



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION

ROY COOPER  
GOVERNOR

J. ERIC BOYETTE  
SECRETARY

June 29, 2022

U. S. Army Corps of Engineers  
Regulatory Field Office  
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NC Division of Water Resources  
Transportation Permitting Branch  
1617 Mail Service Center  
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ATTN: Mr. David E. Bailey  
NCDOT Coordinator

Mr. Ryan Conchilla  
NCDOT Coordinator

Subject: **Application for Section 404 Permit, Section 401 Water Quality Certification, and Buffer Authorization** for the proposed widening of I-40 from US 15/501 to I-85 in Orange County, Division 7. Federal Aid No. IMS-040-4(148)259, Debit \$570 from WBS No. 34178.1.3,  
**TIP: I-3306 A**

Dear Sirs:

NCDOT proposes to widen I-40 in Orange County, from I-85/I-40 interchange to the Durham County line, to a six-lane facility with a 22-foot median. The widening will involve adding an additional lane in each direction along I-40, predominantly within the existing median. Improvements to interchange areas will be provided as needed.

Purpose and Need:

The purpose of the proposed project is to relieve peak hour congestion on this facility such that a LOS D or better can be maintained for the 2040 build condition. A desired outcome would be to improve the traffic flow and continuity between the existing eight-lane section at the beginning of the project (I-85) and the six-lane section at the end of the project (Durham County Line).

**NEPA DOCUMENT STATUS**

A Type III Categorical Exclusion Action Classification Form was completed in March 2019 and is included in this application package.

## MERGER SUMMARY

| Concurrence Point                                        | Meeting Date |
|----------------------------------------------------------|--------------|
| 1 Purpose and Need                                       | 9/11/2014    |
| 2 Alternatives to be Studied in Detail                   | 9/11/2014    |
| 2A Bridging Decisions and Alignment Review               | 10/17/2018   |
| 3 Least Environmentally Damaging Practicable Alternative | 10/17/2018   |
| 4A Avoidance and Minimization Measures                   | 2/26/2019    |
| 4B Hydraulic Review                                      | 2/9/2022     |
| 4C Hydraulic Review                                      | 4/20/2022    |

## IMPACTS TO WATERS OF THE U.S. and AVOIDANCE, MINIMIZATION, AND MITIGATION

The following tables display the impacts to jurisdictional wetlands and streams. Site numbers correspond with the permit (hydraulic) drawings included in this application and with the PJD package, dated December 2013, and with the updated PJD tables, dated June 19, 2014. NCDOT received the PJD authorization from the USACE, dated July 22, 2014.



Wetland Impacts in 03020201

| Permit Site / Wetland ID <sup>1/</sup>            | NC WAM Classification      | HUC      | Wetland Size (ac) | Perm. Fill in Wetlands (ac) | Excavation (ac) | Mechanized Clearing (ac) | Impact Description/<br>Avoidance and Minimization                                                                                                                                                                                                                                                                                                                                                                                                       |
|---------------------------------------------------|----------------------------|----------|-------------------|-----------------------------|-----------------|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 / WA                                            | Bottomland Hardwood Forest | 03020201 | 0.02              | 0                           | 0               | 0.017                    | Mechanized Clearing for access to construct new headwall and reinforced slope. Minimized impacts to mechanized clearing by utilizing steepened slopes.<br>Utilized reinforced slope to reduce permanent impacts                                                                                                                                                                                                                                         |
| 2B / WE                                           | Bottomland Hardwood Forest | 03020201 | 0.32              | 0                           | 0               | 0.037                    | Mechanized Clearing for access to install new 84" bore and jack supplemental pipe. Minimized impacts to mechanized clearing by utilizing steepened slopes.<br>Bore pit installed on downstream side to reduce impacts. Limiting impacts to a small area for construction.                                                                                                                                                                               |
| 3B / WB                                           | Bottomland Hardwood Forest | 03020201 | 0.05              | 0                           | 0.003           | 0.04                     | Mechanized Clearing for access to install new 42" bore and jack supplemental pipe. Channel tie in cuts through wetland<br>Bore pit installed on downstream side to reduce impacts. Keeping channel tie in shallow to not affect hydrology of the wetland                                                                                                                                                                                                |
| 3B / WC                                           | Bottomland Hardwood Forest | 03020201 | 0.06              | 0                           | 0               | 0.01                     | Mechanized Clearing for access to install new 72" bore and jack supplemental pipe. Bore pit located inside edge of wetland.<br>Channel tie in cuts through wetland. Bore pit installed on this side to avoid additional stream impacts. Keeping channel tie in shallow to not affect hydrology of the wetland                                                                                                                                           |
| 4A / WM                                           | Bottomland Hardwood Forest | 03020201 | 0.03              | 0                           | 0.0004          | 0.018                    | Mechanized Clearing for access to install new channel tie for 78" bore and jack pipe. Channel tie in cuts through edge of wetland. Bore pit located outside the wetland. Minimized excavation through the wetland to avoid affecting hydrology of the wetland.                                                                                                                                                                                          |
| 5 / WD                                            | Headwater Forest           | 03020201 | 0.05              | 0.001                       | 0.004           | 0.008                    | Permanent Fill due to the noise wall and associated berm. Excavation due to ditch behind noise wall that ties to 24" storm pipe. Mechanized Clearing due to access to construct the noise wall, ditch and pipe. Moved noise wall as close as possible to cut slope to minimize impacts.                                                                                                                                                                 |
| 7A / WG                                           | Bottomland Hardwood Forest | 03020201 | 0.139             | 0.04                        | 0.01            | 0.057                    | Roadway fill for Roadway widening. Bore pit for new 72" pipe. Excavation due to new channel to be constructed tying in new pipe to existing channel. Mechanized clearing for access to construct new pipe and roadway fill. 2:1 slopes were utilized to minimize fill in wetland. Bore pit located on this side to minimize impacts as it has a shorter distance to tie back to existing.                                                               |
| 7B / WP                                           | Bottomland Hardwood Forest | 03020201 | 0.28              | 0.009                       | 0.006           | 0.083                    | Roadway fill for Roadway widening. Bore pit for new 72" pipe. Excavation due to new channel to be constructed tying in new pipe to existing channel. Mechanized clearing for access to construct new pipe and roadway fill. Roadway fill for Roadway widening. Bore pit for new 72" pipe. Excavation due to new channel to be constructed tying in new pipe to existing channel. Mechanized clearing for access to construct new pipe and roadway fill. |
| Totals by Impact Type:                            |                            |          |                   | 0.05                        | 0.02            | 0.26                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Total Permanent Wetland Impacts for HUC 03020201: |                            |          |                   | 0.33                        |                 |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Total Mitigation Requested                        |                            |          |                   | 0.33                        |                 |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

\* Wetlands impacted are riparian.

<sup>1/</sup> Wetland IDs correspond to I-3306A PJD labeling.

<sup>2/</sup> Rounded Totals are sum of actual impacts to 1/1000th.

Wetland Impacts in 03020202

| Permit Site / Wetland ID <sup>1/</sup>            | NC WAM Classification      | HUC      | Wetland Size (ac) | Perm. Fill in Wetlands (ac) | Excavation (ac) | Mechanized Clearing (ac) | Impact Description/<br>Avoidance and Minimization                                                                                                                                            |
|---------------------------------------------------|----------------------------|----------|-------------------|-----------------------------|-----------------|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 16B / WU                                          | Headwater Forest           | 03030002 | 0.02              | 0                           | 0.01            | 0.009                    | Excavation for channel relocation. Mechanized clearing for construction of channel relocation. Excavation for channel relocation. Mechanized clearing for construction of channel relocation |
| 19A / WT                                          | Bottomland Hardwood Forest | 03030002 | 0.04              | 0                           | 0.0003          | 0.03                     | Excavation for channel tie in. Mechanized Clearing for access to construct the channel. Excavation for channel tie in. Mechanized Clearing for access to construct the channel.              |
| 21B / WS                                          | Bottomland Hardwood Forest | 03030002 | 0.08              | 0.007                       | 0.013           | 0.011                    | Roadway fill for construction of new ramp. Mechanized clearing for access. Utilized steepened slopes with rock plating to minimize impacts.                                                  |
| 24 / WW                                           | Hardwood Flat              | 03030002 | 0.21              | 0                           | 0               | 0.005                    | Mechanized Clearing due to method of clearing. 2:1 backslopes utilized to reduce impacts.                                                                                                    |
| 25A / WKK                                         | Headwater Forest           | 03030002 | 0.04              | 0                           | 0.001           | 0.01                     | Excavation for channel tie in. Mechanized Clearing for access to construct the channel. Minimized tie in length for the new channel                                                          |
| 26 / WJJ                                          | Headwater Forest           | 03030002 | 0.19              | 0                           | 0.001           | 0.003                    | Cut slope for Roadway construction and Mechanized Clearing due to method of clearing. 2:1 backslopes utilized to reduce impacts.                                                             |
| 28A / WAA                                         | Bottomland Hardwood Forest | 03030002 | 0.0315            | 0                           | 0.05            | 0                        | Excavation for channel relocation. Total Take Impact was unavoidable to install the channel relocation.                                                                                      |
| 30C / WCC                                         | Seep                       | 03030002 | 0.05              | 0.01                        | 0               | 0.03                     | Roadway fill for roadway construction. Mechanized clearing for access to bore and jack new 108" pipe 2:1 slopes utilized to minimize impacts                                                 |
| Totals by Impact Type:                            |                            |          |                   | 0.02                        | 0.08            | 0.10                     |                                                                                                                                                                                              |
| Total Permanent Wetland Impacts for HUC 03030002: |                            |          |                   | 0.20                        |                 |                          |                                                                                                                                                                                              |
| Total Requested from DMS                          |                            |          |                   | 0.20                        |                 |                          |                                                                                                                                                                                              |

\* Wetlands impacted are riparian.  
<sup>1/</sup> Wetland IDs correspond to I-3306A PJD labeling.  
<sup>2/</sup> Rounded Totals are sum of actual impacts to 1/1000th.

**Stream Impacts in HUC 3020201**

| Permit Site No. | Stream Name/<br>JD ID | Status/Class       | HUC     | Permanent Impact Type | Length | Temporary Impact (acres) | ACOE Mitigation Required | DWR Mitigation Required | Impact Description/ Avoidance and Minimization                                                                                                                                                                                                                                                                                                                              |
|-----------------|-----------------------|--------------------|---------|-----------------------|--------|--------------------------|--------------------------|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1               | Rocky Run             | Perennial          | 3020201 | Perm. Fill (loss)     | --     | --                       | --                       | --                      | Rock plating required rebuilding the headwall for the box culvert.                                                                                                                                                                                                                                                                                                          |
|                 |                       |                    |         | Bank Stabilization    | --     | --                       | --                       | --                      |                                                                                                                                                                                                                                                                                                                                                                             |
|                 | Rocky Run             | WS-II; HQW,NSW, CA |         | Embedded rip-rap      | --     | --                       | --                       | --                      | Rock plating was used to tighten slope and reduce stream impacts.                                                                                                                                                                                                                                                                                                           |
|                 |                       |                    |         | Temporary Fill        |        | 0.03                     | --                       | --                      |                                                                                                                                                                                                                                                                                                                                                                             |
| 2A              | UT to Eno River       | Perennial          | 3020201 | Perm. Fill (loss)     | --     | --                       | --                       | --                      | A supplemental 84" pipe will be constructed on a floodplain bench. Floodplain bench will have bank stabilization and will not be placed in the bed of the stream.                                                                                                                                                                                                           |
|                 |                       |                    |         | Bank Stabilization    | 63     | --                       | --                       | --                      |                                                                                                                                                                                                                                                                                                                                                                             |
|                 | SA                    | C; NSW             |         | Embedded rip-rap      | --     | --                       | --                       | --                      | Bore pit was located outside the stream limits and rip rap was limited to the banks only.                                                                                                                                                                                                                                                                                   |
|                 |                       |                    |         | Temporary Fill        |        | <0.01                    | --                       | --                      |                                                                                                                                                                                                                                                                                                                                                                             |
| 2B              | UT to Eno River       | Perennial          | 3020201 | Perm. Fill (loss)     | --     | --                       | --                       | --                      | A supplemental 84" pipe will be constructed on a floodplain bench. Floodplain bench will have bank stabilization and will not be placed in the bed of the stream.                                                                                                                                                                                                           |
|                 |                       |                    |         | Bank Stabilization    | 39     | --                       | --                       | --                      |                                                                                                                                                                                                                                                                                                                                                                             |
|                 | SA                    | C; NSW             |         | Embedded rip-rap      | --     | --                       | --                       | --                      | Bore pit was located outside the stream limits and rip rap was limited to the banks only.                                                                                                                                                                                                                                                                                   |
|                 |                       |                    |         | Temporary Fill        |        | <0.01                    | --                       | --                      |                                                                                                                                                                                                                                                                                                                                                                             |
| 3A              | UT to Eno River       | Perennial          | 3020201 | Perm. Fill (loss)     | --     | --                       | --                       | --                      | A supplemental 42" pipe will be constructed on a floodplain bench. Floodplain bench will have bank stabilization and will not be placed in the bed of the stream.                                                                                                                                                                                                           |
|                 |                       |                    |         | Bank Stabilization    | 52     | --                       | --                       | --                      |                                                                                                                                                                                                                                                                                                                                                                             |
|                 | SA                    | C; NSW             |         | Embedded rip-rap      | --     | --                       | --                       | --                      | Bore pit was located outside the stream limits and rip rap was limited to the banks only.                                                                                                                                                                                                                                                                                   |
|                 |                       |                    |         | Temporary Fill        |        | <0.01                    | --                       | --                      |                                                                                                                                                                                                                                                                                                                                                                             |
| 3B              | UT to Eno River       | Perennial          | 3020201 | Perm. Fill (loss)     | --     | --                       | --                       | --                      | A supplemental 42" pipe will be constructed on a floodplain bench. Floodplain bench will have bank stabilization and will not be placed in the bed of the stream. The 72" bore and jack will have embedded rip rap at the outlet. There is existing rip rap at this outlet channel as well                                                                                  |
|                 |                       |                    |         | Bank Stabilization    | 43     | --                       | --                       | --                      |                                                                                                                                                                                                                                                                                                                                                                             |
|                 | SA, SB                | C; NSW             |         | Embedded rip-rap      | 20     | --                       | 20 (1:1)                 | --                      | Bore pit was located outside the stream limits as much as possible and rip rap was limited to the banks only for the floodplain bench. For Stream SA, at the entrance of the 42" bore and jack, rip rap will be placed on the banks only. For Stream SB, where we are adding rip rap at the outlet of the 72" bore and jack, the rip rap will be placed flush with the bed. |
|                 |                       |                    |         | Temporary Fill        |        | 0.02                     | --                       | --                      |                                                                                                                                                                                                                                                                                                                                                                             |
| 3C              | UT to Eno River       | Intermittent       | 3020201 | Perm. Fill (loss)     | 40     | --                       | 40 ( 2:1)                | --                      | A new channel needs to be constructed to tie the existing stream to the new 72" bore and jack.                                                                                                                                                                                                                                                                              |
|                 |                       |                    |         | Bank Stabilization    | --     | --                       | --                       | --                      |                                                                                                                                                                                                                                                                                                                                                                             |
|                 | SB                    | C; NSW             |         | Embedded rip-rap      | --     | --                       | --                       | --                      | New channel was tied in as quick as possible to limit permanent impacts.                                                                                                                                                                                                                                                                                                    |
|                 |                       |                    |         | Temporary Fill        |        | <0.01                    | --                       | --                      |                                                                                                                                                                                                                                                                                                                                                                             |

**Stream Impacts in HUC 3020201 (continued)**

| Permit Site No. | Stream Name/<br>JD ID | Status/Class                               | HUC     | Permanent Impact Type | Length | Temporary Impact (acres) | ACOE Mitigation Required | DWR Mitigation Required | Impact Description/ Avoidance and Minimization                                                                                                                                                                                              |
|-----------------|-----------------------|--------------------------------------------|---------|-----------------------|--------|--------------------------|--------------------------|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3D              | UT to Eno River       | Intermittent                               | 3020201 | Perm. Fill (loss)     | --     | --                       | --                       | --                      | Bank Stabilization utilized for new 66" bore and jack.                                                                                                                                                                                      |
|                 |                       |                                            |         | Bank Stabilization    | 31     | --                       | --                       | --                      |                                                                                                                                                                                                                                             |
|                 | SC                    | C; NSW                                     |         | Embedded rip-rap      | --     | --                       | --                       | --                      | Existing channel was utilized and rip rap was limited to the banks only.                                                                                                                                                                    |
|                 |                       |                                            |         | Temporary Fill        |        | <0.01                    | --                       | --                      |                                                                                                                                                                                                                                             |
| 4A              | UT to Eno River       | Intermittent                               | 3020201 | Perm. Fill (loss)     | 60     | --                       | 60 (2:1)                 | --                      | A new channel needs to be constructed to tie the existing stream to the new 78" bore and jack.                                                                                                                                              |
|                 |                       |                                            |         | Bank Stabilization    | --     | --                       | --                       | --                      |                                                                                                                                                                                                                                             |
|                 | SC                    | C; NSW                                     |         | Embedded rip-rap      | --     | --                       | --                       | --                      | New channel was tied in as quick as possible to limit permanent impacts.                                                                                                                                                                    |
|                 |                       |                                            |         | Temporary Fill        |        | <0.01                    | --                       | --                      |                                                                                                                                                                                                                                             |
| 4B              | UT to Eno River       | Intermittent                               | 3020201 | Perm. Fill (loss)     | 50     | --                       | 50 (2:1)                 | --                      | A new channel needs to be constructed to tie the existing stream to the new 78" bore and jack.                                                                                                                                              |
|                 |                       |                                            |         | Bank Stabilization    | --     | --                       | --                       | --                      |                                                                                                                                                                                                                                             |
|                 | SC                    | C; NSW                                     |         | Embedded rip-rap      | --     | --                       | --                       | --                      | New channel was tied in as quick as possible to limit permanent impacts.                                                                                                                                                                    |
|                 |                       |                                            |         | Temporary Fill        |        | <0.01                    | --                       | --                      |                                                                                                                                                                                                                                             |
| 6               | UT to Cates Creek     | NCDWR: Intermittent; USACE: Jurisdictional | 3020201 | Perm. Fill (loss)     | --     | --                       | --                       | --                      | A new channel will need to be constructed for the 42" bore and jack.                                                                                                                                                                        |
|                 |                       |                                            |         | Bank Stabilization    | --     | --                       | --                       | --                      |                                                                                                                                                                                                                                             |
|                 | SD                    | C; NSW                                     |         | Embedded rip-rap      | 40     | --                       | 40 (1:1)                 | --                      | Rip rap will be embedded flush with the existing channel where it ties back to the existing channel.                                                                                                                                        |
|                 |                       |                                            |         | Temporary Fill        |        | <0.01                    | --                       | --                      |                                                                                                                                                                                                                                             |
| 7A              | UT to Cates Creek     | Perennial                                  | 3020201 | Perm. Fill (loss)     | 38     | --                       | 38 (2:1)                 | --                      | Fill in stream due to widening the road. Bank stabilization for where the new channel for the 72" bore and jack ties to the existing channel. Rip rap embedded in the stream where the new 48" pipe extension ties to the existing channel. |
|                 |                       |                                            |         | Bank Stabilization    | 16     | --                       | --                       | --                      |                                                                                                                                                                                                                                             |
|                 | SG                    | C; NSW                                     |         | Embedded rip-rap      | 16     | --                       | 16 (1:1)                 | --                      | Utilized bank stabilization and embedded rip rap for stabilization. Retained and extended the existing 48" pipe to maintain flow in old channel to reduce permanent impacts. 2:1 slopes to reduce impacts                                   |
|                 |                       |                                            |         | Temporary Fill        |        | <0.01                    | --                       | --                      |                                                                                                                                                                                                                                             |
| 7B              | UT to Cates Creek     | Perennial                                  | 3020201 | Perm. Fill (loss)     | 40     | --                       | 40 (2:1)                 | --                      | Fill in stream due to widening the road. Loss of channel for where the new channel for the 72" bore and jack ties to the existing channel.                                                                                                  |
|                 |                       |                                            |         | Bank Stabilization    | --     | --                       | --                       | --                      |                                                                                                                                                                                                                                             |
|                 | SG                    | C; NSW                                     |         | Embedded rip-rap      | --     | --                       | --                       | --                      | 2:1 slopes utilized to reduce impacts                                                                                                                                                                                                       |
|                 |                       |                                            |         | Temporary Fill        |        | <0.01                    | --                       | --                      |                                                                                                                                                                                                                                             |

Stream Impacts in HUC 3020201 (continued)

| Permit Site No.                           | Stream Name/<br>JD ID | Status/Class | HUC     | Permanent Impact Type | Length | Temporary Impact (acres) | ACOE Mitigation Required | DWR Mitigation Required | Impact Description/ Avoidance and Minimization                                                                                                                                                                                            |
|-------------------------------------------|-----------------------|--------------|---------|-----------------------|--------|--------------------------|--------------------------|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 8                                         | UT to Cates Creek     | Intermittent | 3020201 | Perm. Fill (loss)     | 8      | --                       | 8 (2:1)                  | --                      | Extension of 30" RCP. Bank Stabilization for the new extension.                                                                                                                                                                           |
|                                           |                       |              |         | Bank Stabilization    | 13     | --                       | --                       | --                      |                                                                                                                                                                                                                                           |
|                                           | SE                    | C; NSW       |         | Embedded rip-rap      | --     | --                       | --                       | --                      | Existing channel was utilized, and rip rap was limited to the banks only.                                                                                                                                                                 |
|                                           |                       |              |         | Temporary Fill        |        | <0.01                    | --                       | --                      |                                                                                                                                                                                                                                           |
| 9A                                        | UT to New Hope Creek  | Perennial    | 3020201 | Perm. Fill (loss)     | 40     | --                       | 40 (2:1)                 | --                      | A new channel needs to be constructed to tie the existing stream to the new 84" bore and jack. The channel loss is due to the abandoned channel. There is embedded rip rap for the last section of tie in.                                |
|                                           |                       |              |         | Bank Stabilization    | --     | --                       | --                       | --                      |                                                                                                                                                                                                                                           |
|                                           | SK                    | WS-V; NSW    |         | Embedded rip-rap      | 20     | --                       | 20 (1:1)                 | --                      | Rip rap will be embedded flush with the existing channel where it ties back to the existing channel.                                                                                                                                      |
|                                           |                       |              |         | Temporary Fill        |        | <0.01                    | --                       | --                      |                                                                                                                                                                                                                                           |
| 9B                                        | UT to New Hope Creek  | Perennial    | 3020201 | Perm. Fill (loss)     | 65     | --                       | 65 (2:1)                 | --                      | A new channel needs to be constructed to tie the existing stream to the new 84" bore and jack. The channel loss is due to the abandoned channel. Impacts to stream SK and SJ were grouped together as the impact occurs at the confluence |
|                                           |                       |              |         | Bank Stabilization    | --     | --                       | --                       | --                      |                                                                                                                                                                                                                                           |
|                                           | SK, SJ                | WS-V; NSW    |         | Embedded rip-rap      | --     | --                       | --                       | --                      | Steepened slopes were utilized to bring the slope stakes in and reduce impacts.                                                                                                                                                           |
|                                           |                       |              |         | Temporary Fill        |        | <0.01                    | --                       | --                      |                                                                                                                                                                                                                                           |
| Total Stream Impacts for HUC 3020201      |                       |              |         |                       | 694    | 0.07                     | 341 (2:1)<br>96 (1:1)    | --                      |                                                                                                                                                                                                                                           |
| Total Requested from DMS for HUC 3020201: |                       |              |         |                       |        |                          | 778                      |                         |                                                                                                                                                                                                                                           |

Stream Impacts in HUC 3020202

| Permit Site No. | Stream Name/<br>JD ID | Status/Class | HUC     | Permanent Impact Type | Length | Temporary Impact (acres) | ACOE Mitigation Required | DWR Mitigation Required | Impact Description/ Avoidance and Minimization                                                                                                                                                                                     |
|-----------------|-----------------------|--------------|---------|-----------------------|--------|--------------------------|--------------------------|-------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 10A             | UT to New Hope Creek  | Intermittent | 3030002 | Perm. Fill (loss)     | --     | --                       | --                       | --                      | Temporary Impacts for bore pit due to close proximity to stream. May need to pipe part of the stream in order to bore and jack the 60" pipe                                                                                        |
|                 |                       |              |         | Bank Stabilization    | --     | --                       | --                       | --                      |                                                                                                                                                                                                                                    |
|                 | SR                    | WS-V; NSW    |         | Embedded rip-rap      | --     | --                       | --                       | --                      | Will try not to utilize this impact if possible.                                                                                                                                                                                   |
|                 |                       |              |         | Temporary Fill        |        | 0.01                     | --                       | --                      |                                                                                                                                                                                                                                    |
| 10B             | UT to New Hope Creek  | Intermittent | 3030002 | Perm. Fill (loss)     | 34     | --                       | 9 (2:1)                  | --                      | A new channel needs to be constructed to tie the existing stream to the new 60" bore and jack. The channel loss is due to the abandoned channel. The majority of the stream impact is armoring with rip rap that will be embedded. |
|                 |                       |              |         | Bank Stabilization    | --     | --                       | --                       | --                      |                                                                                                                                                                                                                                    |
|                 | SL                    | WS-V; NSW    |         | Embedded rip-rap      | --     | --                       | 25 (1:1)                 | --                      | New channel was tied in as quick as possible to limit permanent impacts.                                                                                                                                                           |
|                 |                       |              |         | Temporary Fill        |        | <0.01                    | --                       | --                      |                                                                                                                                                                                                                                    |

**Stream Impacts HUC 3030002 (continued)**

| Permit Site No. | Stream Name/<br>JD ID | Status/Class | HUC     | Permanent Impact Type | Length | Temporary Impact (acres) | ACOE Mitigation Required | DWR Mitigation Required | Impact Description/ Avoidance and Minimization                                                                                                                                                                                                      |
|-----------------|-----------------------|--------------|---------|-----------------------|--------|--------------------------|--------------------------|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 10C             | UT to New Hope Creek  | Intermittent | 3030002 | Perm. Fill (loss)     | 18     | --                       | 18 (2:1)                 | --                      | A new channel needs to be constructed to tie the existing stream to the new 60" bore and jack. The channel loss is due to the abandoned channel. Impacts to stream SL and SM were grouped together as the impact occurs at the confluence           |
|                 |                       |              |         | Bank Stabilization    | --     | --                       | --                       | --                      |                                                                                                                                                                                                                                                     |
|                 | SM, SL                | WS-V; NSW    |         | Embedded rip-rap      | --     | --                       | --                       | --                      | Steepened slopes were utilized to bring the slope stakes in and reduce impacts.                                                                                                                                                                     |
|                 |                       |              |         | Temporary Fill        |        | <0.01                    | --                       | --                      |                                                                                                                                                                                                                                                     |
| 11              | UT to New Hope Creek  | Intermittent | 3030002 | Perm. Fill (loss)     | --     | --                       | --                       | --                      | A new channel needs to be constructed for the new 42" bore and jack. Bank Stabilization will be utilized where this new channel ties to the existing stream.                                                                                        |
|                 |                       |              |         | Bank Stabilization    | 26     | --                       | --                       | --                      |                                                                                                                                                                                                                                                     |
|                 | SL                    | WS-V; NSW    |         | Embedded rip-rap      | --     | --                       | --                       | --                      | Bank Stabilization was utilized to reduce permanent impacts                                                                                                                                                                                         |
|                 |                       |              |         | Temporary Fill        |        | 0.01                     | --                       | --                      |                                                                                                                                                                                                                                                     |
| 12              | UT to New Hope Creek  | Intermittent | 3030002 | Perm. Fill (loss)     | --     | --                       | --                       | --                      | A new channel needs to be constructed for the new 48" bore and jack. Bank Stabilization will be utilized where this new channel ties to the existing stream. There is a small section of embedded rip rap at the outlet of the existing 30" pipe    |
|                 |                       |              |         | Bank Stabilization    | 32     | --                       | --                       | --                      |                                                                                                                                                                                                                                                     |
|                 | SL                    | WS-V; NSW    |         | Embedded rip-rap      | 10     | --                       | 10 (1:1)                 | --                      | Bank Stabilization was utilized to reduce permanent impacts                                                                                                                                                                                         |
|                 |                       |              |         | Temporary Fill        |        | <0.01                    | --                       | --                      |                                                                                                                                                                                                                                                     |
| 13              | UT to New Hope Creek  | Intermittent | 3030002 | Perm. Fill (loss)     | --     | --                       | --                       | --                      | Temporary Impacts for filling the existing 15" CMP pipe. No permanent impacts                                                                                                                                                                       |
|                 |                       |              |         | Bank Stabilization    | --     | --                       | --                       | --                      |                                                                                                                                                                                                                                                     |
|                 | SL                    | WS-V; NSW    |         | Embedded rip-rap      | --     | --                       | --                       | --                      | Removing a direct discharge location.                                                                                                                                                                                                               |
|                 |                       |              |         | Temporary Fill        |        | <0.01                    | --                       | --                      |                                                                                                                                                                                                                                                     |
| 14A             | UT to New Hope Creek  | Intermittent | 3030002 | Perm. Fill (loss)     | --     | --                       | --                       | --                      | A supplemental 66" pipe will be constructed on a floodplain bench. Floodplain bench will have bank stabilization and will not be placed in the bed of the stream. Access is bad for this work so additional temporary impacts were added for access |
|                 |                       |              |         | Bank Stabilization    | 38     | --                       | --                       | --                      |                                                                                                                                                                                                                                                     |
|                 | SL                    | WS-V; NSW    |         | Embedded rip-rap      | --     | --                       | --                       | --                      | Rip rap was limited to the banks only.                                                                                                                                                                                                              |
|                 |                       |              |         | Temporary Fill        |        | 0.04                     | --                       | --                      |                                                                                                                                                                                                                                                     |
| 14B             | UT to New Hope Creek  | Perennial    | 3030002 | Perm. Fill (loss)     | --     | --                       | --                       | --                      | A supplemental 66" pipe will be constructed on a floodplain bench. Floodplain bench will have bank stabilization and will not be placed in the bed of the stream.                                                                                   |
|                 |                       |              |         | Bank Stabilization    | 54     | --                       | --                       | --                      |                                                                                                                                                                                                                                                     |
|                 | SN                    | WS-V; NSW    |         | Embedded rip-rap      | --     | --                       | --                       | --                      | Bore pit was located outside the stream limits and rip rap was limited to the banks only.                                                                                                                                                           |
|                 |                       |              |         | Temporary Fill        |        | <0.01                    | --                       | --                      |                                                                                                                                                                                                                                                     |



**Stream Impacts HUC 3030002 (continued)**

| Permit Site No. | Stream Name/<br>JD ID | Status/Class | HUC     | Permanent Impact Type | Length | Temporary Impact (acres) | ACOE Mitigation Required | DWR Mitigation Required | Impact Description/ Avoidance and Minimization                                                                                                                                                                                                    |
|-----------------|-----------------------|--------------|---------|-----------------------|--------|--------------------------|--------------------------|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 15              | UT to New Hope Creek  | Perennial    | 3030002 | Perm. Fill (loss)     | --     | --                       | --                       | --                      | Temporary Impacts for filling the existing 36" CMP pipe. No permanent impacts                                                                                                                                                                     |
|                 |                       |              |         | Bank Stabilization    | --     | --                       | --                       | --                      |                                                                                                                                                                                                                                                   |
|                 | SN                    | WS-V; NSW    |         | Embedded rip-rap      | --     | --                       | --                       | --                      | Removing a direct discharge location.                                                                                                                                                                                                             |
|                 |                       |              |         | Temporary Fill        |        | <0.01                    | --                       | --                      |                                                                                                                                                                                                                                                   |
| 16A             | UT to New Hope Creek  | Perennial    | 3030002 | Perm. Fill (loss)     | --     | --                       | --                       | --                      | A new channel needs to be constructed to the new 66" bore and jack. Bank Stabilization will be utilized where this new channel ties to the existing stream. Bank Stabilization is also required for the new 36" pipe that is tying to the stream. |
|                 |                       |              |         | Bank Stabilization    | 43     | --                       | --                       | --                      |                                                                                                                                                                                                                                                   |
|                 | SS                    | WS-V; NSW    |         | Embedded rip-rap      | --     | --                       | --                       | --                      | Bank Stabilization was utilized to reduce permanent impacts                                                                                                                                                                                       |
|                 |                       |              |         | Temporary Fill        | --     | <0.01                    | --                       | --                      |                                                                                                                                                                                                                                                   |
| 16B             | UT to New Hope Creek  | Perennial    | 3030002 | Perm. Fill (loss)     | 47     | --                       | 47 (2:1)                 | --                      | A new channel needs to be constructed to the new 66" bore and jack.                                                                                                                                                                               |
|                 |                       |              |         | Bank Stabilization    | --     | --                       | --                       | --                      |                                                                                                                                                                                                                                                   |
|                 | SBB                   | WS-V; NSW    |         | Embedded rip-rap      | --     | --                       | --                       | --                      | Rip rap was not utilized in the bed of the new channel.                                                                                                                                                                                           |
|                 |                       |              |         | Temporary Fill        |        | <0.01                    | --                       | --                      |                                                                                                                                                                                                                                                   |
| 16C             | UT to New Hope Creek  | Perennial    | 3030002 | Perm. Fill (loss)     | 46     | --                       | 46 (2:1)                 | --                      | A new channel needs to be constructed to tie the existing stream to the new 66" bore and jack. The channel loss is due to the abandoned channel.                                                                                                  |
|                 |                       |              |         | Bank Stabilization    | --     | --                       | --                       | --                      |                                                                                                                                                                                                                                                   |
|                 | SS                    | WS-V; NSW    |         | Embedded rip-rap      | --     | --                       | --                       | --                      | New channel was tied in as quick as possible to limit permanent impacts.                                                                                                                                                                          |
|                 |                       |              |         | Temporary Fill        |        | <0.01                    | --                       | --                      |                                                                                                                                                                                                                                                   |
| 17              | UT to New Hope Creek  | Intermittent | 3030002 | Perm. Fill (loss)     | 20     | --                       | 20 (2:1)                 | --                      | A new channel needs to be constructed to tie the existing stream to the new 42" bore and jack. The channel loss is due to the abandoned channel.                                                                                                  |
|                 |                       |              |         | Bank Stabilization    | --     | --                       | --                       | --                      |                                                                                                                                                                                                                                                   |
|                 | SY Y                  | WS-V; NSW    |         | Embedded rip-rap      | --     | --                       | --                       | --                      | New channel was tied in as quick as possible to limit permanent impacts.                                                                                                                                                                          |
|                 |                       |              |         | Temporary Fill        |        | <0.01                    | --                       | --                      |                                                                                                                                                                                                                                                   |

**Stream Impacts HUC 3030002 (continued)**

| Permit Site No. | Stream Name/<br>JD ID | Status/Class | HUC     | Permanent Impact Type | Length | Temporary Impact (acres) | ACOE Mitigation Required | DWR Mitigation Required | Impact Description/ Avoidance and Minimization                                                                                                   |
|-----------------|-----------------------|--------------|---------|-----------------------|--------|--------------------------|--------------------------|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| 18              | New Hope Creek        | Perennial    | 3030002 | Perm. Fill (loss)     | --     | --                       | --                       | --                      | Bank Stabilization was utilized for new 42" outlet.                                                                                              |
|                 |                       |              |         | Bank Stabilization    | 30     | --                       | --                       | --                      |                                                                                                                                                  |
|                 | New Hope Creek        | WS-V; NSW    |         | Embedded rip-rap      | --     | --                       | --                       | --                      | Bank Stabilization was utilized to reduce permanent impacts                                                                                      |
|                 |                       |              |         | Temporary Fill        |        | <0.01                    | --                       | --                      |                                                                                                                                                  |
| 19A             | UT to Old Field Creek | Perennial    | 3030002 | Perm. Fill (loss)     | 40     | --                       | 40 (2:1)                 | --                      | A new channel needs to be constructed to tie the existing stream to the new 78" bore and jack. The channel loss is due to the abandoned channel. |
|                 |                       |              |         | Bank Stabilization    | --     | --                       | --                       | --                      |                                                                                                                                                  |
|                 | SV                    | WS-V; NSW    |         | Embedded rip-rap      | --     | --                       | --                       | --                      | New channel was tied in as quick as possible to limit permanent impacts.                                                                         |
|                 |                       |              |         | Temporary Fill        |        | <0.01                    | --                       | --                      |                                                                                                                                                  |
| 19B             | UT to Old Field Creek | Perennial    | 3030002 | Perm. Fill (loss)     | 54     | --                       | 54 (2:1)                 | --                      | A new channel needs to be constructed to tie the existing stream to the new 78" bore and jack. The channel loss is due to the abandoned channel. |
|                 |                       |              |         | Bank Stabilization    | --     | --                       | --                       | --                      |                                                                                                                                                  |
|                 | SV                    | WS-V; NSW    |         | Embedded rip-rap      | --     | --                       | --                       | --                      | New channel was tied in as quick as possible to limit permanent impacts.                                                                         |
|                 |                       |              |         | Temporary Fill        |        | <0.01                    | --                       | --                      |                                                                                                                                                  |
| 20A             | UT to Old Field Creek | Perennial    | 3030002 | Perm. Fill (loss)     | 47     | --                       | 47 (2:1)                 | --                      | A new channel needs to be constructed to tie the existing stream to the new 84" bore and jack. The channel loss is due to the abandoned channel. |
|                 |                       |              |         | Bank Stabilization    | --     | --                       | --                       | --                      |                                                                                                                                                  |
|                 | SX                    | WS-V; NSW    |         | Embedded rip-rap      | --     | --                       | --                       | --                      | New channel was tied in as quick as possible to limit permanent impacts.                                                                         |
|                 |                       |              |         | Temporary Fill        |        | <0.01                    | --                       | --                      |                                                                                                                                                  |
| 20B             | UT to Old Field Creek | Perennial    | 3030002 | Perm. Fill (loss)     | 42     | --                       | 42 (2:1)                 | --                      | A new channel needs to be constructed to tie the existing stream to the new 84" bore and jack. The channel loss is due to the abandoned channel. |
|                 |                       |              |         | Bank Stabilization    | --     | --                       | --                       | --                      |                                                                                                                                                  |
|                 | SX                    | WS-V; NSW    |         | Embedded rip-rap      | --     | --                       | --                       | --                      | New channel was tied in as quick as possible to limit permanent impacts.                                                                         |
|                 |                       |              |         | Temporary Fill        |        | <0.01                    | --                       | --                      |                                                                                                                                                  |
| 21A             | Old Field Creek       | Perennial    | 3030002 | Perm. Fill (loss)     | --     | --                       | --                       | --                      | Bank Stabilization to help protect Duke Energy Transmission Tower                                                                                |
|                 |                       |              |         | Bank Stabilization    | 34     | --                       | --                       | --                      |                                                                                                                                                  |
|                 | Old Field Creek       | WS-V; NSW    |         | Embedded rip-rap      | --     | --                       | --                       | --                      | Bank Stabilization utilized on banks only. Utilized Rock Plating and culvert headwall extension to limit permanent impacts                       |
|                 |                       |              |         | Temporary Fill        |        | 0.02                     | --                       | --                      |                                                                                                                                                  |



**Stream Impacts HUC 3030002 (continued)**

| Permit Site No. | Stream Name/<br>JD ID | Status/Class | HUC     | Permanent Impact Type | Length | Temporary Impact (acres) | ACOE Mitigation Required | DWR Mitigation Required | Impact Description/ Avoidance and Minimization                                                                                                                 |
|-----------------|-----------------------|--------------|---------|-----------------------|--------|--------------------------|--------------------------|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 22              | UT to Old Field Creek | Intermittent | 3030002 | Perm. Fill (loss)     | --     | --                       | --                       | --                      | Additional rip rap is needed at the end of the existing pipe. Rip rap will be embedded flush with the stream bed.                                              |
|                 |                       |              |         | Bank Stabilization    | --     | --                       | --                       | --                      |                                                                                                                                                                |
|                 | SAA                   | WS-V; NSW    |         | Embedded rip-rap      | 10     | --                       | 10 (1:1)                 | --                      | Utilizing embedded rip rap                                                                                                                                     |
|                 |                       |              |         | Temporary Fill        |        | <0.01                    | --                       | --                      |                                                                                                                                                                |
| 23A             | UT to Old Field Creek | Intermittent | 3030002 | Perm. Fill (loss)     | 33     | --                       | 33 (2:1)                 | --                      | A new channel needs to be constructed to tie the existing stream to the new 72" bore and jack. The channel loss is due to the abandoned channel.               |
|                 |                       |              |         | Bank Stabilization    | --     | --                       | --                       | --                      |                                                                                                                                                                |
|                 | SCC                   | WS-V; NSW    |         | Embedded rip-rap      | --     | --                       | --                       | --                      | New channel was tied in as quick as possible to limit permanent impacts.                                                                                       |
|                 |                       |              |         | Temporary Fill        |        | <0.01                    | --                       | --                      |                                                                                                                                                                |
| 23B             | UT to Old Field Creek | Intermittent | 3030002 | Perm. Fill (loss)     | 57     | --                       | 57 (2:1)                 | --                      | A new channel needs to be constructed to tie the existing stream to the new 72" bore and jack. The channel loss is due to the abandoned channel.               |
|                 |                       |              |         | Bank Stabilization    | --     | --                       | --                       | --                      |                                                                                                                                                                |
|                 | SCC                   | WS-V; NSW    |         | Embedded rip-rap      | --     | --                       | --                       | --                      | New channel was tied in as quick as possible to limit permanent impacts.                                                                                       |
|                 |                       |              |         | Temporary Fill        |        | <0.01                    | --                       | --                      |                                                                                                                                                                |
| 25A             | UT to Old Field Creek | Intermittent | 3030002 | Perm. Fill (loss)     | 39     | --                       | 39 (2:1)                 | --                      | A new channel needs to be constructed to tie the existing stream to the new 72" bore and jack. The channel loss is due to the abandoned channel.               |
|                 |                       |              |         | Bank Stabilization    | --     | --                       | --                       | --                      |                                                                                                                                                                |
|                 | SDD                   | WS-V; NSW    |         | Embedded rip-rap      | --     | --                       | --                       | --                      | New channel was tied in as quick as possible to limit permanent impacts.                                                                                       |
|                 |                       |              |         | Temporary Fill        |        | <0.01                    | --                       | --                      |                                                                                                                                                                |
| 25B             | UT to Old Field Creek | Intermittent | 3030002 | Perm. Fill (loss)     | --     | --                       | --                       | --                      | A new channel needs to be constructed to tie the existing stream to the new 72" bore and jack. Bank Stabilization is utilized on the existing channel section. |
|                 |                       |              |         | Bank Stabilization    | 24     | --                       | --                       | --                      |                                                                                                                                                                |
|                 | SDD                   | WS-V; NSW    |         | Embedded rip-rap      | --     | --                       | --                       | --                      | Rip rap was not utilized in the bed of the new channel.                                                                                                        |
|                 |                       |              |         | Temporary Fill        |        | <0.01                    | --                       | --                      |                                                                                                                                                                |
| 27              | UT to New Hope Creek  | Perennial    | 3030002 | Perm. Fill (loss)     | --     | --                       | --                       | --                      | Additional rip rap is needed at the end of the existing pipe.                                                                                                  |
|                 |                       |              |         | Bank Stabilization    | --     | --                       | --                       | --                      |                                                                                                                                                                |
|                 | SEE                   | WS-V; NSW    |         | Embedded rip-rap      | 20     | --                       | 20 (1:1)                 | --                      | There is existing rip rap in the bed of the stream.                                                                                                            |
|                 |                       |              |         | Temporary Fill        | --     | --                       | --                       | --                      |                                                                                                                                                                |

**Stream Impacts HUC 3030002 (continued)**

| Permit Site No. | Stream Name/<br>JD ID | Status/Class | HUC     | Permanent Impact Type | Length | Temporary Impact (acres) | ACOE Mitigation Required | DWR Mitigation Required | Impact Description/ Avoidance and Minimization                                                                                                    |
|-----------------|-----------------------|--------------|---------|-----------------------|--------|--------------------------|--------------------------|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| 28A             | UT to New Hope Creek  | Perennial    | 3030002 | Perm. Fill (loss)     | 23     | --                       | 23 (2:1)                 | --                      | A new channel needs to be constructed to tie the existing stream to the new 78" bore and jack. The channel loss is due to the abandoned channel.  |
|                 |                       |              |         | Bank Stabilization    | --     | --                       | --                       | --                      |                                                                                                                                                   |
|                 | SEE                   | WS-V; NSW    |         | Embedded rip-rap      | --     | --                       | --                       | --                      | Bore pit was located outside the stream limits.                                                                                                   |
|                 |                       |              |         | Temporary Fill        |        | <0.01                    | --                       | --                      |                                                                                                                                                   |
| 28B             | UT to New Hope Creek  | Perennial    | 3030002 | Perm. Fill (loss)     | 34     | --                       | 34 (2:1)                 | --                      | A new channel needs to be constructed to tie the existing stream to the new 78" bore and jack. The channel loss is due to the abandoned channel.  |
|                 |                       |              |         | Bank Stabilization    | --     | --                       | --                       | --                      |                                                                                                                                                   |
|                 | SEE, SGG              | WS-V; NSW    |         | Embedded rip-rap      | --     | --                       | --                       | --                      | New channel was tied in as quick as possible to limit permanent impacts.                                                                          |
|                 |                       |              |         | Temporary Fill        |        | <0.01                    | --                       | --                      |                                                                                                                                                   |
| 29              | UT to New Hope Creek  | Perennial    | 3030002 | Perm. Fill (loss)     | --     | --                       | --                       | --                      | Additional rip rap is needed at the end of the existing pipe. Bank Stabilization will be utilized where it ties to the existing stream            |
|                 |                       |              |         | Bank Stabilization    | 17     | --                       | --                       | --                      |                                                                                                                                                   |
|                 | SEE                   | WS-V; NSW    |         | Embedded rip-rap      | --     | --                       | --                       | --                      | Utilizing bank stabilization to limit impacts to the stream                                                                                       |
|                 |                       |              |         | Temporary Fill        |        | <0.01                    | --                       | --                      |                                                                                                                                                   |
| 30A             | UT to New Hope Creek  | Perennial    | 3030002 | Perm. Fill (loss)     | 47     | --                       | 47 (2:1)                 | --                      | A new channel needs to be constructed to tie the existing stream to the new 108" bore and jack. The channel loss is due to the abandoned channel. |
|                 |                       |              |         | Bank Stabilization    | --     | --                       | --                       | --                      |                                                                                                                                                   |
|                 | SEE                   | WS-V; NSW    |         | Embedded rip-rap      | --     | --                       | --                       | --                      | New channel was tied in as quick as possible to limit permanent impacts.                                                                          |
|                 |                       |              |         | Temporary Fill        |        | 0.01                     | --                       | --                      |                                                                                                                                                   |
| 30B             | UT to New Hope Creek  | Perennial    | 3030002 | Perm. Fill (loss)     | 76     | --                       | 76 (2:1)                 | --                      | A new channel needs to be constructed to tie the existing stream to the new 108" bore and jack. The channel loss is due to the abandoned channel. |
|                 |                       |              |         | Bank Stabilization    | --     | --                       | --                       | --                      |                                                                                                                                                   |
|                 | SEE                   | WS-V; NSW    |         | Embedded rip-rap      | --     | --                       | --                       | --                      | New channel was tied in as quick as possible to limit permanent impacts.                                                                          |
|                 |                       |              |         | Temporary Fill        |        | <0.01                    | --                       | --                      |                                                                                                                                                   |
| 31              | UT to New Hope Creek  | Intermittent | 3030002 | Perm. Fill (loss)     | 34     | --                       | 34 (2:1)                 | --                      | A new channel needs to be constructed to tie the existing stream to the new 42" bore and jack. The channel loss is due to the abandoned channel.  |
|                 |                       |              |         | Bank Stabilization    | --     | --                       | --                       | --                      |                                                                                                                                                   |
|                 | SHH                   | WS-V; NSW    |         | Embedded rip-rap      | --     | --                       | --                       | --                      | New channel was tied in as quick as possible to limit permanent impacts.                                                                          |
|                 |                       |              |         | Temporary             |        | <0.01                    | --                       | --                      |                                                                                                                                                   |

Stream Impacts HUC 3030002 (continued)

| Permit Site No.                             | Stream Name/<br>JD ID | Status/Class | HUC     | Permanent Impact Type | Length | Temporary Impact (acres) | ACOE Mitigation Required | DWR Mitigation Required | Impact Description/ Avoidance and Minimization                                                                    |
|---------------------------------------------|-----------------------|--------------|---------|-----------------------|--------|--------------------------|--------------------------|-------------------------|-------------------------------------------------------------------------------------------------------------------|
| 32                                          | UT to New Hope Creek  | Intermittent | 3030002 | Perm. Fill (loss)     | --     | --                       | --                       | --                      | Additional rip rap is needed at the end of the existing pipe. Rip rap will be embedded flush with the stream bed. |
|                                             |                       |              |         | Bank Stabilization    | --     | --                       | --                       | --                      |                                                                                                                   |
|                                             | SII                   | WS-V; NSW    |         | Embedded rip-rap      | 12     | --                       | 12 (1:1)                 | --                      | Utilizing embedded rip rap                                                                                        |
|                                             |                       |              |         | Temporary Fill        |        | <0.01                    | --                       | --                      |                                                                                                                   |
| Total Stream Impacts for HUC 3030002        |                       |              |         |                       | 1,041  | 0.15                     | 666 (2:1)<br>77 (1:1)    | --                      |                                                                                                                   |
| Total Mitigation Requested for HUC 3030002: |                       |              |         |                       |        |                          | 1,409                    |                         |                                                                                                                   |

|                                         |  |  |  |  |       |      |                          |    |  |
|-----------------------------------------|--|--|--|--|-------|------|--------------------------|----|--|
| Total Stream Impacts for Project        |  |  |  |  | 1,735 | 0.22 | 1,007 (2:1)<br>173 (1:1) | -- |  |
| Total Mitigation Requested for Project: |  |  |  |  |       |      | 2,187                    |    |  |

Buffer Impacts in HUC 3020201

| Permit Site No. | Stream Name/ JD ID     | HUC     | Permanent or Temporary | Buffer Mitigation Required? | Zone 1 Impact (sqft) | Zone 2 Impact (sqft) | Impact Description                                                                                                      |
|-----------------|------------------------|---------|------------------------|-----------------------------|----------------------|----------------------|-------------------------------------------------------------------------------------------------------------------------|
| 1               | Rocky Run<br>Rocky Run | 3020201 | Permanent              | No                          | 3,055                | 2,204                | Rock plating required rebuilding the headwall for the box culvert.                                                      |
| 2A              | UT to Eno River<br>SA  | 3020201 | Permanent              | No                          | 2,195                | 1,363                | A supplemental 84" pipe will be constructed on a floodplain bench.                                                      |
| 2B              | UT to Eno River<br>SA  | 3020201 | Permanent              | No                          | 3,164                | 2,219                | A supplemental 84" pipe will be constructed on a floodplain bench.                                                      |
| 3A              | UT to Eno River<br>SA  | 3020201 | Permanent              | No                          | 3,110                | 1,629                | A supplemental 48" pipe will be constructed on a floodplain bench.                                                      |
| 3B              | UT to Eno River<br>SA  | 3020201 | Permanent              | No                          | 4,675                | 1,439                | A supplemental 48" pipe will be constructed on a floodplain bench. A 72" bore and jack will also have to be constructed |

Buffer Impacts in HUC 3020201 (continued)

| Permit Site No.                         | Stream Name/ JD ID             | HUC     | Permanent or Temporary | Buffer Mitigation Required? | Zone 1 Impact (sqft) | Zone 2 Impact (sqft) | Impact Description                                                                             |
|-----------------------------------------|--------------------------------|---------|------------------------|-----------------------------|----------------------|----------------------|------------------------------------------------------------------------------------------------|
| 3C                                      | UT to Eno River<br>SB          | 3020201 | Permanent              | No                          | 2,626                | 1,884                | A new channel needs to be constructed to tie the existing stream to the new 72" bore and jack. |
| 3D                                      | UT to Eno River<br>SC          | 3020201 | Permanent              | No                          | 4,037                | 1,156                | New 66" bore and jack.                                                                         |
| 4A                                      | UT to Eno River<br>SC          | 3020201 | Permanent              | No                          | 4,260                | 2,667                | A new channel needs to be constructed to tie the existing stream to the new 78" bore and jack. |
| 4B                                      | UT to Eno River<br>SC          | 3020201 | Permanent              | No                          | 4,311                | 3,196                | A new channel needs to be constructed to tie the existing stream to the new 78" bore and jack. |
| 6                                       | UT to Cates Creek<br>SD        | 3020201 | Permanent              | No                          | 2,952                | 2,015                | A new channel will need to be constructed for the 42" bore and jack.                           |
| 7A                                      | UT to Cates Creek<br>SG        | 3020201 | Permanent              | No                          | 5,216                | 2,193                | New 72" bore and jack and 48" pipe extension to tie to the existing channel.                   |
| 7B                                      | UT to Cates Creek<br>SG        | 3020201 | Permanent              | No                          | 2,647                | 1,542                | Fill in stream due to widening the road. New 72" bore and jack ties to the existing channel.   |
| 8                                       | UT to Cates Creek<br>SE        | 3020201 | Permanent              | Yes                         | 571                  | --                   | Extension of 30" RCP. Replacement of 15" with 24".                                             |
| 9A                                      | UT to New Hope Creek<br>SK     | 3020201 | Permanent              | No                          | 3,752                | 1,119                | A new channel needs to be constructed to tie the existing stream to the new 84" bore and jack. |
| 9B                                      | UT to New Hope Creek<br>SK, SJ | 3020201 | Permanent              | No                          | 2,932                | --                   | A new channel needs to be constructed to tie the existing stream to the new 84" bore and jack. |
|                                         |                                |         |                        |                             | Zone 1 Impact        | Zone 2 Impact        |                                                                                                |
| Total Allowable Impacts for HUC 3020201 |                                |         |                        |                             | 48,932               | 24,626               |                                                                                                |
| Total Mitigable Impacts for HUC 3020201 |                                |         |                        |                             | 192                  | --                   |                                                                                                |

**Buffer Impacts in HUC 3020202**

| Permit Site No. | Stream Name/ JD ID          | HUC     | Permanent or Temporary | Buffer Mitigation Required? | Zone 1 Impact (sqft) | Zone 2 Impact (sqft) | Impact Description                                                                                                                                                                                                                             |
|-----------------|-----------------------------|---------|------------------------|-----------------------------|----------------------|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 10A             | UT to New Hope Creek<br>SR  | 3030002 | Permanent              | No                          | 4,675                | --                   | New 60" bore and jack.                                                                                                                                                                                                                         |
| 10B             | UT to New Hope Creek<br>SL  | 3030002 | Permanent              | No                          | 1,291                | 852                  | A new channel needs to be constructed to tie the existing stream to the new 60" bore and jack.                                                                                                                                                 |
| 11              | UT to New Hope Creek<br>SL  | 3030002 | Permanent              | No                          | 986                  | --                   | A new channel needs to be constructed for the new 42" bore and jack.                                                                                                                                                                           |
| 12              | UT to New Hope Creek<br>SL  | 3030002 | Permanent              | No                          | 2,332                | 1,359                | A new channel needs to be constructed for the new 48" bore and jack.                                                                                                                                                                           |
| 14A             | UT to New Hope Creek<br>SL  | 3030002 | Permanent              | No                          | 5,798                | --                   | A supplemental 66" pipe will be constructed on a floodplain bench. Access is bad for this work so additional temporary impacts were added for access                                                                                           |
| 14B             | UT to New Hope Creek<br>SN  | 3030002 | Permanent              | No                          | 3,212                | 1,628                | A supplemental 66" pipe will be constructed on a floodplain bench.                                                                                                                                                                             |
| 15              | UT to New Hope Creek<br>SN  | 3030002 | Permanent              | No                          | 530                  | --                   | Temporary Impacts for filling the existing 36" CMP pipe.                                                                                                                                                                                       |
| 16A             | UT to New Hope Creek<br>SS  | 3030002 | Permanent              | No                          | 2,426                | 2,269                | A new channel needs to be constructed to the new 66" bore and jack.                                                                                                                                                                            |
| 16B             | UT to New Hope Creek<br>SBB | 3030002 | Permanent              | No                          | 3,152                | 2,071                | A new channel needs to be constructed to the new 66" bore and jack.                                                                                                                                                                            |
| 16C             | UT to New Hope Creek<br>SS  | 3030002 | Permanent              | No                          | 3,237                | 1,668                | A new channel needs to be constructed to tie the existing stream to the new 66" bore and jack. A ditch was added to the buffer as the existing system dropped into the existing 48" pipe and the new bore and jack pipe could not be accessed. |
| 17              | UT to New Hope Creek<br>SYY | 3030002 | Permanent              | No                          | 1,902                | 845                  | A new channel needs to be constructed to tie the existing stream to the new 42" bore and jack.                                                                                                                                                 |

**Buffer Impacts in HUC 3020202 (continued)**

| Permit Site No. | Stream Name/ JD ID                 | HUC     | Permanent or Temporary | Buffer Mitigation Required? | Zone 1 Impact (sqft) | Zone 2 Impact (sqft) | Impact Description                                                                                                                                                                     |
|-----------------|------------------------------------|---------|------------------------|-----------------------------|----------------------|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 18              | New Hope Creek<br>New Hope Creek   | 3030002 | Permanent              | No                          | 1,716                | 1,070                | Bank Stabilization was utilized for new 42" outlet.                                                                                                                                    |
| 19A             | UT to Old Field Creek<br>SV        | 3030002 | Permanent              | No                          | 2,477                | 1,434                | A new channel needs to be constructed to tie the existing stream to the new 78" bore and jack.                                                                                         |
| 19B             | UT to Old Field Creek<br>SV        | 3030002 | Permanent              | No                          | 3,565                | 2,356                | A new channel needs to be constructed to tie the existing stream to the new 78" bore and jack.                                                                                         |
| 20A             | UT to Old Field Creek<br>SX        | 3030002 | Permanent              | No                          | 3,463                | 1,489                | A new channel needs to be constructed to tie the existing stream to the new 84" bore and jack.                                                                                         |
| 20B             | UT to Old Field Creek<br>SX        | 3030002 | Permanent              | No                          | 3,385                | 2,016                | A new channel needs to be constructed to tie the existing stream to the new 84" bore and jack.                                                                                         |
| 21A             | Old Field Creek<br>Old Field Creek | 3030002 | Permanent              | No                          | 2,330                | 1,646                | Bank Stabilization to help protect Duke Energy Transmission Tower                                                                                                                      |
| 22              | UT to Old Field Creek<br>SAA       | 3030002 | Permanent              | No                          | 858                  | 778                  | Additional rip rap is needed at the end of the existing pipe.                                                                                                                          |
| 23A             | UT to Old Field Creek<br>SCC       | 3030002 | Permanent              | No                          | 3,326                | 2,375                | A new channel needs to be constructed to tie the existing stream to the new 72" bore and jack. In order to tie to existing ditch, the proposed ditch had to extend into Buffer Zone 2. |
| 23B             | UT to Old Field Creek<br>SCC       | 3030002 | Permanent              | No                          | 2,903                | 2,082                | A new channel needs to be constructed to tie the existing stream to the new 72" bore and jack.                                                                                         |
| 25A             | UT to Old Field Creek<br>SDD       | 3030002 | Permanent              | No                          | 2,674                | 1,928                | A new channel needs to be constructed to tie the existing stream to the new 72" bore and jack.                                                                                         |



Buffer Impacts in HUC 3020202 (continued)

| Permit Site No.                         | Stream Name/ JD ID               | HUC     | Permanent or Temporary | Buffer Mitigation Required? | Zone 1 Impact (sqft) | Zone 2 Impact (sqft) | Impact Description                                                                              |
|-----------------------------------------|----------------------------------|---------|------------------------|-----------------------------|----------------------|----------------------|-------------------------------------------------------------------------------------------------|
| 25B                                     | UT to Old Field Creek<br>SDD     | 3030002 | Permanent              | No                          | 1,550                | 614                  | A new channel needs to be constructed to tie the existing stream to the new 72" bore and jack.  |
| 27                                      | UT to New Hope Creek<br>SEE      | 3030002 | Permanent              | No                          | 564                  | 367                  | Additional rip rap is needed at the end of the existing pipe.                                   |
| 28A                                     | UT to New Hope Creek<br>SEE      | 3030002 | Permanent              | No                          | 2,465                | 1,488                | A new channel needs to be constructed to tie the existing stream to the new 78" bore and jack.  |
| 28B                                     | UT to New Hope Creek<br>SEE, SGG | 3030002 | Permanent              | No                          | 2,320                | 1,803                | A new channel needs to be constructed to tie the existing stream to the new 78" bore and jack.  |
| 29                                      | UT to New Hope Creek<br>SEE      | 3030002 | Permanent              | No                          | 2,164                | 2,335                | Additional rip rap is needed at the end of the existing pipe.                                   |
| 30A                                     | UT to New Hope Creek<br>SEE      | 3030002 | Permanent              | No                          | 4,649                | 2,803                | A new channel needs to be constructed to tie the existing stream to the new 108" bore and jack. |
| 30B                                     | UT to New Hope Creek<br>SEE      | 3030002 | Permanent              | No                          | 4,895                | 1,493                | A new channel needs to be constructed to tie the existing stream to the new 108" bore and jack. |
| 31                                      | UT to New Hope Creek<br>SHH      | 3030002 | Permanent              | No                          | 2,682                | 1,938                | A new channel needs to be constructed to tie the existing stream to the new 42" bore and jack.  |
| 32                                      | UT to New Hope Creek<br>SII      | 3030002 | Permanent              | No                          | 3,119                | 1,978                | Additional rip rap is needed at the end of the existing pipe.                                   |
|                                         |                                  |         |                        |                             | Zone 1 Impact        | Zone 2 Impact        |                                                                                                 |
| Total Allowable Impacts for HUC 3030002 |                                  |         |                        |                             | 80,646               | 42,685               |                                                                                                 |
| Total Allowable Impacts for HUC 3020201 |                                  |         |                        |                             | 48,932               | 24,626               |                                                                                                 |
| Total Mitigable Impacts for HUC 3020201 |                                  |         |                        |                             | 571                  | --                   |                                                                                                 |
| Total Allowable Impacts for Project     |                                  |         |                        |                             | 129,578              | 67,311               |                                                                                                 |
| Total Mitigable Impacts for the Project |                                  |         |                        |                             | 571                  | --                   |                                                                                                 |

## MITIGATION SOURCES/SUMMARY

Mitigation for the unavoidable impacts for this project will be handled by mitigation banks and the NC Division of Mitigation Services (DMS).

Included in this application package are the credit release letters from the USACE and the affidavits as evidence the credits have been purchased from the mitigation banks.

Below is a summary of the mitigation sources for the project. Note that only the amounts noted in the above tables will be debited.

| <b>Wetlands</b> |                  |                       |                                    |
|-----------------|------------------|-----------------------|------------------------------------|
| <b>HUC</b>      | <b>Site Name</b> | <b>Bank Developer</b> | <b>Maximum Amount Secured (ac)</b> |
| 03020201        | Pancho Wetland   | EBX                   | 0.7                                |
| 03030002        | n/a              | DMS                   | 0.24                               |
| <b>Streams</b>  |                  |                       |                                    |
| <b>HUC</b>      | <b>Site Name</b> | <b>Bank Developer</b> | <b>Maximum Amount Secured (lf)</b> |
| 03020201        | Buffalo Branch   | EBX                   | 738                                |
|                 | Bucher           | EBX                   | 2,766.24                           |
| 03030002        | Benton Branch    | Restoration Systems   | 3,894.8                            |
|                 | Bethel Branch    | Wildlands Holding     | 2,080                              |
| <b>Buffers</b>  |                  |                       |                                    |
| <b>HUC</b>      | <b>Site Name</b> | <b>Bank Developer</b> | <b>Amount Secured (lf)</b>         |
| 03030002        | n/a              | DMS                   | Zone 1: 0.2                        |

## FEDERALLY PROTECTED SPECIES

Plants and animals with Federal classification of Endangered (E) or Threatened (T) are protected under provisions of Section 7 and Section 9 of the Endangered Species Act of 1973, as amended.

The USFWS lists the following federally protected species in the project area:

| <b>Common Name</b>      | <b>Habitat Present</b>        | <b>Biological Conclusion</b>                      | <b>Last Survey/Applicable Programmatic Agreement</b> |
|-------------------------|-------------------------------|---------------------------------------------------|------------------------------------------------------|
| Dwarf wedgemussel       | Yes                           | May Affect, <b>Not Likely</b> to Adversely Affect | Eastern Mussel                                       |
| Atlantic pigtoe         | Yes (Identified Stream Reach) | May Affect, <b>Likely</b> to Adversely Affect     | Eastern Mussel                                       |
| Carolina madtom         | Yes                           | May Affect, <b>Not Likely</b> to Adversely Affect | Neuse River Waterdog & Carolina Madtom               |
| Neuse River waterdog    | Yes                           | May Affect, <b>Not Likely</b> to Adversely Affect | Neuse River Waterdog & Carolina Madtom               |
| Michaux sumac           | Yes                           | No Effect                                         | 6/2022                                               |
| Smooth coneflower       | Yes                           | No Effect                                         | 6/2022                                               |
| Northern long-eared bat | (outside of range)            | n/a                                               | Eastern NLEB                                         |



## INDIRECT CUMULATIVE IMPACT ANALYSIS

Please find enclosed Community Impact Assessment and Community Characteristics Report.

### CULTURAL RESOURCES

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

As indicated in the attached Archaeological and Historic Properties and Landscapes Reports, no surveys are required for these resources.

### FEMA COMPLIANCE

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

### REGULATORY APPROVALS

Please find enclosed Pre-Construction Notification form, Mitigation Acceptance Letter(s), Concurrence Meeting Minutes, Stormwater Management Plan (SMP), Permit drawings and Buffer Drawings, Historic Archaeology and Properties forms.

Application is hereby made for the following regulatory approvals for the above-described activities:

Section 404: USACE Regional General Permit 50.

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

Thank you for your assistance with this project. If you have any questions or need additional information, please contact Michael Turchy at [maturchy@ncdot.gov](mailto:maturchy@ncdot.gov). A copy of this application and distribution list will also be posted on the NCDOT website at: <http://connect.ncdot.gov/resources/Environmental/Pages>.

Sincerely,

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

ec: NCDOT Permit Application Standard Distribution List.

E-PCN



## Pre-Construction Notification (PCN) Form

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

April 13, 2022 Ver 4.3

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

Pre-Filing Meeting Date Request was submitted on: \*

4/20/2022

If this is a courtesy copy, please fill in this with the submission date.

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

Orange

Is this a NCDMS Project? \*

☐ Yes ☒ No

Click Yes, only if NCDMS is the applicant or co-applicant.

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:

I-3306A

WBS # \*

34178.1.3

(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)

Has this PCN previously been submitted? \*

☐ Yes  
☒ No

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

- ☐ Nationwide Permit (NWP)  
☒ Regional General Permit (RGP)  
☐ Standard (IP)

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

☒ Yes ☐ No

Regional General Permit (RGP) Number:

201902350 - Work associated with bridge construction, widening, replacement, and interchanges

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

- |                                                                               |                                                                    |
|-------------------------------------------------------------------------------|--------------------------------------------------------------------|
| <input checked="" type="checkbox"/> 401 Water Quality Certification - Regular | <input type="checkbox"/> 401 Water Quality Certification - Express |
| <input type="checkbox"/> Non-404 Jurisdictional General Permit                | <input checked="" type="checkbox"/> Riparian Buffer Authorization  |
| <input type="checkbox"/> Individual 401 Water Quality Certification           |                                                                    |

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

FILE TYPE 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? \*

Michael Turchy

1b. Primary Contact Email: \*

maturchy@ncdot.gov

1c. Primary Contact Phone: \*

(xxx)xxx-xxxx

(919)707-6157

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.:

n/a

2c. Contact Person:

(for Corporations)

Michael Turchy

2d. Address \*

Street Address

1000 Birch Ridge Drive

Address Line 2

City

Raleigh

Postal / Zip Code

27610

State / Province / Region

NC

Country

USA

2e. Telephone Number: \*

(xxx)xxx-xxxx

(919)707-6157

2f. Fax Number:

(xxx)xxx-xxxx

2g. Email Address: \*

maturchy@ncdot.gov

## C. Project Information and Prior Project History

### 1. Project Information

**1a. Name of project: \***

I-3306 A

**1b. Subdivision name:**

(if appropriate)

**1c. Nearest municipality / town: \***

Hillsborough, NC/Chapel Hill, NC

## 2. Project Identification

**2a. Property Identification Number:**

(tax PIN or parcel ID)

**2b. Property size:**

(in acres)

**2c. Project Address**

Street Address

Address Line 2

City

Postal / Zip Code

State / Province / Region

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: \***

36.066593

ex: 34.208504

**Longitude: \***

-79.145538

-77.796371

## 3. Surface Waters

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

Multiple, see attached cover letter with stream tables

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

Multiple, see attached cover letter with stream tables

[Surface Water Lookup](#)

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

Neuse

Cape Fear

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

030202010303, 030300020601

[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 agricultural, residential, forested, existing transportation facilities, and commercial/business concentrated mainly around the US 15/501 interchange.

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

☐ Yes ☒ No ☐ Unknown

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

5.85

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

(intermittent and perennial)

22,246

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

The purpose of the proposed project is to relieve peak hour congestion on this facility such that a LOS D or better can be maintained for the 2040 build condition. A desired outcome would be to improve the traffic flow and continuity between the existing eight-lane section at the beginning of the project (I-85) and the six-lane section at the end of the project (Durham County Line). Improving travel conditions on I-40 to a LOS D or better throughout this portion of the freeway from I-85 to the Durham County line will have a direct and positive impact on traffic flow and continuity experienced by the public using this corridor. Daily commuting between points west of I-85 and US 15-501 will experience fewer delays.

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

The project consists of widening I-40 in Orange County, from I-85/I-40 interchange to the Durham County line, to a six-lane facility with a 22 foot median. The widening will involve adding an additional lane in each direction along I-40, predominantly within the existing median, which will require little additional right-of way. Full depth, 12 foot paved outside shoulders will be provided. Improvements to interchange areas will be provided as needed to accommodate future traffic. At the NC 86 interchange, a superstreet design is proposed at the intersection of Eubanks Road and NC 86 with a U-turn bulb-out near Perkins Drive. Standard road building equipment, such as trucks, dozers, and cranes will be used.

## 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-2013-00201

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

Name (if known): Philip Beach  
Agency/Consultant Company: SEPI Engineering  
Other: NRTR completed by SEPI Engineering

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

August 5, 2015

## 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.

## 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 *<br>(acres) |
|------------------|------------------|-----------------------|------------------|---------------|----------------|--------------------------------|------------------------------|
| see              | attached         | P                     | Unknown          | cover letter  | Yes            | Both                           | 0.000<br>(acres)             |

2g. Total Temporary Wetland Impact

0.000

2g. Total Permanent Wetland Impact

0.000

2g. Total Wetland Impact

0.000

2i. Comments:

see attached cover letter, drawings and impact summary sheets.

### 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 *<br>Average (feet) | 3h. Impact length *<br>(linear feet) |
|----|-----------------------------|-------------------|----------------------|---------------|-----------------------|----------------------------|----------------------------------|--------------------------------------|
| S1 | See attached cover          | Permanent         | Other                | letter        | Perennial             | Both                       | 0                                | 0                                    |

\*\* 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:

0

3i. Total temporary stream impacts:

0

3i. Total stream and ditch impacts:

0

3j. Comments:

see attached cover letter, drawings and impact summary sheets.

## 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 * |
|---------------------------|-----------------------|---------------------------|-----------------------------------|---------------------|---------------------|
| See attached cover letter | P                     | See attached cover letter | Yes                               | 0<br>(square feet)  | 0<br>(square feet)  |

## 6h. Total buffer impacts:

|                          | Zone 1 | Zone 2 |
|--------------------------|--------|--------|
| Total Temporary impacts: | 0.00   | 0.00   |

|                          | Zone 1 | Zone 2 |
|--------------------------|--------|--------|
| Total Permanent impacts: | 0.00   | 0.00   |

|                                | Zone 1 | Zone 2 |
|--------------------------------|--------|--------|
| Total combined buffer impacts: | 0.00   | 0.00   |

6i. Comments:

see attached cover letter, drawings and impact summary sheets.

## 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: \*

All jurisdictional features were delineated, field verified and surveyed. Using these surveyed features, designs were adjusted to avoid and/or minimize impacts to jurisdictional areas. All wetland areas not affected by the project will be protected from unnecessary encroachment. Best Management Practices for Protection of Surface Waters will be used. Other avoidance and minimization efforts include utilizing the existing, disturbed median to accommodate the majority of the widening, and minimizing stream and wetland impacts by retaining and extending all existing major hydraulic structures.

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

Erosion and sediment Best Management Practices (BMPs) will be installed prior to construction. Water will be diverted around work areas to prevent sedimentation of downstream aquatic resources. Impacts will be minimized by strict enforcement of the BMPs for the protection of surface waters, restrictions against staging of equipment in or adjacent to waters of the US and coordination (including a pre-construction meeting) with the Division Environmental Officer.

### 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

### 3. Complete if Using a Mitigation Bank

#### 3a. Name of Mitigation Bank:

See attached cover letter

#### 3b. Credits Purchased/Requested (attach receipt and letter)

Type:

Quantity:

#### 3c. Comments

### 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)

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

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)

#### 4e. Riparian wetland mitigation requested:

(acres)

#### 4f. Non-riparian wetland mitigation requested:

(acres)

#### 4g. Coastal (tidal) wetland mitigation requested:

(acres)

#### 4h. Comments

see attached cover letter for mitigation breakdown.

## 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](#).

### 2. Stormwater Management Plan

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

☒ Yes ☐ No

Comments:

## 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

## 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.

The project will improve travel patterns, reduce travel time, affect access to properties in the area or open areas for development or redevelopment. Due to its minimal transportation impact-causing activities, this project will neither influence nearby land uses nor stimulate growth. Therefore, a detailed indirect and cumulative effects study will not be necessary.

## 4. Sewage Disposal (DWR Requirement)

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

☐ Yes ☒ No ☐ N/A

## 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

What Federal Agency is involved?

FHWA

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? \*

see attached cover letter/permit package.

## 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? \*

EFH Mapping.

## 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? \*

Archaeology and Historic Property Survey Reports (No survey required letters) attached.

## 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

Please use the space below to attach all required documentation or any additional information you feel is helpful for application review. Documents should be combined into one file when possible, with a Cover Letter, Table of Contents, and a Cover Sheet for each Section preferred.

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

I-3306 Orange June 2022.pdf

67.5MB

File must be PDF or KMZ

## Signature

\*

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

- The project proponent hereby certifies that all information contained herein is true, accurate, and complete to the best of my knowledge and belief; and
- The project proponent hereby requests that the certifying authority review and take action on this CWA 401 certification request within the applicable reasonable period of time.
- 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: \***

Michael Turchy

**Signature \***



**Date**

6/28/2022

# Mitigation Acceptance

## Benton Branch Mitigation Site

Benton Branch Bank Site is part of the Cape Fear 02 Umbrella Mitigation Bank. This 33.14-acre site is located adjacent to and including Benton Branch in the Cape Fear watershed, Cataloging Unit (03030002), on both sides of Milesville Road near its intersection with Massey Road, north of Elon, in Caswell County, NC.

NCDOT has acquired 3,894.8 stream credits from Benton Branch mitigation site to offset impacts associated future TIP's. Restoration systems will be debiting the Benton Branch mitigation site for 3,894 linear feet to offset 1947 linear feet of impacts.

| Site Name     | Stream Type | Bank Developer      | Stream Mitigation Credits (lf) | I-3306A Stream Impacts (lf) | I-3306A Stream Mitigation Req'd (lf) |
|---------------|-------------|---------------------|--------------------------------|-----------------------------|--------------------------------------|
| Benton Branch | Warm        | Restoration Systems | 3894.8                         | 722                         | 1444                                 |

## Bethel Branch Bank Site

Bethel Branch Mitigation Site is located within the South Fork Cane Creek watershed of the Cape Fear River Cataloging unit (03030002). The site is located at 277 R E Wright road, near Snow Camp, in Chatham County, NC.

NCDOT has acquired 2080.8 stream credits so far to offset the impacts associated TIP projects. Wildlands Holding will be debiting Bethel branch for 1296 linear ft to offset 648 linear feet of impacts associated with I-3306A.

| Site Name     | Stream Type | Bank Developer    | Stream Mitigation Credits (lf) | I-3306A Stream Impacts (lf) | I-3306A Stream Mitigation Reqd (lf) |
|---------------|-------------|-------------------|--------------------------------|-----------------------------|-------------------------------------|
| Bethel Branch | Warm        | Wildlands Holding | 2080                           | 648                         | 1296                                |

## Bucher Mitigation Site

The Bucher Mitigation site is located at 3132 Redwood Road in Durham County NC. The mitigation site is adjacent to and within the Neuse River Basin, Hydrologic Unit Code 03020201.

NCDOT has acquired 2766.24 stream credits to offset the impacts associated with NCDOT TIP projects. EBX will be debiting 2766 credit from the Bucher mitigation site to offset 1383 linear feet of impacts associated with I-3306A. Below is a table showing the debit and the totals credits remaining.

| Site Name | Stream Type | Bank Developer | Stream Mitigation Credits (lf) | I-3306A Stream Impacts (lf) | I-3306A Stream Mitigation Req'd (lf) |
|-----------|-------------|----------------|--------------------------------|-----------------------------|--------------------------------------|
| Bucher    | Warm        | EBX            | 2766.24                        | 1383                        | 2766                                 |

## Buffalo Branch Mitigation Site

The Buffalo Branch Mitigation site is located on the north side of Little Divine Road, east of Live Oak Church Road approximately four miles north of Selma, in Johnston County, NC. The Mitigation site is adjacent to unnamed tributaries that flow to Buffalo Branch in the upper Neuse Cataloging Unit 03020201.

NCDOT has acquired 1143 stream credits so far to offset the impacts TIP projects. EBX will be debiting 486 linear of stream credit to offset 283 linear feet of impacts associated with I-3306A.

| Site Name      | Stream Type | Bank Developer | Stream Mitigation Credits (lf) | I-3306A Stream Impacts (lf) | I-3306A Stream Mitigation Reqd (lf) |
|----------------|-------------|----------------|--------------------------------|-----------------------------|-------------------------------------|
| Buffalo Branch | Warm        | EBX            | 1143                           | 369                         | 738                                 |

## Pancho Wetland

The Pancho Stream and Wetland mitigation site is located on the North and South sides of Stevens Mill Road, northeast of Newton Grove and South west of Princeton in Wayne County NC. The mitigation site is adjacent to and including Kennedy Mill Branch, within the Neuse River Basin, Hydrologic Code (HUC) 03020201.

NCDOT has acquired 4.482 acres of riparian wetland credit to offset the impacts associated with future TIP's. I-3306A has 0.18 acres of impacts associated with this project and EBX will be debiting the Pancho Wetland mitigation site 0.36 acres to offset these impacts.

| Site Name      | Wetland Type | Bank Developer | Stream Mitigation Credits (lf) | I-3306A Stream Impacts (lf) | I-3306A Stream Mitigation Req'd (lf) |
|----------------|--------------|----------------|--------------------------------|-----------------------------|--------------------------------------|
| Pancho Wetland | Riparian     | EBX            | 4.482                          | 0.35                        | 0.7                                  |







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

November 19, 2020

Regulatory Division

Action ID No. SAW-2015-01701

Re: Year 3 Monitoring Credit Release associated with Cape Fear 02 Umbrella Mitigation Bank, Benton Branch Bank Site

Mr. Worth Creech  
Restoration Systems, LLC  
2202 Haynes Street, Suite 211  
Raleigh, North Carolina 27604

Dear Mr. Creech:

This correspondence is in reference to the Benton Branch Bank Site, part of the Cape Fear 02 Umbrella Mitigation Bank. The 33.14-acre site is located adjacent to and including Benton Branch in the Cape Fear watershed, Cataloging Unit (03030002), on both sides of Miesville Road near its intersection with Massey Road, north of Elon, in Caswell County, North Carolina. The purpose of this letter is to confirm the Year 3 Monitoring credit release for this mitigation site.

Pursuant to the Umbrella Mitigation Banking Instrument (UMBI) entitled, Agreement to Establish the Cape Fear 02 Umbrella Mitigation Bank Within the State of North Carolina, approved by letter dated July 7, 2017; the site-specific Final Bank Site Mitigation Plan, Cape Fear 02 Umbrella Mitigation Bank, Developed Through Restoration and Enhancement of the Benton Branch Bank Site (Plan) dated May 2017; and the Year 3 (2020) Annual Monitoring Document Report – Cape Fear 02 Umbrella Mitigation Bank Benton Branch Bank Site dated October 2020, 10 percent of the mitigation site's total restoration and enhancement stream credits shall be available for sale provided the Year 3 monitoring report demonstrates interim performance standards are being met.

By copy of this correspondence, we confirm that you have satisfied the above requirements for the Year 3 Monitoring credit release, and 605.9 stream mitigation units (SMUs) are now available for sale. To date, 3938.35 SMUs (65 percent of the total stream credits) and 1.95 WMUs (50 percent of the total wetland credits) have been released for sale.

Please be aware that the Long-Term Maintenance and Monitoring Performance Bond will expire on November 21, 2021. Failure to submit financial assurance prior to the expiration date may lead to a suspension in credit sales.

Thank you for your interest in restoring and protecting waters of the United States. If you have questions regarding this letter, please contact Samantha Dailey, Raleigh Regulatory Field Office at [Samantha.J.Dailey@usace.army.mil](mailto:Samantha.J.Dailey@usace.army.mil) or telephone (919) 554-4884, Extension 22.

Sincerely,

A handwritten signature in blue ink, appearing to read "Todd Tugwell".

Todd Tugwell  
Mitigation Project Manager  
Regulatory Division

Electronic Copies Furnished:  
NCIRT Distribution List



**BENTON BRANCH MITIGATION BANK  
TRANSFER OF CREDIT AFFIDAVIT**

Permittee: NC DEPARTMENT OF TRANSPORTATION  
Project Name: Transportation Improvement Projects

**Compensatory Mitigation Credits:** 898.8 stream credits  
**Mitigation Site Debited:** Benton Branch Mitigation Bank

Mitigation Site Info: Located in Caswell County, Cape Fear River Basin, and Cataloging Unit 03030002 and authorized by the Interagency Review Team (IRT) pursuant to the Cape Fear 02 Umbrella Stream Mitigation Bank "Mitigation Banking Instrument" (MBI) approved July 6, 2017 (Bank).

**Statement of Mitigation Liability Acceptance:** I, the undersigned, verify that I am authorized to approve mitigation transactions for the Mitigation Sponsor shown below, and I certify that the Sponsor agrees to accept full responsibility for providing the mitigation identified in this document, associated with the USACE Permittee shown. I also verify that released credits, as approved by the USACE, are currently available at the mitigation site identified above.

**Mitigation Sponsor Name:** Restoration Systems, LLC

**Name of Sponsor's Authorized Representative:** John Preyer

  
\_\_\_\_\_  
Signature of Sponsor's Authorized Representative

11/28/2017  
\_\_\_\_\_  
Date of Signature



**BENTON BRANCH MITIGATION BANK  
TRANSFER OF CREDIT AFFIDAVIT**

Permittee: NC DEPARTMENT OF TRANSPORTATION  
Project Name: Transportation Improvement Projects

**Compensatory Mitigation Credits:** 918.9 stream credits  
**Mitigation Site Debited:** Benton Branch Mitigation Bank

Mitigation Site Info: Located in Caswell County, Cape Fear River Basin, and Cataloging Unit 03030002 and authorized by the Interagency Review Team (IRT) pursuant to the Cape Fear 02 Umbrella Stream Mitigation Bank "Mitigation Banking Instrument" (MBI) approved July 6, 2017 (Bank).

**Statement of Mitigation Liability Acceptance:** I, the undersigned, verify that I am authorized to approve mitigation transactions for the Mitigation Sponsor shown below, and I certify that the Sponsor agrees to accept full responsibility for providing the mitigation identified in this document, associated with the USACE Permittee shown. I also verify that released credits, as approved by the USACE, are currently available at the mitigation site identified above.

**Mitigation Sponsor Name:** Restoration Systems, LLC

**Name of Sponsor's Authorized Representative:** John Preyer

  
\_\_\_\_\_  
Signature of Sponsor's Authorized Representative

05/09/2018  
\_\_\_\_\_  
Date of Signature



**BENTON BRANCH MITIGATION BANK  
TRANSFER OF CREDIT AFFIDAVIT**

Permittee: NC DEPARTMENT OF TRANSPORTATION  
Project Name: Transportation Improvement Projects

**Compensatory Mitigation Credits:** 579.1 stream credits  
**Mitigation Site Debited:** Benton Branch Mitigation Bank

Mitigation Site Info: Located in Caswell County, Cape Fear River Basin, and Cataloging Unit 03030002 and authorized by the Interagency Review Team (IRT) pursuant to the Cape Fear 02 Umbrella Stream Mitigation Bank "Mitigation Banking Instrument" (MBI) approved July 6, 2017 (Bank).

**Statement of Mitigation Liability Acceptance:** I, the undersigned, verify that I am authorized to approve mitigation transactions for the Mitigation Sponsor shown below, and I certify that the Sponsor agrees to accept full responsibility for providing the mitigation identified in this document, associated with the USACE Permittee shown. I also verify that released credits, as approved by the USACE, are currently available at the mitigation site identified above.

**Mitigation Sponsor Name:** Restoration Systems, LLC

**Name of Sponsor's Authorized Representative:** John Preyer

  
\_\_\_\_\_  
Signature of Sponsor's Authorized Representative

11/26/2018  
\_\_\_\_\_  
Date of Signature



**BENTON BRANCH MITIGATION BANK  
TRANSFER OF CREDIT AFFIDAVIT**

Permittee: NC DEPARTMENT OF TRANSPORTATION  
Project Name: Transportation Improvement Projects

**Compensatory Mitigation Credits:** 898.8 stream credits  
**Mitigation Site Debited:** Benton Branch Mitigation Bank

Mitigation Site Info: Located in Caswell County, Cape Fear River Basin, and Cataloging Unit 03030002 and authorized by the Interagency Review Team (IRT) pursuant to the Cape Fear 02 Umbrella Stream Mitigation Bank "Mitigation Banking Instrument" (MBI) approved July 6, 2017 (Bank).

**Statement of Mitigation Liability Acceptance:** I, the undersigned, verify that I am authorized to approve mitigation transactions for the Mitigation Sponsor shown below, and I certify that the Sponsor agrees to accept full responsibility for providing the mitigation identified in this document, associated with the USACE Permittee shown. I also verify that released credits, as approved by the USACE, are currently available at the mitigation site identified above.

**Mitigation Sponsor Name:** Restoration Systems, LLC

**Name of Sponsor's Authorized Representative:** John Preyer

  
\_\_\_\_\_  
Signature of Sponsor's Authorized Representative

12/26/2019  
\_\_\_\_\_  
Date of Signature



**BENTON BRANCH MITIGATION BANK  
TRANSFER OF CREDIT AFFIDAVIT**

Permittee: NC DEPARTMENT OF TRANSPORTATION  
Project Name: Transportation Improvement Projects

**Compensatory Mitigation Credits:** 599.2 stream credits  
**Mitigation Site Debited:** Benton Branch Mitigation Bank

Mitigation Site Info: Located in Caswell County, Cape Fear River Basin, and Cataloging Unit 03030002 and authorized by the Interagency Review Team (IRT) pursuant to the Cape Fear 02 Umbrella Stream Mitigation Bank "Mitigation Banking Instrument" (MBI) approved July 6, 2017 (Bank).

**Statement of Mitigation Liability Acceptance:** I, the undersigned, verify that I am authorized to approve mitigation transactions for the Mitigation Sponsor shown below, and I certify that the Sponsor agrees to accept full responsibility for providing the mitigation identified in this document, associated with the USACE Permittee shown. I also verify that released credits, as approved by the USACE, are currently available at the mitigation site identified above.

**Mitigation Sponsor Name:** Restoration Systems, LLC

**Name of Sponsor's Authorized Representative:** John Preyer

  
\_\_\_\_\_  
Signature of Sponsor's Authorized Representative

12/04/2020  
\_\_\_\_\_  
Date of Signature







REPLY TO  
ATTENTION OF:

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

December 18, 2019

Regulatory Division/1200A

Action ID No. SAW-2014-02129

Re: Year 4 Monitoring Credit Release associated with Neu-Con Umbrella Mitigation Bank, Buffalo Branch Mitigation Site

Mr. Brad Breslow  
EBX-Neuse I, LLC  
302 Jefferson Street, Suite 110  
Raleigh, North Carolina 27605

Dear Mr. Breslow:

This correspondence is in reference to the Neu-Con Umbrella Mitigation Bank, Buffalo Branch Mitigation Site, located on the north side of Little Divine Road, east of Live Oak Church Road, approximately four miles north of Selma, in Johnston County, North Carolina. The mitigation site is adjacent to unnamed tributaries that flow to Buffalo Branch in the Upper Neuse Cataloging Unit (03020201). The purpose of this letter is to confirm the Year 4 Monitoring credit release for this mitigation site.

Pursuant to the Umbrella Mitigation Banking Instrument entitled, Neu-Con Umbrella Wetland Mitigation and Stream Restoration Bank, approved April 2, 2001, and amended April 10, 2009, and February 2, 2017; the site-specific Buffalo Branch Final Mitigation Plan dated April 2015; and the Buffalo Branch Mitigation Site Year 4 Monitoring Report dated October 2019, 5 percent of the mitigation site's total restoration and enhancement credits shall be available for sale provided the Year 4 Monitoring Report demonstrates interim performance standards are being met.

By copy of this correspondence, we confirm that you have satisfied the above requirements for the Year 4 Monitoring credit release, and 190.6 stream mitigation units (SMUs) are now available for sale. To date, 2859 SMUs (75 percent of the total stream restoration and enhancement credits) have been released for sale.

Please be aware that the Long Term Maintenance and Monitoring Performance Bond will expire on January 26, 2020. Failure to submit financial assurance prior to the expiration date may lead to a suspension in credit sales.

Thank you for your interest in restoring and protecting waters of the United States. If you have questions regarding this letter, please contact Samantha Dailey, Raleigh Regulatory Field Office at [Samantha.J.Dailey@usace.army.mil](mailto:Samantha.J.Dailey@usace.army.mil) or telephone (919) 554-4884, Extension 22.

Sincerely,

Jean B. Gibby  
Chief, Raleigh Field Office

Electronic Copies Furnished:  
NCIRT Distribution List



**MITIGATION CREDIT TRANSFER CERTIFICATE**  
**NEU-CON WETLAND AND STREAM UMBRELLA BANK**

**TO: NORTH CAROLINA INTERAGENCY REVIEW TEAM**

The undersigned, EBX-Neuse I, LLC the Sponsor of the Neu-Con Wetland and Stream Umbrella Mitigation Bank (Buffalo Branch Site) hereby certifies the following:

1. NC Department of Transportation has deposited monies with the Sponsor sufficient to acquire 913.30 Stream Mitigation Credits from the Bank for use on projects in HUC 03020201 of the Neuse River Watershed per Contract #7700002007.
2. The Sponsor has deducted 913.30 Stream Mitigation Credits from the Bank's credit ledger in HUC 03020201 of the Neuse River Watershed.

A copy of the Bank's Credit ledgers reflecting the above transaction are attached to this Certificate.

**EBX-Neuse I, LLC**

A handwritten signature in black ink, appearing to read 'Cara S. Conder'.

By: \_\_\_\_\_  
Cara S. Conder, Authorized Agent

Date: \_\_\_\_\_ 03/20/18

Copies:  
LeiLani Paugh, NCDOT (electronic)  
Linda Fitzpatrick, NCDOT (electronic)



**MITIGATION CREDIT TRANSFER CERTIFICATE**  
**NEU-CON WETLAND AND STREAM UMBRELLA BANK**

**TO: NORTH CAROLINA INTERAGENCY REVIEW TEAM**

The undersigned, EBX-Neuse I, LLC the Sponsor of the Neu-Con Wetland and Stream Umbrella Mitigation Bank (Buffalo Branch Site) hereby certifies the following:

1. NC Department of Transportation has deposited monies with the Sponsor sufficient to acquire 229.70 Stream Mitigation Credits from the Bank for use on projects in HUC 03020201 of the Neuse River Watershed per Contract #7700002007.
2. The Sponsor has deducted 229.70 Stream Mitigation Credits from the Bank's credit ledger in HUC 03020201 of the Neuse River Watershed.

A copy of the Bank's Credit ledgers reflecting the above transaction are attached to this Certificate.

**EBX-Neuse I, LLC**

By:   
Daniel B. Ramsay, Authorized Agent

Date: 01/04/19

Copies:  
LeiLani Paugh, NCDOT (electronic)  
Linda Fitzpatrick, NCDOT (electronic)



**MITIGATION CREDIT TRANSFER CERTIFICATE**

**NEU-CON WETLAND AND STREAM UMBRELLA BANK**

**TO: NORTH CAROLINA INTERAGENCY REVIEW TEAM**

The undersigned, EBX-Neuse I, LLC the Sponsor of the Neu-Con Wetland and Stream Umbrella Mitigation Bank (Buffalo Branch Site) hereby certifies the following:

1. NC Department of Transportation has deposited monies with the Sponsor sufficient to acquire 134.07 Stream Mitigation Credits from the Bank for use on projects in HUC 03020201 of the Neuse River Watershed per Contract #7700002012.
2. The Sponsor has deducted 134.07 Stream Mitigation Credits from the Bank's credit ledger in HUC 03020201 of the Neuse River Watershed.

A copy of the Bank's Credit ledgers reflecting the above transaction are attached to this Certificate.

**EBX-Neuse I, LLC**

By: \_\_\_\_\_

Daniel B. Ramsay, Authorized Agent

Date: 01/21/2020

Copies:

LeiLani Paugh, NCDOT (electronic)

Linda Fitzpatrick, NCDOT (electronic)



**MITIGATION CREDIT TRANSFER CERTIFICATE**  
**NEU-CON WETLAND AND STREAM UMBRELLA BANK**

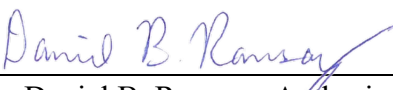
**TO: NORTH CAROLINA INTERAGENCY REVIEW TEAM**

The undersigned, EBX-Neuse I, LLC the Sponsor of the Neu-Con Wetland and Stream Umbrella Mitigation Bank (Buffalo Branch Site) hereby certifies the following:

1. NC Department of Transportation has deposited monies with the Sponsor sufficient to acquire 153.20 Stream Mitigation Credits from the Bank for use on projects in HUC 03020201 of the Neuse River Watershed per Contract #7700002012.
2. The Sponsor has deducted 153.20 Stream Mitigation Credits from the Bank's credit ledger in HUC 03020201 of the Neuse River Watershed.

A copy of the Bank's Credit ledgers reflecting the above transaction are attached to this Certificate.

**EBX-Neuse I, LLC**

By:   
Daniel B. Ramsay, Authorized Agent

Date: 12/02/2020

Copies:  
LeiLani Paugh, NCDOT (electronic)  
Linda Fitzpatrick, NCDOT (electronic)







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

January 28, 2021

Regulatory Division

Action ID No. SAW-2016-02365

Re: Year 2 Monitoring Credit Release associated with the Cane Creek Umbrella Mitigation Bank, Bethel Branch Mitigation Site

Mr. Jeff Keaton  
Wildlands Engineering, Inc.  
312 W Millbrook Road, Suite 225  
Raleigh, North Carolina 27609

Dear Mr. Keaton:

This correspondence is in reference to the Cane Creek Umbrella Mitigation Site, Bethel Branch Mitigation Site, located within the South Fork Cane Creek watershed of the Cape Fear River Catalog Unit (03030002). The site is located at 277 R E Wright Road, near Snow Camp, in Chatham County, North Carolina. The purpose of this letter is to confirm the release of stream and wetland restoration and enhancement credits associated with the Year 2 Monitoring activities for this project.

Pursuant to the Mitigation Banking Instrument (UMBI) entitled, Agreement to Establish the Cane Creek Umbrella Mitigation Bank in the Cape Fear River Basin within the state of North Carolina, approved February 1, 2018; the site-specific Bethel Branch Mitigation Site Final Mitigation Plan (Plan), dated October 2018 and approved November 8, 2018; and the Monitoring Year 2 Report – Bethel Branch Mitigation Site dated December 2020, 10 percent of the mitigation site's total restoration and enhancement credits shall be available for sale provided the Year 2 Monitoring Report demonstrates interim performance standards are being met.

By copy of this correspondence, we confirm that you have satisfied the above requirements for the Year 2 Monitoring credit release, and 520.2 stream mitigation units (SMUs) and 0.314 wetland mitigation units (WMUs) are now available for sale. To date, 2601 SMUs and 1.57 WMUs (50 percent of the total restoration and enhancement credits) have been released for sale.

Please be aware that the Long-Term Maintenance and Monitoring Performance Bond is valid through October 1, 2026. Failure to submit financial assurance prior to the expiration date may lead to a suspension in credit sales.

Thank you for your interest in restoring and protecting waters of the United States. If you have questions regarding this letter, please contact Samantha Dailey, Raleigh Regulatory Field Office at [Samantha.J.Dailey@usace.army.mil](mailto:Samantha.J.Dailey@usace.army.mil) or telephone (919) 554-4884, Extension 22.

Sincerely,

A handwritten signature in blue ink, appearing to read "Todd Tugwell". The signature is stylized with a large, looped "T" and a cursive "Tugwell".

Todd Tugwell  
Mitigation Project Manager  
Regulatory Division

Electronic Copies Furnished:  
NCIRT Distribution List

## Affidavit of Credit Sales

State of North Carolina

County of Mecklenburg

Shawn D. Wilkerson, Manager of Wildlands Holdings IV, LLC, being first duly sworn says that:

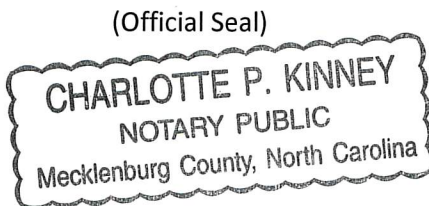
I, Shawn D. Wilkerson, as Manager of Wildlands Holdings IV, LLC, and in my capacity as Manager, do hereby verify that I am authorized to approve the sale of compensatory mitigation credits to the North Carolina Department of Transportation from the Cane Creek Umbrella Mitigation Bank – Bethel Branch Site owned by Wildlands Holdings IV, LLC.

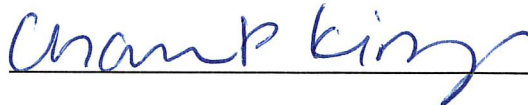
I further verify that on October 23, 2019, Wildlands Holdings IV, LLC sold and transferred 1,560.6 of released Stream Mitigation Units to the North Carolina Department of Transportation.

  
Shawn D. Wilkerson

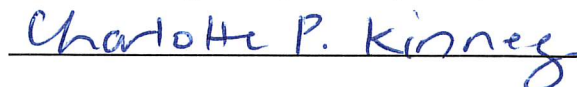
I certify that Shawn D. Wilkerson, Manager of Wildlands Holdings IV, LLC personally appeared before me this day, acknowledging to me that he is Manager of Wildlands Holdings IV, a North Carolina limited liability company and that he, as Manager, being authorized to do so, affirmed the foregoing on behalf of Wildlands Holdings IV, LLC.

Date: 10/23/19





Official Signature of Notary



Notary's printed or typed name

My commission expires: 2/1/21

## Affidavit of Credit Sales

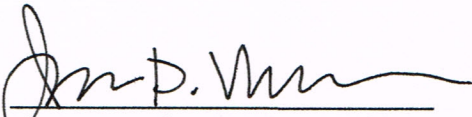
State of North Carolina

County of Mecklenburg

Shawn D. Wilkerson, Manager of Wildlands Holdings IV, LLC, being first duly sworn says that:

I, Shawn D. Wilkerson, as Manager of Wildlands Holdings IV, LLC, and in my capacity as Manager, do hereby verify that I am authorized to approve the sale of compensatory mitigation credits to the North Carolina Department of Transportation from the Cane Creek Umbrella Mitigation Bank – Bethel Branch Site owned by Wildlands Holdings IV, LLC.

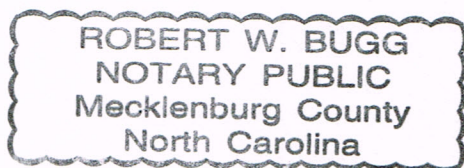
I further verify that on March 23, 2020, Wildlands Holdings IV, LLC sold and transferred 520.2 of released Stream Mitigation Units to the North Carolina Department of Transportation.

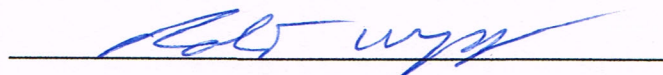
  
Shawn D. Wilkerson

I certify that Shawn D. Wilkerson, Manager of Wildlands Holdings IV, LLC personally appeared before me this day, acknowledging to me that he is Manager of Wildlands Holdings IV, a North Carolina limited liability company and that he, as Manager, being authorized to do so, affirmed the foregoing on behalf of Wildlands Holdings IV, LLC.

Date: 3/30/2020

(Official Seal)



  
Official Signature of Notary

Robert W. Bugg

Notary's printed or typed name

My commission expires: 8-23-21





**MITIGATION CREDIT TRANSFER CERTIFICATE**  
**NEU-CON WETLAND AND STREAM UMBRELLA BANK**

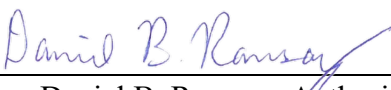
**TO: NORTH CAROLINA INTERAGENCY REVIEW TEAM**

The undersigned, EBX-Neuse I, LLC the Sponsor of the Neu-Con Wetland and Stream Umbrella Mitigation Bank (Bucher Site) hereby certifies the following:

1. NC Department of Transportation has deposited monies with the Sponsor sufficient to acquire 2,053.50 Stream Mitigation Credits from the Bank for use on projects in HUC 03020201 of the Neuse River Watershed per Contract #7700002012.
2. The Sponsor has deducted 2,053.50 Stream Mitigation Credits from the Bank's credit ledger in HUC 03020201 of the Neuse River Watershed.

A copy of the Bank's Credit ledgers reflecting the above transaction are attached to this Certificate.

**EBX-Neuse I, LLC**

By:   
Daniel B. Ramsay, Authorized Agent

Date: 01/18/2021

Copies:  
LeiLani Paugh, NCDOT (electronic)  
Linda Fitzpatrick, NCDOT (electronic)





**MITIGATION CREDIT TRANSFER CERTIFICATE**  
**NEU-CON WETLAND AND STREAM UMBRELLA BANK**

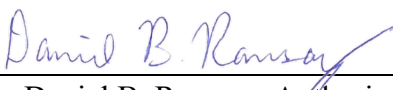
**TO: NORTH CAROLINA INTERAGENCY REVIEW TEAM**

The undersigned, EBX-Neuse I, LLC the Sponsor of the Neu-Con Wetland and Stream Umbrella Mitigation Bank (Cedar Grove Site) hereby certifies the following:

1. NC Department of Transportation has deposited monies with the Sponsor sufficient to acquire 182.97 Stream Mitigation Credits from the Bank for use on projects in HUC 03020201 of the Neuse River Watershed per Contract #7700002012.
2. The Sponsor has deducted 182.97 Stream Mitigation Credits from the Bank's credit ledger in HUC 03020201 of the Neuse River Watershed.

A copy of the Bank's Credit ledgers reflecting the above transaction are attached to this Certificate.

**EBX-Neuse I, LLC**

By:   
Daniel B. Ramsay, Authorized Agent

Date: 12/02/2020

Copies:  
LeiLani Paugh, NCDOT (electronic)  
Linda Fitzpatrick, NCDOT (electronic)







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

November 19, 2020

Regulatory Division

Action ID No. SAW-2016-01990

Re: Year 2 Monitoring Credit Release associated with the Neu-Con Umbrella Mitigation Bank, Stone Creek Mitigation Site

Mr. Brad Breslow  
EBX-Neuse I, LLC  
3600 Glenwood Avenue, Suite 100  
Raleigh, North Carolina 27612

Dear Mr. Breslow:

This correspondence is in reference to the Neu-Con Umbrella Mitigation Bank, Stone Creek Mitigation Site, located southwest of the intersection of Joyner Bridge Road and Rhodes Pond Road, near Four Oaks, in Johnston County, North Carolina; within the Mill Creek watershed in the Upper Neuse Cataloging Unit (03020201). The purpose of this letter is to confirm the release of stream restoration and enhancement credits associated with the Year 2 Monitoring activities for this project.

Pursuant to the Mitigation Banking Instrument (UMBI) entitled, Neu-Con Umbrella Wetland Mitigation and Stream Restoration Bank, approved April 2, 2001 and amended April 10, 2009; the site-specific Stone Creek Final Mitigation Plan dated October 2018 and approved November 9, 2018; and the Stone Creek Mitigation Site Year 2 Monitoring Report dated October 2020, 10 percent of the mitigation site's total restoration and enhancement credits shall be available for sale provided the Year 2 Monitoring Report demonstrates interim performance standards are being met.

By copy of this correspondence, we confirm that you have satisfied the above requirements for the Year 2 Monitoring credit release, and 446.2 stream mitigation units (SMUs) are now available for sale. To date, 2407 SMUs (50 percent of the total restoration and enhancement credits and 100 percent of the total preservation credits) have been released for sale.

Please be aware that the Long-Term Maintenance and Monitoring Performance Bond will expire on October 17, 2021. Failure to submit financial assurance prior to the expiration date may lead to a suspension in credit sales.

Thank you for your interest in restoring and protecting waters of the United States. If you have questions regarding this letter, please contact Samantha Dailey, Raleigh Regulatory Field Office at [Samantha.J.Dailey@usace.army.mil](mailto:Samantha.J.Dailey@usace.army.mil) or telephone (919) 554-4884, Extension 22.

Sincerely,

A handwritten signature in blue ink, appearing to read "Todd Tugwell". The signature is stylized with a large initial "T" and a long, sweeping underline.

Todd Tugwell  
Mitigation Project Manager  
Regulatory Division

Electronic Copies Furnished:  
NCIRT Distribution List



**MITIGATION CREDIT TRANSFER CERTIFICATE**  
**NEU-CON WETLAND AND STREAM UMBRELLA BANK**

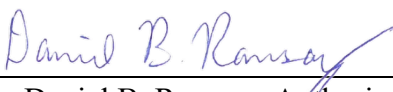
**TO: NORTH CAROLINA INTERAGENCY REVIEW TEAM**

The undersigned, EBX-Neuse I, LLC the Sponsor of the Neu-Con Wetland and Stream Umbrella Mitigation Bank (Stone Creek Site) hereby certifies the following:

1. NC Department of Transportation has deposited monies with the Sponsor sufficient to acquire 135.00 Stream Mitigation Credits from the Bank for use on projects in HUC 03020201 of the Neuse River Watershed per Contract #7700002012.
2. The Sponsor has deducted 135.00 Stream Mitigation Credits from the Bank's credit ledger in HUC 03020201 of the Neuse River Watershed.

A copy of the Bank's Credit ledgers reflecting the above transaction are attached to this Certificate.

**EBX-Neuse I, LLC**

By:   
Daniel B. Ramsay, Authorized Agent

Date: 12/02/2020

Copies:  
LeiLani Paugh, NCDOT (electronic)  
Linda Fitzpatrick, NCDOT (electronic)





**MITIGATION CREDIT TRANSFER CERTIFICATE**  
**NEU-CON WETLAND AND STREAM UMBRELLA BANK**

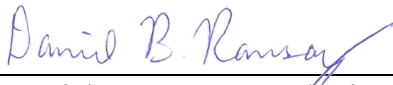
**TO: NORTH CAROLINA INTERAGENCY REVIEW TEAM**

The undersigned, EBX-Neuse I, LLC the Sponsor of the Neu-Con Wetland and Stream Umbrella Mitigation Bank (Uzzle Site) hereby certifies the following:

1. NC Department of Transportation has deposited monies with the Sponsor sufficient to acquire 108.00 Stream Mitigation Credits from the Bank for use on projects in HUC 03020201 of the Neuse River Watershed per Contract #7700002012.
2. The Sponsor has deducted 108.00 Stream Mitigation Credits from the Bank's credit ledger in HUC 03020201 of the Neuse River Watershed.

A copy of the Bank's Credit ledgers reflecting the above transaction are attached to this Certificate.

**EBX-Neuse I, LLC**

By:   
Daniel B. Ramsay, Authorized Agent

Date: 12/02/2020

Copies:  
LeiLani Paugh, NCDOT (electronic)  
Linda Fitzpatrick, NCDOT (electronic)





STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION

ROY COOPER  
GOVERNOR

JAMES H. TROGDON, III  
SECRETARY

February 5, 2020

Ms. Tiffani Bylow  
Restoration Systems, LLC  
1101 Haynes St. Suite 211  
Raleigh, North Carolina

RE: Pancho Stream & Wetland Mitigation Bank Contracts Performance Bond  
Mitigation Credit Agreement Purchase Contracts #7700002153 & #7700002000  
(formerly #6300050227)

Dear Ms. Bylow:

We have received your request for the release in the Contract Performance Bond regarding the above referenced Contracts. We have the signed Credit Release letter and Transfer of Credit Affidavits for all purchased credits and the contracts have been fulfilled. The bond may be released.

Sincerely,

*LeiLani Paugh*

LeiLani Paugh  
Mitigation and Modeling Group Supervisor  
NCDOT EAU





**PANCHO STREAM AND WETLAND MITIGATION BANK  
TRANSFER OF CREDIT AFFIDAVIT**

Permittee: NC DEPARTMENT OF TRANSPORTATION  
Project Name: Transportation Improvement Projects

**Compensatory Mitigation Credits:** 4.482 riparian wetland credits  
**Mitigation Site Debited:** Pancho Stream & Wetland Mitigation Bank

Mitigation Site Info: Located in Wayne County, Neuse River Basin, and Cataloging Unit 03020201 and authorized by the Interagency Review Team (IRT) pursuant to the Pancho Stream & Wetland Mitigation Bank "Mitigation Banking Instrument" (MBI) approved April 12, 2012 (Bank).

**Statement of Mitigation Liability Acceptance:** I, the undersigned, verify that I am authorized to approve mitigation transactions for the Mitigation Sponsor shown below, and I certify that the Sponsor agrees to accept full responsibility for providing the mitigation identified in this document, associated with the USACE Permittee shown. I also verify that released credits, as approved by the USACE, are currently available at the mitigation site identified above.

**Mitigation Sponsor Name:** Restoration Systems, LLC

**Name of Sponsor's Authorized Representative:** John Preyer

  
\_\_\_\_\_  
Signature of Sponsor's Authorized Representative

2/21/2018  
\_\_\_\_\_  
Date of Signature

# Stormwater Management Plan



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



(Version 3.00; Released August 2021)

WBS Element: 34178.3.GV3      TIP/Proj No: I-3306A / W-5707C      County(ies): Orange      Page 1 of 5

General Project Information

|                                 |          |                                                                |             |                   |                        |                                  |                                                                  |           |
|---------------------------------|----------|----------------------------------------------------------------|-------------|-------------------|------------------------|----------------------------------|------------------------------------------------------------------|-----------|
| WBS Element:                    |          | 34178.3.GV3                                                    | TIP Number: | I-3306A / W-5707C | Project Type:          | Roadway Widening                 | Date:                                                            | 4/20/2022 |
| NCDOT Contact:                  |          | Ron McCollum, PE                                               |             |                   | Contractor / Designer: | HDR Engineering / James Rice, PE |                                                                  |           |
|                                 | Address: | 1000 Birch Ridge Drive<br>Raleigh, NC 27610                    |             |                   |                        | Address:                         | 555 Fayetteville Street, Suite 900<br>Raleigh, NC 27601          |           |
|                                 | Phone:   | (919) 707-6616                                                 |             |                   |                        | Phone:                           | (919) 232-6621                                                   |           |
|                                 | Email:   | <a href="mailto:remccollum@ncdot.gov">remccollum@ncdot.gov</a> |             |                   |                        | Email:                           | <a href="mailto:james.rice@hdrinc.com">james.rice@hdrinc.com</a> |           |
| City/Town:                      |          | Hillsborough                                                   |             |                   | County(ies):           | Orange                           |                                                                  |           |
| River Basin(s):                 |          | Neuse                                                          | Cape Fear   |                   | CAMA County?           | No                               |                                                                  |           |
| Wetlands within Project Limits? |          | Yes                                                            |             |                   |                        |                                  |                                                                  |           |

Project Description

|                                        |                                                                                                                                                                            |                       |                   |                                                                                                                                                                           |           |       |            |
|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-------|------------|
| Project Length (lin. miles or feet):   | 11.55 miles                                                                                                                                                                | Surrounding Land Use: | Low density urban |                                                                                                                                                                           |           |       |            |
|                                        | Proposed Project                                                                                                                                                           |                       |                   | Existing Site                                                                                                                                                             |           |       |            |
| Project Built-Up Area (ac.)            | 202.0                                                                                                                                                                      | ac.                   |                   | 140.0                                                                                                                                                                     | ac.       |       |            |
| Typical Cross Section Description:     | 6 lane divided highway with a 22' variable median: (2) 14 foot outside paved shoulders, (6) 12 foot travel lanes, (2) 11 foot paved median shoulders - total width of 122' |                       |                   | 4 lane divided highway with a 38 foot grass median: (2) 5 foot outside paved shoulders, (4) 12 foot travel lanes, (2) 4 foot paved median shoulders - total width of 104' |           |       |            |
| Annual Avg Daily Traffic (veh/hr/day): | Design/Future:                                                                                                                                                             | 88400                 | Year:             | 2040                                                                                                                                                                      | Existing: | 75030 | Year: 2021 |



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



(Version 3.00; Released August 2021)

General Project Narrative:  
(Description of Minimization of Water  
Quality Impacts)

**Project Description:** The proposed project (I-3306A) widens I-40 from I-85 in Orange County to the Durham County line with interchange modifications, including the I-40 / NC-86 interchange. Neuse River Basin and Jordan Lake buffer rules in effect. Jurisdictional streams, ponds and wetlands have been identified within project limits. Major receiving streams along the project are Rocky Run, Cates Creek, New Hope Creek, Old Field Creek, Mountain Creek, Stony Creek, Cedar Fork, and Unnamed Trib. to Eno River. Box culverts and circular pipe culverts are used to convey all jurisdictional stream crossings through 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 rock plated 1.5:1 slopes from Sta 65+00 to Sta 70+00 -YRPD- and headwall extension to minimize impacts to Rocky Run. Ditches and pipes that outlet adjacent to wetlands have been designed to have non-erosive velocities.

**Stormwater BMP Measures:**



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



(Version 3.00; Released August 2021)

WBS Element: 34178.3.GV3      TIP/Proj No.: I-3306A / W-5707C      County(ies): Orange      Page 2 of 5

General Project Information

Waterbody Information

|                                                                  |                              |                                                                  |                                 |                                                                                                      |       |
|------------------------------------------------------------------|------------------------------|------------------------------------------------------------------|---------------------------------|------------------------------------------------------------------------------------------------------|-------|
| Surface Water Body (1):                                          | Rocky Run                    |                                                                  | NCDWR Stream Index No.:         | 27-2-6-2-(2)                                                                                         |       |
| NCDWR Surface Water Classification for Water Body                | Primary Classification:      |                                                                  | Water Supply II (WS-II)         |                                                                                                      |       |
|                                                                  | Supplemental Classification: |                                                                  | High Quality Waters (HQP) (NSW) |                                                                                                      |       |
| Other Stream Classification:                                     |                              |                                                                  |                                 |                                                                                                      |       |
| Impairments:                                                     | None                         |                                                                  |                                 |                                                                                                      |       |
| Aquatic T&E Species?                                             | No                           | Comments:                                                        |                                 |                                                                                                      |       |
| NRTR Stream ID:                                                  | Rocky Run                    |                                                                  |                                 | 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 (2):                                          | Cates Creek                  |                                                                  | NCDWR Stream Index No.:         | 27-2-8                                                                                               |       |
| NCDWR Surface Water Classification for Water Body                | Primary Classification:      |                                                                  | Water Supply V (WS-V) Class C   |                                                                                                      |       |
|                                                                  | Supplemental Classification: |                                                                  | Nutrient Sensitive Waters (NSW) |                                                                                                      |       |
| Other Stream Classification:                                     |                              |                                                                  |                                 |                                                                                                      |       |
| Impairments:                                                     | None                         |                                                                  |                                 |                                                                                                      |       |
| Aquatic T&E Species?                                             | No                           | Comments:                                                        |                                 |                                                                                                      |       |
| NRTR Stream ID:                                                  | Cates Creek                  |                                                                  |                                 | 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):                                          | UT to Eno River              |                                                                  | NCDWR Stream Index No.:         | 27-2-(7)                                                                                             |       |
| NCDWR Surface Water Classification for Water Body                | Primary Classification:      |                                                                  | Class C                         |                                                                                                      |       |
|                                                                  | Supplemental Classification: |                                                                  | Nutrient Sensitive Waters (NSW) |                                                                                                      |       |
| Other Stream Classification:                                     |                              |                                                                  |                                 |                                                                                                      |       |
| Impairments:                                                     | None                         |                                                                  |                                 |                                                                                                      |       |
| Aquatic T&E Species?                                             | No                           | Comments:                                                        |                                 |                                                                                                      |       |
| NRTR Stream ID:                                                  | SA, SB, SC, SXX              |                                                                  |                                 | 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 3.00; Released August 2021)

WBS Element: 34178.3.GV3      TIP No.: I-3306A / W-5707C      County(ies): Orange      Page 3 of 5

Additional Waterbody Information

|                                                                  |                                                                                                                       |                                                                  |                                 |                                                                                                      |     |
|------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|---------------------------------|------------------------------------------------------------------------------------------------------|-----|
| Surface Water Body (4):                                          | UT to Cates Creek                                                                                                     |                                                                  | NCDWR Stream Index No.:         | 27-2-8                                                                                               |     |
| NCDWR Surface Water Classification for Water Body                | Primary Classification:                                                                                               |                                                                  | Class C                         |                                                                                                      |     |
|                                                                  | Supplemental Classification:                                                                                          |                                                                  | Nutrient Sensitive Waters (NSW) |                                                                                                      |     |
| Other Stream Classification:                                     |                                                                                                                       |                                                                  |                                 |                                                                                                      |     |
| Impairments:                                                     | None                                                                                                                  |                                                                  |                                 |                                                                                                      |     |
| Aquatic T&E Species?                                             | No                                                                                                                    | Comments:                                                        |                                 |                                                                                                      |     |
| NRTR Stream ID:                                                  | SD, SE, SF, SG                                                                                                        |                                                                  | 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):                                          | UT to Sevenmile Creek                                                                                                 |                                                                  | NCDWR Stream Index No.:         | 27-2-6-(1.5)                                                                                         |     |
| NCDWR Surface Water Classification for Water Body                | Primary Classification:                                                                                               |                                                                  | Water Supply II (WS-II)         |                                                                                                      |     |
|                                                                  | Supplemental Classification:                                                                                          |                                                                  | High Quality Waters (HQP) (NSW) |                                                                                                      |     |
| Other Stream Classification:                                     |                                                                                                                       |                                                                  |                                 |                                                                                                      |     |
| Impairments:                                                     | None                                                                                                                  |                                                                  |                                 |                                                                                                      |     |
| Aquatic T&E Species?                                             | No                                                                                                                    | Comments:                                                        |                                 |                                                                                                      |     |
| NRTR Stream ID:                                                  | SH                                                                                                                    |                                                                  | 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 (6):                                          | UT to New Hope Creek                                                                                                  |                                                                  | NCDWR Stream Index No.:         | 16-41-1-(0.5)                                                                                        |     |
| NCDWR Surface Water Classification for Water Body                | Primary Classification:                                                                                               |                                                                  | Water Supply V (WS-V)           |                                                                                                      |     |
|                                                                  | Supplemental Classification:                                                                                          |                                                                  | Nutrient Sensitive Waters (NSW) |                                                                                                      |     |
| Other Stream Classification:                                     |                                                                                                                       |                                                                  |                                 |                                                                                                      |     |
| Impairments:                                                     | None                                                                                                                  |                                                                  |                                 |                                                                                                      |     |
| Aquatic T&E Species?                                             | No                                                                                                                    | Comments:                                                        |                                 |                                                                                                      |     |
| NRTR Stream ID:                                                  | SI, SJ, SK, SL, SM, SN, SO, SR, SS, ST, SU, SBB, SEE, SFF, SGG, SHH, SII, SJJ, SKK, SLL, SMM, SNN, SOO, SRR, SYY, SZZ |                                                                  | 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):                                          | New Hope Creek                                                                                                        |                                                                  | NCDWR Stream Index No.:         | 16-41-1-(0.5)                                                                                        |     |
| NCDWR Surface Water Classification for Water Body                | Primary Classification:                                                                                               |                                                                  | Water Supply V (WS-V)           |                                                                                                      |     |
|                                                                  | Supplemental Classification:                                                                                          |                                                                  | Nutrient Sensitive Waters (NSW) |                                                                                                      |     |

|                                                                                   |                |                                                                                                                                                                  |     |  |                                                                                                      |  |       |                                                                                     |
|-----------------------------------------------------------------------------------|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|--|------------------------------------------------------------------------------------------------------|--|-------|-------------------------------------------------------------------------------------|
|  |                | <div>North Carolina Department of Transportation</div> <div>Highway Stormwater Program</div> <div>STORMWATER MANAGEMENT PLAN</div> <div>FOR NCDOT PROJECTS</div> |     |  |                                                                                                      |  |       |  |
| (Version 3.00; Released August 2021)                                              |                |                                                                                                                                                                  |     |  |                                                                                                      |  |       |                                                                                     |
| Other Stream Classification:                                                      |                |                                                                                                                                                                  |     |  |                                                                                                      |  |       |                                                                                     |
| Impairments:                                                                      | None           |                                                                                                                                                                  |     |  |                                                                                                      |  |       |                                                                                     |
| Aquatic T&E Species?                                                              | No             | Comments:                                                                                                                                                        |     |  |                                                                                                      |  |       |                                                                                     |
| NRTR Stream ID:                                                                   | New Hope Creek |                                                                                                                                                                  |     |  | 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)                  |                |                                                                                                                                                                  |     |  |                                                                                                      |  |       |                                                                                     |





**(Version 3.00; Released August 2021)**

**WBS Element: 34178.3.GV3**

**TIP/Proj No.: I-3306A / W-5707C**

**County(ies):** Orange

Page 5 of 5

## Swale

| Sheet No. | Line  | Station | Location (LT,RT,CL) | Latitude | Longitude | Surface Water Body       | Base Width (ft) | Front Slope (H:1) | Back Slope (H:1) | Drainage Area (ac) | Recommended Treatm't Length (ft) | Actual Length (ft) | Longitudinal Slope (%) | Q2 (cfs) | V2 (fps) | Q10 (cfs) | V10 (fps) | Rock Checks Used | BMP Associated w/ Buffer Rules? |
|-----------|-------|---------|---------------------|----------|-----------|--------------------------|-----------------|-------------------|------------------|--------------------|----------------------------------|--------------------|------------------------|----------|----------|-----------|-----------|------------------|---------------------------------|
| 6         | YFLYA | 30+50   | RT                  | 36.05772 | -79.12464 | (3)UT to Eno River       | 0.0             | 6.0               | 6.0              | 0.4                | 38                               | 350                | 2.80%                  | 0.7      | 1.8      | 0.9       | 1.9       |                  | Yes                             |
| 10        | L     | 41+28   | RT                  | 36.04385 | -79.11404 | (4)UT to Cates Creek     | 0.0             | 6.0               | 4.0              | 0.1                | 13                               | 105                | 2.45%                  | 0.4      | 1.6      | 0.5       | 1.7       |                  | Yes                             |
| 12        | -L-   | 72+00   | RT                  | 36.03804 | -79.10658 | (4)UT to Cates Creek     | 0.0             | 6.0               | 4.0              | 0.4                | 36                               | 128                | 1.55%                  | 0.5      | 1.4      | 0.6       | 1.5       |                  | Yes                             |
| 13        | -L-   | 82+41   | RT                  | 36.0376  | -79.10335 | (4)UT to Cates Creek     | 0.0             | 6.0               | 6.0              | 0.2                | 20                               | 141                | 0.88%                  | 0.6      | 1.1      | 0.8       | 1.2       |                  | Yes                             |
| 15        | -L-   | 115+50  | LT                  | 36.0347  | -79.09302 | (6)UT to New Hope        | 0.0             | 6.0               | 6.0              | 0.4                | 37                               | 150                | 0.31%                  | 0.5      | 0.7      | 0.6       | 0.8       |                  | Yes                             |
| 15        | -L-   | 116+50  | LT                  | 36.03433 | -79.09261 | (6)UT to New Hope        | 0.0             | 6.0               | 6.0              | 0.5                | 51                               | 100                | 0.84%                  | 0.7      | 1.1      | 0.9       | 1.2       |                  | Yes                             |
| 16        | -L-   | 131+22  | RT                  | 36.03028 | -79.09042 | (6)UT to New Hope        | 0.0             | 6.0               | 4.0              | 0.3                | 34                               | 128                | 1.09%                  | 1.0      | 1.4      | 1.3       | 1.5       |                  | Yes                             |
| 20        | -L-   | 184+69  | RT                  | 36.0158  | -79.08714 | (6)UT to New Hope        | 0.0             | 6.0               | 4.0              | 0.7                | 69                               | 428                | 0.82%                  | 0.9      | 1.3      | 1.2       | 1.4       |                  | Yes                             |
| 20        | -L-   | 192+30  | RT                  | 36.01425 | -79.08668 | (6)UT to New Hope        | 0.0             | 6.0               | 4.0              | 0.5                | 50                               | 333                | 0.75%                  | 0.7      | 1.2      | 0.9       | 1.3       |                  | Yes                             |
| 26        | -L-   | 281+75  | LT                  | 35.99181 | -79.07522 | (6)UT to Old Field       | 0.0             | 4.0               | 6.0              | 1.3                | 126                              | 225                | 0.48%                  | 3.6      | 1.5      | 4.6       | 1.5       |                  | Yes                             |
| 26        | -L-   | 284+00  | LT                  | 35.99124 | -79.07524 | (6)UT to Old Field       | 0.0             | 4.0               | 6.0              | 1.3                | 126                              | 400                | 0.65%                  | 3.6      | 1.6      | 4.6       | 1.7       |                  | Yes                             |
| 26        | -L-   | 287+50  | RT                  | 35.98979 | -79.07584 | (6)UT to Old Field Creek | 0.0             | 6.0               | 4.0              | 0.6                | 58                               | 294                | 0.92%                  | 1.1      | 1.4      | 1.4       | 1.4       |                  | Yes                             |
| 29        | -L-   | 330+86  | RT                  | 35.97812 | -79.07095 | (9)Old Field Creek       | 0.0             | 6.0               | 4.0              | 1.3                | 134                              | 884                | 0.76%                  | 3.9      | 1.8      | 5.0       | 1.9       |                  | Yes                             |
| 29        | L     | 335+02  | LT                  | 35.97772 | -79.07007 | (9)Old Field Creek       | 0.0             | 6.0               | 6.0              | 1.1                | 113                              | 579                | 0.62%                  | 3.6      | 1.5      | 4.6       | 1.6       |                  | Yes                             |
| 30        | -L-   | 347+03  | RT                  | 35.97451 | -79.06845 | (9)Old Field Creek       | 0.0             | 6.0               | 6.0              | 0.4                | 35                               | 544                | 0.84%                  | 0.5      | 1.0      | 0.6       | 1.1       |                  | Yes                             |
| 31        | L     | 368+47  | LT                  | 35.97135 | -79.06231 | (6)UT to Old Field       | 0.0             | 6.0               | 4.0              | 1.1                | 113                              | 533                | 0.70%                  | 2.6      | 1.5      | 3.3       | 1.6       |                  | Yes                             |
| 31        | L     | 373+80  | LT                  | 35.97063 | -79.06059 | (6)UT to Old Field       | 0.0             | 6.0               | 4.0              | 0.7                | 68                               | 455                | 0.65%                  | 1.6      | 1.3      | 2.0       | 1.4       |                  | Yes                             |
| 31        | L     | 363+53  | RT                  | 35.97145 | -79.06364 | (6)UT to Old Field       | 0.0             | 6.0               | 4.0              | 1.0                | 95                               | 434                | 0.93%                  | 1.7      | 1.5      | 2.2       | 1.6       |                  | Yes                             |
| 31        | L     | 374+12  | RT                  | 35.9703  | -79.06093 | (6)UT to Old Field       | 0.0             | 6.0               | 4.0              | 2.1                | 209                              | 687                | 0.59%                  | 3.4      | 1.5      | 4.3       | 1.6       |                  | Yes                             |
| 31        | Y9RPB | 24+66   | LT                  | 35.97472 | -79.06573 | (6)UT to Old Field       | 0.0             | 4.0               | 6.0              | 0.6                | 57                               | 334                | 1.97%                  | 1.3      | 1.9      | 1.7       | 2.0       |                  | Yes                             |
| 31        | Y9A   | 23+76   | RT                  | 35.97216 | -79.06159 | (6)UT to Old Field       | 0.0             | 6.0               | 4.0              | 0.4                | 40                               | 326                | 0.58%                  | 0.7      | 1.0      | 0.9       | 1.1       |                  | Yes                             |
| 31        | Y9RPC | 22+37   | RT                  | 35.96978 | -79.06262 | (6)UT to Old Field       | 0.0             | 6.0               | 4.0              | 0.5                | 50                               | 316                | 2.46%                  | 0.7      | 1.8      | 0.9       | 1.9       |                  | Yes                             |
| 31        | Y9    | 26+75   | LT                  | 35.97062 | -79.06257 | (6)UT to Old Field       | 0.0             | 6.0               | 6.0              | 0.5                | 51                               | 375                | 1.85%                  | 0.7      | 1.5      | 0.9       | 1.6       |                  | Yes                             |
| 32        | L     | 378+60  | LT                  | 35.9703  | -79.05953 | (6)UT to Old Field       | 2.0             | 4.0               | 4.0              | 0.7                | 66                               | 75                 | 0.49%                  | 1.5      | 1.0      | 1.9       | 1.1       |                  | Yes                             |
| 32        | L     | 379+28  | LT                  | 35.97001 | -79.05902 | (6)UT to Old Field       | 0.0             | 6.0               | 4.0              | 0.5                | 52                               | 305                | 0.69%                  | 1.2      | 1.3      | 1.5       | 1.3       |                  | Yes                             |
| 32        | L     | 385+62  | LT                  | 35.96929 | -79.05705 | (6)UT to Old Field       | 0.0             | 6.0               | 6.0              | 0.5                | 48                               | 260                | 0.66%                  | 1.1      | 1.2      | 1.4       | 1.2       |                  | Yes                             |
| 32        | L     | 388+48  | LT                  | 35.96902 | -79.05629 | (6)UT to Old Field       | 0.0             | 6.0               | 6.0              | 1.4                | 135                              | 663                | 0.65%                  | 3.1      | 1.5      | 3.9       | 1.6       |                  | Yes                             |
| 33        | L     | 395+39  | LT                  | 35.96826 | -79.05405 | (6)UT to Old Field       | 0.0             | 6.0               | 4.0              | 0.5                | 49                               | 282                | 0.66%                  | 1.1      | 1.2      | 1.4       | 1.3       |                  | Yes                             |
| 33        | L     | 397+07  | RT                  | 35.96768 | -79.05356 | (6)UT to Old Field       | 0.0             | 6.0               | 4.0              | 1.3                | 128                              | 893                | 1.03%                  | 1.8      | 1.6      | 2.2       | 1.7       |                  | Yes                             |
| 34        | L     | 406+00  | RT                  | 35.9671  | -79.0511  | (6)UT to Old Field       | 0.0             | 6.0               | 4.0              | 0.3                | 30                               | 350                | 0.66%                  | 0.4      | 0.9      | 0.5       | 1.0       |                  | Yes                             |
| 34        | L     | 409+80  | RT                  | 35.96698 | -79.04979 | (6)UT to Old Field       | 0.0             | 6.0               | 4.0              | 0.9                | 91                               | 1040               | 0.46%                  | 1.3      | 1.1      | 1.6       | 1.2       |                  | Yes                             |
| 35        | L     | 424+30  | RT                  | 35.96782 | -79.04496 | (6)UT to Old Field       | 0.0             | 6.0               | 4.0              | 0.4                | 41                               | 410                | 0.53%                  | 0.6      | 0.9      | 0.7       | 1.0       |                  | Yes                             |
| 35        | L     | 428+50  | RT                  | 35.96831 | -79.0437  | (6)UT to Old Field Creek | 0.0             | 6.0               | 4.0              | 0.6                | 62                               | 420                | 1.10%                  | 1.7      | 1.6      | 2.2       | 1.7       |                  | Yes                             |
|           |       |         |                     |          |           |                          |                 |                   |                  |                    |                                  |                    |                        |          |          |           |           |                  |                                 |
|           |       |         |                     |          |           |                          |                 |                   |                  |                    |                                  |                    |                        |          |          |           |           |                  |                                 |
|           |       |         |                     |          |           |                          |                 |                   |                  |                    |                                  |                    |                        |          |          |           |           |                  |                                 |
|           |       |         |                     |          |           |                          |                 |                   |                  |                    |                                  |                    |                        |          |          |           |           |                  |                                 |
|           |       |         |                     |          |           |                          |                 |                   |                  |                    |                                  |                    |                        |          |          |           |           |                  |                                 |
|           |       |         |                     |          |           |                          |                 |                   |                  |                    |                                  |                    |                        |          |          |           |           |                  |                                 |
|           |       |         |                     |          |           |                          |                 |                   |                  |                    |                                  |                    |                        |          |          |           |           |                  |                                 |
|           |       |         |                     |          |           |                          |                 |                   |                  |                    |                                  |                    |                        |          |          |           |           |                  |                                 |
|           |       |         |                     |          |           |                          |                 |                   |                  |                    |                                  |                    |                        |          |          |           |           |                  |                                 |
|           |       |         |                     |          |           |                          |                 |                   |                  |                    |                                  |                    |                        |          |          |           |           |                  |                                 |
|           |       |         |                     |          |           |                          |                 |                   |                  |                    |                                  |                    |                        |          |          |           |           |                  |                                 |
|           |       |         |                     |          |           |                          |                 |                   |                  |                    |                                  |                    |                        |          |          |           |           |                  |                                 |
|           |       |         |                     |          |           |                          |                 |                   |                  |                    |                                  |                    |                        |          |          |           |           |                  |                                 |
|           |       |         |                     |          |           |                          |                 |                   |                  |                    |                                  |                    |                        |          |          |           |           |                  |                                 |
|           |       |         |                     |          |           |                          |                 |                   |                  |                    |                                  |                    |                        |          |          |           |           |                  |                                 |
|           |       |         |                     |          |           |                          |                 |                   |                  |                    |                                  |                    |                        |          |          |           |           |                  |                                 |
|           |       |         |                     |          |           |                          |                 |                   |                  |                    |                                  |                    |                        |          |          |           |           |                  |                                 |
|           |       |         |                     |          |           |                          |                 |                   |                  |                    |                                  |                    |                        |          |          |           |           |                  |                                 |
|           |       |         |                     |          |           |                          |                 |                   |                  |                    |                                  |                    |                        |          |          |           |           |                  |                                 |
|           |       |         |                     |          |           |                          |                 |                   |                  |                    |                                  |                    |                        |          |          |           |           |                  |                                 |
|           |       |         |                     |          |           |                          |                 |                   |                  |                    |                                  |                    |                        |          |          |           |           |                  |                                 |
|           |       |         |                     |          |           |                          |                 |                   |                  |                    |                                  |                    |                        |          |          |           |           |                  |                                 |
|           |       |         |                     |          |           |                          |                 |                   |                  |                    |                                  |                    |                        |          |          |           |           |                  |                                 |
|           |       |         |                     |          |           |                          |                 |                   |                  |                    |                                  |                    |                        |          |          |           |           |                  |                                 |
|           |       |         |                     |          |           |                          |                 |                   |                  |                    |                                  |                    |                        |          |          |           |           |                  |                                 |
|           |       |         |                     |          |           |                          |                 |                   |                  |                    |                                  | </                 |                        |          |          |           |           |                  |                                 |

### Additional Comments

Steep terrain on the outside limited the number of ditches that met grass swale credit. This rolling steep terrain dictated the roadway profile so many of the proposed roadway grades were too steep to achieve grass swale credit. During design, the velocity was monitored to see if grades could be flattened to meet grass swale criteria. With the loss of the median ditch due to the widening, we looked into a pervious pavement or some other alternative to provide treatment. At this time, additional pavement options are not available.





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



(Version 3.00; Released August 2021)

WBS Element: 34178.3.GV3      TIP No.: I-3306A / W-5707C      County(ies): Orange      Page 4 of 5

Additional Waterbody Information

|                                                                  |                                             |                                                                  |                                 |                                                                                                      |       |
|------------------------------------------------------------------|---------------------------------------------|------------------------------------------------------------------|---------------------------------|------------------------------------------------------------------------------------------------------|-------|
| Surface Water Body (8):                                          | UT to Old Field Creek                       |                                                                  | NCDWR Stream Index No.:         | 16-41-1-7                                                                                            |       |
| NCDWR Surface Water Classification for Water Body                | Primary Classification:                     |                                                                  | Water Supply V (WS-V)           |                                                                                                      |       |
|                                                                  | Supplemental Classification:                |                                                                  | Nutrient Sensitive Waters (NSW) |                                                                                                      |       |
| Other Stream Classification:                                     |                                             |                                                                  |                                 |                                                                                                      |       |
| Impairments:                                                     | None                                        |                                                                  |                                 |                                                                                                      |       |
| Aquatic T&E Species?                                             | No                                          | Comments:                                                        |                                 |                                                                                                      |       |
| NRTR Stream ID:                                                  | SV, SW, SX, SY, SZ, SAA, SCC, SDD, STT, SUU |                                                                  |                                 | 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):                                          | Old Field Creek                             |                                                                  | NCDWR Stream Index No.:         | 16-41-1-7                                                                                            |       |
| NCDWR Surface Water Classification for Water Body                | Primary Classification:                     |                                                                  | Water Supply V (WS-V)           |                                                                                                      |       |
|                                                                  | Supplemental Classification:                |                                                                  | Nutrient Sensitive Waters (NSW) |                                                                                                      |       |
| Other Stream Classification:                                     |                                             |                                                                  |                                 |                                                                                                      |       |
| Impairments:                                                     | None                                        |                                                                  |                                 |                                                                                                      |       |
| Aquatic T&E Species?                                             | No                                          | Comments:                                                        |                                 |                                                                                                      |       |
| NRTR Stream ID:                                                  | Old Field Creek                             |                                                                  |                                 | 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 (10):                                         | Sevenmile Creek                             |                                                                  | NCDWR Stream Index No.:         | 27-2-6-(1.5)                                                                                         |       |
| NCDWR Surface Water Classification for Water Body                | Primary Classification:                     |                                                                  | Water Supply II (WS-II)         |                                                                                                      |       |
|                                                                  | Supplemental Classification:                |                                                                  | High Quality Waters (Hqw) (NSW) |                                                                                                      |       |
| Other Stream Classification:                                     |                                             |                                                                  |                                 |                                                                                                      |       |
| Impairments:                                                     | None                                        |                                                                  |                                 |                                                                                                      |       |
| Aquatic T&E Species?                                             | No                                          | Comments:                                                        |                                 |                                                                                                      |       |
| NRTR Stream ID:                                                  | Sevenmile Creek                             |                                                                  |                                 | 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) |                                             |                                                                  |                                 |                                                                                                      |       |

# Permit Drawings



North Carolina Department of Transportation  
Highway Stormwater Program  
STORMWATER MANAGEMENT PLAN



(Version 3.00; Released August 2021)

FOR NCDOT PROJECTS

|                                                                                      |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |                                                                                                                                                                           |  |                                                         |  |
|--------------------------------------------------------------------------------------|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|---------------------------------------------------------|--|
| WBS Element: 34178.3.GV3                                                             |  | TIP/Proj No: I-3306A / W-5707C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  | County(ies): Orange                                                                                                                                                       |  | Page 1 of 7                                             |  |
| General Project Information                                                          |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |                                                                                                                                                                           |  |                                                         |  |
| WBS Element:                                                                         |  | 34178.3.GV3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  | TIP Number:                                                                                                                                                               |  | I-3306A / W-5707C                                       |  |
| NCDOT Contact:                                                                       |  | Ron McCollum, PE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  | Contractor / Designer:                                                                                                                                                    |  | HDR Engineering / James Rice, PE                        |  |
| Address:                                                                             |  | 1000 Birch Ridge Drive<br>Raleigh, NC 27610                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  | Address:                                                                                                                                                                  |  | 555 Fayetteville Street, Suite 900<br>Raleigh, NC 27601 |  |
| Phone:                                                                               |  | (919) 707-6616                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  | Phone:                                                                                                                                                                    |  | (919) 232-6621                                          |  |
| Email:                                                                               |  | remccollum@ncdot.gov                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |  | Email:                                                                                                                                                                    |  | james.rice@hdrinc.com                                   |  |
| City/Town:                                                                           |  | Hillsborough                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  | County(ies):                                                                                                                                                              |  | Orange                                                  |  |
| River Basin(s):                                                                      |  | Neuse                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |  | Cape Fear                                                                                                                                                                 |  | CAMA County?                                            |  |
| Wetlands within Project Limits?                                                      |  | Yes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |  | No                                                                                                                                                                        |  |                                                         |  |
| Project Description                                                                  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |                                                                                                                                                                           |  |                                                         |  |
| Project Length (lin. miles or feet):                                                 |  | 11.40 miles                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |  | Surrounding Land Use:                                                                                                                                                     |  | Low density urban and rural residential                 |  |
|                                                                                      |  | Proposed Project                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |  | Existing Site                                                                                                                                                             |  |                                                         |  |
| Project Built-Up Area (ac.)                                                          |  | 202.0 ac.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |  | 140.0 ac.                                                                                                                                                                 |  |                                                         |  |
| Typical Cross Section Description:                                                   |  | 6 lane divided highway with a 22' variable median: (2) 14 foot outside paved shoulders, (6) 12 foot travel lanes, (2) 11 foot paved median shoulders - total width of 122'                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |  | 4 lane divided highway with a 38 foot grass median: (2) 5 foot outside paved shoulders, (4) 12 foot travel lanes, (2) 4 foot paved median shoulders - total width of 104' |  |                                                         |  |
| Annual Avg Daily Traffic (veh/hr/day):                                               |  | Design/Future: 106,000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |  | Year: 2040                                                                                                                                                                |  | Existing: 68,200                                        |  |
| General Project Narrative:<br>(Description of Minimization of Water Quality Impacts) |  | Project Description:<br>The proposed project (I-3306A) widens I-40 from I-85 in Orange County to the Durham County line with four interchange modifications, including the I-40 / NC-86 interchange. Neuse River Basin and Jordan Lake buffer rules apply to the project. Jurisdictional streams, ponds and wetlands have been identified within project limits. Major receiving streams along the project are Rocky Run, Cates Creek, New Hope Creek, Old Field Creek, and Unnamed Tributary to Eno River. Box culverts and circular pipe culverts are used to convey all jurisdictional stream crossings through the project.<br><br>Impact Minimization Efforts:<br>The Design-Build Team (DBT) utilized guardrail with 2:1 slopes were used throughout the project to minimize impacts to streams and wetlands. Ditches and pipes that outlet adjacent to wetlands have been designed to have non-erosive velocities and rip rap pads will be used to dissipate energy and help provide diffused flow. There are no bridge deck drains that directly discharge storm water into any receiving waters. The permanent drainage easement (PDE) will be set to have as little impacts as possible.<br><br>Impact minimization efforts started with the DBT proposal plans. The DBT plans saw significant impact reductions compared to the preliminary plans by utilizing 1.5:1 rock plated fill slopes at seven locations through the project. Steepening the slopes at four of those locations eliminated all potential impacts with roadway fill. The seven sites are summarized below:<br>•-YRPD- 65+00 to 70+00 LT (Site 1) rock plated slopes and a proposed headwall extension reduced roadway fill impacts to Rocky Run and wetlands WA.<br>•-Y2RPB- 16+00 to 17+00 LT eliminates culvert extension and approximately 70 LF of roadway fill impacts to stream SF.<br>•-Y2RPC- 10+00 to 11+50 RT eliminates approximately 40 LF of roadway fill impacts to stream SF. Removes all impacts.<br>•-L- 125+00 to 128+00 RT (Site 9) reduces approximately 40 LF of impacts to stream SJ and SK and over 6,000 sf buffer impacts associated with roadway fill.<br>•-L- 193+50 to 195+50 LT (Site 14) eliminates more than 230 LF of channel change impacts to stream SN and approximately 15,000 sf of buffer impacts associated with roadway fill and channel change.<br>•-Y9RPB- 13+50 to 17+00 LT (Site 21) rock plated slopes and a proposed headwall extension reduced 18 LF of roadway fill impacts to Old Field Creek and wetlands WS. Design also avoids impacts to Duke Energy facilities.<br>•-L- 507+00 to 508+50 LT (Site 30) reduces impacts to Stream SEE.<br><br>(Project Narrative Continues on page 2) |  |                                                                                                                                                                           |  |                                                         |  |



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



(Version 3.00; Released August 2021)

WBS Element: 34178.3.GV3 TIP No.: I-3306A / W-5707C County(ies): Orange Page 2 of 7

Additional General Project Information

General Project Narrative:  
(Description of Minimization of Water  
Quality Impacts)

The DBT also proposed a Value Engineering Study (VE Study) to NCDOT Hydraulics Unit and NCDOT Design Build Unit that examined five existing major crossings looking at several alternative pipe designs. Through this VE Study process the DBT was able to eliminate three proposed supplemental pipes and reduced a dual pipe crossing to a single pipe crossing. Removing the three crossing eliminates all stream impacts associated with bank stabilization and constructing the flood benches on the upstream and downstream banks.

The VE Study impacts are summarized below:

- YFLYA- 50+00 Reduce proposed crossing from 2@60" to 1@84" along steam SA.
- L- 61+50 Eliminated 72" supplemental pipe along Cates Creek. Removes all impacts.
- L- 91+30 Eliminated 72" supplemental pipe along stream SF. Removes all impacts.
- L- 343+00 (Site 20) Eliminated 84" supplemental pipe along Old Field Creek.

The DBT reviewed potential impacts associated with trenchless pipe installation bore pits for each of the proposed cross pipes. At each site, the DBT goals was to avoid impacts to wetlands. There are three sites that wetlands are impacted by bore pits are Site 3, Site 7, and Site 16. The bore pit impacts are accounted for as Mech Clearing and plan to use a native wetland seed mix when being restored.

The DBT field investigation efforts have also identified many locations at existing culvert and other jurisdiction features that currently have existing rip rap on banks and/or in the channel. Based on existing stream conditions, these locations may be reviewed for to require a lower mitigation ratio in areas the proposed design calls to utilizes rip rap bank stabilization or stream bed protection in areas of existing rip rap.

Stormwater BMP Measures:

The DBT has taken an approach to eliminate as many direct discharges as possible from the existing conditions by rerouting the drainage systems. The design removes 34 existing direct discharge outlets that were inside the buffer zones to locations outside the buffer zones. The design attempts to achieve grass swale credit where possible. The DBT has flattened ditches where possible to keep them as grass even the ditches do not get swale credit which may still provide some treatment. After the 4C meeting the DBT was able to review and revise an additional seven proposed outfalls to outlet outside buffers. Three of the locations were able to utilize grass lined ditches to provide some treatment although do not get swale credit. The seven revised outfalls are summarized below:

- Y2RPC- 13+80 RT and 18+10 RT were rerouted to the inside of the interchange to flow through a grass lined ditch
- L- 176+15 LT was rerouted to flow through a grass lined ditch
- L- 197+00 RT was rerouted to discharge outside the buffer into an existing ditch
- L- 354+30 RT was rerouted to the inside of the interchange to grass lines ditch
- L- at station 472+60 was rerouted to discharge outside the buffer
- L- at station 398+50 was rerouted to discharge outside the buffer.

Project Challenges:

The biggest challenge is that the natural terrain is very steep throughout the project and is not conducive to basins or swales. The project is widening to the inside and there is not much existing ROW to work within. The project RFP says, "No additional right of way will be acquired solely for stormwater management". The DBT looked at a minimum stormwater basin size of 30'X90' (considering maintenance berms and tying back into the existing terrain) and were not able to contain any basins inside the existing ROW. The DBT also looked at trying to include basins in the interchanges but there is no significant drainage that could be rerouted for treatment. The natural terrain in all quadrants of the I-40/I-85 interchange are steep and the roadway grades are mostly greater than 2% which are not conducive to grass swales.

|                                                                                   |  |                                                                                                                                                                  |  |                                                                  |  |                                                                                                      |  |
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| WBS Element: 34178.3.GV3                                                          |  | TIP/Proj No.: I-3306A / W-5707C                                                                                                                                  |  | County(ies): Orange                                              |  | Page 3 of 7                                                                                          |  |
| General Project Information                                                       |  |                                                                                                                                                                  |  |                                                                  |  |                                                                                                      |  |
| Waterbody Information                                                             |  |                                                                                                                                                                  |  |                                                                  |  |                                                                                                      |  |
| Surface Water Body (1):                                                           |  | Rocky Run                                                                                                                                                        |  | NCDWR Stream Index No.:                                          |  | 27-2-6-2-(2)                                                                                         |  |
| NCDWR Surface Water Classification for Water Body                                 |  | Primary Classification:                                                                                                                                          |  | Water Supply II (WS-II)                                          |  |                                                                                                      |  |
|                                                                                   |  | Supplemental Classification:                                                                                                                                     |  | High Quality Waters (HQW) (NSW)                                  |  |                                                                                                      |  |
| Other Stream Classification:                                                      |  |                                                                                                                                                                  |  |                                                                  |  |                                                                                                      |  |
| Impairments:                                                                      |  | None                                                                                                                                                             |  |                                                                  |  |                                                                                                      |  |
| Aquatic T&E Species?                                                              |  | No                                                                                                                                                               |  | Comments:                                                        |  |                                                                                                      |  |
| NRTR Stream ID:                                                                   |  | Rocky Run                                                                                                                                                        |  | 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                                                                                                                                                              |  | (If yes, provide justification in the General Project Narrative) |  | (If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative) |  |
| (If yes, provide justification in the General Project Narrative)                  |  |                                                                                                                                                                  |  |                                                                  |  |                                                                                                      |  |
| Surface Water Body (2):                                                           |  |                                                                                                                                                                  |  |                                                                  |  |                                                                                                      |  |
| Cates Creek                                                                       |  | NCDWR Stream Index No.:                                                                                                                                          |  | 27-2-8                                                           |  |                                                                                                      |  |
| NCDWR Surface Water Classification for Water Body                                 |  | Primary Classification:                                                                                                                                          |  | Water Supply V (WS-V)                                            |  |                                                                                                      |  |
|                                                                                   |  | Supplemental Classification:                                                                                                                                     |  | Nutrient Sensitive Waters (NSW)                                  |  |                                                                                                      |  |
| Other Stream Classification:                                                      |  |                                                                                                                                                                  |  |                                                                  |  |                                                                                                      |  |
| Impairments:                                                                      |  | None                                                                                                                                                             |  |                                                                  |  |                                                                                                      |  |
| Aquatic T&E Species?                                                              |  | No                                                                                                                                                               |  | Comments:                                                        |  |                                                                                                      |  |
| NRTR Stream ID:                                                                   |  | Cates Creek                                                                                                                                                      |  | 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                                                                                                                                                              |  | (If yes, provide justification in the General Project Narrative) |  | (If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative) |  |
| (If yes, provide justification in the General Project Narrative)                  |  |                                                                                                                                                                  |  |                                                                  |  |                                                                                                      |  |
| Surface Water Body (3):                                                           |  |                                                                                                                                                                  |  |                                                                  |  |                                                                                                      |  |
| UT to Eno River                                                                   |  | NCDWR Stream Index No.:                                                                                                                                          |  | 27-2-(7)                                                         |  |                                                                                                      |  |
| NCDWR Surface Water Classification for Water Body                                 |  | Primary Classification:                                                                                                                                          |  | Class C                                                          |  |                                                                                                      |  |
|                                                                                   |  | Supplemental Classification:                                                                                                                                     |  | Nutrient Sensitive Waters (NSW)                                  |  |                                                                                                      |  |
| Other Stream Classification:                                                      |  |                                                                                                                                                                  |  |                                                                  |  |                                                                                                      |  |
| Impairments:                                                                      |  | None                                                                                                                                                             |  |                                                                  |  |                                                                                                      |  |
| Aquatic T&E Species?                                                              |  | No                                                                                                                                                               |  | Comments:                                                        |  |                                                                                                      |  |
| NRTR Stream ID:                                                                   |  | SA, SB, SC, SXX                                                                                                                                                  |  | 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                                                                                                                                                              |  | (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)                  |  |                                                                                                                                                                  |  |                                                                  |  |                                                                                                      |  |

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| WBS Element: 34178.3.GV3                                                          |  | TIP No.: I-3306A / W-5707C                                                                                                                                       |  | County(ies): Orange                                              |  | Page 4 of 7                                                                                          |  |
| Additional Waterbody Information                                                  |  |                                                                                                                                                                  |  |                                                                  |  |                                                                                                      |  |
| Surface Water Body (4):                                                           |  | UT to Cates Creek                                                                                                                                                |  | NCDWR Stream Index No.:                                          |  | 27-2-8                                                                                               |  |
| NCDWR Surface Water Classification for Water Body                                 |  | Primary Classification:                                                                                                                                          |  | Class C                                                          |  |                                                                                                      |  |
|                                                                                   |  | Supplemental Classification:                                                                                                                                     |  | Nutrient Sensitive Waters (NSW)                                  |  |                                                                                                      |  |
| Other Stream Classification:                                                      |  |                                                                                                                                                                  |  |                                                                  |  |                                                                                                      |  |
| Impairments:                                                                      |  | None                                                                                                                                                             |  |                                                                  |  |                                                                                                      |  |
| Aquatic T&E Species?                                                              |  | No                                                                                                                                                               |  | Comments:                                                        |  |                                                                                                      |  |
| NRTR Stream ID:                                                                   |  | SD, SE, SF, SG                                                                                                                                                   |  | 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                                                                                                                                                              |  | (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):                                                           |  | UT to Sevenmile Creek                                                                                                                                            |  | NCDWR Stream Index No.:                                          |  | 27-2-6-(1.5)                                                                                         |  |
| NCDWR Surface Water Classification for Water Body                                 |  | Primary Classification:                                                                                                                                          |  | Water Supply II (WS-II)                                          |  |                                                                                                      |  |
|                                                                                   |  | Supplemental Classification:                                                                                                                                     |  | High Quality Waters (HQW) (NSW)                                  |  |                                                                                                      |  |
| Other Stream Classification:                                                      |  |                                                                                                                                                                  |  |                                                                  |  |                                                                                                      |  |
| Impairments:                                                                      |  | None                                                                                                                                                             |  |                                                                  |  |                                                                                                      |  |
| Aquatic T&E Species?                                                              |  | No                                                                                                                                                               |  | Comments:                                                        |  |                                                                                                      |  |
| NRTR Stream ID:                                                                   |  | SH                                                                                                                                                               |  | 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                                                                                                                                                              |  | (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 (6):                                                           |  | UT to New Hope Creek                                                                                                                                             |  | NCDWR Stream Index No.:                                          |  | 16-41-1-(0.5)                                                                                        |  |
| NCDWR Surface Water Classification for Water Body                                 |  | Primary Classification:                                                                                                                                          |  | Water Supply V (WS-V)                                            |  |                                                                                                      |  |
|                                                                                   |  | Supplemental Classification:                                                                                                                                     |  | Nutrient Sensitive Waters (NSW)                                  |  |                                                                                                      |  |
| Other Stream Classification:                                                      |  |                                                                                                                                                                  |  |                                                                  |  |                                                                                                      |  |
| Impairments:                                                                      |  | None                                                                                                                                                             |  |                                                                  |  |                                                                                                      |  |
| Aquatic T&E Species?                                                              |  | No                                                                                                                                                               |  | Comments:                                                        |  |                                                                                                      |  |
| NRTR Stream ID:                                                                   |  | SI, SJ, SK, SL, SM, SN, SO, SR, SS, ST, SU, SBB, SEE, SFF, SGG, SHH, SII, SJJ, SKK, SLL, SMM, SNN, SOO, SRR, SYY, SZZ                                            |  | 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                                                                                                                                                              |  | (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):                                                           |  | New Hope Creek                                                                                                                                                   |  | NCDWR Stream Index No.:                                          |  | 16-41-1-(0.5)                                                                                        |  |
| NCDWR Surface Water Classification for Water Body                                 |  | Primary Classification:                                                                                                                                          |  | Water Supply V (WS-V)                                            |  |                                                                                                      |  |
|                                                                                   |  | Supplemental Classification:                                                                                                                                     |  | Nutrient Sensitive Waters (NSW)                                  |  |                                                                                                      |  |
| Other Stream Classification:                                                      |  |                                                                                                                                                                  |  |                                                                  |  |                                                                                                      |  |
| Impairments:                                                                      |  | None                                                                                                                                                             |  |                                                                  |  |                                                                                                      |  |
| Aquatic T&E Species?                                                              |  | No                                                                                                                                                               |  | Comments:                                                        |  |                                                                                                      |  |
| NRTR Stream ID:                                                                   |  | New Hope Creek                                                                                                                                                   |  | 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                                                                                                                                                              |  | (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)                                                                                                 |  |                                                                  |  |                                                                                                      |  |

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| WBS Element: 34178.3.GV3                                                          |  | TIP No.: I-3306A / W-5707C                                                                                                                                       |  | County(ies): Orange                                              |  | Page 5 of 7                                                                                          |  |
| Additional Waterbody Information                                                  |  |                                                                                                                                                                  |  |                                                                  |  |                                                                                                      |  |
| Surface Water Body (8):                                                           |  | UT to Old Field Creek                                                                                                                                            |  | NCDWR Stream Index No.:                                          |  | 16-41-1-7                                                                                            |  |
| NCDWR Surface Water Classification for Water Body                                 |  | Primary Classification:                                                                                                                                          |  | Water Supply V (WS-V)                                            |  |                                                                                                      |  |
|                                                                                   |  | Supplemental Classification:                                                                                                                                     |  | Nutrient Sensitive Waters (NSW)                                  |  |                                                                                                      |  |
| Other Stream Classification:                                                      |  |                                                                                                                                                                  |  |                                                                  |  |                                                                                                      |  |
| Impairments:                                                                      |  | None                                                                                                                                                             |  |                                                                  |  |                                                                                                      |  |
| Aquatic T&E Species?                                                              |  | No                                                                                                                                                               |  | Comments:                                                        |  |                                                                                                      |  |
| NRTR Stream ID:                                                                   |  | SV, SW, SX, SY, SZ, SAA, SCC, SDD, STT, SUU                                                                                                                      |  | 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                                                                                                                                                              |  | (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):                                                           |  | Old Field Creek                                                                                                                                                  |  | NCDWR Stream Index No.:                                          |  | 16-41-1-7                                                                                            |  |
| NCDWR Surface Water Classification for Water Body                                 |  | Primary Classification:                                                                                                                                          |  | Water Supply V (WS-V)                                            |  |                                                                                                      |  |
|                                                                                   |  | Supplemental Classification:                                                                                                                                     |  | Nutrient Sensitive Waters (NSW)                                  |  |                                                                                                      |  |
| Other Stream Classification:                                                      |  |                                                                                                                                                                  |  |                                                                  |  |                                                                                                      |  |
| Impairments:                                                                      |  | None                                                                                                                                                             |  |                                                                  |  |                                                                                                      |  |
| Aquatic T&E Species?                                                              |  | No                                                                                                                                                               |  | Comments:                                                        |  |                                                                                                      |  |
| NRTR Stream ID:                                                                   |  | Old Field Creek                                                                                                                                                  |  | 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                                                                                                                                                              |  | (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 (10):                                                          |  | Sevenmile Creek                                                                                                                                                  |  | NCDWR Stream Index No.:                                          |  | 27-2-6-(1.5)                                                                                         |  |
| NCDWR Surface Water Classification for Water Body                                 |  | Primary Classification:                                                                                                                                          |  | Water Supply II (WS-II)                                          |  |                                                                                                      |  |
|                                                                                   |  | Supplemental Classification:                                                                                                                                     |  | High Quality Waters (HQP) (NSW)                                  |  |                                                                                                      |  |
| Other Stream Classification:                                                      |  |                                                                                                                                                                  |  |                                                                  |  |                                                                                                      |  |
| Impairments:                                                                      |  | None                                                                                                                                                             |  |                                                                  |  |                                                                                                      |  |
| Aquatic T&E Species?                                                              |  | No                                                                                                                                                               |  | Comments:                                                        |  |                                                                                                      |  |
| NRTR Stream ID:                                                                   |  | Sevenmile Creek                                                                                                                                                  |  | 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                                                                                                                                                              |  | (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 3.00; Released August 2021)

WBS Element: 34178.3.GV3

TIP/Proj No.: I-3306A / W-5707C

County(ies): Orange

Page 6 of 7

## Swale

| Sheet No. | Line   | Station | Location (LT,RT,CL) | Latitude   | Longitude   | Surface Water Body       | Base Width (ft) | Front Slope (H:1) | Back Slope (H:1) | Drainage Area (ac) | Recommended Treatm't Length (ft) | Actual Length (ft) | Longitudinal Slope (%) | Q2 (cfs) | V2 (fps) | Q10 (cfs) | V10 (fps) | Rock Checks Used | BMP Associated w/ Buffer Rules? |
|-----------|--------|---------|---------------------|------------|-------------|--------------------------|-----------------|-------------------|------------------|--------------------|----------------------------------|--------------------|------------------------|----------|----------|-----------|-----------|------------------|---------------------------------|
| 6         | YFLYA  | 30+50   | RT                  | 36.05772   | -79.12464   | (3)UT to Eno River       | 0.0             | 6.0               | 6.0              | 0.4                | 38                               | 350                | 2.80%                  | 0.7      | 1.8      | 0.9       | 1.9       |                  | Yes                             |
| 7         | YFLYA  | 18+00   | LT                  | 36.0546625 | -79.1237442 | (3)UT to Eno River       | 0.0             | 6.0               | 4.0              | 1.0                | 96                               | 239                | 1.28%                  | 2.2      | 1.9      | 2.8       | 2.0       |                  | Yes                             |
| 10        | -L-    | 40+23   | RT                  | 36.0440275 | -79.1142318 | (4)UT to Cates Creek     | 0.0             | 6.0               | 4.0              | 0.3                | 25                               | 148                | 2.36%                  | 0.4      | 1.5      | 0.5       | 1.6       |                  | Yes                             |
| 10        | L      | 41+28   | RT                  | 36.04385   | -79.11404   | (4)UT to Cates Creek     | 0.0             | 6.0               | 4.0              | 0.1                | 13                               | 105                | 2.45%                  | 0.4      | 1.6      | 0.5       | 1.7       |                  | Yes                             |
| 12        | -L-    | 72+00   | RT                  | 36.03804   | -79.10658   | (4)UT to Cates Creek     | 0.0             | 6.0               | 4.0              | 0.4                | 36                               | 128                | 1.55%                  | 0.5      | 1.4      | 0.6       | 1.5       |                  | Yes                             |
| 14        | Y2RPA  | 19+00   | RT                  | 36.0362513 | -79.0948226 | (2)Cates Creek           | 0.0             | 6.0               | 6.0              | 0.5                | 54                               | 75                 | 2.48%                  | 0.7      | 1.7      | 0.9       | 1.8       |                  | Yes                             |
| 14        | -Y2RPC | 17+50   | LT                  | 36.0370541 | -79.0994215 | (2)Cates Creek           | 0.0             | 6.0               | 6.0              | 1.3                | 125                              | 150                | 0.51%                  | 2.3      | 1.3      | 2.9       | 1.4       |                  | Yes                             |
| 14        | -Y2RPC | 22+92   | LT                  | 36.0362808 | -79.0978865 | (2)Cates Creek           | 0.0             | 6.0               | 3.0              | 2.2                | 223                              | 468                | 0.71%                  | 5.1      | 1.9      | 6.5       | 2.0       |                  | Yes                             |
| 15        | -L-    | 115+50  | LT                  | 36.0347    | -79.09302   | (6)UT to New Hope Creek  | 0.0             | 6.0               | 4.0              | 0.4                | 43                               | 150                | 0.31%                  | 0.6      | 0.8      | 0.8       | 0.8       |                  | Yes                             |
| 15        | -L-    | 116+50  | LT                  | 36.03433   | -79.09261   | (6)UT to New Hope Creek  | 0.0             | 4.0               | 3.0              | 0.4                | 43                               | 100                | 0.84%                  | 0.6      | 1.3      | 0.8       | 1.4       |                  | Yes                             |
| 15        | -L-    | 119+50  | RT                  | 36.0333008 | -79.0923532 | (6)UT to New Hope Creek  | 0.0             | 6.0               | 4.0              | 1.3                | 131                              | 467                | 0.37%                  | 3.6      | 1.3      | 4.6       | 1.4       |                  | Yes                             |
| 16        | -L-    | 131+22  | RT                  | 36.03028   | -79.09042   | (6)UT to New Hope Creek  | 0.0             | 6.0               | 4.0              | 0.3                | 34                               | 128                | 1.02%                  | 1.0      | 1.4      | 1.3       | 1.5       |                  | Yes                             |
| 20        | -L-    | 184+69  | RT                  | 36.0158    | -79.08714   | (6)UT to New Hope Creek  | 0.0             | 6.0               | 4.0              | 0.6                | 63                               | 428                | 0.82%                  | 1.4      | 1.4      | 1.8       | 1.5       |                  | Yes                             |
| 20        | -L-    | 192+30  | RT                  | 36.01425   | -79.08668   | (6)UT to New Hope Creek  | 0.0             | 6.0               | 4.0              | 0.6                | 60                               | 333                | 0.75%                  | 1.4      | 1.3      | 1.7       | 1.4       |                  | Yes                             |
| 21        | Y3RPA  | 12+00   | RT                  | 36.0070605 | -79.0823056 | (6)UT to New Hope Creek  | 0.0             | 6.0               | 4.0              | 1.0                | 104                              | 116                | 0.50%                  | 1.9      | 1.2      | 2.4       | 1.3       |                  | Yes                             |
| 22        | -L-    | 228+00  | RT                  | 36.0050558 | -79.0818132 | (6)UT to New Hope Creek  | 0.0             | 6.0               | 4.0              | 0.7                | 70                               | 372                | 0.99%                  | 2.1      | 1.7      | 2.7       | 1.8       |                  | Yes                             |
| 24        | -L-    | 253+50  | RT                  | 35.998834  | -79.0777677 | (6)UT to New Hope Creek  | 0.0             | 6.0               | 4.0              | 0.5                | 45                               | 250                | 0.93%                  | 1.3      | 1.4      | 1.6       | 1.5       |                  | Yes                             |
| 26        | -L-    | 281+75  | LT                  | 35.99181   | -79.07522   | (8)UT to Old Field Creek | 0.0             | 4.0               | 6.0              | 1.3                | 126                              | 225                | 0.48%                  | 3.6      | 1.5      | 4.6       | 1.5       |                  | Yes                             |
| 26        | -L-    | 284+00  | LT                  | 35.99124   | -79.07524   | (8)UT to Old Field Creek | 0.0             | 4.0               | 6.0              | 1.3                | 126                              | 400                | 0.65%                  | 3.6      | 1.6      | 4.6       | 1.7       |                  | Yes                             |
| 26        | -L-    | 287+50  | RT                  | 35.98979   | -79.07584   | (8)UT to Old Field Creek | 0.0             | 6.0               | 4.0              | 0.6                | 60                               | 294                | 0.92%                  | 1.1      | 1.4      | 1.4       | 1.5       |                  | Yes                             |
| 28        | -L-    | 319+50  | RT                  | 35.9814903 | -79.0729198 | (8)UT to Old Field Creek | 0.0             | 6.0               | 4.0              | 0.5                | 52                               | 326                | 1.33%                  | 1.4      | 1.7      | 1.8       | 1.8       |                  | Yes                             |
| 29        | -L-    | 331+00  | RT                  | 35.97812   | -79.07095   | (9)Old Field Creek       | 0.0             | 6.0               | 4.0              | 1.1                | 107                              | 880                | 0.85%                  | 2.5      | 1.6      | 3.1       | 1.7       |                  | Yes                             |
| 30        | L      | 335+02  | LT                  | 35.97772   | -79.07007   | (9)Old Field Creek       | 0.0             | 6.0               | 6.0              | 1.1                | 113                              | 579                | 0.62%                  | 3.6      | 1.5      | 4.6       | 1.6       |                  | Yes                             |
| 30        | -L-    | 347+03  | RT                  | 35.97451   | -79.06845   | (9)Old Field Creek       | 0.0             | 6.0               | 6.0              | 0.4                | 36                               | 544                | 0.84%                  | 0.5      | 1.0      | 0.6       | 1.1       |                  | Yes                             |
| 30        | -L-    | 340+50  | RT                  | 35.976285  | -79.0698315 | (9)Old Field Creek       | 0.0             | 6.0               | 4.0              | 0.2                | 24                               | 70                 | 1.43%                  | 0.8      | 1.5      | 1.0       | 1.6       |                  | Yes                             |
| 31        | L      | 370+67  | LT                  | 35.97135   | -79.06231   | (8)UT to Old Field Creek | 0.0             | 6.0               | 4.0              | 0.6                | 55                               | 313                | 0.82%                  | 1.3      | 1.4      | 1.6       | 1.4       |                  | Yes                             |
| 31        | L      | 373+80  | LT                  | 35.97063   | -79.06059   | (8)UT to Old Field Creek | 0.0             | 6.0               | 4.0              | 0.8                | 77                               | 420                | 0.68%                  | 1.8      | 1.4      | 2.2       | 1.5       |                  | Yes                             |
| 31        | L      | 363+56  | RT                  | 35.97145   | -79.06364   | (8)UT to Old Field Creek | 0.0             | 6.0               | 4.0              | 0.9                | 85                               | 434                | 0.95%                  | 1.6      | 1.5      | 2.0       | 1.6       |                  | Yes                             |
| 31        | L      | 370+12  | RT                  | 35.9708214 | -79.0622488 | (8)UT to Old Field Creek | 0.0             | 6.0               | 4.0              | 1.2                | 120                              | 400                | 0.79%                  | 1.9      | 1.5      | 2.4       | 1.6       |                  | Yes                             |
| 31        | L      | 374+12  | RT                  | 35.9703    | -79.06093   | (8)UT to Old Field Creek | 0.0             | 6.0               | 4.0              | 3.8                | 383                              | 687                | 0.59%                  | 6.1      | 1.8      | 7.8       | 1.9       |                  | Yes                             |
| 31        | Y9RPB  | 24+50   | LT                  | 35.97472   | -79.06573   | (8)UT to Old Field Creek | 0.0             | 4.0               | 6.0              | 0.6                | 58                               | 350                | 1.96%                  | 1.3      | 1.9      | 1.7       | 2.0       |                  | Yes                             |
| 31        | Y9A    | 16+72   | RT                  | 35.9732998 | -79.0630229 | (8)UT to Old Field Creek | 0.0             | 6.0               | 4.0              | 0.5                | 51                               | 315                | 0.32%                  | 0.9      | 0.9      | 1.2       | 0.9       |                  | Yes                             |
| 31        | Y9A    | 23+75   | RT                  | 35.97216   | -79.06159   | (8)UT to Old Field Creek | 0.0             | 6.0               | 4.0              | 0.4                | 38                               | 388                | 0.60%                  | 0.7      | 1.0      | 0.9       | 1.1       |                  | Yes                             |
| 31        | Y9A    | 14+46   | LT                  | 35.9738598 | -79.0633298 | (8)UT to Old Field Creek | 0.0             | 6.0               | 4.0              | 1.1                | 109                              | 637                | 1.15%                  | 2.0      | 1.7      | 2.5       | 1.8       |                  | Yes                             |
| 31        | Y9     | 26+88   | LT                  | 35.97062   | -79.06257   | (8)UT to Old Field Creek | 0.0             | 6.0               | 6.0              | 0.5                | 51                               | 388                | 1.84%                  | 0.7      | 1.5      | 0.9       | 1.6       |                  | Yes                             |
| 31        | Y9     | 25+45   | RT                  | 35.9706155 | -79.0621836 | (8)UT to Old Field Creek | 0.0             | 6.0               | 6.0              | 0.8                | 82                               | 284                | 2.49%                  | 1.3      | 2.0      | 1.7       | 2.1       |                  | Yes                             |
| 31        | Y9RPD  | 22+45   | RT                  | 35.9698332 | -79.0611773 | (8)UT to Old Field Creek | 0.0             | 6.0               | 4.0              | 0.5                | 52                               | 81                 | 0.60%                  | 1.4      | 1.3      | 1.8       | 1.3       |                  | Yes                             |

Continues on next page

## Additional Comments

The challenges to gain swale credit is greatly impacted by the steep natural terrain. The project maintains the existing I-40 roadway profiles and the rolling terrain pushes many roadway ditch computations slightly outside of achieving swale credit. Many swale credit issues were indicated by a slightly higher Q2> 2.0 fps (i.e. 2.13 fps or 2.26 fps). During design the DBT was able to review to see if ditch grades could be flattened to meet grass swale criteria to most practical extent. Although swale credit could not be achieved in many locations those locations were able to utilize grass ditches to provide some treatment before entering the buffer zones. With the loss of the median ditch due to widening, the DBT was asked if a pervious pavement or similar alternative to provide treatment was an option or considered. Through follow up coronations it was determined additional pavement options are not available.





**Highway Stormwater Program  
STORMWATER MANAGEMENT PLAN  
FOR NCDOT PROJECTS**

Page 7 of 7

## Swales

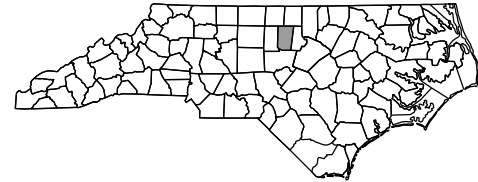
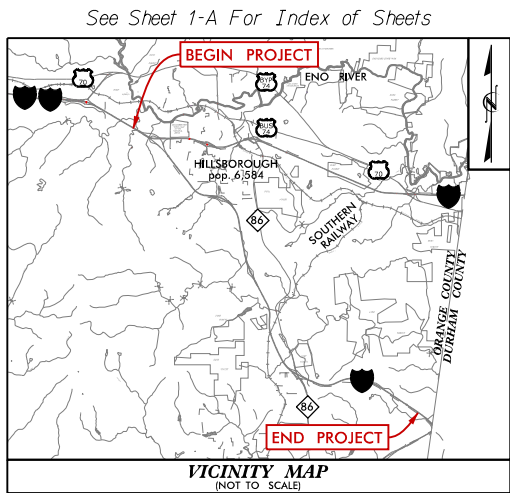
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### Additional Comments

09/08/99

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CONTRACT: C204632 TIP PROJECT: I-3306A / W-5707C



STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

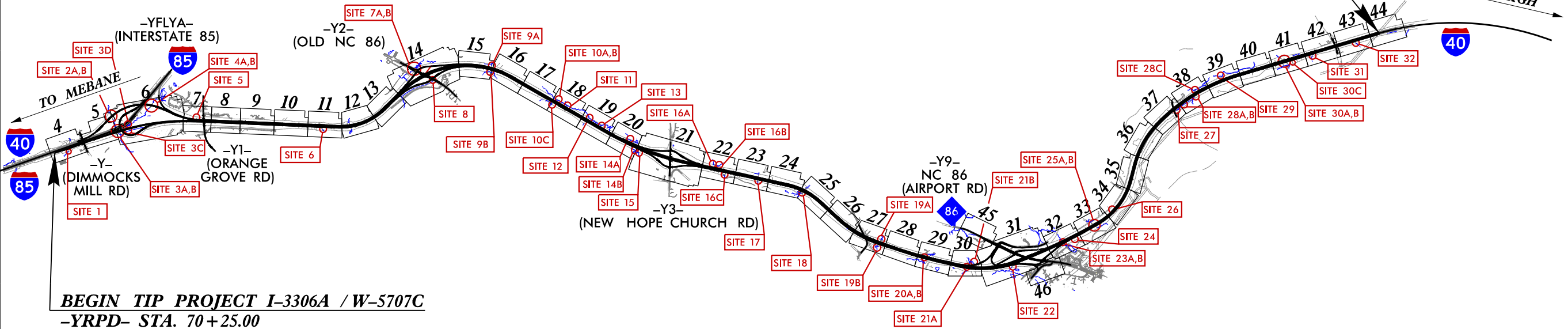
ORANGE COUNTY

LOCATION: I-40 WIDENING FROM I-85 IN ORANGE COUNTY TO THE DURHAM COUNTY LINE WITH INTERCHANGE MODIFICATIONS, INCLUDING THE I-40 / NC-86 INTERCHANGE; AND I-40 WESTBOUND TEMPORARY PAVEMENT MARKING AND OVERHEAD LANE USE SIGN MODIFICATIONS NEAR US 15-501 IN DURHAM COUNTY

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

I-3306A  
SURFACE WATER AND WETLAND IMPACTS

END TIP PROJECT I-3306A / W-5707C  
-L- STA. 550+00.00



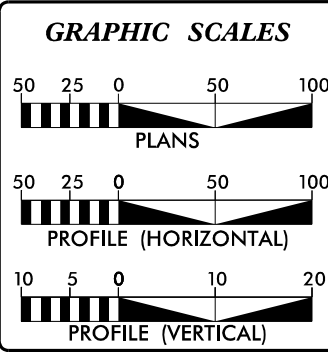
BEGIN TIP PROJECT I-3306A / W-5707C  
-YRPD- STA. 70+25.00

**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

PERMIT DRAWING  
SHEET 1 OF 97

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED



DESIGN DATA

ADT 2019 = 68,200  
ADT 2040 = 106,000  
K = 6.5 %  
D = 60 %  
T = 18 % \*  
V = 70 MPH  
\*TTST = 11% DUAL = 3%  
FUNC CLASS =  
INTERSTATE  
STATEWIDE TIER

PROJECT LENGTH

LENGTH ROADWAY -L- (I-40) = 11.304 MILES  
LENGTH STRUCTURES -L- (I-40) = 0.096 MILES  
TOTAL LENGTH TIP PROJECT I-3306A / W-5707C = 11.40 MILES

NCDOT CONTACT: \_\_\_\_\_  
RON McCOLLUM, P.E.  
DESIGN-BUILD ASSISTANT MANAGER

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

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: \_\_\_\_\_  
AUGUST 17, 2021

LETTING DATE: \_\_\_\_\_  
AUGUST 17, 2021

ANTHONY G. THOMPSON, P.E.  
PROJECT ENGINEER

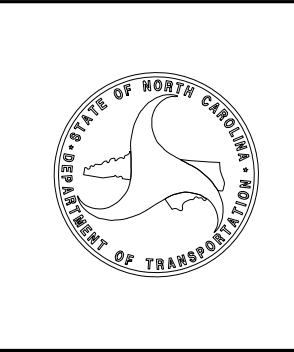
CALVIN MOODY, P.E.  
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: \_\_\_\_\_ P.E.

ROADWAY DESIGN ENGINEER

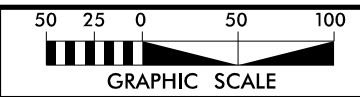
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REVISIONS

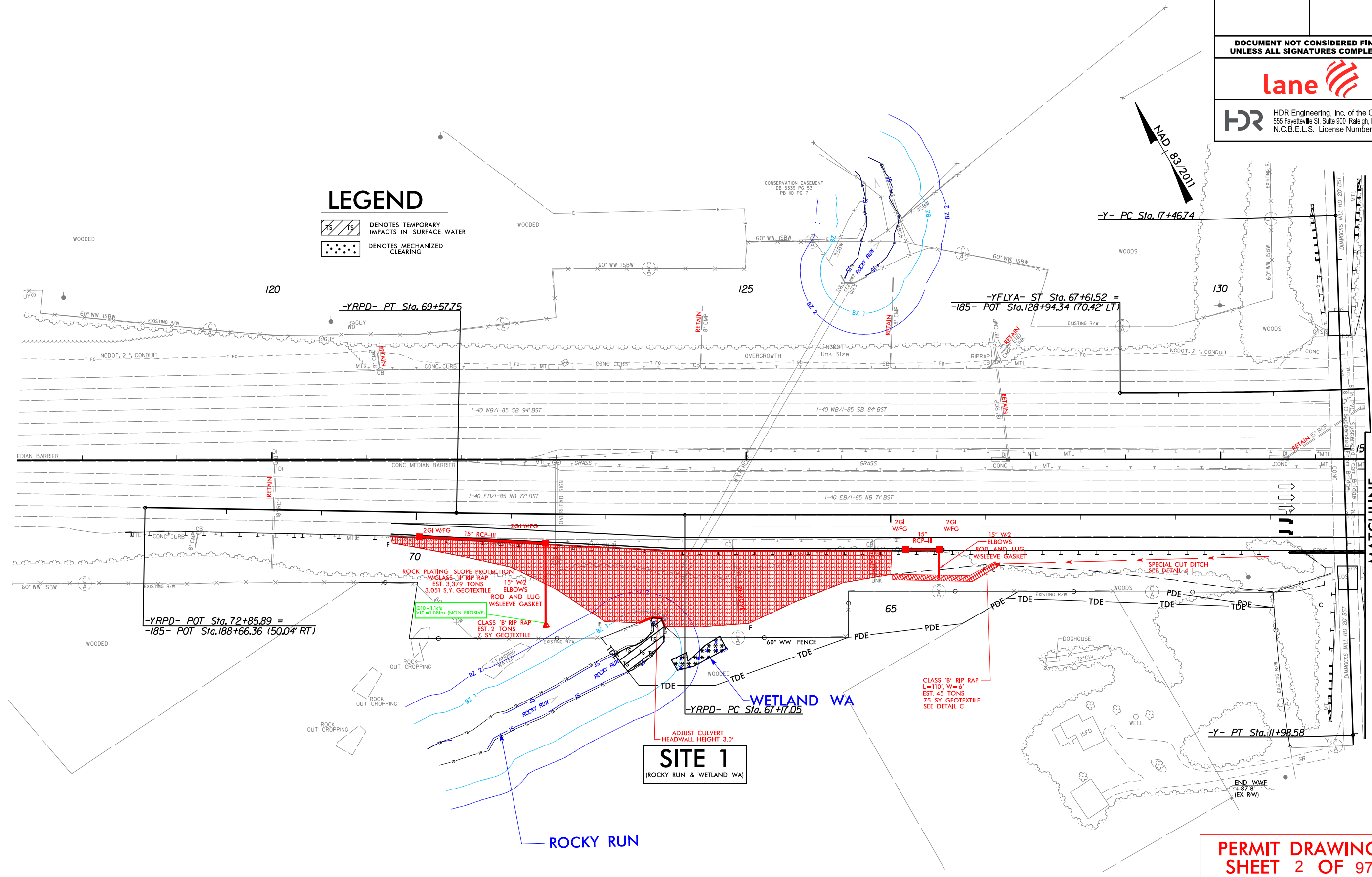
NOTES:  
DENOTES BORE PIT (TYP)



|                                                                                                                                     |                     |                       |
|-------------------------------------------------------------------------------------------------------------------------------------|---------------------|-----------------------|
| PROJECT REFERENCE NO.<br><b>I-3306A / W-5707C</b>                                                                                   |                     | SHEET NO.<br><b>4</b> |
| RW SHEET NO.                                                                                                                        |                     |                       |
| ROADWAY DESIGN ENGINEER                                                                                                             | HYDRAULICS ENGINEER |                       |
| DOCUMENT NOT CONSIDERED FINAL<br>UNLESS ALL SIGNATURES COMPLETED                                                                    |                     |                       |
|                                                                                                                                     |                     |                       |
| HDR Engineering, Inc. of the Carolinas<br>555 Fayetteville St, Suite 900 Raleigh, N.C. 27601<br>N.C.B.E.L.S. License Number: F-0116 |                     |                       |

LEGEND

- DENOTES TEMPORARY IMPACTS IN SURFACE WATER
- DENOTES MECHANIZED CLEARING



**SITE 1**  
(ROCKY RUN & WETLAND WA)

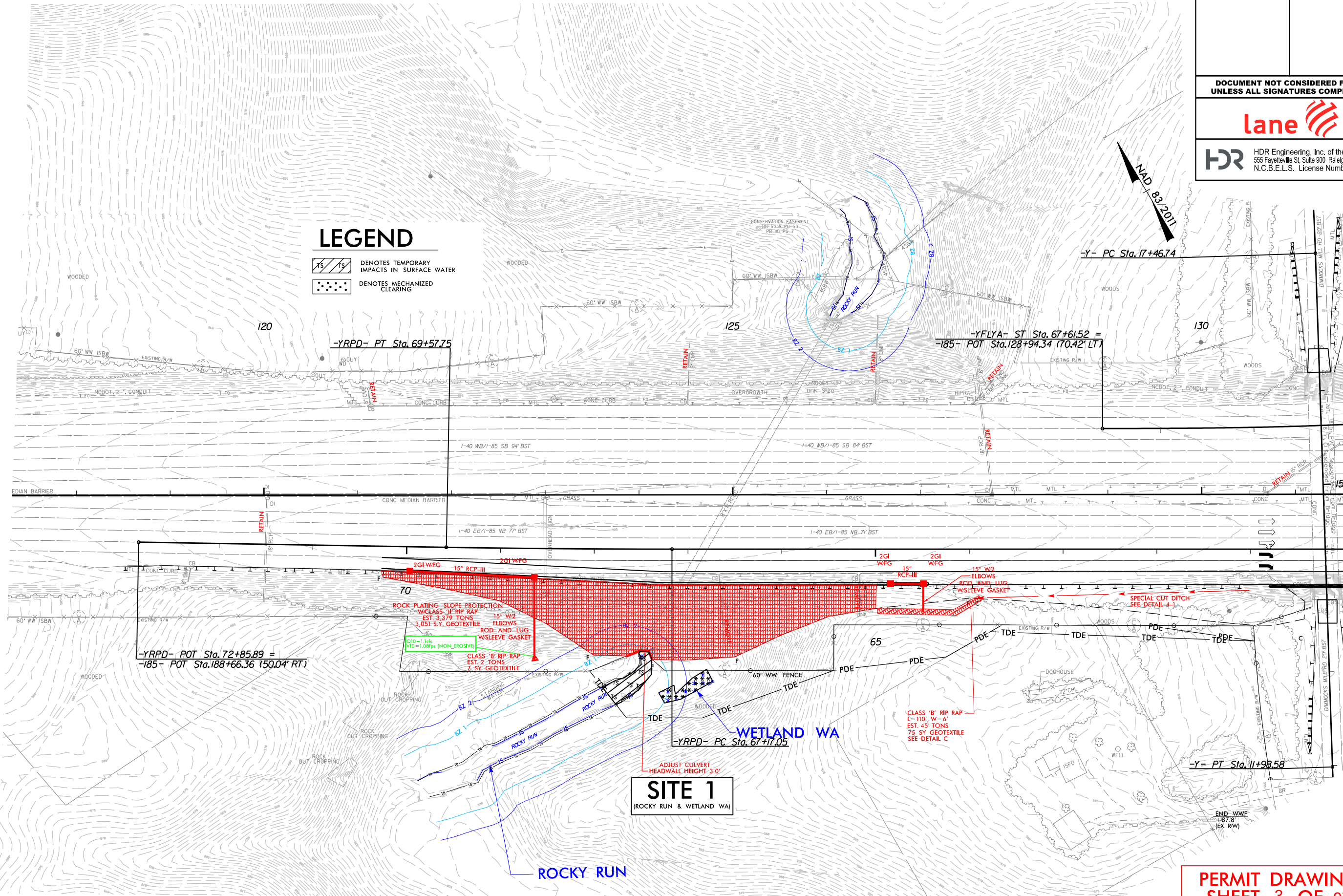
MATCHLINE  
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PERMIT DRAWING  
SHEET 2 OF 97



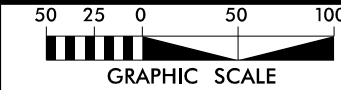
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REVISIONS



## NOTES:

■ DENOTES BORE PIT (TYP)



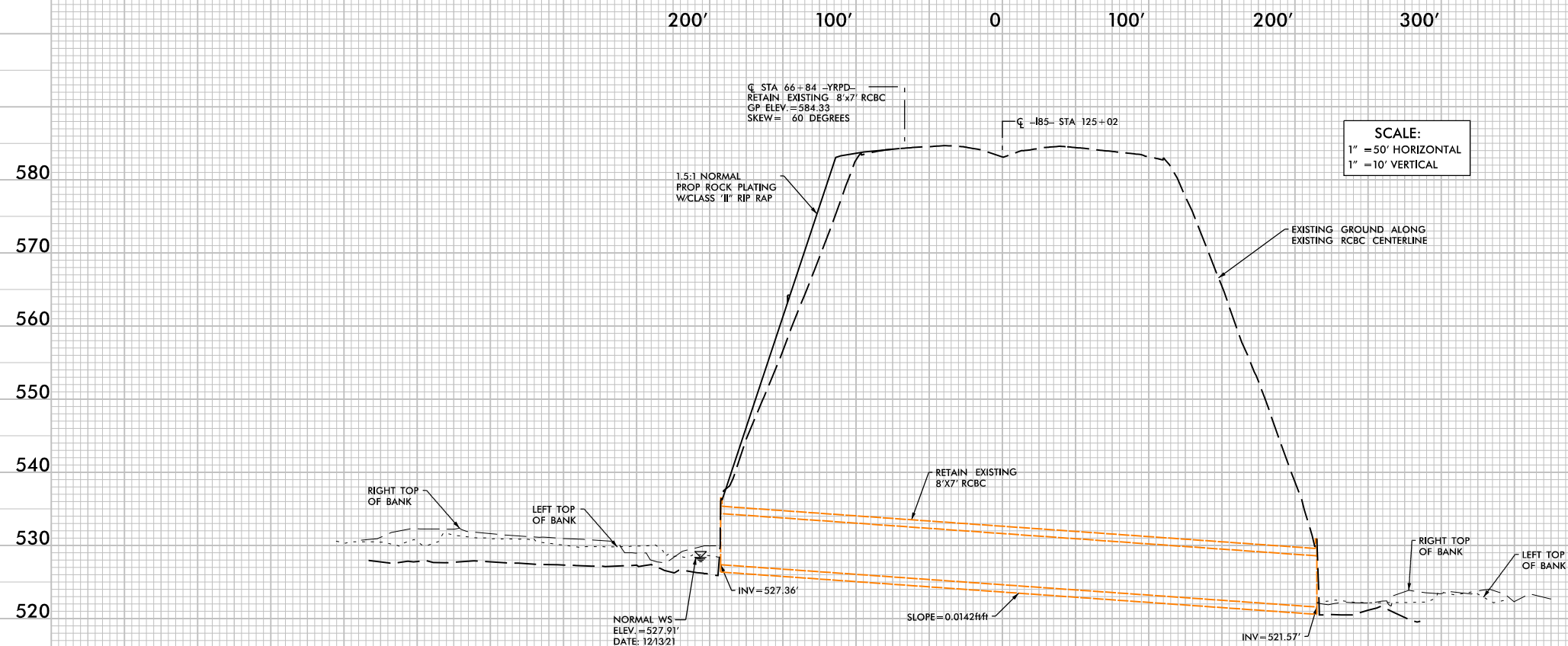
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| L-3306A / W-5707C                                                                                                                   | 4                   |
| R/W SHEET NO.                                                                                                                       |                     |
| ROADWAY DESIGN ENGINEER                                                                                                             | HYDRAULICS ENGINEER |
| DOCUMENT NOT CONSIDERED FINAL<br>UNLESS ALL SIGNATURES COMPLETED                                                                    |                     |
|                                                                                                                                     |                     |
|                                                                                                                                     |                     |
| HDR Engineering, Inc. of the Carolinas<br>555 Fayetteville St, Suite 900 Raleigh, N.C. 27601<br>N.C.B.E.L.S. License Number: F-0116 |                     |

PERMIT DRAWING  
SHEET 3 OF 97



|                                                                                                |  |                        |  |
|------------------------------------------------------------------------------------------------|--|------------------------|--|
| PROJECT REFERENCE NO.                                                                          |  | SHEET NO.              |  |
| ROADWAY DESIGN<br>ENGINEER                                                                     |  | HYDRAULICS<br>ENGINEER |  |
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## SITE 1

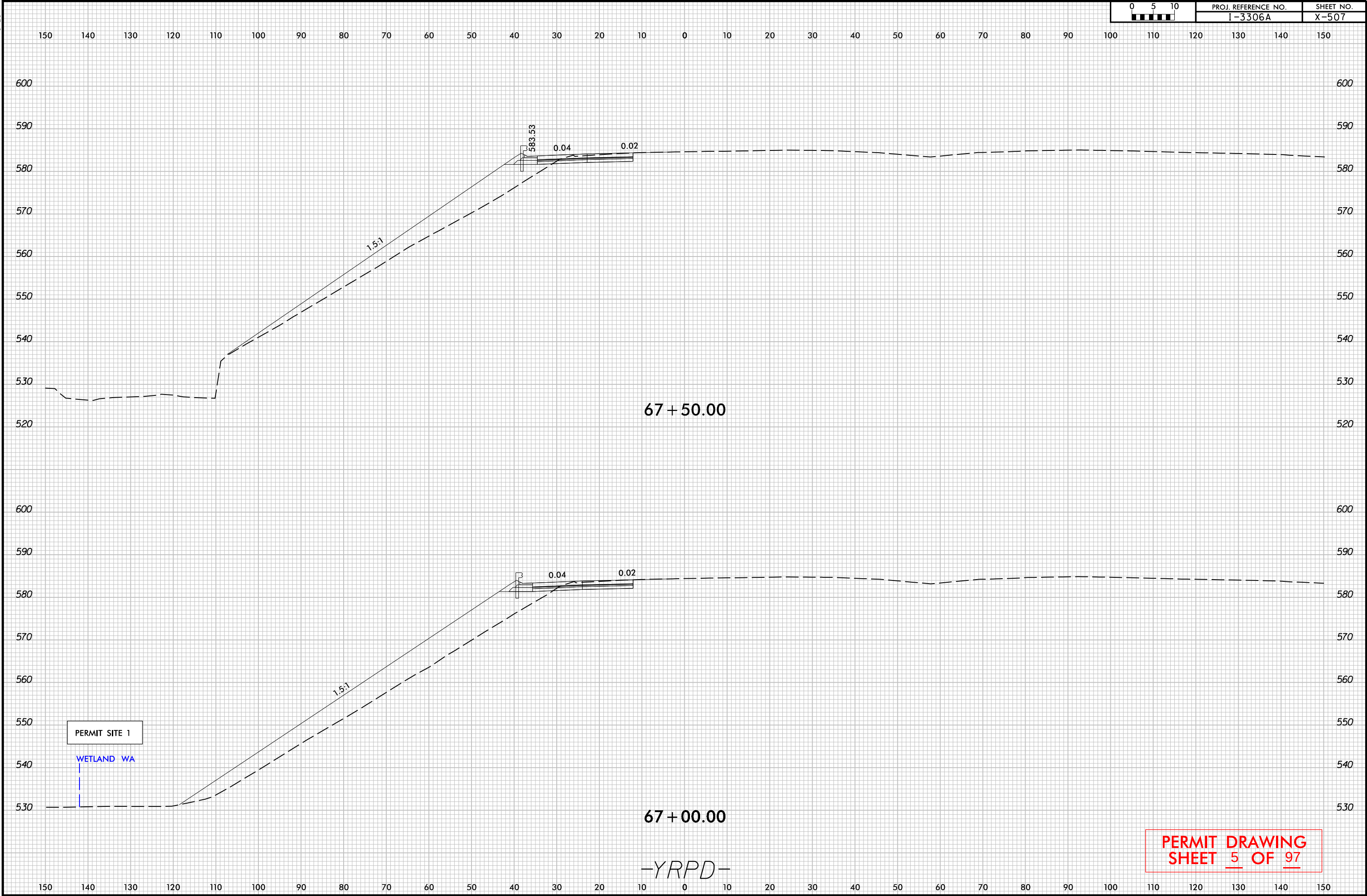


## PROFILE ALONG STRUCTURE

PERMIT DRAWING  
SHEET 4 OF 97

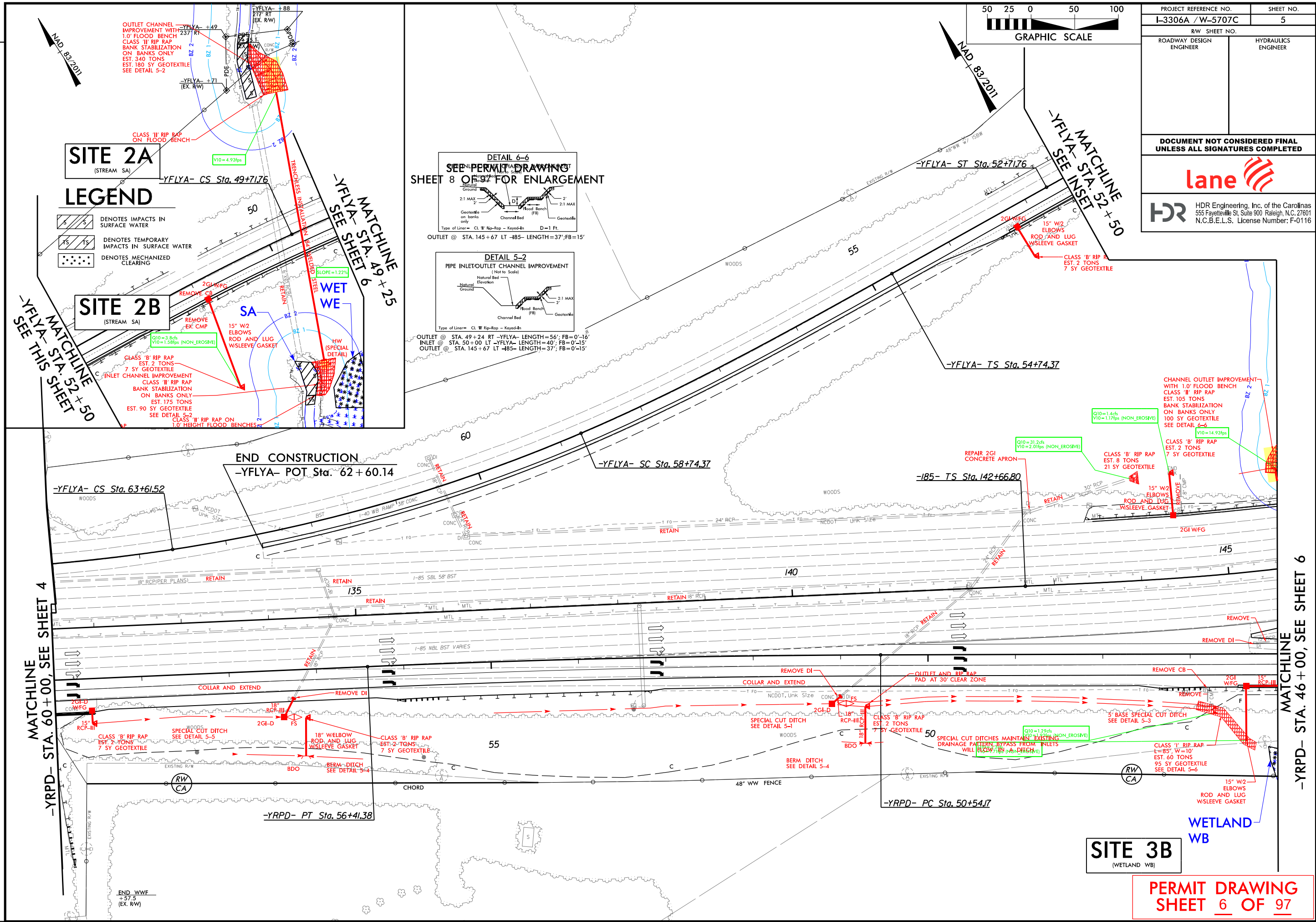


8/23/99



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REVISIONS



**SITE 2A**  
(STREAM SA)

**LEGEND**

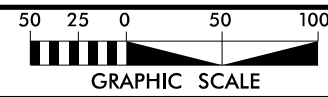
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- Denotes TEMPORARY IMPACTS IN SURFACE WATER
- Denotes MECHANIZED CLEARING

**SITE 2B**  
(STREAM SA)

**END CONSTRUCTION**  
-YFLYA- POT Sta. 62+60.14

**SITE 3B**  
(WETLAND WB)

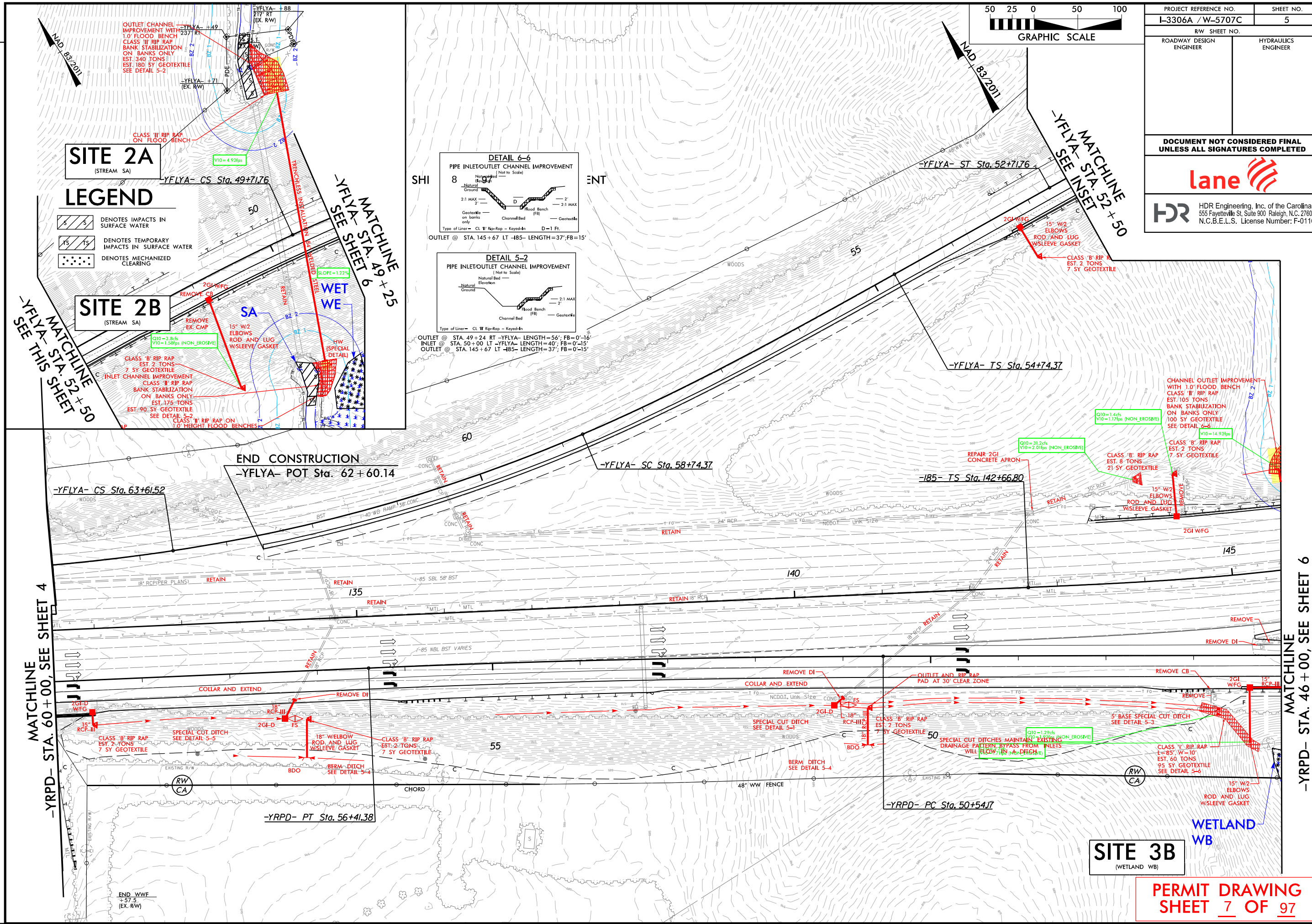
**PERMIT DRAWING**  
**SHEET 6 OF 97**



|                                                                                                                                     |                     |
|-------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| PROJECT REFERENCE NO.                                                                                                               | SHEET NO.           |
| L-3306A / W-5707C                                                                                                                   | 5                   |
| R/W SHEET NO.                                                                                                                       |                     |
| ROADWAY DESIGN ENGINEER                                                                                                             | HYDRAULICS ENGINEER |
| DOCUMENT NOT CONSIDERED FINAL<br>UNLESS ALL SIGNATURES COMPLETED                                                                    |                     |
|                                                                                                                                     |                     |
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REVISIONS

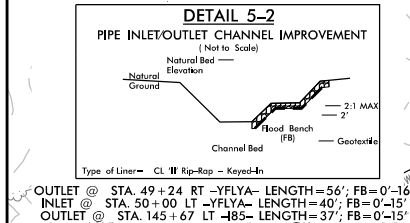
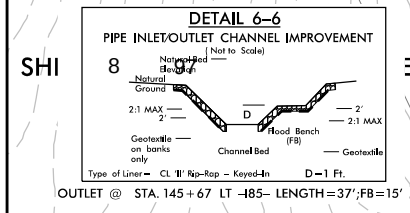


**SITE 2A**  
(STREAM SA)

**LEGEND**

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

**SITE 2B**  
(STREAM SA)



**SITE 3B**  
(WETLAND WB)

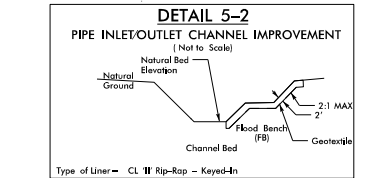
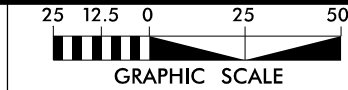
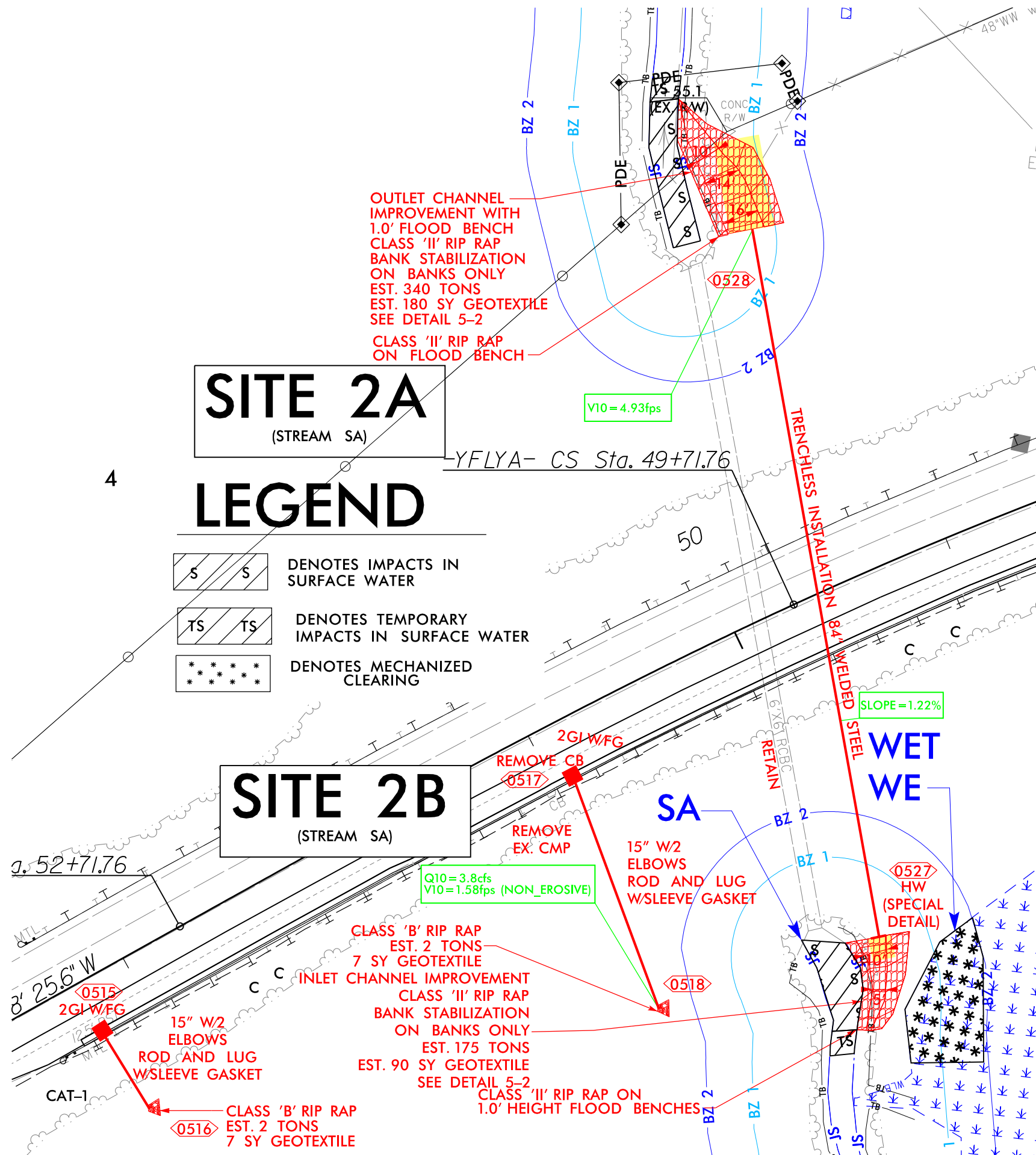
**PERMIT DRAWING**  
**SHEET 7 OF 97**

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| PROJECT REFERENCE NO.                                                                                                               | SHEET NO.           |
| L-3306A / W-5707C                                                                                                                   | 5                   |
| RW SHEET NO.                                                                                                                        |                     |
| ROADWAY DESIGN ENGINEER                                                                                                             | HYDRAULICS ENGINEER |
| DOCUMENT NOT CONSIDERED FINAL<br>UNLESS ALL SIGNATURES COMPLETED                                                                    |                     |
| lane                                                                                                                                |                     |
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PLOT DRIVER: NCDOT\_color\_eng\_100.plt  
USER: EPROFFIT  
FILE: ...\\drawings\\13306A.PRM\_4C\_PSH.dgn  
PENTABLE: NCDOT\_permits.NCON.tbl  
DATE: 6/2/2022  
TIME: 2:49:13 PM

REVISIONS



OUTLET @ STA. 49+24 RT -YFLYA- LENGTH=56'; FB=15'  
INLET @ STA. 50+00 LT -YFLYA- LENGTH=40'; FB=3'-11'

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| PROJECT REFERENCE NO.                                                                                                               | SHEET NO.           |
| I-3306 / W-5707C                                                                                                                    | 5A                  |
| R/W SHEET NO.                                                                                                                       |                     |
| ROADWAY DESIGN ENGINEER                                                                                                             | HYDRAULICS ENGINEER |
| DOCUMENT NOT CONSIDERED FINAL<br>UNLESS ALL SIGNATURES COMPLETED                                                                    |                     |
| lane                                                                                                                                |                     |
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REVISIONS

5/14/99



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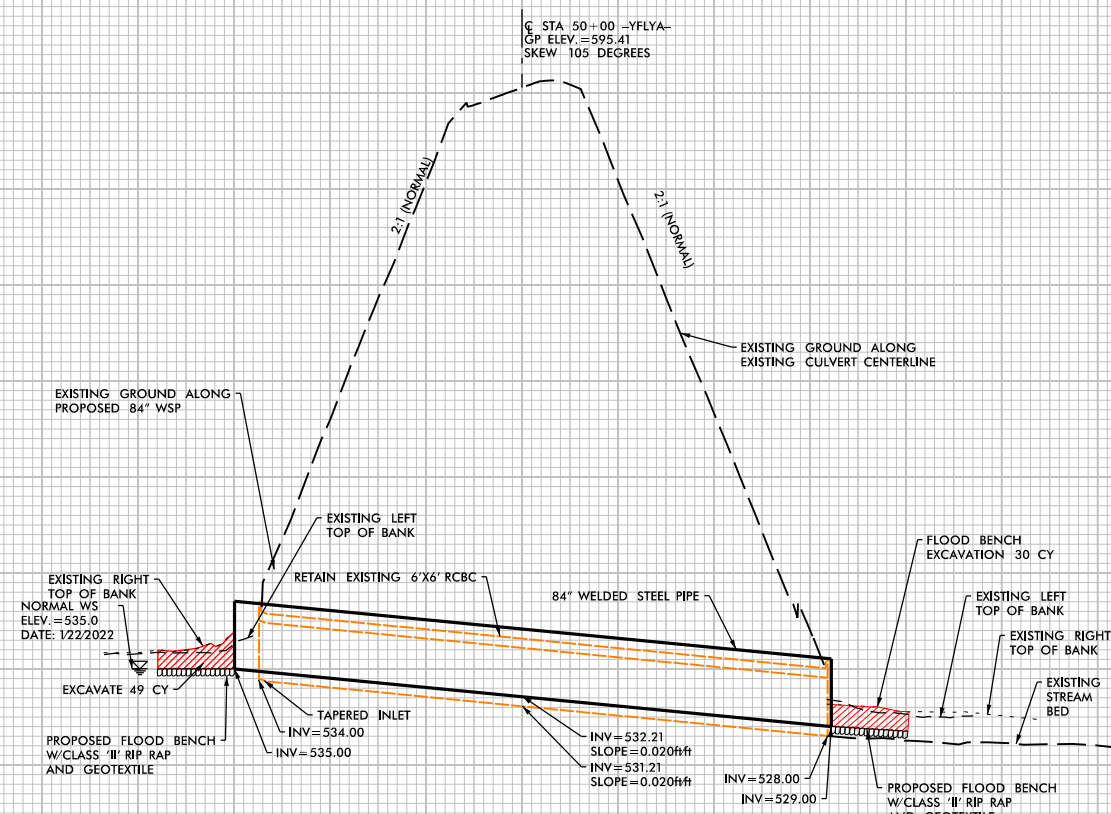
| PROJECT REFERENCE NO.   |                                                                  | SHEET NO. |
|-------------------------|------------------------------------------------------------------|-----------|
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER                                              |           |
|                         | DOCUMENT NOT CONSIDERED FINAL<br>UNLESS ALL SIGNATURES COMPLETED |           |

SITE 2A,B

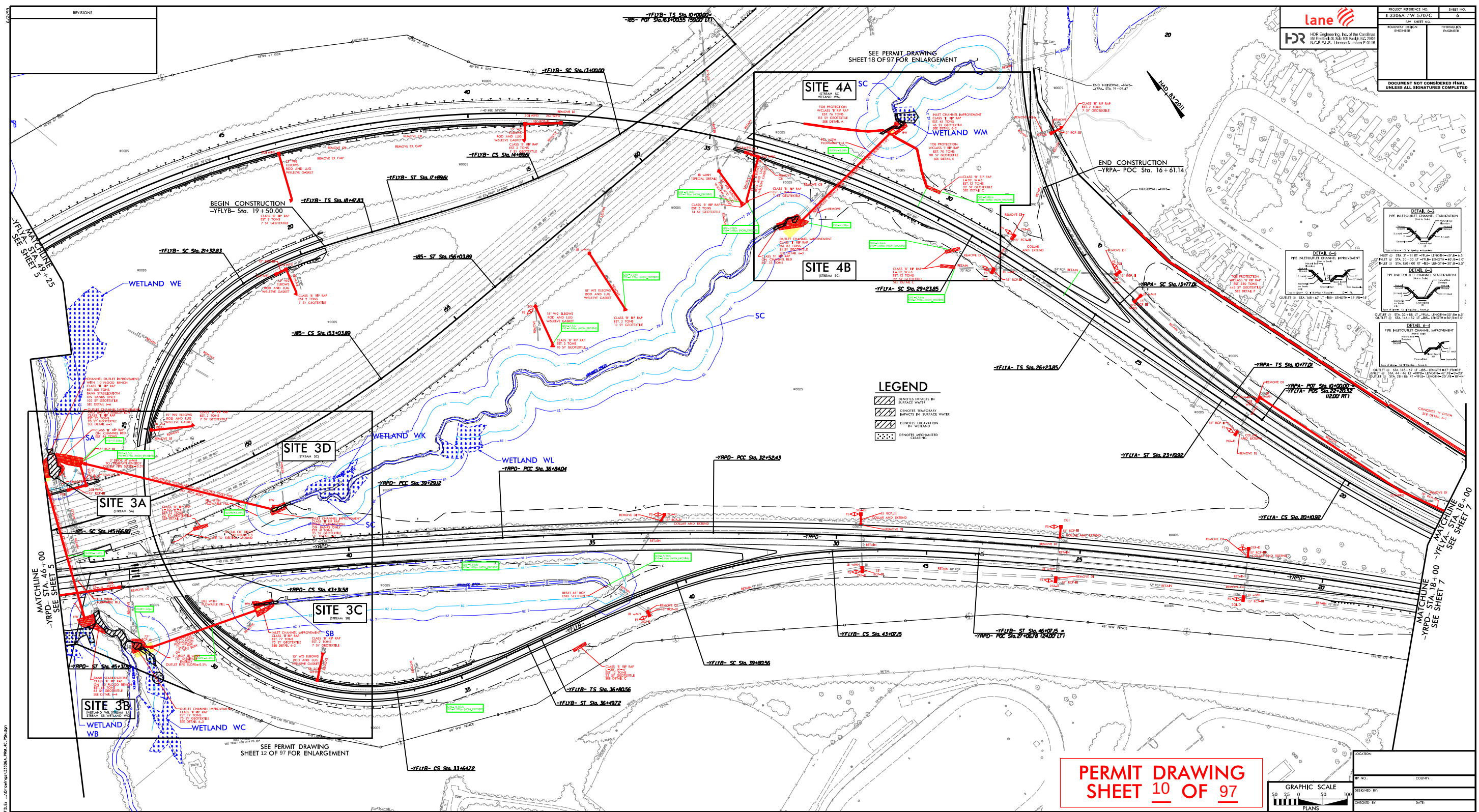
300' 200' 100' 0 100' 200' 300'

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

595  
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PROFILE ALONG STRUCTURE

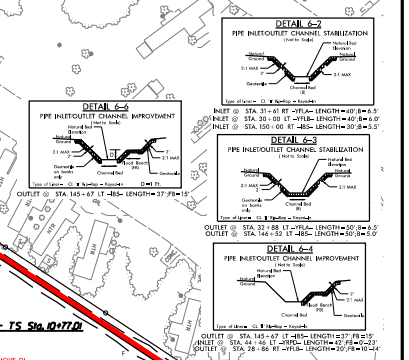


| REVISIONS |
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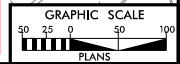
Lane Engineering, Inc. of the Carolinas  
355 Fawcett St. Suite 600 Raleigh, NC 27601  
N.C. S.E.C.E.S. License Number F-4116

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|-----------------------|-----------------|
| PROJECT REFERENCE NO. | SHEET NO.       |
| F-3306A / W-3707C     | 10              |
| REV. SHEET NO.        | PROJ. SHEET NO. |
| ROADWAY DESIGN        | ENGINEER        |

DOCUMENT NOT CONSIDERED FINAL  
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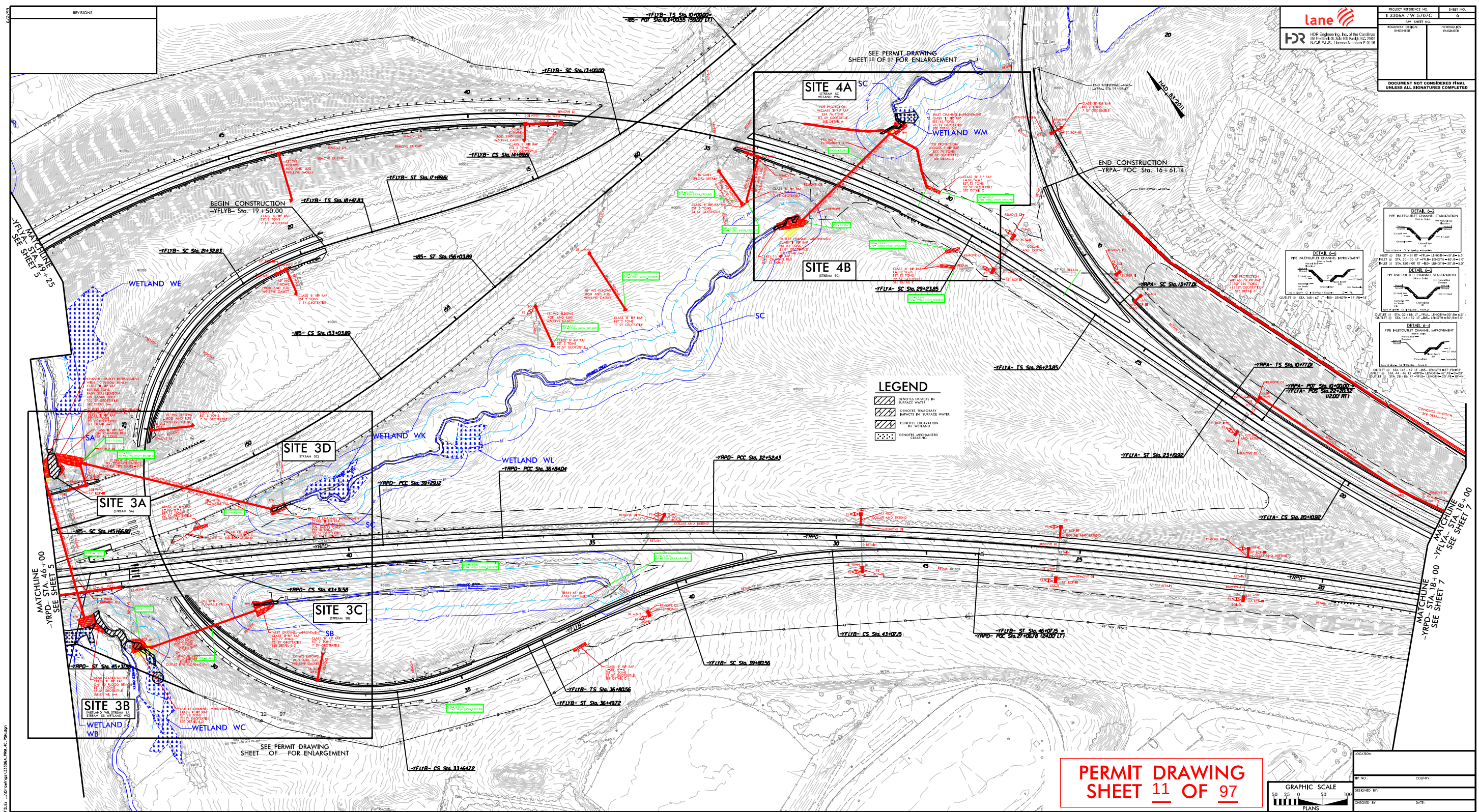
PERMIT DRAWING  
SHEET 10 OF 97



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

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TIME: 10:46:47 PM  
C:\:\corridor\400\400.dwg



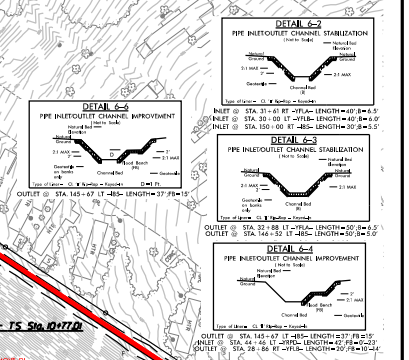


| REVISIONS |
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N.C. License Number F-4116

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|-------------------------------------|----------------|
| PROJECT NUMBER<br>1-3306A / W-5707C | SHEET NO.<br>2 |
| ROADWAY DESIGN<br>ENGINEER          | PROJ. ENGINEER |

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED



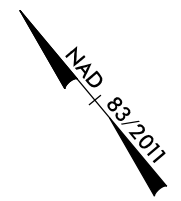
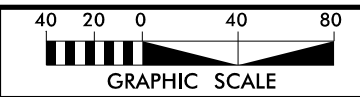
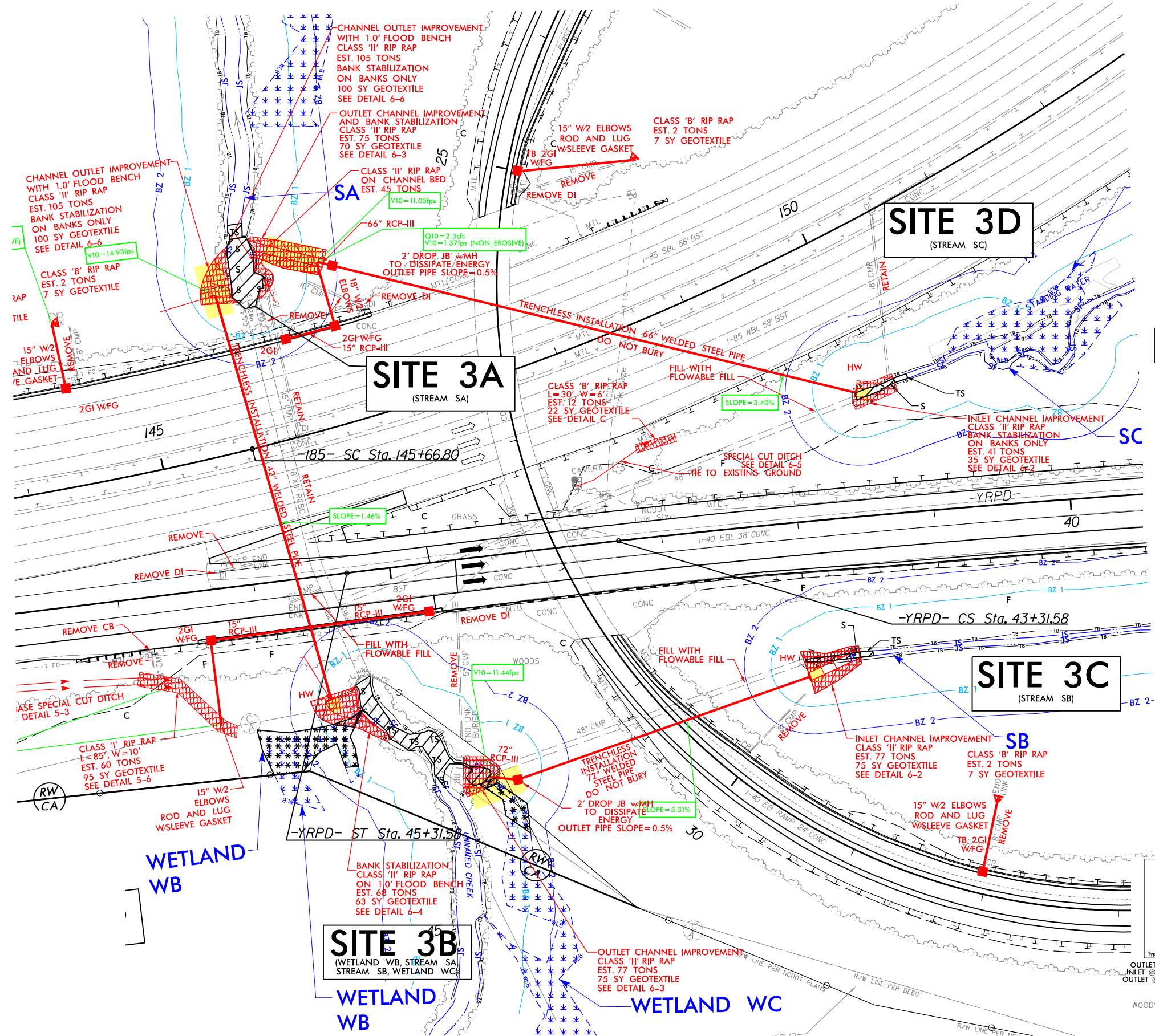
PERMIT DRAWING  
SHEET 11 OF 97

|                                      |         |
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| GRAPHIC SCALE<br>0 25 50 100<br>FEET | PLANS   |
| LOCATION:                            | TP NO.: |
| DESIGNED BY:                         | COUNTY: |
| CHECKED BY:                          | DATE:   |

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PLOT: 11001.dwg



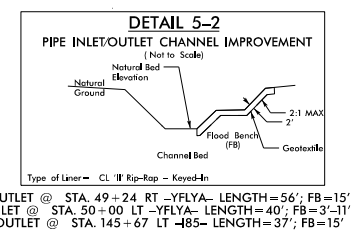
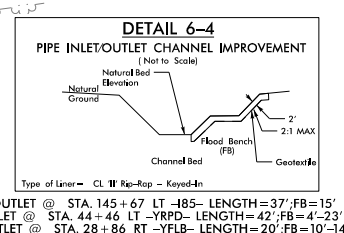
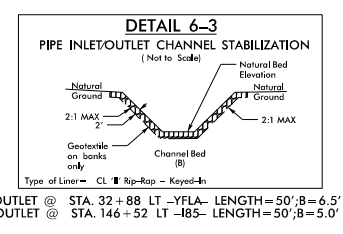
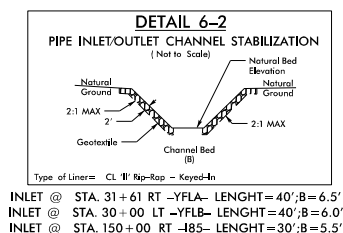
REVISIONS



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| PROJECT REFERENCE NO.   |  | SHEET NO.           |  |
| I-3306 / W-5707C        |  | 6A                  |  |
| RW SHEET NO.            |  |                     |  |
| ROADWAY DESIGN ENGINEER |  | HYDRAULICS ENGINEER |  |
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# LEGEND

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



REVISIONS

5/14/99

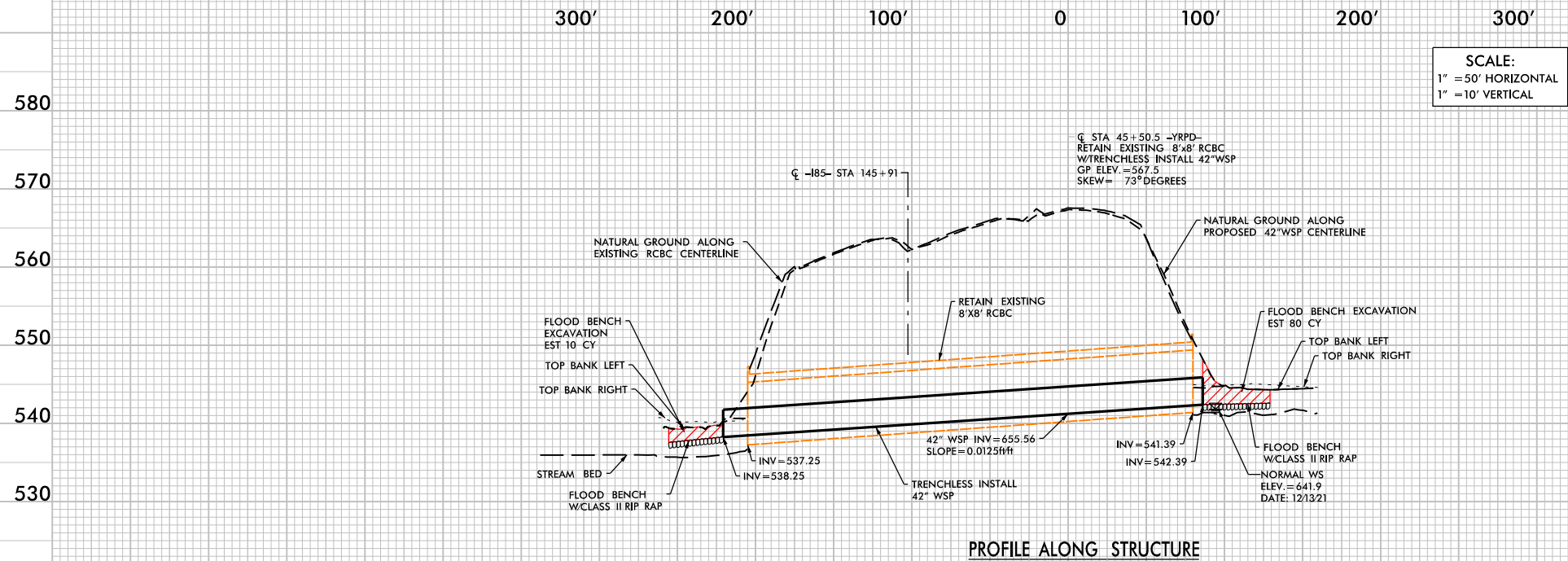


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555 Fayetteville St, Suite 900 Raleigh, N.C. 27601  
N.C.B.E.L.S. License Number: F-0116



| PROJECT REFERENCE NO.   |                                                                  | SHEET NO. |
|-------------------------|------------------------------------------------------------------|-----------|
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER                                              |           |
|                         | DOCUMENT NOT CONSIDERED FINAL<br>UNLESS ALL SIGNATURES COMPLETED |           |

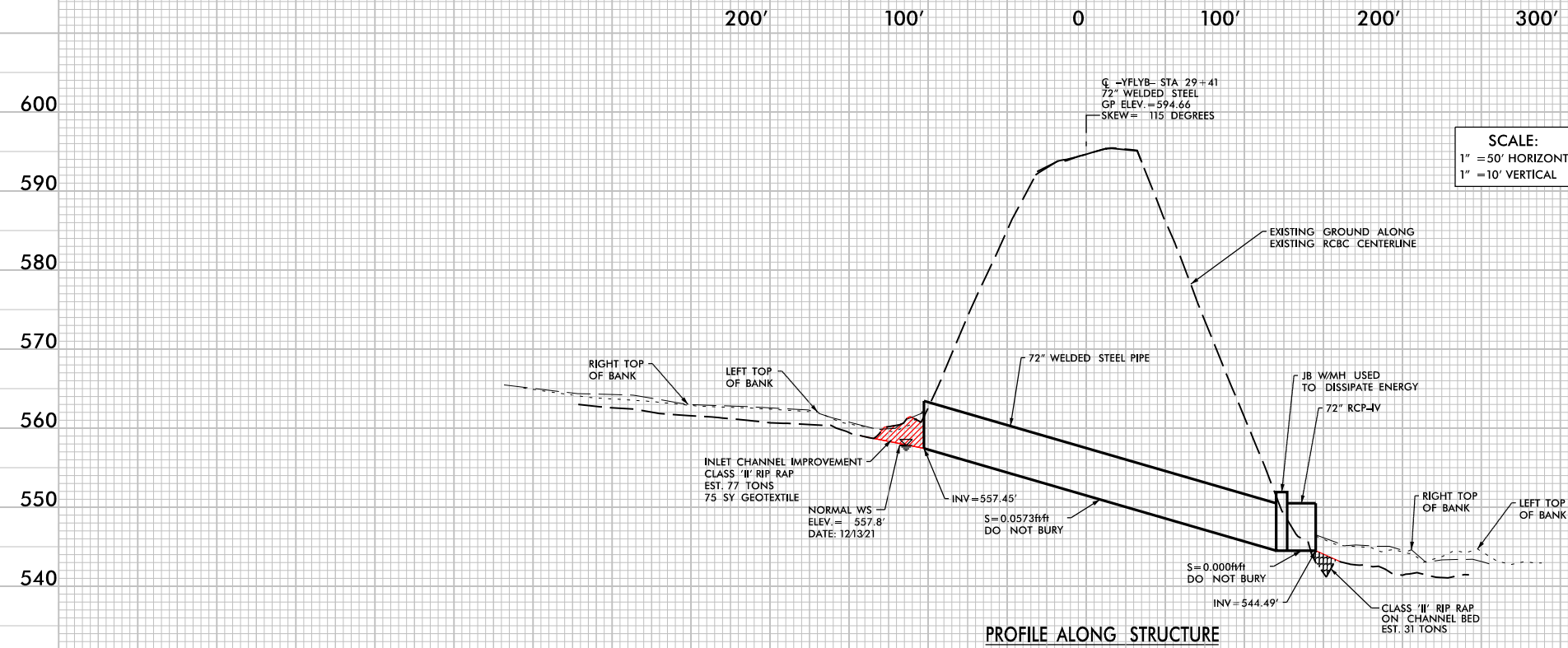
SITE 3A,B





|                                                                                                |  |                        |  |
|------------------------------------------------------------------------------------------------|--|------------------------|--|
| PROJECT REFERENCE NO.                                                                          |  | SHEET NO.              |  |
|                                                                                                |  |                        |  |
| ROADWAY DESIGN<br>ENGINEER                                                                     |  | HYDRAULICS<br>ENGINEER |  |
|                                                                                                |  |                        |  |
| <p align="center"><b>DOCUMENT NOT CONSIDERED FINAL<br/>UNLESS ALL SIGNATURES COMPLETED</b></p> |  |                        |  |

**SITE 3B,C**



PERMIT DRAWING  
SHEET 14 OF 97



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.

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

SITE 3A,D

200' 100' 0 100' 200' 300'

570  
560  
550  
540  
530

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

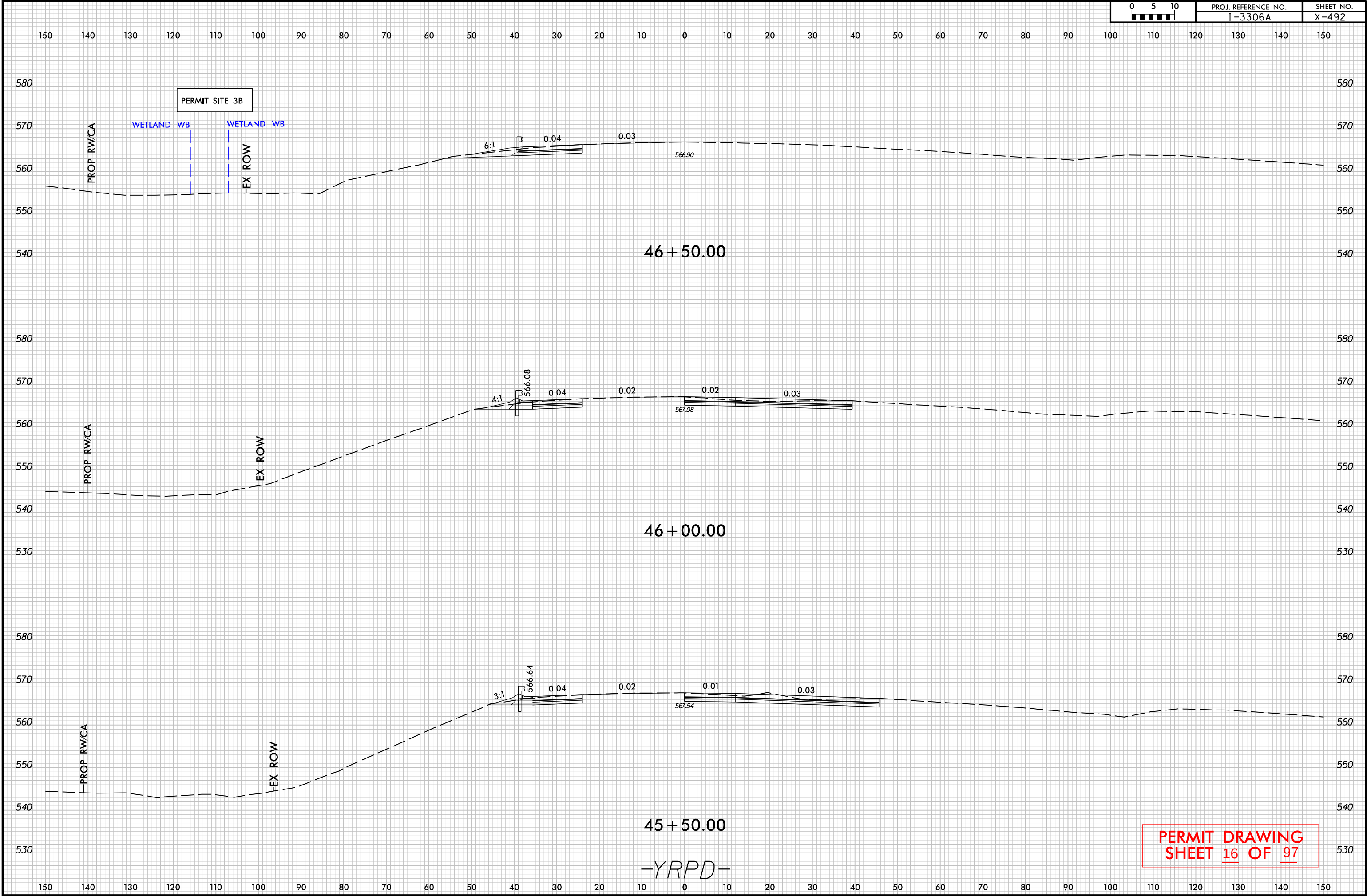
LEFT TOP OF BANK  
RIGHT TOP OF BANK  
NORMAL WS  
ELEV. = 551.79'  
DATE: 12/13/21  
INV = 550.73'  
SLOPE = 0.0340ft/ft  
DO NOT BURY  
66" WELDED STEEL PIPE  
EXISTING GROUND ALONG  
EXISTING RCBC CENTERLINE  
JB WMH USED  
TO DISSIPATE ENERGY  
66" RCP-IV  
LEFT TOP OF BANK  
RIGHT TOP OF BANK  
INV = 537.00'  
SLOPE = 0.000ft/ft  
DO NOT BURY  
OUTLET CHANNEL IMPROVEMENT  
CLASS II' RIP RAP  
EST. 75 TONS  
70 SY GEOTEXTILE  
CLASS II' RIP RAP  
ON FLOOD BENCH  
EST. 88 TONS  
83 SY GEOTEXTILE

PROFILE ALONG STRUCTURE

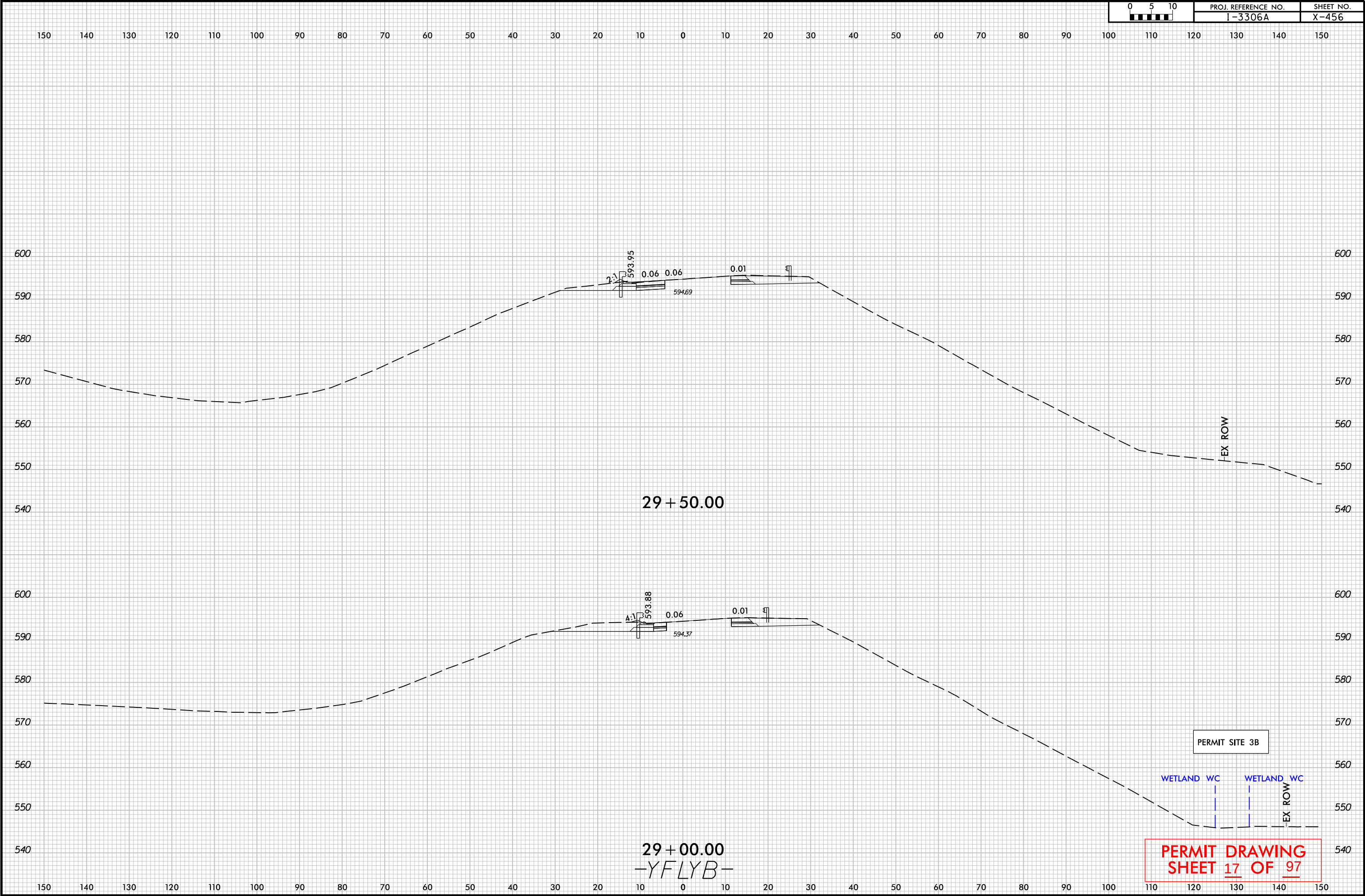
PERMIT DRAWING  
SHEET 15 OF 97

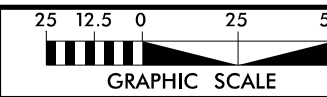


8/23/99

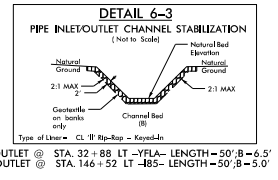
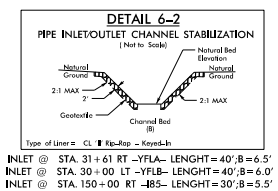
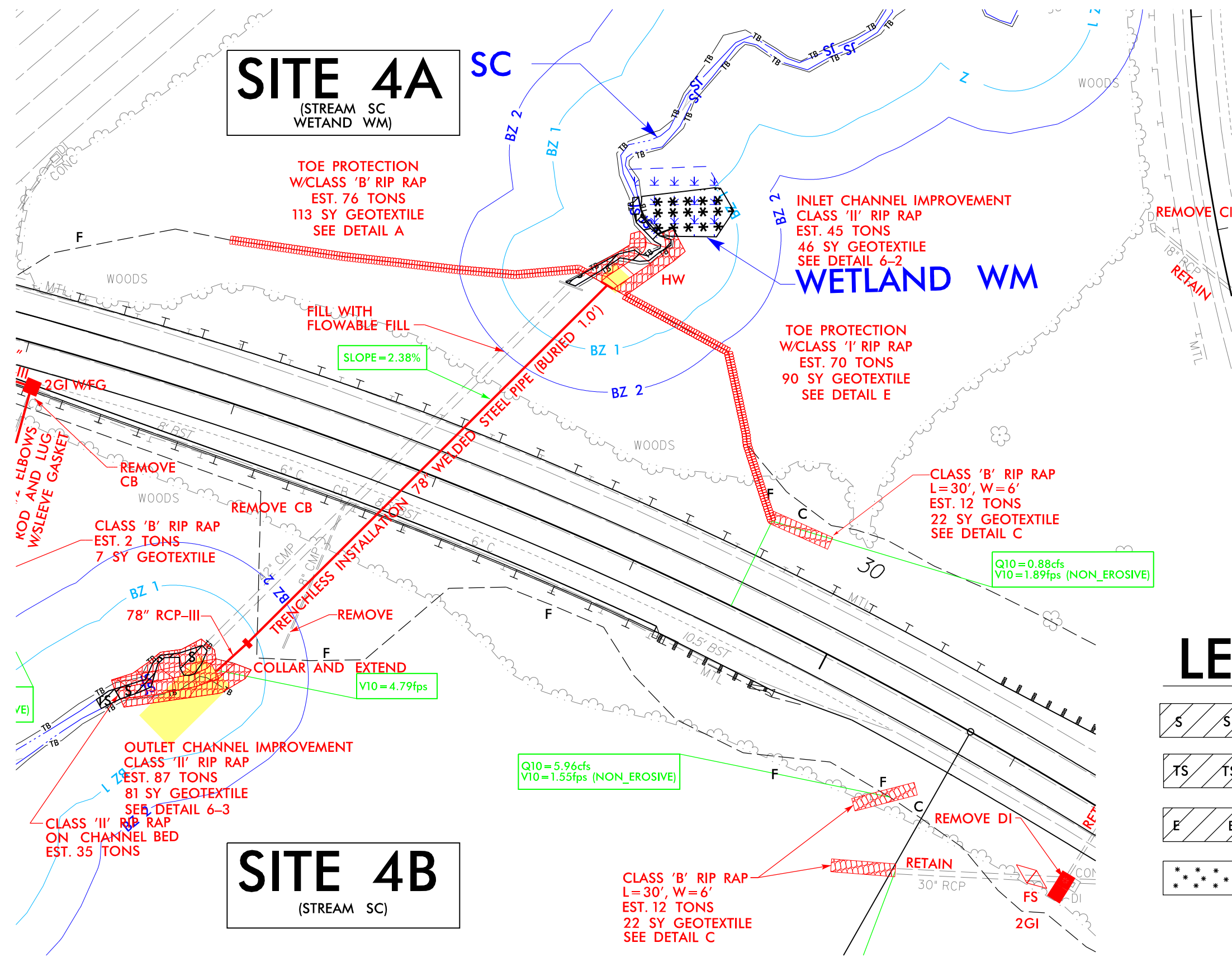
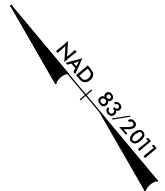


8/23/99





|                                                                                          |                                                                                                                                     |           |
|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|-----------|
| PROJECT REFERENCE NO.                                                                    |                                                                                                                                     | SHEET NO. |
| I-3306 / W-5707C                                                                         |                                                                                                                                     | 6B        |
| RW SHEET NO.                                                                             |                                                                                                                                     |           |
| ROADWAY DESIGN<br>ENGINEER                                                               | HYDRAULICS<br>ENGINEER                                                                                                              |           |
|                                                                                          |                                                                                                                                     |           |
| DOCUMENT NOT CONSIDERED FINAL<br>UNLESS ALL SIGNATURES COMPLETED                         |                                                                                                                                     |           |
| lane  |                                                                                                                                     |           |
|       | HDR Engineering, Inc. of the Carolinas<br>555 Fayetteville St, Suite 900 Raleigh, N.C. 27601<br>N.C.B.E.L.S. License Number: F-0116 |           |



# LEGEND

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

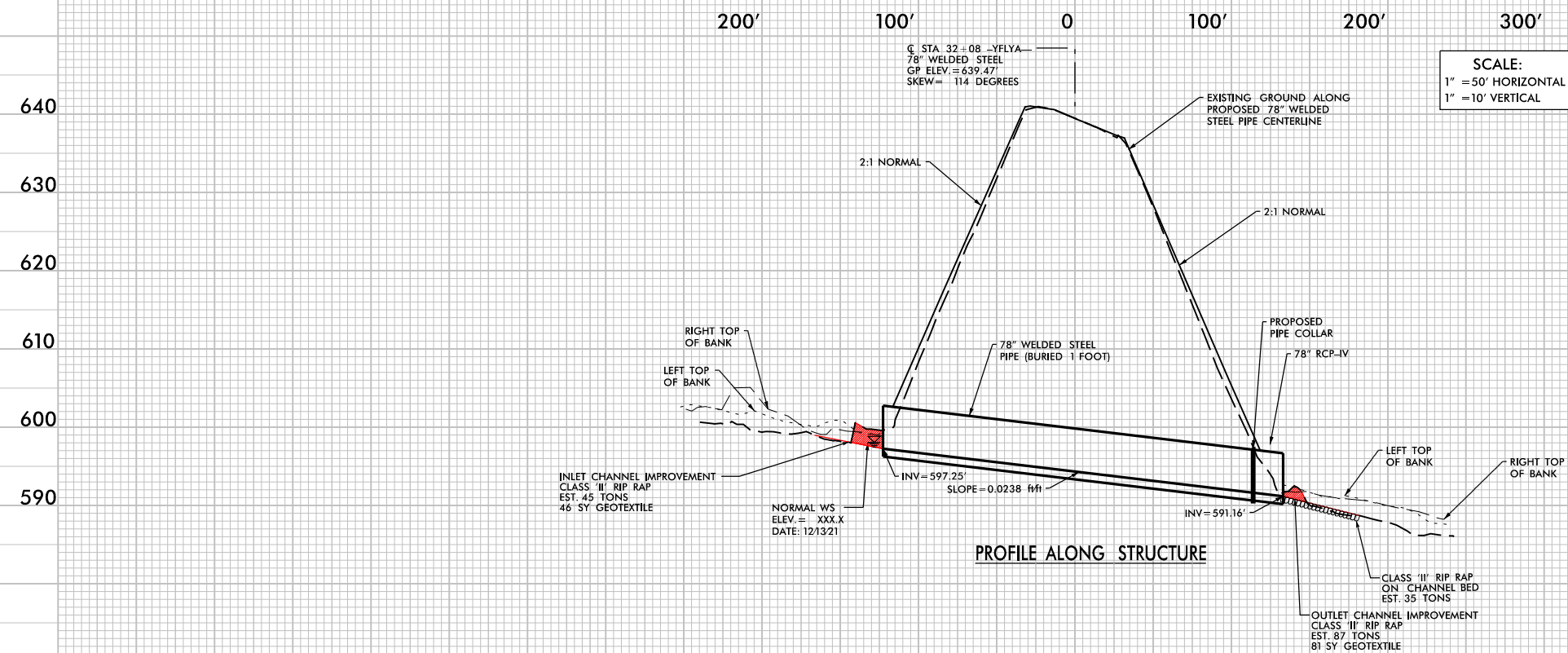
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FILE: ...\\drawings\\I3306A.PRM-4C\_PSH.dgn  
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DATE: 6/2/2022  
TIME: 2:49:23 PM

REVISIONS

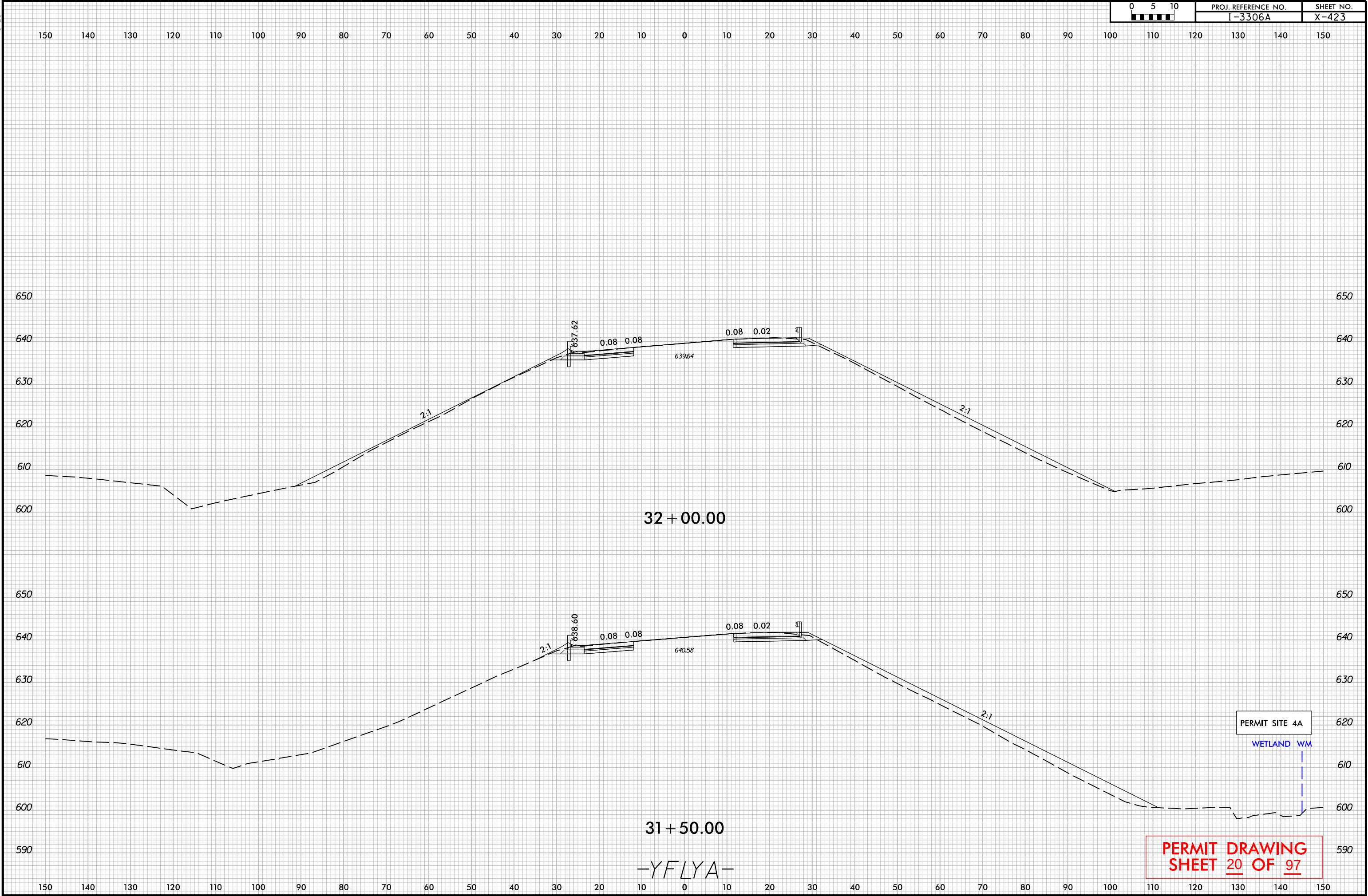


|                                                                                                |  |                        |  |
|------------------------------------------------------------------------------------------------|--|------------------------|--|
| PROJECT REFERENCE NO.                                                                          |  | SHEET NO.              |  |
|                                                                                                |  |                        |  |
| ROADWAY DESIGN<br>ENGINEER                                                                     |  | HYDRAULICS<br>ENGINEER |  |
|                                                                                                |  |                        |  |
| <p align="center"><b>DOCUMENT NOT CONSIDERED FINAL<br/>UNLESS ALL SIGNATURES COMPLETED</b></p> |  |                        |  |

**SITE 4A,B**

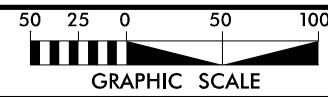
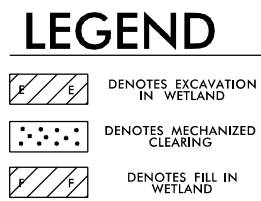
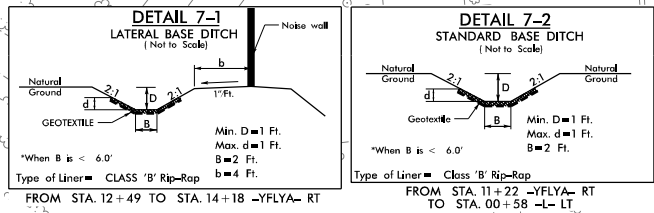
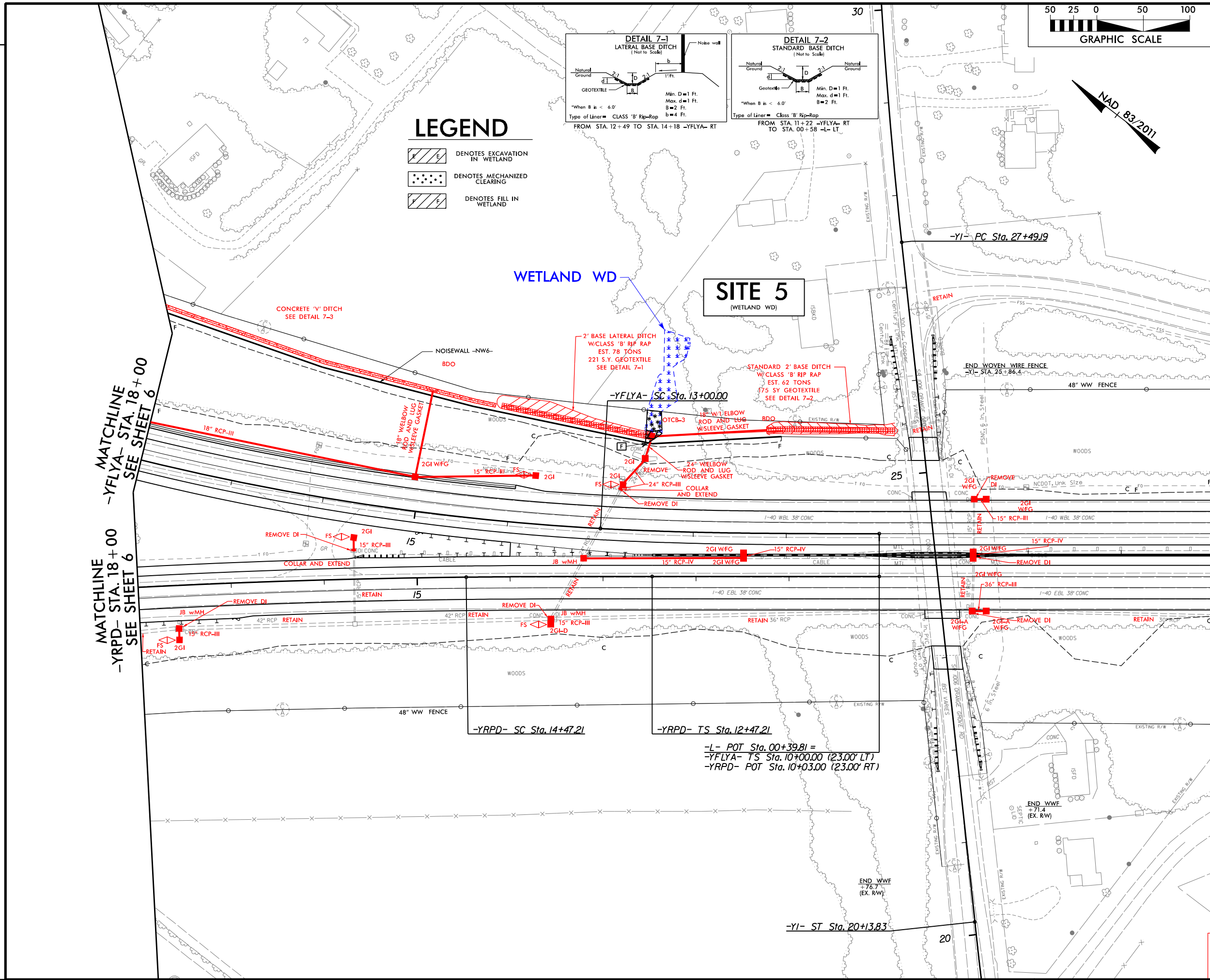


PERMIT DRAWING  
SHEET 19 OF 97





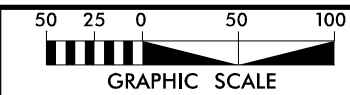
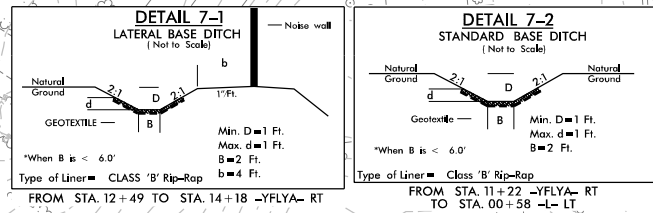
REVISIONS



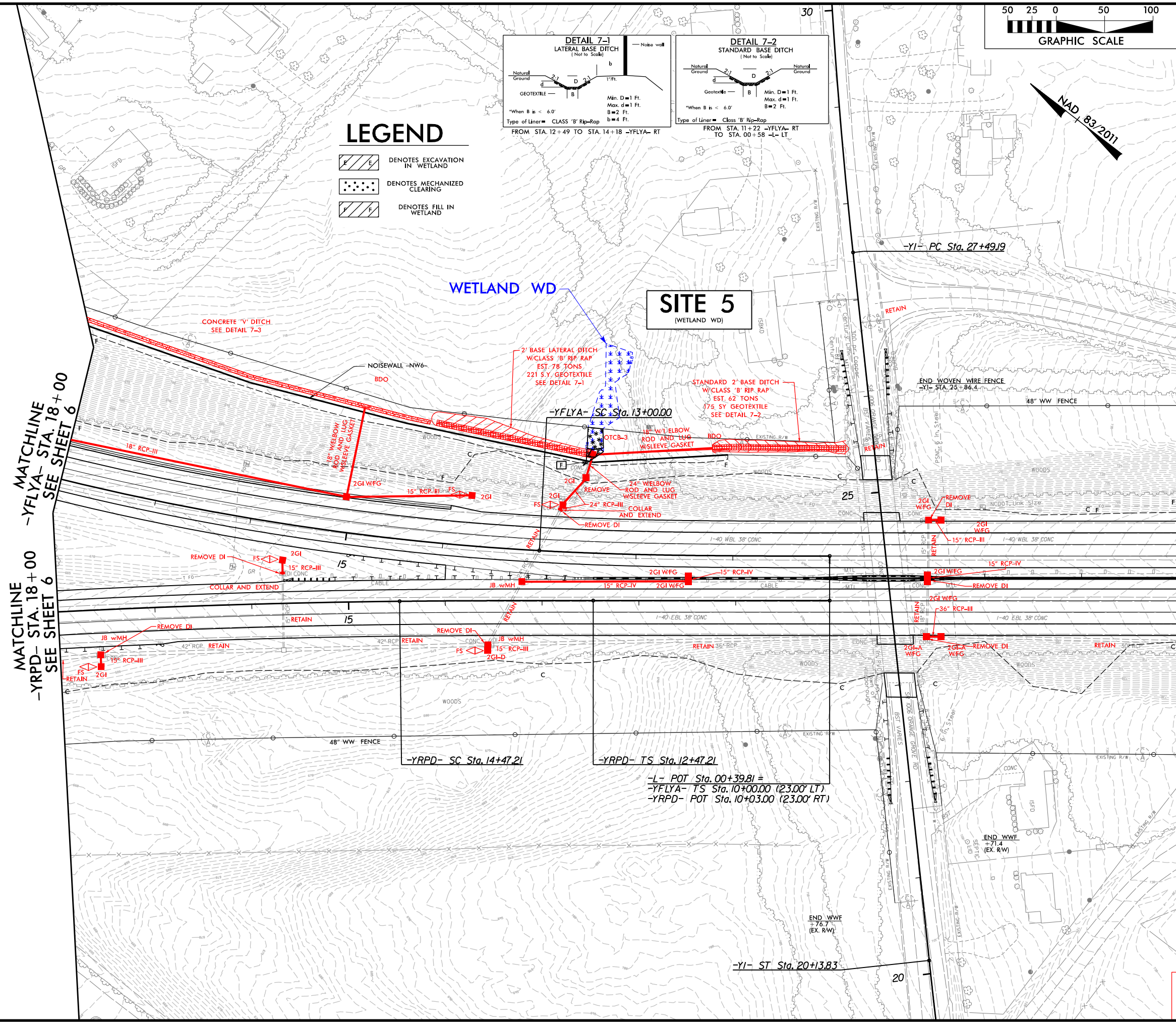
|                                                                                                                                     |                     |
|-------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| PROJECT REFERENCE NO.                                                                                                               | SHEET NO.           |
| I-3306A /W-5707C                                                                                                                    | 7                   |
| R/W SHEET NO.                                                                                                                       |                     |
| ROADWAY DESIGN ENGINEER                                                                                                             | HYDRAULICS ENGINEER |
| DOCUMENT NOT CONSIDERED FINAL<br>UNLESS ALL SIGNATURES COMPLETED                                                                    |                     |
| lane                                                                                                                                |                     |
| HDR Engineering, Inc. of the Carolinas<br>555 Fayetteville St, Suite 900 Raleigh, N.C. 27601<br>N.C.B.E.L.S. License Number: F-0116 |                     |

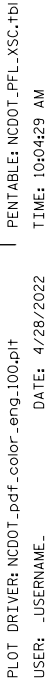
MATCHLINE -L- STA. 4+00, SEE SHEET 8





|                                                                                     |                                                                                                                                     |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| PROJECT REFERENCE NO.                                                               | SHEET NO.                                                                                                                           |
| I-3306A / W-5707C                                                                   | 7                                                                                                                                   |
| R/W SHEET NO.                                                                       |                                                                                                                                     |
| ROADWAY DESIGN<br>ENGINEER                                                          | HYDRAULICS<br>ENGINEER                                                                                                              |
| <p><b>DOCUMENT NOT CONSIDERED FINAL<br/>UNLESS ALL SIGNATURES COMPLETED</b></p>     |                                                                                                                                     |
|  |                                                                                                                                     |
|  | HDR Engineering, Inc. of the Carolinas<br>555 Fayetteville St, Suite 900 Raleigh, N.C. 27601<br>N.C.B.E.L.S. License Number: F-0116 |







PLOT DRIVER: NCDOT\_color\_eng-100.plt  
USER: EPROFFIT  
FILE: ...\\drawings\\13306A.PRM-4C.PSH.dgn  
PENTABLE: NCDOT\_permits.NCON.tbl  
DATE: 6/2/2022  
TIME: 2:49:29 PM

REVISIONS

MATCHLINE -L- STA. 44+00, SEE SHEET 10

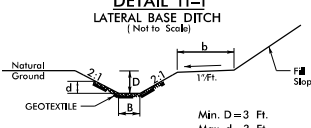
MATCHLINE -L- STA. 58+00, SEE SHEET 12

**LEGEND**

 DENOTES IMPACTS IN SURFACE WATER

 DENOTES TEMPORARY IMPACTS IN SURFACE WATER

**DETAIL 11-1**  
LATERAL BASE DITCH  
(Not to Scale)



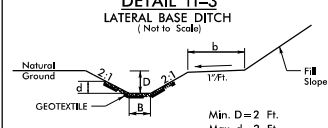
Min. D=3 Ft.  
Max. d=3 Ft.  
B=4 Ft.  
b=5 Ft.

\*When B is < 6.0'

Type of Liner - CLASS 'II' Rip-Rap

FROM STA. 48+82 TO STA. 50+38 -L- RT

**DETAIL 11-3**  
LATERAL BASE DITCH  
(Not to Scale)

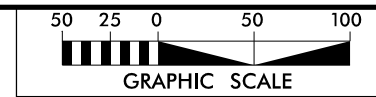


Min. D=2 Ft.  
Max. d=2 Ft.  
B=4 Ft.  
b=5 Ft.

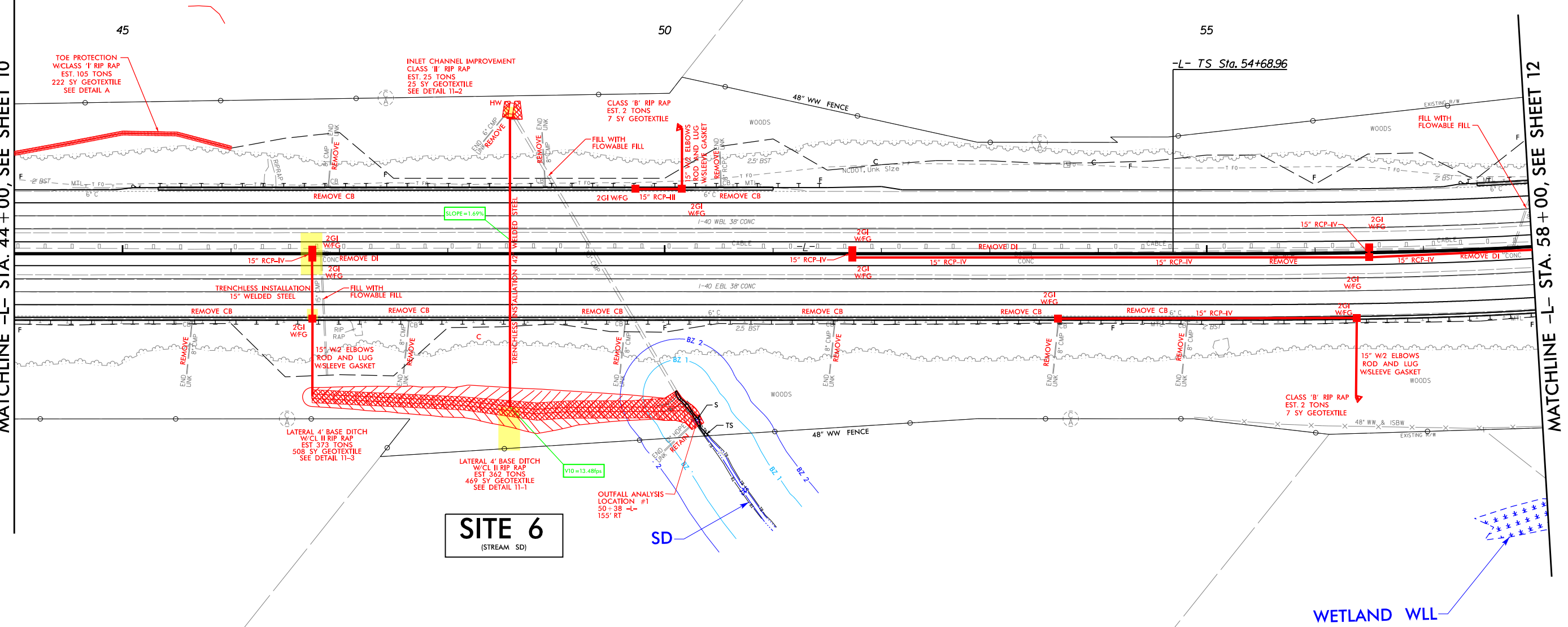
\*When B is < 6.0'

Type of Liner - CLASS 'II' Rip-Rap

FROM STA. 46+75 TO STA. 48+82 -L- RT



|                                                                                                                                                                                                                         |                     |                        |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|------------------------|
| PROJECT REFERENCE NO.<br><b>L-3306A /W-5707C</b>                                                                                                                                                                        |                     | SHEET NO.<br><b>11</b> |
| RW SHEET NO.                                                                                                                                                                                                            |                     |                        |
| ROADWAY DESIGN ENGINEER                                                                                                                                                                                                 | HYDRAULICS ENGINEER |                        |
| <b>DOCUMENT NOT CONSIDERED FINAL<br/>UNLESS ALL SIGNATURES COMPLETED</b>                                                                                                                                                |                     |                        |
|                                                                                                                                      |                     |                        |
|  HDR Engineering, Inc. of the Carolinas<br>555 Fayetteville St, Suite 900 Raleigh, N.C. 27601<br>N.C.B.E.L.S. License Number: F-0116 |                     |                        |



WETLAND WLL

**SITE 6**  
(STREAM SD)

**PERMIT DRAWING  
SHEET 24 OF 97**

PLOT DRIVER: NCDOT\_color\_eng\_100.plt  
USER: EPROFFIT  
FILE: ...\\drawings\\13306A.PRM\_4C\_PSH.dgn  
PENTABLE: NCDOT\_permits.CON.tbl  
TIME: 2:42:49 PM  
DATE: 6/2/2022

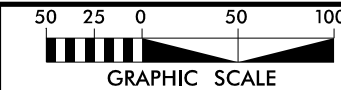
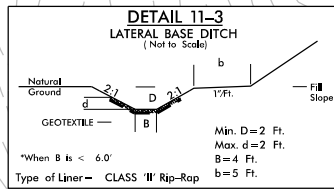
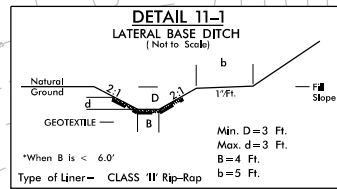
REVISIONS

MATCHLINE -L- STA. 44+00, SEE SHEET 10

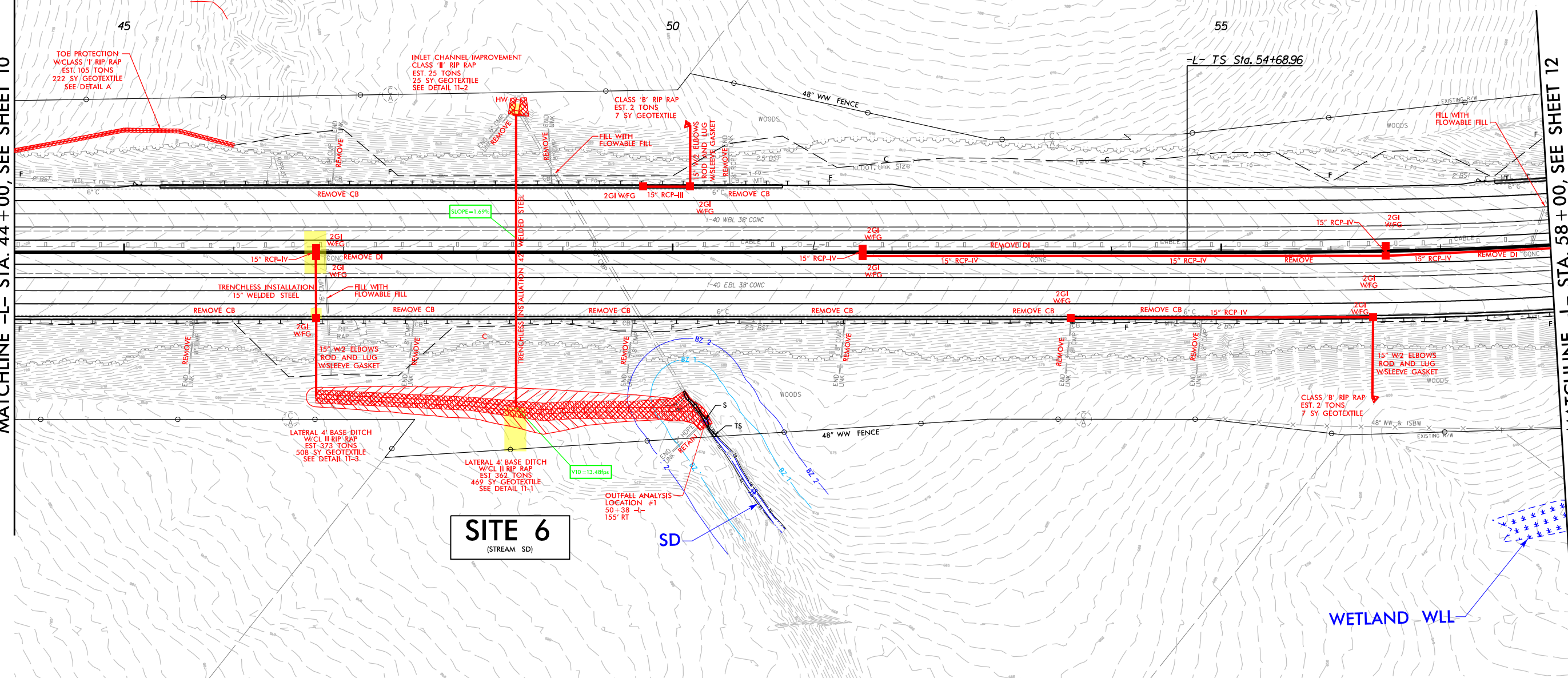
MATCHLINE -L- STA. 58+00, SEE SHEET 12

## LEGEND

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



|                                                                                                                                                                                                                         |  |                        |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------------------|--|
| PROJECT REFERENCE NO.<br>I-3306A /W-5707C                                                                                                                                                                               |  | SHEET NO.<br>11        |  |
| RW SHEET NO.                                                                                                                                                                                                            |  |                        |  |
| ROADWAY DESIGN<br>ENGINEER                                                                                                                                                                                              |  | HYDRAULICS<br>ENGINEER |  |
| <b>DOCUMENT NOT CONSIDERED FINAL<br/>UNLESS ALL SIGNATURES COMPLETED</b>                                                                                                                                                |  |                        |  |
|                                                                                                                                      |  |                        |  |
|  HDR Engineering, Inc. of the Carolinas<br>555 Fayetteville St, Suite 900 Raleigh, N.C. 27601<br>N.C.B.E.L.S. License Number: F-0116 |  |                        |  |

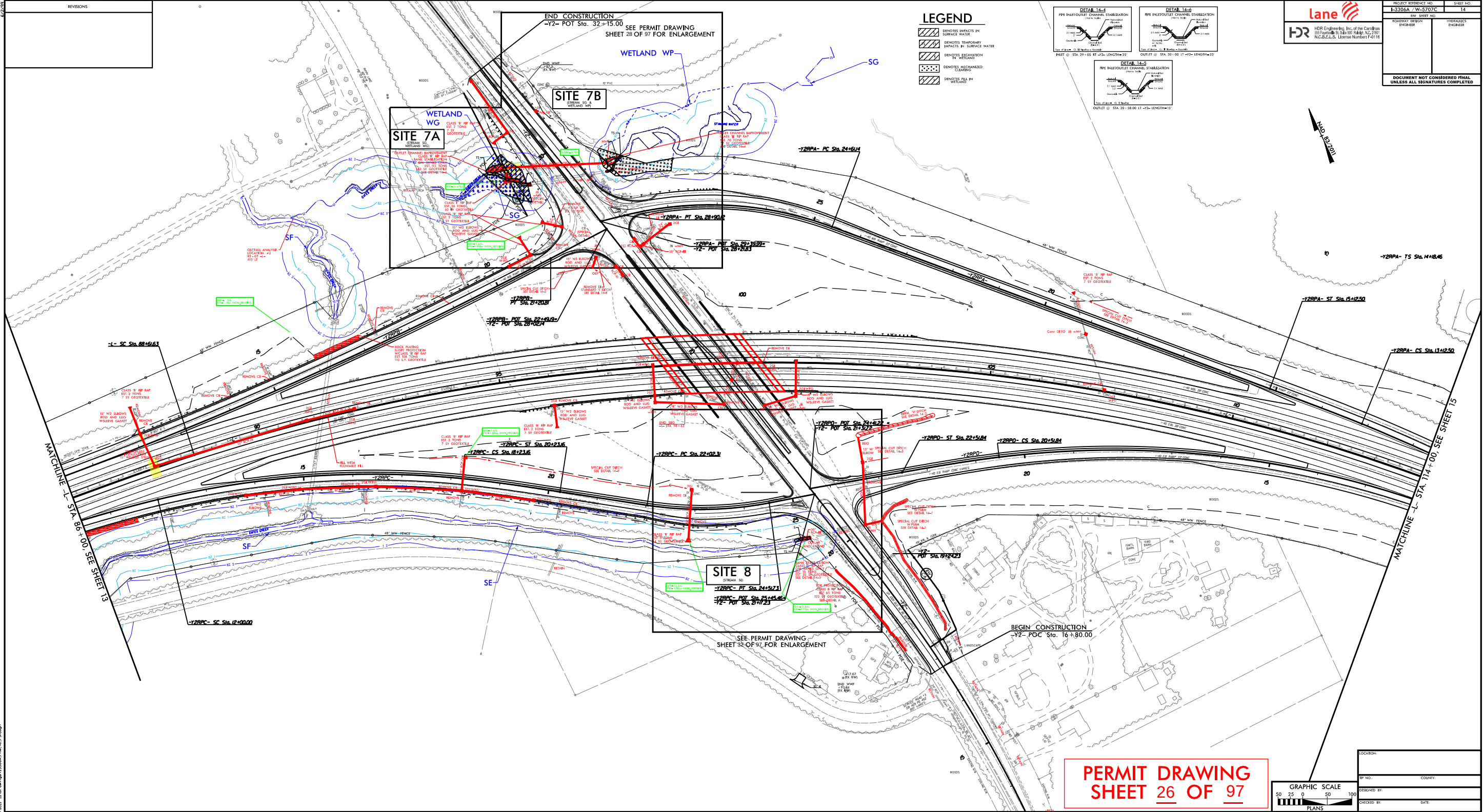


**SITE 6**  
(STREAM SD)

WETLAND WILL

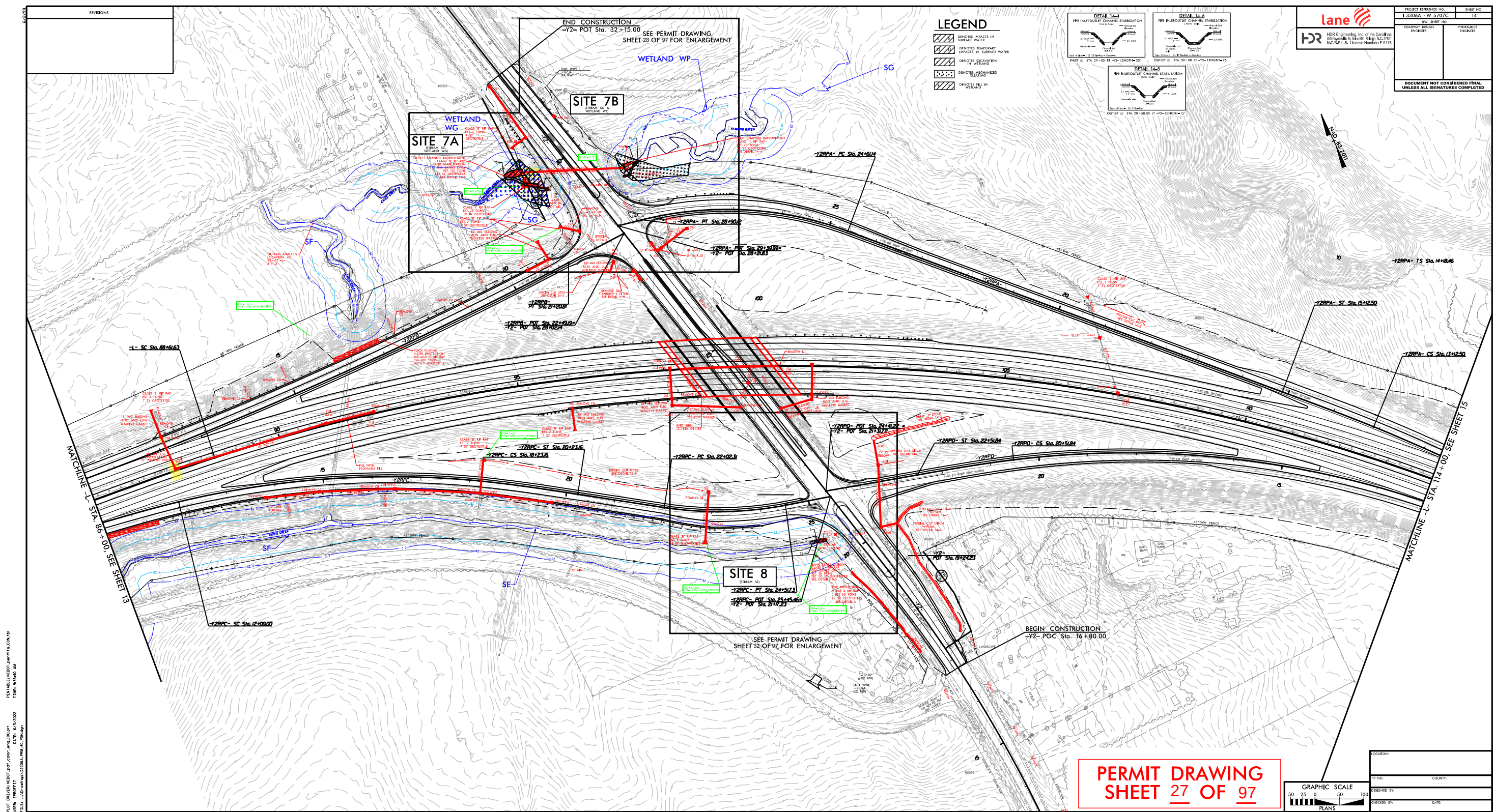
PERMIT DRAWING  
SHEET 25 OF 97





PLOT: D:\PLOT\12021\12021.dwg  
USER: E:\PLOT\12021\12021.dwg  
DATE: 06/17/2022  
TIME: 10:30 AM



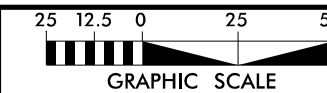




# LEGEND

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

END CONSTRUCTION  
-Y2- POT Sta. 32+15.00



|                                                                                                                                     |                     |
|-------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| PROJECT REFERENCE NO.<br>I-3306 / W-5707C                                                                                           | SHEET NO.<br>14A    |
| R/W SHEET NO.                                                                                                                       |                     |
| ROADWAY DESIGN ENGINEER                                                                                                             | HYDRAULICS ENGINEER |
| DOCUMENT NOT CONSIDERED FINAL<br>UNLESS ALL SIGNATURES COMPLETED                                                                    |                     |
|                                                                                                                                     |                     |
| HDR Engineering, Inc. of the Carolinas<br>555 Fayetteville St, Suite 900 Raleigh, N.C. 27601<br>N.C.B.E.L.S. License Number: F-0116 |                     |

**WETLAND WG**

**SITE 7A**  
(STREAM SG, WETLAND WG)

CLASS 'B' RIP RAP  
EST. 2 TONS  
7 SY GEOTEXTILE

OUTLET CHANNEL IMPROVEMENT  
CLASS 'II' RIP RAP  
BANK STABILIZATION  
BZ ON BANKS ONLY  
EST. 115 TONS  
143 SY GEOTEXTILE  
BZ SEE DETAIL 14-6

CLASS 'I' RIP RAP  
EST. 26 TONS  
50 SY GEOTEXTILE

CLASS 'B' RIP RAP  
EST. 2 TONS  
7 SY GEOTEXTILE

15" W/2 ELBOWS  
ROD AND LUG  
W/SLEEVE GASKET

Q10=7.4cfs  
V10=1.89fps (NON\_EROSIVE)

**SITE 7B**  
(STREAM SG & WETLAND WP)

**WETLAND WP**

END WWF  
+37.3  
(EX. RW)

SLOPE = 0.75%

TRENCHLESS INSTALLATION  
72" WELDED STEEL (DO NOT BURY)

REMOVE  
+/- 17LF OF  
EX. 15" RCP

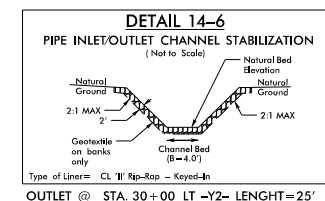
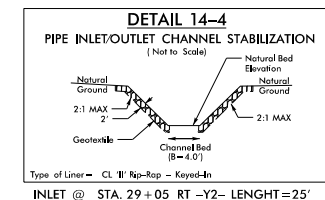
REMOVE  
DI -Y2RPA- PT S

REMOVE  
24" RCP-III

2GI

15" W/1 ELBOW  
ROD AND LUG  
W/SLEEVE GASKET

PERMIT DRAWING  
SHEET 28 OF 97



200' 100' 0 100' 200' 300'

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

JB W/MH

2:1 NORMAL

72" WELDED STEEL PIPE

RIGHT TOP OF BANK

LEFT TOP OF BANK

INLET CHANNEL IMPROVEMENT

CLASS II RIP RAP

EST. 70 TONS

57 SY GEOTEXTILE

NORMAL WS ELEV. = 408.0'

SLOPE = 0.0075 ft/ft

DO NOT BURY

INV = 606.39'

72" WELDED STEEL PIPE

EXISTING GROUND ALONG PROPOSED 72" WELDED PIPE CENTERLINE

2:1 NORMAL

RIGHT TOP OF BANK

LEFT TOP OF BANK

INV = 604.95'

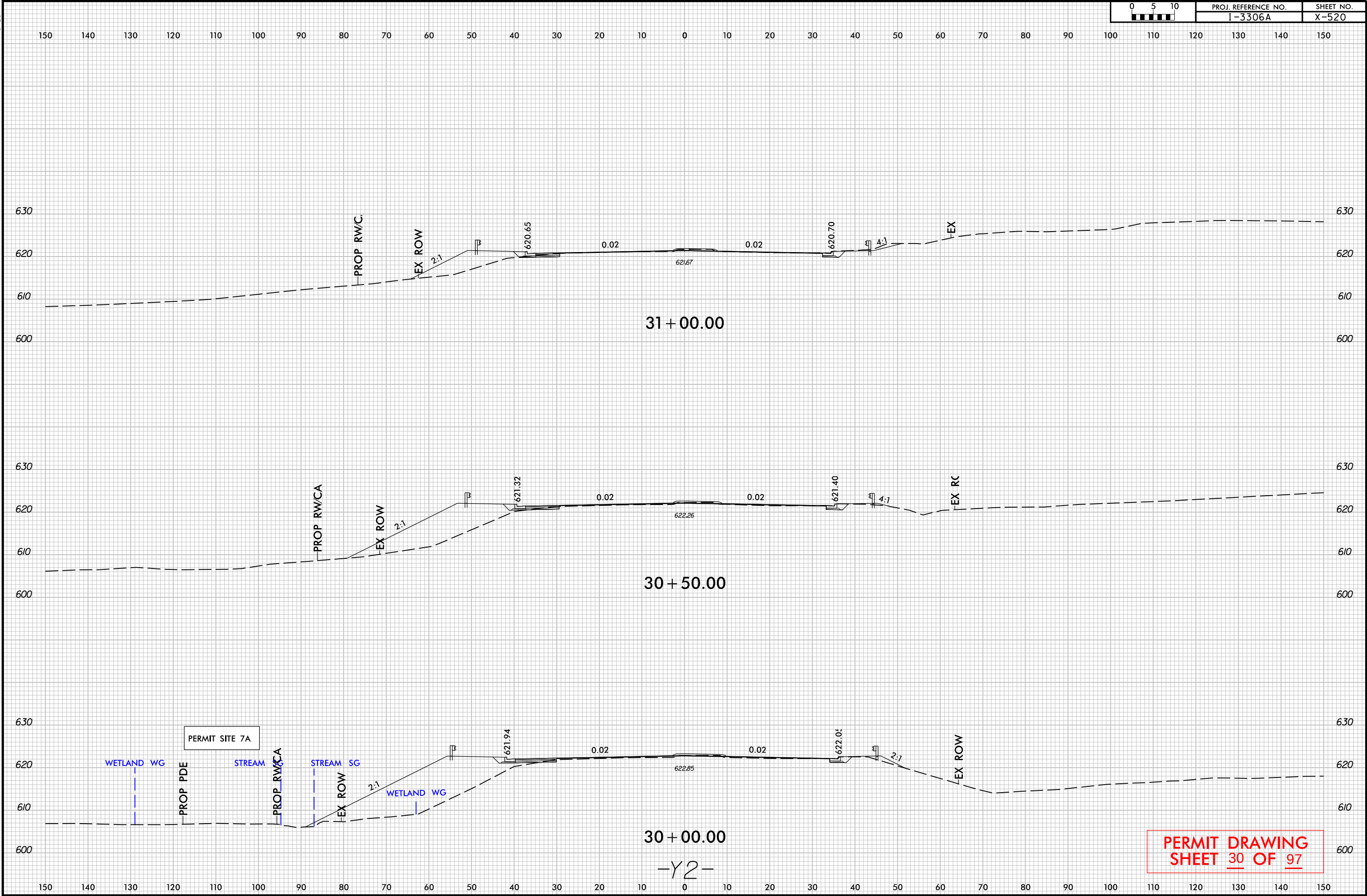
G -Y2- STA 29+17  
72" WELDED STEEL  
GP. ELEV. = 623.86'  
SKEW = 118 DEGREES

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

### PROFILE ALONG STRUCTURE

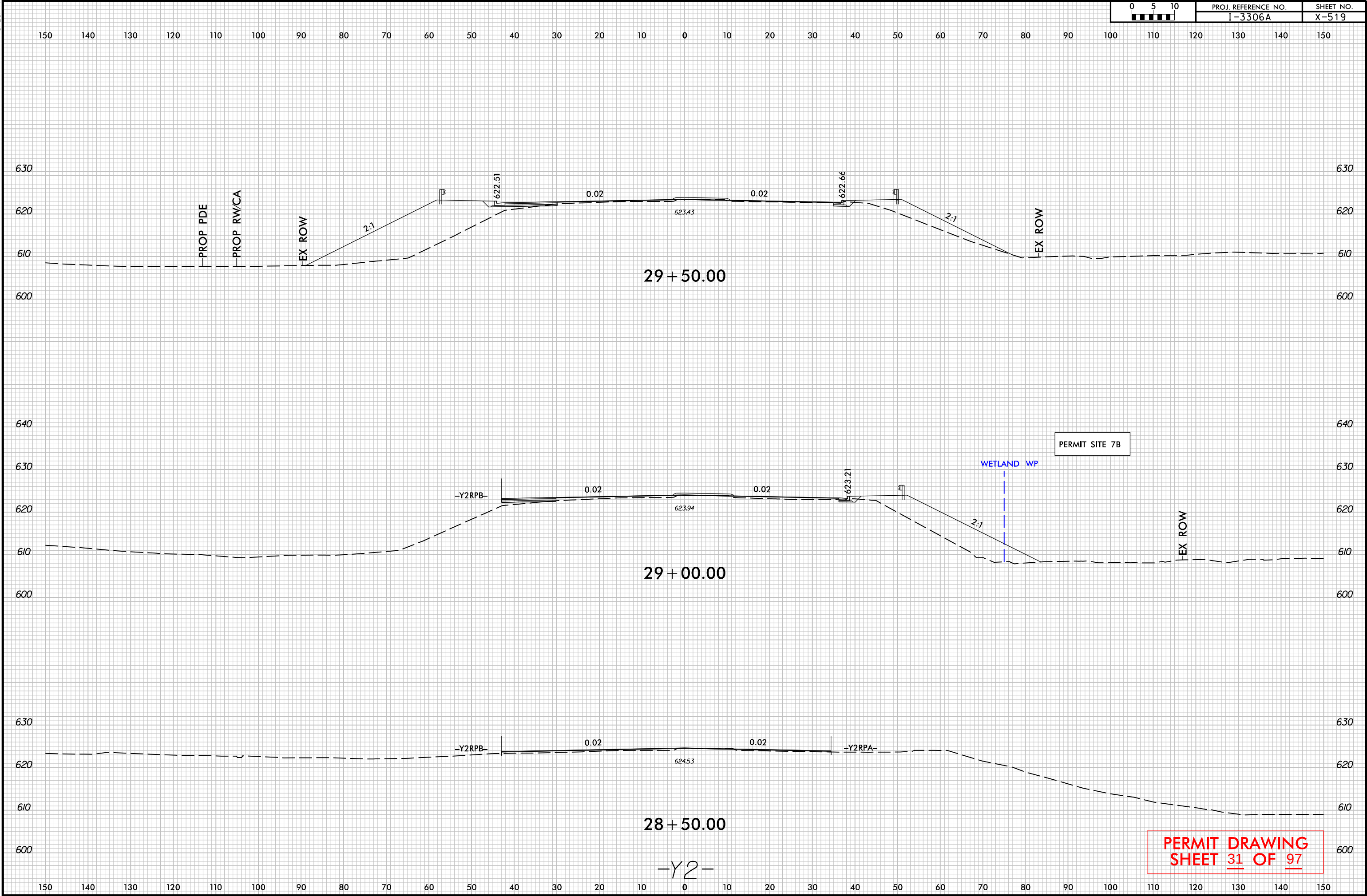
PERMIT DRAWING  
SHEET 29 OF 97

8/23/99



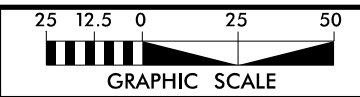
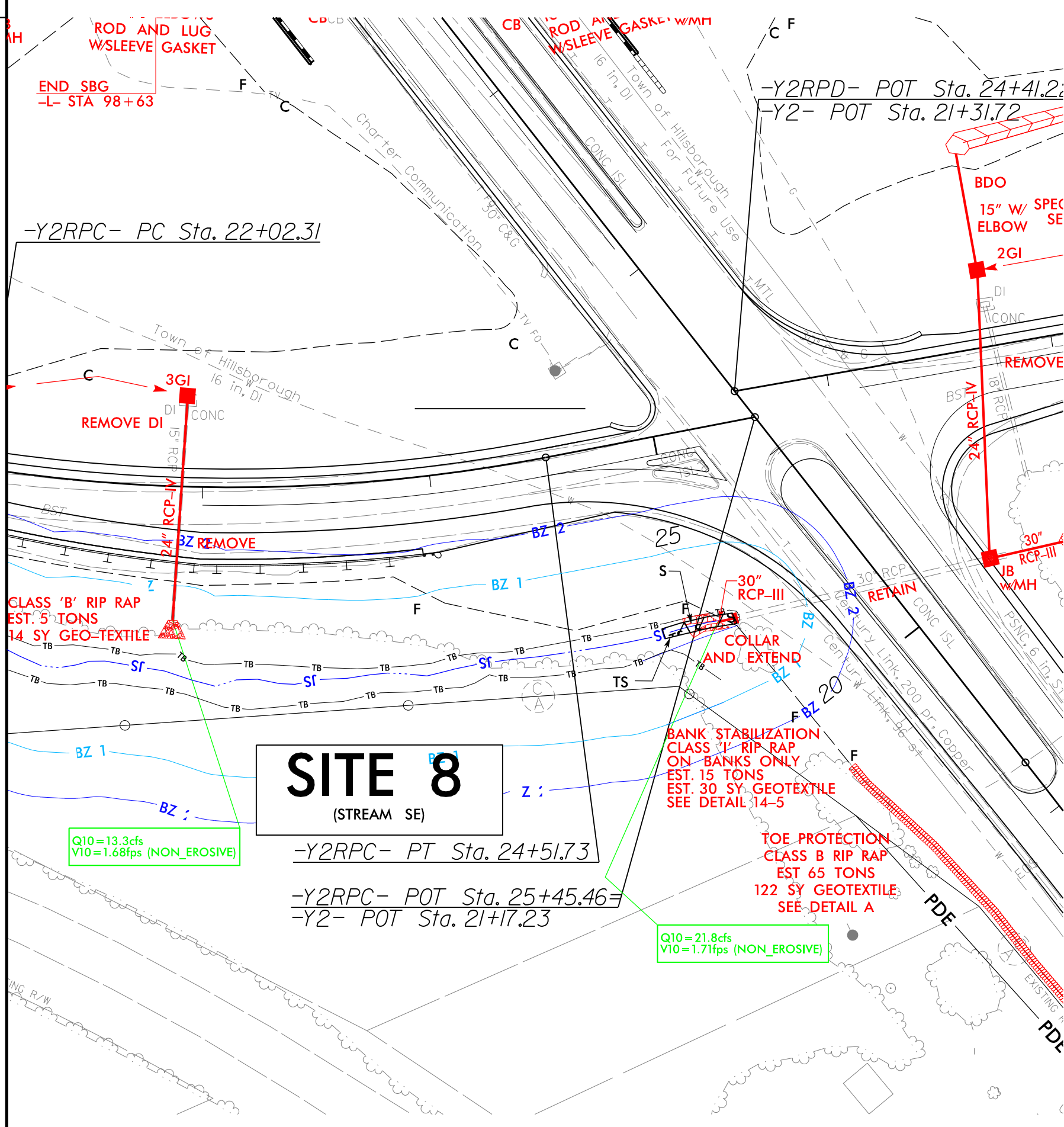


8/23/99



PLOT DRIVER: NCDOT\_color\_eng-100.plt  
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DATE: 6/2/2022  
TIME: 2:49:37 PM

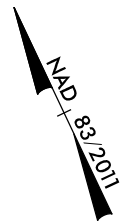
REVISIONS



# LEGEND

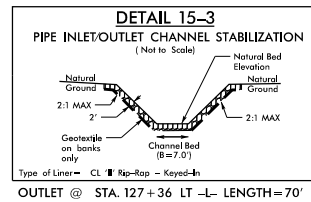
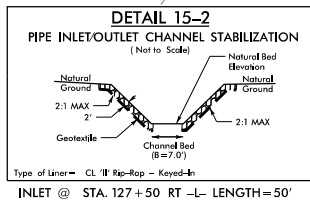
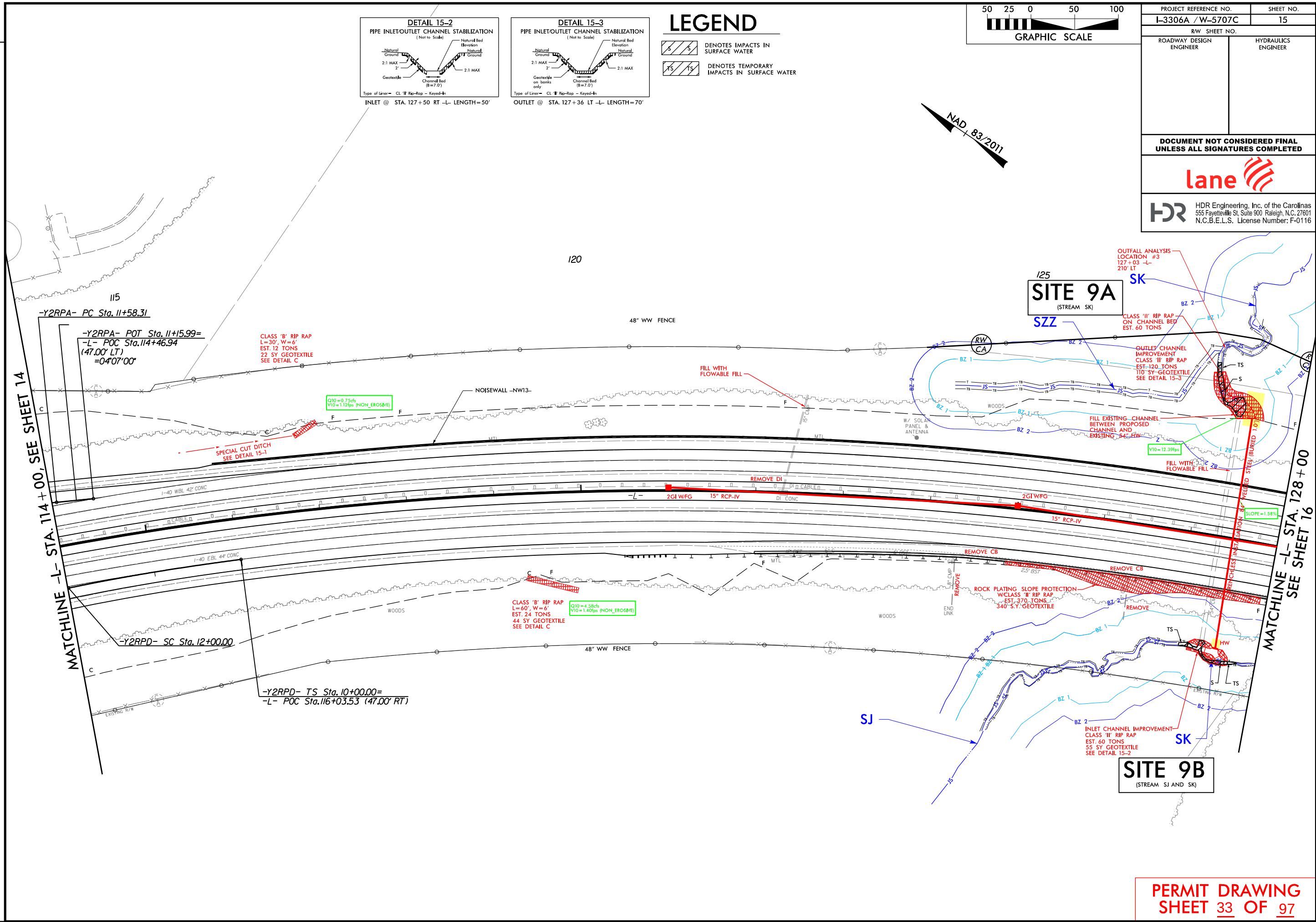
- DENOTES IMPACTS IN SURFACE WATER
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER

|                                                                                     |  |                                                                                                                                     |  |
|-------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------------------------------------------------|--|
| PROJECT REFERENCE NO.                                                               |  | SHEET NO.                                                                                                                           |  |
| I-3306 / W-5707C                                                                    |  | 14B                                                                                                                                 |  |
| RW SHEET NO.                                                                        |  |                                                                                                                                     |  |
| ROADWAY DESIGN<br>ENGINEER                                                          |  | HYDRAULICS<br>ENGINEER                                                                                                              |  |
| <b>DOCUMENT NOT CONSIDERED FINAL<br/>UNLESS ALL SIGNATURES COMPLETED</b>            |  |                                                                                                                                     |  |
|  |  |                                                                                                                                     |  |
|  |  | HDR Engineering, Inc. of the Carolinas<br>555 Fayetteville St, Suite 900 Raleigh, N.C. 27601<br>N.C.B.E.L.S. License Number: F-0116 |  |



**SITE 8**  
(STREAM SE)

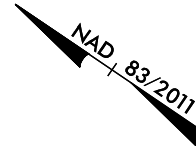
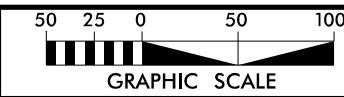
REVISIONS



**LEGEND**

DENOTES IMPACTS IN SURFACE WATER

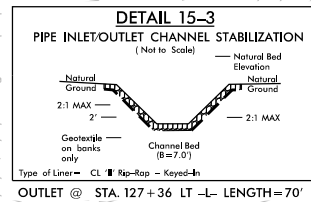
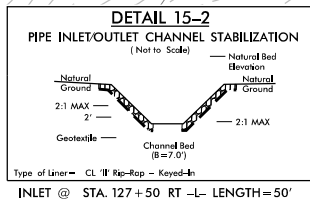
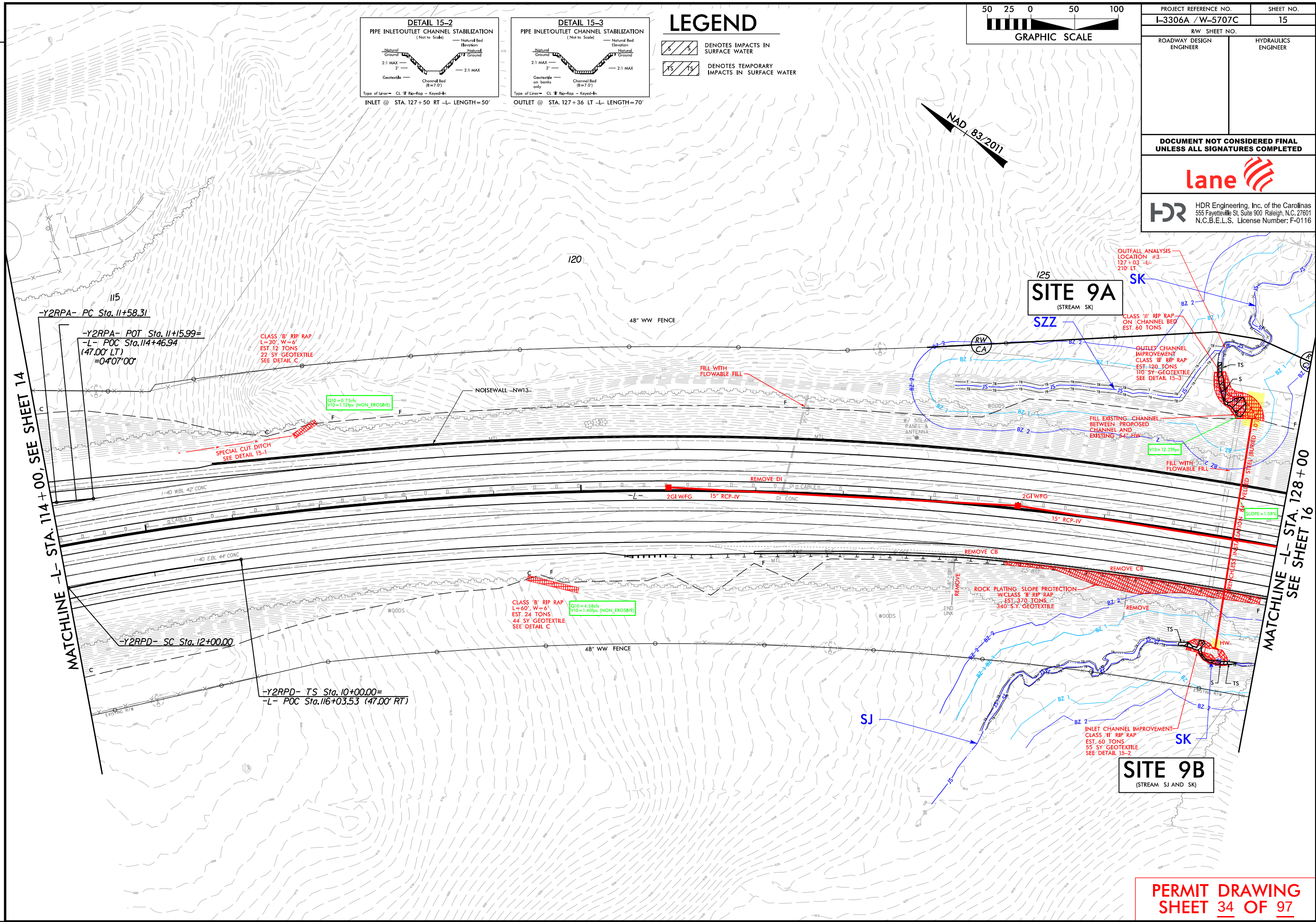
DENOTES TEMPORARY IMPACTS IN SURFACE WATER



|                                                                                                                                     |                     |
|-------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| PROJECT REFERENCE NO.                                                                                                               | SHEET NO.           |
| L-3306A /W-5707C                                                                                                                    | 15                  |
| RW SHEET NO.                                                                                                                        |                     |
| ROADWAY DESIGN ENGINEER                                                                                                             | HYDRAULICS ENGINEER |
| DOCUMENT NOT CONSIDERED FINAL<br>UNLESS ALL SIGNATURES COMPLETED                                                                    |                     |
|                                                                                                                                     |                     |
| HDR Engineering, Inc. of the Carolinas<br>555 Fayetteville St, Suite 900 Raleigh, N.C. 27601<br>N.C.B.E.L.S. License Number: F-0116 |                     |



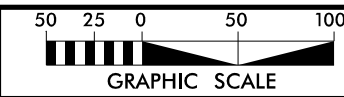
REVISIONS



**LEGEND**

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER



|                                                  |  |                        |  |
|--------------------------------------------------|--|------------------------|--|
| PROJECT REFERENCE NO.<br><b>L-3306A /W-5707C</b> |  | SHEET NO.<br><b>15</b> |  |
| RW SHEET NO.                                     |  | HYDRAULICS ENGINEER    |  |
| ROADWAY DESIGN ENGINEER                          |  |                        |  |

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

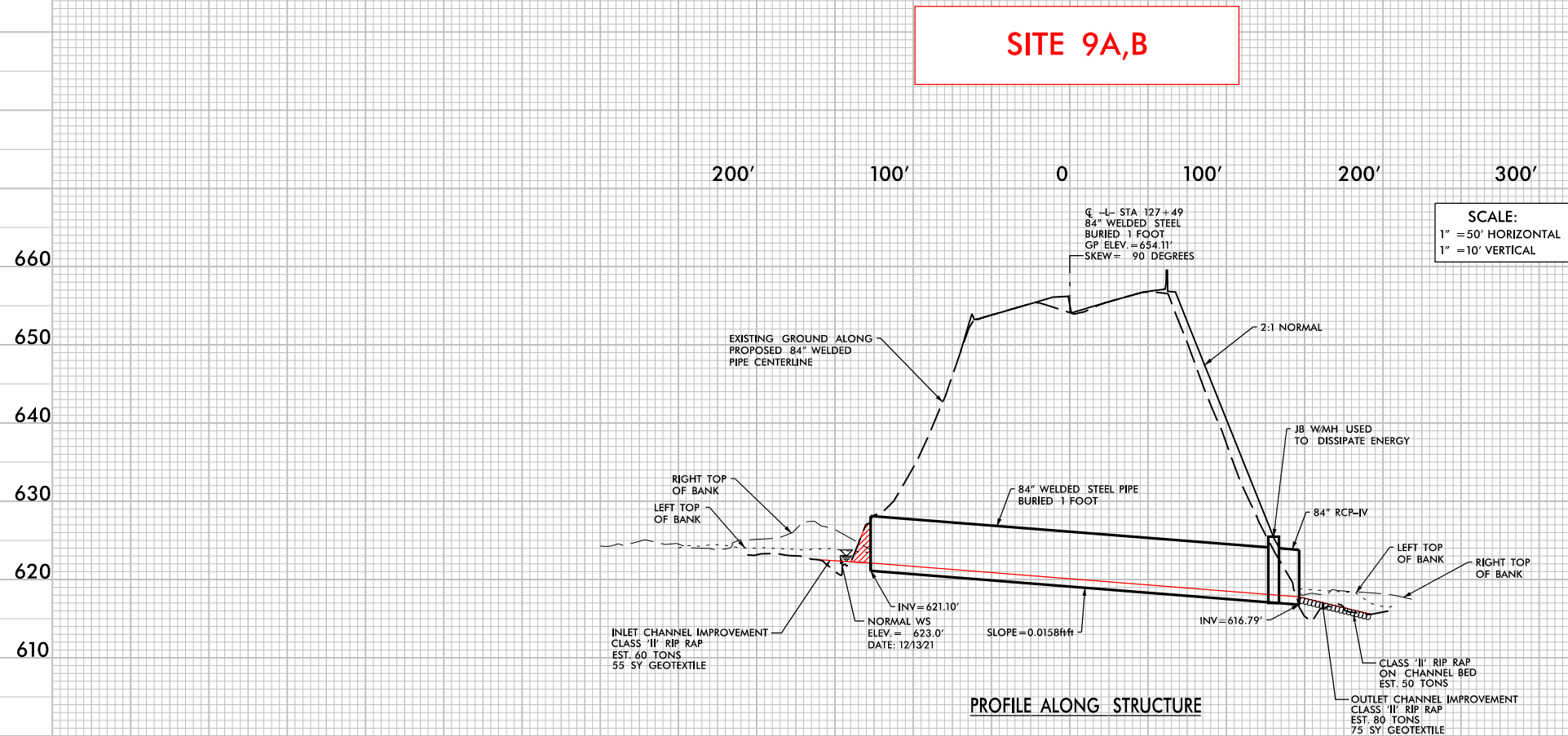
**lane**

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REVISIONS

5/14/99

|                                                                                                                                                                                                                                     |  |                                                                  |  |                        |  |
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|  <div>HDR Engineering, Inc. of the Carolinas<br/>555 Fayetteville St. Suite 900 Raleigh, N.C. 27601<br/>N.C.B.E.L.S. License Number: F-0116</div> |  | PROJECT REFERENCE NO.                                            |  | SHEET NO.              |  |
|                                                                                                                                                  |  | ROADWAY DESIGN<br>ENGINEER                                       |  | HYDRAULICS<br>ENGINEER |  |
|                                                                                                                                                                                                                                     |  | DOCUMENT NOT CONSIDERED FINAL<br>UNLESS ALL SIGNATURES COMPLETED |  |                        |  |

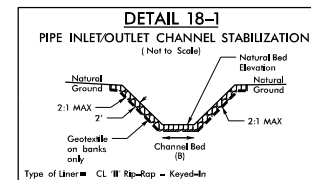


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DATE: 6/15/2022  
TIME: 9:54:00 AM

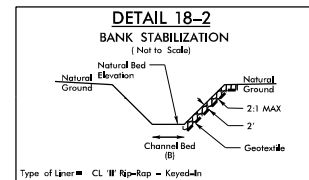
REVISIONS

## LEGEND

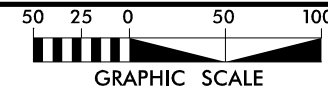
-  DENOTES IMPACTS IN SURFACE WATER
-  DENOTES TEMPORARY IMPACTS IN SURFACE WATER



OUTLET @ STA. 157+14 LT -L- LENGTH=40';B=5.0'  
OUTLET @ STA. 162+53 LT -L- LENGTH=20';B=3.5'  
INLET @ STA. 156+50 RT -L- LENGTH=10';B=4.0'

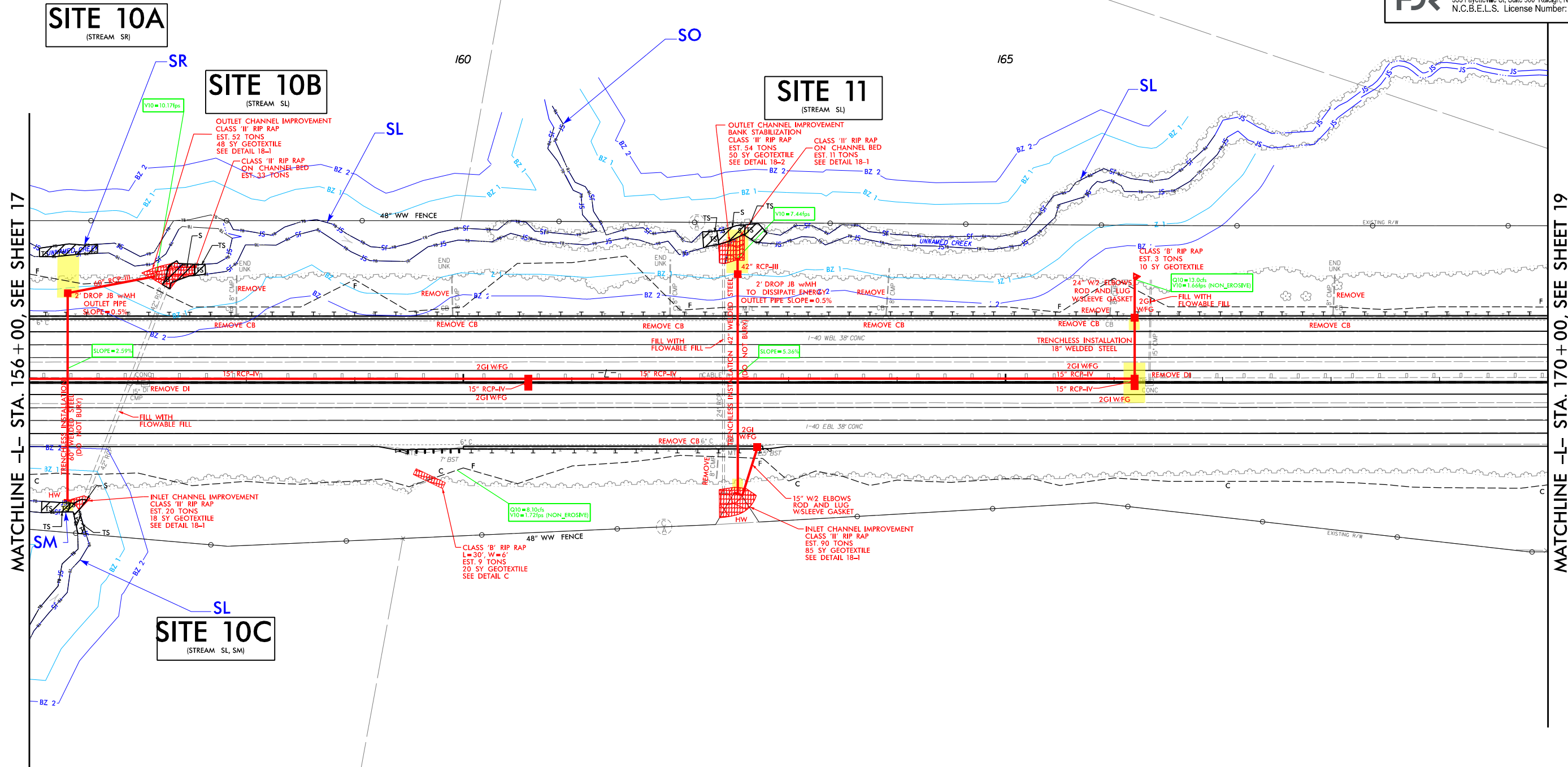


STA. 162+45 LT -L- LENGTH=25';B=11'



NAD 83/2011

|                                                                                                                                                                                                                         |  |                        |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------------------|--|
| PROJECT REFERENCE NO.                                                                                                                                                                                                   |  | SHEET NO.              |  |
| I-3306A / W-5707C                                                                                                                                                                                                       |  | 18                     |  |
| RW SHEET NO.                                                                                                                                                                                                            |  |                        |  |
| ROADWAY DESIGN<br>ENGINEER                                                                                                                                                                                              |  | HYDRAULICS<br>ENGINEER |  |
| <b>DOCUMENT NOT CONSIDERED FINAL<br/>UNLESS ALL SIGNATURES COMPLETED</b>                                                                                                                                                |  |                        |  |
|                                                                                                                                      |  |                        |  |
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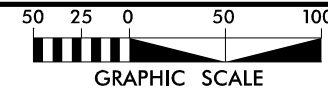
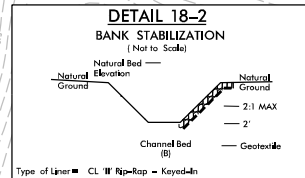
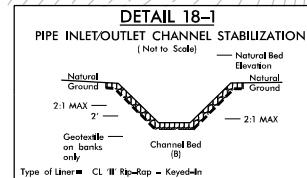
REVISIONS

MATCHLINE -L- STA. 156 + 00, SEE SHEET 17

MATCHLINE -L- STA. 170 + 00, SEE SHEET 19

## LEGEND

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



|                                                                                                                                                                                                                         |  |                        |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------------------|--|
| PROJECT REFERENCE NO.                                                                                                                                                                                                   |  | SHEET NO.              |  |
| I-3306A / W-5707C                                                                                                                                                                                                       |  | 18                     |  |
| RW SHEET NO.                                                                                                                                                                                                            |  |                        |  |
| ROADWAY DESIGN<br>ENGINEER                                                                                                                                                                                              |  | HYDRAULICS<br>ENGINEER |  |
| <b>DOCUMENT NOT CONSIDERED FINAL<br/>UNLESS ALL SIGNATURES COMPLETED</b>                                                                                                                                                |  |                        |  |
|                                                                                                                                      |  |                        |  |
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**SITE 10A**  
(STREAM SR)

**SITE 10B**  
(STREAM SL)

**SITE 11**  
(STREAM SL)

**SITE 10C**  
(STREAM SL, SM)

REVISIONS

5/14/99



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PROJECT REFERENCE NO.

SHEET NO.

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

SITE 10A,B

The diagram is a cross-sectional profile of a structure, likely a bridge or culvert, plotted on a grid. The horizontal axis represents stationing, with labels at 200', 100', 0, 100', 200', and 300'. The vertical axis represents elevation in feet, with labels at 560, 570, 580, 590, and 600. The profile shows the existing ground line (dashed) and the proposed structure (solid). Key features include: 

- Structure Details:** A central section with a 2:1 normal slope on both sides. A vertical structure is shown with a 2:1 normal slope on its right side. A joint (JB) with a manhole (w/MH) is indicated.
- Elevations and Stationing:** The structure starts at station 0 with an elevation of 576.27'. It ends at station 300' with an elevation of 569.22'.
- Channel Improvements:** On the left side, there is an inlet channel improvement with Class 'II' rip rap (estimated 20 tons) and 18 sy geotextile. On the right side, there is an outlet channel improvement with Class 'III' rip rap (estimated 52 tons) and 48 sy geotextile.
- Bank Details:** The left bank has a left top of bank and a right top of bank. The right bank has a right top of bank and a left top of bank.
- Scale:** 1" = 50' HORIZONTAL, 1" = 10' VERTICAL.
- Notes:** A note at the top center states: "G STA 156+35 -L- PROPOSED 60" WELDED STEEL GP ELEV. = 589.05' SKEW = 90 DEGREES". Another note on the right side states: "SLOPE = 0.0259111 DO NOT BURY".

PROFILE ALONG STRUCTURE

PERMIT DRAWING  
SHEET 38 OF 97



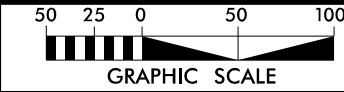
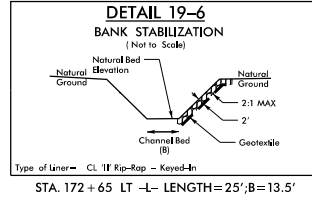
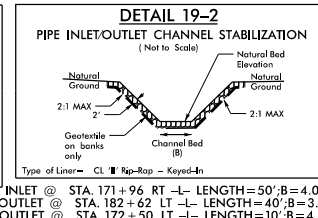
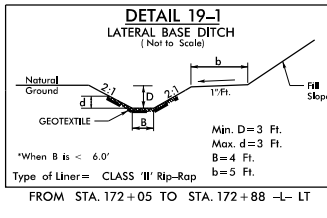
REVISIONS

MATCHLINE -L- STA. 170+00, SEE SHEET 18

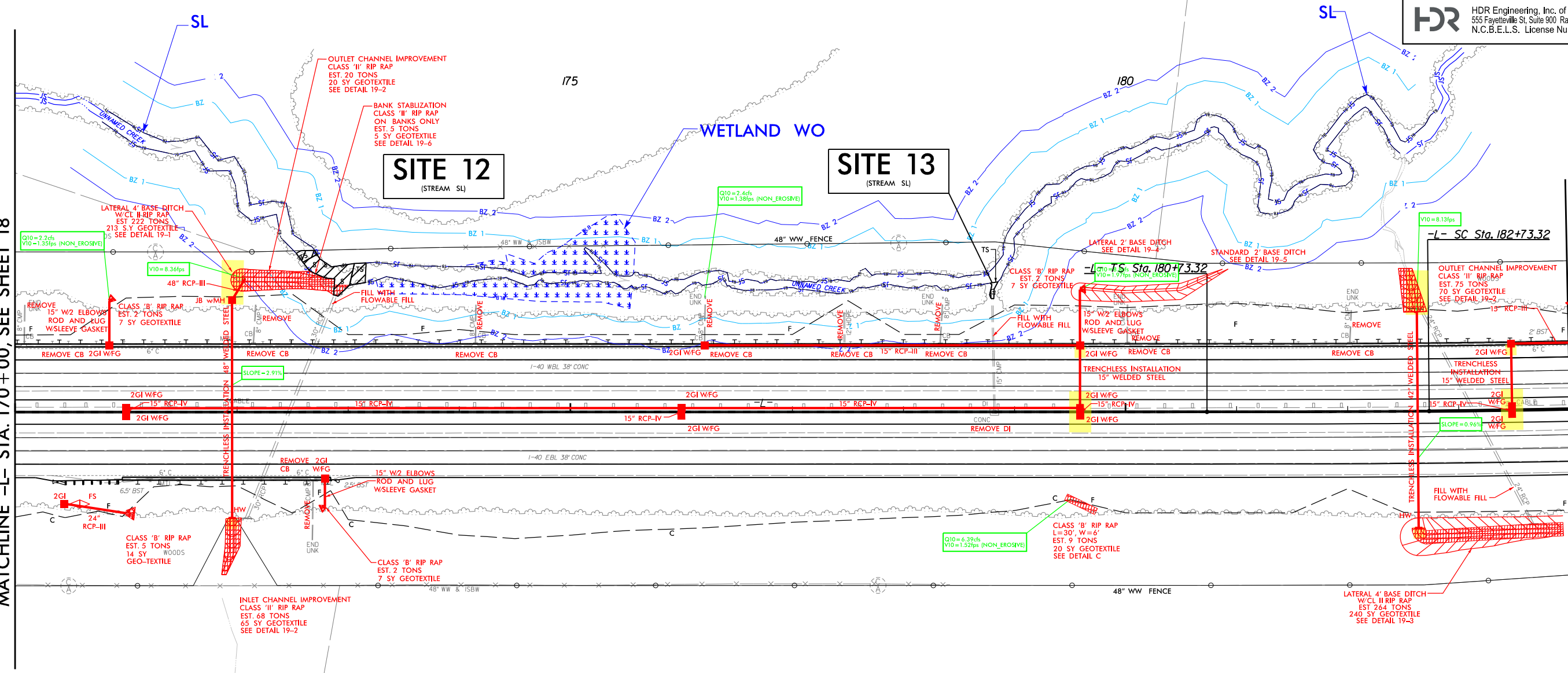
MATCHLINE -L- STA. 184+00, SEE SHEET 20

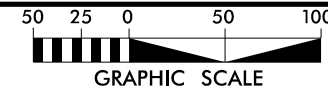
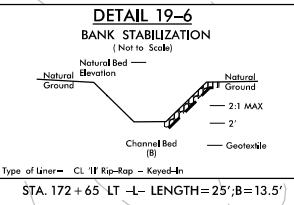
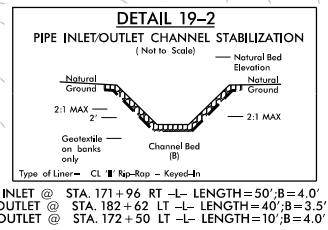
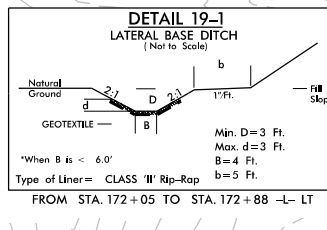
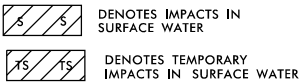
# LEGEND

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

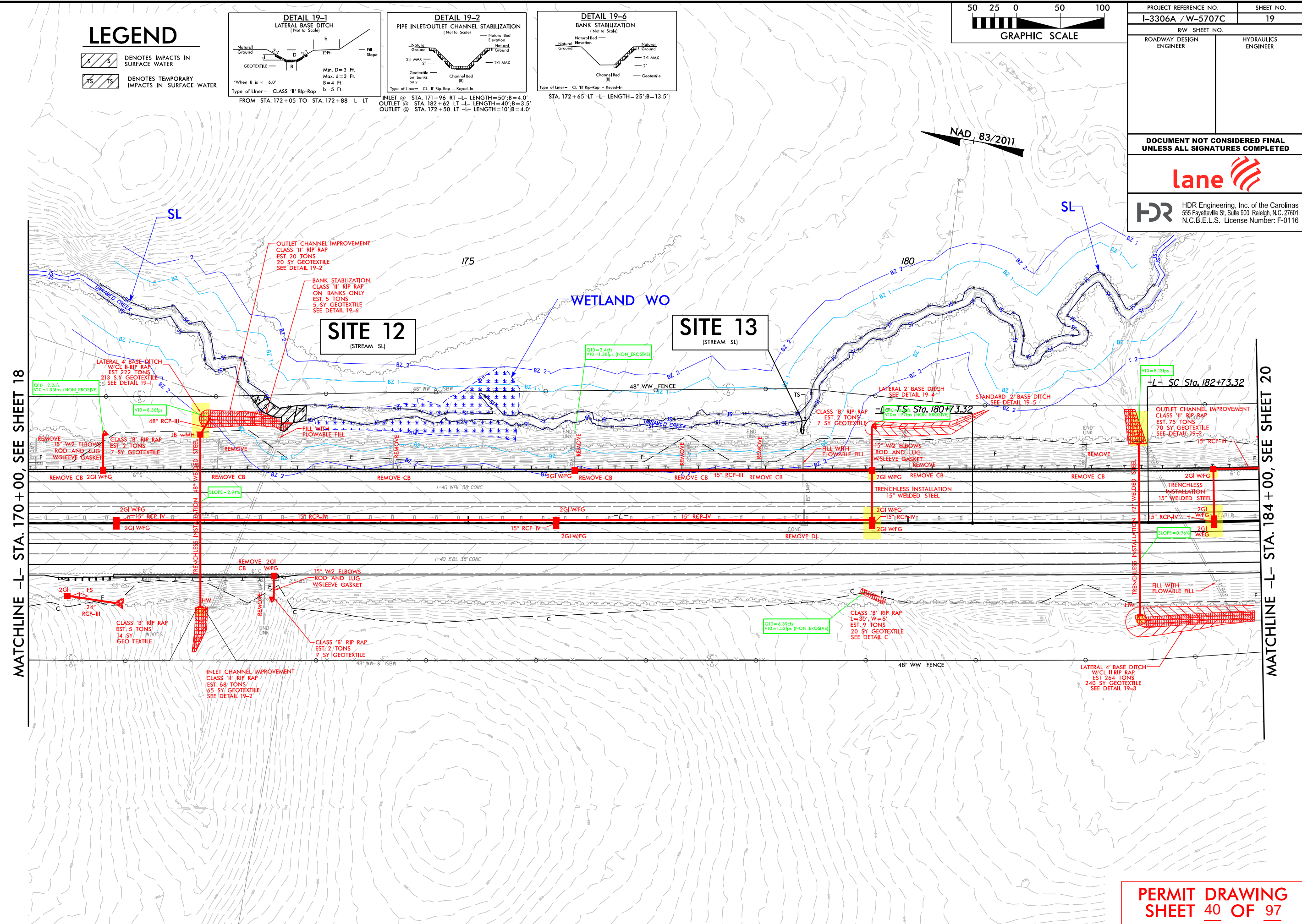


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|-------------------------------------------------------------------------------------------------------------------------------------|------------------------|------------------------|
| PROJECT REFERENCE NO.<br><b>L-3306A /W-5707C</b>                                                                                    |                        | SHEET NO.<br><b>19</b> |
| RW SHEET NO.                                                                                                                        |                        |                        |
| ROADWAY DESIGN<br>ENGINEER                                                                                                          | HYDRAULICS<br>ENGINEER |                        |
| <b>DOCUMENT NOT CONSIDERED FINAL<br/>UNLESS ALL SIGNATURES COMPLETED</b>                                                            |                        |                        |
|                                                                                                                                     |                        |                        |
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| PROJECT REFERENCE NO.                                                               | SHEET NO.                                                                                                                           |
| I-3306A / W-5707C                                                                   | 19                                                                                                                                  |
| RW SHEET NO.                                                                        |                                                                                                                                     |
| ROADWAY DESIGN<br>ENGINEER                                                          | HYDRAULICS<br>ENGINEER                                                                                                              |
| <p><b>DOCUMENT NOT CONSIDERED FINAL<br/>UNLESS ALL SIGNATURES COMPLETED</b></p>     |                                                                                                                                     |
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|  | HDR Engineering, Inc. of the Carolinas<br>555 Fayetteville St. Suite 900 Raleigh, N.C. 27601<br>N.C.B.E.L.S. License Number: F-0116 |



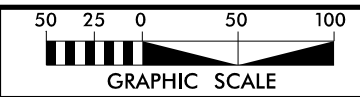
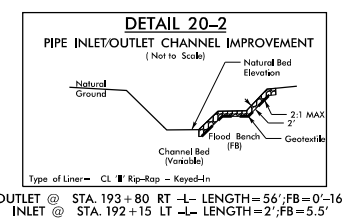


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TIME: 2:49:46 PM  
DATE: 6/2/2022

REVISIONS

# LEGEND

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



|                         |                     |
|-------------------------|---------------------|
| PROJECT REFERENCE NO.   | SHEET NO.           |
| L-3306A / W-5707C       | 20                  |
| RW SHEET NO.            |                     |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

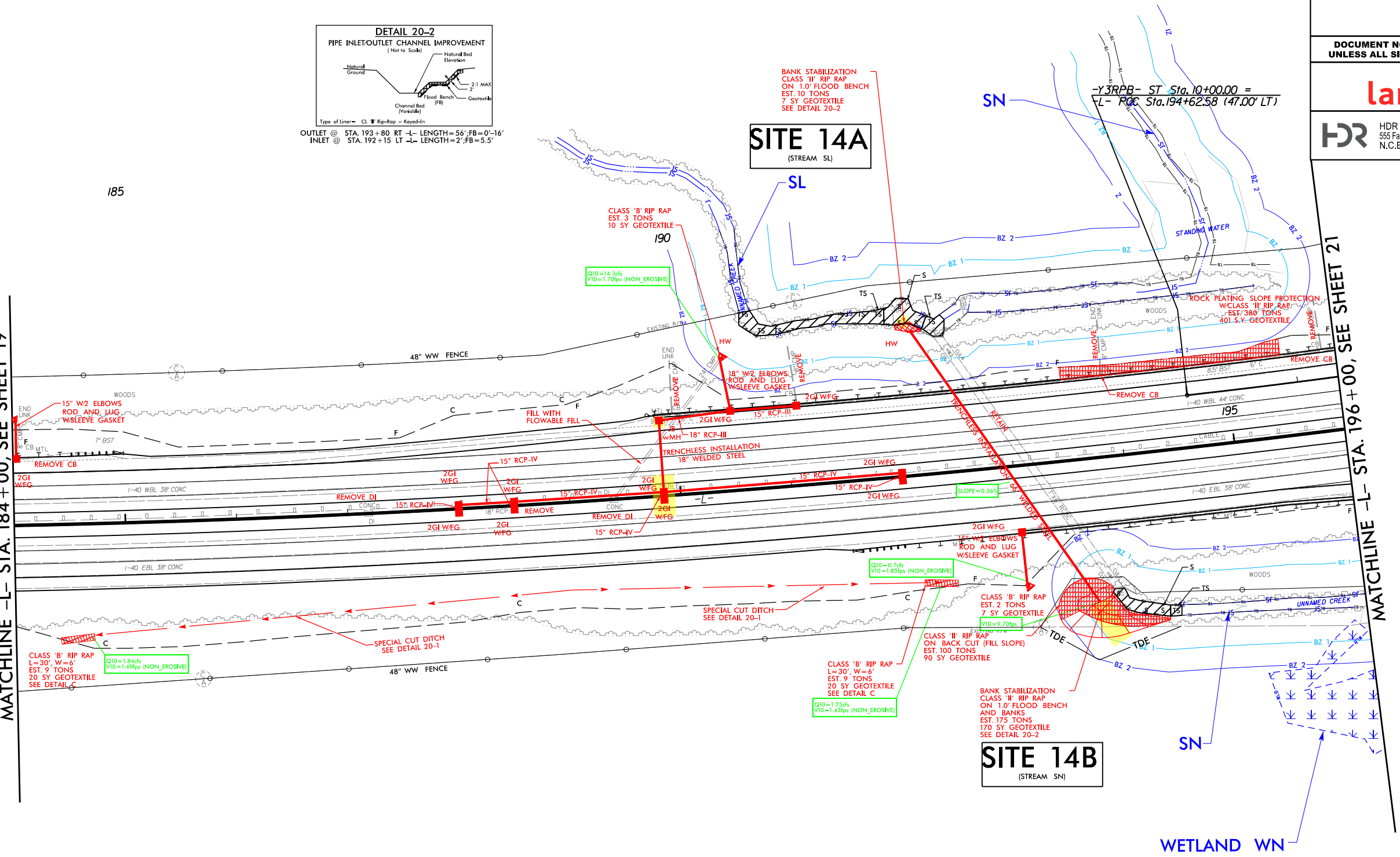
DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED



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MATCHLINE -L- STA. 184+00, SEE SHEET 19

MATCHLINE -L- STA. 196+00, SEE SHEET 21

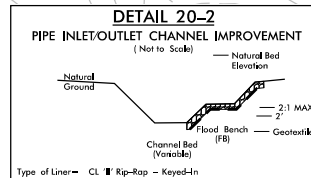


PERMIT DRAWING  
SHEET 41 OF 97

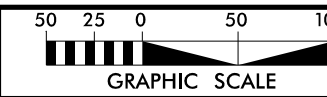
REVISIONS

LEGEND

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



OUTLET @ STA. 193+80 RT -L- LENGTH=56'; FB=0'-16'  
INLET @ STA. 192+15 LT -L- LENGTH=2'; FB=5.5'



|                                                                                                                                                                                                                         |  |                        |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------------------|--|
| PROJECT REFERENCE NO.                                                                                                                                                                                                   |  | SHEET NO.              |  |
| I-3306A / W-5707C                                                                                                                                                                                                       |  | 20                     |  |
| R/W SHEET NO.                                                                                                                                                                                                           |  |                        |  |
| ROADWAY DESIGN<br>ENGINEER                                                                                                                                                                                              |  | HYDRAULICS<br>ENGINEER |  |
| <b>DOCUMENT NOT CONSIDERED FINAL<br/>UNLESS ALL SIGNATURES COMPLETED</b>                                                                                                                                                |  |                        |  |
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MATCHLINE -L- STA. 184+00, SEE SHEET 19

MATCHLINE -L- STA. 196+00, SEE SHEET 21

SITE 14A  
(STREAM SL)

SITE 14B  
(STREAM SN)

PERMIT DRAWING  
SHEET 42 OF 97



REVISIONS

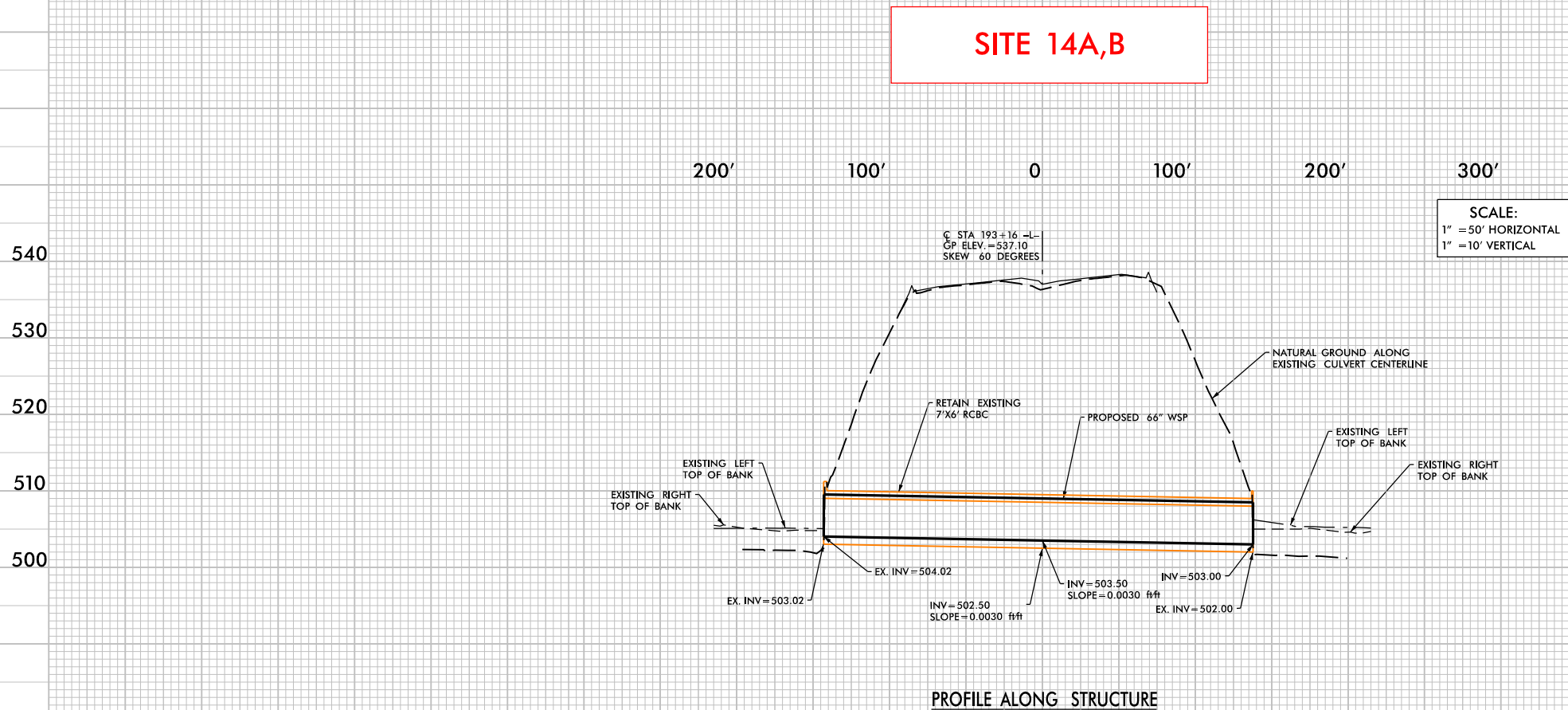
5/14/99



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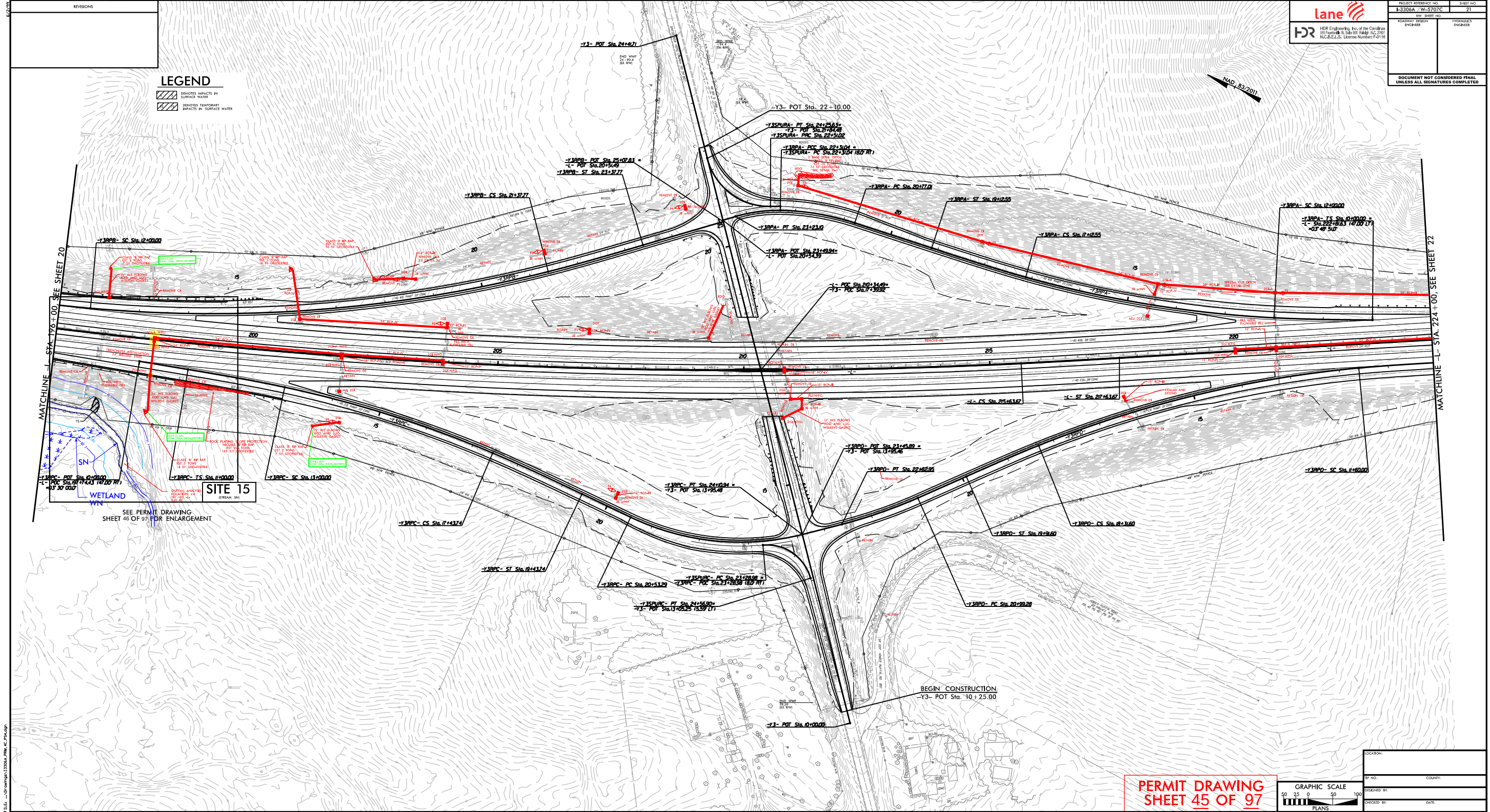


| PROJECT REFERENCE NO.                                            |  | SHEET NO.              |  |
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| ROADWAY DESIGN<br>ENGINEER                                       |  | HYDRAULICS<br>ENGINEER |  |
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PLANT: 01/25/2021 10:01 AM  
USER: E:\PROJECTS\13306A\13306A.PRW  
DATE: 6/2/2022  
TIME: 10:01 PM

lane

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255 Fayetteville Rd., Suite 600 Raleigh, NC 27601  
N.C. B.C.L.S. License Number F-0116

PROJECT REFERENCE NO.  
13306A / WL-3707C

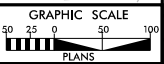
SHEET NO.  
21

ROADWAY DESIGN  
ENGINEER

PROJ. ENGINEER

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING  
SHEET 45 OF 97

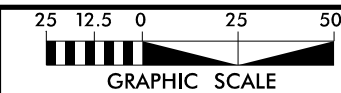
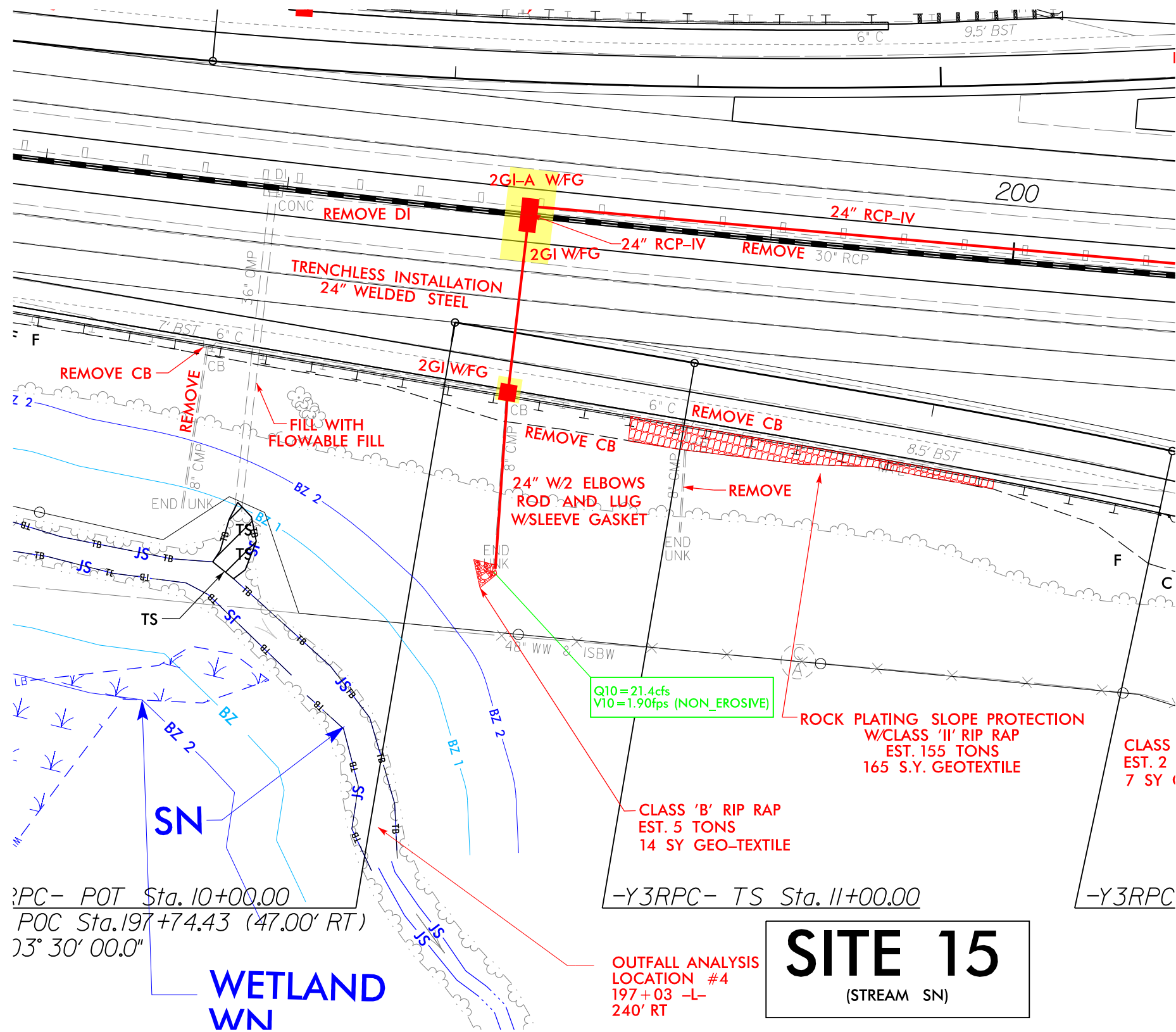


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| TP NO.:      | COUNTY:     |
| DESIGNED BY: | CHECKED BY: |
| DATE:        | DATE:       |



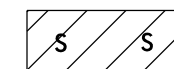
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TIME: 2:49:50 PM

REVISIONS



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| PROJECT REFERENCE NO.      |  | SHEET NO.              |  |
| I-3306 / W-5707C           |  | 21A                    |  |
| R/W SHEET NO.              |  |                        |  |
| ROADWAY DESIGN<br>ENGINEER |  | HYDRAULICS<br>ENGINEER |  |
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## LEGEND



DENOTES IMPACTS IN  
SURFACE WATER



DENOTES TEMPORARY  
IMPACTS IN SURFACE WATER

# SITE 15

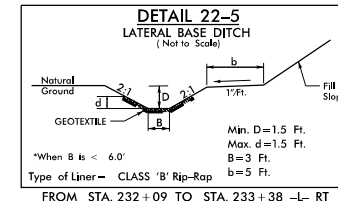
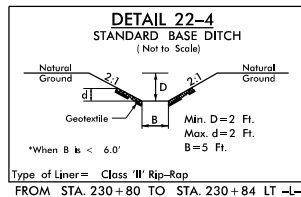
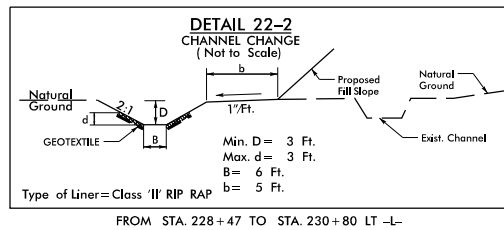
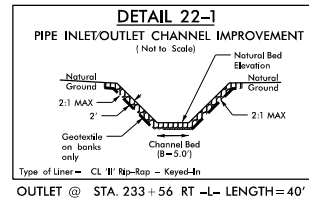
(STREAM SN)

PERMIT DRAWING  
SHEET 46 OF 97

PLOT DRIVER: NCDOT\_color\_eng-100.plt  
USER: EPROFFIT  
FILE: ...\\drawing\\13306A.PRM-4C\_PSH.dgn  
PENTABLE: NCDOT\_permit13306A.NCON.tbl  
DATE: 6/16/2022  
TIME: 10:16:39 AM

# LEGEND

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



**SITE 16A**  
(STREAM SS)

**SITE 16B**  
(STREAM SBB & WETLAND WU)

**SITE 16C**  
(STREAM SS)

MATCHLINE -L- STA. 224+00, SEE SHEET 21

MATCHLINE -L- STA. 238+00, SEE SHEET 23

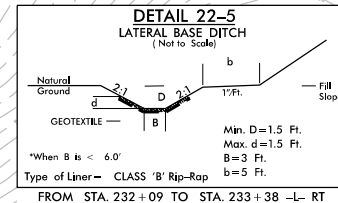
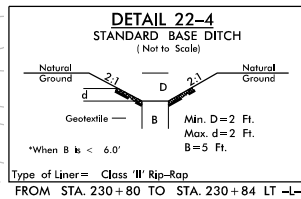
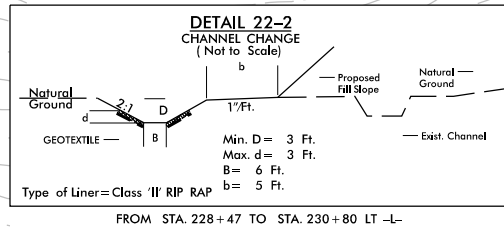
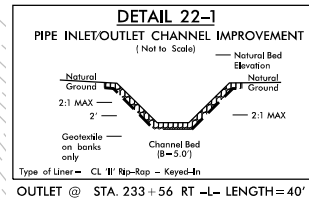
|                                                                                                                                     |                     |
|-------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| PROJECT REFERENCE NO.                                                                                                               | SHEET NO.           |
| L-3306A /W-5707C                                                                                                                    | 22                  |
| RW SHEET NO.                                                                                                                        |                     |
| ROADWAY DESIGN ENGINEER                                                                                                             | HYDRAULICS ENGINEER |
| DOCUMENT NOT CONSIDERED FINAL<br>UNLESS ALL SIGNATURES COMPLETED                                                                    |                     |
|                                                                                                                                     |                     |
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PERMIT DRAWING  
SHEET 47 OF 97



# LEGEND

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



**SITE 16A**  
(STREAM SS)

**SITE 16B**  
(STREAM SBB & WETLAND WU)

**SITE 16C**  
(STREAM SS)

MATCHLINE -L- STA. 224+00, SEE SHEET 21

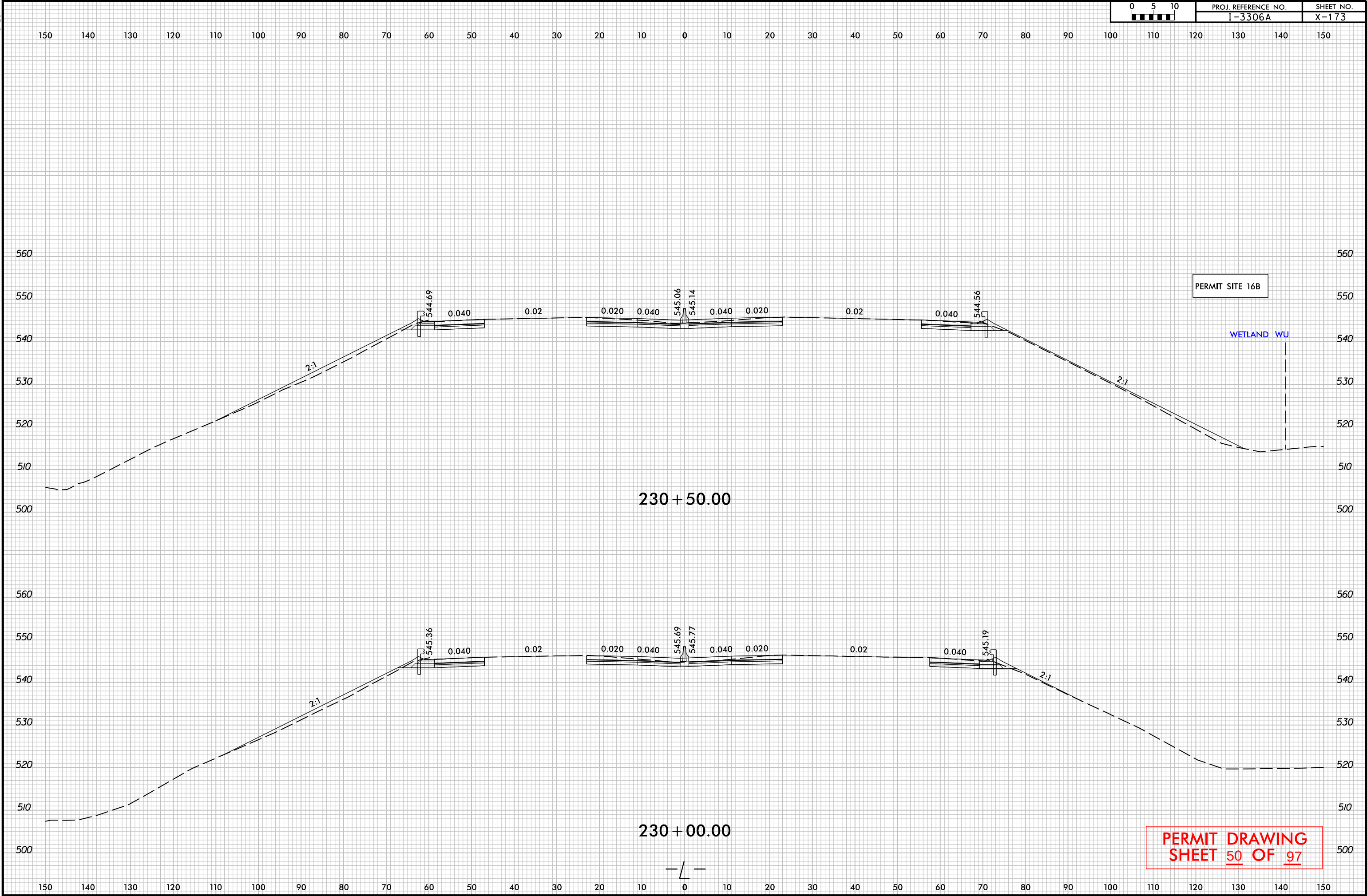
MATCHLINE -L- STA. 238+00, SEE SHEET 23

|                                                                                                                                     |  |                        |  |
|-------------------------------------------------------------------------------------------------------------------------------------|--|------------------------|--|
| PROJECT REFERENCE NO.                                                                                                               |  | SHEET NO.              |  |
| I-3306A / W-5707C                                                                                                                   |  | 22                     |  |
| RW SHEET NO.                                                                                                                        |  |                        |  |
| ROADWAY DESIGN<br>ENGINEER                                                                                                          |  | HYDRAULICS<br>ENGINEER |  |
| <b>DOCUMENT NOT CONSIDERED FINAL<br/>UNLESS ALL SIGNATURES COMPLETED</b>                                                            |  |                        |  |
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8/23/99



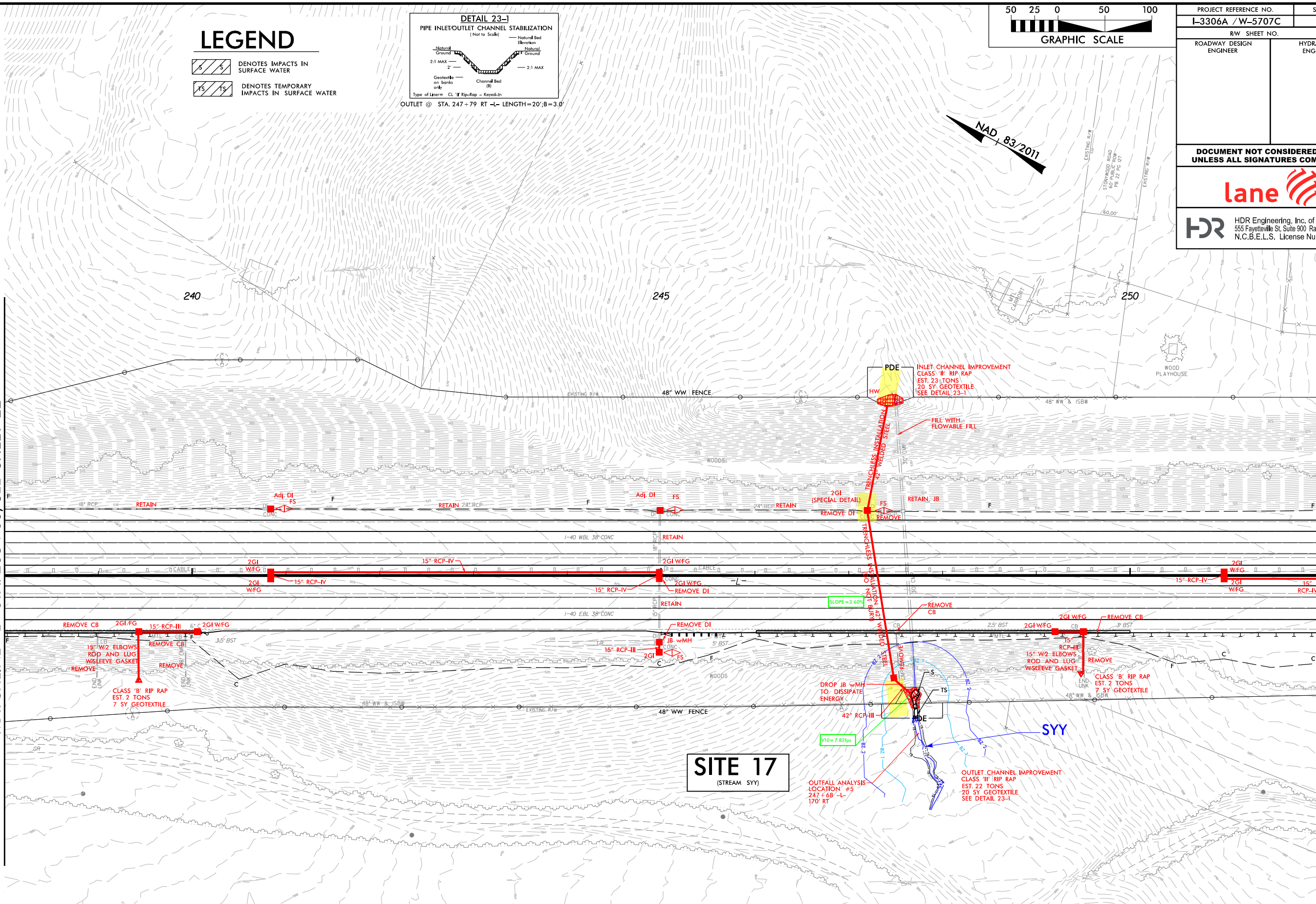




PLOT DRIVER: NCDOT\_color\_eng-100.plt  
USER: EPROFFIT  
FILE: ...\\drawings\\13306A.PRM-4C.PSH.dgn  
PENTABLE: NCDOT\_permits.CON.tbl  
TIME: 2/4/2026 PM  
DATE: 6/2/2022

REVISIONS

MATCHLINE -L- STA. 238 + 00, SEE SHEET 22

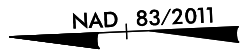
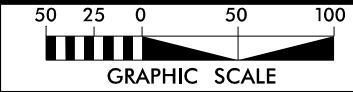
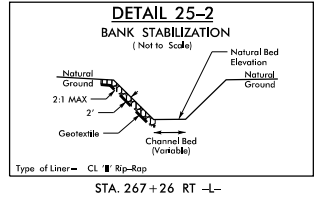


|                                                                                                                                                |  |                        |  |
|------------------------------------------------------------------------------------------------------------------------------------------------|--|------------------------|--|
| PROJECT REFERENCE NO.<br><b>L-3306A /W-5707C</b>                                                                                               |  | SHEET NO.<br><b>23</b> |  |
| RW SHEET NO.                                                                                                                                   |  | HYDRAULICS ENGINEER    |  |
| ROADWAY DESIGN ENGINEER                                                                                                                        |  |                        |  |
| <b>DOCUMENT NOT CONSIDERED FINAL<br/>UNLESS ALL SIGNATURES COMPLETED</b>                                                                       |  |                        |  |
| <b>lane</b>                                                                                                                                    |  |                        |  |
| <b>HDR</b> HDR Engineering, Inc. of the Carolinas<br>555 Fayetteville St, Suite 900 Raleigh, N.C. 27601<br>N.C.B.E.L.S. License Number: F-0116 |  |                        |  |

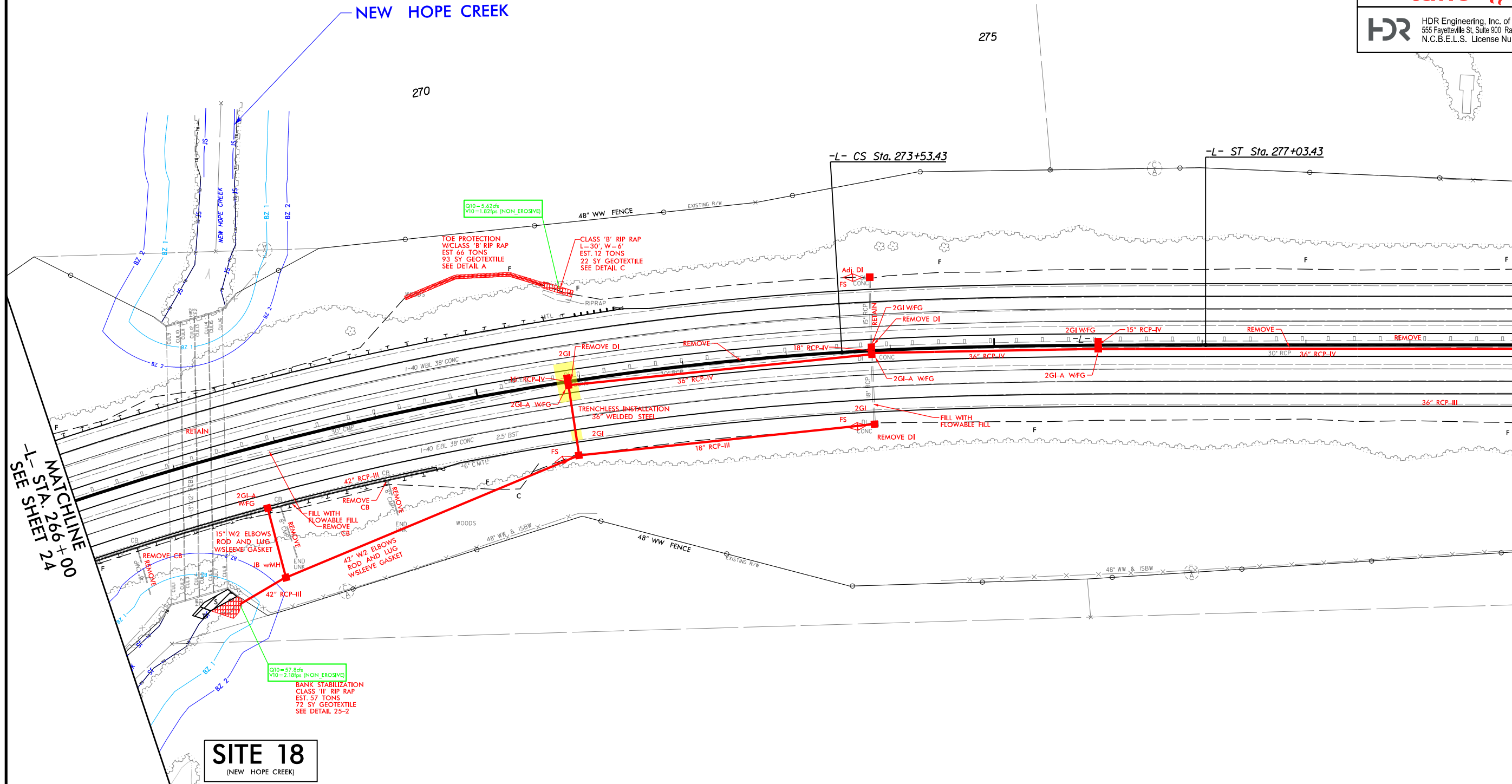
MATCHLINE -L- STA. 252 + 00, SEE SHEET 24

LEGEND

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



|                                                                                     |  |                                                                                                                                     |  |
|-------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------------------------------------------------|--|
| PROJECT REFERENCE NO.<br>I-3306A /W-5707C                                           |  | SHEET NO.<br>25                                                                                                                     |  |
| R/W SHEET NO.                                                                       |  |                                                                                                                                     |  |
| ROADWAY DESIGN<br>ENGINEER                                                          |  | HYDRAULICS<br>ENGINEER                                                                                                              |  |
| <b>DOCUMENT NOT CONSIDERED FINAL<br/>UNLESS ALL SIGNATURES COMPLETED</b>            |  |                                                                                                                                     |  |
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SITE 18  
(NEW HOPE CREEK)

PLOT DRIVER: NCDOT\_color\_eng-100.plt  
USER: EPROFFIT  
FILE: ...\\drawings\\13306A.PRM-4C\_PSH.dgn  
PENTABLE: NCDOT\_permits.NCON.tbl  
DATE: 6/2/2022  
TIME: 2:49:57 PM

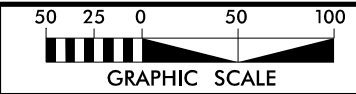
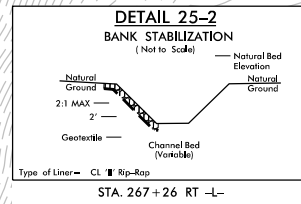
MATCHLINE -L- STA. 280+00, SEE SHEET 26

MATCHLINE -L- STA. 266+00  
SEE SHEET 24



 DENOTES IMPACTS IN SURFACE WATER

 DENOTES TEMPORARY IMPACTS IN SURFACE WATER



NAD 83/2011

|                                                                                                                                                                                                                                                                                                                    |                        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| PROJECT REFERENCE NO.                                                                                                                                                                                                                                                                                              | SHEET NO.              |
| I-3306A / W-5707C                                                                                                                                                                                                                                                                                                  | 25                     |
| R/W SHEET NO.                                                                                                                                                                                                                                                                                                      |                        |
| ROADWAY DESIGN<br>ENGINEER                                                                                                                                                                                                                                                                                         | HYDRAULICS<br>ENGINEER |
| <p><b>DOCUMENT NOT CONSIDERED FINAL<br/>UNLESS ALL SIGNATURES COMPLETED</b></p> <div style="text-align: center;">  </div>                                                                                                       |                        |
|  <div style="display: inline-block; vertical-align: middle; margin-left: 10px;"> HDR Engineering, Inc. of the Carolinas<br/> 555 Fayetteville St, Suite 900 Raleigh, N.C. 27601<br/> N.C.B.E.L.S. License Number: F-0116 </div> |                        |

**MATCHLINE -L- STA. 280+00, SEE SHEET 26**

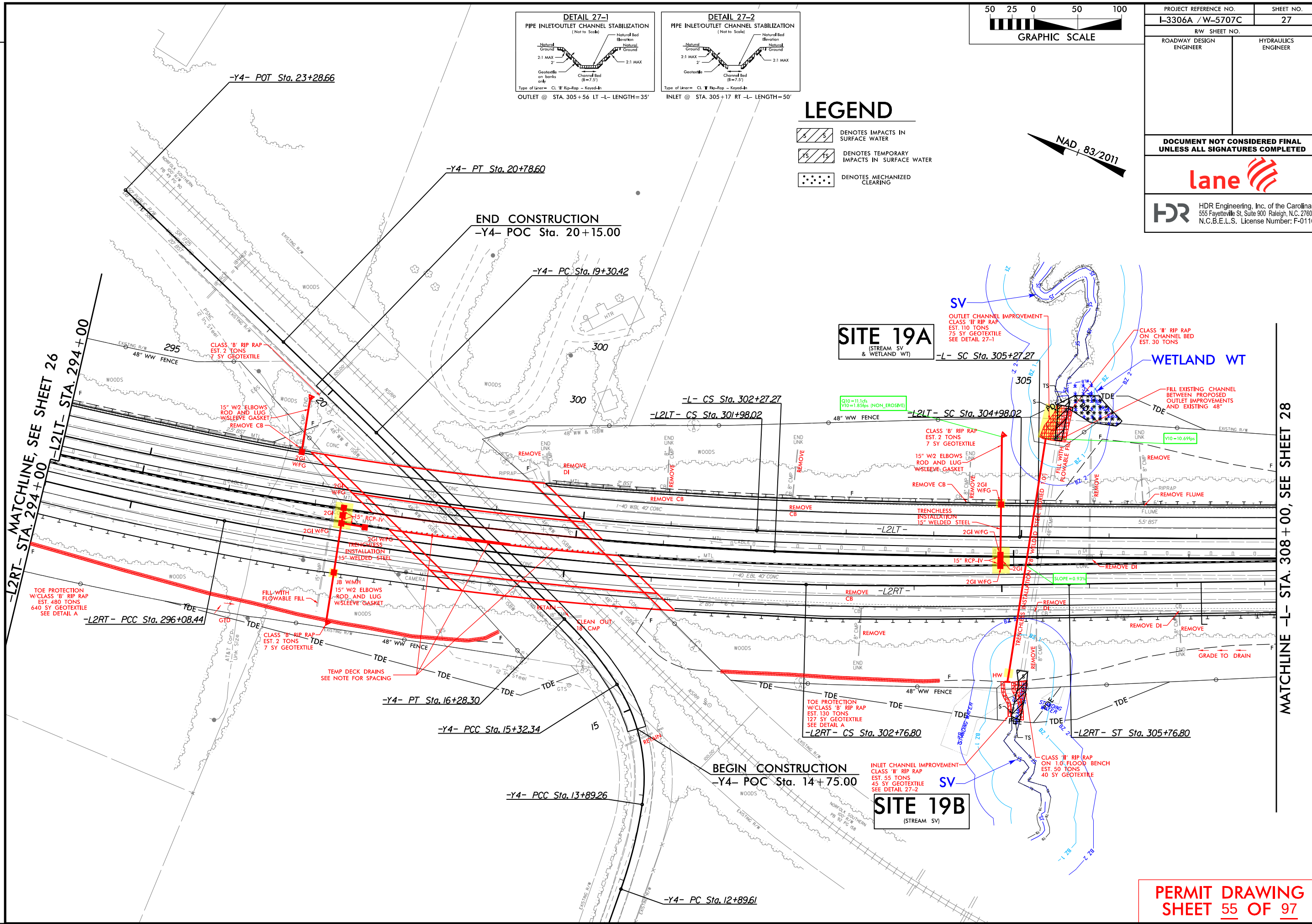
PERMIT DRAWING  
SHEET 54 OF 97

PENTABLE: NCDOT\_permits\_CON.tbl  
TIME: 2:43:30 PM

PLOT DRIVER: NCDOT\_pdf\_color\_eng.100.plt  
USER: EPROFFIT DATE: 6/2/2022  
FILE: ...\\Drawings\\I3306A-PRM\_4C-PSH.dgn

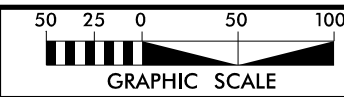
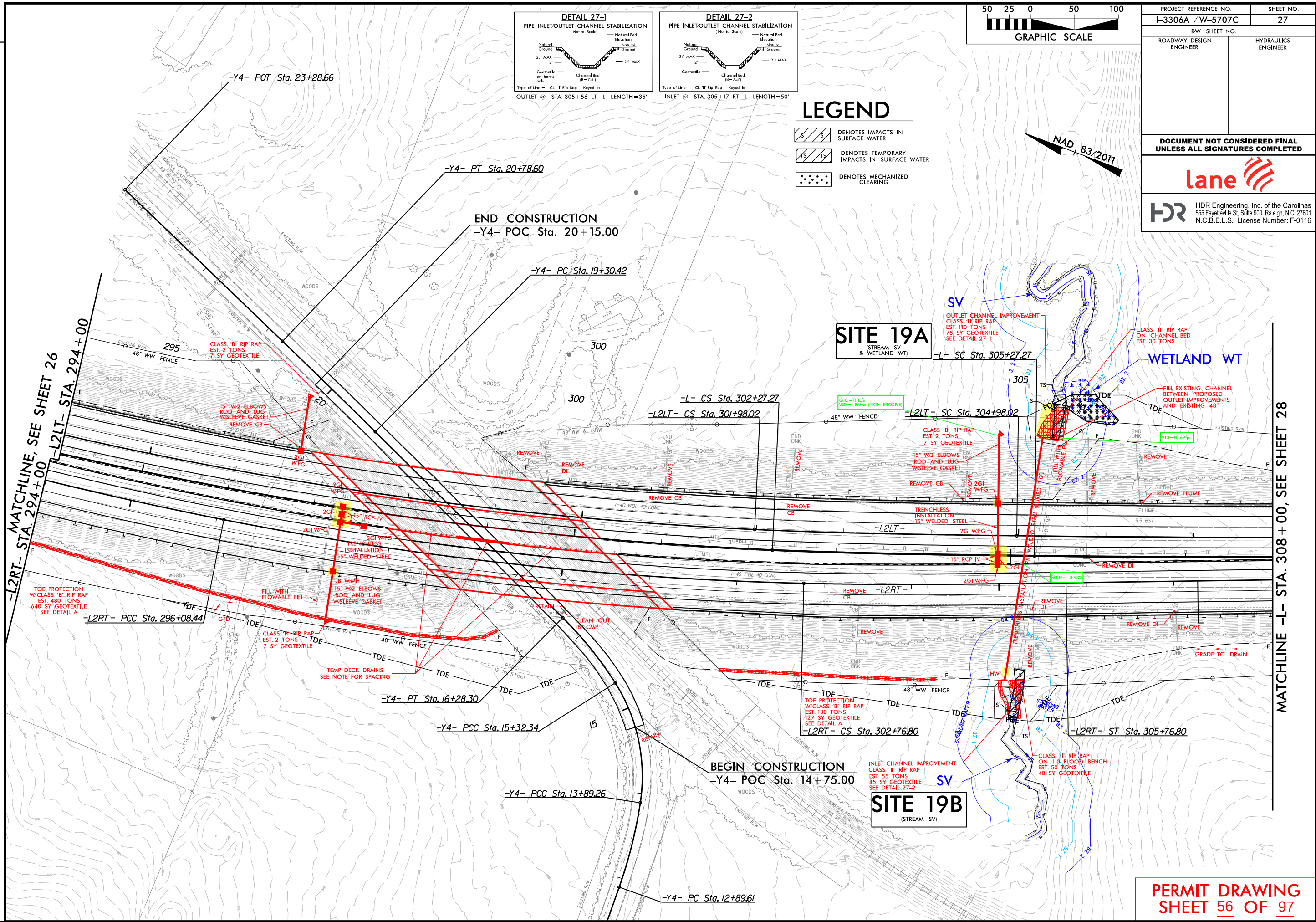


REVISIONS





REVISIONS



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|-----------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------------------------------------------------|--|
| PROJECT REFERENCE NO.                                                                               |  | SHEET NO.                                                                                                                           |  |
| I-3306A /W-5707C                                                                                    |  | 27                                                                                                                                  |  |
| RW SHEET NO.                                                                                        |  |                                                                                                                                     |  |
| ROADWAY DESIGN<br>ENGINEER                                                                          |  | HYDRAULICS<br>ENGINEER                                                                                                              |  |
| DOCUMENT NOT CONSIDERED FINAL<br>UNLESS ALL SIGNATURES COMPLETED                                    |  |                                                                                                                                     |  |
| <div>lane </div> |  |                                                                                                                                     |  |
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REVISIONS



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



PROJECT REFERENCE NO.

SHEET NO.

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

SITE 19A,B

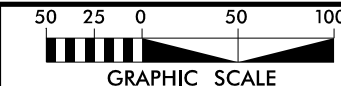
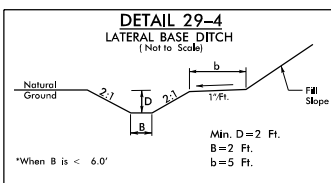
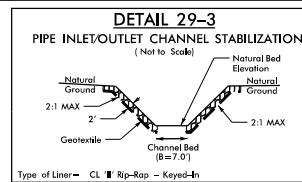
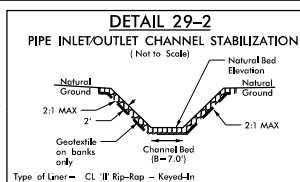
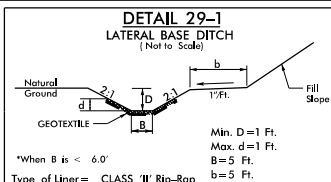
The diagram is a cross-sectional profile of a structure, likely a bridge or culvert, plotted on a grid. The horizontal axis represents stationing from 200' to 300', with a central point at 0. The vertical axis represents elevation in feet, ranging from 480 to 520. The structure is a trapezoidal shape with a top width of approximately 100 feet and a bottom width of approximately 100 feet. The sides are labeled with a 2:1 normal slope. The top of the structure is labeled with stationing: STA 305+15 -L- and STA 305+10 -R- (implied). The bottom of the structure is labeled with stationing: STA 305+24 -L- and STA 305+10 -R- (implied). The bottom of the structure is also labeled with elevation: INV = 480.70' and INV = 478.20'. The structure is labeled as PROPOSED 78" WELDED STEEL. The bottom of the structure is labeled as PROPOSED 78" WELDED STEEL PIPE (BURIED 1 FOOT). The bottom of the structure is also labeled as INLET CHANNEL IMPROVEMENT CLASS III RIP RAP EST. 55 TONS 45 SY GEOTEXTILE. The bottom of the structure is also labeled as OUTLET CHANNEL IMPROVEMENT CLASS III RIP RAP EST. 110 TONS 75 SY GEOTEXTILE. The bottom of the structure is also labeled as NORMAL WS ELEV = 481.3' DATE: 12/13/21. The bottom of the structure is also labeled as SLOPE = 0.0093 ft/ft. The bottom of the structure is also labeled as EXISTING GROUND ALONG PROPOSED 78" WELDED STEEL. The bottom of the structure is also labeled as LEFT TOP OF BANK and RIGHT TOP OF BANK. The bottom of the structure is also labeled as SCALE: 1" = 50' HORIZONTAL 1" = 10' VERTICAL.

PERMIT DRAWING  
SHEET 57 OF 97

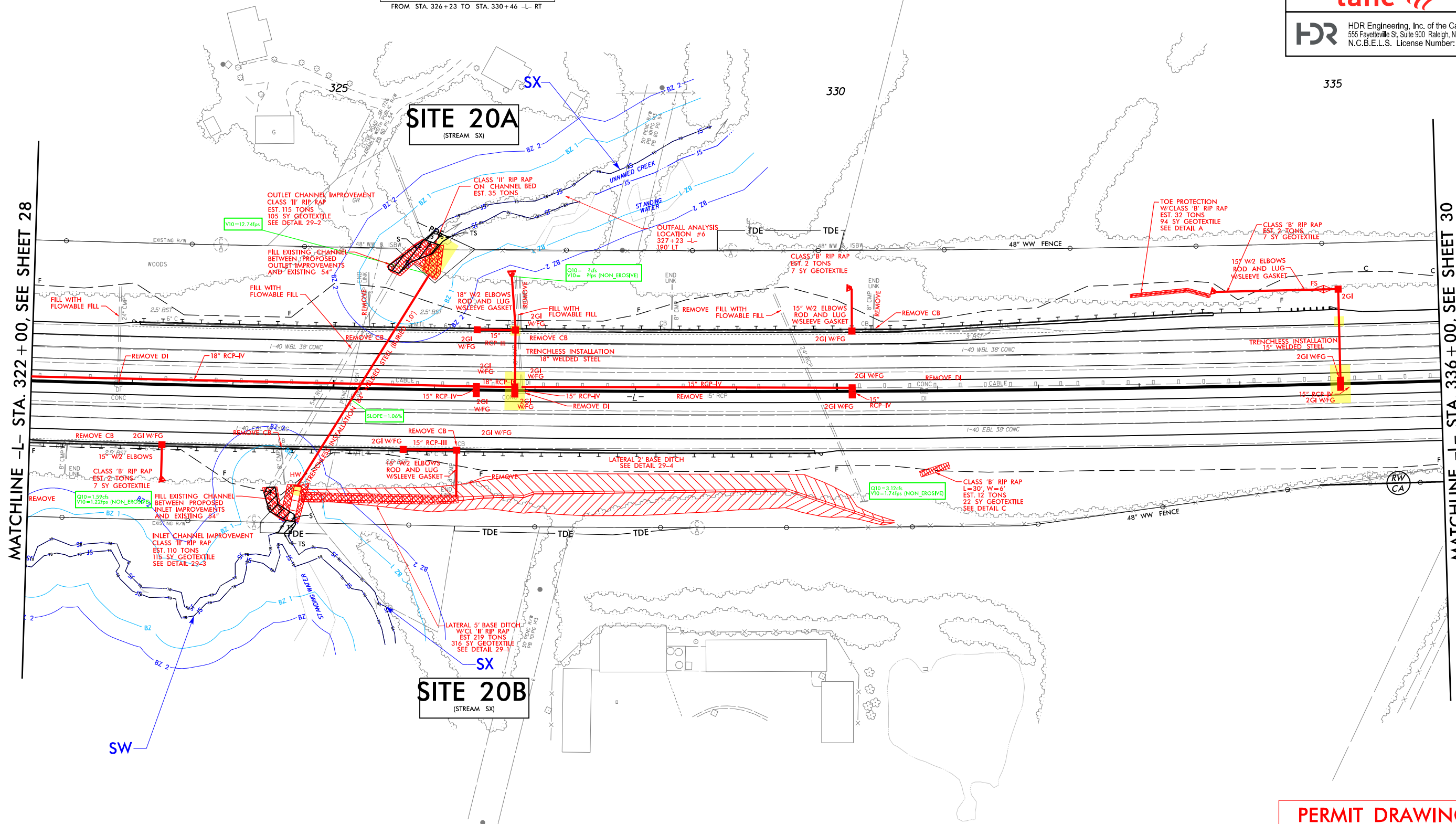


# LEGEND

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



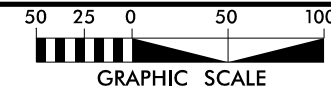
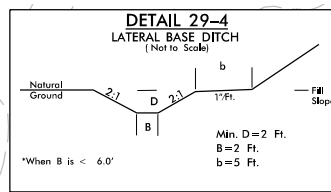
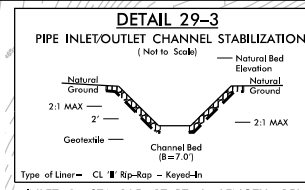
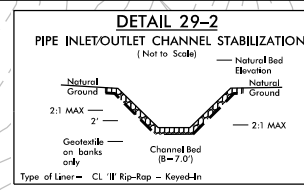
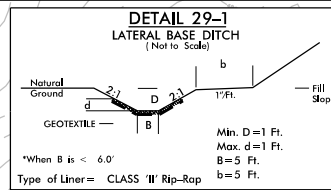
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|-------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| PROJECT REFERENCE NO.                                                                                                               | SHEET NO.           |
| L-3306A /W-5707C                                                                                                                    | 29                  |
| R/W SHEET NO.                                                                                                                       |                     |
| ROADWAY DESIGN ENGINEER                                                                                                             | HYDRAULICS ENGINEER |
| DOCUMENT NOT CONSIDERED FINAL<br>UNLESS ALL SIGNATURES COMPLETED                                                                    |                     |
|                                                                                                                                     |                     |
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 DENOTES IMPACTS IN SURFACE WATER

 DENOTES TEMPORARY IMPACTS IN SURFACE WATER

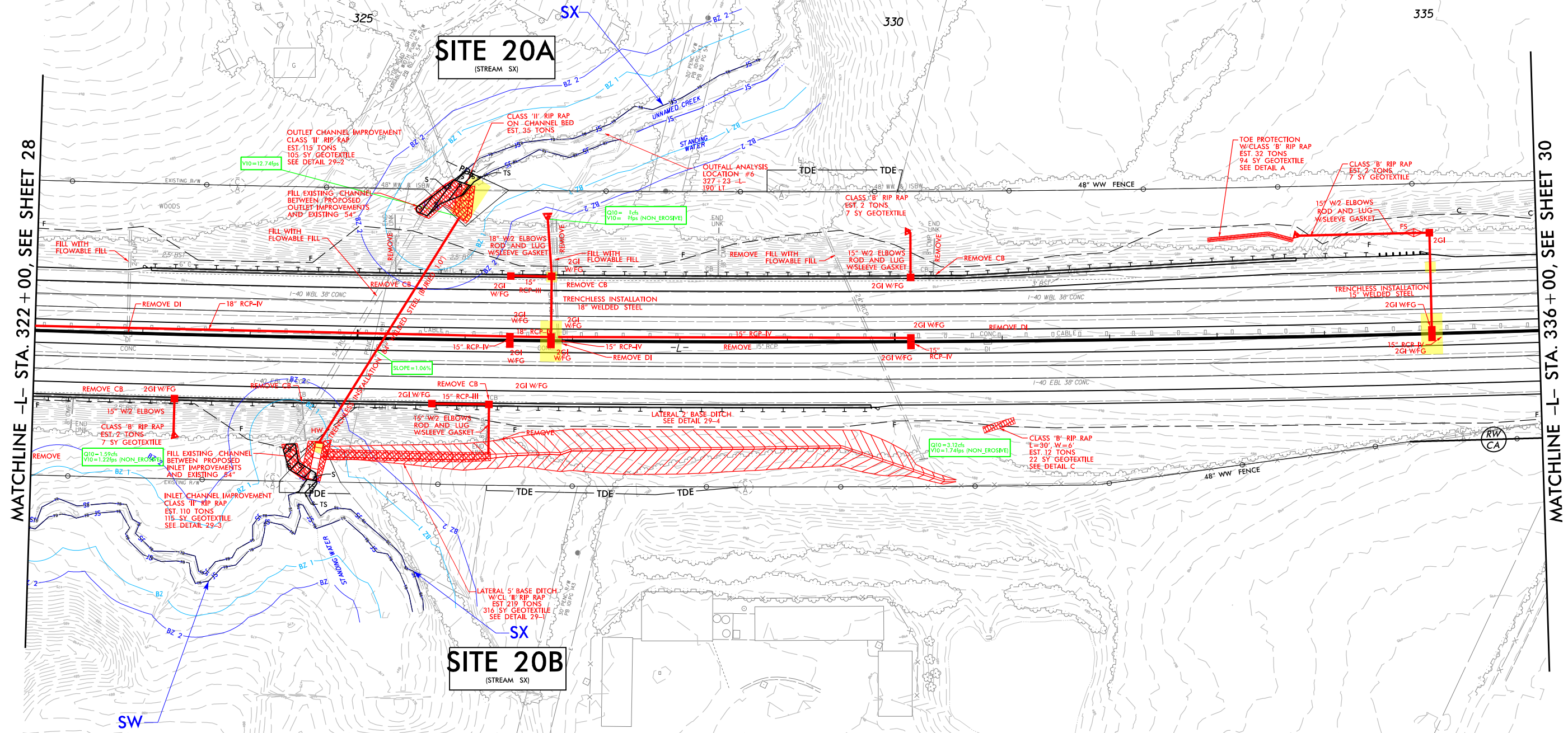


NAD / 83/201

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|----------------------------|--|------------------------|--|
| PROJECT REFERENCE NO.      |  | SHEET NO.              |  |
| I-3306A / W-5707C          |  | 29                     |  |
| R/W SHEET NO.              |  |                        |  |
| ROADWAY DESIGN<br>ENGINEER |  | HYDRAULICS<br>ENGINEER |  |

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

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

PERMIT SHEET 59 OF 97

PENTABLE: NCDOT\_permits\_CON.tbl  
TIME: 2:43:38 PM

PLOT DRIVER: NCD01\_pdf\_color\_eng\_100.plt  
USER: EPROFFIT DATE: 6/2/2022  
FILE: ...Drawings\I3306A.PRM.4C.PSH.dgn

REVISIONS

5/14/99

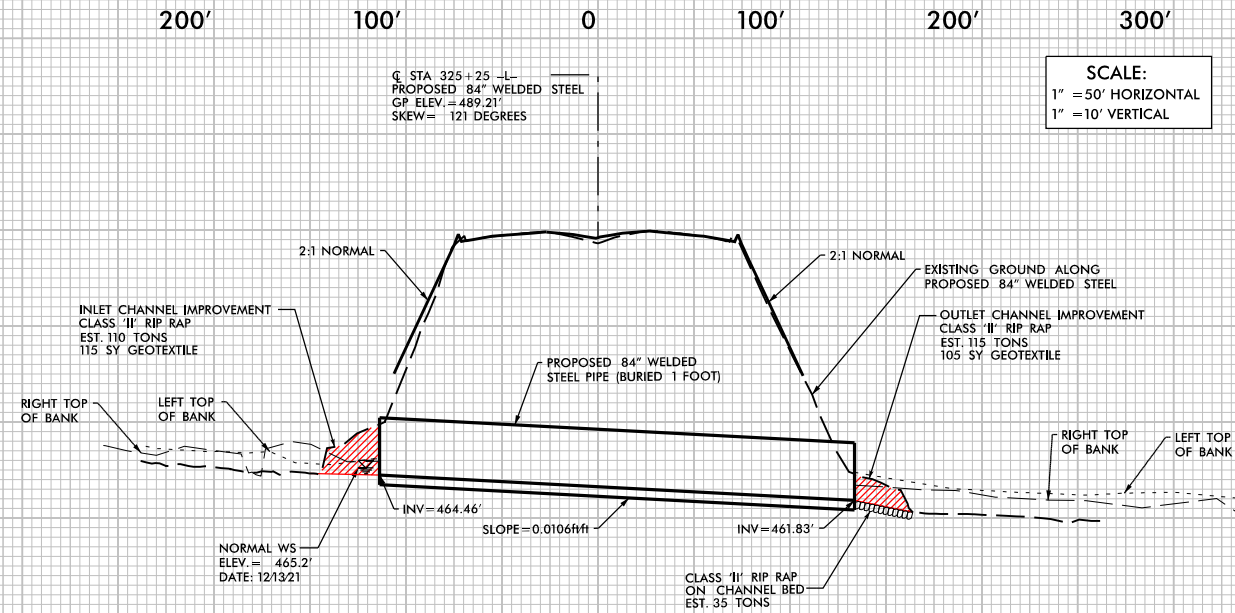


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N.C.B.E.L.S. License Number: F-0116



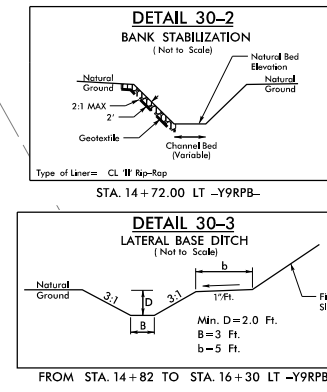
| PROJECT REFERENCE NO.      |                                                                  | SHEET NO. |
|----------------------------|------------------------------------------------------------------|-----------|
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|                            | DOCUMENT NOT CONSIDERED FINAL<br>UNLESS ALL SIGNATURES COMPLETED |           |

SITE 20A,B

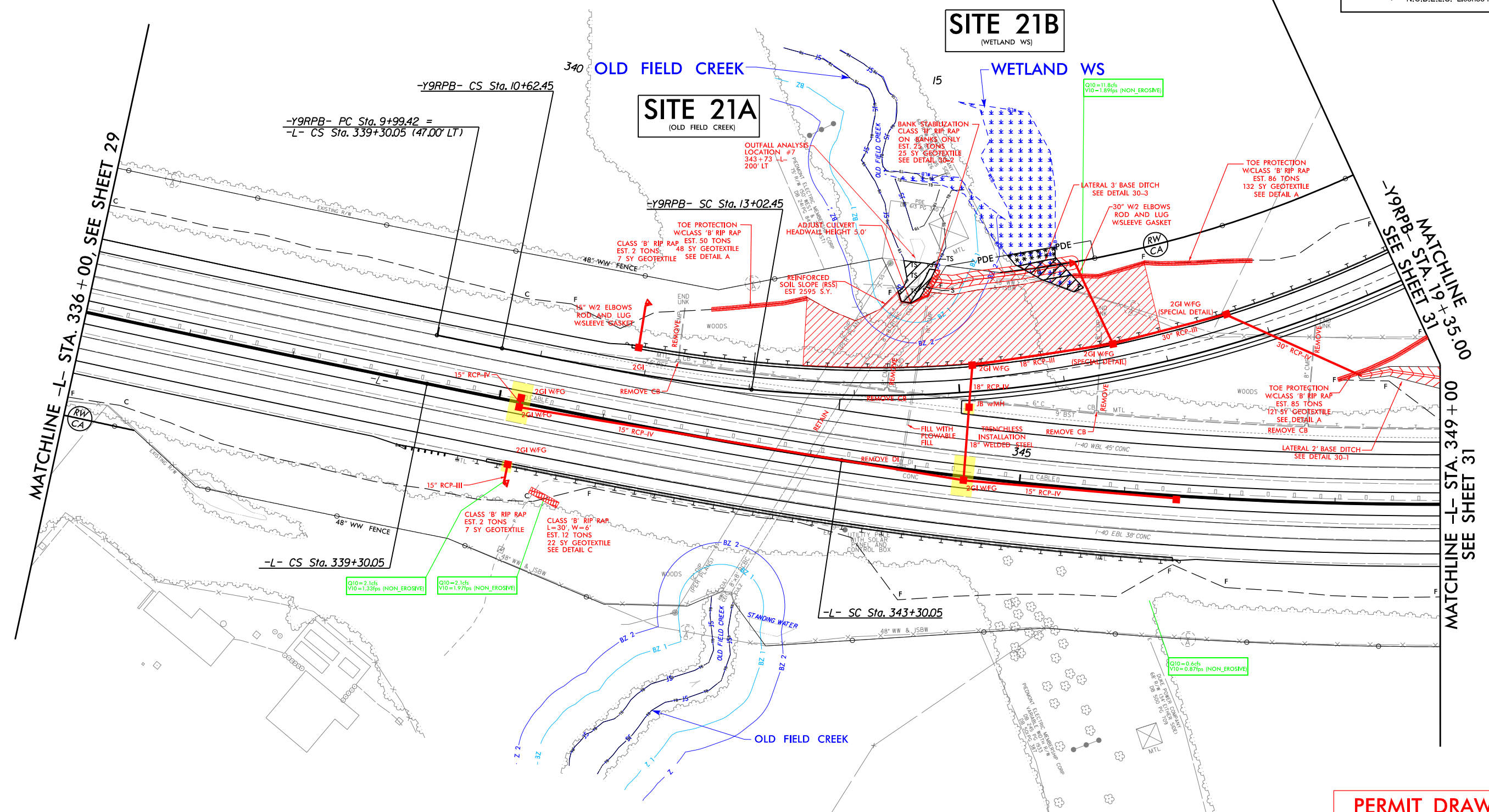


PROFILE ALONG STRUCTURE





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

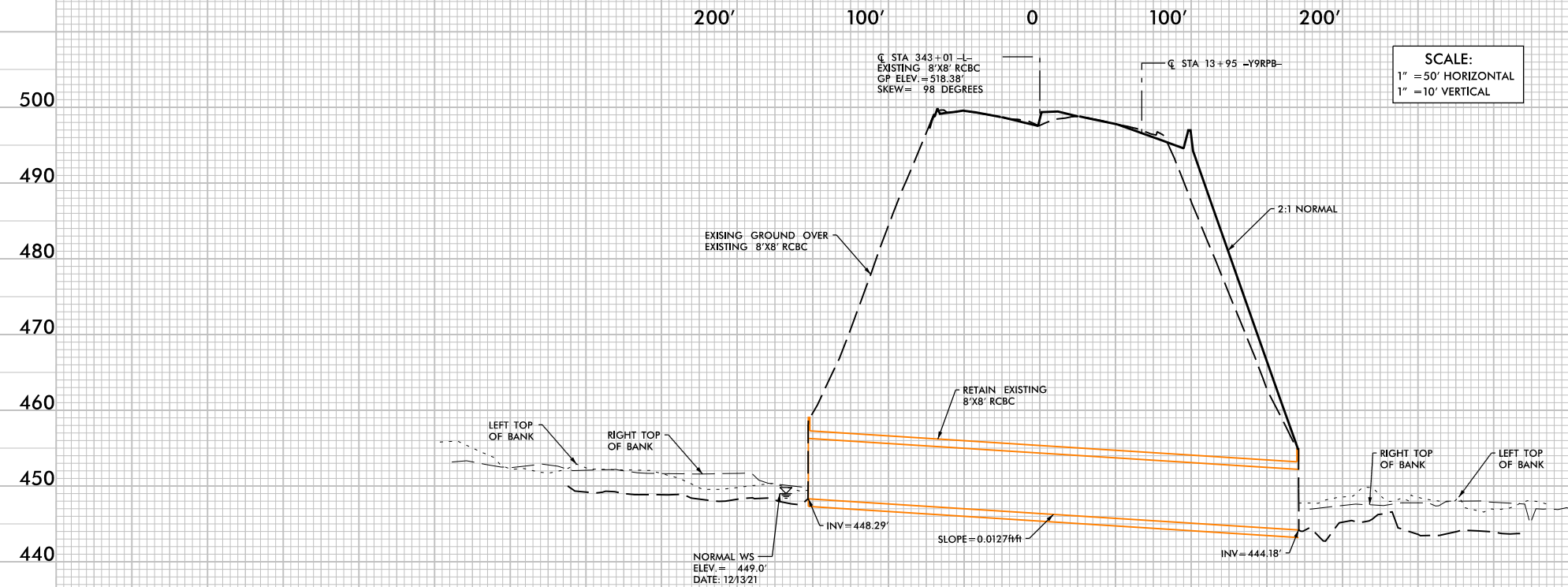


PLOT DRIVER: NCD001\_pdf\_color\_eng\_100.plt  
USER: EPROFFIT DATE: 6/3/2022  
FILE: ...Drawings\I3306A\_PRM\_4C\_PSH.dgn





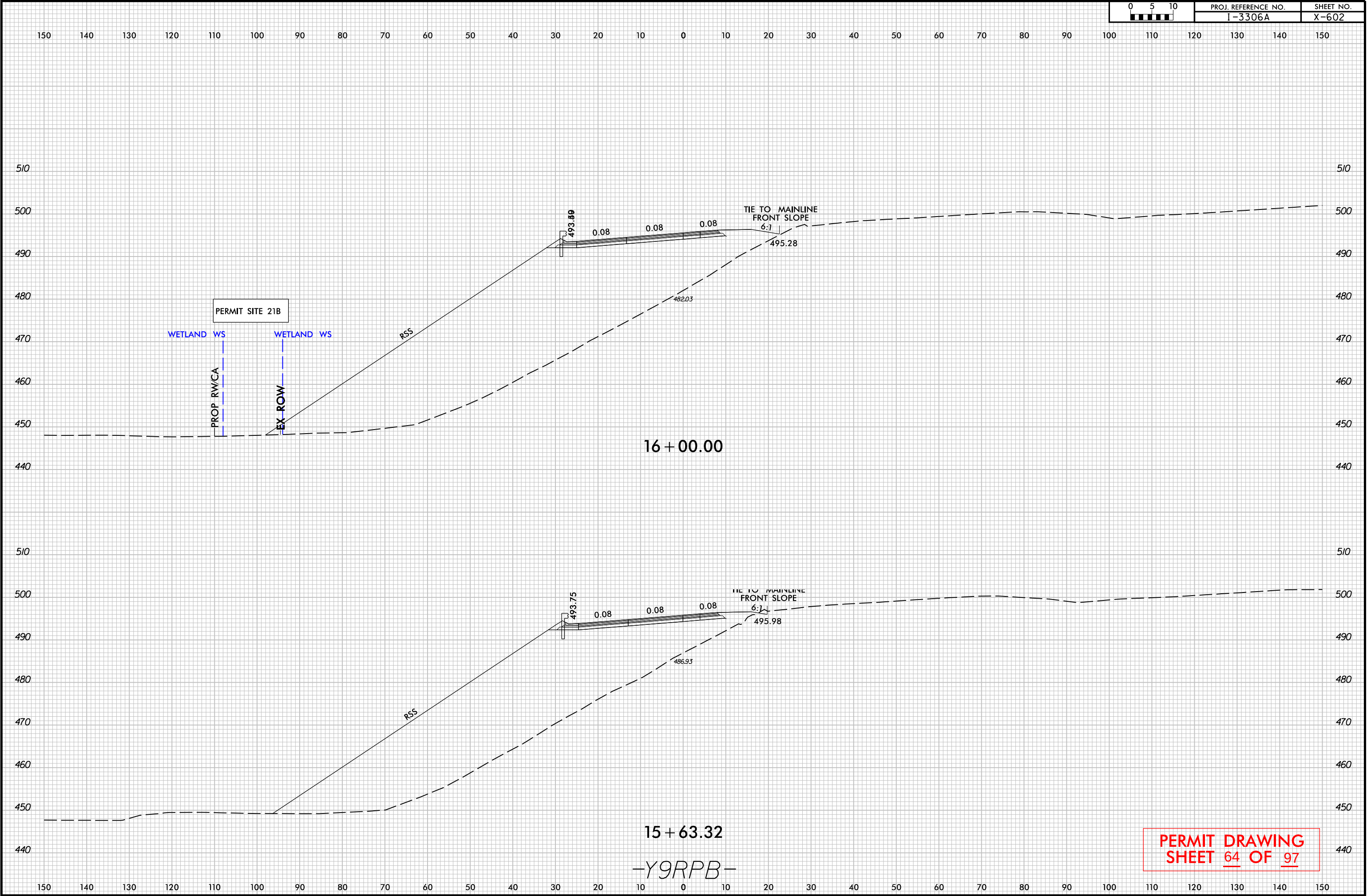
**SITE 21A**

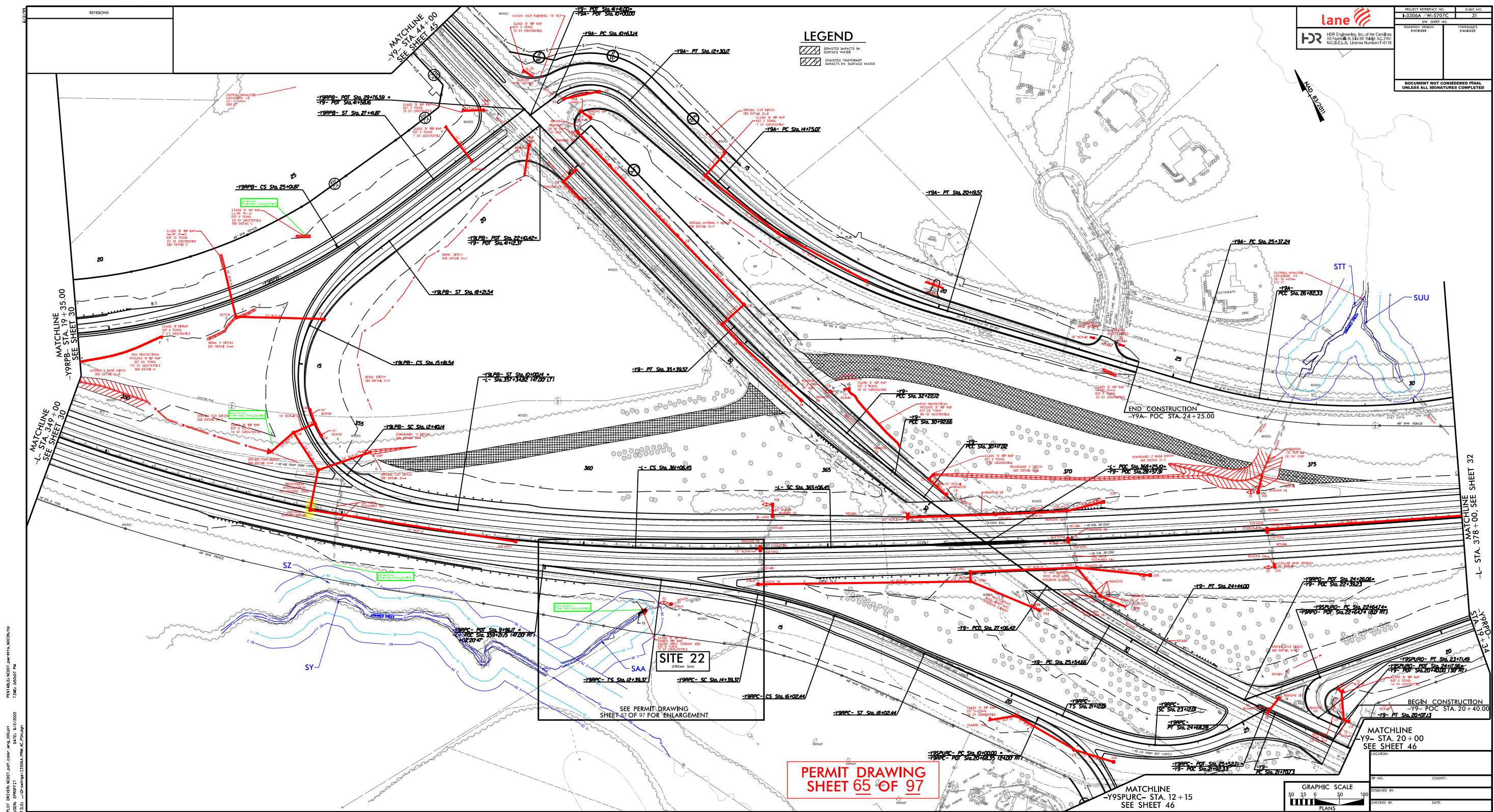


### PROFILE ALONG STRUCTURE

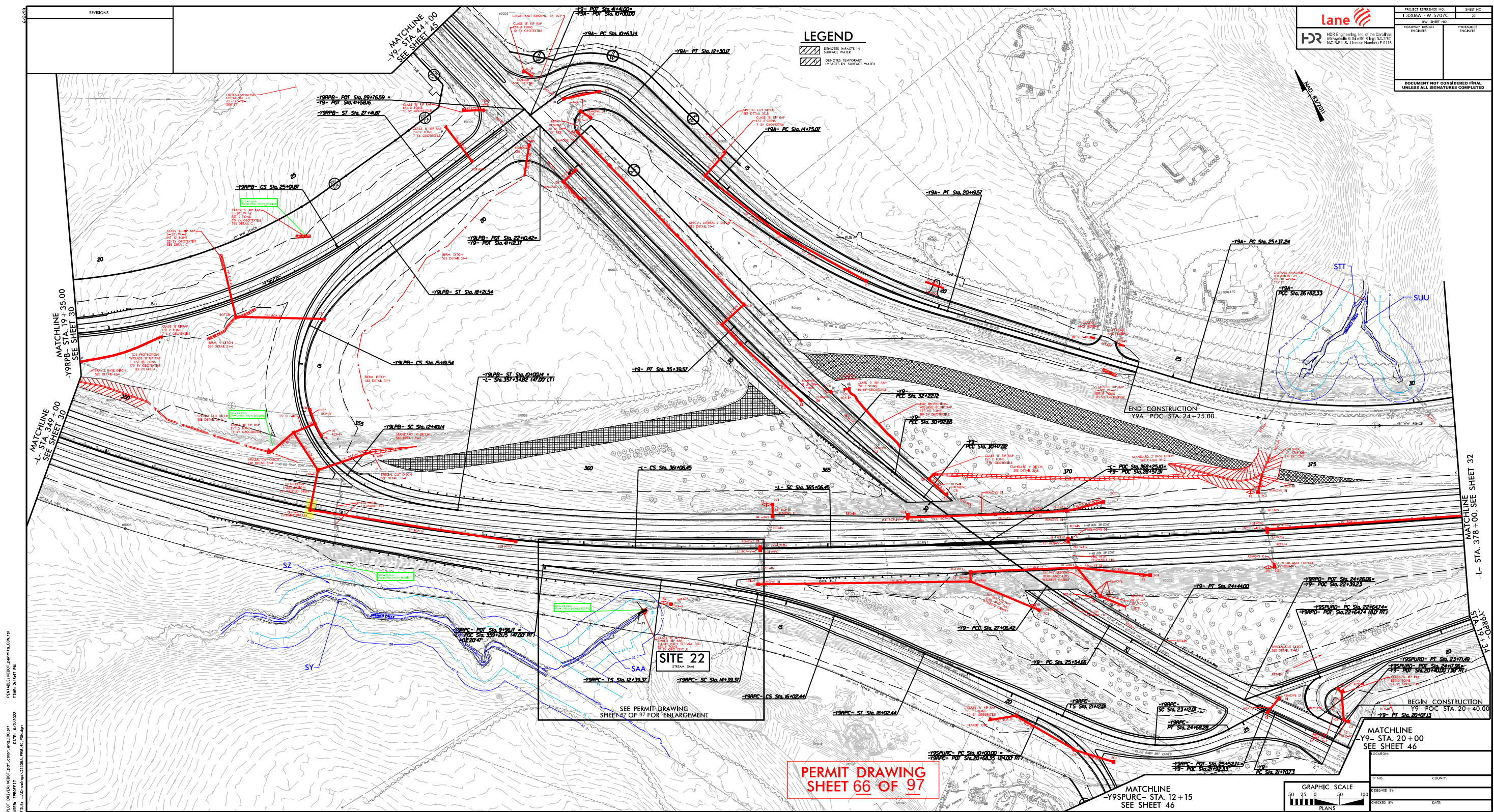
PERMIT SHEET 63 OF 97







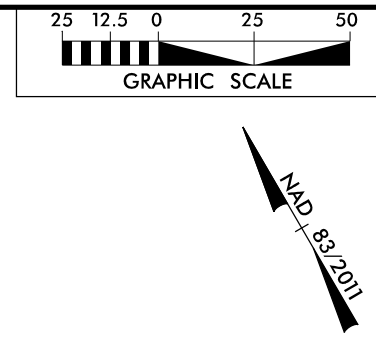
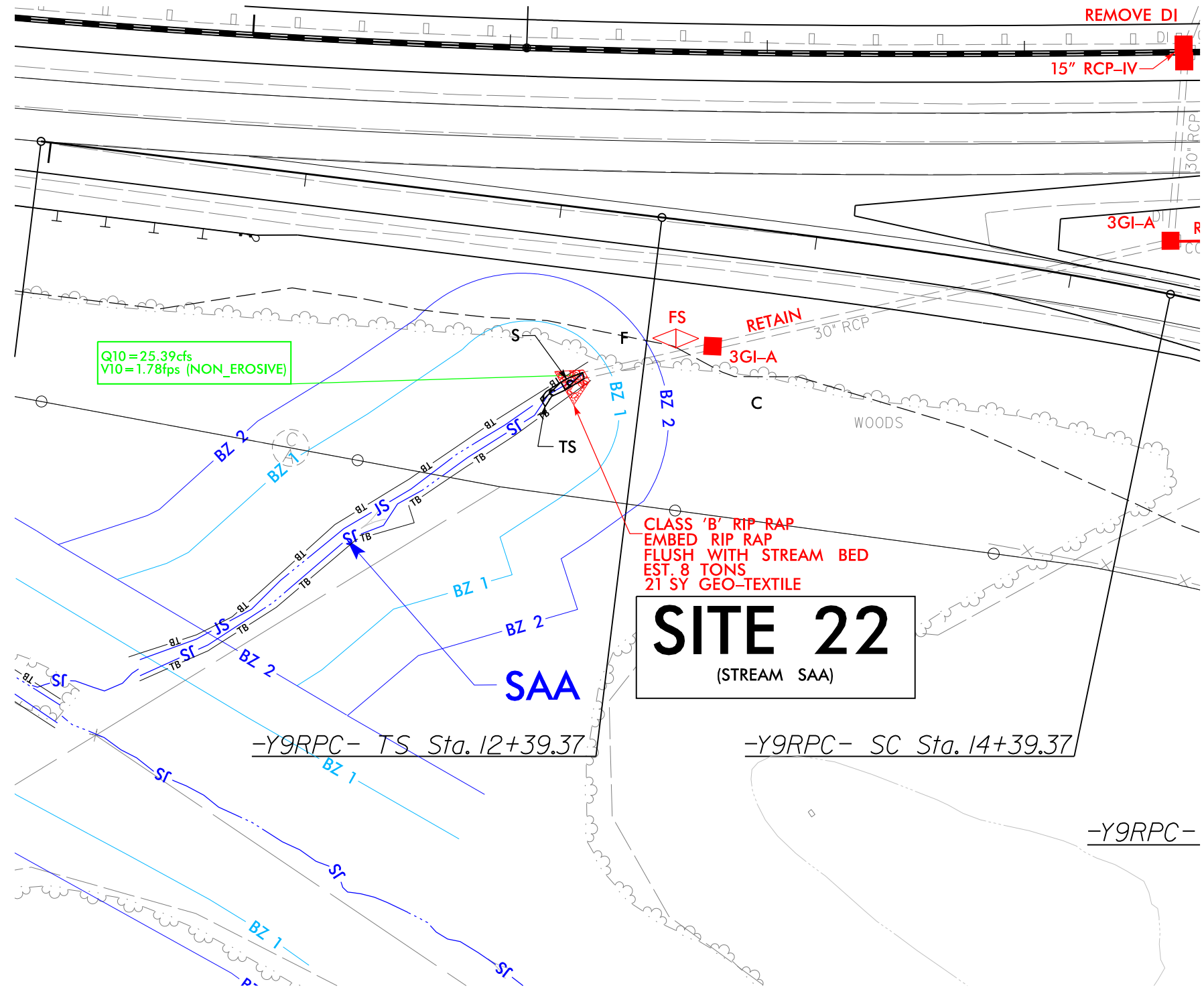






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DATE: 6/2/2022

REVISIONS



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| PROJECT REFERENCE NO.      |  | SHEET NO.              |  |
| I-3306 / W-5707C           |  | 31A                    |  |
| RW SHEET NO.               |  |                        |  |
| ROADWAY DESIGN<br>ENGINEER |  | HYDRAULICS<br>ENGINEER |  |
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# LEGEND

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

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USER: EPROFFIT  
FILE: ...\\drawings\\13306A.PRM-4C-PSH.dgn  
PENTABLE: NCDOT\_permit.dgn  
DATE: 6/16/2022  
TIME: 10:18:10 AM

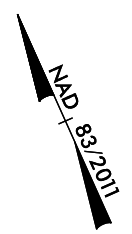
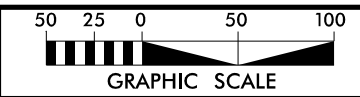
REVISIONS

MATCHLINE -L- STA. 378+00, SEE SHEET 31  
-Y9RPD- STA. 19+34

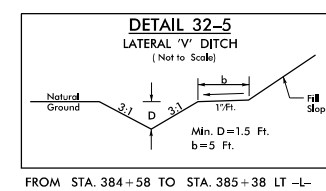
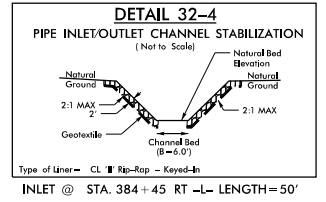
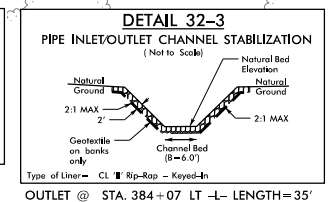
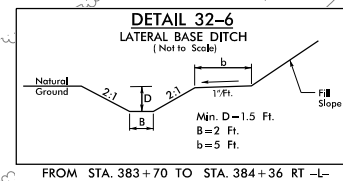
MATCHLINE -L- STA. 392+00, SEE SHEET 33

# LEGEND

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



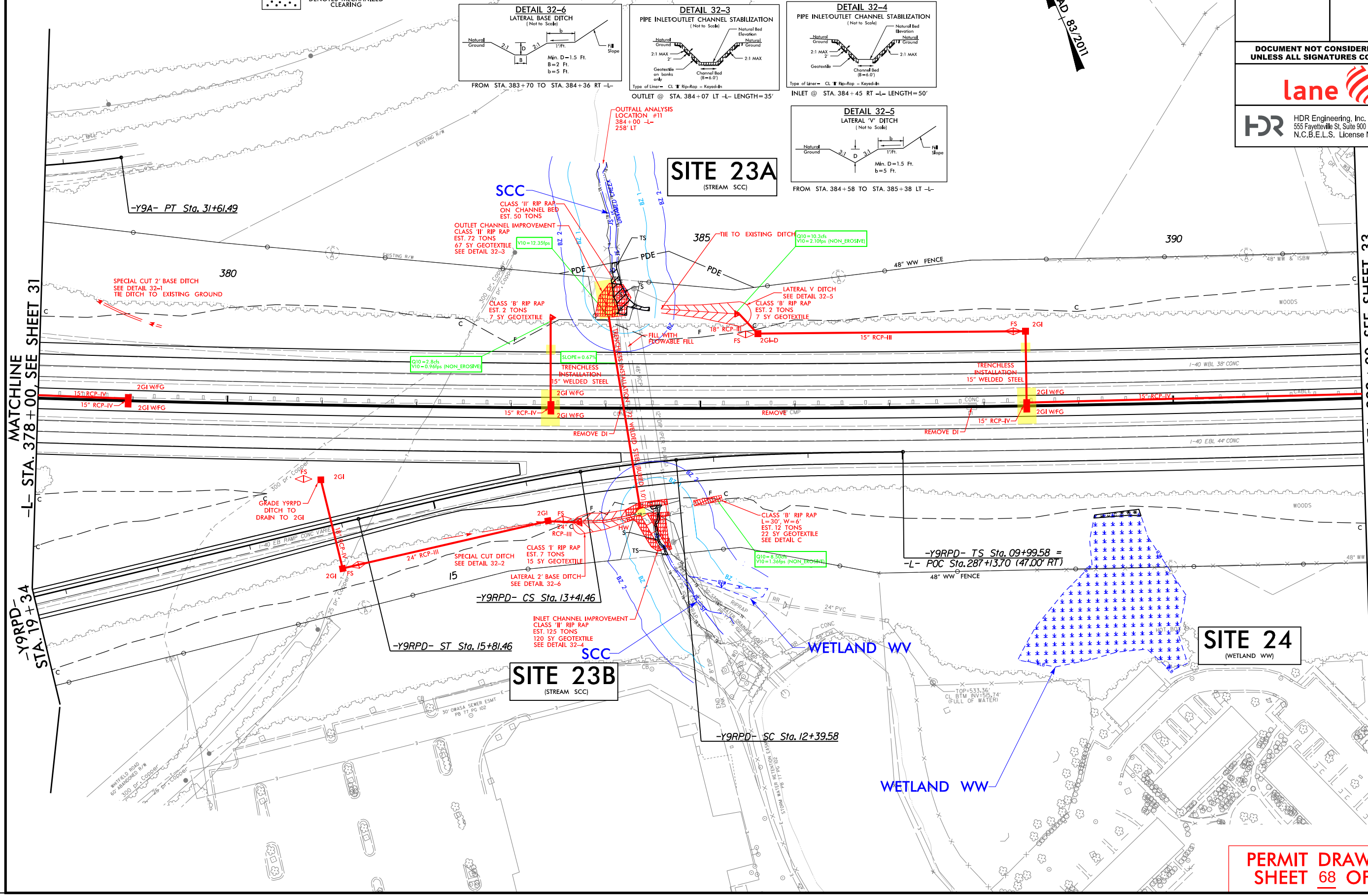
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|-------------------------------------------------------------------------------------------------------------------------------------|--|------------------------|--|
| PROJECT REFERENCE NO.<br><b>L-3306A /W-5707C</b>                                                                                    |  | SHEET NO.<br><b>32</b> |  |
| RW SHEET NO.                                                                                                                        |  | HYDRAULICS ENGINEER    |  |
| ROADWAY DESIGN ENGINEER                                                                                                             |  |                        |  |
| <b>DOCUMENT NOT CONSIDERED FINAL<br/>UNLESS ALL SIGNATURES COMPLETED</b>                                                            |  |                        |  |
|                                                                                                                                     |  |                        |  |
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**SITE 23A**  
(STREAM SCC)

**SITE 24**  
(WETLAND WW)

**SITE 23B**  
(STREAM SCC)





REVISIONS

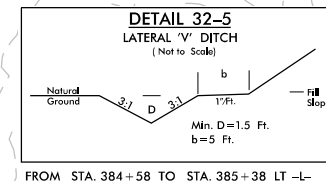
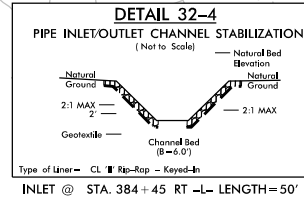
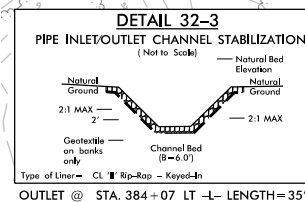
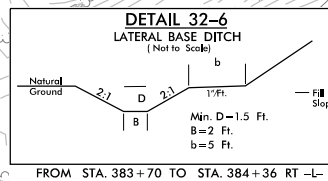
MATCHLINE  
-L- STA. 378+00, SEE SHEET 31

-Y9RPD-  
STA. 19+34

MATCHLINE -L- STA. 392+00, SEE SHEET 33

# LEGEND

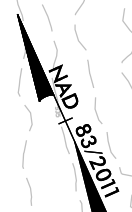
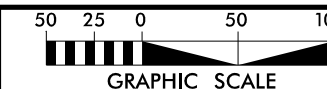
- DENOTES IMPACTS IN SURFACE WATER
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER
- DENOTES MECHANIZED CLEARING



**SITE 23A**  
(STREAM SCC)

**SITE 24**  
(WETLAND WW)

**SITE 23B**  
(STREAM SCC)



|                                                                                     |  |                                                                                                                                     |  |
|-------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------------------------------------------------|--|
| PROJECT REFERENCE NO.                                                               |  | SHEET NO.                                                                                                                           |  |
| I-3306A / W-5707C                                                                   |  | 32                                                                                                                                  |  |
| RW SHEET NO.                                                                        |  |                                                                                                                                     |  |
| ROADWAY DESIGN<br>ENGINEER                                                          |  | HYDRAULICS<br>ENGINEER                                                                                                              |  |
| <b>DOCUMENT NOT CONSIDERED FINAL<br/>UNLESS ALL SIGNATURES COMPLETED</b>            |  |                                                                                                                                     |  |
|  |  |                                                                                                                                     |  |
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REVISIONS

5/14/99

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



PROJECT REFERENCE NO.

SHEET NO.

ROADWAY DESIGN  
ENGINEER

HYDRAULICS  
ENGINEER

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

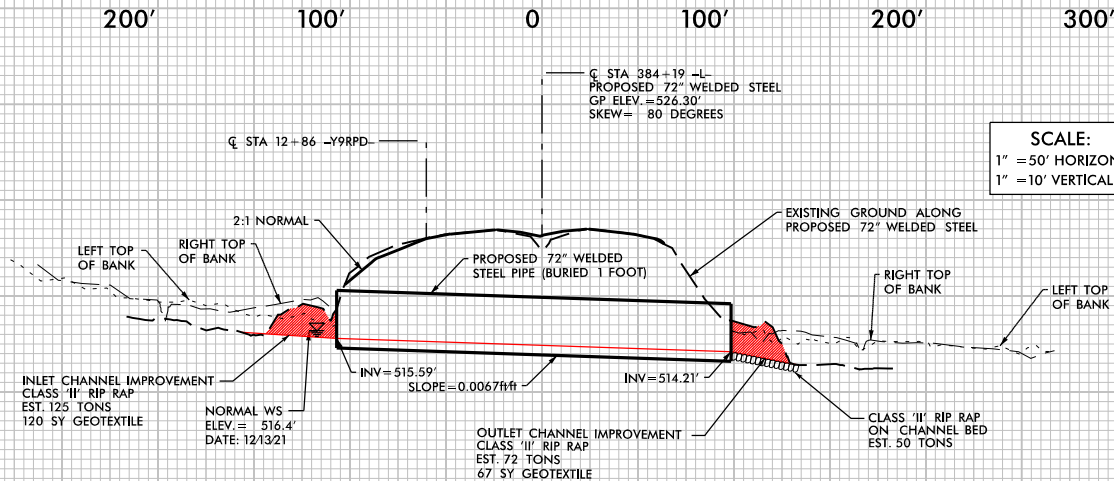
**SITE 23A,B**

530

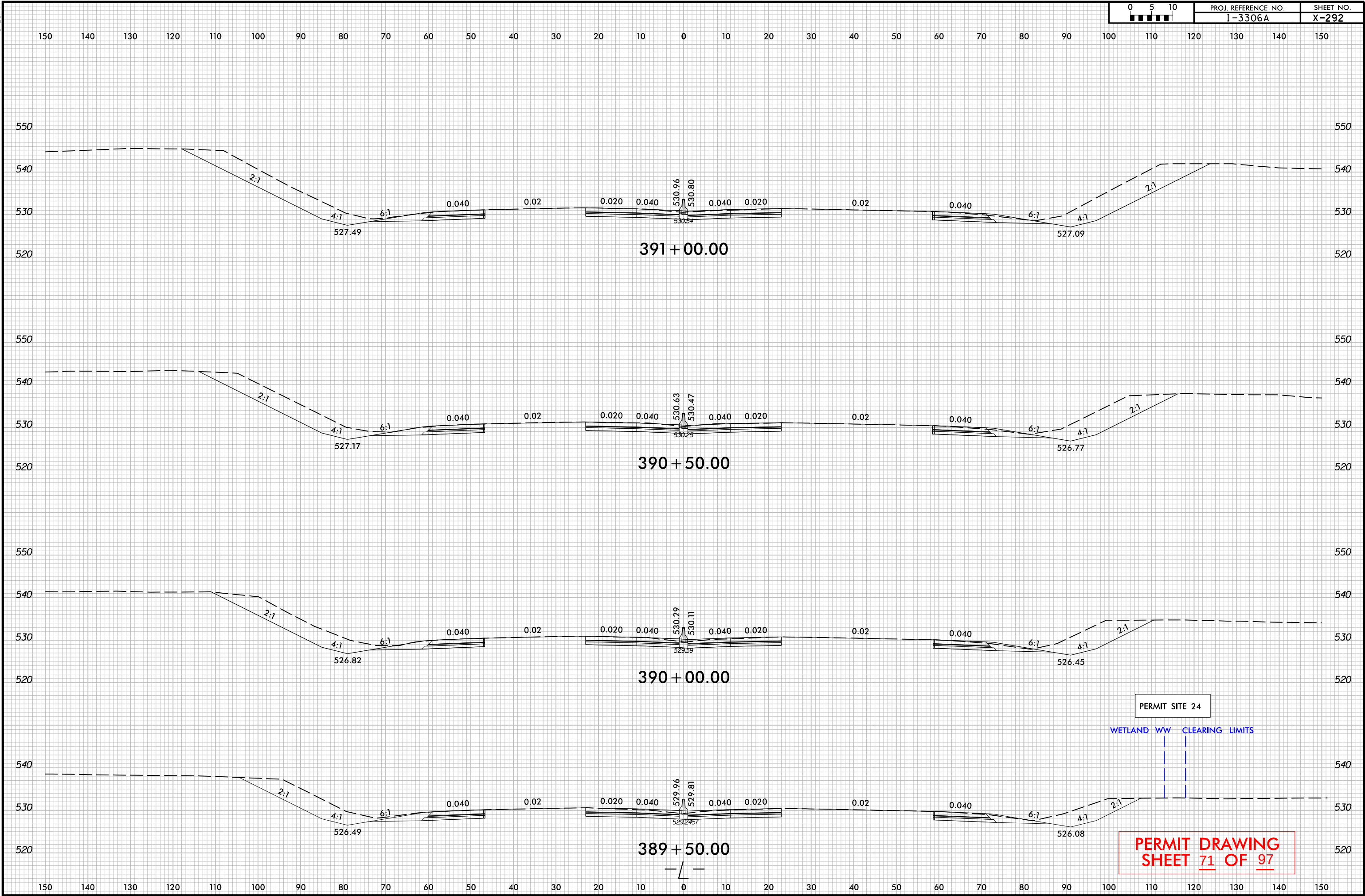
520

510

500



PROFILE ALONG STRUCTURE

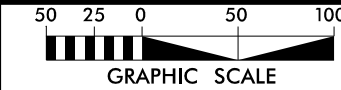
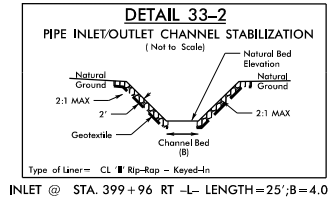
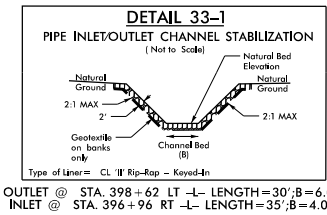




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FILE: ...\\drawings\\13306A.PRM-4C\_PSH.dgn  
PENTABLE: NCDOT\_permits.NCON.tbl  
DATE: 6/2/2022  
TIME: 2:50:15 PM

# LEGEND

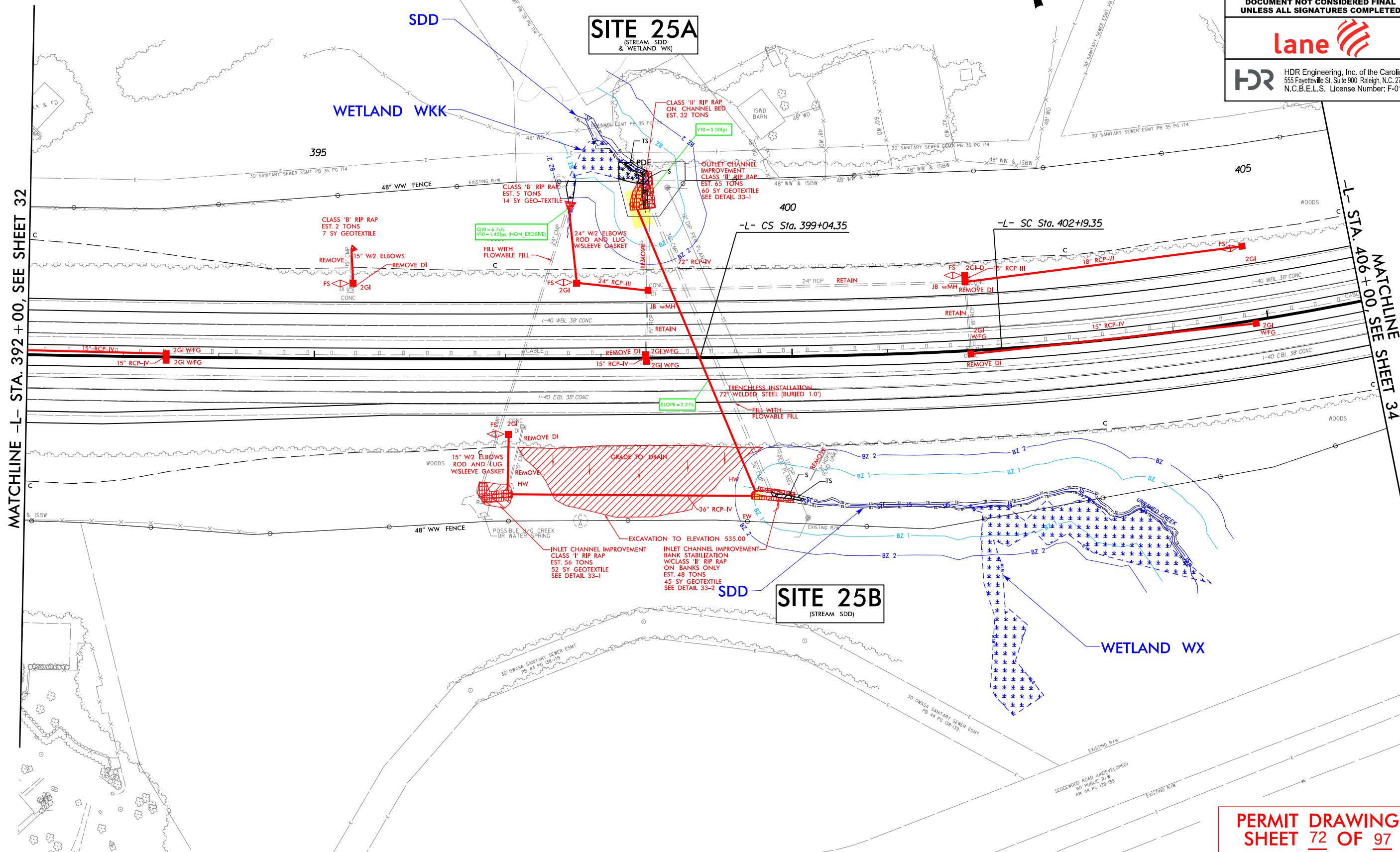
- DENOTES IMPACTS IN SURFACE WATER
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER
- DENOTES MECHANIZED CLEARING



|                                                                                     |  |                                                                                                                                     |  |
|-------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------------------------------------------------|--|
| PROJECT REFERENCE NO.                                                               |  | SHEET NO.                                                                                                                           |  |
| L-3306A /W-5707C                                                                    |  | 33                                                                                                                                  |  |
| RW SHEET NO.                                                                        |  |                                                                                                                                     |  |
| ROADWAY DESIGN ENGINEER                                                             |  | HYDRAULICS ENGINEER                                                                                                                 |  |
| <b>DOCUMENT NOT CONSIDERED FINAL<br/>UNLESS ALL SIGNATURES COMPLETED</b>            |  |                                                                                                                                     |  |
|  |  |                                                                                                                                     |  |
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MATCHLINE -L- STA. 392+00, SEE SHEET 32

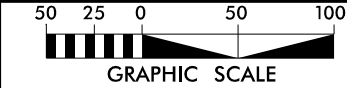
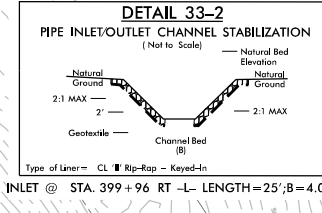
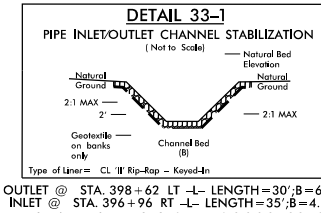
MATCHLINE STA. 406+00, SEE SHEET 34





LEGEND

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



|                                                                                                                                     |                     |                 |
|-------------------------------------------------------------------------------------------------------------------------------------|---------------------|-----------------|
| PROJECT REFERENCE NO.<br>L-3306A /W-5707C                                                                                           |                     | SHEET NO.<br>33 |
| RW SHEET NO.                                                                                                                        |                     |                 |
| ROADWAY DESIGN ENGINEER                                                                                                             | HYDRAULICS ENGINEER |                 |
| DOCUMENT NOT CONSIDERED FINAL<br>UNLESS ALL SIGNATURES COMPLETED                                                                    |                     |                 |
|                                                                                                                                     |                     |                 |
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MATCHLINE -L- STA. 392+00, SEE SHEET 32

MATCHLINE STA. 406+00, SEE SHEET 34

SITE 25A  
(STREAM SDD & WETLAND WK)

SITE 25B  
(STREAM SDD)

PERMIT DRAWING  
SHEET 73 OF 97

PLOT DRIVER: NCDOT\_color\_eng-100.plt  
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FILE: ...\\drawings\\13306A.PRM-4C\_PSH.dgn  
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TIME: 2:43:56 PM  
DATE: 6/2/2022

REVISIONS

REVISIONS

5/14/99

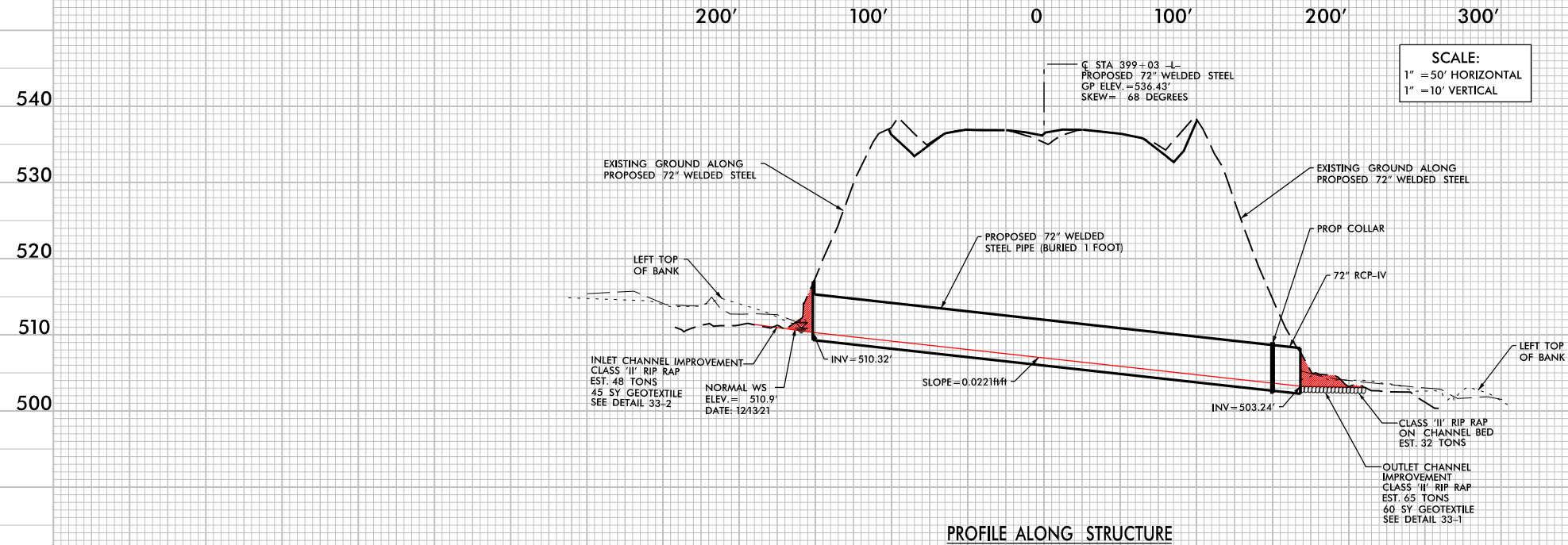


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N.C.B.E.L.S. License Number: F-0116



| PROJECT REFERENCE NO.   |                                                                  | SHEET NO. |
|-------------------------|------------------------------------------------------------------|-----------|
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER                                              |           |
|                         | DOCUMENT NOT CONSIDERED FINAL<br>UNLESS ALL SIGNATURES COMPLETED |           |

SITE 25A,B





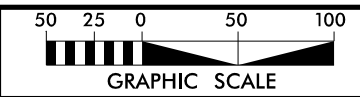
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USER: EPROFFIT  
FILE: ...\\drawings\\13306A.PRM-4C\_PSH.dgn

PENTABLE: NCDOT\_permits.NCON.tbl  
DATE: 6/2/2022  
TIME: 2:50:17 PM

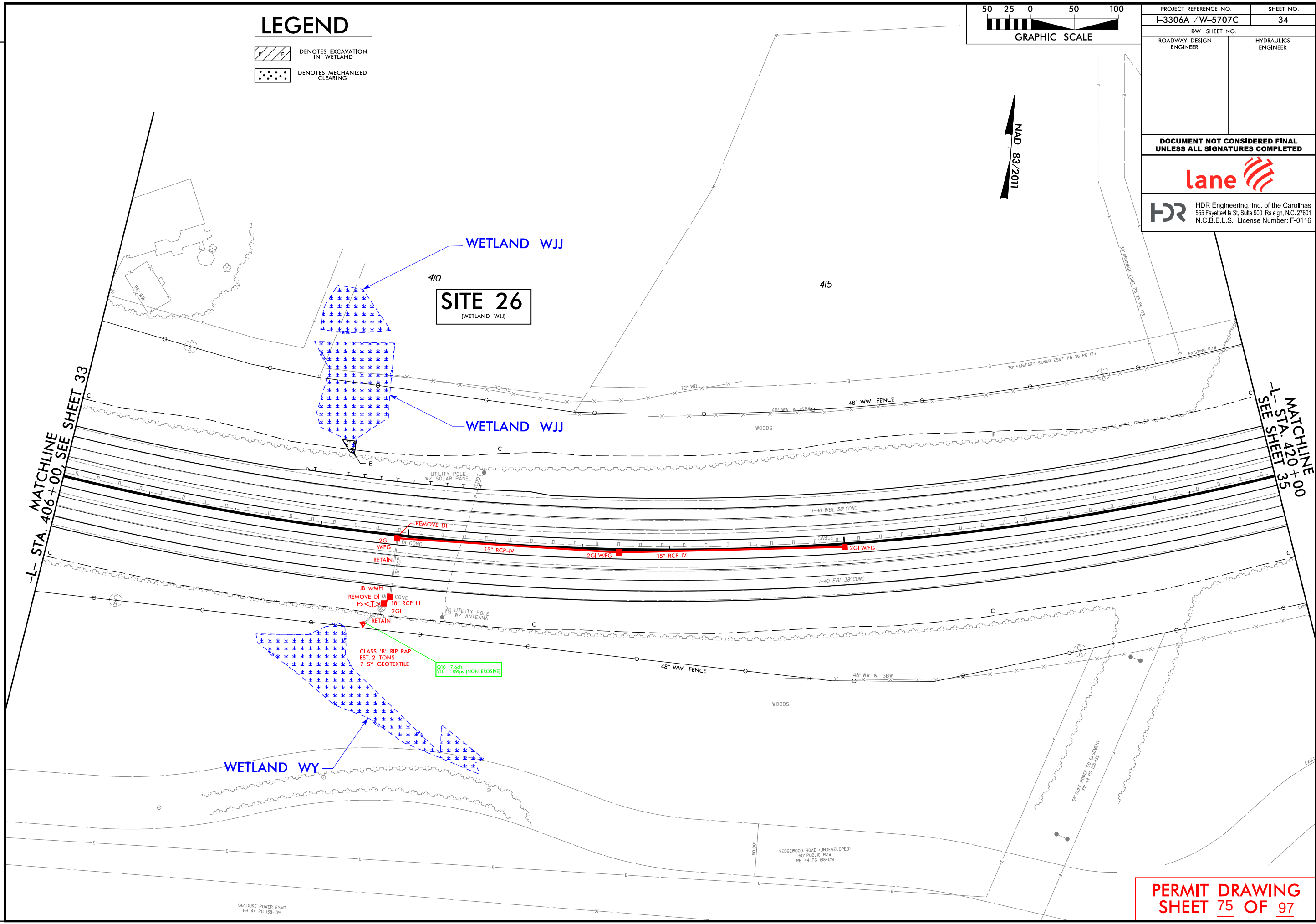
REVISIONS

# LEGEND

-  DENOTES EXCAVATION IN WETLAND
-  DENOTES MECHANIZED CLEARING



|                                                                                                                                                                                                                         |                     |                        |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|------------------------|
| PROJECT REFERENCE NO.<br><b>L-3306A / W-5707C</b>                                                                                                                                                                       |                     | SHEET NO.<br><b>34</b> |
| RW SHEET NO.                                                                                                                                                                                                            |                     |                        |
| ROADWAY DESIGN ENGINEER                                                                                                                                                                                                 | HYDRAULICS ENGINEER |                        |
| <b>DOCUMENT NOT CONSIDERED FINAL<br/>UNLESS ALL SIGNATURES COMPLETED</b>                                                                                                                                                |                     |                        |
|                                                                                                                                      |                     |                        |
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 DENOTES EXCAVATION  
IN WETLAND

 DENOTES MECHANIZED  
CLEARING



|                                                                                                |  |                                                                                                                                     |  |
|------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------------------------------------------------|--|
| PROJECT REFERENCE NO.                                                                          |  | SHEET NO.                                                                                                                           |  |
| I-3306A / W-5707C                                                                              |  | 34                                                                                                                                  |  |
| R/W SHEET NO.                                                                                  |  |                                                                                                                                     |  |
| ROADWAY DESIGN<br>ENGINEER                                                                     |  | HYDRAULICS<br>ENGINEER                                                                                                              |  |
| <p align="center"><b>DOCUMENT NOT CONSIDERED FINAL<br/>UNLESS ALL SIGNATURES COMPLETED</b></p> |  |                                                                                                                                     |  |
|             |  |                                                                                                                                     |  |
|             |  | HDR Engineering, Inc. of the Carolinas<br>555 Fayetteville St, Suite 900 Raleigh, N.C. 27601<br>N.C.B.E.L.S. License Number: F-0111 |  |

MATCHLINE  
STA. 420 + 00  
-L- SEE SHEET 35

WETLAND WY

WETLAND WJJ

**SITE 26**  
(WETLAND WJJ)

—WETLAND WJJ

JB w/MH  
 MOVE DI [red square] CONC  
 FS [red diamond] [red square] 18" RCP-1  
 2GI  
 RETAIN

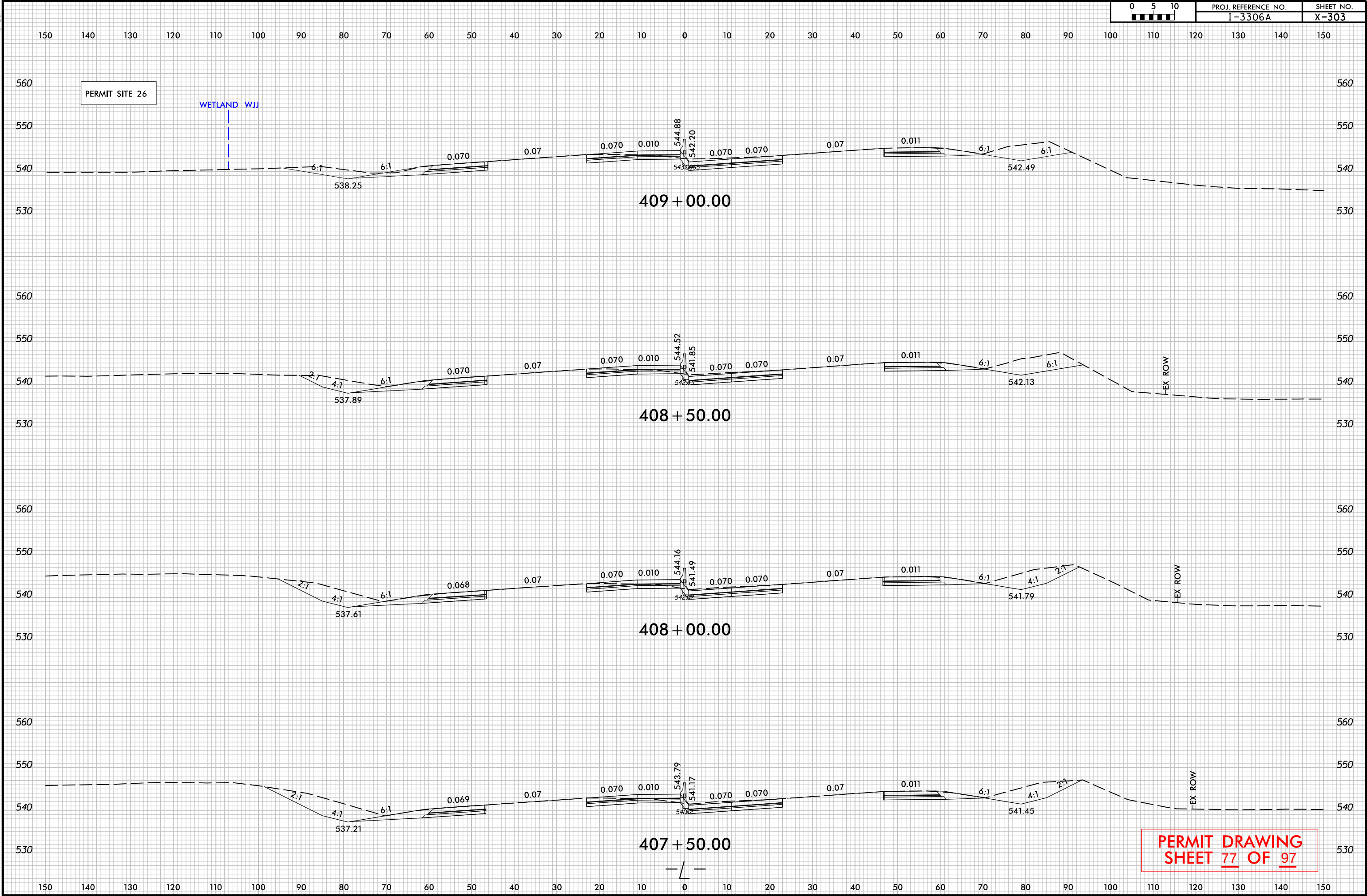
CLASS 'B' RIP RAP  
EST. 2 TONS  
7 SY GEOTEXTILE

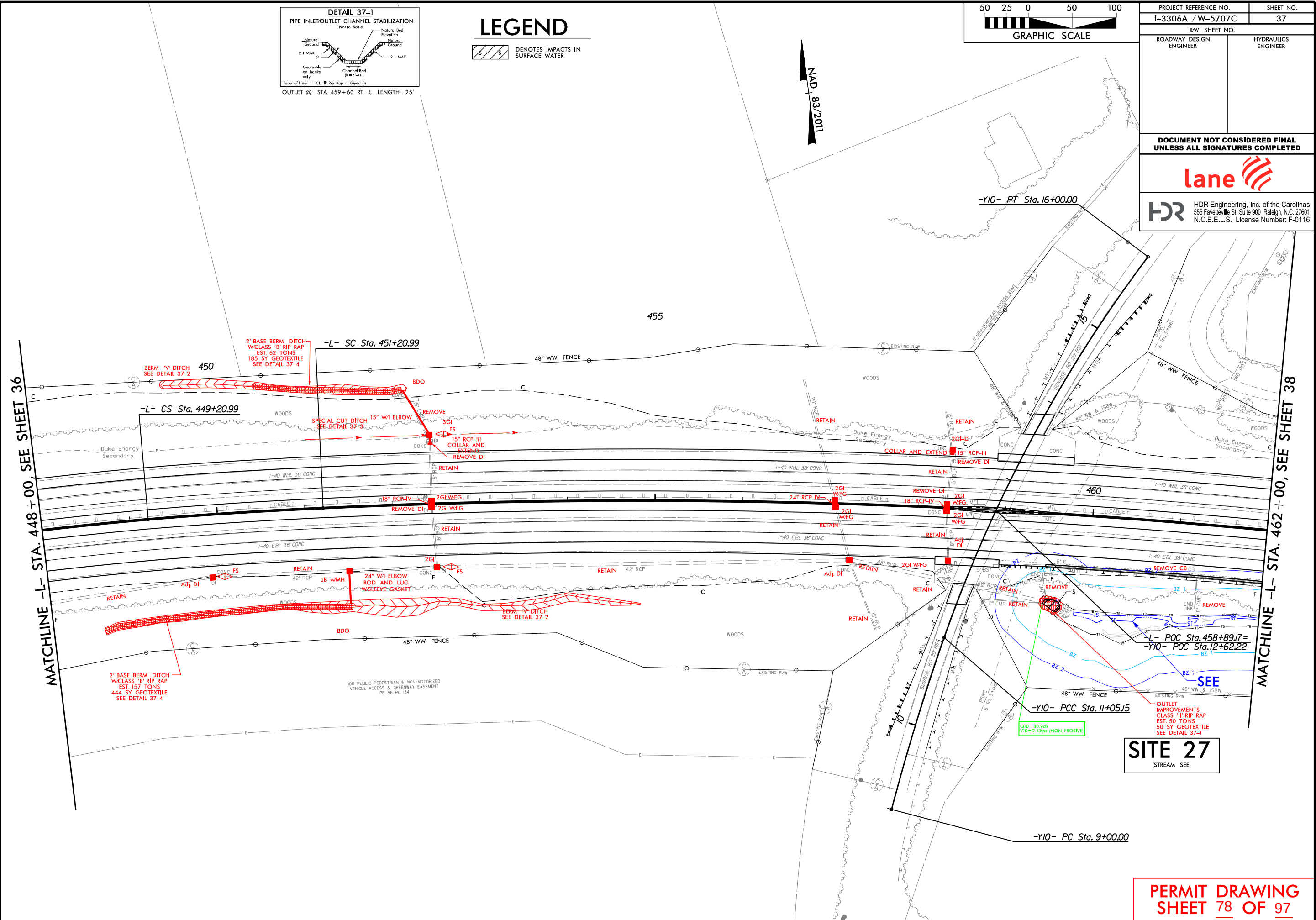
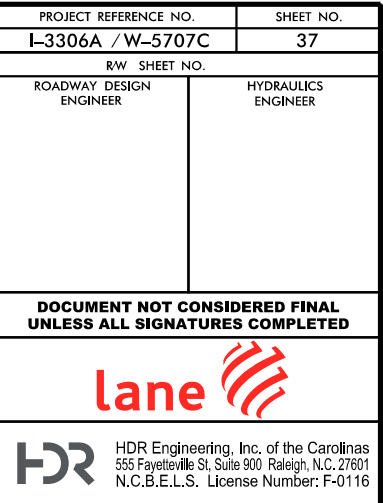
Q10 = 7.6 cfs  
V10 = 1.89 fps (NON\_EROSIVE)

PERMIT SHEET 76 OF 97



8/23/99





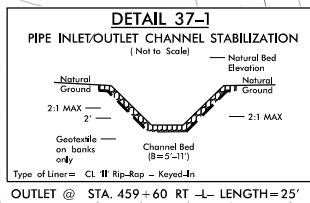


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PENTABLE: NCDOT\_permit.s.CON.tbl  
TIME: 2:44:07 PM

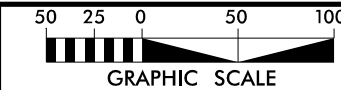
DATE: 6/2/2022

REVISIONS

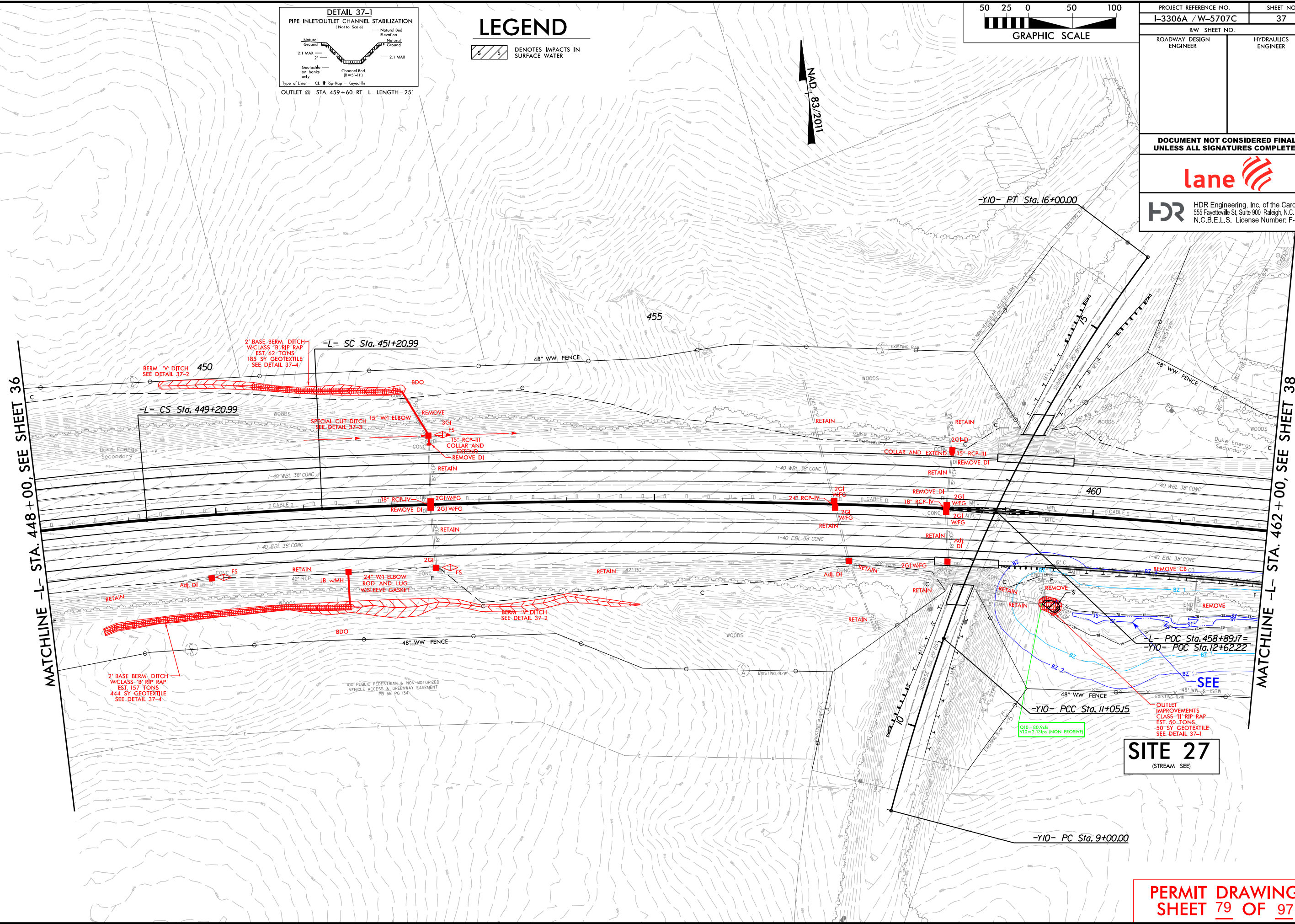


## LEGEND

DENOTES IMPACTS IN SURFACE WATER



|                                                                                     |  |                                                                                                                                     |  |
|-------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------------------------------------------------|--|
| PROJECT REFERENCE NO.                                                               |  | SHEET NO.                                                                                                                           |  |
| I-3306A / W-5707C                                                                   |  | 37                                                                                                                                  |  |
| RW SHEET NO.                                                                        |  |                                                                                                                                     |  |
| ROADWAY DESIGN<br>ENGINEER                                                          |  | HYDRAULICS<br>ENGINEER                                                                                                              |  |
| <b>DOCUMENT NOT CONSIDERED FINAL<br/>UNLESS ALL SIGNATURES COMPLETED</b>            |  |                                                                                                                                     |  |
|  |  |                                                                                                                                     |  |
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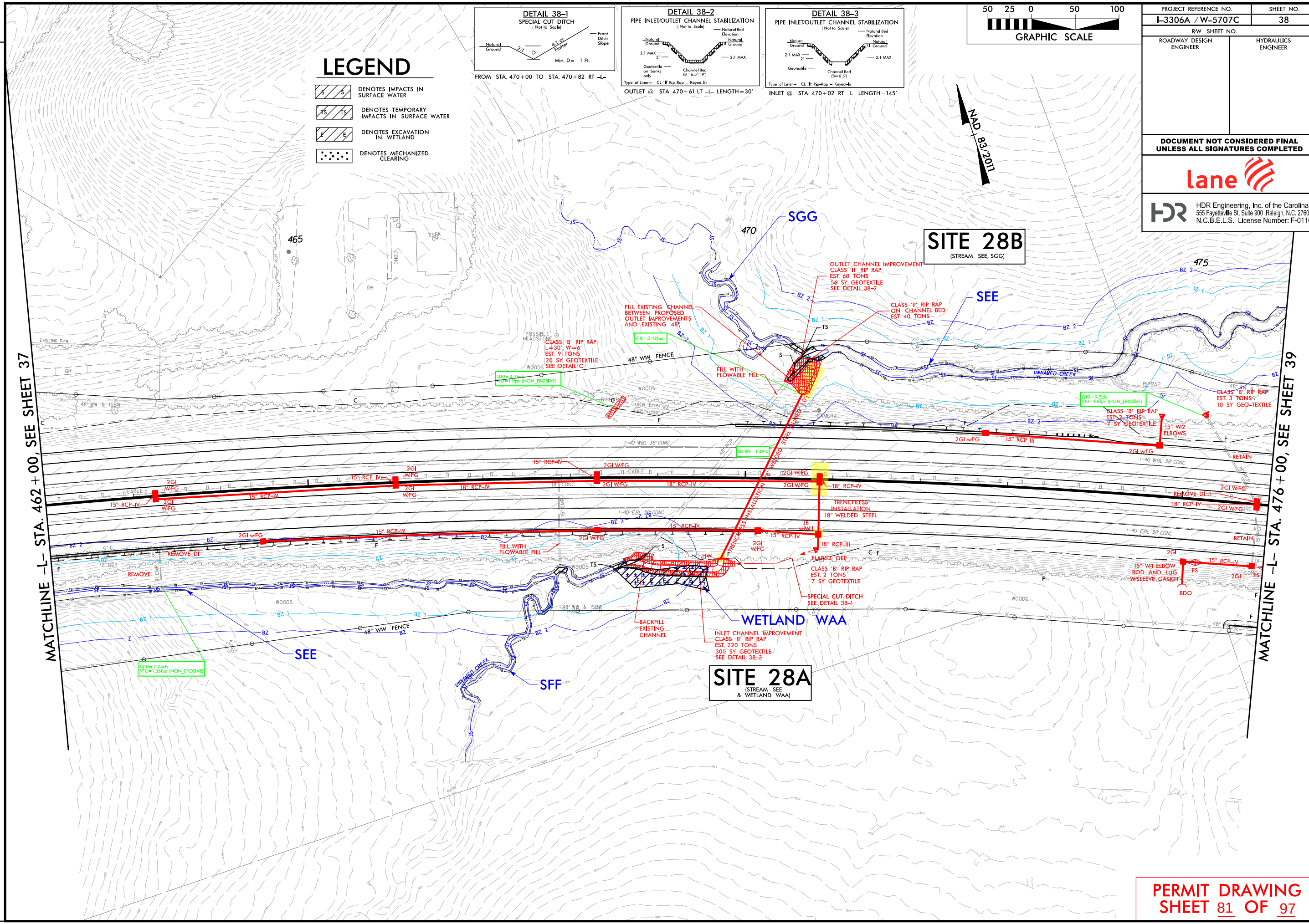
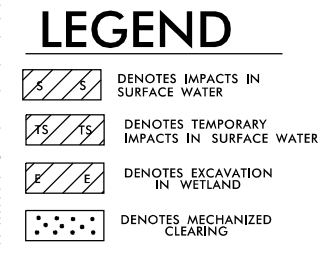
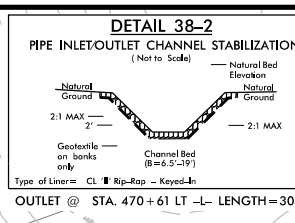


**SITE 27**  
(STREAM SEE)

**PERMIT DRAWING  
SHEET 79 OF 97**

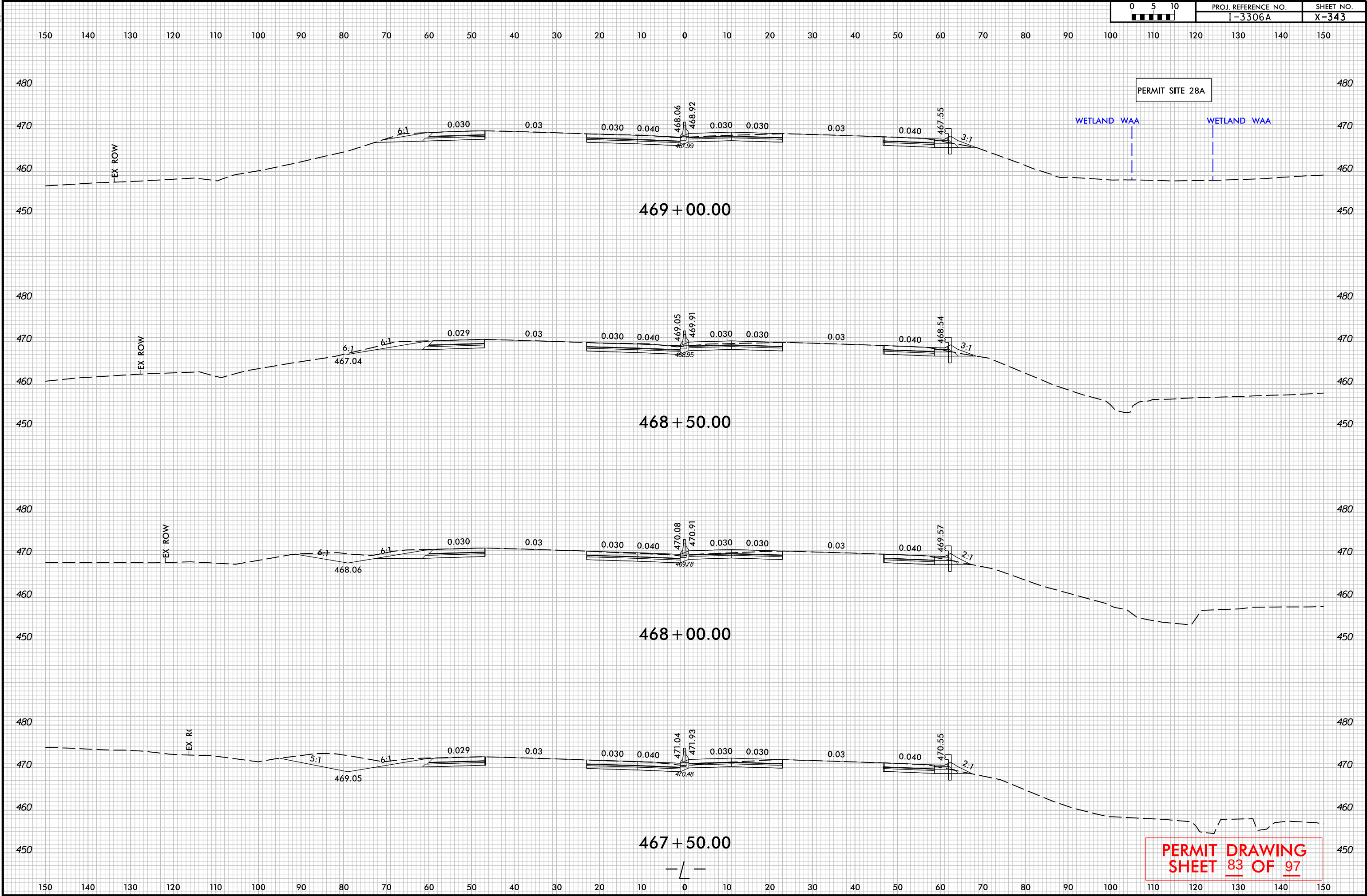




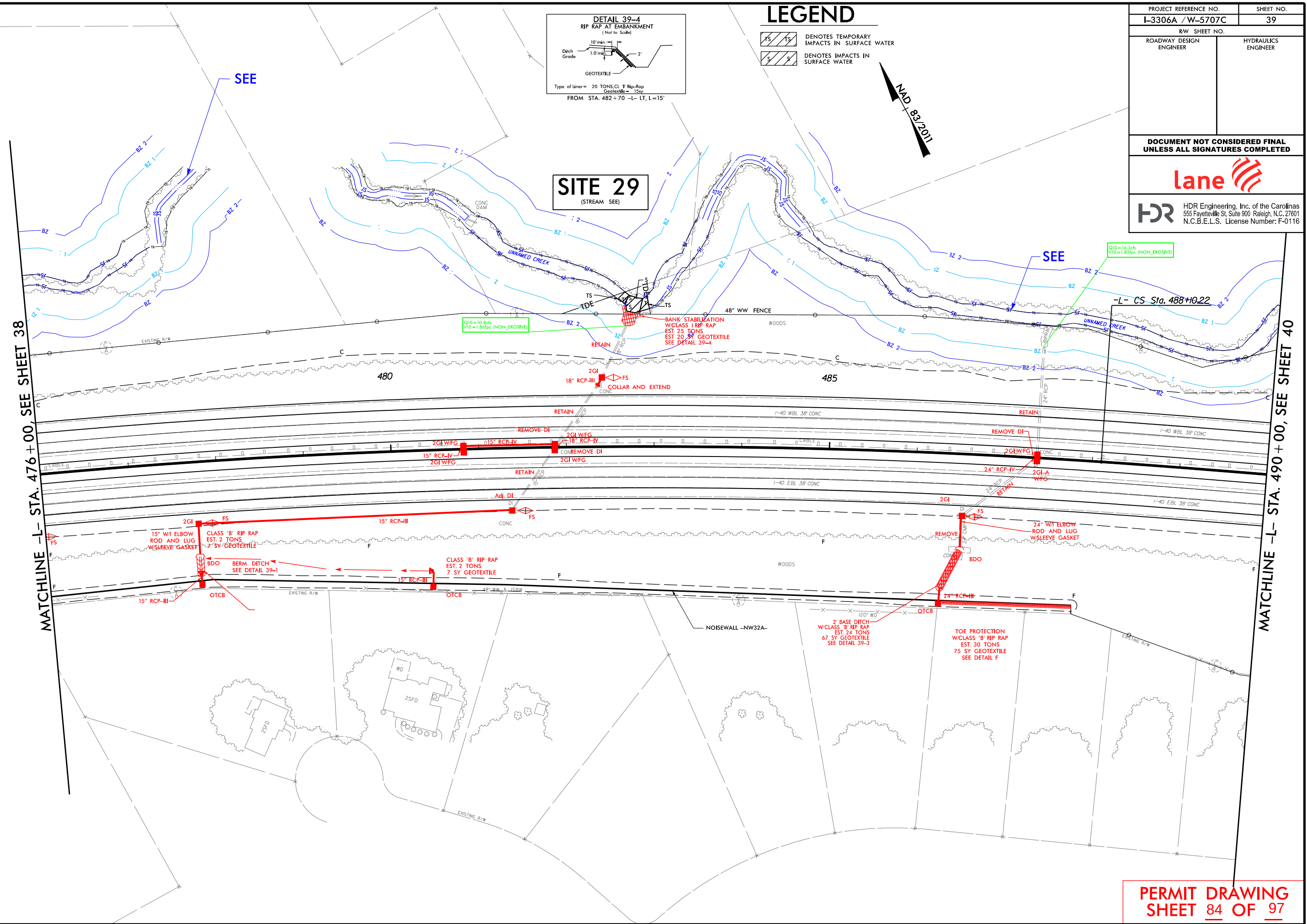




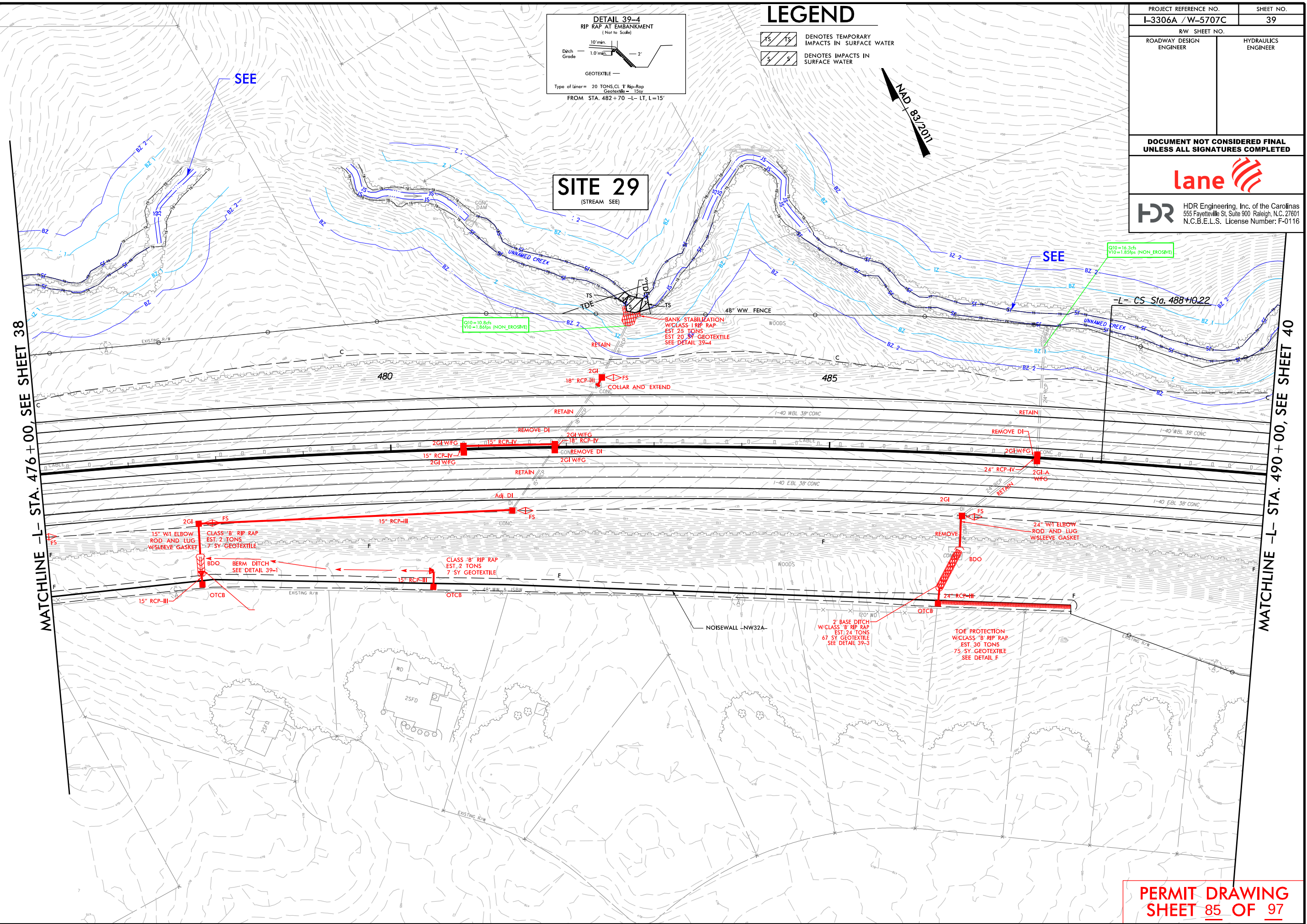
8/23/99









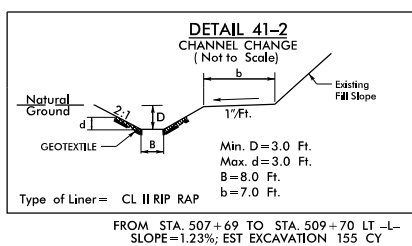
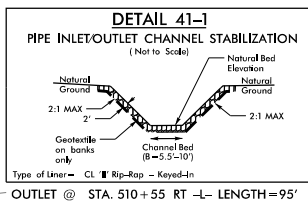


PLOT DRIVER: NCDOT\_color\_eng-100.plt  
USER: EPROFFIT  
FILE: ...\\drawings\\13306A.PRM-4C.PSH.dgn  
PENTABLE: NCDOT\_permit.NCON.tbl  
DATE: 6/2/2022  
TIME: 2:50:28 PM

REVISIONS

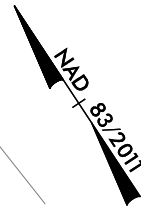
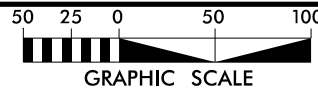
MATCHLINE -L- STA. 504 + 00 SEE SHEET 40

MATCHLINE -L- STA. 518 + 00, SEE SHEET 42

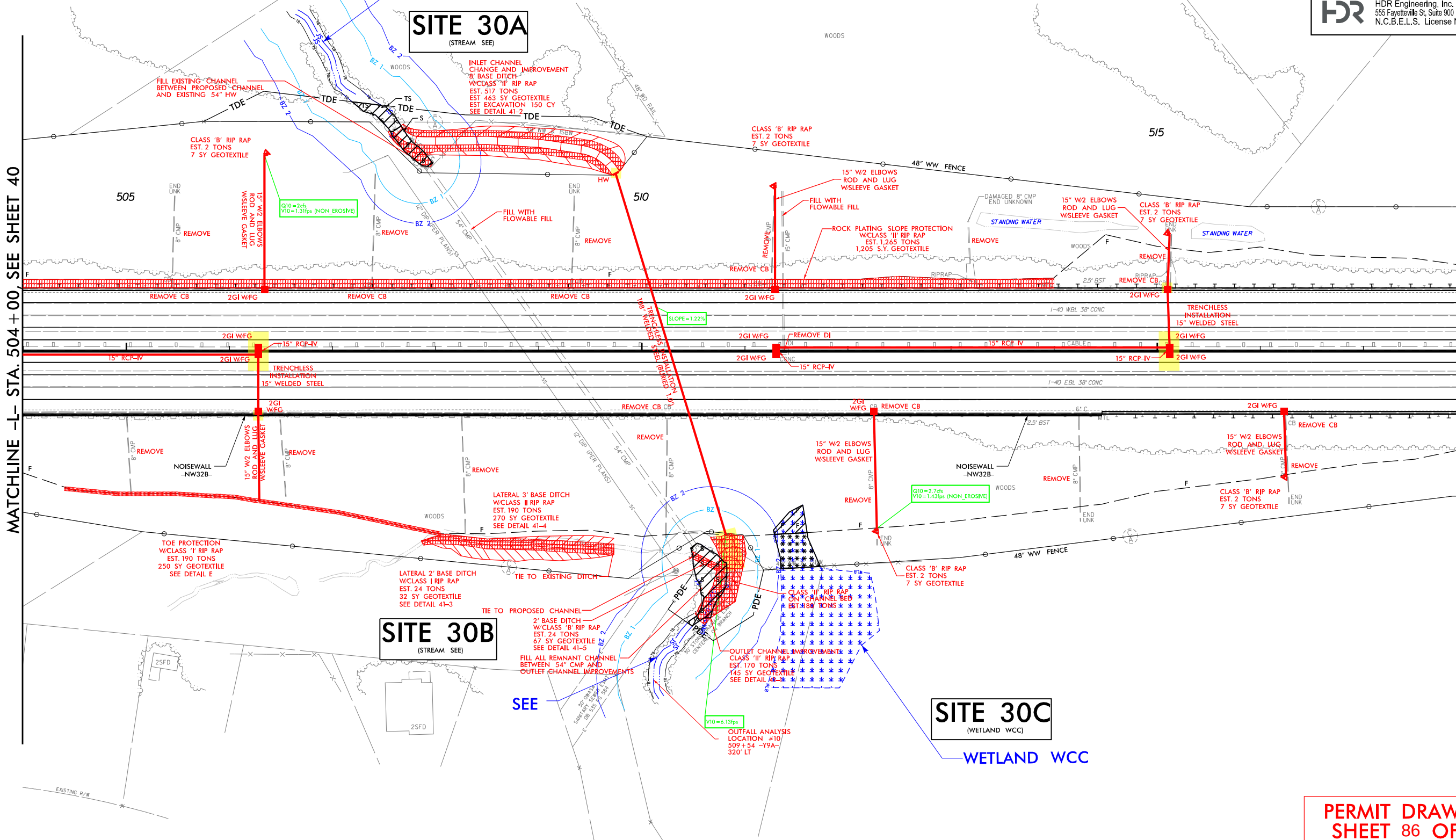


## LEGEND

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



|                                                                                     |  |                                                                                                                                     |  |
|-------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------------------------------------------------|--|
| PROJECT REFERENCE NO.<br><b>I-3306A / W-5707C</b>                                   |  | SHEET NO.<br><b>41</b>                                                                                                              |  |
| RW SHEET NO.                                                                        |  |                                                                                                                                     |  |
| ROADWAY DESIGN<br>ENGINEER                                                          |  | HYDRAULICS<br>ENGINEER                                                                                                              |  |
| <b>DOCUMENT NOT CONSIDERED FINAL<br/>UNLESS ALL SIGNATURES COMPLETED</b>            |  |                                                                                                                                     |  |
|  |  |                                                                                                                                     |  |
|  |  | HDR Engineering, Inc. of the Carolinas<br>555 Fayetteville St, Suite 900 Raleigh, N.C. 27601<br>N.C.B.E.L.S. License Number: F-0116 |  |

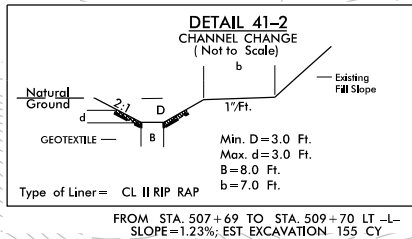
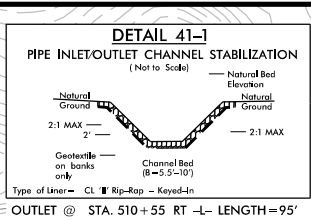




REVISIONS

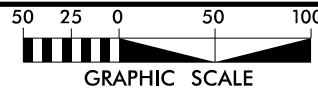
MATCHLINE -L- STA. 504+00 SEE SHEET 40

MATCHLINE -L- STA. 518+00, SEE SHEET 42

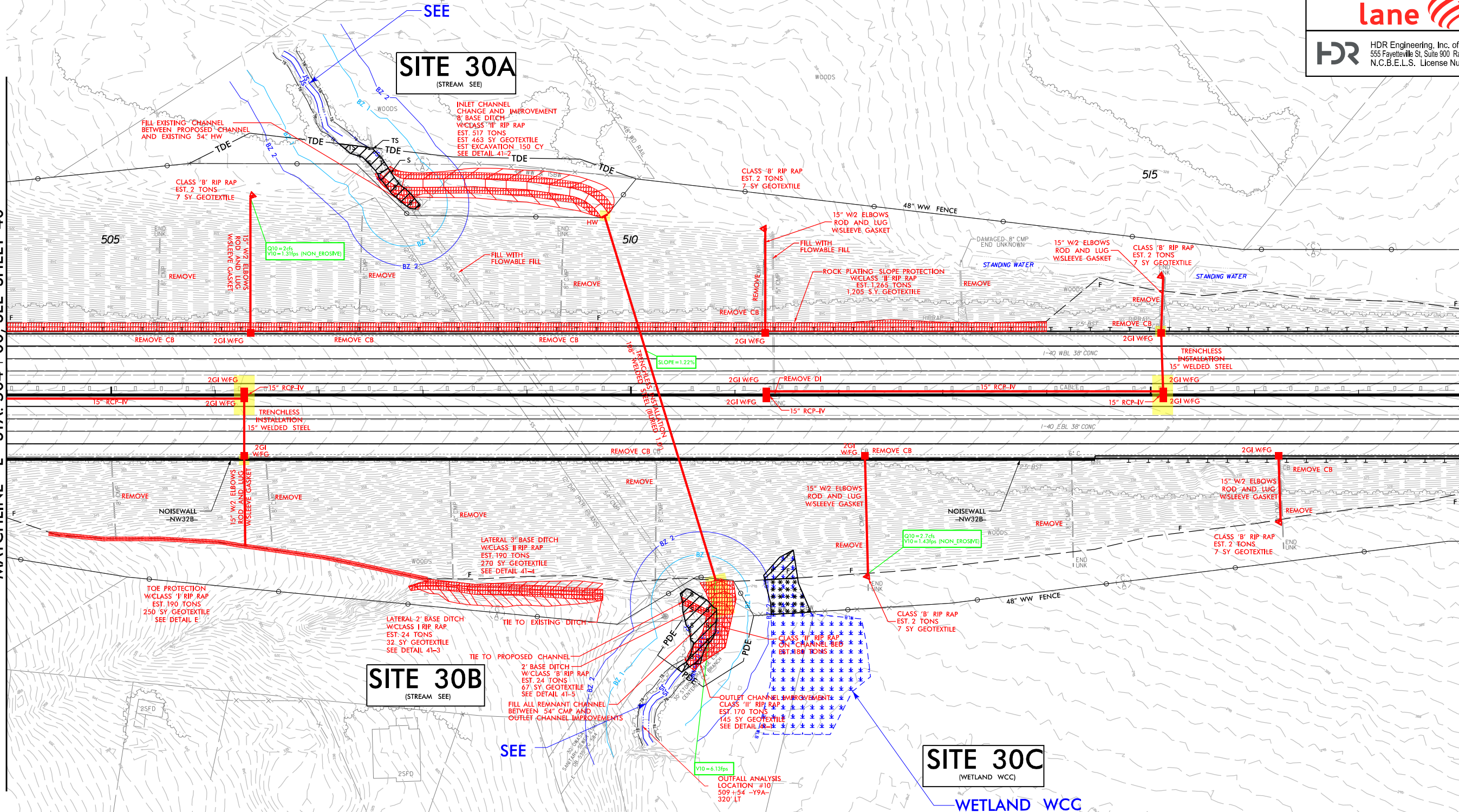


LEGEND

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



|                                                                                                                                                                                                                         |  |                        |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------------------|--|
| PROJECT REFERENCE NO.                                                                                                                                                                                                   |  | SHEET NO.              |  |
| I-3306A /W-5707C                                                                                                                                                                                                        |  | 41                     |  |
| RW SHEET NO.                                                                                                                                                                                                            |  |                        |  |
| ROADWAY DESIGN<br>ENGINEER                                                                                                                                                                                              |  | HYDRAULICS<br>ENGINEER |  |
| <b>DOCUMENT NOT CONSIDERED FINAL<br/>UNLESS ALL SIGNATURES COMPLETED</b>                                                                                                                                                |  |                        |  |
|                                                                                                                                      |  |                        |  |
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N.C.B.E.L.S. License Number: F-0116



PROJECT REFERENCE NO.

SHEET NO.

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

SITE 30A,B

200' 100' 0 100' 200' 300'

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

360  
350  
340  
330  
320  
310  
300  
290

Q STA 510+28 -L-  
GP ELEV. = 354.05  
SKEW = 73 DEGREES

PROPOSED GRADE ALONG  
PROPOSED CULVERT CENTERLINE

EXISTING GROUND ALONG  
PROPOSED CULVERT CENTERLINE

EXISTING GROUND ALONG  
PROPOSED CULVERT CENTERLINE

2:1 (NORMAL)

NORMAL WS.  
ELEV. = 295.45  
DATE: 01/10/2022

EXISTING RIGHT  
TOP OF BANK

EXISTING LEFT  
TOP OF BANK

PROPOSED 108" WSP  
BURIED 1.0'

EXISTING LEFT  
TOP OF BANK

EXISTING RIGHT  
TOP OF BANK

INV = 294.95

PROPOSED STREAM BED  
SLOPE = 0.5%

INV = 292.63  
S = 0.0122 ft/ft

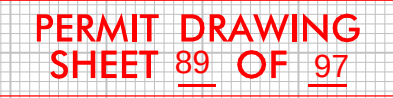
INV = 290.30

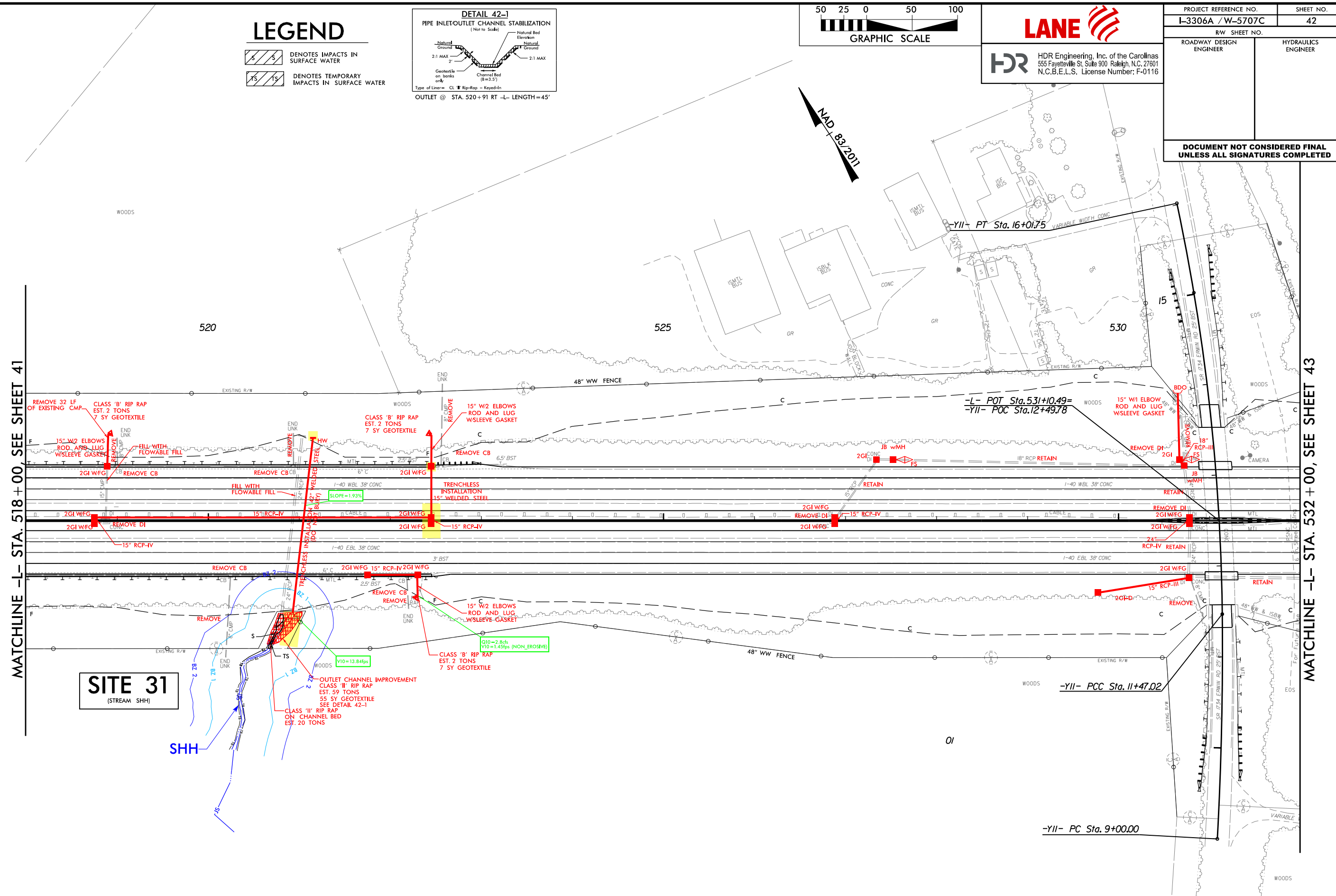
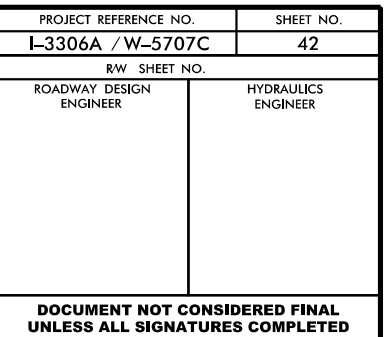
PROPOSED STREAM BED  
INSTALL CL 1/2" RIP RAP  
FLUSH WITH STREAM BED  
SLOPE = 0.5%

PROFILE ALONG STRUCTURE

PERMIT DRAWING  
SHEET 88 OF 97











PLOT DRIVER: NCDOT\_color\_eng-100.plt  
USER: EPROFFIT  
FILE: ...\\drawings\\13306A.PRM-4C.PSH.dgn

PENTABLE: NCDOT\_permits.NCON.tbl  
TIME: 2:50:34 PM  
DATE: 6/2/2022

REVISIONS

MATCHLINE -L- STA. 532 + 00, SEE SHEET 42

LEGEND

S

S

DENOTES IMPACTS IN SURFACE WATER

TS

TS

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

PROJECT REFERENCE NO.  
I-3306A / W-5707C

SHEET NO.  
43

R/W SHEET NO.

ROADWAY DESIGN ENGINEER

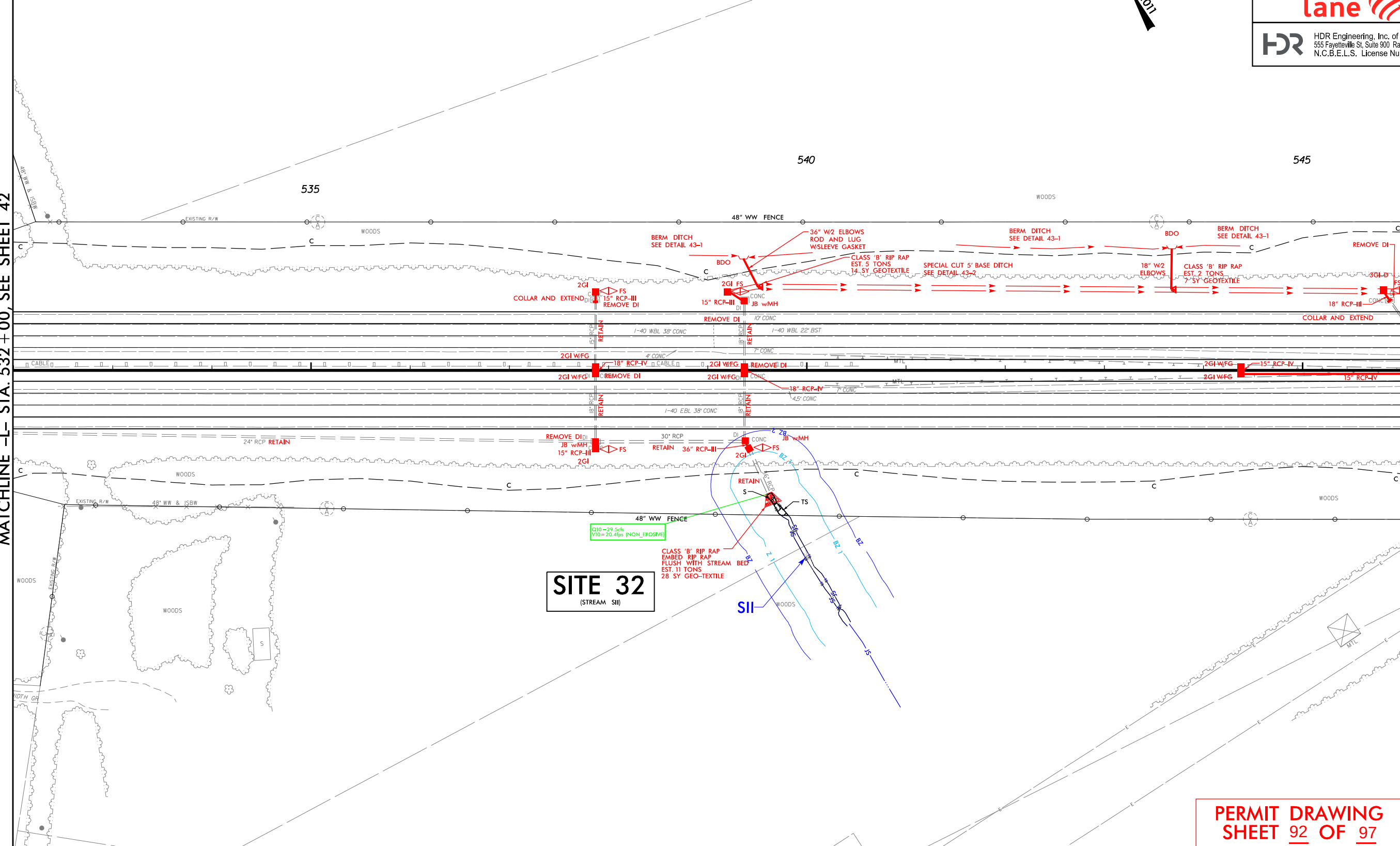
HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

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



MATCHLINE -L- STA. 546 + 00, SEE SHEET 44

PERMIT DRAWING  
SHEET 92 OF 97



REVISIONS

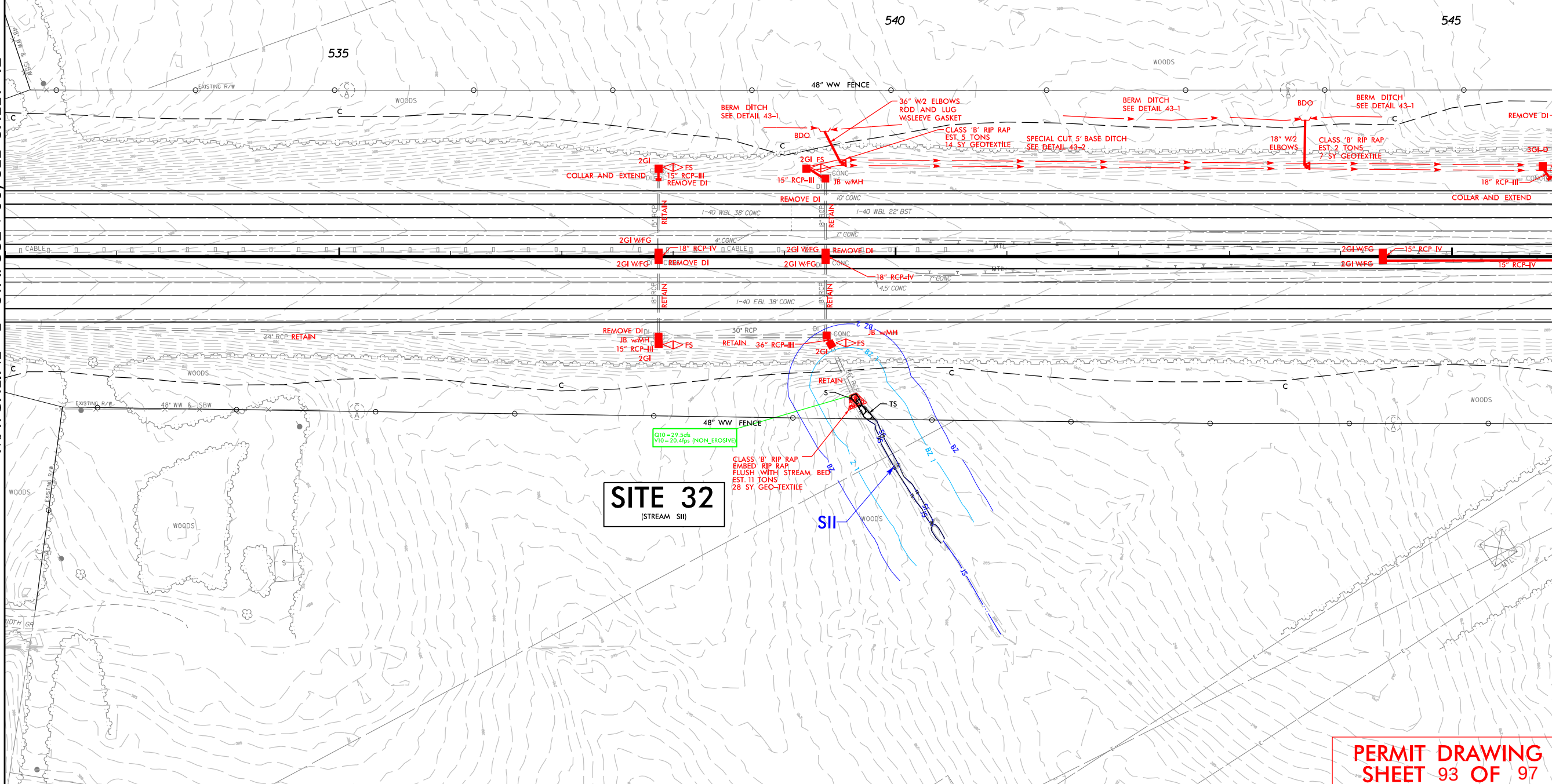
MATCHLINE -L- STA. 532 + 00, SEE SHEET 42

LEGEND

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



|                                                                                                                                                                                                                         |                     |                        |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|------------------------|
| PROJECT REFERENCE NO.<br><b>L-3306A /W-5707C</b>                                                                                                                                                                        |                     | SHEET NO.<br><b>43</b> |
| RW SHEET NO.                                                                                                                                                                                                            |                     |                        |
| ROADWAY DESIGN ENGINEER                                                                                                                                                                                                 | HYDRAULICS ENGINEER |                        |
| DOCUMENT NOT CONSIDERED FINAL<br>UNLESS ALL SIGNATURES COMPLETED                                                                                                                                                        |                     |                        |
|                                                                                                                                      |                     |                        |
|  HDR Engineering, Inc. of the Carolinas<br>555 Fayetteville St, Suite 900 Raleigh, N.C. 27601<br>N.C.B.E.L.S. License Number: F-0116 |                     |                        |



MATCHLINE -L- STA. 546 + 00, SEE SHEET 44

| 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 (Pond) (ac) | Permanent SW impacts (Stream) (ac) | Temp. SW impacts (ac) | Existing Channel Impacts Permanent (ft) | Existing Channel Impacts Temp. (ft) | Natural Stream Design (ft) |
| 1                                        | 125+00 -I85- RT   | 8' X 7' RCBC          |                                 |                             |                             | 0.02                                 |                                |                                  |                                    | 0.03                  |                                         | 67                                  |                            |
| 2A                                       | 50+00 -YFLYA- RT  | 6' X 6' RCBC          |                                 |                             |                             |                                      |                                |                                  |                                    | < 0.01                |                                         | 10                                  |                            |
|                                          |                   | BANK STABILIZATION    |                                 |                             |                             |                                      |                                |                                  | 0.02                               |                       | 63                                      |                                     |                            |
| 2B                                       | 50+00 -YFLYA- LT  | 6' X 6' RCBC          |                                 |                             |                             | 0.04                                 |                                |                                  |                                    | < 0.01                |                                         | 10                                  |                            |
|                                          |                   | BANK STABILIZATION    |                                 |                             |                             |                                      |                                |                                  | 0.01                               |                       | 39                                      |                                     |                            |
| 3A                                       | 146+00 -I85- LT   | 42" AND 66" PIPES     |                                 |                             |                             |                                      |                                |                                  |                                    | < 0.01                |                                         | 10                                  |                            |
|                                          |                   | BANK STABILIZATION    |                                 |                             |                             |                                      |                                |                                  | 0.02                               |                       | 52                                      |                                     |                            |
| 3B                                       | 146+00 -I85- RT   | 8' X 8' RCBC          |                                 |                             | < 0.01                      | 0.05                                 |                                |                                  | < 0.01                             | 0.02                  | 20                                      | 79                                  |                            |
|                                          |                   | BANK STABILIZATION    |                                 |                             |                             |                                      |                                |                                  |                                    |                       | 43                                      |                                     |                            |
| 3C                                       | 30+00 -YFLYB- LT  | 72" PIPE              |                                 |                             |                             |                                      |                                |                                  | < 0.01                             | < 0.01                | 40                                      | 10                                  |                            |
| 3D                                       | 150+00 -I85- RT   | 66" PIPE              |                                 |                             |                             |                                      |                                |                                  |                                    | < 0.01                |                                         | 10                                  |                            |
|                                          |                   | BANK STABILIZATION    |                                 |                             |                             |                                      |                                |                                  | < 0.01                             |                       | 31                                      |                                     |                            |
| 4A                                       | 32+00 -YFLA- RT   | 78" PIPE              |                                 |                             | < 0.01                      | 0.02                                 |                                |                                  | < 0.01                             | < 0.01                | 60                                      | 16                                  |                            |
| 4B                                       | 32+00 -YFLA- LT   | 78" PIPE              |                                 |                             |                             |                                      |                                |                                  | < 0.01                             | < 0.01                | 50                                      | 10                                  |                            |
| 5                                        | 12+50 -YFLYA- RT  | 24" PIPE              | < 0.01                          |                             | < 0.01                      | < 0.01                               |                                |                                  |                                    |                       |                                         |                                     |                            |
| 6                                        | 50+00 -L- RT      | LATERAL DITCH         |                                 |                             |                             |                                      |                                |                                  | < 0.01                             | < 0.01                | 40                                      | 12                                  |                            |
| 7A                                       | 30+00 -Y2- LT     | 78" and 48" PIPE      | 0.04                            |                             | 0.01                        | 0.06                                 |                                |                                  | < 0.01                             | < 0.01                | 54                                      | 29                                  |                            |
|                                          |                   | BANK STABILIZATION    |                                 |                             |                             |                                      |                                |                                  | 0.01                               |                       | 16                                      |                                     |                            |
| 7B                                       | 30+00 -Y2- RT     | 78" PIPE              | < 0.01                          |                             | < 0.01                      | 0.08                                 |                                |                                  | < 0.01                             | < 0.01                | 40                                      | 8                                   |                            |
| 8                                        | 20+24 -Y2- LT     | 30" PIPE              |                                 |                             |                             |                                      |                                |                                  | < 0.01                             | < 0.01                | 8                                       | 11                                  |                            |
|                                          |                   | BANK STABILIZATION    |                                 |                             |                             |                                      |                                |                                  | < 0.01                             |                       | 13                                      |                                     |                            |
| TOTALS* THIS SHEET:                      |                   |                       | 0.05                            |                             | 0.02                        | 0.27                                 |                                |                                  | 0.10                               | 0.07                  | 569                                     | 282                                 |                            |

\*Rounded totals are sum of actual impacts.

NOTES:

NC DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
MAY 2022  
ORANGE COUNTY  
TIP I-3306A  
STATE PROJ. # 34178.3.GV3  
SHEET 94 OF 97

| 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 (Pond) (ac) | Permanent SW impacts (Stream) (ac) | Temp. SW impacts (ac) | Existing Channel Impacts Permanent (ft) | Existing Channel Impacts Temp. (ft) | Natural Stream Design (ft) |
| 9A                                       | 156+36 -L- LT     | 84" PIPE              |                                 |                             |                             |                                      |                                |                                  | 0.01                               | < 0.01                | 60                                      | 10                                  |                            |
| 9B                                       | 127+50 -L- RT     | 84" PIPE              |                                 |                             |                             |                                      |                                |                                  | < 0.01                             | < 0.01                | 65                                      | 20                                  |                            |
| 10A                                      | 156+35 -L- LT     | BORE PIT              |                                 |                             |                             |                                      |                                |                                  |                                    | 0.01                  |                                         | 54                                  |                            |
| 10B                                      | 156+36 -L- LT     | 60" PIPE              |                                 |                             |                             |                                      |                                |                                  | < 0.01                             | < 0.01                | 34                                      | 10                                  |                            |
| 10C                                      | 156+36 -L- RT     | 60" PIPE              |                                 |                             |                             |                                      |                                |                                  | < 0.01                             | < 0.01                | 18                                      | 45                                  |                            |
| 11                                       | 162+53 -L- LT     | 42" PIPE              |                                 |                             |                             |                                      |                                |                                  |                                    | 0.01                  |                                         | 33                                  |                            |
|                                          |                   | BANK STABILIZATION    |                                 |                             |                             |                                      |                                |                                  | < 0.01                             |                       | 26                                      |                                     |                            |
| 12                                       | 173+00 -L- LT     | LATERAL DITCH         |                                 |                             |                             |                                      |                                |                                  |                                    | < 0.01                |                                         | 21                                  |                            |
|                                          |                   | BANK STABILIZATION    |                                 |                             |                             |                                      |                                |                                  | 0.02                               |                       | 42                                      |                                     |                            |
| 13                                       | 178+80 -L- LT     | 15" PIPE REMOVAL      |                                 |                             |                             |                                      |                                |                                  |                                    | < 0.01                |                                         | 15                                  |                            |
| 14A                                      | 192+00 -L- LT     | BANK STABILIZATION    |                                 |                             |                             |                                      |                                |                                  | 0.02                               | 0.04                  | 38                                      | 166                                 |                            |
| 14B                                      | 192+00 -L-        | BANK STABILIZATION    |                                 |                             |                             |                                      |                                |                                  | 0.01                               | < 0.01                | 54                                      | 28                                  |                            |
|                                          |                   |                       |                                 |                             |                             |                                      |                                |                                  |                                    |                       |                                         |                                     |                            |
| 15                                       | 197+00 -L- RT     | 36" PIPE REMOVAL      |                                 |                             |                             |                                      |                                |                                  |                                    | < 0.01                |                                         | 25                                  |                            |
| 16A                                      | 228+50 -L- LT     | 36" PIPE              |                                 |                             |                             |                                      |                                |                                  |                                    | < 0.01                |                                         | 10                                  |                            |
|                                          |                   | BANK STABILIZATION    |                                 |                             |                             |                                      |                                |                                  | < 0.01                             |                       | 43                                      |                                     |                            |
| 16B                                      | 231+00 -L- LT     | 66" PIPE              |                                 |                             | 0.01                        | < 0.01                               |                                |                                  | < 0.01                             | < 0.01                | 47                                      | 15                                  |                            |
|                                          |                   |                       |                                 |                             |                             |                                      |                                |                                  |                                    |                       |                                         |                                     |                            |
| 16C                                      | 233+50 -L- RT     | 66" PIPE              |                                 |                             |                             |                                      |                                |                                  | < 0.01                             | < 0.01                | 46                                      | 13                                  |                            |
| 17                                       | 247+50 -L- RT     | 42" PIPE              |                                 |                             |                             |                                      |                                |                                  | < 0.01                             | < 0.01                | 20                                      | 10                                  |                            |
| 18                                       | 267+00 -L- RT     | BANK STABILIZATION    |                                 |                             |                             |                                      |                                |                                  | < 0.01                             | < 0.01                | 30                                      | 10                                  |                            |
|                                          |                   |                       |                                 |                             |                             |                                      |                                |                                  |                                    |                       |                                         |                                     |                            |
|                                          |                   |                       |                                 |                             |                             |                                      |                                |                                  |                                    |                       |                                         |                                     |                            |
| TOTALS* THIS SHEET:                      |                   |                       |                                 |                             | 0.01                        | < 0.01                               |                                |                                  | 0.11                               | 0.10                  | 523                                     | 485                                 |                            |

\*Rounded totals are sum of actual impacts.

NOTES:

NC DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
MAY 2022  
ORANGE COUNTY  
TIP I-3306A  
STATE PROJ. # 34178.3.GV3  
SHEET 95 OF 97

| 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 (Pond) (ac) | Permanent SW impacts (Stream) (ac) | Temp. SW impacts (ac) | Existing Channel Impacts Permanent (ft) | Existing Channel Impacts Temp. (ft) | Natural Stream Design (ft) |
| 19A                                      | 305+00 -L- LT     | 78" PIPE              |                                 |                             | < 0.01                      | 0.03                                 |                                |                                  | < 0.01                             | < 0.01                | 40                                      | 6                                   |                            |
| 19B                                      | 305+00 -L- RT     | 78"PIPE               |                                 |                             |                             |                                      |                                |                                  | 0.01                               | < 0.01                | 54                                      | 4                                   |                            |
| 20A                                      | 325+00 -L- LT     | 84" PIPE              |                                 |                             |                             |                                      |                                |                                  | 0.01                               | < 0.01                | 47                                      | 12                                  |                            |
| 20B                                      | 325+00 -L- RT     | 84" PIPE              |                                 |                             |                             |                                      |                                |                                  | 0.01                               | < 0.01                | 42                                      | 13                                  |                            |
| 21A                                      | 343+30 -L- LT     | 8' x 8' RCBC          |                                 |                             |                             |                                      |                                |                                  |                                    | 0.02                  |                                         | 40                                  |                            |
|                                          |                   | BANK STABILIZATION    |                                 |                             |                             |                                      |                                |                                  | < 0.01                             |                       | 34                                      |                                     |                            |
| 21B                                      | 16+50 -Y9RPB- LT  | ROADWAY FILL / DITCH  | < 0.01                          |                             | 0.01                        | 0.01                                 |                                |                                  |                                    |                       |                                         |                                     |                            |
| 22                                       | 12+00 -Y9RPC- RT  | 30" PIPE              |                                 |                             |                             |                                      |                                |                                  | < 0.01                             | < 0.01                | 10                                      | 10                                  |                            |
| 23A                                      | 384+00 -L- LT     | 72" PIPE              |                                 |                             |                             |                                      |                                |                                  | < 0.01                             | < 0.01                | 33                                      | 22                                  |                            |
| 23B                                      | 384+00 -L- RT     | 72" PIPE              |                                 |                             |                             |                                      |                                |                                  | < 0.01                             | < 0.01                | 57                                      | 4                                   |                            |
| 24                                       | 389+50 -L- RT     | ROADWAY CUT           |                                 |                             |                             | < 0.01                               |                                |                                  |                                    |                       |                                         |                                     |                            |
| 25A                                      | 399+00 -L- LT     | 72" PIPE              |                                 |                             | < 0.01                      | 0.01                                 |                                |                                  | < 0.01                             | < 0.01                | 39                                      | 18                                  |                            |
| 25B                                      | 399+00 -L- LT     | 72" PIPE              |                                 |                             |                             |                                      |                                |                                  |                                    | < 0.01                |                                         | 10                                  |                            |
|                                          |                   | BANK STABILIZATION    |                                 |                             |                             |                                      |                                |                                  | < 0.01                             |                       | 24                                      |                                     |                            |
| 26                                       | 409+00 -L- LT     | ROADWAY CUT           |                                 |                             | < 0.01                      | < 0.01                               |                                |                                  |                                    |                       |                                         |                                     |                            |
| 27                                       | 11+70 -Y10- RT    | 48" PIPE              |                                 |                             |                             |                                      |                                |                                  | < 0.01                             |                       | 20                                      |                                     |                            |
|                                          |                   |                       |                                 |                             |                             |                                      |                                |                                  |                                    |                       |                                         |                                     |                            |
| 28A                                      | 470+00 -L- RT     | 78" PIPE              |                                 |                             | 0.05                        |                                      |                                |                                  | < 0.01                             | < 0.01                | 23                                      | 14                                  |                            |
| 28B                                      | 470+00 -L- LT     | 78" PIPE              |                                 |                             |                             |                                      |                                |                                  | < 0.01                             | < 0.01                | 34                                      | 45                                  |                            |
| 29                                       | 482+50 -L- LT     | 18" PIPE              |                                 |                             |                             |                                      |                                |                                  |                                    | < 0.01                |                                         | 20                                  |                            |
|                                          |                   | BANK STABILIZATION    |                                 |                             |                             |                                      |                                |                                  | < 0.01                             |                       | 17                                      |                                     |                            |
| 30A                                      | 509+00 -L- LT     | 108" PIPE             |                                 |                             |                             |                                      |                                |                                  | 0.01                               | 0.01                  | 47                                      | 35                                  |                            |
| 30B                                      | 509+00 -L- RT     | 108" PIPE             |                                 |                             |                             |                                      |                                |                                  | 0.04                               | < 0.01                | 76                                      | 10                                  |                            |
| 30C                                      | 511+50 -L- RT     | ROADWAY FILL          | 0.01                            |                             |                             | 0.03                                 |                                |                                  |                                    |                       |                                         |                                     |                            |
| 31                                       | 521+00 -L- RT     | 42" PIPE              |                                 |                             |                             |                                      |                                |                                  | < 0.01                             | < 0.01                | 34                                      | 5                                   |                            |
| 32                                       | 539+50 -L- RT     | 36" PIPE              |                                 |                             |                             |                                      |                                |                                  | < 0.01                             | < 0.01                | 12                                      | 15                                  |                            |
| TOTALS* THIS SHEET:                      |                   |                       | 0.02                            | 0                           | 0.06                        | 0.09                                 | 0                              | 0                                | 0.14                               | 0.06                  | 643                                     | 283                                 |                            |

\*Rounded totals are sum of actual impacts.

NOTES:

NC DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
MAY 2022  
ORANGE COUNTY  
TIP I-3306A  
STATE PROJ. # 341783.3.GV3

SHEET 96 OF 97



| 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 (Pond) (ac) | Permanent SW impacts (Stream) (ac) | Temp. SW impacts (ac) | Existing Channel Impacts Permanent (ft) | Existing Channel Impacts Temp. (ft) | Natural Stream Design (ft) |
|                                          |                   |                       |                                 |                             |                             |                                      |                                |                                  |                                    |                       |                                         |                                     |                            |
|                                          |                   |                       |                                 |                             |                             |                                      |                                |                                  |                                    |                       |                                         |                                     |                            |
|                                          |                   |                       |                                 |                             |                             |                                      |                                |                                  |                                    |                       |                                         |                                     |                            |
|                                          |                   |                       |                                 |                             |                             |                                      |                                |                                  |                                    |                       |                                         |                                     |                            |
| SHEET 1                                  |                   |                       | 0.05                            |                             | 0.02                        | 0.27                                 |                                |                                  | 0.10                               | 0.07                  | 569                                     | 282                                 |                            |
|                                          |                   |                       |                                 |                             |                             |                                      |                                |                                  |                                    |                       |                                         |                                     |                            |
| SHEET 2                                  |                   |                       |                                 |                             | 0.01                        | < 0.01                               |                                |                                  | 0.11                               | 0.10                  | 523                                     | 485                                 |                            |
|                                          |                   |                       |                                 |                             |                             |                                      |                                |                                  |                                    |                       |                                         |                                     |                            |
| SHEET 3                                  |                   |                       | 0.02                            |                             | 0.06                        | 0.09                                 |                                |                                  | 0.14                               | 0.06                  | 643                                     | 283                                 |                            |
|                                          |                   |                       |                                 |                             |                             |                                      |                                |                                  |                                    |                       |                                         |                                     |                            |
|                                          |                   |                       |                                 |                             |                             |                                      |                                |                                  |                                    |                       |                                         |                                     |                            |
|                                          |                   |                       |                                 |                             |                             |                                      |                                |                                  |                                    |                       |                                         |                                     |                            |
|                                          |                   |                       |                                 |                             |                             |                                      |                                |                                  |                                    |                       |                                         |                                     |                            |
|                                          |                   |                       |                                 |                             |                             |                                      |                                |                                  |                                    |                       |                                         |                                     |                            |
|                                          |                   |                       |                                 |                             |                             |                                      |                                |                                  |                                    |                       |                                         |                                     |                            |
|                                          |                   |                       |                                 |                             |                             |                                      |                                |                                  |                                    |                       |                                         |                                     |                            |
|                                          |                   |                       |                                 |                             |                             |                                      |                                |                                  |                                    |                       |                                         |                                     |                            |
|                                          |                   |                       |                                 |                             |                             |                                      |                                |                                  |                                    |                       |                                         |                                     |                            |
|                                          |                   |                       |                                 |                             |                             |                                      |                                |                                  |                                    |                       |                                         |                                     |                            |
|                                          |                   |                       |                                 |                             |                             |                                      |                                |                                  |                                    |                       |                                         |                                     |                            |
|                                          |                   |                       |                                 |                             |                             |                                      |                                |                                  |                                    |                       |                                         |                                     |                            |
|                                          |                   |                       |                                 |                             |                             |                                      |                                |                                  |                                    |                       |                                         |                                     |                            |
|                                          |                   |                       |                                 |                             |                             |                                      |                                |                                  |                                    |                       |                                         |                                     |                            |
|                                          |                   |                       |                                 |                             |                             |                                      |                                |                                  |                                    |                       |                                         |                                     |                            |
| I-3306A PROJECT TOTALS*:                 |                   |                       | 0.07                            | 0                           | 0.10                        | 0.36                                 | 0                              | 0                                | 0.34                               | 0.22                  | 1735                                    | 1050                                |                            |

\*Rounded totals are sum of actual impacts.

NOTES:

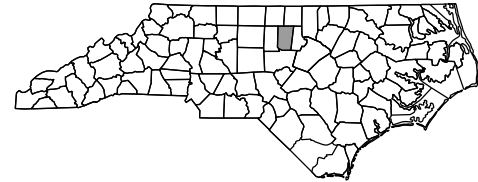
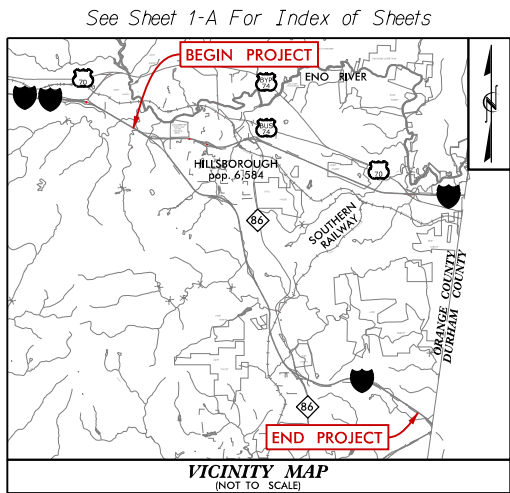
NC DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
MAY 2022  
ORANGE COUNTY  
TIP I3306-A  
STATE PROJ. # 341783.3.GV3  
SHEET 97 OF 97

# Buffer Drawings

09/08/99

PLOT DRIVER: NCDOT\_pdf\_color\_eng.100.plt  
USER: CMYERS  
DATE: 5/6/2022  
FILE: Lone\_Construction\_Corp\Lone\_I-40\_I-3306A\_W-5707C\Hydraulics\PERMITS\_Environmental\Drawings\Buffer\I-3306A\_PRM\_BUF\_TSH.dgn

CONTRACT: C204632 TIP PROJECT: I-3306A / W-5707C



STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

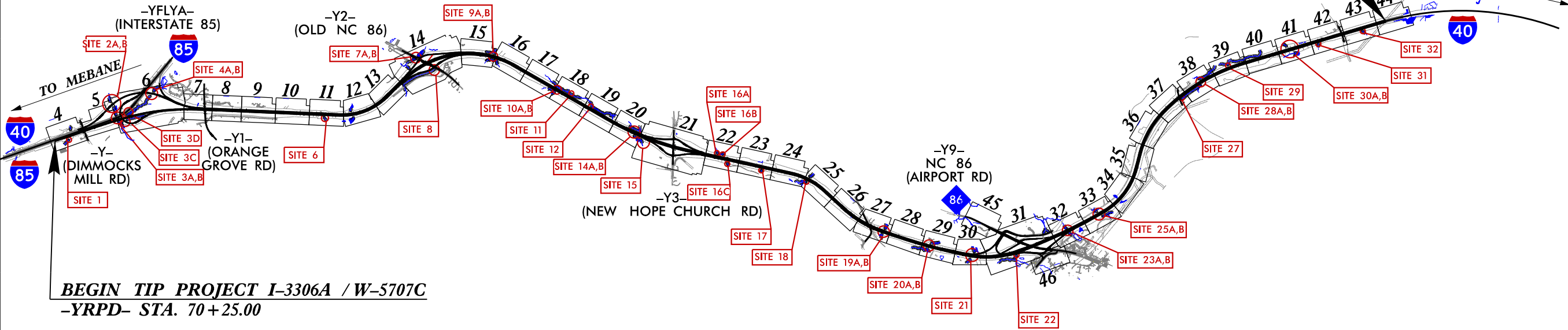
# ORANGE COUNTY

**LOCATION:** I-40 WIDENING FROM I-85 IN ORANGE COUNTY TO THE DURHAM COUNTY LINE WITH INTERCHANGE MODIFICATIONS, INCLUDING THE I-40 / NC-86 INTERCHANGE; AND I-40 WESTBOUND TEMPORARY PAVEMENT MARKING AND OVERHEAD LANE USE SIGN MODIFICATIONS NEAR US 15-501 IN DURHAM COUNTY

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

**I-3306A  
RIPARIAN BUFFER IMPACTS**

**END TIP PROJECT I-3306A / W-5707C**  
-L- STA. 550+00.00

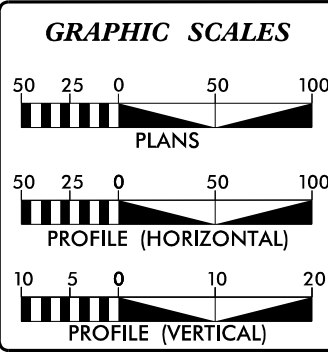


**BEGIN TIP PROJECT I-3306A / W-5707C**  
-YRPD- STA. 70+25.00

**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

**BUFFER DRAWING  
SHEET 1 OF 39**

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



**DESIGN DATA**

|                |               |
|----------------|---------------|
| ADT 2019 =     | 68,200        |
| ADT 2040 =     | 106,000       |
| K =            | 6.5 %         |
| D =            | 60 %          |
| T =            | 18 % *        |
| V =            | 70 MPH        |
| *TTST =        | 11% DUAL = 3% |
| FUNC CLASS =   | INTERSTATE    |
| STATEWIDE TIER |               |

**PROJECT LENGTH**

|                                              |              |
|----------------------------------------------|--------------|
| LENGTH ROADWAY -L- (I-40) =                  | 11.304 MILES |
| LENGTH STRUCTURES -L- (I-40) =               | 0.096 MILES  |
| TOTAL LENGTH TIP PROJECT I-3306A / W-5707C = | 11.40 MILES  |

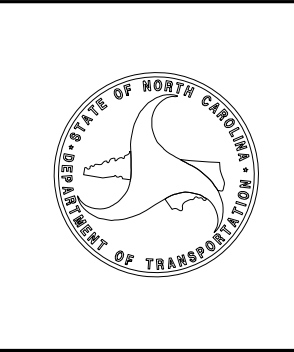
NCDOT CONTACT: RON McCOLLUM, P.E.  
DESIGN-BUILD ASSISTANT MANAGER

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

|                                       |                                               |
|---------------------------------------|-----------------------------------------------|
| 2018 STANDARD SPECIFICATIONS          |                                               |
| RIGHT OF WAY DATE:<br>AUGUST 17, 2021 | ANTHONY G. THOMPSON, P.E.<br>PROJECT ENGINEER |
| LETTING DATE:<br>AUGUST 17, 2021      | CALVIN MOODY, P.E.<br>PROJECT DESIGN ENGINEER |

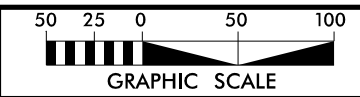
**HYDRAULICS ENGINEER**

|                          |
|--------------------------|
| SIGNATURE: _____<br>P.E. |
| ROADWAY DESIGN ENGINEER  |
| SIGNATURE: _____<br>P.E. |



PLOT DRIVER: NCDOT\_color\_eng\_100.plt  
USER: EPROFFIT  
FILE: ...\\N3306A.PRM\_4C.BUF.PSH.dgn  
PENTABLE: NCDOT\_permits.NCON.tbl  
DATE: 6/3/2022  
TIME: 3:08:40 PM

REVISIONS



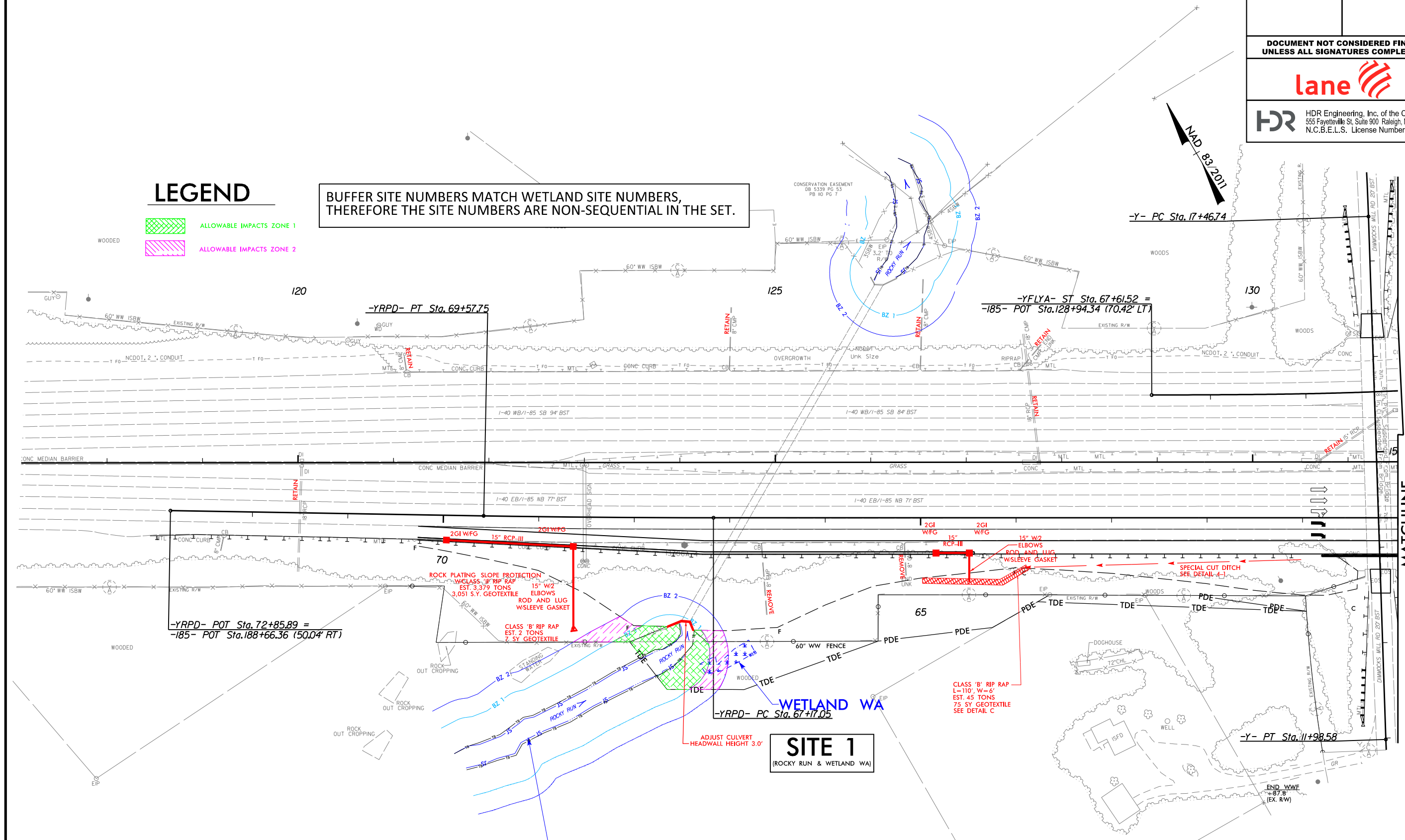
|                                                                                     |  |                                                                                                                                     |  |
|-------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------------------------------------------------|--|
| PROJECT REFERENCE NO.                                                               |  | SHEET NO.                                                                                                                           |  |
| I-3306A / W-5707C                                                                   |  | 4                                                                                                                                   |  |
| RW SHEET NO.                                                                        |  |                                                                                                                                     |  |
| ROADWAY DESIGN<br>ENGINEER                                                          |  | HYDRAULICS<br>ENGINEER                                                                                                              |  |
| DOCUMENT NOT CONSIDERED FINAL<br>UNLESS ALL SIGNATURES COMPLETED                    |  |                                                                                                                                     |  |
|  |  |                                                                                                                                     |  |
|  |  | HDR Engineering, Inc. of the Carolinas<br>555 Fayetteville St, Suite 900 Raleigh, N.C. 27601<br>N.C.B.E.L.S. License Number: F-0116 |  |

**SITE 1**  
(ROCKY RUN)

**LEGEND**

-  ALLOWABLE IMPACTS ZONE 1
-  ALLOWABLE IMPACTS ZONE 2

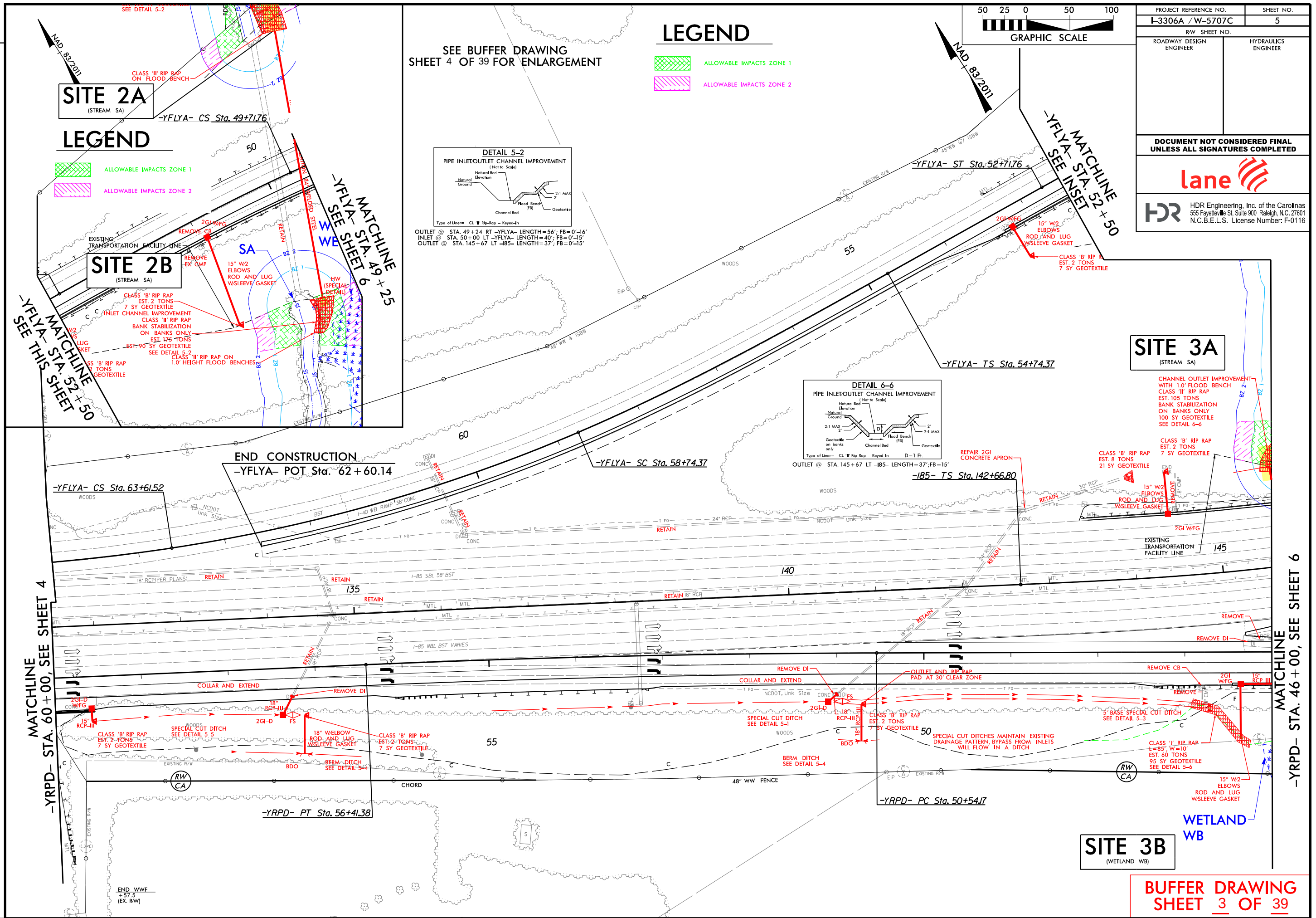
BUFFER SITE NUMBERS MATCH WETLAND SITE NUMBERS,  
THEREFORE THE SITE NUMBERS ARE NON-SEQUENTIAL IN THE SET.



MATCHLINE  
-YRPD- STA. 60+00, SEE SHEET 5

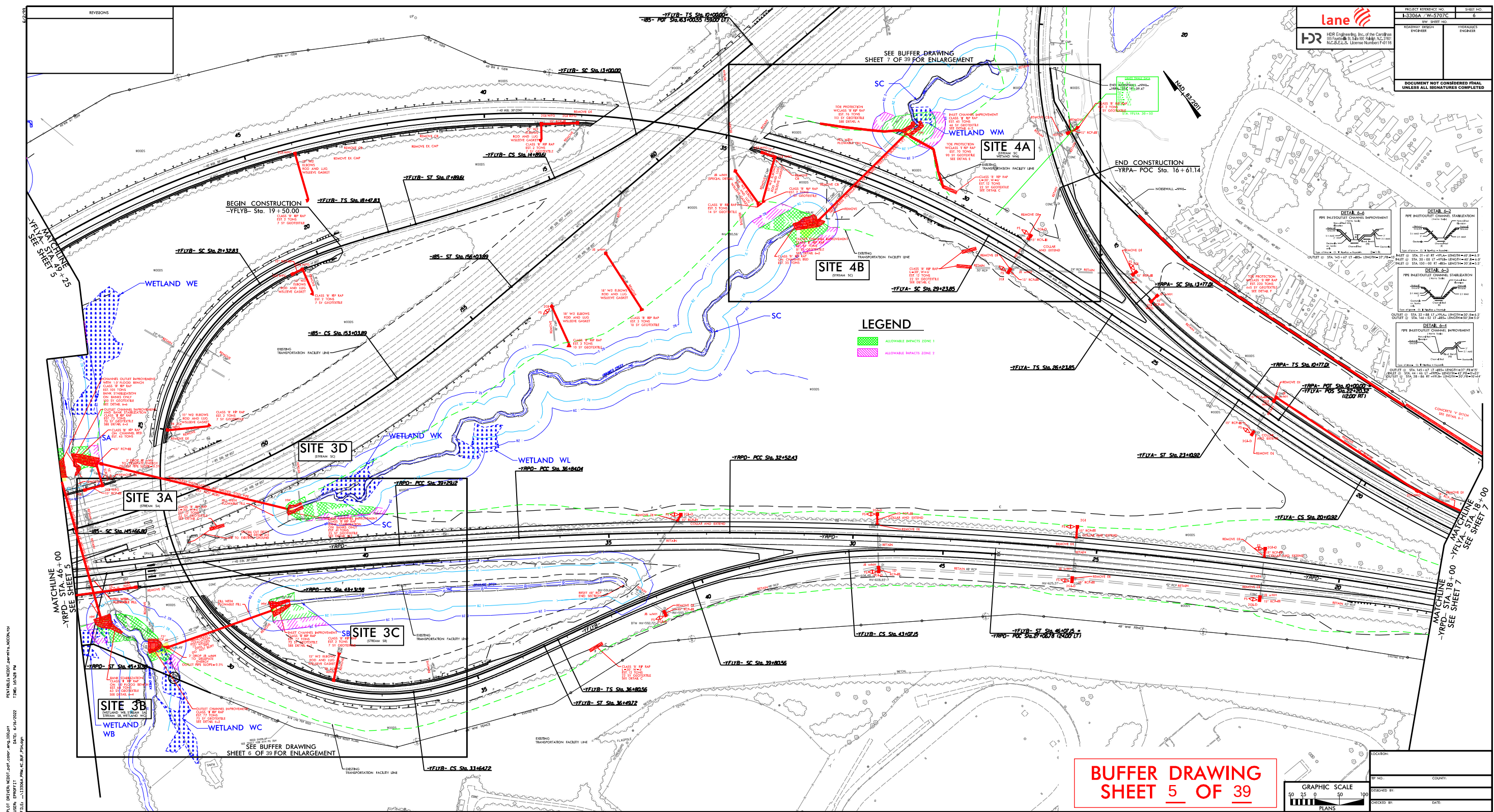
**BUFFER DRAWING**  
**SHEET 2 OF 39**





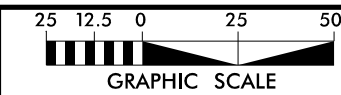
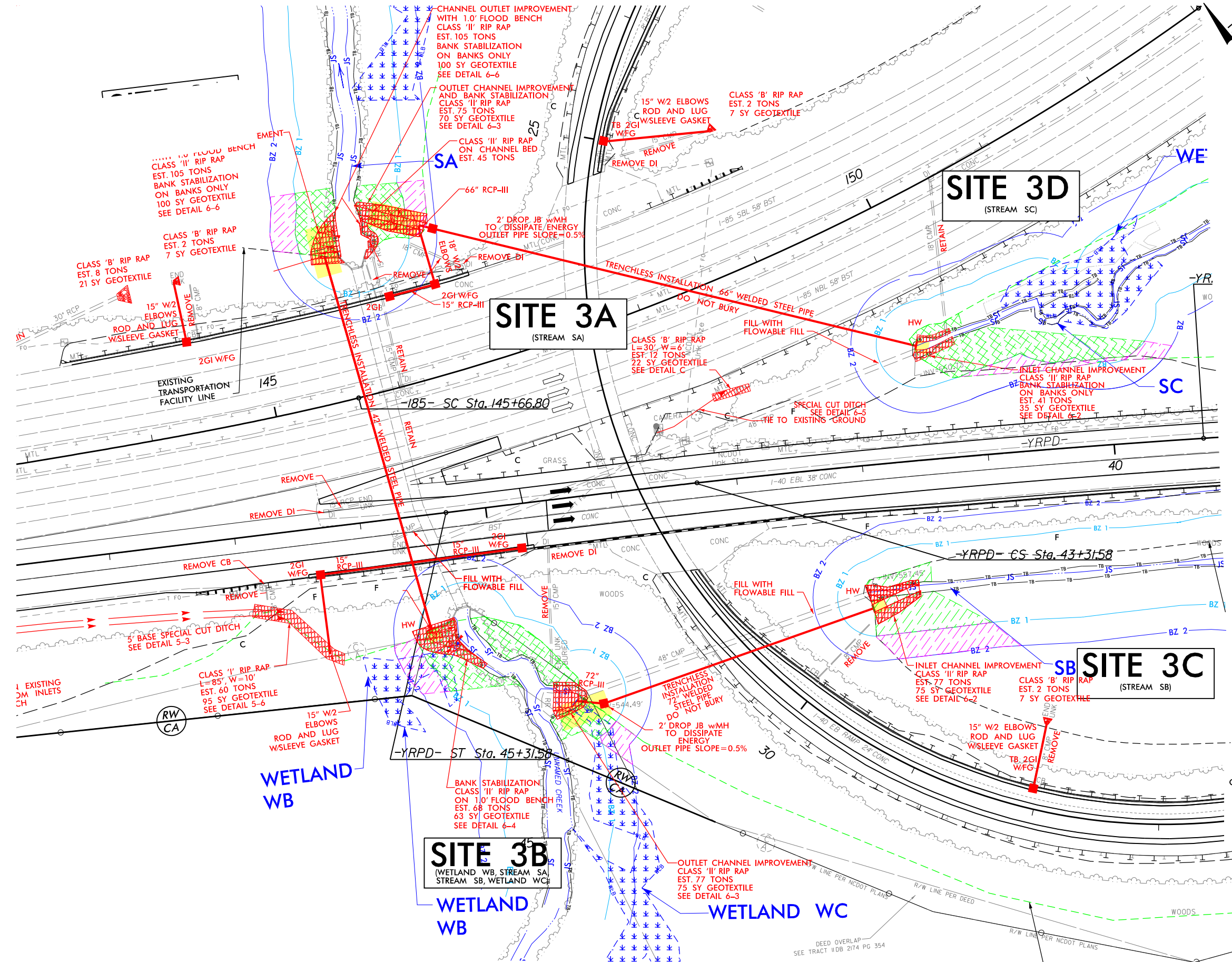




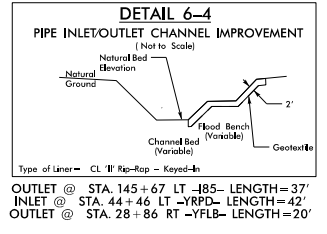
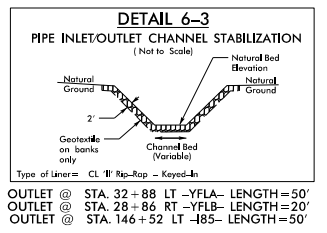
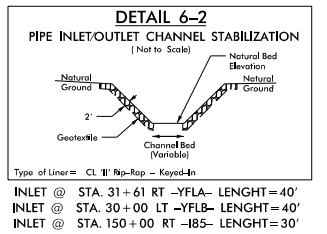




REVISIONS



|                                                                                                                                     |                     |
|-------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| PROJECT REFERENCE NO.                                                                                                               | SHEET NO.           |
| I-3306 / W-5707C                                                                                                                    | 6A                  |
| R/W SHEET NO.                                                                                                                       |                     |
| ROADWAY DESIGN ENGINEER                                                                                                             | HYDRAULICS ENGINEER |
| DOCUMENT NOT CONSIDERED FINAL<br>UNLESS ALL SIGNATURES COMPLETED                                                                    |                     |
|                                                                                                                                     |                     |
| HDR Engineering, Inc. of the Carolinas<br>555 Fayetteville St, Suite 900 Raleigh, N.C. 27601<br>N.C.B.E.L.S. License Number: F-0116 |                     |

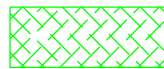


## LEGEND

- ALLOWABLE IMPACTS ZONE 1
- ALLOWABLE IMPACTS ZONE 2
- MITIGABLE IMPACTS ZONE 1
- MITIGABLE IMPACTS ZONE 2



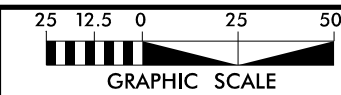
# LEGEND



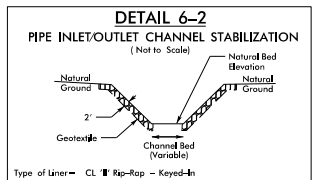
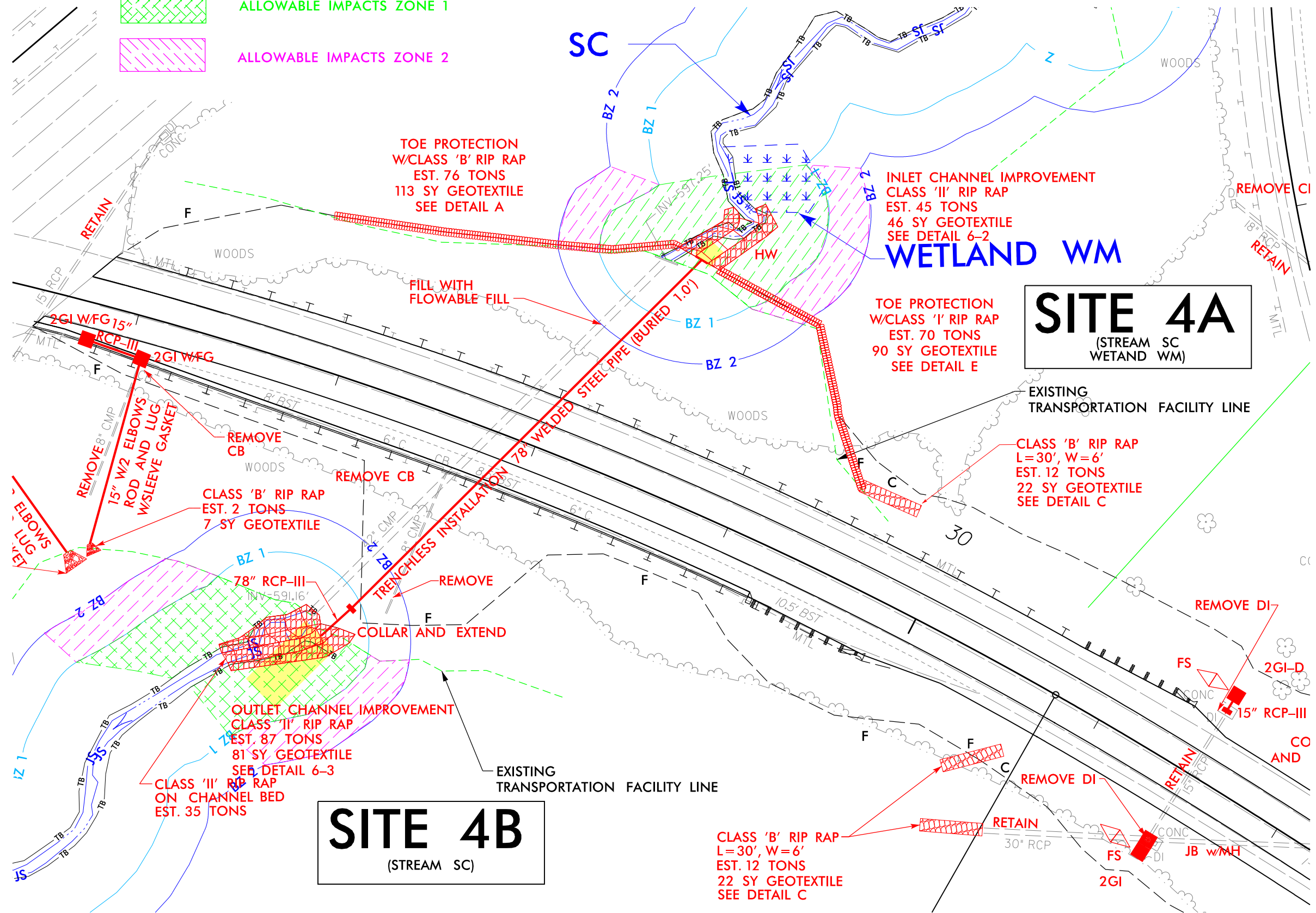
ALLOWABLE IMPACTS ZONE 1



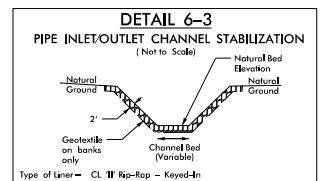
ALLOWABLE IMPACTS ZONE 2



|                                                                                                                                                                                                                         |                        |           |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|-----------|
| PROJECT REFERENCE NO.                                                                                                                                                                                                   |                        | SHEET NO. |
| I-3306 / W-5707C                                                                                                                                                                                                        |                        | 6B        |
| R/W SHEET NO.                                                                                                                                                                                                           |                        |           |
| ROADWAY DESIGN<br>ENGINEER                                                                                                                                                                                              | HYDRAULICS<br>ENGINEER |           |
| <b>DOCUMENT NOT CONSIDERED FINAL<br/>UNLESS ALL SIGNATURES COMPLETED</b>                                                                                                                                                |                        |           |
|                                                                                                                                      |                        |           |
|  HDR Engineering, Inc. of the Carolinas<br>555 Fayetteville St. Suite 900 Raleigh, N.C. 27601<br>N.C.B.E.L.S. License Number: F-0116 |                        |           |



INLET @ STA. 31+61 RT -YFLA- LENGTH=40'  
INLET @ STA. 30+00 LT -YFLB- LENGTH=40'  
INLET @ STA. 150+00 RT -185- LENGTH=30'



OUTLET @ STA. 32+88 LT -YFLA- LENGTH=50'  
OUTLET @ STA. 28+86 RT -YFLB- LENGTH=20'  
OUTLET @ STA. 146+52 LT -185- LENGTH=50'

PLOT DRIVER: NCDOT\_color\_eng\_100.plt  
USER: EPROFFIT  
FILE: ...\\N3306A.PRM\_4C.BUF.PSH.dgn  
PENTABLE: NCDOT\_permits.NCON.tbl  
TIME: 3:08:54 PM  
DATE: 6/3/2022

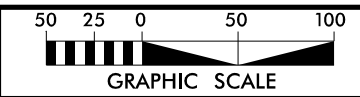
REVISIONS

MATCHLINE -L- STA. 44 + 00, SEE SHEET 10

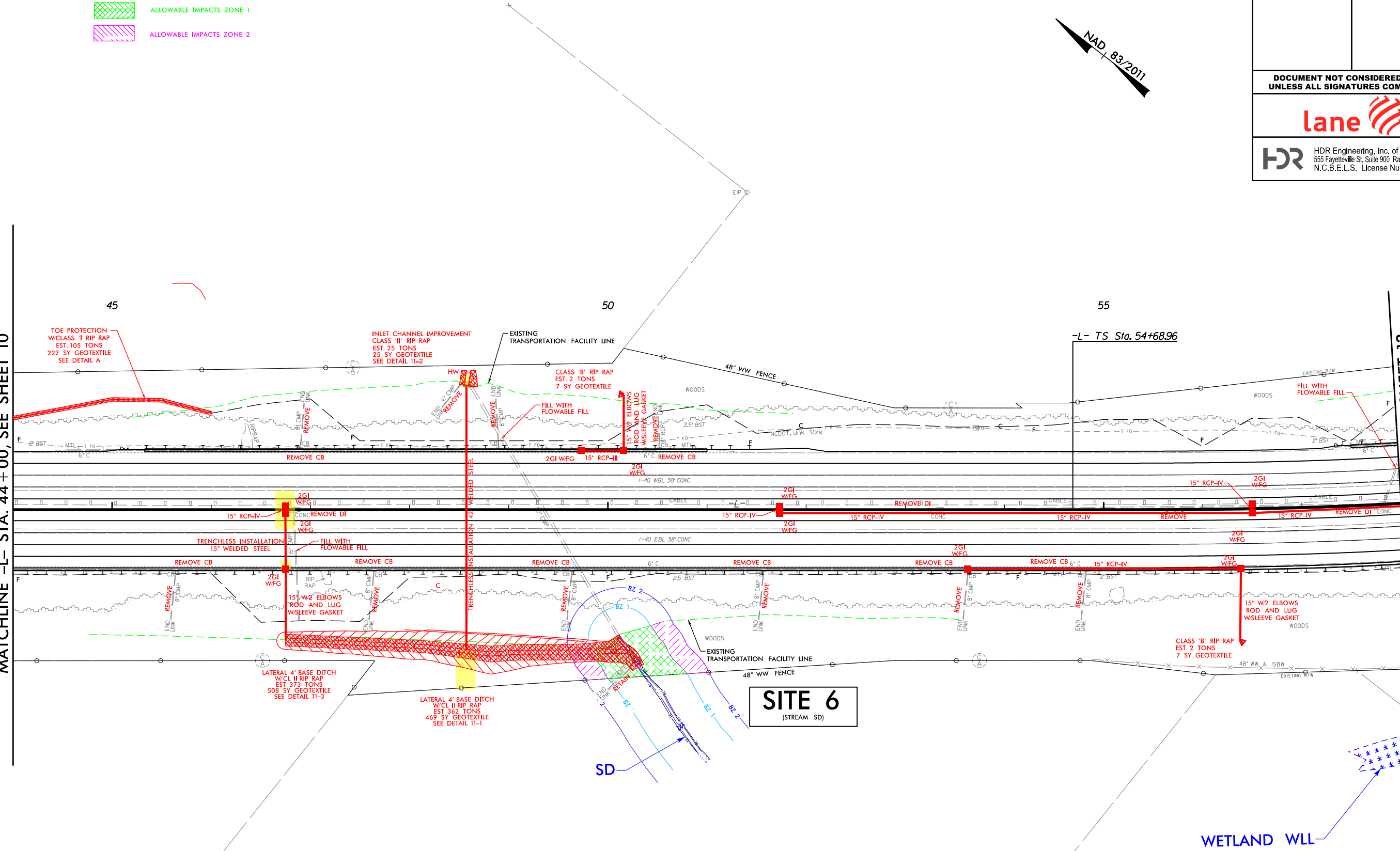
MATCHLINE -L- STA. 58 + 00, SEE SHEET 12

# LEGEND

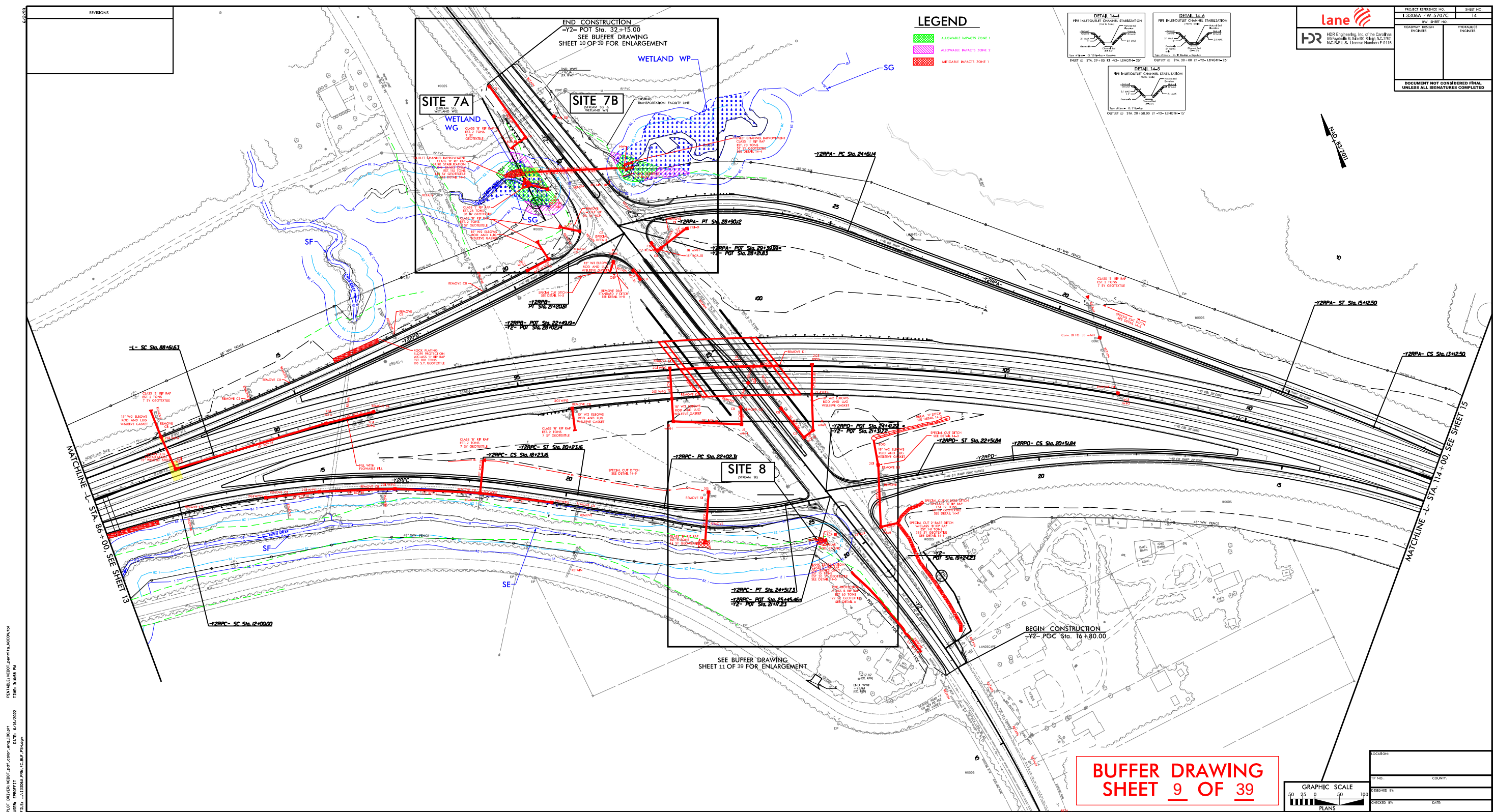
- ALLOWABLE IMPACTS ZONE 1
- ALLOWABLE IMPACTS ZONE 2



|                                                                                          |  |                                                                                                                                     |  |
|------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------------------------------------------------|--|
| PROJECT REFERENCE NO.                                                                    |  | SHEET NO.                                                                                                                           |  |
| I-3306A /W-5707C                                                                         |  | 11                                                                                                                                  |  |
| RW SHEET NO.                                                                             |  |                                                                                                                                     |  |
| ROADWAY DESIGN<br>ENGINEER                                                               |  | HYDRAULICS<br>ENGINEER                                                                                                              |  |
|                                                                                          |  |                                                                                                                                     |  |
| DOCUMENT NOT CONSIDERED FINAL<br>UNLESS ALL SIGNATURES COMPLETED                         |  |                                                                                                                                     |  |
| lane  |  |                                                                                                                                     |  |
| HDR                                                                                      |  | HDR Engineering, Inc. of the Carolinas<br>555 Fayetteville St, Suite 900 Raleigh, N.C. 27601<br>N.C.B.E.L.S. License Number: F-0116 |  |

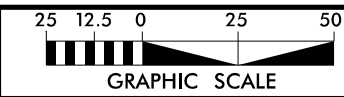
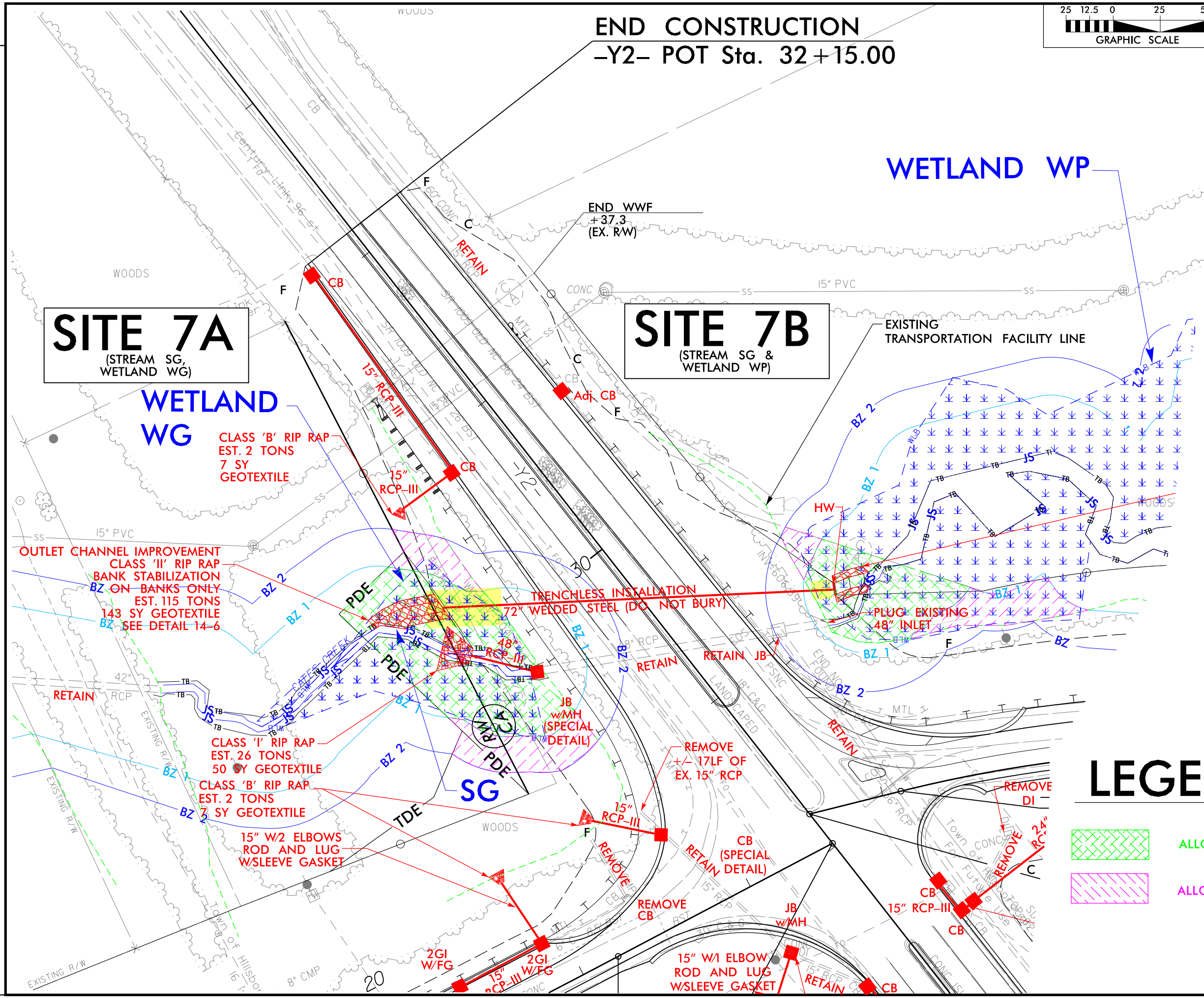




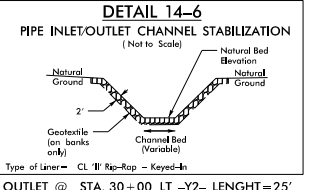
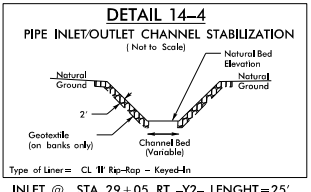


PLOT DRIVER: NCDOT\_color\_eng\_100.plt  
USER: EPROFFIT  
FILE: ...\\N3306A.PRM\_4C.BUF.PSH.dgn  
PENTABLE: NCDOT\_permits.NCON.tbl  
TIME: 3:08:59 PM  
DATE: 6/3/2022

REVISIONS



|                                                                                                                                     |  |                     |  |
|-------------------------------------------------------------------------------------------------------------------------------------|--|---------------------|--|
| PROJECT REFERENCE NO.<br>I-3306 / W-5707C                                                                                           |  | SHEET NO.<br>14A    |  |
| RW SHEET NO.                                                                                                                        |  | HYDRAULICS ENGINEER |  |
| ROADWAY DESIGN ENGINEER                                                                                                             |  |                     |  |
| DOCUMENT NOT CONSIDERED FINAL<br>UNLESS ALL SIGNATURES COMPLETED                                                                    |  |                     |  |
|                                                                                                                                     |  |                     |  |
| HDR Engineering, Inc. of the Carolinas<br>555 Fayetteville St, Suite 900 Raleigh, N.C. 27601<br>N.C.B.E.L.S. License Number: F-0116 |  |                     |  |



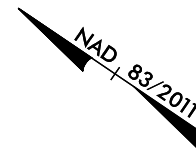
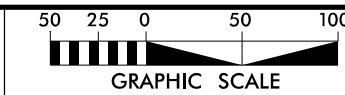
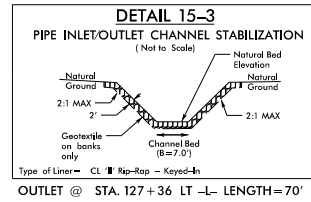
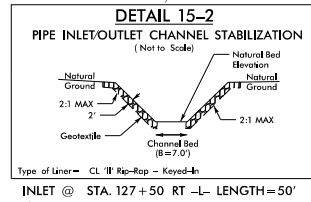
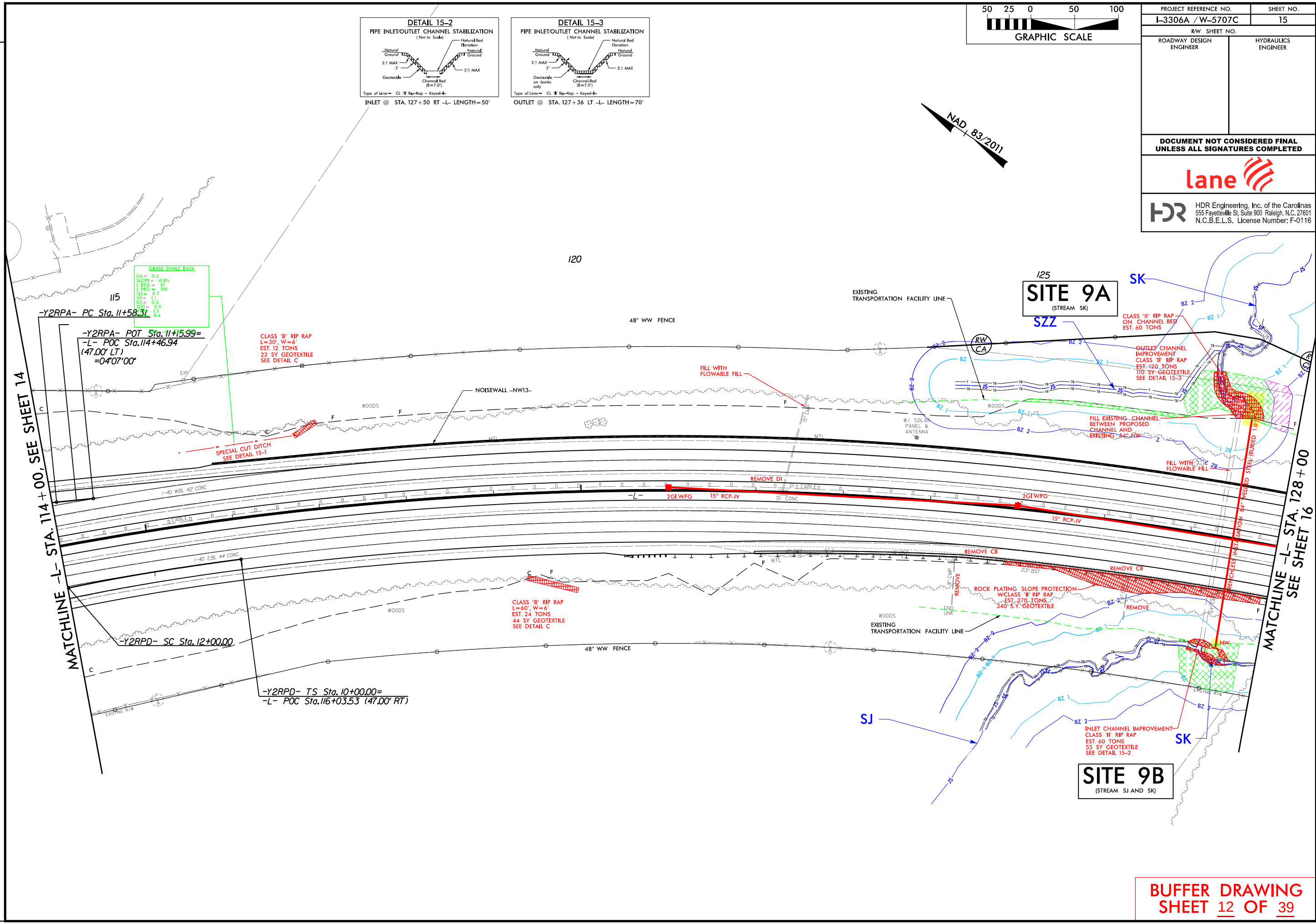
# LEGEND

- ALLOWABLE IMPACTS ZONE 1
- ALLOWABLE IMPACTS ZONE 2





REVISIONS



|                                                                                                                                                |                        |
|------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| PROJECT REFERENCE NO.<br><b>L-3306A /W-5707C</b>                                                                                               | SHEET NO.<br><b>15</b> |
| RW SHEET NO.                                                                                                                                   |                        |
| ROADWAY DESIGN ENGINEER                                                                                                                        | HYDRAULICS ENGINEER    |
| DOCUMENT NOT CONSIDERED FINAL<br>UNLESS ALL SIGNATURES COMPLETED                                                                               |                        |
| <b>lane</b>                                                                                                                                    |                        |
| <b>HDR</b> HDR Engineering, Inc. of the Carolinas<br>555 Fayetteville St, Suite 900 Raleigh, N.C. 27601<br>N.C.B.E.L.S. License Number: F-0116 |                        |

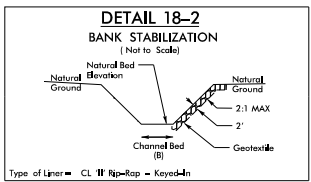
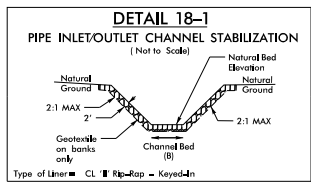
REVISIONS

MATCHLINE -L- STA. 156 + 00, SEE SHEET 17

MATCHLINE -L- STA. 170 + 00, SEE SHEET 19

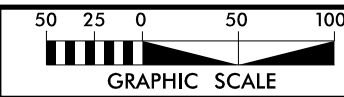
# LEGEND

- ALLOWABLE IMPACTS ZONE 1
- ALLOWABLE IMPACTS ZONE 2

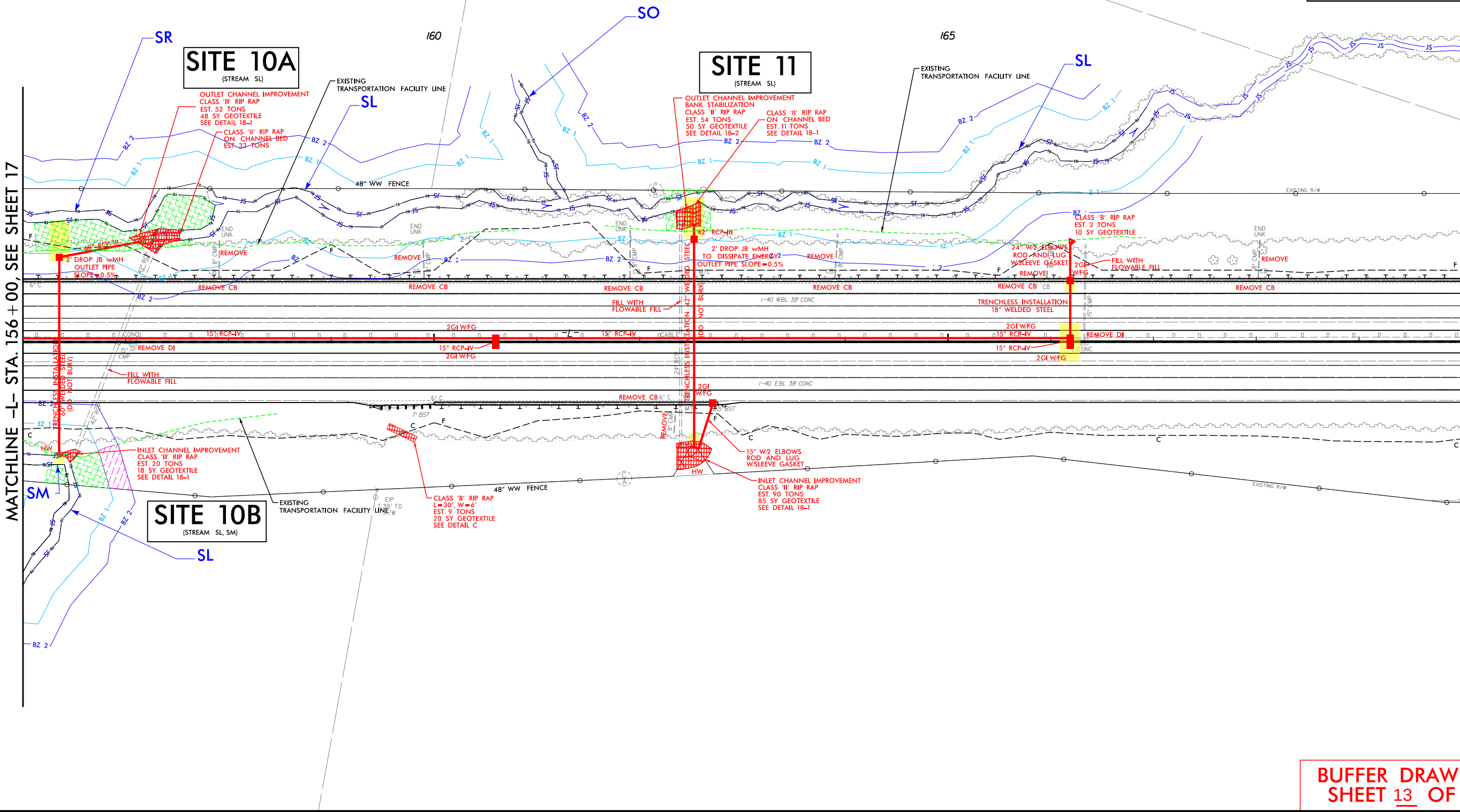


OUTLET @ STA. 157 + 14 LT -L- LENGTH = 40'; B = 5.0'  
OUTLET @ STA. 162 + 53 LT -L- LENGTH = 20'; B = 3.5'  
INLET @ STA. 156 + 50 RT -L- LENGTH = 10'; B = 4.0'

STA. 162 + 45 LT -L- LENGTH = 25'; B = 11'



|                                                                                     |  |                                                                                                                                     |  |
|-------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------------------------------------------------|--|
| PROJECT REFERENCE NO.                                                               |  | SHEET NO.                                                                                                                           |  |
| I-3306A / W-5707C                                                                   |  | 18                                                                                                                                  |  |
| RW SHEET NO.                                                                        |  |                                                                                                                                     |  |
| ROADWAY DESIGN<br>ENGINEER                                                          |  | HYDRAULICS<br>ENGINEER                                                                                                              |  |
| DOCUMENT NOT CONSIDERED FINAL<br>UNLESS ALL SIGNATURES COMPLETED                    |  |                                                                                                                                     |  |
|  |  |                                                                                                                                     |  |
|  |  | HDR Engineering, Inc. of the Carolinas<br>555 Fayetteville St, Suite 900 Raleigh, N.C. 27601<br>N.C.B.E.L.S. License Number: F-0116 |  |



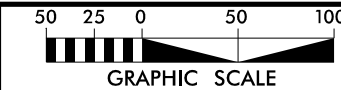
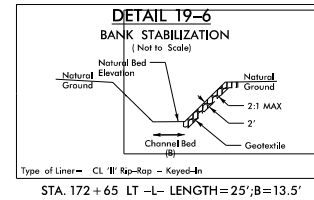
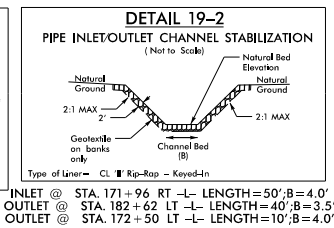
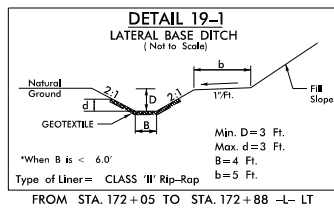


REVISIONS

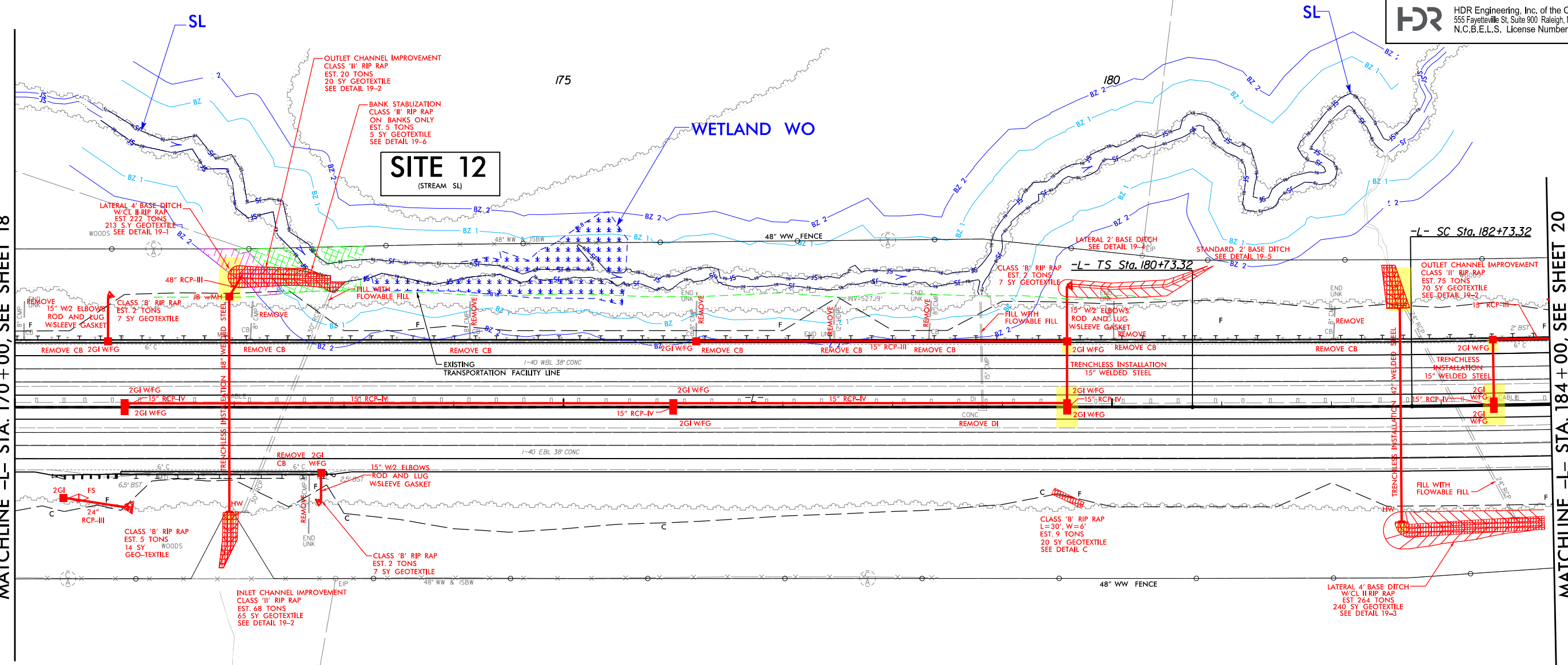
MATCHLINE -L- STA. 170+00, SEE SHEET 18

## LEGEND

- ALLOWABLE IMPACTS ZONE 1
- ALLOWABLE IMPACTS ZONE 2



|                                                                                                                                                                                                                         |  |                        |  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------------------|--|
| PROJECT REFERENCE NO.                                                                                                                                                                                                   |  | SHEET NO.              |  |
| I-3306A /W-5707C                                                                                                                                                                                                        |  | 19                     |  |
| R/W SHEET NO.                                                                                                                                                                                                           |  |                        |  |
| ROADWAY DESIGN<br>ENGINEER                                                                                                                                                                                              |  | HYDRAULICS<br>ENGINEER |  |
| <b>DOCUMENT NOT CONSIDERED FINAL<br/>UNLESS ALL SIGNATURES COMPLETED</b>                                                                                                                                                |  |                        |  |
|                                                                                                                                      |  |                        |  |
|  HDR Engineering, Inc. of the Carolinas<br>555 Fayetteville St, Suite 900 Raleigh, N.C. 27601<br>N.C.B.E.L.S. License Number: F-0116 |  |                        |  |



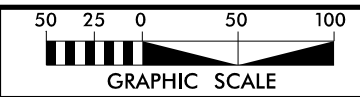
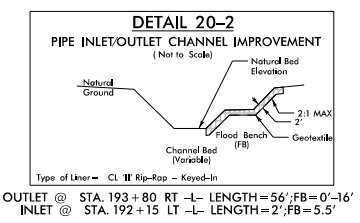
MATCHLINE -L- STA. 184+00, SEE SHEET 20



REVISIONS

LEGEND

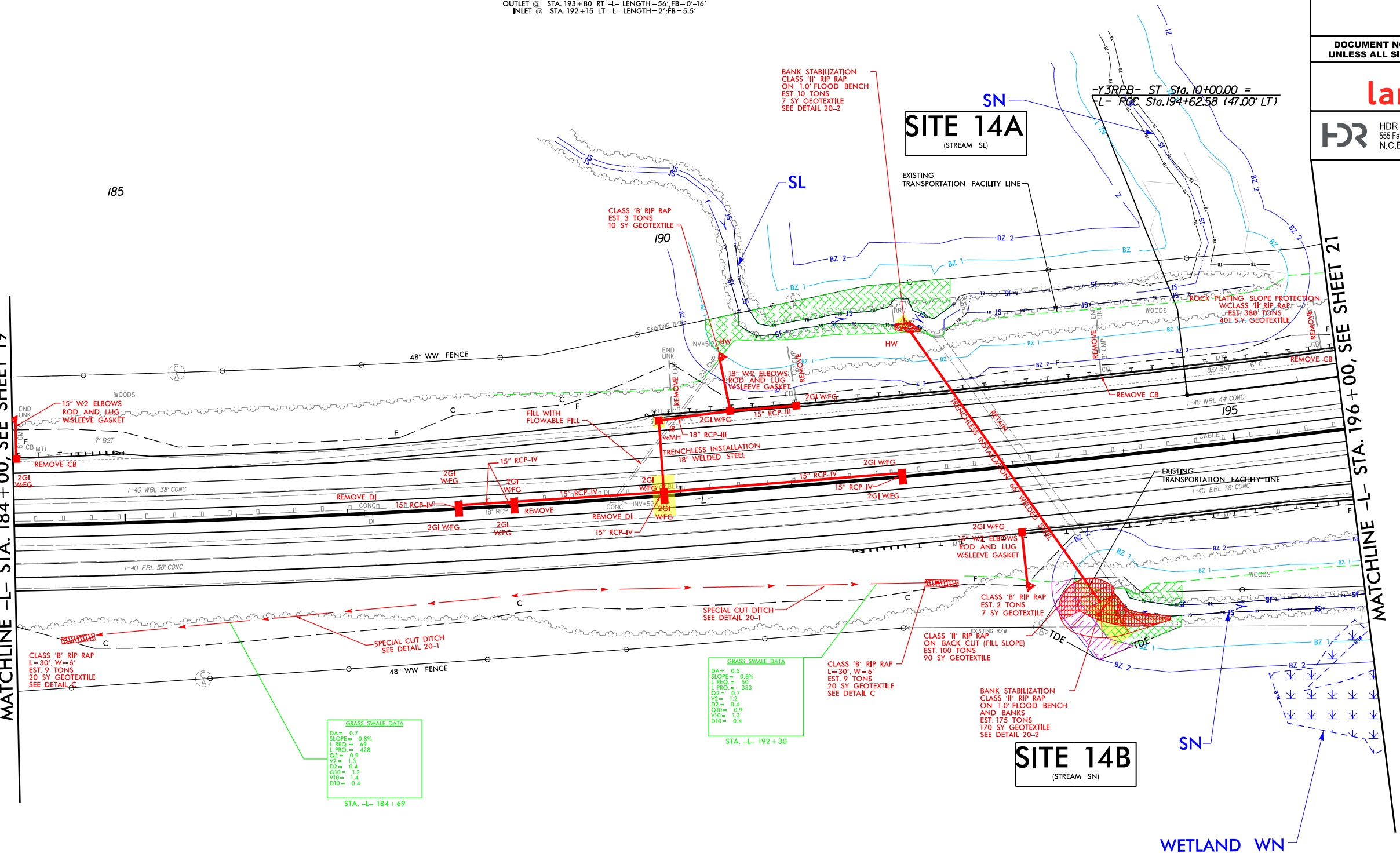
- ALLOWABLE IMPACTS ZONE 1
- ALLOWABLE IMPACTS ZONE 2



|                                                                                     |  |                                                                                                                                     |  |
|-------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------------------------------------------------------------|--|
| PROJECT REFERENCE NO.                                                               |  | SHEET NO.                                                                                                                           |  |
| I-3306A /W-5707C                                                                    |  | 20                                                                                                                                  |  |
| RW SHEET NO.                                                                        |  |                                                                                                                                     |  |
| ROADWAY DESIGN<br>ENGINEER                                                          |  | HYDRAULICS<br>ENGINEER                                                                                                              |  |
| DOCUMENT NOT CONSIDERED FINAL<br>UNLESS ALL SIGNATURES COMPLETED                    |  |                                                                                                                                     |  |
|  |  |                                                                                                                                     |  |
|  |  | HDR Engineering, Inc. of the Carolinas<br>555 Fayetteville St, Suite 900 Raleigh, N.C. 27601<br>N.C.B.E.L.S. License Number: F-0116 |  |

MATCHLINE -L- STA. 184+00, SEE SHEET 19

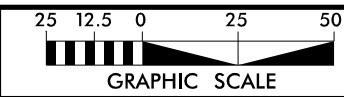
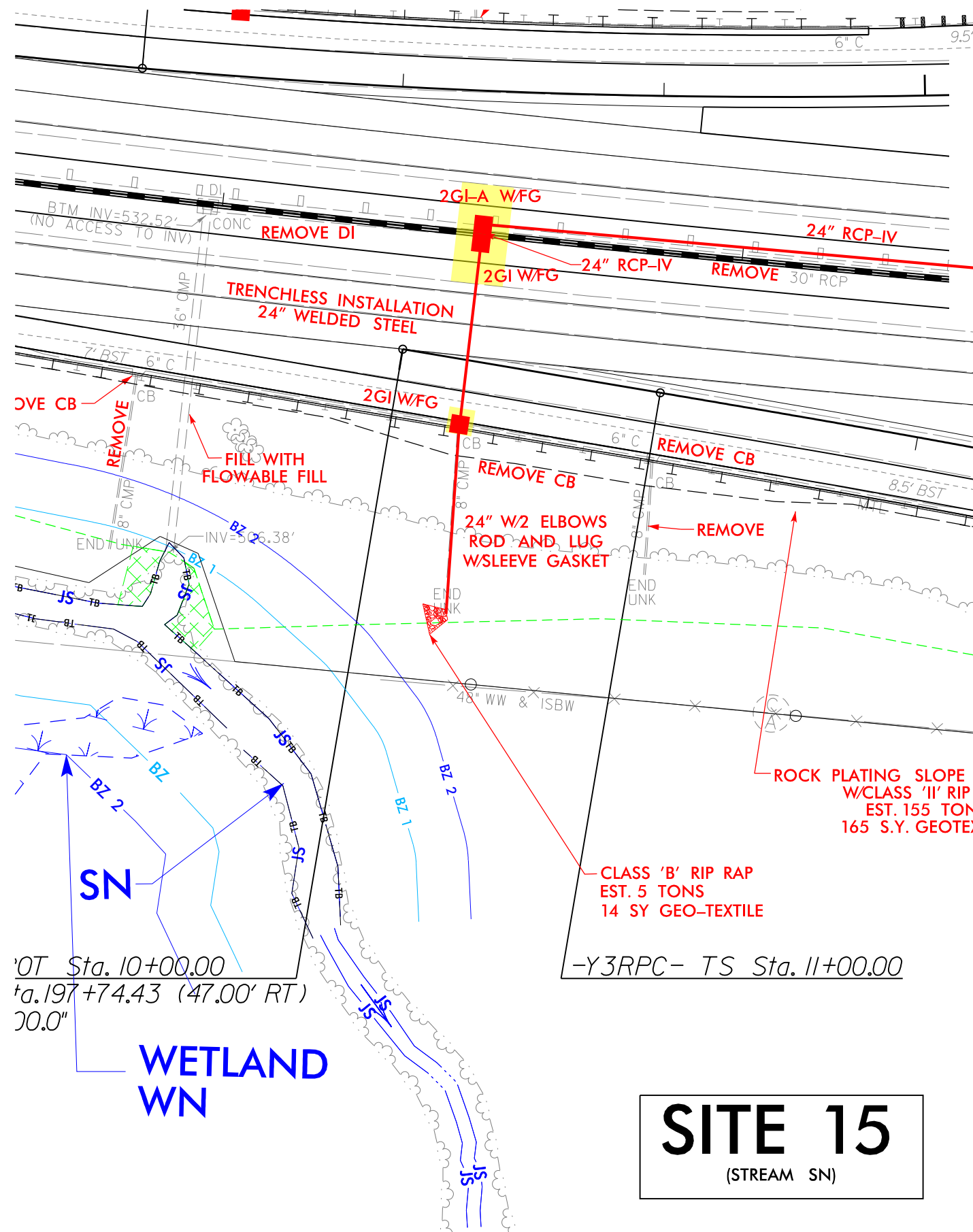
MATCHLINE -L- STA. 196+00, SEE SHEET 21





PLOT DRIVER: NCDOT\_color\_eng-100.plt  
USER: EPROFFIT  
FILE: ...\\13306A\_PRM-4C.BUF.PSH.dgn  
PENTABLE: NCDOT\_permits.NCON.tbl  
DATE: 6/3/2022  
TIME: 3:09:17 PM

REVISIONS



# LEGEND

-  ALLOWABLE IMPACTS ZONE 1
-  ALLOWABLE IMPACTS ZONE 2

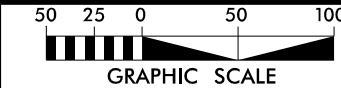
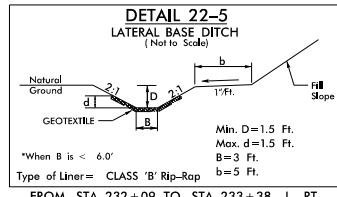
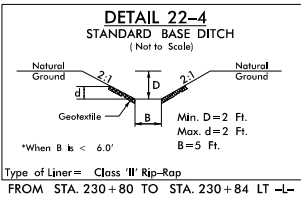
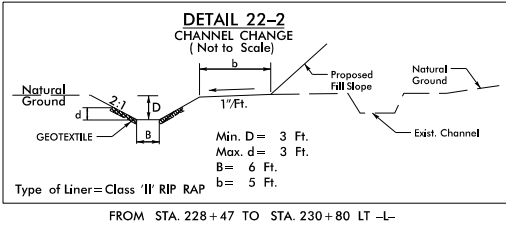
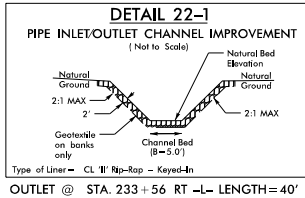
|                                                                                                                                                                                                                             |  |                        |  |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------------------|--|
| PROJECT REFERENCE NO.                                                                                                                                                                                                       |  | SHEET NO.              |  |
| I-3306 / W-5707C                                                                                                                                                                                                            |  | 21A                    |  |
| RW SHEET NO.                                                                                                                                                                                                                |  |                        |  |
| ROADWAY DESIGN<br>ENGINEER                                                                                                                                                                                                  |  | HYDRAULICS<br>ENGINEER |  |
|                                                                                                                                                                                                                             |  |                        |  |
| DOCUMENT NOT CONSIDERED FINAL<br>UNLESS ALL SIGNATURES COMPLETED                                                                                                                                                            |  |                        |  |
| lane                                                                                                                                     |  |                        |  |
| HDR  HDR Engineering, Inc. of the Carolinas<br>555 Fayetteville St, Suite 900 Raleigh, N.C. 27601<br>N.C.B.E.L.S. License Number: F-0116 |  |                        |  |

**SITE 15**  
(STREAM SN)

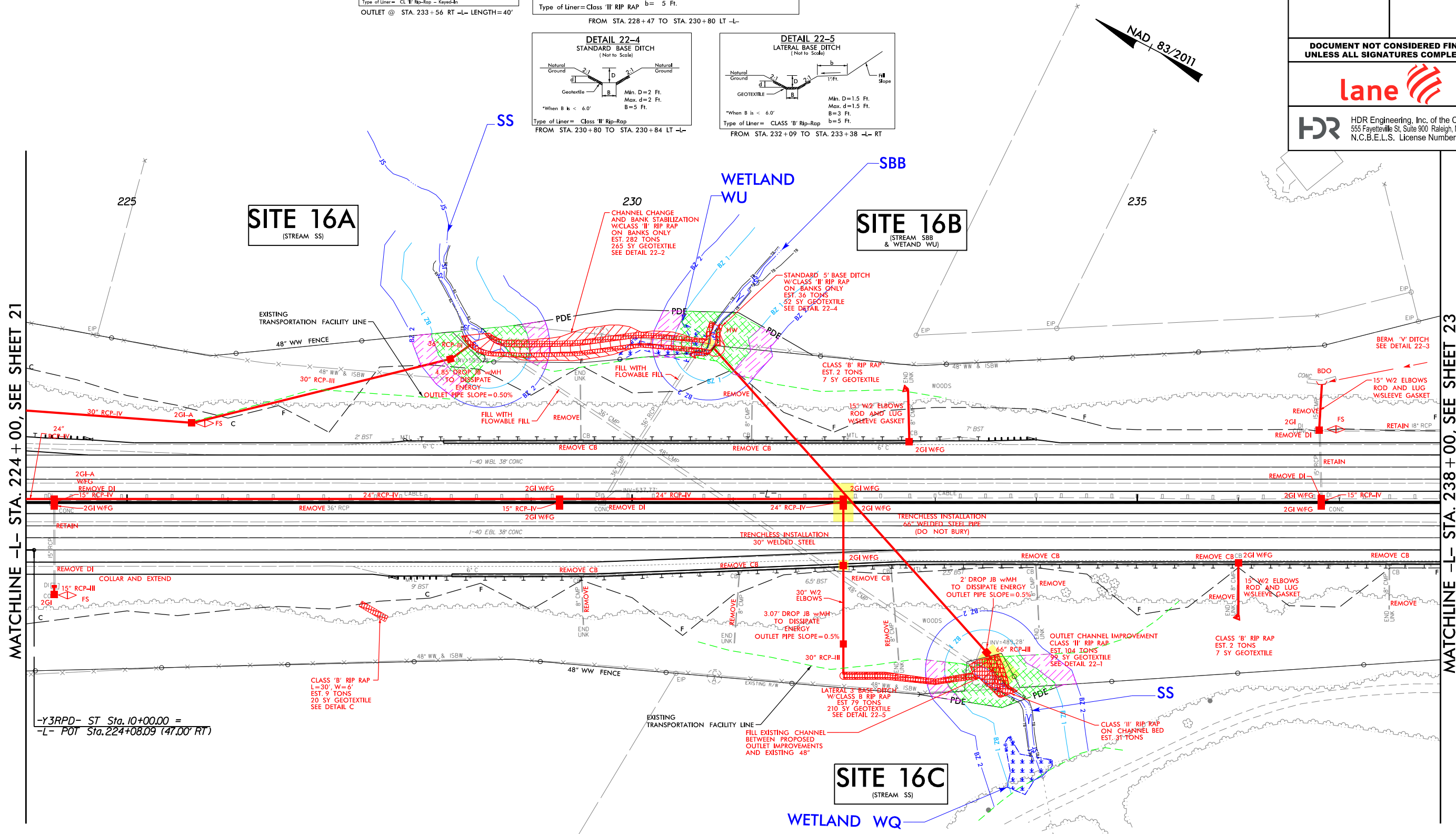


# LEGEND

- ALLOWABLE IMPACTS ZONE 1
- ALLOWABLE IMPACTS ZONE 2



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| PROJECT REFERENCE NO.                                                                                                                                                                                                   |  | SHEET NO.              |  |
| I-3306A / W-5707C                                                                                                                                                                                                       |  | 22                     |  |
| RW SHEET NO.                                                                                                                                                                                                            |  |                        |  |
| ROADWAY DESIGN<br>ENGINEER                                                                                                                                                                                              |  | HYDRAULICS<br>ENGINEER |  |
| <b>DOCUMENT NOT CONSIDERED FINAL<br/>UNLESS ALL SIGNATURES COMPLETED</b>                                                                                                                                                |  |                        |  |
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|  HDR Engineering, Inc. of the Carolinas<br>555 Fayetteville St, Suite 900 Raleigh, N.C. 27601<br>N.C.B.E.L.S. License Number: F-0116 |  |                        |  |







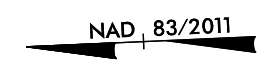
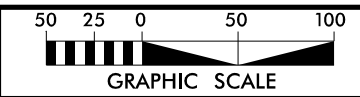
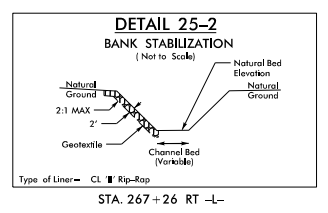
PLOT DRIVER: NCDOT\_color\_eng-100.plt  
USER: EPROFFIT  
FILE: ...\\13306A.PRM-4C.BUF.PSH.dgn  
PENTABLE: NCDOT\_permits.NCON.tbl  
DATE: 6/3/2022  
TIME: 3:09:23 PM

REVISIONS

MATCHLINE -L- STA. 266+00  
SEE SHEET 24

# LEGEND

- ALLOWABLE IMPACTS ZONE 1
- ALLOWABLE IMPACTS ZONE 2



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| PROJECT REFERENCE NO.                                                                    |  | SHEET NO.                                                                                                                           |  |
| I-3306A / W-5707C                                                                        |  | 25                                                                                                                                  |  |
| RW SHEET NO.                                                                             |  |                                                                                                                                     |  |
| ROADWAY DESIGN<br>ENGINEER                                                               |  | HYDRAULICS<br>ENGINEER                                                                                                              |  |
| DOCUMENT NOT CONSIDERED FINAL<br>UNLESS ALL SIGNATURES COMPLETED                         |  |                                                                                                                                     |  |
| lane  |  |                                                                                                                                     |  |
|       |  | HDR Engineering, Inc. of the Carolinas<br>555 Fayetteville St, Suite 900 Raleigh, N.C. 27601<br>N.C.B.E.L.S. License Number: F-0116 |  |

NEW HOPE CREEK

270

275

-L- CS Sta. 273+53.43

-L- ST Sta. 277+03.43

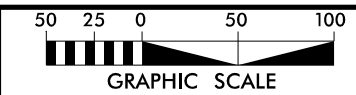
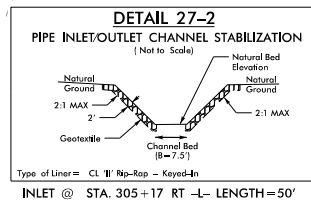
MATCHLINE -L- STA. 280+00, SEE SHEET 26

SITE 18  
(NEW HOPE CREEK)

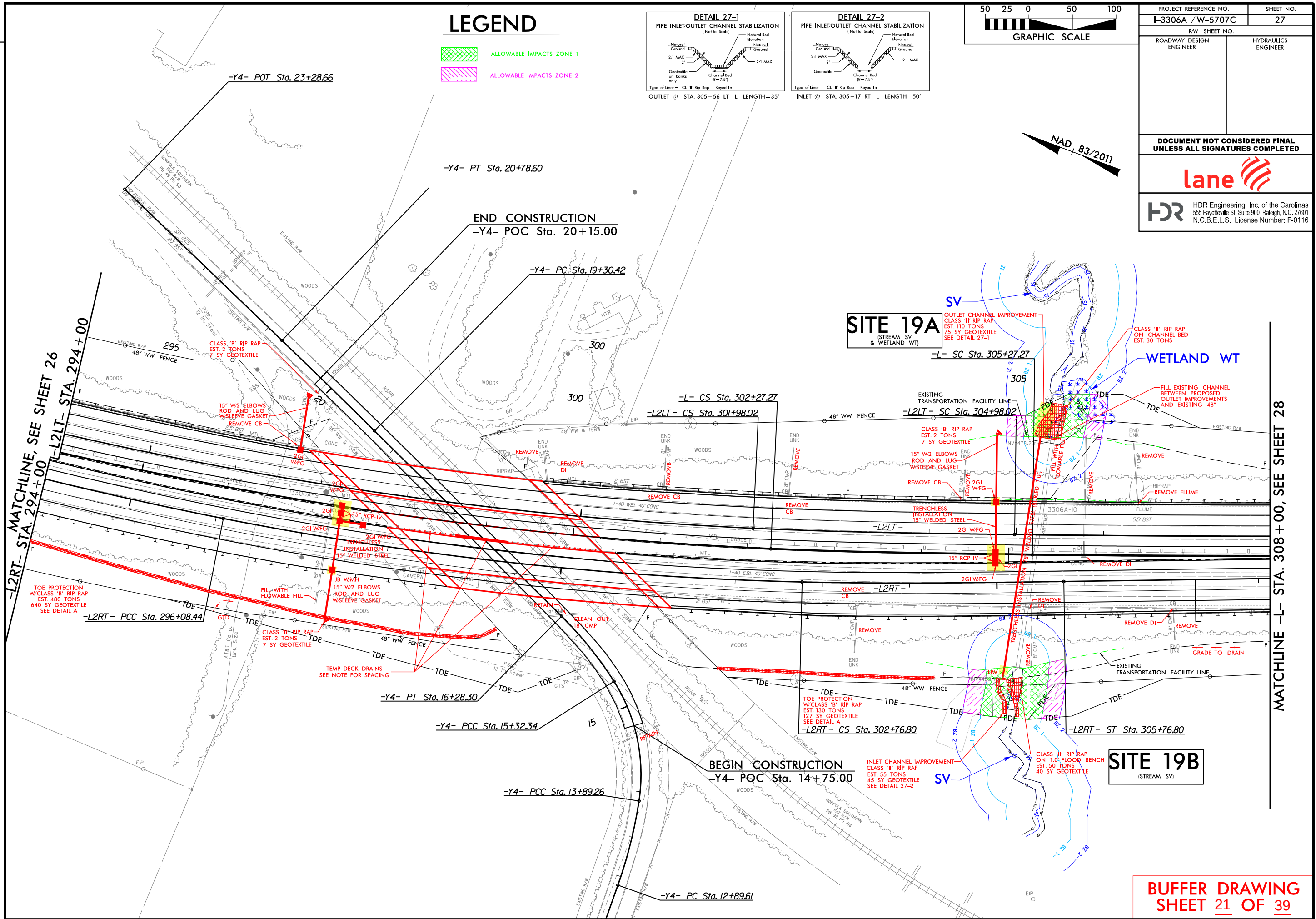
BANK STABILIZATION  
CLASS 'II' RIP RAP  
EST. 57 TONS  
72 SY GEOTEXTILE  
SEE DETAIL 25-2

 ALLOWABLE IMPACTS ZONE 1

 ALLOWABLE IMPACTS ZONE 2



|                                                                                                                                                                                                                                                                                                                    |                        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|
| PROJECT REFERENCE NO.                                                                                                                                                                                                                                                                                              | SHEET NO.              |
| I-3306A / W-5707C                                                                                                                                                                                                                                                                                                  | 27                     |
| RW SHEET NO.                                                                                                                                                                                                                                                                                                       |                        |
| ROADWAY DESIGN<br>ENGINEER                                                                                                                                                                                                                                                                                         | HYDRAULICS<br>ENGINEER |
| <p><b>DOCUMENT NOT CONSIDERED FINAL<br/>UNLESS ALL SIGNATURES COMPLETED</b></p> <div style="text-align: center;">  <p><b>lane</b></p> </div>                                                                                    |                        |
|  <div style="display: inline-block; vertical-align: middle;"> <p><b>HDR Engineering, Inc. of the Carolinas</b><br/> 555 Fayetteville St, Suite 900 Raleigh, N.C. 27601<br/> N.C.B.E.L.S. Registration Number: F-0116</p> </div> |                        |

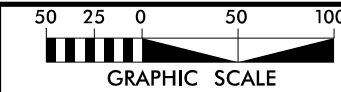
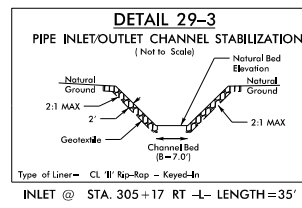
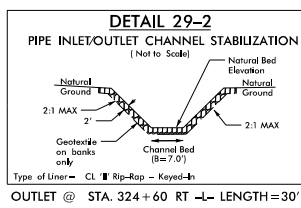
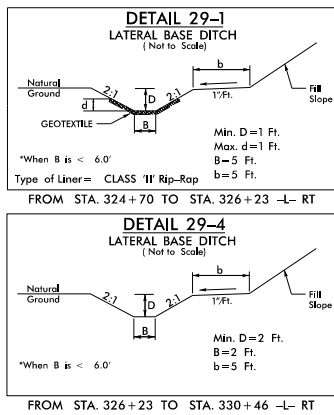




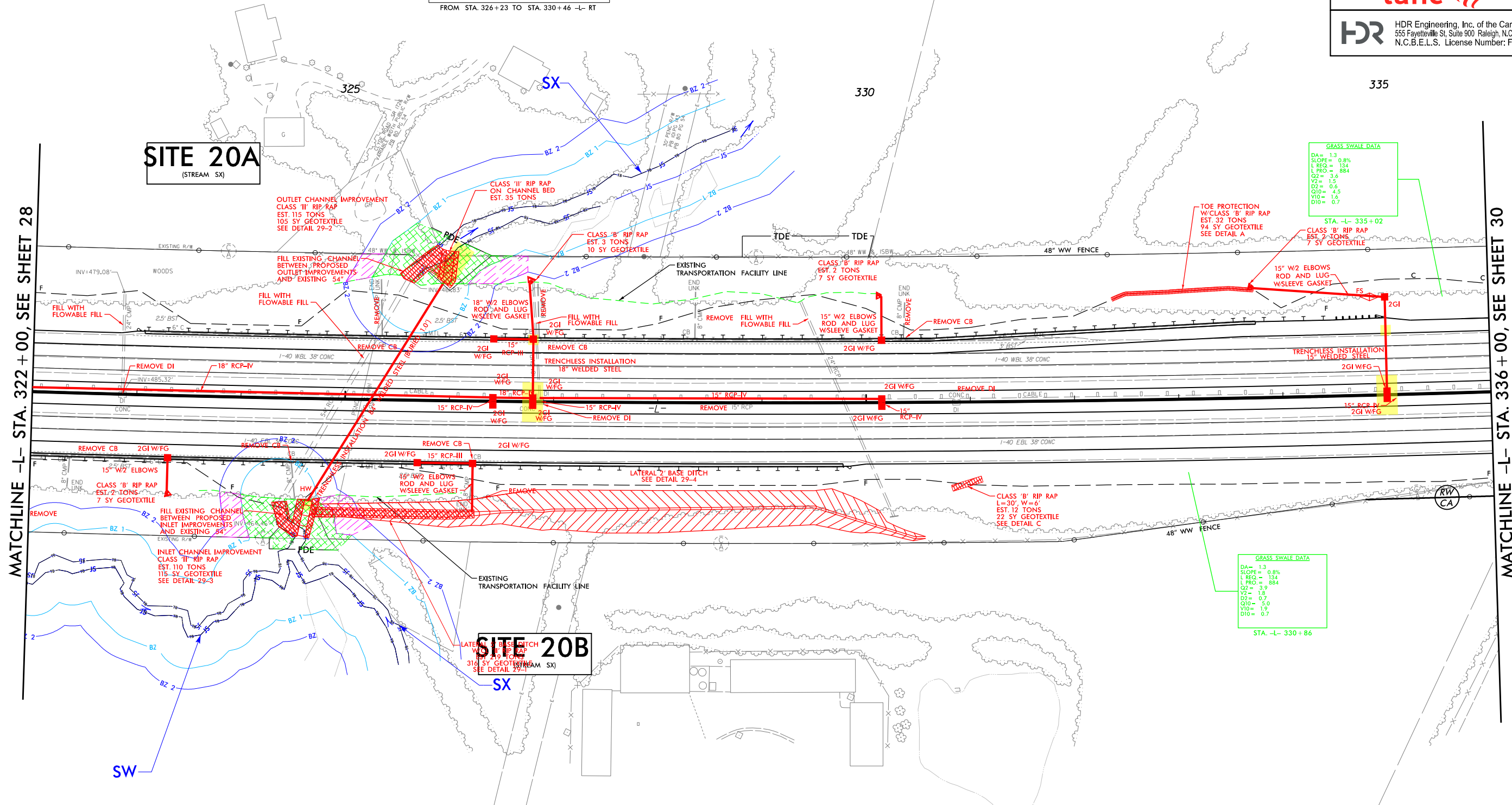
REVISIONS

## LEGEND

- ALLOWABLE IMPACTS ZONE 1
- ALLOWABLE IMPACTS ZONE 2



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| PROJECT REFERENCE NO.                                                               |  | SHEET NO.                                                                                                                           |  |
| I-3306A /W-5707C                                                                    |  | 29                                                                                                                                  |  |
| RW SHEET NO.                                                                        |  |                                                                                                                                     |  |
| ROADWAY DESIGN<br>ENGINEER                                                          |  | HYDRAULICS<br>ENGINEER                                                                                                              |  |
| <b>DOCUMENT NOT CONSIDERED FINAL<br/>UNLESS ALL SIGNATURES COMPLETED</b>            |  |                                                                                                                                     |  |
|  |  |                                                                                                                                     |  |
|  |  | HDR Engineering, Inc. of the Carolinas<br>555 Fayetteville St, Suite 900 Raleigh, N.C. 27601<br>N.C.B.E.L.S. License Number: F-0116 |  |



GRASS SWALE DATA

|        |      |
|--------|------|
| DA=    | 1.3  |
| SLOPE= | 0.8% |
| L REQ= | 134  |
| L PRO= | 884  |
| Q2=    | 3.6  |
| V2=    | 1.5  |
| D2=    | 0.6  |
| Q10=   | 4.5  |
| V10=   | 1.6  |
| D10=   | 0.7  |

GRASS SWALE DATA

|        |      |
|--------|------|
| DA=    | 1.3  |
| SLOPE= | 0.8% |
| L REQ= | 134  |
| L PRO= | 884  |
| Q2=    | 3.9  |
| V2=    | 1.5  |
| D2=    | 0.7  |
| Q10=   | 5.0  |
| V10=   | 1.9  |
| D10=   | 0.7  |

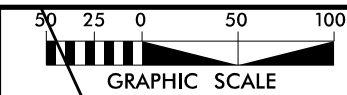


PLOT DRIVER: NCDOT\_color\_eng\_100.plt  
USER: EPROFFIT  
FILE: ...\\I3306A.PRM\_4C.BUF.PSH.dgn  
PENTABLE: NCDOT\_permits.NCON.tbl  
DATE: 6/3/2022  
TIME: 3:09:30 PM

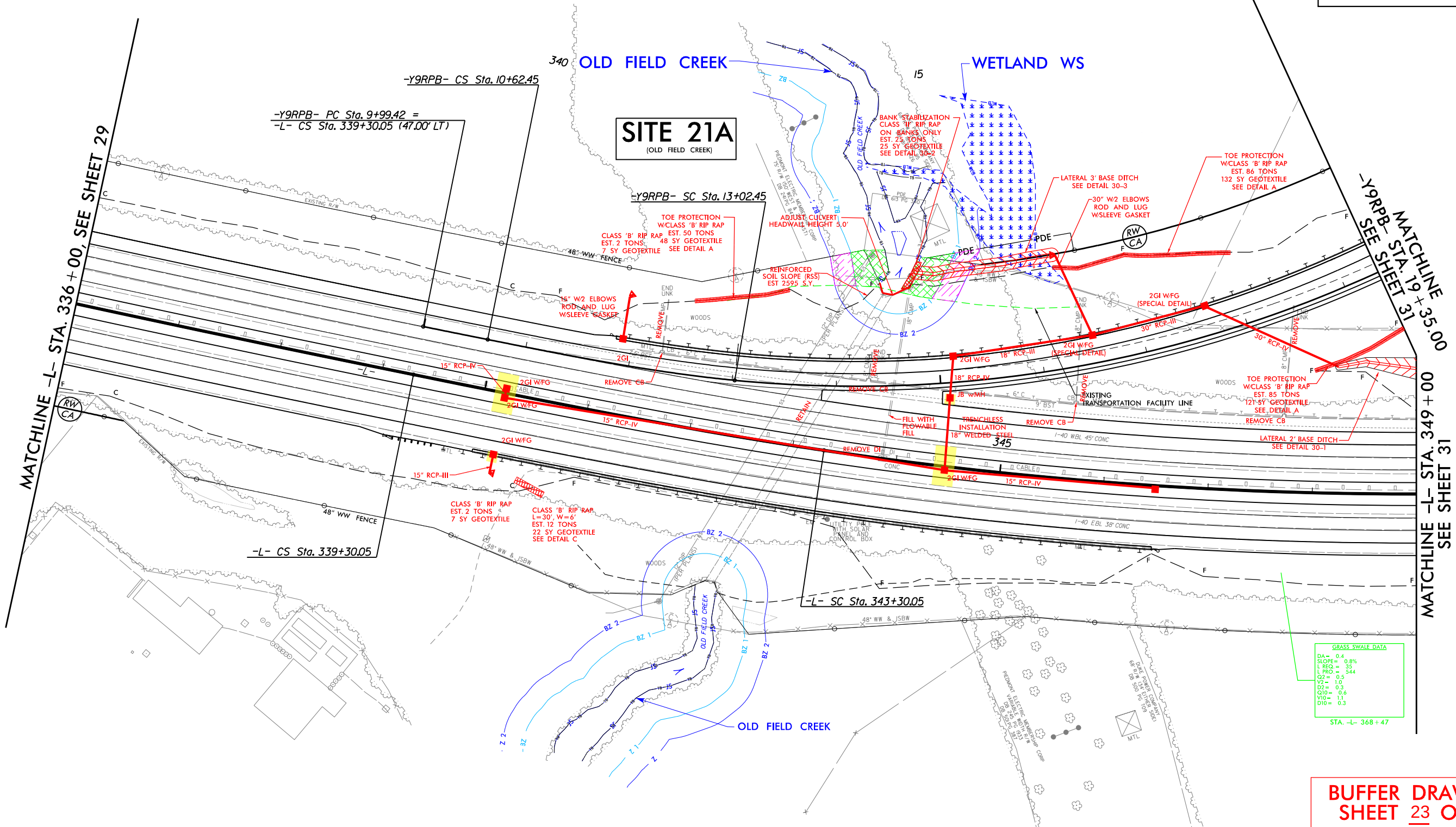
REVISIONS

# LEGEND

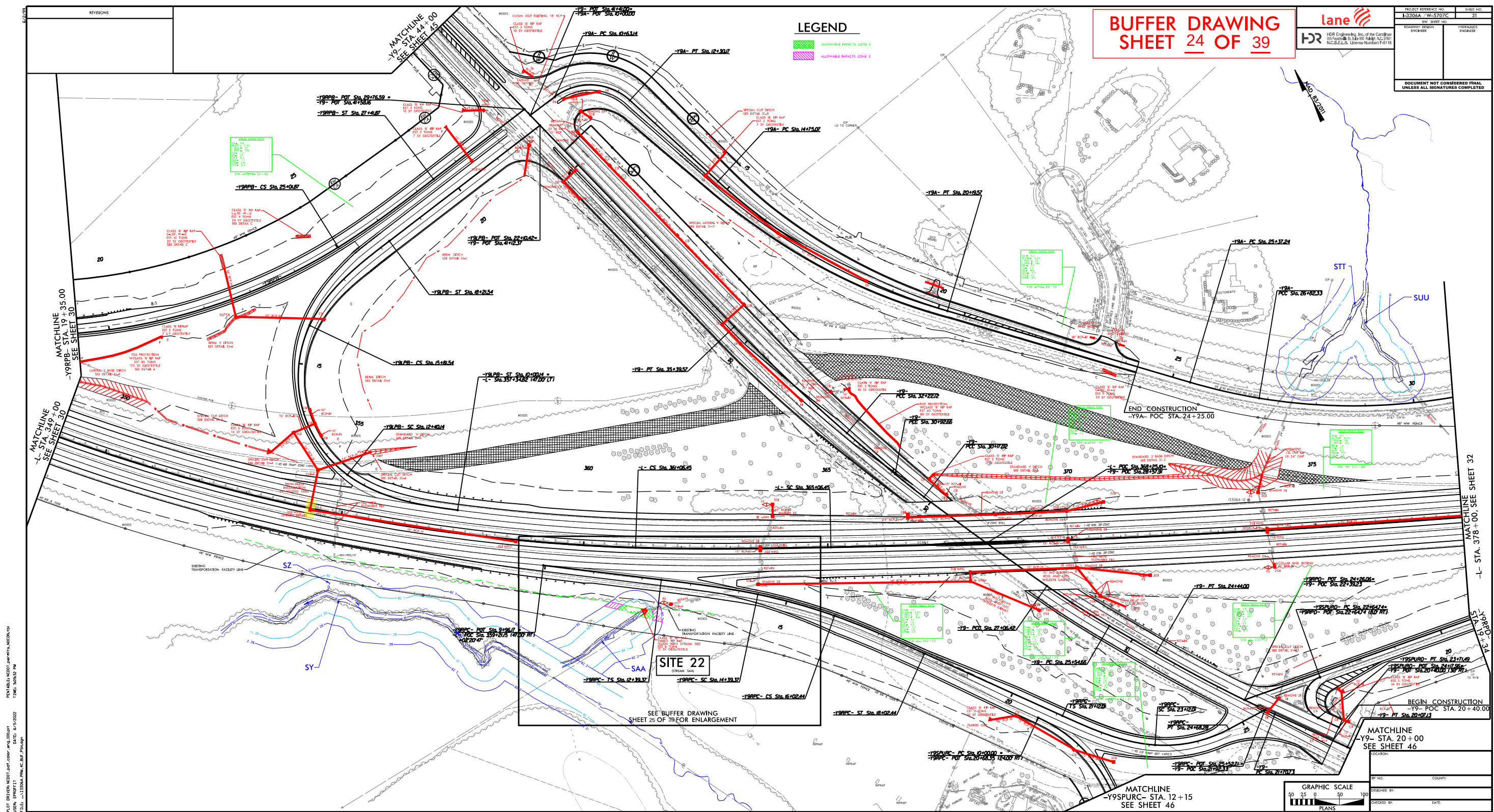
- ALLOWABLE IMPACTS ZONE 1
- ALLOWABLE IMPACTS ZONE 2



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| PROJECT REFERENCE NO.<br>I-3306A / W-5707C |  | SHEET NO.<br>30        |  |
| R/W SHEET NO.                              |  |                        |  |
| ROADWAY DESIGN<br>ENGINEER                 |  | HYDRAULICS<br>ENGINEER |  |
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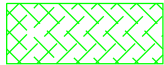


|                  |      |
|------------------|------|
| GRASS SWALE DATA |      |
| DA               | 0.4  |
| SLOPE            | 0.8% |
| L REQ            | 35   |
| L PRO            | 344  |
| Q2               | 0.5  |
| V2               | 1.0  |
| D2               | 0.3  |
| Q10              | 0.6  |
| V10              | 1.1  |
| D10              | 0.3  |
| STA. -L- 368+47  |      |





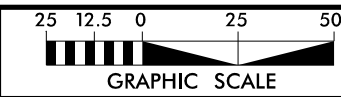
LEGEND



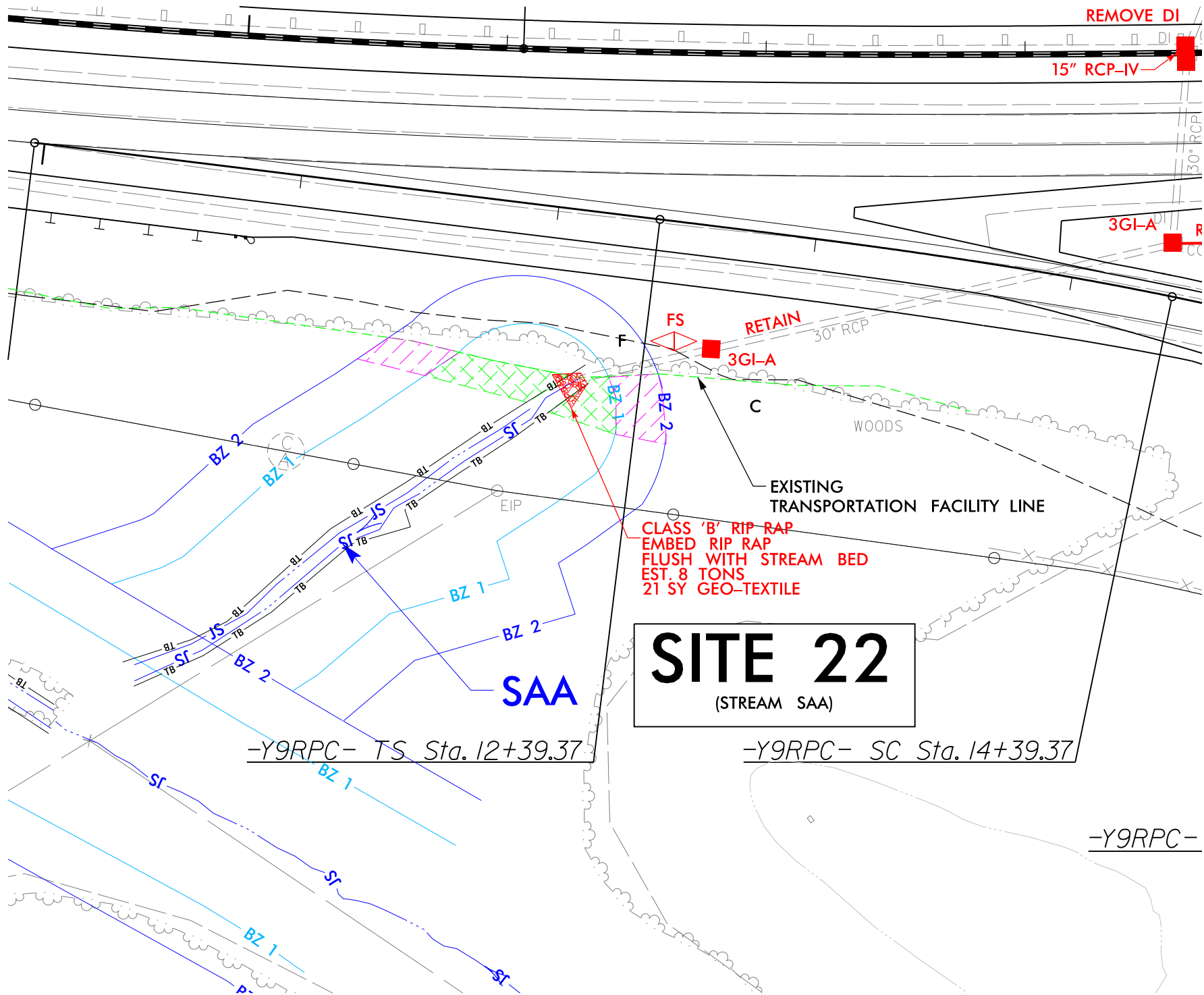
ALLOWABLE IMPACTS ZONE 1



ALLOWABLE IMPACTS ZONE 2



|                                                                                                                                     |  |                        |  |
|-------------------------------------------------------------------------------------------------------------------------------------|--|------------------------|--|
| PROJECT REFERENCE NO.<br>I-3306 / W-5707C                                                                                           |  | SHEET NO.<br>31A       |  |
| RAW SHEET NO.                                                                                                                       |  |                        |  |
| ROADWAY DESIGN<br>ENGINEER                                                                                                          |  | HYDRAULICS<br>ENGINEER |  |
|                                                                                                                                     |  |                        |  |
| DOCUMENT NOT CONSIDERED FINAL<br>UNLESS ALL SIGNATURES COMPLETED                                                                    |  |                        |  |
| lane                                             |  |                        |  |
| HDR Engineering, Inc. of the Carolinas<br>555 Fayetteville St, Suite 900 Raleigh, N.C. 27601<br>N.C.B.E.L.S. License Number: F-0116 |  |                        |  |



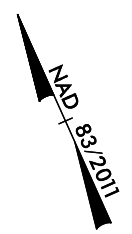
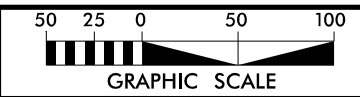
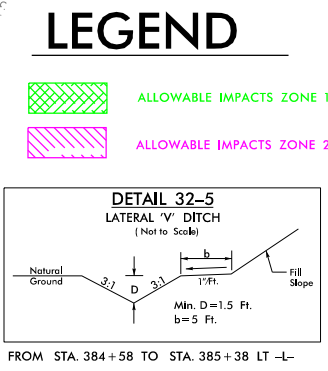
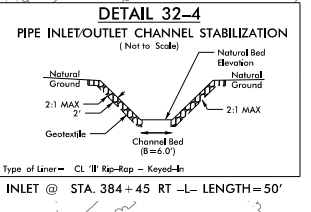
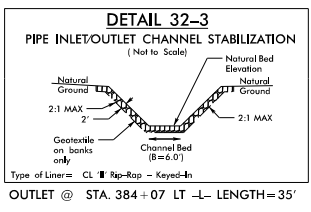
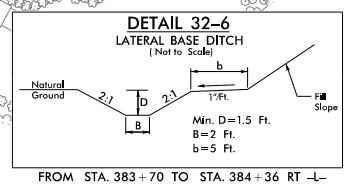
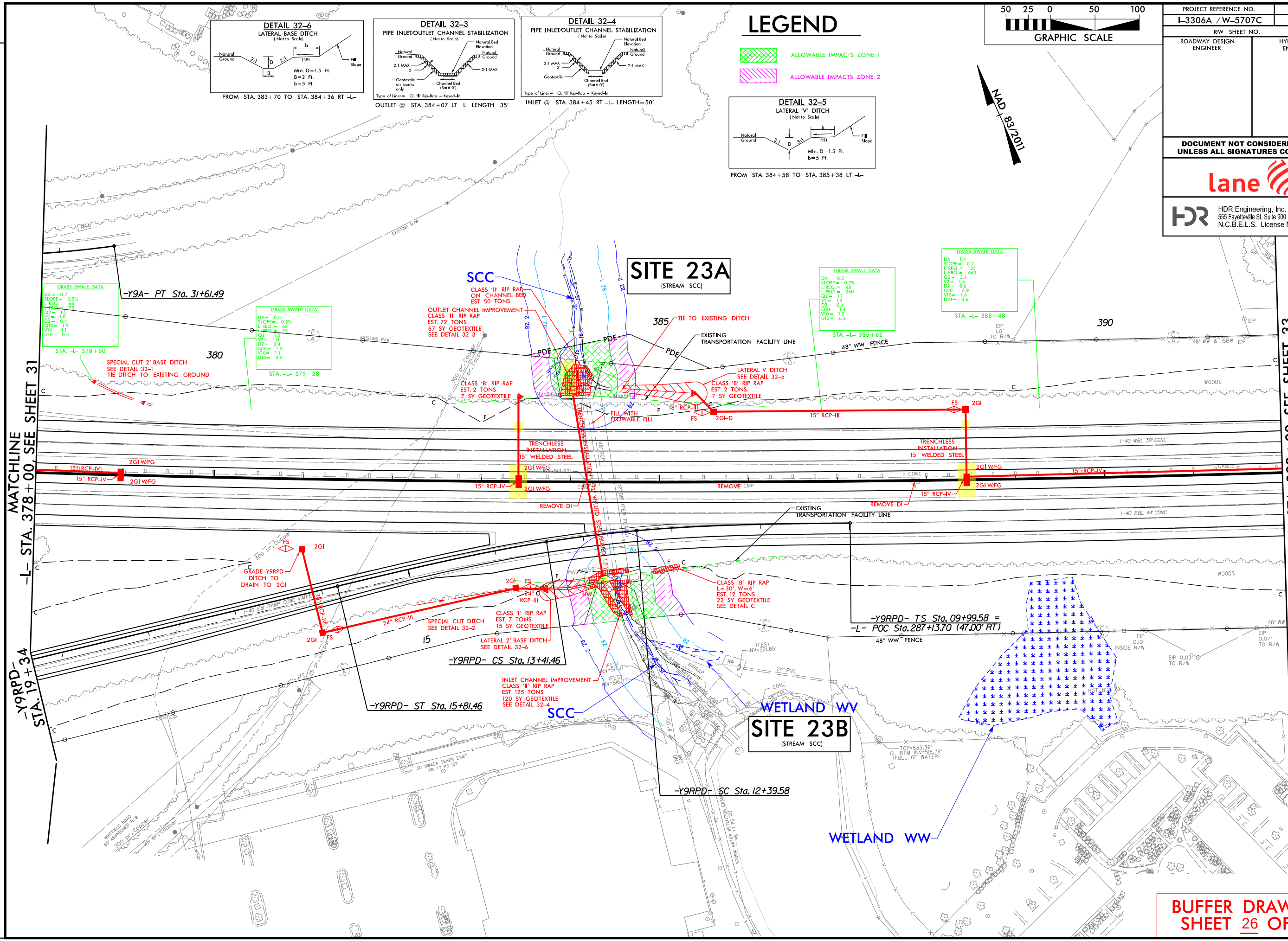
PLOT DRIVER: NCDOT\_color\_eng-100.plt  
USER: EPROFFIT  
FILE: ...\\I3306A\_PRM-4C.BUF.PSH.dgn  
PENTABLE: NCDOT\_permits.NCON.tbl  
TIME: 3:09:35 PM  
DATE: 6/3/2022

REVISIONS

REVISIONS

MATCHLINE -L- STA. 378+00, SEE SHEET 31  
-Y9RPD- STA. 19+34

MATCHLINE -L- STA. 392+00, SEE SHEET 33



|                                                                                                                                     |  |                        |
|-------------------------------------------------------------------------------------------------------------------------------------|--|------------------------|
| PROJECT REFERENCE NO.<br><b>I-3306A /W-5707C</b>                                                                                    |  | SHEET NO.<br><b>32</b> |
| RW SHEET NO.                                                                                                                        |  | HYDRAULICS ENGINEER    |
| ROADWAY DESIGN ENGINEER                                                                                                             |  |                        |
| DOCUMENT NOT CONSIDERED FINAL<br>UNLESS ALL SIGNATURES COMPLETED                                                                    |  |                        |
| <b>lane</b>                                                                                                                         |  |                        |
| HDR Engineering, Inc. of the Carolinas<br>555 Fayetteville St, Suite 900 Raleigh, N.C. 27601<br>N.C.B.E.L.S. License Number: F-0116 |  |                        |



**DETAIL 33-1**

**PIPE INLET/OUTLET CHANNEL STABILIZATION**

(Not to Scale)

Type of Liner = CL #1 Rip-Rap - Keyed-In

**DETAIL 33-2**

**PIPE INLET/OUTLET CHANNEL STABILIZATION**

(Not to Scale)

Type of Liner = CL #1 Rip-Rap - Keyed-In

**OUTLET @ STA. 398 + 62 LT -L- LENGTH=30'; B=6.0'**

**INLET @ STA. 396 + 96 RT -L- LENGTH=35'; B=4.0'**

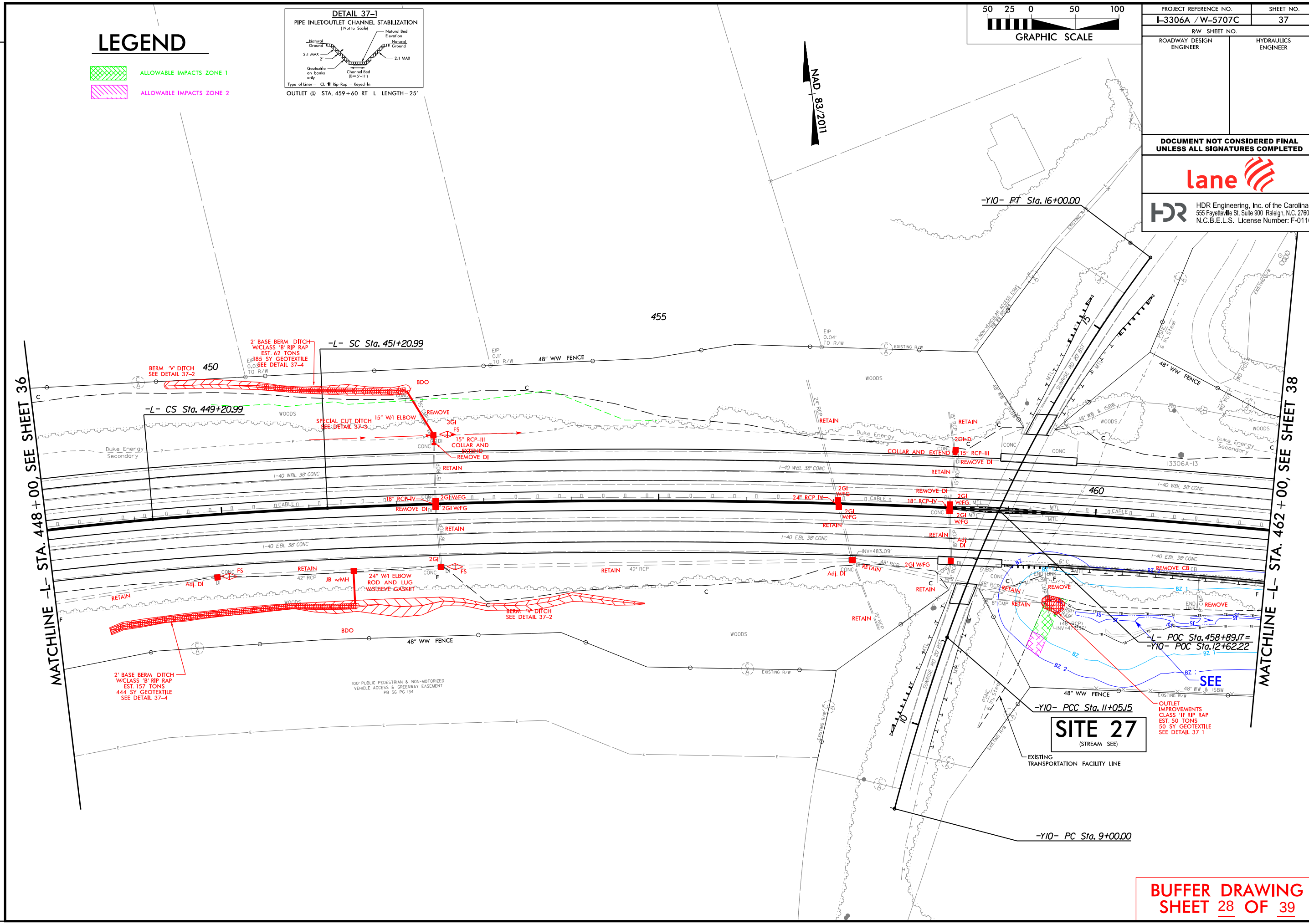
**INLET @ STA. 399 + 96 RT -L- LENGTH=25'; B=4.0'**

OUTLET @ STA. 398+62 LT -L- LENGTH=30';B=6.0'  
INLET @ STA. 396+96 RT -L- LENGTH=35';B=4.0'



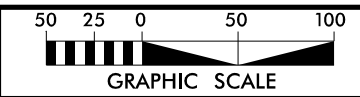
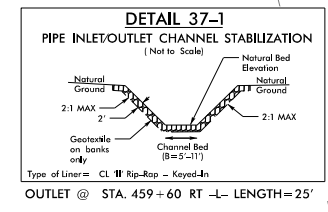
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USER: EPROFFIT  
FILE: ...\\13306A.PRM\_4C.BUF.PSH.dgn  
PENTABLE: NCDOT\_permits.NCON.tbl  
TIME: 3:09:41 PM  
DATE: 6/3/2022

REVISIONS



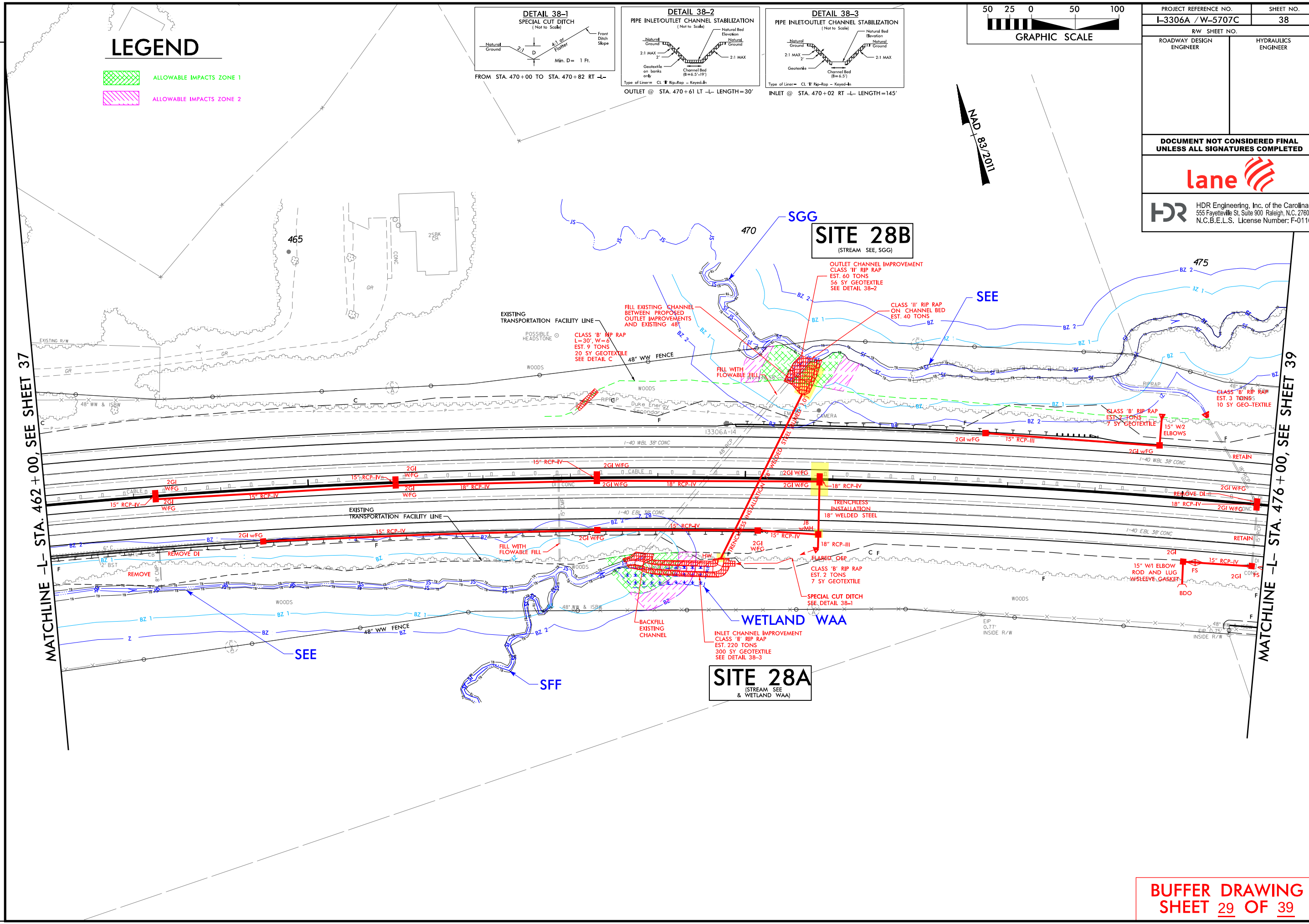
# LEGEND

- ALLOWABLE IMPACTS ZONE 1
- ALLOWABLE IMPACTS ZONE 2



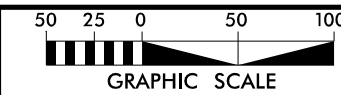
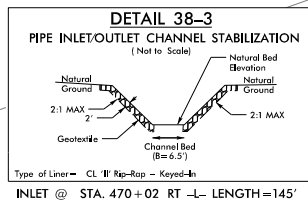
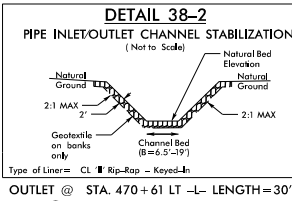
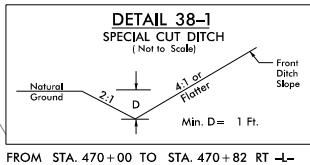
|                                                                                                                                     |                     |                        |
|-------------------------------------------------------------------------------------------------------------------------------------|---------------------|------------------------|
| PROJECT REFERENCE NO.<br><b>L-3306A /W-5707C</b>                                                                                    |                     | SHEET NO.<br><b>37</b> |
| RW SHEET NO.                                                                                                                        |                     |                        |
| ROADWAY DESIGN ENGINEER                                                                                                             | HYDRAULICS ENGINEER |                        |
| <b>DOCUMENT NOT CONSIDERED FINAL<br/>UNLESS ALL SIGNATURES COMPLETED</b>                                                            |                     |                        |
|                                                                                                                                     |                     |                        |
| HDR Engineering, Inc. of the Carolinas<br>555 Fayetteville St, Suite 900 Raleigh, N.C. 27601<br>N.C.B.E.L.S. License Number: F-0116 |                     |                        |

REVISIONS



LEGEND

- ALLOWABLE IMPACTS ZONE 1
- ALLOWABLE IMPACTS ZONE 2



|                                                                                                                                                |                     |                        |
|------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|------------------------|
| PROJECT REFERENCE NO.<br><b>L-3306A /W-5707C</b>                                                                                               |                     | SHEET NO.<br><b>38</b> |
| RW SHEET NO.                                                                                                                                   |                     |                        |
| ROADWAY DESIGN ENGINEER                                                                                                                        | HYDRAULICS ENGINEER |                        |
| <b>DOCUMENT NOT CONSIDERED FINAL<br/>UNLESS ALL SIGNATURES COMPLETED</b>                                                                       |                     |                        |
| <b>lane</b>                                                                                                                                    |                     |                        |
| <b>HDR</b> HDR Engineering, Inc. of the Carolinas<br>555 Fayetteville St, Suite 900 Raleigh, N.C. 27601<br>N.C.B.E.L.S. License Number: F-0116 |                     |                        |



PLOT DRIVER: NCDOT\_color\_eng\_100.plt  
USER: EPROFFIT  
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PENTABLE: NCDOT\_permits.NCON.tbl  
DATE: 6/3/2022  
TIME: 3:09:46 PM

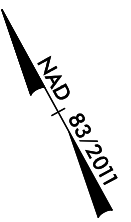
REVISIONS

# LEGEND

- ALLOWABLE IMPACTS ZONE 1
- ALLOWABLE IMPACTS ZONE 2

SEE

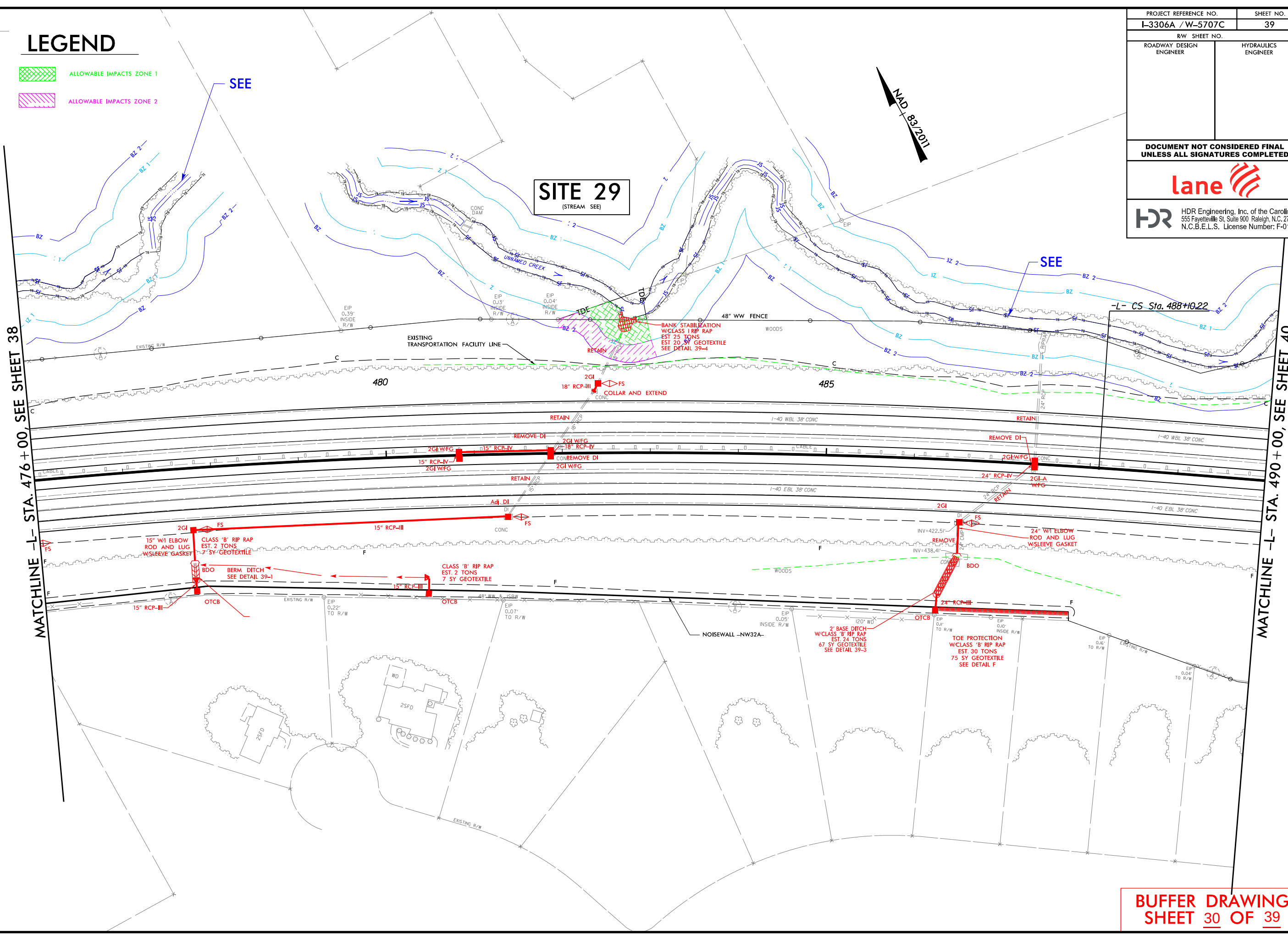
SITE 29  
(STREAM SEE)



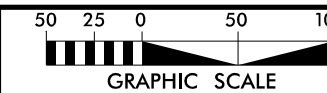
|                                                                                                                                     |                        |                        |
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| PROJECT REFERENCE NO.<br><b>L-3306A /W-5707C</b>                                                                                    |                        | SHEET NO.<br><b>39</b> |
| RW SHEET NO.                                                                                                                        |                        |                        |
| ROADWAY DESIGN<br>ENGINEER                                                                                                          | HYDRAULICS<br>ENGINEER |                        |
| DOCUMENT NOT CONSIDERED FINAL<br>UNLESS ALL SIGNATURES COMPLETED                                                                    |                        |                        |
|                                                                                                                                     |                        |                        |
| HDR Engineering, Inc. of the Carolinas<br>555 Fayetteville St, Suite 900 Raleigh, N.C. 27601<br>N.C.B.E.L.S. License Number: F-0116 |                        |                        |

MATCHLINE -L- STA. 476 + 00, SEE SHEET 38

MATCHLINE -L- STA. 490 + 00, SEE SHEET 40

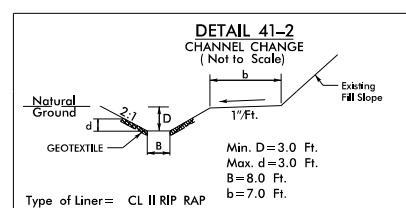
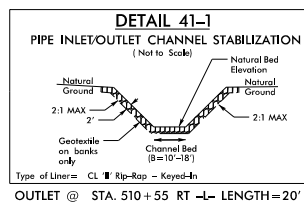






|                                                                                                                                                                                                                |                                                                                                                                     |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| PROJECT REFERENCE NO.                                                                                                                                                                                          | SHEET NO.                                                                                                                           |
| I-3306A / W-5707C                                                                                                                                                                                              | 41                                                                                                                                  |
| R/W SHEET NO.                                                                                                                                                                                                  |                                                                                                                                     |
| ROADWAY DESIGN<br>ENGINEER                                                                                                                                                                                     | HYDRAULICS<br>ENGINEER                                                                                                              |
| <p align="center"><b>DOCUMENT NOT CONSIDERED FINAL<br/>UNLESS ALL SIGNATURES COMPLETED</b></p> <div align="center">  </div> |                                                                                                                                     |
|                                                                                                                             | HDR Engineering, Inc. of the Carolinas<br>555 Fayetteville St, Suite 900 Raleigh, N.C. 27601<br>N.C.B.E.L.S. License Number: F-0111 |

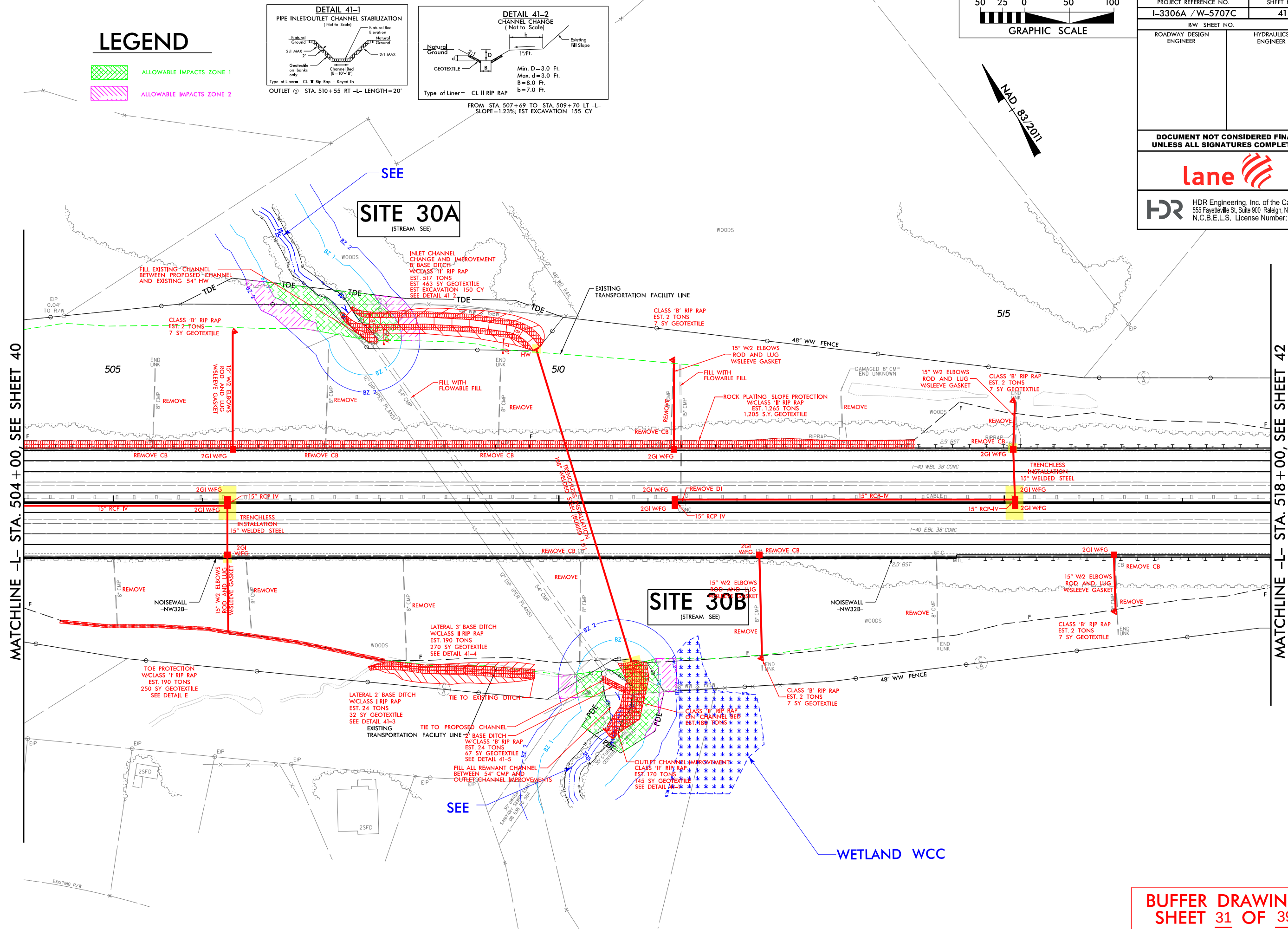
## LEGEND



FROM STA. 507+69 TO STA. 509+70 LT -L-  
SLOPE=1.23%; EST EXCAVATION 155 CY

—SEE

**SITE 30A**  
(STREAM SEE)



**MATCHLINE -L- STA. 504+00, SEE SHEET 40**

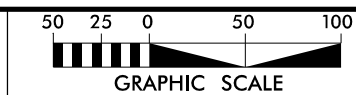
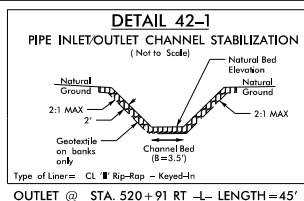
MATCHLINE -L- STA. 518+00, SEE SHEET 42

—WETLAND WCC

BUFFER DRAWING  
 SHEET 31 OF 39

PENTABLE; NCD0T\_permits.NOCN.tbl  
 DRIVER; NCD0T\_pdf\_color\_eng-100.plt  
 USER; EPROFIT DATE: 6/3/2022  
 FILE: ...I3306A.PRM 4C.BUF.PSH.dgn  
 TIME: 3:09:48 PM

## LEGEND



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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.              |
| I-3306A / W-5707C                                                               | 42                     |
| R/W SHEET NO.                                                                   |                        |
| ROADWAY DESIGN<br>ENGINEER                                                      | HYDRAULICS<br>ENGINEER |
| <p><b>DOCUMENT NOT CONSIDERED FINAL<br/>UNLESS ALL SIGNATURES COMPLETED</b></p> |                        |

**MATCHLINE -L- STA. 518+00, SEE SHEET 41**

## SITE 31

(STREAM SHH

SHH

**MATCHLINE -L- STA. 532 + 00, SEE SHEET 43**

 ALLOWABLE IMPACTS ZONE 1

 ALLOWABLE IMPACTS ZONE 2

**MATCHLINE -L- STA. 546+00, SEE SHEET 44**

**SITE 32**  
(STREAM SII)

**BUFFER DRAWING**  
**SHEET 33 OF 39**

| RIPARIAN BUFFER IMPACTS SUMMARY |                              |                          |               |        |                 |                 |                 |                |                 |                 |                |                    |                 |
|---------------------------------|------------------------------|--------------------------|---------------|--------|-----------------|-----------------|-----------------|----------------|-----------------|-----------------|----------------|--------------------|-----------------|
|                                 |                              |                          | IMPACTS       |        |                 |                 |                 |                |                 |                 |                | BUFFER REPLACEMENT |                 |
| Site No.                        | Station<br>(From/To)<br>6214 | Structure<br>Size / Type | TYPE          |        |                 | ALLOWABLE       |                 |                | MITIGABLE       |                 |                |                    |                 |
|                                 |                              |                          | ROAD CROSSING | BRIDGE | PARALLEL IMPACT | ZONE 1<br>(ft²) | ZONE 2<br>(ft²) | TOTAL<br>(ft²) | ZONE 1<br>(ft²) | ZONE 2<br>(ft²) | TOTAL<br>(ft²) | ZONE 1<br>(ft²)    | ZONE 2<br>(ft²) |
| 1                               | 67+50 -YRPD- LT              | 8' x 7' RCBC             | x             |        |                 | 3055            | 2204            | 5259           |                 |                 |                |                    |                 |
| 2A                              | 49+50 -YFLYA- RT             | 84" PIPE                 | x             |        |                 | 2195            | 1363            | 3558           |                 |                 |                |                    |                 |
| 2B                              | 49+50 -YFLYA- LT             | 84" PIPE                 | x             |        |                 | 3164            | 2219            | 5383           |                 |                 |                |                    |                 |
| 3A                              | 145+67 -I85- LT              | 42" PIPE                 | x             |        |                 | 3110            | 1629            | 4739           |                 |                 |                |                    |                 |
| 3B                              | 146+00 -I85- RT              | 42" PIPE                 | x             |        |                 | 4675            | 1439            | 6114           |                 |                 |                |                    |                 |
| 3C                              | 30+00 -YRPD- LT              | 72" PIPE                 | x             |        |                 | 2626            | 1884            | 4510           |                 |                 |                |                    |                 |
| 3D                              | 150+00 -I85- RT              | 66" PIPE                 | X             |        |                 | 4037            | 1156            | 5193           |                 |                 |                |                    |                 |
| 4A                              | 32+00 -YFLYA- RT             | 78" PIPE                 | x             |        |                 | 4260            | 2667            | 6927           |                 |                 |                |                    |                 |
| 4B                              | 32+00 -YFLYA- RT             | 78" PIPE                 | x             |        |                 | 4311            | 3196            | 7507           |                 |                 |                |                    |                 |
| 6                               | 50+00 -L- RT                 | 30" PIPE                 | x             |        |                 | 2952            | 2015            | 4967           |                 |                 |                |                    |                 |
| 7A                              | 29+15 -Y2- LT                | 78" PIPE                 | x             |        |                 | 5216            | 2193            | 7409           |                 |                 |                |                    |                 |
| 7B                              | 29+15 -Y2- RT                | 78" PIPE                 | x             |        |                 | 2647            | 1542            | 4189           |                 |                 |                |                    |                 |
| 8                               | 20+20 -Y2- LT                | 30" PIPE                 |               |        | x               |                 |                 |                | 571             |                 | 571            |                    |                 |
| 9A                              | 127+50 -L- LT                | 84" PIPE                 | x             |        |                 | 3752            | 1119            | 4871           |                 |                 |                |                    |                 |
| 9B                              | 127+50 -L- RT                | 84" PIPE                 | x             |        |                 | 2932            |                 | 2932           |                 |                 |                |                    |                 |
| 10A                             | 156+35 -L- LT                | 60" PIPE                 | x             |        |                 | 4675            |                 | 4675           |                 |                 |                |                    |                 |
| 10B                             | 156+35 -L- RT                | 60" PIPE                 | x             |        |                 | 1291            | 852             | 2143           |                 |                 |                |                    |                 |
| 11                              | 162+50 -L- LT                | 42" PIPE                 | x             |        |                 | 986             |                 | 986            |                 |                 |                |                    |                 |
| 12                              | 172+00 -L- LT                | 48" PIPE                 | x             |        |                 | 2332            | 1359            | 3691           |                 |                 |                |                    |                 |
| 14A                             | 193+00 -L- LT                | 66" PIPE                 | x             |        |                 | 5798            |                 | 5798           |                 |                 |                |                    |                 |
| 14B                             | 193+00 -L-RT                 | 66" PIPE                 | x             |        |                 | 3212            | 1628            | 4840           |                 |                 |                |                    |                 |
| 15                              | 197+00 -L- RT                | 24" PIPE                 | x             |        |                 | 530             |                 | 530            |                 |                 |                |                    |                 |
|                                 |                              |                          |               |        |                 |                 |                 |                |                 |                 |                |                    |                 |
|                                 |                              |                          |               |        |                 |                 |                 |                |                 |                 |                |                    |                 |
| TOTALS SHEET 1*:                |                              |                          |               |        |                 | 67756           | 28465           | 96221          | 571             | 0               | 571            | 0                  | 0               |

NOTES:

NC DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
MAY 2022  
ORANGE COUNTY  
TIP I-3360A  
STATE PROJ. # 34178.3.GV3  
SHEET 34 OF 39



| RIPARIAN BUFFER IMPACTS SUMMARY |                              |                          |               |        |                 |                              |                              |                             |                              |                              |                             |                              |                              |
|---------------------------------|------------------------------|--------------------------|---------------|--------|-----------------|------------------------------|------------------------------|-----------------------------|------------------------------|------------------------------|-----------------------------|------------------------------|------------------------------|
|                                 |                              |                          | IMPACTS       |        |                 |                              |                              |                             |                              |                              |                             | BUFFER REPLACEMENT           |                              |
| Site No.                        | Station<br>(From/To)<br>6214 | Structure<br>Size / Type | TYPE          |        |                 | ALLOWABLE                    |                              |                             | MITIGABLE                    |                              |                             |                              |                              |
|                                 |                              |                          | ROAD CROSSING | BRIDGE | PARALLEL IMPACT | ZONE 1<br>(ft <sup>2</sup> ) | ZONE 2<br>(ft <sup>2</sup> ) | TOTAL<br>(ft <sup>2</sup> ) | ZONE 1<br>(ft <sup>2</sup> ) | ZONE 2<br>(ft <sup>2</sup> ) | TOTAL<br>(ft <sup>2</sup> ) | ZONE 1<br>(ft <sup>2</sup> ) | ZONE 2<br>(ft <sup>2</sup> ) |
| 16A                             | 228+00 -L- LT                | 36" PIPE                 | x             |        |                 | 2426                         | 2269                         | 4695                        |                              |                              |                             |                              |                              |
| 16B                             | 231+00 -L- LT                | 66" PIPE                 | x             |        |                 | 3152                         | 2071                         | 5223                        |                              |                              |                             |                              |                              |
| 16C                             | 234+00 -L- RT                | 66" PIPE                 | x             |        |                 | 3237                         | 1668                         | 4905                        |                              |                              |                             |                              |                              |
| 17                              | 247+50 -L- RT                | 42" PIPE                 | x             |        |                 | 1902                         | 845                          | 2747                        |                              |                              |                             |                              |                              |
| 18                              | 267+00 -L- RT                | 4 -13'x12" RCBC          | x             |        |                 | 1716                         | 1070                         | 2786                        |                              |                              |                             |                              |                              |
| 19A                             | 305+00 -L- LT                | 78" PIPE                 | x             |        |                 | 2477                         | 1434                         | 3911                        |                              |                              |                             |                              |                              |
| 19B                             | 305+00 -L- RT                | 78" PIPE                 | x             |        |                 | 3565                         | 2356                         | 5921                        |                              |                              |                             |                              |                              |
| 20A                             | 325+00 -L- LT                | 84" PIPE                 | x             |        |                 | 3463                         | 1489                         | 4952                        |                              |                              |                             |                              |                              |
| 20B                             | 325+00 -L- RT                | 84" PIPE                 | x             |        |                 | 3385                         | 2016                         | 5401                        |                              |                              |                             |                              |                              |
| 21A                             | 343+00 -L-                   | 8' x 8' RCBC             | x             |        |                 | 2330                         | 1646                         | 3976                        |                              |                              |                             |                              |                              |
| 22                              | 12+00 -Y9RPC- RT             | 30" PIPE                 | x             |        |                 | 858                          | 778                          | 1636                        |                              |                              |                             |                              |                              |
| 23A                             | 125+00 -L- LT                | 72" PIPE                 | x             |        |                 | 3326                         | 2375                         | 5701                        |                              |                              |                             |                              |                              |
| 23B                             | 125+00 -L- RT                | 72" PIPE                 | x             |        |                 | 2903                         | 2082                         | 4985                        |                              |                              |                             |                              |                              |
| 25A                             | 399+00 -L- LT                | 72" PIPE                 | x             |        |                 | 2674                         | 1928                         | 4602                        |                              |                              |                             |                              |                              |
| 25B                             | 399+00 -L- RT                | 72" PIPE                 | x             |        |                 | 1550                         | 614                          | 2164                        |                              |                              |                             |                              |                              |
| 27                              | 11+70 -Y10- RT               | 48" PIPE                 | x             |        |                 | 564                          | 367                          | 931                         |                              |                              |                             |                              |                              |
| 28A                             | 470+00 -L-                   | 78" PIPE                 | x             |        |                 | 2465                         | 1488                         | 3953                        |                              |                              |                             |                              |                              |
| 28B                             | 470+00 -L-                   | 78" PIPE                 | x             |        |                 | 2320                         | 1803                         | 4123                        |                              |                              |                             |                              |                              |
| 29                              | 482+00 -L- LT                | 18" PIPE                 | x             |        |                 | 2164                         | 2335                         | 4499                        |                              |                              |                             |                              |                              |
| 30A                             | 510+00 -L- LT                | 108" PIPE                | x             |        |                 | 4649                         | 2803                         | 7452                        |                              |                              |                             |                              |                              |
| 30B                             | 510+00 -L- RT                | 108" PIPE                | x             |        |                 | 4895                         | 1493                         | 6388                        |                              |                              |                             |                              |                              |
| 31                              | 521+00 -L- RT                | 42" PIPE                 | x             |        |                 | 2682                         | 1938                         | 4620                        |                              |                              |                             |                              |                              |
| 32                              | 539+50 -L- RT                | 36" PIPE                 | x             |        |                 | 3119                         | 1978                         | 5097                        |                              |                              |                             |                              |                              |
|                                 |                              |                          |               |        |                 |                              |                              |                             |                              |                              |                             |                              |                              |
| TOTALS*:                        |                              |                          |               |        |                 | 61822                        | 38846                        | 100668                      | 0                            | 0                            | 0                           | 0                            | 0                            |

NOTES:

NC DEPARTMENT OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 MAY 2022  
 ORANGE COUNTY  
 TIP I-3360A  
 STATE PROJ. # 34178.3.GV3  
 SHEET 35 OF 39

| RIPARIAN BUFFER IMPACTS SUMMARY |                              |                          |                  |        |                    |                 |                 |                |                 |                 |                |                    |                 |
|---------------------------------|------------------------------|--------------------------|------------------|--------|--------------------|-----------------|-----------------|----------------|-----------------|-----------------|----------------|--------------------|-----------------|
|                                 |                              |                          | IMPACTS          |        |                    |                 |                 |                |                 |                 |                | BUFFER REPLACEMENT |                 |
| Site No.                        | Station<br>(From/To)<br>6214 | Structure<br>Size / Type | TYPE             |        |                    | ALLOWABLE       |                 |                | MITIGABLE       |                 |                |                    |                 |
|                                 |                              |                          | ROAD<br>CROSSING | BRIDGE | PARALLEL<br>IMPACT | ZONE 1<br>(ft²) | ZONE 2<br>(ft²) | TOTAL<br>(ft²) | ZONE 1<br>(ft²) | ZONE 2<br>(ft²) | TOTAL<br>(ft²) | ZONE 1<br>(ft²)    | ZONE 2<br>(ft²) |
|                                 |                              |                          |                  |        |                    |                 |                 |                |                 |                 |                |                    |                 |
|                                 |                              |                          |                  |        |                    |                 |                 |                |                 |                 |                |                    |                 |
|                                 |                              |                          |                  |        |                    |                 |                 |                |                 |                 |                |                    |                 |
|                                 |                              |                          |                  |        |                    |                 |                 |                |                 |                 |                |                    |                 |
| BUFFER SUM 1                    |                              |                          |                  |        |                    | 67756           | 28465           | 96221          | 571             |                 | 571            |                    |                 |
| BUFFER SUM 2                    |                              |                          |                  |        |                    | 61822           | 38846           | 100668         |                 |                 |                |                    |                 |
|                                 |                              |                          |                  |        |                    |                 |                 |                |                 |                 |                |                    |                 |
|                                 |                              |                          |                  |        |                    |                 |                 |                |                 |                 |                |                    |                 |
|                                 |                              |                          |                  |        |                    |                 |                 |                |                 |                 |                |                    |                 |
|                                 |                              |                          |                  |        |                    |                 |                 |                |                 |                 |                |                    |                 |
|                                 |                              |                          |                  |        |                    |                 |                 |                |                 |                 |                |                    |                 |
|                                 |                              |                          |                  |        |                    |                 |                 |                |                 |                 |                |                    |                 |
|                                 |                              |                          |                  |        |                    |                 |                 |                |                 |                 |                |                    |                 |
|                                 |                              |                          |                  |        |                    |                 |                 |                |                 |                 |                |                    |                 |
|                                 |                              |                          |                  |        |                    |                 |                 |                |                 |                 |                |                    |                 |
|                                 |                              |                          |                  |        |                    |                 |                 |                |                 |                 |                |                    |                 |
|                                 |                              |                          |                  |        |                    |                 |                 |                |                 |                 |                |                    |                 |
|                                 |                              |                          |                  |        |                    |                 |                 |                |                 |                 |                |                    |                 |
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|                                 |                              |                          |                  |        |                    |                 |                 |                |                 |                 |                |                    |                 |
|                                 |                              |                          |                  |        |                    |                 |                 |                |                 |                 |                |                    |                 |
|                                 |                              |                          |                  |        |                    |                 |                 |                |                 |                 |                |                    |                 |
| I-3306A PROJECT TOTALS*:        |                              |                          |                  |        |                    | 129578          | 67311           | 196889         | 571             | 0               | 571            | 0                  | 0               |

NOTES:

NC DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
MAY 2022  
ORANGE COUNTY  
TIP I-3360A  
STATE PROJ. # 34178.3.GV3  
SHEET 36 OF 39

## WETLANDS IN BUFFER IMPACTS SUMMARY

|          |                   |  | WETLANDS IN BUFFERS |        |
|----------|-------------------|--|---------------------|--------|
| SITE NO. | STATION (FROM/TO) |  | ZONE 1              | ZONE 2 |
|          |                   |  | (ft²)               | (ft²)  |
| 1        | 125+00 -L-RT      |  | 69                  | 268    |
| 2B       | 49+50 -YFLYA- LT  |  | 544                 | 1136   |
| 3B       | 145+67 -L- RT     |  | 465                 | 434    |
| 3B       | 29+50 -YFLYB- RT  |  | 470                 | 132    |
| 4A       | 32+00 -YFLYA- RT  |  | 752                 | 14     |
| 7A       | 29+15 -Y2- LT     |  | 4247                | 91     |
| 7B       | 29+15 -Y2- RT     |  | 2330                | 1345   |
|          |                   |  |                     |        |
|          |                   |  |                     |        |
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|          |                   |  |                     |        |
| TOTAL:   |                   |  | 8877                | 3420   |

NC DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
MAY 2022  
ORANGE COUNTY  
TIP I-3306  
STATE PROJ. # 34178.3.GV3  
SHEET 37 OF 39

WETLANDS IN BUFFER IMPACTS SUMMARY

|          |                   |  | WETLANDS IN BUFFERS       |                           |
|----------|-------------------|--|---------------------------|---------------------------|
| SITE NO. | STATION (FROM/TO) |  | ZONE 1 (ft <sup>2</sup> ) | ZONE 2 (ft <sup>2</sup> ) |
|          |                   |  |                           |                           |
| 16B      | 231+00 -L- LT     |  | 396                       | 178                       |
| 19A      | 305+00 -L- LT     |  | 692                       | 515                       |
| 25A      | 399+00 -L- LT     |  | 318                       | 133                       |
| 28B      | 470+00 -L-        |  | 1117                      | 496                       |
| 30B      | 510+00 -L- RT     |  |                           | 30                        |
|          |                   |  |                           |                           |
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|          |                   |  |                           |                           |
|          |                   |  |                           |                           |
|          |                   |  |                           |                           |
| TOTAL:   |                   |  | 2523                      | 1352                      |

NC DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
MAY 2022  
ORANGE COUNTY  
TIP I-3306A  
STATE PROJ. # 34178.3.GV3  
SHEET 38 OF 39



## WETLANDS IN BUFFER IMPACTS SUMMARY

|              |                   |  | WETLANDS IN BUFFERS       |                           |
|--------------|-------------------|--|---------------------------|---------------------------|
| SITE NO.     | STATION (FROM/TO) |  | ZONE 1 (ft <sup>2</sup> ) | ZONE 2 (ft <sup>2</sup> ) |
|              |                   |  |                           |                           |
| BUFFER SUM 1 |                   |  | 8877                      | 3420                      |
| BUFFER SUM 2 |                   |  | 2523                      | 1352                      |
|              |                   |  |                           |                           |
|              |                   |  |                           |                           |
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|              |                   |  |                           |                           |
|              |                   |  |                           |                           |
| TOTAL:       |                   |  | 11400                     | 4772                      |

NC DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
MAY 2022  
ORANGE COUNTY  
TIP I-3306A  
STATE PROJ. # 34178.3.GV3  
SHEET 39 OF 39

NC DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
MAY 2022  
ORANGE COUNTY  
TIP I-3306A  
STATE PROJ. # 34178.3.GV3  
SHEET 39 OF 39

NC DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
MAY 2022  
ORANGE COUNTY  
TIP I-3306A  
STATE PROJ. # 34178.3.GV3  
SHEET 39 OF 39

NC DEPARTMENT OF TRANSPORTATION  
DIVISION OF HIGHWAYS  
MAY 2022  
ORANGE COUNTY  
TIP I-3306A  
STATE PROJ. # 34178.3.GV3  
SHEET 39 OF 39

# Historic Properties

18-10-0037  
Addendum

# NO NATIONAL REGISTER OF HISTORIC PLACES ELIGIBLE OR LISTED ARCHAEOLOGICAL SITES PRESENT FORM



This form only pertains to ARCHAEOLOGICAL RESOURCES for this project. It is not valid for Historic Architecture and Landscapes. You must consult separately with the Historic Architecture and Landscapes Group.

## PROJECT INFORMATION

Project No: **I-3306A** County: **Orange**  
 WBS No: 34178.1.3 Document: **PCE**  
 F.A. No: **IMS-040-4(148)259** Funding: ☐ State ☒ Federal  
 Federal Permit Required? ☒ Yes ☐ No Permit Type: **FHWA and USACE**

### Project Description:

The project calls for the addition of travel lanes in each direction along I-40 in Orange County. A "No National Register of Historic Places Eligible or Listed Archaeological Sites Present or Affect" form was submitted on February 11, 2013 for the original APE. The current addendum covers property along NC 86 at Exit 266 on I-40 for improvements to the interchange. The APE for the addendum encompasses three locations in the northeast, northwest, and southwest quadrants. The northeast location measures approximately 2,000 feet (609.6 m) north-south by 270 to 465 feet (82.3 to 141.73 m) east-west covering 17.5 acres. The northwest location measures approximately 790 feet (240.79 m) north-south by 1,125 feet (342.9 m) east-west covering 14 acres. Lastly, the southwest location extends approximately 1,670 feet (509.02 m) north-south along NC 86 from on-ramp and extends as much as 550 feet (167.64 m) east-west covering 18 acres.

## SUMMARY OF ARCHAEOLOGICAL FINDINGS

*The North Carolina Department of Transportation (NCDOT) Archaeology Group reviewed the subject project and determined:*

- ☒ There are no National Register listed or eligible ARCHAEOLOGICAL SITES present within the project's area of potential effects. (Attach any notes or documents as needed)
- ☐ No subsurface archaeological investigations were required for this project.
- ☐ Subsurface investigations did not reveal the presence of any archaeological resources.
- ☒ Subsurface investigations did not reveal the presence of any archaeological resources considered eligible for the National Register.
- ☒ All identified archaeological sites located within the APE have been considered and all compliance for archaeological resources with Section 106 of the National Historic Preservation Act and GS 121-12(a) has been completed for this project.

**SUMMARY OF CULTURAL RESOURCES REVIEW*****Brief description of review activities, results of review, and conclusions:***

NCDOT has carried out further archaeological investigations for the proposed improvements to I-40 in Orange County, North Carolina, along NC 86 at Exit 266. The project area is located on the northside of Chapel Hill and plotted in the northern half of the Chapel Hill USGS 7.5' topographic quadrangle (Figure 1). This PA form is an addendum to the earlier "No national Register of Historic Places Eligible or Listed Archaeological Sites Present or Affect" form, which was submitted on February 11, 2013.

**Background Research**

A new site files search was conducted at the Office of State Archaeology (OSA) on November 29, 2018. No known archaeological sites are located within or adjacent to the APE. However, the project area was included in 1978 investigations for the proposed route of I-40 (McCabe et al. 1978). These investigations involved sample testing in areas that provided easy accessibility, good surface visibility, and a high probability for sites. Field work consisted mostly of a pedestrian survey supplemented with shovel tests (STs) and shovel scraping. It appears that only a very small portion of the properties in the northwest and southwest quadrants were covered under this former investigation yielding negative results.

According to the North Carolina State Historic Preservation Office online data base (HPOWEB 2018), there are no known historic architectural resources within the APE's addendum that may yield intact archaeological deposits.

A review of NCDOT aerial imagery from 1960 to 1992 provided no significant information (NCDOT Photogrammetry Unit 2019). Roads for the residential properties in the southwestern location appear first on the 1977 aerial with houses showing on the later 1980 photos. The northern two locations are forested on these early aerials, but photos from 1986 has the northwest location cleared and cultivated. I-40 is also seen under construction on the 1986 images, but disturbance appears to be limited to the current right-of-way. The northwest location is still opened in the 1992 photos with the current pine plantation being planted likely soon after.

County and regional maps provide no significant information for either the project area or vicinity.

The USDA soil survey map for Orange County shows the APE consisting of Enon loam (EnC), Georgeville silt loam (GeB, GeC), and Lloyd clay loam (HwB) (USDA NRCS 2018). These soils are found on ridges and hillsides between drainageways. They are well drained with a slope of less than 12 percent. The current investigations found soil erosion as an issue with a gully on the ridges and wash-outs towards the base of hillsides (Figure 2). Exposed rocks at the surface are present as well (Figure 3). The pine plantation in the northwest location also suffers from severe erosion.

**Fieldwork Results**

The archaeological field reconnaissance and survey for the proposed I-3306A APE addendum was carried out on March 13 and 20, 2019. This included systematic shovel testing at 30- and 60-meter (ca. 98 and 197 ft) intervals. Areas with less disturb soils were tested at 30-m intervals, while those areas that showed little integrity were tested at a greater distance. Due to poor surface visibility, a pedestrian survey could not be conducted. No shovel testing occurred in areas with obvious disturbance, which included gullies, wash-outs, and expanses that had been graded/cut for residential or urban development. A total of 43 shovel tests (STs) were initially excavated of which one was positive for precontact lithic flake (Figure 4). Four additional STs were excavated at 15-m (ca. 49 ft) intervals in order to delineate the site within the project



limits. No shovel tests were placed outside of the APE, since this area will not be impacted. The archaeological find was recorded as site 31OR684.

The three APE locations are situated on a northern sloping ridge with gentle hillsides (see Figure 4). The project area is broken up by NC 86 running north-south and I-40 traveling east-west. Tributaries found to the east and west of the ridge, while Old Field Creek is to the north. These waterways are part of the Cape Fear drainage basin. The project area locations are primarily forested. The northeast location appears to be the least disturbed, but it appears to have been timber harvested on some point in the past. Soil have been altered at the southern end from the relocation of SR 1730 (Whitfield Road) during the construction of I-40. In the forest, an old drive/road/trail is present (see Figure 2). The trail has been gulled by soil erosion as it leads to Old Field Creek. This has also contributed to a large wash-out at the base of the hillside. The northwest location consists of a pine plantation that was planted after 1992 (Figure 5). Although disturbance appear minimal, soils were not consistent. Tests along the northern slope yielded subsoil at the surface, and those at the southern end contained a thick deposit of fill. Tests in the middle showed a plowzone that was almost indistinguishable from the subsoil suggesting that the original surface eroded away during exposure. Lastly, the southwest location contains forested residential lots. These lots seem to have been graded as larger push piles of stone and soil are found on the backside of the properties. The three excavated shovel tests showed a thin mottle surface layer followed by subsoil. A powerline corridor also bisects the location with buried utilities scattered throughout. North Chapel Hill Baptist Church is located adjacent to NC 86 and contains a cemetery (Figure 6). The cemetery was established in 1922 as McDuffie Memorial Baptist Church. There are at least 96 marked graves and possibly two unmarked according to findagrave.com. The cemetery is recommended for avoided, but if impacts are to occur then all work needs to comply with North Carolina State laws (G.S. 65 and 70).

The soil stratigraphy is generally comprised of two strata. In the northeast location, the surface layer is a brown (7.5YR 4/4) or strong brown (7.5YR 5/6) silty clay loam that ranges from 5 to 30 cm thick. It is followed by a yellowish red (5YR 4/6) silty clay, which is subsoil. In the northwest, the surface layer or plowzone is a reddish brown (5YR 4/4) silty clay loam that may be as much as 40 cm thick in places. Subsoil where this top layer is present is also a reddish brown but is composed of a silty clay. As previously mentioned, however, this top layer is missing along the slopes with yellowish red (7.5YR 5/6) silty clay subsoil at the surface. Those shovel test near I-40 and the ramp contain over 50 cm of fill covering subsoil. Finally, the southwest location has a 5 cm thick top layer of strong brown (7.5YR 4/6) silty clay loam mottled with yellowish red (5YR 4/6). Below this is subsoil of yellowish red silty clay.

### 31OR684

Site 31OR684 is a precontact isolated artifact occurrence. A metavolcanics tertiary flake (mearing 1 to 2 cm long) was recovered from the upper 20 cm of the surface layer at ST# 20. The site is situated on the ridge top approximately 280 meters southwest of an unnamed tributary of Old Field Creek. Four negative delineation STs at 15-m interval bound the site (Figure 7). The artifact likely represents discarded material from a very short-term occupation. However, it is possible that additional artifacts may be present along the ridge towards the northeast and east, outside of the project limits. Due to the lack of any diagnostic resources, the site cannot be dated to any particular precontact period.

31OR684 lacks the potential to yield important information regarding the precontact occupation of the region. The artifact was recovered in a disturbed context with no other materials. Intact deposits are not unlikely. As a result, site 31OR684 is recommended not eligible for the National Register, and no further work is required within the APE.

|                        |
|------------------------|
| 18-10-0037<br>Addendum |
|------------------------|

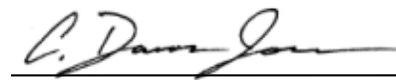
### Summary and Recommendations

The archeological investigations for the proposed improvements to I-40 in Orange County, North Carolina, along NC 86 at Exit 266 identified no significant archaeological resources within the APE. Although one site (31OR684) was recorded, it was determined not eligible for the National Register due a lack of additional artifact and no vertical or horizontal integrity. Therefore, this site would not contribute any new or important information. No further archaeological work is recommended for this road improvement project. However, if design plans change to impact areas outside of the archaeological APE, then further consultation might be necessary. Any impacts to the North Chapel Hill Baptist Church will need to be in compliance with G.S. 65 and 70. This current PA form is an addendum to the original "No National Register of Historic Places Eligible or Listed Archaeological Sites Present or Affect" form submitted on February 11, 2013. The original form is still valid in conjunction with the current addendum.

Please note that this project falls with a North Carolina County in which the Federally recognized Catawba Nation and the NC State recognized Occaneechi Band have expressed an interest. It is recommended that you contact each federal agency involved with your project to determine their Section 106 Tribal consultation requirements.

### SUPPORT DOCUMENTATION

See attached: ☒ Map(s)    ☐ Previous Survey Info    ☒ Photos    ☐ Correspondence  
Signed:



**C. Damon Jones**  
NCDOT ARCHAEOLOGIST

3/28/19

**Date**

## REFERENCES CITED

## HPOWEB

2019 North Carolina State Historic Preservation Office GIS Web Service.  
<http://gisNCDCCR.gov/hpoweb/>. Accessed March 22, 2019.

McCabe, J. Terrence, Thomas Hargrove, and Jerry Cross

1978 *I-40 Extension: A Cultural Resource Reconnaissance Survey of the Proposed Interstate 40 Extension, Durham and Orange Counties, North Carolina*. Archaeology Branch, Division of Archives and History, North Carolina Department of Cultural Resources. Submitted to the North Carolina Department of Transportation, Raleigh.

## NCDOT Photogrammetry Unit

2019 NCDOT Historic Aerial Imagery Index. Available online at  
<https://ncdot.maps.arcgis.com/home/item.html?id=91e02b76dce4470ebd7ec240ad202a04>.  
Accessed January 25, 2019.

## United States Department of Agriculture Natural Resources Conservation Services (USDA NRCS)

2019 Orange County Soil Survey. Available online at  
<http://webosilsurvey.nrcs.usda.gov/app/>. Accessed March 22, 2019.

## United States Geological Survey (USGS)

2013 Chapel Hill, North Carolina, 7.5-minute quadrangle map.



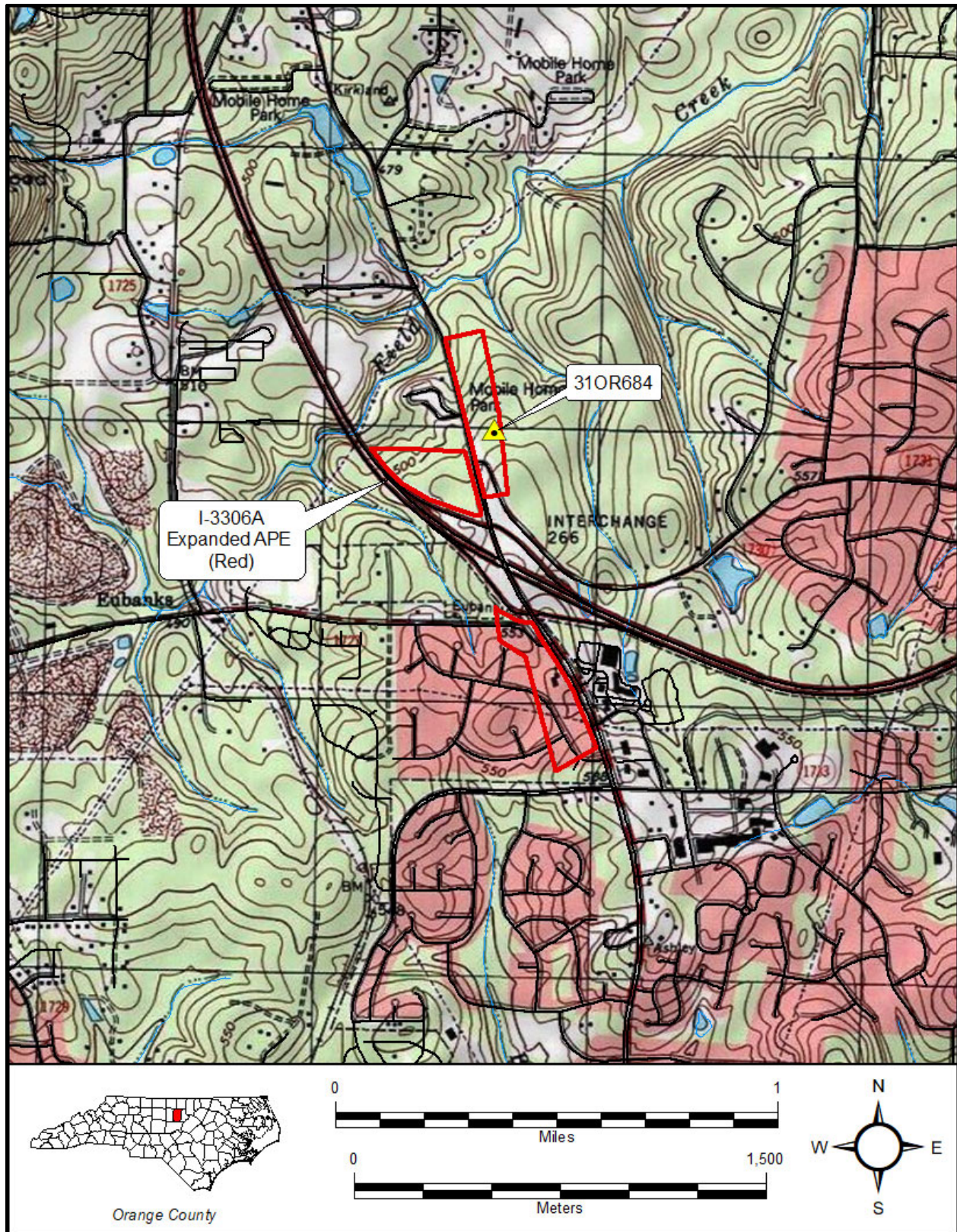


Figure 1. Topographic Setting of the Project Area and location of 31OR684, Chapel Hill (2013), NC, USGS 7.5' Topographic Quadrangle.





Figure 2. View of the gully along the ridge in the northeastern location that likely resulted from use as a private drive, road, or trail, looking west.



Figure 3. View of exposed rocks at the surface in the northeastern location.



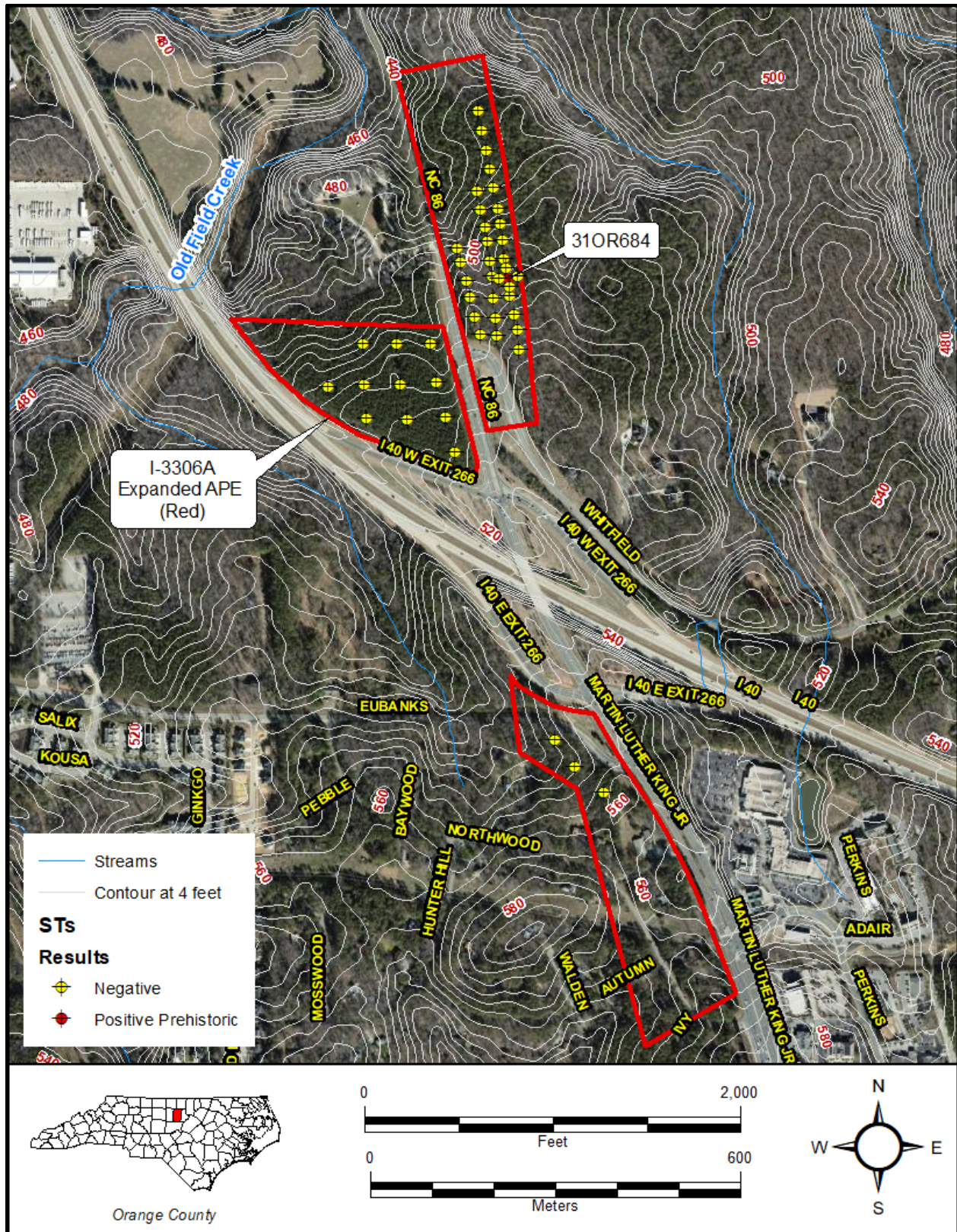


Figure 4. Aerial View of the project area showing contours, development, and ST placement.





Figure 5. View of pine plantation in the northwest location, looking north.



Figure 6. View of North Chapel Hill Baptist Church Cemetery, looking south.



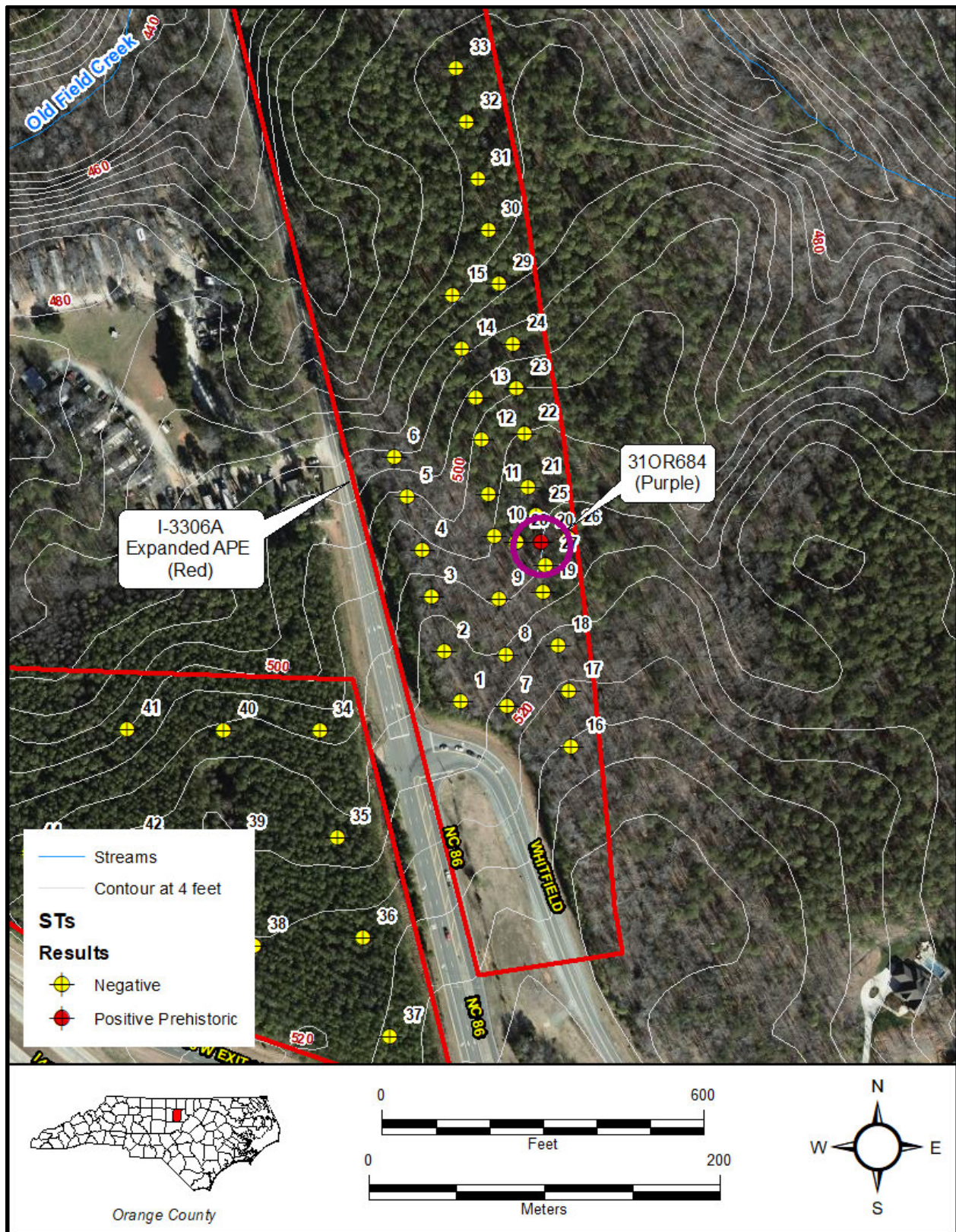


Figure 7. Site Map of 31OR684.



# Historic Archaeology

18-10-0037  
Addendum

# NO NATIONAL REGISTER OF HISTORIC PLACES ELIGIBLE OR LISTED ARCHAEOLOGICAL SITES PRESENT FORM



This form only pertains to ARCHAEOLOGICAL RESOURCES for this project. It is not valid for Historic Architecture and Landscapes. You must consult separately with the Historic Architecture and Landscapes Group.

## PROJECT INFORMATION

Project No: **I-3306A** County: **Orange**  
 WBS No: 34178.1.3 Document: **PCE**  
 F.A. No: **IMS-040-4(148)259** Funding: ☐ State ☒ Federal  
 Federal Permit Required? ☒ Yes ☐ No Permit Type: **FHWA and USACE**

### Project Description:

The project calls for the addition of travel lanes in each direction along I-40 in Orange County. A "No National Register of Historic Places Eligible or Listed Archaeological Sites Present or Affect" form was submitted on February 11, 2013 for the original APE. The current addendum covers property along NC 86 at Exit 266 on I-40 for improvements to the interchange. The APE for the addendum encompasses three locations in the northeast, northwest, and southwest quadrants. The northeast location measures approximately 2,000 feet (609.6 m) north-south by 270 to 465 feet (82.3 to 141.73 m) east-west covering 17.5 acres. The northwest location measures approximately 790 feet (240.79 m) north-south by 1,125 feet (342.9 m) east-west covering 14 acres. Lastly, the southwest location extends approximately 1,670 feet (509.02 m) north-south along NC 86 from on-ramp and extends as much as 550 feet (167.64 m) east-west covering 18 acres.

## SUMMARY OF ARCHAEOLOGICAL FINDINGS

*The North Carolina Department of Transportation (NCDOT) Archaeology Group reviewed the subject project and determined:*

- ☒ There are no National Register listed or eligible ARCHAEOLOGICAL SITES present within the project's area of potential effects. (Attach any notes or documents as needed)
- ☐ No subsurface archaeological investigations were required for this project.
- ☐ Subsurface investigations did not reveal the presence of any archaeological resources.
- ☒ Subsurface investigations did not reveal the presence of any archaeological resources considered eligible for the National Register.
- ☒ All identified archaeological sites located within the APE have been considered and all compliance for archaeological resources with Section 106 of the National Historic Preservation Act and GS 121-12(a) has been completed for this project.

**SUMMARY OF CULTURAL RESOURCES REVIEW*****Brief description of review activities, results of review, and conclusions:***

NCDOT has carried out further archaeological investigations for the proposed improvements to I-40 in Orange County, North Carolina, along NC 86 at Exit 266. The project area is located on the northside of Chapel Hill and plotted in the northern half of the Chapel Hill USGS 7.5' topographic quadrangle (Figure 1). This PA form is an addendum to the earlier "No national Register of Historic Places Eligible or Listed Archaeological Sites Present or Affect" form, which was submitted on February 11, 2013.

**Background Research**

A new site files search was conducted at the Office of State Archaeology (OSA) on November 29, 2018. No known archaeological sites are located within or adjacent to the APE. However, the project area was included in 1978 investigations for the proposed route of I-40 (McCabe et al. 1978). These investigations involved sample testing in areas that provided easy accessibility, good surface visibility, and a high probability for sites. Field work consisted mostly of a pedestrian survey supplemented with shovel tests (STs) and shovel scraping. It appears that only a very small portion of the properties in the northwest and southwest quadrants were covered under this former investigation yielding negative results.

According to the North Carolina State Historic Preservation Office online data base (HPOWEB 2018), there are no known historic architectural resources within the APE's addendum that may yield intact archaeological deposits.

A review of NCDOT aerial imagery from 1960 to 1992 provided no significant information (NCDOT Photogrammetry Unit 2019). Roads for the residential properties in the southwestern location appear first on the 1977 aerial with houses showing on the later 1980 photos. The northern two locations are forested on these early aerials, but photos from 1986 has the northwest location cleared and cultivated. I-40 is also seen under construction on the 1986 images, but disturbance appears to be limited to the current right-of-way. The northwest location is still opened in the 1992 photos with the current pine plantation being planted likely soon after.

County and regional maps provide no significant information for either the project area or vicinity.

The USDA soil survey map for Orange County shows the APE consisting of Enon loam (EnC), Georgeville silt loam (GeB, GeC), and Lloyd clay loam (HwB) (USDA NRCS 2018). These soils are found on ridges and hillsides between drainageways. They are well drained with a slope of less than 12 percent. The current investigations found soil erosion as an issue with a gully on the ridges and wash-outs towards the base of hillsides (Figure 2). Exposed rocks at the surface are present as well (Figure 3). The pine plantation in the northwest location also suffers from severe erosion.

**Fieldwork Results**

The archaeological field reconnaissance and survey for the proposed I-3306A APE addendum was carried out on March 13 and 20, 2019. This included systematic shovel testing at 30- and 60-meter (ca. 98 and 197 ft) intervals. Areas with less disturb soils were tested at 30-m intervals, while those areas that showed little integrity were tested at a greater distance. Due to poor surface visibility, a pedestrian survey could not be conducted. No shovel testing occurred in areas with obvious disturbance, which included gullies, wash-outs, and expanses that had been graded/cut for residential or urban development. A total of 43 shovel tests (STs) were initially excavated of which one was positive for precontact lithic flake (Figure 4). Four additional STs were excavated at 15-m (ca. 49 ft) intervals in order to delineate the site within the project

limits. No shovel tests were placed outside of the APE, since this area will not be impacted. The archaeological find was recorded as site 31OR684.

The three APE locations are situated on a northern sloping ridge with gentle hillsides (see Figure 4). The project area is broken up by NC 86 running north-south and I-40 traveling east-west. Tributaries found to the east and west of the ridge, while Old Field Creek is to the north. These waterways are part of the Cape Fear drainage basin. The project area locations are primarily forested. The northeast location appears to be the least disturbed, but it appears to have been timber harvested on some point in the past. Soil have been altered at the southern end from the relocation of SR 1730 (Whitfield Road) during the construction of I-40. In the forest, an old drive/road/trail is present (see Figure 2). The trail has been gulled by soil erosion as it leads to Old Field Creek. This has also contributed to a large wash-out at the base of the hillside. The northwest location consists of a pine plantation that was planted after 1992 (Figure 5). Although disturbance appear minimal, soils were not consistent. Tests along the northern slope yielded subsoil at the surface, and those at the southern end contained a thick deposit of fill. Tests in the middle showed a plowzone that was almost indistinguishable from the subsoil suggesting that the original surface eroded away during exposure. Lastly, the southwest location contains forested residential lots. These lots seem to have been graded as larger push piles of stone and soil are found on the backside of the properties. The three excavated shovel tests showed a thin mottle surface layer followed by subsoil. A powerline corridor also bisects the location with buried utilities scattered throughout. North Chapel Hill Baptist Church is located adjacent to NC 86 and contains a cemetery (Figure 6). The cemetery was established in 1922 as McDuffie Memorial Baptist Church. There are at least 96 marked graves and possibly two unmarked according to findagrave.com. The cemetery is recommended for avoided, but if impacts are to occur then all work needs to comply with North Carolina State laws (G.S. 65 and 70).

The soil stratigraphy is generally comprised of two strata. In the northeast location, the surface layer is a brown (7.5YR 4/4) or strong brown (7.5YR 5/6) silty clay loam that ranges from 5 to 30 cm thick. It is followed by a yellowish red (5YR 4/6) silty clay, which is subsoil. In the northwest, the surface layer or plowzone is a reddish brown (5YR 4/4) silty clay loam that may be as much as 40 cm thick in places. Subsoil where this top layer is present is also a reddish brown but is composed of a silty clay. As previously mentioned, however, this top layer is missing along the slopes with yellowish red (7.5YR 5/6) silty clay subsoil at the surface. Those shovel test near I-40 and the ramp contain over 50 cm of fill covering subsoil. Finally, the southwest location has a 5 cm thick top layer of strong brown (7.5YR 4/6) silty clay loam mottled with yellowish red (5YR 4/6). Below this is subsoil of yellowish red silty clay.

### 31OR684

Site 31OR684 is a precontact isolated artifact occurrence. A metavolcanics tertiary flake (mearing 1 to 2 cm long) was recovered from the upper 20 cm of the surface layer at ST# 20. The site is situated on the ridge top approximately 280 meters southwest of an unnamed tributary of Old Field Creek. Four negative delineation STs at 15-m interval bound the site (Figure 7). The artifact likely represents discarded material from a very short-term occupation. However, it is possible that additional artifacts may be present along the ridge towards the northeast and east, outside of the project limits. Due to the lack of any diagnostic resources, the site cannot be dated to any particular precontact period.

31OR684 lacks the potential to yield important information regarding the precontact occupation of the region. The artifact was recovered in a disturbed context with no other materials. Intact deposits are not unlikely. As a result, site 31OR684 is recommended not eligible for the National Register, and no further work is required within the APE.



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|------------------------|
| 18-10-0037<br>Addendum |
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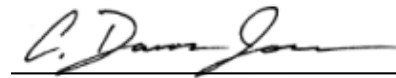
### Summary and Recommendations

The archeological investigations for the proposed improvements to I-40 in Orange County, North Carolina, along NC 86 at Exit 266 identified no significant archaeological resources within the APE. Although one site (31OR684) was recorded, it was determined not eligible for the National Register due a lack of additional artifact and no vertical or horizontal integrity. Therefore, this site would not contribute any new or important information. No further archaeological work is recommended for this road improvement project. However, if design plans change to impact areas outside of the archaeological APE, then further consultation might be necessary. Any impacts to the North Chapel Hill Baptist Church will need to be in compliance with G.S. 65 and 70. This current PA form is an addendum to the original "No National Register of Historic Places Eligible or Listed Archaeological Sites Present or Affect" form submitted on February 11, 2013. The original form is still valid in conjunction with the current addendum.

Please note that this project falls with a North Carolina County in which the Federally recognized Catawba Nation and the NC State recognized Occaneechi Band have expressed an interest. It is recommended that you contact each federal agency involved with your project to determine their Section 106 Tribal consultation requirements.

### SUPPORT DOCUMENTATION

See attached: ☒ Map(s)    ☐ Previous Survey Info    ☒ Photos    ☐ Correspondence  
Signed:



**C. Damon Jones**  
NCDOT ARCHAEOLOGIST

3/28/19

**Date**

## REFERENCES CITED

## HPOWEB

2019 North Carolina State Historic Preservation Office GIS Web Service.  
<http://gisNCDCCR.gov/hpoweb/>. Accessed March 22, 2019.

McCabe, J. Terrence, Thomas Hargrove, and Jerry Cross

1978 *I-40 Extension: A Cultural Resource Reconnaissance Survey of the Proposed Interstate 40 Extension, Durham and Orange Counties, North Carolina*. Archaeology Branch, Division of Archives and History, North Carolina Department of Cultural Resources. Submitted to the North Carolina Department of Transportation, Raleigh.

## NCDOT Photogrammetry Unit

2019 NCDOT Historic Aerial Imagery Index. Available online at  
<https://ncdot.maps.arcgis.com/home/item.html?id=91e02b76dce4470ebd7ec240ad202a04>.  
Accessed January 25, 2019.

## United States Department of Agriculture Natural Resources Conservation Services (USDA NRCS)

2019 Orange County Soil Survey. Available online at  
<http://webosilsurvey.nrcs.usda.gov/app/>. Accessed March 22, 2019.

## United States Geological Survey (USGS)

2013 Chapel Hill, North Carolina, 7.5-minute quadrangle map.



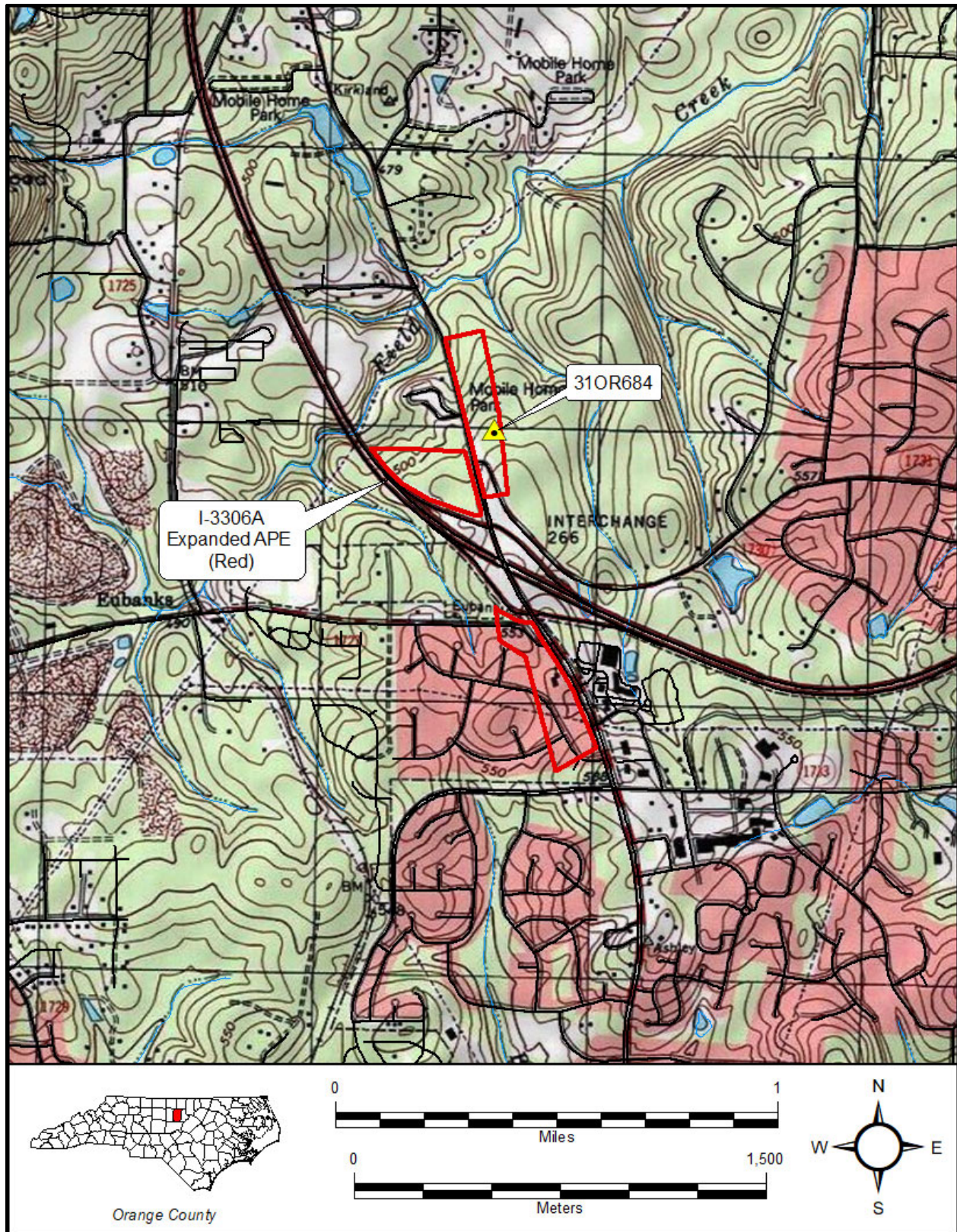


Figure 1. Topographic Setting of the Project Area and location of 31OR684, Chapel Hill (2013), NC, USGS 7.5' Topographic Quadrangle.





Figure 2. View of the gully along the ridge in the northeastern location that likely resulted from use as a private drive, road, or trail, looking west.



Figure 3. View of exposed rocks at the surface in the northeastern location.



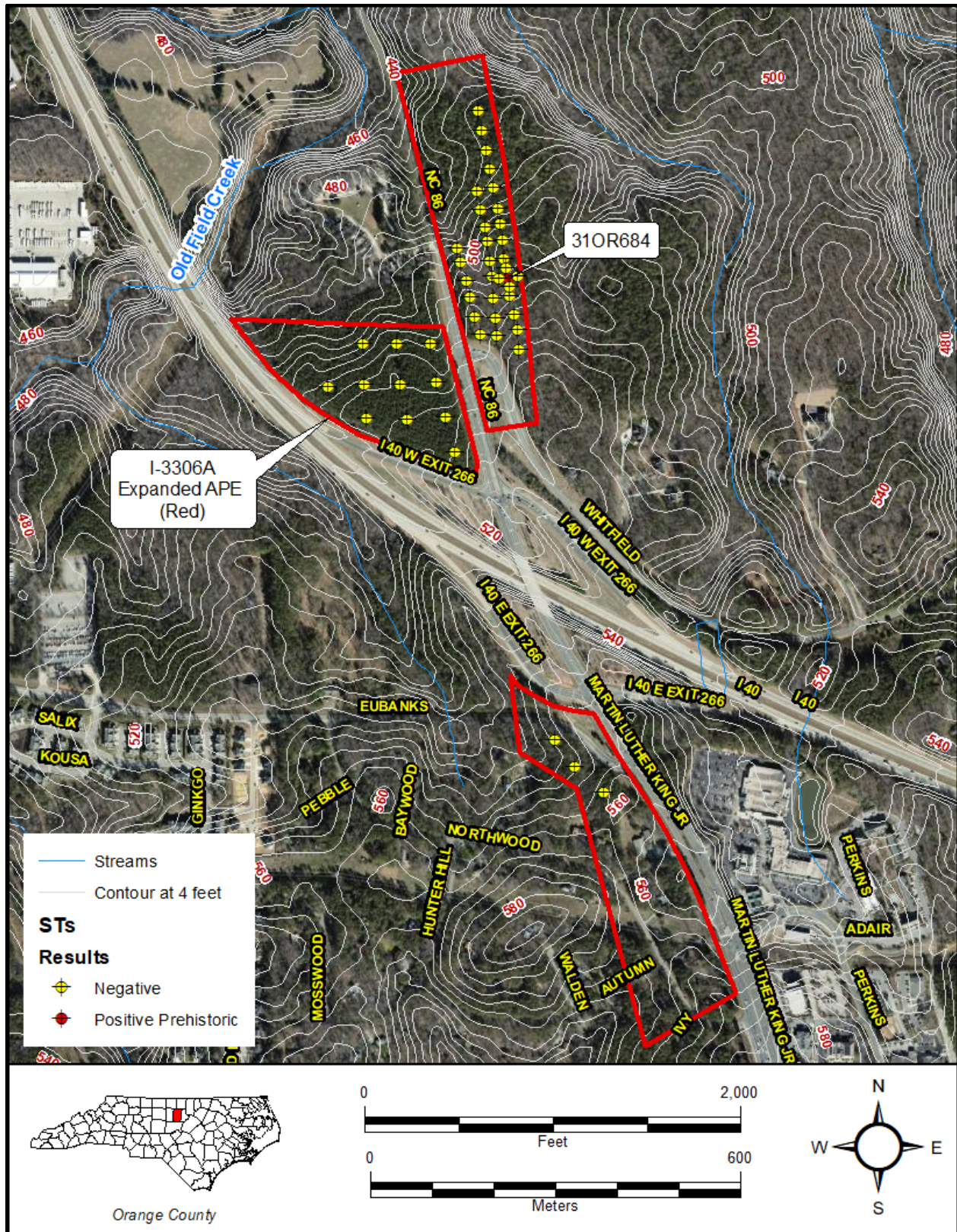


Figure 4. Aerial View of the project area showing contours, development, and ST placement.





Figure 5. View of pine plantation in the northwest location, looking north.



Figure 6. View of North Chapel Hill Baptist Church Cemetery, looking south.



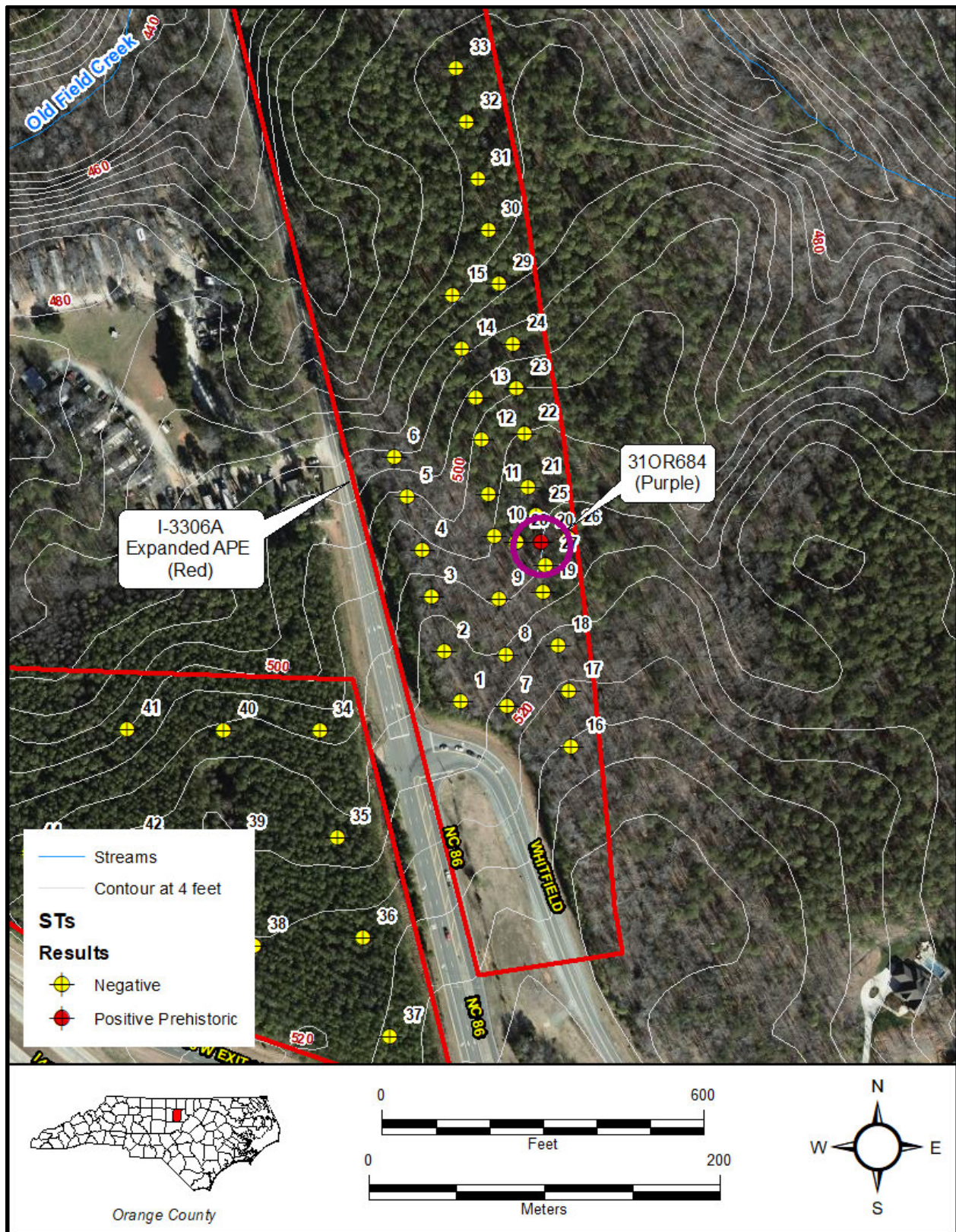


Figure 7. Site Map of 31OR684.