



STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY  
GOVERNOR

LYNDO TIPPETT  
SECRETARY

January 13, 2006

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

ATTENTION: Ms. Angie Pennock  
NCDOT Coordinator

Dear Madam:

SUBJECT: **Nationwide Permit 33 Application** for the proposed replacement of Bridge No. 106 on SR 1309 (Lower Alarka Road/ Stephenson Branch Road) over Alarka Creek, in Swain County. Federal Aid Project No. BRZ-1309(2), State Project No. 82990401, TIP No. B-3701, WBS Element 33241.1.1, Division 14.

Please find enclosed three copies of the Categorical Exclusion (CE) Document, as well as, the Pre-construction Notification Form, permit drawings, and ½ size plans for the above referenced project completed by the North Carolina Department of Transportation (NCDOT). The agency proposes to replace Bridge No. 106, northeast of the existing alignment, with a 100-foot single span steel girder bridge. Construction of the proposed project will require the installation of two temporary rock work pads resulting in a total of 0.019 acre of temporary impacts to the existing stream channel. There are no jurisdictional wetlands within the project study area.

### **Impacts to Waters of the United States**

#### General Description

Alarka Creek is located in the Little Tennessee River Basin (sub-basin 04-04-02), and is approximately 24 feet wide and 2.5 feet deep within the project study area. The NCDWQ classifies Alarka Creek as Class "C Tr". A moratorium is being observed from November 1 – April 15 to protect natural trout propagation and stocked trout. There are no High Quality Waters (HQW), Water Supplies (WS-I or WS-II), or Outstanding Resource Waters occurring within 1.0 mile of the project study area. Alarka Creek is not designated as a National Wild and Scenic River or a State Natural and Scenic River.

Permanent Impacts: There are no permanent impacts associated with this project.

Temporary Impacts: There are 0.019 acre of temporary fill in surface water associated with this project because of two temporary rock work pads. The work pads will be used to set the steel girders of the new bridge in place. The work pads will be removed once construction is

**MAILING ADDRESS:**  
NC DEPARTMENT OF TRANSPORTATION  
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS  
1598 MAIL SERVICE CENTER  
RALEIGH NC 27699-1598

TELEPHONE: 919-715-1500  
FAX: 919-715-1501

WEBSITE: [WWW.NCDOT.ORG](http://WWW.NCDOT.ORG)

**LOCATION:**  
PARKER-LINCOLN BUILDING  
CAPITAL BLVD  
RALEIGH, NC

complete. The stream and banks will then be restored to their original condition.

There are no utility impacts associated with this project.

### Bridge Demolition

The existing Bridge No. 106 was constructed in 1958. The three-span structure has a clear roadway width of 20 feet which includes two travel lanes over the bridge. The superstructure consists of an asphalt wearing surface over a timber deck on I-beams and the substructure consists of timber caps and piles on concrete sills. Neither the superstructure nor the substructure will create any temporary fill in the creek, however removal may create some disturbance in the streambed. If the removal of the substructure does create disturbance in the streambed, a turbidity curtain will be used to control sediment.

### Federally Protected Species

Plants and animals with federal classifications of Endangered, Threatened, Proposed Endangered, and Proposed Threatened are protected under provisions of Section 7 and Section 9 of the Endangered Species Act of 1973, as amended. As of January 29, 2003, the Fish and Wildlife Service (FWS) lists ten federally protected species for Swain County.

#### Federally Protected Species for Swain County

| Common Name                       | Scientific Name                     | Status | Biological Conclusion |
|-----------------------------------|-------------------------------------|--------|-----------------------|
| Carolina Northern Flying Squirrel | <i>Glaucomys sabrinus coloratus</i> | E      | No Effect             |
| Eastern cougar                    | <i>Felis concolor cougar</i>        | E      | No Effect             |
| Indiana bat                       | <i>Myotis sodalis</i>               | E      | No Effect             |
| Spotfin chub                      | <i>Cyprinella monacha</i>           | T      | No Effect             |
| Appalachian elktoe                | <i>Alasmindonta raveneliana</i>     | T      | No Effect             |
| Little-wing pearly mussel         | <i>Pegias fibula</i>                | E      | No Effect             |
| Noonday globe                     | <i>Patera clarki nantahala</i>      | T      | No Effect             |
| Spruce-fir moss spider            | <i>Microhexura montivaga</i>        | E      | No Effect             |
| Virginia spirea                   | <i>Spiraea virginiana</i>           | T      | No Effect             |
| Rock gnome lichen                 | <i>Gymnoderma lineane</i>           | E      | No Effect             |

E-denotes Endangered, T-denotes Threatened.

A survey for spotfin chub and sicklefin redhorse was completed on August 18, 2004 and again on October 19, 2005 during which no specimens were found. As a result, USFWS has concurred with a biological conclusion of No Effect for the Spotfin chub.

A mist net survey for Indiana bat was completed on July 1, 2004 during which no specimens were observed. As a result, USFWS has concurred with a biological conclusion of No Effect.

### Avoidance, Minimization, and Mitigation

**Avoidance and Minimization:** Avoidance examines all appropriate and practicable possibilities of averting impacts to "Waters of the United States." The NCDOT is committed to incorporating all reasonable and practicable design features to avoid and minimize jurisdictional stages; minimization measures were incorporated as part of the project design. The use of best management practices for construction should reduce impacts to plant communities.

- The entire stream is being spanned, therefore eliminating any permanent impacts.

- The existing bridge is being used to maintain traffic until the new bridge is complete, therefore eliminating the need for a temporary on-site detour.

Mitigation: There is no mitigation since there are no permanent impacts.

### **Regulatory Approvals**

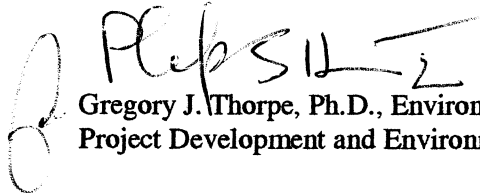
Section 404 Permit: All other aspects of this project are being processed by the Federal Highway Administration as a "Categorical Exclusion" in accordance with 23 CFR § 771.115(b). The NCDOT requests that these activities be authorized by a Nationwide Permit 33.

Section 401 Permit: We anticipate 401 General Certification number 3366 will apply to this project. In accordance with 15A NCAC 2H .0501(a) we are providing two copies of this application to the North Carolina Department of Environmental and Natural Resources, Division of Water Quality, for their records.

We also anticipate that comments from the North Carolina Wildlife Resources Commission (NCWRC) will be required prior to authorization by the Corps of Engineers. By copy of this letter and attachment, NCDOT hereby requests NCWRC review. NCDOT requests that NCWRC forward their comments to the Corps of Engineers.

Thank you for your assistance with this project. If you have any questions or need additional information, please contact Megan Willis at [mwillis@dot.state.nc.us](mailto:mwillis@dot.state.nc.us) or (919) 715-1341.

Sincerely,



Gregory J. Thorpe, Ph.D., Environmental Management Director  
Project Development and Environmental Analysis Branch

cc:

**w/attachment**

Mr. John Hennessy, NCDWQ (2 Copies)  
Ms. Marella Buncick, USFWS  
Ms. Marla Chambers, NCWRC  
Dr. David Chang, P.E., Hydraulics  
Mr. Greg Perfetti, P.E., Structure Design  
Mr. Mark Staley, Roadside Environmental  
Mr. J. B. Setzer, P.E., Division Engineer  
Mr. Mark Davis, DEO  
Mr. Harold Draper, TVA

**w/o attachment**

Mr. Jay Bennett, P.E., Roadway Design  
Mr. Majed Alghandour, P. E., Programming and TIP  
Mr. Art McMillan, P.E., Highway Design  
Mr. Scott McLendon, USACE, Wilmington  
Mr. John Williams, PDEA Engineer

**Office Use Only:**

Form Version March 05

**USACE Action ID No.** \_\_\_\_\_

**DWQ No.** \_\_\_\_\_

(If any particular item is not applicable to this project, please enter "Not Applicable" or "N/A".)

**I. Processing**

1. Check all of the approval(s) requested for this project:

|   |  |
|---|--|
| <input checked="" type="checkbox"/> Section 404 Permit              | <input type="checkbox"/> Riparian or Watershed Buffer Rules      |
| <input type="checkbox"/> Section 10 Permit                          | <input type="checkbox"/> Isolated Wetland Permit from DWQ        |
| <input checked="" type="checkbox"/> 401 Water Quality Certification | <input type="checkbox"/> Express 401 Water Quality Certification |
  
2. Nationwide, Regional or General Permit Number(s) Requested: 33
  
3. If this notification is solely a courtesy copy because written approval for the 401 Certification is not required, check here:
  
4. If payment into the North Carolina Ecosystem Enhancement Program (NCEEP) is proposed for mitigation of impacts, attach the acceptance letter from NCEEP, complete section VIII, and check here:
  
5. If your project is located in any of North Carolina's twenty coastal counties (listed on page 4), and the project is within a North Carolina Division of Coastal Management Area of Environmental Concern (see the top of page 2 for further details), check here:

**II. Applicant Information**

1. Owner/Applicant Information  
Name: Gregory J. Thorpe, Ph.D., Environmental Management Director  
Mailing Address: 1598 Mail Service Center  
\_\_\_\_\_  
\_\_\_\_\_  
Telephone Number: (919) 733-3141 Fax Number: (919) 733-9794  
E-mail Address: mwillis@dot.state.nc.us
  
2. Agent/Consultant Information (A signed and dated copy of the Agent Authorization letter must be attached if the Agent has signatory authority for the owner/applicant.)  
Name: \_\_\_\_\_  
Company Affiliation: \_\_\_\_\_  
Mailing Address: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
Telephone Number: \_\_\_\_\_ Fax Number: \_\_\_\_\_  
E-mail Address: \_\_\_\_\_

### III. Project Information

Attach a **vicinity map** clearly showing the location of the property with respect to local landmarks such as towns, rivers, and roads. Also provide a detailed **site plan** showing property boundaries and development plans in relation to surrounding properties. Both the vicinity map and site plan must include a scale and north arrow. The specific footprints of all buildings, impervious surfaces, or other facilities must be included. If possible, the maps and plans should include the appropriate USGS Topographic Quad Map and NRCS Soil Survey with the property boundaries outlined. Plan drawings, or other maps may be included at the applicant's discretion, so long as the property is clearly defined. For administrative and distribution purposes, the USACE requires information to be submitted on sheets no larger than 11 by 17-inch format; however, DWQ may accept paperwork of any size. DWQ prefers full-size construction drawings rather than a sequential sheet version of the full-size plans. If full-size plans are reduced to a small scale such that the final version is illegible, the applicant will be informed that the project has been placed on hold until decipherable maps are provided.

1. Name of project: Replacement of Bridge No. 106 on SR 1309 over Alarka Creek
2. T.I.P. Project Number or State Project Number (NCDOT Only): B-3701
3. Property Identification Number (Tax PIN): N/A
4. Location  
County: Swain Nearest Town: Lauada  
Subdivision name (include phase/lot number): N/A  
Directions to site (include road numbers/names, landmarks, etc.): Bridge No. 106 on SR 1309 off Highway 19-74 in Swain County.
5. Site coordinates (For linear projects, such as a road or utility line, attach a sheet that separately lists the coordinates for each crossing of a distinct waterbody.)  
Decimal Degrees (6 digits minimum): 83' 28' 00' °N 35' 23' 00' °W
6. Property size (acres): N/A
7. Name of nearest receiving body of water: Alarka Creek which flows to the Tuckasegee River
8. River Basin: Little Tennessee River Basin, Cataloging Unit 06010202  
(Note – this must be one of North Carolina's seventeen designated major river basins. The River Basin map is available at <http://h2o.enr.state.nc.us/admin/maps/>.)
9. Describe the existing conditions on the site and general land use in the vicinity of the project at the time of this application: Rural and minimally developed with forest cover.

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10. Describe the overall project in detail, including the type of equipment to be used: \_\_\_\_\_  
Standard DOT construction equipment.

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11. Explain the purpose of the proposed work: Increase safety for travelers along SR 1309.

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**IV. Prior Project History**

If jurisdictional determinations and/or permits have been requested and/or obtained for this project (including all prior phases of the same subdivision) in the past, please explain. Include the USACE Action ID Number, DWQ Project Number, application date, and date permits and certifications were issued or withdrawn. Provide photocopies of previously issued permits, certifications or other useful information. Describe previously approved wetland, stream and buffer impacts, along with associated mitigation (where applicable). If this is a NCDOT project, list and describe permits issued for prior segments of the same T.I.P. project, along with construction schedules.

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**V. Future Project Plans**

Are any future permit requests anticipated for this project? If so, describe the anticipated work, and provide justification for the exclusion of this work from the current application.

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**VI. Proposed Impacts to Waters of the United States/Waters of the State**

It is the applicant's (or agent's) responsibility to determine, delineate and map all impacts to wetlands, open water, and stream channels associated with the project. Each impact must be listed separately in the tables below (e.g., culvert installation should be listed separately from riprap dissipater pads). Be sure to indicate if an impact is temporary. All proposed impacts, permanent and temporary, must be listed, and must be labeled and clearly identifiable on an accompanying site plan. All wetlands and waters, and all streams (intermittent and perennial) should be shown on a delineation map, whether or not impacts are proposed to these systems. Wetland and stream evaluation and delineation forms should be included as appropriate. Photographs may be included at the applicant's discretion. If this proposed impact is strictly for wetland or stream mitigation, list and describe the impact in Section VIII below. If additional space is needed for listing or description, please attach a separate sheet.

1. Provide a written description of the proposed impacts: 0.019 acre of temporary fill into Alarka Creek.

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2. Individually list wetland impacts. Types of impacts include, but are not limited to mechanized clearing, grading, fill, excavation, flooding, ditching/drainage, etc. For dams, separately list impacts due to both structure and flooding.

| Wetland Impact Site Number (indicate on map) | Type of Impact | Type of Wetland (e.g., forested, marsh, herbaceous, bog, etc.) | Located within 100-year Floodplain (yes/no) | Distance to Nearest Stream (linear feet) | Area of Impact (acres) |
|--|----------------|--|---|--|------------------------|
|  |                |  |   |  |                        |
|  |                |  |   |  |                        |
|  |                |  |   |  |                        |
|  |                |  |   |  |                        |
|  |                |  |   |  |                        |
|  |                |  |   |  |                        |
| Total Wetland Impact (acres)                 |                |  |   |  |                        |

3. List the total acreage (estimated) of all existing wetlands on the property: 0

4. Individually list all intermittent and perennial stream impacts. Be sure to identify temporary impacts. Stream impacts include, but are not limited to placement of fill or culverts, dam construction, flooding, relocation, stabilization activities (e.g., cement walls, rip-rap, crib walls, gabions, etc.), excavation, ditching/straightening, etc. If stream relocation is proposed, plans and profiles showing the linear footprint for both the original and relocated streams must be included. To calculate acreage, multiply length X width, then divide by 43,560.

| Stream Impact Number (indicate on map)      | Stream Name  | Type of Impact | Perennial or Intermittent? | Average Stream Width Before Impact | Impact Length (linear feet) | Area of Impact (acres) |
|---|--------------|----------------|----------------------------|------------------------------------|-----------------------------|------------------------|
| Site 1                                      | Alarka Creek | Temporary      | Perennial                  | 24 ft.                             |                             | 0.019                  |
|   |              |                |                            |                                    |                             |                        |
|   |              |                |                            |                                    |                             |                        |
|   |              |                |                            |                                    |                             |                        |
|   |              |                |                            |                                    |                             |                        |
| Total Stream Impact (by length and acreage) |              |                |                            |                                    |                             | 0.019                  |

5. Individually list all open water impacts (including lakes, ponds, estuaries, sounds, Atlantic Ocean and any other water of the U.S.). Open water impacts include, but are not limited to fill, excavation, dredging, flooding, drainage, bulkheads, etc.

| Open Water Impact Site Number (indicate on map) | Name of Waterbody (if applicable) | Type of Impact | Type of Waterbody (lake, pond, estuary, sound, bay, ocean, etc.) | Area of Impact (acres) |
|---|-----------------------------------|----------------|--|------------------------|
|   |                                   |                |  |                        |
|   |                                   |                |  |                        |

|                                 |  |  |  |  |
|---------------------------------|--|--|--|--|
|                                 |  |  |  |  |
| Total Open Water Impact (acres) |  |  |  |  |

6. List the cumulative impact to all Waters of the U.S. resulting from the project:

|  |       |
|--|-------|
| Stream Impact (acres):                     | 0.019 |
| Wetland Impact (acres):                    | 0     |
| Open Water Impact (acres):                 | 0     |
| Total Impact to Waters of the U.S. (acres) | 0.019 |
| Total Stream Impact (linear feet):         | 0     |

7. Isolated Waters

Do any isolated waters exist on the property?  Yes  No

Describe all impacts to isolated waters, and include the type of water (wetland or stream) and the size of the proposed impact (acres or linear feet). Please note that this section only applies to waters that have specifically been determined to be isolated by the USACE.

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8. Pond Creation

If construction of a pond is proposed, associated wetland and stream impacts should be included above in the wetland and stream impact sections. Also, the proposed pond should be described here and illustrated on any maps included with this application.

Pond to be created in (check all that apply):  uplands  stream  wetlands

Describe the method of construction (e.g., dam/embankment, excavation, installation of draw-down valve or spillway, etc.):

Proposed use or purpose of pond (e.g., livestock watering, irrigation, aesthetic, trout pond, local stormwater requirement, etc.):

Current land use in the vicinity of the pond:

Size of watershed draining to pond: \_\_\_\_\_ Expected pond surface area: \_\_\_\_\_

**VII. Impact Justification (Avoidance and Minimization)**

Specifically describe measures taken to avoid the proposed impacts. It may be useful to provide information related to site constraints such as topography, building ordinances, accessibility, and financial viability of the project. The applicant may attach drawings of alternative, lower-impact site layouts, and explain why these design options were not feasible. Also discuss how impacts were minimized once the desired site plan was developed. If applicable, discuss construction techniques to be followed during construction to reduce impacts. The entire stream is being spanned, therefore no permanent impacts will result from this project.

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**VIII. Mitigation**



DWQ - In accordance with 15A NCAC 2H .0500, mitigation may be required by the NC Division of Water Quality for projects involving greater than or equal to one acre of impacts to freshwater wetlands or greater than or equal to 150 linear feet of total impacts to perennial streams.

USACE – In accordance with the Final Notice of Issuance and Modification of Nationwide Permits, published in the Federal Register on January 15, 2002, mitigation will be required when necessary to ensure that adverse effects to the aquatic environment are minimal. Factors including size and type of proposed impact and function and relative value of the impacted aquatic resource will be considered in determining acceptability of appropriate and practicable mitigation as proposed. Examples of mitigation that may be appropriate and practicable include, but are not limited to: reducing the size of the project; establishing and maintaining wetland and/or upland vegetated buffers to protect open waters such as streams; and replacing losses of aquatic resource functions and values by creating, restoring, enhancing, or preserving similar functions and values, preferable in the same watershed.

If mitigation is required for this project, a copy of the mitigation plan must be attached in order for USACE or DWQ to consider the application complete for processing. Any application lacking a required mitigation plan or NCEEP concurrence shall be placed on hold as incomplete. An applicant may also choose to review the current guidelines for stream restoration in DWQ's Draft Technical Guide for Stream Work in North Carolina, available at <http://h2o.enr.state.nc.us/ncwetlands/strmgide.html>.

1. Provide a brief description of the proposed mitigation plan. The description should provide as much information as possible, including, but not limited to: site location (attach directions and/or map, if offsite), affected stream and river basin, type and amount (acreage/linear feet) of mitigation proposed (restoration, enhancement, creation, or preservation), a plan view, preservation mechanism (e.g., deed restrictions, conservation easement, etc.), and a description of the current site conditions and proposed method of construction. Please attach a separate sheet if more space is needed.

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2. Mitigation may also be made by payment into the North Carolina Ecosystem Enhancement Program (NCEEP). Please note it is the applicant's responsibility to contact the NCEEP at (919) 715-0476 to determine availability, and written approval from the NCEEP indicating that they are will to accept payment for the mitigation must be attached to this form. For additional information regarding the application process for the NCEEP, check the NCEEP website at <http://h2o.enr.state.nc.us/wrp/index.htm>. If use of the NCEEP is proposed, please check the appropriate box on page five and provide the following information:

Amount of stream mitigation requested (linear feet): \_\_\_\_\_

Amount of buffer mitigation requested (square feet): \_\_\_\_\_

Amount of Riparian wetland mitigation requested (acres): \_\_\_\_\_

Amount of Non-riparian wetland mitigation requested (acres): \_\_\_\_\_  
 Amount of Coastal wetland mitigation requested (acres): \_\_\_\_\_

**IX. Environmental Documentation (required by DWQ)**

1. Does the project involve an expenditure of public (federal/state/local) funds or the use of public (federal/state) land? Yes  No
2. If yes, does the project require preparation of an environmental document pursuant to the requirements of the National or North Carolina Environmental Policy Act (NEPA/SEPA)?  
 Note: If you are not sure whether a NEPA/SEPA document is required, call the SEPA coordinator at (919) 733-5083 to review current thresholds for environmental documentation.  
 Yes  No
3. If yes, has the document review been finalized by the State Clearinghouse? If so, please attach a copy of the NEPA or SEPA final approval letter. Yes  No

**X. Proposed Impacts on Riparian and Watershed Buffers (required by DWQ)**

It is the applicant's (or agent's) responsibility to determine, delineate and map all impacts to required state and local buffers associated with the project. The applicant must also provide justification for these impacts in Section VII above. All proposed impacts must be listed herein, and must be clearly identifiable on the accompanying site plan. All buffers must be shown on a map, whether or not impacts are proposed to the buffers. Correspondence from the DWQ Regional Office may be included as appropriate. Photographs may also be included at the applicant's discretion.

1. Will the project impact protected riparian buffers identified within 15A NCAC 2B .0233 (Neuse), 15A NCAC 2B .0259 (Tar-Pamlico), 15A NCAC 02B .0243 (Catawba) 15A NCAC 2B .0250 (Randleman Rules and Water Supply Buffer Requirements), or other (please identify \_\_\_\_\_)? Yes  No
2. If "yes", identify the square feet and acreage of impact to each zone of the riparian buffers. If buffer mitigation is required calculate the required amount of mitigation by applying the buffer multipliers.

| Zone* | Impact (square feet) | Multiplier        | Required Mitigation |
|-------|----------------------|-------------------|---------------------|
| 1     |                      | 3 (2 for Catawba) |                     |
| 2     |                      | 1.5               |                     |
| Total |                      |                   |                     |

\* Zone 1 extends out 30 feet perpendicular from the top of the near bank of channel; Zone 2 extends an additional 20 feet from the edge of Zone 1.

3. If buffer mitigation is required, please discuss what type of mitigation is proposed (i.e., Donation of Property, Riparian Buffer Restoration / Enhancement, or Payment into the

Riparian Buffer Restoration Fund). Please attach all appropriate information as identified within 15A NCAC 2B .0242 or .0244, or .0260. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**XI. Stormwater (required by DWQ)**

Describe impervious acreage (existing and proposed) versus total acreage on the site. Discuss stormwater controls proposed in order to protect surface waters and wetlands downstream from the property. If percent impervious surface exceeds 20%, please provide calculations demonstrating total proposed impervious level. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**XII. Sewage Disposal (required by DWQ)**

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.

N/A  
\_\_\_\_\_  
\_\_\_\_\_

**XIII. Violations (required by DWQ)**

Is this site in violation of DWQ Wetland Rules (15A NCAC 2H .0500) or any Buffer Rules?

Yes  No

Is this an after-the-fact permit application? Yes  No

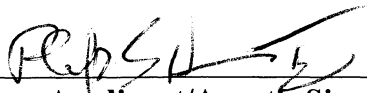
**XIV. Cumulative Impacts (required by DWQ)**

Will this project (based on past and reasonably anticipated future impacts) result in additional development, which could impact nearby downstream water quality? Yes  No

If yes, please submit a qualitative or quantitative cumulative impact analysis in accordance with the most recent North Carolina Division of Water Quality policy posted on our website at <http://h2o.enr.state.nc.us/ncwetlands>. If no, please provide a short narrative description: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**XV. Other Circumstances (Optional):**

It is the applicant's responsibility to submit the application sufficiently in advance of desired construction dates to allow processing time for these permits. However, an applicant may choose to list constraints associated with construction or sequencing that may impose limits on work schedules (e.g., draw-down schedules for lakes, dates associated with Endangered and Threatened Species, accessibility problems, or other issues outside of the applicant's control).  
\_\_\_\_\_  
\_\_\_\_\_



1/17/06

**Applicant/Agent's Signature**

**Date**

(Agent's signature is valid only if an authorization letter from the applicant is provided.)

**Swain County**  
**Replacement of Bridge No. 106**  
**On SR 1309 Over Alarka Creek**  
**Federal Aid Project No. BRZ-1309(2)**  
**State Project No. 8.2990401**  
**W.B.S. No. 33241.1.1**  
**T.I.P. No. B-3701**

CATEGORICAL EXCLUSION

UNITED STATES DEPARTMENT OF TRANSPORTATION

FEDERAL HIGHWAY ADMINISTRATION

AND

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

Approved:

2/25/04  
DATE

*Gregory J. Thorpe*  
\_\_\_\_\_  
for Gregory J. Thorpe, PhD,  
Environmental Management Director, PDEA

2/27/04  
DATE

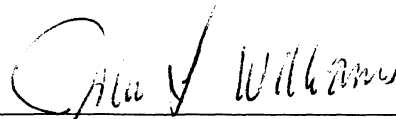
*John F. Sullivan, III*  
\_\_\_\_\_  
for John F. Sullivan, III  
Division Administrator, FHWA

**Swain County**  
**Replacement of Bridge No. 106**  
**On SR 1309 Over Alarka Creek**  
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CATEGORICAL EXCLUSION

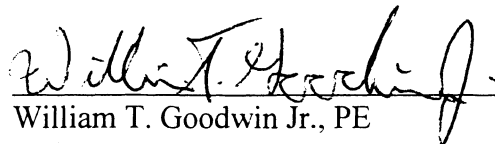
Documentation Prepared in  
Project Development and Environmental Analysis Branch By:

February 2004



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John L. Williams, PE  
Project Planning Engineer



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William T. Goodwin Jr., PE  
Unit Head

## **PROJECT COMMITMENTS:**

**Swain County  
Bridge No. 106 on SR 1309 Over Alarka Creek  
Federal Aid Project No. BRZ-1309 (2)  
State Project No. 8.2990401, W.B.S. No. 33241.1.1  
T.I.P. No. B-3701**

### **Geotechnical Unit– Trout Stream**

During subsurface investigations, equipment should be inspected daily and maintained to prevent contamination of surface waters from leaking fuels, lubricants, hydraulic fluids, or other toxic materials.

### **Construction Unit– Trout Stream**

- A moratorium on in-water construction is to be enforced from November 1 to April 15.
- Temporary or permanent herbaceous vegetation should be planted on all bare soil within 15 days of ground disturbing activities to provide long term erosion control.
- All work in or adjacent to stream waters should be in a dry work area. Sandbags, rock berms, cofferdams, or other diversion structures should be used where possible to prevent excavation in flowing water.
- If concrete is used during construction, a dry work area must be maintained to prevent direct contact between curing concrete and stream water. Uncured concrete affects water quality and is highly toxic to fish.
- Heavy equipment should be operated from the bank rather than in stream channels in order to minimize sedimentation and reduce the likelihood of introducing other pollutants into streams.
- Only clean, sediment-free rock should be used as temporary fill (causeways), and should be removed without excessive disturbance of the natural stream bottom when construction is completed.

### **Right of Way Branch –Great Smokey Mountain Railroad (For your Information)**

Early coordination with the Great Smokey Mountain Railroad indicates that they have serious concerns regarding the aesthetic impacts that this project will have to their viewshed along the project limits. Among those concerns is the clearing of the trees along the project area and the exposure of powerlines currently hidden by the trees as well as the view that will be opened. The final project footprint can not be known until the Hydraulics Unit adds their information to the project design. It is anticipated that the Right of Way Unit will pick up with coordination and begin negotiation regarding these issues during Right of Way Acquisition.

### **Project Development Engineer/Office of Natural Environment – T&E Species Concerns**

T&E updates including Spotfin chub, Appalachian elktoe, Littlewing pearly mussel and Virginia spirea will be needed prior to project construction.

### **Structure Design Unit – This project falls within TVA jurisdiction**

**Swain County**  
**Replacement of Bridge No. 106**  
**On SR 1309 Over Alarka Creek**  
**Federal Aid Project No. BRZ-1309(2)**  
**State Project No. 8.2990401**  
**W.B.S. No. 33241.1.1**  
**T.I.P. No. B-3701**

**INTRODUCTION:** Bridge No. 106 is included in the latest approved North Carolina Department of Transportation (NCDOT) Transportation Improvement Program and is eligible for the Federal-Aid Bridge Replacement and Rehabilitation Program. The location is shown in Figure 1. No substantial environmental impacts are anticipated. The project is classified as a Federal “Categorical Exclusion”.

**I. PURPOSE AND NEED STATEMENT**

Bridge Maintenance Unit records indicate the bridge has a sufficiency rating of 26.7 out of a possible 100 for a new structure. With an overall structural appraisal of 2 and a substructure rating of 4 the bridge is considered to be structurally deficient. With a deck geometry appraisal of 4 the bridge is considered to be functionally obsolete. For both reasons of structural deficiency and functional obsolescence Bridge No. 106 is eligible for federal replacement funds. The replacement of this inadequate structure will result in safer traffic operations.

**II. EXISTING CONDITIONS**

The project is located in south central Swain County (see Figure 1). The area is rural and largely undeveloped with scattered residences. The Great Smokey Mountain Railroad runs parallel to SR 1309 to the north (see Figure 2).

SR 1309 is classified as a rural minor collector in the Statewide Functional Classification System and it is not a National Highway System Route. This route is not a designated bicycle route and there is no indication that an unusual number of bicyclists use this roadway.

The current traffic volume of 500 vehicles per day (VPD) is expected to increase to 900 VPD by the year 2025. The projected volume includes one-percent truck-tractor semi-trailer (TTST) and two-percent dual-tired vehicles. There is no posted speed limit and is therefore 55 miles per hour by statute in the project area.

In the vicinity of the bridge, SR 1309 has a 20-foot pavement width with 4-foot grass shoulders. The roadway is in a sage vertical curve through the project area. The existing bridge is in a reverse horizontal curve. The roadway is situated approximately 15 feet above the streambed.

Bridge No. 106 is a three-span structure. The superstructure consists of an asphalt-wearing surface over a timber deck on I-beams. All bents utilize timber caps and piles on concrete sills. The existing bridge (see Figure 3) was constructed in 1958. The overall length of the structure is



deterioration, timber structures become impractical to maintain and are programmed for replacement. Bridge No. 106 is beyond the point of rehabilitation being practical.

According to the Draft NCDOT Offsite Detour Guidelines, a project with significant constraints and duration of 8 months could have a maximum delay of 15 minutes resulting from an offsite detour. For this project there are no constraints suggesting that an offsite detour is imperative. The delay for the average road user would be 16 minutes. For these reasons, an offsite detour has been ruled out.

Replacing the bridge on the existing location utilizing an onsite detour was discussed during the scoping meeting and ruled out due in consideration that the impacts would be the same and the additional cost associated with building a detour structure would be significant. There are no compelling reasons to put the replacement structure on the existing location.

Replacing the bridge on new alignment to the south was considered and ruled out due to the limitations of topography and access. Access to the driveway on the southeast corner of the bridge would be very difficult to maintain without dramatic alteration to the mountainside.

#### **D. Preferred Alternative**

Bridge No. 106 will be replaced on new alignment as shown in Figure 2. This alignment is recommended because it is the only practical alternative for replacing the bridge. Impacts to the natural and human environments are minimal.

The NCDOT Division 14 Engineer concurs with this recommendation as the preferred alternative.

#### **IV. ESTIMATED COSTS**

The estimated costs for the build alternative is as follows:

| <b>Item</b>             | <b>Cost</b>  |
|-------------------------|--------------|
| Structure               | \$ 280,000   |
| Roadway Approaches      | 416,000      |
| Structure Removal       | 18,000       |
| Misc. & Mob.            | 249,000      |
| Eng. & Contingencies    | 162,000      |
| Total Construction Cost | 1,125,000    |
| Right-of-way Costs      | 198,000      |
| Total Project Cost      | \$ 1,323,100 |

## **B. Jurisdictional Topics**

Alarka Creek is a jurisdictional surface water under Section 404 of the Clean Water Act. Discussion of the biological, physical, and water quality aspects of all surface waters in the project area are presented in previous sections of this report.

### **Summary of Anticipated Impacts**

Anticipated impacts to surface waters are determined by using the entire project study area of 5.44 acres. With this assumption, the impacts to Alarka Creek and its small-unnamed tributary would total an area of 0.71 acres.

### **Permits**

Nationwide Permit 23 (33 CFR 330.5(a) (23)) is likely to be applicable for all impacts to “Waters of the United States” resulting from the proposed project. This permit authorizes activities undertaken, assisted, authorized, regulated, funded, or financed in whole or part by another federal agency or department where that agency or department has determined that pursuant to the Council on Environmental Quality regulation for implementing the procedural provisions of the National Environmental Policy Act.

This project will also require a 401 Water Quality Certification from the DWQ prior to the issuance of the Nationwide Permit. Section 401 of the Clean Water Act requires that the state issue or deny water certification for any federally permitted or licensed activity that may result in a discharge to “Waters of the United States.” Section 401 Certification allows surface waters to be temporarily impacted for the duration of the construction or other land manipulation. The issuance of a 401 permit from the DWQ is a prerequisite to issuance of a Section 404 permit.

A North Carolina Division of Water Quality (DWQ) Section 401 Water Quality General Certification is required prior to the issuance of the Section 404 Individual Permit. Since the proposed project is located in a designated “Trout” county, the authorization of a nationwide permit by the COE is conditioned upon the concurrence of the Wildlife Resources Commission (WRC).

The proposed project is located in the Tennessee Valley Authority’s (TVA) Land Management District. A permit pursuant to Section 26a of the TVA Act, is required for all construction or development involving streams or floodplains in the Tennessee River drainage basin.

### **Federally-Protected Species**

Plants and animals with federal classifications of Endangered (E), Threatened (T), Proposed Endangered (PE), and Proposed Threatened (PT) are protected under the provisions of Section 7 and Section 9 of the Endangered Species Act of 1973, as amended. As of February 25, 2003, the U.S. Fish & Wildlife Service lists ten federally protected species for Swain County (Table 2).

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**INDIANA BAT****ENDANGERED**

BHE Environmental Inc. of Cincinnati, Ohio conducted a survey in July 2002. No Indiana bats were captured during the survey. Based on the surveys, the Indiana bat does not appear to utilize the project areas for maternity roosting. Project construction will potentially destroy suitable spring/summer roosting habitat for Indiana bats. However, the destruction of habitat is considered insignificant because the US Forest Service currently has greater than 500,000 acres of suitable spring/summer roosting habitat that would be utilized by Indiana bats under protection. In addition, the forest management plan implemented on US Forest Service land is converting multiple acres of unsuitable forest into suitable spring/summer roosting habitat for the Indiana bat annually. Potentially, individual Indiana bats could use the project area for foraging and/or temporary roosting. Any impacts to the foraging or temporary roosting habitat within the project corridor is not expected to adversely impact this species.

**BIOLOGICAL CONCLUSION:****NOT LIKELY TO ADVERSELY AFFECT**

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**SPOTFIN CHUB****THREATENED**

Habitat for the Spotfin chub exists within the project area. A survey conducted in the year 2000 found no presence of the chub. The survey is currently in need of update. Given that the likely outcome of the project will be **NOT LIKELY TO ADVERSELY AFFECT**, the FHWA and USFWS have agreed to allow the CE to be completed with the commitment that the survey will be updated during the 2004 survey season.

**BIOLOGICAL CONCLUSION:****UNRESOLVED**

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**APPALACHIAN ELKTOE****ENDANGERED**

Suitable habitat does exist within the project study area. A review of the NC Natural Heritage Program database of rare species and unique habitats, on May 15, 2001, revealed no record of the presence of Appalachian elktoe within the project vicinity. On April 24, 2001, NCDOT Environmental Specialists Tim Savidge and Logan Williams conducted surveys within the project study area. No live mussels were found during the survey. It was concluded, based on historic distribution of these species and the habitat present in Alarka Creek, that there is a remote possibility that this mussel may occur in Alarka Creek downstream of the project area.

**BIOLOGICAL CONCLUSION:****NOT LIKELY TO ADVERSELY AFFECT**

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**VIRGINIA SPIREA****THREATENED**

Suitable habitat in the form of scoured banks, meander scrolls, point bars, natural levees, or braided features does exist within the project study area. A review of NC natural Heritage Program database of rare species and unique habitats, on May 15, 2001 revealed no record of the presence of Virginia spirea within the project vicinity. No spirea specimens were observed.

**BIOLOGICAL CONCLUSION: NOT LIKELY TO ADVERSELY AFFECT**

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**ROCK GNOME LICHEN****ENDANGERED**

Suitable habitat in the form of vertical rock faces with seepage does not exist within the project study area. A review of the NC Natural Heritage Program database of rare species and unique habitats on May 15, 2001 revealed no record of the presence of rock gnome lichen within the project vicinity.

**BIOLOGICAL CONCLUSION: NO EFFECT**

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Because of the duration of the project planning process, some of the original T&E surveys need to be updated. NCDOT has coordinated with the FHWA and USFWS and determined that we can move forward with the signing of the Categorical Exclusion with a commitment to update the surveys and follow through with all necessary coordination prior to project construction.

**VI. CULTURAL RESOURCES****A. Compliance Guidelines**

This project is subject to compliance with Section 106 of the National Historic Preservation Act of 1966, as amended, implemented by the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106, codified at Title 36 CFR Part 800. Section 106 requires Federal agencies to take into account the effect of their undertakings (federally funded, licensed, or permitted) on properties included in or eligible for inclusion in the National Register of Historic Places and afford the Advisory Council a reasonable opportunity to comment on such undertakings.

**B. Historic Architecture**

The North Carolina Department of Cultural Resources has reviewed this project and determined that there are no structures of historic significance that could be affected by the project. An attached concurrence form dated March 18, 2003 indicates that no structures of historical significance will be affected by this project.

This project is an air quality “neutral” project, so it is not required to be included in the regional emissions analysis and a project level CO analysis is not required. If vegetation is disposed of by burning, all burning shall be done in accordance with applicable local laws and regulations of the North Carolina State Implementation Plan (SIP) for air quality in compliance with 15 NCAC 2D.0520.

Noise levels could increase during construction but will be temporary. This evaluation completes the assessment requirements for highway traffic noise of Title 23, Code of Federal Regulation (CFR), Part 772 and for air quality (1990 Clean Air Act Amendments and the National Environmental Policy Act) and no additional reports are required.

An examination of records at the North Carolina Department of Environment and Natural Resources, Division of Environmental Management, Groundwater Section and the North Carolina Department of Human Resources, Solid Waste Management Section revealed no underground storage tanks or hazardous waste sites in the project area.

Swain County is a participant in the National Flood Insurance Program. There are no practical alternatives to crossing the floodplain area. Any shift in alignment will result in an impact area of about the same magnitude. The proposed project is not anticipated to increase the level or extent of upstream flood potential.

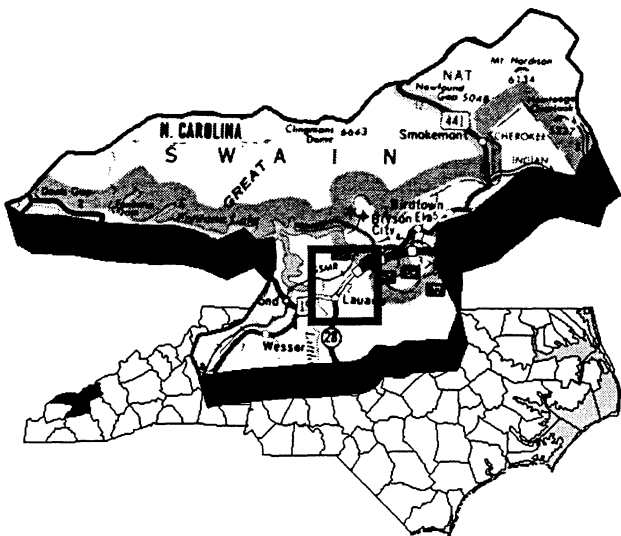
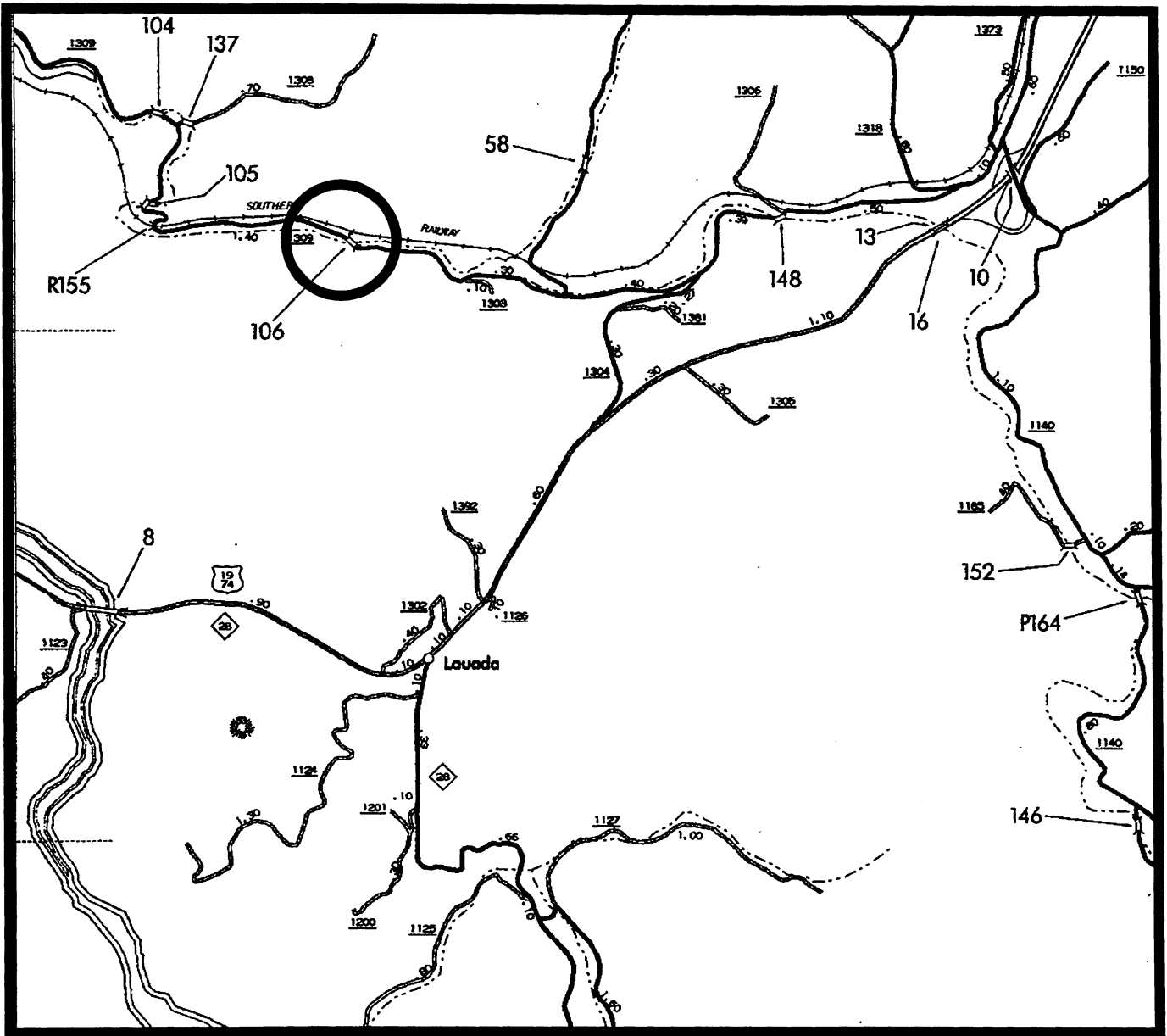
On the basis of the above discussion, it is concluded that no substantial adverse environmental impacts will result from implementation of the project.

## **VII. OTHER PROJECT COORDINATION**

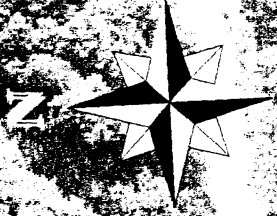
As illustrated in Figure 2, the footprint of the project impacts a slope that nears The Great Smokey Mountain Railroad. The railroad bed itself will not be impacted but the footprint shown is currently forested and would be cleared of trees exposing a rock slope. Preliminary coordination has occurred with an official from The Great Smokey Mountain Railroad who has raised concerns over the impacts to the viewshed. The Final Design and Right of Way phases are the appropriate time frames to pursue the types of information and negotiation required to resolve this issue.

The Wildlife Resource Commission has identified Alarka Creek as a Hatchery Supported trout stream also containing wild trout populations in the area. Their primary concerns were that the replacement structure be a spanning structure and that a construction moratorium from November 1 through April 15 be observed to protect the egg and fry stages of trout development. Other general requirements outlined in their attached letter have been included in the attached Project Commitments Sheet.

Because of the duration of the project planning process, some of the original T&E surveys need to be updated. NCDOT has coordinated with the FHWA and USFWS and determined that we can move forward with the signing of the Categorical Exclusion with a commitment to update the surveys and follow through with all necessary coordination prior to project construction.



|  |  |
|--|--|
|  | <p>NORTH CAROLINA<br/>DEPARTMENT OF TRANSPORTATION<br/>PROJECT DEVELOPMENT &amp;<br/>ENVIRONMENTAL ANALYSIS BRANCH</p> |
| <p>SWAIN COUNTY<br/>REPLACE BRIDGE 106 ON SR 1309<br/>OVER ALARKA CREEK<br/>B-3701</p> |  |
| <p>Figure 1</p>  |  |



Great Smokey Mountain Railroad

Bridge No. 106

SR 1309



North Carolina  
Department of Transportation  
Project Development &  
Environmental Analysis Branch

Swain County  
Replace Bridge No. 106 on SR 1309  
Over Alarka Creek  
B-3701

Scale 1" = 100' Figure 2

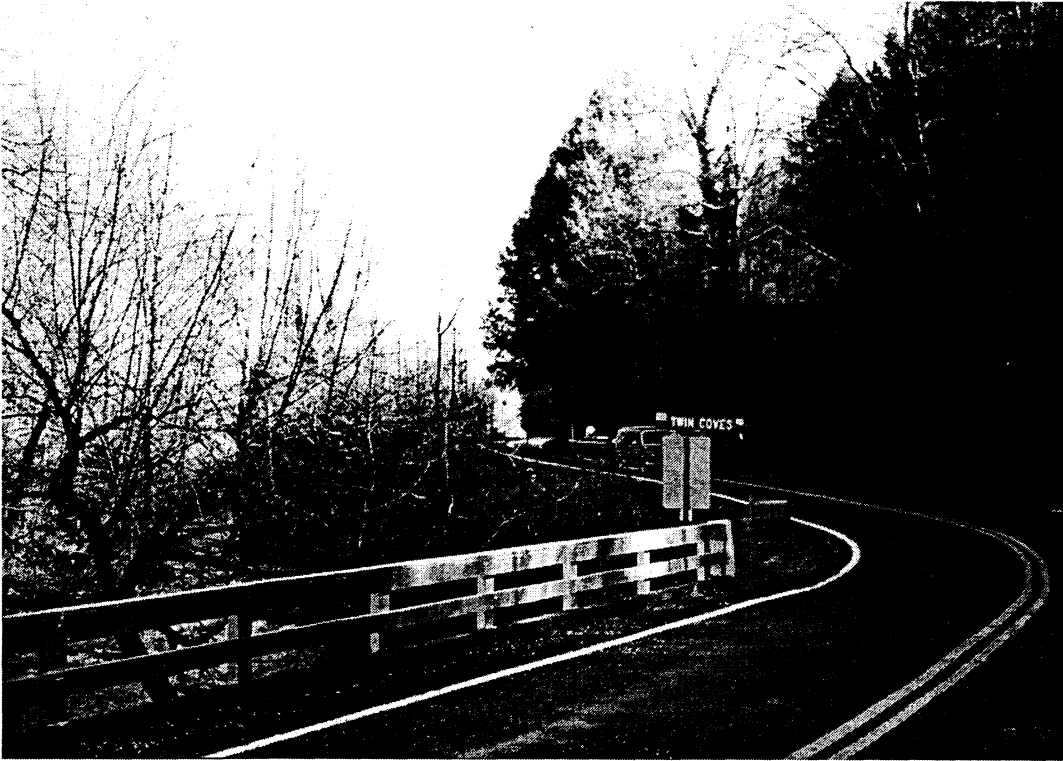


**North Face of Bridge No. 106**



**Driveway - Southeast Corner of Bridge**





**View From Center of Bridge Facing East**



**View From Center of Bridge Facing West**



## North Carolina Department of Cultural Resources

State Historic Preservation Office

David L. S. Brook, Administrator

James B. Hunt Jr., Governor  
Betty Ray McCain, Secretary

Division of Archives and History  
Jeffrey J. Crow, Director

November 2, 2000

Nicholas L. Graf  
Division Administrator  
Federal Highway Administration  
Department of Transportation  
310 New Bern Avenue  
Raleigh, North Carolina 27601-1442

Re: Replacement of Bridge No. 106 over Alarka Creek on SR 1309, TIP No. B-3701. Swain County, ER 00-8459

Dear Mr. Graf:

On May 7, 2000, April Montgomery met with North Carolina Department of Transportation (NCDOT) staff for a meeting of the minds concerning the above project. We reported our available information on historic architectural and archaeological surveys and resources along with our recommendations. NCDOT provided project area photographs at the meeting.

Based upon a review of the photographs and the information discussed at the meeting, we offer our preliminary comments regarding this project.

In terms of historic architectural resources, we are aware of no structures located within the area of potential effect. However, since the project area has not been surveyed in over a decade, there be structures of architectural or historical significance of which we are unaware. We recommend an architectural historic on your staff identify and evaluate any properties over fifty years of age within the project area and report the findings to us.

There are no recorded archaeological sites within the proposed project area. If the replacement is to be located along the existing alignment, it is unlikely that significant archaeological resources would be affected and no investigations would be recommended. If, however, the replacement is to be in a new location, please forward a map to this office indicating the location of the new alignment so we may evaluate the potential effects of the replacement upon archaeological resources.

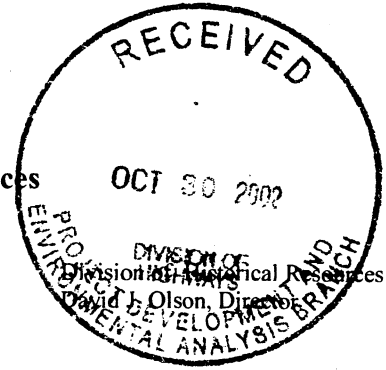
The above comments are made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36 CFR Part 800.

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|                | Location                      | Mailing Address                                 | Telephone/Fax             |
|----------------|-------------------------------|---|---------------------------|
| ADMINISTRATION | 507 N. Blount St., Raleigh NC | 4617 Mail Service Center, Raleigh NC 27699-4617 | (919) 733-4763 • 733-8653 |
| ARCHAEOLOGY    | 421 N. Blount St., Raleigh NC | 4619 Mail Service Center, Raleigh NC 27699-4619 | (919) 733-7342 • 715-2671 |



North Carolina Department of Cultural Resources  
 State Historic Preservation Office  
 David L. S. Brook, Administrator



Michael F. Easley, Governor  
 Deborah C. Evans, Secretary  
 Jeffrey J. Crow, Deputy Secretary

October 25, 2002

MEMORANDUM

TO: Greg Thorpe, Manager  
 Project Development and Environmental Analysis Branch  
 NCDOT Division of Highways

FROM: David Brook *David Brook*

SUBJECT: Bridge No. 106 on SR 1309 over Alarka Creek, B-3701, Swain County, ER 00-8459

Thank you for forwarding additional information concerning the above project. Since the proposed development is to take place in areas where previous ground disturbance has occurred, it is unlikely that archaeological resources will be affected. We, therefore, recommend that no archaeological investigation be conducted in connection with this project.

The above comments are made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36 CFR Part 800.

Thank you for your cooperation and consideration. If you have questions concerning the above comment, contact Renee Gledhill-Earley, environmental review coordinator, at 919/733-4763. In all future communication concerning this project, please cite the above referenced tracking number.

DB:kgc

cc: Matt Wilkerson, NCDOT

| Administration    | Location                      | Mailing Address                              | Telephone/Fax             |
|-------------------|-------------------------------|--|---------------------------|
| Administration    | 507 N. Blount St, Raleigh, NC | 4617 Mail Service Center, Raleigh 27699-4617 | (919) 733-4763 • 733-8653 |
| Restoration       | 515 N. Blount St, Raleigh, NC | 4613 Mail Service Center, Raleigh 27699-4613 | (919) 733-6547 • 715-4801 |
| Survey & Planning | 515 N. Blount St, Raleigh, NC | 4618 Mail Service Center, Raleigh 27699-4618 | (919) 733-4763 • 715-4801 |

**CONCURRENCE FORM FOR PROPERTIES NOT ELIGIBLE FOR THE NATIONAL REGISTER OF HISTORIC PLACES**

Project Description: Replace Bridge No. 106 on SR 1309 over Alarka Creek

On 03/18/03, representatives of the

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

Reviewed the subject project at

- Scoping meeting
- Historic architectural resources photograph review session consultation
- Other

All parties present agreed

- There are no properties over fifty years old within the project's area of potential effects.
- There are no properties less than fifty years old which are considered to meet Criteria Consideration G within the project's area of potential effects.
- There are properties over fifty years old within the project's Area of Potential Effects (APE), but based on the historical information available and the photographs of each property, the property identified as \_\_\_\_\_ is considered not eligible for the National Register and no further evaluation of it is necessary.
- There are no historic properties located on Study Line 1309 within the project's area of potential effect.
- All properties, whether they are in the project's area of potential effect or not, have been considered for listing on the National Register of Historic Places. All properties within the project's area of potential effect have been evaluated for listing on the National Register of Historic Places and have been determined to be not eligible for listing.
- There are no historic properties affected by this project.

Signed:

Mary Pope 3-18-2003  
 Representative, NCDOT Date

Michael D. Dawson 3/18/03  
 Representative, FHWA Date

Paul Swallow 3/18/03  
 Representative, HPO Date

David Brook 3/21/03  
 State Historic Preservation Officer Date

If a survey report is prepared, a final copy of this form and the attached list will be included.

11. During subsurface investigations, equipment should be inspected daily and maintained to prevent contamination of surface waters from leaking fuels, lubricants, hydraulic fluids, or other toxic materials.

Thank you for the opportunity to review and comment during the early stages of these projects. If you have any questions regarding these comments, please contact me at (828) 452-2546.

cc: Mr. Steve Lund, NCDOT Coordinator, COE, Asheville



☒ North Carolina Wildlife Resources Commission ☒

Charles R. Fullwood, Executive Director

MEMORANDUM

TO: John L. Williams, Bridge Planning Unit  
Project Development and Environmental Analysis Branch, NCDOT

FROM: Mark S. Davis, Mountain Region Coordinator  
Habitat Conservation Program

DATE: May 16, 2000

SUBJECT: Scoping comments on Bridge Replacement Projects  
TIP Project No. B-3635 over Junaluska Creek, Cherokee County  
TIP Project No. B-3701 over Alarka Creek, Swain County

This memorandum responds to your request for our concerns regarding impacts on fish and wildlife resources resulting from the subject projects. The North Carolina Wildlife Resources Commission (NCWRC) has reviewed the proposed projects, and our comments are provided in accordance with provisions of the National Environmental Policy Act (42 U.S.C. 4332(2)(c)) and the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661-667d).

The proposed work involves 2 bridge replacement/demolition projects in western North Carolina (listed below). Construction impacts on wildlife and fisheries resources will depend on the extent of disturbance in the streambed and surrounding floodplain areas. We prefer bridge designs that do not alter the natural stream morphology or impede fish passage. Bridge designs should also include provisions for the deck drainage to flow through a vegetated upland buffer prior to reaching the subject surface waters. Demolition plans for the existing bridge structures should be addressed in the environmental documents prepared for these projects, as well as any proposed causeways, temporary access roads or detours. We are also concerned about impacts to Designated Public Mountain Trout Waters (DPMTW) and environmental documentation for these projects should include a description of any streams or wetlands on the project site and surveys for any threatened or endangered species that may be affected by construction.

**B-3635 - Cherokee County, Bridge No. 26 on SR 1505 over Junaluska Creek**

Junaluska Creek is managed by the NCWRC as Hatchery Supported trout water and also supports wild trout populations in the project area. The project scoping sheet indicates that the bridge will be replaced with a 3 @ 10' x 5' RCBC just upstream of the existing bridge. Due to the presence of trout in the project area, we recommend that the existing bridge be replaced with another spanning structure. We also recommend that instream work be prohibited during the trout spawning period of November 1 through April 15 to protect the egg and fry stages from off-site sedimentation.

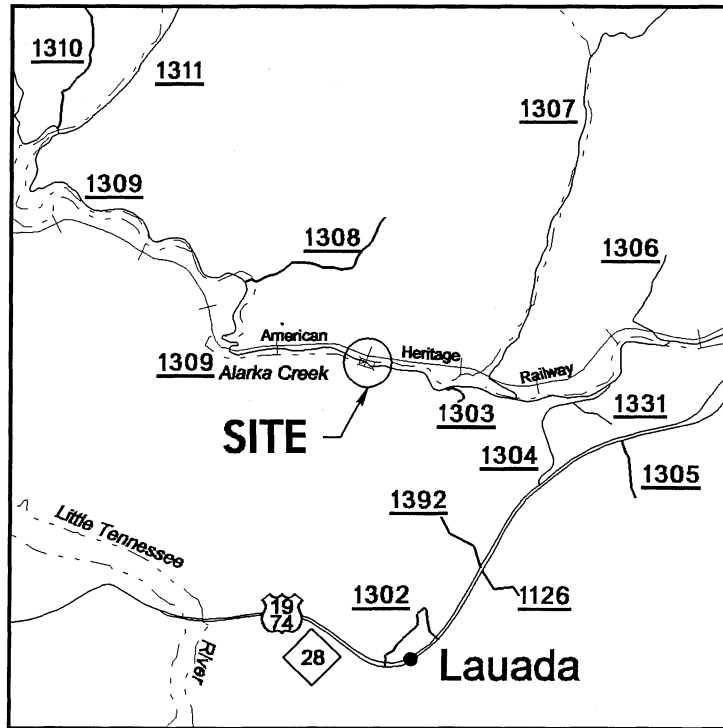
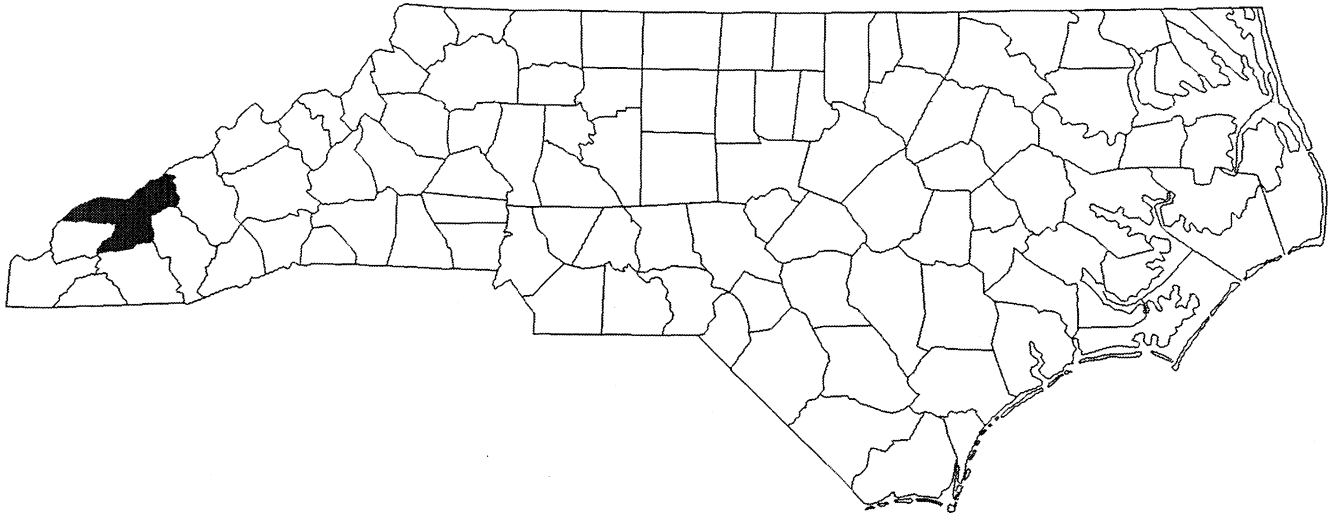
**B-3701 - Swain County, Bridge No. 106 on SR 1309 over Alarka Creek**

Alarka Creek is managed by the NCWRC as Hatchery Supported trout water and also supports wild trout populations in the project area. We recommend that the existing bridge be replaced with another spanning structure. We also recommend that instream work be prohibited during the trout spawning period of November 1 through April 15 to protect the egg and fry stages from off-site sedimentation.

Because the Corps of Engineers (COE) recognizes the above counties as "trout water counties", the NCWRC will review any nationwide or general 404 permits for the proposed projects. The following conditions are likely to be placed on the subject 404 permits:

1. Adequate sedimentation and erosion control measures must be implemented prior to any ground disturbing activities to minimize impacts to downstream aquatic resources. Structures should be inspected and maintained regularly, especially following rainfall events.
2. Temporary or permanent herbaceous vegetation should be planted on all bare soil within 15 days of ground disturbing activities to provide long-term erosion control.
3. All work in or adjacent to stream waters should be conducted in a dry work area. Sandbags, rock berms, cofferdams, or other diversion structures should be used where possible to prevent excavation in flowing water.
4. If concrete is used during construction, a dry work area must be maintained to prevent direct contact between curing concrete and stream water. Uncured concrete affects water quality and is highly toxic to fish and other aquatic organisms.
5. Grading and backfilling should be minimized, and tree and shrub growth should be retained if possible to ensure long term availability of shoreline cover for gamefish and wildlife.
6. **Instream construction is prohibited during the trout spawning period of November 1 to April 15 to avoid impacts on trout reproduction.**
7. Heavy equipment should be operated from the bank rather than in stream channels in order to minimize sedimentation and reduce the likelihood of introducing other pollutants into streams.
8. If multi-celled reinforced concrete box culverts are utilized, they should be designed so that all water flows through a single cell (or two if necessary) during low flow conditions. This could be accomplished by constructing a low sill on the upstream end of the other cells that will divert low flows to another cell. This will facilitate fish passage at low flows.
9. Notched baffles should be placed in reinforced concrete box culverts at 15 foot intervals to allow for the collection of sediments in the culvert, reduce flow velocities, and to provide resting places for fish moving through the structure.
10. Only clean, sediment-free rock should be used as temporary fill (causeways), and should be removed without excessive disturbance of the natural stream bottom when construction is completed.

# NORTH CAROLINA

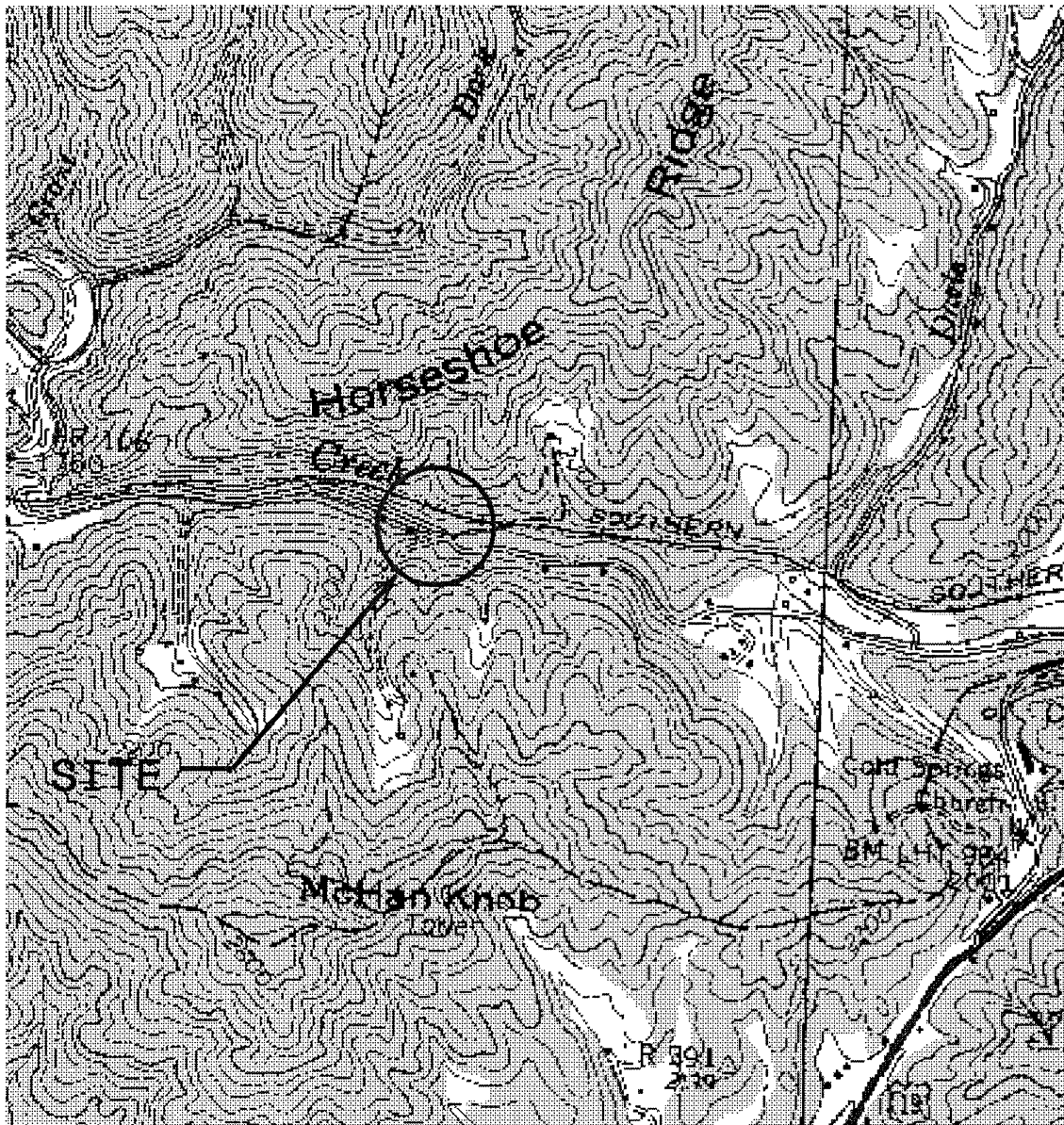


## VICINITY MAPS

NCDOT  
DIVISION OF HIGHWAYS  
SWAIN COUNTY  
WBS: 33241.1.1(B-3701)

PROPOSED REPLACEMENT OF  
BRIDGE NO.106 ON SR 1309  
OVER ALARKA CREEK





# LOCATION MAPS

NCDOT  
 DIVISION OF HIGHWAYS  
 SWAIN COUNTY  
 WBS: 33241.1.1CB-370D

PROPOSED REPLACEMENT OF  
 BRIDGE NO.106 ON SR 1309  
 OVER ALARKA CREEK

**WETLAND PERMIT IMPACT SUMMARY**

| Site No.       | Station (From/To)          | Structure Size / Type | WETLAND IMPACTS                 |                             |                             |                                      | SURFACE WATER IMPACTS          |                           |                       |   |                                     |                            |  |  |
|----------------|----------------------------|-----------------------|---------------------------------|-----------------------------|-----------------------------|--------------------------------------|--------------------------------|---------------------------|-----------------------|---|-------------------------------------|----------------------------|--|--|
|                |                            |                       | Permanent Fill In Wetlands (ac) | Temp. Fill In Wetlands (ac) | Excavation in Wetlands (ac) | Mechanized Clearing in Wetlands (ac) | Hand Clearing in Wetlands (ac) | Permanent SW Impacts (ac) | Temp. SW Impacts (ac) | Existing Channel Impacts Permanent (ft) | Existing Channel Impacts Temp. (ft) | Natural Stream Design (ft) |  |  |
| 1              | -L- STA 18+22.03 Lt. & Rt. | BRIDGE                |                                 |                             |                             |                                      |                                | 0.019                     |                       |   |                                     |                            |  |  |
| <b>TOTALS:</b> |                            |                       |                                 |                             |                             |                                      |                                | 0.019                     |                       |   |                                     |                            |  |  |

ATTN: REVISION 03/10/05

NC DEPARTMENT OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
 COUNTY \_\_\_\_\_  
 WBS - 32241.1.1 (B-3701)  
 SHEET **3 of 8**  
 #####

PROPERTY OWNERS  
NAMES AND ADDRESSES

| PARCEL NO. | NAMES                                      | ADDRESSES                                   |
|------------|--|---|
| 1          | THE GREAT SMOKY<br>MOUNTAINS RAILWAY, INC. | P.O. BOX 397<br>BRYSON CITY, NC 28713       |
| 2          | JAMES & CATHY FRANKLIN                     | 2482 Hickory Cir.<br>Union Groove, AL 35175 |
| 3          | FRANCES B. COLE                            | 876 SCRUGGS RD.<br>FOREST CITY, NC 28043    |

NCDOT

DIVISION OF HIGHWAYS

SWAIN COUNTY

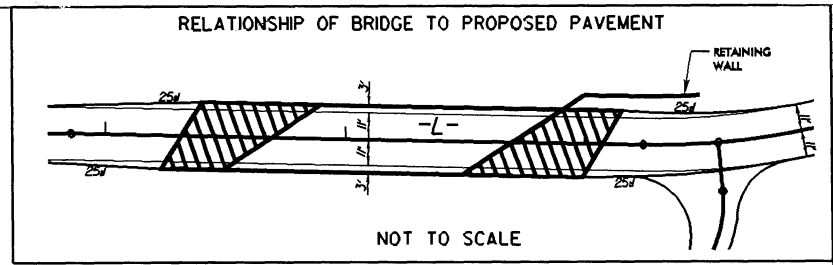
WBS: 33241.11(B-3701)

PROPOSED REPLACEMENT OF  
BRIDGE NO.106 ON SR 1309  
OVER ALARKA CREEK

8/17/9

| -L-                           |                                |                                |                                |                                |
|-------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| PI Sta 11+69.82               | PI Sta 14+31.08                | PI Sta 16+21.03                | PI Sta 20+08.14                | PI Sta 21+64.30                |
| $\Delta = 4' 40' 23.9''$ (RT) | $\Delta = 24' 56' 39.8''$ (LT) | $\Delta = 25' 06' 13.4''$ (RT) | $\Delta = 31' 00' 00.0''$ (LT) | $\Delta = 15' 15' 42.7''$ (RT) |
| $D = 2' 12' 13.3''$           | $D = 9' 57' 52.1''$            | $D = 19' 05' 54.9''$           | $D = 19' 05' 54.9''$           | $D = 9' 57' 52.1''$            |
| $L = 212.07'$                 | $L = 250.33'$                  | $L = 131.44'$                  | $L = 162.32'$                  | $L = 153.16'$                  |
| $T = 106.09'$                 | $T = 127.18'$                  | $T = 66.79'$                   | $T = 83.20'$                   | $T = 77.04'$                   |
| $R = 2600.00'$                | $R = 575.00'$                  | $R = 300.00'$                  | $R = 300.00'$                  | $R = 575.00'$                  |
| $Se = 0.04$                   | $Se = 0.04$                    | $Se = 0.04$                    | $Se = 0.04$                    | $Se = 0.04$                    |
| Run off = see plans           | Run off = see plans            | Run off = see plans            | Run off = see plans            | Run off = see plans            |
| **V = 60 MPH                  | **V = 40 MPH                   | **V = 30 MPH                   | **V = 30 MPH                   | **V = 40 MPH                   |

\*\*DESIGN EXCEPTION REQUIRED FOR DESIGN SPEED (30 MPH)



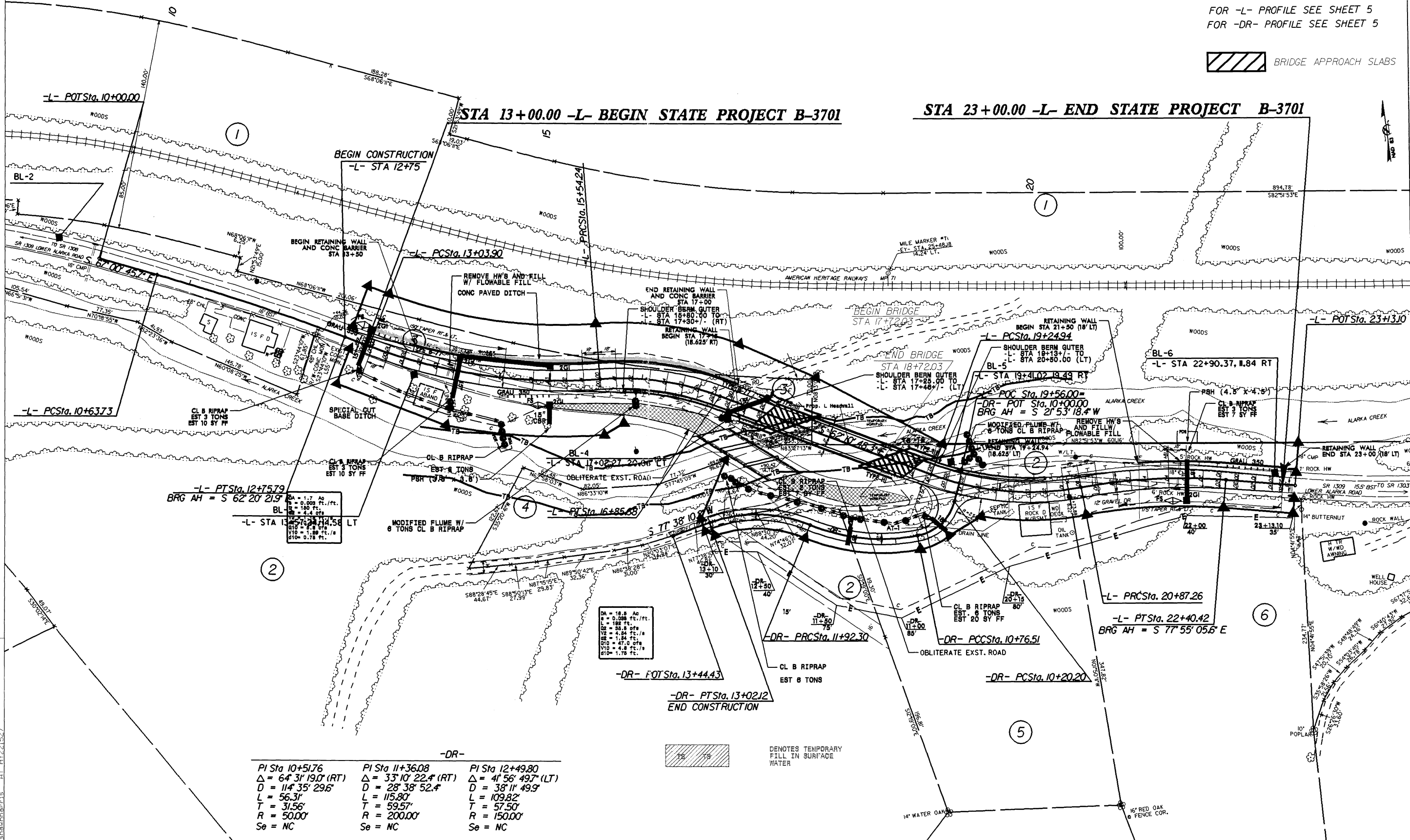
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|---------------------------------|---------------------|
| PROJECT REFERENCE NO.<br>B-3701 | SHEET NO.<br>5 of 8 |
| R/W SHEET NO.                   | HYDRAULICS ENGINEER |
| ROADWAY DESIGN ENGINEER         |                     |

PRELIMINARY PLANS  
DO NOT USE FOR CONSTRUCTION

FOR -L- PROFILE SEE SHEET 5  
FOR -DR- PROFILE SEE SHEET 5

BRIDGE APPROACH SLABS

REVISIONS

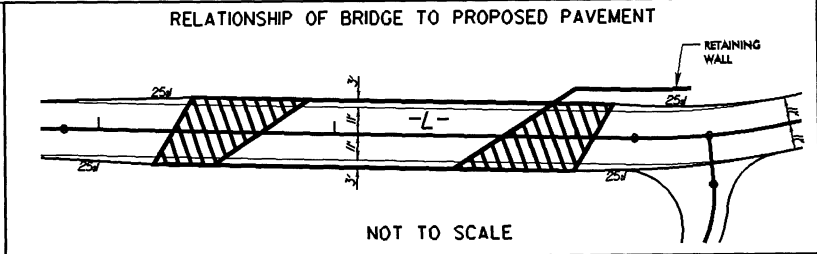


| -DR-                           |                                |                                |
|--------------------------------|--------------------------------|--------------------------------|
| PI Sta 10+51.76                | PI Sta 11+36.08                | PI Sta 12+49.80                |
| $\Delta = 64' 31' 19.0''$ (RT) | $\Delta = 33' 10' 22.4''$ (RT) | $\Delta = 41' 56' 49.7''$ (LT) |
| $D = 114' 35' 29.6''$          | $D = 28' 38' 52.4''$           | $D = 38' 11' 49.9''$           |
| $L = 56.31'$                   | $L = 115.80'$                  | $L = 109.82'$                  |
| $T = 31.56'$                   | $T = 59.57'$                   | $T = 57.50'$                   |
| $R = 50.00'$                   | $R = 200.00'$                  | $R = 150.00'$                  |
| $Se = NC$                      | $Se = NC$                      | $Se = NC$                      |

DENOTES TEMPORARY FILL IN SURFACE WATER

31-OCT-2005 10:25  
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shawnbaris AT HY221537

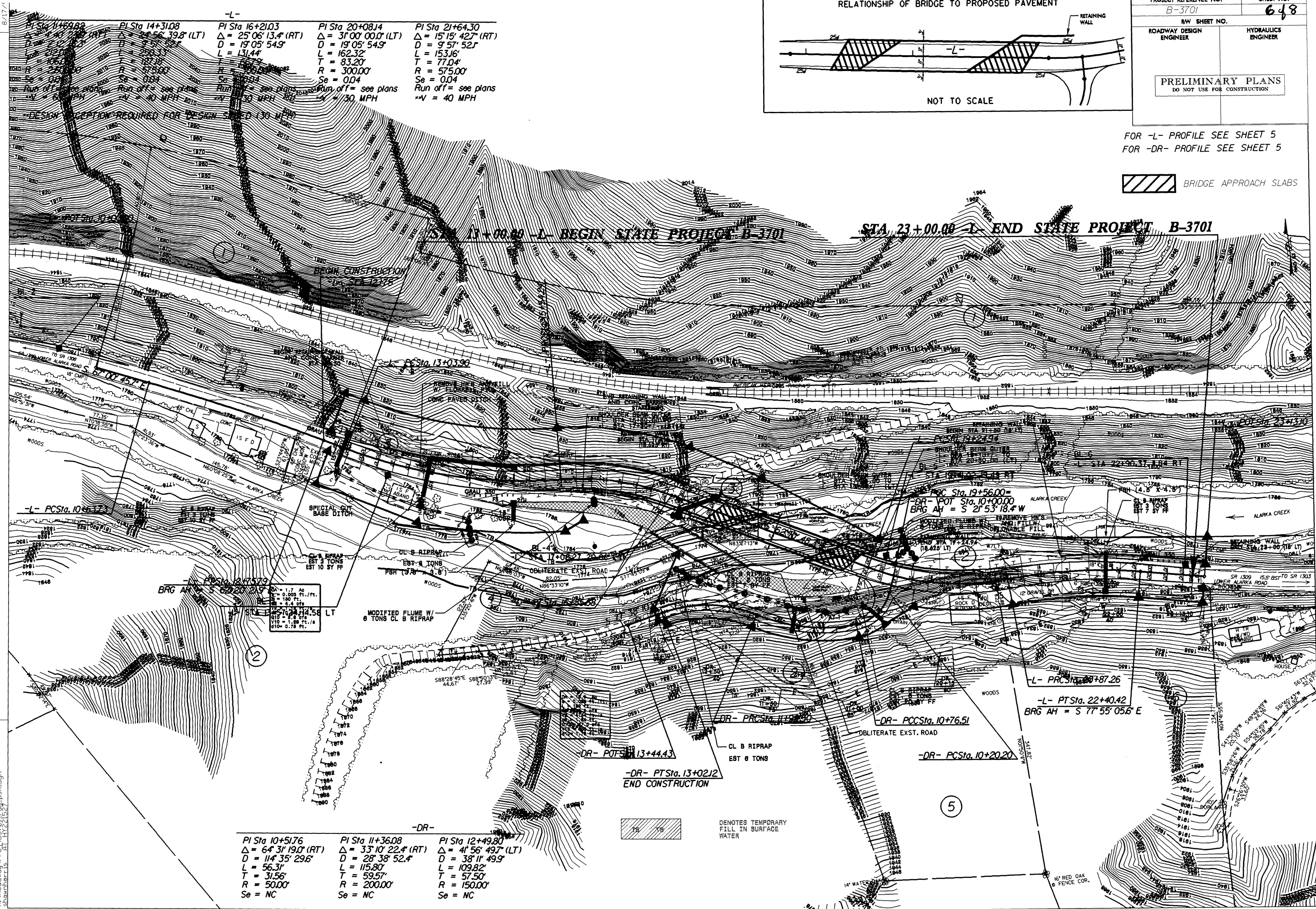




|  |                     |
|--|---------------------|
| PROJECT REFERENCE NO.<br>B-3701                  | SHEET NO.<br>648    |
| ROADWAY DESIGN ENGINEER                          | HYDRAULICS ENGINEER |
| PRELIMINARY PLANS<br>DO NOT USE FOR CONSTRUCTION |                     |

FOR -L- PROFILE SEE SHEET 5  
FOR -DR- PROFILE SEE SHEET 5

BRIDGE APPROACH SLABS



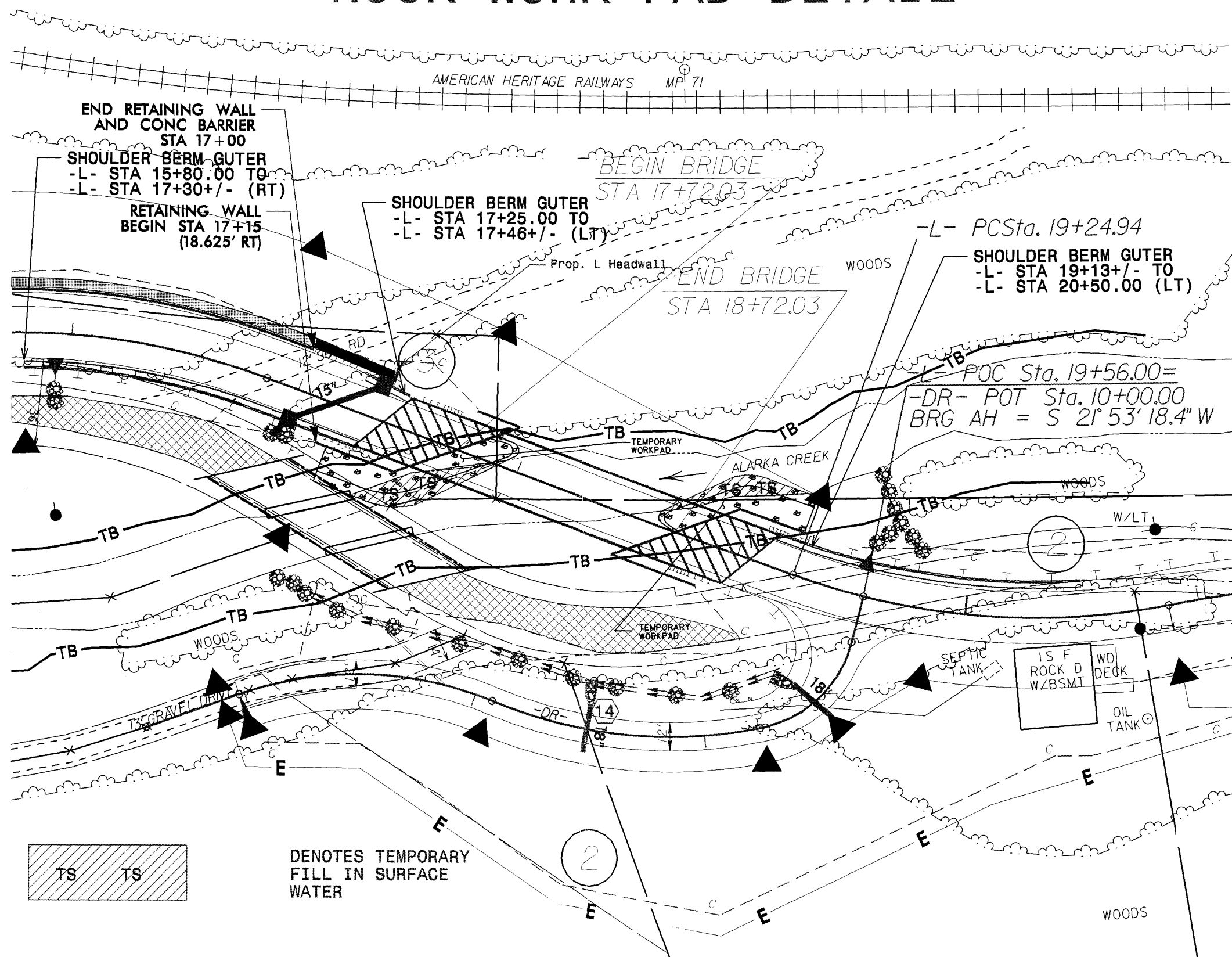
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| PI Sta 14+31.08<br>$\Delta = 56^{\circ} 39.8' (LT)$<br>$D = 250.33'$<br>$L = 127.18'$<br>$T = 67.50'$<br>$R = 575.00'$<br>$Se = 0.04$ | PI Sta 16+21.03<br>$\Delta = 25^{\circ} 06' 13.4' (RT)$<br>$D = 19^{\circ} 05' 54.9'$<br>$L = 131.44'$<br>$T = 66.79'$<br>$R = 300.00'$<br>$Se = 0.04$ | PI Sta 20+08.14<br>$\Delta = 31^{\circ} 00' 00.0' (LT)$<br>$D = 19^{\circ} 05' 54.9'$<br>$L = 162.32'$<br>$T = 83.20'$<br>$R = 300.00'$<br>$Se = 0.04$ | PI Sta 21+64.30<br>$\Delta = 15^{\circ} 15' 42.7' (RT)$<br>$D = 9^{\circ} 57' 52.1'$<br>$L = 153.16'$<br>$T = 77.04'$<br>$R = 575.00'$<br>$Se = 0.04$ |
|---|--|--|---|

|   |  |  |
|---|--|--|
| PI Sta 10+51.76<br>$\Delta = 64^{\circ} 31' 19.0' (RT)$<br>$D = 114^{\circ} 35' 29.6'$<br>$L = 56.31'$<br>$T = 31.56'$<br>$R = 50.00'$<br>$Se = NC$ | PI Sta 11+36.08<br>$\Delta = 33^{\circ} 10' 22.4' (RT)$<br>$D = 28^{\circ} 38' 52.4'$<br>$L = 115.80'$<br>$T = 59.57'$<br>$R = 200.00'$<br>$Se = NC$ | PI Sta 12+49.80<br>$\Delta = 41^{\circ} 56' 49.7' (LT)$<br>$D = 38^{\circ} 11' 49.9'$<br>$L = 109.82'$<br>$T = 57.50'$<br>$R = 150.00'$<br>$Se = NC$ |
|---|--|--|

REVISIONS

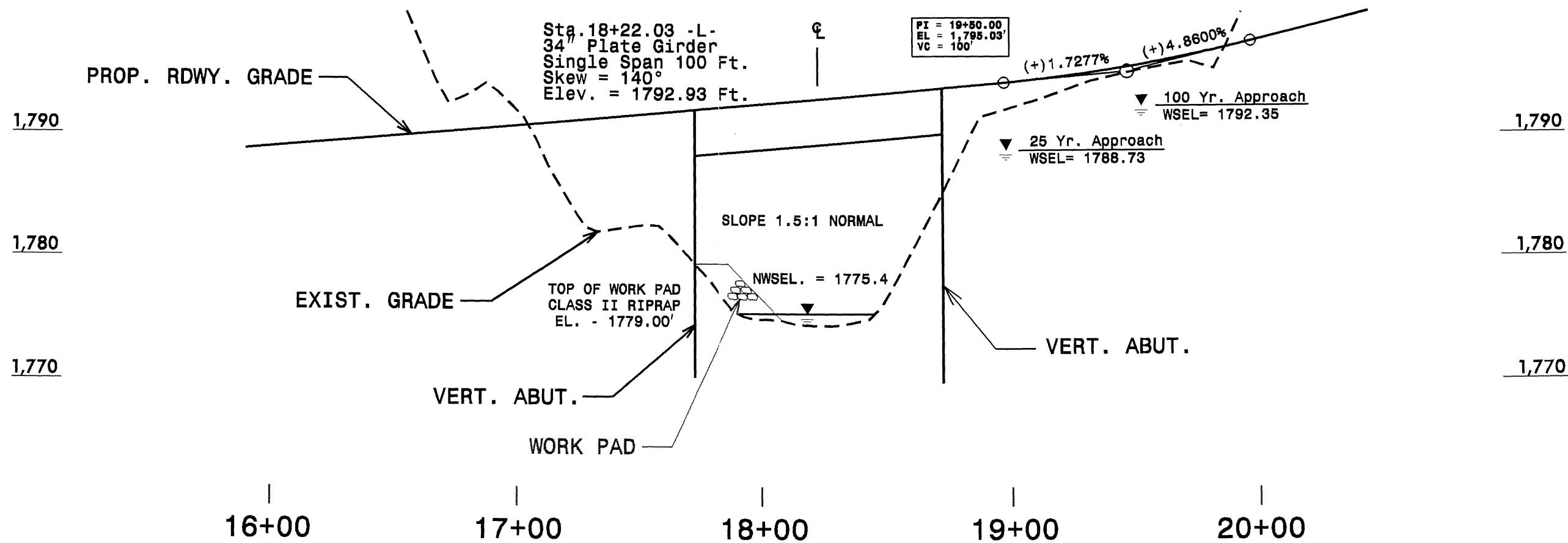
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# ROCK WORK PAD DETAIL



DENOTES TEMPORARY FILL IN SURFACE WATER

# ROCK WORK PAD SECTION



















10/2/25  
*Note: Not to Scale*  
*\*S.U.E. = Subsurface Utility Engineering*












STATE OF NORTH CAROLINA  
 DIVISION OF HIGHWAYS

# CONVENTIONAL PLAN SHEET SYMBOLS










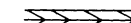

### BOUNDARIES AND PROPERTY:

- State Line \_\_\_\_\_
- County Line \_\_\_\_\_
- Township Line \_\_\_\_\_
- City Line \_\_\_\_\_
- Reservation Line \_\_\_\_\_
- Property Line \_\_\_\_\_
- Existing Iron Pin \_\_\_\_\_ 
- Property Corner \_\_\_\_\_ 
- Property Monument \_\_\_\_\_ 
- Parcel/Sequence Number \_\_\_\_\_ 
- Existing Fence Line \_\_\_\_\_ 
- Proposed Woven Wire Fence \_\_\_\_\_ 
- Proposed Chain Link Fence \_\_\_\_\_ 
- Proposed Barbed Wire Fence \_\_\_\_\_ 
- Existing Wetland Boundary \_\_\_\_\_ 
- Proposed Wetland Boundary \_\_\_\_\_ 
- Existing Endangered Animal Boundary \_\_\_\_\_ 
- Existing Endangered Plant Boundary \_\_\_\_\_ 

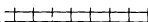




### BUILDINGS AND OTHER CULTURE:

- Gas Pump Vent or U/G Tank Cap \_\_\_\_\_ 
- Sign \_\_\_\_\_ 
- Well \_\_\_\_\_ 
- Small Mine \_\_\_\_\_ 
- Foundation \_\_\_\_\_ 
- Area Outline \_\_\_\_\_ 
- Cemetery \_\_\_\_\_ 
- Building \_\_\_\_\_ 
- School \_\_\_\_\_ 
- Church \_\_\_\_\_ 
- Dam \_\_\_\_\_ 














### HYDROLOGY:

- Stream or Body of Water \_\_\_\_\_ 
- Hydro, Pool or Reservoir \_\_\_\_\_ 
- Jurisdictional Stream \_\_\_\_\_ 
- Buffer Zone 1 \_\_\_\_\_ 
- Buffer Zone 2 \_\_\_\_\_ 
- Flow Arrow \_\_\_\_\_ 
- Disappearing Stream \_\_\_\_\_ 
- Spring \_\_\_\_\_ 
- Swamp Marsh \_\_\_\_\_ 
- Proposed Lateral, Tail, Head Ditch \_\_\_\_\_ 
- False Sump \_\_\_\_\_ 













### RAILROADS:

- Standard Gauge \_\_\_\_\_ 
- RR Signal Milepost \_\_\_\_\_ 
- Switch \_\_\_\_\_ 
- RR Abandoned \_\_\_\_\_ 
- RR Dismantled \_\_\_\_\_ 







### RIGHT OF WAY:

- Baseline Control Point \_\_\_\_\_ 
- Existing Right of Way Marker \_\_\_\_\_ 
- Existing Right of Way Line \_\_\_\_\_ 
- Proposed Right of Way Line \_\_\_\_\_ 
- Proposed Right of Way Line with Iron Pin and Cap Marker \_\_\_\_\_ 
- Proposed Right of Way Line with Concrete or Granite Marker \_\_\_\_\_ 
- Existing Control of Access \_\_\_\_\_ 
- Proposed Control of Access \_\_\_\_\_ 
- Existing Easement Line \_\_\_\_\_ 
- Proposed Temporary Construction Easement \_\_\_\_\_ 
- Proposed Temporary Drainage Easement \_\_\_\_\_ 
- Proposed Permanent Drainage Easement \_\_\_\_\_ 
- Proposed Permanent Utility Easement \_\_\_\_\_ 

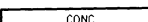

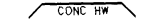


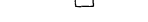



### ROADS AND RELATED FEATURES:

- Existing Edge of Pavement \_\_\_\_\_ 
- Existing Curb \_\_\_\_\_ 
- Proposed Slope Stakes Cut \_\_\_\_\_ 
- Proposed Slope Stakes Fill \_\_\_\_\_ 
- Proposed Wheel Chair Ramp \_\_\_\_\_ 
- Curb Cut for Future Wheel Chair Ramp \_\_\_\_\_ 
- Existing Metal Guardrail \_\_\_\_\_ 
- Proposed Guardrail \_\_\_\_\_ 
- Existing Cable Guiderail \_\_\_\_\_ 
- Proposed Cable Guiderail \_\_\_\_\_ 
- Equality Symbol \_\_\_\_\_ 
- Pavement Removal \_\_\_\_\_ 












### VEGETATION:

- Single Tree \_\_\_\_\_ 
- Single Shrub \_\_\_\_\_ 
- Hedge \_\_\_\_\_ 
- Woods Line \_\_\_\_\_ 
- Orchard \_\_\_\_\_ 
- Vineyard \_\_\_\_\_ 














### EXISTING STRUCTURES:

- MAJOR:
  - Bridge, Tunnel or Box Culvert \_\_\_\_\_ 
  - Bridge Wing Wall, Head Wall and End Wall \_\_\_\_\_ 
- MINOR:
  - Head and End Wall \_\_\_\_\_ 
  - Pipe Culvert \_\_\_\_\_ 
  - Footbridge \_\_\_\_\_ 
  - Drainage Box: Catch Basin, DI or JB \_\_\_\_\_ 
  - Paved Ditch Gutter \_\_\_\_\_ 
  - Storm Sewer Manhole \_\_\_\_\_ 
  - Storm Sewer \_\_\_\_\_ 








### 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 \_\_\_\_\_ 
  - Designated U/G Power Line (S.U.E.\*) \_\_\_\_\_ 









### 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 \_\_\_\_\_ 
- Designated U/G Telephone Cable (S.U.E.\*) \_\_\_\_\_ 
- Recorded U/G Telephone Conduit \_\_\_\_\_ 
- Designated U/G Telephone Conduit (S.U.E.\*) \_\_\_\_\_ 
- Recorded U/G Fiber Optics Cable \_\_\_\_\_ 
- Designated U/G Fiber Optics Cable (S.U.E.\*) \_\_\_\_\_ 






### 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 \_\_\_\_\_ 







### TV:

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











### GAS:

- Gas Valve \_\_\_\_\_ 
- Gas Meter \_\_\_\_\_ 
- Recorded U/G Gas Line \_\_\_\_\_ 
- Designated U/G Gas Line (S.U.E.\*) \_\_\_\_\_ 
- Above Ground Gas Line \_\_\_\_\_ 

### SANITARY SEWER:

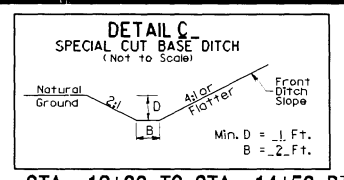
- Sanitary Sewer Manhole \_\_\_\_\_ 
- Sanitary Sewer Cleanout \_\_\_\_\_ 
- U/G Sanitary Sewer Line \_\_\_\_\_ 
- Above Ground Sanitary Sewer \_\_\_\_\_ 
- Recorded SS Forced Main Line \_\_\_\_\_ 
- Designated SS Forced Main Line (S.U.E.\*) \_\_\_\_\_ 

### MISCELLANEOUS:

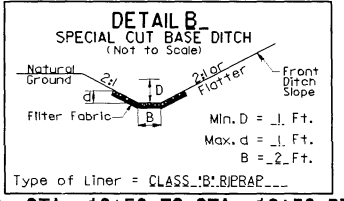
- Utility Pole \_\_\_\_\_ 
- Utility Pole with Base \_\_\_\_\_ 
- Utility Located Object \_\_\_\_\_ 
- Utility Traffic Signal Box \_\_\_\_\_ 
- Utility Unknown U/G Line \_\_\_\_\_ 
- U/G Tank; Water, Gas, Oil \_\_\_\_\_ 
- A/G Tank; Water, Gas, Oil \_\_\_\_\_ 
- U/G Test Hole (S.U.E.\*) \_\_\_\_\_ 
- Abandoned According to Utility Records \_\_\_\_\_ 
- End of Information \_\_\_\_\_ 

| PI Sta                         | PI Sta                         | PI Sta                          | PI Sta                          | PI Sta                          |
|--------------------------------|--------------------------------|---------------------------------|---------------------------------|---------------------------------|
| 11+69.82                       | 14+31.08                       | 16+21.03                        | 20+08.14                        | 21+64.30                        |
| $\Delta = 4' 40'' 23.9''$ (RT) | $\Delta = 2' 45'' 39.8''$ (LT) | $\Delta = 25' 06'' 13.4''$ (RT) | $\Delta = 31' 00'' 00.0''$ (LT) | $\Delta = 15' 15'' 42.7''$ (RT) |
| $D = 2' 12'' 13.3''$           | $D = 9' 57'' 52.7''$           | $D = 19' 05'' 54.9''$           | $D = 19' 05'' 54.9''$           | $D = 9' 57'' 52.7''$            |
| $L = 212.07'$                  | $L = 250.33'$                  | $L = 131.44'$                   | $L = 162.32'$                   | $L = 153.16'$                   |
| $T = 106.09'$                  | $T = 127.18'$                  | $T = 66.79'$                    | $T = 83.20'$                    | $T = 77.04'$                    |
| $R = 2600.00'$                 | $R = 575.00'$                  | $R = 300.00'$                   | $R = 300.00'$                   | $R = 575.00'$                   |
| $Se = 0.04$                    | $Se = 0.04$                    | $Se = 0.04$                     | $Se = 0.04$                     | $Se = 0.04$                     |
| Run off = see plans            | Run off = see plans            | Run off = see plans             | Run off = see plans             | Run off = see plans             |
| **V = 60 MPH                   | **V = 40 MPH                   | **V = 30 MPH                    | **V = 30 MPH                    | **V = 40 MPH                    |

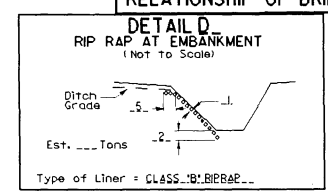
\*\*DESIGN EXCEPTION REQUIRED FOR DESIGN SPEED (30 MPH)



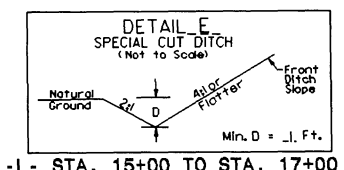
-L- STA. 13+00 TO STA. 14+50 RT.



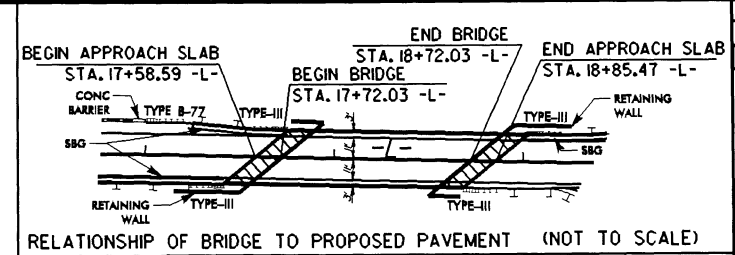
-DR- STA. 10+50 TO STA. 12+50 RT.



-L- STA. 14+50 TO STA. 14+80 RT.  
-DR- STA. 12+50 TO STA. 12+80 RT.



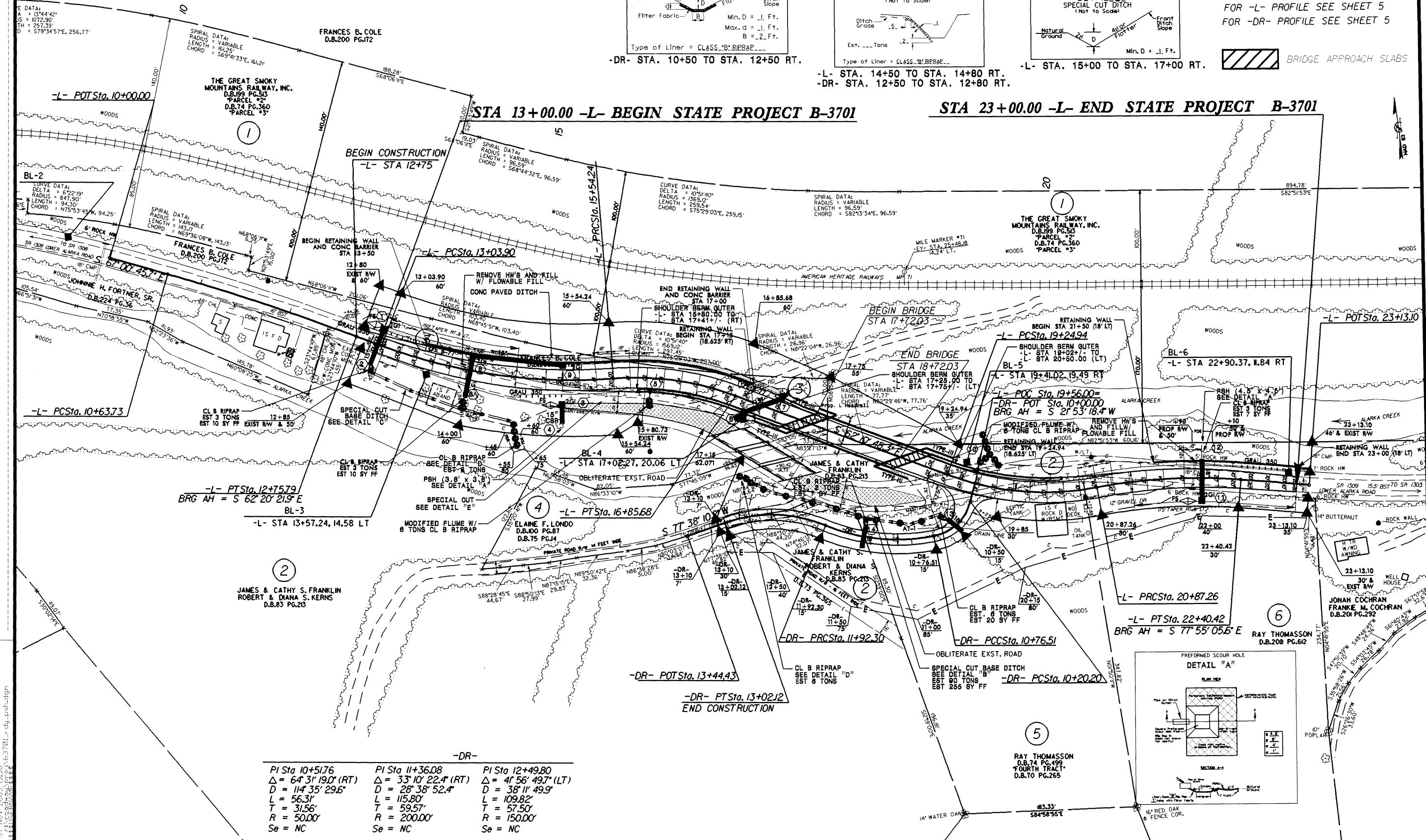
-L- STA. 15+00 TO STA. 17+00 RT.



FOR -L- PROFILE SEE SHEET 5  
FOR -DR- PROFILE SEE SHEET 5

BRIDGE APPROACH SLABS

|  |                       |
|--|-----------------------|
| PROJECT REFERENCE NO.<br><b>B-3701</b>           | SHEET NO.<br><b>3</b> |
| R/W SHEET NO.                                    |                       |
| ROADWAY DESIGN ENGINEER                          | HYDRAULICS ENGINEER   |
| PRELIMINARY PLANS<br>DO NOT USE FOR CONSTRUCTION |                       |



| PI Sta                          | PI Sta                          | PI Sta                          |
|---------------------------------|---------------------------------|---------------------------------|
| 10+51.76                        | 11+36.08                        | 12+49.80                        |
| $\Delta = 64' 31'' 19.0''$ (RT) | $\Delta = 33' 10'' 22.4''$ (RT) | $\Delta = 41' 56'' 49.7''$ (LT) |
| $D = 114' 35'' 29.6''$          | $D = 28' 38'' 52.4''$           | $D = 38' 11'' 49.9''$           |
| $L = 56.31'$                    | $L = 115.80'$                   | $L = 109.82'$                   |
| $T = 31.56'$                    | $T = 59.57'$                    | $T = 57.50'$                    |
| $R = 50.00'$                    | $R = 200.00'$                   | $R = 150.00'$                   |
| $Se = NC$                       | $Se = NC$                       | $Se = NC$                       |

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5/28/95

**\*\*DESIGN EXCEPTION REQUIRED FOR DESIGN SPEED FROM (30 MPH)**

**STRUCTURE HYDRAULIC DATA**

DESIGN DISCHARGE = 4500 CFS  
 DESIGN FREQUENCY = 25 YRS  
 DESIGN HW ELEVATION = 1788.73 FT  
 BASE DISCHARGE = 6400 CFS  
 BASE FREQUENCY = 100 YRS  
 BASE HW ELEVATION = 1792.35 FT  
 OVERTOPPING DISCHARGE = 6200 CFS  
 OVERTOPPING FREQUENCY = 50+ YRS  
 OVERTOPPING ELEVATION = 1789.30 FT

**-L-**

BM#3 ELEV. 1795.02'  
 -L- STA. 17+02.89 OFF 132.25' RT  
 8 INCH NAIL IN BASE OF 10 INCH SYCAMORE.  
 +/- 84 FEET FROM THE SOUTH EP OF BRIDGE  
 OVER ALARKA CREEK. +/- 12 FEET NORTH OF  
 THE CENTERLINE OF A 10 FOOT GRAVEL ROAD  
 (TWIN COVES ROAD). +/- 25 FEET SOUTH SW  
 FROM A 3 FOOT HIGH METAL GATE.

----- RT DITCH GRADE

PROJECT REFERENCE NO.

B-3701

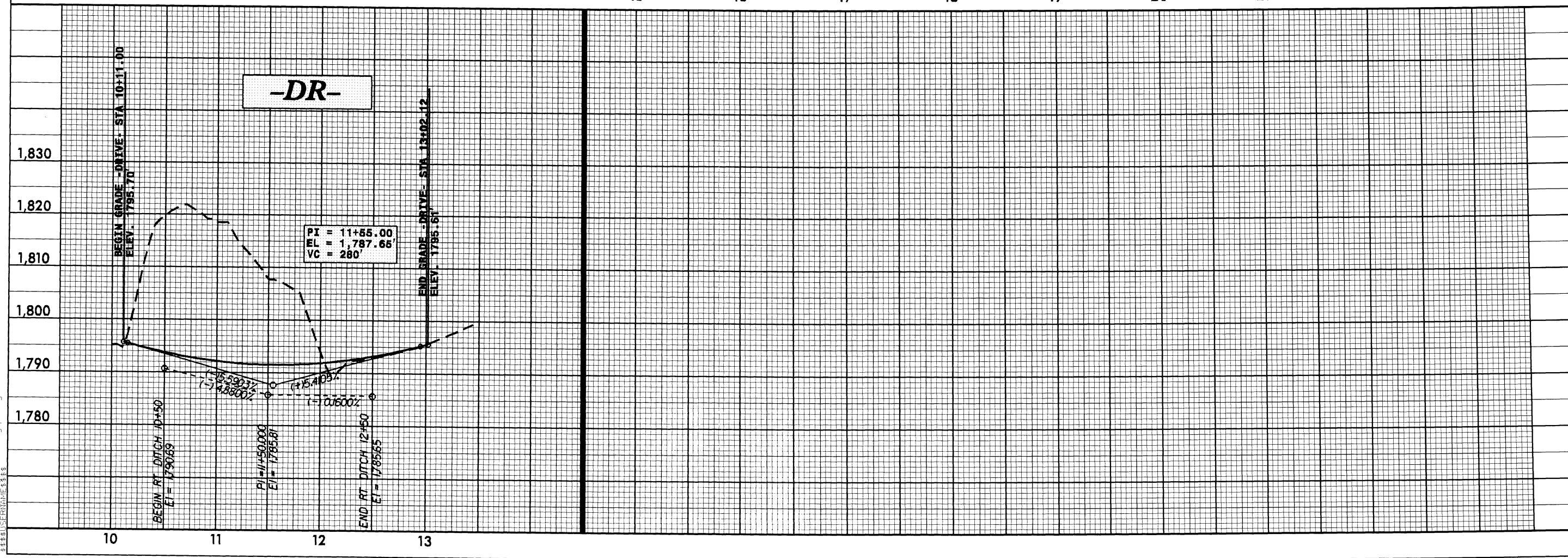
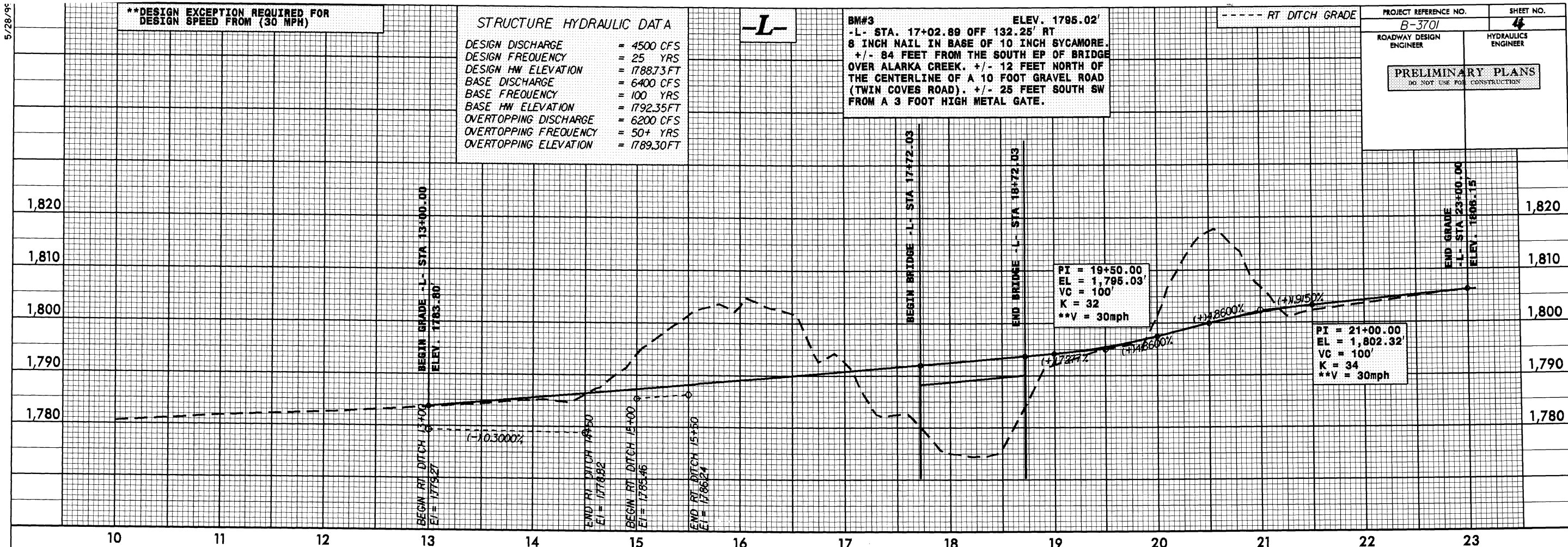
SHEET NO.

44

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

**PRELIMINARY PLANS**  
DO NOT USE FOR CONSTRUCTION



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B3701-DR-HYDRAULIC