STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

March 5, 2008

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

ATTENTION: Mr. David Baker
NCDOT Coordinator

SUBJECT: **Application for Nationwide Permits 13, 23, 33 and Section 401 Water Quality Certification** for the proposed replacement of Bridge No. 526 over West Branch Creek on SR 1347 in Rutherford County, Division 13, Federal Aid Project No. BRSTP-0183(1), State Project No. 8.1852001, WBS Element 33404.1.1, **TIP No. B-4631**.

Dear Sir:

Please see the enclosed PCN, permit drawings and design plans. A Programmatic Categorical Exclusion was completed for this project in November 2005 and distributed shortly thereafter. Additional copies are available upon request. NCDOT proposes to replace the existing 76-foot long Bridge No. 526 with a triple barrel 12-foot wide by 10-foot high reinforced concrete box culvert (RCBC) 59 feet long. This project will result in an off-site detour to minimize environmental impacts. There will be 225 linear feet of permanent stream impacts and 0.01 acre of temporary stream impacts incurred from the construction of this project.

IMPACTS TO WATERS OF THE UNITED STATES

General Description:
The water resource on project B-4631 includes the West Branch Creek. West Branch Creek is located in the Broad River Basin (Division of Water Quality (DWQ)) subbasin 03-08-02. The DWQ Index number for West Branch Creek is 9-25-3 and the Hydrological Cataloguing Unit is 03050105.

The North Carolina Department of Environmental and Natural Resources has designated West Branch Creek as **"C"**. There are no High Quality Waters (HQW), Water Supplies (WS-I or WSII), or Outstanding Resource Waters (ORW) within 1.0 mile of the project study area. West Branch Creek does not appear on the North Carolina DWQ 303(d) List (updated 2006) and there are no 303(d) streams within one mile of the project.

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

TELEPHONE: 919-733-3141
FAX: 919-715-1501

WEBSITE: WWW.NCDOT.ORG

LOCATION:
PARKER LINCOLN BUILDING,
2728 CAPITAL BLVD., SUITE 240
RALEIGH NC 27604

There are no anticipated impacts to jurisdictional wetlands within the project study area. Rutherford County is listed as a mountain trout county, however West Branch Creek does not have a water resource classification involving trout and the NCWRC states that it is not designated as trout water. There are no jurisdictional wetlands within the project area.

Permanent Impacts:
There will be 225 linear feet of permanent stream impacts to West Branch Creek as depicted on the permit drawing, sheet 5 of 7. These impacts are associated with installing a triple barrel 12-foot by 10-foot RCBC 59 feet long. There will be 2-foot sills installed in the outer barrels to accommodate for low flow. There is 74 feet of rip-rap bank stabilization downstream and 75 feet upstream, which accounts for a significant portion of the permanent impacts (149 feet). The following narrative from the NCDOT hydraulic's unit explains why the bridge is being replaced by a box culvert:

"On smaller stream crossings it is more economical to replace bridges with box culverts. Culverts cost less than bridges, require less maintenance throughout their service life than bridges and last longer than bridges. West Branch Creek does not have a water resource classification involving trout and the NC Wildlife Resources Commission states that this stream is not designated as trout water. The proposed culvert has been designed to accommodate the existing stream width through the center barrel of the culvert by placing sills in the two outer barrels of the culvert. A flood plain bench has been created at the inlet and outlet of the culvert to maintain the normal stream width up and downstream of the culvert. The slope of the culvert has been designed to match the existing stream slope which is approximately 0.005 ft/ft. The culvert will be buried approximately 1.5 feet below the stream bed. The culvert is 59 feet in length. The culvert has been aligned and the stream has been realigned on both ends of the culvert to provide a smooth transition through the road crossing."

Temporary Impacts:
There will be 0.01 acre of temporary impacts associated with dewatering as part of the culvert installation method. This is also shown on permit drawing sheet 5 of 7.

Utility Impacts:
There will be no jurisdictional impacts associated with relocation of utility lines on the project site.

Bridge Demolition
Bridge No. 526 is constructed entirely of timber and steel. It should be possible to remove the existing structure without dropping any debris into West Branch Creek.

PROJECT SCHEDULE

The project schedule calls for a September 16, 2008 let date with a review date of July 29, 2008.

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 January 16, 2008, the

United States Fish and Wildlife Service (USFWS) lists five federally protected species for Rutherford County (Table 1). The biological conclusion for the five listed species is No Effect. It should be noted that the Bald Eagle was previously listed as "Threatened", however it was delisted August 8, 2007. It is still protected under the Bald and Golden Eagle Protection Act.

Table 1. Federally Protected Species for Rutherford County.

COMMON NAME	SCIENTIFIC NAME	STATUS	HABITAT	BIOLOGICAL CONCLUSIO N
Indiana bat	*Myotis sodalis*	E	No	No Effect
Bald eagle	*Haliaeetus leucocephalus*	Delisted	No	N/A
Dwarf-flowered heartleaf	*Hexastylis naniflora*	T	No	No Effect
White Irisette	*Sisyrinchium dichotomum*	E	No	No Effect
Small-whorled pagonia	*Isotria medeoloides*	T	No	No Effect
Rock gnome lichen	*Gymnoderma lineare*	E	No	No Effect

The bald eagle has been delisted from the Endangered Species Act as of August 8, 2007. It is still protected under the Bald and Golden Eagle Protection Act. A survey was conducted in July 2001. No suitable habitat was observed.

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 following avoidance and minimization measures will apply to this project.

- The existing bridge demolition will not result in any fill being dropped into waters of the United States.
- Traffic will be detoured off-site during construction. This eliminates the need for a causeway or temporary on-site detour.
- Water will not be directly discharged into West Branch Creek via deck drains.
- 2:1 slopes will be used at the culvert for minimization.
- There will be 2-foot sills in the outer barrels to accommodate for low flow.
- The culvert has been designed to be buried approximately 1.5 feet below the streambed to allow for aquatic life passage.

In addition, Best Management Practices will be followed as outlined in "NCDOT's Best Management Practices for Construction and Maintenance Activities".

Compensatory Mitigation:
The NCDOT proposes no mitigation for the 76 feet of minimal impacts associated with this project. There are no HQW, ORW, or Water Supplies and 149 feet of bank stabilization does not result in loss of waters.

REGULATORY APPROVALS

Section 404 Permit:
It is anticipated that the dewatering activities will be authorized under Section 404 Nationwide Nationwide Permits 13 and 33 (Bank Stabilization and Temporary Construction Access and Dewatering). We are, therefore, requesting the issuance of Nationwide Permits 13 and 33. All other aspects of this project are being processed by the Federal Highway Administration as a "Programmatic Categorical Exclusion". The NCDOT requests that these activities be authorized by a Nationwide Permit 23.

Section 401 Permit:
We anticipate 401 General Certification numbers 3701, 3688 and 3689 will apply to this project. We are hereby requesting a water quality certification from DWQ. We are submitting five copies of this application to the North Carolina Department of Environmental and Natural Resources, Division of Water Quality, for their review and approval.

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 Jeremy T. Leamer at jtleamer@dot.state.nc.us or (919) 715-7726.

Sincerely,

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

W/attachment
Mr. Brian Wrenn, NCDWQ (5 Copies)
Ms. Marella Buncick, USFWS
Ms. Marla Chambers, NCWRC

W/o attachment (see website for attachments)
Dr. David Chang, P.E., Hydraulics
Mr. Victor Barbour, P.E., Project Services Unit
Mr. Greg Perfetti, P.E., Structure Design
Mr. Mark Staley, Roadside Environmental
Mr. J.J. Swain, P.E., Div. 13 Division Engineer
Mr. Roger Bryan, Div. 13 DEO
Mr. Jay Bennett, P.E., Roadway Design
Mr. Majed Alghandour, P.E., Program.
Mr. Art McMillan, P.E., Highway Design
Mr. Scott McLendon, USACE, Wilmington
Ms. Beth Harmon, EEP
Mr. Todd Jones, NCDOT External Audit Branch
Ms. Natalie Lockheart, 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:
   - x Section 404 Permit
   - ☐ Section 10 Permit
   - x 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: 13, 23, 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: NC DOT - PDEA
   1598 Mail Service Center, Raleigh, NC 27699-1548
   Telephone Number: (919) 733-3141 Fax Number: (919) 733-9794
   E-mail Address: _____

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: N/A

2. T.I.P. Project Number or State Project Number (NCDOT Only): **B-4631**

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

4. Location
   County: Rutherford Nearest Town: Rutherfordton
   Subdivision name (include phase/lot number):
   Directions to site (include road numbers/names, landmarks, etc.):
   Bridge # 526 On SR 1347 over West Branch Creek.

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.)
   One water body: West Branch Creek
   Decimal Degrees (6 digits minimum): 352433 °N 0820129 °W

6. Property size (acres): N/A

7. Name of nearest receiving body of water: Mountain Creek

8. River Basin: Broad
   (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: Bridge No. 526 spans West Branch Creek along SR 1347 in Rutherford County near the town of Rutherfordton. The bridge was constructed in 1970. The

posted speed limit is 35 mph. General land use in the vicinity is rural residential and agricultural land.

10. Describe the overall project in detail, including the type of equipment to be used: Bridge removal project involving heavy construction equipment and manual labor to install a 3-barrel concrete box culvert.

11. Explain the purpose of the proposed work: Public transportation improvement project.

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. No prior permits have been issued/ withdrawn for this project.

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.
No.

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 225 linear feet of permanent surface water impacts associated with the culvert construction and bank stabilization. Temporary impacts for stream channel dewatering will result in 34 linear feet of surface water impacts.

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 Designation (indicate on map)	Stream Name	Type of Impact	Perennial or Intermittent?	Average Stream Width Before Impact	Impact Length (linear feet)	Area of Impact (acres)
S	West Branch Creek	permanent	perennial	9'	225	0.05
TS	West Branch Creek	temporary	perennial	9'	34	0.01
Total Stream Impact (by length and acreage)					259	0.06

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)
N/A				
Total Open Water Impact (acres)				

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

Stream Impact (acres):	0.08
Wetland Impact (acres):	N/A
Open Water Impact (acres):	N/A
Total Impact to Waters of the U.S. (acres) Permanent	0.05
Total Impact to Waters of the U.S. (acres) Temporary	0.01
Total Stream Impact (linear feet) Permanent:	225
Total Stream Impact (linear feet) Temporary:	34

7. Isolated Waters
Do any isolated waters exist on the property? ☐ Yes x 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. Replacement with off-site detour was chosen due to the necessary re-alignment of the approaching roadways which would increase the design speed from 35 mph to 60 mph. The "do-nothing" alternative was not considered due to it eliminating the use of SR 1347 and closing the bridge. Impacts will be minimized by constructing a 3-barrel concrete reinforced box culvert and surficial bridge runoff will not be directed into Garden Creek via deck drains.

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 (see DWQ website for most current version.).

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.

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://www.nceep.net/pages/inlieureplace.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 x 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 x - A Categorical Exclusion dated January 2007 has been submitted. 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 x 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 x

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. Impervious acreage is not expected to significantly increase as a result of this bridge replacement project. Deck drains will not be used.

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 x

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

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 x

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:_____

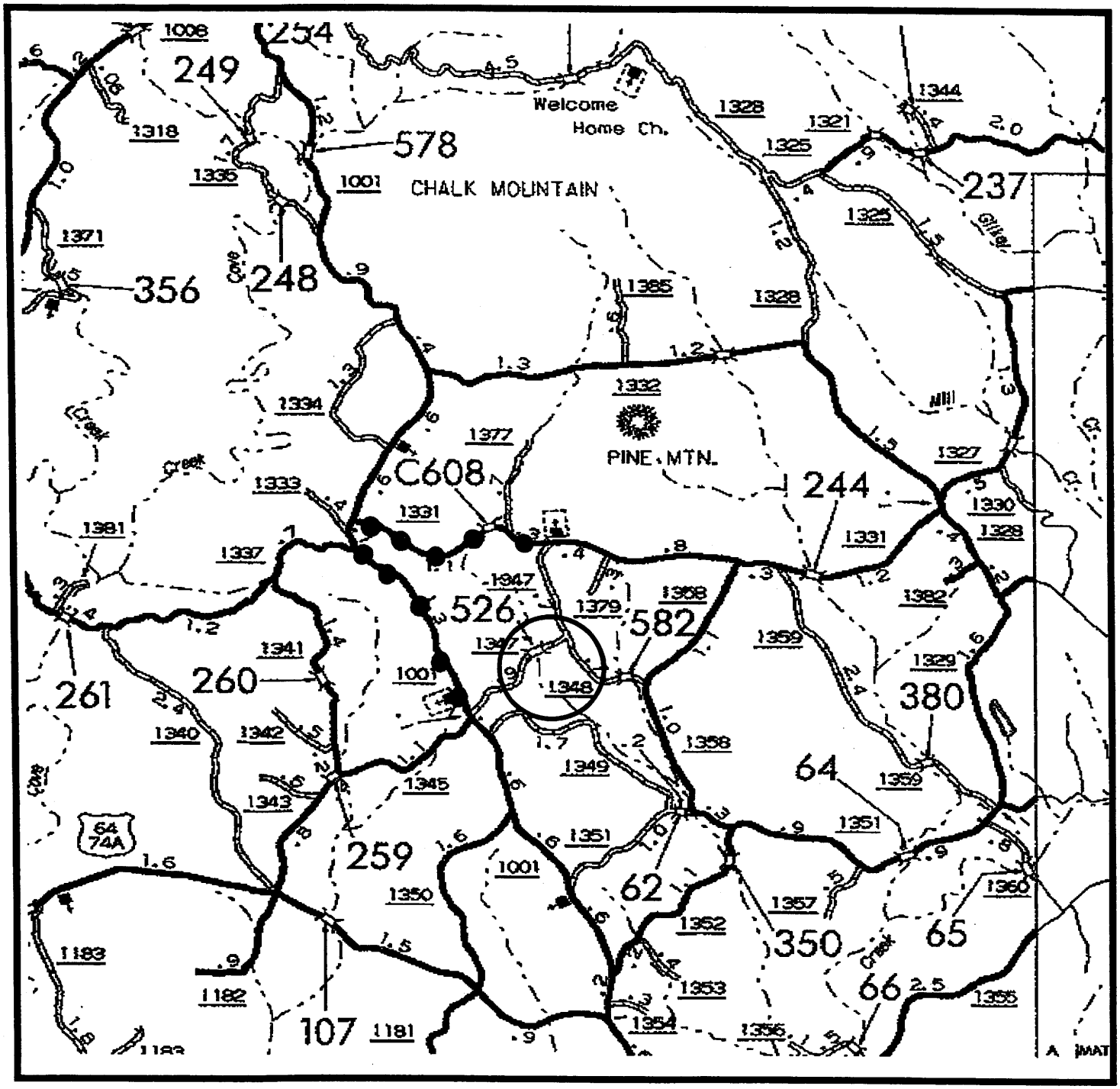
XV. Other Circumstances (Optional):

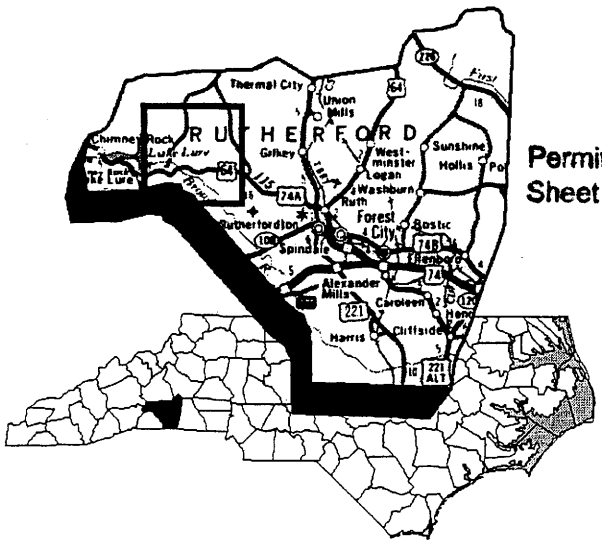
It is the applicant's responsibility to submit the application sufficiently in advance of desired construction dates to allow processing time for these permits. However, an applicant may choose to list constraints associated with construction or sequencing that may impose limits on work schedules (e.g.,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

E L Lusk 3.5.08

Applicant/Agent's Signature **Date**

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





Permit Drawing Sheet 1 of 7

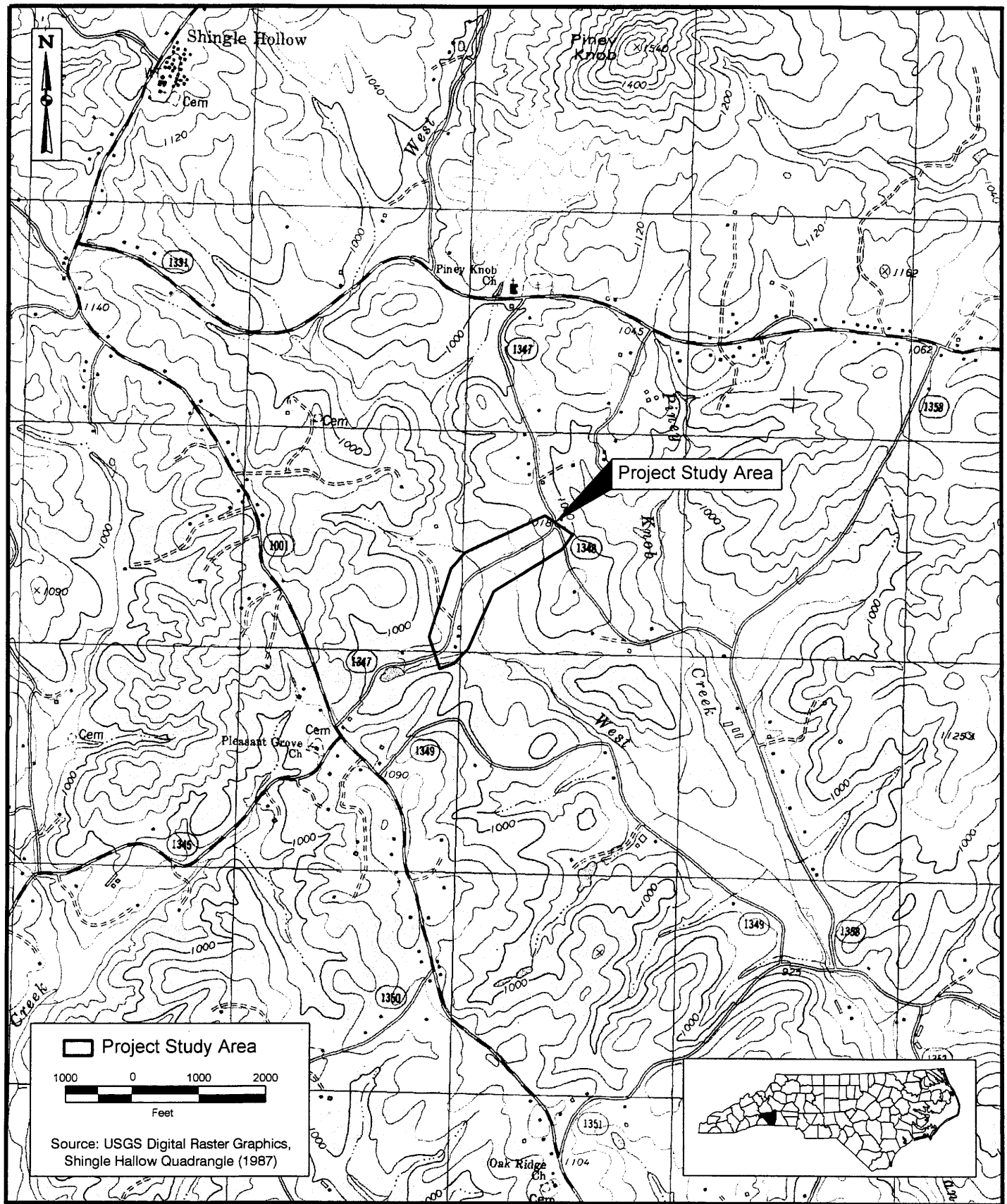
STUDIED DETOUR ROUTE

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
PROJECT DEVELOPMENT & ENVIRONMENTAL ANALYSIS BRANCH

RUTHERFORD COUNTY
REPLACE BRIDGE NO. 526 ON SR 1347
OVER A CREEK
B-4631

Figure 1

ER02026.03/location.dwg



Environmental Services, Inc.

Project Location
Bridge No. 526 on SR 1347
over West Branch Mountain Creek
Rutherford County, North Carolina
T.I.P. B-4631

Figure:	1
Project:	ER02026.03
Date:	August 2004

Permit Drawing
Sheet 2 of 7

Adjacent Property Owners

Owner/ Business	Address
Dorothy Carroll & Harriett Sherill	265 Parris Rd. Rutherfordton, NC 28139
David R. & Vicki O. Haynes	346 Parris Rd. Rutherfordton, NC 28139
Patsy McKeown & Alice Jenkins	P.O. Box 1305 Rutherfordton, NC 28139
William Roy Haynes	514 Parris Rd. Rutherfordton, NC 28139

Permit Drawing
Sheet 3 of 7

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

Rutherford County
PROJ - 33805.1.1 (B-4631)

SHEET 11/28/2006

WETLAND PERMIT IMPACT SUMMARY

			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	-L- 16+85.64	3 @ 12'x10' RCBC						0.05	0.01	76	34	
		Bank stabilization								149		
TOTALS:								0.05	0.01	225	34	

Permit Drawing
Sheet 4 **of** 7

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

RUTHERFORD COUNTY
WBS - 33805.1.1 (B-4631)

SHEET 2/4/2008

ATN Revised 3/31/05

PERMIT DRWGS SHT OF

PROJECT REFERENCE NO.	SHEET NO.
B-4631	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

50 25 0 50 100ft
SCALE

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

REVISIONS

8/17/9

NAD 83

15+00

20+00

1 DOROTHY CARROLL & HARRIETT SHERILL

2 PATSY McKEOWN ALICE JENKINS

3 DAVID R. HAYNES VICKI O. HAYNES

4 WILLIAM ROY HAYNES

WILLIAM ROY HAYNES & JUSTINE FLACK HAYNES

Rip Rap at Embankment See Detail 'B'

Rip Rap at Embankment See Detail 'E'

Channel Change See Detail 'A'

Cut Ditch See Detail 'E'

Lateral 'V' Ditch See Detail 'C'

Lateral 'V' Ditch w/ Rip Rap See Detail 'D'

Use Class B Rip-Rap in ditch transitions

CLASS I 31 TONS

CLASS I 18 TONS

CLASS I 5 TONS

CLASS I 7 TONS

CLASS I 19 TONS

CLASS I 14 TONS

TDE

GRAU 350 REMOVE

INV= 933.59'

INV= 931.25'

INV= 932.45'

INV= 964.29'

EXISTING R/W

SR 1108 (Old Pumpkin Center Road)

SR 1108 (Pumpkin Center Road)

WEST BRANCH MOUNTAIN CREEK

HTR

WOOD POSTS

DETAIL A
Stream Detail Upstream and Downstream of Culvert
(Not to Scale)

38' at culvert entrance and outlet. Tie to existing width where shown.

2:1 Class I Rip Rap (typical) 1' high bench 12' base 2:1 3'

DDE = 395 cyds

DETAIL B
RIP RAP AT EMBANKMENT
(Not to Scale)

Ditch Grade 3' 1.5' 1'

Type of Liner= Class I Rip-Rap

FROM STA. 16+25 TO STA. 16+47 RT.
FROM STA. 16+71 TO STA. 16+92 LT.
FROM STA. 16+86 TO STA. 16+96 RT.
FROM STA. 17+20 TO STA. 17+31 LT.

DETAIL C
LATERAL 'V' DITCH
(Not to Scale)

Natural Ground 2' D 2:1 b F/F Ft. Fill Slope

Min. D= 1 Ft.
b= 3 Ft.

FROM STA. 15+00 TO STA. 16+35 RT.
FROM STA. 16+93 TO STA. 18+50 RT.
FROM STA. 17+30 TO STA. 18+21 LT.

DETAIL D
LATERAL 'V' DITCH
(Not to Scale)

Natural Ground 2' D 2:1 b F/F Ft. Fill Slope

Filter Fabric

Min. D= 1 Ft.
Max. d= 2 Ft.
b= 3 Ft.

Type of Liner= Class B Rip-Rap

FROM STA. 18+56 TO STA. 21+00 LT.
FROM STA. 18+71 TO STA. 20+50 RT.

DETAIL E
SPECIAL CUT DITCH
(Not to Scale)

Natural Ground 2:1 D Ad or Flatter Front Ditch Slope

Min. D= 1 Ft.

FROM STA. 12+00 TO STA. 15+00 RT.
FROM STA. 12+50 TO STA. 14+00 LT.

Permit Drawing
Sheet 5 of 7

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$USER$ at XYZ

8/17/94

REVISIONS

50 25 0 50 100ft

SCALE

ENLARGEMENT

PERMIT DRWGS SHT OF

PROJECT REFERENCE NO.	SHEET NO.
B-4631	
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

15+00

20+00

NAD 83

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

WEST BRANCH MOUNTAIN CREEK

Rip Rap at Embankment See Detail 'B'

Channel Change See Detail 'A'

CLASS I 31 TONS

Lateral 'V' Ditch See Detail 'C'

TDE

CLASS I 21 TONS

CLASS I 15 TONS

GRAU 350

15" RCP

REMOVE

CLASS I 7 TONS

GRAU 350 REMOVE

16" SRCP

NAIL

SEAT

15"

55' R/W

50' R/W

Cut Ditch See Detail 'E'

Lateral 'V' Ditch See Detail 'C'

CLASS I 7 TONS

CLASS I 5 TONS

WATER TANK

CLASS I 19 TONS

51.17'

CLASS I 14 TONS

Rip Rap at Embankment See Detail 'B'

TDE

Lateral 'V' Ditch See Detail 'C'

CMP

8' SOIL

SR-1347 PARRIS ROAD 18' ASPHALT

Lateral 'V' Ditch w/ Rip Rap See Detail 'D'

Use C Rip Rc ditch

Lateral 'V' Ditch w/Rip Rap See Detail 'D'

Channel Change See Detail 'A'

3

4

Permit Drawing Sheet ___ of ___

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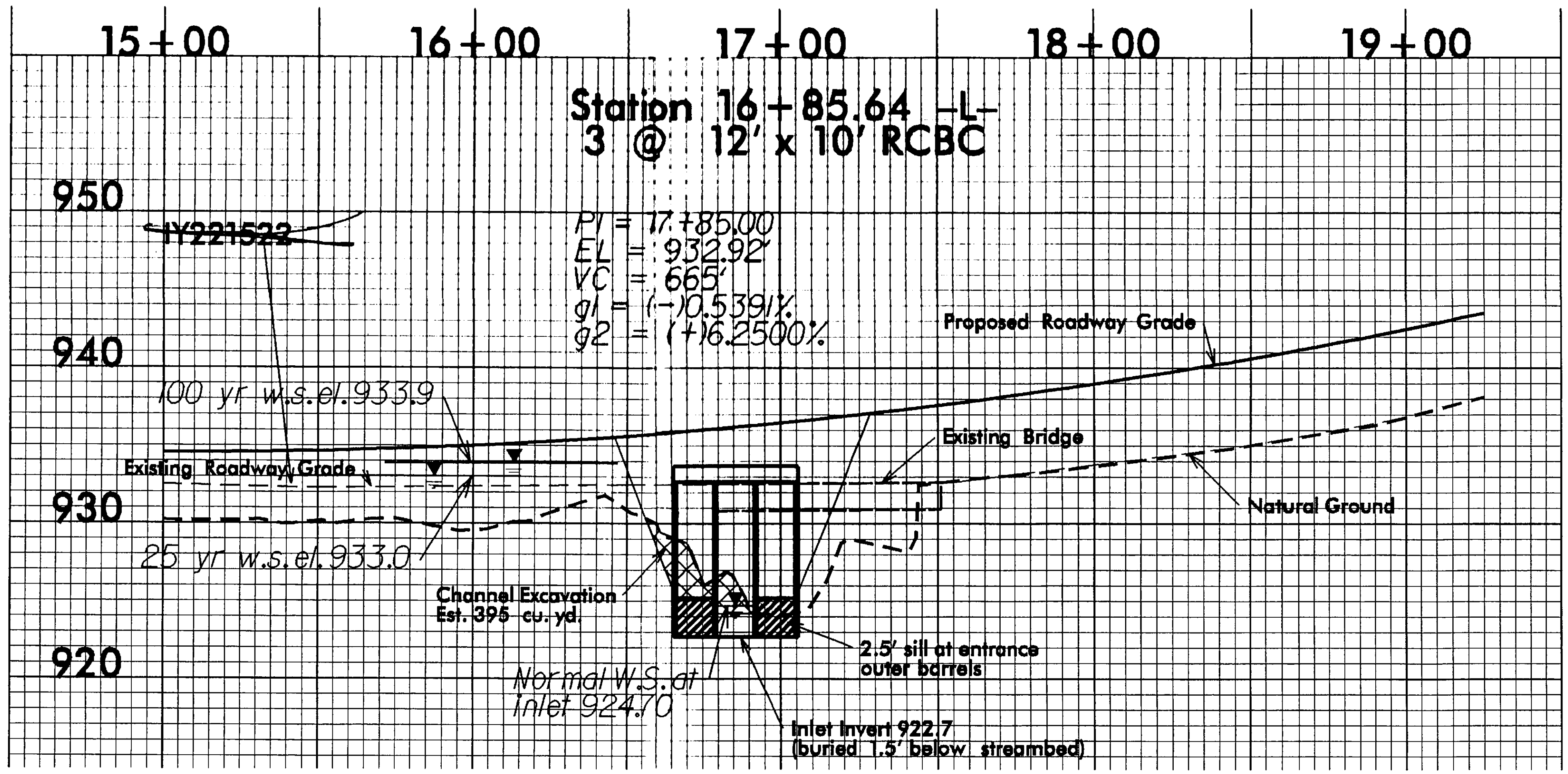
Chris Smith

PROJECT REFERENCE NO.	SHEET NO.
B-4631	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

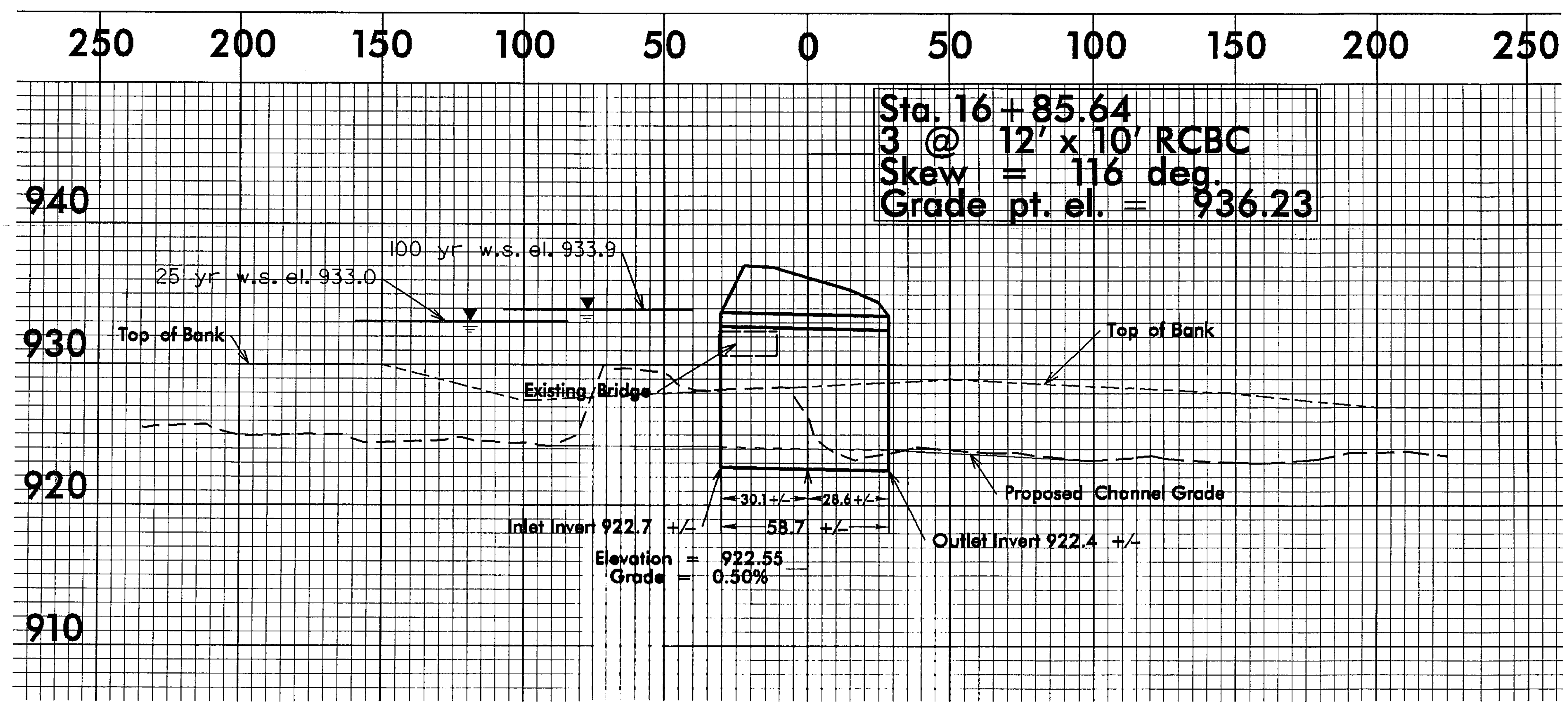
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRWGS SHT OF

-L- PROFILE



CULVERT X-SECTION



Permit Drawing
Sheet 7 of 7

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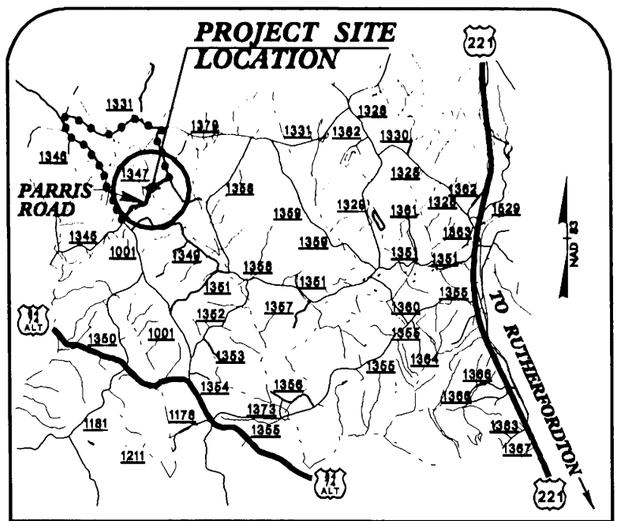
09/08/99

TIP PROJECT: B-4631

CONTRACT: C201929

See Sheet 1A for Index of Sheets
See Sheet 1B for Conventional Symbols



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

RUTHERFORD COUNTY

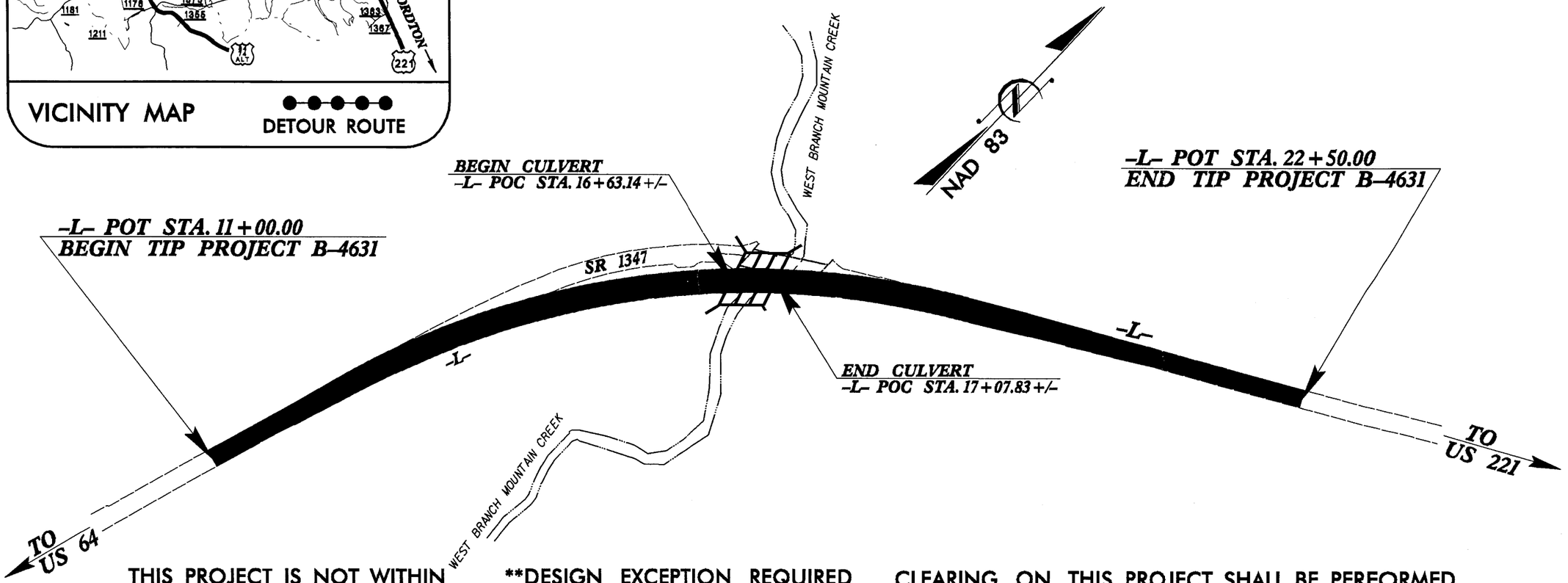
LOCATION: BRIDGE NO. 526 ON SR 1347 (PARRIS ROAD) OVER WEST BRANCH MOUNTAIN CREEK.

TYPE OF WORK: GRADING, DRAINAGE, PAVEMENT, AND CULVERT

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4631	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
33805.1.1	BRZ-1347(3)	P.E.
33805.2.1	BRZ-1347(3)	ROW

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

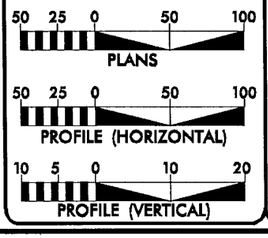


THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES

**DESIGN EXCEPTION REQUIRED FOR DESIGN SPEED

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD II .

GRAPHIC SCALES



DESIGN DATA

ADT 2007 = 330
ADT 2030 = 500
DHV = 10 %
D = 60 %
T = 3 % *
** V = 50 MPH
FUNC. CLASS = LOCAL
* TTST 1% DUAL 2%

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4631 = 0.210 MI

LENGTH STRUCTURE TIP PROJECT B-4631 = 0.008 MI

TOTAL LENGTH TIP PROJECT B-4631 = 0.218 MI

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

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: SEPTEMBER 12, 2007

LETTING DATE: SEPTEMBER 16, 2008

ROGER D. THOMAS, PE
PROJECT ENGINEER

BRIAN P. ROBINSON
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

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$$$$USERNAME$$$$

3/15/06

PROJECT REFERENCE NO.	SHEET NO.
B-4631	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
- 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

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 — T
- 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 — TU/L
- 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-4631	2

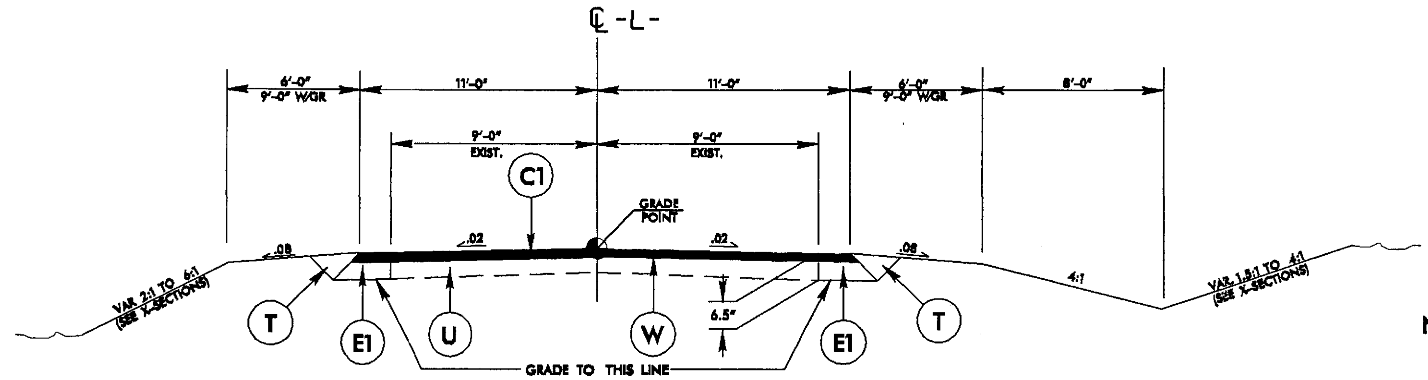
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PAVEMENT SCHEDULE

C1	PROP. APPROX. 2.5" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1.5" IN DEPTH.
E1	PROP. APPROX. 4.0" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5.5" IN DEPTH.
J1	PROPOSED 8" AGGREGATE BASE COURSE.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL)

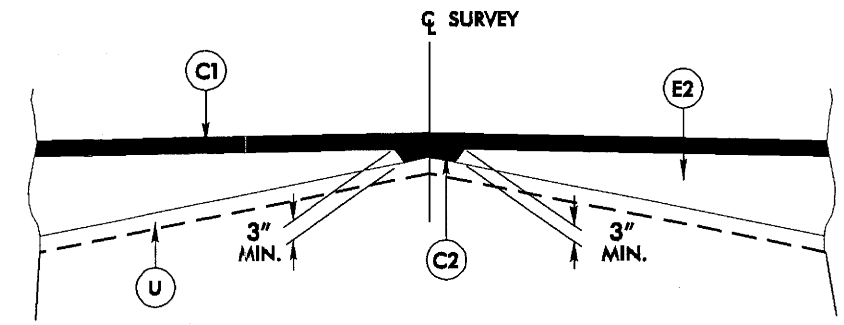
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



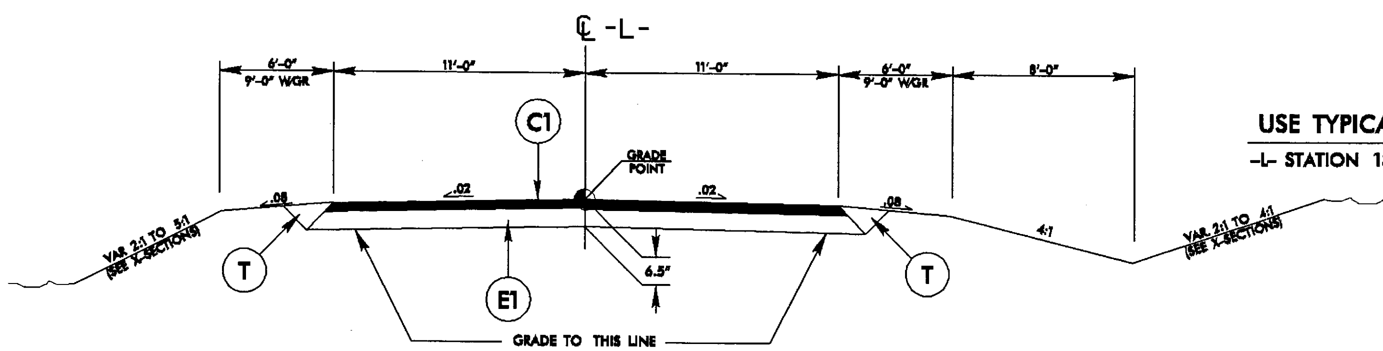
TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1
-L- STATION 11+50.00 TO 13+00.00
-L- STATION 21+50.00 TO 22+00.00

NOTE: OVERLAY EXISTING PAVEMENT (C1)
-L- STATION 11+00.00 TO 11+50.00
-L- STATION 22+00.00 TO 22+50.00

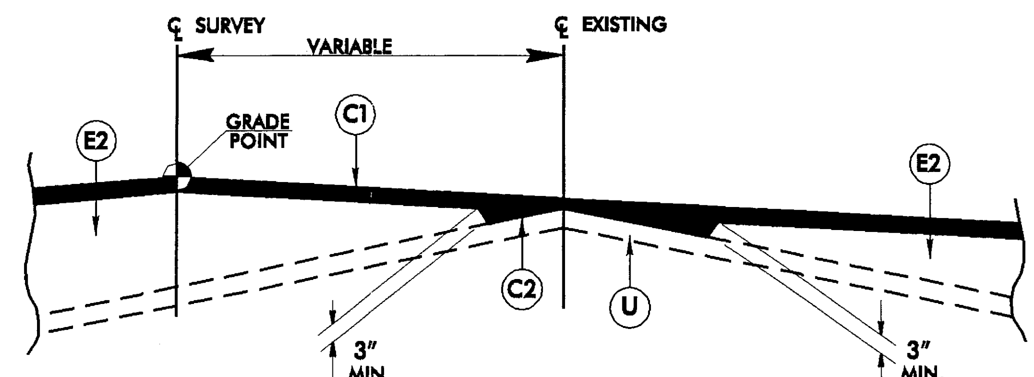


DETAILS SHOWING METHOD OF WEDGING

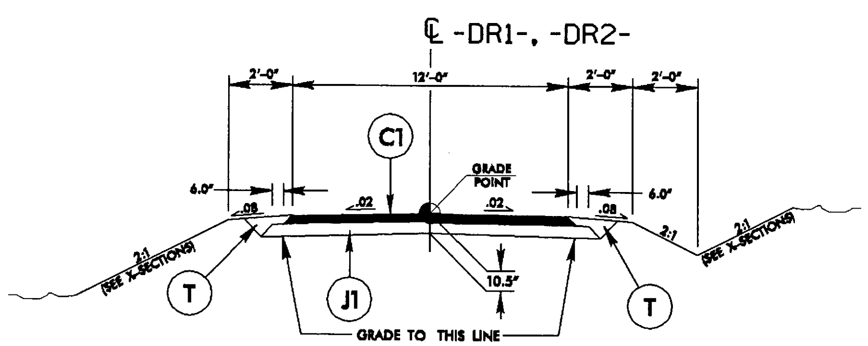


TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2
-L- STATION 13+00.00 TO 21+50.00



DETAILS SHOWING METHOD OF WEDGING



TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3
-DR1- STATION 10+00.00 TO 11+00.75
-DR2- STATION 10+13.00 TO 11+05.00

PROJECT REFERENCE NO.	SHEET NO.
B-4631	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

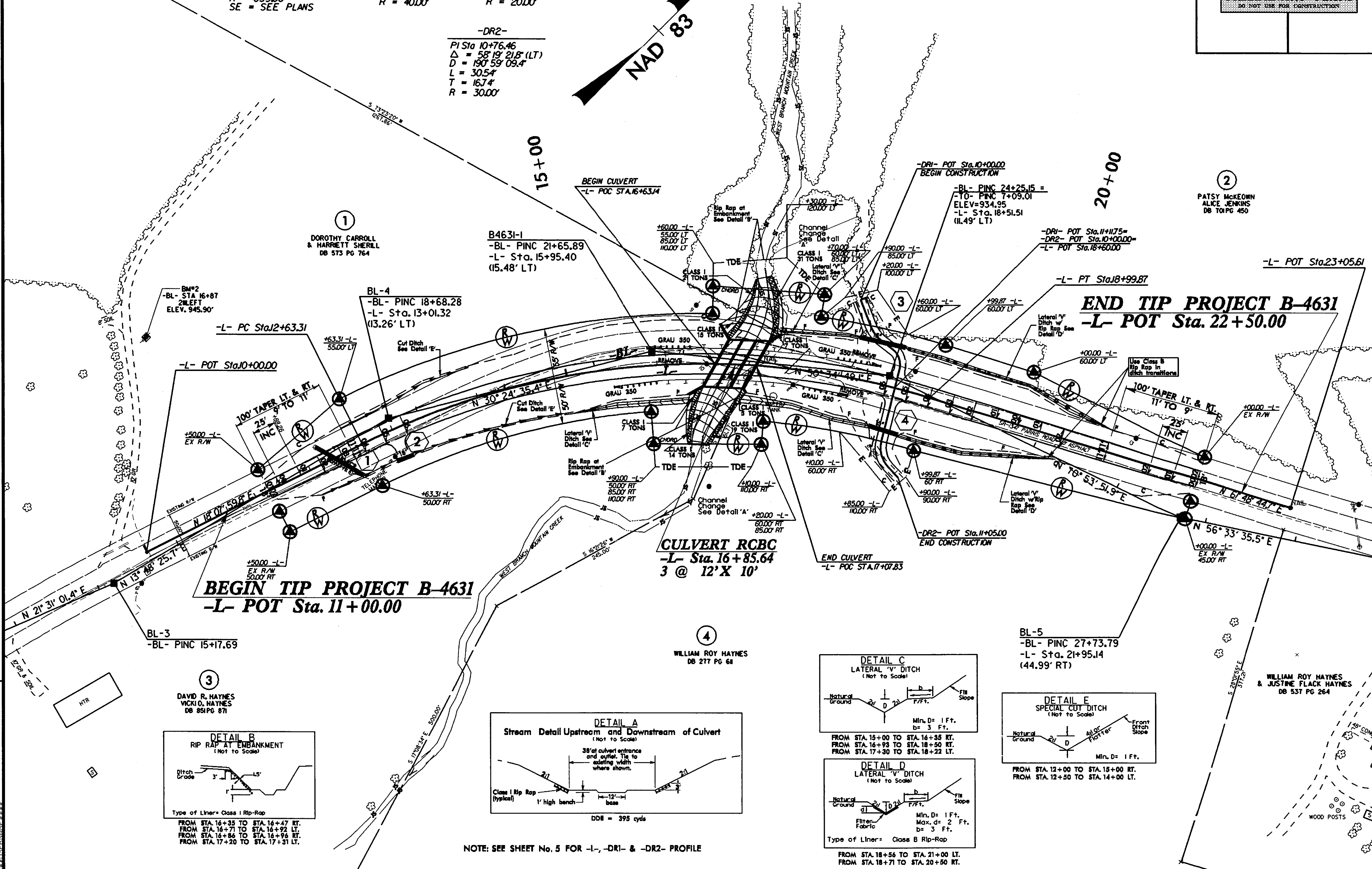
DESIGN EXCEPTION REQUIRED FOR DESIGN SPEED

-L-
PI Sta 15+97.96
Δ = 43° 40' 44.9" (RT)
D = 6° 51' 42.4"
L = 636.56'
T = 334.65'
R = 835.00'
SE = SEE PLANS

-DR1-
PI Sta 10+40.97
Δ = 32° 10' 54.3" (LT)
D = 143° 14' 22.0"
L = 22.47'
T = 11.54'
R = 40.00'

PI Sta 10+80.01
Δ = 67° 02' 53.4" (RT)
D = 286° 28' 44.0"
L = 23.40'
T = 13.25'
R = 20.00'

-DR2-
PI Sta 10+76.46
Δ = 58° 19' 21.8" (LT)
D = 190° 59' 09.4"
L = 30.54'
T = 16.74'
R = 30.00'



NAD 83
15+00
20+00
BEGIN TIP PROJECT B-4631
-L- POT Sta. 11+00.00
END TIP PROJECT B-4631
-L- POT Sta. 22+50.00
CULVERT RCBC
-L- Sta. 16+85.64
3 @ 12' X 10'
BEGIN CULVERT
-L- POC STA.16+63.14
END CULVERT
-L- POC STA.17+07.83
B4631-1
-BL- PINC 21+65.89
-L- Sta. 15+95.40
(15.48' LT)
BL-4
-BL- PINC 18+68.28
-L- Sta. 13+01.32
(13.26' LT)
BL-3
-BL- PINC 15+17.69
BL-5
-BL- PINC 27+73.79
-L- Sta. 21+95.14
(44.99' RT)
-DR1- POT Sta.10+00.00
BEGIN CONSTRUCTION
-BL- PINC 24+25.15 =
-TO- PINC 7+09.01
ELEV=934.95
-L- Sta. 18+51.51
(11.49' LT)
-DR1- POT Sta.11+11.75=
-DR2- POT Sta.10+00.00=
-L- POT Sta.18+60.00
-L- PT Sta.18+99.87
-L- POT Sta.23+05.61
-L- PC Sta.12+63.31
-L- POT Sta.10+00.00
-DR2- POT Sta.11+05.00
END CONSTRUCTION
BM#2
-BL- STA 16+87
21' LEFT
ELEV. 945.90'
N 21° 31' 01.4" E
N 13° 48' 25.7" E
N 18° 07' 59.8" E
N 30° 24' 35.4" E
N 50° 34' 49.1" E
N 78° 53' 51.9" E
N 61° 48' 44.7" E
N 56° 33' 35.5" E
100' TAPER LT. & RT. 9' TO 11'
100' TAPER LT. & RT. 11' TO 9'
DOROTHY CARROLL
& HARRIETT SHERILL
DB 573 PG 764
PATSY McKEOWN
ALICE JENKINS
DB 701 PG 450
DAVID R. HAYNES
VICKI O. HAYNES
DB 851 PG 871
WILLIAM ROY HAYNES
DB 277 PG 611
WILLIAM ROY HAYNES
& JUSTINE FLACK HAYNES
DB 537 PG 264
WEST BRANCH MOUNTAIN CREEK
SR-1347 PARRIS ROAD
DETAIL A
Stream Detail Upstream and Downstream of Culvert
(Not to Scale)
38' at culvert entrance and outlet. Tie to existing width where shown.
Class I Rip Rap (typical)
1' high bench
12' base
DDE = 395 cyds
DETAIL B
RIP RAP AT EMBANKMENT
(Not to Scale)
Type of Liner= Class I Rip-Rap
FROM STA. 16+35 TO STA. 16+47 RT.
FROM STA. 16+71 TO STA. 16+92 LT.
FROM STA. 16+86 TO STA. 16+96 RT.
FROM STA. 17+20 TO STA. 17+31 LT.
DETAIL C
LATERAL 'V' DITCH
(Not to Scale)
Min. D= 1 Ft.
b= 3 Ft.
FROM STA. 15+00 TO STA. 16+35 RT.
FROM STA. 16+93 TO STA. 18+50 RT.
FROM STA. 17+30 TO STA. 18+22 LT.
DETAIL D
LATERAL 'V' DITCH
(Not to Scale)
Min. D= 1 Ft.
Max. d= 2 Ft.
b= 3 Ft.
Type of Liner= Class B Rip-Rap
FROM STA. 18+56 TO STA. 21+00 LT.
FROM STA. 18+71 TO STA. 20+50 RT.
DETAIL E
SPECIAL CUT DITCH
(Not to Scale)
Min. D= 1 Ft.
FROM STA. 12+00 TO STA. 15+00 RT.
FROM STA. 12+50 TO STA. 14+00 LT.

NOTE: SEE SHEET No. 5 FOR -L-, -DR1- & -DR2- PROFILE

REVISIONS

8/17/99

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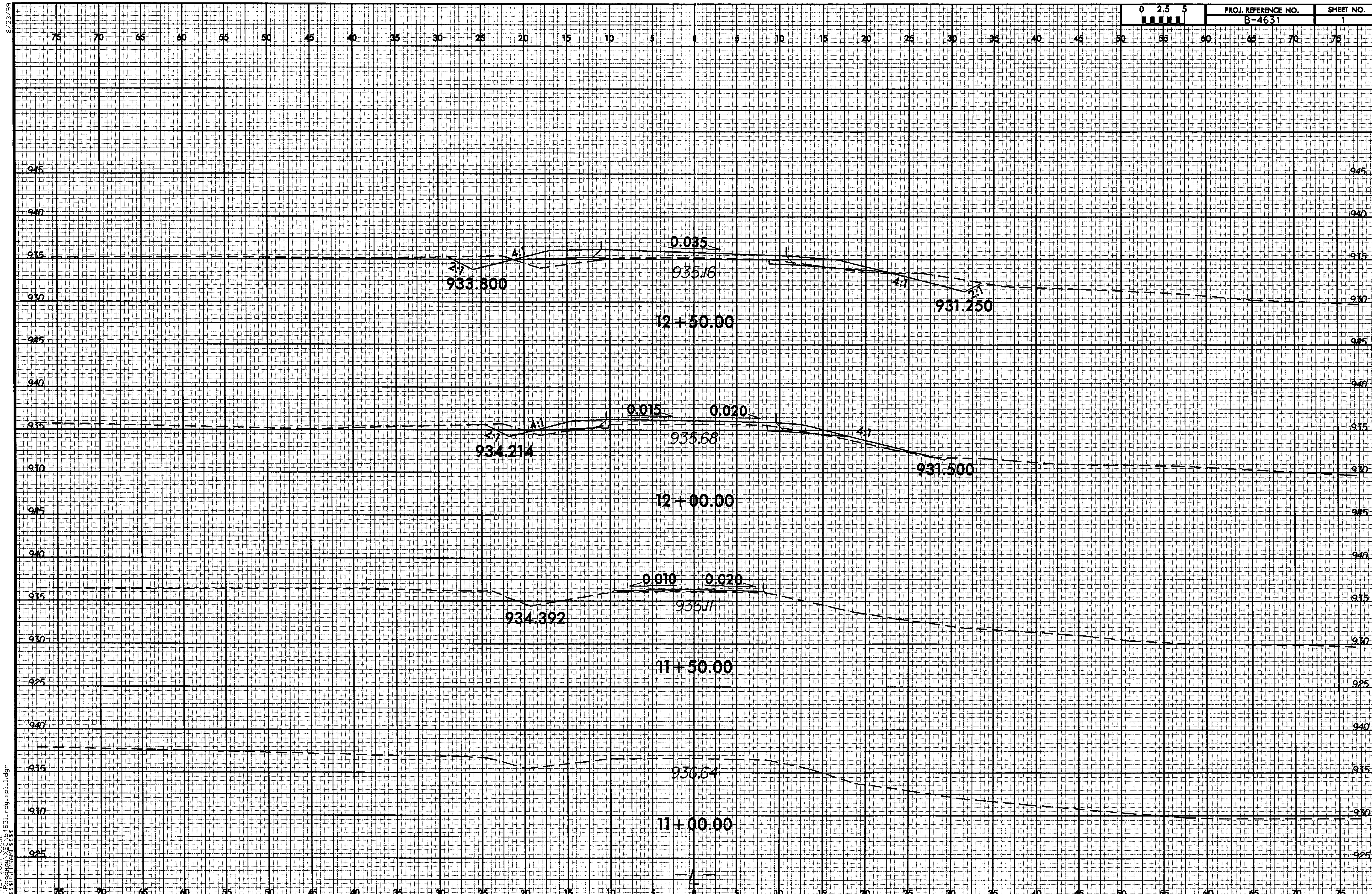
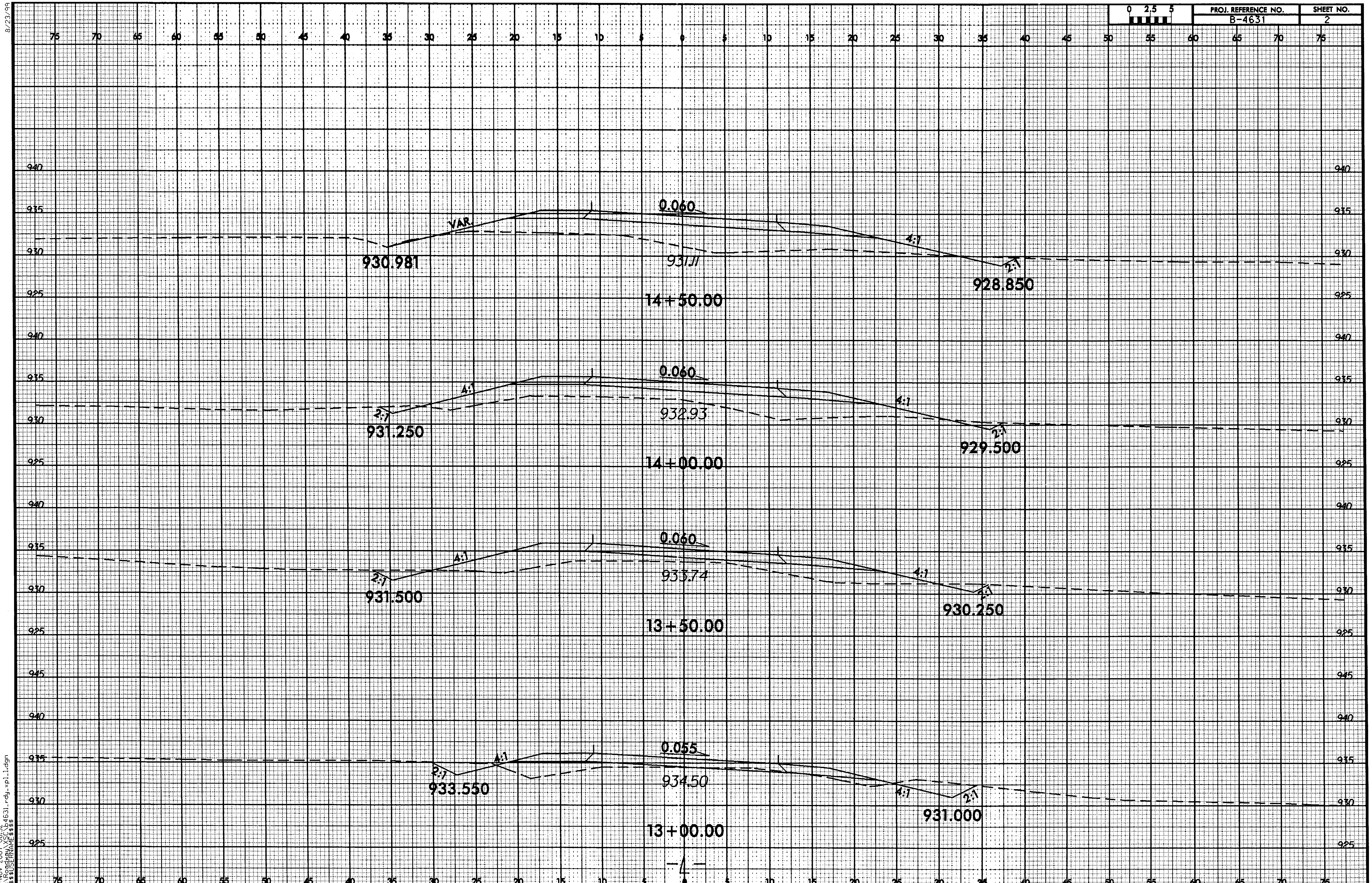


0 2.5 5
PROJ. REFERENCE NO.
B-4631
SHEET NO.
1
8/23/99
0.035
4:1
2:1
933.800
935.16
4:1
2:1
931.250
12+50.00
0.015
0.020
4:1
2:1
934.214
935.68
4:1
931.500
12+00.00
0.010
0.020
934.392
936.11
11+50.00
936.64
11+00.00
-L-

PROJ. REFERENCE NO.	SHEET NO.
B-4631	2



8/23/99

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8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4631	3

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

940 935 930 925 920

0.060

VAR.

2:1

930.90

16+50.00

0.060

VAR.

929.821

3:1

2:1 2:1

929.60

927.904

16+00.00

0.060

VAR.

930.308

3:1

2:1 2:1

930.17

928.052

15+50.00

0.060

VAR.

930.485

4:1

2:1

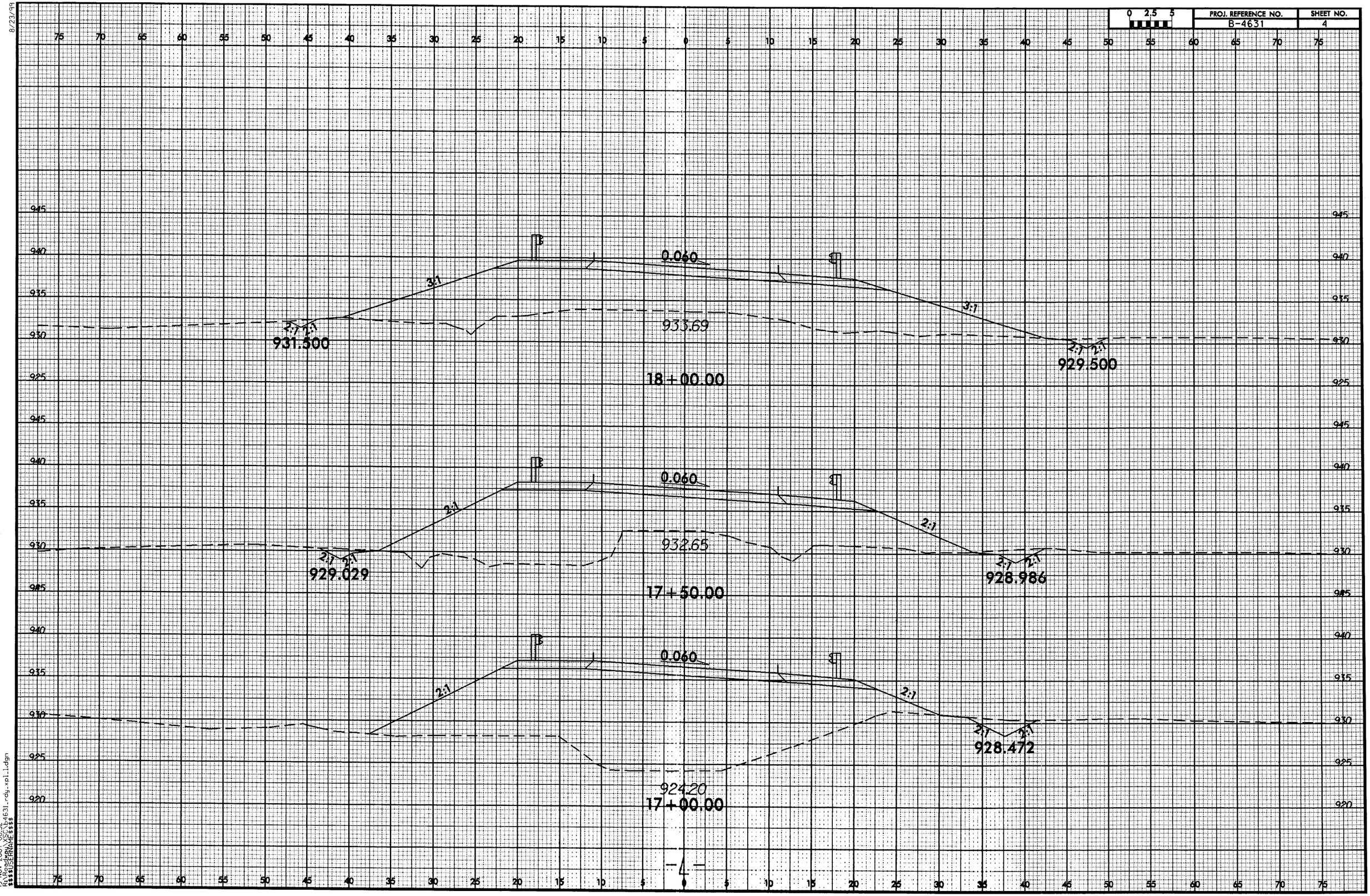
930.26

928.200

15+00.00

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4631	4



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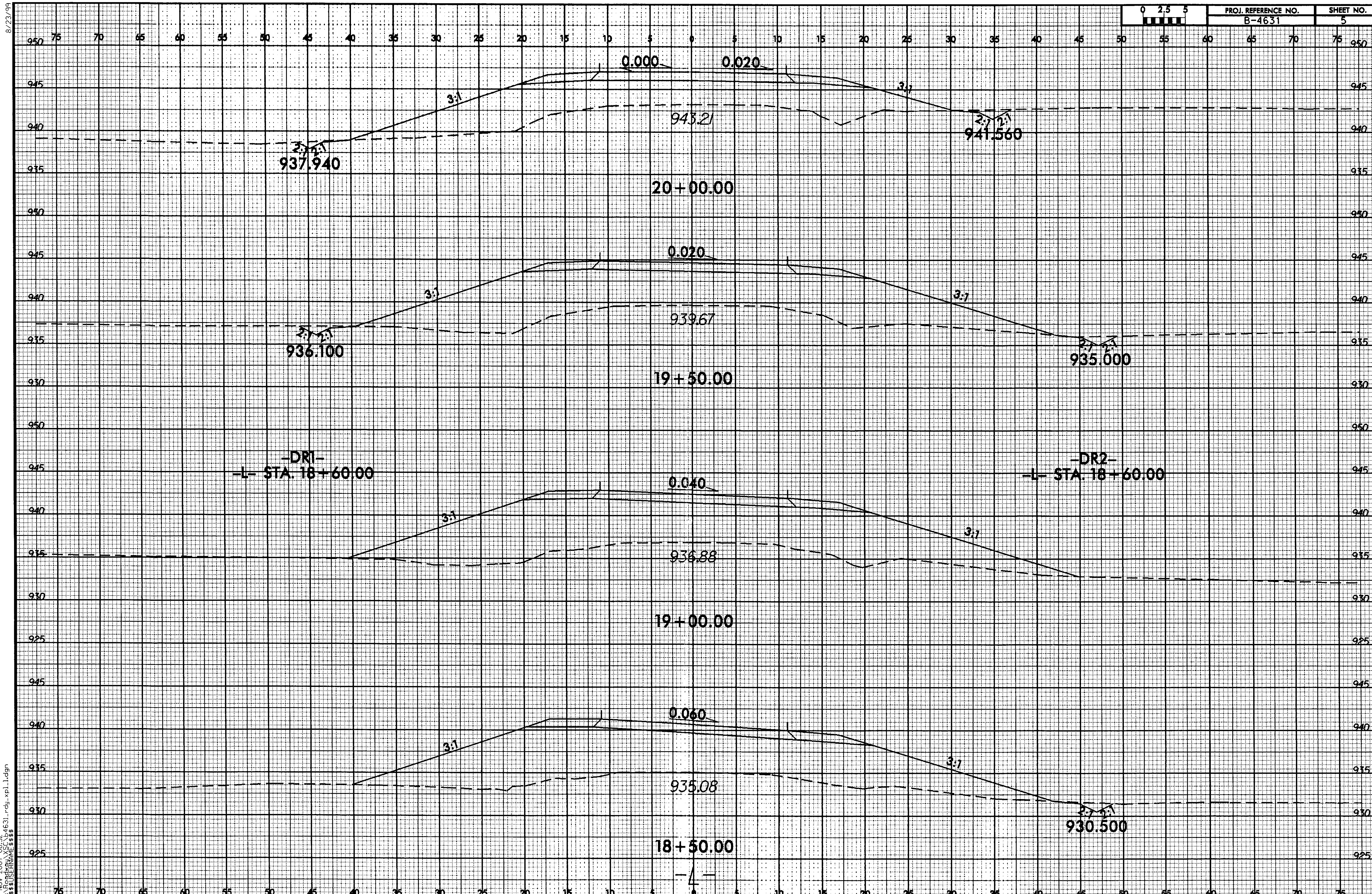
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B-4631
SHEET NO.
5
0 2.5 5
8/23/99
0.000
0.020
943.21
937.940
941.560
20+00.00
0.020
939.67
936.100
935.000
19+50.00
-DR1-
-L- STA. 18+60.00
-DR2-
-L- STA. 18+60.00
0.040
936.88
19+00.00
0.060
935.08
930.500
18+50.00
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PROJECT REFERENCE NO.	SHEET NO.
B-4631	5

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DESIGN EXCEPTION REQUIRED FOR DESIGN SPEED

CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 1150 CFS
DESIGN FREQUENCY	= 25 YRS
DESIGN HW ELEVATION	= 933.0 FT
BASE DISCHARGE	= 1700 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 933.9 FT
OVERTOPPING DISCHARGE	= 2600 CFS
OVERTOPPING FREQUENCY	= 500 YRS
OVERTOPPING ELEVATION	= 935.2 FT

5/28/99

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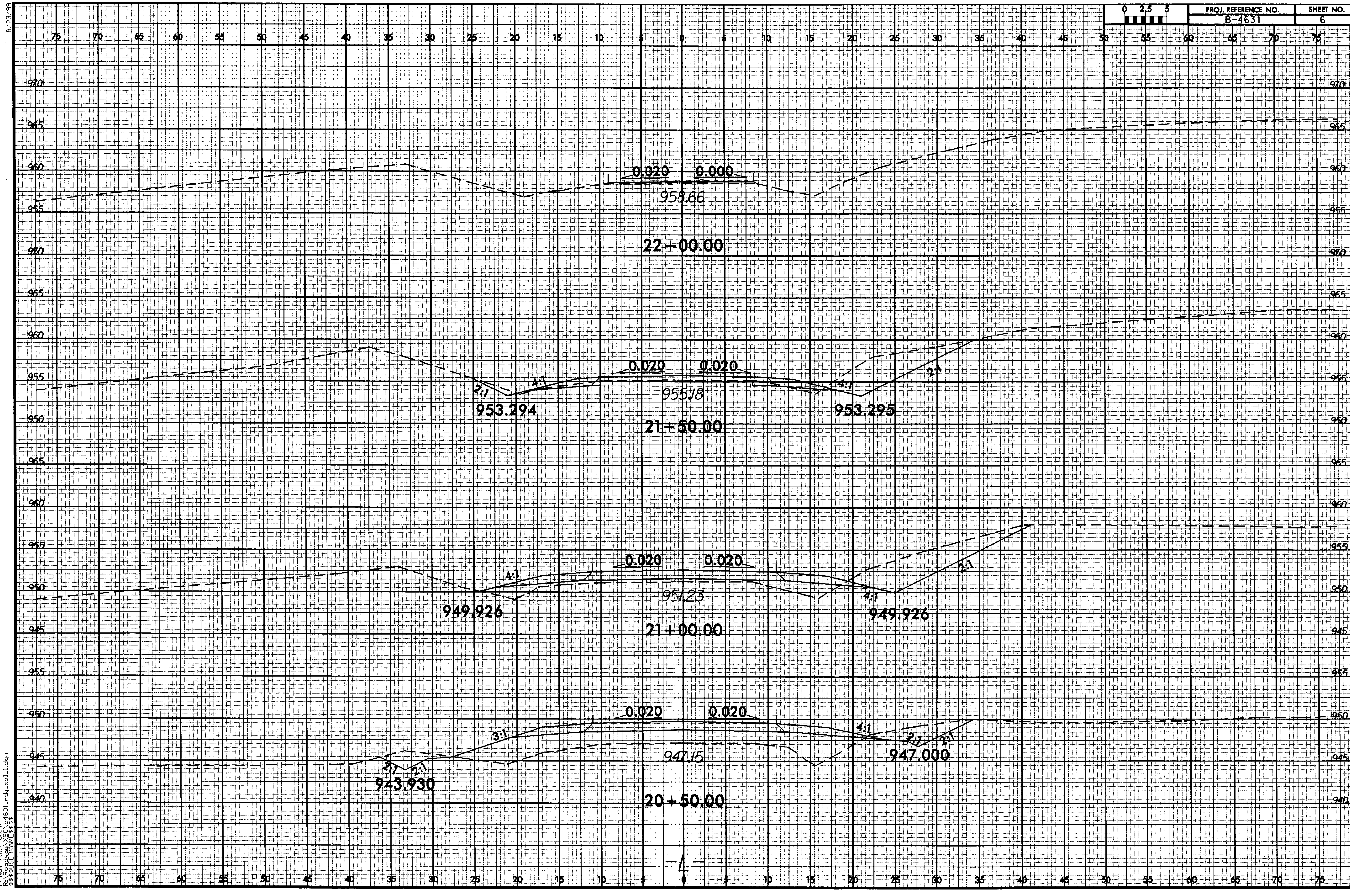

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8/23/99

0 2.5 5

PROJ. REFERENCE NO.	SHEET NO.
B-4631	7

961.61

22+50.00

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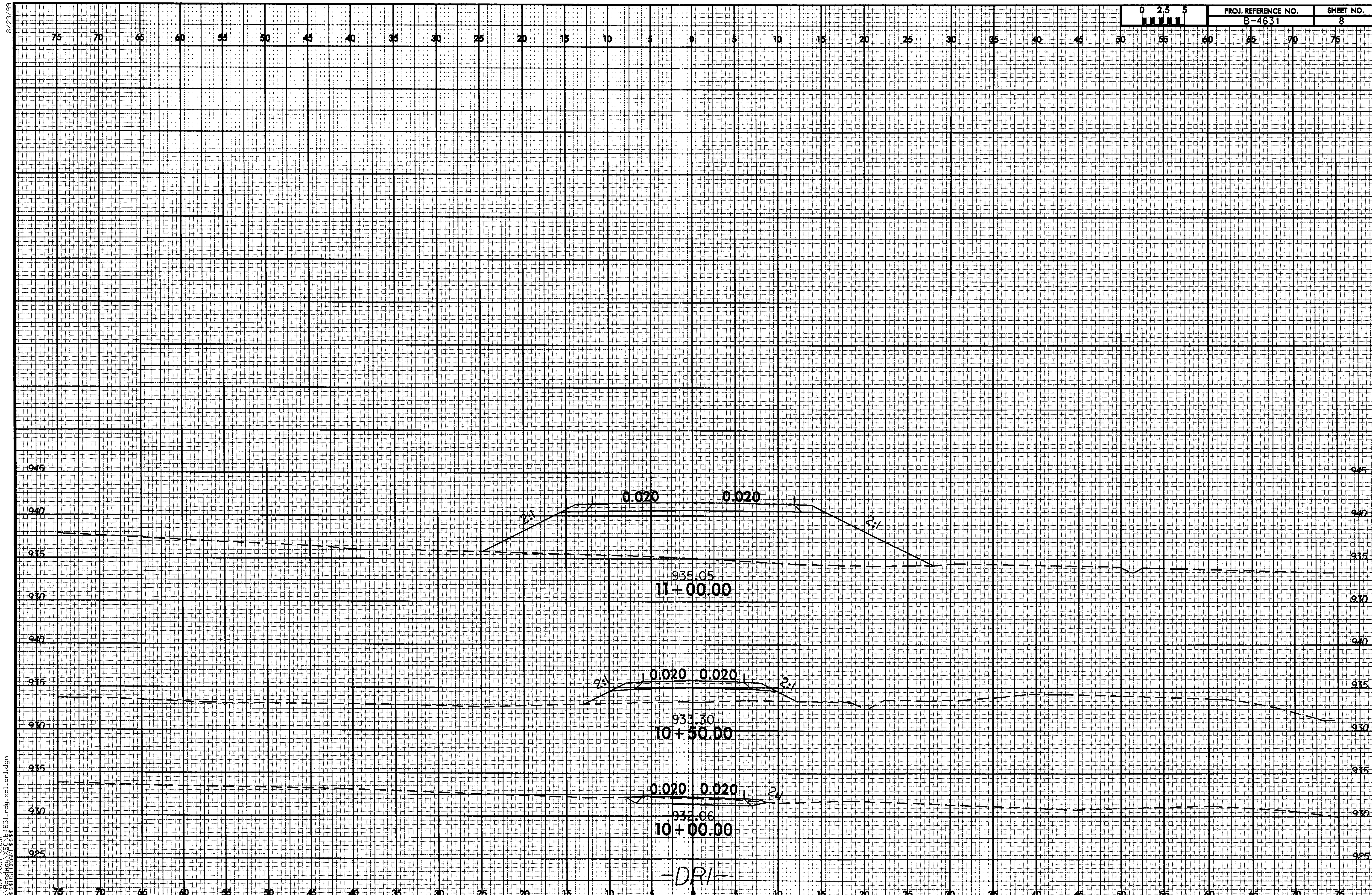
PROJ. REFERENCE NO.	SHEET NO.
B-4631	8



8/23/99

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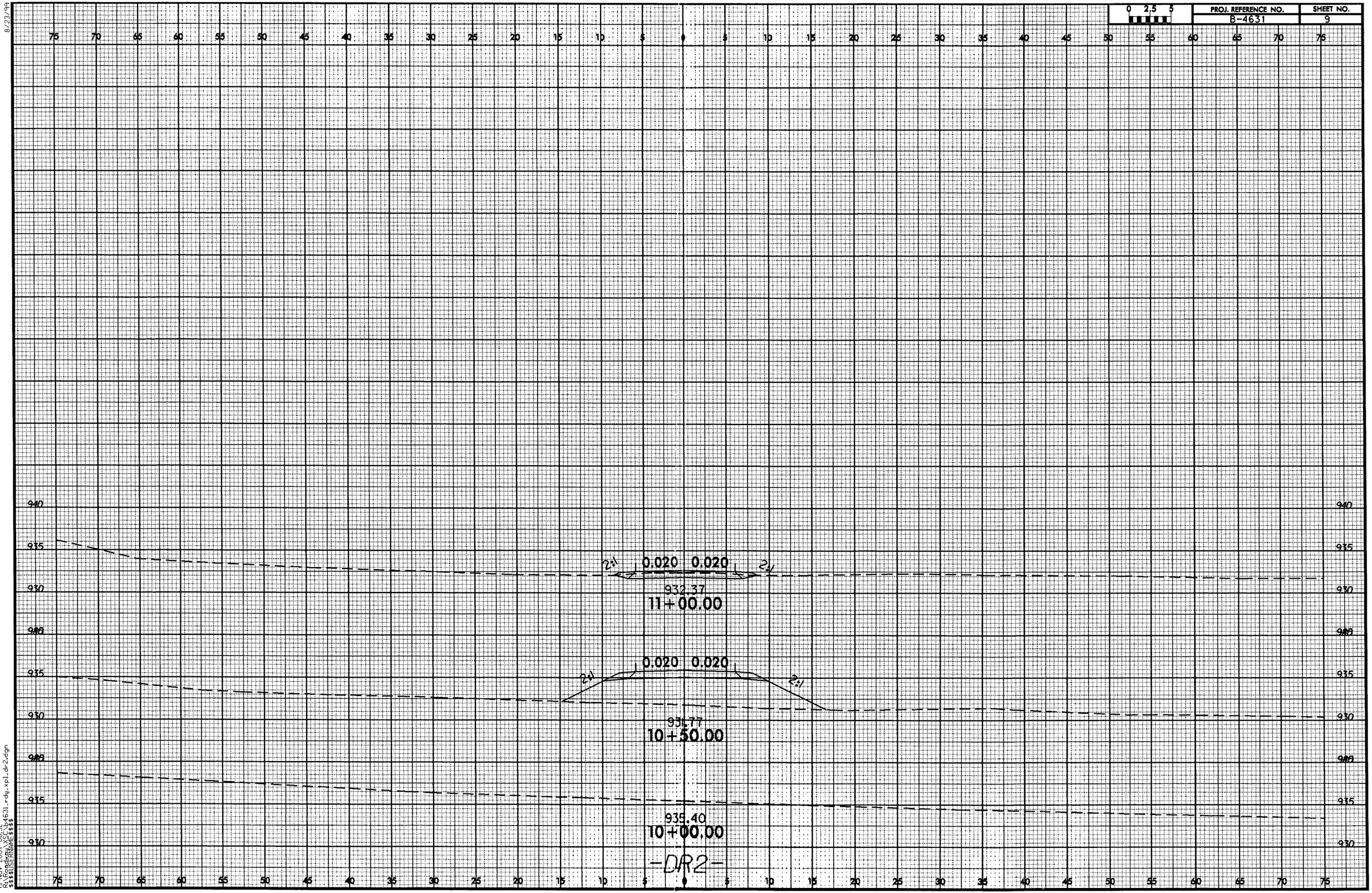
8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4631	9



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PROJECT REFERENCE NO.	SHEET NO.
B-4631	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

8/17/99

REVISIONS

DESIGN EXCEPTION REQUIRED FOR DESIGN SPEED

-L-
PI Sta 15+97.96
Δ = 43° 40' 44.9" (RT)
D = 6° 51' 42.4"
L = 636.56'
T = 334.65'
R = 835.00'
SE = SEE PLANS

-DR1-
PI Sta 10+40.97
Δ = 32° 10' 54.3" (LT)
D = 143° 14' 22.0"
L = 22.47'
T = 11.54'
R = 40.00'

PI Sta 10+80.01
Δ = 67° 02' 53.4" (RT)
D = 286° 28' 44.0"
L = 23.40'
T = 13.25'
R = 20.00'

-DR2-
PI Sta 10+76.46
Δ = 58° 19' 21.8" (LT)
D = 190° 59' 09.4"
L = 30.54'
T = 16.74'
R = 30.00'

NAD 83

S 73°23'20" W 267.96'

15+00

20+00

BEGIN CULVERT
-L- POC STA.16+63.14

-DR1- POT Sta.10+00.00
BEGIN CONSTRUCTION

-BL- PINC 24+25.15 =
-TO- PINC 7+09.01
ELEV=934.95
-L- Sta. 18+51.51
(11.49' LT)

-DR1- POT Sta.11+11.75=
-DR2- POT Sta.10+00.00=
-L- POT Sta.18+60.00

-L- POT Sta.23+05.61

-L- PT Sta.18+99.87

END TIP PROJECT B-4631
-L- POT Sta. 22+50.00

BEGIN TIP PROJECT B-4631
-L- POT Sta. 11+00.00

CULVERT RCBC
-L- Sta. 16+85.64
3 @ 12'X 10'

END CULVERT
-L- POC STA.17+07.83

1
DOROTHY CARROLL
& HARRETT SHERILL
DB 573 PG 764

2
PATSY McKEDWIN
ALICE JENKINS
DB TO1PG 450

3
DAVID R. HAYNES
VICKI O. HAYNES
DB 851PG 871

4
WILLIAM ROY HAYNES
DB 277 PG 68

WILLIAM ROY HAYNES
& JUSTINE FLACK HAYNES
DB 537 PG 264

B4631-1
-BL- PINC 21+65.89
-L- Sta. 15+95.40
(15.48' LT)

BL-4
-BL- PINC 18+68.28
-L- Sta. 13+01.32
(13.26' LT)

BL-3
-BL- PINC 15+17.69

BL-5
-BL- PINC 27+73.79
-L- Sta. 21+95.14
(44.99' RT)

BM#2
-BL- STA 16+87
29LEFT
ELEV. 945.90'

-L- PC Sta.12+63.31

-L- POT Sta.10+00.00

N 21° 31' 01.4" E

N 13° 48' 25.7" E

N 18° 07' 59.8" E 15.43'

N 30° 24' 35.4" E

N 30° 34' 40.1" E

N 78° 53' 51.9" E

N 56° 33' 35.5" E

N 61° 48' 44.7" E

S 17°08'34" E 500.00'

S 16°21'26" W 245.00'

S 28°09'59" E 317.26'

100' TAPER LT. & RT.
9' TO 11'
25' INC

100' TAPER LT. & RT.
11' TO 9'
25' INC

Use Class B Rip Rap in ditch transitions

Rip Rap at Embankment See Detail 'B'

Channel Change See Detail 'A'

Cut Ditch See Detail 'E'

Lateral 'V' Ditch See Detail 'C'

Lateral 'V' Ditch w/Rip Rap See Detail 'D'

CLASS I 21 TONS
CLASS I 15 TONS
CLASS I 7 TONS
CLASS I 9 TONS
CLASS I 19 TONS
CLASS I 14 TONS

GRAU 350
GRAU 350 REMOVE

TDE
CHORD
NAIL
EXISTING R/W
EX R/W
TELEPHONE
WEST BRANCH MOUNTAIN CREEK
SPOON FARRIS ROAD ON ASPHALT
HTR
WOOD POSTS
18" CONC.

+63.31 -L- 55.00' LT
+63.31 -L- 50.00' RT
+50.00 -L- EX R/W 50.00' RT
+50.00 -L- EX R/W
+60.00 -L- 55.00' LT 85.00' LT 110.00' LT
+30.00 -L- 120.00' LT
+70.00 -L- 60.00' LT 85.00' LT
+20.00 -L- 100.00' LT
+90.00 -L- 85.00' LT
+60.00 -L- 60.00' LT
+99.87 -L- 60.00' LT
+00.00 -L- 60.00' LT
+00.00 -L- EX R/W
+00.00 -L- EX R/W 45.00' RT
+90.00 -L- 50.00' RT 85.00' RT 110.00' RT
+10.00 -L- 110.00' RT
+20.00 -L- 60.00' RT 85.00' LT
+10.00 -L- 60.00' RT
+85.00 -L- 110.00' RT
+99.87 -L- 60' RT
+90.00 -L- 90.00' RT

-DR2- POT Sta.11+05.00
END CONSTRUCTION

DETAIL A
Stream Detail Upstream and Downstream of Culvert
(Not to Scale)

38'at culvert entrance and outlet. Tie to existing width where shown.
Class I Rip Rap (typical)
1' high bench
13' base
2:1
3:1

DDB = 395 cyds

DETAIL B
RIP RAP AT EMBANKMENT
(Not to Scale)

Ditch Grade
3'
1.5'
Type of Liner= Class I Rip-Rap

FROM STA. 16+35 TO STA. 16+47 RT.
FROM STA. 16+71 TO STA. 16+92 LT.
FROM STA. 16+86 TO STA. 16+96 RT.
FROM STA. 17+20 TO STA. 17+31 LT.

DETAIL C
LATERAL 'V' DITCH
(Not to Scale)

Natural Ground
2:1
D
2:1
b
F/Ft.
Fill Slope
Min. D= 1 Ft.
b= 3 Ft.

FROM STA. 15+00 TO STA. 16+35 RT.
FROM STA. 16+93 TO STA. 18+50 RT.
FROM STA. 17+30 TO STA. 18+22 LT.

DETAIL D
LATERAL 'V' DITCH
(Not to Scale)

Natural Ground
2:1
d1
To 2:1
b
F/Ft.
Fill Slope
Filter Fabric
Min. D= 1 Ft.
Max. d1= 2 Ft.
b= 3 Ft.
Type of Liner= Class B Rip-Rap

FROM STA. 18+56 TO STA. 21+00 LT.
FROM STA. 18+71 TO STA. 20+50 RT.

DETAIL E
SPECIAL CUT DITCH
(Not to Scale)

Natural Ground
2:1
D
4:1 or Flatter
Front Ditch Slope
Min. D= 1 Ft.

FROM STA. 12+00 TO STA. 15+00 RT.
FROM STA. 12+50 TO STA. 14+00 LT.

NOTE: SEE SHEET No. 5 FOR -L-, -DR1- & -DR2- PROFILE

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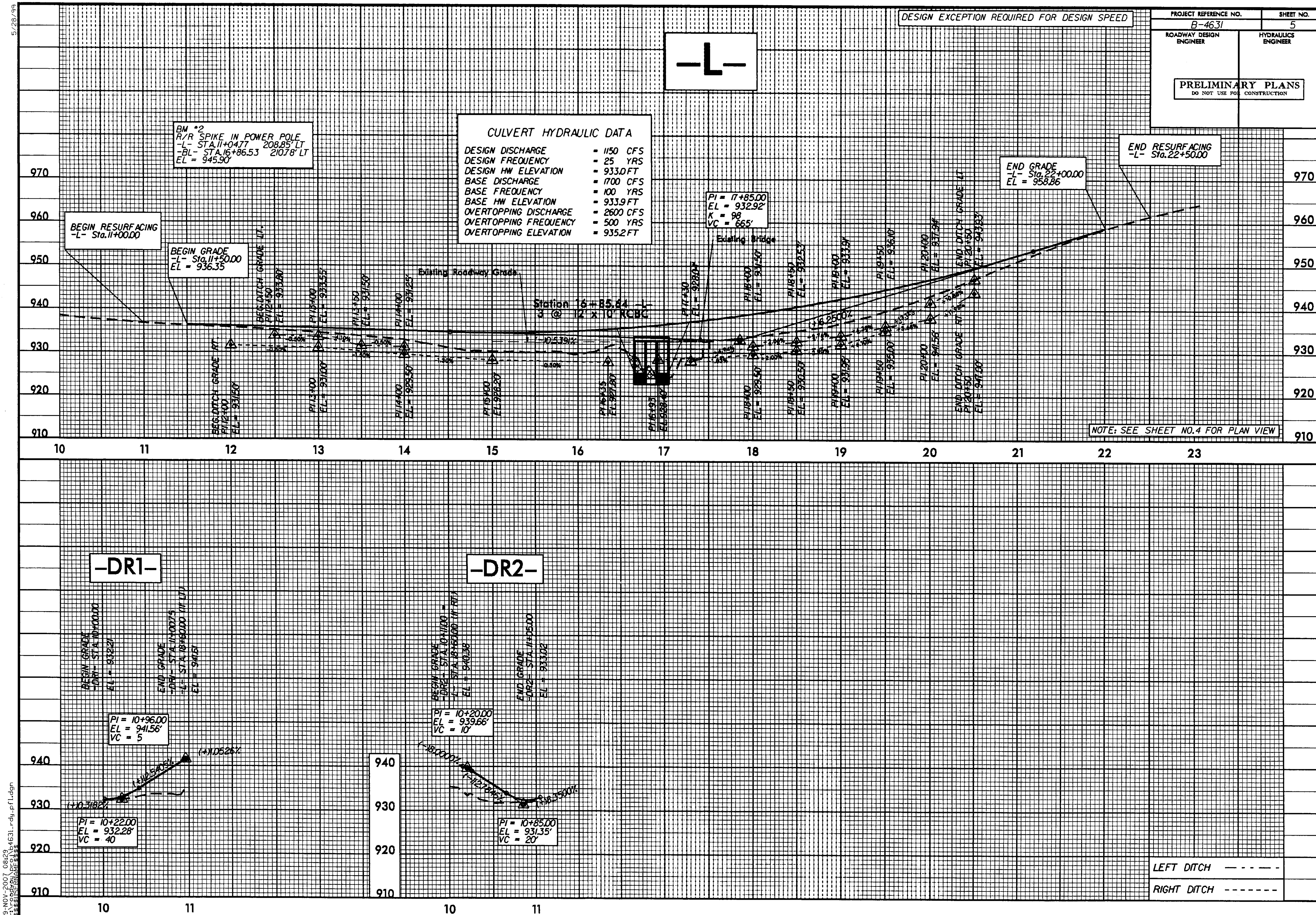

DESIGN EXCEPTION REQUIRED FOR DESIGN SPEED
PROJECT REFERENCE NO. B-4631
SHEET NO. 5
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
-L-
BM *2
R/R SPIKE IN POWER POLE
-L- STA.11+04.77 208.85' LT
-BL- STA.16+86.53 210.78' LT
EL = 945.90'
CULVERT HYDRAULIC DATA
DESIGN DISCHARGE = 1150 CFS
DESIGN FREQUENCY = 25 YRS
DESIGN HW ELEVATION = 933.0 FT
BASE DISCHARGE = 1700 CFS
BASE FREQUENCY = 100 YRS
BASE HW ELEVATION = 933.9 FT
OVERTOPPING DISCHARGE = 2600 CFS
OVERTOPPING FREQUENCY = 500 YRS
OVERTOPPING ELEVATION = 935.2 FT
BEGIN RESURFACING
-L- Sta.11+00.00
BEGIN GRADE
-L- Sta.11+50.00
EL = 936.35
Existing Roadway Grade
Station 16+85.64 -L-
3 @ 12' x 10' RCBC
PI = 17+85.00
EL = 932.92'
K = 98
VC = 665'
Existing Bridge
END GRADE
-L- Sta.22+00.00
EL = 958.86
END RESURFACING
-L- Sta.22+50.00
BEG. DITCH GRADE LT.
BEG. DITCH GRADE RT.
END DITCH GRADE LT.
END DITCH GRADE RT.
(-)0.5391%
(+)6.2500%
NOTE: SEE SHEET NO.4 FOR PLAN VIEW
970
960
950
940
930
920
910
10 11 12 13 14 15 16 17 18 19 20 21 22 23
-DR1-
BEGIN GRADE
-DR1- STA. 10+00.00
EL = 932.27
END GRADE
-DR1- STA. 11+00.75
-L- STA. 18+60.00 (11' LT)
EL = 940.61
PI = 10+96.00
EL = 941.56'
VC = 5
(+)0.3182%
(+)11.5406%
(+)1.0526%
PI = 10+22.00
EL = 932.28'
VC = 40
-DR2-
BEGIN GRADE
-DR2- STA. 10+11.00
-L- STA. 18+60.00 (11' RT)
EL = 940.38
END GRADE
-DR2- STA. 11+05.00
EL = 933.02
PI = 10+20.00
EL = 939.66'
VC = 10'
(-)18.0000%
(-)11.2784%
(+)8.3500%
PI = 10+85.00
EL = 931.35'
VC = 20'
940
930
920
910
10 11
LEFT DITCH
RIGHT DITCH