



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PATRICK L. MCCRORY
GOVERNOR

ANTHONY J. TATA
SECRETARY

February 1, 2013

U.S. Army Corps of Engineers
Asheville Regulatory Field Office
151 Patton Avenue, Room 208
Asheville, NC 28801-5006

ATTN: Ms. Sarah Elizabeth Hair
NCDOT Coordinator

SUBJECT: **Application for Section 404 Nationwide Permit 13 and 33** for the proposed widening of I-485 (Charlotte Outer Loop) from I-77 to SR 3642 (Rea Road) south of Charlotte in Mecklenburg County, Federal Aid Project No. IMNHF-0485(8), Division 10, WBS Element No. 39929.1.1, TIP No. R-4902

Dear Madam:

The North Carolina Department of Transportation (NCDOT) proposes to widen approximately 8.2 miles of I-485 (Charlotte Outer Loop) from I-77 to SR 3624 (Rea Road), to a basic six-lane divided facility. The majority of the proposed improvements would occur to the median side of the existing facility. There will be 24 linear feet (<0.01 acre) of permanent stream impacts from the installation of six piers for bridge construction, 45 linear feet of bank stabilization, and approximately 251 linear feet (0.25 acre) of temporary stream impacts for placement of barges to be used to support equipment during bridge construction.

Please see enclosed copies of the Pre-construction Notification (PCN), Jurisdictional Determination, Minutes from the December 12, 2012 Interagency Meeting, stormwater management plan, permit drawings and design plans for the above reference project. The Categorical Exclusion (CE) was completed in July 2012 and distributed shortly thereafter.

MAILING ADDRESS:
NC DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT & ENVIRONMENTAL ANALYSIS UNIT
1598 MAIL SERVICE CENTER
RALEIGH NC 27699-1548

TELEPHONE: 919-707-6000
FAX: 919-212-5785
WEBSITE: NCDOT.GOV

LOCATION:
CENTURY CENTER, BUILDING B
1020 BIRCH RIDGE DRIVE
RALEIGH NC 27610

A copy of this permit application and its distribution list will be posted on the NCDOT Website at: <https://connect.ncdot.gov/resources/Environmental>. If you have any questions or need additional information, please call Erin Cheely at (919) 707-6108.

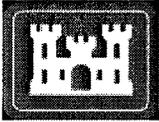
Sincerely,



for

Gregory J. Thorpe, Ph.D., Manager
Project Development and Environmental
Analysis Unit

Cc:
NCDOT Permit Application Standard Distribution List



Office Use Only:
 Corps action ID no. _____
 DWQ project no. _____
 Form Version 1.3 Dec 10 2008

Pre-Construction Notification (PCN) Form

A. Applicant Information

1. Processing

| | | |
|--|---|--|
| 1a. Type(s) of approval sought from the Corps: | <input checked="" type="checkbox"/> Section 404 Permit | <input type="checkbox"/> Section 10 Permit |
| 1b. Specify Nationwide Permit (NWP) number: 13 33 or General Permit (GP) number: | | |
| 1c. Has the NWP or GP number been verified by the Corps? | | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| 1d. Type(s) of approval sought from the DWQ (check all that apply): | | |
| <input type="checkbox"/> 401 Water Quality Certification – Regular <input type="checkbox"/> Non-404 Jurisdictional General Permit <input type="checkbox"/> 401 Water Quality Certification – Express <input type="checkbox"/> Riparian Buffer Authorization | | |
| 1e. Is this notification solely for the record because written approval is not required? | For the record only for DWQ 401 Certification: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | For the record only for Corps Permit: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| 1f. 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. | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| 1g. Is the project located in any of NC's twenty coastal counties. If yes, answer 1h below. | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| 1h. Is the project located within a NC DCM Area of Environmental Concern (AEC)? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |

2. Project Information

| | |
|---|---|
| 2a. Name of project: | I-485 (Charlotte Outer Loop) From I-77 to SR 3642 (Rea Road) South of Charlotte |
| 2b. County: | Mecklenburg |
| 2c. Nearest municipality / town: | Charlotte |
| 2d. Subdivision name: | <i>not applicable</i> |
| 2e. NCDOT only, T.I.P. or state project no: | R-4902 |

3. Owner Information

| | |
|--|---|
| 3a. Name(s) on Recorded Deed: | North Carolina Department of Transportation |
| 3b. Deed Book and Page No. | <i>not applicable</i> |
| 3c. Responsible Party (for LLC if applicable): | <i>not applicable</i> |
| 3d. Street address: | 1598 Mail Service Center |
| 3e. City, state, zip: | Raleigh, NC 27699-1598 |
| 3f. Telephone no.: | (919) 707-6108 |
| 3g. Fax no.: | (919) 212-5785 |
| 3h. Email address: | ekcheely@ncdot.gov |

| | |
|---|---|
| 4. Applicant Information (if different from owner) | |
| 4a. Applicant is: | <input type="checkbox"/> Agent <input type="checkbox"/> Other, specify: |
| 4b. Name: | <i>not applicable</i> |
| 4c. Business name (if applicable): | |
| 4d. Street address: | |
| 4e. City, state, zip: | |
| 4f. Telephone no.: | |
| 4g. Fax no.: | |
| 4h. Email address: | |
| 5. Agent/Consultant Information (if applicable) | |
| 5a. Name: | <i>not applicable</i> |
| 5b. Business name (if applicable): | |
| 5c. Street address: | |
| 5d. City, state, zip: | |
| 5e. Telephone no.: | |
| 5f. Fax no.: | |
| 5g. Email address: | |

| B. Project Information and Prior Project History | |
|---|--|
| 1. Property Identification | |
| 1a. Property identification no. (tax PIN or parcel ID): | <i>not applicable</i> |
| 1b. Site coordinates (in decimal degrees): | Latitude: 35.08848 (DD.DDDDDD) Longitude: - 80.87441 (-DD.DDDDDD) |
| 1c. Property size: | Project Study Area 732.2 acres |
| 2. Surface Waters | |
| 2a. Name of nearest body of water (stream, river, etc.) to proposed project: | McAlpine Creek, McMullen Creek, Little Sugar Creek, Sugar Creek, Kings Branch, Fourmile Creek |
| 2b. Water Quality Classification of nearest receiving water: | C |
| 2c. River basin: | Catawba |
| 3. Project Description | |
| 3a. Describe the existing conditions on the site and the general land use in the vicinity of the project at the time of this application: The project study area corridor is dominated by urban disturbed lands and mixed hardwood forest. The project vicinity is urban to suburban in nature. The project corridor, I-485 (Charlotte Outer Loop), is a six-lane divided facility (including auxiliary lanes) with three 12-foot lanes in each direction from I-77 to SR 3998 (South Boulevard). From SR 3998 to (SR 3624 (Rea Road), I-485 is a four-lane divided facility with two 12-foot lanes in each direction. | |
| 3b. List the total estimated acreage of all existing wetlands on the property: 4.35 acres within project study area. | |
| 3c. List the total estimated linear feet of all existing streams (intermittent and perennial) on the property: 14,891 linear feet within project study area. | |
| 3d. Explain the purpose of the proposed project: This segment of I-485 is one of the most congested freeways in the state of North Carolina. The purpose of this project is to increase system capacity and improve efficiency on I-485 (Charlotte Outer Loop) for local and regional traffic. | |
| 3e. Describe the overall project in detail, including the type of equipment to be used: The project will involve the widening of I-485 (Charlotte Outer Loop) from I-77 to SR 3624 (Rea Road) to a basic six-lane divided facility (approximately 8.2 miles). This involves the construction of one additional travel lane in each direction within the existing median. Additional improvements include the construction of a flyover structure at the US 521 (Johnston Road) interchange, a westbound auxiliary lane from US 521 (Johnston Road) to NC 51 (Pineville-Matthews Road), resurfacing of the existing outside shoulder of I-485 within project limits, widening of all existing structures within project limits except for the bridges over I-77, and installation of conduit for future travel information services (cameras and dynamic message signs). Standard road construction equipment, such as trucks, dozers, and cranes will be used. | |
| 4. Jurisdictional Determinations | |
| 4a. Have jurisdictional wetland or stream determinations by the Corps or State been requested or obtained for this property / project (including all prior phases) in the past? Comments: USACE Action ID 2011-00255 | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown |
| 4b. If the Corps made the jurisdictional determination, what type of determination was made? | <input type="checkbox"/> Preliminary <input checked="" type="checkbox"/> Final |
| 4c. If yes, who delineated the jurisdictional areas? Name (if known): ESI Staff | Agency/Consultant Company: ESI Other: |
| 4d. If yes, list the dates of the Corps jurisdictional determinations or State determinations and attach documentation. July 16, 2012 | |

| | |
|--|--|
| 5. Project History | |
| 5a. Have permits or certifications been requested or obtained for this project (including all prior phases) in the past? | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Unknown |
| 5b. If yes, explain in detail according to "help file" instructions. R-4902 is a new and distinct STIP project from the original construction of I-485. | |
| 6. Future Project Plans | |
| 6a. Is this a phased project? | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| 6b. If yes, explain. | |

| C. Proposed Impacts Inventory | | | | | | |
|--|--|---|---|---|--------------------------------------|------------------------------------|
| 1. Impacts Summary | | | | | | |
| 1a. Which sections were completed below for your project (check all that apply): | | | | | | |
| <input type="checkbox"/> Wetlands | | <input checked="" type="checkbox"/> Streams - tributaries | | <input type="checkbox"/> Buffers | | |
| <input type="checkbox"/> Open Waters | | <input type="checkbox"/> Pond Construction | | | | |
| 2. Wetland Impacts | | | | | | |
| If there are wetland impacts proposed on the site, then complete this question for each wetland area impacted. | | | | | | |
| 2a. Wetland impact number – Permanent (P) or Temporary (T) | 2b. Type of impact | 2c. Type of wetland (if known) | 2d. Forested | 2e. Type of jurisdiction (Corps - 404, 10 DWQ – non-404, other) | 2f. Area of impact (acres) | |
| Site 1 <input type="checkbox"/> P <input type="checkbox"/> T | | | <input type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> Corps <input type="checkbox"/> DWQ | | |
| Site 2 <input type="checkbox"/> P <input type="checkbox"/> T | | | <input type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> Corps <input type="checkbox"/> DWQ | | |
| Site 3 <input type="checkbox"/> P <input type="checkbox"/> T | | | <input type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> Corps <input type="checkbox"/> DWQ | | |
| Site 4 <input type="checkbox"/> P <input type="checkbox"/> T | | | <input type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> Corps <input type="checkbox"/> DWQ | | |
| Site 5 <input type="checkbox"/> P <input type="checkbox"/> T | | | <input type="checkbox"/> Yes <input type="checkbox"/> No | <input type="checkbox"/> Corps <input type="checkbox"/> DWQ | | |
| 2g. Total wetland impacts | | | | | 0 Permanent 0 Temporary | |
| 2h. Comments: | | | | | | |
| 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. | | | | | | |
| 3a. Stream impact number - Permanent (P) or Temporary (T) | 3b. Type of impact | 3c. Stream name | 3d. Perennial (PER) or intermittent (INT)? | 3e. Type of jurisdiction (Corps - 404, 10 DWQ – non-404, other) | 3f. Average stream width (feet) | 3g. Impact length (linear feet) |
| Site 1 <input type="checkbox"/> P <input checked="" type="checkbox"/> T | Barge Placement | Sugar Creek | <input checked="" type="checkbox"/> PER <input type="checkbox"/> INT | <input checked="" type="checkbox"/> Corps <input type="checkbox"/> DWQ | 20 | 75 Temp |
| Site 2 <input type="checkbox"/> P <input checked="" type="checkbox"/> T | Barge Placement | Little Sugar Creek | <input checked="" type="checkbox"/> PER <input type="checkbox"/> INT | <input checked="" type="checkbox"/> Corps <input type="checkbox"/> DWQ | 33 | 100 Temp |
| Site 3 <input checked="" type="checkbox"/> P <input checked="" type="checkbox"/> T | Barge Placement; Bank Stabilization | McMullen Creek | <input checked="" type="checkbox"/> PER <input type="checkbox"/> INT | <input checked="" type="checkbox"/> Corps <input type="checkbox"/> DWQ | 22 | 76 Temp 45 Perm |
| Site 4 <input type="checkbox"/> P <input type="checkbox"/> T | | | <input type="checkbox"/> PER <input type="checkbox"/> INT | <input type="checkbox"/> Corps <input type="checkbox"/> DWQ | | |
| Site 5 <input type="checkbox"/> P <input type="checkbox"/> T | | | <input type="checkbox"/> PER <input type="checkbox"/> INT | <input type="checkbox"/> Corps <input type="checkbox"/> DWQ | | |
| Site 6 <input type="checkbox"/> P <input type="checkbox"/> T | | | <input type="checkbox"/> PER <input type="checkbox"/> INT | <input type="checkbox"/> Corps <input type="checkbox"/> DWQ | | |
| 3h. Total stream and tributary impacts | | | | | 45 Perm 251 Temp (0.25ac Temp) | |

3i. Comments: Two 4' diameter piers will be placed in Sugar Creek for bridge construction (Impact Site 1); four 4' diameter piers will be placed in Little Sugar Creek for bridge construction (Impact Site 2). Total permanent impact from piers will be 24 linear feet (<0.01 acre). Barges will be placed (not drug) in creeks to allow bridge construction equipment to work within the creeks. Barges will decrease construction time required within the creeks, and allow for quick removal if a large storm event is anticipated. Since barge placement will be dictated by site conditions during construction, the entire length of the bent cap plus ~4 feet x width of stream has been calculated as potential area for barges to be placed. Total temporary impacts are anticipated to be much less than 251 linear feet. A total of 45 linear feet of bank stabilization for sediment and erosion control purposes is proposed next to piers adjacent to the edge of McMullen Creek (Impact Site 3).

4. Open Water Impacts

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

| 4a. Open water impact number – Permanent (P) or Temporary (T) | 4b. Name of waterbody (if applicable) | 4c. Type of impact | 4d. Waterbody type | 4e. Area of impact (acres) |
|--|--|-----------------------|-----------------------|-------------------------------|
| O1 <input type="checkbox"/> P <input type="checkbox"/> T | | | | |
| O2 <input type="checkbox"/> P <input type="checkbox"/> T | | | | |
| O3 <input type="checkbox"/> P <input type="checkbox"/> T | | | | |
| O4 <input type="checkbox"/> P <input type="checkbox"/> T | | | | |
| 4f. Total open water impacts | | | | 0 Permanent 0 Temporary |

4g. Comments:

5. Pond or Lake Construction

If pond or lake construction proposed, then complete the chart below.

| 5a. Pond ID number | 5b. Proposed use or purpose of pond | 5c. Wetland Impacts (acres) | | | 5d. Stream Impacts (feet) | | | 5e. Upland (acres) |
|-----------------------|--|--------------------------------|--------|-----------|------------------------------|--------|-----------|-----------------------|
| | | Flooded | Filled | Excavated | Flooded | Filled | Excavated | Flooded |
| P1 | | | | | | | | |
| P2 | | | | | | | | |
| 5f. Total | | | | | | | | |

5g. Comments:

| | |
|---|---|
| 5h. Is a dam high hazard permit required? | <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, permit ID no: |
| 5i. Expected pond surface area (acres): | |
| 5j. Size of pond watershed (acres): | |
| 5k. Method of construction: | |

6. Buffer Impacts (for DWQ)

If project will impact a protected riparian buffer, then complete the chart below. If yes, then individually list all buffer impacts below. If any impacts require mitigation, then you **MUST** fill out Section D of this form.

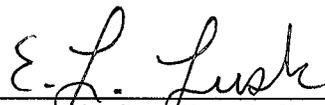
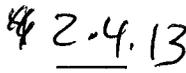
| | | | | | |
|--|--------------------------|---|---|------------------------------------|------------------------------------|
| 6a. Project is in which protected basin? | | <input type="checkbox"/> Neuse <input type="checkbox"/> Tar-Pamlico <input type="checkbox"/> Other: <input checked="" type="checkbox"/> Catawba <input type="checkbox"/> Randleman | | | |
| 6b. Buffer impact number – Permanent (P) or Temporary (T) | 6c. Reason for impact | 6d. Stream name | 6e. Buffer mitigation required? | 6f. Zone 1 impact (square feet) | 6g. Zone 2 impact (square feet) |
| B1 <input type="checkbox"/> P <input type="checkbox"/> T | | | <input type="checkbox"/> Yes <input type="checkbox"/> No | | |
| B2 <input type="checkbox"/> P <input type="checkbox"/> T | | | <input type="checkbox"/> Yes <input type="checkbox"/> No | | |
| B3 <input type="checkbox"/> P <input type="checkbox"/> T | | | <input type="checkbox"/> Yes <input type="checkbox"/> No | | |
| 6h. Total buffer impacts | | | | 0 | 0 |
| 6i. Comments: The streams within the project corridor are not subject to the Catawba River Basin Buffer Rules administered by NCDWQ. The Catawba River Basin Buffer Rules apply only to the Catawba River mainstem below Lake James and along mainstem lakes from and including Lake James to the North Carolina and South Carolina Border in the Catawba River Basin. Creeks within the project corridor are within the Catawba River Basin but not the mainstem. | | | | | |

| | | |
|--|--|----------|
| D. Impact Justification and Mitigation | | |
| 1. Avoidance and Minimization | | |
| 1a. Specifically describe measures taken to avoid or minimize the proposed impacts in designing project. Project design has incorporated steeper fill slopes, avoiding impacts to all wetlands identified within the project study area corridor. Stream impacts have been minimized by utilizing bridges, and placement of only 6 piers within jurisdictional waters. Pier placement is predicated on alignment of existing bridge piers to subsequently adhere to the project's "no rise" requirement. Preformed scour holes will be utilized at Site 1. Bank stabilization is proposed (Impact Site 3); however, if piers can be successfully protected without using bank stabilization, none will be used. All other jurisdictional streams within the project study area corridor have been avoided during project design. | | |
| 1b. Specifically describe measures taken to avoid or minimize the proposed impacts through construction techniques. Barges, instead of temporary causeways or platforms, will be utilized to support equipment within the streams during construction of the bridges. By precisely placing the barges where needed via crane from high ground, temporary impacts and stream bed disturbance will be minimized vs. constructing causeways. Barges will be placed (not drug) by crane within the waterways, allowing for > 50% of the waterway to be open at all times. The barges can be removed if a large storm event is anticipated. Sediment release and stream bed degradation will be minimized using the barges, as opposed to installation and removal of temporary causeway or platform structures. Disturbance to banks to access waters will occur above the OHWM. Construction time will also be minimized within the streams by utilizing the barges. Stone access roads will be constructed from the existing road medians down the creek banks to a slope manageable for the drill rig and cranes. All banks will be protected with silt fence to minimize runoff into the creek. Equipment will be tracked on timber mats to lessen the impact on existing banks, and no equipment will be tracked on the creek bottoms at any time. Construction techniques will adhere to USACE Regional Conditions and Water Quality Certification Conditions. | | |
| 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? | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If no, explain: Pier impacts (24 lf) with no footings, temporary impacts from placement of barges (251 lf), and a small amount of bank stabilization is proposed (potentially 45 lf) for the project; therefore, no mitigation is required. | |
| 2b. If yes, mitigation is required by (check all that apply): | <input type="checkbox"/> DWQ <input type="checkbox"/> Corps | |
| 2c. If yes, which mitigation option will be used for this project? | <input type="checkbox"/> Mitigation bank <input type="checkbox"/> Payment to in-lieu fee program <input type="checkbox"/> Permittee Responsible Mitigation | |
| 3. Complete if Using a Mitigation Bank | | |
| 3a. Name of Mitigation Bank: not applicable | | |
| 3b. Credits Purchased (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. | | | <input type="checkbox"/> Yes | |
| 4b. Stream mitigation requested: | | | linear feet | |
| 4c. If using stream mitigation, stream temperature: | | | <input type="checkbox"/> warm <input type="checkbox"/> cool <input type="checkbox"/> cold | |
| 4d. Buffer mitigation requested (DWQ 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: | | | | |
| 5. Complete if Using a Permittee Responsible Mitigation Plan | | | | |
| 5a. If using a permittee responsible mitigation plan, provide a description of the proposed mitigation plan. | | | | |
| 6. Buffer Mitigation (State Regulated Riparian Buffer Rules) – required by DWQ | | | | |
| 6a. Will the project result in an impact within a protected riparian buffer that requires buffer mitigation? | | | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | |
| 6b. If yes, then identify the square feet of impact to each zone of the riparian buffer that requires mitigation. Calculate the amount of mitigation required. | | | | |
| Zone | 6c. Reason for impact | 6d. Total impact (square feet) | Multiplier | 6e. Required mitigation (square feet) |
| Zone 1 | | | 3 (2 for Catawba) | |
| Zone 2 | | | 1.5 | |
| 6f. Total buffer mitigation required: | | | | |
| 6g. If buffer mitigation is required, discuss what type of mitigation is proposed (e.g., payment to private mitigation bank, permittee responsible riparian buffer restoration, payment into an approved in-lieu fee fund). | | | | |
| 6h. Comments: | | | | |

| E. Stormwater Management and Diffuse Flow Plan (required by DWQ) | |
|--|---|
| 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? | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| 1b. If yes, then is a diffuse flow plan included? If not, explain why. Comments: | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| 2. Stormwater Management Plan | |
| 2a. What is the overall percent imperviousness of this project? | N/A |
| 2b. Does this project require a Stormwater Management Plan? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| 2c. If this project DOES NOT require a Stormwater Management Plan, explain why: | |
| 2d. If this project DOES require a Stormwater Management Plan, then provide a brief, narrative description of the plan: See attached permit drawings. | |
| 2e. Who will be responsible for the review of the Stormwater Management Plan? | <input type="checkbox"/> Certified Local Government <input type="checkbox"/> DWQ Stormwater Program <input checked="" type="checkbox"/> DWQ 401 Unit |
| 3. Certified Local Government Stormwater Review | |
| 3a. In which local government's jurisdiction is this project? | not applicable |
| 3b. Which of the following locally-implemented stormwater management programs apply (check all that apply): | <input type="checkbox"/> Phase II <input type="checkbox"/> NSW <input type="checkbox"/> USMP <input type="checkbox"/> Water Supply Watershed <input type="checkbox"/> Other: |
| 3c. Has the approved Stormwater Management Plan with proof of approval been attached? | <input type="checkbox"/> Yes <input type="checkbox"/> No |
| 4. DWQ Stormwater Program Review | |
| 4a. Which of the following state-implemented stormwater management programs apply (check all that apply): | <input type="checkbox"/> Coastal counties <input type="checkbox"/> HQW <input type="checkbox"/> ORW <input type="checkbox"/> Session Law 2006-246 <input type="checkbox"/> Other: |
| 4b. Has the approved Stormwater Management Plan with proof of approval been attached? | <input type="checkbox"/> Yes <input type="checkbox"/> No N/A |
| 5. DWQ 401 Unit Stormwater Review | |
| 5a. Does the Stormwater Management Plan meet the appropriate requirements? | <input type="checkbox"/> Yes <input type="checkbox"/> No N/A |
| 5b. Have all of the 401 Unit submittal requirements been met? | <input type="checkbox"/> Yes <input type="checkbox"/> No N/A |

| | |
|--|--|
| F. Supplementary Information | |
| 1. Environmental Documentation (DWQ Requirement) | |
| 1a. Does the project involve an expenditure of public (federal/state/local) funds or the use of public (federal/state) land? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> 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)? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> 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.) Comments: Categorical Exclusion (CE) approved July 18, 2012 | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| 2. Violations (DWQ Requirement) | |
| 2a. Is the site in violation of DWQ Wetland Rules (15A NCAC 2H .0500), Isolated Wetland Rules (15A NCAC 2H .1300), DWQ Surface Water or Wetland Standards, or Riparian Buffer Rules (15A NCAC 2B .0200)? | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| 2b. Is this an after-the-fact permit application? | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| 2c. If you answered "yes" to one or both of the above questions, provide an explanation of the violation(s): | |
| 3. Cumulative Impacts (DWQ Requirement) | |
| 3a. Will this project (based on past and reasonably anticipated future impacts) result in additional development, which could impact nearby downstream water quality? | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| 3b. If you answered "yes" to the above, submit a qualitative or quantitative cumulative impact analysis in accordance with the most recent DWQ policy. If you answered "no," provide a short narrative description. According to the approved CE document (July 18, 2012), the project is intended to increase vehicle capacity along the corridor. Vehicular access in the area is not to be changed. The completion of the additional lanes should result in slight reduction of travel time for motorists. The travel time savings is not expected to affect route choice or development decisions. The study area is largely built out, and additional development will be controlled locally by stringent growth management and existing ordinances. Existing zoning and planning authorities will ensure that any further development will occur in a planned fashion. Based on these factors, the project is not expected to result in a change in land use; therefore, no further study is warranted. | |
| 4. Sewage Disposal (DWQ Requirement) | |
| 4a. Clearly detail the ultimate treatment methods and disposition (non-discharge or discharge) of wastewater generated from the proposed project, or available capacity of the subject facility. not applicable | |

| | | |
|--|---|---|
| 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? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> No |
| 5b. Have you checked with the USFWS concerning Endangered Species Act impacts? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| 5c. If yes, indicate the USFWS Field Office you have contacted. | <input type="checkbox"/> Raleigh <input type="checkbox"/> Asheville | |
| 5d. What data sources did you use to determine whether your site would impact Endangered Species or Designated Critical Habitat? Potential habitat is present for four federally listed species in Mecklenburg County: Carolina heelsplitter, Michaux's sumac, Schweinitz's sunflower, and Smooth coneflower. A mussel survey was completed in streams with potential habitat within the project corridor, and a subsequent report was prepared by NCDOT (August 1, 2008). No habitat was considered suitable for the mussel, and no mussels were identified within the areas surveyed. The North Carolina Natural Heritage Program (NCNHP) records indicate no documented occurrences of the Carolina heelsplitter within 5.0 miles of the project study area. Potential habitat areas for Michaux's sumac, Schweinitz's sunflower, and Smooth coneflower were surveyed on October 10 and 11, 2007. Updated surveys were conducted by NCDOT on October 6, 2009 and October 18, 2011, and no individuals were identified during these surveys. NCNHP records indicate no documented occurrences within 1.0 mile of the project study area. The project will have no effect on any Federally Threatened or Endangered species listed for Mecklenburg County. | | |
| 6. Essential Fish Habitat (Corps Requirement) | | |
| 6a. Will this project occur in or near an area designated as essential fish habitat? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| 6b. What data sources did you use to determine whether your site would impact Essential Fish Habitat? NMFS County Index | | |
| 7. Historic or Prehistoric Cultural Resources (Corps Requirement) | | |
| 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)? | <input type="checkbox"/> Yes | <input checked="" type="checkbox"/> No |
| 7b. What data sources did you use to determine whether your site would impact historic or archeological resources? NEPA Documentation | | |
| 8. Flood Zone Designation (Corps Requirement) | | |
| 8a. Will this project occur in a FEMA-designated 100-year floodplain? | <input checked="" type="checkbox"/> Yes | <input type="checkbox"/> 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? FEMA Maps | | |
| Dr. Gregory J. Thorpe, Ph D Applicant/Agent's Printed Name |  Applicant/Agent's Signature (Agent's signature is valid only if an authorization letter from the applicant is provided.) |  Date |

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

Action I.D.: **2011-00255**

County: **Mecklenburg**

U.S.G.S. Quad: **Weddington**

NOTIFICATION OF JURISDICTIONAL DETERMINATION

Property Owner/Agent: **North Carolina Department of Transportation;**

Attn: Gregory J. Thorpe, PhD

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

Property description:

Size (acres): approximately 17,000 linear feet and 3 acres

Nearest Town: Pineville

Nearest Waterway: McAlpine Creek, McMullen Creek, Little Sugar Creek, Sugar Creek, Kings Branch, Fourmile Creek

River Basin: Lower Catawba

Coordinates: 35.125491 N and -80.917484 W to 35.063844 N and -80.816043 W

Hydrologic Unit Code: 03050103

Location Description: The project site is located in jurisdictional waters of the U.S., along approximately 8 miles of the existing I-485 roadway corridor from the intersection of I-485 and I-77 SB to east of Rea Road (SR 3624), near Pineville, in Mecklenburg County, North Carolina.

Indicate Which of the Following Apply:

A. Preliminary Determination

- Based on preliminary information, there may be wetlands and stream channels on the above described property. We strongly suggest you have this property inspected to determine the extent of Department of the Army (DA) jurisdiction. To be considered final, a jurisdictional determination must be verified by the Corps. This preliminary determination is not an appealable action under the Regulatory Program Administrative Appeal Process (Reference 33 CFR Part 331).). If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also, you may provide new information for further consideration by the Corps to reevaluate the JD.

B. Approved Determination

- There are Navigable Waters of the United States within the above described property subject to the permit requirements of Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act. Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.

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

- We strongly suggest you have the wetlands and stream channels on your property delineated. Due to the size of your property and/or our present workload, the Corps may not be able to accomplish this wetland delineation in a timely manner. For a more timely delineation, you may wish to obtain a consultant. To be considered final, any delineation must be verified by the Corps.

- The wetlands and stream channels on your property have been delineated and the delineation has been verified by the Corps. We strongly suggest you have this delineation surveyed. Upon completion, this survey should be reviewed and verified by the Corps. Once verified, this survey will provide an accurate depiction of all areas subject to CWA jurisdiction on your property which, provided there is no change in the law or our published regulations, may be relied upon for a period not to exceed five years.

X The wetlands and stream channels have been delineated and surveyed and are accurately depicted on the maps submitted to this office titled "*I-485 Improvements*" dated January 2008 and "*I-485 Addendum*", dated January

Action Id.: 2011-00255

2012. Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.

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

Placement of dredged or fill material within waters of the US and/or wetlands without a Department of the Army permit may constitute a violation of Section 301 of the Clean Water Act (33 USC § 1311). If you have any questions regarding this determination and/or the Corps regulatory program, please contact **Liz Hair** at **828-271-7980**.

C. Basis For Determination

The site contains wetlands as determined by the *1987 Corps of Engineers Wetland Delineation Manual* and the *Interim Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Eastern Mountain and Piedmont Region*. These wetlands are adjacent to stream channels located on the property that exhibit indicators of ordinary high water marks. The stream channels on the property are McAlpine Creek, McMullen Creek, Little Sugar Creek, Sugar Creek, Fourmile Creek and their unnamed tributaries which flow into the Catawba River (TNW), which ultimately flows to the Atlantic Ocean through the Santee River.

D. Remarks:

E. Attention USDA Program Participants

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

F. Appeals Information (This information applies only to approved jurisdictional determinations as indicated in B. above)

Attached to this verification is an approved jurisdictional determination. If you are not in agreement with that approved jurisdictional determination, you can make an administrative appeal under 33 CFR 331. Enclosed you will find a request for appeal (RFA) form. If you request to appeal this determination you must submit a completed RFA form to the following address:

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

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 CFR part 331.5, and that it has been received by the Division Office within 60 days of the date of the NAP. Should you decide to submit an RFA form, it must be received at the above address by September 17, 2012.

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

Corps Regulatory Official: Liz Hair

Issue Date: **July 16, 2012**

Expiration Date: **July 16, 2017**



Subject: Minutes from the **Interagency Coordination Meeting** December 12, 2012
for **R-4902 in Mecklenburg County**
(Revised Meeting Minutes January 10, 2013)

Team Members:

Mitch Batuzich for Donnie Brew - FHWA
Chris Militscher – EPA (not in attendance)
Liz Hair – USACE
Marella Buncick – USFWS (not in attendance)
Marla Chambers –NCWRC
Renee Gledhill-Earley–SHPO (not in attendance)
Alan Johnson – DWQ (Phone)

Other Participants:

Marshall Clawson - Hydraulics
Kevin Fischer - Structures
Lawrence Gettier - WZTC
James Dunlop – Congestion Management
Cheryl Evans - ITS
Daniel Oliver – Utilities Unit
Stacy Oberhausen – PDEA
Angela Sanderson - PDEA
Tim McFadden - TPMU
Erin Cheely – PDEA - NES
Teresa Bruton – TPMU
Carla Dagnino – PDEA - NES
Elizabeth Lusk – PDEA - NES
Jennifer Harris - PDEA
Jason Tracy – Lane
John Johnson – STV
Brandon Fulton – STV
Allison Drake – STV
Scott Robidoux – STV
Jonathan Henderson, HDR
James Rice, HDR
Vickie Miller, HDR

General introduction of the project was initiated by Tim McFadden. Introductions were made by all in attendance. Scott Robidoux, STV hydraulic design engineer, initiated the review by describing the overall project touching on most of the project details below.

As a reminder, due to time constraints (11:45am – 12:15pm meeting time), the meeting focused primarily on the plan sheets that have jurisdictional impacts. Therefore, plan sheets 8, 15 and 23 were reviewed in detail with the understanding that all other plan sheets, having no impacts to jurisdictional features were not specifically reviewed during the meeting. Basic information for each plan sheet is provided below with comments during the meeting shown in *“italics”*.

General Project Details:

- Project is located in Mecklenburg County.
- For this project we will be widening approximately 9.2 miles of existing I-485 to the inside. After additional lanes are added between I-77 and US 521, there is no room for a grassed median, so the median will be paved with barrier between traffic. Past the US 521 interchange, a 22’ grass ditch will be constructed.

- We have 1 major Y-Line, US 521. A flyover ramp is to be constructed from US 521 northbound to I-485 westbound.
- There are no specific stormwater requirements for this area; however Sugar Creek (ecological, biological integrity for benthos; and fecal colliform), Little Sugar Creek (copper; ecological, biological integrity for benthos and fish; and fecal colliform), McMullen Creek (ecological, biological integrity for benthos), and McAlpine Creek (ecological, biological integrity for benthos and fish; and fecal colliform) are all 303d listed streams.
- Wherever possible, we utilized existing outfalls. When feasible, we shifted outlets that were directly discharging into jurisdictional streams to provide a small amount of treatment before entering the stream.
- Utilize existing drainage structures wherever possible. Existing checked for capacity and velocity.
- Reduced impacts by relocating some existing pipe outfalls to provide minimum 50' buffer where possible (Locations shown on each sheet).
- Proposed detention ponds inside loops at Johnson Road Interchange.
- Three plan sheets (8, 15, and 23) with permanent and/or temporary impacts.

Plan Review:

Plan Sheet 8

- Sugar Creek (S13) – 303d Stream
- Widening bridge to the inside
 - Lining up new piers with existing piers to satisfy FEMA requirements.
 - There will be 2 additional piers with an approximate diameter of 4' in the channel.
 - Existing outfalls discharge between the existing structures. Relocating outfalls due to widening and eliminating direct discharge into JS.
 - Design team will look into BMPs such as PSHs.
- From Station 106+00 to 109+00, utilizing steepened fill to eliminate impacts to Sugar Creek.

Marla expressed concern about piers being within the stream and asked if there was an option to keep piers out of water?

Marshall and Scott described that the piers were being placed within those locations to align with current pier locations to meet design considerations/requirements, reduce potential debris blockage and meet FEMA requirements.

Marla would prefer the piers not be in the stream and understands there are limitations.

Plan Sheet 15

- Little Sugar Creek (S9) – 303d Stream

- Widening bridge to the inside
 - Lining up new piers with existing piers to satisfy FEMA requirements.
 - There will be 4 additional piers with an approximate diameter of 4' in the channel.
 - Existing outfall discharges between the existing structures. Relocating outfalls due to widening and eliminating direct discharge into JS.
 - Design team will look into BMPs such as PSHs.
- UT to Little Sugar Creek (S10) – Not disturbing existing 48"RCP or stream.
- Maintaining existing outfalls where feasible.

Marla expressed concern about piers in the stream and the way they line up with the existing bridge piers. She asked if the piers could be placed in a different location/alignment to decrease the impacts.

Marshall, Scott and Jonathan discussed the design considerations and regulatory issues behind the proposed pier locations. They mentioned the same FEMA requirements and debris blockage issues as at Sugar Creek. In addition the structural reasons were discussed in more depth as to why the piers must be located to provide similar span lengths as the existing bridges due to "camber" in the spans. Otherwise, the additional lanes for each bridge would not be at the same level of the existing structure which would be a safety issue.

Liz asked to see a photo of the existing bridge. A photo was available but it was too dark to provide the detail the group was hoping for. Marshall said he would send photos of the existing bridge from the Bridge Inspection Report to Liz.

Plan Sheet 23

- Jurisdictional features.
- UT to McMullen Creek (S6) – Not disturbing existing stream
- McMullen Creek (S4) – 303d Stream
- Wetland (W1) – (Station 310+00 RT) – No impacts to this wetland.
- Wetland (W2) – (Station 302+00 – 308+00 LT) – No impacts to this wetland.
- Widening bridge to the inside and (LT)
 - Lining up new piers with existing piers to satisfy FEMA requirements.
 - There will be no additional piers within the channel at this bridge site.
 - May place rip rap at toe of slope if needed for protection.
 - Existing outfall discharges between the existing structures. Relocating outfalls due to widening and eliminating direct discharge into JS.
- Replace slope drain at end of bridge (LT) and add preformed scour hole.
- Remove existing outfall in median at Sta. 309+00 near beginning of bridge. Pipe drainage to existing 18" cross pipe at Sta. 302+00 near low point.
- Utilized steeper roadway slopes to avoid jurisdictional impacts.

Alan asked about potentially relocating channel because of new bent location on stream bank.

Marla suggested investigating a J-hook to divert flow away from piers on stream bank rather than relocating channel.

Scott displayed a photo of the existing bridge structure showing the existing piers in the stream bank with rip rap rock on the bank slope. Marshall mentioned that standard design practice is to rip rap bridge abutments. Scott said that appropriate bank stabilization will be provided.

General Discussion Items:

- *Alan asked about checking/providing appropriate outlet protection for existing outlets. There was some discussion. Jonathan and Scott said all outlet velocities will be checked with the goal of providing non-erosive flows.*
- *Jonathan mentioned that R-4902 is pursuing a Nationwide permit based on the minor impacts associated with the project and information provided in the RFP.*
- *Community House Connection*
 - *Teresa brought up potential of additional grade separation bridge being added to the R-4902 project. Bridge only, not actual connection to the road itself. NCDOT would own the bridge and the City would own the future road. Bridge would span over jurisdictional stream.*
 - *Brandon wanted to confirm with the regulatory agencies that the pursuit of a NWP 23 (mentioned in RFP) was the correct path to follow. Liz discussed that typically if a project is permitted under an IP, then an additional permit would be an IP. There was general discussion about type of permit necessary if Community House is added to R-4902 project. Liz stated it should not impact the 404 if there are no impacts and that the Corp did not want to go with an IP.*
 - *Elizabeth mentioned that she had coordinated with Scott (Head office manager, USACE – Asheville). His opinion was that since the permit had expired and minimal impacts for the project were expected, a NWP 23 would suffice. Liz and Alan said there would be no problems with permitting if there are no additional impacts to jurisdictional streams. After some discussion, all agreed that a Nationwide was appropriate for this project and that if there were no additional impacts then a permit mod wouldn't be needed.*
 - *Environmental Agencies indicated that since the roadway sections had no jurisdictional impacts, the Community House Road Bridge could be constructed and permitted without permitting the two connecting roadways.*
 - *Teresa expects that the updated document for the Community House connection would be signed within the next couple of weeks. (Since the Dec. 12, 2012 meeting the CE has been signed without additional updates).*



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



Version 1.2 Released July 2012

Project/TIP No.: R-4902; WBS Element No. 39929.1.1 County(ies): Mecklenburg Page 1 of 5

General Project Information

| | | | | | | |
|---|---|---------------------|--------------------------------|---|-------------------------|-----------|
| Project No.: | R-4902; WBS Element No. 39929.1.1 | | Project Type: | Roadway Widening | Date: | 1/31/2013 |
| NCDOT Contact: | Tim McFadden | | Contractor / Designer: | Lane/STV | | |
| Address: | 1020 Birchdale Drive Raleigh, NC 27610 | | Address: | Edward Vance 1001 W. Morehead St. Charlotte, NC | | |
| | Phone: | 919-707-6700 | | Phone: | 704-816-2555 | |
| | Email: | tmcfadden@ncdot.gov | | Email: | edward.vance@stvinc.com | |
| City/Town: | Charlotte | | County(ies): | Mecklenburg | | |
| River Basin(s): | Catawba | | CAMA County? | No | | |
| Primary Receiving Water: | Sugar Creek | | NCDWQ Stream Index No.: | 11-137 | | |
| NCDWQ Surface Water Classification for Primary Receiving Water | Primary: | Class C | | | | |
| | Supplemental: | | | | | |
| Other Stream Classification: | None | | | | | |
| 303(d) Impairments: | biological impairment | | fecal coliform | | | |
| Buffer Rules in Effect | N/A | | | | | |

| | | | | | | |
|---|-----------------------|------------------------------|--|---------|--|--|
| Project Length (lin. Miles or feet): | 8.2 miles | Surrounding Land Use: | Urban disturbed lands, mixed hardwood forest, urban to suburban in nature. | | | |
| Project Built-Upon Area (ac.) | 129.21 ac. | | 71.56 ac. | | | |
| Typical Cross Section Description: | | | | | | |
| Average Daily Traffic (veh/hr/day): | Design/Future: | 198,700 | Existing: | 131,900 | | |

General Project Narrative:

The project will involve the widening to the median of I-485 (Charlotte Outer Loop) from I-77 to SR 3624 (Rea Road) for approximately 8.2 miles. This involves the construction of one additional lane in each direction within the existing median. Additional improvements include the construction of a flyover structure at the US 521 (Johnston Road Interchange), a westbound auxiliary lane from US 521 (Johnston Road) to NC 51 (Pineville-Matthews Road), resurfacing of the existing shoulder of I-485 within project limits, widening of all existing structures within project limits except for bridges over I-77, and installation of conduit for future travel information services (cameras and dynamic message signs). Existing drainage was utilized where practical.



| Sheet No. | Station (From / To) | Stream Crossing Station | Base Width (ft) | Front Slope (H:V) | Back Slope (H:V) | Drainage Area (ac) | Recommended Treatment Length (ft) | Actual Length (ft) | Longitudinal Slope (%) | Q2 (cfs) | V2 (fps) | Q10 (cfs) | V10 (fps) | Rock Checks Used |
|-----------|---------------------|-------------------------|-----------------|-------------------|------------------|--------------------|-----------------------------------|--------------------|------------------------|----------|----------|-----------|-----------|------------------|
| 4 | -L- 45+00 M | NA | 0.0 | 6:1 | 6:1 | 0.97 | 97 | 375 | 1.20% | 2.4 | 0.4 | 3.1 | 0.5 | No |
| | -L- 48+75 M | | | | | | | | | | | | | |
| 4 | -L- 48+75 M | NA | 0.0 | 6:1 | 6:1 | 0.12 | 12 | 75 | 0.50% | 0.3 | 0.1 | 0.4 | 0.1 | No |
| | -L- 49+50 M | | | | | | | | | | | | | |
| 4 | -L- 50+50 M | NA | 0.0 | 6:1 | 6:1 | 0.70 | 70 | 174 | 0.30% | 1.7 | 0.3 | 2.2 | 0.4 | No |
| | -L- 52+24 M | | | | | | | | | | | | | |
| 13 | -L- 173+50 RT | NA | 0.0 | 4:1 | 3:1 | 0.23 | 23 | 50 | 3.70% | 0.4 | 0.1 | 0.6 | 0.2 | No |
| | -L- 174+00 RT | | | | | | | | | | | | | |
| 13 | -L- 174+00 RT | NA | 0.0 | 4:1 | 3:1 | 1.20 | 120 | 250 | 1.70% | 2.2 | 0.7 | 2.9 | 1.0 | No |
| | -L- 176+50 RT | | | | | | | | | | | | | |
| 14 | -L- 182+00 LT | NA | 0.0 | 4:1 | 3:1 | 0.73 | 73 | 200 | 1.30% | 1.2 | 0.5 | 1.6 | 0.7 | No |
| | -L- 184+00 LT | | | | | | | | | | | | | |
| 16 | -L- 213+52 LT | NA | 0.0 | 4:1 | 3:1 | 0.43 | 43 | 98 | 2.00% | 0.7 | 0.2 | 0.9 | 0.3 | No |
| | -L- 214+50 LT | | | | | | | | | | | | | |
| 21 | -L- 278+00 RT | NA | 0.0 | 6:1 | 4:1 | 0.40 | 40 | 300 | 1.47% | 0.6 | 1.4 | 0.9 | 1.6 | No |
| | -L- 281+00 RT | | | | | | | | | | | | | |
| 24 | -L- 318+50 RT | NA | 0.0 | 6:1 | 4:1 | 0.70 | 70 | 300 | 1.23% | 0.9 | 1.4 | 1.3 | 1.6 | No |
| | -L- 321+50 RT | | | | | | | | | | | | | |
| 25 | -L- 331+50 RT | NA | 0.0 | 6:1 | 3:1 | 2.10 | 210 | 300 | 0.35% | 3.3 | 1.3 | 4.9 | 1.4 | No |
| | -L- 334+50 RT | | | | | | | | | | | | | |
| 26 | -L- 347+17 RT | NA | 0.0 | 6:1 | 4:1 | 0.20 | 20 | 158 | 1.47% | 0.2 | 0.9 | 0.4 | 1.0 | No |
| | -L- 348+75 RT | | | | | | | | | | | | | |
| 27 | -L- 352+00 RT | NA | 0.0 | 6:1 | 4:1 | 1.70 | 170 | 588 | 0.58% | 3.3 | 1.5 | 5.3 | 1.7 | No |
| | -L- 357+88 RT | | | | | | | | | | | | | |
| 27 | -L- 360+50 LT | NA | 0.0 | 6:1 | 4:1 | 0.80 | 80 | 415 | 0.39% | 1.8 | 1.1 | 3.0 | 1.3 | No |
| | -L- 364+65 LT | | | | | | | | | | | | | |
| 28 | -L- 366+50 LT | NA | 0.0 | 6:1 | 4:1 | 0.40 | 40 | 215 | 0.72% | 0.7 | 1.1 | 1.1 | 1.3 | No |
| | -L- 367+65 LT | | | | | | | | | | | | | |
| 28 | -L- 371+50 LT | NA | 0.0 | 6:1 | 4:1 | 0.90 | 90 | 150 | 1.08% | 1.6 | 1.6 | 2.6 | 1.8 | No |
| | -L- 373+00 LT | | | | | | | | | | | | | |
| 28 | -L- 375+65 RT | NA | 0.0 | 6:1 | 4:1 | 0.40 | 40 | 155 | 2.10% | 0.8 | 1.8 | 1.4 | 2.0 | No |
| | -L- 377+20 RT | | | | | | | | | | | | | |
| 28 | -L- 367+65 LT | NA | 0.0 | 6:1 | 4:1 | 1.30 | 130 | 335 | 0.43% | 2.3 | 1.2 | 3.7 | 1.4 | No |
| | -L- 371+00 LT | | | | | | | | | | | | | |
| 28 | -L- 381+50 RT | NA | 0.0 | 6:1 | 4:1 | 0.40 | 40 | 150 | 0.75% | 0.8 | 1.2 | 1.3 | 1.3 | No |
| | -L- 383+00 RT | | | | | | | | | | | | | |
| 28 | -L- 383+00 RT | NA | 0.0 | 6:1 | 4:1 | 0.50 | 50 | 200 | 0.64% | 1.0 | 1.2 | 1.6 | 1.3 | No |
| | -L- 385+00 RT | | | | | | | | | | | | | |
| 28 | -L- 385+16 RT | NA | 0.0 | 6:1 | 4:1 | 0.70 | 70 | 284 | 0.62% | 1.3 | 1.3 | 2.2 | 1.4 | No |
| | -L- 388+00 RT | | | | | | | | | | | | | |

YES NO Have minimum design criteria, as presented in the NCDOT Best Management Practices Toolbox, Version 1 (March 2008), been met and verified? If No, provide further explanation of why design criteria was not met.



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



Version 1.2 - Released July 2012

Project/TIP No.: R-4902; WBS Element No County(ies): Mecklenburg

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Scale

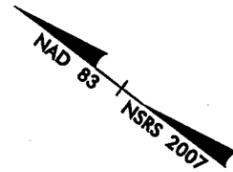
| Sheet No. | Station (From / To) | Stream Crossing Station | Base Width (ft) | Front Slope (H:V) | Back Slope (H:V) | Drainage Area (ac) | Recommended Treatment Length (ft) | Actual Length (ft) | Longitudinal Slope (%) | Q2 (cfs) | V2 (fps) | Q10 (cfs) | V10 (fps) | Rock Checks Used |
|-----------|---------------------|-------------------------|-----------------|-------------------|------------------|--------------------|-----------------------------------|--------------------|------------------------|----------|----------|-----------|-----------|------------------|
| 28 | -L- 388+10 LT | NA | 0.0 | 6:1 | 4:1 | 1.70 | 170 | 440 | 0.40% | 3.3 | 1.3 | 5.3 | 1.5 | No |
| | -L- 392+50 RT | | | | | | | | | | | | | |
| 28 | -L- 393+00 LT | NA | 0.0 | 6:1 | 4:1 | 1.30 | 130 | 300 | 0.41% | 2.3 | 1.2 | 3.7 | 1.4 | No |
| | -L- 396+00 RT | | | | | | | | | | | | | |
| 28 | Y8RPC 23+00 | NA | 0.0 | 4:1 | 3:1 | 0.70 | 70 | 400 | 1.48% | 0.7 | 1.6 | 1.2 | 1.8 | No |
| | Y8RPC 27+00 | | | | | | | | | | | | | |
| 30 | -L- 410+53 LT | NA | 0.0 | 6:1 | 4:1 | 1.30 | 130 | 809 | 0.87% | 1.8 | 1.5 | 3.0 | 1.7 | No |
| | -L- 418+62 LT | | | | | | | | | | | | | |
| 32 | -L- 438+22, 87.9' | NA | 0.0 | 6:1 | 4:1 | 1.70 | 170 | 614 | 0.90% | 2.4 | 1.7 | 3.9 | 1.9 | No |
| | -L- 446+36, 88.7' | | | | | | | | | | | | | |
| 34 | -L- 464+00 LT | NA | 0.0 | 6:1 | 4:1 | 2.60 | 260 | 400 | 0.30% | 4.6 | 1.3 | 7.4 | 1.5 | No |
| | -L- 468+00 LT | | | | | | | | | | | | | |
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| | | | | | | | 0 | | | | | | | |
| | | | | | | | 0 | | | | | | | |

YES NO Have minimum design criteria, as presented in the NCDOT Best Management Practices Toolbox, Version 1 (March 2008), been met and verified? If No, provide further explanation of why design criteria was not met.

LEGEND

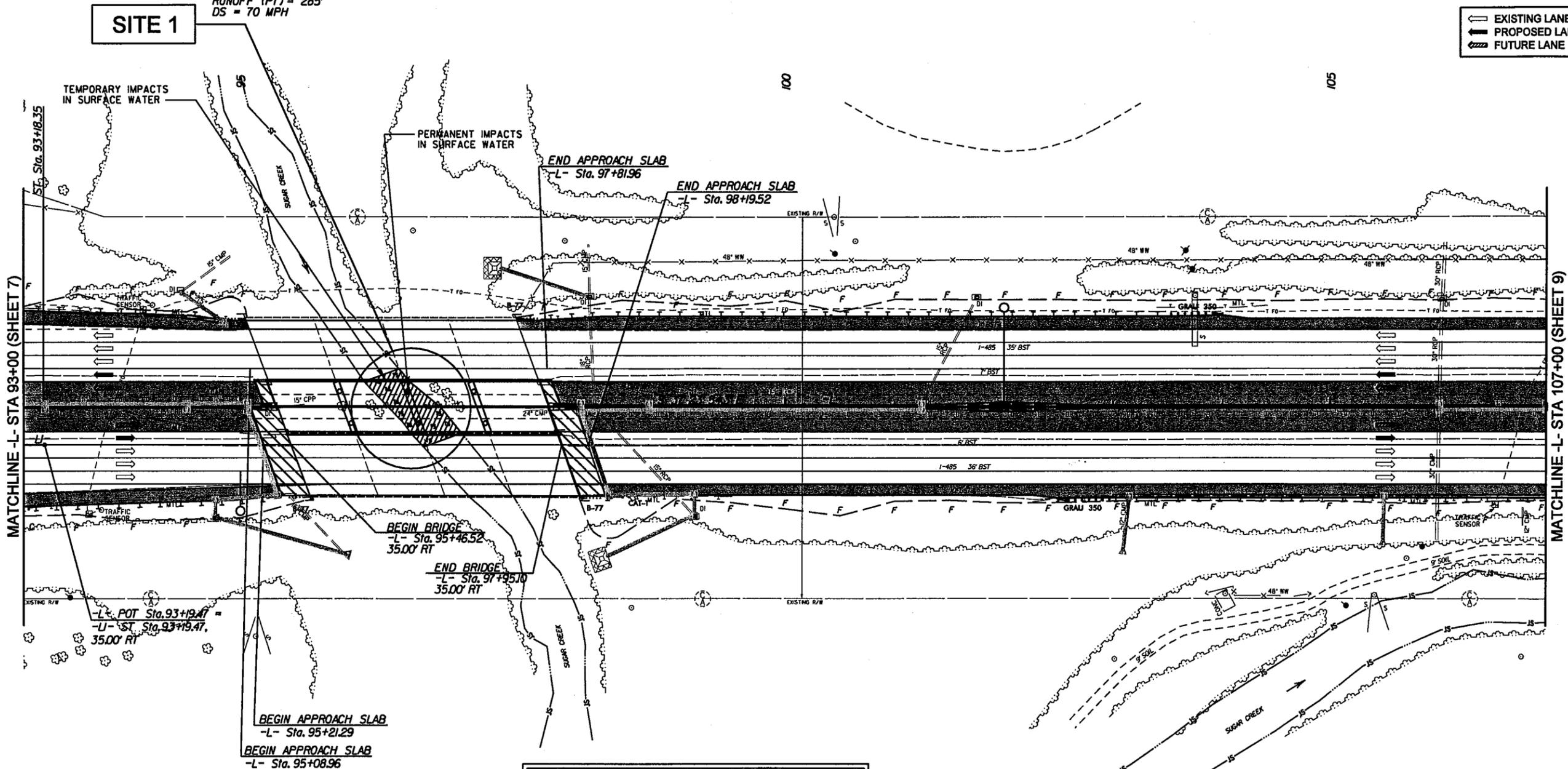
DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER



-L-

| | | |
|-------------------------|-----------------------------|-------------------------|
| PIs Sta 65+01.20 | PI Sta 77+91.80 | PIs Sta 90+51.70 |
| $\Theta_s = 2'00'00.0"$ | $\Delta = 22'50'18.0"$ (RT) | $\Theta_s = 2'00'00.0"$ |
| Ls = 400.00' | D = 1'00'00.0' | Ls = 400.00' |
| LT = 266.68' | L = 2,283.83' | LT = 266.68' |
| ST = 133.35' | T = 1,157.28' | ST = 133.35' |
| | R = 5,729.58' | |
| | e = 3.8% | |
| | RUNOFF (PC) = 400' | |
| | RUNOFF (PT) = 285' | |
| | DS = 70 MPH | |



-L-

| | | |
|-------------------------|-----------------------------|-------------------------|
| PIs Sta 64+11.7 | PI Sta 77+49.50 | PIs Sta 90+52.82 |
| $\Theta_s = 2'00'44.3"$ | $\Delta = 23'53'44.8"$ (RT) | $\Theta_s = 2'00'44.3"$ |
| Ls = 400.00' | D = 1'00'22.1' | Ls = 400.00' |
| LT = 266.68' | L = 2,374.98' | LT = 266.68' |
| ST = 133.35' | T = 1,205.01' | ST = 133.35' |
| | R = 5,694.58' | |
| | e = 3.8% | |
| | RUNOFF = 400' | |

NOTE:
THE TEMPORARY BARGES SHALL NOT TAKE UP MORE THAN 50% OF THE STREAM CHANNEL WIDTH AT ANY GIVEN TIME.

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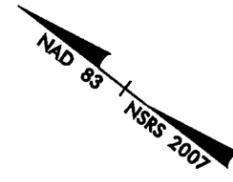
-L-

| | | |
|---------------------------|-------------------------------|---------------------------|
| Pls Sta 65+01.20 | PI Sta 77+91.80 | Pls Sta 90+51.70 |
| $\Theta_s = 2'00''00.0''$ | $\Delta = 22'50''18.0''$ (RT) | $\Theta_s = 2'00''00.0''$ |
| LS = 400.00' | D = 1'00''00.0'' | LS = 400.00' |
| LT = 266.68' | L = 2,283.63' | LT = 266.68' |
| ST = 133.35' | T = 1,157.28' | ST = 133.35' |
| | R = 5,729.58' | |
| | $e = 3.8\%$ | |
| | RUNOFF (PC) = 400' | |
| | RUNOFF (PT) = 285' | |
| | DS = 70 MPH | |

LEGEND

 DENOTES IMPACTS IN SURFACE WATER

 DENOTES TEMPORARY IMPACTS IN SURFACE WATER



THE LANE CONSTRUCTION CORPORATION

STV/Ralph Whithead Associates, Inc.
1000 West Marshall Rd., Box 200
Charlotte, NC 28208
NC LICENSE NO. F-0991

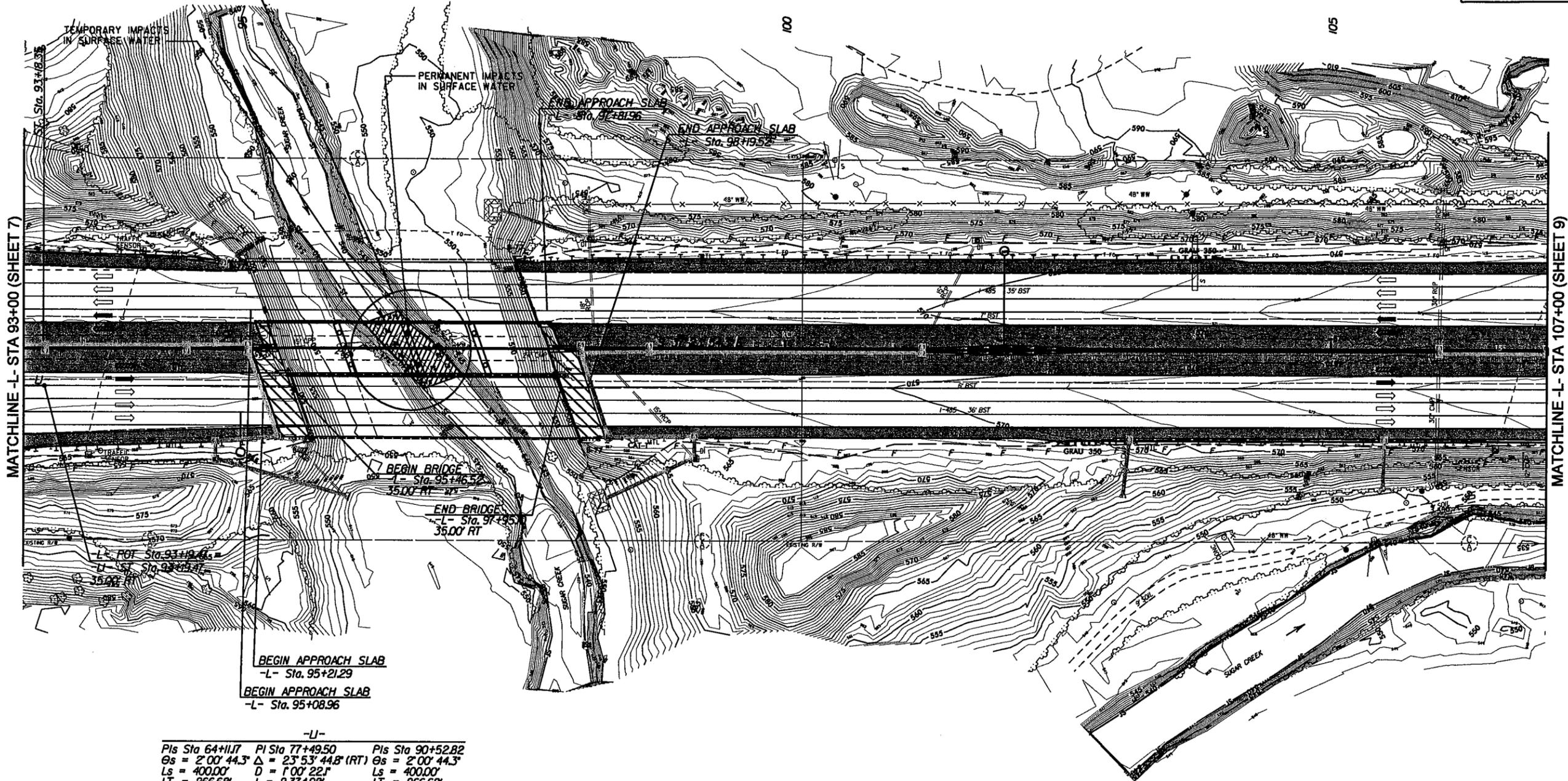
HDR HDR Engineering, Inc. of the Carolinas
1773 National Drive, Suite 207 Raleigh, NC 27612
N.C. REG. LICENSE NUMBER F-0116

| | |
|---------------------------------|---------------------|
| PROJECT REFERENCE NO. R-4902 | SHEET NO. 8A |
| RAW SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SITE 1



MATCHLINE -L- STA 93+00 (SHEET 7)

MATCHLINE -L- STA 107+00 (SHEET 9)

BEGIN APPROACH SLAB
-L- Sta. 95+21.29

BEGIN APPROACH SLAB
-L- Sta. 95+08.96

-U-

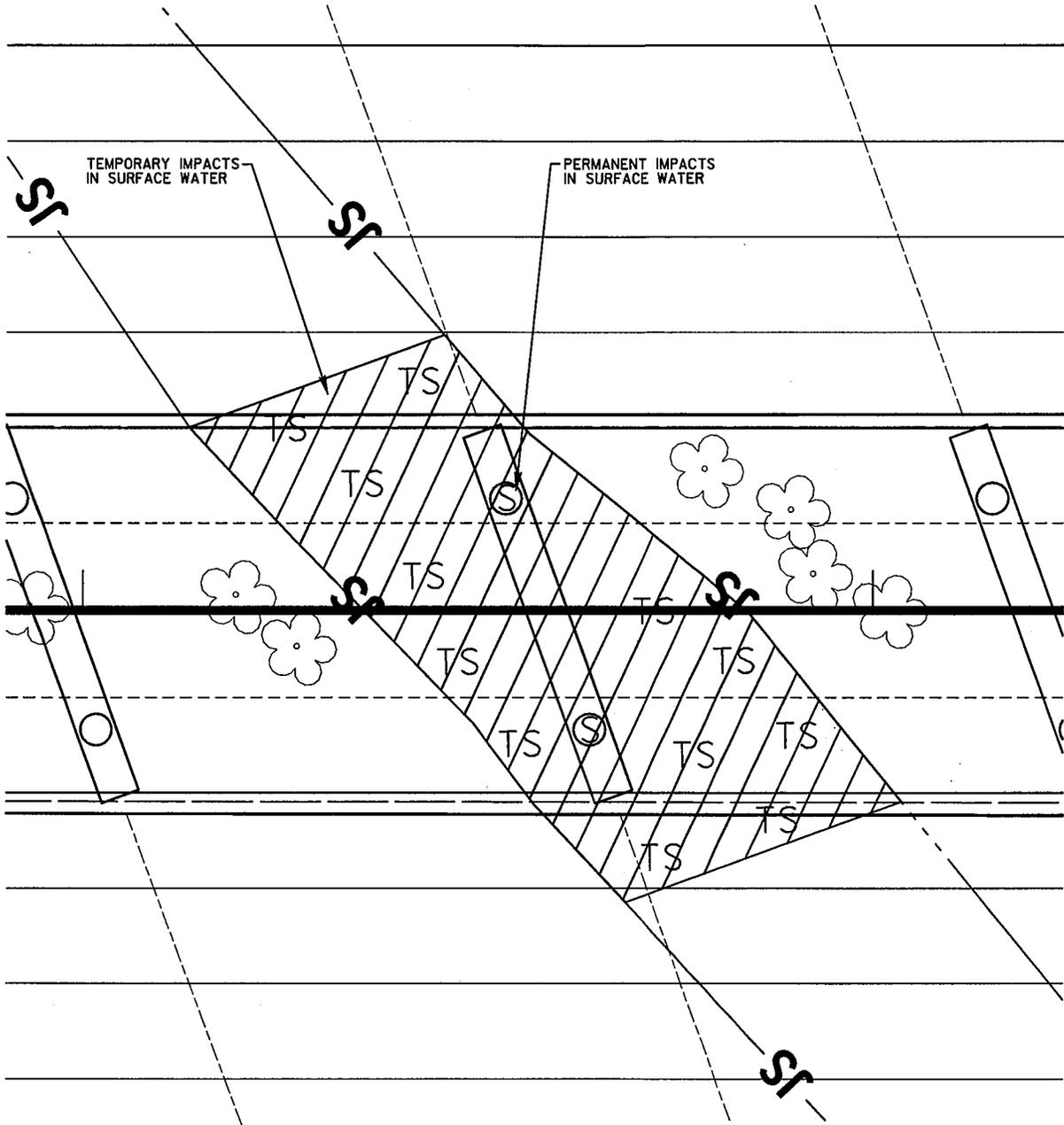
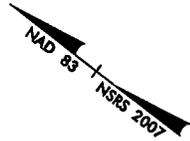
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|---------------------------|-------------------------------|---------------------------|
| Pls Sta 64+11.17 | PI Sta 77+49.50 | Pls Sta 90+52.82 |
| $\Theta_s = 2'00''44.3''$ | $\Delta = 23'53''44.8''$ (RT) | $\Theta_s = 2'00''44.3''$ |
| LS = 400.00' | D = 1'00''22.1'' | LS = 400.00' |
| LT = 266.68' | L = 2,374.98' | LT = 266.68' |
| ST = 133.35' | T = 1,205.01' | ST = 133.35' |
| | R = 5,694.58' | |
| | $e = 3.8\%$ | |
| | RUNOFF = 400' | |

Permit Drawing
Sheet 3 of 15

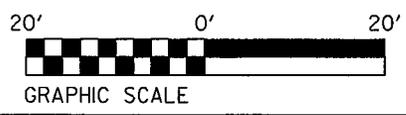
SEE SHEET 42 FOR -LLT- PROFILE
SEE SHEET 42 FOR -LRT- PROFILE

1/29/2013 K:\Projects\PERMITS_Environmental\Drawings\R4902_Hyd_Prm_psh08A.dgn

| LEGEND | |
|---|--|
|  | DENOTES IMPACTS IN SURFACE WATER |
|  | DENOTES TEMPORARY IMPACTS IN SURFACE WATER |



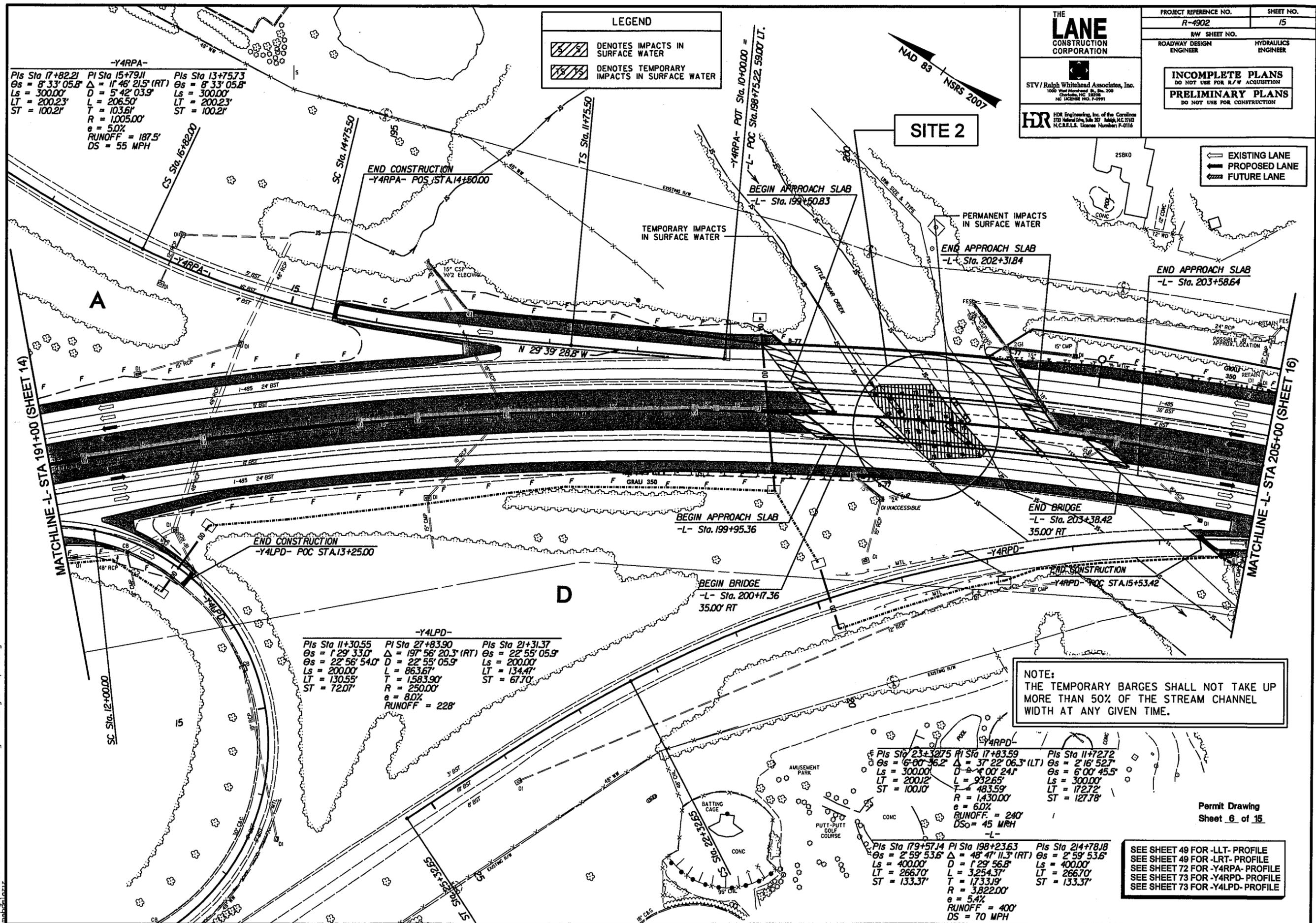
SITE 1



Permit Drawing
Sheet 5 of 15

NCDOT
DIVISION OF HIGHWAYS
MECKLENBURG COUNTY
PROJECT: C202851 (R-4902)
I-485 FROM I-77 TO
SR3624 (REA ROAD)
SOUTH OF CHARLOTTE

SHEET OF 01 / 29 / 2013



LEGEND

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

THE LANE CONSTRUCTION CORPORATION
 STV/Ralph Whitehead Associates, Inc.
 1000 West Hargett Street, Suite 200
 Charlotte, NC 28203
 NC LICENSE NO. P-2991

HDR HDR Engineering, Inc. of the Carolinas
 1770 National Drive, Suite 207 Raleigh, NC 27603
 N.C.E.L.E. License Number P-0116

PROJECT REFERENCE NO. R-4902 SHEET NO. 15
 RW SHEET NO. HYDRAULICS ENGINEER
 ROADWAY DESIGN ENGINEER

INCOMPLETE PLANS
 DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
 DO NOT USE FOR CONSTRUCTION

-Y4RPA-

| | | |
|-------------------|------------------------|-------------------|
| PIs Sta 17+82.21 | PI Sta 15+79.11 | PIs Sta 13+75.73 |
| Os = 8° 33' 05.8" | Δ = 11° 46' 21.5" (RT) | Os = 8° 33' 05.8" |
| Ls = 300.00' | D = 5° 42' 03.9" | Ls = 300.00' |
| LT = 200.23' | L = 206.50' | LT = 200.23' |
| ST = 100.21' | T = 103.61' | ST = 100.21' |
| | R = 1,005.00' | |
| | e = 5.0% | |
| | RUNOFF = 187.5' | |
| | DS = 55 MPH | |

-Y4LPD-

| | | |
|-------------------|-------------------------|--------------------|
| PIs Sta 11+30.55 | PI Sta 27+83.90 | PIs Sta 21+31.37 |
| Os = 1° 29' 33.0" | Δ = 197° 58' 20.3" (RT) | Os = 22° 55' 05.9" |
| Ls = 200.00' | D = 22° 55' 05.9" | Ls = 200.00' |
| LT = 130.55' | L = 863.67' | LT = 134.47' |
| ST = 72.07' | T = 1,583.90' | ST = 67.70' |
| | R = 250.00' | |
| | e = 8.0% | |
| | RUNOFF = 228' | |

-Y4RPD-

| | | |
|-------------------|------------------------|-------------------|
| PIs Sta 23+32.75 | PI Sta 17+83.59 | PIs Sta 11+72.72 |
| Os = 6° 00' 36.2" | Δ = 37° 22' 06.3" (LT) | Os = 2° 16' 52.7" |
| Ls = 300.00' | D = 4° 00' 24.1" | Os = 6° 00' 45.5" |
| LT = 200.12' | L = 932.65' | Ls = 300.00' |
| ST = 100.10' | T = 483.59' | LT = 172.72' |
| | R = 1,430.00' | ST = 127.78' |
| | e = 6.0% | |
| | RUNOFF = 240' | |
| | DS = 45 MRH | |

-Y4RPA-

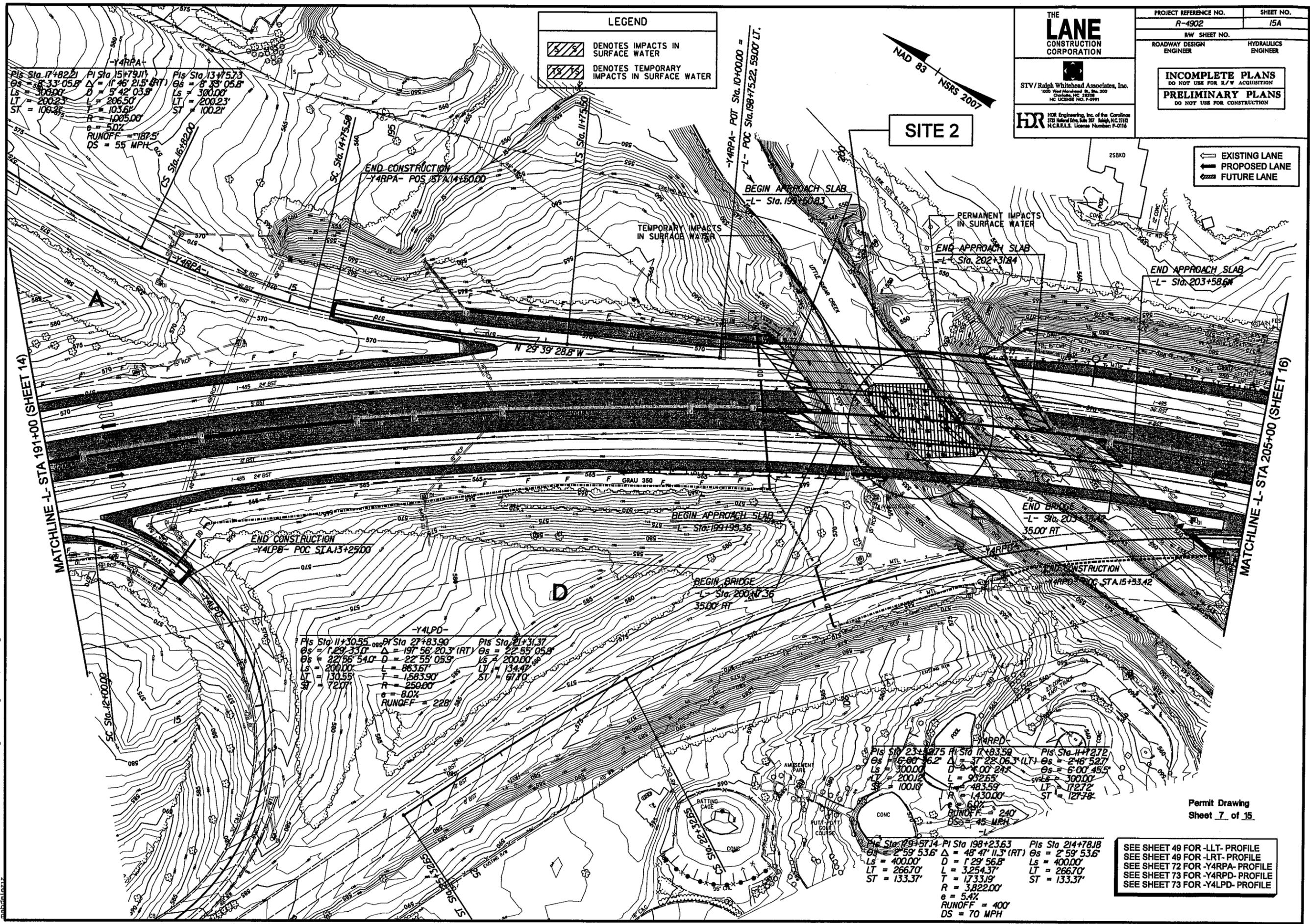
| | | |
|-------------------|------------------------|-------------------|
| PIs Sta 179+57.14 | PI Sta 198+23.63 | PIs Sta 214+78.18 |
| Os = 2° 59' 53.6" | Δ = 48° 47' 11.3" (RT) | Os = 2° 59' 53.6" |
| Ls = 400.00' | D = 1° 29' 56.8" | Ls = 400.00' |
| LT = 266.70' | L = 3,254.37' | LT = 266.70' |
| ST = 133.37' | T = 1,733.19' | ST = 133.37' |
| | R = 3,822.00' | |
| | e = 5.4% | |
| | RUNOFF = 400' | |
| | DS = 70 MPH | |

NOTE:
 THE TEMPORARY BARGES SHALL NOT TAKE UP MORE THAN 50% OF THE STREAM CHANNEL WIDTH AT ANY GIVEN TIME.

SEE SHEET 49 FOR -LLT- PROFILE
 SEE SHEET 49 FOR -LRT- PROFILE
 SEE SHEET 72 FOR -Y4RPA- PROFILE
 SEE SHEET 73 FOR -Y4RPD- PROFILE
 SEE SHEET 73 FOR -Y4LPD- PROFILE

Permit Drawing
 Sheet 6 of 15

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LEGEND

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

THE LANE CONSTRUCTION CORPORATION

STV/Ralph Whithead Associates, Inc.
1000 West Henderson St., Ste. 200
Charlotte, NC 28208
NC License No. F-0991

HDR HDR Engineering, Inc. of the Carolinas
3700 National Drive, Suite 207 Raleigh, NC 27612
N.C.E.L.S. License Number F-0716

PROJECT REFERENCE NO. R-4902 SHEET NO. 15A
RW SHEET NO.
ROADWAY DESIGN ENGINEER HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-Y4RPA-
 Pts Sta 17+82.21 PI Sta 15+79.11 Pts Sta 13+75.73
 Δs = 33° 05.8' Δ = 11' 48" 21.5' (RT) Δs = 8° 33' 05.8"
 Ls = 300.00 D = 5' 42" 03.9' Ls = 300.00
 LT = 200.23 L = 206.50 LT = 200.23
 ST = 109.21 T = 103.61 ST = 100.21
 R = 1005.00
 e = 5.0%
 RUNOFF = 187.5'
 DS = 55 MPH

-Y4LPD-
 Pts Sta 11+30.55 Pts Sta 27+83.90 Pts Sta 21+31.37
 Δs = 129° 33.0' Δ = 197' 56" 20.3' (RT) Δs = 22° 55' 05.8"
 Δs = 22° 55' 54.0' D = 22' 55" 05.9' Ls = 200.00
 Ls = 200.00 L = 863.61 LT = 134.47
 LT = 130.55 T = 1583.90 ST = 67.70
 ST = 72.07 R = 250.00
 e = 8.0%
 RUNOFF = 228'

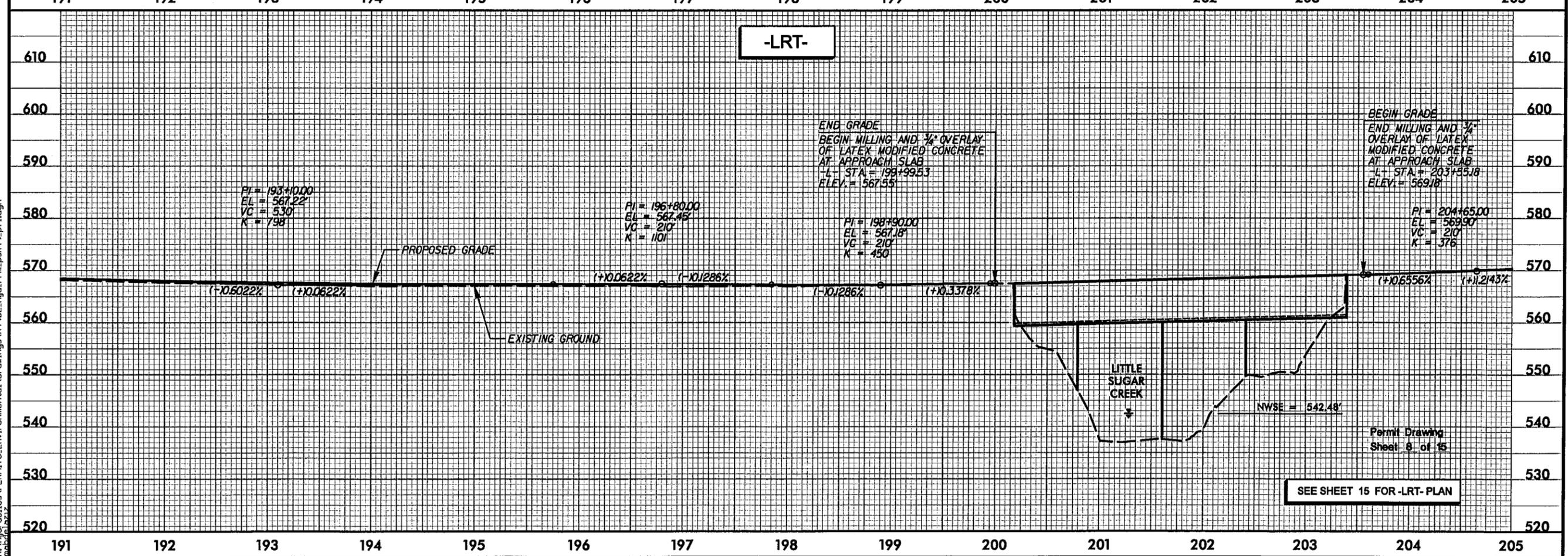
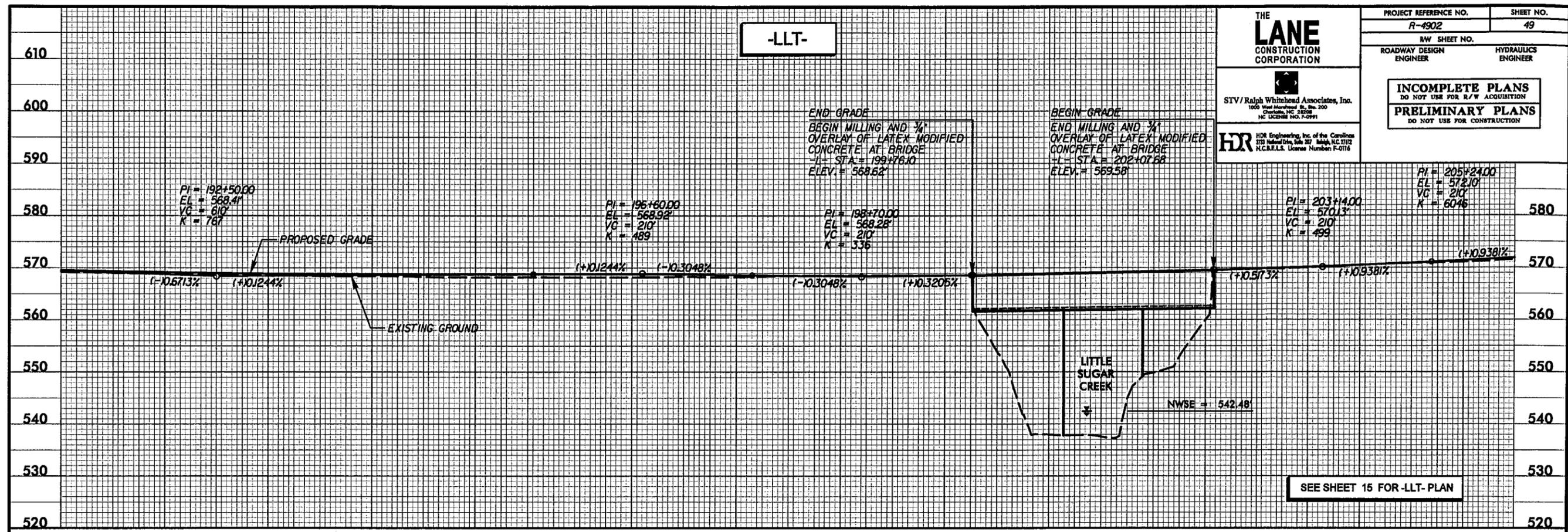
-Y4RPD-
 Pts Sta 23+27.5 Pts Sta 17+83.59 Pts Sta 11+72.72
 Δs = 116° 00' 36.2' Δ = 37' 22" 06.3' (LT) Δs = 2° 46' 52.7"
 Ls = 300.00 D = 4' 00" 24.7' Δs = 6° 00' 45.5"
 LT = 200.12 L = 932.65 LT = 300.00
 ST = 100.19 T = 483.59 ST = 127.78
 R = 1430.00
 e = 6.0%
 RUNOFF = 240'
 DS = 45 MPH

-Y4LRT-
 Pts Sta 19+57.14 PI Sta 198+23.63 Pts Sta 214+78.18
 Δs = 2° 59' 53.6' Δ = 48' 47" 11.3' (RT) Δs = 2° 59' 53.6"
 Ls = 400.00 D = 1' 29" 56.8' Ls = 400.00
 LT = 266.70 L = 3254.37 LT = 266.70
 ST = 133.37 T = 1733.19 ST = 133.37
 R = 3822.00
 e = 5.4%
 RUNOFF = 400'
 DS = 70 MPH

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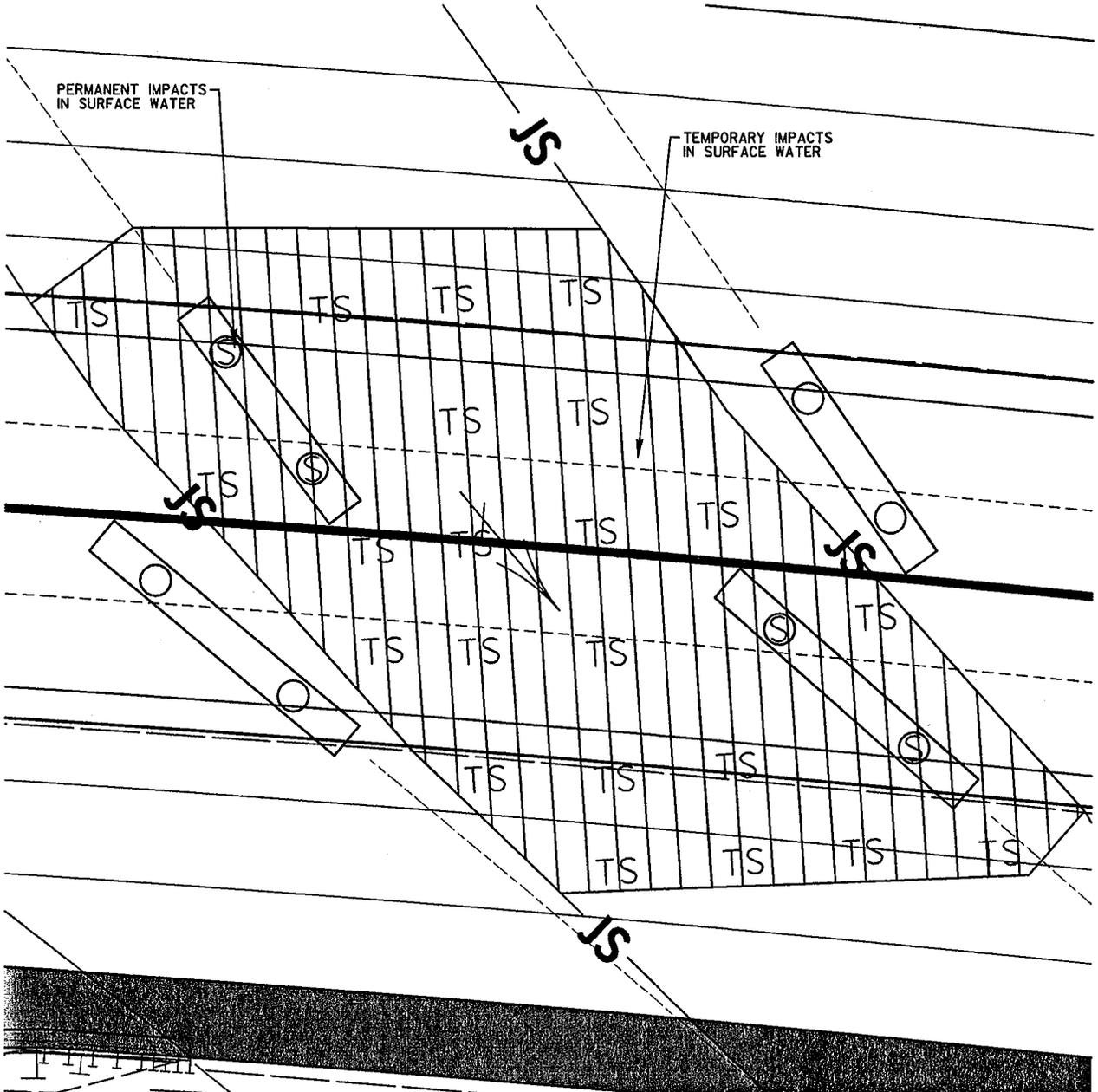
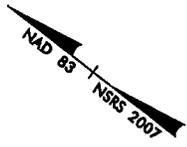
SEE SHEET 49 FOR -LLT- PROFILE
 SEE SHEET 49 FOR -LRT- PROFILE
 SEE SHEET 72 FOR -Y4RPA- PROFILE
 SEE SHEET 73 FOR -Y4RPD- PROFILE
 SEE SHEET 73 FOR -Y4LPD- PROFILE

Permit Drawing
 Sheet 7 of 15

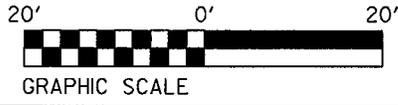


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| LEGEND | |
|---|--|
|  | DENOTES IMPACTS IN SURFACE WATER |
|  | DENOTES TEMPORARY IMPACTS IN SURFACE WATER |



SITE 2



Permit Drawing
Sheet 9 of 15

NCDOT
 DIVISION OF HIGHWAYS
 MECKLENBURG COUNTY
 PROJECT: C202831 (R-4902)
 I-485 FROM I-77 TO
 SR3624 (REA ROAD)
 SOUTH OF CHARLOTTE

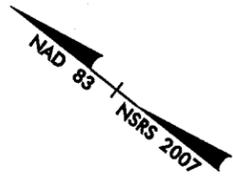
SHEET OF 01/29/2013

-L-

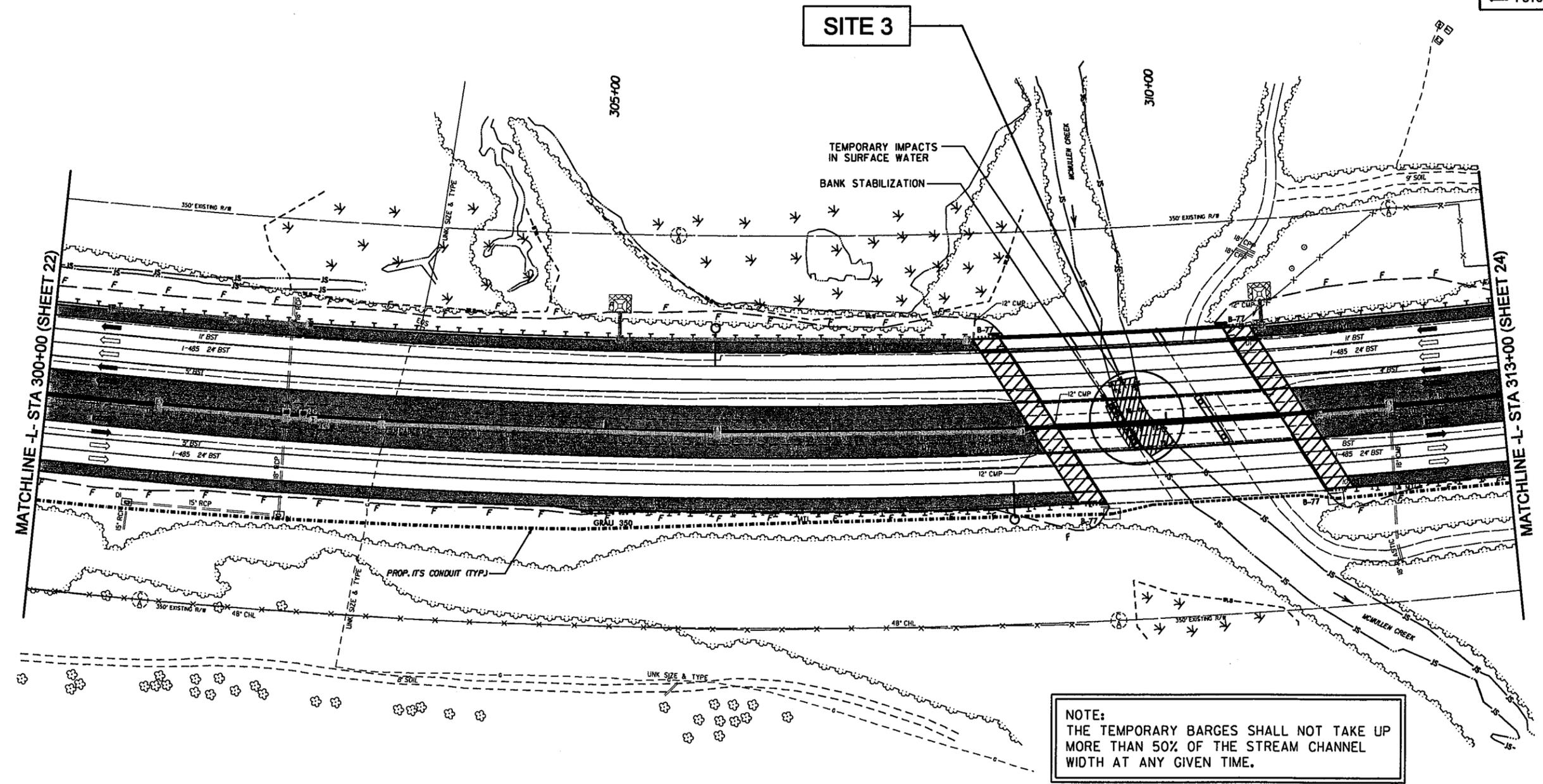
| | | | |
|-----------------------------|---------------------------------|---------------------------------|-----------------------------|
| PIs Sta 274+76.46 | PI Sta 308+20.60 | PI Sta 342+49.93 | PIs Sta 350+75.36 |
| $\Theta_s = 1' 50'' 00.0''$ | $\Delta = 54' 22'' 42.9''$ (LT) | $\Delta = 21' 00'' 00.0''$ (LT) | $\Theta_s = 3' 00'' 00.0''$ |
| $L_s = 400.00'$ | $D = 0' 55'' 00.0''$ | $D = 1' 30'' 00.0''$ | $L_s = 400.00'$ |
| $LT = 266.68'$ | $L = 5,932.21'$ | $L = 1,400.00'$ | $LT = 266.70'$ |
| $ST = 133.35'$ | $T = 3,210.82'$ | $T = 707.94'$ | $ST = 133.37'$ |
| | $R = 6,250.45'$ | $R = 3,819.72'$ | |
| | $e = 4.0\%$ | $e = 6.0\%$ | |
| | $RUNOFF = 400'$ | $RUNOFF = 400'$ | |
| | $DS = 75$ MPH | $DS = 75$ MPH | |

LEGEND

 DENOTES IMPACTS IN SURFACE WATER (BANK STABILIZATION)
 DENOTES TEMPORARY IMPACTS IN SURFACE WATER



 EXISTING LANE
 PROPOSED LANE
 FUTURE LANE



NOTE:
 THE TEMPORARY BARGES SHALL NOT TAKE UP MORE THAN 50% OF THE STREAM CHANNEL WIDTH AT ANY GIVEN TIME.

Permit Drawing
 Sheet 10 of 15

SEE SHEET 57 FOR -LLT- PROFILE
 SEE SHEET 57 FOR -LRT- PROFILE

1/29/2013 R:\Hydraulics\PERMITS_Environmental\Drawings\R4902_Hyd_Prm_psh23.dgn

| | | |
|---|--|-------------------------|
| THE LANE CONSTRUCTION CORPORATION  STV/Ralph Whithead Associates, Inc. <small>105 West Hargett St., Suite 200 Charlotte, NC 28202 NC License No. F-0991</small> | PROJECT REFERENCE NO. R-4902 | SHEET NO. 23A |
| | R/W SHEET NO. ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

HDR HDR Engineering, Inc. of the Carolinas
2703 National Drive, Suite 207 Raleigh, NC 27602
 N.C.R.E.L.S. License Number F-0116

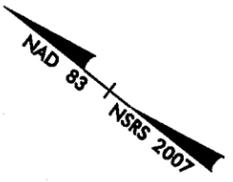
-L-

| | | | |
|--|---|--|--|
| PIs Sta 274+76.46 $\Theta_s = 1' 50'' 00.0''$ Ls = 400.00' LT = 266.68' ST = 133.35' | PI Sta 308+20.60 $\Delta = 54' 22'' 42.9''$ (LT) D = 0' 55'' 00.0'' L = 5932.21' T = 3210.82' R = 6250.45' e = 4.0% RUNOFF = 400' DS = 75 MPH | PI Sta 342+49.93 $\Delta = 21' 00'' 00.0''$ (LT) D = 1' 30'' 00.0'' L = 1400.00' T = 707.94' R = 3819.72' e = 6.0% RUNOFF = 400' DS = 75 MPH | PIs Sta 350+75.36 $\Theta_s = 3' 00'' 00.0''$ Ls = 400.00' LT = 266.70' ST = 133.37' |
|--|---|--|--|

LEGEND

 DENOTES IMPACTS IN SURFACE WATER (BANK STABILIZATION)

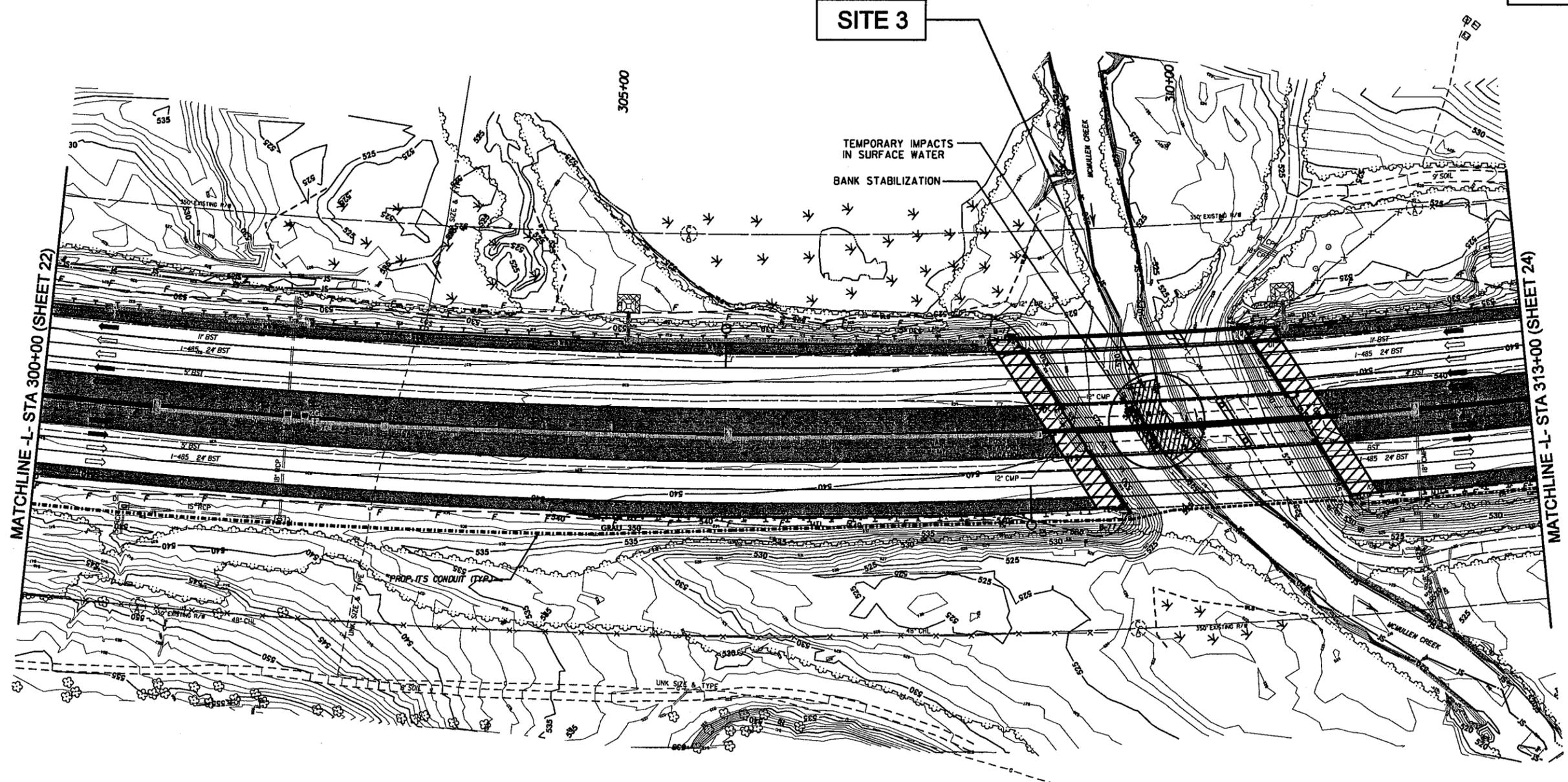
 DENOTES TEMPORARY IMPACTS IN SURFACE WATER



 EXISTING LANE

 PROPOSED LANE

 FUTURE LANE

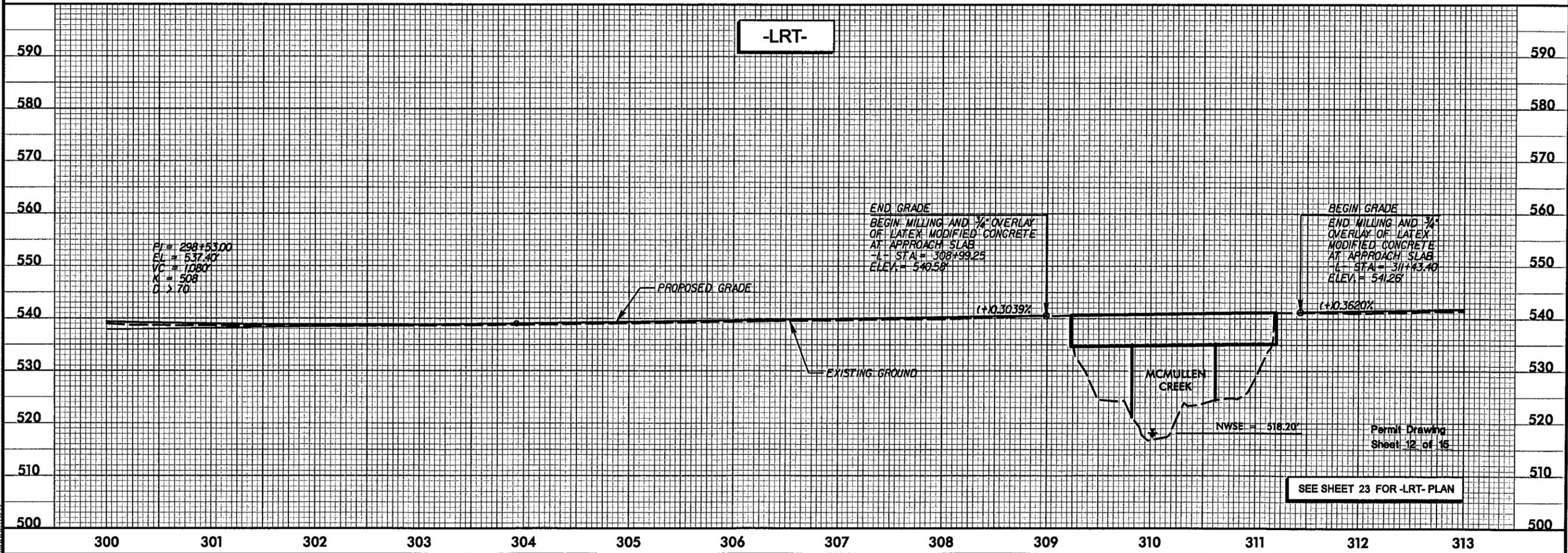
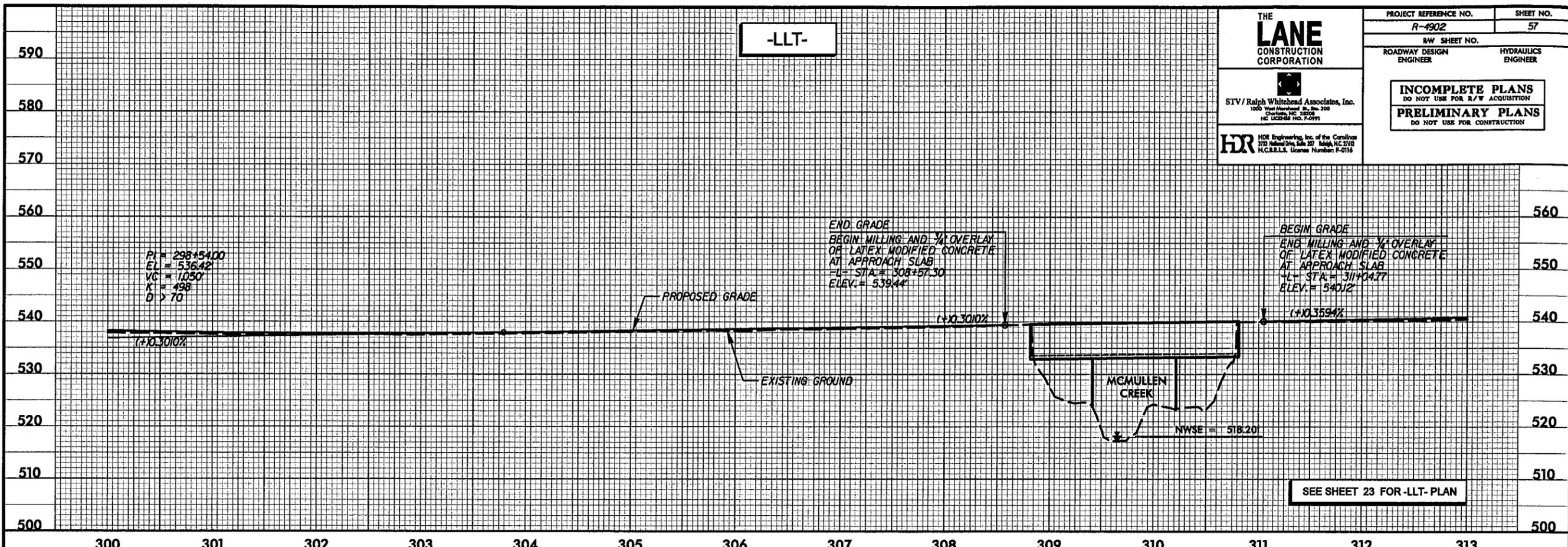


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Permit Drawing
Sheet 11 of 15

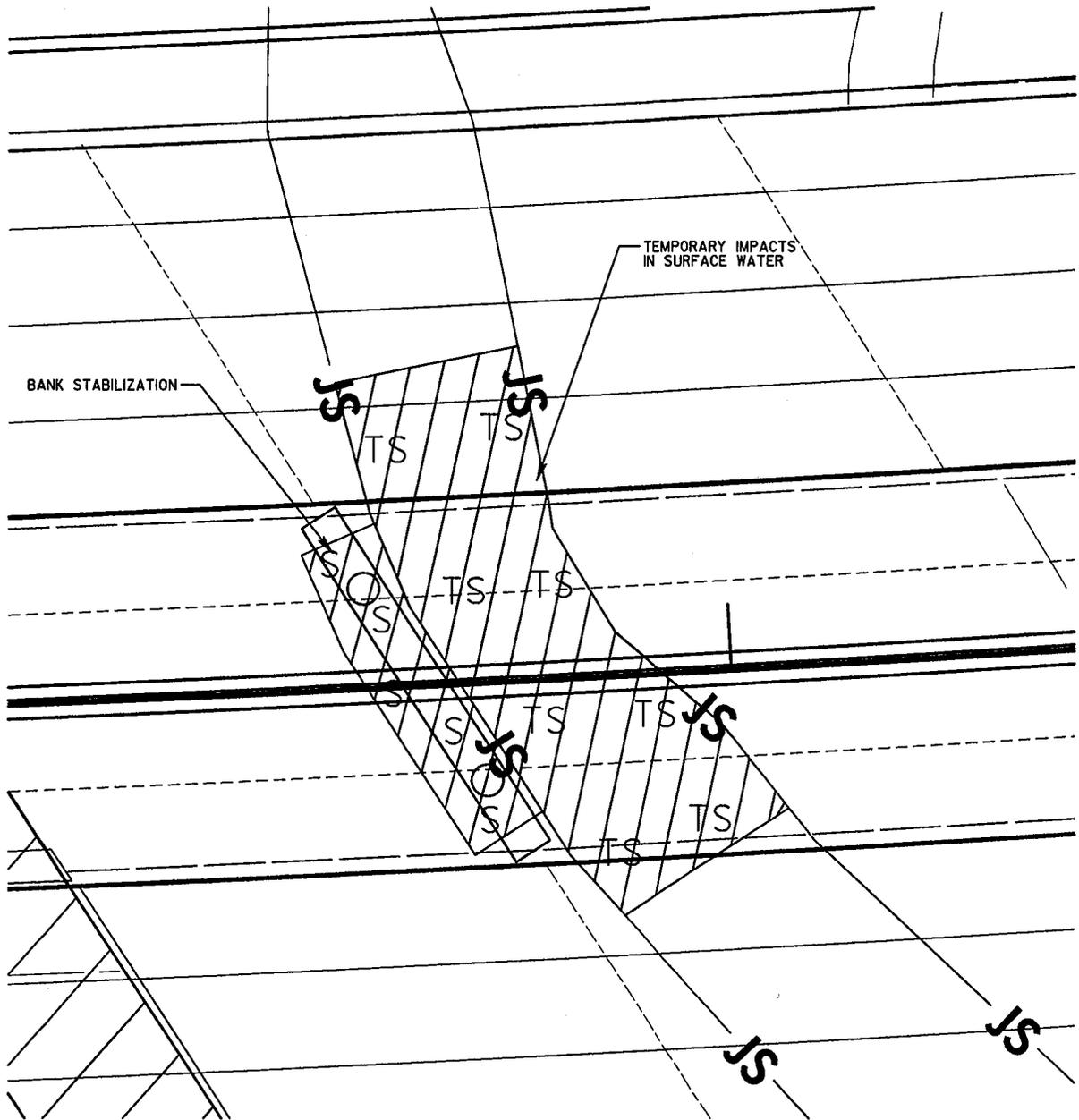
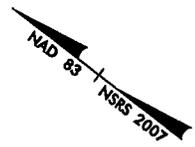
SEE SHEET 57 FOR -LLT- PROFILE
SEE SHEET 57 FOR -LRT- PROFILE

| | | |
|---|---|---------------------|
| THE LANE CONSTRUCTION CORPORATION  STV/Ralph Whitehead Associates, Inc. <small>1000 West Marshall St., Ste. 200 Charlotte, NC 28202 NC UCE2E No. F-0991</small> | PROJECT REFERENCE NO. R-4902 | SHEET NO. 57 |
| | RW SHEET NO. ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
| INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION | | |
|  HDR Engineering, Inc. of the Carolinas <small>3723 National Drive, Suite 207 Raleigh, NC 27612 N.C.E.L.S. License Number F-0115</small> | | |

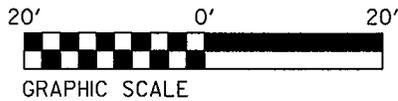


1/29/2013
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| LEGEND | |
|---|---|
|  | DENOTES IMPACTS IN SURFACE WATER (BANK STABILIZATION) |
|  | DENOTES TEMPORARY IMPACTS IN SURFACE WATER |



SITE 3



Permit Drawing
Sheet 13 of 15

NCDOT
DIVISION OF HIGHWAYS
MECKLENBURG COUNTY
PROJECT: C202831 (R-4902)
I-485 FROM I-77 TO
SR3624 (REA ROAD)
SOUTH OF CHARLOTTE

SHEET OF 01/29/2013

**PROPERTY OWNERS
NAMES AND ADDRESSES**

PARCEL NO.

NAMES

ADDRESS

**ALL ADJACENT
PROPERTY OWNERS
ARE NCDOT**

NCDOT

**DIVISION OF HIGHWAYS
MECKLENBURG COUNTY**

PROJECT: C202851 (R-4902)

I-485 FROM I-77 TO

SR3624 (REA ROAD)

SOUTH OF CHARLOTTE

Permit Drawing
Sheet 14 of 15

SHEET

OF

01/29/2013

| WETLAND PERMIT IMPACT SUMMARY | | | | | | | | | | | | |
|-------------------------------|---------------------------|-----------------------|---------------------------------|-----------------------------|-----------------------------|--------------------------------------|--------------------------------|---------------------------|-----------------------|---|-------------------------------------|----------------------------|
| Site No. | Station (From/To) | Structure Size / Type | WETLAND IMPACTS | | | | | SURFACE WATER IMPACTS | | | | |
| | | | Permanent Fill In Wetlands (ac) | Temp. Fill In Wetlands (ac) | Excavation in Wetlands (ac) | Mechanized Clearing in Wetlands (ac) | Hand Clearing in Wetlands (ac) | Permanent SW impacts (ac) | Temp. SW impacts (ac) | Existing Channel Impacts Permanent (ft) | Existing Channel Impacts Temp. (ft) | Natural Stream Design (ft) |
| 1 | -L- Sta. 96+15 to 97+05 | Temporary Barge | | | | | | 0.06 | | 75 | | |
| 2 | -L- Sta. 200+40 to 201+80 | Temporary Barge | | | | | | 0.15 | | 100 | | |
| 3 | -L- Sta. 309+65 to 310+05 | Temporary Barge | | | | | | 0.04 | | 76 | | |
| | | Bank Stabilization | | | | | | | | 45 | | |
| TOTALS: | | | | | | | | 0.00 | 0.25 | 45 | 251 | |

NOTE: Drilled Piers in water at Sites 1 and 2. Total impact = <0.01 ac (75 sq ft) from six piers (two at Site 1 and four at Site 2).

NC DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS

 MECKLENBURG COUNTY
 R-4902
 I-485 WIDENING FROM I-77 TO REA ROAD
 SHEET 15 of 15 1/29/2013

TIP PROJECT: R-4902

CONTRACT: C202831

See Sheet 1-A For Index of Sheets
See Sheet 1-B For Standard Symbology Sheet

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

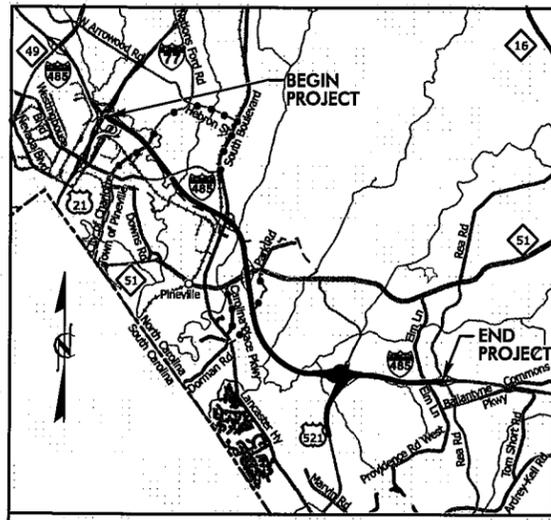
MECKLENBURG COUNTY

LOCATION: I-485 FROM I-77 TO SR 3624 (REA ROAD) SOUTH OF CHARLOTTE

TYPE OF WORK: GRADING, PAVING, DRAINAGE, SIGNING, ITS & STRUCTURES

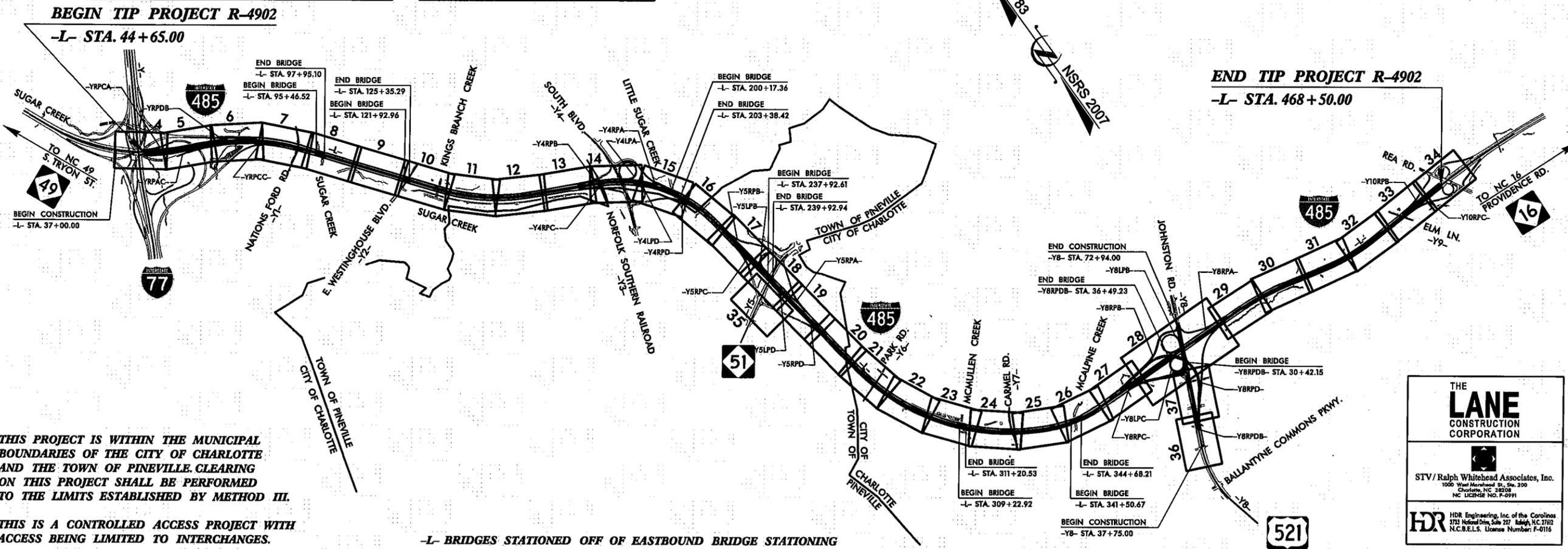
| | | | |
|-----------------|-----------------------------|-------------|--------------|
| STATE | STATE PROJECT REFERENCE NO. | SHEET NO. | TOTAL SHEETS |
| N.C. | R-4902 | 1 | |
| STATE PROJ. NO. | F.A. PROJ. NO. | DESCRIPTION | |
| 39929.3.1 | IMNHF-485(8) | P.E. | |
| | | | |
| | | | |
| | | | |

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



VICINITY MAP

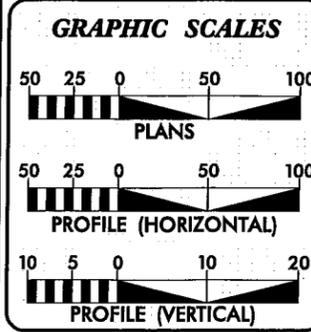
**PRELIMINARY ROADWAY
PLANS SUBMITTAL**
SUBMITTED: 11-02-12
SUBMITTAL #D-003



THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF THE CITY OF CHARLOTTE AND THE TOWN OF PINEVILLE. CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.

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

-L- BRIDGES STATIONED OFF OF EASTBOUND BRIDGE STATIONING



DESIGN DATA

| | | |
|---|---|---------|
| ADT 2015 | = | 153,800 |
| ADT 2035 | = | 220,700 |
| DHV | = | 10 % |
| D | = | 60 % |
| T | = | 10 % * |
| V | = | 70 MPH |
| *(TTST 5 + DUAL 5) | | |
| FUNCTIONAL CLASSIFICATION: INTERSTATE STATEWIDE TIER | | |

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT R-4902 = 7.773 MILES

LENGTH OF STRUCTURE TIP PROJECT R-4902 = 0.254 MILES (BASED ON 485 OUTER BRIDGES)

TOTAL LENGTH OF TIP PROJECT R-4902 = 8.027 MILES

NCDOT CONTACT: TERESA BRUTON, PE
Project Engineer - Transportation Program Management

PLANS PREPARED FOR THE NCDOT BY:
STV/RALPH WHITEHEAD ASSOCIATES, INC.
1000 West Morehead St., Ste. 200, Charlotte NC, 28208
NC License Number F-0991

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: **OCTOBER 1, 2012**

LETTING DATE: **OCTOBER 1, 2012**

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: _____ P.E.

THE LANE CONSTRUCTION CORPORATION

STV/Ralph Whitehead Associates, Inc.
1000 West Morehead St., Ste. 200
Charlotte, NC 28208
NC LICENSE NO. F-0991

HDR HDR Engineering, Inc. of the Carolinas
3733 Midland Drive, Suite 207 Raleigh, NC 27612
N.C.B.E.L.S. License Number: F-0116



Note: Not to Scale

*S.U.E. = Subsurface Utility Engineering

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO. R-4902
SHEET NO. 1-B

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

| | |
|--|----------|
| State Line | _____ |
| County Line | _____ |
| Township Line | _____ |
| City Line | _____ |
| Reservation Line | _____ |
| Property Line | _____ |
| Existing Iron Pin | ○ |
| Property Corner | ⊗ |
| Property Monument | ⊠ |
| Parcel/Sequence Number | ⑫③ |
| Existing Fence Line | -x-x-x- |
| Proposed Woven Wire Fence | -o-o-o- |
| Proposed Chain Link Fence | -□-□-□- |
| Proposed Barbed Wire Fence | -◇-◇-◇- |
| Existing Wetland Boundary | -w.w.- |
| Proposed Wetland Boundary | -w.w.- |
| Existing Endangered Animal Boundary | -e.a.b.- |
| Existing Endangered Plant Boundary | -e.p.s.- |
| Known Soil Contamination: Area or Site | ☠ ☠ |
| Potential Soil Contamination: Area or Site | ☠ ☠ |

BUILDINGS AND OTHER CULTURE:

| | |
|-------------------------------|---|
| Gas Pump Vent or U/G Tank Cap | ○ |
| Sign | ⊙ |
| Well | ⊕ |
| Small Mine | ⊗ |
| Foundation | ⊠ |
| Area Outline | ⊠ |
| Cemetery | ⊠ |
| Building | ⊠ |
| School | ⊠ |
| Church | ⊠ |
| Dam | ⊠ |

HYDROLOGY:

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

RAILROADS:

| | |
|--------------------|-------|
| Standard Gauge | _____ |
| RR Signal Milepost | ○ |
| Switch | ⊠ |
| RR Abandoned | _____ |
| RR Dismantled | _____ |

RIGHT OF WAY:

| | |
|--|-----------|
| Baseline Control Point | ◆ |
| Existing Right of Way Marker | △ |
| Existing Right of Way Line | _____ |
| Proposed Right of Way Line | _____ |
| Proposed Right of Way Line with Iron Pin and Cap Marker | _____ |
| Proposed Right of Way Line with Concrete or Granite Marker | _____ |
| Existing Control of Access | ⊕ |
| Proposed Control of Access | ⊕ |
| Existing Easement Line | _____ |
| Proposed Temporary Construction Easement | _____ |
| Proposed Temporary Drainage Easement | _____ TDE |
| Proposed Permanent Drainage Easement | _____ PDE |
| Proposed Permanent Drainage / Utility Easement | _____ DUE |
| Proposed Permanent Utility Easement | _____ PUE |
| Proposed Temporary Utility Easement | _____ TUE |
| Proposed Aerial Utility Easement | _____ AUE |
| Proposed Permanent Easement with Iron Pin and Cap Marker | ◆ |

ROADS AND RELATED FEATURES:

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

VEGETATION:

| | |
|--------------|-------|
| Single Tree | ○ |
| Single Shrub | ○ |
| Hedge | _____ |
| Woods Line | _____ |

| | |
|----------|-------|
| Orchard | _____ |
| Vineyard | _____ |

EXISTING STRUCTURES:

| | |
|--|---------------|
| MAJOR: | |
| Bridge, Tunnel or Box Culvert | _____ CONC |
| Bridge Wing Wall, Head Wall and End Wall | _____ CONC WW |
| MINOR: | |
| Head and End Wall | _____ CONC HW |
| Pipe Culvert | _____ |
| Footbridge | _____ |
| Drainage Box: Catch Basin, DI or JB | _____ CB |
| Paved Ditch Gutter | _____ |
| Storm Sewer Manhole | _____ S |
| Storm Sewer | _____ S |

UTILITIES:

| | |
|-------------------------------------|---------|
| POWER: | |
| Existing Power Pole | _____ |
| Proposed Power Pole | _____ |
| Existing Joint Use Pole | _____ |
| Proposed Joint Use Pole | _____ |
| Power Manhole | _____ |
| Power Line Tower | _____ |
| Power Transformer | _____ |
| U/G Power Cable Hand Hole | _____ |
| H-Frame Pole | _____ |
| Recorded U/G Power Line | _____ P |
| Designated U/G Power Line (S.U.E.*) | _____ P |

TELEPHONE:

| | |
|---|------------|
| Existing Telephone Pole | _____ |
| Proposed Telephone Pole | _____ |
| Telephone Manhole | _____ |
| Telephone Booth | _____ |
| Telephone Pedestal | _____ |
| Telephone Cell Tower | _____ |
| U/G Telephone Cable Hand Hole | _____ |
| Recorded U/G Telephone Cable | _____ T |
| Designated U/G Telephone Cable (S.U.E.*) | _____ T |
| Recorded U/G Telephone Conduit | _____ TC |
| Designated U/G Telephone Conduit (S.U.E.*) | _____ TC |
| Recorded U/G Fiber Optics Cable | _____ T FO |
| Designated U/G Fiber Optics Cable (S.U.E.*) | _____ T FO |

WATER:

| | |
|-------------------------------------|-----------------|
| Water Manhole | _____ |
| Water Meter | _____ |
| Water Valve | _____ |
| Water Hydrant | _____ |
| Recorded U/G Water Line | _____ W |
| Designated U/G Water Line (S.U.E.*) | _____ W |
| Above Ground Water Line | _____ A/G Water |

TV:

| | |
|--|-------------|
| TV Satellite Dish | _____ |
| TV Pedestal | _____ |
| TV Tower | _____ |
| U/G TV Cable Hand Hole | _____ |
| Recorded U/G TV Cable | _____ TV |
| Designated U/G TV Cable (S.U.E.*) | _____ TV |
| Recorded U/G Fiber Optic Cable | _____ TV FO |
| Designated U/G Fiber Optic Cable (S.U.E.*) | _____ TV FO |

GAS:

| | |
|-----------------------------------|---------------|
| Gas Valve | _____ |
| Gas Meter | _____ |
| Recorded U/G Gas Line | _____ G |
| Designated U/G Gas Line (S.U.E.*) | _____ G |
| Above Ground Gas Line | _____ A/G Gas |

SANITARY SEWER:

| | |
|--|--------------------------|
| Sanitary Sewer Manhole | _____ |
| Sanitary Sewer Cleanout | _____ |
| U/G Sanitary Sewer Line | _____ SS |
| Above Ground Sanitary Sewer | _____ A/G Sanitary Sewer |
| Recorded SS Forced Main Line | _____ FSS |
| Designated SS Forced Main Line (S.U.E.*) | _____ FSS |

MISCELLANEOUS:

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

SKETCHES SHOWING BRIDGES IN RELATIONSHIP TO PAVEMENT

 = BRIDGE APPROACH SLAB

THE
LANE
CONSTRUCTION
CORPORATION

STV / Ralph Whitehead Associates, Inc.
1000 West Hargett St., Ste. 200
Charlotte, NC 28208
NC LICENSE NO. F-0971

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3733 Hargett Drive, Suite 207 Raleigh, NC 27612
N.C.E.L.S. License Number: F-0116

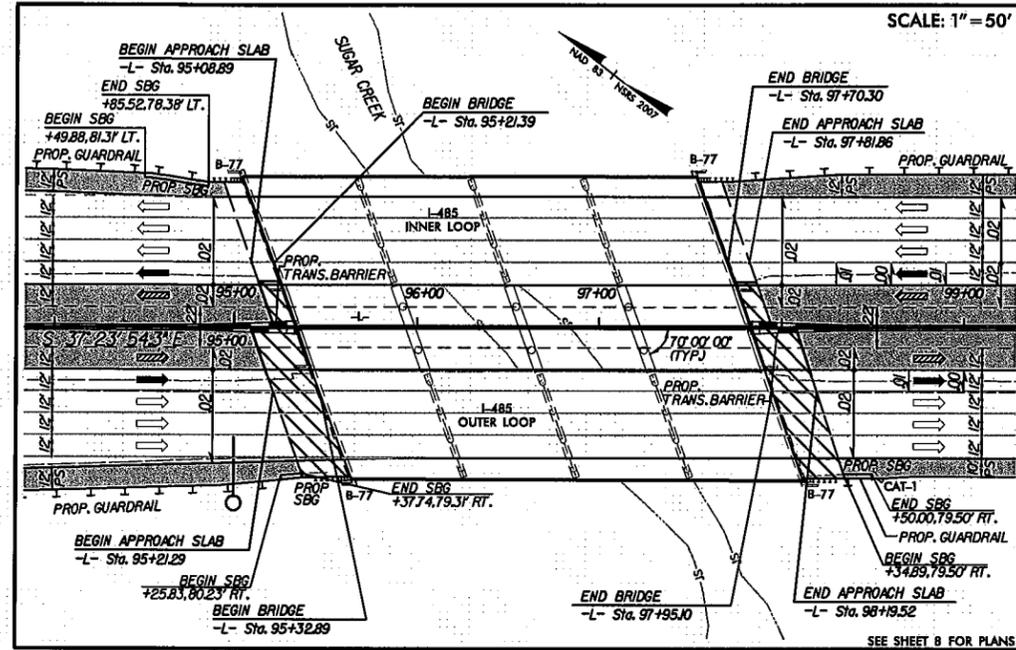
PROJECT REFERENCE NO. SHEET NO.

R-4902 2-J

R/W SHEET NO.

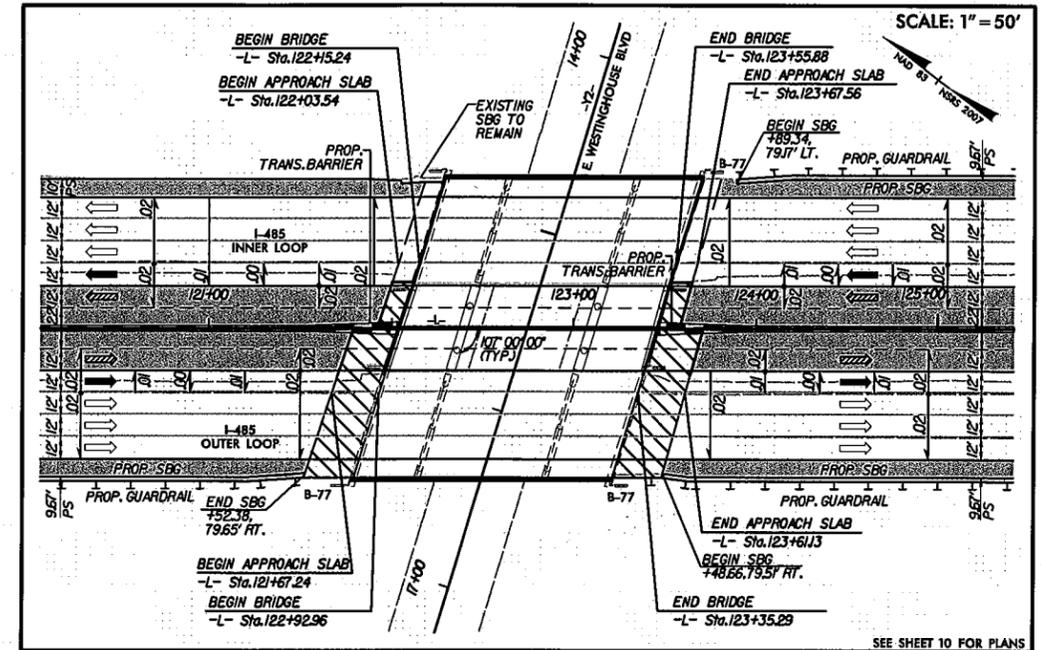
ROADWAY DESIGN ENGINEER HYDRAULICS ENGINEER

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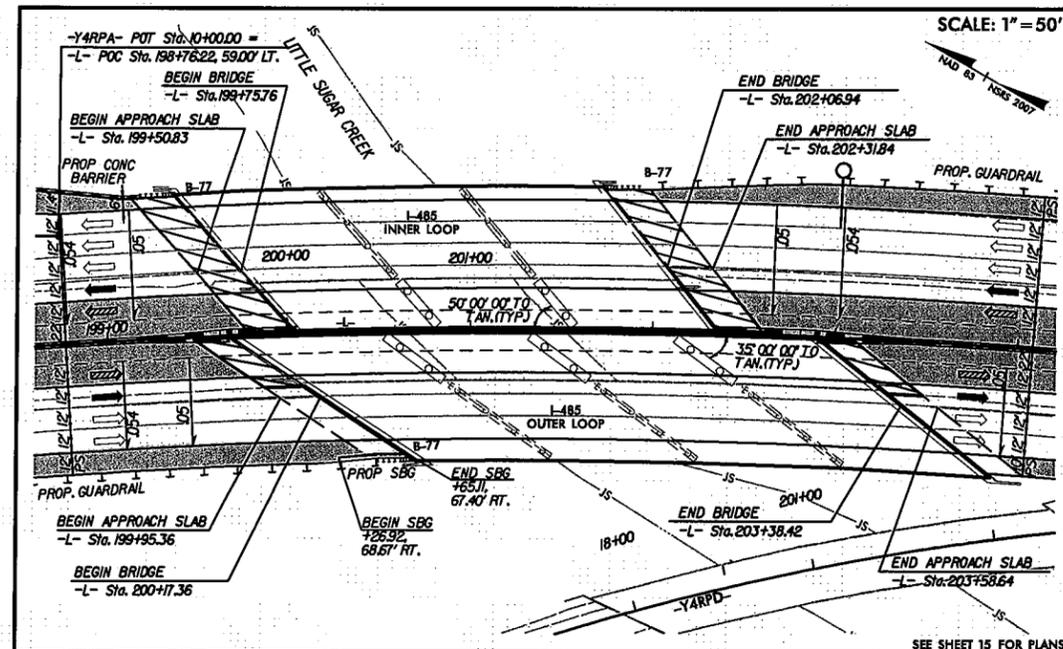
BRIDGE SKETCH NO. 1

DETAIL SHOWING PAVEMENT-BRIDGE RELATIONSHIP FOR L- (I-485) OVER SUGAR CREEK



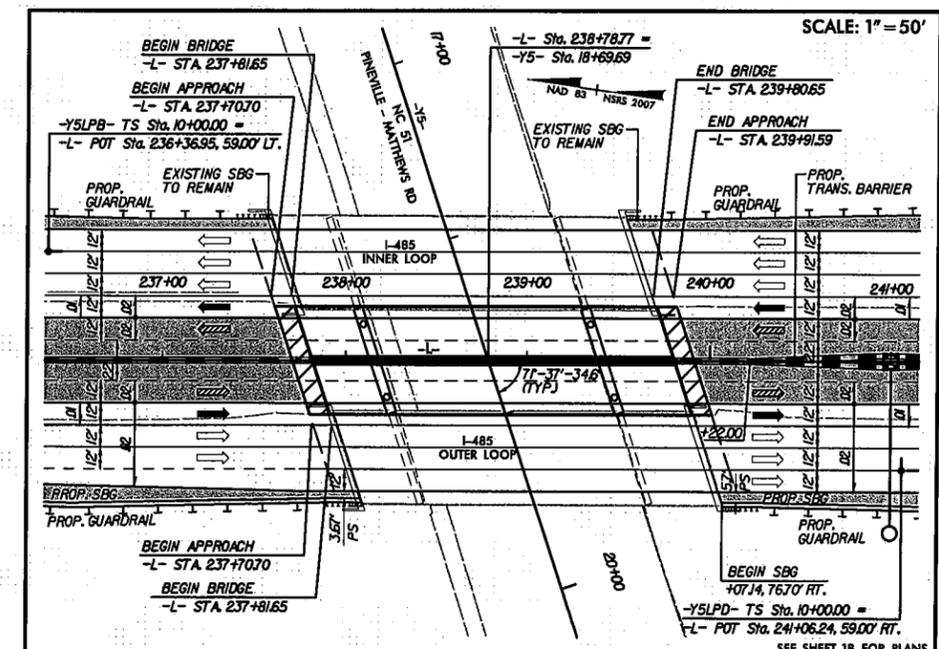
BRIDGE SKETCH NO. 2

DETAIL SHOWING PAVEMENT-BRIDGE RELATIONSHIP FOR L- (I-485) OVER -Y2- (E. WESTINGHOUSE BLVD)



BRIDGE SKETCH NO. 3

DETAIL SHOWING PAVEMENT-BRIDGE RELATIONSHIP FOR L- (I-485) OVER LITTLE SUGAR CREEK



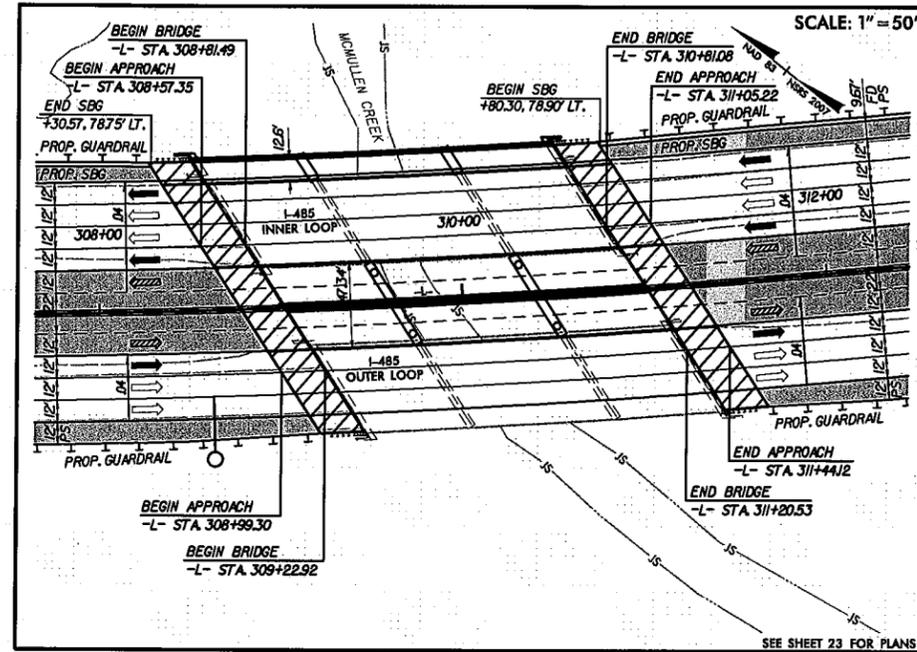
BRIDGE SKETCH NO. 4

DETAIL SHOWING PAVEMENT-BRIDGE RELATIONSHIP FOR L- (I-485) OVER NC 51 (PINEVILLE-MATTHEWS RD)

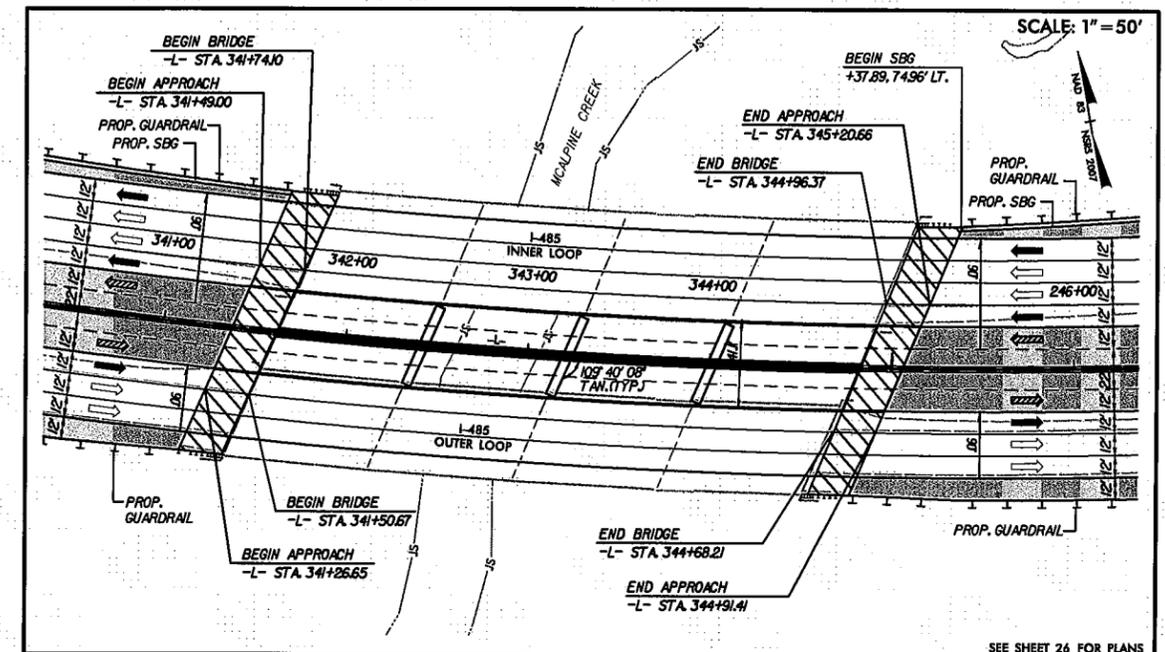
SKETCHES SHOWING BRIDGES IN RELATIONSHIP TO PAVEMENT

 = BRIDGE APPROACH SLAB

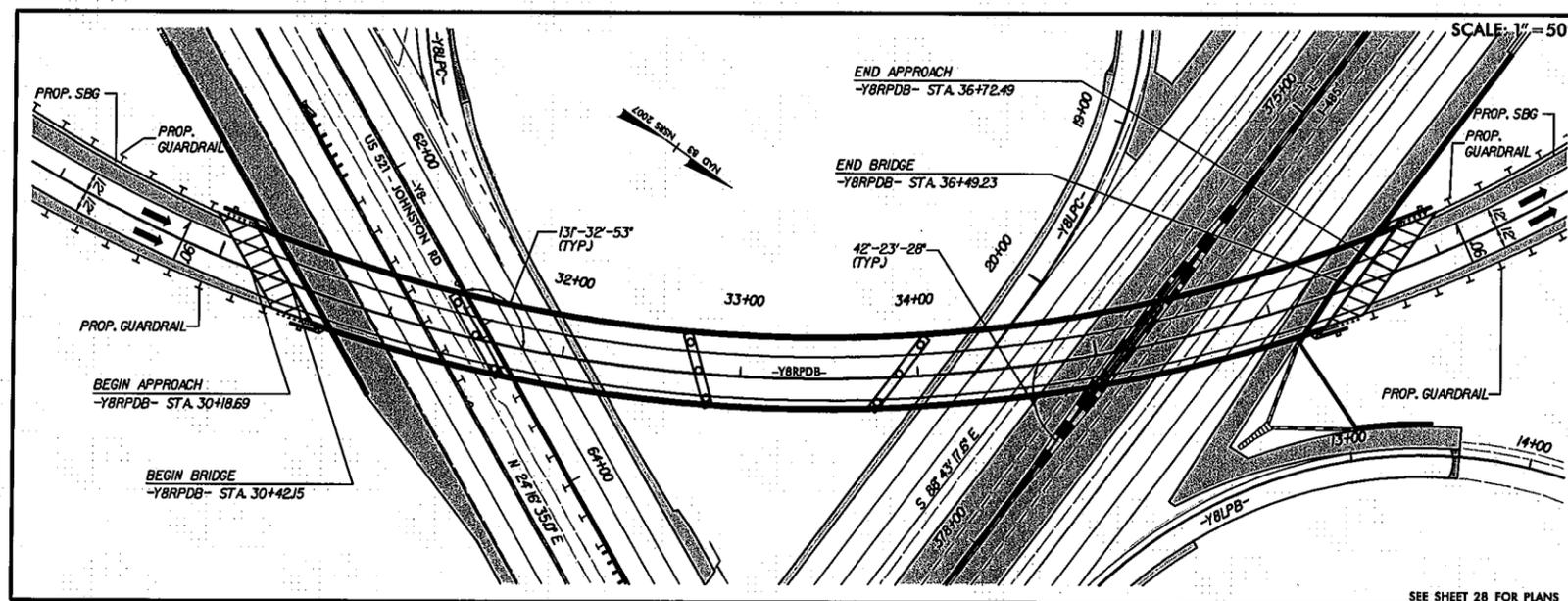
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| THE LANE CONSTRUCTION CORPORATION  STV / Ralph Whitehead Associates, Inc. 1000 West Morehead St., Ste. 200 Charlotte, NC 28208 NC LICENSE NO. F-0991 | PROJECT REFERENCE NO. R-4902 | SHEET NO. 2-K |
| | ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
| INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION | | |
|  HDR Engineering, Inc. of the Carolinas 3723 Heffland Drive, Suite 207 Raleigh, NC 27612 N.C.E.L.S. License Number: F-0116 | | |



BRIDGE SKETCH NO. 5
 DETAIL SHOWING PAVEMENT-BRIDGE RELATIONSHIP FOR I-485 OVER MCMULLEN CREEK



BRIDGE SKETCH NO. 6
 DETAIL SHOWING PAVEMENT-BRIDGE RELATIONSHIP FOR I-485 OVER MCALPINE CREEK



BRIDGE SKETCH NO. 3
 DETAIL SHOWING PAVEMENT-BRIDGE RELATIONSHIP FOR -Y8RPDB- (JOHNSTON RD) OVER -Y8- (US 521 - JOHNSTON RD) & -I-485-

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PROJECT REFERENCE NO. R-4902 SHEET NO. 15

R/W SHEET NO. ROADWAY DESIGN ENGINEER HYDRAULICS ENGINEER

INCOMPLETE PLANS
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PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

THE LANE CONSTRUCTION CORPORATION

STV/Ralph Whitehead Associates, Inc.
1000 West Hargett St., Ste. 200
Charlotte, NC 28208
NC LICENSE NO. F-0991

HDR HDR Engineering, Inc. of the Carolinas
3783 Midland Drive, Suite 207 Raleigh, NC 27612
N.C.E.L.S. License Number: F-0116

-Y4RPA-

| | | |
|--------------------------------|------------------------------------|--------------------------------|
| Pls Sta 17+82.21 | Pls Sta 15+79.11 | Pls Sta 13+75.73 |
| $\Theta_s = 8^\circ 33' 05.8"$ | $\Delta = 17^\circ 46' 21.5" (RT)$ | $\Theta_s = 8^\circ 33' 05.8"$ |
| $L_s = 300.00'$ | $D = 5^\circ 42' 03.9"$ | $L_s = 300.00'$ |
| $LT = 200.23'$ | $L = 206.50'$ | $LT = 200.23'$ |
| $ST = 100.21'$ | $T = 103.61'$ | $ST = 100.21'$ |
| | $R = 1,005.00'$ | |
| | $e = 5.0\%$ | |
| | RUNOFF = 187.5' | |

-Y4LPD-

| | | |
|---------------------------------|-------------------------------------|---------------------------------|
| Pls Sta 11+30.55 | Pls Sta 27+83.90 | Pls Sta 21+31.37 |
| $\Theta_s = 1^\circ 29' 33.0"$ | $\Delta = 197^\circ 56' 20.3" (RT)$ | $\Theta_s = 22^\circ 55' 05.9"$ |
| $\Theta_s = 22^\circ 56' 54.0"$ | $D = 22^\circ 55' 05.9"$ | $L_s = 200.00'$ |
| $L_s = 200.00'$ | $L = 863.67'$ | $LT = 134.47'$ |
| $LT = 130.55'$ | $T = 1,583.90'$ | $ST = 67.70'$ |
| $ST = 72.07'$ | $R = 250.00'$ | |
| | $e = 8.0\%$ | |
| | RUNOFF = 228' | |

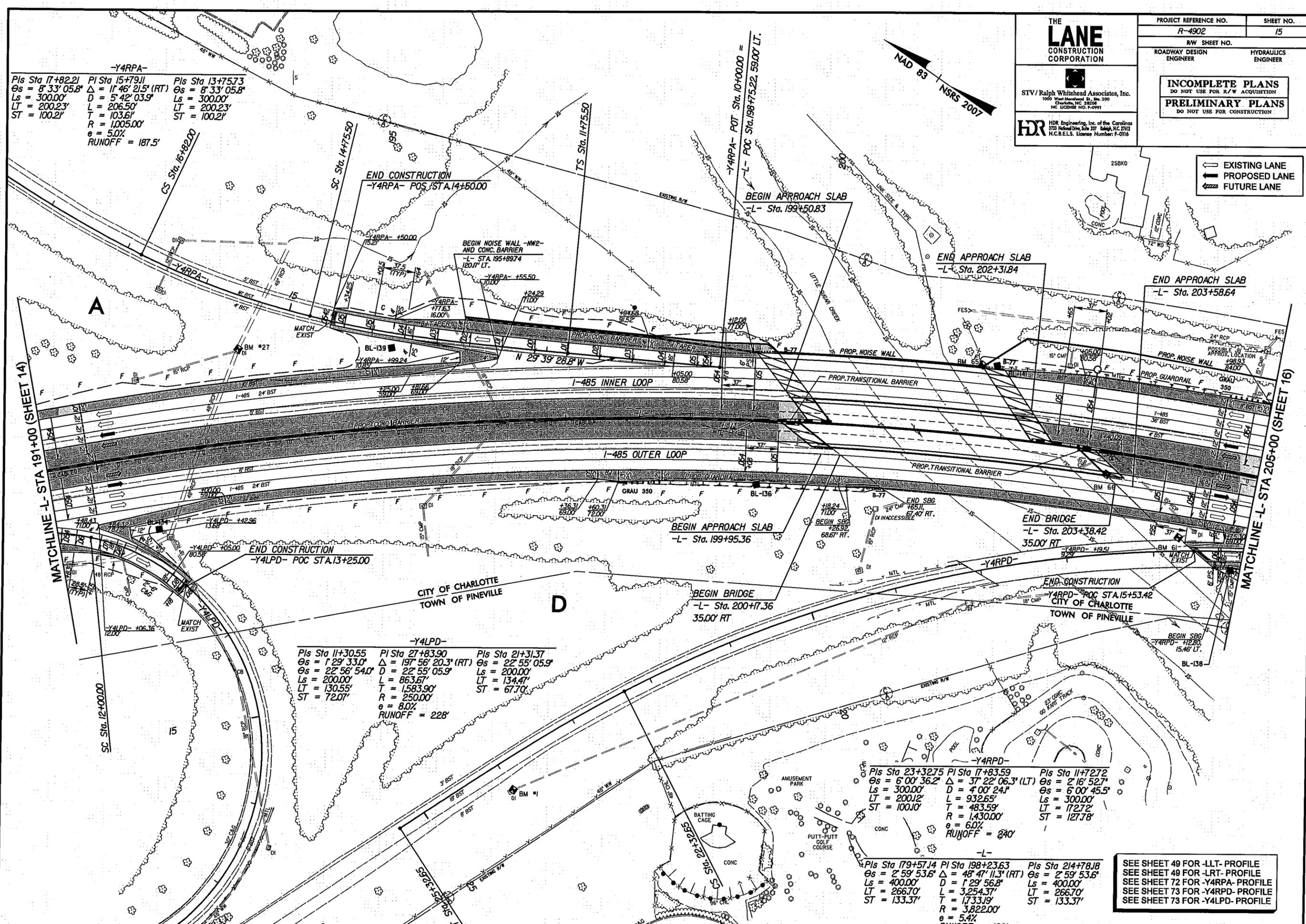
-Y4RPD-

| | | |
|--------------------------------|------------------------------------|--------------------------------|
| Pls Sta 23+32.75 | Pls Sta 17+83.59 | Pls Sta 11+72.72 |
| $\Theta_s = 6^\circ 00' 36.2"$ | $\Delta = 37^\circ 22' 06.3" (LT)$ | $\Theta_s = 2^\circ 16' 52.7"$ |
| $L_s = 300.00'$ | $D = 4^\circ 00' 24.1"$ | $\Theta_s = 6^\circ 00' 45.5"$ |
| $LT = 200.12'$ | $L = 932.65'$ | $L_s = 300.00'$ |
| $ST = 100.10'$ | $T = 483.59'$ | $LT = 172.72'$ |
| | $R = 1,430.00'$ | $ST = 127.78'$ |
| | $e = 6.0\%$ | |
| | RUNOFF = 240' | |

-L-

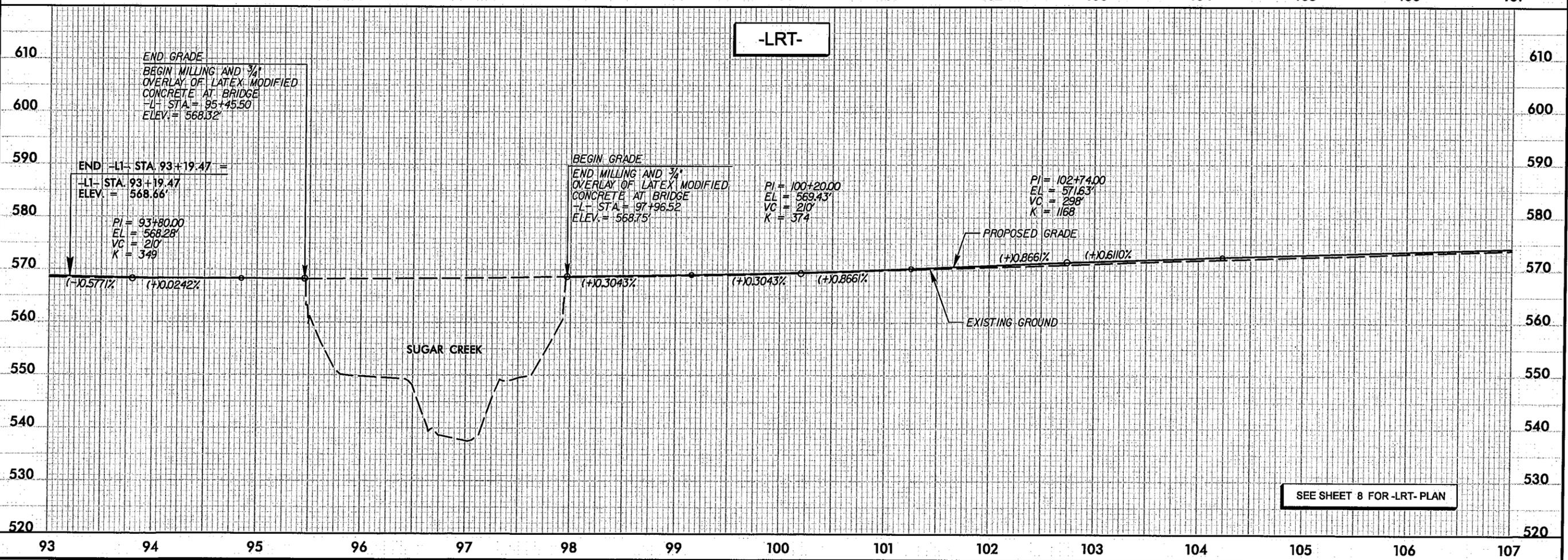
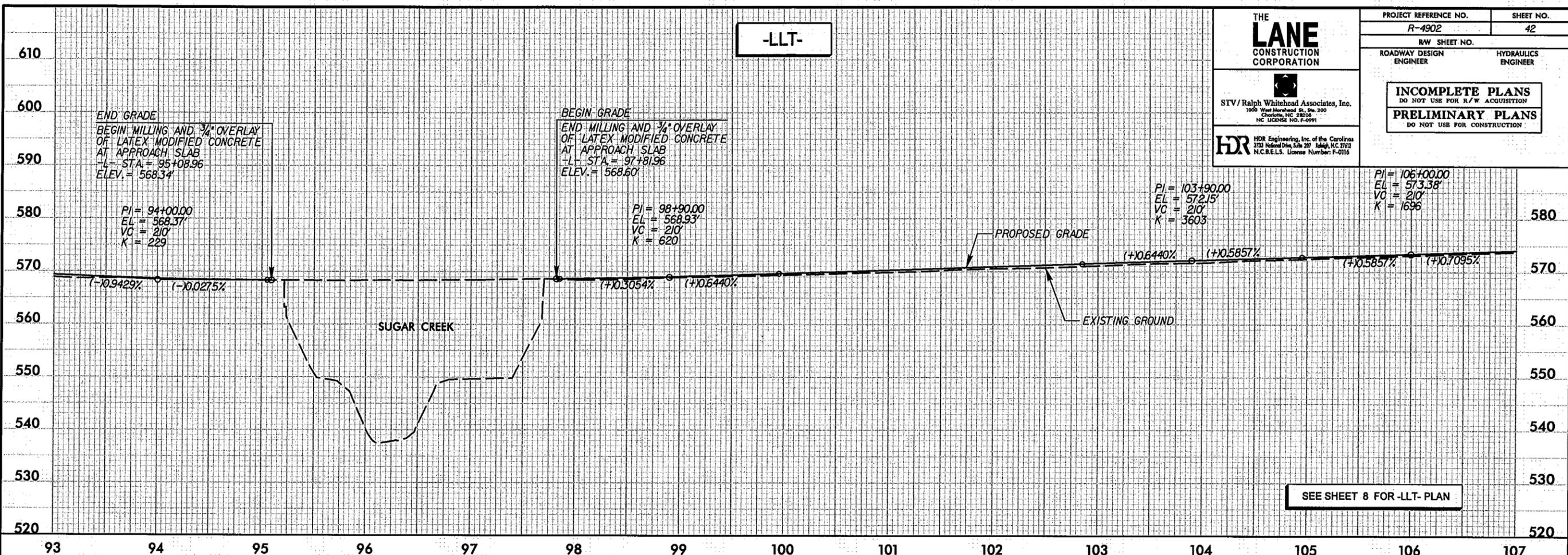
| | | |
|--------------------------------|------------------------------------|--------------------------------|
| Pls Sta 179+57.14 | Pls Sta 198+23.63 | Pls Sta 214+78.18 |
| $\Theta_s = 2^\circ 59' 53.6"$ | $\Delta = 48^\circ 47' 11.3" (RT)$ | $\Theta_s = 2^\circ 59' 53.6"$ |
| $L_s = 400.00'$ | $D = 1^\circ 29' 56.8"$ | $L_s = 400.00'$ |
| $LT = 266.70'$ | $L = 3,254.37'$ | $LT = 266.70'$ |
| $ST = 133.37'$ | $T = 1,733.19'$ | $ST = 133.37'$ |
| | $R = 3,822.00'$ | |
| | $e = 5.4\%$ | |
| | RUNOFF = 400' | |

SEE SHEET 49 FOR -LLT- PROFILE
SEE SHEET 49 FOR -LRT- PROFILE
SEE SHEET 72 FOR -Y4RPA- PROFILE
SEE SHEET 73 FOR -Y4RPD- PROFILE
SEE SHEET 73 FOR -Y4LPD- PROFILE



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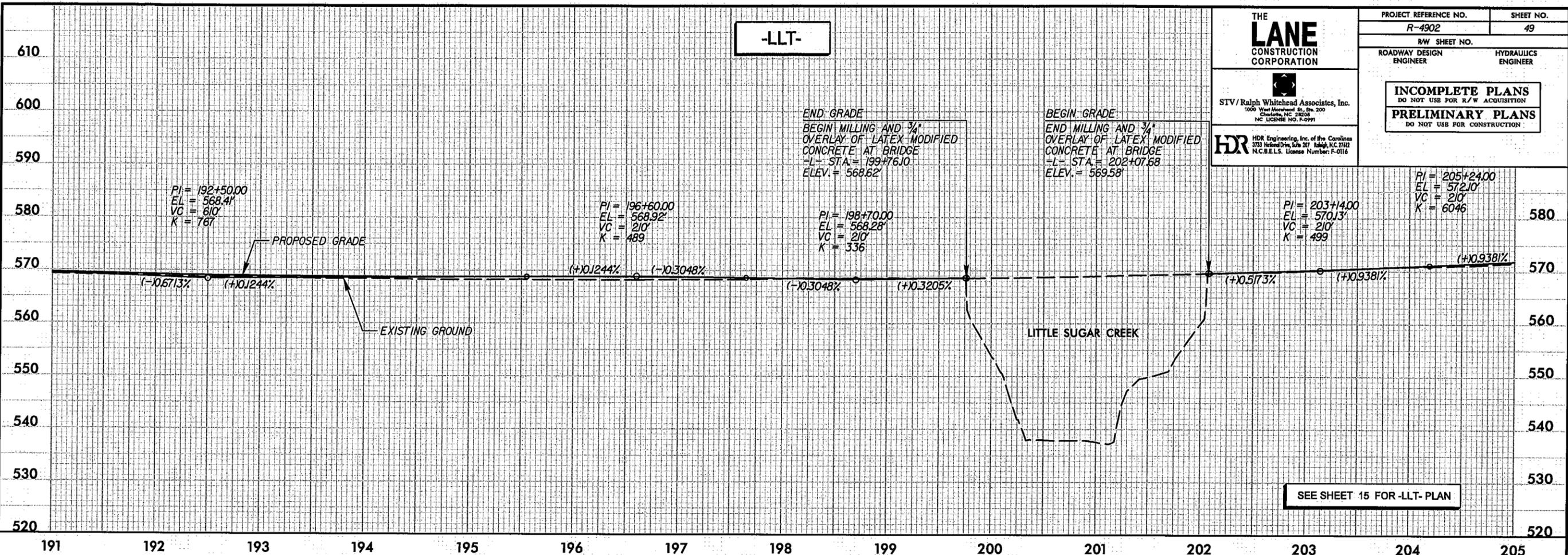
INCOMPLETE PLANS
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PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



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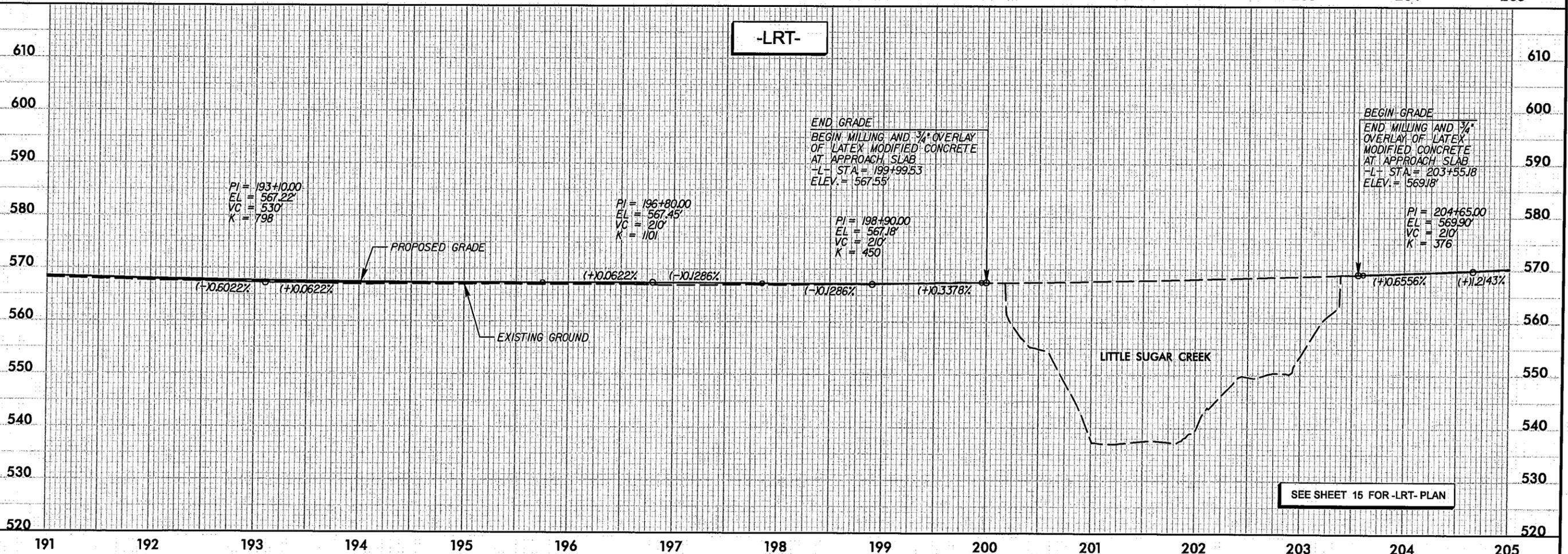
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| PROJECT REFERENCE NO. | R-4902 | SHEET NO. | 49 |
| R/W SHEET NO. | | | |
| ROADWAY DESIGN ENGINEER | | HYDRAULICS ENGINEER | |
| INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION | | | |
| PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION | | | |

-LLT-



SEE SHEET 15 FOR -LLT- PLAN

-LRT-



SEE SHEET 15 FOR -LRT- PLAN

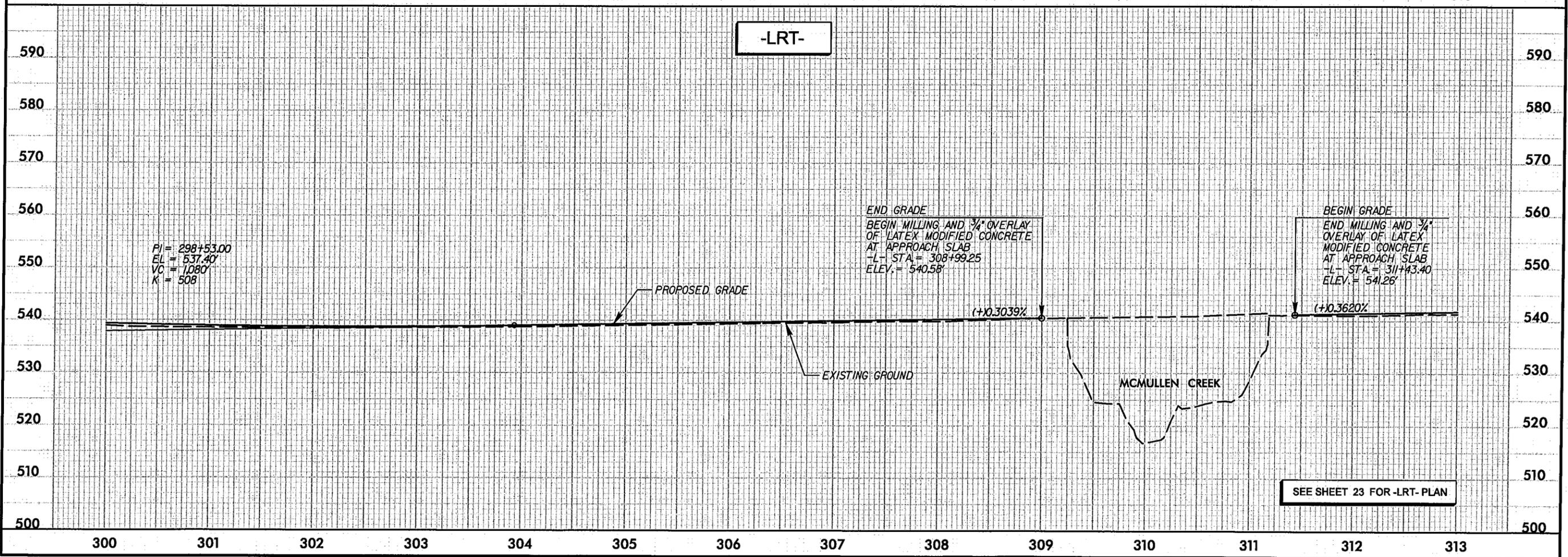
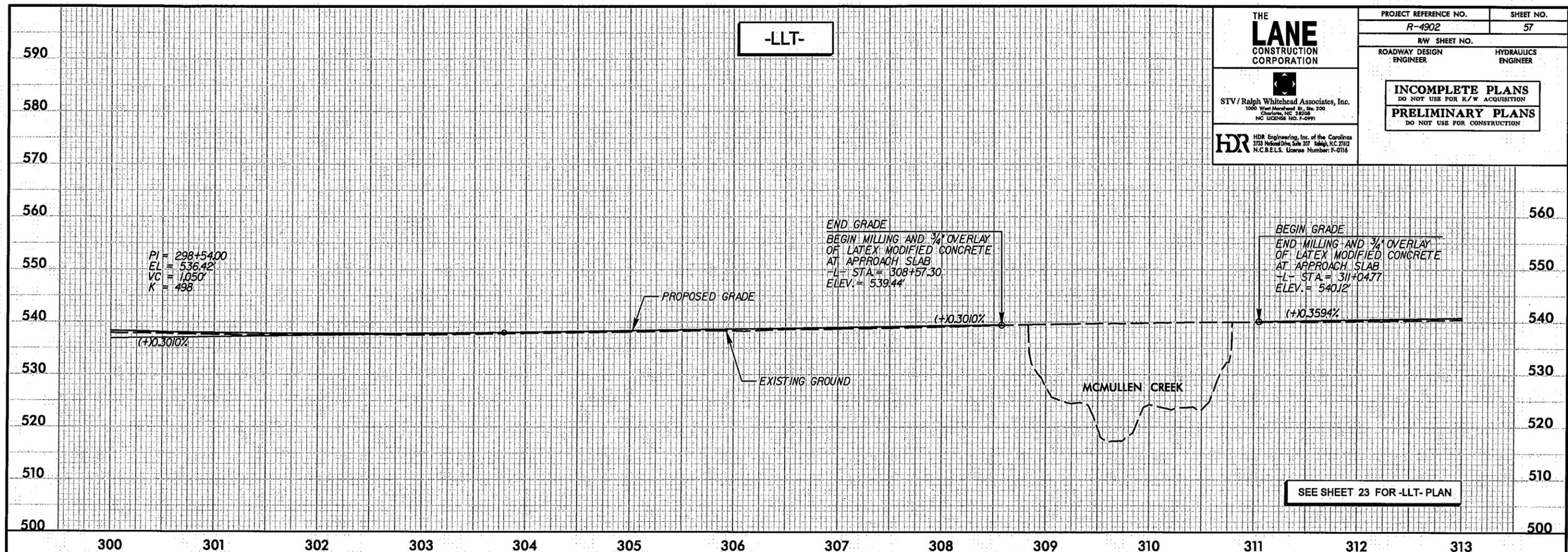
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| | | |
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| THE LANE CONSTRUCTION CORPORATION  STV/Ralph Whitehead Associates, Inc. <small>1000 West Hargett St., Ste. 200 Charlotte, NC 28208 NC LICENSE NO. F-0991</small> | PROJECT REFERENCE NO. R-4902 | SHEET NO. 57 |
| | RW SHEET NO. ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |

INCOMPLETE PLANS
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PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION


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 233 Federal Drive, Suite 307 Raleigh, NC 27611
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