STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

January 30, 2008

U. S. Army Corps of Engineers
Regulatory Field Office
6508 Falls of Neuse Road, Suite 120
Raleigh, NC 27615-6814

ATTENTION: Mr. Monte Matthews
NCDOT Coordinator

SUBJECT: **Application for Nationwide Permit 33** for the replacement of Bridge No. 39 over the Little River on SR 1193 in Alleghany County, Federal Aid Project No. BRZ-1193 (6), State Project No. 8.2700601, WBS Element 33376.1.1, **TIP No. B-4008.**

Dear Sir:

Please see the enclosed Pre-Construction Notification, Permit Drawings and Design Plans for the above referenced project. A Categorical Exclusion was completed for this project in May 2005 and a ROW Consultation in April 2007 and both distributed shortly thereafter. Additional copies are available upon request. NCDOT proposes to replace the existing 88-foot long bridge, No. 39 with a new single-span 130-foot long bridge. There will be no permanent impacts, and there will be 0.01 acre of temporary impacts incurred from the construction of this project. Traffic will be detoured offsite.

IMPACTS TO WATERS OF THE UNITED STATES

General Description:
The water resources impacted for project B-4008 are the Little River and Waterfalls Creek, both located in the New River Basin. The DWQ Index number for this section of the Little River is 10-9-(1) and the DWQ Index number for this section of Waterfalls Creek is 10-9-4. Both streams are within Hydrological Cataloguing Unit of 05050001. The DWQ classifies the Little River and Waterfalls Creek as "C, Tr". Within the project area, neither the Little River or Waterfalls Creek are listed as a 303 (d) water. There are no 303(d) waters within a mile of the project area. No High Quality Waters (HQW), Water Supplies (WS-I or WSII), or Outstanding Resource Waters (ORW)

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

TELEPHONE: 919-715-1334
FAX: 919-715-5501
WEBSITE: WWW.NCDOT.ORG

LOCATION:
PARKER LINCOLN BUILDING,
2728 CAPITAL BLVD.
RALEIGH NC 27604

occur within one mile of the project study area. There are no wetlands within the project study area.

Permanent Impacts:
There will be no permanent stream impacts to the Little River or Waterfalls Creek.

Temporary Impacts:
There will be a total of 0.01 acre of temporary impacts to the Little River resulting from the temporary placement of timber mats for the removal of the existing bent mud sill. The temporary work pad will be in the Little River near the confluence of Waterfalls Creek. Although the timber mat is almost the complete length of this fork of the Little River, flow will not be blocked. The timber mats will be submerged due to the weight of removal equipment, while water from Little River will flow freely overtop of the timber work pad.

Utility Impacts:
There are no water or sewer lines shown within the limits of the project. Existing telephone lines will be relocated but there will be no jurisdictional impacts due to utilities.

Bridge Demolition:
Bridge No. 39 is 47 years old. The existing structure is a two-lane, two-span bridge with an overall length of 88 ft and a clear roadway width of 19.1 ft. The bridge superstructure consists of timber floor with a 5-inch asphalt wearing surface supported on I-beams. The substructure consists of reinforced concrete abutments and an interior bent comprised of timber cap and timber posts with concrete sills. The bridge will be removed without dropping components into the Waters of the United States. All guidelines for bridge demolition and removal will be followed in addition to Best Management Practices (BMPs) for the Protection of Surface Waters and BMPs for Bridge Demolition and Removal.

FEDERALLY PROTECTED SPECIES

Plants and animals with federal classifications of Endangered (E), Threatened (T), Proposed Endangered (PE) and Proposed Threatened (PT) are protected under provisions of Section 7 and Section 9 of the Endangered Species Act of 1973, as amended. As of November 05, 2007, the United States Fish and Wildlife Service (USFWS) lists the bog turtle as threatened due to similarity of apperance (TSA) for Alleghany County (Table 1).

Table 1. Federally Protected Species for Alleghany County

Common Name	Scientific Name	Status	Habitat Yes/No	Biological Conclusion
Bog turtle	*Clemmys muhlenbergii*	T (S/A)	No	Not Subject

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. Best Management Practices will be followed as outlined in "NCDOT's Best Management Practices for Construction and Maintenance Activities". In addition to the above, please see the following specific measures:

- Traffic will be detoured offsite during the construction period.
- Adhering to trout moratorium from October 15 – April 15
- Design Standards in Sensitive Watersheds adhered to
- A preformed scour hole (PSH) exists in the project study area

Compensatory Mitigation:
NCDOT proposes no mitigation since there are no permanent impacts to the Little River or Waterfalls Creek. No loss of waters of the United States will occur for this project.

PROJECT SCHEDULE

The project schedule calls for a September 16, 2008 Let date and a review date of **July 29, 2008**.

REGULATORY APPROVALS

Section 404 Permit:
It is anticipated that the temporary impacts to the Little River will be authorized under Section 404 Nationwide Permit 33 (Temporary Construction Access and Dewatering). We are, therefore, requesting the issuance of a Nationwide Permit 33.

Section 401 Permit:
We anticipate 401 General Certification numbers 3688 will apply to this project. All general conditions of the General Certification will be adhered to, therefore we are not requesting concurrence from the DWQ. In accordance with 15A NCAC 2H .0501(a) we are submitting two copies of this permit application to the North Carolina Department of Environment and Natural Resources, Division of Water Quality, for their records.

This project is located in a trout county, therefore 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 and the NCDOT within 30 calendar days of receipt of this application.

Thank you for your assistance with this project. If you have any questions or need additional information, please contact Jennifer Harrod at jwharrod@dot.state.nc.us or (919) 715-7241. The application will be posted at http://207.4.62.65/PDEA/PermApps/.

Sincerely,

E. D. Lusk

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

cc:
w/attachment
Mr. Brian Wrenn, NCDWQ (2 Copies)
Ms. Marla Chambers, NCWRC
Ms. Marella Buncick, USFWS

w/o attachment (see website for attachments)
Dr. David Chang, P.E., Hydraulics
Mr. Victor Barbour, P.E., Project Services Unit
Mr. Mark Staley, Roadside Environmental
Mr. Greg Perfetti, P.E., Structure Design
Mr. Michael A. Pettyjohn, P.E. Division 11 Engineer
Mr. Heath Slaughter, Division 11 Environmental Officer
Mr. Jay Bennett, P.E., Roadway Design
Mr. Majed Alghandour, P. E., Programming and TIP
Mr. Art McMillan, P.E., Highway Design
Mr. Vincent J. Rhea, P.E., PDEA Project Planning Engineer
Mr. Scott McLendon, USACE, Wilmington

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:
   - ☒ Section 404 Permit
   - ☐ Section 10 Permit
   - ☐ 401 Water Quality Certification
   - ☐ Riparian or Watershed Buffer Rules
   - ☐ Isolated Wetland Permit from DWQ
   - ☐ Express 401 Water Quality Certification

2. Nationwide, Regional or General Permit Number(s) Requested: Nationwide 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: jwharrod@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: Bridge No. 39 on SR 1193 (Pine Swamp Road) over the Little River

2. T.I.P. Project Number or State Project Number (NCDOT Only): B-4008

3. Property Identification Number (Tax PIN): N/A

4. Location
   County: Alleghany Nearest Town: Whitehead,Unincorporated Alleghany Co., NC
   Subdivision name (include phase/lot number): N/A
   Directions to site (include road numbers/names, landmarks, etc.): I-40W; exit 188 US-421 S; Merge on to US-421 N; exit 265-A I-77 N; in Sparta take Left onto 18 S/W; arrive B-4008

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): 36'28'04.42 °N 81'08'59.37 °W

6. Property size (acres): N/A

7. Name of nearest receiving body of water: The New River (just past Virginia Border)

8. River Basin: The New River Basin
   (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: Residential, Urban/Disturbed, Montane Oak-Hickory Forest

10. Describe the overall project in detail, including the type of equipment to be used: Bridge No. 39 will be replaced with a single-span bridge that is 130 feet long.

11. Explain the purpose of the proposed work: NCDOT Bridge Maintenance Unit records indicate Bridge No. 39 has a sufficiency rating of 14.4 out of a possible 100 for a new

structure. The bridge is considered structurally deficient. The replacement of this inadequate structure will result in safer and more efficient traffic operations.

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. N/A

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.
N/A

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. There will be no permanent stream impacts and there will be 0.01 temporary stream impacts to the the Little River due to a temporary work pad.

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)
No Wetlands					
Total Wetland Impact (acres)					0

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)
1	The Little River	Temporary	Perennial	27.0 ft		0.01
Total Stream Impact (by length and acreage)						0.01

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)				0

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

Stream Impact (acres):	0.01 (temp.)
Wetland Impact (acres):	0
Open Water Impact (acres):	0
Total Impact to Waters of the U.S. (acres)	0.01 (temp.)
Total Stream Impact (linear feet):	<1

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.

_____

_____

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 current bridge will be replaced at the existing location and traffic will be maintained by way of offsite detour during construction. NCDOT Best Management Practices will be implemented during all phases of construction and demolition.

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. NCDOT proposes no mitigation for the 0 linear feet of permanent impacts to the Little River and Waterfalls Creek. There are no adverse effects or a loss of waters of the United States.

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): 0
   Amount of buffer mitigation requested (square feet): 0
   Amount of Riparian wetland mitigation requested (acres): 0
   Amount of Non-riparian wetland mitigation requested (acres): 0
   Amount of Coastal wetland mitigation requested (acres): 0

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. All stormwater is being directed to a preformed scour hole, as shown in the permit drawings, thus no stormwater is being directly discharged into the Little River or Waterfalls Creek.

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)

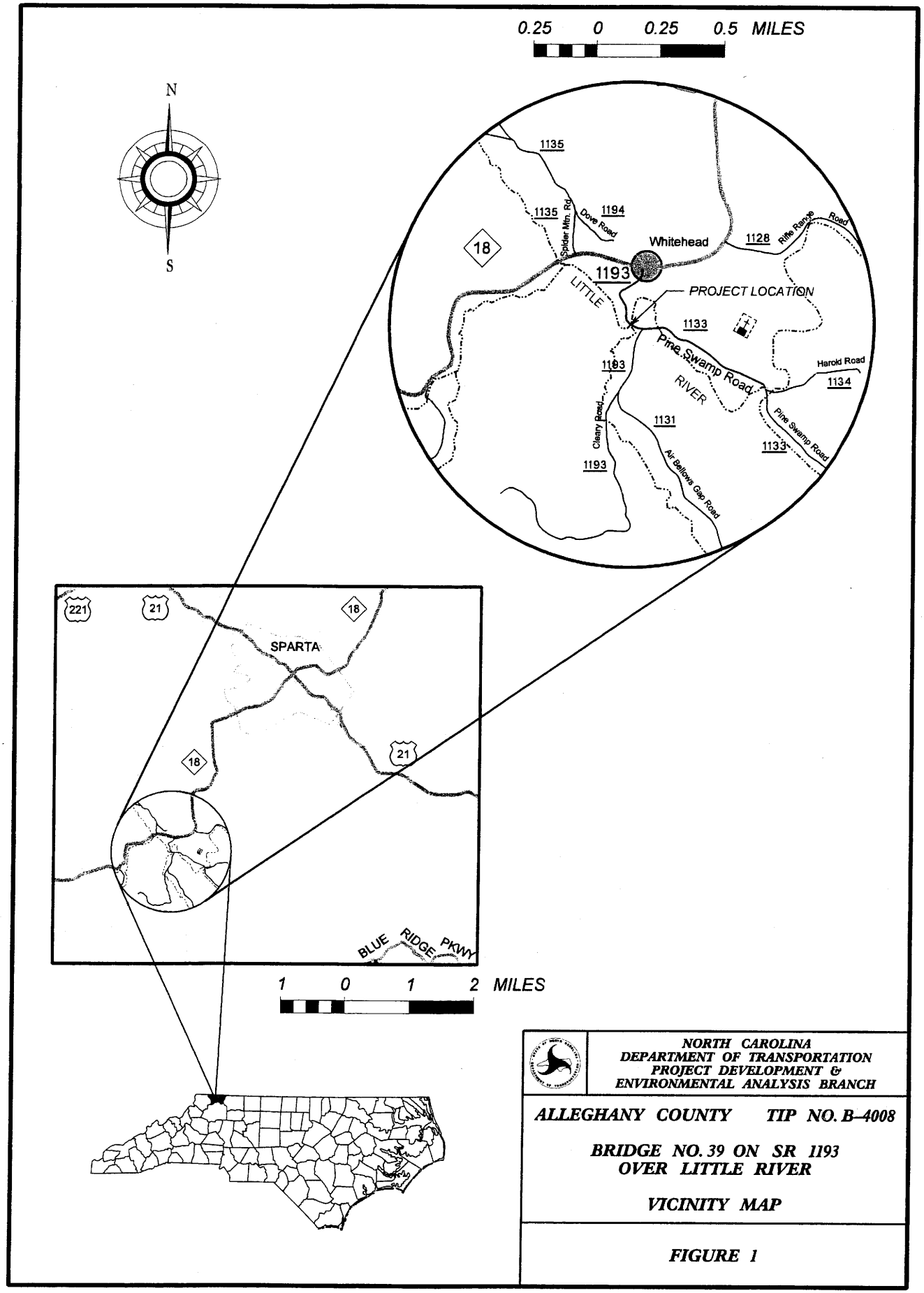
Will this project (based on past and reasonably anticipated future impacts) result in additional development, which could impact nearby downstream water quality? Yes ☐ No ☒
If yes, please submit a qualitative or quantitative cumulative impact analysis in accordance with the most recent North Carolina 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: This project is limited to a bridge replacement. No indirect or cumulative impacts are anticipated

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).
N/A

E. L. Lusk 2.1.08

Applicant/Agent's Signature **Date**
(Agent's signature is valid only if an authorization letter from the applicant is provided.)



NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT &
ENVIRONMENTAL ANALYSIS BRANCH

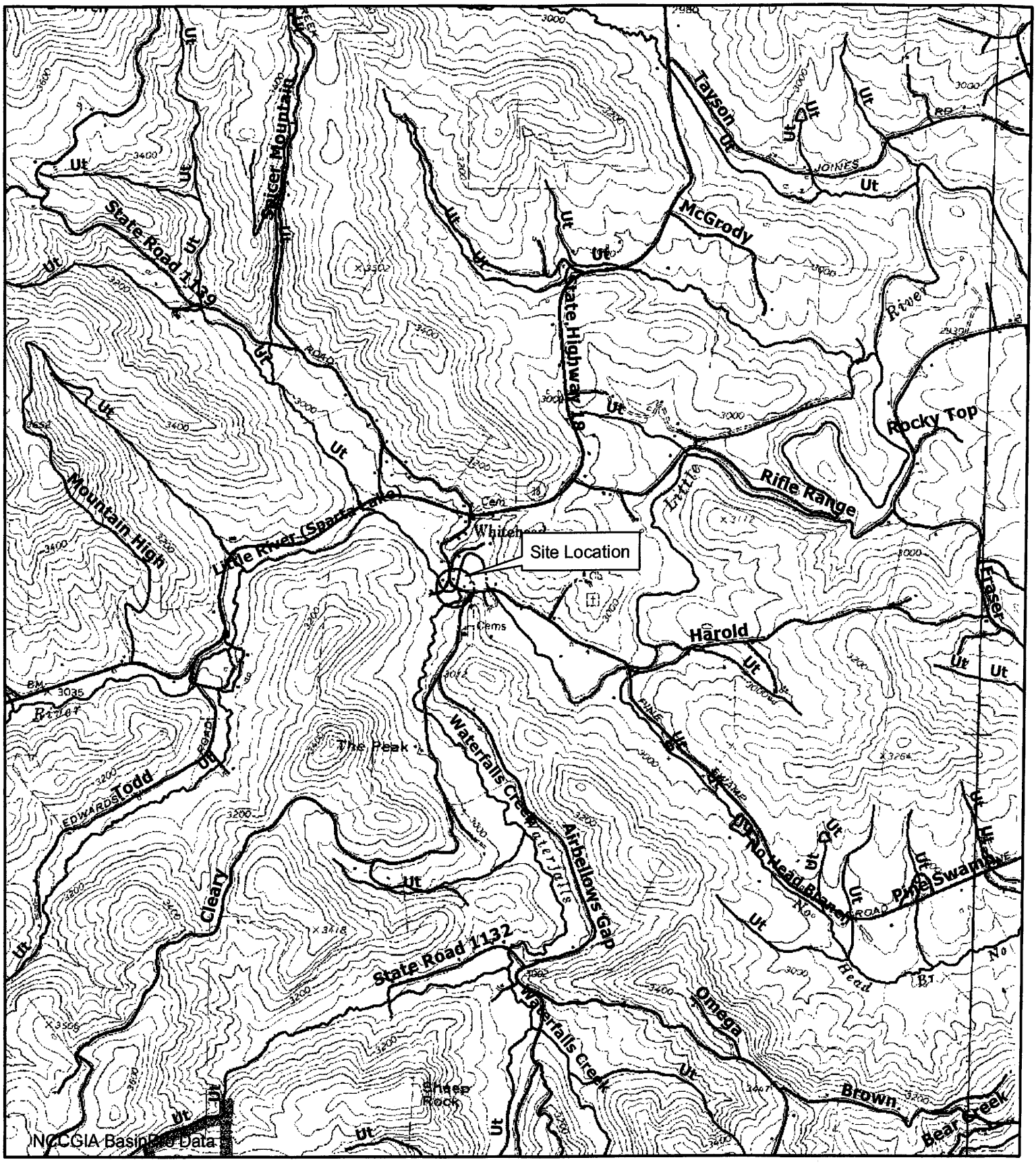
ALLEGHANY COUNTY TIP NO. B-4008

BRIDGE NO. 39 ON SR 1193 OVER LITTLE RIVER

VICINITY MAP

FIGURE 1

Permit Drawing
Sheet 1 of 9



NCCGIA Basin Pro Data

B-4008

BRIDGE No. 39
OVER LITTLE RIVER
ALLEGHANY COUNTY

M A Engineering CONSULTANTS, INC

Permit Drawing
Sheet 2 of 9

Property Owners

Parcel Number	Names	Addresses
NCDOT R/W	NC Department of Transporation	1590 Mail services Center Raleigh, NC 27699-1590

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

ALLEGAHANY COUNTY
WBS - 33376.1.1 (B-4008)

SHEET 11/5/2007

Permit Drawing
Sheet 3 of 9

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS: Permanent Fill In Wetlands (acres)	Temp. Fill In Wetlands (acres)	Excavation in Wetlands (acres)	Mechanized Clearing in Wetlands (acres)	Hand Clearing in Wetlands (acres)	SURFACE WATER IMPACTS: Permanent SW impacts (acres)	Temp. SW impacts (acres)	Existing Channel Impacts Permanent (ft)	Natural Stream Design (ft)
1	-L- 15+62 to 15+91	Construction Access Pad (Timber Material)							0.01		
TOTALS:									0.01		

Permit Drawing Sheet 4 of 9

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

ALLEGAHANY COUNTY
WBS - 33376.1.1 (B-4008)

SHEET 11/21/2007

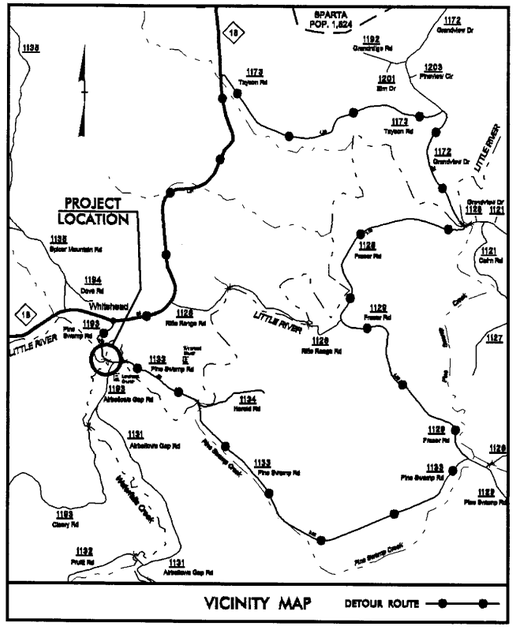
JMD Revised 2/03/05

09/08/99

TIP PROJECT: B-4008

CONTRACT: C201922

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



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

ALLEGHANY COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4008	1	

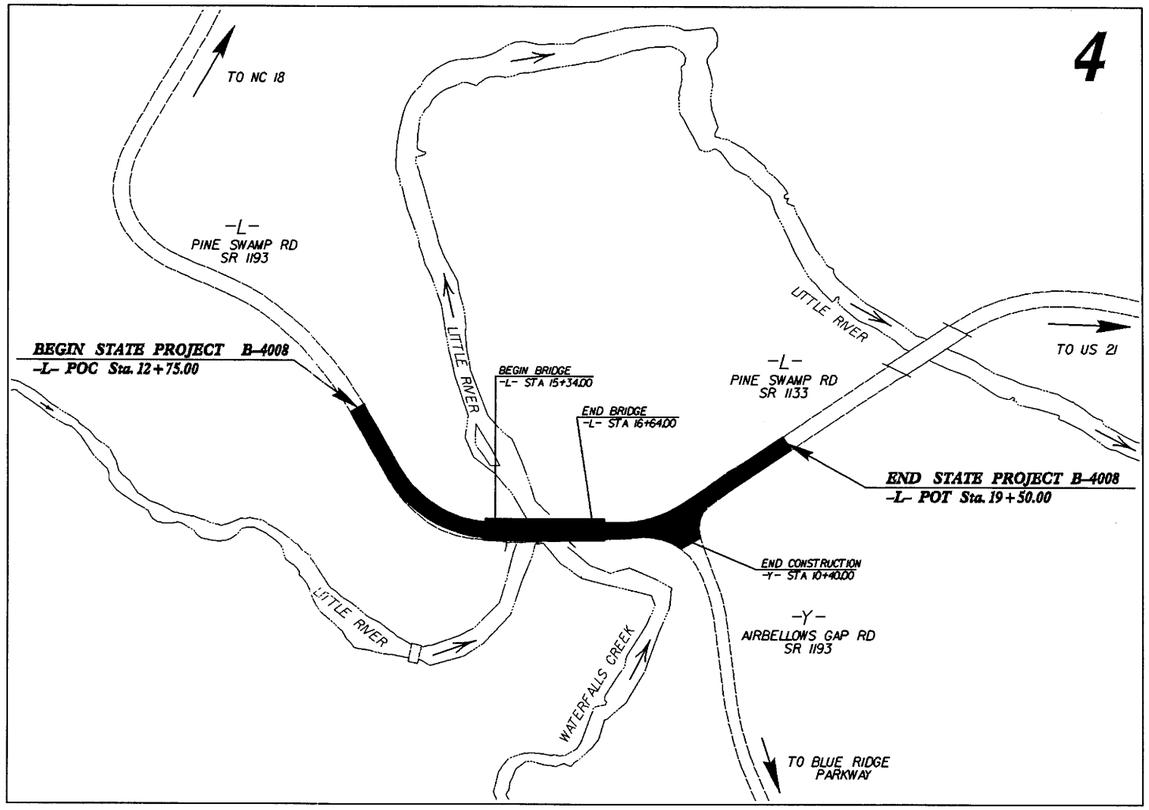
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
33376.1.1	BRZ-1193 (6)	PE
33376.2.1	BRZ-1193 (6)	R/W, UTILITIES

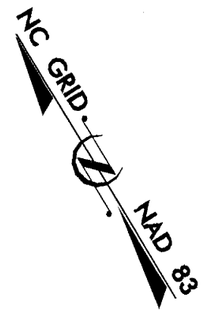
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

LOCATION: ***BRIDGE NO. 39 OVER LITTLE RIVER ON SR 1193 (PINE SWAMP ROAD)***

TYPE OF WORK: ***GRADING, DRAINAGE, PAVING, STRUCTURE, AND GUARDRAIL.***

WETLAND PERMIT DRAWINGS





**DESIGN EXCEPTION
DESIGN SPEED (V)

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.
THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.

NCDOT CONTACT:

MR. DOUG TAYLOR, PE - ENGINEERING COORDINATION SECTION ENGINEER ROADWAY DESIGN UNIT

GRAPHIC SCALES

PLANS 0 50 100
PROFILE (HORIZONTAL) 0 50 100
PROFILE (VERTICAL) 0 10 20

DESIGN DATA

ADT 2008 = 580
ADT 2028 = 840
DHV = 10 %
D = 60 %
T = 3 % *
V = 20 MPH **

* (TTST 1% + DUAL 2%)
FUNCT CLASS = RURAL LOCAL

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4008	=	*0.103 mile*
LENGTH STRUCTURES TIP PROJECT B-4008	=	*0.025 mile*
TOTAL LENGTH TIP PROJECT B-4008	=	*0.128 mile*

Prepared For:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh NC, 27610
By:
MA ENGINEERING CONSULTANTS, INC.
598 E. CHATHAM STREET, SUITE 137
CARY, NORTH CAROLINA 27511
(919) 270-0220

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: SEPTEMBER 21, 2007

LETTING DATE: SEPTEMBER 16, 2008

ROBERT W. PORTER, JR PE
PROJECT ENGINEER

KEVIN S. HUTCHENS
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA

STATE HIGHWAY DESIGN ENGINEER P.E.

21-NOV-2007 13:44
f:\hydraulics\b4008_hyd_prm_tsh.dgn
ddurfield AT HY22523

Hydro Permit Drawing

WETLAND PERMIT

TS TS TS TS — TEMPORARY SURFACE WATER IMPACT

PROJECT REFERENCE NO.	SHEET NO.
B-4008	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

MA Engineering CONSULTANTS, INC.
598 East Chatham Street Suite 137 Cary, NC 27511
Phone: 919.297.0220 Fax: 919.297.0221

SKETCH SHOWING BRIDGE/PAVEMENT RELATIONSHIP

NAD 83 NC GRID

DEWAYNE A. WAGNER ET. AL (1)
DEWAYNE A. WAGNER ET. AL (2)
IRENE RICHARDSON WAGNER ET.AL (3)
IRENE RICHARDSON WAGNER (4)
PAUL J. FOSTER (5)
RAYMOND W. COOK (6)
DAVID POE (7)
GERTRUDE JOINES (8)
LANDMARK UNION BAPTIST CHURCH (9)

PREFORMED SCOUR HOLE SEE DETAIL A

BRIDGE #39

GRADE CUT TO DRAIN W/CLASS "B" RIP RAP

SCOUR PROTECTION STONE SEE STRUCTURE PLANS FOR DETAIL AND QUANTITY. (STRUCTURE PAY ITEM)

TEMPORARY CONSTRUCTION ACCESS

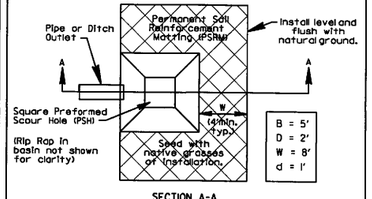
PINE SWAMP ROAD SR-1133 20' BST

LITTLE RIVER

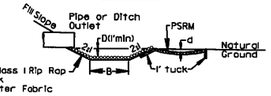
WATERFALLS CREEK

DETAIL A
PREFORMED SCOUR HOLE

PLAN VIEW



SECTION A-A



Liner: Class I Rip Rap 1.5' thick with Filter Fabric

-L- 15+06 LT 11/05

11/05/2007
R:\Hydraulics\permit\b4008_hyd_prm_wet.dgn
Default

8/17/99

REVISIONS

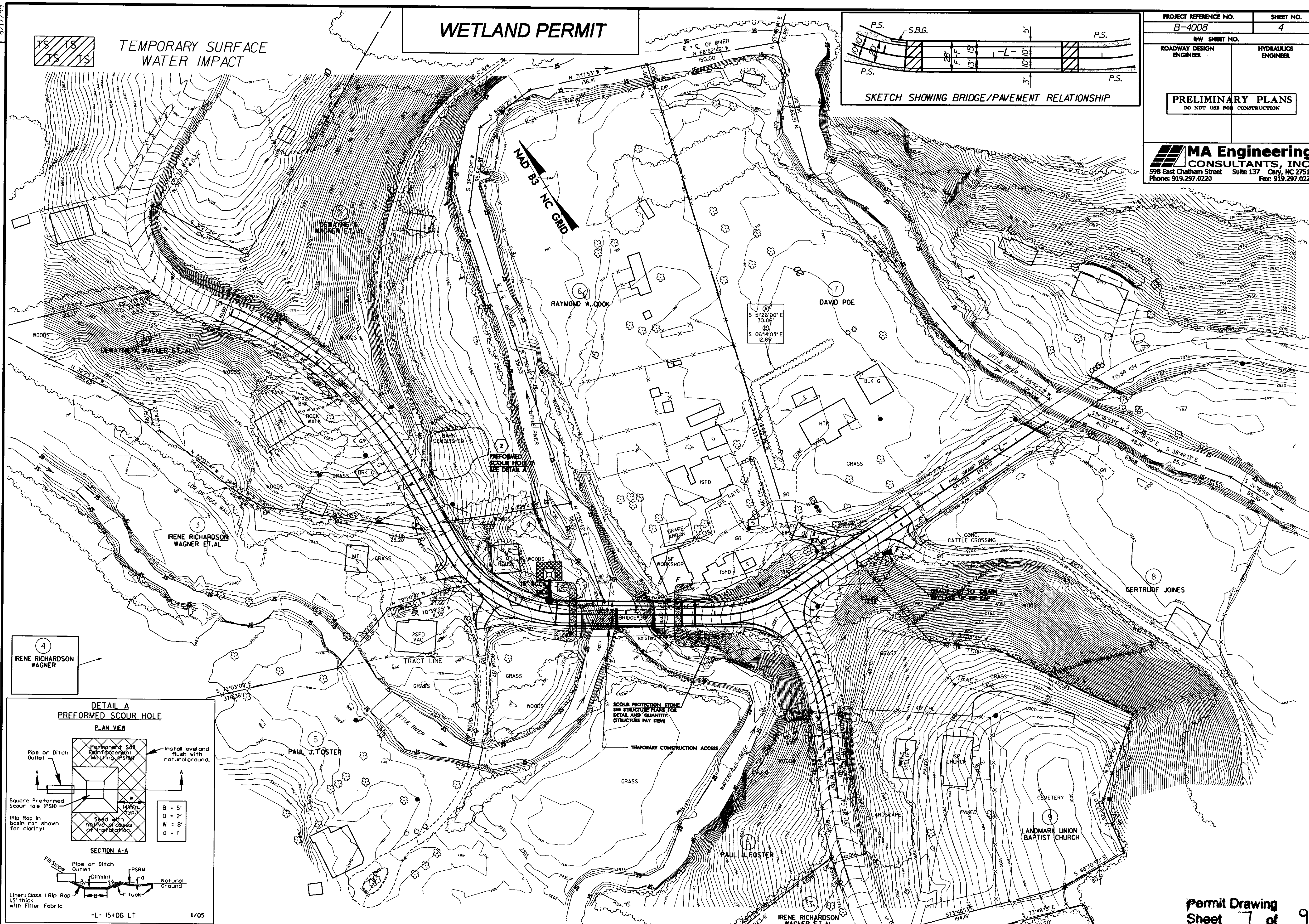
Permit Drawing Sheet 6 of 9

WETLAND PERMIT

PROJECT REFERENCE NO.	SHEET NO.
B-4008	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

MA Engineering CONSULTANTS, INC.
598 East Chatham Street Suite 137 Cary, NC 27511
Phone: 919.297.0220 Fax: 919.297.0221


TEMPORARY SURFACE WATER IMPACT
SKETCH SHOWING BRIDGE/PAVEMENT RELATIONSHIP
NAD 83 NC GRID
DEWAYNE A. WAGNER ET. AL
RAYMOND W. COOK
DAVID POE
IRENE RICHARDSON WAGNER ET. AL
GERTRUDE JOINES
PAUL J. FOSTER
LANDMARK UNION BAPTIST CHURCH
CEMETERY
LITTLE RIVER
PINE SWAMP ROAD
WATERFALLS CREEK
PREFORMED SCOUR HOLE SEE DETAIL A
SCOUR PROTECTION STONE SEE STRUCTURE PLANS FOR DETAIL AND QUANTITY. (STRUCTURE PAY ITEM)
TEMPORARY CONSTRUCTION ACCESS
GRADE CUT TO DRAIN W/CLASS "B" RIP RAP
TRACT LINE
IRENE RICHARDSON WAGNER
DETAIL A
PREFORMED SCOUR HOLE
PLAN VIEW
SECTION A-A
B = 5'
D = 2'
W = 8'
d = 1'
-L- 15+06 LT
11/05

REVISIONS

8/17/99

11/05/2007

Permit Drawing Sheet 7 of 9

F. A. PROJECT NO. BRZ-1193(6)

GRADE DATA
PI = 14+55.00 -L-
EL. = 2941.940
VC = 150'
-6.665% +1.0000%

SPAN A

FILL FACE @ END BENT #1
STA. 15+34.00 -L-
GRADE POINT EL. 2942.730

BEGIN FRONT SLOPE
STA. 15+23.89 -L-
GRADE POINT EL. 2942.638

1'-0" MIN. EARTH BERM NORMAL TO CAP (TYP.)

1½:1 SLOPE

FIX.

UNCLASSIFIED STRUCTURE EXCAVATION (ROADWAY PAY ITEM)

EXISTING STRUCTURE

HIGH WATER EL. 2938.600 (0100)

UNCLASSIFIED STRUCTURE EXCAVATION (RADWAY PAY ITEM)

N.W.S. EL. 2931.0± MARCH 2006

APPROXIMATE EXISTING GROUND LINE

EL. 2941.0±

EL. 2940.0±

1'-6"

2'-0" (TYP.)

EL. 2939.0±

EL. 2929.0±

EL. 2928.0±

EL. 2929.0±

EL. 2929.0±

EL. 2930.0±

EL. 2939.0±

CLASS II RIP RAP (TYP.)

1½:1 SLOPE

FIX.

1'-6"

EL. 2945.0±

EL. 2945.0±

END BENT #1

TEMPORARY ACCESS

END BENT #2

SECTION ALONG -L-

FILL FACE @ END BENT #2
STA. 16+64.00 -L-
GRADE POINT EL. 2944.726

BEGIN FRONT SLOPE
STA. 16+75.06 -L-
GRADE POINT EL. 2945.187

GRADE DATA
PI = 16+65.00 -L-
EL. = 2944.040
VC = 100'
+1.0000% +6.8000%

20'-0" MAX.

TIMBER MATS (SIZE AND NUMBER OF TIMBERS TO BE DETERMINED BY CONTRACTOR)

NWS EL. 2931.0

STREAM BOTTOM

TEMPORARY ACCESS
SEE SPECIAL PROVISIONS

1'-0" EARTH BERM EL. 2933.230 (LEVEL)

2:1 SLOPE

+18

CLASS II RIP RAP

PT STA. 15+33.29 -L-

STA. 15+23.89 -L-
BEGIN FRONT SLOPE

TO NC 18

STA. 15+19.83 -L-
BEGIN APPROACH SLAB

FILL FACE

2:1 SLOPE

+20

1½:1 SLOPE NORMAL TO CAP

TEMPORARY ACCESS

STA. 15+34.00 -L-
W. P. #1

20'-0" MAX.

LITTLE RIVER

STA. 15+99.00 -L-
BRIDGE IDENTITY

EXISTING STRUCTURE

LITTLE RIVER

WATERFALLS CREEK

1'-0" EARTH BERM EL. 2935.144 LEVEL

+78

2:1 SLOPE

CLASS II RIP RAP

STA. 16+75.06 -L-
BEGIN FRONT SLOPE

STA. 16+78.17 -L-
END APPROACH SLAB

PC STA. 16+98.06 -L-

TO US 21

STA. 16+64.00 -L-
W. P. #2

FILL FACE

1½:1 SLOPE NORMAL TO CAP

90°-00'-00" (TYP.)

SCOUR PROTECTION STONE

1½:1 SLOPE

+10

65'-0"

65'-0"

TOTAL LENGTH OF BRIDGE = 130'-0" (FILL FACE TO FILL FACE)

PLAN

HORIZONTAL CURVE DATA -L-
PI STA. = 14+60.11 -L-
Δ = 60°-24'-03.3" (LT)
L = 163.40'
T = 90.21'
R = 155.00'

HORIZONTAL CURVE DATA -L-
PI STA. = 17+44.99 -L-
Δ = 33°-41'-28.5" (LT)
L = 91.14'
T = 46.93'
R = 155.00'

PROJECT NO. B-4008
ALLEGHANY COUNTY
STATION: 15+99.00 -L-
SHEET 1 OF 3 REPLACES BRIDGE #39

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

GENERAL DRAWING
FOR BRIDGE OVER
LITTLE RIVER ON
SR 1193 (PINE SWAMP RD.)
BETWEEN
NC 18 & SR 1193

REVISIONS						SHEET NO.
NO.	BY:	DATE:	NO.	BY:	DATE:	S-1
1			3			TOTAL SHEETS
2			4			7

DRAWN BY : KEITH D. LAYNE DATE : 1/28/08
CHECKED BY : ? DATE : ?

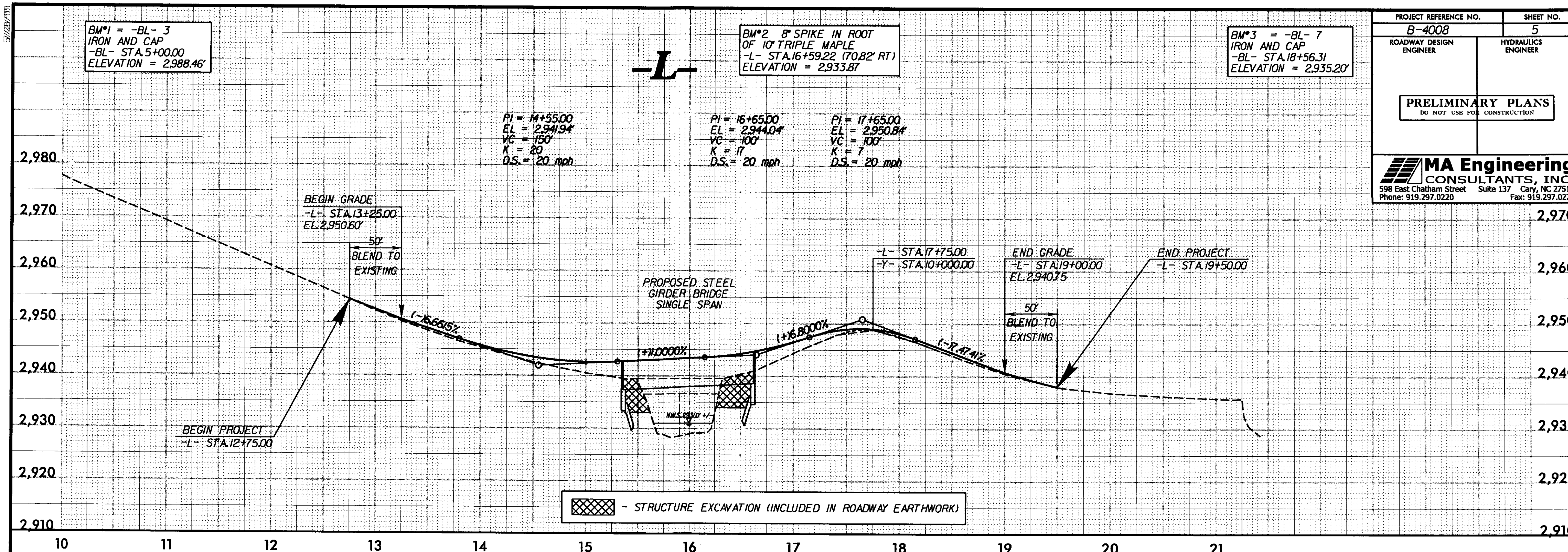
NORTH CAROLINA PROFESSIONAL SEAL 20211 ENGINEER TRAVIS C. PAYNE

Permit Drawing
Sheet 2 of 9

PROJECT REFERENCE NO.	SHEET NO.
B-4008	5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

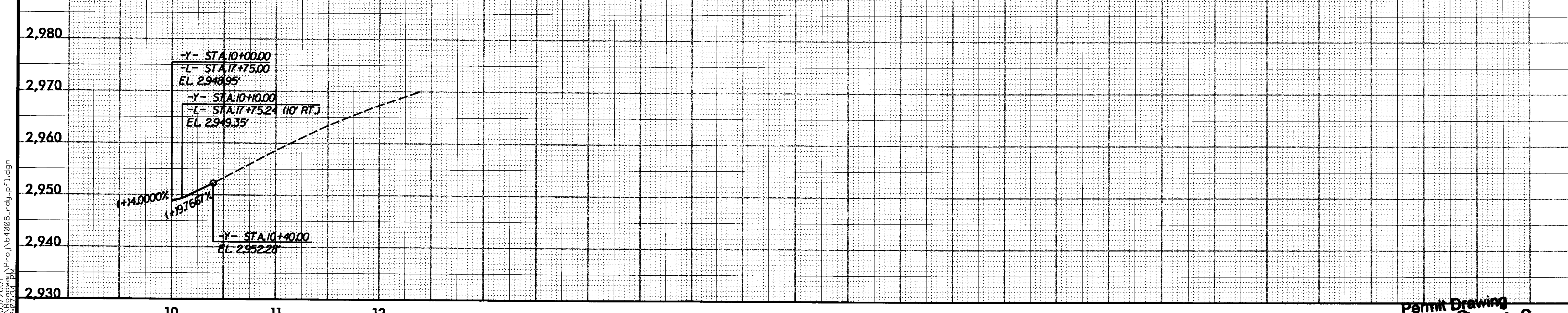
MA Engineering CONSULTANTS, INC.
598 East Chatham Street Suite 137 Cary, NC 27511
Phone: 919.297.0220 Fax: 919.297.0221


BM#1 = -BL- 3
IRON AND CAP
-BL- STA.5+00.00
ELEVATION = 2,988.46'
-L-
BM#2 8" SPIKE IN ROOT
OF 10" TRIPLE MAPLE
-L- STA.16+59.22 (70.82' RT)
ELEVATION = 2,933.87
BM#3 = -BL- 7
IRON AND CAP
-BL- STA.18+56.31
ELEVATION = 2,935.20'
PI = 14+55.00
EL = 2,941.94'
VC = 150'
K = 20
D.S. = 20 mph
PI = 16+65.00
EL = 2,944.04'
VC = 100'
K = 17
D.S. = 20 mph
PI = 17+65.00
EL = 2,950.84'
VC = 100'
K = 7
D.S. = 20 mph
BEGIN GRADE
-L- STA.13+25.00
EL.2,950.60'
50'
BLEND TO EXISTING
(-16.6615%)
PROPOSED STEEL GIRDER BRIDGE SINGLE SPAN
(+1.0000%)
(+16.8000%)
-L- STA.17+75.00
-Y- STA.10+000.00
(-17.4741%)
END GRADE
-L- STA.19+00.00
EL.2,940.75
50'
BLEND TO EXISTING
END PROJECT
-L- STA.19+50.00
BEGIN PROJECT
-L- STA.12+75.00
STRUCTURE EXCAVATION (INCLUDED IN ROADWAY EARTHWORK)
2,980
2,970
2,960
2,950
2,940
2,930
2,920
2,910
10
11
12
13
14
15
16
17
18
19
20
21

-Y-

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 3,100	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 2,937.5	FT
BASE DISCHARGE	= 4,600	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 2,938.6	FT
OVERTOPPING DISCHARGE	= 10,000	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 2,942.6	FT
ESTIMATED NORMAL WATER SURFACE ELEVATION	= 2,931.0+/-	FT
DATE OF SURVEY	= MARCH 2006	
W.S. ELEVATION AT DATE OF SURVEY	= 2,931.0+/-	FT



09/28/99

TIP PROJECT: B-4008

CONTRACT: C201922

Roadway Plans

11/05/2007
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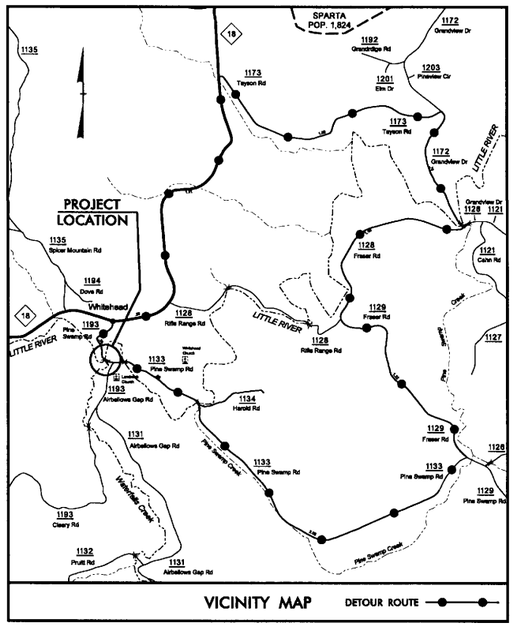
See Sheet 1-A For Index of Sheets
See Sheet 1-B For Symbology



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

ALLEGHANY COUNTY

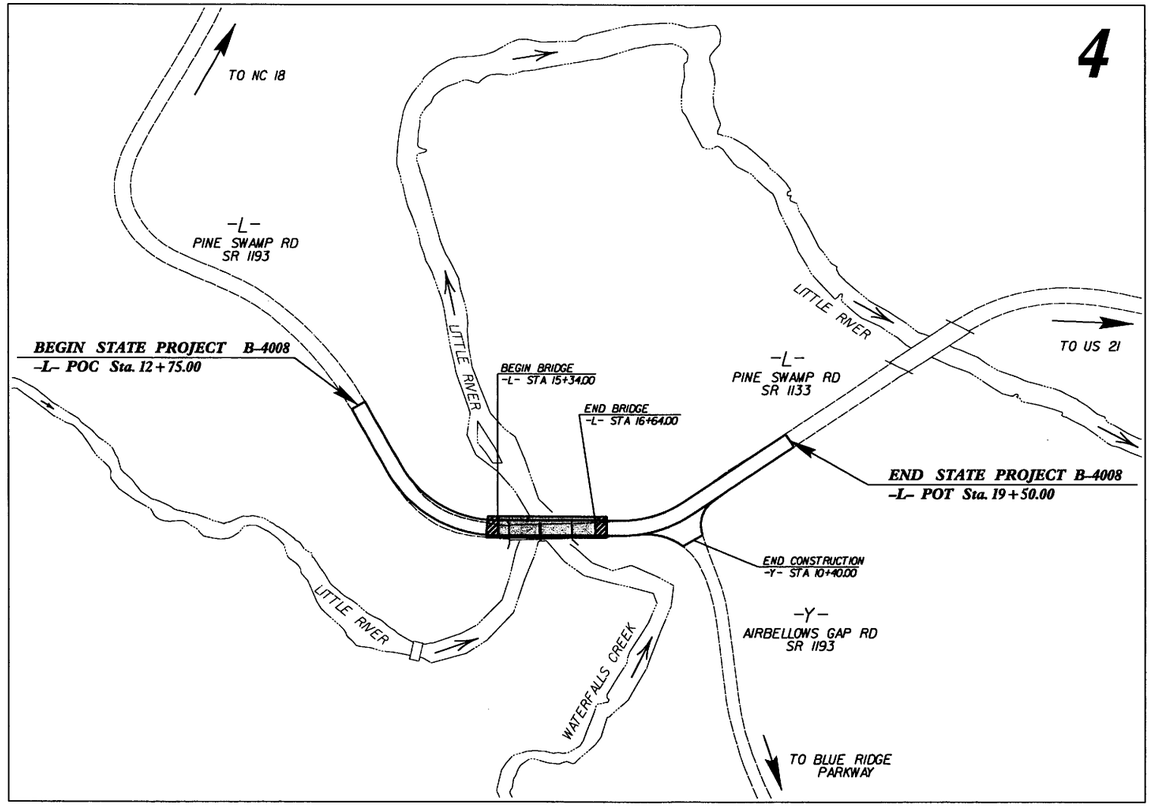
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4008	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
33376.1.1	BRZ-1193 (6)	PE
33376.2.1	BRZ-1193 (6)	R/W, UTILITIES

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

LOCATION: ***BRIDGE NO. 39 OVER LITTLE RIVER ON SR 1193 (PINE SWAMP ROAD)***

TYPE OF WORK: ***GRADING, DRAINAGE, PAVING, STRUCTURE, AND GUARDRAIL.***



NC GRID
NAD 83

**DESIGN EXCEPTION
DESIGN SPEED (V)

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.
THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.

NCDOT CONTACT:

MR. DOUG TAYLOR, PE – ENGINEERING COORDINATION SECTION ENGINEER ROADWAY DESIGN UNIT

GRAPHIC SCALES

PLANS 0 50 100
PROFILE (HORIZONTAL) 0 50 100
PROFILE (VERTICAL) 0 10 20

DESIGN DATA

ADT 2008 = 580
ADT 2028 = 840
DHV = 10 %
D = 60 %
T = 3 % *
V = 20 MPH **

* (TTST 1% + DUAL 2%)

FUNCT CLASS = RURAL LOCAL

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4008	=	*0.103 mile*
LENGTH STRUCTURES TIP PROJECT B-4008	=	*0.025 mile*
TOTAL LENGTH TIP PROJECT B-4008	=	*0.128 mile*

Prepared For:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh NC, 27610
By:
MA ENGINEERING CONSULTANTS, INC.
598 E. CHATHAM STREET, SUITE 137
CARY, NORTH CAROLINA 27511
(919) 270-0220

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: SEPTEMBER 21, 2007

LETTING DATE: SEPTEMBER 16, 2008

ROBERT W. PORTER, JR PE
PROJECT ENGINEER

KEVIN S. HUTCHENS
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: *P.E.*

ROADWAY DESIGN ENGINEER

SIGNATURE: *P.E.*

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA

P.E.
STATE HIGHWAY DESIGN ENGINEER

3/15/06

PROJECT REFERENCE NO.	SHEET NO.
B-4008	1-B

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 — EIP
- Property Corner
- Property Monument — ECM
- Parcel/Sequence Number — 123
- Existing Fence Line
- 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

BUILDINGS AND OTHER CULTURE:

- Gas Pump Vent or U/G Tank Cap
- Sign — S
- 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 — FLOW
- False Sump

RAILROADS:

- Standard Gauge — CSX TRANSPORTATION
- RR Signal Milepost — MILEPOST 35
- 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
- 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 — CA
- Proposed Control of Access
- Existing Easement Line — E
- Proposed Temporary Construction Easement — E
- Proposed Temporary Drainage Easement — TDE
- Proposed Permanent Drainage Easement — PDE
- Proposed Permanent Utility Easement — PUE

ROADS AND RELATED FEATURES:

- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut — C
- Proposed Slope Stakes Fill — F
- Proposed Wheel Chair Ramp — WCR
- Proposed Wheel Chair Ramp Curb Cut — WCC
- Curb Cut for Future Wheel Chair Ramp — CCFR
- 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 — S
- Storm Sewer — S

UTILITIES:

POWER:

- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole — P
- Power Line Tower
- Power Transformer
- U/G Power Cable Hand Hole — HH
- 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 — T
- Telephone Booth
- Telephone Pedestal — T
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole — HH
- 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 — W
- Water Meter
- Water Valve
- Water Hydrant
- Recorded U/G Water Line — W
- Designated U/G Water Line (S.U.E.*) — W
- Above Ground Water Line — A/G Water

TV:

- TV Satellite Dish
- TV Pedestal — C
- TV Tower
- U/G TV Cable Hand Hole — HH
- 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 — S
- Utility Unknown U/G Line — ?UTL
- U/G Tank; Water, Gas, Oil
- A/G Tank; Water, Gas, Oil
- U/G Test Hole (S.U.E.*)
- Abandoned According to Utility Records — AATUR
- End of Information — E.O.I.

PROJECT REFERENCE NO.	SHEET NO.
B-4008	2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

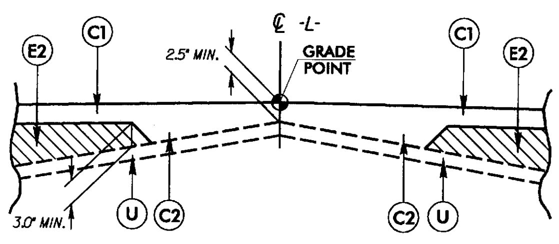
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

MA Engineering CONSULTANTS, INC.
598 East Chatham Street Suite 137 Cary, NC 27511
Phone: 919.297.0220 Fax: 919.297.0221

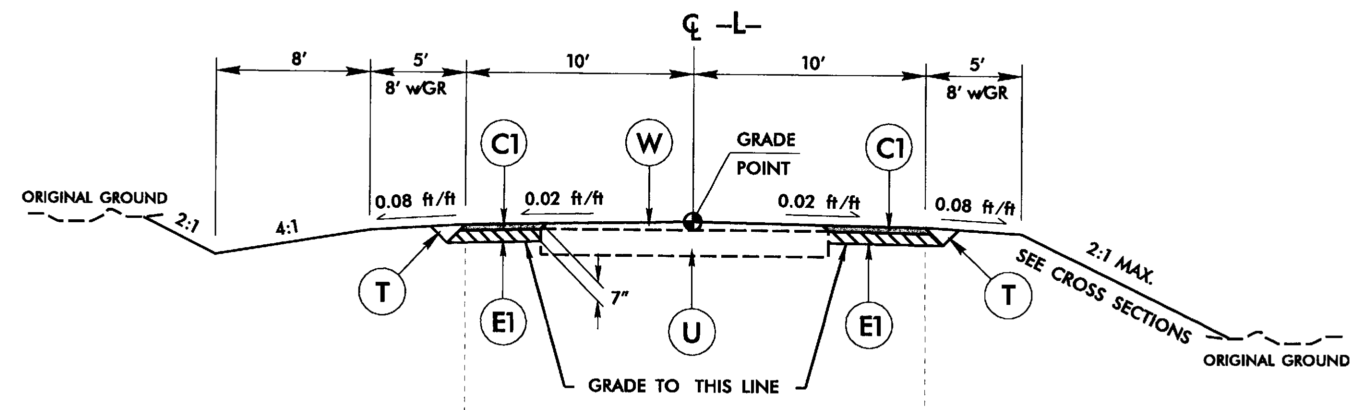
PAVEMENT SCHEDULE

C1	PROP. APPROX. 2.5" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 Lbs PER SQUARE YARD IN TWO LAYERS.
C2	PROP. VARIABLE DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 Lbs PER SQUARE YARD PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 1.0" OR GREATER THAN 1.5" IN DEPTH.
E1	PROP. APPROX. 4.5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 513 Lbs PER SQUARE YARD.
E2	PROP. VARIABLE DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 Lbs PER SQUARE YARD PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 3.0" OR GREATER THAN 5.5" IN DEPTH.
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL THIS SHEET)

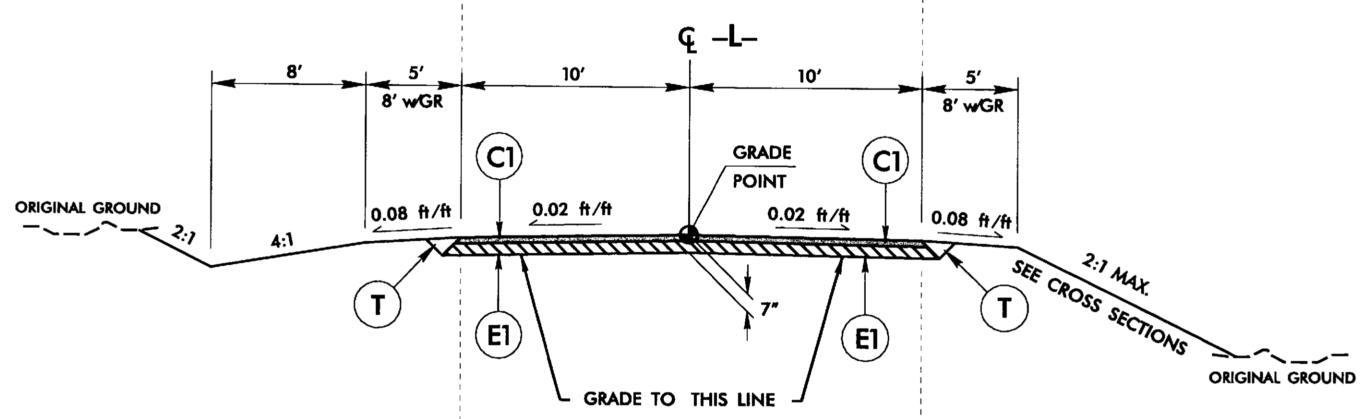
PAVEMENT EDGE SLOPES AND TRENCH SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



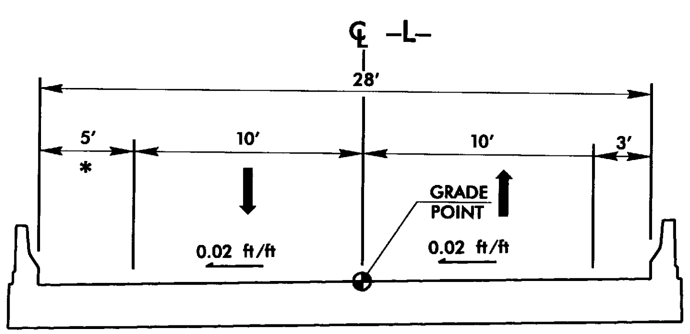
DETAIL SHOWING METHOD OF WEDGING



TYPICAL SECTION NO. 1



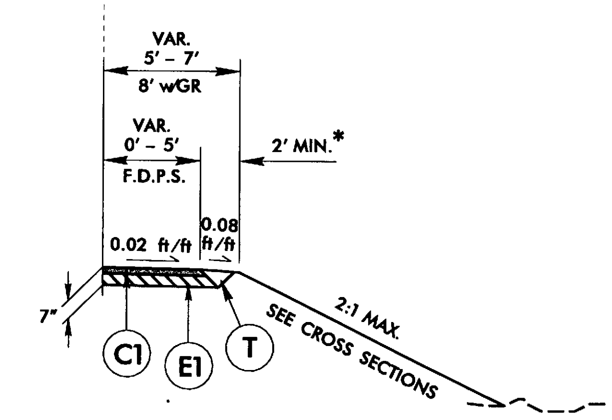
TYPICAL SECTION NO. 2



TYPICAL SECTION ON STRUCTURE

FROM –L– STA. 15+34.00 TO STA. 16+64.00

* BRIDGE WIDENED DUE TO SPREAD



TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 1:

FROM –L– STA. 13+25.00 TO STA. 14+50.00
FROM –L– STA. 17+50.00 TO STA. 19+00.00

BLEND TO EXISTING (SEE CROSS SECTIONS):
FROM –L– STA. 12+75.00 TO STA. 13+25.00
FROM –L– STA. 19+00.00 TO STA. 19+50.00

RESURFACE USING 1.25" OF SF9.5A:
FROM –Y– STA. 10+10.00 TO STA. 10+40.00

USE TYPICAL SECTION NO. 2:

FROM –L– STA. 14+50.00 TO STA. 15+34.00 (BEG. BRIDGE)
FROM –L– STA. 16+64.00 (END BRIDGE) TO STA. 17+50.00

NOTES:
USE ROCK EMBANKMENT WITH 1.5:1 SLOPES:
FROM –L– STA. 16+54.00 TO STA. 17+10.00 RT
SEE CROSS SECTIONS.

USE PARTIAL TYPICAL SECTION NO. 3 IN CONJUNCTION WITH TYPICAL SECTIONS NO. 1 AND NO. 2:

FROM –L– STA. 13+29.89 TO STA. 15+20.00 LT.
FROM –L– STA. 16+78.00 TO STA. 18+29.20 LT.
FROM –L– STA. 14+74.58 TO STA. 15+20.00 RT.
FROM –L– STA. 16+78.00 TO STA. 17+17.81 RT.

NOTES:
* USE MINIMUM 2' GRASS SHOULDER BEYOND EDGE OF PAVED SHOULDER.
EXTEND SHOULDER 3' (MEASURED FROM FACE) WHEN USING GUARDRAIL.
MIRROR AS NECESSARY.

4/04/06

COMPUTED BY: KSH	DATE: 04-27-2007
CHECKED BY: RWP	DATE: 08-31-2007

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
B-4008	3-A

MA Engineering
CONSULTANTS, INC.
598 East Chatham Street Suite 137 Cary, NC 27511
Phone: 919.297.0220 Fax: 919.297.0221

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SUMMARY OF EARTHWORK
IN CUBIC YARDS

LOCATION	UNCLASSIFIED EXCAVATION	UNDERCUT	EMBT+%	BORROW	WASTE
-L- 12+75.00 TO 15+34.00 (BEGIN BRIDGE)	26		541	515	
-L- 15+34 TO 15+60 (STRUCTURE EXCAVATION)	132				132
-L- 16+26 TO 16+64 (STRUCTURE EXCAVATION)	239				239
-L- 16+64.00 (END BRIDGE) TO 19+50.00	178		775	597	
TOTAL	575		1,316	1,112	371
LOSS DUE TO CLEARING & GRUBBING	-75			75	
WASTE TO REPLACE BORROW				-371	-371
PROJECT TOTAL	500		1,316	816	0
ESTIMATE 5% TO REPLACE TOPSOIL ON BORROW PIT				41	
GRAND TOTAL (CUBIC YARDS)	500		1,316	857	
SAY (CUBIC YARDS)	500		1,400	900	

SELECT GRANULAR MATERIAL (CL II or III) = 500 CY
ESTIMATED UNDERCUT = 500 CY
(THESE ARE CONTINGENCY ITEMS PER 'GEOTECHNICAL REPORT – DESIGN AND CONSTRUCTION RECOMMENDATIONS' LETTER DATED AUGUST 22, 2006)

APPROXIMATE QUANTITIES ONLY. UNCLASSIFIED EXCAVATION, BORROW EXCAVATION, FINE GRADING, CLEARING AND GRUBBING, AND REMOVAL OF EXISTING PAVEMENT WILL BE PAID FOR AT THE CONTRACT LUMP SUM PRICE FOR "GRADING".

NOTE: Earthwork quantities are calculated by the Roadway Design Unit. These earthwork quantities are based in part on subsurface data provided by the Geotechnical Engineering Unit.

SUMMARY OF PAVEMENT REMOVAL
IN SQUARE YARDS

LOCATION	ASPHALT REMOVAL	ASPHALT BREAK-UP	CONCRETE REMOVAL	CONCRETE BREAK-UP
-L- 14+50 TO 15+49	223			
-L- 16+32 TO 17+50	273			
GRAND TOTAL	496			
SAY	500			

LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48" & UNDER)

STATION	LOCATION (LT,RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT ELEVATION	INVERT ELEVATION	SLOPE CRITICAL	CLASS III R.C. PIPE (UNLESS NOTED OTHERWISE) 12"	15"	18"	24"	30"	36"	42"	48"	BITUMINOUS COATED C.S. PIPE TYPE B (UNLESS NOTED OTHRWISE) 12" .064	15" .064	18" .064	24" .064	30" .079	36" .079	42" .109	48" .109	CLASS III R.C. PIPE OR C.S. PIPE, TYPE IR ALUMINIZED OR HDPE PIPE, TYPE S OR D 12"	15"	18"	24"	30"	36"	42"	48"
-L- 15+10	LT		1	2942.1																											
-L- 15+08	LT	1	2		2939.3	2933.5											26														
-L- 15+05	LT		2	2933.5																											
TOTALS																	26														

STATION	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE	ENDWALLS STD. 838.01, STD. 838.11 OR STD. 838.80 (UNLESS NOTED OTHERWISE) CU. YDS. R.C.P.	C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES PER EACH (0' THRU 5.0')	* TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. 'A' + (1.3 X COL.'B') LIN. *FT. A 5.0' THRU 10.0'	B 10.0' AND ABOVE	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME & GRATE STD. 840.16	G.D.I. TYPE "A" STD. 840.17 OR 840.26	G.D.I. TYPE "B" STD. 840.18 OR 840.27	G.D.I. TYPE "D" STD. 840.19 OR 840.28	G.D.I. FRAME WITH GRATE STD. 840.22	G.D.I. FRAME WITH TWO GRATES STD. 840.22	G.D.I. (N.S.) FRAME WITH GRATE STD. 840.24	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.24	J.B. STD. 840.31 OR 840.32	G.D.I. (N.S.) FRAME WITH TWO GRATES STD. 840.29	T.B.D.I. STD. 840.35	PREFORMED SCOUR HOLE	CORR. STEEL ELBOWS NO. & SIZE	CONC. COLLARS CL. "B" C.Y. STD 840.72	CONC. & BRICK PIPE PLUG, C.Y. STD. 840.71	PIPE REMOVAL LIN.FT.	REMARKS
-L- 15+10																										
-L- 15+08						1													1	1						
-L- 15+05																					1					
TOTALS						1													1	1	1					

ABBREVIATIONS

C.B.	CATCH BASIN
N.D.I.	NARROW DROP INLET
D.I.	DROP INLET
G.D.I.	GRATED DROP INLET
G.D.I. (N.S.)	GRATED DROP INLET (NARROW SLOT)
J.B.	JUNCTION BOX
M.H.	MANHOLE
T.B.D.I.	TRAFFIC BEARING DROP INLET
T.B.J.B.	TRAFFIC BEARING JUNCTION BOX

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL.
TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.
FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL.
W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL.

GUARDRAIL SUMMARY

G = GATING IMPACT ATTENUATOR TYPE 350
NG = NON-GATING IMPACT ATTENUATOR TYPE 350

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH STRAIGHT	LENGTH SHOP CURVED	LENGTH DOUBLE FACED	WARRANT POINT APPROACH END	WARRANT POINT TRAILING END	"N" DIST. FROM E.O.L.	TOTAL SHOULDER WIDTH	FLARE LENGTH APPROACH END	FLARE LENGTH TRAILING END	W APPROACH END	W TRAILING END	ANCHORS B-77	ANCHORS GRAU 350	ANCHORS CAT-1	IMPACT ATTENUATOR TYPE 350 NO.	PERMITTED G	PERMITTED NG	SINGLE FACED GUARDRAIL	REMOVE EXISTING GUARDRAIL	REMOVE AND STOCKPILE EXISTING GUARDRAIL	REMARKS
-L-	14+61	15+35	RT	81.25			15+35		5.00	8.00	50.00		7.25		1	1								
-L-	14+45	15+35	LT	50.00	31.25			15+35	5.00	8.00		50.00		1.00	1	1								
-L-	16+63	17+57	RT	75.00	37.50			17+00	5.00	8.00		N/A		N/A	1		1							
-L-	16+63	18+33	LT	93.75	75.00		17+75		5.00	8.00	50.00		1.00		1	1								
	SUBTOTAL			300.00	143.75										4	3	1							
	LESS ANCHORS	GRAU-350	3 x 50.00' =	150.00																				
		B-77	4 x 18.75' =	56.25	18.75																			
		CAT-1	1 x 6.25' =	6.25																				
	TOTAL			87.50	125.00		ADDITIONAL GUARDRAIL POSTS = 5 EACH																	

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REVISIONS

-L-

PI Sta 11+46.54
Δ = 38° 50' 13.1" (RT)
D = 14° 19' 26.2"
L = 271.13'
T = 141.01'
R = 400.00'

PI Sta 14+60.11
Δ = 60° 24' 03.3" (LT)
D = 36° 57' 54.1"
L = 163.40'
T = 90.21'
R = 155.00'
RO = 60'
S.E. = 0.04 ft/ft
V = 25 mph

PI Sta 17+44.99
Δ = 33° 41' 28.6" (LT)
D = 36° 57' 54.1"
L = 91.14'
T = 46.93'
R = 155.00'
RO = 60'
S.E. = 0.04 ft/ft
V = 25 mph

SKETCH SHOWING BRIDGE/PAVEMENT RELATIONSHIP

PROJECT REFERENCE NO.	SHEET NO.
B-4008	4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

MA Engineering CONSULTANTS, INC.
598 East Chatham Street Suite 137 Cary, NC 27511
Phone: 919.297.0220 Fax: 919.297.0221

NAD 83 NC GRID

BEGIN STATE PROJECT B-4008
-L- POC Sta. 12+75.00

END STATE PROJECT B-4008
-L- POT Sta. 19+50.00

POT Sta. 10+00.00
PC Sta. 10+05.53
PT Sta. 12+76.66
PC Sta. 13+69.89
PT Sta. 15+33.29
PC Sta. 16+98.06
PT Sta. 17+89.20
POT Sta. 21+42.48
POT Sta. 18+56.31 (BL-7)
PC Sta. 10+49.63
PT Sta. 11+59.65
POT Sta. 12+39.63

-L- POC Sta. 17+75.00
-Y- POT Sta. 10+00.00

END APPROACH SLAB
-L- STA 16+78.00
END BRIDGE
-L- STA 16+64.00
SHOULDER BERM GUTTER
-L- STA 15+05 TO 15+20 LT
BEGIN APPROACH SLAB
-L- STA 15+20.00
BEGIN BRIDGE
-L- STA 15+34.00
END CONSTRUCTION
-Y- STA 10+40.00

-BL- PINC 10+92.52 (BL-5)
-L- 11+75.69 (18.38' RT)
-BL- PINC 14+33.65 (BL-6)
-BY- PINC 5+00.00 (BY-8)
-L- POT 15+01.46 (29.14' RT)
-Y- POT 10+28.27 (24.01' LT)

-Y-
PI Sta 11+05.39
Δ = 22° 55' 24.7" (RT)
D = 20° 50' 05.4"
L = 110.03'
T = 55.76'
R = 275.00'

-BL- 4 8+22.99 PINC (14.65' RT)
-BL- 3 5+00.00 POT
-BL- 4 12+05.68 (14.65' RT)
-BY- 9 8+20.23 POT

1) DEWAYNE A. WAGNER ET. AL
DB 267 PG 900
DB 267 PG 904
PB 9 PG 328

2) DEWAYNE A. WAGNER ET. AL
DB 148 PG 745
DB 267 PG 900
DB 267 PG 904
PB 9 PG 328

3) IRENE RICHARDSON WAGNER ET.AL
DB 123 PG 112
DB 128 PG 500
DB 135 PG 117
PB 5 PG 113

4) IRENE RICHARDSON WAGNER
DB 135 PG 11
DB 125 PG 500
DB 267 PG 904
PB 5 PG 113

5) PAUL J. FOSTER
DB 123 PG 106
DB 135 PG 118
PB 5 PG 113

6) RAYMOND W. COOK
DB 256 PG 597

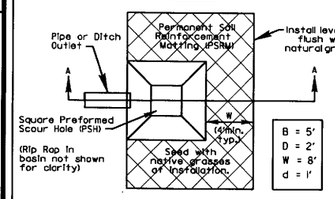
7) DAVID POE
DB 253 PG 1392
DB 125 PG 347

8) GERTRUDE JOINES
DB 85 PG 380
TAX MAP

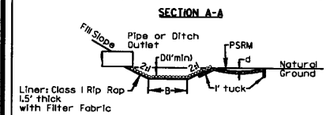
9) LANDMARK UNION BAPTIST CHURCH
DB 193 PG 720
TAX MAP

DETAIL A
PREFORMED SCOUR HOLE

PLAN VIEW



SECTION A-A



-L- 15+06 LT 11/05

(SR 1193) -L- PINE SWAMP RD. (SR 1133)			
580	126	126	580
840	213	213	840
2008 ADT	252	-Y- (SR 1193) AIR BELLOWS GAP RD.	
2028 ADT	426		

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PROJECT REFERENCE NO.	SHEET NO.
B-4008	5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

MA Engineering CONSULTANTS, INC.
598 East Chatham Street Suite 137 Cary, NC 27511
Phone: 919.297.0220 Fax: 919.297.0221

BM#1 = -BL- 3
IRON AND CAP
-BL- STA. 5+00.00
ELEVATION = 2,988.46'

BM#2 8" SPIKE IN ROOT
OF 10" TRIPLE MAPLE
-L- STA. 16+59.22 (70.82' RT)
ELEVATION = 2,933.87

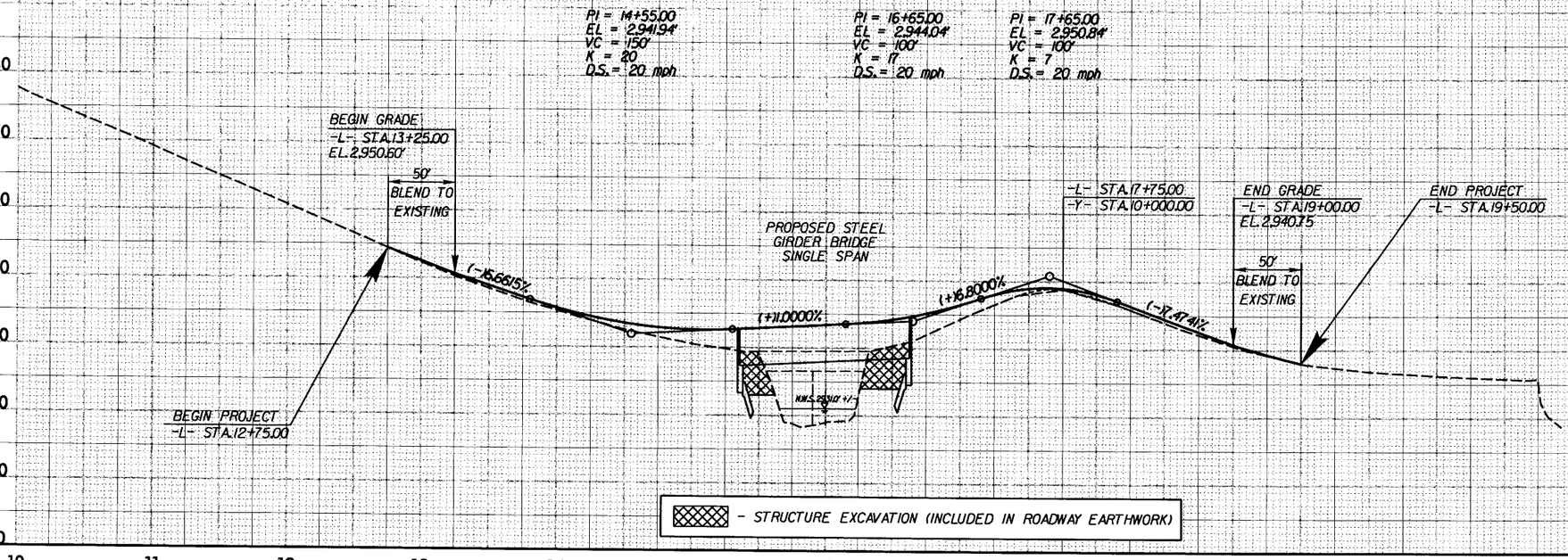
BM#3 = -BL- 7
IRON AND CAP
-BL- STA. 18+56.31
ELEVATION = 2,935.20'

-L-

PI = 14+55.00
EL = 2,941.94'
VC = 150'
K = 20
D.S. = 20 mph

PI = 16+65.00
EL = 2,944.04'
VC = 100'
K = 17
D.S. = 20 mph

PI = 17+65.00
EL = 2,950.84'
VC = 100'
K = 7
D.S. = 20 mph

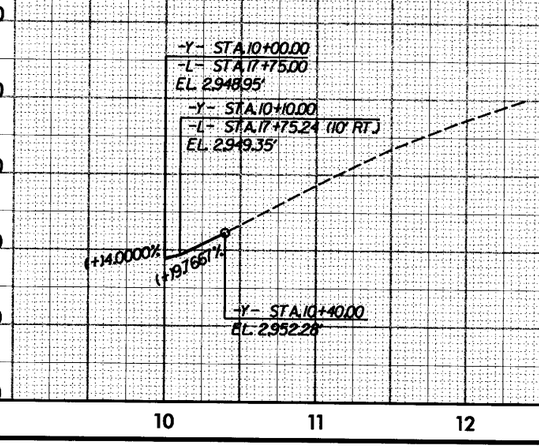


- STRUCTURE EXCAVATION (INCLUDED IN ROADWAY EARTHWORK)

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 3,100	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 2,937.5	FT
BASE DISCHARGE	= 4,600	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 2,938.6	FT
OVERTOPPING DISCHARGE	= 10,000	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 2,942.6	FT
ESTIMATED NORMAL WATER SURFACE ELEVATION	= 2,931.0+/-	FT
DATE OF SURVEY	= MARCH 2006	
W.S. ELEVATION AT DATE OF SURVEY	= 2,931.0+/-	FT

-Y-



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2950
2940
2930

2948.93
0.013 0.013
4:1 4:1
EP EP
2948.42

13+50.00

2950.60
0.010 0.000
4:1
EP EP
2950.27

13+25.00

0.01 0.01
4:1
EP EP
2952.25

13+00.00

0.010 0.013
EP EP
2954.38

12+75.00

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Note: Approximate quantities only. Unclassified Excavation, Borrow Excavation, Fine Grading, Cleaning and Grubbing, and Removal of Existing Pavement will be paid for at the contract lump sum price for "Grading."

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	B-4008	X-3

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2950
2940
2930

2943.52
2' WIDENED SHOULDER
0.040
0.040
4:1
3:1
9.3 %
GRAVEL DRIVEWAY
EP
2942.54

14+50.00

2944.46
2' WIDENED SHOULDER
0.040
0.040
4:1
3:1
EP
2943.82

14+25.00

2945.71
2' WIDENED SHOULDER
0.040
0.040
4:1
4:1
EP
2945.29

14+00.00

2947.47
2' WIDENED SHOULDER
0.030
0.030
4:1
4:1
EP
2946.76

13+75.00

—L—

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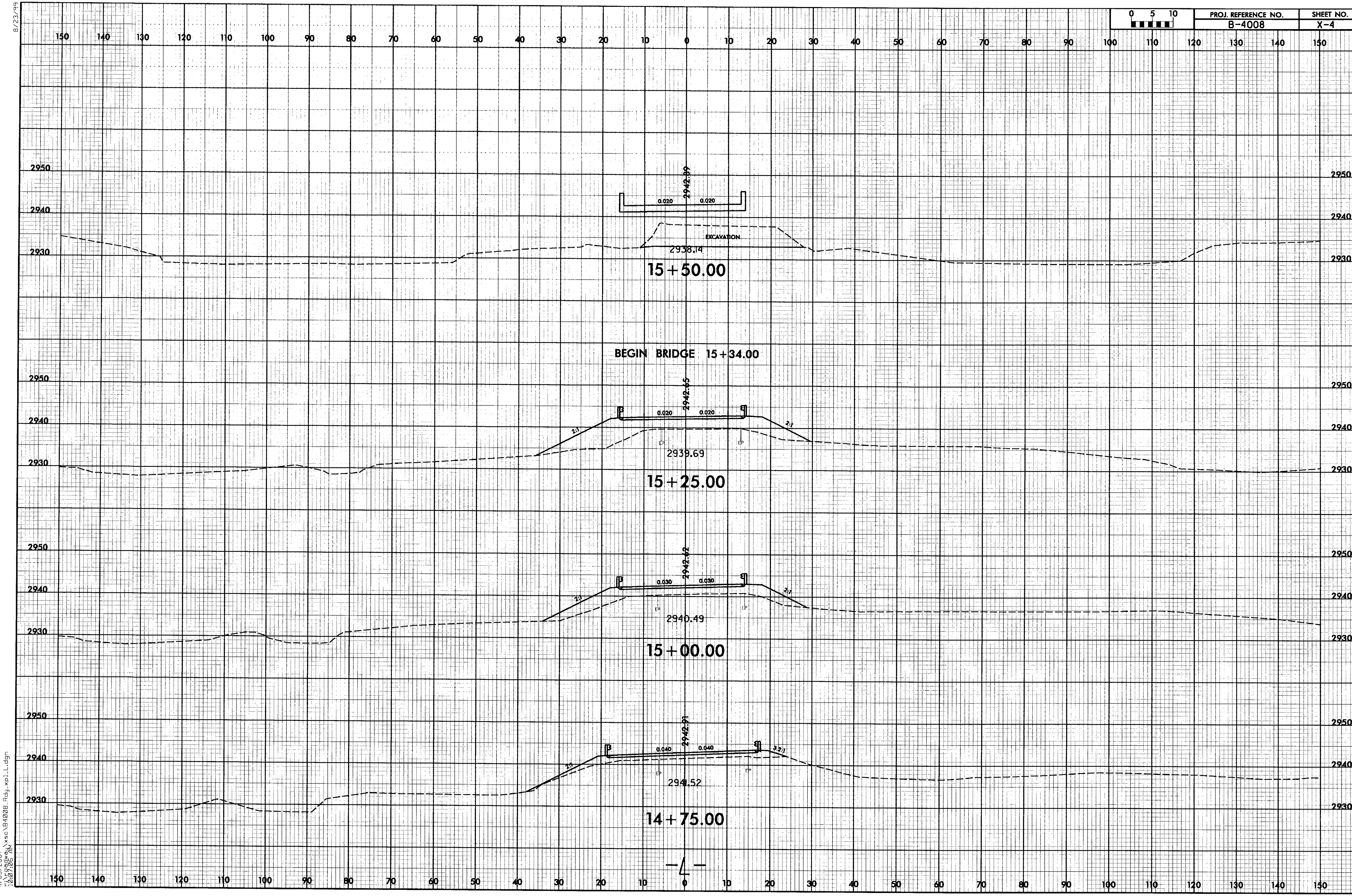

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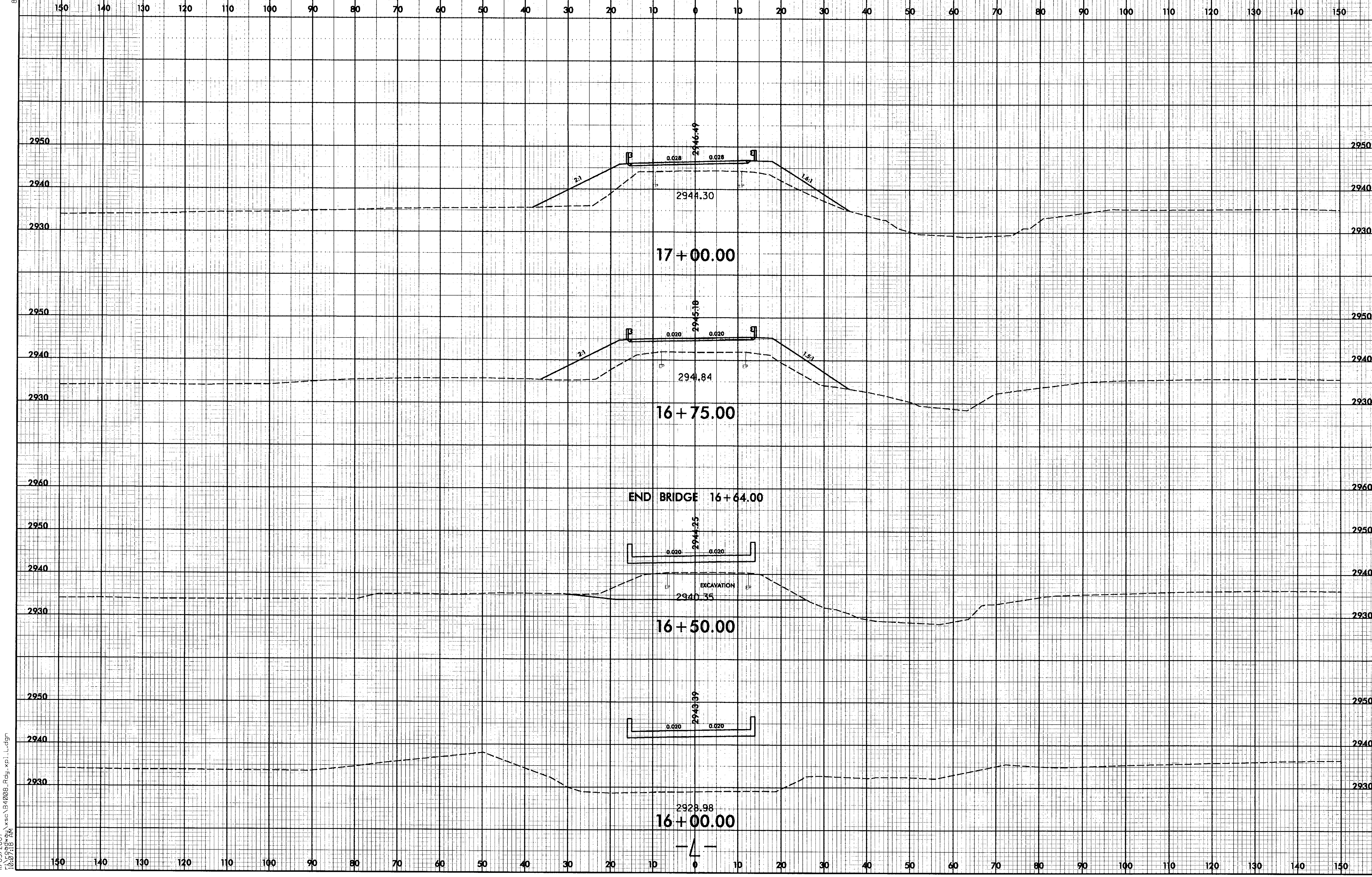
SHEET NO. X-5



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	8-4008	X-6

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2970 2960 2950 2940

2948.86 0.033 0.033 3:1 4:1 2:1 EP EP 2946.577

2947.56

18+00.00

2946.95 0.040 0.040 -Y- 2:1 EP

2948.79

17+75.00

2946.95 0.040 0.040 4:1 2:1 2:1 EP EP 2946.905

2948.45

17+50.00

2946.95 0.040 0.040 4:1 2:1 2:1 EP EP 2946.278

2946.58

17+25.00

2950 2940 2930

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

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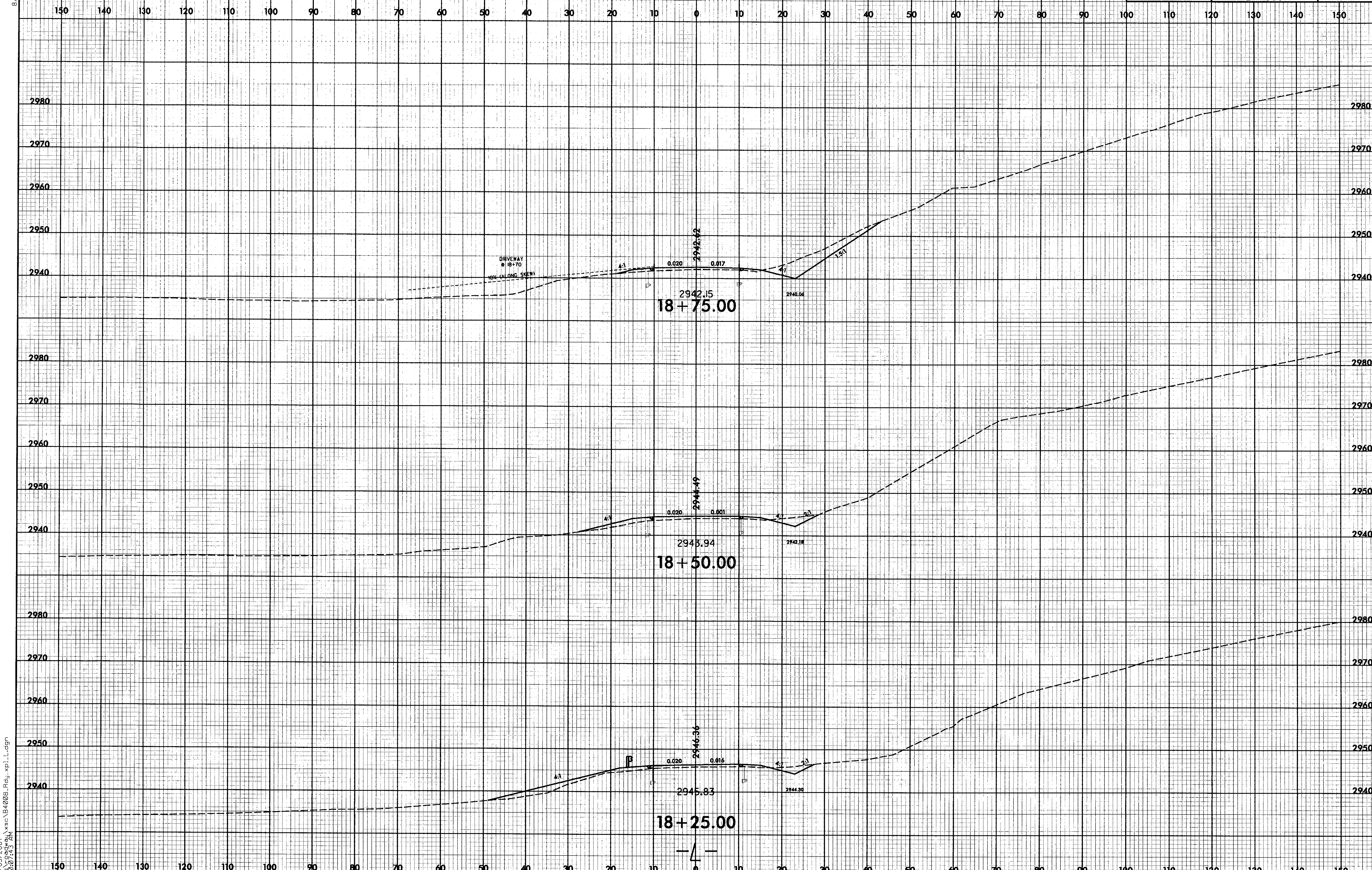
B-4008	X-7



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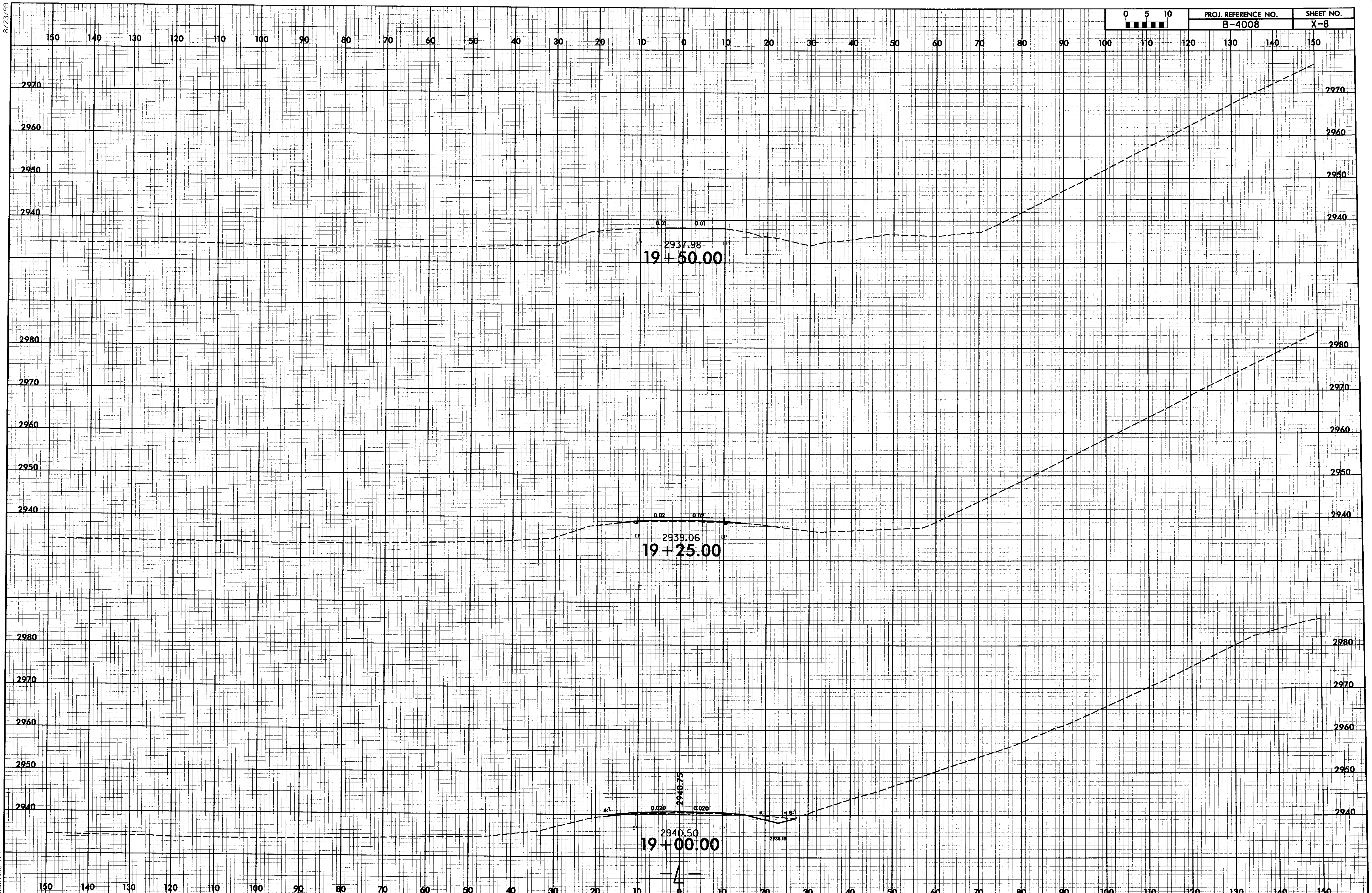
B-4008	X-8



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