETENTION BASIN

NOT TO SCALE

LANE



HDR Engineering, Inc. of the Carolinas
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

PROJECT REFERENCE NO. SHEET NO.

U-2719

2D-3

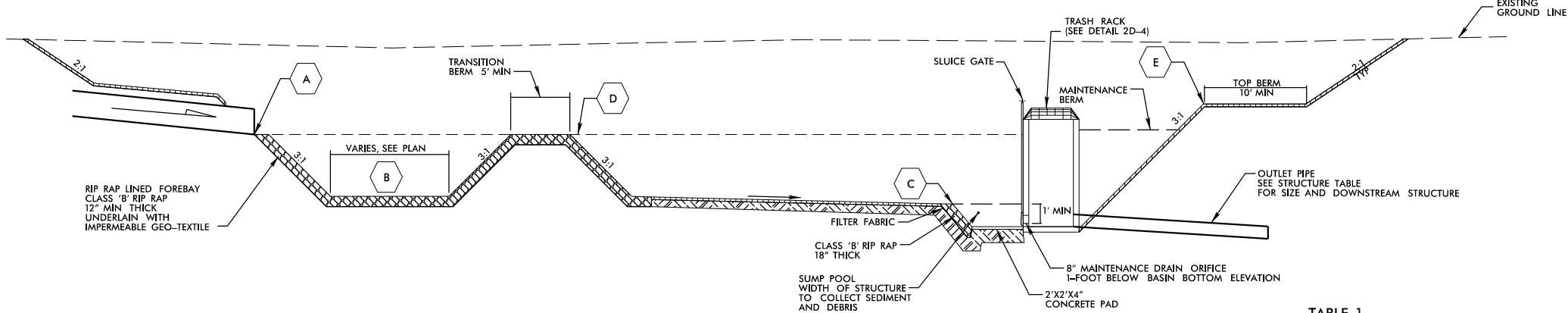
R/W SHEET NO.

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR A/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



TYPICAL SECTION
NTS

TABLE 1

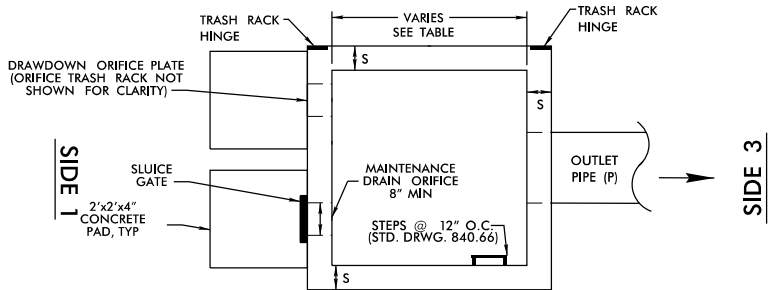
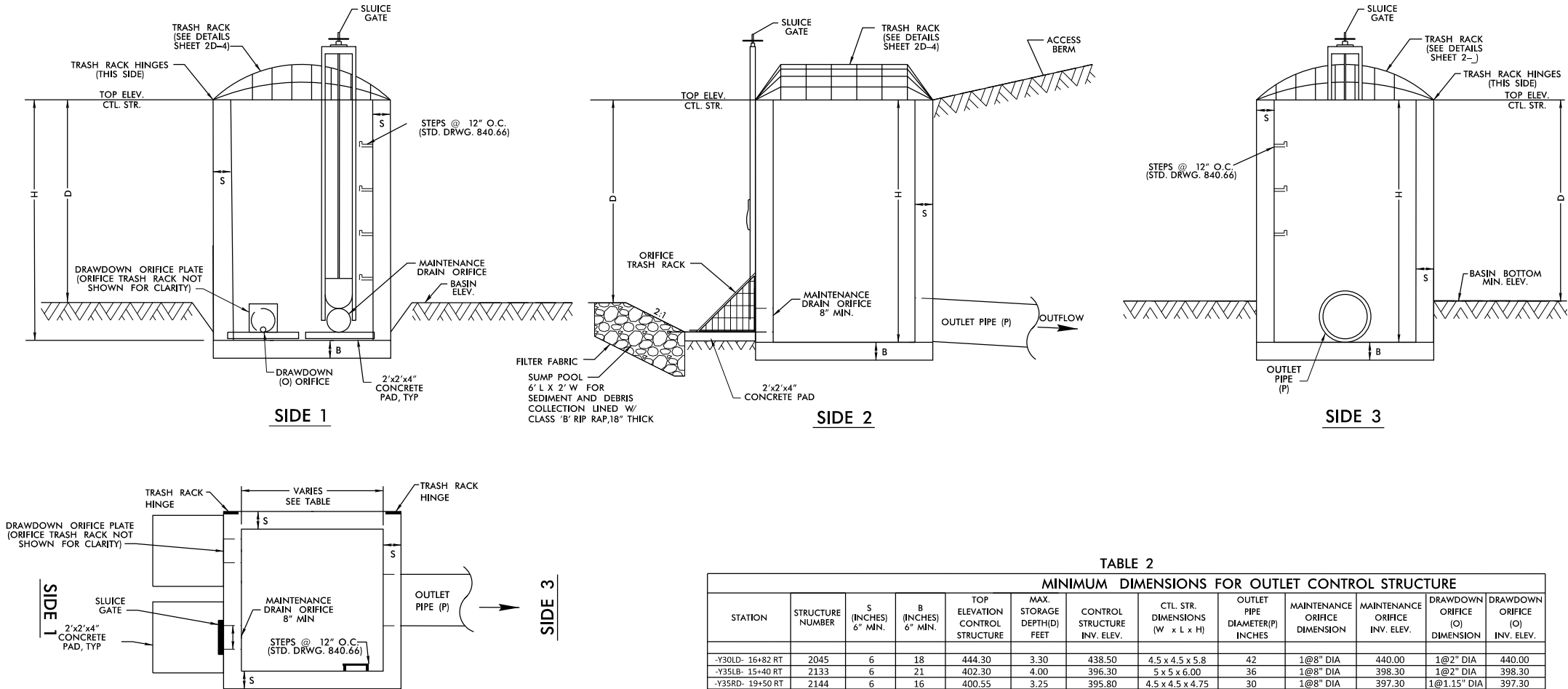
ELEVATIONS FOR DRY DETENTION BASIN					
STATION	A (INLET PIPE INVERT)	B (FOREBAY BOTTOM)	C (BOTTOM OF BASIN)	D (FOREBAY BERM)	E (TOP OF BERM)
-Y30LD- 16+82 RT	444.30	441.00	441.00	444.30	446.00
-Y35LB- 15+40 RT	402.31	399.30	399.30	402.30	404.10
-Y35RD- 19+50 RT	400.36	398.30	398.30	400.55	402.10
-L1B- 252+00 RT	360.00	358.00	360.00	360.00	365.00
-L1- 283+00 RT	398.00	397.00	398.00	398.00	400.00

NOTES:

- SEE PLANS FOR LOCATION AND BASIN DIMENSIONS.
- IF SEASONAL HIGH WATER TABLE (SHWT) IS WITHIN 2' OF THE MEDIA FILTER BOTTOM, CONTACT THE NCDOT HYDRAULIC UNIT PRIOR TO CONSTRUCTION.
- ALL DISTURBED BASIN SLOPES DRAINING INTO THE FILTRATION BASIN SHALL BE SODDED WITH FESCUE SOD.
- ACCESS BERM SHALL BE PROVIDED TO ACCESS CONTROL STRUCTURE ON ALL BASINS AS SHOWN IN DETAIL.
- FOR BASIN 357+88 -L- LT, FILL EMBANKMENT MATERIAL SHOULD CONSIST OF A-4, A-5, OR A-6 SOILS COMPACTED TO 95% OF AASHTO T-99 (STANDARD PROCTOR)

OUTLET CONTROL STRUCTURE

NOT TO SCALE



SIDE 2
PLAN VIEW

TRASH RACK NOT SHOWN FOR CLARITY

TABLE 2

MINIMUM DIMENSIONS FOR OUTLET CONTROL STRUCTURE											
STATION	STRUCTURE NUMBER	S (INCHES) 6" MIN.	B (INCHES) 6" MIN.	TOP ELEVATION CONTROL STRUCTURE	MAX. STORAGE DEPTH(D) FEET	CONTROL STRUCTURE INV. ELEV.	CTL. STR. DIMENSIONS (W x L x H)	OUTLET PIPE DIAMETER(P) INCHES	MAINTENANCE ORIFICE DIMENSION	MAINTENANCE ORIFICE INV. ELEV.	DRAWDOWN ORIFICE (O) DIMENSION
-Y30LD- 16+82 RT	2045	6	18	444.30	3.30	438.50	4.5 x 4.5 x 5.8	42	1@8" DIA	440.00	1@2" DIA
-Y35LB- 15+40 RT	2133	6	21	402.30	4.00	396.30	5 x 5 x 6.00	36	1@8" DIA	398.30	1@2" DIA
-Y35RD- 19+50 RT	2144	6	16	400.55	3.25	395.80	4.5 x 4.5 x 4.75	30	1@8" DIA	397.30	1@1.15" DIA
-L1B- 252+00 RT	1288	6	6	364.00	6	356.00	4 x 4 x 8	36	1@8" DIA	357.00	1@6" DIA
-L1- 283+00 RT	1427	6	6	399.00	2	394.00	4 x 4 x 5	24	1@8" DIA	397.00	1@3" DIA

NOTES:

- NO BEDDING MATERIAL TO BE USED. THEREFORE, DO NOT FOLLOW STANDARD DRAWINGS FOR METHOD OF PIPE INSTALLATION FOR OUTLET PIPE THROUGH EMBANKMENT.
- 8" MIN. ORIFICE WITH SLUDGE GATE IS FOR MAINTENANCE AND SHOULD REMAIN CLOSED DURING NORMAL OPERATION. A GATE VALVE MAY BE USED IN LIEU OF THE 8" SLUDGE GATE.
- SLUDGE GATE SHALL PROVIDE WATERTIGHT SEAL. PROVIDE ADEQUATE CLEARANCE FOR GATE OPERATION AND FOR PROPER SEATING OF GATE OVER PIPE.
- SELECT BOX STANDARD AS REQUIRED TO ACCOMMODATE SLUDGE GATE AND ORIFICE TRASH RACK WIDTH.
- ENSURE TRASH RACK OPENS FREELY AND WITHOUT INTERFERENCE WITH SLUDGE GATE.
- FOOTER DIMENSION (B) IS ADJUSTED FOR ANTI-FLOTATION.
- WATER TIGHT SEALS ARE REQUIRED AT ALL PIPE CONNECTIONS TO STRUCTURE.

PERMIT DRAWING
SHEET 2 OF 48

PLOT DRIVER: NCDOT_color_eng_200.plt
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PENTABLE: NCDOT_permits.NCON.tbl
TIME: 4:48:02 PM
DATE: 6/23/2019

REVISIONS

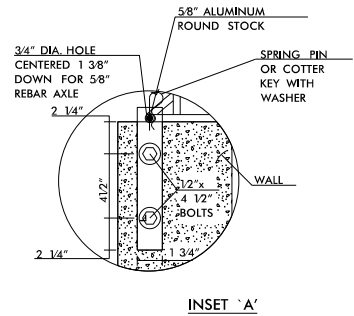
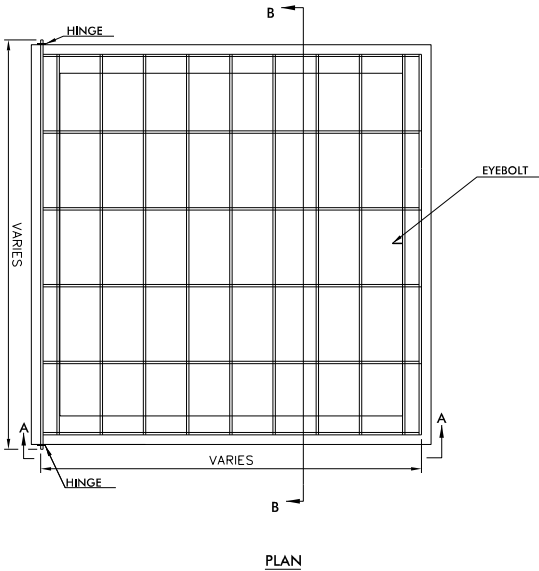
LANE



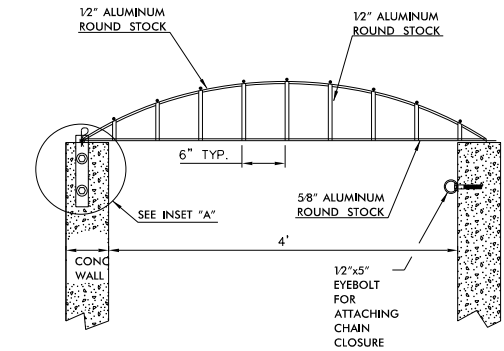
HDR Engineering, Inc. of the Carolinas
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

PROJECT REFERENCE NO.		SHEET NO.	
U-2719		2D-4	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
<div>INCOMPLETE PLANS</div> <div>DO NOT USE FOR R/W ACQUISITION</div>			
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			

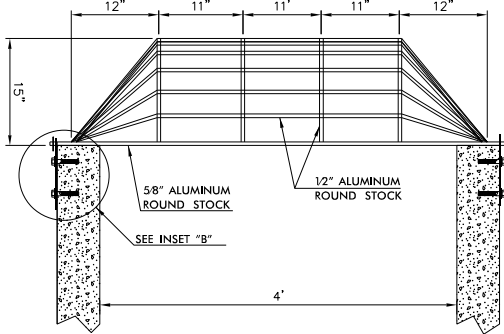
RISER TRASH RACK NOTES:
1. ALL JOINTS SHALL BE FULLY WELDED AROUND JOINT WITH A MINIMUM OF A 1/4" BEAD.
2. IF BOLTS ARE CHEMICALLY ANCHORED, FOLLOW STD. DWG. 862.04 FOR ANCHORING PROCEDURE.
3. EYEBOLT FOR CHAIN CLOSURE SHALL BE INSTALLED BY THE SAME METHOD AS THE HINGE PLATE BOLTS.
4. RACK AND HARDWARE SHALL BE REBAR AND GALVANIZED IN ACCORDANCE WITH ASTM 153.



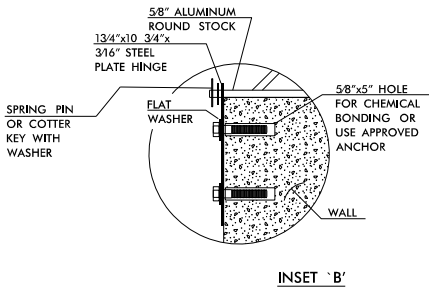
REBAR TRASH RACK



SECTION A-A



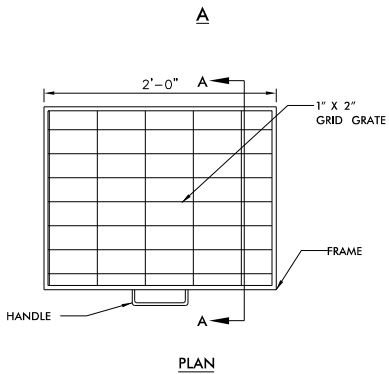
SECTION B-B



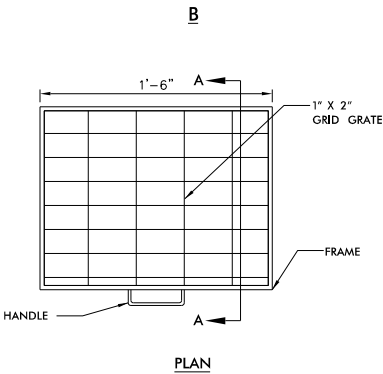
INSET B

REMOVEABLE ORIFICE TRASH RACK

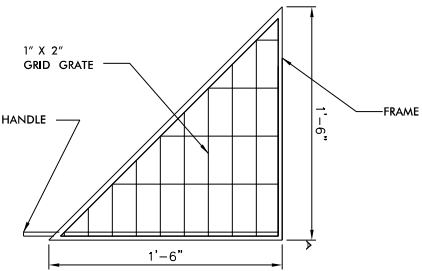
ORIFICE TRASH RACK NOTES:
1. ALL JOINTS SHALL BE FULLY WELDED AROUND JOINT WITH A MINIMUM OF A 3/16" BEAD.
2. IF BOLTS ARE ANCHORED IN CONCRETE, FOLLOW STD. DWG. 862.03 AND 862.04 FOR ANCHORING PROCEDURE.
3. REMOVEABLE ORIFICE TRASH RACK SHALL BE ATTACHED TO CONCRETE BOX BY HINGE OR SLIDE RAIL SYSTEM.
4. RACK AND HARDWARE SHALL BE ALUMINUM OR GALVANIZED IN ACCORDANCE WITH ASTM A-153.



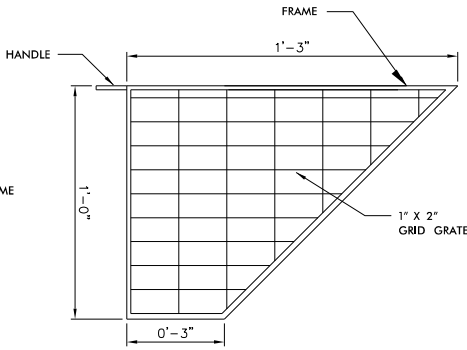
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PLAN

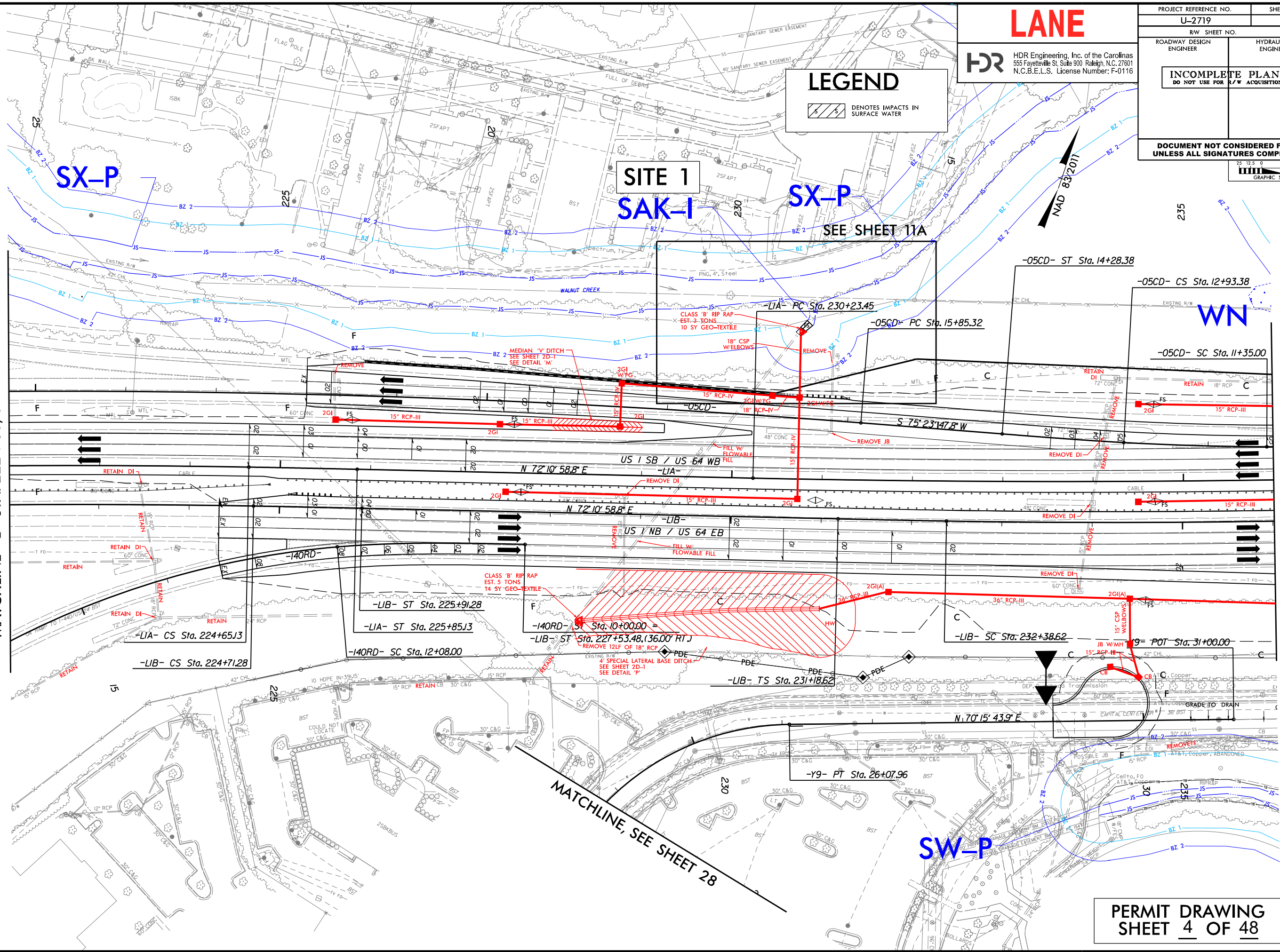


SECTION A-A



SECTION A-A

MATCHLINE -L- STA. 222+00, SEE SHEET 10



MATCHLINE, SEE SHEET 28

PERMIT DRAWING
SHEET 4 OF 48

MATCHLINE-L-STA. 236+00, SEE SHEET 12

LANE

H2R

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N.C.B.E.L.S. License Number: F-0116

PROJECT REFERENCE NO.

U-2719

SHEET NO

1

RW SHEET NO.

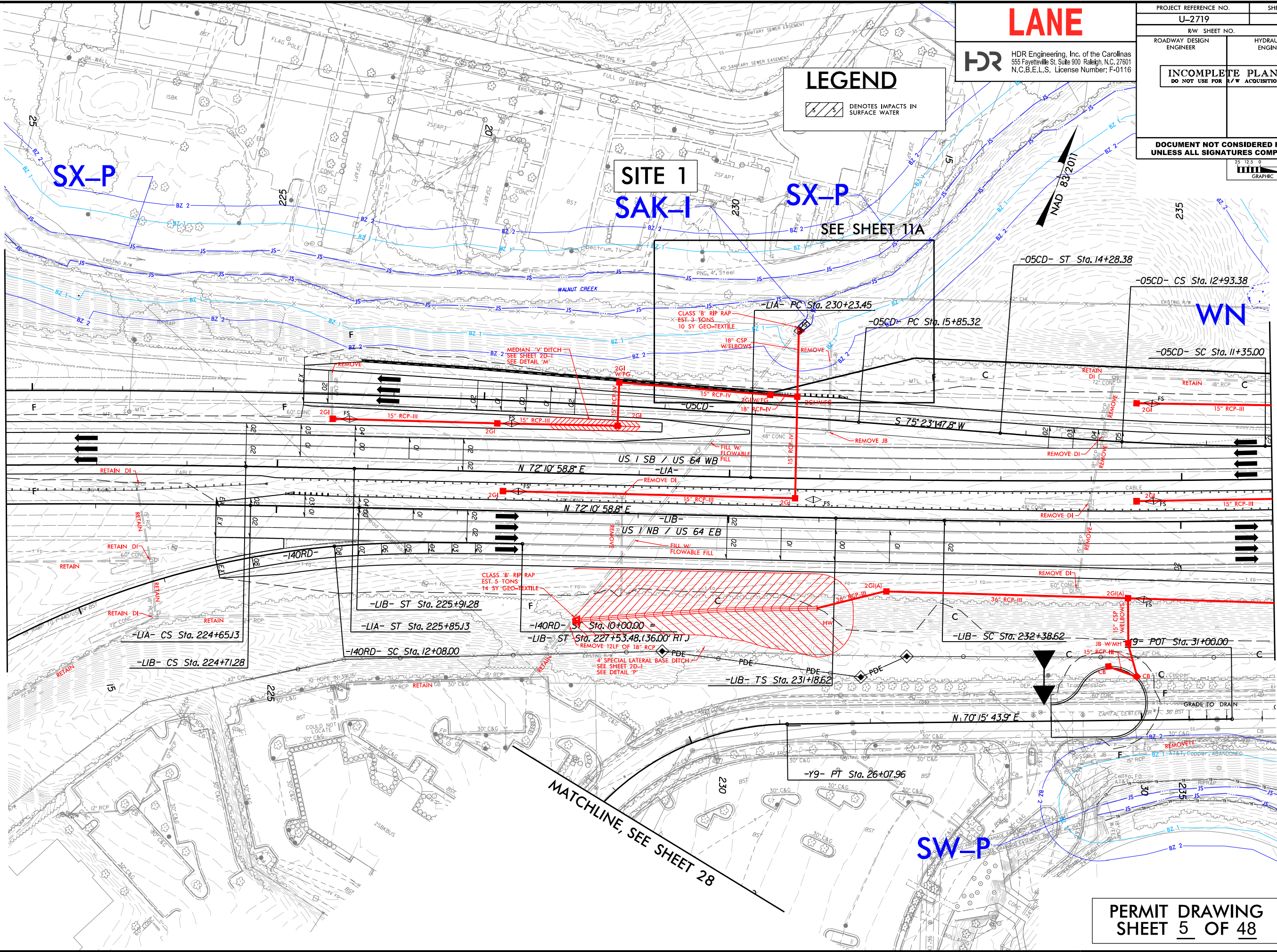
ROADWAY DESIGN
ENGINEERHYDRAULIC
ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

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

REVISIONS

MATCHLINE -L- STA. 222+00, SEE SHEET 10



MATCHLINE, SEE SHEET 28

LANE

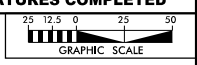


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N.C.B.E.L.S. License Number: F-0116

LEGEND

Denotes impacts in surface water

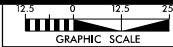
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U-2719	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



PERMIT DRAWING
SHEET 5 OF 48

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TIME: 5:19:27 PM

REVISIONS



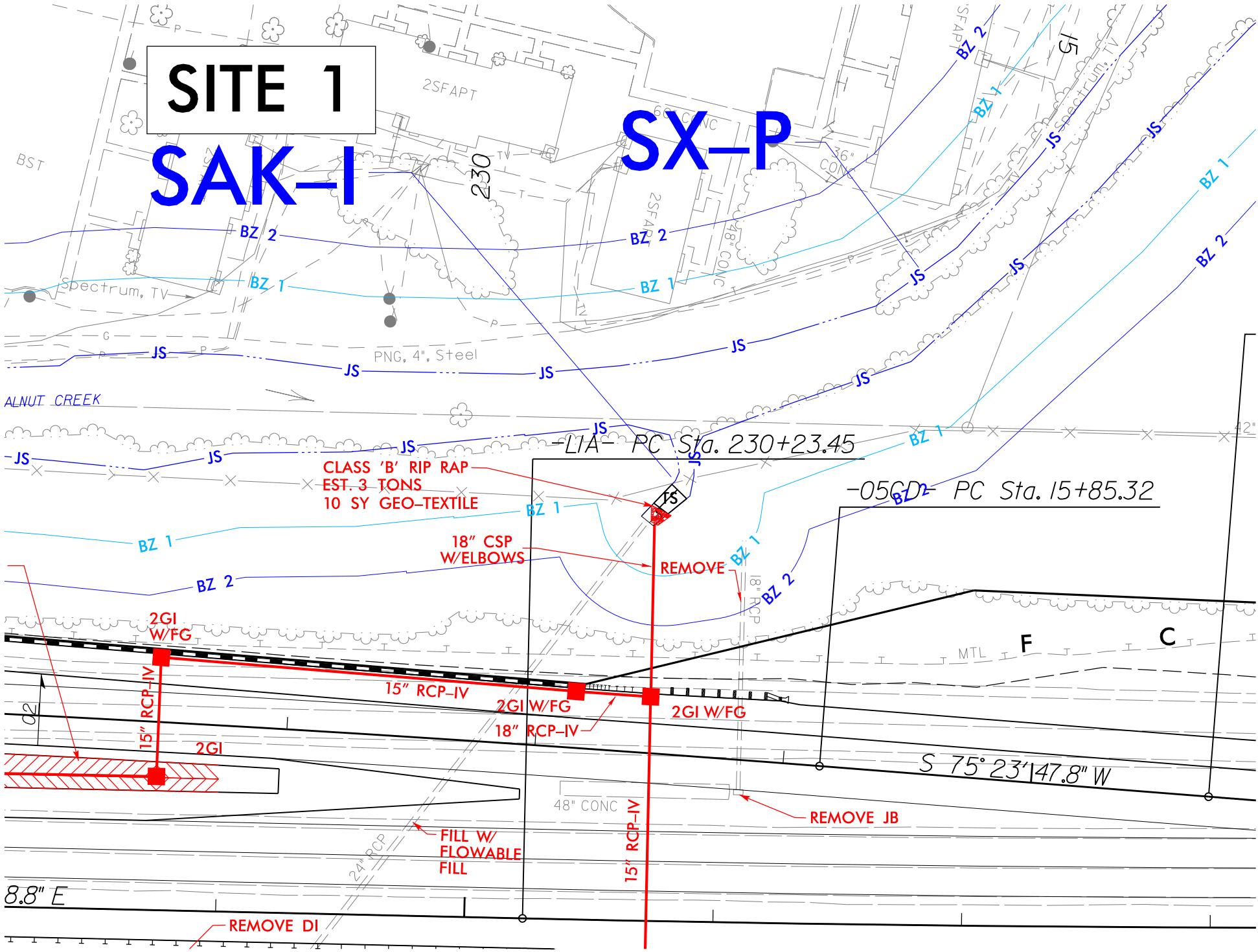
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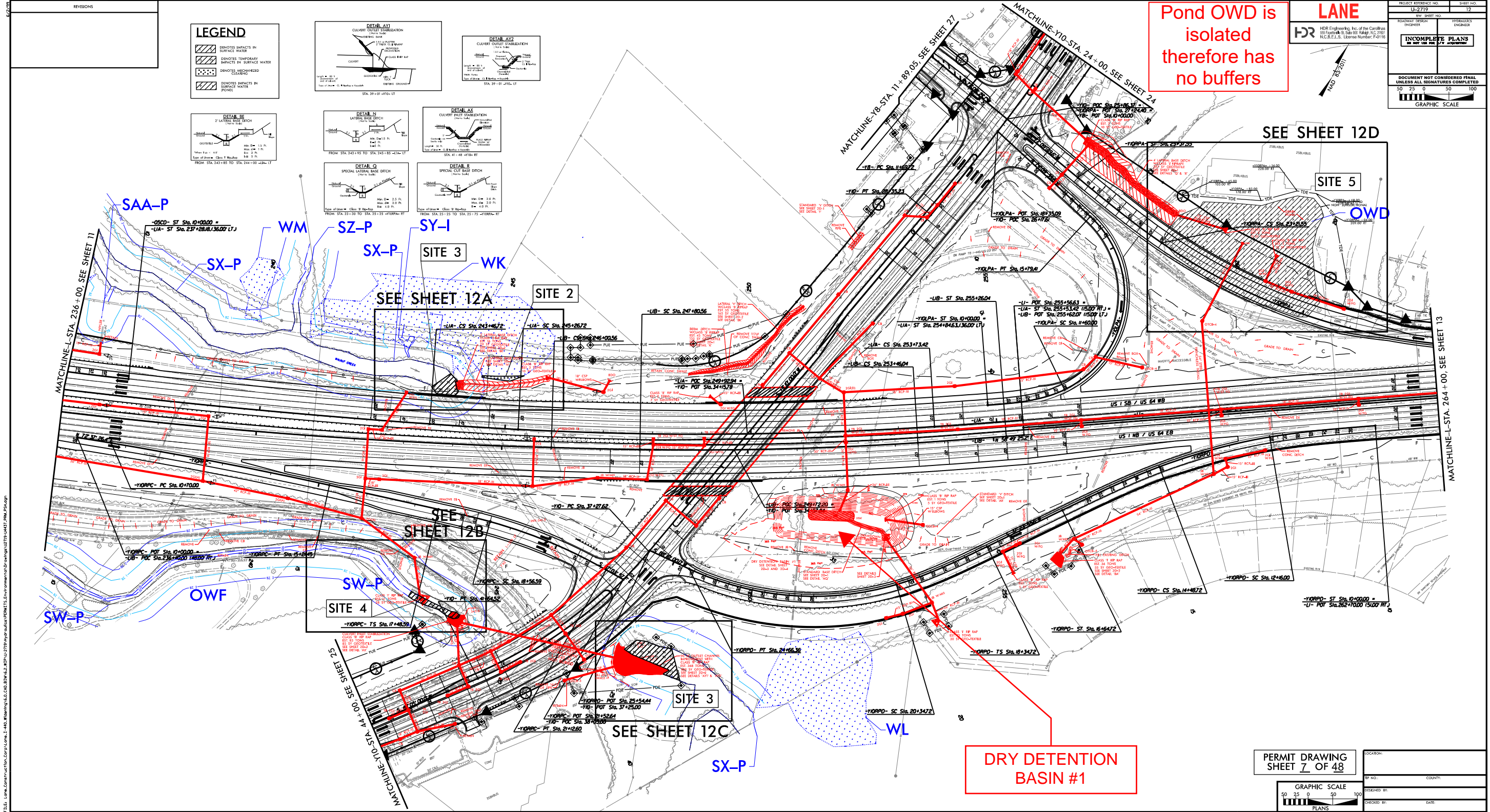
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S

DENOTES IMPACTS IN
SURFACE WATER

PROJECT REFERENCE NO. U-2719		SHEET NO. 11A	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION			
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LANE			





LEGEND

- IMPACTS IN SURFACE WATER
- TEMPORARY IMPACTS IN SURFACE WATER
- MACHINIZED CLEARING
- IMPACTS IN SURFACE WATER (POND)

DETAIL BE
2' LATERAL BASE DITCH
FROM STA 243+85 TO STA 244+00 - LIA-17

DETAIL AV1
CULVERT OUTLET STABILIZATION
FROM STA 243+85 TO STA 244+00 - LIA-17

DETAIL AV2
CULVERT OUTLET STABILIZATION
FROM STA 243+85 TO STA 244+00 - LIA-17

DETAIL N
LATERAL BASE DITCH
FROM STA 243+85 TO STA 244+00 - LIA-17

DETAIL AV3
CULVERT INLET STABILIZATION
FROM STA 243+85 TO STA 244+00 - LIA-17

DETAIL O
SPECIAL LATERAL BASE DITCH
FROM STA 243+85 TO STA 244+00 - LIA-17

DETAIL B
SPECIAL LATERAL BASE DITCH
FROM STA 243+85 TO STA 244+00 - LIA-17

PLANT: 1/27/2019
DATE: 1/27/2019
DESIGNED BY: J. J. JONES
CHECKED BY: J. J. JONES
PROJECT: 1/27/2019
LOCATION: 1/27/2019

Pond OWD is isolated therefore has no buffers

DRY DETENTION BASIN #1

LANE

PROJECT REFERENCE NO. 12719
SHEET NO. 12

INCOMPLETE PLANS
UNLESS ALL SIGNATURES COMPLETED

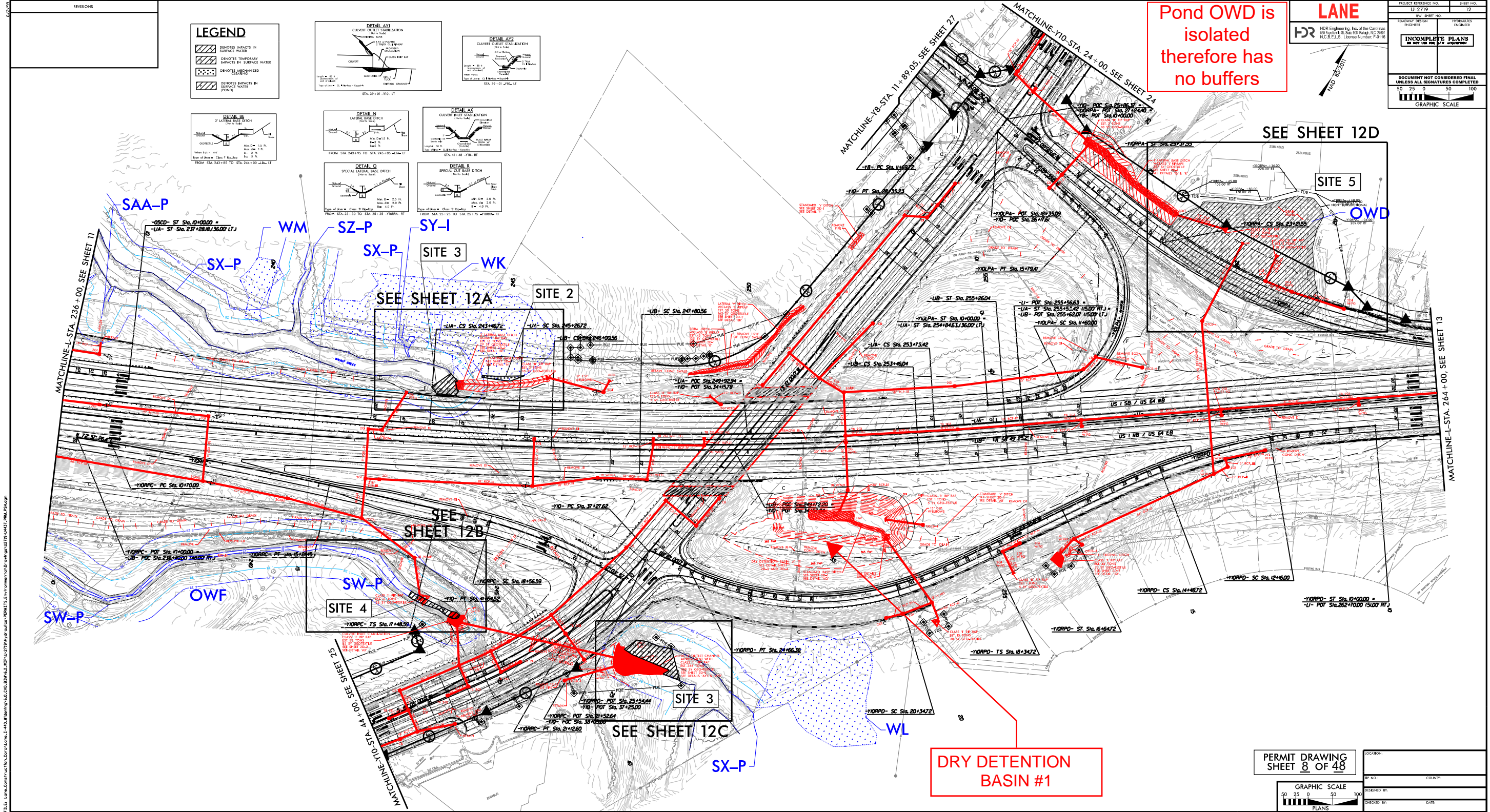
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALE
50 25 0 50 100
PLANS

PERMIT DRAWING SHEET 7 OF 48

GRAPHIC SCALE
50 25 0 50 100
PLANS

LOCATION: _____
TP NO.: _____ COUNTY: _____
DESIGNED BY: _____
CHECKED BY: _____ DATE: _____



LEGEND

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

DETAIL BE
2' LATERAL BASE DITCH
FROM STA 243+85 TO STA 244+00 -1/4-17

DETAIL AVI
CULVERT OUTLET STABILIZATION
FROM STA 243+85 TO STA 244+00 -1/4-17

DETAIL AVI
CULVERT OUTLET STABILIZATION
FROM STA 243+85 TO STA 244+00 -1/4-17

DETAIL N
LATERAL BASE DITCH
FROM STA 243+85 TO STA 244+00 -1/4-17

DETAIL AVI
CULVERT INLET STABILIZATION
FROM STA 243+85 TO STA 244+00 -1/4-17

DETAIL O
SPECIAL LATERAL BASE DITCH
FROM STA 243+85 TO STA 244+00 -1/4-17

DETAIL B
SPECIAL CULVERT BASE DITCH
FROM STA 243+85 TO STA 244+00 -1/4-17

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PLOT: 1/10/2019 10:00:00 AM
PLOT FILE: 12719.dwg
DATE: 1/10/2019
TIME: 10:00:00 AM
PLOT: 1/10/2019 10:00:00 AM

Pond OWD is isolated therefore has no buffers

LANE

FOR

PROJECT REFERENCE NO. 12719
SHEET NO. 12
INCOMPLETE PLANS
UNLESS ALL SIGNATURES COMPLETED
GRAPHIC SCALE
50 25 0 50 100

SEE SHEET 12D

SITE 5

OWD

SEE SHEET 12A

SITE 2

SEE SHEET 12B

SITE 4

SEE SHEET 12C

SITE 3

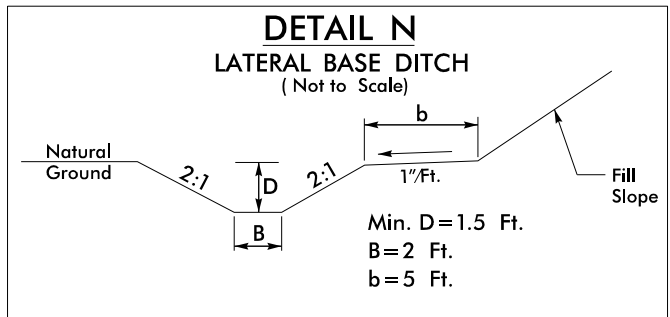
DRY DETENTION BASIN #1

PERMIT DRAWING SHEET 8 OF 48

GRAPHIC SCALE
50 25 0 50 100
PLANS

LOCATION:
TP NO.:
COUNTY:
DESIGNED BY:
CHECKED BY:
DATE:

REVISIONS



FROM STA. 243+95 TO STA. 245+85 -LIA- LT

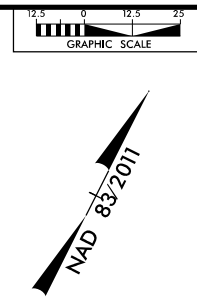
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SITE 3

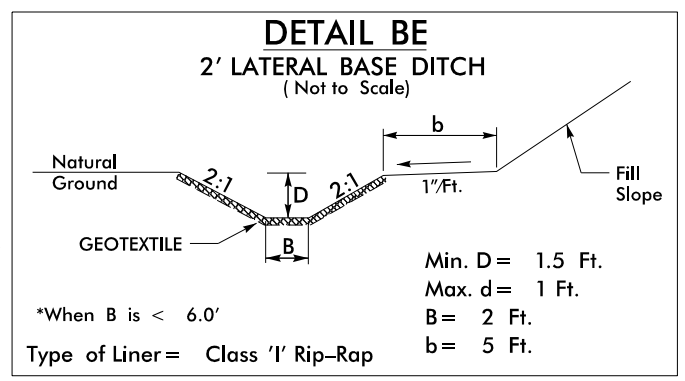
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LEGEND

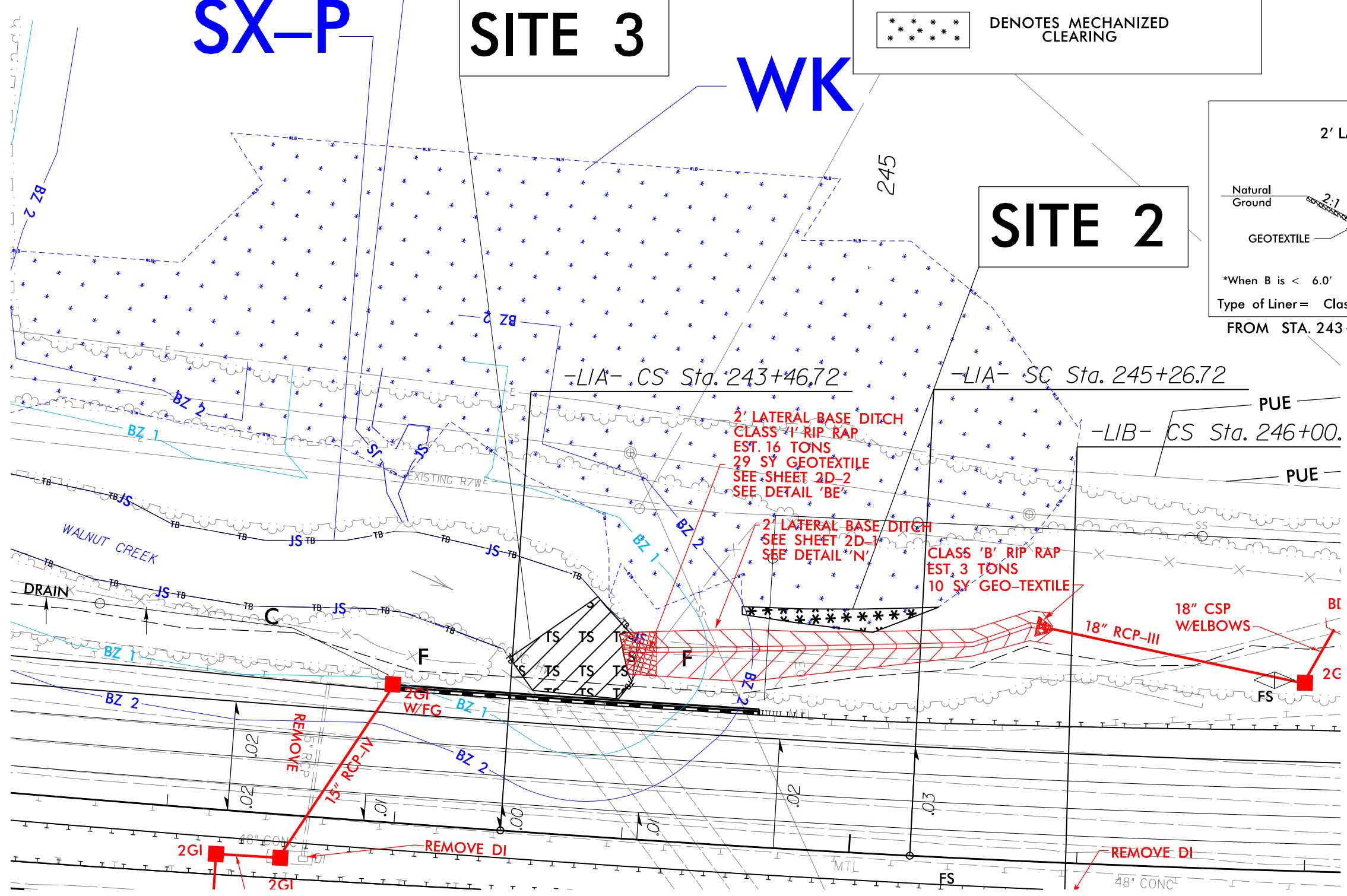
- DENOTES IMPACTS IN SURFACE WATER
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER
- DENOTES MECHANIZED CLEARING



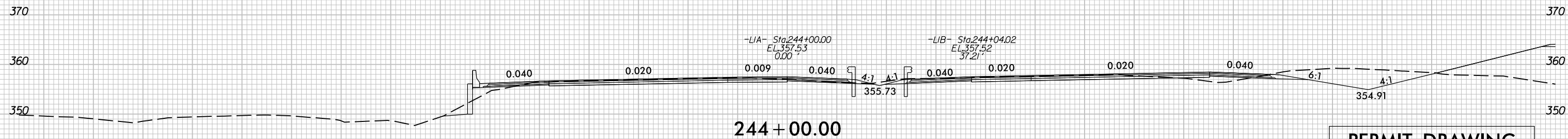
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RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
<div>INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION</div>			
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			
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FROM STA. 243+85 TO STA. 244+00 -LIA- LT



PERMIT DRAWING
SHEET 9 OF 48



PERMIT DRAWING
SHEET 10 OF 48

[illegible]

REVISIONS

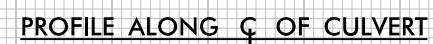


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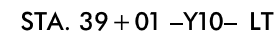
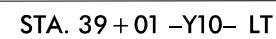
HYDRAULICS
ENGINEER

SCALE:
1" = 50' HORIZONTAL
1" = 10' VERTICAL

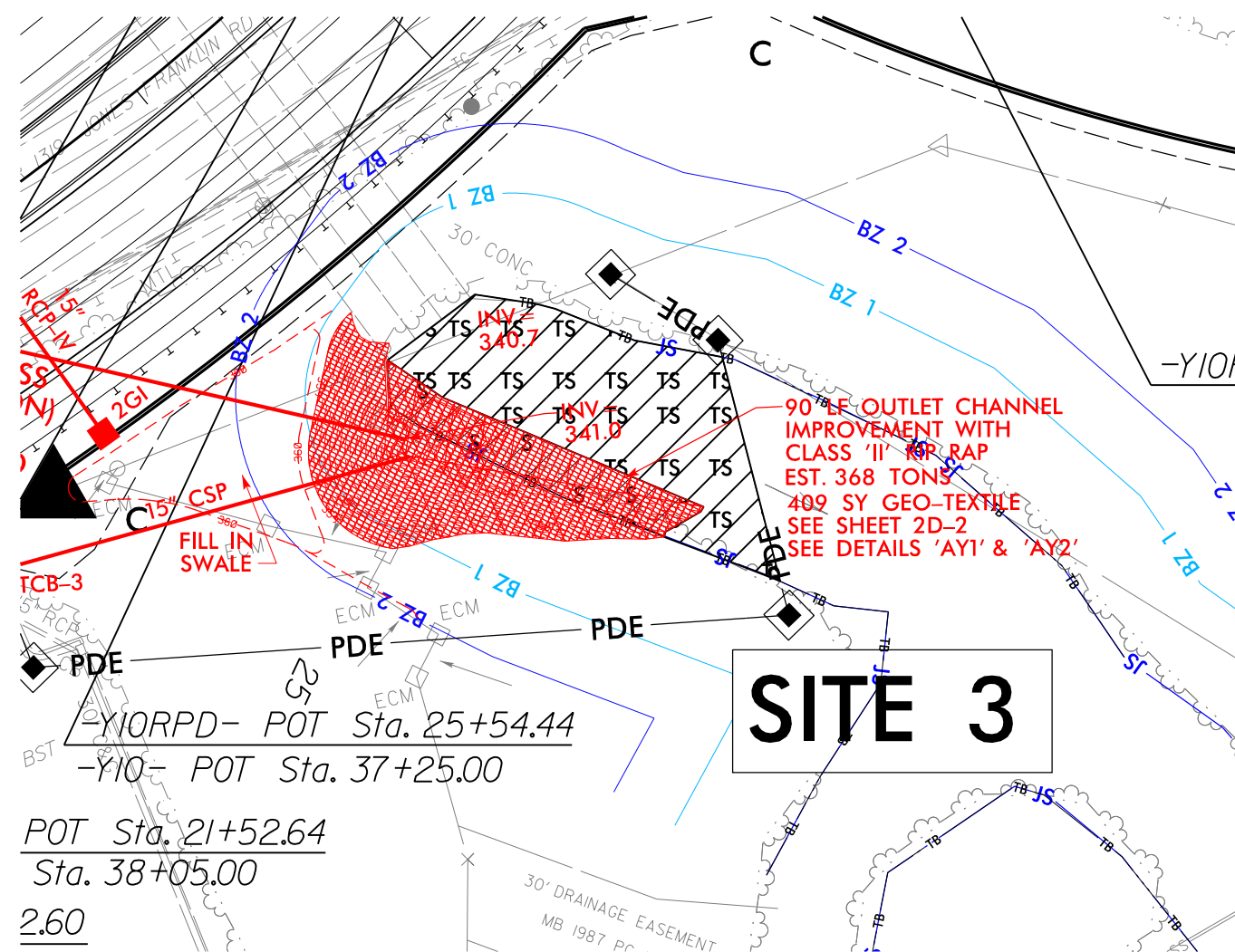
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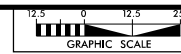



PERMIT DRAWING
SHEET 12 OF 48

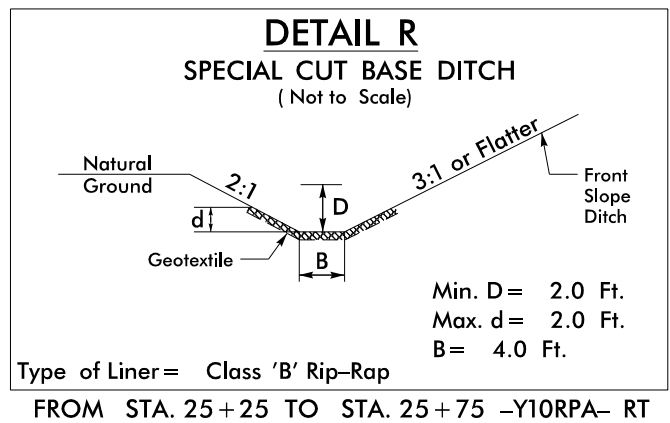
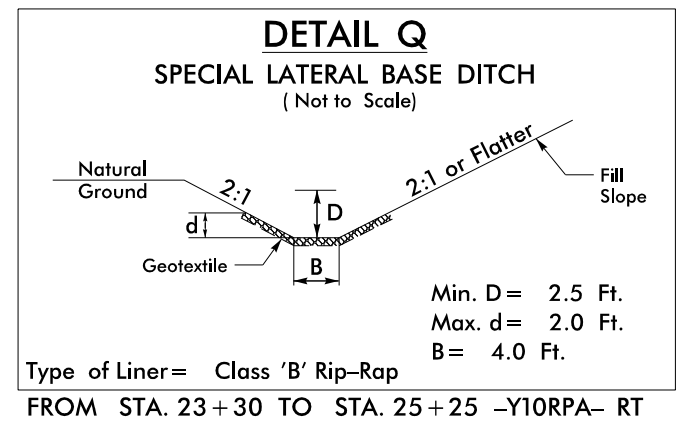


DENOTES IMPACTS IN
SURFACE WATER

DENOTES TEMPORARY
IMPACTS IN SURFACE WATER

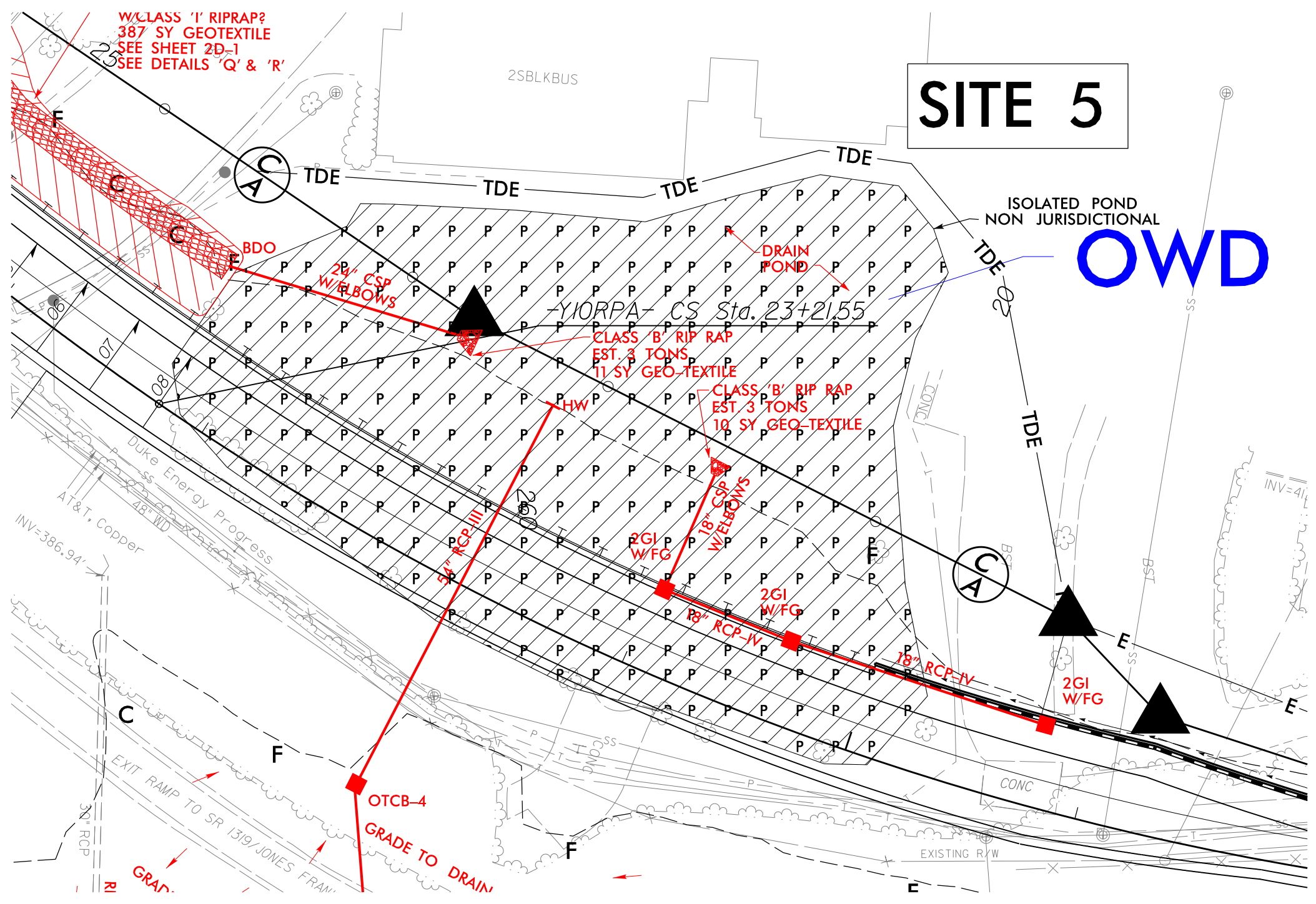


PROJECT REFERENCE NO.		SHEET NO.	
U-2719		12D	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
<div>INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION</div>			
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			
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<div>LANE</div>			



LEGEND

DENOTES IMPACTS IN SURFACE WATER (POND)








PLOT DRIVER: NCDOT_color_eng_100.plt
USER: JMASR0C
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PENTABLE: NCDOT_permits.NCON.tbl
TIME: 3:55:38 PM
DATE: 7/15/2019

REVISIONS

LEGEND

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

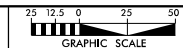
Pond reconstruction being performed under City of Raleigh contract. No surface water impacts to Pond OWC anticipated from U-2719 project.

LANE

H2R

HDR Engineering, Inc. of the Carolinas
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

PROJECT REFERENCE NO.		SHEET NO.	
U-2719		14	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
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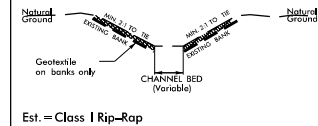
MATCHLINE-L-STA. 278+00, SEE SHEET 13

MATCHLINE I - STA 292+00. SEE SHEET 15

DRY DETENTION
BASIN #2

DETAIL BB

BANK STABILIZATION
(Not to Scale)

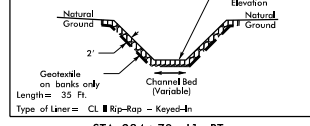


Est. = Class I Rip-Rap

FROM STA. 284+90 TO STA. 287+27 -1- RT

DETAIL B

T OUTLET STABILIZATION
(Not to Scale)

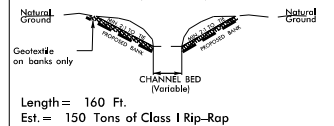


CL ■ Rip-Rap - Keyed-In

STA. 284+70 -L1-

DETAIL B

CHANNEL BANK STABILIZATION
(Not to Scale)



Est. = 150 Tons

FROM 284+24 -11-T STA. TO STA. 285+84 -11-T

FROM: 2012-12-17 17:17:30
TO: 2012-12-17 17:17:30
SUBJECT: [REDACTED]

PERMIT DRAWING
SHEET 15 OF 48

REVISIONS

LEGEND

- TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER
- ... DENOTES MECHANIZED CLEARING
- F E DENOTES FILL IN WETLAND
- S S DENOTES IMPACTS IN SURFACE WATER
- E E DENOTES EXCAVATION IN WETLAND

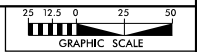
Pond reconstruction being performed under City of Raleigh contract. No surface water impacts to Pond OWC anticipated from U-2719 project.

LANE



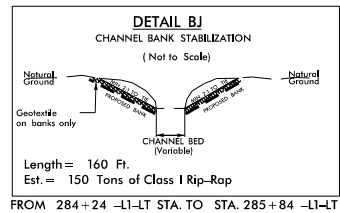
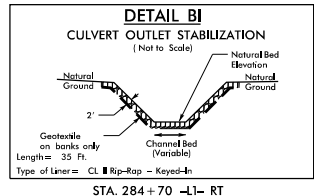
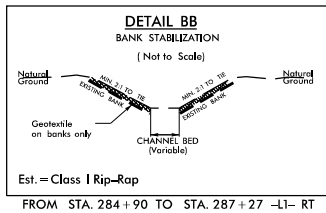
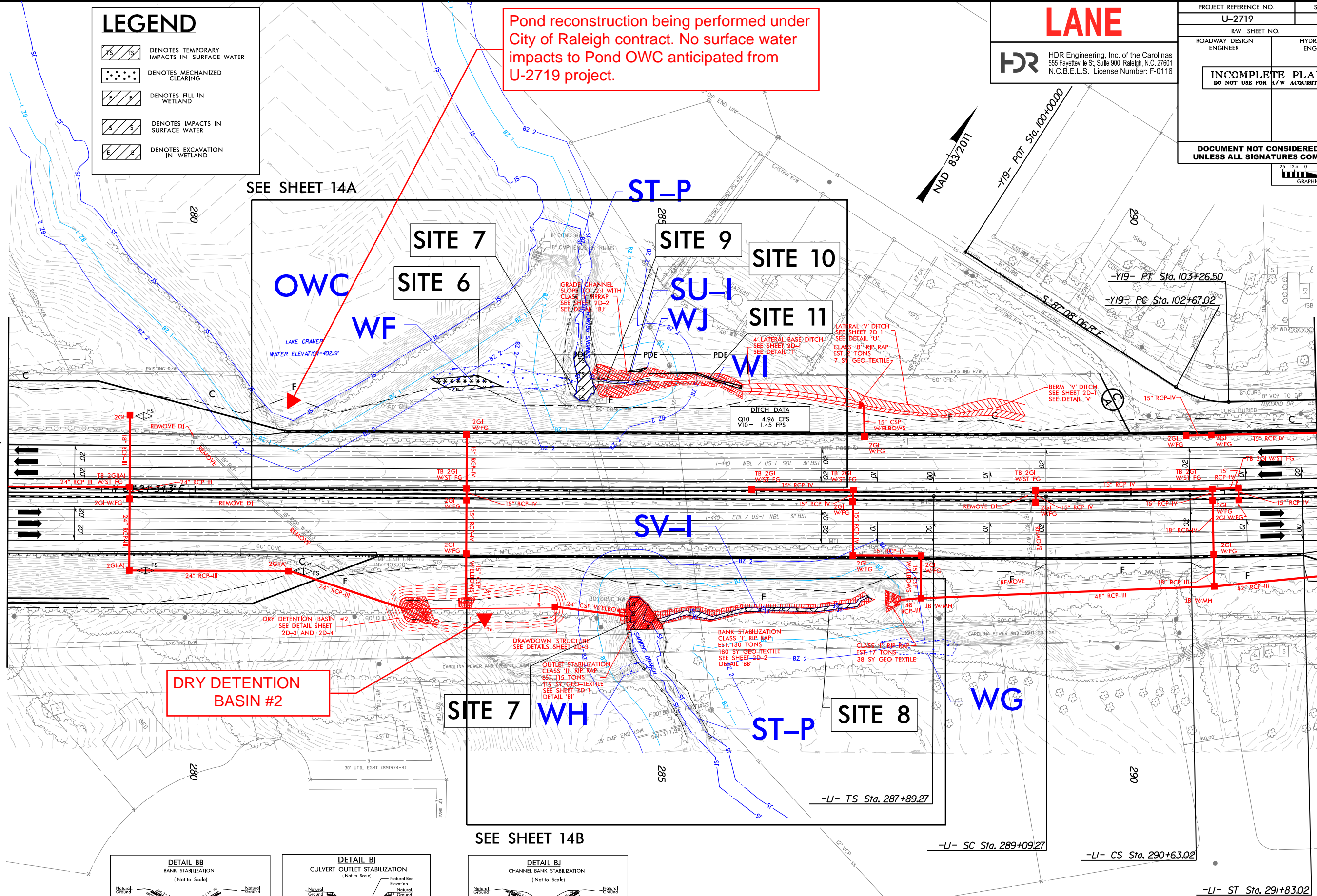
HDR Engineering, Inc. of the Carolinas
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

PROJECT REFERENCE NO.		SHEET NO.	
U-2719		14	
R/W SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
<div>INCOMPLETE PLANS</div> <div>DO NOT USE FOR R/W ACQUISITION</div>			
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			



MATCHLINE-L-STA. 278+00, SEE SHEET 13

MATCHLINE-L-STA. 292+00, SEE SHEET 15



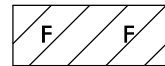
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DATE: 6/24/2019
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REVISIONS

LEGEND



DENOTES MECHANIZED
CLEARING



DENOTES FILL IN
WETLAND



DENOTES TEMPORARY
IMPACTS IN SURFACE WATER



DENOTES IMPACTS IN
SURFACE WATER

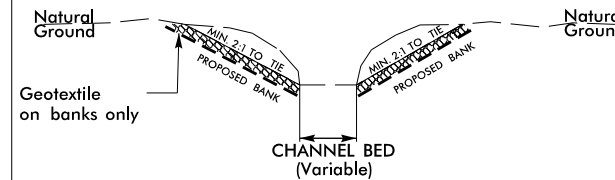


DENOTES EXCAVATION
IN WETLAND

DETAIL BJ

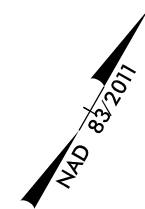
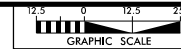
CHANNEL BANK STABILIZATION


(Not to Scale)

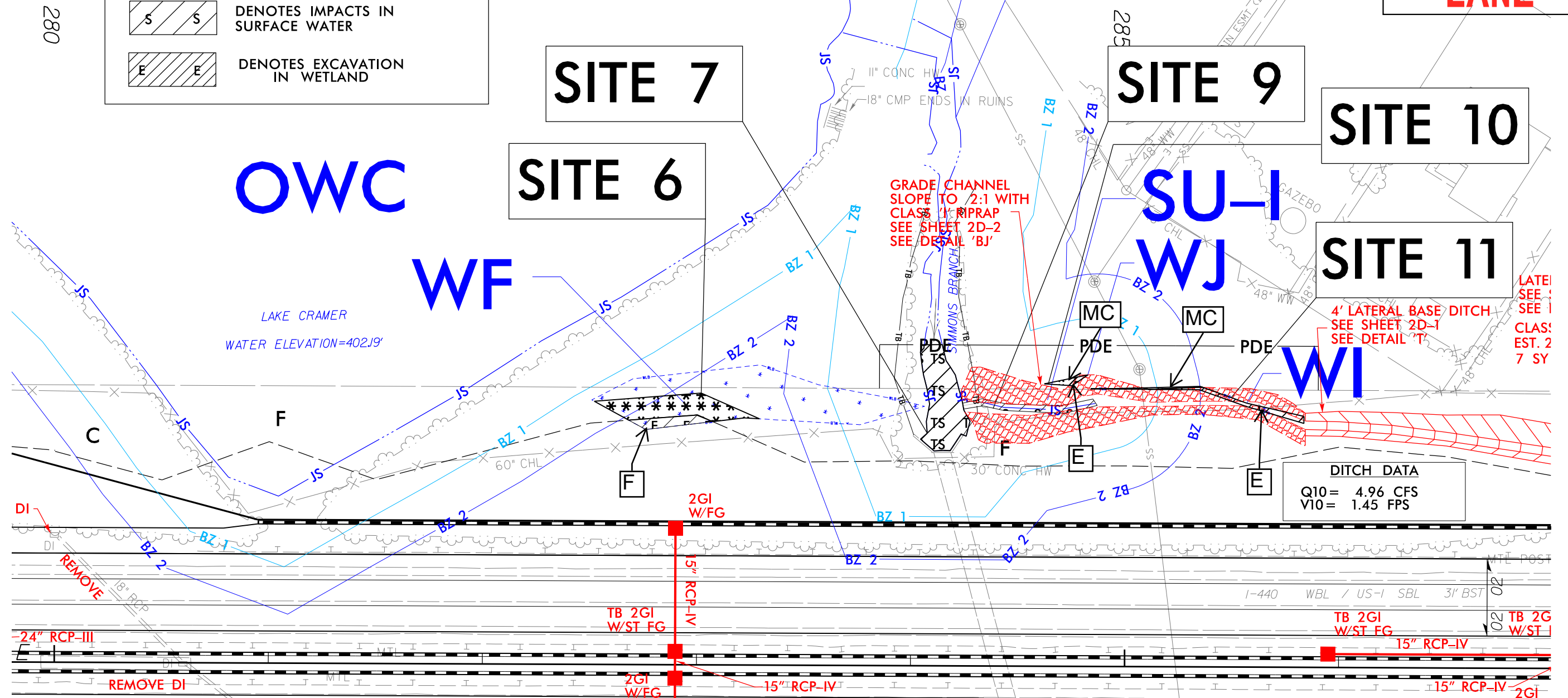


Length = 160 Ft.
Est. = 150 Tons of Class I Rip-Rap

FROM 284+24 -L1-LT STA. TO STA. 285+84 -L1-LT



PROJECT REFERENCE NO. U-2719		SHEET NO. 14A	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
<div>INCOMPLETE PLANS</div> <div>DO NOT USE FOR R/W ACQUISITION</div>			
<div>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</div>			
<div><div></div><div>HDR Engineering, Inc. of the Carolinas 555 Fayetteville St, Suite 900 Raleigh, N.C. 27601 N.C.B.E.L.S. License Number: F-0116</div></div>			
<div>LANE</div>			



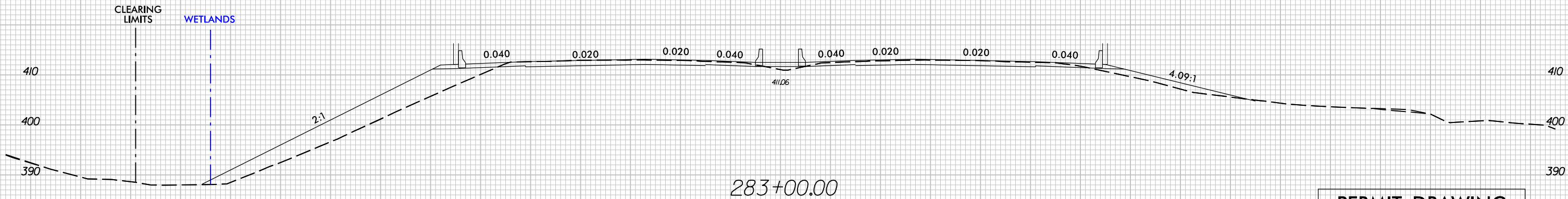
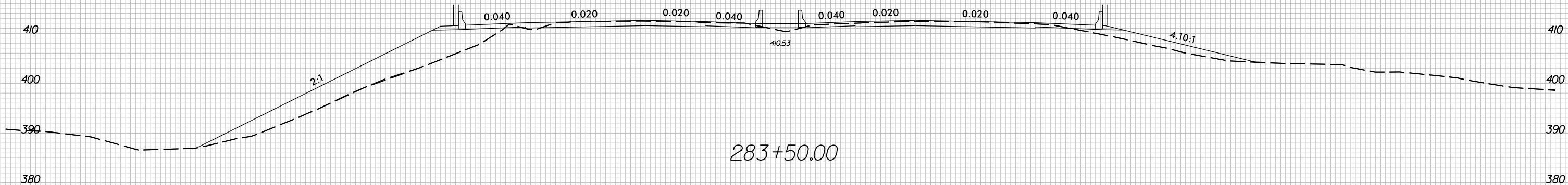
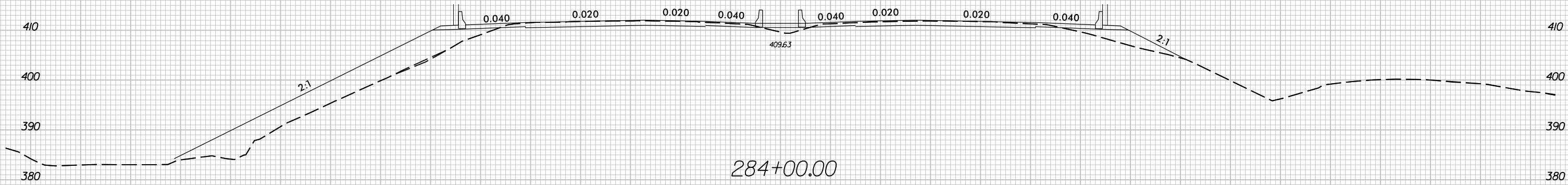
PERMIT DRAWING
SHEET 17 OF 48

6/23/16



PROJ. REFERENCE NO.	SHEET NO.
U-2719	X-102

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



CLEARING LIMITS

WETLANDS

U-2719
PERMIT SITE 7

PERMIT DRAWING
SHEET 18 OF 48

-L/-

10:21:32 AM xpi L.L.dgr
U-2719 PERMIT SITE 7
SUBMITTAL

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REVISIONS

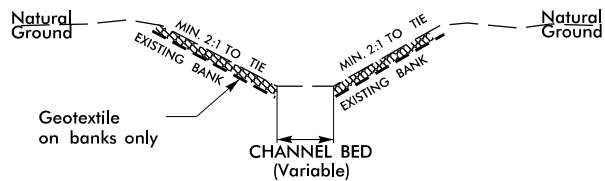
LEGEND



DENOTES IMPACTS IN
SURFACE WATER

DETAIL BB BANK STABILIZATION

(Not to Scale)

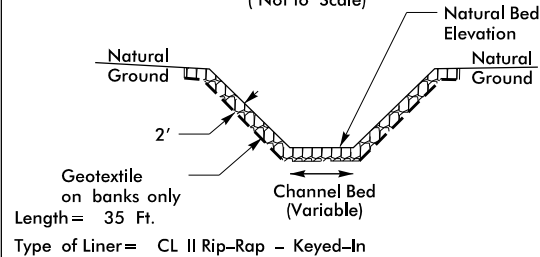


Est. = Class I Rip-Rap

FROM STA. 284+90 TO STA. 287+27 -L1- RT

DETAIL BI CULVERT OUTLET STABILIZATION

(Not to Scale)



STA. 284+70 -L1- RT



PROJECT REFERENCE NO. SHEET NO.

U-2719

14B

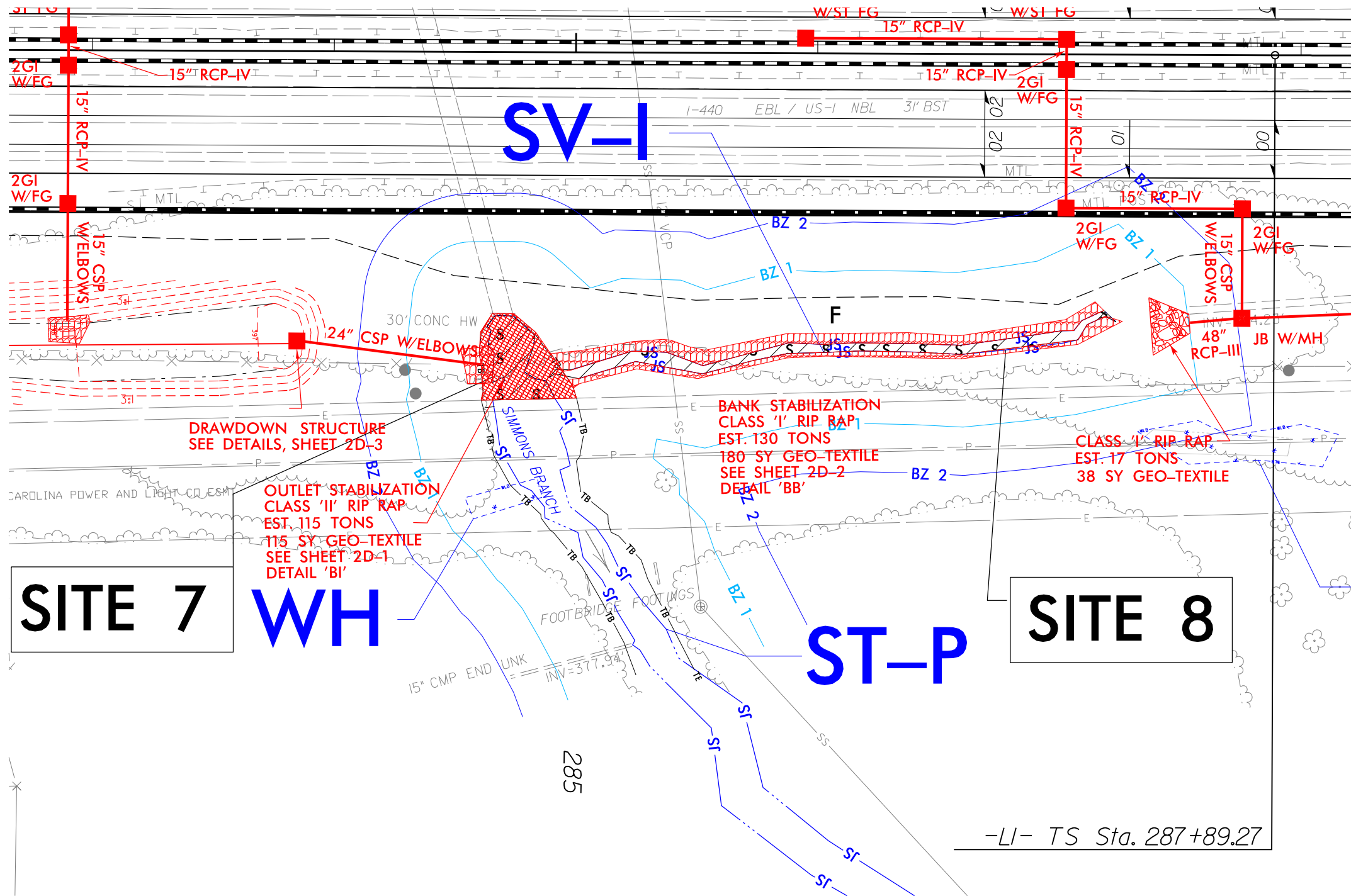
R/W SHEET NO.
ROADWAY DESIGN ENGINEER HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

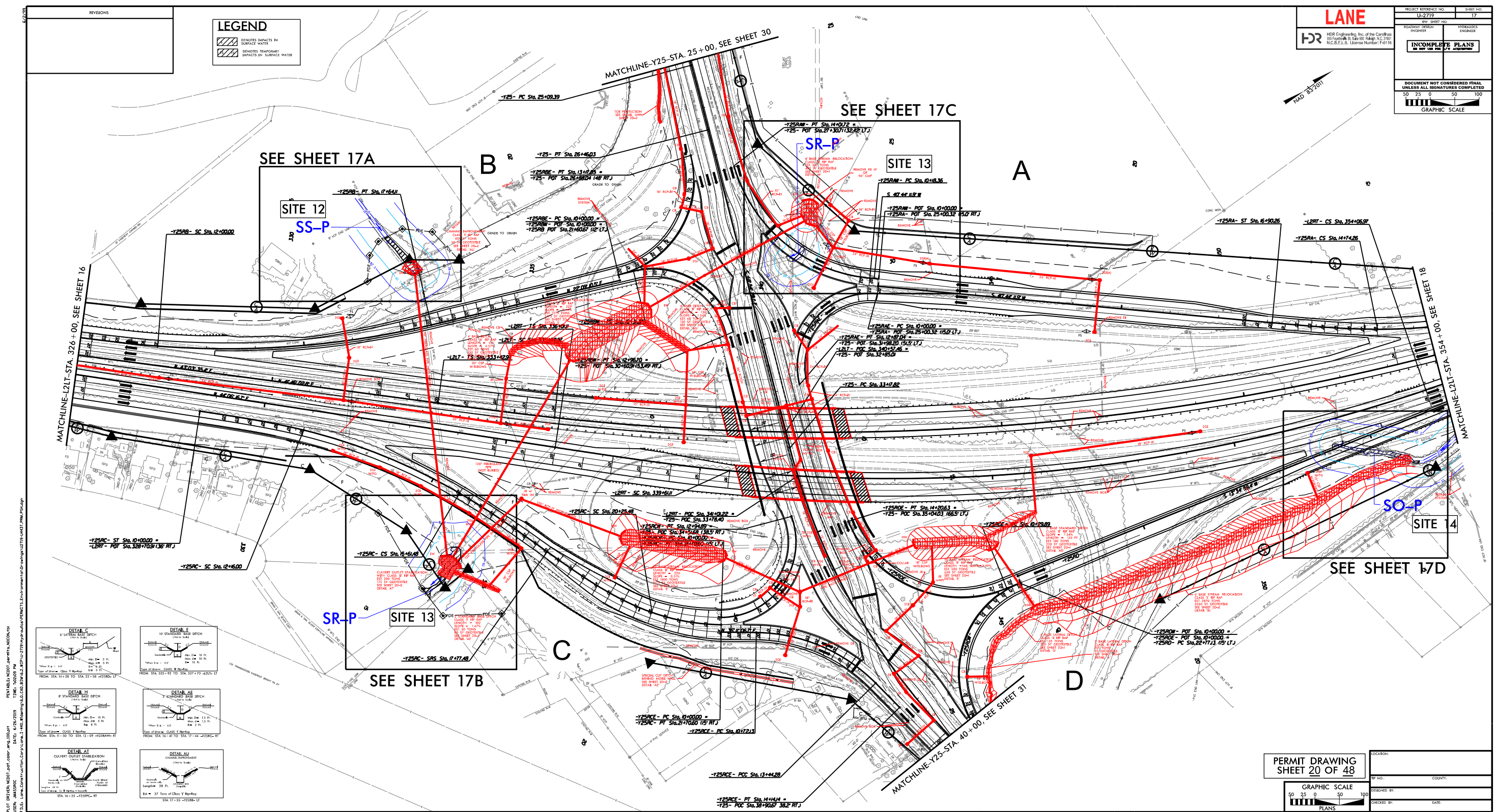
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

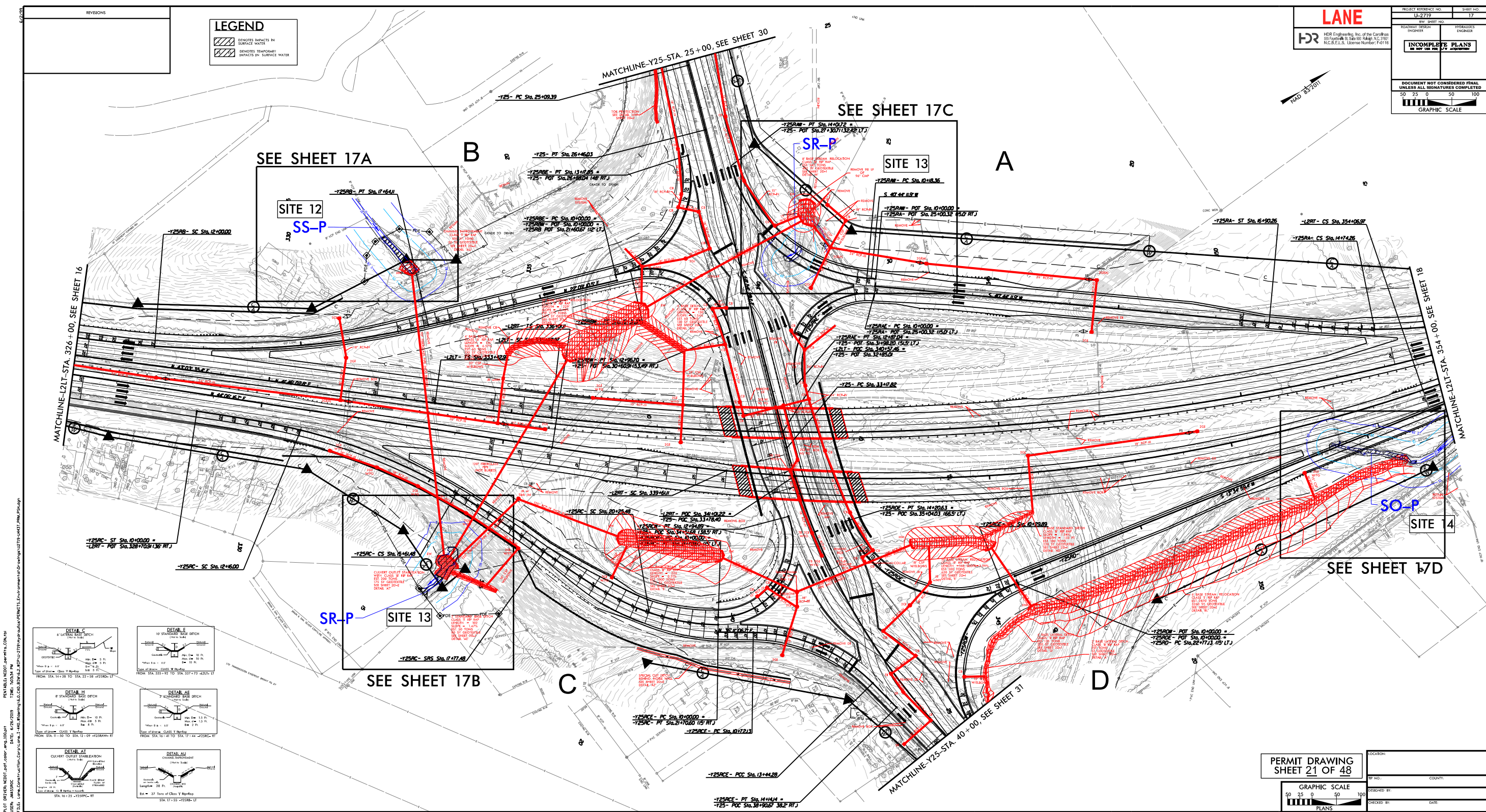
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N.C.B.E.L.S. License Number: F-0116

LANE



PERMIT DRAWING
SHEET 19 OF 48





PLOT DRIVER: NCDOT_color_eng-100.plt
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REVISIONS

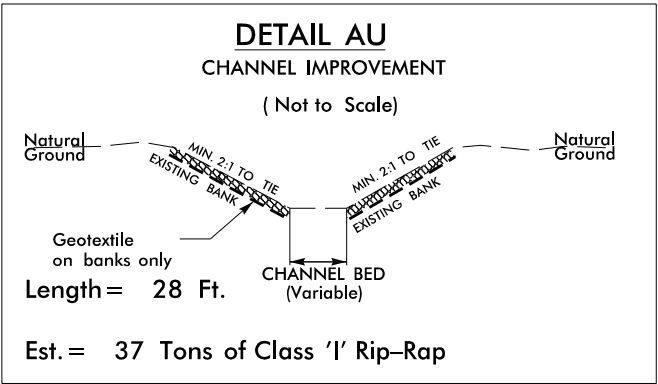
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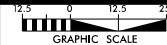
DENOTES IMPACTS IN
SURFACE WATER




DENOTES TEMPORARY
IMPACTS IN SURFACE WATER

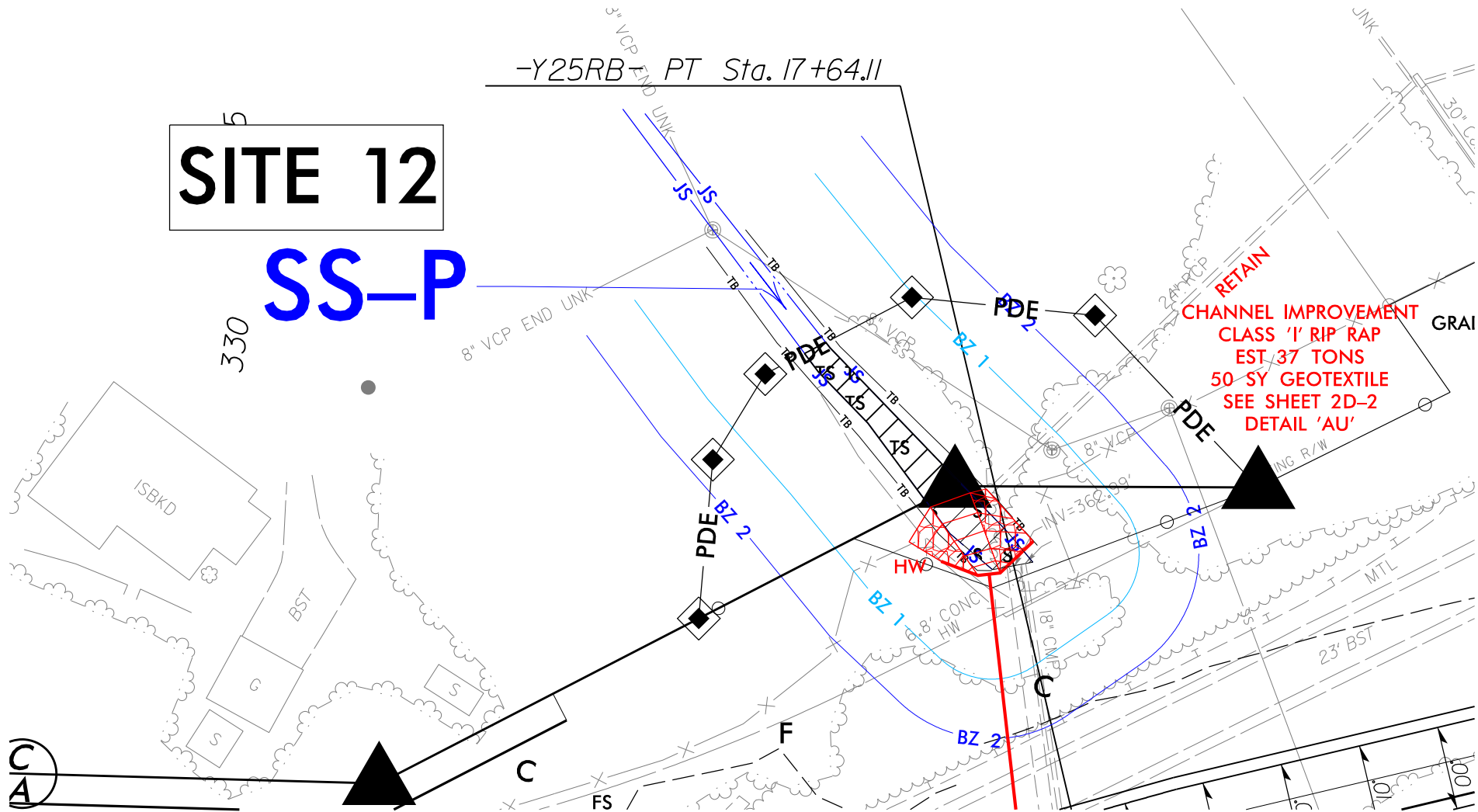


STA. 17+55 -Y25RB- LT




PROJECT REFERENCE NO.		SHEET NO.	
U-2719		17A	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
<div>INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION</div>			
<div>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</div>			
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LANE



PERMIT DRAWING
SHEET 22 OF 48



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N.C.B.E.L.S. License Number: F-0116

PROJECT REFERENCE NO.

U-2719

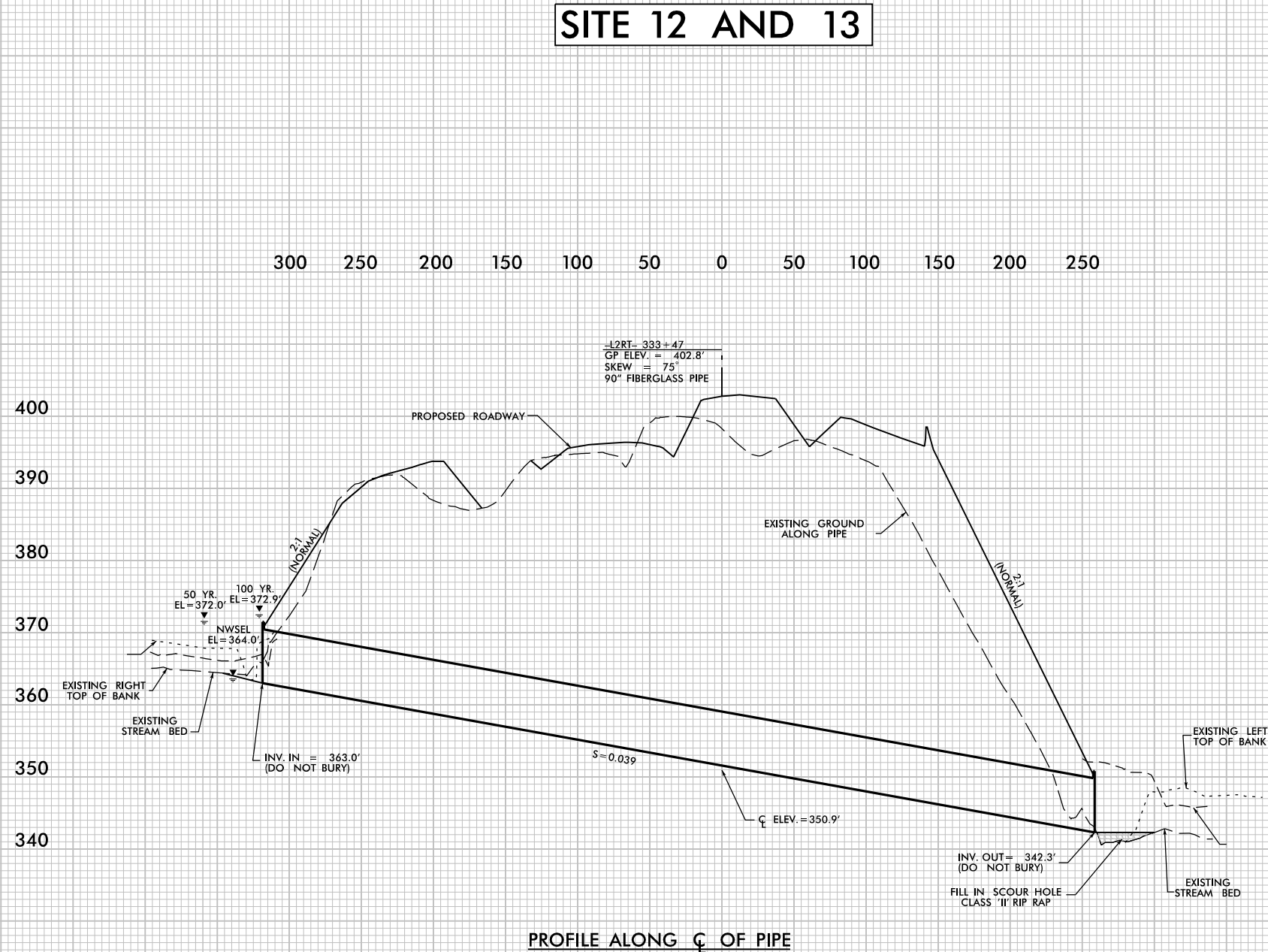
ROADWAY DESIGN ENGINEER

SHEET NO.

HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

SCALE:
1" = 50' HORIZONTAL
1" = 10' VERTICAL



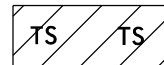
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REVISIONS

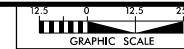
LEGEND



DENOTES IMPACTS IN
SURFACE WATER



DENOTES TEMPORARY
IMPACTS IN SURFACE WATER

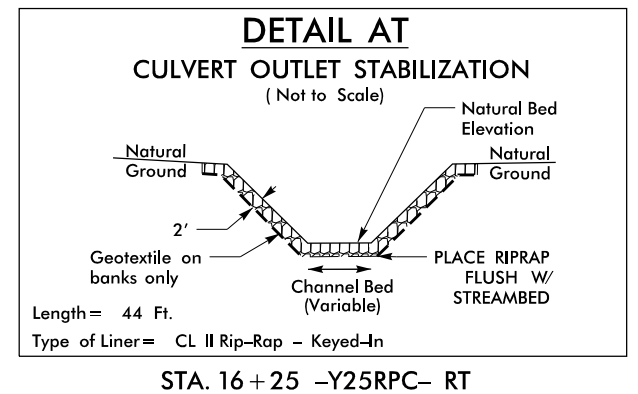
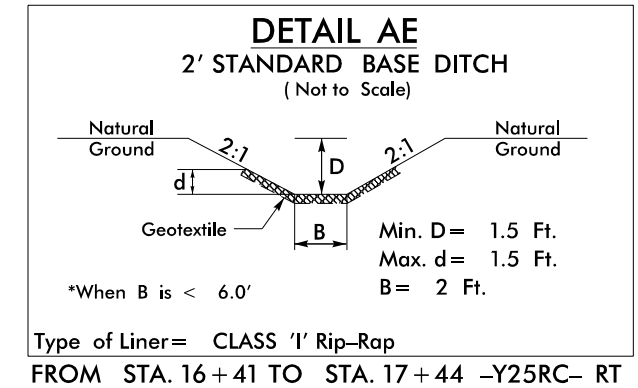
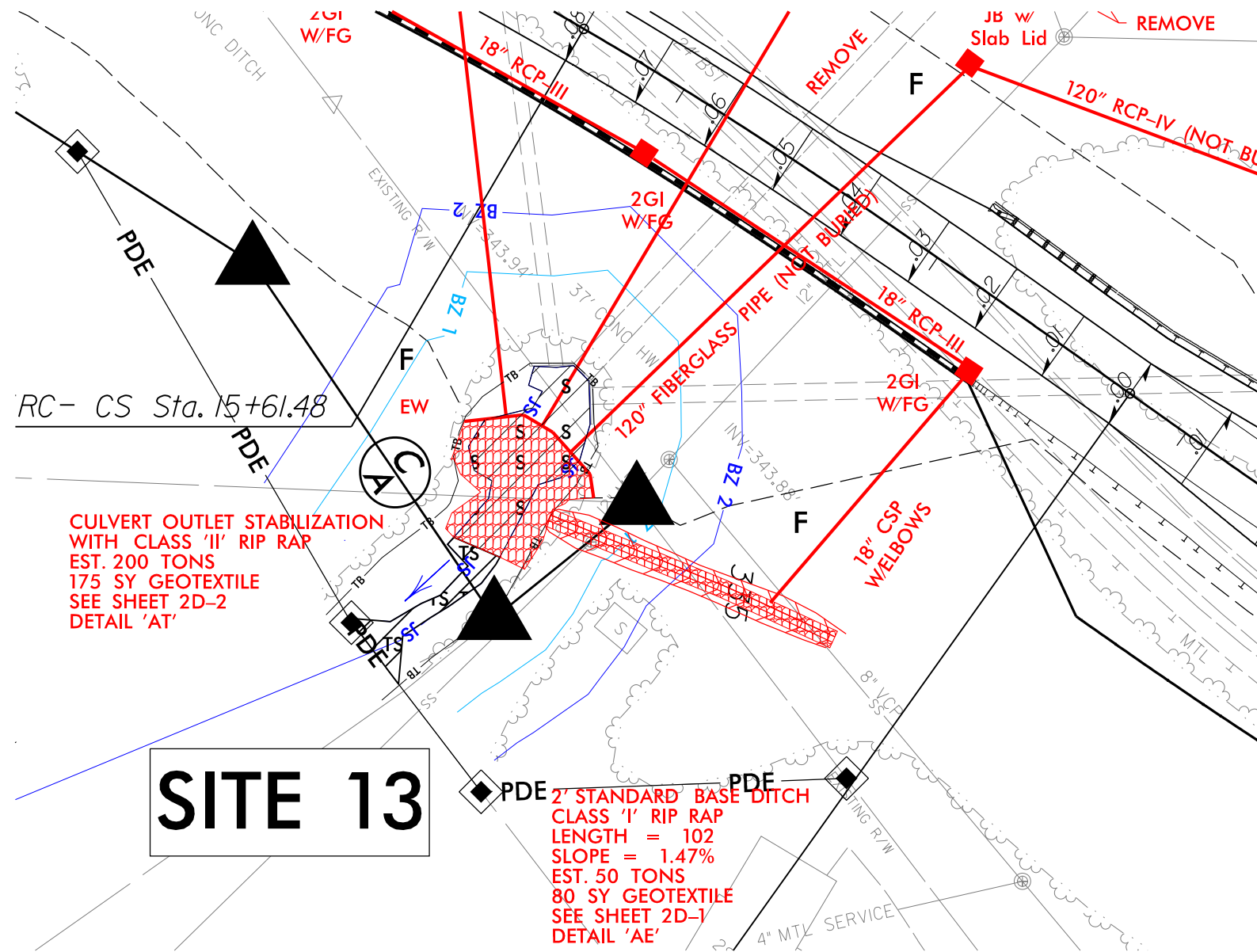


PROJECT REFERENCE NO.		SHEET NO.
U-2719		17B
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION		
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		
H&R HDR Engineering, Inc. of the Carolinas 555 Fayetteville St, Suite 900 Raleigh, N.C. 27601 N.C.B.E.L.S. License Number: F-0116		

LANE

SR-P


SITE 13



PERMIT DRAWING
SHEET 24 OF 48

REVISIONS

5/14/99



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N.C.B.E.L.S. License Number: F-0116

PROJECT REFERENCE NO.

U-2719

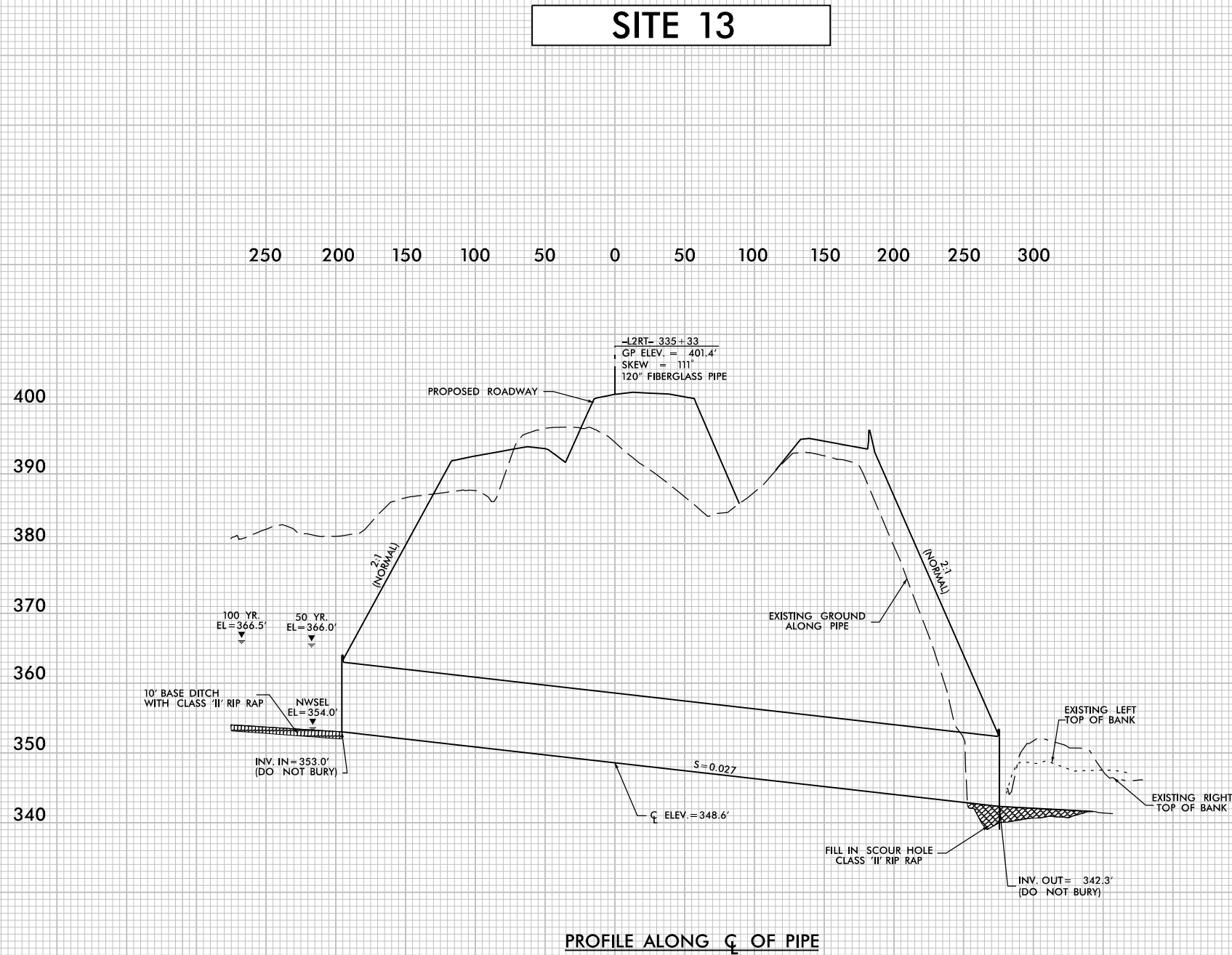
ROADWAY DESIGN ENGINEER

SHEET NO.

HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

SCALE:
1" = 50' HORIZONTAL
1" = 10' VERTICAL

PERMIT DRAWING
SHEET 25 OF 48

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REVISIONS

LEGEND

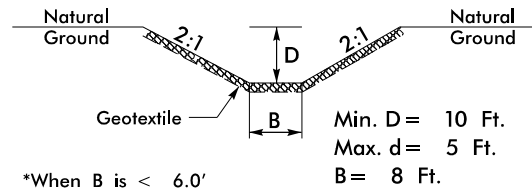


DENOTES IMPACTS IN
SURFACE WATER

DETAIL H

8' STANDARD BASE DITCH


(Not to Scale)

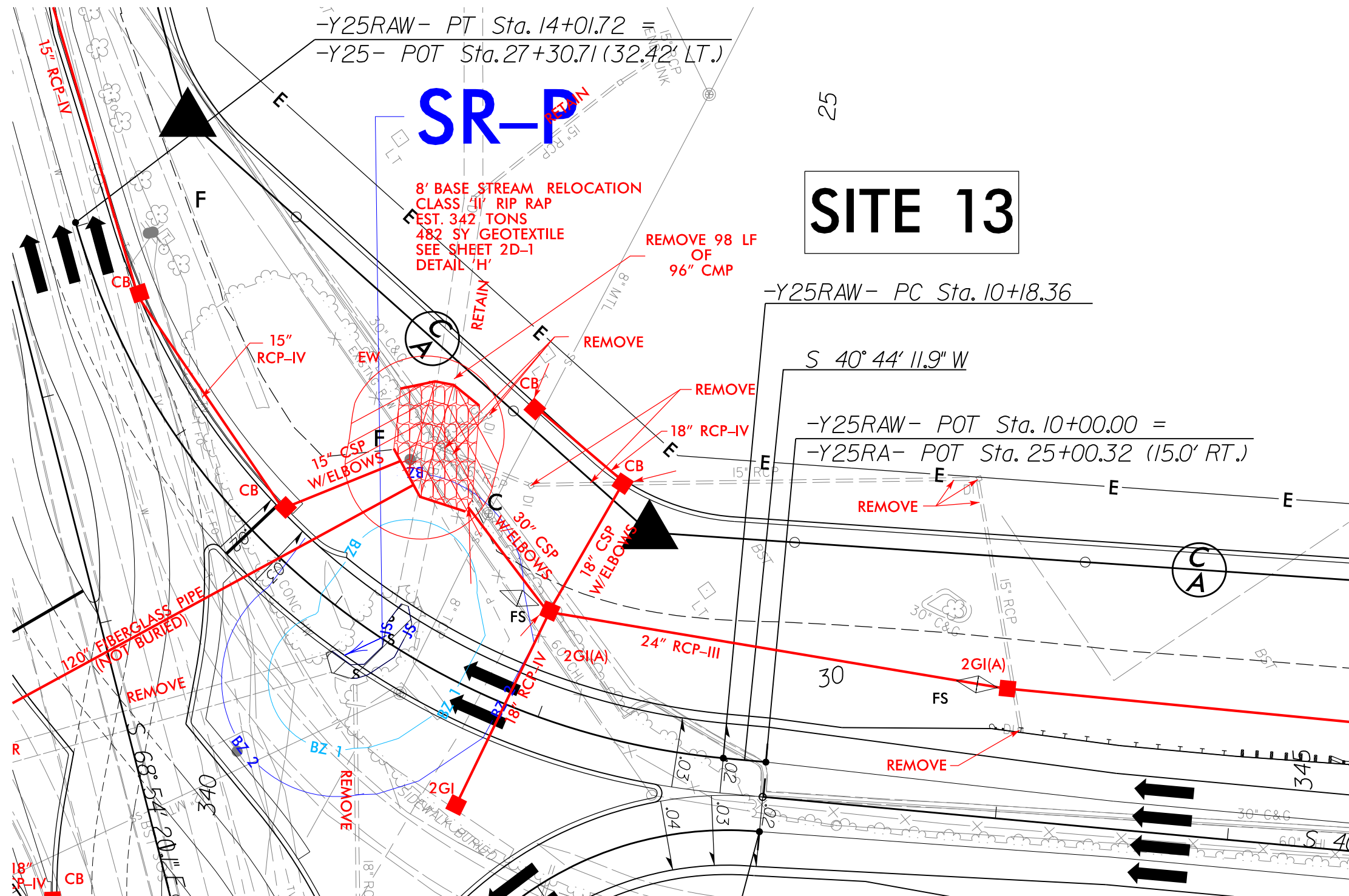


Min. D = 10 Ft.
Max. d = 5 Ft.
B = 8 Ft.


Type of Liner = CLASS 'II' Rip-Rap
FROM STA. 11+50 TO STA. 12+09 -Y25RAW- RT



PROJECT REFERENCE NO. U-2719		SHEET NO. 17C	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
<div>INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION</div>			
<div>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</div>			
<div><div></div><div><div>HDR Engineering, Inc. of the Carolinas 555 Fayetteville St, Suite 900 Raleigh, N.C. 27601 N.C.B.E.L.S. License Number: F-0116</div></div></div>			
<div>LANE</div>			



PERMIT DRAWING
SHEET 26 OF 48



HDR Engineering, Inc. of the Carolinas

555 Fayetteville St, Suite 900 Raleigh, N.C. 27601

N.C.B.E.L.S. License Number: F-0116

PROJECT REFERENCE NO.

U-2719

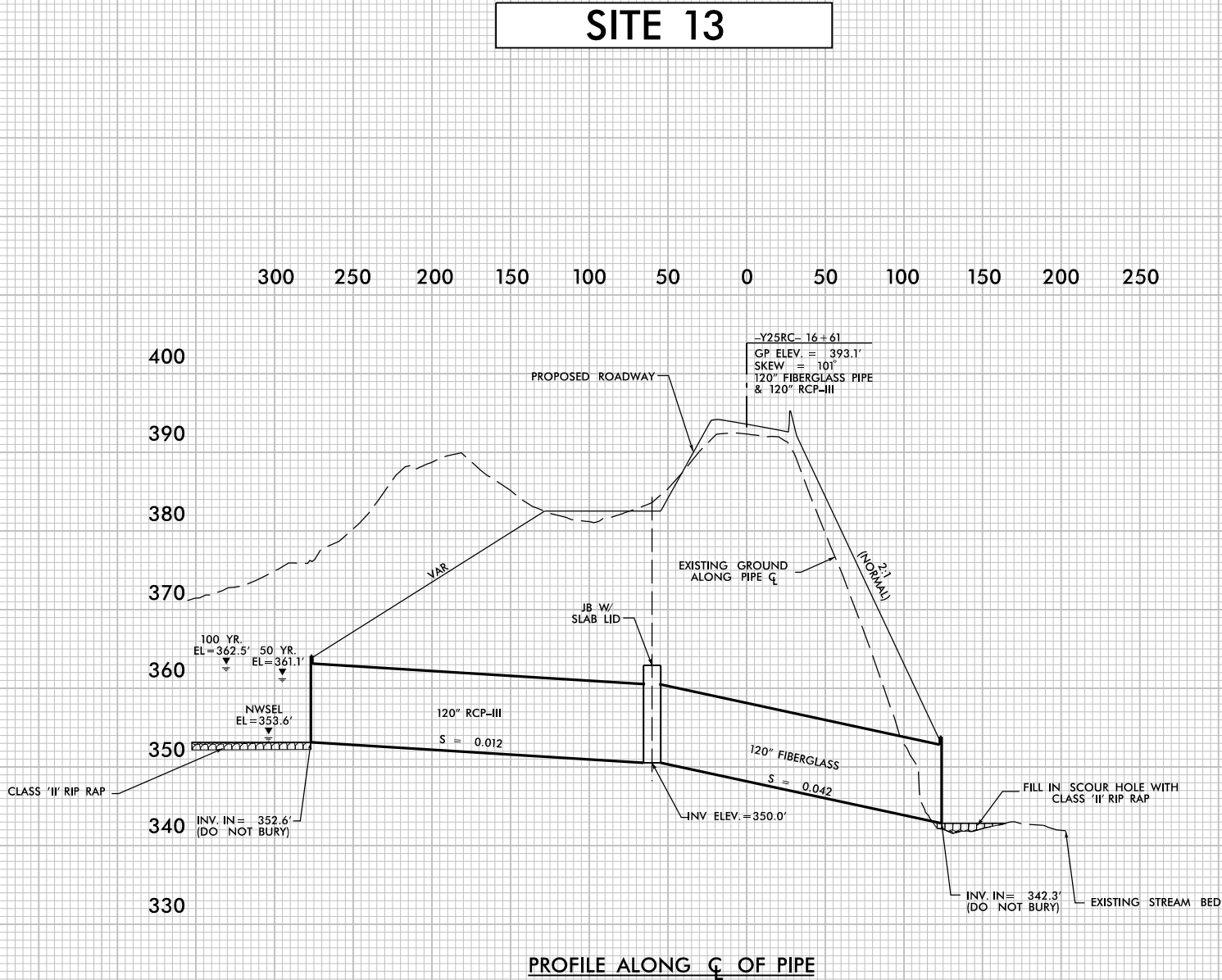
ROADWAY DESIGN ENGINEER

SHEET NO.

HYDRAULICS ENGINEER

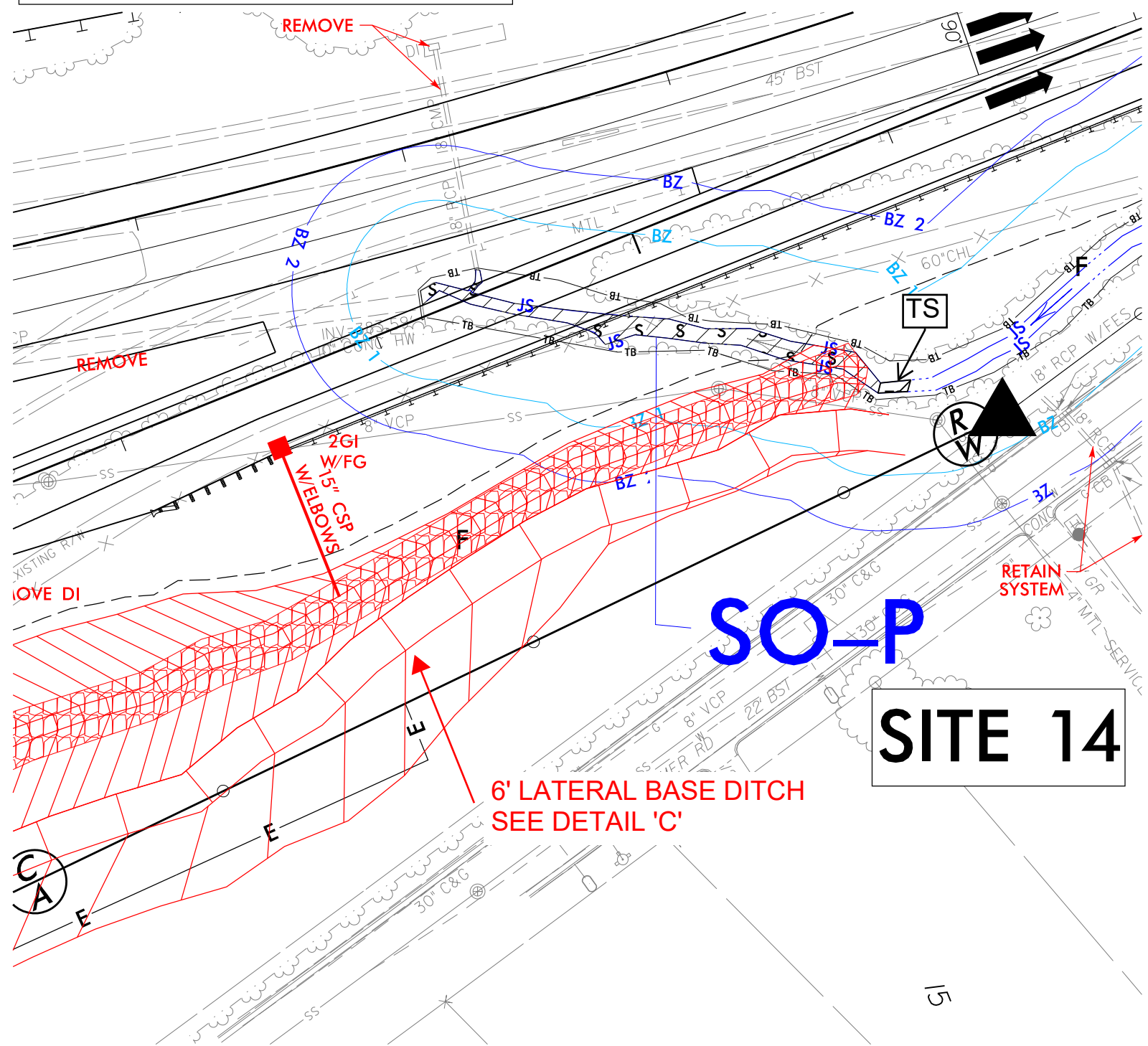
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UNLESS ALL SIGNATURES COMPLETED

SCALE:
1" = 50' HORIZONTAL
1" = 10' VERTICAL



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REVISIONS



LEGEND

S

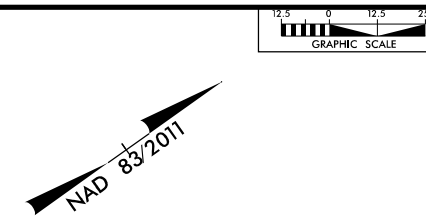
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DENOTES IMPACTS IN SURFACE WATER

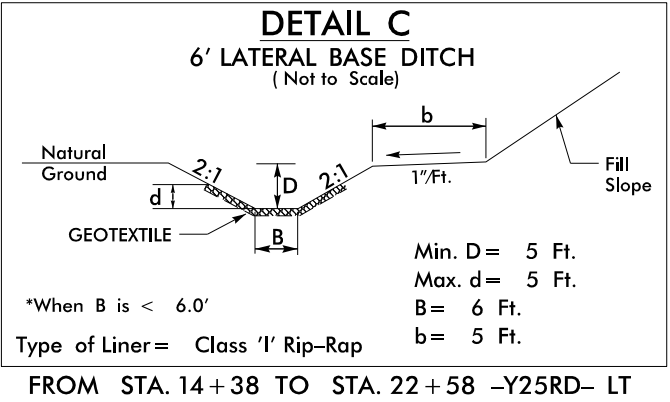
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TS

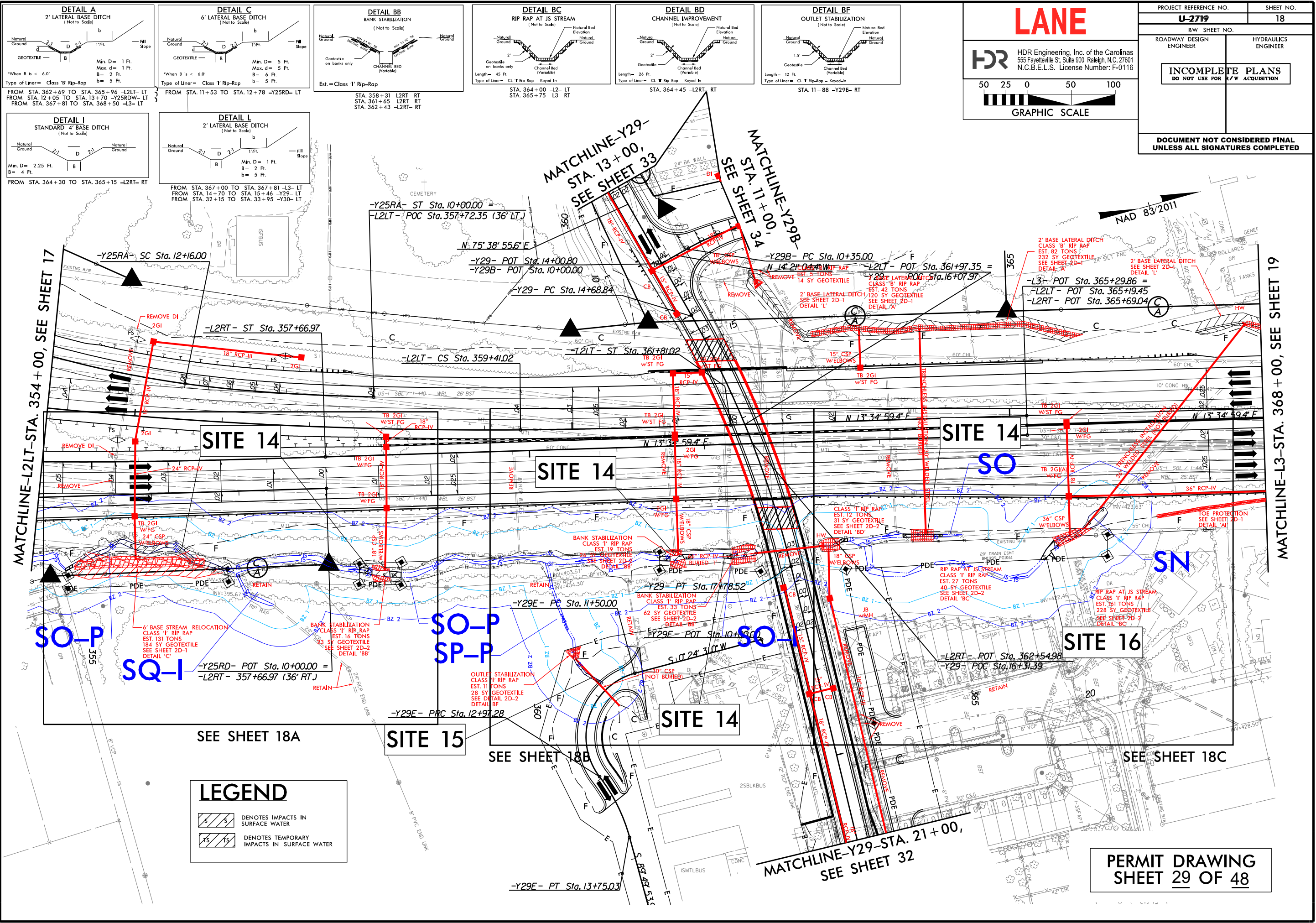
DENOTES TEMPORARY IMPACTS IN SURFACE WATER



PROJECT REFERENCE NO.		SHEET NO.	
U-2719		17D	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
<div>INCOMPLETE PLANS</div> <div>DO NOT USE FOR R/W ACQUISITION</div>			
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			
<div> HDR Engineering, Inc. of the Carolinas 555 Fayetteville St, Suite 900 Raleigh, N.C. 27601 N.C.B.E.L.S. License Number: F-0116</div>			
<div>LANE</div>			



REVISIONS



PLOT DRIVER: NCDOT_pdf_color_eng_100.plt
USER: CMYERS
FILE: Lone_Construction_Corp\Lane_I-440_Widening\6.0_CAD_BIM\6.2_WIP\U-2719\Hydraulics\PERMITS\Drawings\U2719-U4437_PRM_PSH.dgn
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REVISIONS

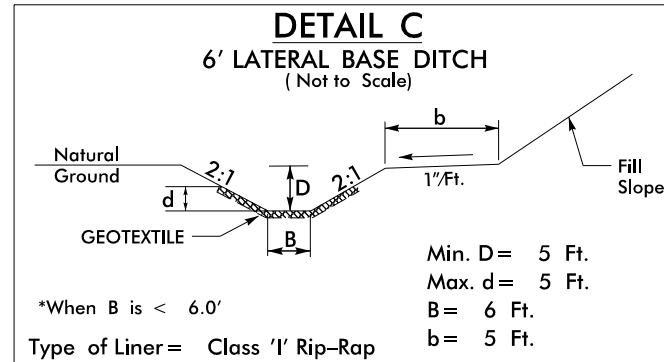
LEGEND



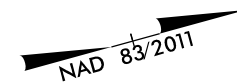
DENOTES IMPACTS IN
SURFACE WATER



DENOTES TEMPORARY
IMPACTS IN SURFACE WATER

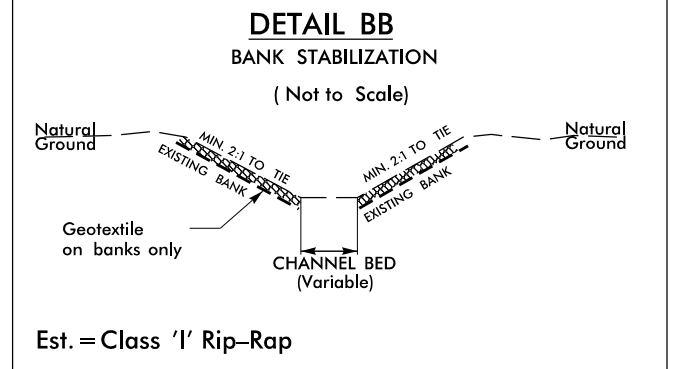
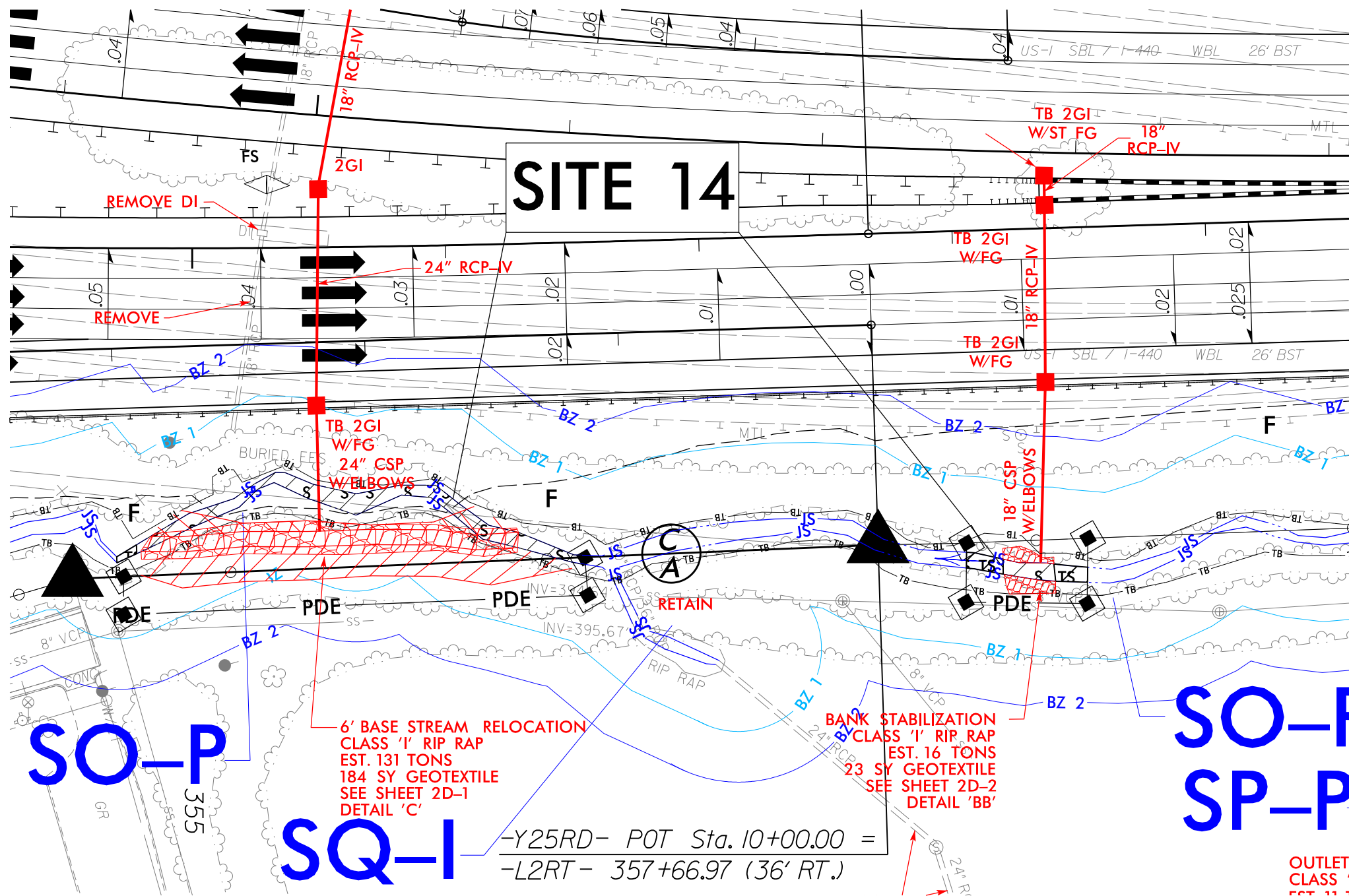


FROM STA. 11+53 TO STA. 12+78 -Y25RD- LT



PROJECT REFERENCE NO.		SHEET NO.	
U-2719		18A	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
<div>INCOMPLETE PLANS</div> <div>DO NOT USE FOR R/W ACQUISITION</div>			
<div>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</div>			

LANE



STA. 358+31 -L2RT- RT
STA. 361+65 -L2RT- RT
STA. 362+43 -L2RT- RT

PERMIT DRAWING
SHEET 31 OF 48

A diagram of a triangular element with two nodes labeled TS. The triangle is oriented with its base at the bottom and its apex at the top. The two nodes are located at the bottom corners of the triangle.

DENOTES TEMPORARY
IMPACTS IN SURFACE WATER

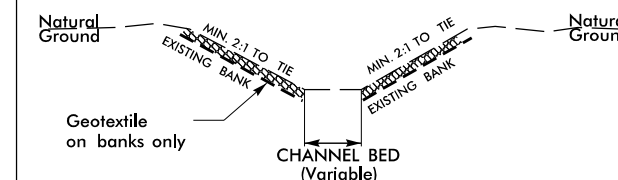
SITE 14

SO-P
SP-P

SITE 14

SITE 15

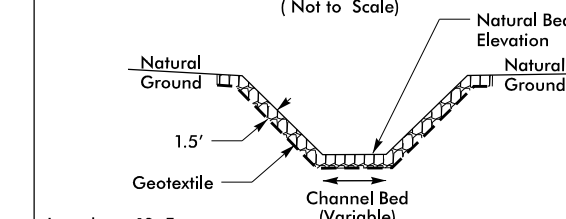
(Not to Scale)



Est. = Class I Rip-Rap

FROM STA. 284+90 TO STA. 287+27 -L1- RT
STA. 358+31 -L2RT- RT
STA. 361+65 -L2RT- RT
STA. 362+43 -L2RT- RT

(Not to Scale)



Length = 12 Ft.

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

STA. 11+88 -Y29E- RT

PLOT DRIVER: NCDOT_pdf_color_eng-100.plt
PENTABLE: NCDOT_permits.NCON.tbl
USER: CMYERS
DATE: 6/24/2019
TIME: 5:21:07 PM
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REVISIONS

LEGEND



DENOTES IMPACTS IN
SURFACE WATER

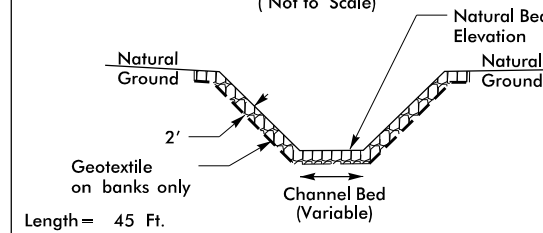


DENOTES TEMPORARY
IMPACTS IN SURFACE WATER

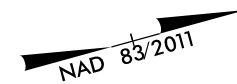
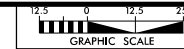
DETAIL BC


RIP RAP AT JS STREAM

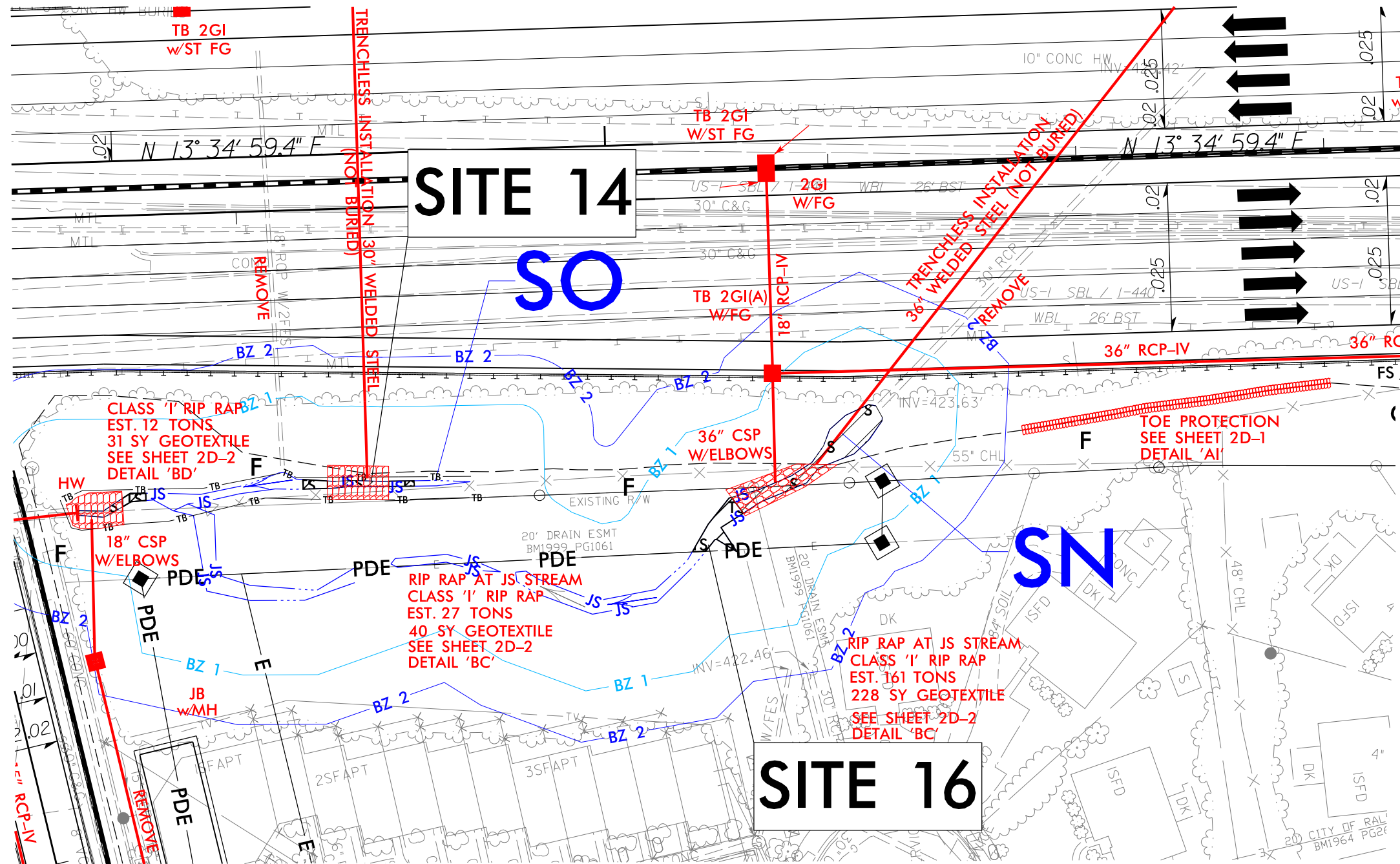
(Not to Scale)



STA. 364+00 -L2- RT
STA. 365+75 -L3- RT



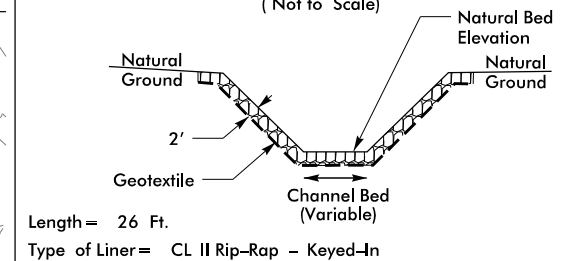
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RW SHEET NO.			
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<div>LANE</div>			



DETAIL BD

CHANNEL IMPROVEMENT

(Not to Scale)




STA. 364+45 -L2RT- RT

PERMIT DRAWING
SHEET 33 OF 48

REVISIONS

5/14/99



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PROJECT REFERENCE NO.

U-2719

ROADWAY DESIGN ENGINEER

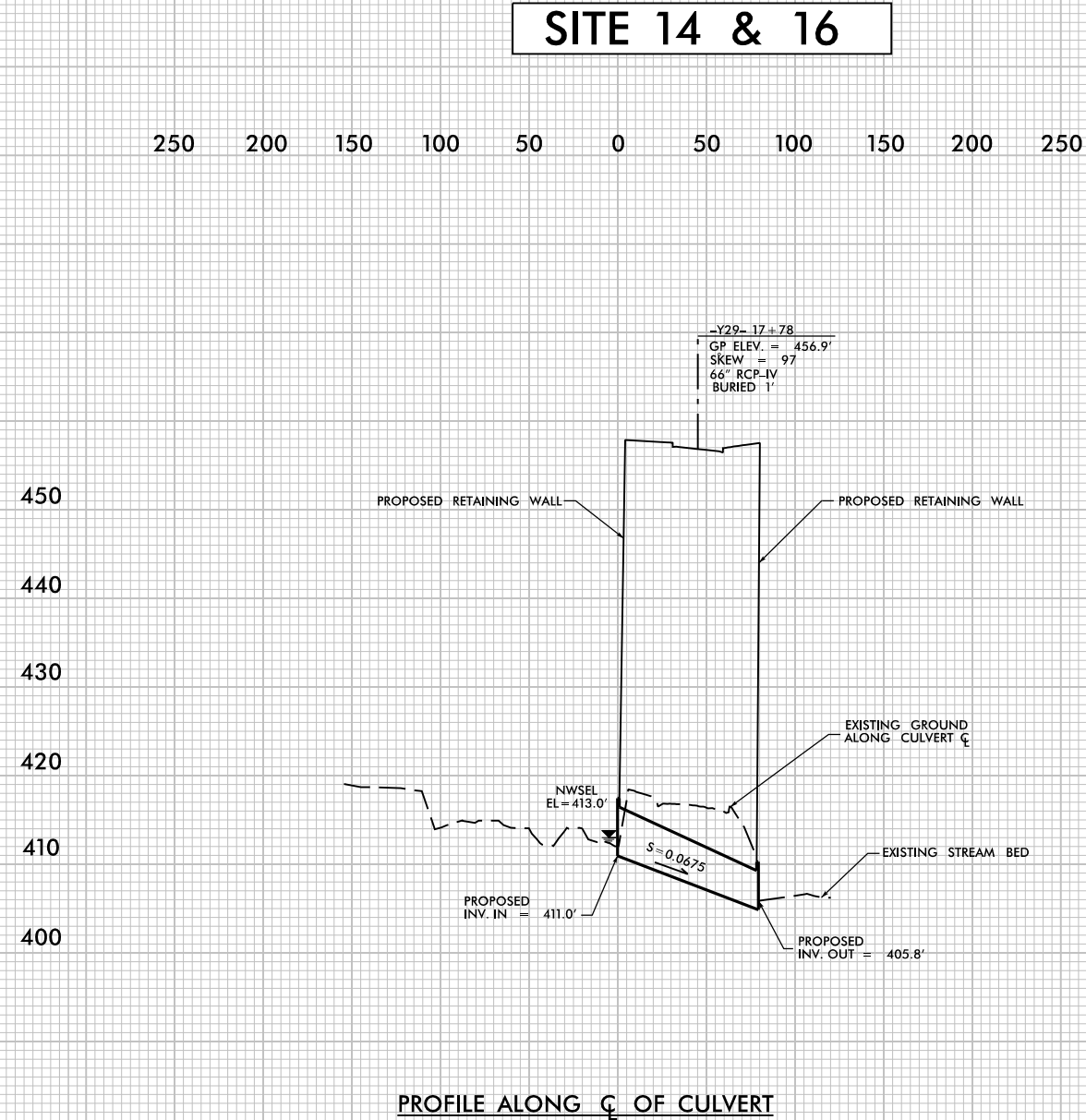
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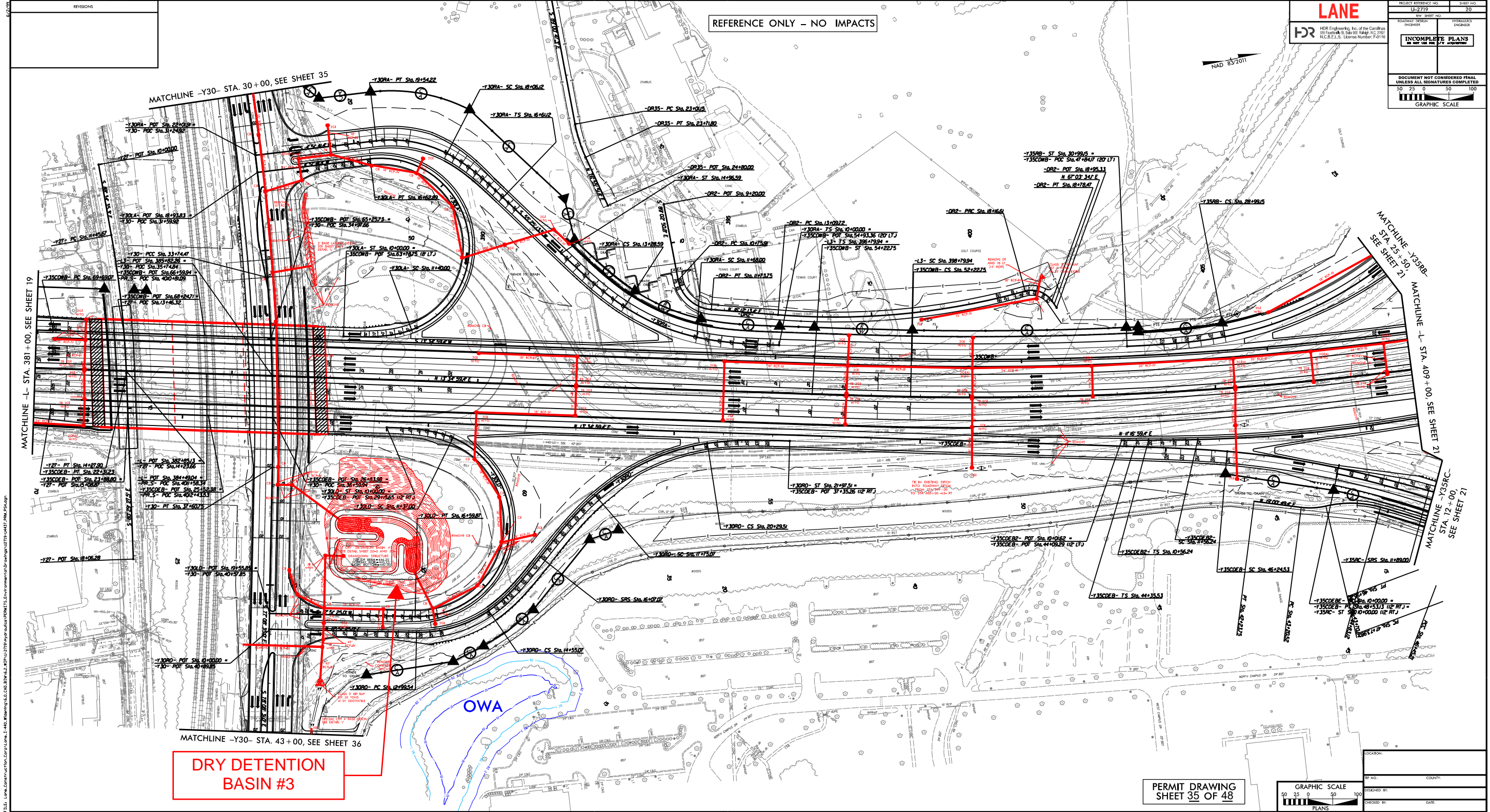
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SCALE:
1" = 50' HORIZONTAL
1" = 10' VERTICAL





REFERENCE ONLY - NO IMPACTS

LANE

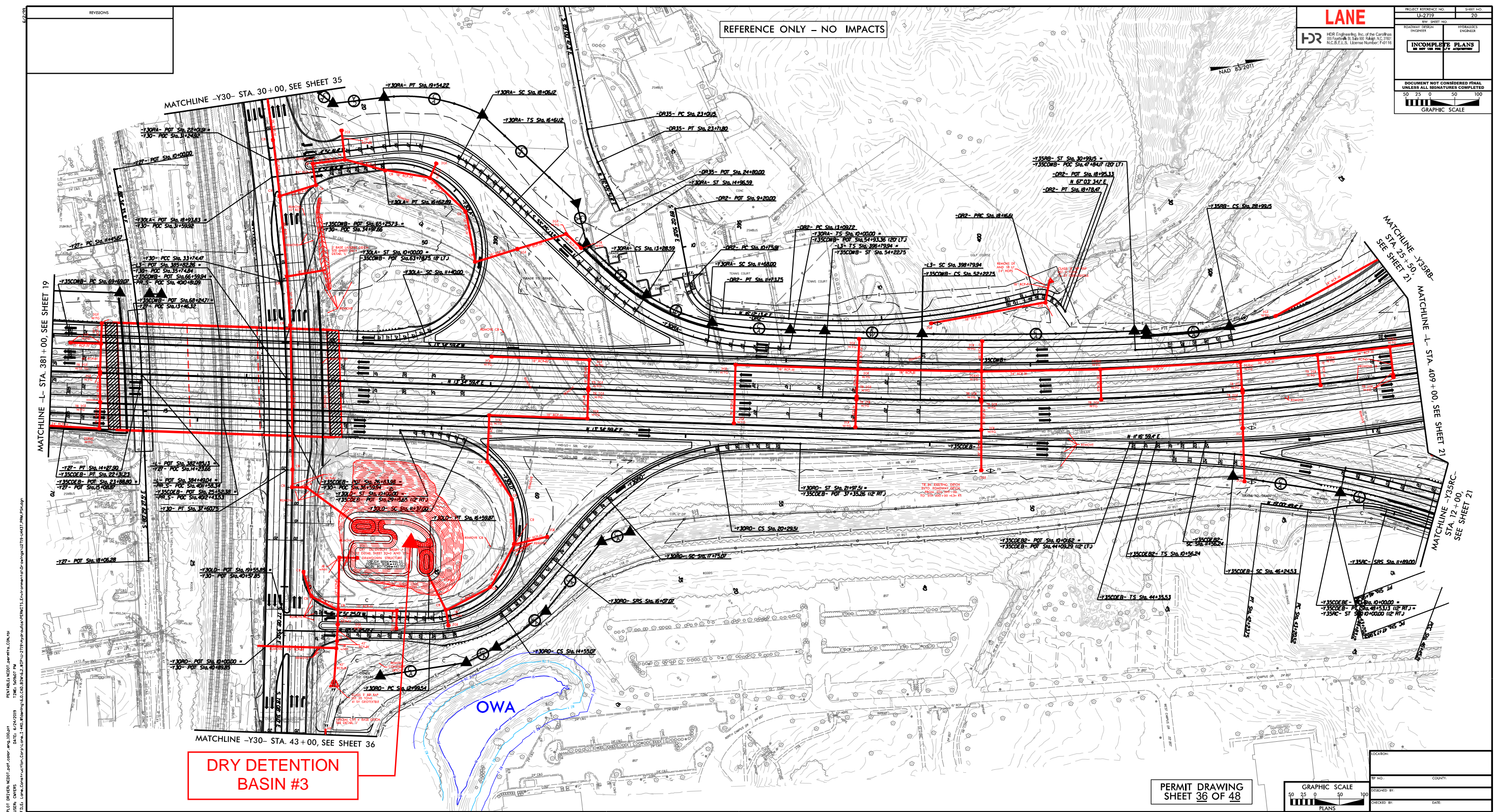
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U-2719	20
REV. SHEET NO.	
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UNLESS ALL SIGNATURES COMPLETED	
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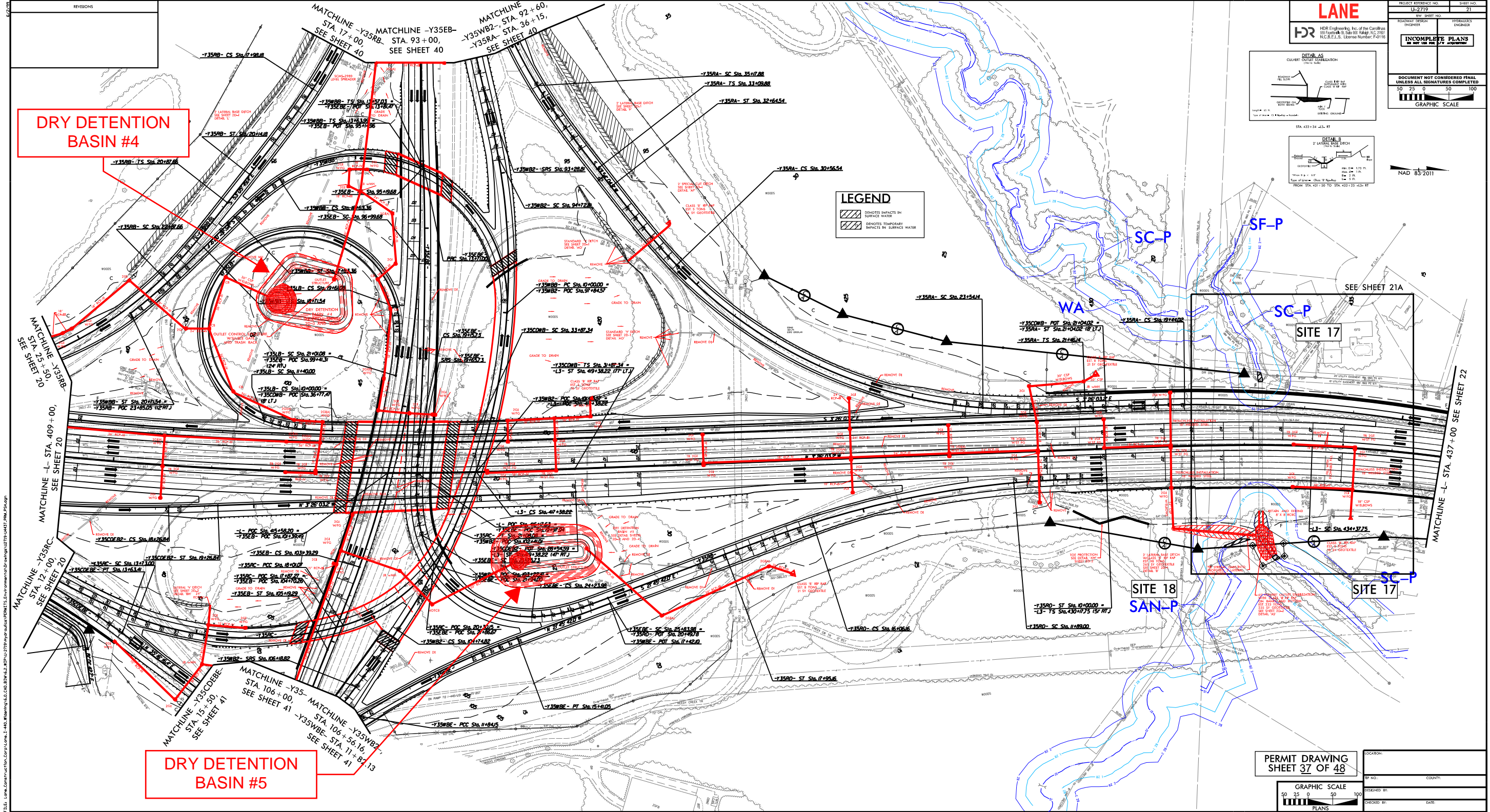
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BASIN #3

PERMIT DRAWING
SHEET 35 OF 48

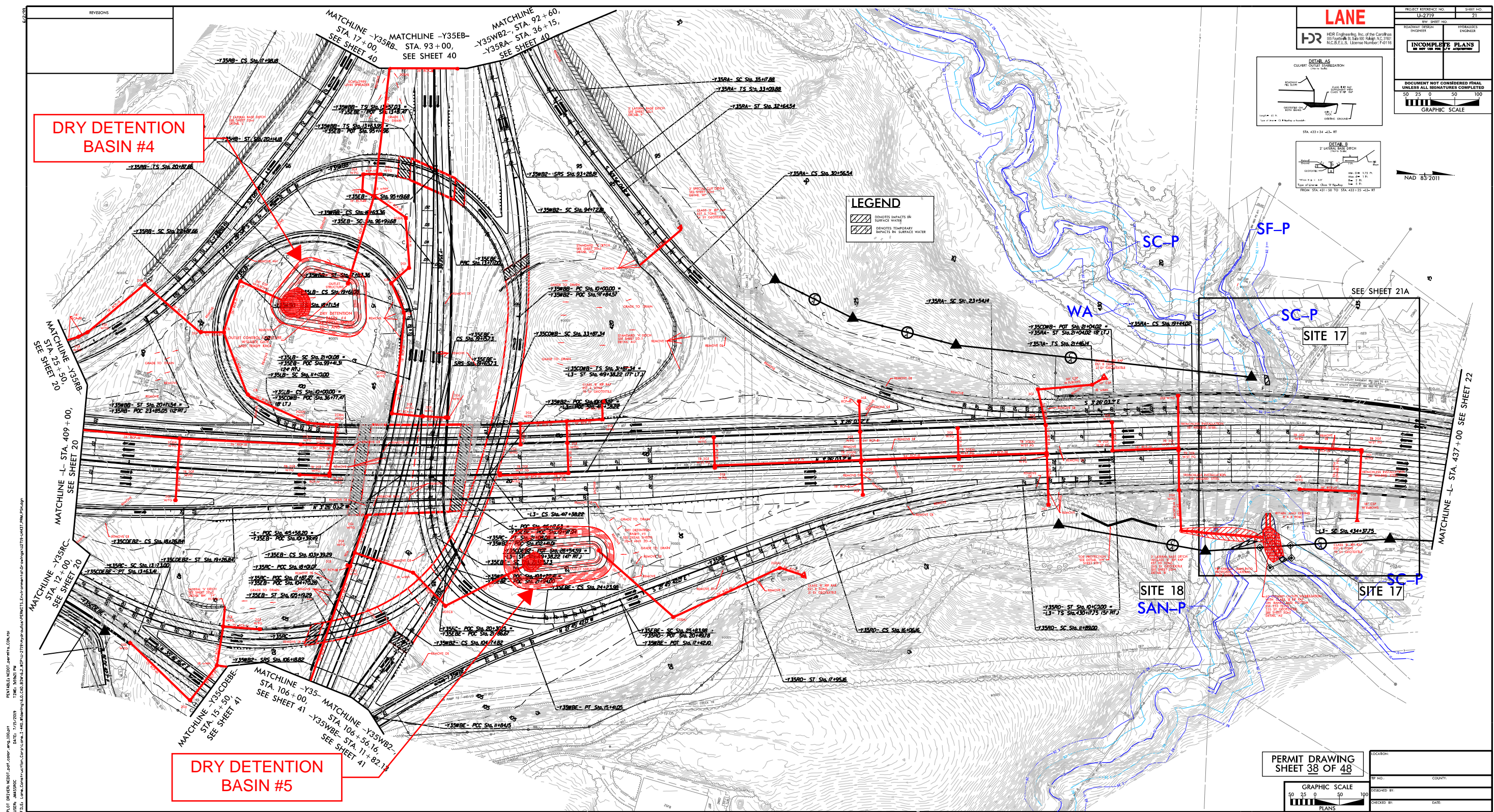
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PLANS

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DESIGNED BY:	
CHECKED BY:	DATE:

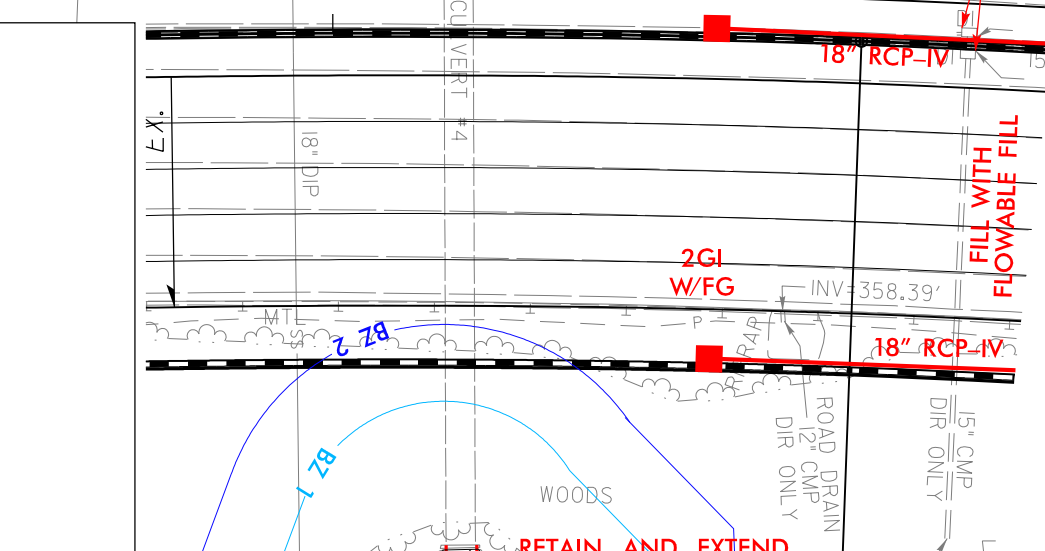
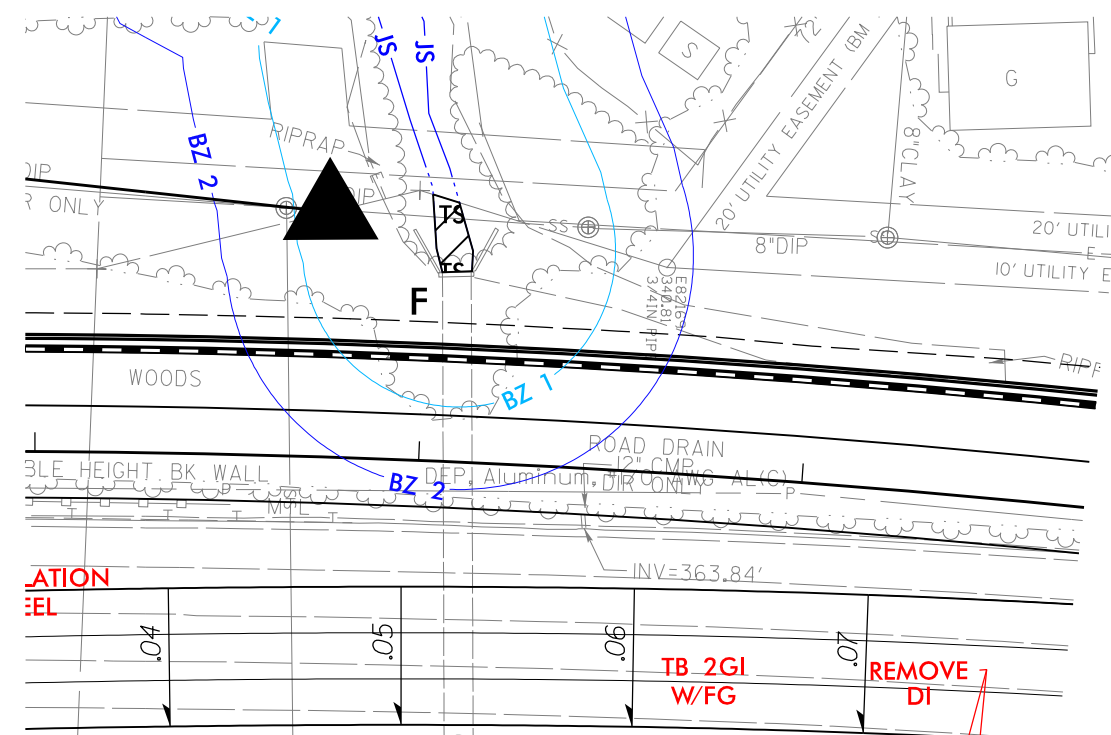
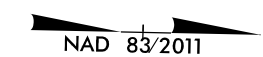




PLANT: INTERIOR, EXTERIOR, AND PAVING
DATE: 10/1/2019
DESIGNED BY: J. J. J. J. J.
CHECKED BY: J. J. J. J. J.



SITE 17



2' LATERAL BASE DITCH
W/CLASS 'B' RIP RAP
DETAIL 'B' 98 TONS
SY GEOTEXTILE
SHEET 2D-1
DETAIL 'B'

SITE 18

SITE 17

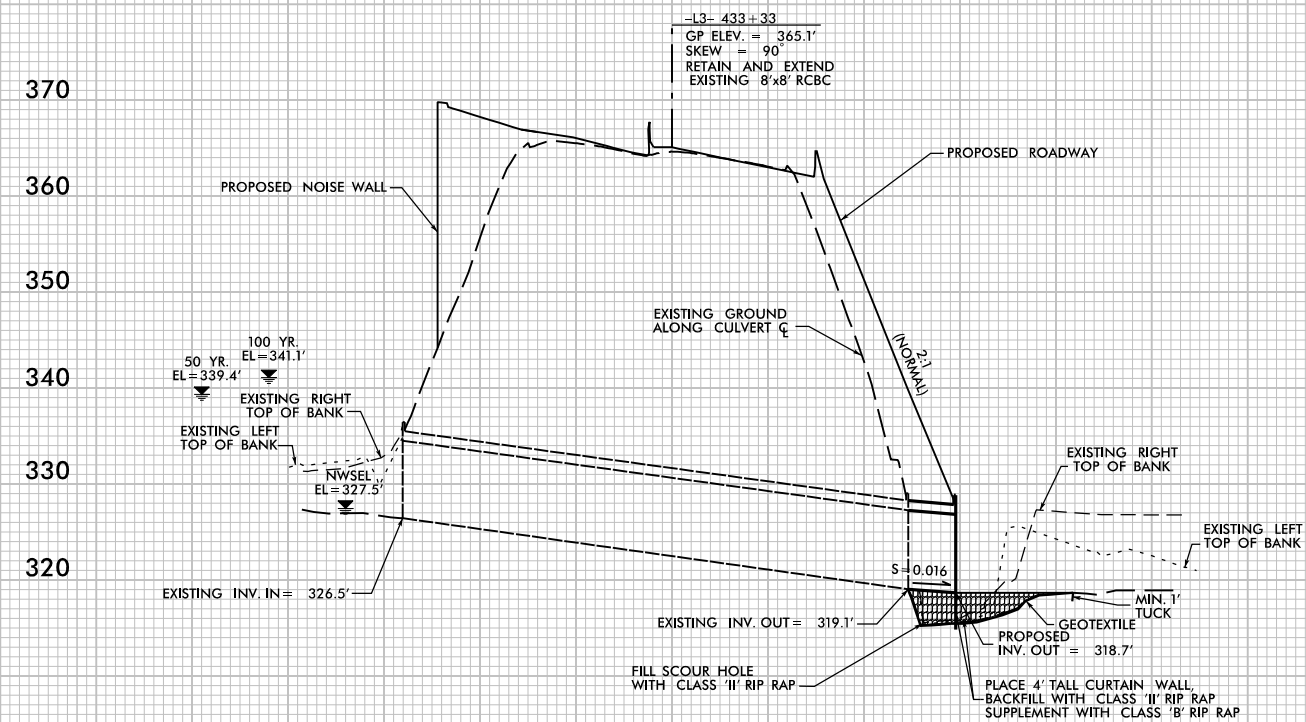
65' CULVERT OUTLET STABILIZATION
WITH CLASS 'II' RIP RAP
ON BANKS AND BOTTOM
EST. 233 TONS
- 235 SY GEOTEXTILE
SEE SHEET 2D-2

PERMIT DRAWING
SHEET 39 OF 48

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

SCALE:
1" = 50' HORIZONTAL
1" = 10' VERTICAL

250	200	150	100	50	0	50	100	150	200	250
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PROFILE ALONG G OF CULVERT

PERMIT DRAWING
SHEET 40 OF 48

5/14/99

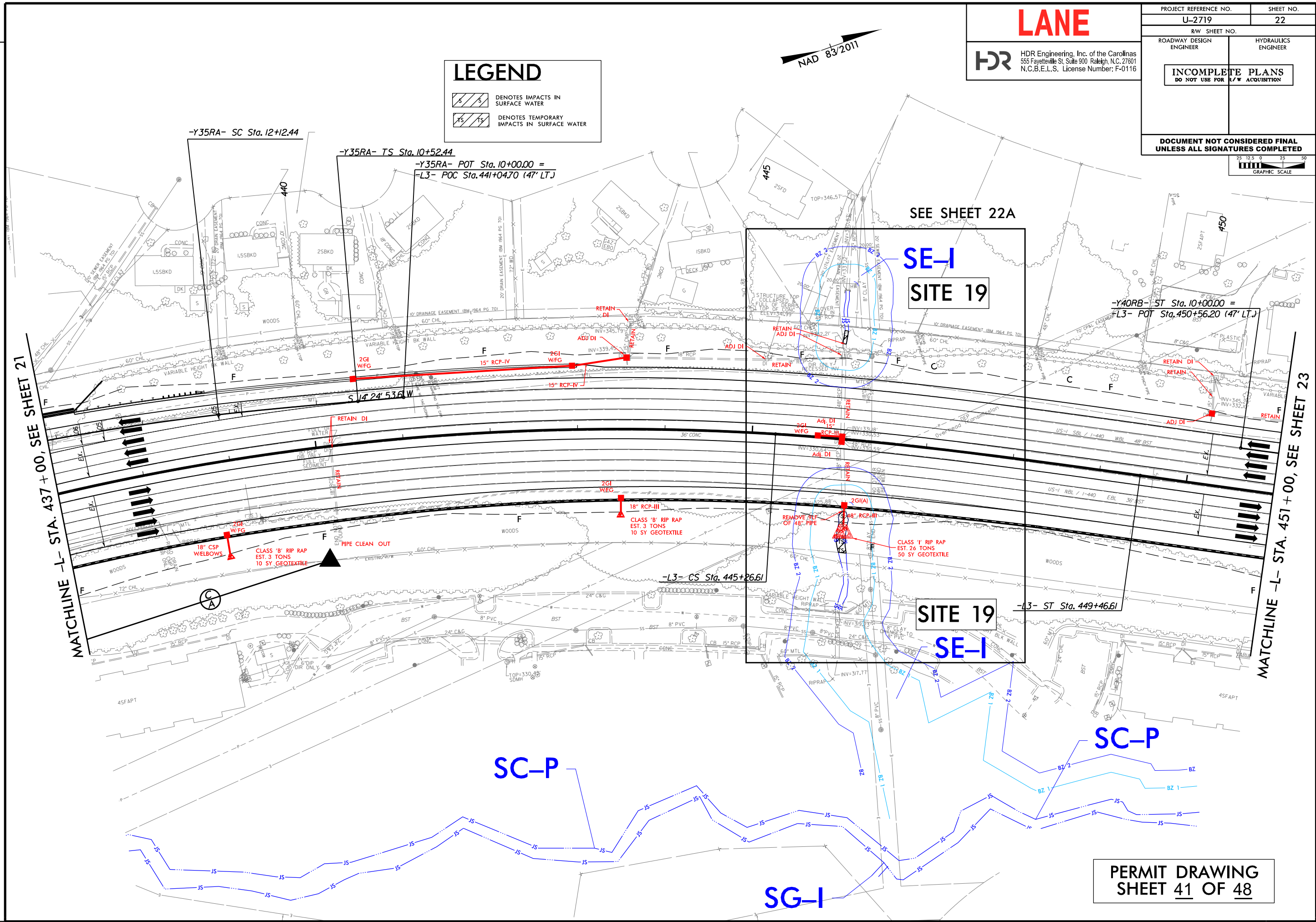
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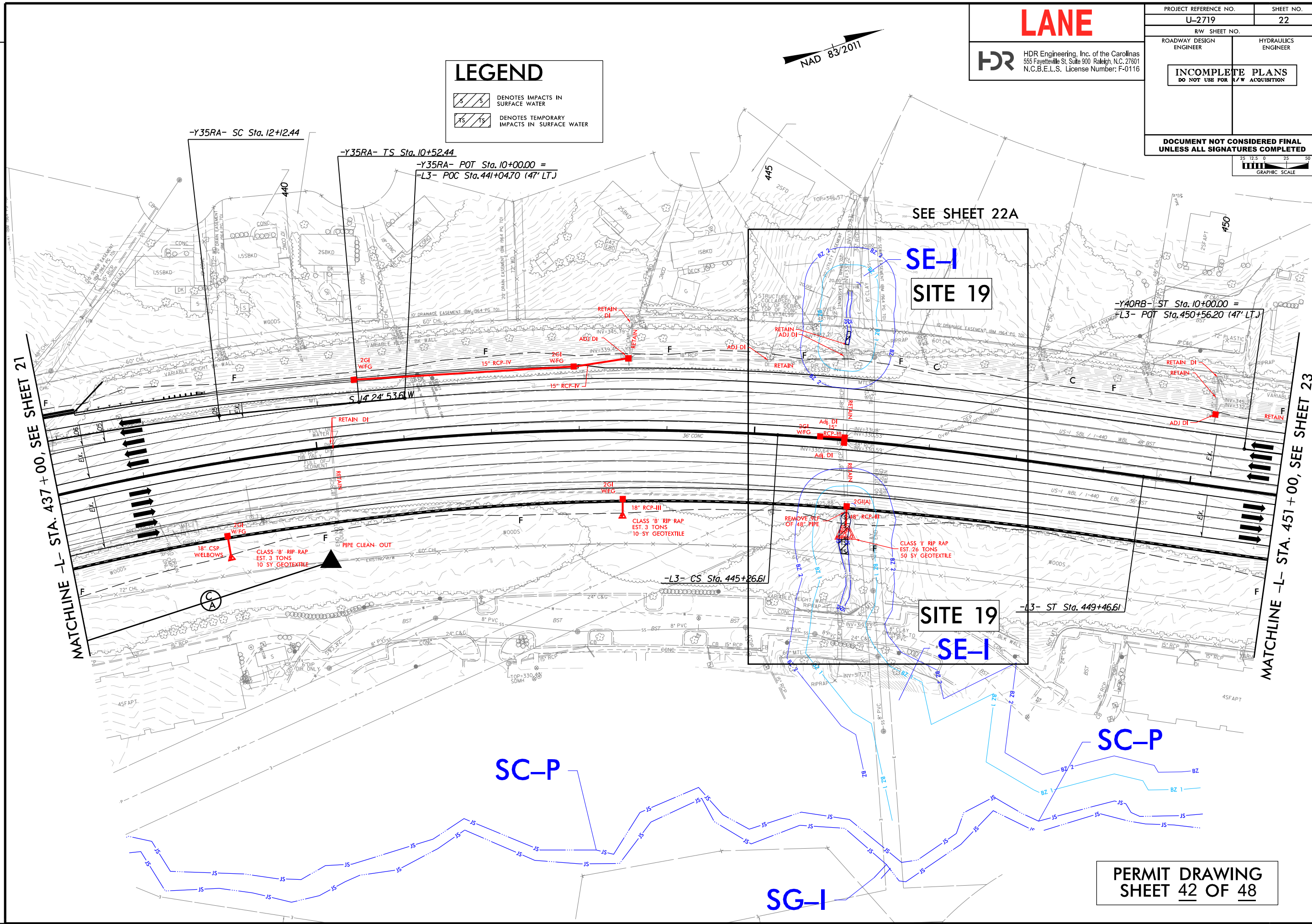
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REVISIONS



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REVISIONS



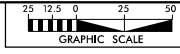
LANE



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PROJECT REFERENCE NO.	SHEET NO.
U-2719	22
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION	

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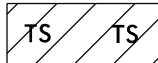
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REVISIONS

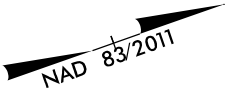
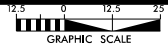
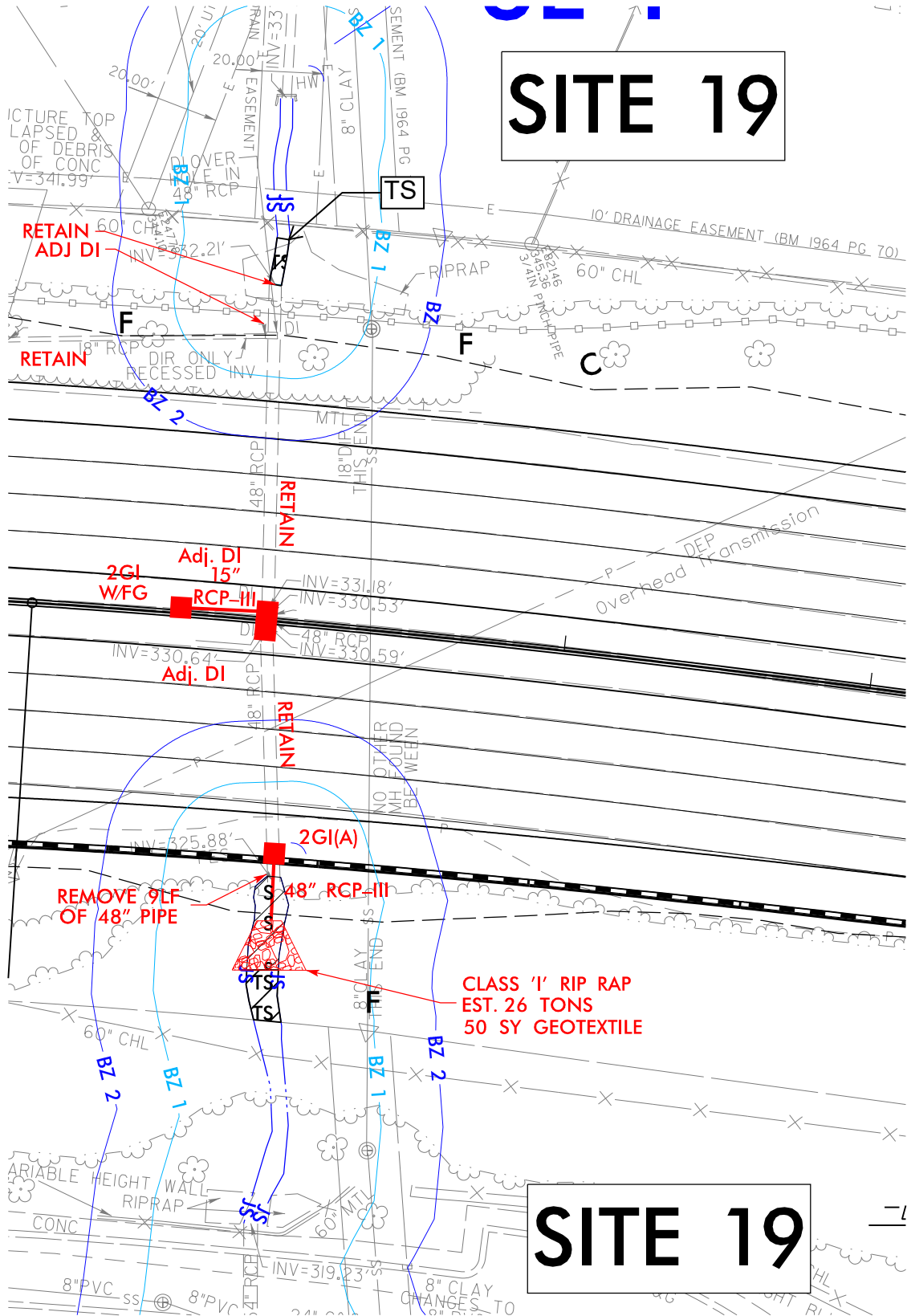
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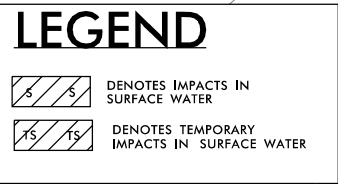
DENOTES IMPACTS IN
SURFACE WATER



DENOTES TEMPORARY
IMPACTS IN SURFACE WATER



PROJECT REFERENCE NO.		SHEET NO.	
U-2719		22A	
R/W SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
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LANE			



REVISIONS

LANE

HDR

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N.C.B.E.L.S. License Number: F-0116

PROJECT REFERENCE NO.
U-2719

SHEET NO.
28

RW SHEET NO.

ROADWAY DESIGN ENGINEER

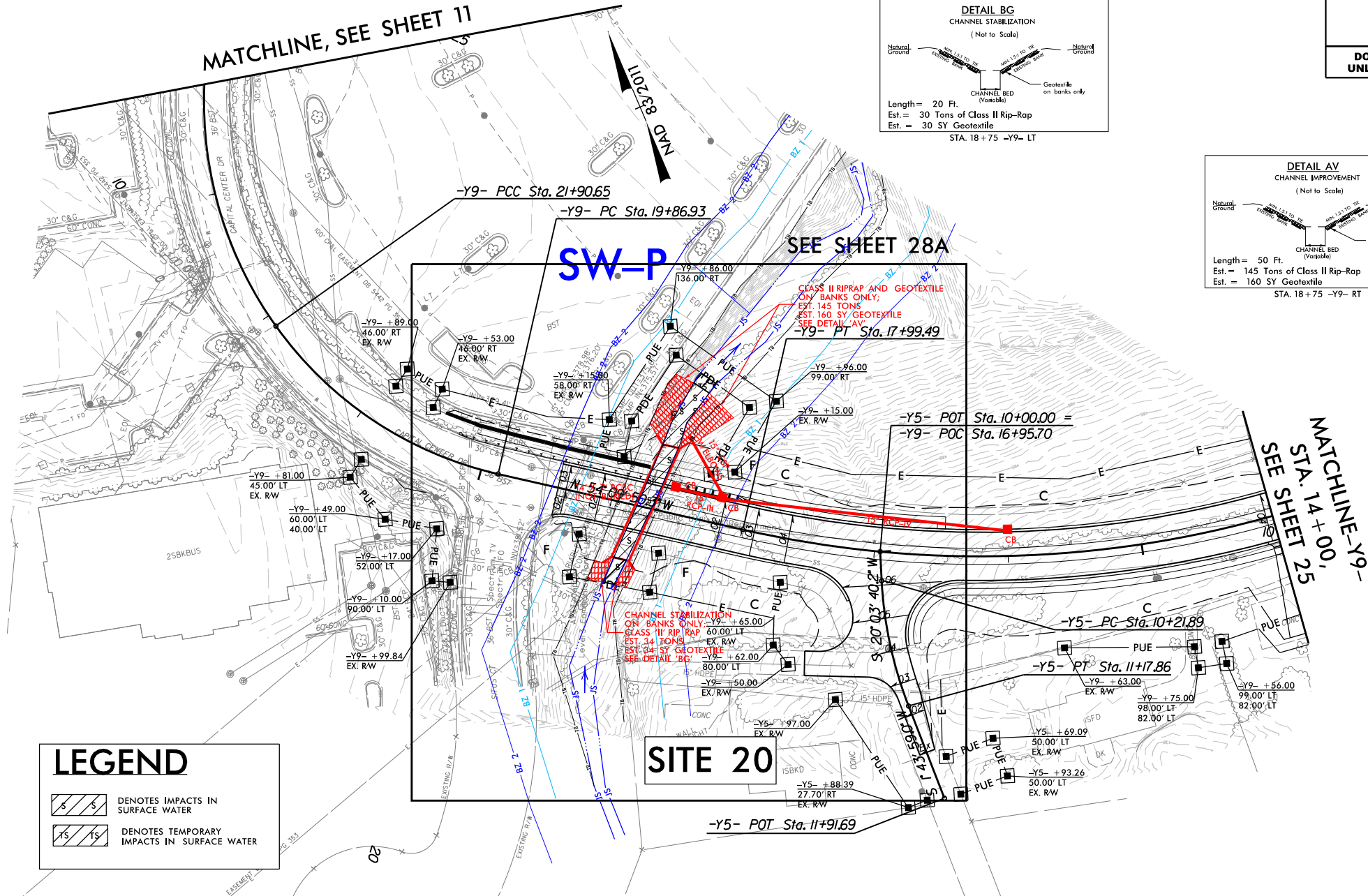
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INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

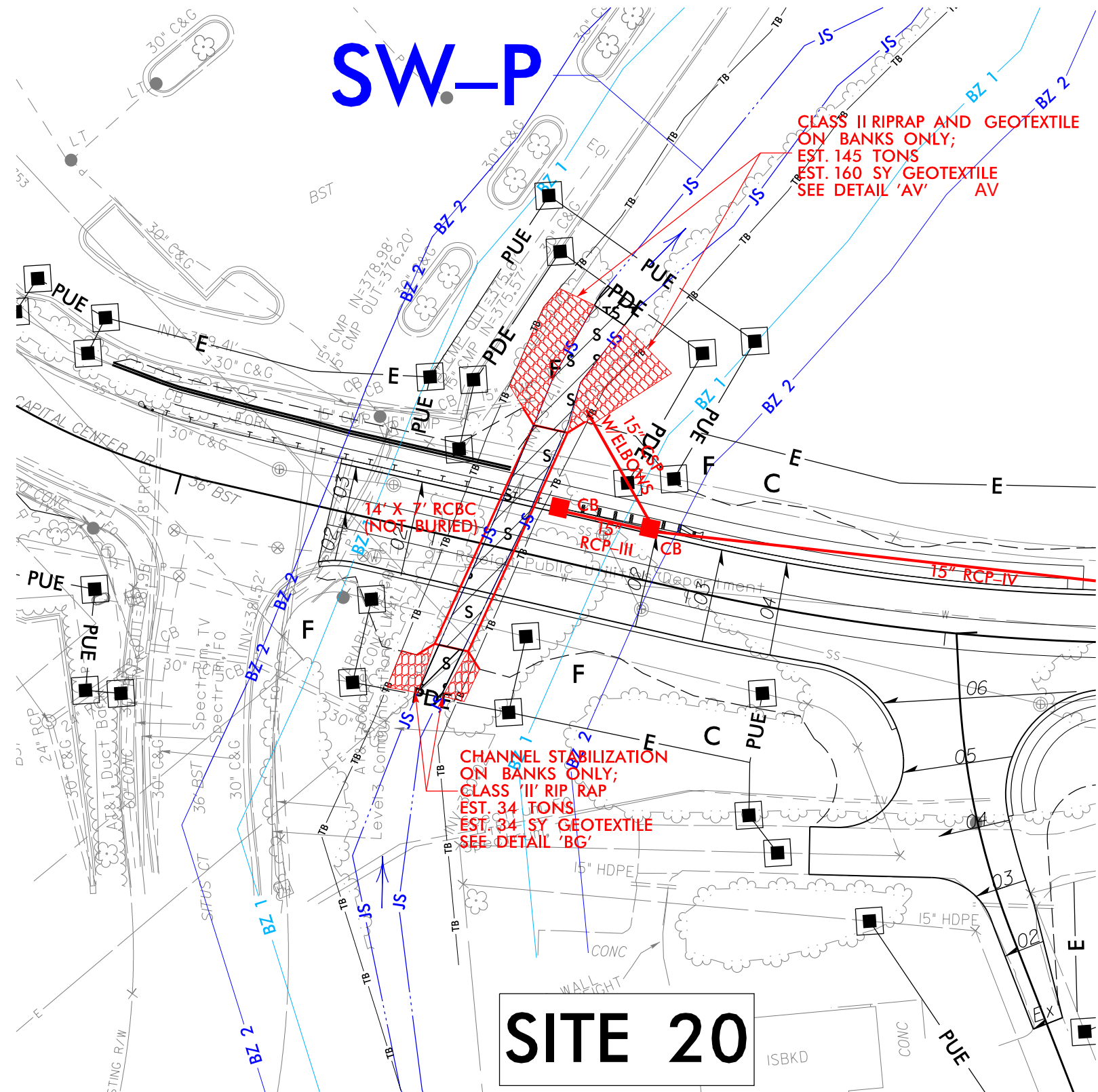
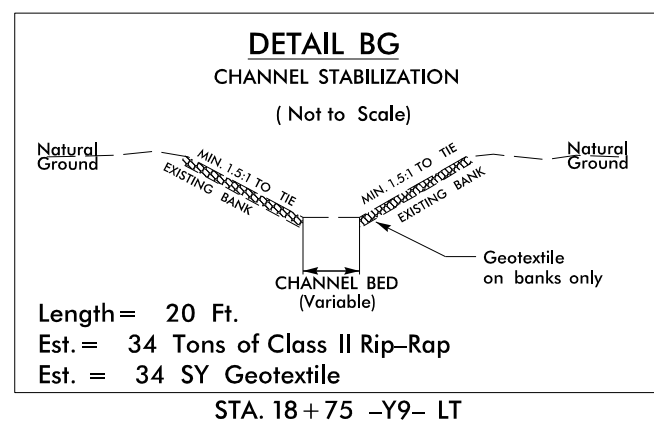
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GRAPHIC SCALE




DENOTES TEMPORARY
IMPACTS IN SURFACE WATER



PERMIT DRAWING
SHEET 46 OF 48

REVISIONS

5/14/99



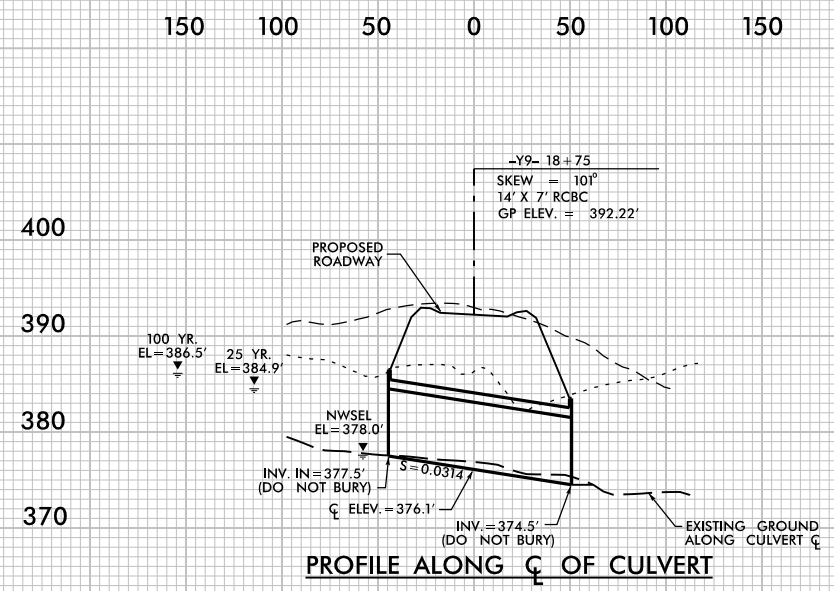
HDR Engineering, Inc. of the Carolinas

555 Fayetteville St, Suite 900 Raleigh, N.C. 27601

N.C.B.E.L.S. License Number: F-0116

PROJECT REFERENCE NO.		SHEET NO.
U-2719		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
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SCALE: 1" = 50' HORIZONTAL 1" = 10' VERTICAL		

SITE 20



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	SAK - 230+75 -L1A- Lt	Rip Rap at 18" Outlet						< 0.01	< 0.01	7	10	
2	WK - 244+95 -L1A- Lt	Lateral Ditch				0.01						
3	SX - 245+72 -L1A-	Culvert Clean Out						< 0.01	0.03	9	41	
		Bank Stabilization						0.03	0.09	93	97	
4	SW - 41+85 -Y10- Rt	Rip Rap in Stream							0.03		112	
5	OWD - 21+50 -Y10RPA-	Draining/Filling Pond						1.25				
6	WF - 282+90 -L1- Lt	Roadway Fill	< 0.01			0.01						
7	ST - 284+75 -L1- Rt	Outlet Stabilization						0.01	0.02	35	50	
8	***SV - 286+00 -L1- Rt	Bank Stabilization						0.02		244		
9	***SU - 284+50 -L1- Lt	Bank Stabilization						< 0.01		62		
10	WJ - 284+74 -L1- Lt	Stabilization			< 0.01	< 0.01						
11	WI - 285+50 -L1- Lt	Stabilization			< 0.01	< 0.01						
12	SS - 17+50 -Y25RB- Lt	Channel Imp./Bank Stab.						0.01	0.01	34	65	
13	SR -16+20 -Y25RC- Rt	Roadway Fill/Outlet Stab.						0.04	0.01	117	50	
14	**SO - 15+79 -Y25RD-	Roadway Fill/Outlet Stab.						0.05	< 0.01	388	40	
	to 364+68 -L2RT- Rt	Bank Stabilization						0.01	< 0.01	85	70	
15	SP - 11+90 -Y29E-	30" CSP						< 0.01	< 0.01	56	10	
16	SN - 365+75 -L3- Rt	36" WSP & 36" CSP						0.01	< 0.01	70	24	
17	SC - 433+33 -L3-	8' x 8' Culvert Extension/Stab.						0.04	< 0.01	97	40	
18	SAN - 433+00 -L3- Rt	Lateral Ditch						0.01	< 0.01	31	39	
19	SE - 466+00 -L3-	48" RCP Extension						< 0.01	< 0.01	29	22	
20	SW - 18+75 -Y9-	14x7 RCBC						0.02	< 0.01	92	20	
		Bank Stabilization						0.01	< 0.01	50	9	
TOTALS*:			< 0.01		< 0.01	0.03		1.53	0.23	1499	699	0

*Rounded totals are sum of actual impacts

NOTES:

**Stream SO is being daylighted for approx. 825 LF that was previously being piped through a 66" RCP.

***Streams SV and SU banks are being stabilized due to existing stream erosion along the banks.

NC DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 7-15-2019
 Wake County
 U-2719
 35869.3.1
 SHEET 48 OF 48

Federal Aid #: IMSNHS-044(10)

TIP#: U-2719

County: Wake

CONCURRENCE FORM FOR ASSESSMENT OF EFFECTS

Project Description: I-440 Beltline Improvements from Walnut Street in Cary to Wade Avenue in Raleigh

On 5/2/2017 representatives of the

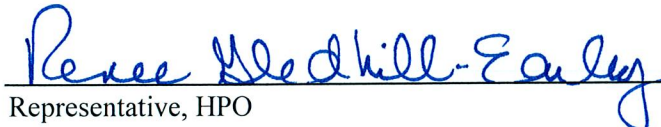
- ☒ North Carolina Department of Transportation (NCDOT)
- ☒ Federal Highway Administration (FHWA)
- ☒ North Carolina State Historic Preservation Office (HPO)
- ☐ Other

Reviewed the subject project and agreed on the effects findings listed within the table on the reverse of this signature page.

Signed:

 5/2/2017
Representative, NCDOT Date

 5/2/2017
FHWA, for the Division Administrator, or other Federal Agency Date

 5/2/17
Representative, HPO Date

Federal Aid #: IMSNHS-044(10)

TIP#: U-2719

County: Wake

Property and Status	Alternative	Effect Finding	Reasons
Oak Grove Cemetery DE – Criteria A,C,D	Extended culvert	No adverse effect	Some earthwork required near the cemetery but no construction within the boundaries and does not alter the setting
	Bridge north	No adverse effect	Bridge would be farther north than existing culvert, some earthwork required near the cemetery but no construction within the boundaries and does not alter the setting, NCDOT would work with community and HPO on aesthetic treatments to bridge
	Bridge south	Adverse Effect	Visual impacts and potential noise impacts. Bridge closer to cemetery, some earthwork required near the cemetery but no construction within the boundaries, NCDOT would work with community and HPO on aesthetic treatments to bridge
Berry O’Kelly School HD NR - Criteria A,B,C	All alternatives	No adverse effect	Addition of lanes and increased height of I-440 over railroad requires retaining wall, noise wall, and drainage structures along boundary of property, but not within. Temporary construction easement required to build the structures but no impacts to eligible resources within district. Noise wall will reduce current noise levels by 10-12 db. NCDOT will coordinate with community on appearance of back of noise wall (possible public art installation)
Capitol City Lumber Company DE – Criterion A	All alternatives	No effect	No construction within the boundaries and does not alter the setting
Royal Baking Company NR – Criterion A	All alternatives	No effect	No construction within the boundaries and does not alter the setting
Meredith College Campus DE – Criteria A,C	All alternatives	No effect	Addition of lanes and greenway rerouting requires work along the edges of the campus property but does not require construction impacts within the historic boundary and does not alter the setting

Initialed:

NCDOT MPJ

FHWA Myj

HPO Bge

FHWA Intends to use the HPO’s concurrence as a basis for a “de minimis” finding for the following properties, pursuant to Section 4(f): N/A

CONCURRENCE FORM FOR ASSESSMENT OF EFFECTS

Project Description: I-440 Beltline Improvements from Walnut Street in Cary to Wade Avenue in Raleigh -- MEREDITH COLLEGE CAMPUS EXPANDED BOUNDARY (8/2/2017) The concurrence form for effects dated 5/2/2017 accurately records the recommendations for the other 4 historic properties in the APE.

On 8/22/2017 representatives of the

- ☒ North Carolina Department of Transportation (NCDOT)
- ☒ Federal Highway Administration (FHWA)
- ☒ North Carolina State Historic Preservation Office (HPO)
- ☒ Other Meredith College VP- Craig Barfield

Reviewed the subject project and agreed on the effects findings listed within the table on the reverse of this signature page.

Signed:


Representative, NCDOT

9/7/2017
Date


for FHWA, for the Division Administrator, or other Federal Agency

9/18/17
Date


Representative, HPO

9.7.17
Date

Federal Aid #: IMSNHS-044(10)

TIP#: U-2719

County: Wake

Property and Status	Alternative	Effect Finding	Reasons
Meredith College Campus-expanded boundary 8/2/2017 (DE, Criteria A&C)	One Flyover	No effect	CONDITION: NCDOT in consultation with Meredith College will develop a landscaping plan for western edge of campus where it abuts new ROW. Addition of lanes and greenway rerouting requires work along edges of the campus property but does not require construction impacts within the historic boundary. Does not alter the viewshed or the setting. Noise levels projected to increase by only 1-2 dBA.
	Two Flyovers	No adverse effect	CONDITION: NCDOT in consultation with Meredith College will develop a landscaping plan for western edge of campus where it abuts new ROW. Addition of lanes and greenway rerouting requires work along edges of the campus property but does not require construction impacts within the historic boundary. Does not alter the setting. Minimal impacts to the viewshed with flyovers. Noise levels projected to increase by only 1-2 dBA.
	Slight Detour	No adverse effect	CONDITION: NCDOT in consultation with Meredith College will develop a landscaping plan for western edge of campus where it abuts new ROW. Addition of lanes and greenway rerouting requires work along edges of the campus property but does not require construction impacts within the historic boundary. Does not alter the setting. Minimal impacts to the viewshed with ramp to Wade Ave, close to NW boundary. Noise levels projected to increase by only 3-4 dBA.

Initialed:

NCDOT MPA

FHWA _____

HPO _____

FHWA Intends to use the HPO's concurrence as a basis for a "de minimis" finding for the following properties, pursuant to Section 4(f):

MyRaleigh

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[Calendar \(/home/content/ITechWebServices/Articles/Calendar.html\)](#)

[Subscriptions \(/home/content/ITechWebServices/Articles/MuRaleighSubscriptions.html\)](#)

Assessment Liens

[By Real Estate Tax ID \(/content/Finance/Documents/AssessmentsLists/AssessmentsByTaxID.pdf\)](#)

[By Property Owner \(/content/Finance/Documents/AssessmentsLists/AssessmentsByOwner.pdf\)](#)

[By Street Address \(/content/Finance/Documents/AssessmentsLists/AssessmentsByStreetAddr.pdf\)](#)

[Stormwater Assessment Liens \(/content/Finance/Documents/AssessmentsLists/StormwaterAssessmentLiens.pdf\)](#)

[Assessment Information \(/projects/content/PWksDesignConst/Articles/AssmtInfo.html\)](#)

Business Services

[Doing Business with the City](#)

[\(/projects/content/FinPurchasing/Articles/PurchasingFAQs.html\)](#)

[Become a City Supplier \(/projects/content/FinPurchasing/Articles/BecomeAVendor.html\)](#)

[Bids & RFPs/RFPs \(/projects/content/FinPurchasing/Articles/BidsandRFPs.html\)](#)

[Business Assistance](#)

[\(/projects/content/HousingNeighborhoods/Articles/BusinessAssistanceProgram.html\)](#)

Projects

[Transportation Project Map \(<http://ra.lmaps.arcgis.com/apps/webappviewer/index.html?id=c4f51f19de1142f9acefffd5ddff206a8&mobileBreakPoint=100>\)](#)

[Parks & Greenway](#)

[\(/projects/content/PRecDesignDevelop/Articles/ParkAndGreenwayPlanningAndDevelopment.html\)](#)

[Street & Sidewalk \(/projects/content/PWksDesignConst/Articles/StreetSidewalkProjects.html\)](#)

[Stormwater Management \(/projects/content/PWksStormwater/Articles/CIPProjects.html\)](#)

[Construction Management \(/projects/content/PublicWorks/Articles/CMDivision.html\)](#)

[40/440 Fortify \(<http://www.ncdot.gov/fortifyunc/>\)](#)

Resources

[Standard Detail Drawings](#)

[\(/projects/content/PlanDev/Articles/DevServ/DrawingsStandardDetailsIndex.html\)](#)

[Mud & Erosion Inspections](#)

[\(/projects/content/PWksStormwater/Articles/StormwaterInspectionsMain.html\)](#)

[Public Utilities Handbook \(/content/PubUtilAdmin/Documents/PublicUtilitiesHandbook.pdf\)](#)

Thank you for printing this page from the City of Raleigh's Official Website (www.raleighnc.gov).

White Oak Lake Reconstruction Project

Planning Design **Construction** Completed

Type Storm Drainage System /

Dam Retrofit

Budget \$3 million

Team

- Stormwater Management (Lead)
- Dewberry (Design)
- DLB Enterprises (Construction)

Current Activity

Posted Tuesday, June 18

The design plans for this project are complete. We also received all required environmental permits from U.S. Army Corps of Engineers, North Carolina Department of Environment and Natural Resources (NCDENR), and North Carolina Dam Safety.

We are coordinating with property owners to secure easements that are required to construct and maintain the project. We also selected DLB Enterprises as the construction contractor for the project. More construction details will be available in July.

Summary

White Oak Lake is a privately owned lake that provides little reduction to peak flows for the downstream Simmons Branch watershed. However, retrofit improvements to increase the lake's ability to store stormwater runoff will reduce flooding in the downstream watershed that currently experiences fairly frequent flooding of roads, yards, garages, crawl spaces, and HVAC units.

MyRaleigh Su

Stormwater Project

mail@address.co

Maps & Plans

[Overview Map of Project](#)

[\(/content/PWksStormwater/1](#)

Public Meeting

[Public Meeting Presenta](#)

[\(/content/PWksStormwater/1](#)

[Public Meeting Presenta](#)

[\(/content/PWksStormwater/1](#)

Stormwater F

[Current Projects \(/p](#)

Departments

[Stormwater Manag](#)

[\(/projects/content/PWk](#)

[Engineering Service](#)

[\(/projects/content/Dep](#)

Contacts

[David Kiker, PE](#)

[\(/projects/content/PWk](#)

Images

White Oak Lake

Schedule

Date	Description
	Stormwater models finalized, 70 percent of the project design plan developed, and environmental permits submitted
Spring 2017	
Fall 2017	Recommended design alternative presented
Late Fall 2018	Private utility relocation, permitting complete
Winter 2019	Project design complete
Spring 2019	Easement acquisition process complete
Summer 2019	Project construction begins
Fall 2020	Project construction complete

History

The White Oak Lake drainage improvements are the last part of a multi-phased project that will reduce flooding in the Simmons Branch watershed. Other projects included culvert improvements at Ravenwood Drive, Kaplan Drive, Lail Court, Swift Drive, and the Simmons Branch Drainage Improvement Project - Phase II.