



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION

PAT L. MCCRORY  
GOVERNOR

ANTHONY J. TATA  
SECRETARY

July 10, 2015

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

ATTN: Ms. Loretta Beckwith  
NCDOT Coordinator

Subject: **Application for Section 404 Nationwide Permit 23 and 33 and Section 401 Water Quality Certification** for the proposed replacement of Bridge No. 577 over Hunting Creek on SR 1538 (Whiteside Road) in Rutherford County, Federal Aid Project No. BRSTP-1538(8), Division 13, TIP No. B-5395, Debit \$270 from WBS 46110.1.1.

Dear Madam:

The North Carolina Department of Transportation (NCDOT) proposes to replace Bridge No. 577 over Hunting Creek with a 76' long, 12'x12' triple-barrel reinforced concrete box culvert (RCBC) on the existing alignment. Traffic will be maintained during construction via an off-site detour.

As a result of the culvert placement, there will be 141 linear feet of permanent stream impacts and 0.01 acre of temporary stream impacts.

Please see enclosed copies of the Pre-Construction Notification (PCN), EEP acceptance letter, stormwater management plan, permit drawings and design plans for the above-referenced project. The Programmatic Categorical Exclusion (PCE) was completed in April 24, 2014 and distributed shortly thereafter. Additional copies are available upon request.

This project calls for a letting date of January 19, 2016 and a review date of December 1, 2015; however, the let date may advance as additional funding becomes available.

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

Sincerely,



*for* Richard W. Hancock, P.E., 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: 23 & 33 or General Permit (GP) number:  |   |  |
| 1c. Has the NWP or GP number been verified by the Corps?  | <input type="checkbox"/> Yes  | <input checked="" type="checkbox"/> No   |
| 1d. Type(s) of approval sought from the DWQ (check all that apply):   |   |  |
| <input checked="" type="checkbox"/> 401 Water Quality Certification – Regular <span style="margin-left: 100px;"><input type="checkbox"/> Non-404 Jurisdictional General Permit</span><br><input type="checkbox"/> 401 Water Quality Certification – Express <span style="margin-left: 100px;"><input type="checkbox"/> Riparian Buffer Authorization</span> |   |  |
| 1e. Is this notification solely for the record because written approval is not required?  | For the record only for DWQ 401 Certification:<br><input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | For the record only for Corps Permit:<br><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 checked="" type="checkbox"/> Yes   | <input 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:                         | Replacement of Bridge 577 over Hunting Creek on SR 1538 |
| 2b. County:                                  | Rutherford  |
| 2c. Nearest municipality / town:             | Logan   |
| 2d. Subdivision name:                        | <i>not applicable</i>                                   |
| 2e. NCDOT only, T.I.P. or state project no.: | B-5395  |

#### 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                          |

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

| <b>B. Project Information and Prior Project History</b>   |  |
|---|--|
| <b>1. Property Identification</b>   |  |
| 1a. Property identification no. (tax PIN or parcel ID):   | <i>not applicable</i>  |
| 1b. Site coordinates (in decimal degrees):  | Latitude: 35.4295<br>(DD.DDDDDD)                      Longitude: - 81.8510<br>(-DD.DDDDDD)           |
| 1c. Property size:  | 2.4 acres  |
| <b>2. Surface Waters</b>  |  |
| 2a. Name of nearest body of water (stream, river, etc.) to proposed project:  | Hunting Creek  |
| 2b. Water Quality Classification of nearest receiving water:  | WS-V   |
| 2c. River basin:  | Broad  |
| <b>3. Project Description</b>   |  |
| 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:<br><br>The land use within the vicinity of the project consists of about 30% forest land, 30% developed or disturbed lands (roadsides and residential areas), and 40% cultivated land (agricultural fields and pastures).   |  |
| 3b. List the total estimated acreage of all existing wetlands on the property:<br><br>0   |  |
| 3c. List the total estimated linear feet of all existing streams (intermittent and perennial) on the property:<br><br>200   |  |
| 3d. Explain the purpose of the proposed project:<br>The purpose of this project is to replace a structurally deficient (sufficiency rating of 21.7 of 100 and structural evaluation appraisal of 2 of 9) and functionally obsolete bridge (deck geometry rating 4 of 9).  |  |
| 3e. Describe the overall project in detail, including the type of equipment to be used:<br>The project involves replacing a 101-foot three-span bridge with a triple barrel 12'x12' reinforced concrete box culvert (RCBC) on the existing alignment. Traffic will be maintained via an off-site detour during construction. Standard road building equipment, such as trucks, dozers, and cranes will be used. |  |
| <b>4. Jurisdictional Determinations</b>   |  |
| 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?<br>Comments: Only 1 perennial stream within construction footprint.   | <input type="checkbox"/> Yes <input checked="" 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 type="checkbox"/> Final                                  |
| 4c. If yes, who delineated the jurisdictional areas?<br>Name (if known): Erin Cheely  | Agency/Consultant Company: NCDOT<br>Other:   |
| 4d. If yes, list the dates of the Corps jurisdictional determinations or State determinations and attach documentation.   |  |
| <b>5. Project History</b>   |  |
| 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.  |  |
| <b>6. Future Project Plans</b>  |  |
| 6a. Is this a phased project?   | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No                                  |
| 6b. If yes, explain.  |  |

| <b>C. Proposed Impacts Inventory</b>   |                       |   |   |   |                                       |                                    |
|--|-----------------------|---|---|---|---------------------------------------|------------------------------------|
| <b>1. Impacts Summary</b>  |                       |   |   |   |                                       |                                    |
| 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                |   |   |                                       |                                    |
| <b>2. Wetland Impacts</b>  |                       |   |   |   |                                       |                                    |
| If there are wetland impacts proposed on the site, then complete this question for each wetland area impacted.   |                       |   |   |   |                                       |                                    |
| 2a.<br>Wetland impact number – Permanent (P) or Temporary (T)  | 2b.<br>Type of impact | 2c.<br>Type of wetland (if known)                         | 2d.<br>Forested   | 2e.<br>Type of jurisdiction (Corps - 404, 10 DWQ – non-404, other)        | 2f.<br>Area of impact (acres)         |                                    |
| Site 1 <input type="checkbox"/> P <input type="checkbox"/> T   |                       |   | <input type="checkbox"/> Yes<br><input type="checkbox"/> No             | <input type="checkbox"/> Corps<br><input type="checkbox"/> DWQ            |                                       |                                    |
| Site 2 <input type="checkbox"/> P <input type="checkbox"/> T   |                       |   | <input type="checkbox"/> Yes<br><input type="checkbox"/> No             | <input type="checkbox"/> Corps<br><input type="checkbox"/> DWQ            |                                       |                                    |
| Site 3 <input type="checkbox"/> P <input type="checkbox"/> T   |                       |   | <input type="checkbox"/> Yes<br><input type="checkbox"/> No             | <input type="checkbox"/> Corps<br><input type="checkbox"/> DWQ            |                                       |                                    |
| <b>2g. Total wetland impacts</b>   |                       |   |   |   | 0 Permanent<br>0 Temporary            |                                    |
| 2h. Comments: No wetlands within the construction footprint.   |                       |   |   |   |                                       |                                    |
| <b>3. Stream Impacts</b>   |                       |   |   |   |                                       |                                    |
| 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.<br>Stream impact number - Permanent (P) or Temporary (T)   | 3b.<br>Type of impact | 3c.<br>Stream name  | 3d.<br>Perennial (PER) or intermittent (INT)?                           | 3e.<br>Type of jurisdiction (Corps - 404, 10 DWQ – non-404, other)        | 3f.<br>Average stream width (feet)    | 3g.<br>Impact length (linear feet) |
| Site 1 <input checked="" type="checkbox"/> P <input type="checkbox"/> T  | 3 @ 12'x12' RCBC      | Hunting Creek   | <input checked="" type="checkbox"/> PER<br><input type="checkbox"/> INT | <input checked="" type="checkbox"/> Corps<br><input type="checkbox"/> DWQ | 13                                    | 141                                |
| Site 1 <input type="checkbox"/> P <input checked="" type="checkbox"/> T  | 3 @ 12'x12' RCBC      | Hunting Creek   | <input checked="" type="checkbox"/> PER<br><input type="checkbox"/> INT | <input checked="" type="checkbox"/> Corps<br><input type="checkbox"/> DWQ | 13                                    | 43<br>(0.01 ac)                    |
| Site 2 <input type="checkbox"/> P <input type="checkbox"/> T   |                       |   | <input type="checkbox"/> PER<br><input type="checkbox"/> INT            | <input type="checkbox"/> Corps<br><input type="checkbox"/> DWQ            |                                       |                                    |
| Site 3 <input type="checkbox"/> P <input type="checkbox"/> T   |                       |   | <input type="checkbox"/> PER<br><input type="checkbox"/> INT            | <input type="checkbox"/> Corps<br><input type="checkbox"/> DWQ            |                                       |                                    |
| Site 4 <input type="checkbox"/> P <input type="checkbox"/> T   |                       |   | <input type="checkbox"/> PER<br><input type="checkbox"/> INT            | <input type="checkbox"/> Corps<br><input type="checkbox"/> DWQ            |                                       |                                    |
| <b>3h. Total stream and tributary impacts</b>  |                       |   |   |   | 141 Perm<br>43 Temp<br>(0.01 ac Temp) |                                    |
| 3i. Comments:  |                       |   |   |   |                                       |                                    |

**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.<br>Open water impact number – Permanent (P) or Temporary (T) | 4b.<br>Name of waterbody (if applicable) | 4c.<br>Type of impact | 4d.<br>Waterbody type | 4e.<br>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         |  |                       |                       |                               |
| <b>4f. Total open water impacts</b>                              |  |                       |                       | 0 Permanent<br>0 Temporary    |

4g. Comments: No open water within construction limits.

**5. Pond or Lake Construction**

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

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

5g. Comments:

5h. Is a dam high hazard permit required?

Yes

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.<br>Project is in which protected basin?                               |                          | <input type="checkbox"/> Neuse <input type="checkbox"/> Tar-Pamlico <input type="checkbox"/> Other:<br><input type="checkbox"/> Catawba <input type="checkbox"/> Randleman |   |                                    |                                    |
|---|--------------------------|--|---|------------------------------------|------------------------------------|
| 6b.<br>Buffer impact number – Permanent (P) or Temporary (T)              | 6c.<br>Reason for impact | 6d.<br>Stream name   | 6e.<br>Buffer mitigation required?                          | 6f.<br>Zone 1 impact (square feet) | 6g.<br>Zone 2 impact (square feet) |
| B1 <input type="checkbox"/> P <input type="checkbox"/> T                  |                          |  | <input type="checkbox"/> Yes<br><input type="checkbox"/> No |                                    |                                    |
| B2 <input type="checkbox"/> P <input type="checkbox"/> T                  |                          |  | <input type="checkbox"/> Yes<br><input type="checkbox"/> No |                                    |                                    |
| B3 <input type="checkbox"/> P <input type="checkbox"/> T                  |                          |  | <input type="checkbox"/> Yes<br><input type="checkbox"/> No |                                    |                                    |
| <b>6h. Total buffer impacts</b>   |                          |  |   |                                    |                                    |
| 6i. Comments: This project is not located within a protected buffer area. |                          |  |   |                                    |                                    |



|   |   |          |
|---|---|----------|
| <b>D. Impact Justification and Mitigation</b>   |   |          |
| <b>1. Avoidance and Minimization</b>  |   |          |
| 1a. Specifically describe measures taken to avoid or minimize the proposed impacts in designing project.<br>The proposed culvert will be on the same alignment as the existing bridge. The proposed culvert will have sills at the inlet and outlet ends (low flow will have a 1' sill, outside barrels will have a 3' sill). The culvert has been designed to maintain the existing stream slope, low flow channel dimensions, low flow velocities and to provide a smooth transition from upstream to downstream with no sharp bends at the inlet or outlet. A shoulder berm gutter will be utilized along the guardrail to eliminate erosion and the catch roadway drainage. A storm drainage system will be in place to catch all stormwater from the roadway and discharge it into a rip-rap lined ditch to dissipate energy before entering the stream. |   |          |
| 1b. Specifically describe measures taken to avoid or minimize the proposed impacts through construction techniques.<br>Traffic will be maintained via an off-site detour during construction. Best Management Practices (BMPs) will be utilized during construction to attempt to reduce the stormwater impacts to the receiving streams due to erosion and runoff.   |   |          |
| <b>2. Compensatory Mitigation for Impacts to Waters of the U.S. or Waters of the State</b>  |   |          |
| 2a. Does the project require Compensatory Mitigation for impacts to Waters of the U.S. or Waters of the State?  | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No<br>If no, explain:  |          |
| 2b. If yes, mitigation is required by (check all that apply):   | <input type="checkbox"/> DWQ <input checked="" type="checkbox"/> Corps  |          |
| 2c. If yes, which mitigation option will be used for this project?  | <input type="checkbox"/> Mitigation bank<br><input checked="" type="checkbox"/> Payment to in-lieu fee program<br><input type="checkbox"/> Permittee Responsible Mitigation |          |
| <b>3. Complete if Using a Mitigation Bank</b>   |   |          |
| 3a. Name of Mitigation Bank: not applicable   |   |          |
| 3b. Credits Purchased (attach receipt and letter)   | Type  | Quantity |
| 3c. Comments:   |   |          |
| <b>4. Complete if Making a Payment to In-lieu Fee Program</b>   |   |          |
| 4a. Approval letter from in-lieu fee program is attached.   | <input checked="" type="checkbox"/> Yes   |          |
| 4b. Stream mitigation requested:  | 141 linear feet   |          |
| 4c. If using stream mitigation, stream temperature:   | <input type="checkbox"/> warm <input checked="" type="checkbox"/> cool <input type="checkbox"/> cold  |          |
| 4d. Buffer mitigation requested (DWQ only):   | 0 square feet   |          |
| 4e. Riparian wetland mitigation requested:  | 0 acres   |          |
| 4f. Non-riparian wetland mitigation requested:  | 0 acres   |          |
| 4g. Coastal (tidal) wetland mitigation requested:   | 0 acres   |          |
| 4h. Comments: The NCDOT does not propose mitigation for the 43 linear feet (0.1 acre) of temporary stream impacts. None of these impacts require permanent fill in the stream bed and, therefore, under Section 404 of the Clean Water Act, do not constitute Loss of Waters of the U.S. and are not subject to compensatory mitigation.  |   |          |
| <b>5. Complete if Using a Permittee Responsible Mitigation Plan</b>   |   |          |
| 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?

Yes       No

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

| Zone   | 6c.<br>Reason for impact | 6d.<br>Total impact<br>(square feet) | Multiplier        | 6e.<br>Required mitigation<br>(square feet) |
|--|--------------------------|--------------------------------------|-------------------|---|
| Zone 1                                       |                          |                                      | 3 (2 for Catawba) |   |
| Zone 2                                       |                          |                                      | 1.5               |   |
| <b>6f. Total buffer mitigation required:</b> |                          |                                      |                   |   |

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:

| <b>E. Stormwater Management and Diffuse Flow Plan (required by DWQ)</b>  |   |
|--|---|
| <b>1. Diffuse Flow Plan</b>  |   |
| 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.<br>Comments: If required from 1a, see attached buffer permit drawings.            | <input type="checkbox"/> Yes <input type="checkbox"/> No  |
| <b>2. Stormwater Management Plan</b>   |   |
| 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:<br>See attached permit drawings. |   |
| 2e. Who will be responsible for the review of the Stormwater Management Plan?  | <input type="checkbox"/> Certified Local Government<br><input type="checkbox"/> DWQ Stormwater Program<br><input checked="" type="checkbox"/> DWQ 401 Unit                                    |
| <b>3. Certified Local Government Stormwater Review</b>   |   |
| 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<br><input type="checkbox"/> NSW<br><input type="checkbox"/> USMP<br><input type="checkbox"/> Water Supply Watershed<br><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  |
| <b>4. DWQ Stormwater Program Review</b>  |   |
| 4a. Which of the following state-implemented stormwater management programs apply (check all that apply):  | <input type="checkbox"/> Coastal counties<br><input type="checkbox"/> HQW<br><input type="checkbox"/> ORW<br><input type="checkbox"/> Session Law 2006-246<br><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  |
| <b>5. DWQ 401 Unit Stormwater Review</b>   |   |
| 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  |

| <b>F. Supplementary Information</b>  |  |
|--|--|
| <b>1. Environmental Documentation (DWQ Requirement)</b>  |  |
| 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.)<br><br>Comments: Programmatic Categorical Exclusion (PCE) approved 4/24/14   | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No    |
| <b>2. Violations (DWQ Requirement)</b>   |  |
| 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):   |  |
| <b>3. Cumulative Impacts (DWQ Requirement)</b>   |  |
| 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<br><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.<br><br>Due to the minimal transportation impact resulting from this bridge replacement, this project will neither influence nearby land uses nor stimulate growth. Therefore, a detailed indirect or cumulative effects study will not be necessary. |  |
| <b>4. Sewage Disposal (DWQ Requirement)</b>  |  |
| 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.<br><br>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?

As of April 2, 2015, there are six federally listed species for Rutherford County. Of these six species, two (Indiana bat and rock gnome lichen) have no habitat present within the project area. Surveys for dwarf-flowered heartleaf, small whorled pogonia and white irisette were conducted in April and May 2011 and no individuals of these species were identified within the project area.

Screenings and/or surveys are currently being conducted for the recently listed northern long-eared bat (NLEB) and concurrence will be requested as soon as a memo is prepared with the results of the screening/survey. The nearest NLEB record is 15 miles away, there are no mines within 1/2 mile, and there will be 0.17 acre of tree clearing for this project. It is anticipated that the biological conclusion for this species will be "May Affect, Not Likely to Adversely Affect" and that concurrence from USFWS will be obtained prior to the January 2016 let date.

**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?<br>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?<br>NEPA Documentation   |                              |  |

**8. Flood Zone Designation (Corps Requirement)**

|   |                              |  |
|---|------------------------------|--|
| 8a. Will this project occur in a FEMA-designated 100-year floodplain?                                 | <input type="checkbox"/> Yes | <input checked="" 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                        |                              |  |

|   |   |                                |
|---|---|--------------------------------|
| <p>for <u>Richard W. Hancock, P.E.</u><br/>Applicant/Agent's Printed Name</p> | <br><hr style="width: 100%; border: 0; border-top: 1px solid black; margin: 5px 0;"/> <p>Applicant/Agent's Signature<br/>(Agent's signature is valid only if an authorization letter from the applicant is provided.)</p> | <p><u>7-10-15</u><br/>Date</p> |
|---|---|--------------------------------|



North Carolina Department of Environment and Natural Resources

Pat McCrory  
Governor

Division of Mitigation Services

Donald R. van der Vaart  
Secretary

June 24, 2015

Mr. Richard W. Hancock, P.E.  
Project Development and Environmental Analysis Unit  
North Carolina Department of Transportation  
1548 Mail Service Center  
Raleigh, North Carolina 27699-1548

Dear Mr. Hancock:

Subject: Mitigation Acceptance Letter:

**B-5395, Replace Bridge 577 on SR 1538 over Hunting Creek, Rutherford County**

The purpose of this letter is to notify you that the Division of Mitigation Services (DMS) will provide the compensatory stream mitigation for the subject project. Based on the information supplied by you on June 23, 2015, the impacts are located in CU 03050105 of the Broad River basin in the Southern Mountains (SM) Eco-Region, and are as follows:

| Broad<br>03050105<br>SM | Stream |       |      | Wetlands |                  |                  | Buffer (Sq. Ft.) |        |
|-------------------------|--------|-------|------|----------|------------------|------------------|------------------|--------|
|                         | Cold   | Cool  | Warm | Riparian | Non-<br>Riparian | Coastal<br>Marsh | Zone 1           | Zone 2 |
| Impacts (feet/acres)    | 0      | 141.0 | 0    | 0        | 0                | 0                | 0                | 0      |

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

This impact and associated mitigation need were under projected by the NCDOT in the 2015 impact data. DMS will commit to implement sufficient compensatory stream mitigation credits to offset the impacts associated with this project as determined by the regulatory agencies using the delivery timeline listed in Section F.3.c.iii of the In-Lieu Fee Instrument dated July 28, 2010. If the above referenced impact amounts are revised, then this mitigation acceptance letter will no longer be valid and a new mitigation acceptance letter will be required from DMS.

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

Sincerely,

James B. Stanfill  
Asset Management Supervisor

cc: Ms. Lori Beckwith, USACE – Asheville Regulatory Field Office  
Ms. Amy Chapman, NCDWR  
File: B-5395



North Carolina Department of Transportation

Highway Stormwater Program  
STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS



(Version 2.01; Released December 2014)

WBS Element: 46110.1.1      TIP No.: B-5395      County(ies): Rutherford      Page 1 of 2

General Project Information

|                                 |                    |  |                        |                      |  |       |           |
|---------------------------------|--------------------|--|------------------------|----------------------|--|-------|-----------|
| WBS Element:                    | 46110.1.1          | TIP Number:  | B-5395                 | Project Type:        | Bridge Replacement                                 | Date: | 3/23/2015 |
| NCDOT Contact:                  | Stephen Morgan, PE |  | Contractor / Designer: | Carlas Sharpless, PE |  |       |           |
|                                 | Address:           | 1590 Mail Service Center<br>Raleigh, NC 27599-1590 |                        | Address:             | 1590 Mail Service Center<br>Raleigh, NC 27699-1590 |       |           |
|                                 | Phone:             | 919-707-6739                                       |                        | Phone:               | 919-707-6750                                       |       |           |
|                                 | Email:             | smorgan@ncdot.gov                                  |                        | Email:               | csharpless@ncdot.gov                               |       |           |
| City/Town:                      |                    |  | County(ies):           | Rutherford           |  |       |           |
| River Basin(s):                 | Broad              |  | CAMA County?           | No                   |  |       |           |
| Wetlands within Project Limits? | No                 |  |                        |                      |  |       |           |

Project Description

|  |   |                       |                   |               |           |       |       |      |
|--|---|-----------------------|-------------------|---------------|-----------|-------|-------|------|
| Project Length (lin. miles or feet):   | .116 miles  | Surrounding Land Use: | Rural Residential |               |           |       |       |      |
|  | Proposed Project  |                       |                   | Existing Site |           |       |       |      |
| Project Built-Up Area (ac.)  | 2.4   | ac.                   | 1.6               | ac.           |           |       |       |      |
| Typical Cross Section Description:   | 2-10 foot travel lanes with 3' grass shoulder(7' w/ guardrail) and variable side slopes to tie-in.  |                       |                   |               |           |       |       |      |
| Annual Avg Daily Traffic (veh/hr/day):   | Design/Future:  | 1,200                 | Year:             | 2040          | Existing: | 1,020 | Year: | 2013 |
| General Project Narrative:<br>(Description of Minimization of Water Quality Impacts) | The project involves replacing Bridge 577 on SR 1538 (Whitesides Rd.) over Hunting Creek in Rutherford County. The existing structure is a 3-span 101' bridge, and will be replaced with a 3@12'x12' RCBC Buried 1' w/ sills in the existing location. The existing roadway consists of 20' of BST with shoulder section. The proposed roadway is a 2-10 foot travel lane facility with grass shoulders and variable slopes to tie into natural ground. Shoulder berm gutter will be utilized along the guardrail to eliminate erosion and to catch roadway drainage. A storm drainage system will be in place to catch all stormwater from roadway and discharge it into a rip-rap lined ditch to dissipate energy before entering the stream. The roadway will remain in the existing location and will utilize vertical grade alignments that will minimize impacts while providing a safe transportation facility for the public. |                       |                   |               |           |       |       |      |

Waterbody Information

|  |                              |                       |  |                         |  |    |  |
|--|------------------------------|-----------------------|--|-------------------------|--|----|--|
| Surface Water Body (1):  | Hunting Creek                |                       | NCDWR Stream Index No.:  | 9-41-14-2               |  |    |  |
| NCDWR Surface Water Classification for Water Body                | Primary Classification:      | Water Supply V (WS-V) |  |                         |  |    |  |
|  | Supplemental Classification: | None                  |  |                         |  |    |  |
| Other Stream Classification:                                     |                              |                       |  |                         |  |    |  |
| Impairments:   |                              |                       |  |                         |  |    |  |
| Threatened/Endangered Species?                                   | Comments:                    |                       |  |                         |  |    |  |
| NRTR Stream ID:  |                              |                       |  | Buffer Rules in Effect: | N/A  |    |  |
| Project Includes Bridge Spanning Water Body?                     |                              |                       | Deck Drains Discharge Over Buffer?                               | No                      | Dissipator Pads Provided in Buffer?  | No |  |
| Deck Drains Discharge Over Water Body?                           |                              |                       | (If yes, provide justification in the General Project Narrative) |                         | (If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative) |    |  |
| (If yes, provide justification in the General Project Narrative) |                              |                       |  |                         |  |    |  |



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



(Version 2.01; Released December 2014)

**WBS Element:** 46110.1.1    **TIP No.:** B-5395    **County(ies):** Rutherford    **Page** 2 **of** 2

**Bridge to Culvert Avoidance and Minimization**

**Proposed Structure Summary**

|  |  |                          |                                     |    |
|--|--|--------------------------|-------------------------------------|----|
| <b>Sheet No. &amp; Station</b>                                 | <b>Sheet No.:</b> 4  | <b>Station:</b> 21+66.21 | <b>Number of Culverts:</b>          | 3  |
| <b>Drainage Area (ac or sq mi):</b>                            |  |                          | <b>Culvert Width/Diameter (ft):</b> |    |
| <b>Surface Water Body:</b>                                     | (1)Hunting Creek   |                          | <b>Culvert Height (ft):</b>         | 12 |
| <b>Culvert Type:</b>   | Reinforced Concrete Box Culvert  |                          | <b>Culvert Length (ft)</b>          | 12 |
| <b>Avoidance and Minimization Efforts: (Bridge to Culvert)</b> | The proposed culvert will be buried 1 ft. with a 1 ft. sill in the center barrel to allow for native material to remain in a low flow channel. 3 ft. sills are placed in the outer barrels to maintain a low flow channel in the center barrel of the proposed structure. The culvert maintains the existing stream slope, low flow channel dimensions, low flow velocities and provides a smooth transition from upstream to downstream with no sharp bends at the inlet or outlet. |                          |                                     |    |

**Stream Slope**

|   |           |
|---|-----------|
| <b>Existing Average Stream Slope (%):</b> | 0.8 +/- % |
| <b>Proposed Culvert Slope (%):</b>        | 0.80 %    |

**Fish and/or Aquatic Life Passage**

|   |   |
|---|---|
| <b>Existing Low Flow Channel Dimensions in the Stream:</b>      | The existing low flow channel width up and downstream of the culvert is approximately 13' with an average depth of 1.0 ft.  |
| <b>Proposed Low Flow Dimensions Through the Culvert:</b>        | High sills in the outer barrels will maintain a low flow channel of approximately 12' wide through the middle barrel.   |
| <b>Existing Low Flow Velocities in the Stream (ft/s):</b>       | 1.6 ft./sec   |
| <b>Proposed Low Flow Velocities Through the Culvert (ft/s):</b> | 1.6 ft./sec   |
| <b>Alternating Low Flow Sills/Baffles:</b>                      | The stream is not recognized as a designated trout stream. Alternating sills/baffles were not utilized since one barrel is approximately the same width as the natural channel. |

**Culvert Burial**

|  |                                   |
|--|-----------------------------------|
| <b>Proposed Culvert Burial Depth (ft):</b> | 1                                 |
| <b>Existing Streambed Material:</b>        | cobbles, small boulders, and silt |

|                                |  |
|--------------------------------|--|
| <b>Proposed Sills/Baffles:</b> | High Sills are utilized in outer barrels to maintain the natural channel width through the proposed structure. A low sill was utilized in the center barrel to maintain the establishment of native streambed material along the floor of the proposed culvert. - 1' high sill/baffle in center barrel, 3' high sills/baffles in outer barrels. Sills are to be placed at culvert entrance and culvert exit, with one baffle at the centerline of the culvert. |
|--------------------------------|--|

**Culvert/Stream Alignment**

|  |   |  |
|--|---|--|
| <b>Stream Patterns Upstream and Downstream of the Culvert that Could Affect Fish Passage and Bank Stability:</b> | The stream channel is relatively straight through the reach of the stream where the culvert will be placed. There are minor bends up and downstream of the culvert in the existing stream.                      |  |
| <b>Bed Forms Impacted by Culvert (riffles, pools, glides, etc.):</b>   | A natural low flow bench has formed in the streambed just upstream of the existing bridge. The placement of small boulders and cobbles has established slightly curvy low flow channel approaching the culvert. |  |
| <b>Low Flow Floodplain Bench Required? (provide justification)</b>   | Yes   | Floodplain Benches will be required to maintain the width of the natural stream since the proposed structure is wider than the proposed stream. Floodplain Benches will be placed at the entrance and outlet of the culvert in the outer sills to provide a smooth |
| <b>Sharp Bends at Inlet/Outlet? (describe culvert alignment with stream)</b>                                     | No  | Culvert provides a smooth transition from the upstream to downstream with no sharp bends at entrance and outlet.   |
| <b>Stream Realignment Necessary? (provide justification)</b>   | No  | Culvert is located in existing stream with no sharp or sudden bends so a stream realignment will not be necessary.   |
| <b>Bank Stabilization:</b>   | Class II Rip-Rap on Banks   |  |

**Outlet Velocities**

|  |     |   |     |
|--|-----|---|-----|
| <b>Natural Stream Channel 2-yr Velocity (ft/s):</b>  | 3.7 | <b>Natural Stream Channel 10-yr Velocity (ft/s):</b>  | 4.2 |
| <b>Proposed Culvert 2-yr Outlet Velocity (ft/s):</b> | 2.5 | <b>Proposed Culvert 10-yr Outlet Velocity (ft/s):</b> | 3.9 |

**Roadway Geometric Considerations**

**Evaluate/Describe Roadway Geometric Constraints:**  
 Although there were no geometric constraints, the use of a bridge crossing at this site would have required extensive changes to the grade, thus increasing the footprint substantially. A culvert crossing will allow the roadway grade to follow the existing with minimal changes, thus minimizing impacts along the project.

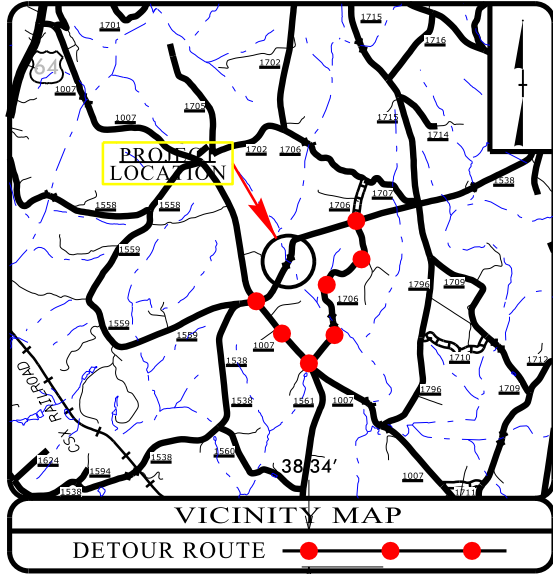


09/08/99

TIP PROJECT: B-5395

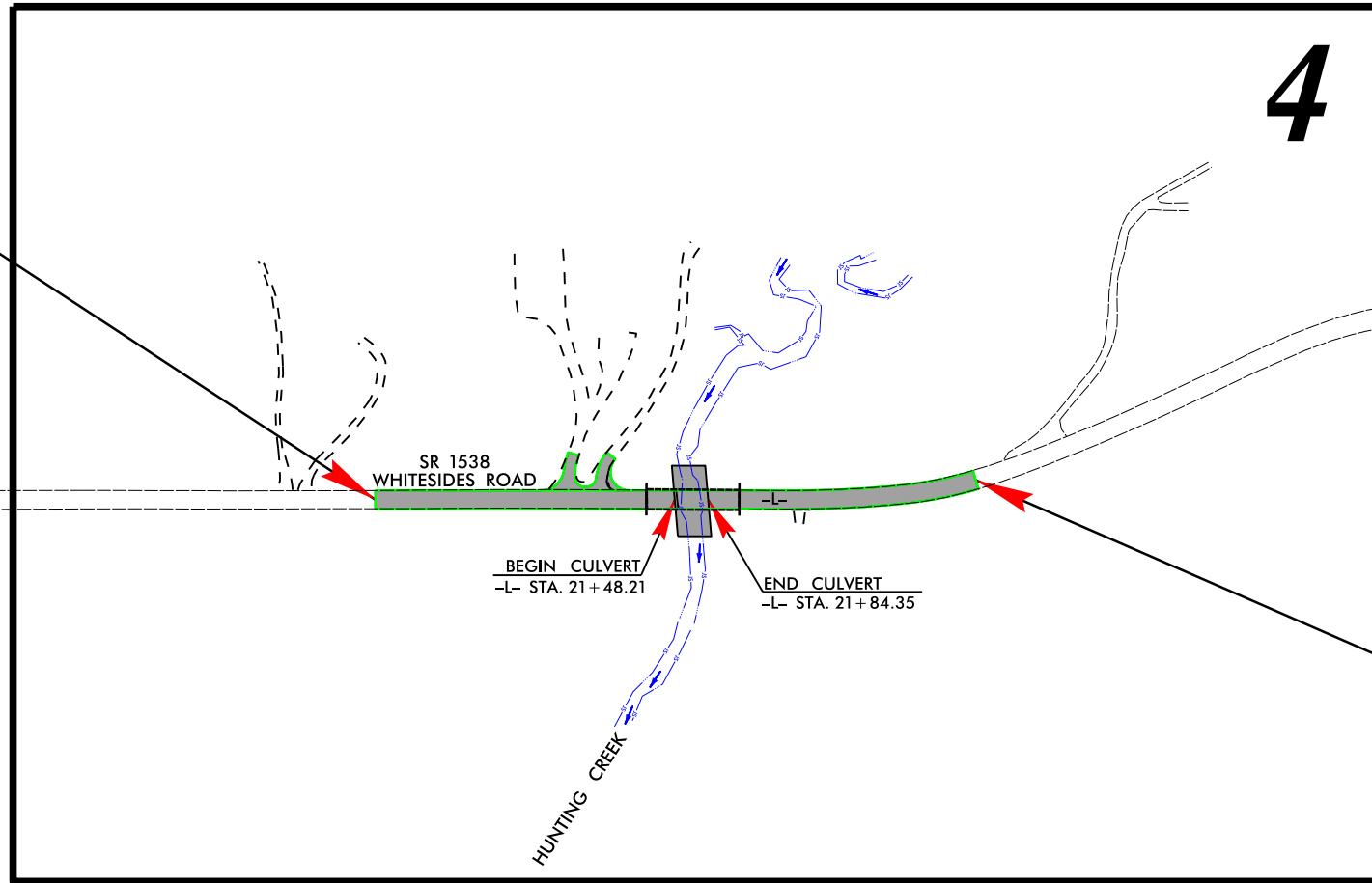
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See Sheet 1A For Index of Sheets

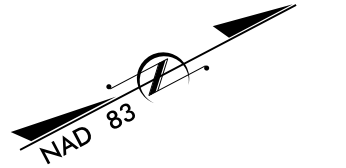


**BEGIN TIP PROJECT No. B-5395**  
-L- POT Sta. 18+25.00

TO PEARIDGE ROAD



**END TIP PROJECT No. B-5395**  
-L- POC Sta. 24+75.00



STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS  
**RUTHERFORD COUNTY**

**LOCATION: REPLACEMENT OF BRIDGE No. 577 OVER HUNTING CREEK ON SR 1538 (WHITESIDES ROAD)**

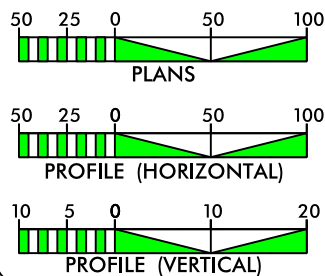
**TYPE OF WORK: GRADING, PAVING, DRAINAGE, AND CULVERT**

| STATE           | STATE PROJECT REFERENCE NO. | SHEET NO.     | TOTAL SHEETS |
|-----------------|-----------------------------|---------------|--------------|
| N.C.            | B-5395                      | 1             |              |
| STATE PROJ. NO. | F.A. PROJ. NO.              | DESCRIPTION   |              |
| 46110.1.1       | BRSTP-1538(8)               | P.E.          |              |
| 46110.2.FD1     | BRSTP-1538(8)               | RW, UTILITIES |              |
|                 |                             | CONSTRUCTION  |              |
|                 |                             |               |              |
|                 |                             |               |              |

**WETLAND AND SURFACE WATER IMPACTS PERMIT**

**PRELIMINARY PLANS**  
DO NOT USE FOR CONSTRUCTION

**GRAPHIC SCALES**



**DESIGN DATA**

ADT 2013 = 1020  
ADT 2040 = 1200  
K = 11 %  
D = 70%  
T = 8 % \*  
\*\* V = 45MPH  
\* TTST = 3% DUAL = 5%  
FUNC CLASS = LOCAL  
SUBREGIONAL TIER  
\*\* DESIGN EXCEPTION

**PROJECT LENGTH**

LENGTH ROADWAY TIP PROJECT B-5395 = 0.116 Miles  
LENGTH STRUCTURE TIP PROJECT B-5395 = 0.007 Miles  
  
TOTAL LENGTH TIP PROJECT B-5395 = 0.123 Miles

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

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:  
JANUARY 23, 2015

LETTING DATE:  
JANUARY 19, 2016

KEVIN E. MOORE, P.E.  
PROJECT ENGINEER

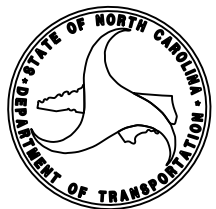
STEVEN D. KENDALL, P.E.  
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

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

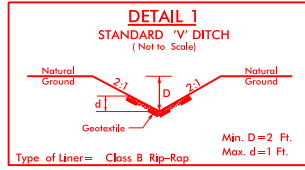
ROADWAY DESIGN ENGINEER

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

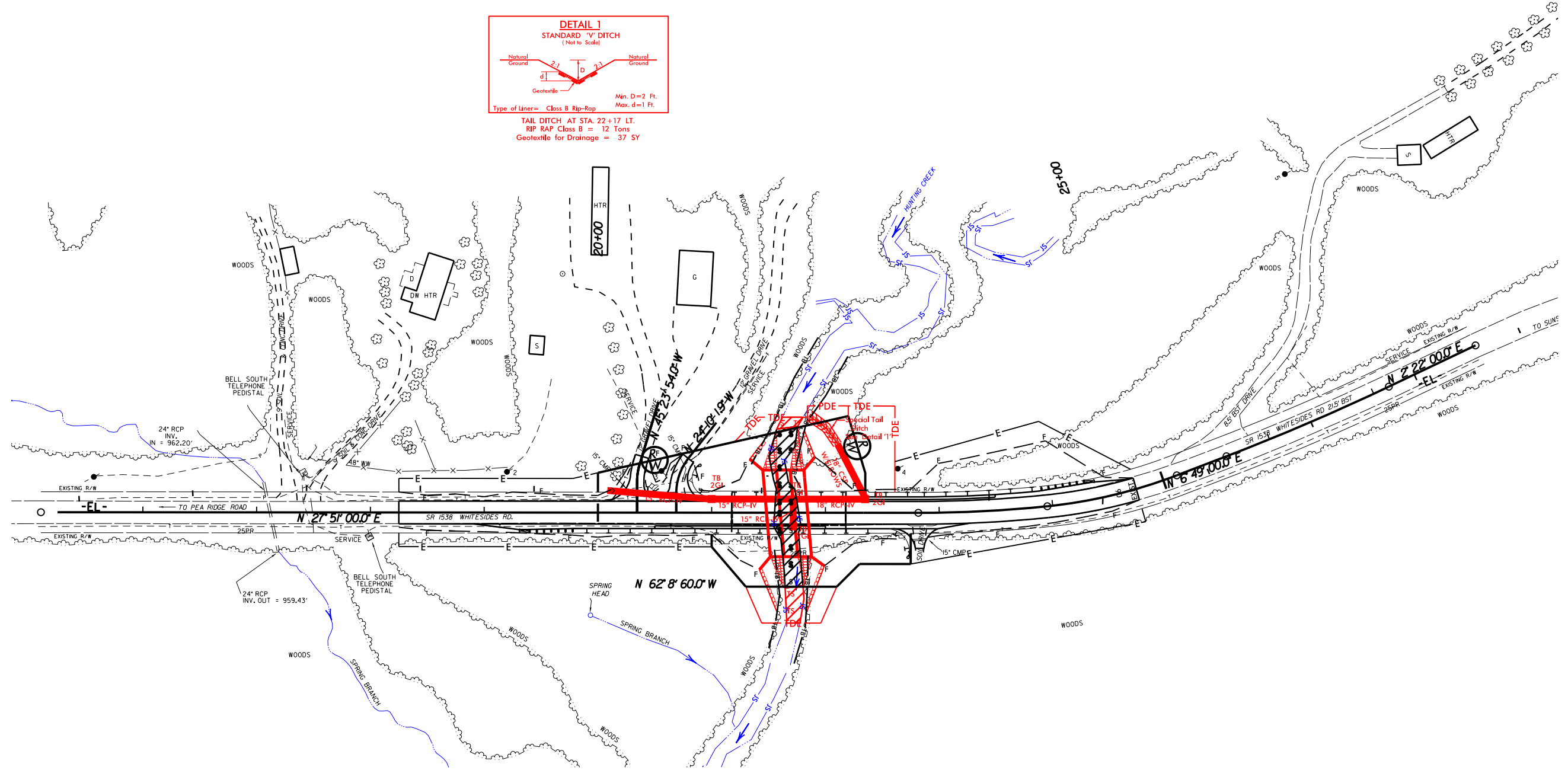


\$\$\$\$\$\$SYTIME\$\$\$\$\$\$  
\$\$\$\$\$\$DCN\$\$\$\$\$\$  
\$\$\$\$\$\$USERNAME\$\$\$\$\$\$


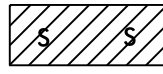
|  |                       |
|--|-----------------------|
| PROJECT REFERENCE NO.<br><b>B-5395</b> | SHEET NO.<br><b>4</b> |
| RW SHEET NO.                           |                       |
| ROADWAY DESIGN ENGINEER                | HYDRAULICS ENGINEER   |

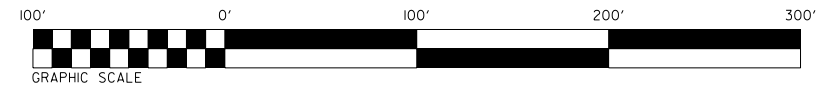


TAIL DITCH AT STA. 22+17 LT.  
RIP RAP Class B = 12 Tons  
Geotextile for Drainage = 37 SY

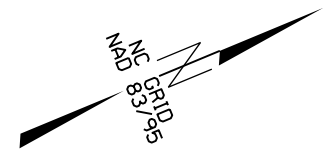


**PLAN VIEW**

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



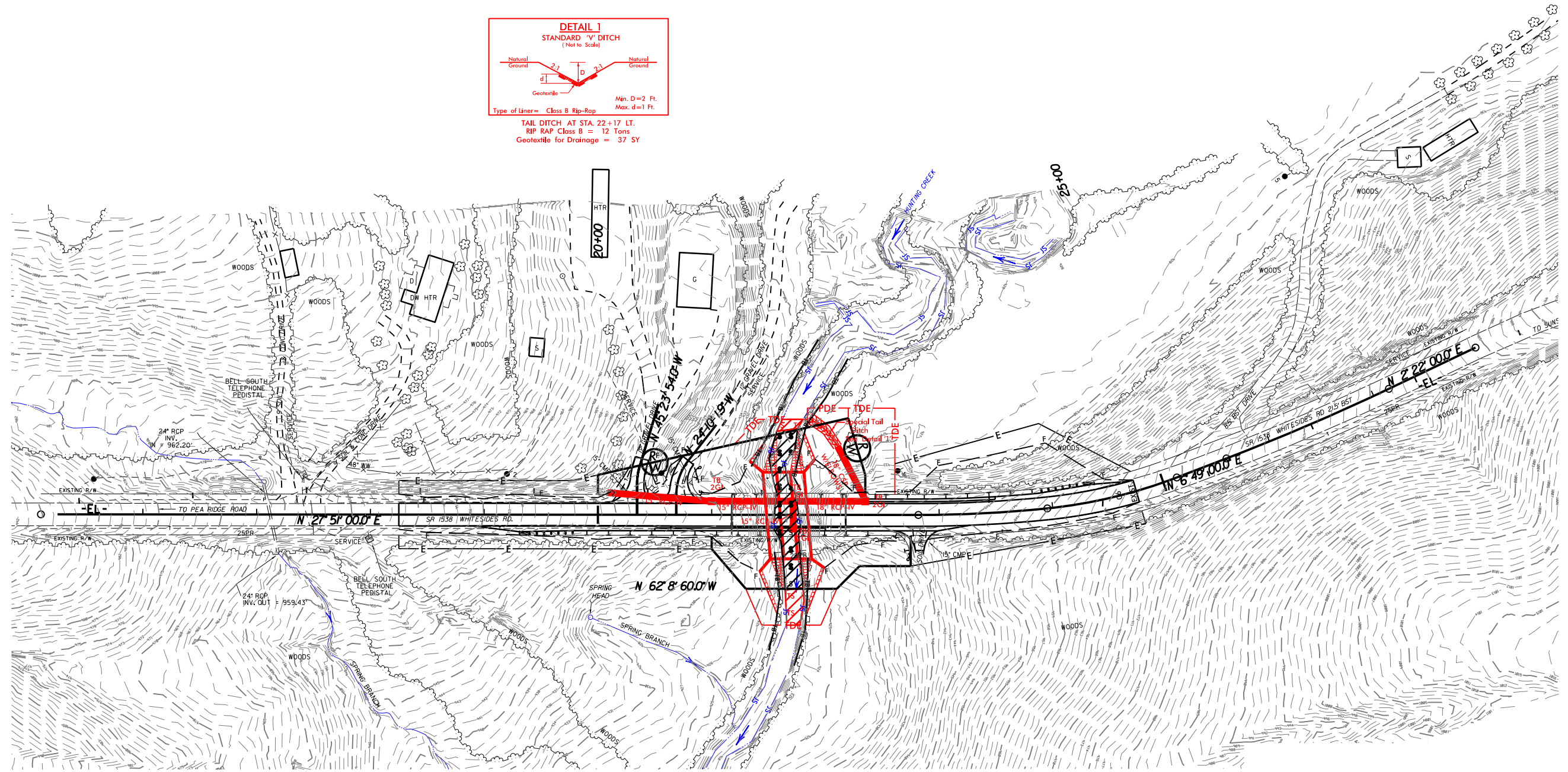
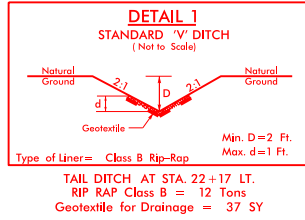
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**PERMIT DRAWING  
SHEET 2 OF 6**

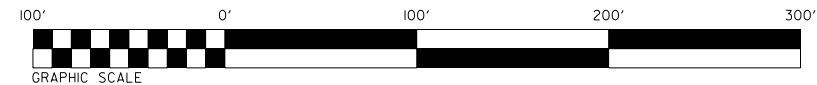
5/14/99  
SYSTEMS  
DRAWING  
DATE

|  |                       |
|--|-----------------------|
| PROJECT REFERENCE NO.<br><b>B-5395</b> | SHEET NO.<br><b>4</b> |
| RW SHEET NO.                           |                       |
| ROADWAY DESIGN ENGINEER                | HYDRAULICS ENGINEER   |

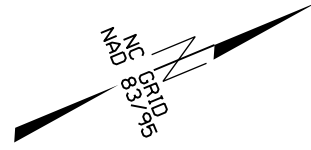


PLAN VIEW

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



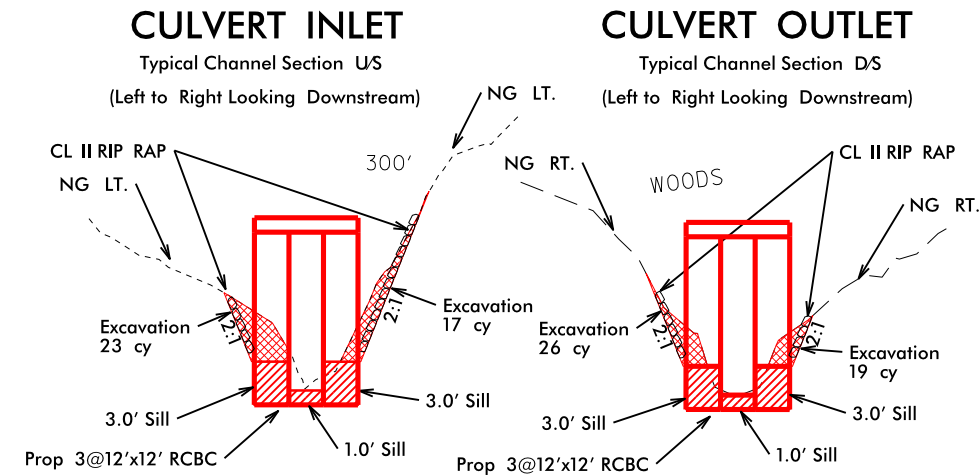
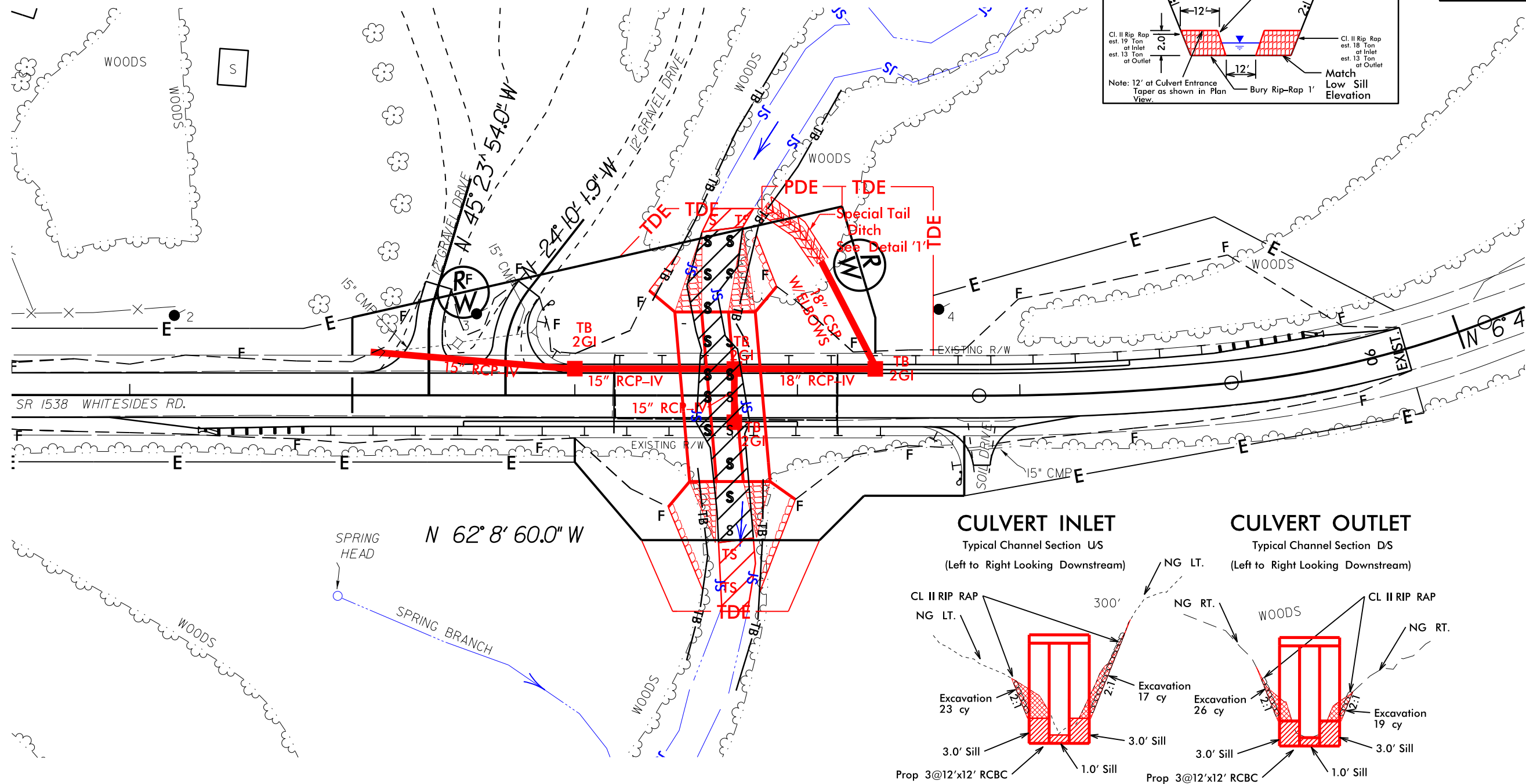
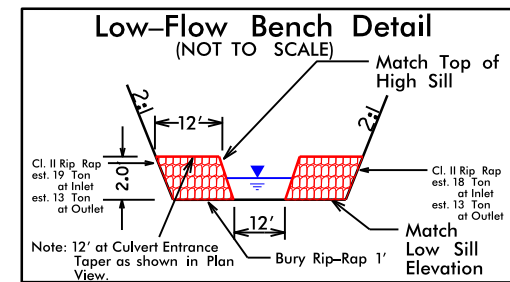
Scale: 1" = 100'



**PERMIT DRAWING**  
**SHEET 3 OF 6**

5/14/99  
SYSTEMS DESIGN  
PUBLIC WORKS

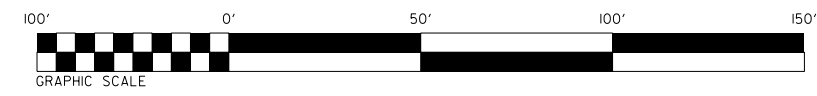
|   |                        |
|---|------------------------|
| PROJECT REFERENCE NO.<br><b>U-3633</b>                  | SHEET NO.<br>-         |
| RW SHEET NO.  |                        |
| ROADWAY DESIGN<br>ENGINEER                              | HYDRAULICS<br>ENGINEER |
| <b>PRELIMINARY PLANS</b><br>DO NOT USE FOR CONSTRUCTION |                        |



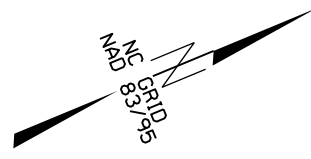
**PLAN VIEW  
ENLARGEMENT**

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES IMPACTS IN SURFACE WATER



Scale: 1" = 50'



**PERMIT DRAWING  
SHEET 4 OF 6**

5/14/99

S:\PROJECTS\3633\DRAWING\3633-04.DWG

5/28/99

PROJECT REFERENCE NO. SHEET NO.

B-5395

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS  
DO NOT USE FOR CONSTRUCTION

BEGIN GRADE -L- STA 18+23.00  
ELEV = 961.51'

END GRADE -L- STA 24+75.00  
ELEV = 956.74'

PI = 21+64.00  
EI = 933.63  
VC = 323'  
K = 20  
V = 20 mph

CULVERT -L- STA 21+66.21  
G.P.E. = 939.23'  
3@12' X 12' RCBC BURIED 1.0' W/SILLS  
SKEW = 85 DEG.

| CULVERT HYDRAULIC DATA |             |
|------------------------|-------------|
| DESIGN DISCHARGE       | = 1200 CFS  |
| DESIGN FREQUENCY       | = 25 YRS    |
| DESIGN HW ELEVATION    | = 927.0 FT  |
| BASE DISCHARGE         | = 2000 CFS  |
| BASE FREQUENCY         | = 100 YRS   |
| BASE HW ELEVATION      | = 928.84 FT |
| OVERTOPPING DISCHARGE  | = 6300 CFS  |
| OVERTOPPING FREQUENCY  | = 500+ YRS  |
| OVERTOPPING ELEVATION  | = 939.3 FT  |

WSEL - 919.8  
5/28/2014

BM ELEVATION = 940.87'  
IN 623474 E 1150906  
STATION 22+62.32 30.08' RIGHT  
RR SPIKE IN BASE OF 20' SYCAMORE TREE

\* DESIGN EXCEPTION REQUIRED FOR SAG VERTICAL CURVE AND ASSOCIATED NIGHTTIME STOPPING SIGHT DISTANCES.

SEE SHEET NO. 4 FOR -L- DESIGN

17 18 19 20 21 22 23 24 25 26 27

-DRV1-

-DRV2-

PI = 10+15.00  
EI = 943.84  
VC = 13'

END GRADE -DRV1- STA 10+50.00  
ELEV = 948.02'

BEGIN GRADE -DRV1- STA 10+10.00  
ELEV = 943.74'

PI = 10+18.00  
EI = 941.8'  
VC = 15'

PI = 10+39.00  
EI = 939.07'  
VC = 24'

END GRADE -DRV2- STA 10+50.00  
ELEV = 938.51'

BEGIN GRADE -DRV2- STA 10+10.00  
ELEV = 941.34'

PERMIT DRAWING  
SHEET 5 OF 6

SEE SHEET NO. 4 FOR -DRV1- DESIGN

SEE SHEET NO. 4 FOR -DRV2- DESIGN

10 11 10 11

SYSTEMS DESIGN

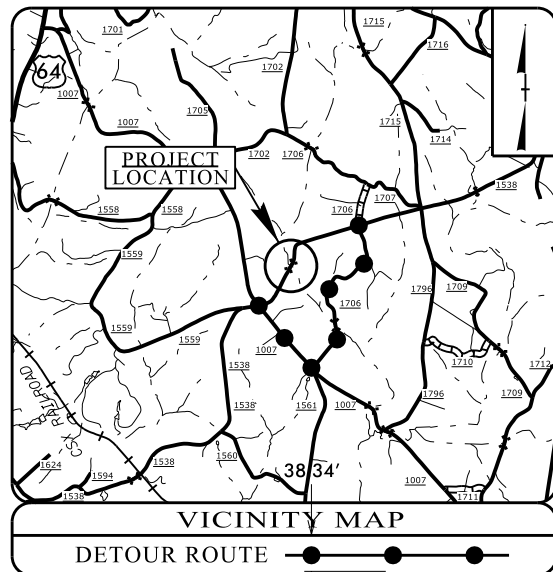
| WETLAND PERMIT IMPACT SUMMARY |                   |                       |                                 |                             |                             |                                      |                                |                           |                       |   |                                     |                            |
|-------------------------------|-------------------|-----------------------|---------------------------------|-----------------------------|-----------------------------|--------------------------------------|--------------------------------|---------------------------|-----------------------|---|-------------------------------------|----------------------------|
| 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                             | 21+48/21+84 -L-   | 3 @ 12'x12' RCBC      |                                 |                             |                             |                                      |                                | 0.06                      | 0.01                  | 141                                     | 43                                  |                            |
|                               |                   |                       |                                 |                             |                             |                                      |                                |                           |                       |   |                                     |                            |
|                               |                   |                       |                                 |                             |                             |                                      |                                |                           |                       |   |                                     |                            |
|                               |                   |                       |                                 |                             |                             |                                      |                                |                           |                       |   |                                     |                            |
|                               |                   |                       |                                 |                             |                             |                                      |                                |                           |                       |   |                                     |                            |
|                               |                   |                       |                                 |                             |                             |                                      |                                |                           |                       |   |                                     |                            |
|                               |                   |                       |                                 |                             |                             |                                      |                                |                           |                       |   |                                     |                            |
|                               |                   |                       |                                 |                             |                             |                                      |                                |                           |                       |   |                                     |                            |
|                               |                   |                       |                                 |                             |                             |                                      |                                |                           |                       |   |                                     |                            |
|                               |                   |                       |                                 |                             |                             |                                      |                                |                           |                       |   |                                     |                            |
|                               |                   |                       |                                 |                             |                             |                                      |                                |                           |                       |   |                                     |                            |
|                               |                   |                       |                                 |                             |                             |                                      |                                |                           |                       |   |                                     |                            |
|                               |                   |                       |                                 |                             |                             |                                      |                                |                           |                       |   |                                     |                            |
|                               |                   |                       |                                 |                             |                             |                                      |                                |                           |                       |   |                                     |                            |
|                               |                   |                       |                                 |                             |                             |                                      |                                |                           |                       |   |                                     |                            |
|                               |                   |                       |                                 |                             |                             |                                      |                                |                           |                       |   |                                     |                            |
|                               |                   |                       |                                 |                             |                             |                                      |                                |                           |                       |   |                                     |                            |
|                               |                   |                       |                                 |                             |                             |                                      |                                |                           |                       |   |                                     |                            |
|                               |                   |                       |                                 |                             |                             |                                      |                                |                           |                       |   |                                     |                            |
| TOTALS*:                      |                   |                       |                                 |                             |                             |                                      |                                | 0.06                      | 0.01                  | 141                                     | 43                                  | 0                          |

\*Rounded totals are sum of actual impacts

NOTES:

NC DEPARTMENT OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 3/3/2015  
 RUTHERFORD  
 B-5395  
 46110.1.1  
 SHEET 6 OF 6

See Sheet 1A For Index of Sheets



STATE OF NORTH CAROLINA  
 DIVISION OF HIGHWAYS  
**RUTHERFORD COUNTY**

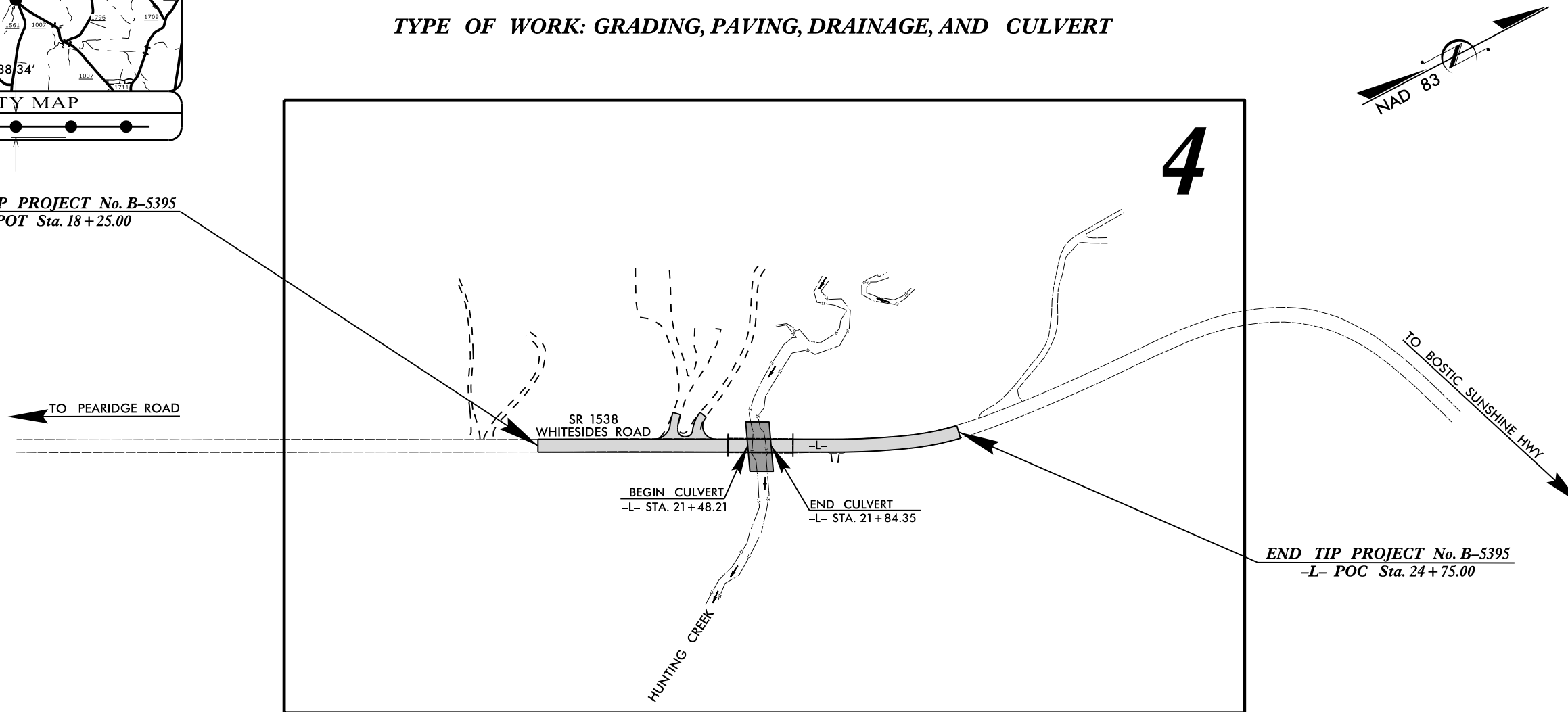
**LOCATION: REPLACEMENT OF BRIDGE No. 577 OVER HUNTING CREEK ON SR 1538 (WHITESIDES ROAD)**

**TYPE OF WORK: GRADING, PAVING, DRAINAGE, AND CULVERT**

| STATE           | STATE PROJECT REFERENCE NO. | SHEET NO.      | TOTAL SHEETS |
|-----------------|-----------------------------|----------------|--------------|
| N.C.            | B-5395                      | 1              |              |
| STATE PROJ. NO. | F.A. PROJ. NO.              | DESCRIPTION    |              |
| 46110.1.1       | BRSTP-1538(8)               | P.E.           |              |
| 46110.2.FD1     | BRSTP-1538(8)               | R/W, UTILITIES |              |
|                 |                             | CONSTRUCTION   |              |
|                 |                             |                |              |
|                 |                             |                |              |
|                 |                             |                |              |

**CONTRACT: TIP PROJECT: B-5395**

**BEGIN TIP PROJECT No. B-5395**  
 -L- POT Sta. 18 + 25.00

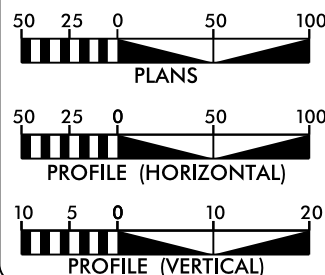


**END TIP PROJECT No. B-5395**  
 -L- POC Sta. 24 + 75.00

Clearing on this project shall be performed to the limits established by Method II  
 This project is not within any Municipal Boundaries

**PRELIMINARY PLANS**  
 DO NOT USE FOR CONSTRUCTION

**GRAPHIC SCALES**



**DESIGN DATA**

ADT 2013 = 1020  
 ADT 2040 = 1200  
 K = 11 %  
 D = 70%  
 T = 8 % \*  
 V = 45MPH  
 \* TTST = 3% DUAL = 5%  
 FUNC CLASS = LOCAL  
 SUBREGIONAL TIER

**PROJECT LENGTH**

LENGTH ROADWAY TIP PROJECT B-5395 = 0.116 Miles  
 LENGTH STRUCTURE TIP PROJECT B-5395 = 0.007 Miles  
**TOTAL LENGTH TIP PROJECT B-5395 = 0.123 Miles**

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

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:  
 JANUARY 23, 2015

LETTING DATE:  
 JANUARY 19, 2016

**KEVIN E. MOORE, P.E.**  
 PROJECT ENGINEER

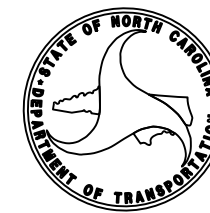
**STEVEN D. KENDALL, P.E.**  
 PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

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

ROADWAY DESIGN ENGINEER

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



Note: Not to Scale

\*S.U.E. = Subsurface Utility Engineering

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

# CONVENTIONAL PLAN SHEET SYMBOLS

### BOUNDARIES AND PROPERTY:

|  |           |
|--|-----------|
| State Line                                 | -----     |
| County Line                                | -----     |
| Township Line                              | -----     |
| City Line                                  | -----     |
| Reservation Line                           | -----     |
| Property Line                              | -----     |
| Existing Iron Pin                          | ○ EP      |
| Property Corner                            | ✱         |
| Property Monument                          | □ ECM     |
| Parcel/Sequence Number                     | ①23       |
| Existing Fence Line                        | -x-x-x-   |
| Proposed Woven Wire Fence                  | ○         |
| Proposed Chain Link Fence                  | □         |
| Proposed Barbed Wire Fence                 | ◇         |
| Existing Wetland Boundary                  | ----- WLB |
| Proposed Wetland Boundary                  | ----- WLB |
| Existing Endangered Animal Boundary        | ----- EAB |
| Existing Endangered Plant Boundary         | ----- EPB |
| 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                          | ○ W |
| Small Mine                    | ✱   |
| Foundation                    | □   |
| Area Outline                  | □   |
| Cemetery                      | □ † |
| Building                      | □   |
| School                        | □   |
| Church                        | □   |
| Dam                           | □   |

### HYDROLOGY:

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

### RAILROADS:

|                    |          |
|--------------------|----------|
| Standard Gauge     | -----    |
| RR Signal Milepost | ○        |
| Switch             | □ 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                                    | ----- RW  |
| Proposed Right of Way Line with Iron Pin and Cap Marker       | △ RW      |
| Proposed Right of Way Line with Concrete or Granite RW Marker | △ RW      |
| Proposed Control of Access Line with Concrete CA Marker       | △ CA      |
| Existing Control of Access                                    | △ CA      |
| Proposed Control of Access                                    | △ CA      |
| Existing Easement Line  | ----- E   |
| Proposed Temporary Construction Easement                      | ----- E   |
| 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 | □ 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                      | ⊕               |
| 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             | -----           |
| Designated U/G Water Line (S.U.E.*) | -----           |
| 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               | ----- TUL |
| U/G Tank; Water, Gas, Oil              | □         |
| Underground Storage Tank, Approx. Loc. | ⊕         |
| 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.    |

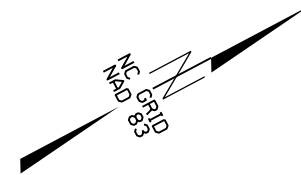


8/17/99

# SURVEY CONTROL SHEET B-5395

|                       |           |
|-----------------------|-----------|
| PROJECT REFERENCE NO. | SHEET NO. |
| B-5395                | 1C-1      |
| Location and Surveys  |           |

| BL | POINT | DESC.    | NORTH       | EAST         | ELEVATION | L STATION              | OFFSET   |
|----|-------|----------|-------------|--------------|-----------|------------------------|----------|
|    | 1     | BL-1     | 621845.0832 | 1149902.4514 | 1061.22   | OUTSIDE PROJECT LIMITS |          |
|    | 2     | BL-2     | 622398.5821 | 1150320.6692 | 1029.22   | 10+38.39               | 14.31 RT |
|    | 3     | BL-3     | 623032.6789 | 1150617.4164 | 969.11    | 17+37.70               | 19.05 LT |
|    | 4     | BL-4     | 623359.3642 | 1150790.7138 | 938.92    | 21+07.50               | 18.18 LT |
|    | 5     | BL-5     | 623680.4208 | 1150973.4519 | 956.94    | 24+74.72               | 15.04 RT |
|    | 6     | BL-6     | 624213.7835 | 1151005.1959 | 1001.91   | 30+00.41               | 25.19 LT |
|    | GPS1  | B-5395-1 | 621054.6320 | 1150025.4070 | 1058.74   | OUTSIDE PROJECT LIMITS |          |
|    | GPS2  | B-5395-2 | 621786.4680 | 1149421.9790 | 1049.57   | OUTSIDE PROJECT LIMITS |          |



.....  
 BM1 ELEVATION = 940.87  
 N 623474 E 1150906  
 L STATION 22+62.32 30.08' RIGHT  
 RR SPIKE IN BASE OF 20" SYCAMORE TREE  
 .....

**NCDOT GPS MONUMENT (B-5395-2)**

**LOCALIZED PROJECT COORDINATES**

N = 691786.4680  
 E = 1149.421.9790



**NCDOT BASELINE MONUMENT (BL-1)**  
**LOCALIZED PROJECT COORDINATES**

N = 621845.0832  
 E = 1149902.4514

**NCDOT BASELINE MONUMENT (BL-2)**  
**LOCALIZED PROJECT COORDINATES**

N = 622398.5821  
 E = 1150320.6692

**NCDOT GPS MONUMENT (B-5395-1)**

**LOCALIZED PROJECT COORDINATES**

B-5395-1 = GPS-1 N = 621054.6320  
 E = 1150025.4070

**NOTES:**

1. THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:  
[HTTP://WWW.DOH.DOT.STATE.NC.US/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/](http://www.doh.dot.state.nc.us/preconstruct/highway/location/project/)

THE FILES TO BE FOUND ARE AS FOLLOWS:  
 B5395\_LS\_CONTROL.TXT

SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

● INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.

PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.  
 NETWORK ESTABLISHED FROM NGS ONLINE POSITIONING SERVICE (OPUS)

**-DR2- STA. 11+55.00**  
**END STATE PROJECT 42846.1.1**  
**LOCALIZED PROJECT COORDINATES**

N = 623441.0330  
 E = 1150702.8084

**-DRI- STA. 10+66.00**  
**END STATE PROJECT 42846.1.1**  
**LOCALIZED PROJECT COORDINATES**

N = 623324.4058  
 E = 1150719.5835

**NCDOT BASELINE MONUMENT (BL-3)**  
**LOCALIZED PROJECT COORDINATES**

N = 623032.6789  
 E = 1150617.4164

**-L- STA. 18+25.00**  
**BEG STATE PROJECT 46110.1.1**  
**LOCALIZED PROJECT COORDINATES**

N = 623101.1220  
 E = 1150674.7876

**NCDOT BASELINE MONUMENT (BL-4)**  
**LOCALIZED PROJECT COORDINATES**

N = 623359.3642  
 E = 1150790.7138

**-L- STA. 25+25.00**  
**END STATE PROJECT 46110.1.1**  
**LOCALIZED PROJECT COORDINATES**

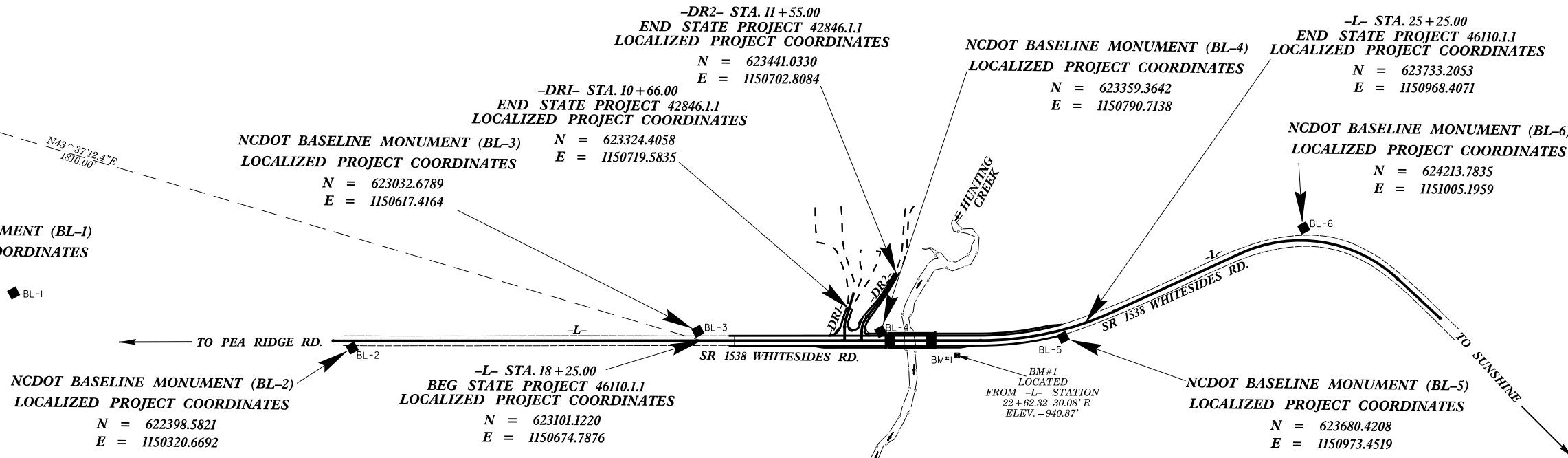
N = 623733.2053  
 E = 1150968.4071

**NCDOT BASELINE MONUMENT (BL-6)**  
**LOCALIZED PROJECT COORDINATES**

N = 624213.7835  
 E = 1151005.1959

**NCDOT BASELINE MONUMENT (BL-5)**  
**LOCALIZED PROJECT COORDINATES**

N = 623680.4208  
 E = 1150973.4519



**DATUM DESCRIPTION**

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B-5395-2 = GPS-2"

WITH NAD 83 STATE PLANE GRID COORDINATES OF  
 NORTHING: 621786.4680(ft) EASTING: 1149421.9790(ft)  
 ELEVATION: 1049.57(ft)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999762637

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B-5395-2 = GPS-2" TO -L- STATION 18+25.00 IS  
 N 43° 37' 12.4" E 1816.00'

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES  
 VERTICAL DATUM USED IS NAVD 88

NOTE: DRAWING NOT TO SCALE

23-JAN-2015 10:13  
 R:\Roadshow\Projects\B5395.LS-1c-1.dgn  
 5:58:15 PM

# SURVEY CONTROL SHEET B-5395 (PRELIMINARY)



## (DESIGN ALIGNMENTS)

-L-

| L    |          |             |              |
|------|----------|-------------|--------------|
| TYPE | STATION  | NORTH       | EAST         |
| POT  | 15+25.00 | 622835.8699 | 1150534.6401 |
| PC   | 22+81.67 | 623504.8975 | 1150888.1248 |
| PCC  | 23+95.26 | 623607.8915 | 1150935.9148 |
| PT   | 25+12.59 | 623721.2170 | 1150964.9592 |
| PC   | 25+59.37 | 623767.6710 | 1150970.5122 |
| PT   | 27+14.71 | 623922.4679 | 1150982.9442 |
| POT  | 27+99.08 | 624006.7699 | 1150986.4283 |

## -DRIVES-

| DRV1 |          |             |              |
|------|----------|-------------|--------------|
| TYPE | STATION  | NORTH       | EAST         |
| POT  | 10+00.00 | 623286.2944 | 1150772.6246 |
| PC   | 10+27.62 | 623299.1803 | 1150748.1948 |
| PT   | 10+42.27 | 623307.8050 | 1150736.4133 |
| POT  | 11+00.00 | 623348.3392 | 1150695.3115 |

| DRV2 |          |             |              |
|------|----------|-------------|--------------|
| TYPE | STATION  | NORTH       | EAST         |
| POT  | 10+00.00 | 623316.7189 | 1150788.6995 |
| PC   | 10+16.93 | 623324.6277 | 1150773.7307 |
| PT   | 10+50.08 | 623348.3664 | 1150751.4709 |
| POT  | 10+90.00 | 623384.7922 | 1150735.1282 |

## (ROW MARKERS)

-L-

| ROW MARKER CONCRETE OR GRANITE |          |        |             |              |
|--------------------------------|----------|--------|-------------|--------------|
| ALIGN                          | STATION  | OFFSET | NORTH       | EAST         |
| L                              | 20+00.00 | -18.00 | 623264.2612 | 1150740.6252 |
| L                              | 20+00.00 | -35.00 | 623272.2029 | 1150725.5942 |
| L                              | 21+00.00 | 30.00  | 623330.2550 | 1150829.7814 |
| L                              | 21+00.00 | 19.00  | 623335.3937 | 1150820.0555 |
| L                              | 21+30.00 | 65.00  | 623340.4296 | 1150874.7422 |
| L                              | 22+10.00 | 65.00  | 623411.1635 | 1150912.1149 |
| L                              | 22+20.00 | -85.00 | 623490.0790 | 1150784.1604 |
| L                              | 22+30.00 | 45.00  | 623438.1902 | 1150903.7746 |
| L                              | 22+35.00 | -35.00 | 623479.9837 | 1150835.3765 |
| L                              | 22+35.00 | -19.00 | 623472.5092 | 1150849.5232 |
| L                              | 22+75.00 | 45.00  | 623477.9780 | 1150924.7967 |
| L                              | 22+75.00 | 18.00  | 623490.5912 | 1150900.9240 |

## (PERMANENT EASEMENTS)

-L-

| PERMANENT UTILITY EASEMENT MARKER IRON PIN AND CAP |          |         |             |              |
|--|----------|---------|-------------|--------------|
| ALIGN  | STATION  | OFFSET  | NORTH       | EAST         |
| L  | 19+05.00 | 45.00   | 623150.8337 | 1150751.9481 |
| L  | 19+05.00 | 18.00   | 623163.4470 | 1150728.0754 |
| L  | 19+05.00 | -18.00  | 623180.2647 | 1150696.2451 |
| L  | 19+05.00 | -46.00  | 623193.3451 | 1150671.4883 |
| L  | 19+25.00 | 45.00   | 623168.5172 | 1150761.2913 |
| L  | 19+25.00 | 18.00   | 623181.1305 | 1150737.4186 |
| L  | 19+25.00 | -18.00  | 623197.9482 | 1150705.5883 |
| L  | 24+37.00 | -117.00 | 623680.6218 | 1150837.5172 |
| L  | 24+38.00 | -149.00 | 623690.3778 | 1150807.0326 |

| PERMANENT DRAINAGE EASEMENT MARKER IRON PIN AND CAP |          |        |             |              |
|---|----------|--------|-------------|--------------|
| ALIGN   | STATION  | OFFSET | NORTH       | EAST         |
| L   | 21+84.00 | -76.82 | 623454.4266 | 1150774.5768 |
| L   | 21+84.00 | -94.00 | 623462.4532 | 1150759.3851 |
| L   | 22+20.00 | -94.00 | 623494.2834 | 1150776.2028 |

**NOTES:**

1. THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:  
[HTTP://WWW.DOH.DOT.STATE.NC.US/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/](http://www.doh.dot.state.nc.us/preconstruct/highway/location/project/)  
  
THE FILES TO BE FOUND ARE AS FOLLOWS:  
*B5395\_LS\_CONTROL.TXT*  
  
SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
- INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.  
PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.  
NETWORK ESTABLISHED FROM NGS ONLINE POSITIONING SERVICE (OPUS)

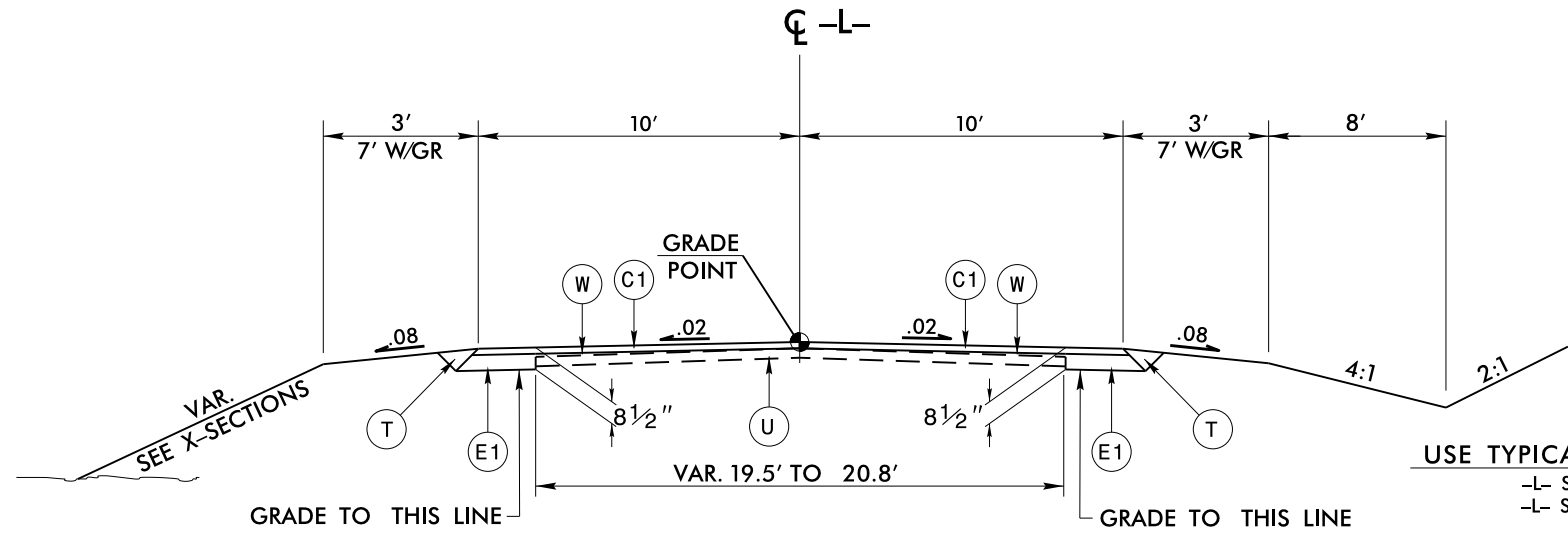
### DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B-5395-2 = GPS-2"  
WITH NAD 83 STATE PLANE GRID COORDINATES OF  
NORTHING: 621786.4680(ft) EASTING: 1149421.9790(ft)  
ELEVATION: 1049.57(ft)  
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999762637  
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B-5395-2 = GPS-2" TO -L- STATION 18+25.00 IS  
N 43°37'12.4"E 1816.00'  
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES  
VERTICAL DATUM USED IS NAVD 88

| PAVEMENT SCHEDULE<br>(Final Design) |  |
|-------------------------------------|--|
| C1                                  | PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.   |
| C2                                  | PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1 1/2" IN DEPTH.                          |
| E1                                  | PROP. APPROX. 5 1/2" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.   |
| E2                                  | PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5 1/2" IN DEPTH. |
| R                                   | SHOULDER BERM GUTTER   |
| T                                   | EARTH MATERIAL.  |
| U                                   | EXISTING PAVEMENT.   |
| W                                   | VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL).   |

NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

|   |                          |
|---|--------------------------|
| PROJECT REFERENCE NO.<br><b>B-5395</b>                  | SHEET NO.<br><b>2A-1</b> |
| ROADWAY DESIGN ENGINEER                                 | PAVEMENT DESIGN ENGINEER |
| <b>PRELIMINARY PLANS</b><br>DO NOT USE FOR CONSTRUCTION |                          |



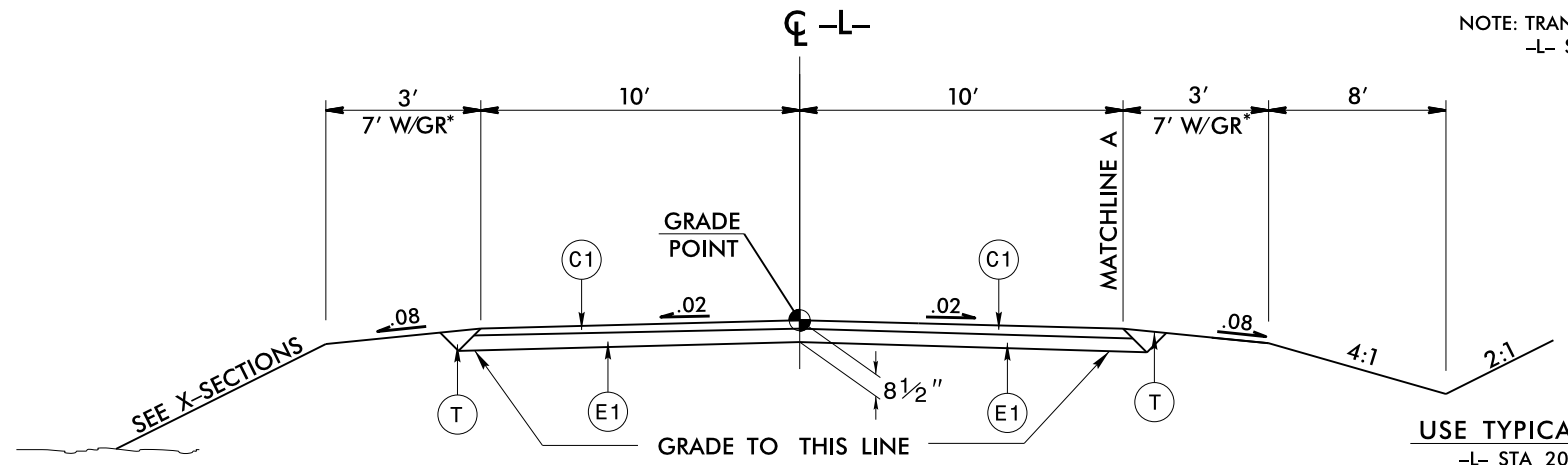
**TYPICAL SECTION NO. 1**

USE TYPICAL SECTION NO. 1 AS FOLLOWS  
 -L- STA 18+25.00 TO STA 20+00.00  
 -L- STA 24+00.00 TO STA 24+75.00

NOTE: MILLING REQUIRED FOR PAVEMENT TIE-IN  
 -L- STA. 18+25.00 TO STA. 19+50.00  
 -L- STA. 24+00.00 TO STA. 24+75.00

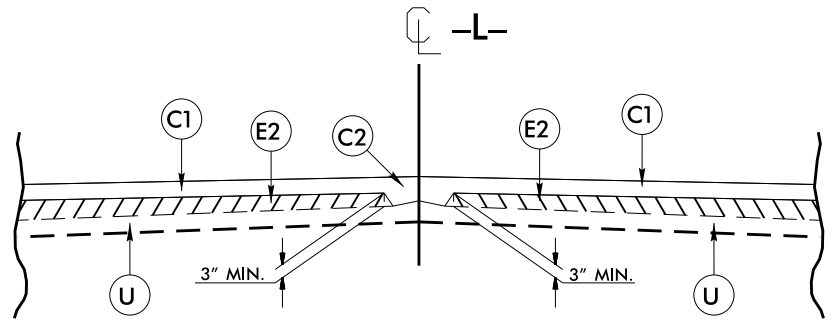
NOTE: TRANSITION FROM EXISTING TO TYPICAL SECTION NO. 1  
 -L- STA. 18+25.00 TO STA. 18+75.00

NOTE: TRANSITION FROM TYPICAL SECTION NO. 1 TO EXISTING  
 -L- STA. 24+25.00 TO STA. 24+75.00

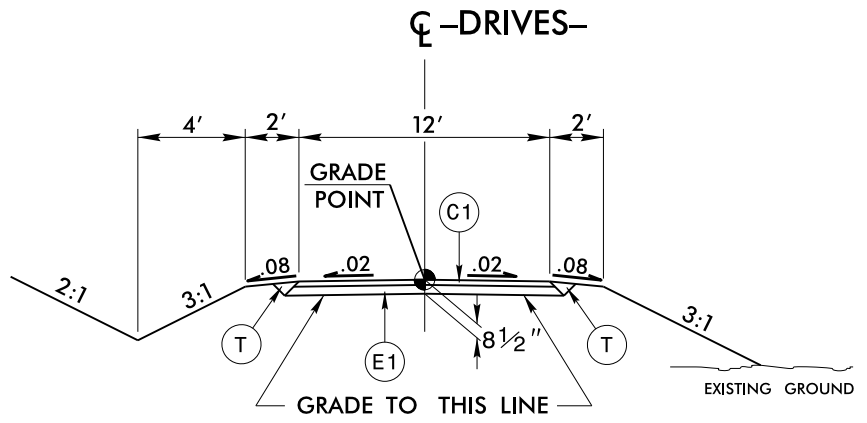


**TYPICAL SECTION NO. 2**

USE TYPICAL SECTION NO. 2 AS FOLLOWS  
 -L- STA 20+00.00 TO STA 24+00.00  
 \* 4' PAVED SHOULDER AT GUARDRAIL LOCATIONS

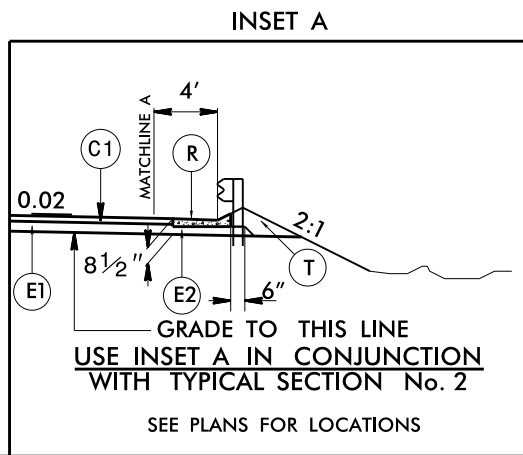


**Detail Showing Method of Wedging**



**TYPICAL SECTION NO. 3**

USE TYPICAL SECTION NO. 3 AS FOLLOWS  
 -DRV1- STA 10+10.00 to 10+50.00  
 -DRV2- STA 10+10.00 to 10+50.08



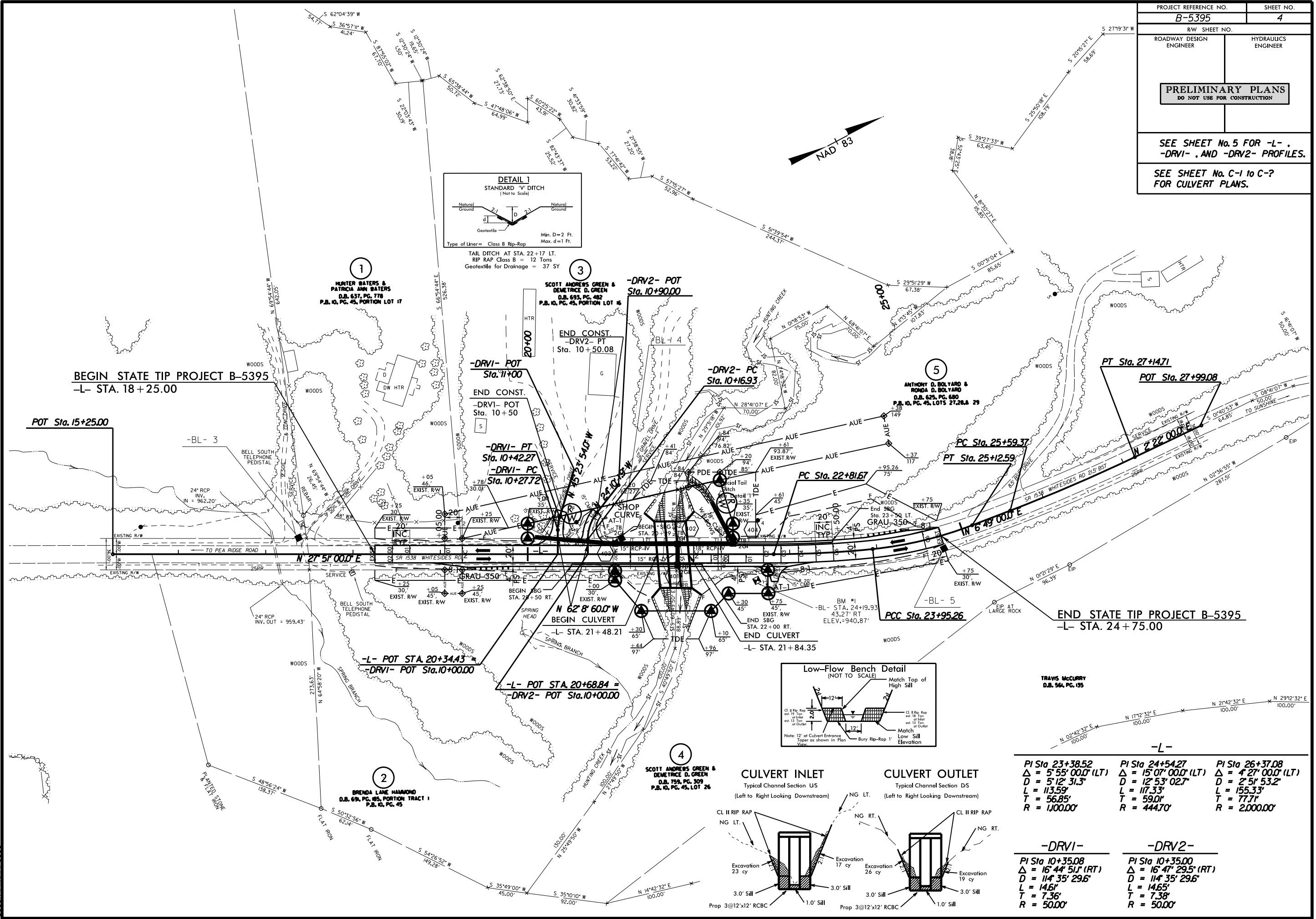
**INSET A**  
 USE INSET A IN CONJUNCTION WITH TYPICAL SECTION No. 2

SEE PLANS FOR LOCATIONS

23-JAN-2015 10:13  
 R:\Roadway\Proj\B-5395\_Rdy\_tup.dgn  
 \$\$\$\$  
 \$\$\$\$

|  |  |                       |  |
|--|--|-----------------------|--|
| PROJECT REFERENCE NO.<br><b>B-5395</b>                   |  | SHEET NO.<br><b>4</b> |  |
| RW SHEET NO.   |  | HYDRAULICS ENGINEER   |  |
| ROADWAY DESIGN ENGINEER                                  |  | HYDRAULICS ENGINEER   |  |
| <b>PRELIMINARY PLANS</b><br>DO NOT USE FOR CONSTRUCTION  |  |                       |  |
| SEE SHEET No. 5 FOR -L-,<br>-DRVI-, AND -DRV2- PROFILES. |  |                       |  |
| SEE SHEET No. C-1 to C-?<br>FOR CULVERT PLANS.           |  |                       |  |

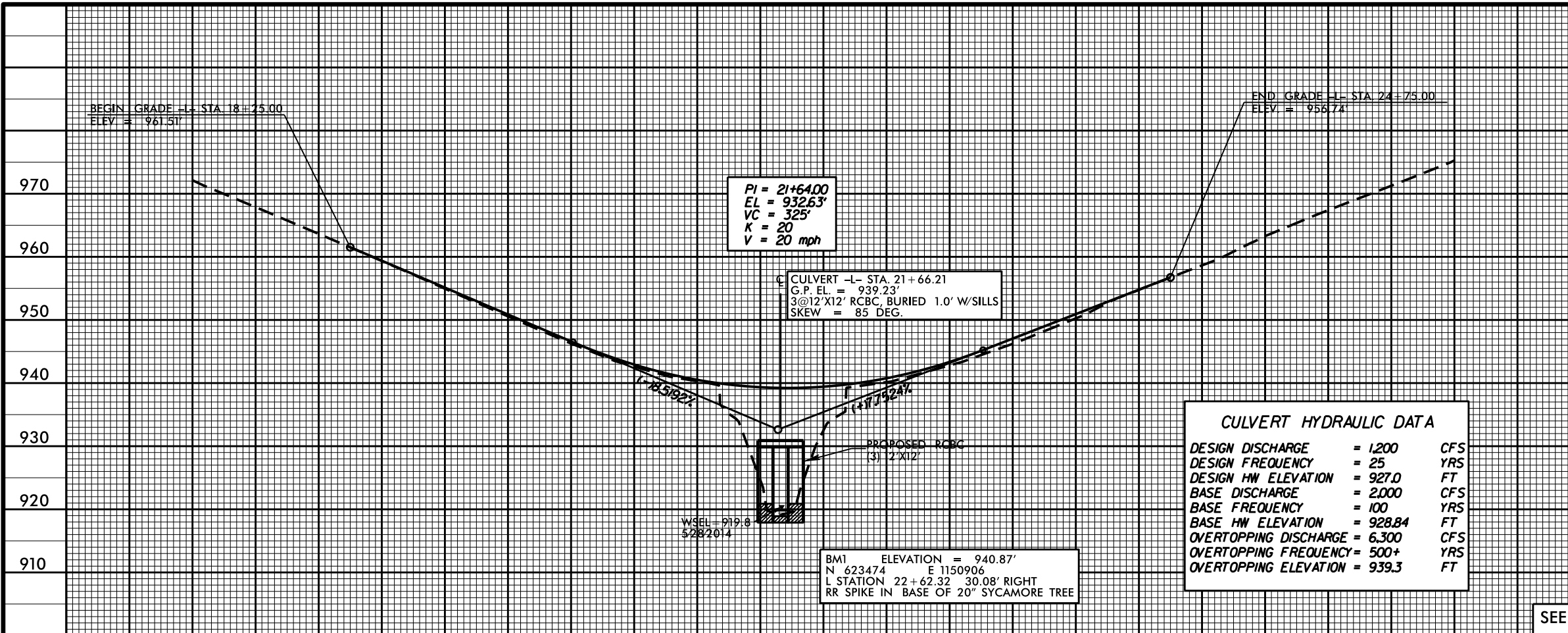
8/17/99  
23-JAN-2015 10:44  
R:\Roadway\Proj\B-5395\_Rdwy-esh4.dgn  
\$\$\$\$11/15/2015 10:44:44 AM\$\$\$\$



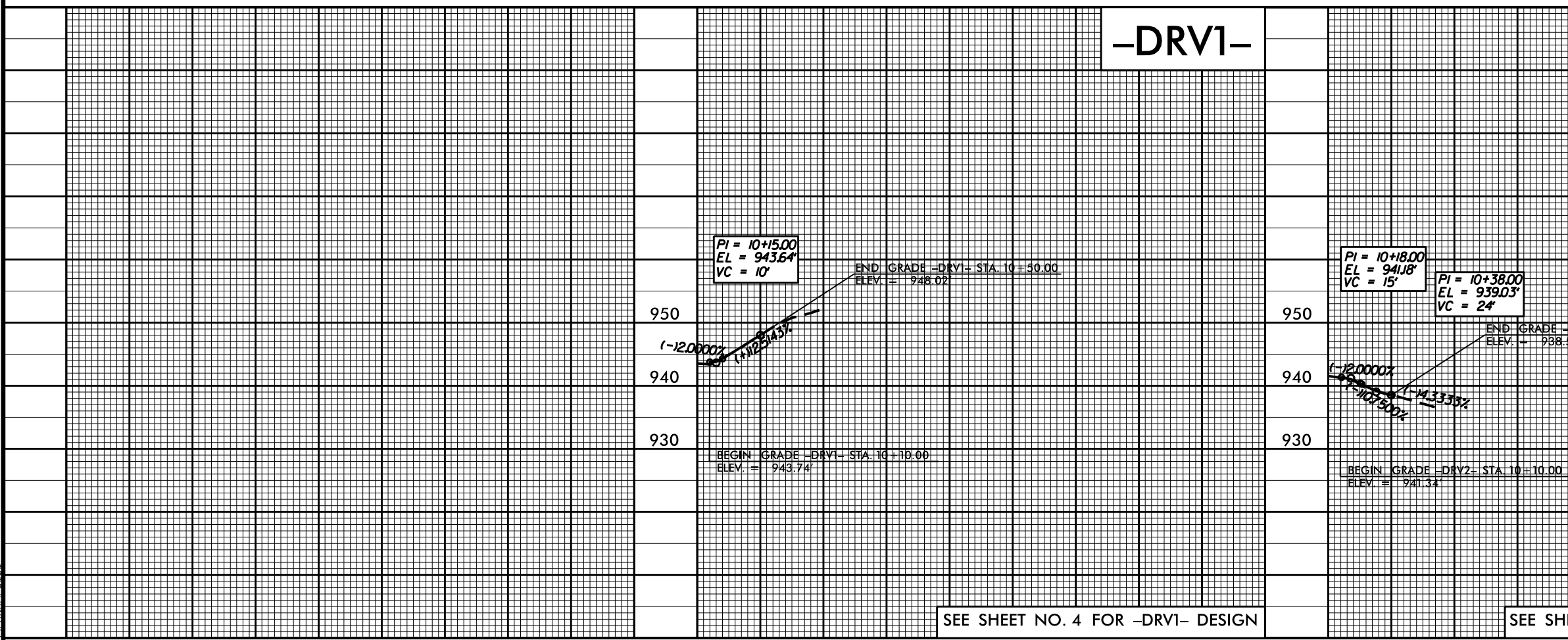
|   |   |  |
|---|---|--|
| <b>-L-</b>  |   |  |
| <b>PI Sta 23+38.52</b><br>$\Delta = 5' 55' 00.0''$ (LT)<br>$D = 5' 12' 31.3''$<br>$L = 113.59'$<br>$T = 56.85'$<br>$R = 1100.00'$ | <b>PI Sta 24+54.27</b><br>$\Delta = 15' 07' 00.0''$ (LT)<br>$D = 12' 53' 02.7''$<br>$L = 117.33'$<br>$T = 59.0'$<br>$R = 444.70'$ | <b>PI Sta 26+37.08</b><br>$\Delta = 4' 27' 00.0''$ (LT)<br>$D = 2' 51' 53.2''$<br>$L = 155.33'$<br>$T = 77.7'$<br>$R = 2000.00'$ |
| <b>-DRVI-</b>   |   |  |
| <b>PI Sta 10+35.08</b><br>$\Delta = 16' 44' 51.1''$ (RT)<br>$D = 11' 35' 29.6''$<br>$L = 146.1'$<br>$T = 7.36'$<br>$R = 50.00'$   | <b>-DRV2-</b>   |  |
|   | <b>PI Sta 10+35.00</b><br>$\Delta = 16' 47' 29.5''$ (RT)<br>$D = 11' 35' 29.6''$<br>$L = 146.5'$<br>$T = 7.38'$<br>$R = 50.00'$   |  |

5/28/99

|   |                       |
|---|-----------------------|
| PROJECT REFERENCE NO.<br><b>B-5395</b>                  | SHEET NO.<br><b>5</b> |
| ROADWAY DESIGN ENGINEER                                 | HYDRAULICS ENGINEER   |
| <b>PRELIMINARY PLANS</b><br>DO NOT USE FOR CONSTRUCTION |                       |



17 18 19 20 21 22 23 24 25 26 27



10 11 10 11

23-JAN-2015 10:14  
R:\Roadway\PCO\B-5395\_Rdy.pfl.dgn  
5/28/99