STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

January 28, 2005

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

ATTN: Mr. Eric Alsmeyer
NCDOT Coordinator

Subject: **Nationwide Permit 23 and 33 Application** for replacement of Bridge No. 80 on NC 801 over South Yadkin River, Rowan/Davie Counties, Federal Aid Project No. BRSTP-801(1), State Project No. 8.1632101, Division 9, TIP No. B-4256

Please see the enclosed Pre-Construction Notification (PCN), Ecosystem Enhancement Program (EEP) acceptance letter, Categorical Exclusion, permit drawings and design plans for the subject project. The NCDOT proposes to replace the 368-foot Bridge No. 80 with a new 5-span 400-foot pre-stressed concrete modified bulb-tee girder bridge. The new bridge will have two bents in the water and will be located approximately 50 feet to the north of the existing bridge. Traffic will be maintained on the existing bridge until construction is complete for the new bridge. There will be 405 linear feet of permanent stream impacts and 0.24 acre of temporary impacts. There will be an in-water construction moratorium from April 1 thought June 30 to protect the fish migration, spawning and larval recruitment of the white bass and sunfish.

IMPACTS TO WATERS OF THE UNITED STATES

General Description: The project is located in the Yadkin River basin (YAD04 and YAD06 sub-basin, HUC 03040102). This portion of the South Yadkin River and its tributaries are classified as Class C water bodies. The South Yadkin River originates

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

TELEPHONE: 919-715-1500
FAX: 919-715-1501
WEBSITE: WWW.DOH.DOT.STATE.NC.US

LOCATION:
2728 CAPITOL BOULEVARD
PARKER LINCOLN BUILDING, SUITE 168
RALEIGH NC 27699

about 50 miles northwest of the project area and from the project area, the river meanders in a southeasterly direction about 7.8 miles to its confluence with the Yadkin River. At the NC 801 crossing the South Yadkin River is approximately 75 feet wide.

West of NC 801, an unnamed tributary (UT1) flows into the South Yadkin River on its north side. This stream is a perennial stream as determined by the USACE (May 12, 2004 site visit) and the DWQ (June 29, 2004 site visit). Another unnamed tributary (UT2) flows in a westerly direction under NC 801 to its confluence with UT1, and is located within the project area. A four-foot box culvert is used to direct the stream under the road. A third unnamed tributary (UT3) flows adjacent to NC 801 on the south side before crossing under it and emptying into the river just to the east of the bridge. UT2 and UT3 have been determined intermittent streams and will not require mitigation according to information gathered at the site visits by the USACE and the DWQ mentioned above.

Permanent Impacts: There will be 51 linear feet of stream impacts to UT1 due to bank stabilization (site 3 on permit drawing sheet 13 of 13). The east bank of UT1 will be lined with rip/rap to secure the stream and protect from further encroachment towards the new bridge. There will be 330 linear feet of roadway fill impacts to UT3 due to the new bridge construction and new alignment (site 1 on permit drawing sheet 13 of 13). The stream will be entirely relocated to the west of NC 801 through a lateral base ditch (see permit drawings sheets 4 and 5 of 13). The pathway for this existing stream takes a sharp turn along the west end of the proposed bridge which will compromise the new structure. Construction of the relocated channel will be completed before roadway fill is placed in the existing stream. There will be 75 linear feet of permanent stream impacts from the road realignment and a culvert extension for UT2 (see permit drawing sheets 6 and 7 of 13 and site 2 on sheet 13 of 13). The new fill slopes will extend outside the existing culvert therefore making the culvert extension necessary for the project. Permanent impacts to streams on this project will total 456 linear feet. The USACE and DWQ determined UT2 and UT3 intermittent streams and will not require mitigation. There will be 51 linear feet of stream mitigation required on this project.

Temporary Impacts: There will be 0.24 acre of temporary impacts to the South Yadkin River due to a causeway constructed for bridge removal and new bridge construction. Construction of the causeway will be in phases. At no time will the river be impacted by a causeway on either side of the river or together at a length greater than half the width of the river.

1. **Phase 1**: Construct rock causeway on east and west bank to access and construct the proposed bridge piers in the river.
2. **Phase 2**: Remove a portion of Phase 1 causeways and construct additional causeways on the east and west bank to access and construct proposed new span #3. Construct remainder of proposed bridge.
3. **Phase 3**: Upon completion of the proposed bridge, phase traffic onto the new road facility. Remove portions of the Phase 2 causeways and construct additional causeways on the east and west bank to access and remove existing bridge superstructure and piers located over or in the river.

Utility Impacts: There will be no impacts to jurisdictional waters from the relocation of electrical lines on the project site. Water and sewer lines will not need relocation due to this bridge construction.

Bridge Demolition: The superstructure consists of a reinforced concrete deck and girders supported by reinforced concrete piles and caps. The existing bridge end bents are protected by spill-through abutments armored with riprap. Two reinforced concrete abutments are in the water. There is a potential for 43 cubic yards of reinforced concrete components of the bridge to be temporarily dropped into the Waters of the United States during construction. During construction, Best Management Practices for Bridge Demolition and Removal will be followed. Components of the demolition process are addressed as follows:

(a) The asphalt wearing surface will be removed prior to further demolition without dropping into the water.
(b) The bridge rails and the deck portion of the deck/girder system will be removed by non-fracturing methods without dropping materials into the water. A causeway will be used.
(c) Removal of the bridge girders and interior bents will utilize causeways. To the maximum extent practicable, girders and bents will be dropped onto causeways or onto the shore rather than into the water.

FEDERALLY PROTECTED SPECIES

Plants and animals with a federal classification 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. The USFWS lists 2 species under federal protection in Rowan County and 1 species for Davie County as of January 29, 2003. A field survey was conducted in 2002 for all three species and it was determined that the project site does not have habitat for the Michaux's sumac or the Schweinitz's sunflower. An additional field survey was conducted in December 2004 to investigate habitat or an observation of a bald eagle. No bald eagles were observed and it was determined that habitat does not exist for the bald eagle. The NC Natural Heritage database of rare species and unique habitats was reviewed in December 2004 and there is no documentation of federally protected species within 1 mile of the project area. The species under federal protection in Rowan and Davie Counties are listed in Table 1.

Table 1. Species Under Federal Protection in Rowan and Davie Counties

Common Name	Scientific Name	County	Federal Status	Habitat	Biological Conclusion
Bald Eagle	*Haliaeetus leucocephalus*	Rowan	T	No	No Effect
Michaux's sumac	*Rhus michauxii*	Davie	E	No	No Effect
Schweinitz's sunflower	*Helianthus schweinitzii*	Rowan	E	No	No Effect

The USFWS list the Carolina heelsplitter, (*Lasmigora decorata)* as occurring in the Yadkin River Basin. A mussel survey was conducted by NCDOT biologists in August 2002. There were no live mussels found during the survey. Given these results, it was determined that the Carolina heelsplitter does not occur in the project footprint. In conclusion, this species was given a "No Effect" for this area. The NC Natural Heritage database does not list any known locations of the Carolina heelsplitter within the proximity of the project.

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 impacts, and to provide full compensatory mitigation of all remaining, unavoidable jurisdictional stages; minimization measures were incorporated as part of the project design. Practical means to minimize impacts to surface waters impacted by the project include:

- Installation of temporary silt fences, earth berms and temporary ground cover during construction
- Strict enforcement of sedimentation and erosion control BMPs for the protection of surface waters
- Rip/rap for bank stabilization will be limited to the streambank below the high water mark, and vegetation should be used for stabilization above the high water elevation.
- Possible use of turbidity curtains during construction of permanent bridge bents.
- There will be an instream moratorium for white bass and sunfish from April 1 through June 30.
- Best Management Practices will be followed for this project as outlined in "NCDOT's Best Management Practices for Construction and Maintenance Activities".

Mitigation: The Ecosystem Enhancement Program (EEP) will provide stream mitigation for 51 linear feet of stream impacts to UT1 to the Yadkin River. (Please see attached EEP Mitigation Acceptance Letter dated January 25, 2005.)

REGULATORY APPROVALS

Section 404 Permit: It is anticipated that the temporary work pads will be authorized under Section 404 Nationwide Permit 33. We are therefore requesting the issuance of a Nationwide Permit 33 for the workpads. The remaining aspects of the project are being processed by the Federal Highway Administration as a "Categorical Exclusion" in accordance with 23 CFR 771.115(b). The NCDOT requests that these activities be authorized by a Nationwide Permit 23 (FR number 10, pages 2020-2095; January 15, 2002).

Section 401 Permit: We anticipate 401 General Certification numbers 3403 and 3366 will apply to this project. All general conditions of the Water quality Certifications will be met. Therefore, in accordance with 15A NCAC 2H, Section .0500(a) and 15A NCAC

2B.0200 we are providing two copies of this application to the North Carolina Department of Environment and Natural Resources, Division of Water Quality, for their notification.

Thank you for your time and assistance with this project. Please contact Carla Dagnino at (919) 715-1456 if you have any questions or need any additional information.

Sincerely,

Gregory J. Thorpe, Ph.D
Environmental Management Director, PDEA

w/attachment
- Mr. John Hennessy, NCDWQ (7 copies)
- Ms. Marla Chambers NCWRC
- Ms. Marella Buncick, USFWS
- Dr. David Chang, P.E., Hydraulics
- Mr. Mark Staley, Roadside Environmental
- Mr. Greg Perfetti, P.E., Structure Design
- Mr. S. P. Ivey, P.E. , Division Engineer
- Ms. Diane Hampton, P.E. , DEO

w/o attachment
- Mr. Jay Bennett, P.E., Roadway Design
- Mr. Omar Sultan, Programming and TIP
- Mr. Art McMillan, P.E., Highway Design
- Mr. David Franklin, USACE, Wilmington
- Mr. Dennis Pipkin, PDEA Project Planning Engineer
- Ms. Beth Harmon, EEP
- Ms. Laurie P. Smith, CPA, NCDOT, Program Management

Office Use Only: Form Version May 2002

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

2. Nationwide, Regional or General Permit Number(s) Requested: NW 23, NW 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 Wetlands Restoration Program (NCWRP) is proposed for mitigation of impacts (verify availability with NCWRP prior to submittal of PCN), 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: NC Department of Transportation
   Mailing Address: 1548 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: NA
   Company Affiliation: _____
   Mailing Address: _____
   Telephone Number: _____ Fax Number: _____
   E-mail Address: _____

III. Project Information

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

1. Name of project: Replacement of bridge No. 80 on NC 801 Over South Yadkin River

2. T.I.P. Project Number or State Project Number (NCDOT Only): B-4256

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

4. Location
   County: Rowan-Davie County Nearest Town: Cooleemee
   Subdivision name (include phase/lot number): N/A
   Directions to site (include road numbers, landmarks, etc.): From US 601 take NC 801 South towards Cooleemee, on US401 East make a right turn onto SR2044 and travel approximately 1 and ½ miles towards the bridge No. 127.

5. Site coordinates, if available (UTM or Lat/Long): 35° 48.23'N, 80° 33.43'W
   (Note – If project is linear, such as a road or utility line, attach a sheet that separately lists the coordinates for each crossing of a distinct waterbody.)

6. Property size (acres): 0.35 mile * 120 feet = 5.1 acres

7. Nearest body of water (stream/river/sound/ocean/lake): South Yadkin River

8. River Basin: Yadkin 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: The project is in a rural area just south of Cooleemee. The project area is mainly forested with some residences and commercial areas and a large industrial facility located in one quadrant of the project area.

10. Describe the overall project in detail, including the type of equipment to be used: The NCDOT proposes to replace the 368 foot Bridge No. 80 with a new 400 foot, 4 span pre-stressed concrete girder bridge approximately 50 feet north of the existing bridge. The bridge replacement will 456 linear feet of permanent impacts to the receiving waters. UT1 will have 51 feet of impacts due to fill associated with bank stabilization; UT2 will have 75 feet of impacts from a culvert extension The traffic will be maintained on the existing bridge site. Construction equipment will consist of heavy duty trucks, earth moving equipment, cranes, etc.

11. Explain the purpose of the proposed work: The existing bridge is considered structurally deficient and obsolete. The replacement of the bridge will result in a safer and more efficient use for traffic.

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.

NA

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.

NA

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. The applicant must also provide justification for these impacts in Section VII below. All proposed impacts, permanent and temporary, must be listed herein, and must be clearly identifiable on an accompanying site plan. All wetlands and waters, and all streams (intermittent and perennial) must 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.

Provide a written description of the proposed impacts: See permit application attached (page 2)

1. Individually list wetland impacts below:

Wetland Impact Site Number (indicate on map)	Type of Impact*	Area of Impact (acres)	Located within 100-year Floodplain** (yes/no)	Distance to Nearest Stream (linear feet)	Type of Wetland***
NA					

* List each impact separately and identify temporary impacts. 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.

** 100-Year floodplains are identified through the Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Maps (FIRM), or FEMA-approved local floodplain maps. Maps are available through the FEMA Map Service Center at 1-800-358-9616, or online at http://www.fema.gov.

*** List a wetland type that best describes wetland to be impacted (e.g., freshwater/saltwater marsh, forested wetland, beaver pond, Carolina Bay, bog, etc.) Indicate if wetland is isolated (determination of isolation to be made by USACE only).

List the total acreage (estimated) of all existing wetlands on the property: 0 acre
Total area of wetland impact proposed: 0 acre

2. Individually list all intermittent and perennial stream impacts below:

Stream Impact Site Number (indicate on map)	Type of Impact*	Length of Impact (linear feet)	Stream Name**	Average Width of Stream Before Impact	Perennial or Intermittent? (please specify)
1	Permanent	330	UT3 South Yadkin River	3 feet	Intermittent
2	Temporary Fill	0.25 acre	South Yadkin River	75 feet	Perennial
3	Permanent	51	UT1 South Yadkin River	2 feet	Perennial
4	Permanent	75	UT2 to UT1 South Yadkin River	1 foot	Intermittent

* List each impact separately and identify temporary impacts. Impacts include, but are not limited to: culverts and associated rip-rap, dams (separately list impacts due to both structure and flooding), relocation (include linear feet before and after, and net loss/gain), stabilization activities (cement wall, rip-rap, crib wall, 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.

** Stream names can be found on USGS topographic maps. If a stream has no name, list as UT (unnamed tributary) to the nearest downstream named stream into which it flows. USGS maps are available through the USGS at 1-800-358-9616, or online at www.usgs.gov. Several internet sites also allow direct download and printing of USGS maps (e.g., www.topozone.com, www.mapquest.com, etc.).

Cumulative impacts (linear distance in feet) to all streams on site: 456 feet

3. Individually list all open water impacts (including lakes, ponds, estuaries, sounds, Atlantic Ocean and any other water of the U.S.) below:

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

* List each impact separately and identify temporary impacts. Impacts include, but are not limited to: fill, excavation, dredging, flooding, drainage, bulkheads, etc.

4. 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.): NA

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

Size of watershed draining to pond: NA Expected pond surface area: NA

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.

See attached permit application.

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 March 9, 2000, 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 NCWRP 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.
   Compensatory mitigation will be provided by EEP to 51 linear feet of stream impacts imposed from bank stabilization to UT1 South Yadkin River located on the west side of NC801 and connecting to the South Yadkin River on its north side.

2. Mitigation may also be made by payment into the North Carolina Wetlands Restoration Program (NCWRP). Please note it is the applicant's responsibility to contact the NCWRP at (919) 733-5208 to determine availability and to request written approval of mitigation prior to submittal of a PCN. For additional information regarding the application process for the NCWRP, check the NCWRP website at http://h2o.enr.state.nc.us/wrp/index.htm. If use of the NCWRP is proposed, please check the appropriate box on page three and provide the following information:
   Amount of stream mitigation requested (linear feet): 51
   Amount of buffer mitigation requested (square feet): NA
   Amount of Riparian wetland mitigation requested (acres): NA
   Amount of Non-riparian wetland mitigation requested (acres): NA
   Amount of Coastal wetland mitigation requested (acres): NA

IX. Environmental Documentation (required by DWQ)

Does the project involve an expenditure of public (federal/state) funds or the use of public (federal/state) land?

Yes ☒ No ☐

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 ☐

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.

Will the project impact protected riparian buffers identified within 15A NCAC 2B .0233 (Neuse), 15A NCAC 2B .0259 (Tar-Pamlico), 15A NCAC 2B .0250 (Randleman Rules and Water Supply Buffer Requirements), or other (please identify_____)?

Yes ☐ No ☒ If you answered "yes", provide the following information:

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
		3	
		1.5	
Total			

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

If buffer mitigation is required, please discuss what type of mitigation is proposed (i.e., Donation of Property, Conservation Easement, Riparian Buffer Restoration / Enhancement, Preservation or Payment into the Riparian Buffer Restoration Fund). Please attach all appropriate information as identified within 15A NCAC 2B .0242 or .0260.

NA

XI. Stormwater (required by DWQ)

Describe impervious acreage (both 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.

NA

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.

NA

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. 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).

NA

1/27/05

Applicant/Agent's Signature **Date**

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

Ecosystem Enhancement PROGRAM

January 25, 2005

Mr. Gregory J. Thorpe, Ph.D.
Environmental Management Director
Project Development and Environmental Analysis Branch
North Carolina Department of Transportation
1548 Mail Service Center
Raleigh, NC 27699-1548

Dear Dr. Thorpe:

Subject: EEP Mitigation Acceptance Letter:

B-4256, Bridge 80 over the South Yadkin River on NC 801, Rowan and Davie Counties

The purpose of this letter is to notify you that the Ecosystem Enhancement Program (EEP) will provide stream mitigation for the subject project. Based on the information supplied by you in a letter dated January 7, 2005, the impacts are located in CU 03040102 of the Yadkin River Basin in the Central Piedmont Eco-Region, and are as follows:

Stream Impacts: 51 feet

The subject project is not listed in Exhibit 2 of the Memorandum of Agreement (MOA) among the North Carolina Department of Environment and Natural Resources, the North Carolina Department of Transportation, and the U. S. Army Corps of Engineers, Wilmington District dated July 22, 2003. The EEP is only committed to provide the mitigation needs for projects listed on Exhibit 2 during the first two years of the program; however Amendment 1 details how non-Exhibit 2 projects may be proposed for EEP mitigation acceptance. Specifically, Amendment 1 amended Section IX.A. by adding the following language:

> "Exhibit 2 may be modified if requested jointly by NCDENR and NCDOT, and approved in writing by the USACE. In no event may the total projected impacts of projects per cataloging unit on Exhibit 2 exceed the total projected impacts of projects per cataloging unit on Exhibit 2 as it existed at the time of the original execution of the MOA, July 22, 2003."

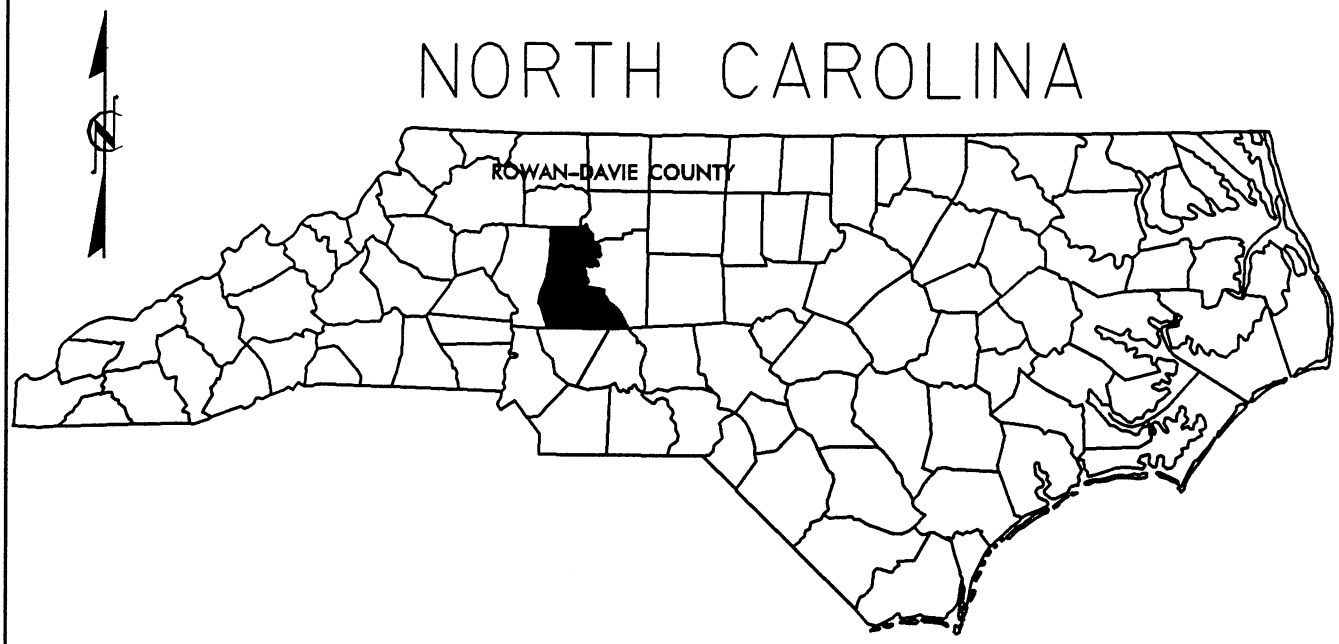
In this case, NCDOT has not proposed to swap this project with an Exhibit 2 project with similar attributes and impacts. Therefore, mitigation for the project must be provided for under the conditions of Section X of the Tri-Party MOA. The EEP currently has surplus mitigation in the CU sufficient to cover this years projected mitigation requirements plus the additional compensatory stream mitigation for the 51 feet of stream impacts associated with this project. Therefore, EEP agrees to accept responsibility to provide compensatory stream mitigation up to a 2:1 ratio in Cataloging Unit 03040102 of the Yadkin River Basin.

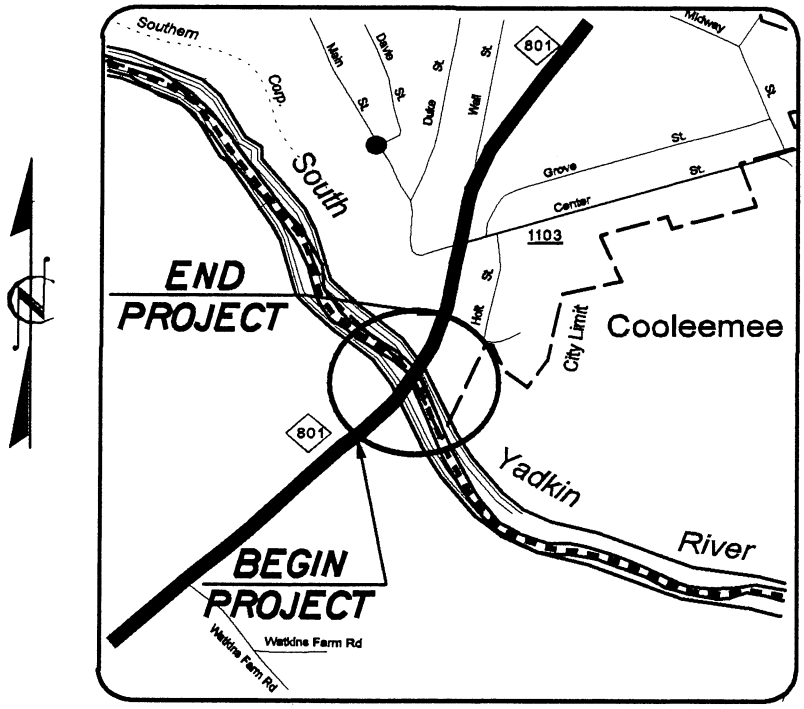
If you have any questions or need additional information, please contact Ms. Beth Harmon at 919-715-1929.

Sincerely,

William D. Gilmore, P.E.
Director

cc: Mr. Eric Alsmeyer, USACE-Raleigh
Mr. John Hennessy, Division of Water Quality, Wetlands/401 Unit
File: B-4256





VICINITY MAPS

NCDOT

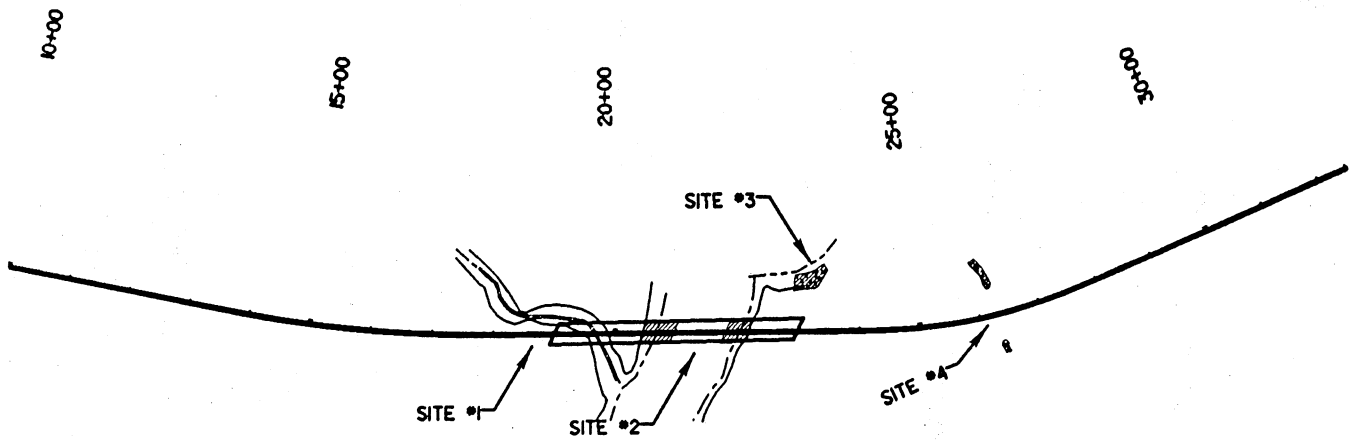
DIVISION OF HIGHWAYS

ROWAN-DAVIE COUNTY

PROJECT: 8.1632101 (B-4256)

BRIDGE #80 OVER SOUTH YADKIN RIVER ON NC 801

SHEET 1 OF 13



SITE MAP

NCDOT

DIVISION OF HIGHWAYS

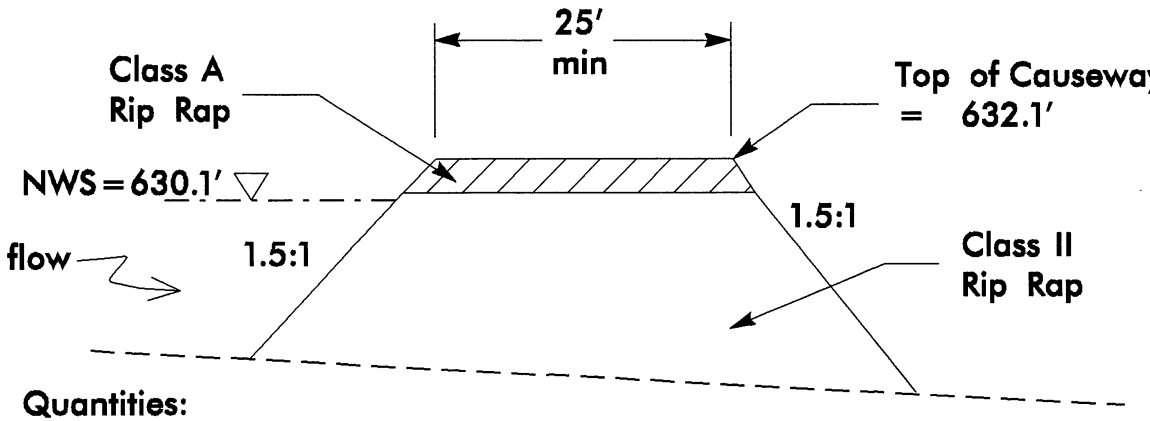
ROWAN-DAVIE COUNTY

PROJECT: 8.1632101 (B-4256)

BRIDGE #80 OVER SOUTH YADKIN RIVER ON NC 801

SHEET 2 **OF** 13

CAUSEWAY DETAIL



Quantities:

Class II Rip Rap = 3000 Tons
Class A Rip Rap = 380 Tons
Volume Below NWS = 1300 cu. yds.

WETLAND LEGEND

WLB —— WETLAND BOUNDARY

WLB / WLB — WETLAND

F F — DENOTES FILL IN WETLAND

S S — DENOTES FILL IN SURFACE WATER

P P — DENOTES FILL IN SURFACE WATER (POND)

T T — DENOTES TEMPORARY FILL IN WETLAND

E E — DENOTES EXCAVATION IN WETLAND

TS TS — DENOTES TEMPORARY FILL IN SURFACE WATER

DENOTES MECHANIZED CLEARING

—— —— FLOW DIRECTION

TB — TOP OF BANK

WE — EDGE OF WATER

C — PROP. LIMIT OF CUT

F — PROP. LIMIT OF FILL

PROP. RIGHT OF WAY

—— NG —— NATURAL GROUND

PL — PROPERTY LINE

—TDE— TEMP. DRAINAGE EASEMENT

—PDE— PERMANENT DRAINAGE EASEMENT

— EAB — EXIST. ENDANGERED ANIMAL BOUNDARY

— EPB — EXIST. ENDANGERED PLANT BOUNDARY

▽ — WATER SURFACE

LIVE STAKES

BOULDER

CORE FIBER ROLLS

PROPOSED BRIDGE

PROPOSED BOX CULVERT

PROPOSED PIPE CULVERT
12"-48" PIPES
54" PIPES & ABOVE

(DASHED LINES DENOTE EXISTNG STRUCTURES)

SINGLE TREE

WOODS LINE

DRAINAGE INLET

ROOTWAD

RIP RAP

5 — ADJACENT PROPERTY OWNER OR PARCEL NUMBER IF AVAILABLE

PREFORMED SCOUR HOLE (PSH)

LEVEL SPREADER (LS)

GRASS SWALE

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
DAVIE / ROWAN COUNTY
PROJECT: 33598.1.1 (B-4256)
BRIDGE NO. 80 OVER
SOUTH YADKIN RIVER
ON NC 801

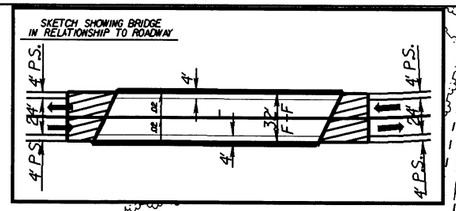
8/17/99

PROJECT REFERENCE NO.	SHEET NO.
B-4256	4
RW SHEET NO. 4 of 13	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

ENGLISH

SKETCH SHOWING BRIDGE IN RELATIONSHIP TO ROADWAY



BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	=	22,000 CFS
DESIGN FREQUENCY	=	50 YR
DESIGN HW ELEVATION	=	642.4'
BASE DISCHARGE	=	26,000 CFS
BASE FREQUENCY	=	100 YR
BASE HW ELEVATION	=	643.8'
OVERTOPPING DISCHARGE	=	+38,000 CFS
OVERTOPPING FREQUENCY	=	+500 YR
OVERTOPPING ELEVATION	=	661.5'
DATE OF SURVEY	=	8/6/03
W.S. ELEVATION AT DATE OF SURVEY	=	630.1'

25-JAN-2005 08:05
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gcain AT

PROJECT REFERENCE NO.	SHEET NO.
B-4256	4
R/W SHEET NO.	5 OF 13
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

ENGLISH

8/17/99

SKETCH SHOWING BRIDGE IN RELATIONSHIP TO ROADWAY

- FILL EXISTING DITCH

Sta.19+00.00 -L- Begin Bridge

3' LATERAL BASE DITCH STA 17+68 -L- LT. TO STA 20+80 -L- LT SEE DETAIL #1 2693 CY DDE

DITCH TO BE CONSTRUCTED BEFORE ROADWAY FILL IS PLACED

Sta. 23+00.00 -L- End Bridge

SITE #3

SITE #1

SITE #2

SOUTH YADKIN RIVER

UP TO SOUTH YADKIN RIVER

DB 745 PG 99
DB 763 PG 696
BOOK OF MAPS 777

DB 156 PG 206
PB 3 PG II-14
PB 5 PG 142-143
LINE BANK W/CLASS II RIPRAP 100 TONS 200 SY PP

DB 522 PG 491
BOOK OF MAPS 776

DB 745 PG 98
BOOK OF MAPS 776

DB 729 PG 212
BOOK OF MAPS 776

DB 335 PG 142
DB 357 PG 164
PB 3 PG 57

BEGIN T.I.P. PROJECT B-4256
BEGIN CONSTRUCTION
POT Sta. 12+60.04 -L-

- PAVEMENT REMOVAL

CLASS 'B' RIPRAP 2 TONS 7 SY PP

CLASS II RIPRAP TO ELEV. 640.4' +/-130 TONS

CLASS B RIPRAP 1 TON 4 SY PP

REMOVE +/- 8' EXISTING COLLAR AND EXTEND

SHOULDER BERM GUTTER FROM GUTTER STA. 17+00 LT TO BEGIN OF BRIDGE

CL DITCH
TB OF DITCH

TB OF TRIBUTARY
CL OF TRIBUTARY

CAUSEWAY PHASE 1
CAUSEWAY PHASE 2
CAUSEWAY PHASE 3

REMOVE BRIDGE # 80

TB 2GI W/ FLAT GRATE

15" CSP W/ELBOWS

GRAU-350

TEMP. GRAU-350 STA. 17+50.00 RT.

TEMP. GRAU-350 STA. 23+75.00 RT.

GRADE TO DRAIN

W/LT MONITORING WELLS

MONITORING WELL

TAIL DITCH SEE DETAIL 2 -L- STA. 17+70 RT. 20 CY DDE

FILL EXISTING DITCH +/- 1350 CY

EXCAVATE TO NG +/-2400CY

EXCAVATE TO NG +/-2200CY

CLASS II RIPRAP ELEV. 643.4 +/- 45 TONS

MATCHLINE STA 24+00.00 SEE SHEET 5

DETAIL 1
LATERAL BASE DITCH
(Not to Scale)

Natural Ground
Fill Slope
2% Min. D = 1.0 Ft.
B = 3.0 Ft.
S = 10.0 Ft.

-L- STA. 17+68 -L- TO -L- STA. 20+80 LT. 2693 CY DDE

DETAIL 2
TAIL DITCH
(Not to Scale)

Natural Ground
2%
Min. D = 1.5 Ft.

-L- STA. 17+70 RT. 20 CY DDE

DENOTES TEMPORARY FILL IN SURFACE WATER

DENOTES FILL IN SURFACE WATER

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	=	22,000 CFS
DESIGN FREQUENCY	=	50 YR
DESIGN HW ELEVATION	=	642.4'
BASE DISCHARGE	=	26,000 CFS
BASE FREQUENCY	=	100 YR
BASE HW ELEVATION	=	643.8'
OVERTOPPING DISCHARGE	=	+38,000 CFS
OVERTOPPING FREQUENCY	=	+500 YR
OVERTOPPING ELEVATION	=	661.5'
DATE OF SURVEY	=	8/6/03
W.S. ELEVATION AT DATE OF SURVEY	=	630.1'

-L-
PI = 13+99.31
EL = 664.22'
K = 305
VC = 125'
DS = 60 mph

-L-
PI = 15+50.29
EL = 663.29'
K = 436
VC = 120'
DS = 60 mph

-L-
PI = 17+39.96
EL = 661.60'
K = 142
VC = 210'
DS = 60 mph

-L-
PI = 21+50.16
EL = 664.00'
K = 156
VC = 235'
DS = 60 mph

-L-
PI = 24+42.94
EL = 661.29'
K = 136
VC = 170'
DS = 60 mph

STA. 12+60.04 EL = 665.5'
BEGIN GRADE STA. 12+85.04 EL = 665.39
25' TAPER TO EXIST.
PROPOSED GRADE
EXISTING GROUND
BEGIN BRIDGE STA. 19+00.00
END BRIDGE STA. 23+00.00
(-)1.0259%
(-)1.0160%
(-)0.6160%
(-)0.8910%
(-)0.8910%
(+)0.5851%
(+)0.5851%
(-)0.9256%
18"
1.65:1 = SKEWED
1.5:1 = NORMAL
CAUSEWAY TOP Elev. = 632.1'
Existing Bridge
CLASS II RIP RAP
ACTUAL LENGTH = 255'
ACTUAL SLOPE = 1.7100%
0.6000%
15:1
BEGIN BASE DITCH STA 17+68.00 LT. ELEV. 632.50
STA. 20+00.00 LT. ELEV. 629.00
END BASE DITCH STA. 20+80.00 LT. ELEV. 628.50
NWSE & WSE 8/6/03 630.09
USGS 389 JAS BL STA. 22+83.09 OFFSET 28.03' ELEV. 661.91' (REASSIGNED VALUE)

BM 1
N 750036.9700 E 1537191.873
BL STA 5+09.35 OFFSET 145.87' LEFT
ELEV. 685.45'

680 670 660 650 640 630 620 610
11 12 13 14 15 16 17 18 19 20 21 22 23 24

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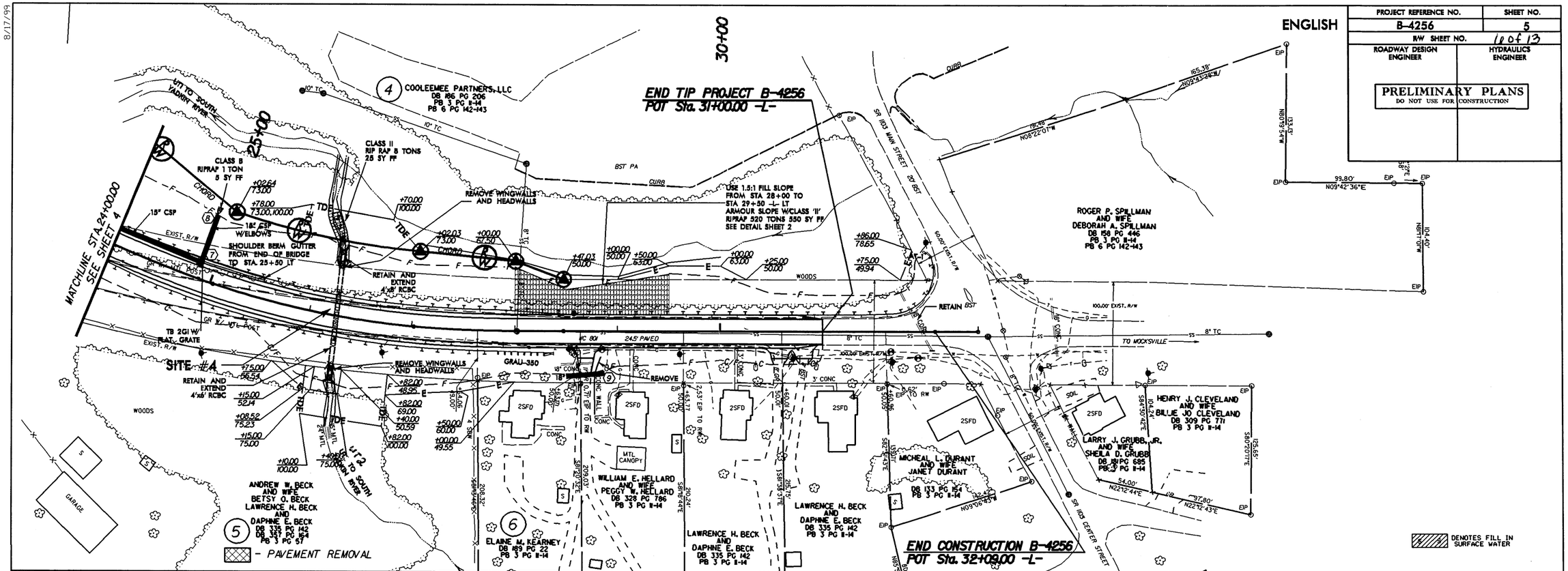
dgn

8/17/98

PROJECT REFERENCE NO.	SHEET NO.
B-4256	5
R/W SHEET NO.	10 of 13
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

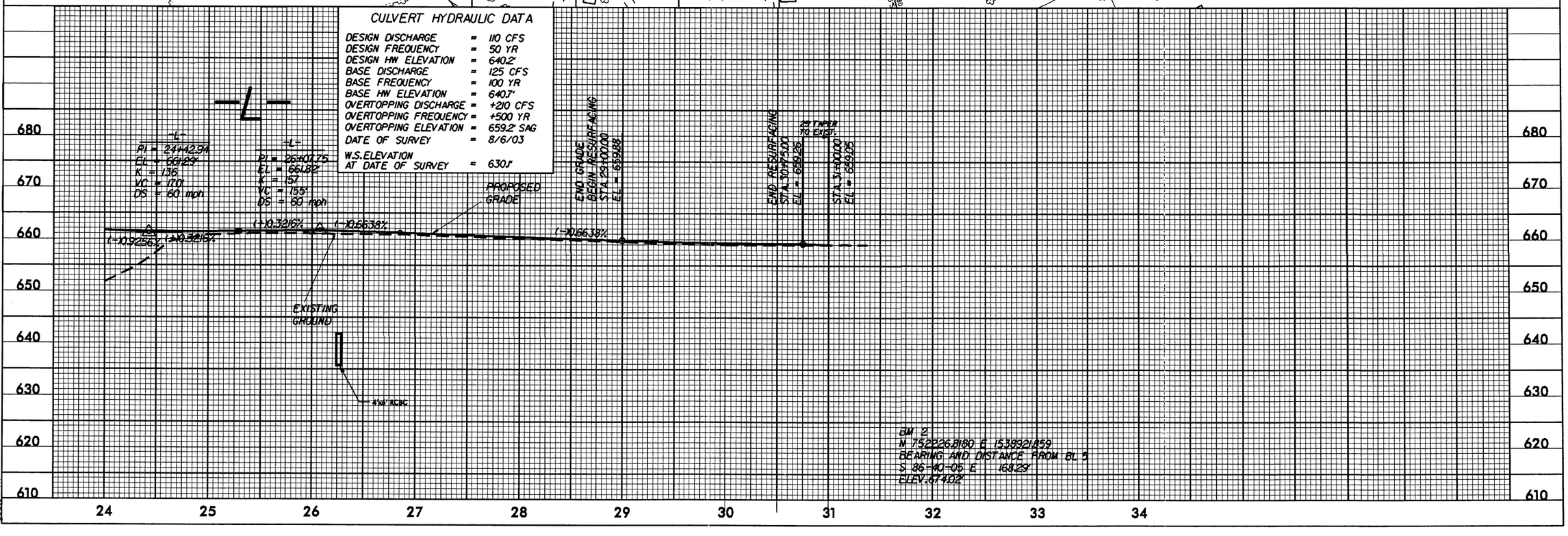
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

ENGLISH

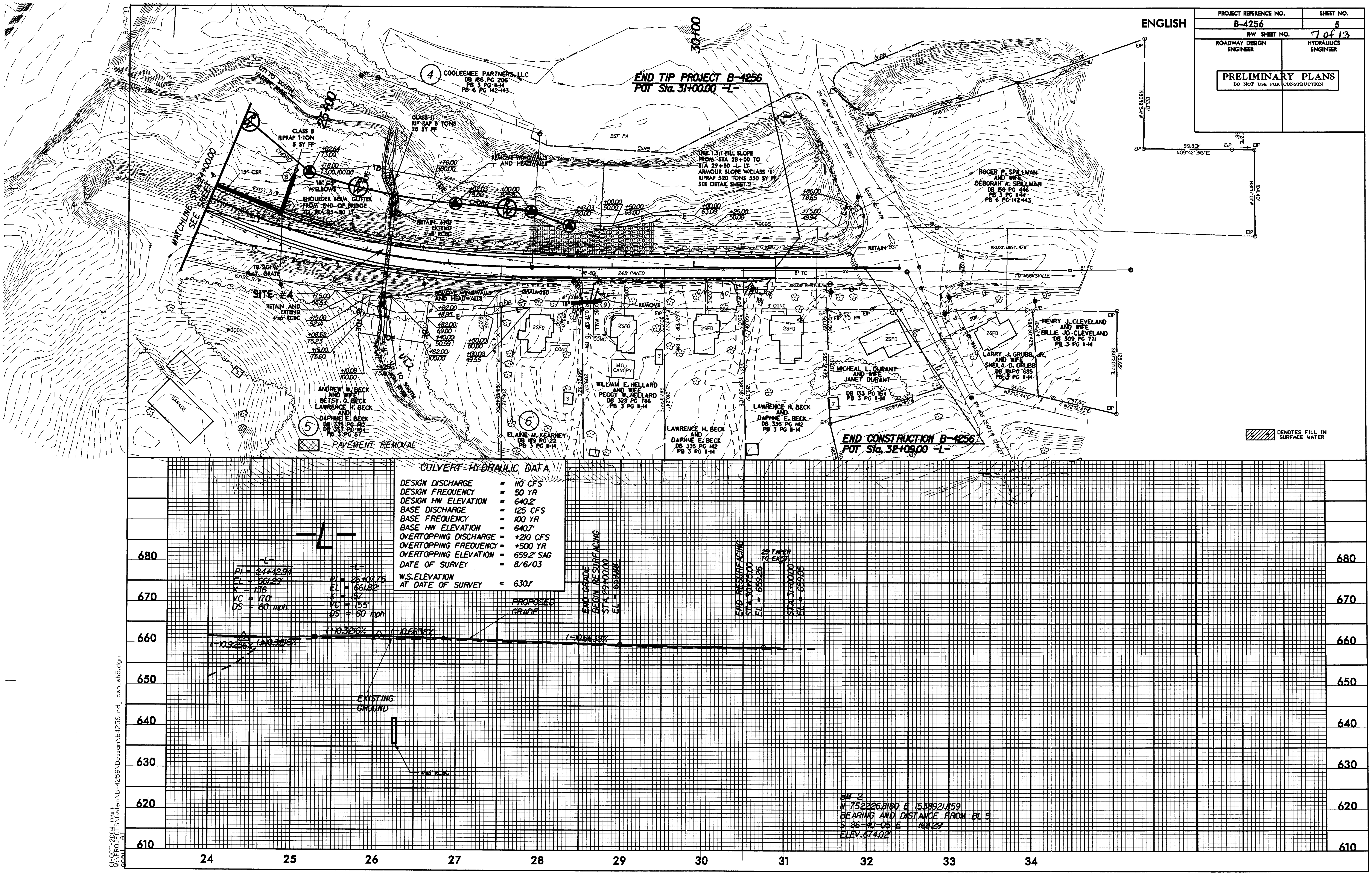


CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	=	110 CFS
DESIGN FREQUENCY	=	50 YR
DESIGN HW ELEVATION	=	640.2'
BASE DISCHARGE	=	125 CFS
BASE FREQUENCY	=	100 YR
BASE HW ELEVATION	=	640.7'
OVERTOPPING DISCHARGE	=	+210 CFS
OVERTOPPING FREQUENCY	=	+500 YR
OVERTOPPING ELEVATION	=	659.2' SAG
DATE OF SURVEY	=	8/6/03
W.S.ELEVATION AT DATE OF SURVEY	=	630.1



BM 2
N 752226.8180 E 1538921.859
BEARING AND DISTANCE FROM BL 5
S 86-40-05 E 168.29'
ELEV. 674.02'


ENGLISH
PROJECT REFERENCE NO. B-4256
SHEET NO. 5
R/W SHEET NO. 7 of 13
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
END TIP PROJECT B-4256
POT Sta. 31+00.00 -L-
END CONSTRUCTION B-4256
POT Sta. 32+09.00 -L-
MATCHLINE STA. 24+00.00 SEE SHEET 4
COOLEEMEE PARTNERS, LLC
DB 186 PG 206
PB 3 PG 11-14
PB 6 PG 142-143
ROGER P. SPILLMAN
AND WIFE
DEBORAH A. SPILLMAN
DB 156 PG 446
PB 3 PG 11-14
PB 6 PG 142-143
HENRY J. CLEVELAND
AND WIFE
BILLIE JO CLEVELAND
DB 309 PG 771
PB 3 PG 11-14
LARRY J. GRUBB, JR.
AND WIFE
SHEILA D. GRUBB
MICHEAL L. DURANT
AND WIFE
JANET DURANT
WILLIAM E. HELLARD
AND WIFE
PEGGY W. HELLARD
LAWRENCE H. BECK
AND
DAPHNE E. BECK
DB 335 PG 142
PB 3 PG 11-14
ANDREW W. BECK
AND WIFE
BETSY Q. BECK
LAWRENCE H. BECK
AND
DAPHNE E. BECK
ELAINE M. KEARNEY
SITE #4
RETAIN AND EXTEND 4'x6' RCBC
REMOVE WINGWALLS AND HEADWALLS
CLASS B RIPRAP 1 TON 5 SY FF
CLASS II RIP RAP 8 TONS 25 SY FF
SHOULDER BERM GUTTER FROM END OF BRIDGE TO STA. 25+30 LT
USE 1.5:1 FILL SLOPE FROM STA 28+00 TO STA 29+50 -L- LT ARMOUR SLOPE W/CLASS 'II' RIPRAP 520 TONS 550 SY FF SEE DETAIL SHEET 2
SR 1103 MAIN STREET
SR 1103 CENTER STREET
TO MOCKSVILLE
24.5' PAVED
PAVEMENT REMOVAL
DENOTES FILL IN SURFACE WATER
-L-
PI = 24+42.94
EL = 661.29'
K = 136
VC = 170'
DS = 60 mph
PI = 26+07.75
EL = 661.82'
K = 157
VC = 155'
DS = 60 mph
(-)0.9256%
(+)0.3216%
(-)0.6638%
PROPOSED GRADE
EXISTING GROUND
4'x6' RCBC
END GRADE BEGIN RESURFACING STA. 29+00.00 EL = 659.88
END RESURFACING STA. 30+75.00 EL = 659.26
25' TAPER TO EXIST.
STA. 31+00.00 EL = 659.05
BM 2
N 752226.8180 E 1538921.859
BEARING AND DISTANCE FROM BL 5
S 86-40-05 E 168.29'
ELEV. 674.02'
24 25 26 27 28 29 30 31 32 33 34
680 670 660 650 640 630 620 610

CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 110 CFS
DESIGN FREQUENCY	= 50 YR
DESIGN HW ELEVATION	= 640.2'
BASE DISCHARGE	= 125 CFS
BASE FREQUENCY	= 100 YR
BASE HW ELEVATION	= 640.7'
OVERTOPPING DISCHARGE	= +210 CFS
OVERTOPPING FREQUENCY	= +500 YR
OVERTOPPING ELEVATION	= 659.2' SAG
DATE OF SURVEY	= 8/6/03
W.S. ELEVATION AT DATE OF SURVEY	= 630±

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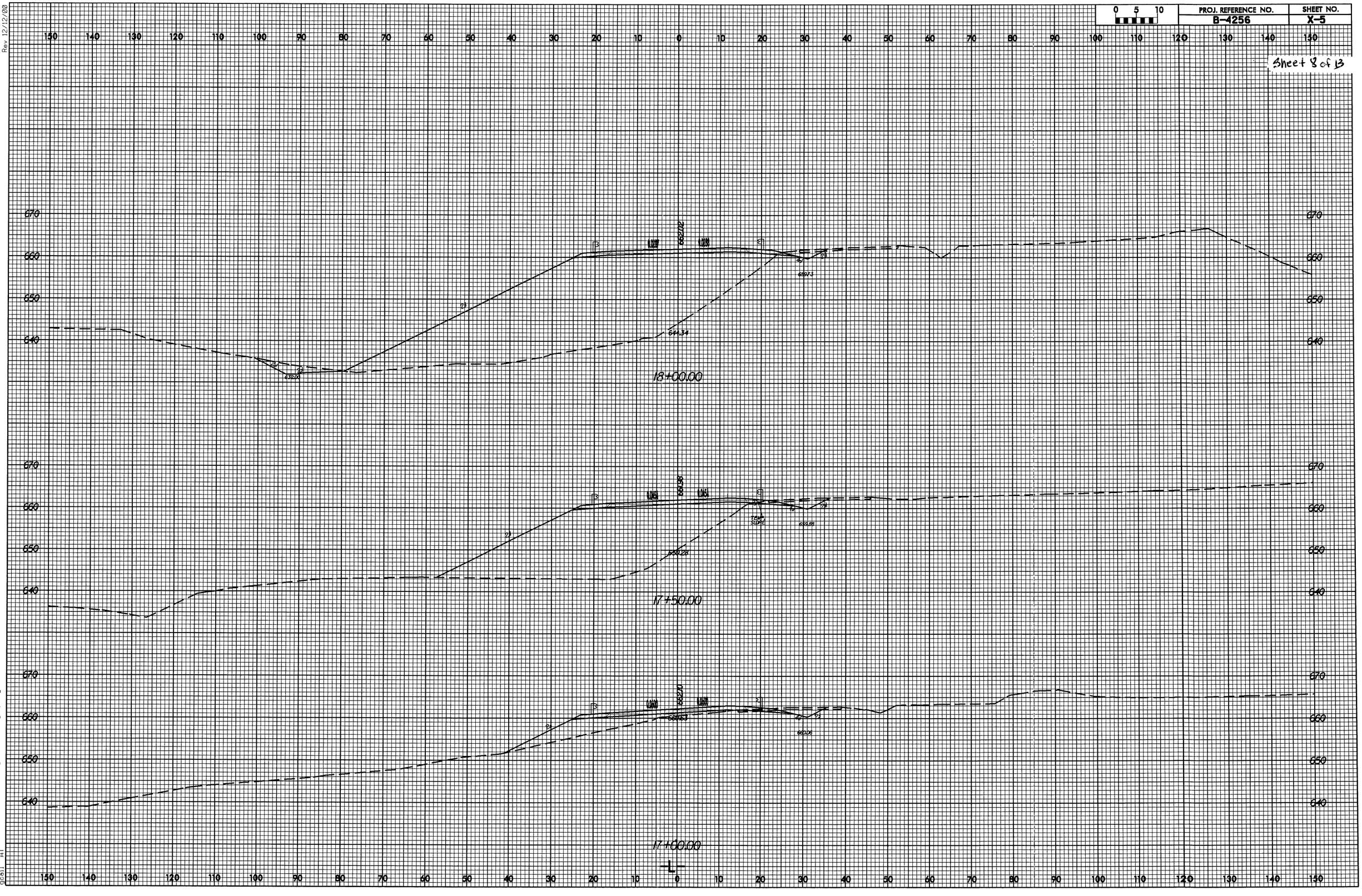
Rev 12/12/00

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4256	X-5

Sheet 8 of 13



Rev 12/12/00

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4256	X-6

Sheet 9 of 13

19+50.00

BEGIN BRIDGE STA.19+00.00

19+00.00

18+50.00

-L-

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scott

Rev 12/12/00

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4256	X-9

Sheet 10 of 13

24+00.00

23+50.00

END BRIDGE STA. 23+00.00

23+00.00

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gcal

Rev. 12/12/00

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	B-4256	X-12

Sheet 11 of 13

29+00.00

28+50.00

28+00.00

27+50.00

-L-

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gcail

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
2	ROGER SPILLMAN	PO BOX 738 COOLEEMEE NC 27014
3	DEBORAH SPILLMAN	PO BOX 738 COOLEEMEE NC 27014
4	COOLEEMEE PARTNERS, LLC	PO BOX 828 COOLEEMEE, NC 27014
5	ANDREW & LAWRENCE BECK	P. O. BOX 688 COOLEEMEE NC 27014

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
ROWAN DAVIE COUNTY

PROJECT: 8.1632101 (B-4256)

BRIDGE #80 OVER SOUTH YADKIN RIVER ON NC 801

WETLAND PERMIT IMPACT SUMMARY

			WETLAND IMPACTS				SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation In Wetlands (ac)	Mechanized Clearing (Method III) (ac)	Fill In SW (Natural) (ac)	Fill In SW (Pond) (ac)	Temp. Fill In SW (ac)	Existing Channel Impacted (ft)	Natural Stream Design (ft)
1	18+00-20+00	Roadway Fill @ UT 3					0.04			330	
2	20+50 - 21+30	Causeway - Prop Bridge Constr							0.15		
	20+30 - 21+20 Rt	Causeway - Remove Exist Bridge							0.09		
3	23+25	Bank Stabilization					0.01			51	
4	26+20	Culvert Extension					0.01			75	
TOTALS:			0	0	0	0	0.06	0	0.24	456	0

2 Bents in the water @ 37.7 square' each = 0.002 acre

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
ROWAN/DAVIE COUNTY
PROJECT: 33598.1.1 (B-4256)
BRIDGE #80 OVER SOUTH
YADKIN RIVER ON NC 801
SHEET 13 OF 13 September-04

Form Revised 3/22/01

CONTRACT: C201224 TIP: B-4256

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4256	1	

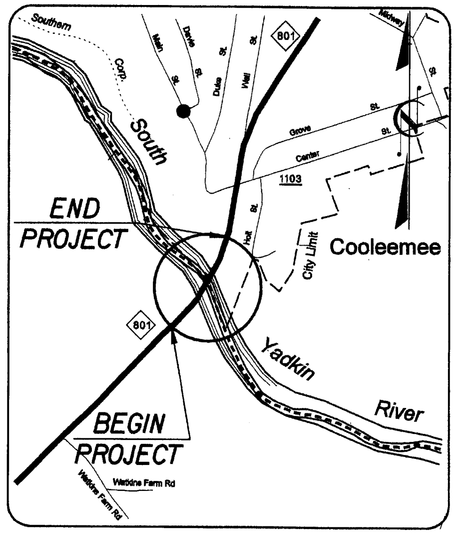
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
33598.1.1	BRSTP-801(1)	P.E.
33598.2.1	BRSTP-801(1)	RW
33598.3.2	BRSTP-801(6)	CONST

ROWAN-DAVIE COUNTIES

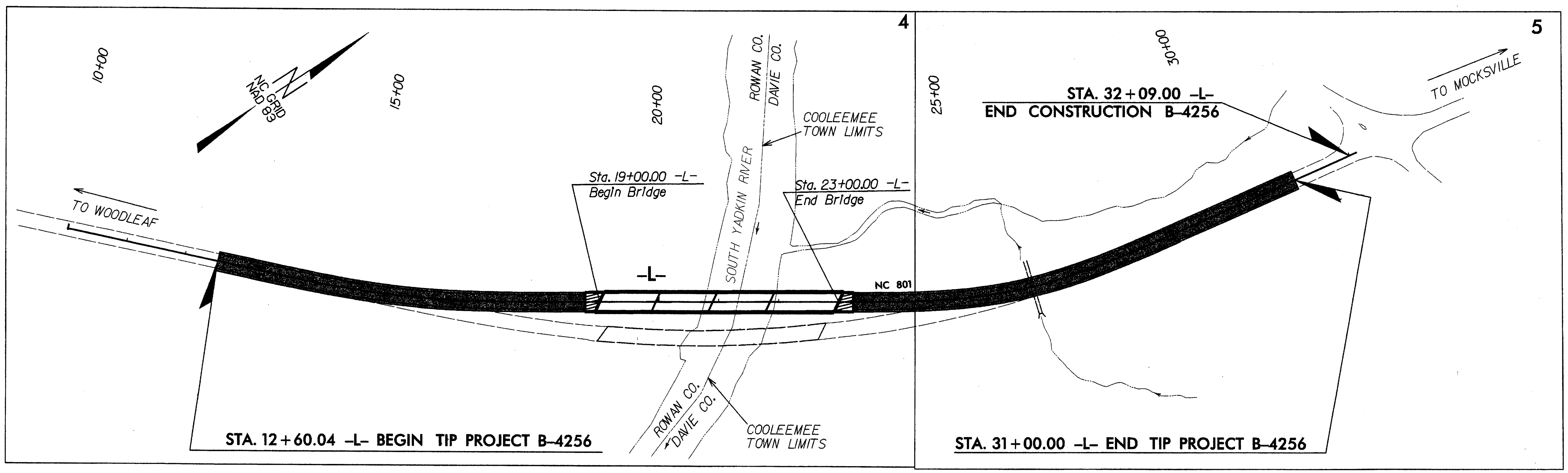
LOCATION: BRIDGE NO. 80 OVER SOUTH YADKIN RIVER ON NC 801

TYPE OF WORK: GRADING, DRAINAGE, STRUCTURE, AND PAVING

See Sheet 1-A For Index of Sheets
See Sheet 1-B For Conventional Symbols



VICINITY MAP



PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NCDOT CONTACT: CATHY HOUSER, P.E., PROJECT ENGINEER - DESIGN SERVICES

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2005 = 6000
ADT 2025 = 10000
DHV = 10 %
D = 60 %
T = 5 % *
** V = 50 MPH
*** V = 60 MPH
* TTST 2% DUAL 3%
** DAVIE CO.
*** ROWAN CO.

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4256 = 0.273 mi
LENGTH STRUCTURE TIP PROJECT B-4256 = 0.076 mi
TOTAL LENGTH OF TIP PROJECT B-4256 = 0.348 mi

Prepared In the Office of:
WANG ENGINEERING COMPANY, INC.
CARY, N.C.
FOR NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

2002 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
MAY 21, 2004

LETTING DATE:
MAY 17, 2005

GREG S. PURVIS, P. E.
PROJECT ENGINEER

SCOTT L. KENNEDY
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE DESIGN ENGINEER P.E.

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR DATE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

INDEX OF SHEETS

*S.U.E = SUBSURFACE UTILITY ENGINEER

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL SYMBOLS

ROADS & RELATED ITEMS

Edge of Pavement
Curb
Prop. Slope Stakes Cut — C
Prop. Slope Stakes Fill — F
Prop. Woven Wire Fence
Prop. Chain Link Fence
Prop. Barbed Wire Fence
Prop. Wheelchair Ramp — WCR
Curb Cut for Future Wheelchair Ramp — CCFR
Exist. Guardrail
Prop. Guardrail
Equality Symbol
Pavement Removal

RIGHT OF WAY

Baseline Control Point
Existing Right of Way Marker
Exist. Right of Way Line w/Marker
Prop. Right of Way Line with Proposed R/W Marker (Iron Pin & Cap)
Prop. Right of Way Line with Proposed (Concrete or Granite) R/W Marker
Exist. Control of Access Line — CA
Prop. Control of Access Line — CA
Exist. Easement Line — E
Prop. Temp. Construction Easement Line — E
Prop. Temp. Drainage Easement Line — TDE
Prop. Perm. Drainage Easement Line — PDE

HYDROLOGY

Stream or Body of Water
River Basin Buffer — RBB
Flow Arrow
Disappearing Stream
Spring
Swamp Marsh
Shoreline
Falls, Rapids
Prop Lateral, Tail, Head Ditches — FLOW

STRUCTURES

MAJOR
Bridge, Tunnel, or Box Culvert — CONC
Bridge Wing Wall, Head Wall and End Wall — CONC WW

MINOR
Head & End Wall — CONC HW
Pipe Culvert
Footbridge
Drainage Boxes — CB
Paved Ditch Gutter

UTILITIES

Exist. Pole
Exist. Power Pole
Prop. Power Pole
Exist. Telephone Pole
Prop. Telephone Pole
Exist. Joint Use Pole
Prop. Joint Use Pole
Telephone Pedestal — T
U/G Telephone Cable Hand Hold — HH
Cable TV Pedestal — C
U/G TV Cable Hand Hold — HH
U/G Power Cable Hand Hold — HH
Hydrant
Satellite Dish
Exist. Water Valve
Sewer Clean Out
Power Manhole — P
Telephone Booth
Cellular Telephone Tower
Water Manhole — W
Light Pole
H-Frame Pole
Power Line Tower
Pole with Base
Gas Valve
Gas Meter
Telephone Manhole — T
Power Transformer
Sanitary Sewer Manhole — S
Storm Sewer Manhole
Tank; Water, Gas, Oil
Water Tank With Legs
Traffic Signal Junction Box — S
Fiber Optic Splice Box — F
Television or Radio Tower
Utility Power Line Connects to Traffic Signal Lines Cut Into the Pavement — TS — TS

Recorded Water Line — W — W
Designated Water Line (S.U.E.*) — W — W
Sanitary Sewer — SS — SS
Recorded Sanitary Sewer Force Main — FSS — FSS
Designated Sanitary Sewer Force Main(S.U.E.*) — FSS — FSS
Recorded Gas Line — G — G
Designated Gas Line (S.U.E.*) — G — G
Storm Sewer — S — S
Recorded Power Line — P — P
Designated Power Line (S.U.E.*) — P — P
Recorded Telephone Cable — T — T
Designated Telephone Cable (S.U.E.*) — T — T
Recorded U/G Telephone Conduit — TC — TC
Designated U/G Telephone Conduit (S.U.E.*) — TC — TC
Unknown Utility (S.U.E.*) — ?UTL — ?UTL
Recorded Television Cable — TV — TV
Designated Television Cable (S.U.E.*) — TV — TV
Recorded Fiber Optics Cable — FO — FO
Designated Fiber Optics Cable (S.U.E.*) — FO — FO
Exist. Water Meter
U/G Test Hole (S.U.E.*) — ATTUR
Abandoned According to U/G Record
End of Information — E.O.I.

BOUNDARIES & PROPERTIES

State Line
County Line
Township Line
City Line
Reservation Line
Property Line
Property Line Symbol — PL
Exist. Iron Pin — EIP
Property Corner
Property Monument — ECM
Property Number — 123
Parcel Number — 6
Fence Line — WW & ISBW
Existing Wetland Boundaries — WLB
High Quality Wetland Boundary — HQ WLB
Medium Quality Wetland Boundaries — MQ WLB
Low Quality Wetland Boundaries — LQ WLB
Proposed Wetland Boundaries — WLB
Existing Endangered Animal Boundaries — EAB
Existing Endangered Plant Boundaries — EPB

BUILDINGS & OTHER CULTURE

Buildings
Foundations
Area Outline
Gate
Gas Pump Vent or U/G Tank Cap
Church
School
Park
Cemetery
Dam
Sign — S
Well — W
Small Mine
Swimming Pool

TOPOGRAPHY

Loose Surface
Hard Surface
Change in Road Surface
Curb
Right of Way Symbol — R/W
Guard Post — GP
Paved Walk
Bridge
Box Culvert or Tunnel
Ferry
Culvert
Footbridge
Trail, Footpath
Light House

VEGETATION

Single Tree
Single Shrub
Hedge
Woods Line
Orchard
Vineyard — VINEYARD

RAILROADS

Standard Gauge — CSX TRANSPORTATION
RR Signal Milepost — MILEPOST 35
Switch — SWITCH

revised 02/02/00

SURVEY CONTROL SHEET B4256

BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
3	BL-3	749924.2560	1537284.9960	680.37	OUTSIDE PROJECT LIMITS	
2	B4256-2	750810.2780	1538221.1180	662.87	17+83.20	66.68 RT
4	BL-4	751263.7650	1538507.5440	662.37	23+18.83	61.21 RT
5	BL-5	752236.5990	1538753.8520	659.04	OUTSIDE PROJECT LIMITS	

****

BM1 ELEV=685.45
N 750037 E 1537192
CHISTLED SQUARE IN THE NE
CORNER OF A CONCRETE PAD
AT OLD ABANDONED BAR, NOW
SURVING AS A JUNKYARD
L STATION 10+00
S 63° 29' 31.1" W DIST 507.31

****

****

BM2 ELEV=674.02
N 752227 E 1538922
R/R SPIKE IN ROOT ON THE
NW SIDE OF A 24" WILLOW OAK,
17.25' FROM THE EP OF
CENTER ST.
L STATION 32+50
N 76° 57' 49.4" E DIST 212.18

****

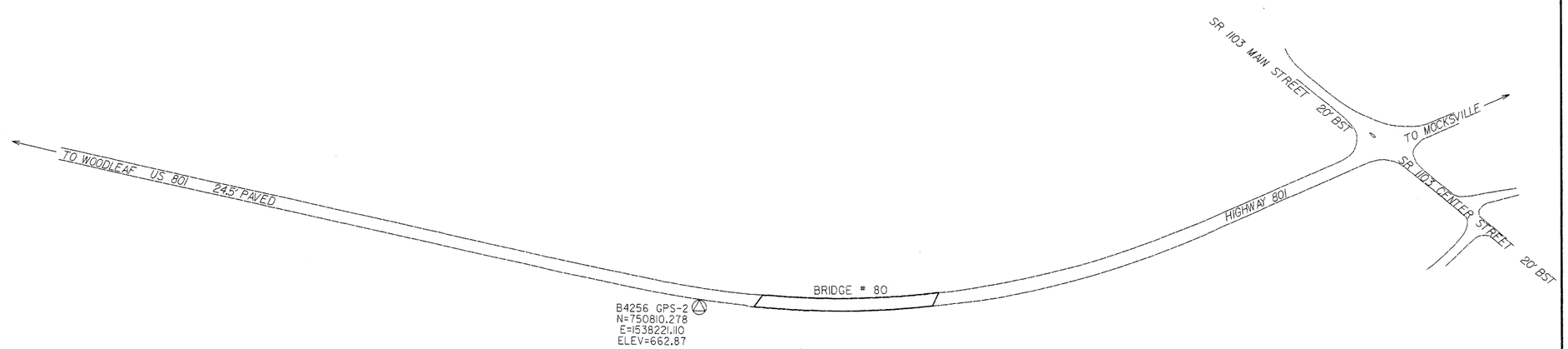
****

389 JAS ELEV=661.88
N 751243 E 1538461
LOCATED ON BRIDGE#80 OVER
THE SOUTH YADKIN RIVER, IN THE
NE END OF THE WHEELGUARD OF
BRIDGE. STANDARD TABLET STAMPED
"389 JAS 1965 663"
L STATION 22+76 34 RIGHT

****

NC GRID
NAD 83

B4256 GPS-1
N=749374.387
E=1536725.371
ELEV=698.40



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B4256-1" WITH NAD 83 STATE PLANE GRID COORDINATES OF NORTHING: 749374.3871(ft) EASTING: 1536725.3714(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999889750
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B4256-1" TO -L- STATION 10+00.00 IS N 45 ° 59' 47.34" E 1279.70'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NGVD 29

NOTES:

THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:

HTTP:\WWW.DOH.DOT.STATE.NC.US/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT B4256_LS_CONTROL_031209.TXT

SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT.

IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

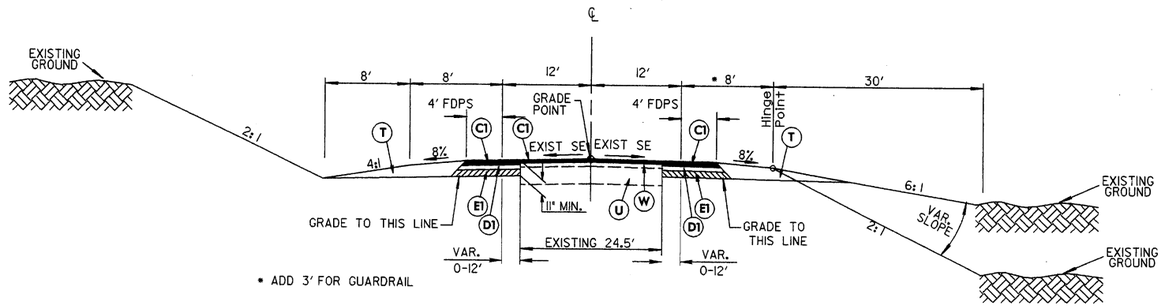
△ ***INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.***

PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.

NOTE: DRAWING NOT TO SCALE

B-4256	2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

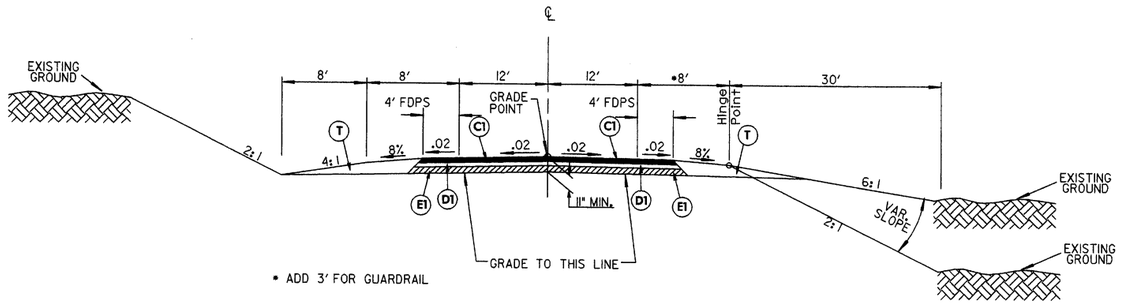
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1 AS FOLLOWS

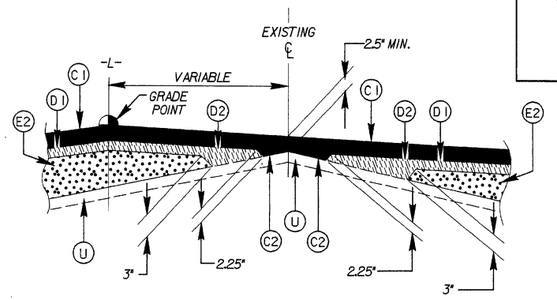
-L- Sta. 12+60.04 to Sta. 16+82.34
-L- Sta. 24+07.79 to Sta. 31+00.00



TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2 AS FOLLOWS

-L- Sta. 17+09.14 to Sta. 18+75.00
-L- Sta. 23+25.00 to Sta. 24+07.79

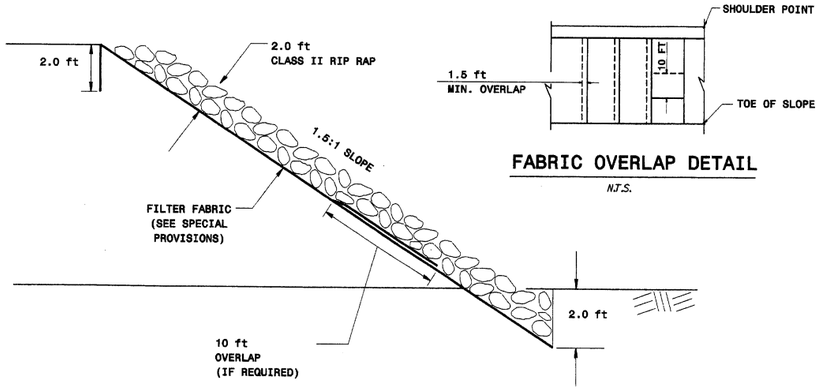


DETAIL SHOWING METHOD OF WEDGING

PAVEMENT SCHEDULE	
C1	PROP. APPROX. 2.5" ASPHALT CONC. SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 140 LBS PER SQ. YD. IN EACH OF TWO LAYERS.
C2	PROP. VAR. DEPTH ASPHALT CONC. SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 1.25" OR GREATER THAN 1.5" IN DEPTH.
D1	PROP. APPROX. 3" ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 342 LBS PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONC. INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS PER SQ. YD PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 2.25" OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 5.5" ASPHALT CONC. BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 627 LBS PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONC. SURFACE 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" OR GREATER THAN 5.5" IN DEPTH.
T	EARTH MATERIAL
U	EXISTING PAVEMENT

NOTE: ALL SLOPES 1:1 UNLESS OTHERWISE SPECIFIED

ROCK PLATING DETAIL



ROCK PLATING DETAIL

N.T.S.

FABRIC OVERLAP DETAIL

N.T.S.

COMPUTED BY: GSP	DATE: 2/23/2004		
CHECKED BY: SLK	DATE: 7/26/2004		

PROJECT NO.	SHEET NO.
B-4256	3-A

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

SUMMARY OF EARTHWORK

LINE	Station	Station	Uncl. Excav. YD³	Undercut YD3	Embank. + % YD³	Borrow YD³	Waste YD³
BEFORE BRIDGE							
-L-	12+80.04	19+00.00	758		8252	7494	
SUB TOTAL			758		8252	7494	
AFTER BRIDGE							
-L-	23+00.00	31+98.00	302		11597	11295	
SUB TOTAL			302		11597	11295	
TOTAL			1060		19849	18789	
FILL EXISTING DITCH							
-L-	19+37.00	20+12.00			1620	1620	
SUBTOTAL					1620	1620	
SUBTOTAL			1060		21469	20409	
Estimated Shoulder Material					965	965	
Estimate 5% for topsoil repl.						1069	
GRAND TOTALS:			1060		22434	22443	
SAY:			1100			22500	

PARCEL INDEX

PARCEL No.	PROPERTY OWNERS NAME	SHEET NO.
1	WILLIE J. LAZENBY JR. AND WIFE CHRISTINE P. LAZENBY	4
2	ROGER P. SPILLMAN	4
3	DEBORAH A. SPILLMAN	4
4	COOLEEMEE PARTNERS LLC.	4, 5
5	ANDREW W. BECK AND WIFE BETSY O. BECK LAWRENCE H. BECK AND DAPHNE E. BECK	4, 5
6	ELAINE M. KEARNEY	5

SUMMARY OF EXISTING ASPHALT PAVEMENT REMOVAL

LINE	STATION TO STATION		LOC LT/RT/CL	YD²
-L-	14+92.00	19+12.00	RT.	789
-L-	22+65.00	26+13.00	RT.	684
			TOTAL	1473
			SAY	1480

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL
TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOLDER 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
G = GATING IMPACT ATTENUATOR TYPE 350
NG = NON-GATING IMPACT ATTENUATOR TYPE 350

GUARDRAIL SUMMARY

LINE	BEG. STA.	END STA.	LOC.	LENGTH STRAIGHT	LENGTH SHOP CURVED	LENGTH DOUBLE FACED	WARRANT POINT APPR. END	WARRANT POINT TRAIL. END	"N" DIST. FROM E.O.L.	TOTAL SHLDR WIDTH	FLARE LENGTH APPR. END	FLARE LENGTH TRAIL. END	W APPR. END	W TRAIL. END	ANCHORS XI MOD	ANCHORS TYPE III	ANCHORS GRAU 350	ANCHORS TEMP. GRAU-350	ANCHORS AT-1	ANCHORS CAT-1	ANCHORS VI MOD	IMP. ATTEN. TYPE 350 EA	IMP. ATTEN. TYPE 350 G	IMP. ATTEN. TYPE 350 NG	REMOVE EXISTING GUARDRAIL	REMARKS
-L-	15+75.00	19+00.00	RT.	325.00			15+75.00		8	11	1.00	0.00				1	1								100	
-L-	15+75.00	19+00.00	LT.	325.00				15+75.00	8	11	0.00	1.00				1	1								202	
-L-	23+00.00	28+37.50	RT.	537.50				28+40.00	8	11	0.00	1.00				1	1								598	
-L-	23+00.00	31+98.00	LT.	865.77	78.72		31+98.00		8	11	1.00	0.00				1			1						976	
-L-	17+50.00		RT.															1	1							
-L-	23+75.00		RT.															1	1							
		SUBTOTAL		2053.27	78.72											4	3	2	1						1676	
		TYPE III @ 18.75' X 4		-75.00																						
		GRAU-350 @ 50' X 3		-150.00																						
		TOTAL		1828.27	78.72																					
		SAY		1825.00	67.5																					

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

STATION	LOCATION (LT, RT, OR CL)	STRUCTURE NO. FROM	STRUCTURE NO. TO	TOP ELEVATION	INVERT IN ELEVATION	INVERT OUT 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 OTHERWISE) 12"	15"	16"	24"	30"	36"	42"	48"	15" SIDE DRAIN PIPE	18" SIDE DRAIN PIPE	24" SIDE DRAIN PIPE	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS R.C.P.	ENDWALLS STD. 838.01 OR STD. 838.11 (UNLESS NOTED OTHERWISE) CU. YARDS C.S.P.	QUANTITIES FOR DRAINAGE STRUCTURES (TOTAL L.F. FOR PAY QUANTITY SHALL BE COL. "A" + (1.5 COL. "B") PER EACH (4' THRU 5.0')	YARDS A 5' THRU 10.0'	YARDS B 10.0' AND ABOVE	C.B. STD. 840.01 OR STD. 840.02	FRAME, GRATES, AND HOOD STANDARD 840.03 TYPE OF GRATE E	F	G	D.I. STD. 840.14 OR STD. 840.15	D.I. FRAME AND GRATE STD. 840.16	M.D.I. TYPE "A" STD. 840.17 OR 840.26	M.D.I. TYPE "B" STD. 840.18 OR 840.27	M.D.I. TYPE "D" STD. 840.19 OR 840.28	M.D.I. FRAME WITH GRATE STD. 840.20	M.D.I. FRAME WITH TWO GRATES STD. 840.22	M.D.I. FRAME WITH TWO GRATES STD. 840.29	15" CS PIPE ELBOWS	STEEL GRATE AND FRAME, STD. 840.37	TRAFFIC BEARING DI, STD. 840.38	CORR. STEEL ELBOWS NO. 8 SIZE	CONC. COLLARS CL. "B" YD³ STD. 840.72	CONC. & BRICK PIPE PLUG, YD³ STD. 840.71	PIPE REMOVAL (FEET)	REMARKS
SIZE																																													
THICKNESS OR GAUGE																	0.064	0.064	0.064	1.63	0.079		0.079		0.109	0.109																					
13+72	RT.	1																									28																				
13+84	LT.	2			EXIST	856.30					20																																				
17+61	LT.	4		661.05	858.30	843.00												48													1	5	8.05														
17+61	LT.	4	5		858.30	843.00																																								
17+70	RT.																																												
18+24	LT.	3	4		859.25	858.30		X		112																																			
18+72	LT.	3		862.04	859.25																										1															
23+26	LT.	6		862.00	859.25	857.35																									1														
24+06	LT.	6	7		859.25	857.35												156																												
24+85	LT.	7		860.10	857.35																										1															
24+85	LT.	7	8		857.35	839.00												50																												
26+63	RT.	9																										40																		
							TOTAL:			112	20							254										28	40		4	5	8.05												4		4	4		0.45		113	

ABBREVIATIONS
C.B. CATCH BASIN
N.D.I. NARROW DROP INLET
D.I. DROP INLET
M.D.I. MEDIAN DROP INLET
M.D.I.(N.S.) MEDIAN 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

B-4256	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SKETCH SHOWING CHANGE IN RELATIONSHIP TO ROADWAY

4' P.S. 4' P.S. 24' 18' 32' F to F 18' 24' 4' P.S. 4' P.S.

- L -
Pls Sta 13+91.72
Θs = 2°17'30.6"
Ls = 160.00'
LT = 106.68'
ST = 53.34'

- L -
PI Sta 15+75.85
Δ = 7°29'02.2" (LT)
D = 2°51'53.2"
L = 261.24
T = 130.81'
R = 2,000.00'
DS = 60
SE = 0.06

- L -
Pls Sta 17+59.62
Θs = 2°17'30.6"
Ls = 160.00'
LT = 106.68'
ST = 53.34'

▨ - FILL EXISTING DITCH

Pls Sta 24+54.35
Θs = 4°58'29.2"
Ls = 145.00'
LT = 96.70'
ST = 48.37'

15+00 20+00

Sta. 18+75.00 -L- Begin Approach Slab
Sta. 19+00.00 -L- Begin Bridge
Sta. 23+25.00 -L- End Approach Slab
Sta. 23+00.00 -L- End Bridge

CSSta. 17+06.28
SCSta. 14+45.04
STSta. 18+66.28
TSSta. 12+85.04
TSSta. 23+57.64

(1) WILLIE J. LAZENBY, JR. AND WIFE CHRISTINE P. LAZENBY DB T29 PG 212 BOOK OF MAPS 776

(2) ROGER P. SPILLMAN DB 745 PG 99 DB 763 PG 496 BOOK OF MAPS 777

(3) DEBORAH A. SPILLMAN DB 745 PG 98 BOOK OF MAPS 776

(4) COOLEEMEE PARTNERS, LLC DB 186 PG 206 PB 3 PG 11-14 PB 6 PG 142-143

(5) ANDREW W. BECK AND WIFE BETSY O. BECK LAWRENCE H. BECK AND DAPHNE E. BECK DB 325 PG 142 DB 357 PG 164 PB 3 PG 57

ANDREW J. PATTERSON, JR. AND WIFE EVELINE Y. PATTERSON DB 522 PG 497 BOOK OF MAPS 776

N 44°53'48.1" E

N 32°49'44.7" E

REMOVE 8' OF EXISTING PIPE, COLLAR AND EXTEND

SHOULDER BERM GUTTER FROM GUTTER STA 17+00 LT TO BEGIN OF BRIDGE

CLASS II RIPRAP TO ELEV. 643.4' +/-130 TONS (STRUCTURE PAY ITEM)

CLASS 'B' RIPRAP 2 TONS 7 SY FF

CLASS II RIPRAP 1 TON 5 SY FF

3' LATERAL BASE DITCH STA 17+68 -L- LT. TO STA 20+80 -L- LT SEE DETAIL #1 2693 CY DDE

DITCH TO BE CONSTRUCTED BEFORE ROADWAY FILL IS PLACED

CL DITCH TB OF DITCH

TB OF TRIBUTARY

CL OF TRIBUTARY

CHORD

RETAIN

R=10 TYP.

R=20

GRADE TO DRAIN

GRAU-350

TEMP. GRAU-350 STA. 17+50.00 RT.

TEMP. GRAU-350 STA. 23+75.00 RT. 61.2' RT.

TB 2GI W/FLAT GRATE

15" CSP W/ELBOWS

15" CSP

TYPE III

REMOVE BRIDGE = 80

CLASS II RIPRAP ELEV. 643.4 +/- 45 TONS (STRUCTURE PAY ITEM)

EXCAVATE EXISTING ROADWAY FILL (STRUCTURE PAY ITEM)

FILL EXISTING DITCH +/- 1350 CY

TAIL DITCH SEE DETAIL 2 -L- STA. 17+70 RT. 20 CY DDE

MATCHLINE STA.24+00.00 SEE SHEET 5

BL-4 PINC 23+25.30 STA. 23+18.83 -L- 66.2' RT.

B4256 GPS-2 -BL-PINC 17+88.93 STA. 17+83.20 -L- 66.68' RT.

BEGIN TIP PROJECT B-4256 BEGIN CONSTRUCTION POT Sta. 12+60.04 -L-

UG TANK 6000 GAL 3 COMPARTMENTS 3000/4000/4000

A'G GAS TANKS ABANDONED

MONITORING WELL

ISBLK BUS.

ISFD

COOLEEMEE TOWN LIMIT

C/L RIVER = COUNTY LINE = PROPERTY LINE ROWAN CO. DAVIE CO.

SOUTH YADKIN RIVER

DETAIL 1
LATERAL BASE DITCH
(Not to Scale)

Natural Ground 2H D 2H Fill Slope 1'/Ft. B b

Min. D = 1.0 Ft.
B = 3.0 Ft.
b = 10.0 Ft.

-L- STA. 17+68 LT. TO -L- STA. 20+80 LT. 2693 CY DDE

DETAIL 2
TAIL DITCH
(Not to Scale)

Natural Ground 2H D 2H Natural Ground

Min. D = 1 Ft.

-L- STA. 17+70 RT. 20 CY DDE

▨ - PAVEMENT REMOVAL

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	=	22,000 CFS
DESIGN FREQUENCY	=	50 YR
DESIGN HW ELEVATION	=	642.4'
BASE DISCHARGE	=	26,000 CFS
BASE FREQUENCY	=	100 YR
BASE HW ELEVATION	=	643.8'
OVERTOPPING DISCHARGE	=	+38,000 CFS
OVERTOPPING FREQUENCY	=	+500 YR
OVERTOPPING ELEVATION	=	661.5'
DATE OF SURVEY	=	8/6/03
W.S.ELEVATION AT DATE OF SURVEY	=	630.1'

SEE STRUCTURE PLANS S-1 THRU S-

-L- PI = 13+99.31 EL = 664.22' K = 305 VC = 125' DS = 60 mph

-L- PI = 15+50.29 EL = 663.29' K = 436 VC = 120' DS = 60 mph

-L- PI = 17+39.96 EL = 661.60' K = 142 VC = 210' DS = 60 mph

-L- PI = 21+50.16 EL = 664.00' K = 156 VC = 235' DS = 60 mph

-L- PI = 24+42.94 EL = 661.29' K = 136 VC = 170' DS = 60 mph

STA. 12+90.04 EL = 665.57'

STA. 12+85.04 EL = 665.39'

BEGIN GRADE

PROPOSED GRADE

(-)10.6160% (-)10.8910% (+)10.5851% (-)10.9256%

18"

BEGIN BRIDGE STA. 19+00.00

END BRIDGE STA. 23+00.00

1.65:1=SKEWED 1.5:1=NORMAL

EXISTING GROUND

CLASS II RIP RAP

ACTUAL LENGTH = 255'
ACTUAL SLOPE = 1.3700%

0.6000%

BEGIN BASE DITCH STA. 17+52.00 LT. ELEV. 632.50

STA. 20+00.00 LT. ELEV. 629.50

END BASE DITCH STA. 20+80.00 LT. ELEV. 628.50

BM 1
N 750036.9700 E 1537191.873
BL STA 5+09.86 OFFSET 145.87' LEFT
ELEV. 685.45'

USGS 389 JAS
BL STA 22+83.09
OFFSET 28.03'
ELEV. 661.91'
(REASSIGNED VALUE)

NWSE & WSE 8603 630.09

680 670 660 650 640 630 620 610

11 12 13 14 15 16 17 18 19 20 21 22 23 24

...\Proj\b4256_roy_psh_sh4.dgn 08/09/2004 03:32:59 PM

B-4256	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PIs Sta 24+54.35
Θs = 4° 58' 29.2"
Ls = 145.00'
LT = 96.70'
ST = 48.37'

PI Sta 26+02.81
Δ = 13° 40' 53.3" (LT)
D = 6° 51' 42.4"
L = 199.39'
T = 100.17'
R = 835.00'
DS = 50 mph
SE = 0.06

PIs Sta 27+50.40
Θs = 4° 58' 29.2"
Ls = 145.00'
LT = 96.70'
ST = 48.37'

NC GRID NAD 83

END TIP PROJECT B-4256
POT Sta. 31+00.00 -L-

POT Sta. 32+49.53

CSSta. 27+02.03

ST Sta. 28+47.03

SCSta. 25+02.64

MATCHLINE STA 24+00.00 SEE SHEET 4

CLASS B RIPRAP 1 TON 5 SY FF

CLASS II RIP RAP 8 TONS 25 SY FF

15" CSP

16" CSP W/ELBOWS

SHOULDER BERM GUTTER FROM END OF BRIDGE TO STA. 25+50 LT

RETAIN AND EXTEND 4'x8' RCBC

REMOVE WINGWALLS AND HEADWALLS

TRANSITION GUARDRAIL

REMOVE & REPLACE EXIST. GUARDRAIL

USE 1.5:1 FILL SLOPE FROM STA. 28+00 TO STA 29+50 -L- LT ARMOUR SLOPE W/CLASS 'II' RIPRAP 520 TONS 550 SY FF SEE DETAIL SHEET 2

RETAIN BST

N 9°11'53.0" E

TB 2GI W/ FLAT GRATE

RETAIN AND EXTEND 4'x6' RCBC

REMOVE WINGWALLS AND HEADWALLS

GRAU-350

REMOVE

TO MOCKSVILLE

BL-5
POT 33+28.83

ROGER P. SPILLMAN AND WIFE DEBORAH A. SPILLMAN
DB 158 PG 446
PB 3 PG 11-14
PB 6 PG 142-143

HENRY J. CLEVELAND AND WIFE BILLIE JO CLEVELAND
DB 309 PG 771
PB 3 PG 11-14

LARRY J. GRUBB, JR. AND WIFE SHEILA D. GRUBB
DB 181 PG 685
PB 3 PG 11-14

MICHEAL L. DURANT AND WIFE JANET DURANT
DB 133 PG 154
PB 3 PG 11-14

WILLIAM E. HELLARD AND WIFE PEGGY W. HELLARD
DB 328 PG 786
PB 3 PG 11-14

LAWRENCE H. BECK AND DAPHNE E. BECK
DB 335 PG 142
PB 3 PG 11-14

ANDREW W. BECK AND WIFE BETSY O. BECK
LAWRENCE H. BECK AND DAPHNE E. BECK
DB 335 PG 142
DB 357 PG 184
PB 3 PG 57

ELAINE M. KEARNEY
DB 189 PG 22
PB 3 PG 11-14

COOLEEMEE PARTNERS, LLC
DB 186 PG 206
PB 3 PG 11-14
PB 6 PG 142-143

END CONSTRUCTION B-4256
POT Sta. 32+09.00 -L-

SR 1103 MAIN STREET 80' BST

SR 1103 CENTER STREET

100.00' EXIST. R/W

60.00' EXIST. R/W

WOODS

2SFD

GARAGE

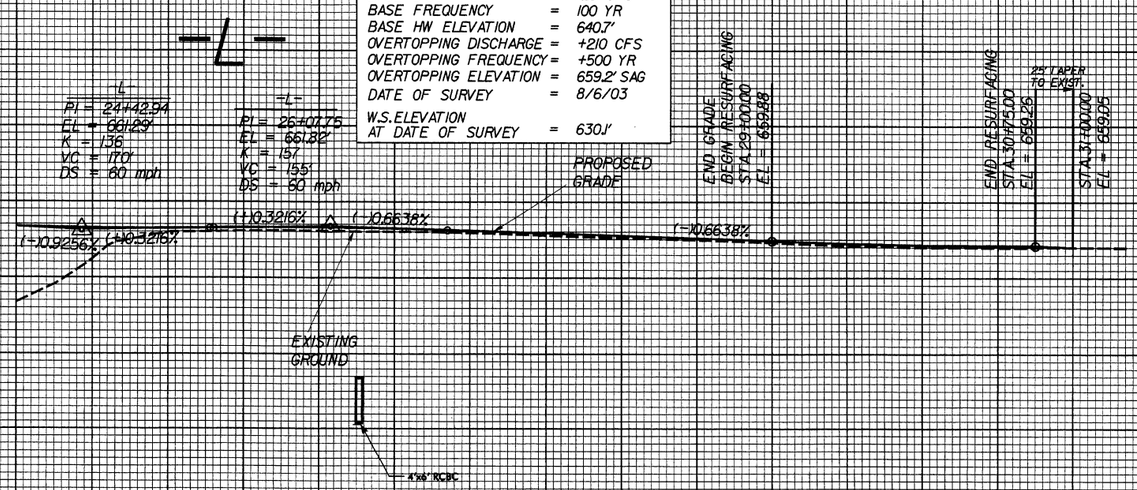
MTL CANOPY

CONC WALL

- PAVEMENT REMOVAL

CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	=	110 CFS
DESIGN FREQUENCY	=	50 YR
DESIGN HW ELEVATION	=	640.2'
BASE DISCHARGE	=	125 CFS
BASE FREQUENCY	=	100 YR
BASE HW ELEVATION	=	640.7'
OVERTOPPING DISCHARGE	=	+210 CFS
OVERTOPPING FREQUENCY	=	+500 YR
OVERTOPPING ELEVATION	=	659.2' SAG
DATE OF SURVEY	=	8/6/03
W.S. ELEVATION AT DATE OF SURVEY	=	630.1'



BM 2
N 752226.8180 E 1538921.859
BEARING AND DISTANCE FROM BL 5
S 86-40-05 E 168.29'
ELEV. 674.02'

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CROSS-SECTION SUMMARY

PROJ. REFERENCE NO.	SHEET NO.
B-4256	X-1

NOTE: EMBANKMENT COLUMN INCLUDES BACKFILL FOR UNDERCUT

Approximate quantities only. Unclassified excavation, borrow excavation, shoulder borrow, fine grading, clearing and grubbing, breaking of existing pavement and removal of existing pavement will be paid for at the lump sum price for "Grading".

Station -L-	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
13+00.00	98	1
13+50.00	186	6
14+00.00	66	31
14+50.00	9	31
15+00.00	33	6
15+50.00	55	2
16+00.00	63	0
16+50.00	86	0
17+00.00	71	94
17+50.00	40	792
18+00.00	33	1971
18+50.00	15	2608
23+50.00	8	941
24+00.00	26	1737
24+50.00	46	1408
25+00.00	59	380
25+50.00	41	681
26+00.00	10	800
26+50.00	2	897
27+00.00	2	723
27+50.00	2	567
28+00.00	2	479
28+50.00	3	273
29+00.00	4	133
29+50.00	5	177
30+00.00	7	186
30+50.00	21	124
31+00.00	40	75
31+50.00	23	57

PRELI MINARY PLANS
DO NOT USE FOR CONSTRUCTION

CROSS SECTION INDEX SHEET

LINE	STATION TO STATION		SHEET TO SHEET	
-L-	12+50.00	31+50.00	X-2	X-14

B-4256 X-2

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

670
660
650

13+50.00

680
670
660

13+00.00

680
670
660

12+50.00

B-4256 X-3

15+00.00

14+50.00

14+00.00

670 660 650 680 670 660 650

690 680 670 660 650

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

B-4256 X-4

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

670
660
650

662.41
661.49
659.89
660.88

16+150.00

662.25
659.33
660.75

16+100.00

664.25
662.72
659.94
660.73

16+050.00

-L-

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B-4256 | X-5

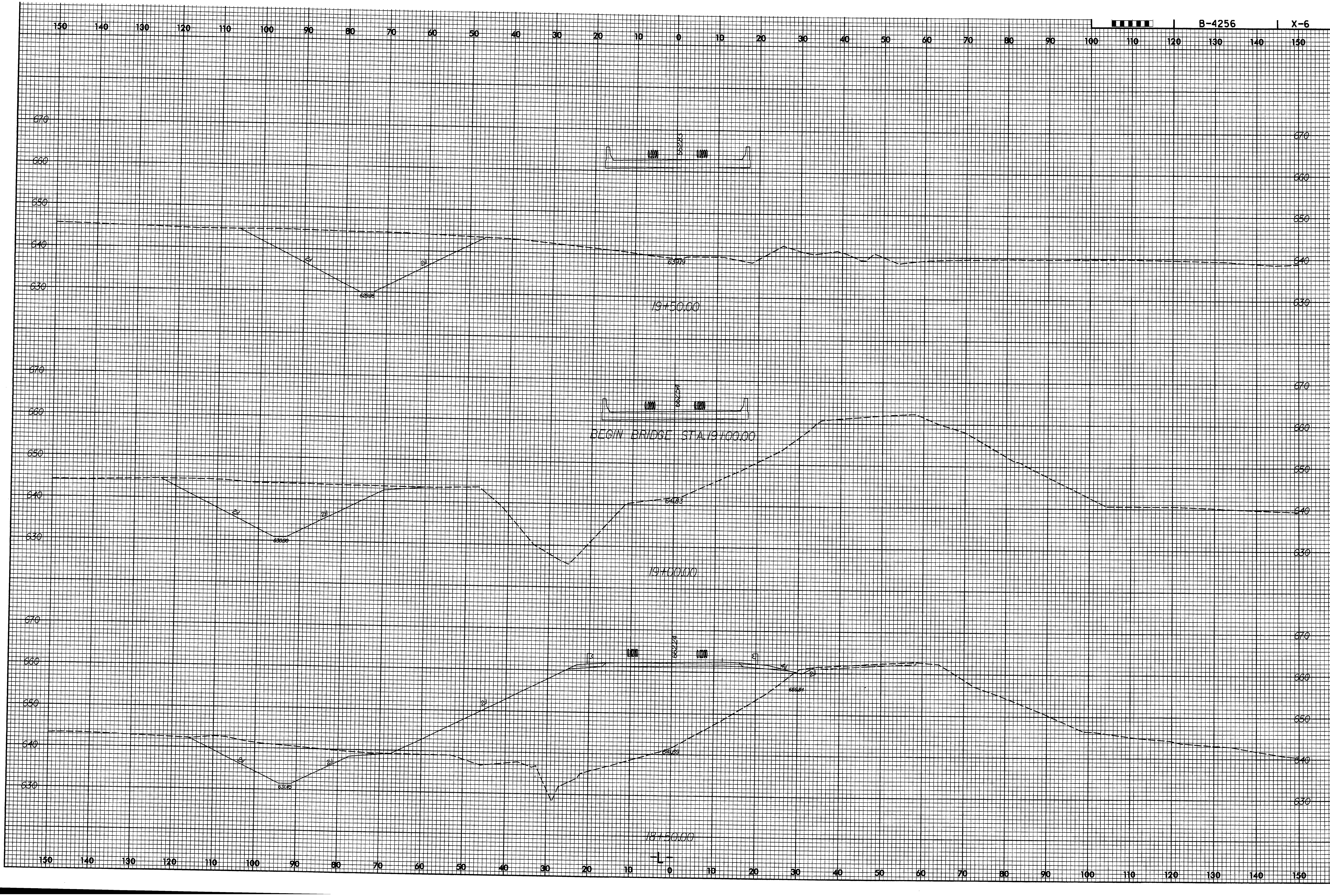
150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

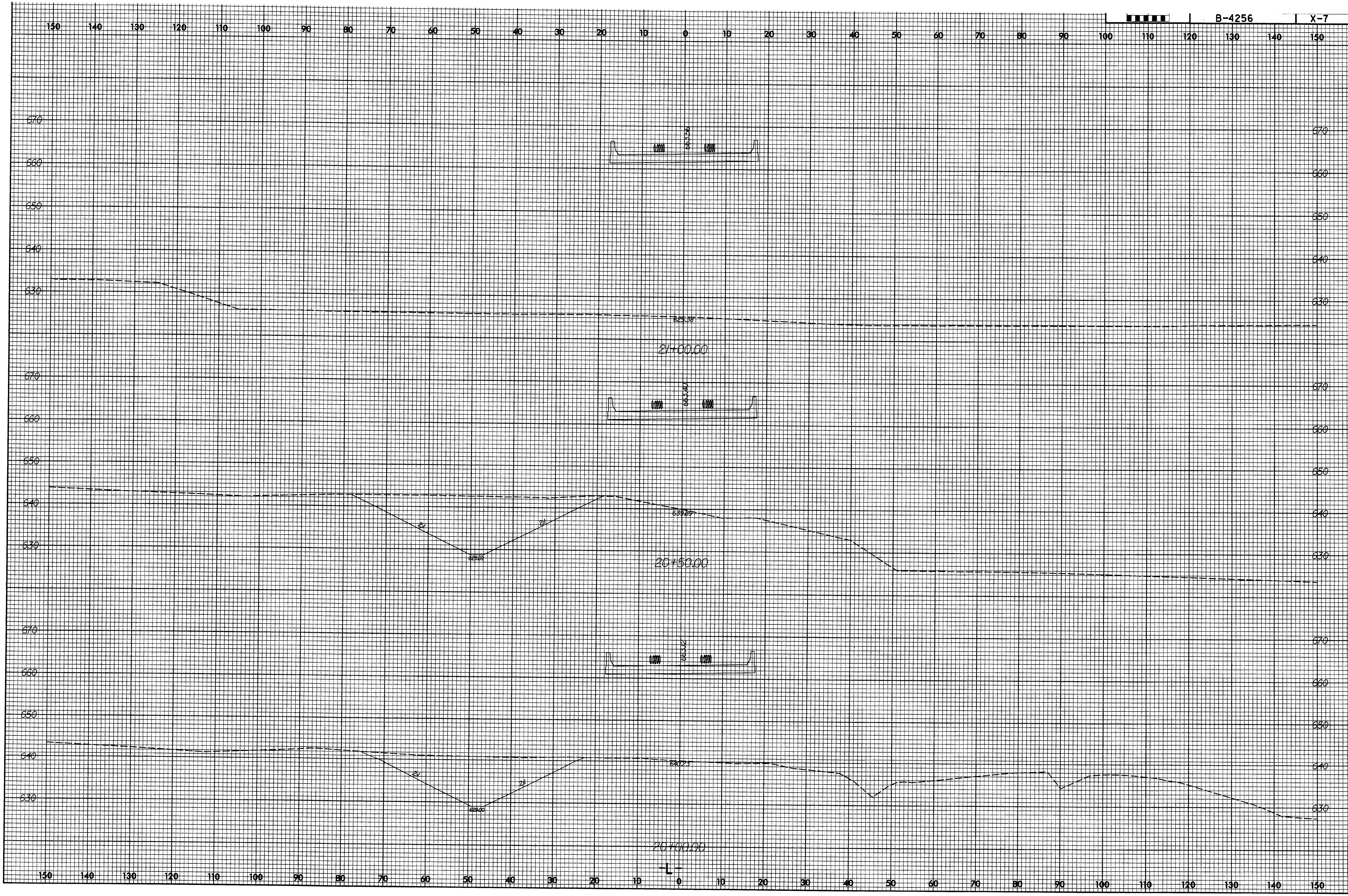
670 660 650 640

18+00.00

17+50.00

17+00.00


B-4256
X-6
19+50.00
BEGIN BRIDGE STA 19+00.00
19+00.00
18+50.00
-L-



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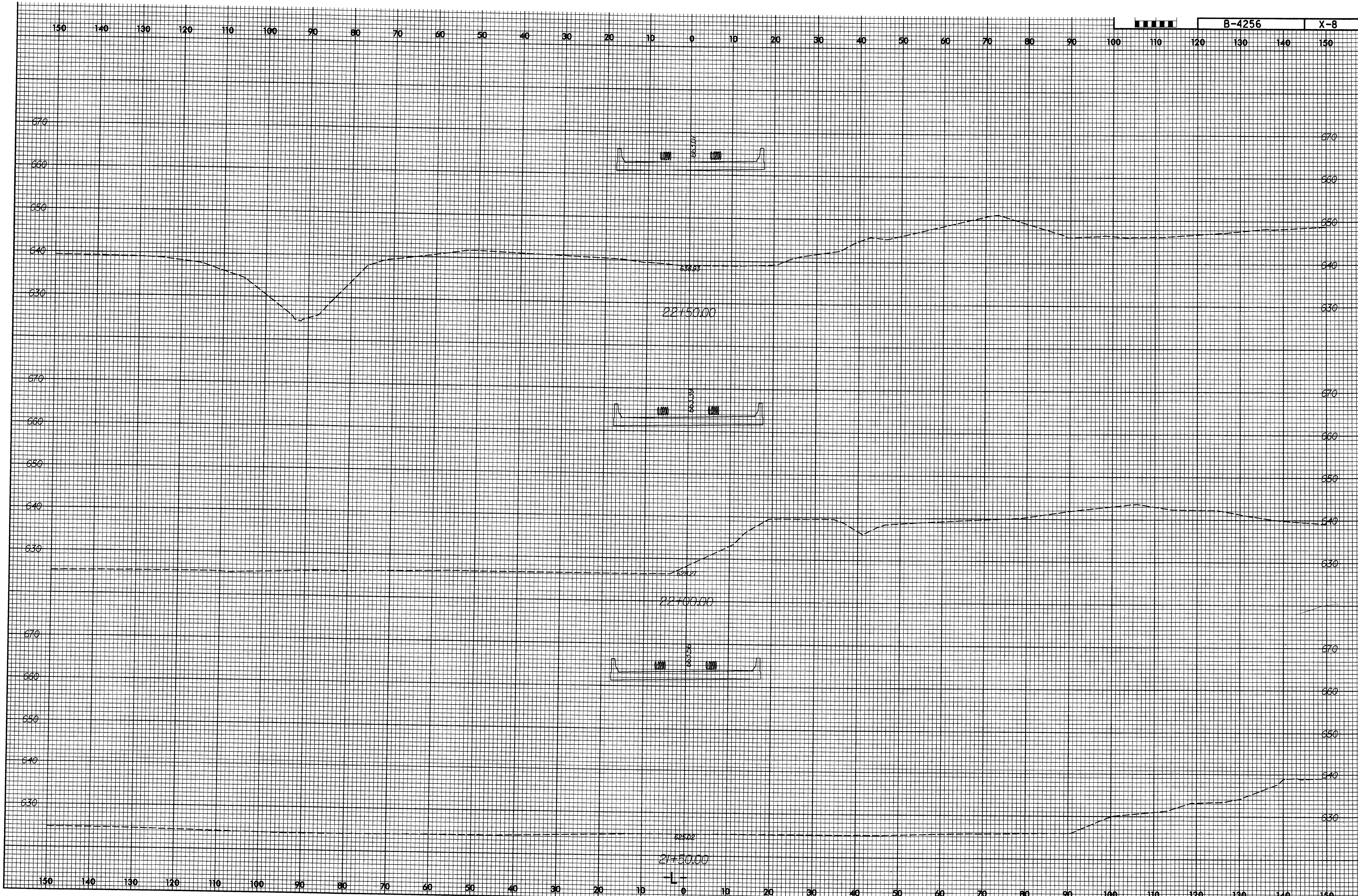

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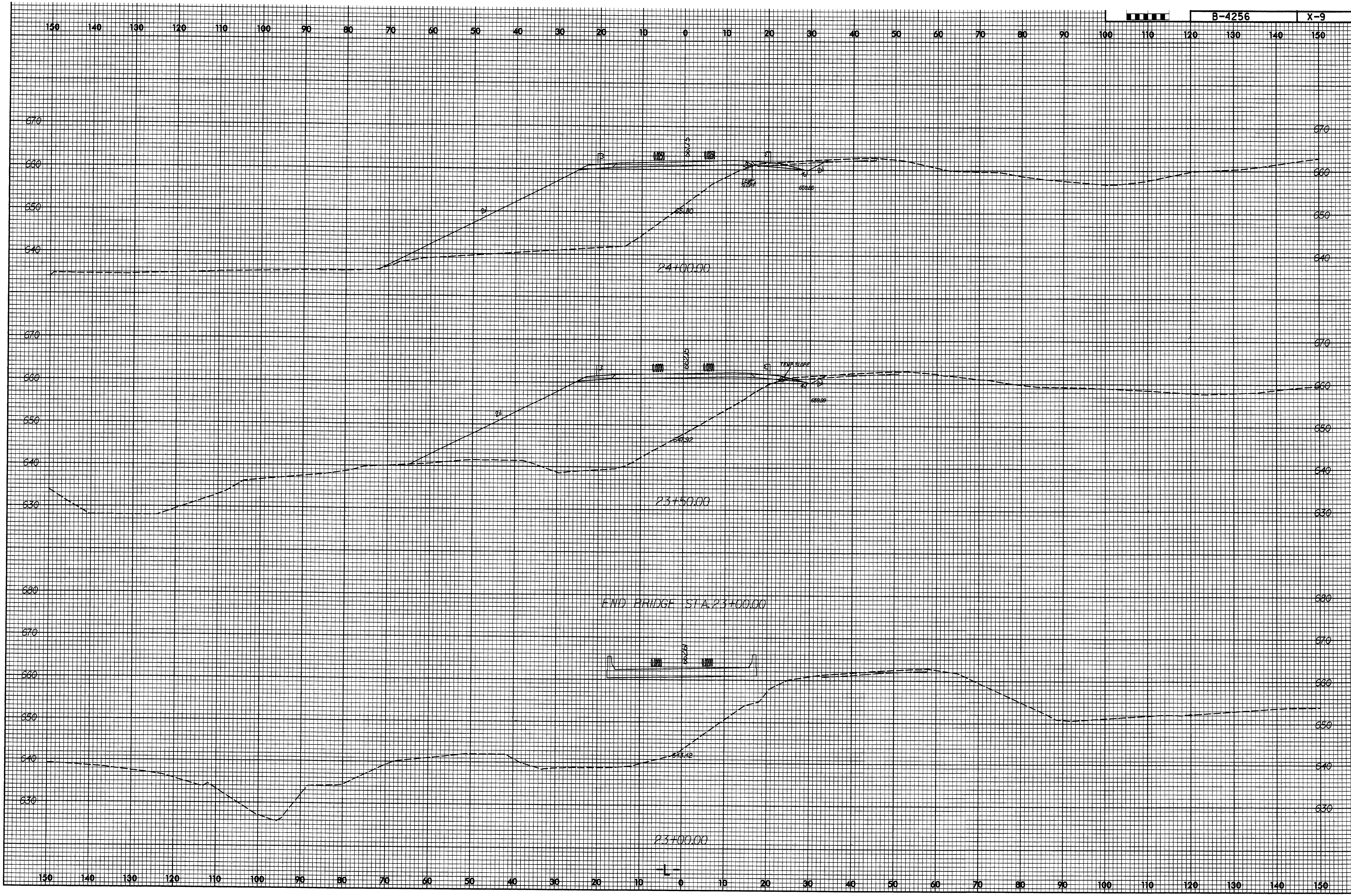
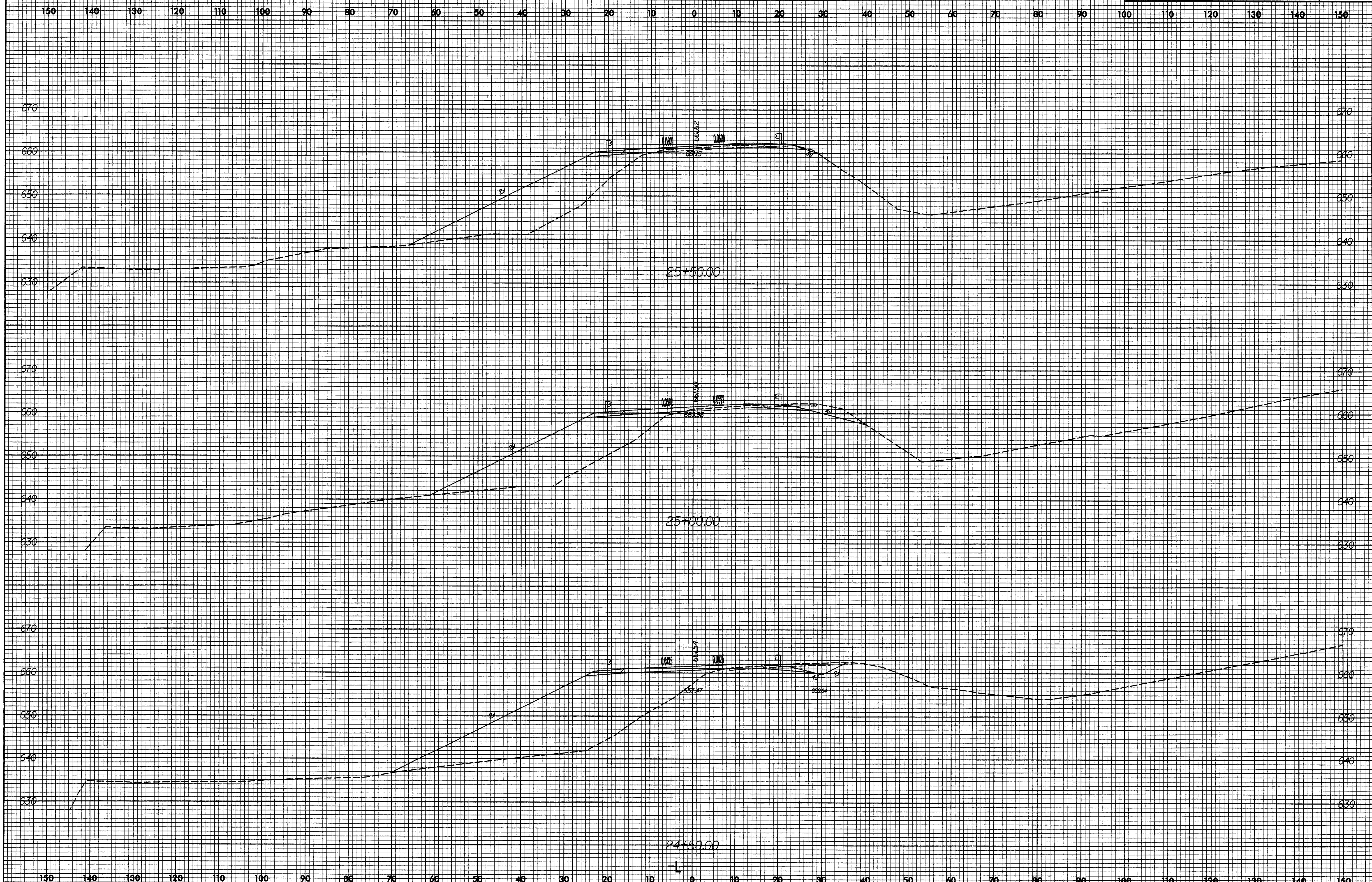

B-4256
X-9
24+00.00
23+50.00
END BRIDGE STA.23+00.00
23+00.00
-L-

B-4256 | X-10



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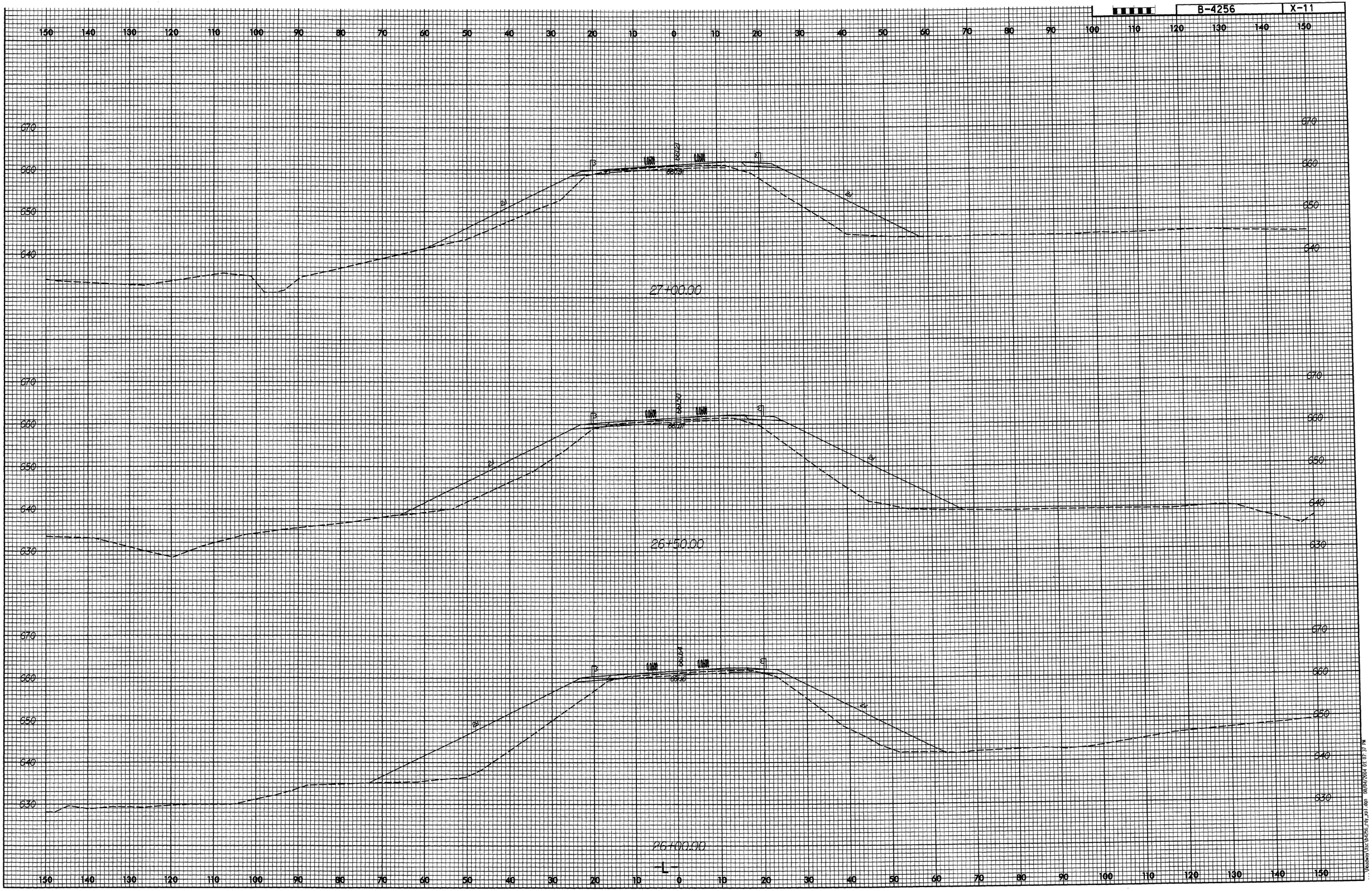


B-4256 X-12

29+00.00

28+50.00

28+00.00

27+50.00

-L-

B-4256 | X-13

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

670 660 650 640

659.05

659.75

659.02

31+00.00

659.27

659.03

655.98

30+50.00

659.28

659.08

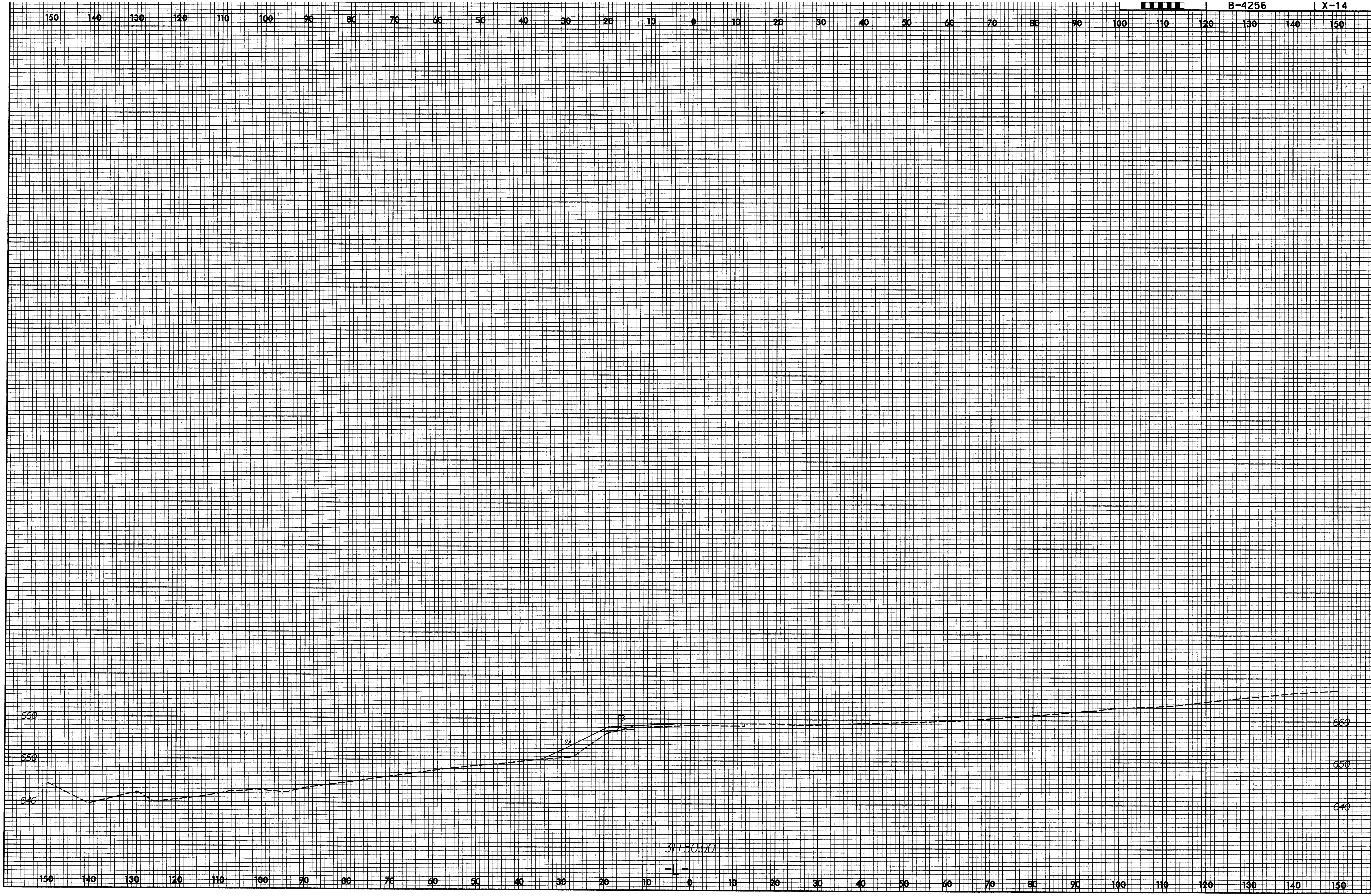
30+00.00

659.28

659.28

29+50.00

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


B-4256
X-14
660
650
640
31+50.00
-L-

Rowan-Davie Counties
Bridge No. 80 on NC 801
over South Yadkin River
Federal Aid Project No. BRSTP-801(1)
State Project No. 8.1632101
T.I.P. No. B-4256

CATEGORICAL EXCLUSION

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

AND

N.C. DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

APPROVED:

4/25/03
DATE

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

4/29/03
Date

for Donald J. Voelker
Acting Division Administrator, FHWA

Rowan-Davie Counties
Bridge No. 80 on NC 801
over South Yadkin River
Federal Aid Project No. BRSTP-801(1)
State Project No. 8.1632101
T.I.P. No. B-4256

CATEGORICAL EXCLUSION

Documentation Prepared in Project Development and Environmental Analysis Branch By:

4-14-03
Date

Dennis Pipkin
Project Planning Engineer

4-14-03
Date

William T. Goodwin, Jr., P.E.
Unit Head, Bridge Replacement Planning Unit

PROJECT COMMITMENTS:

Rowan-Davie Counties
Bridge No. 80 on NC 801
over South Yadkin River
Federal Aid Project No. BRSTP-801(1)
State Project No. 8.1632101
T.I.P. No. B-4256

1. Roadway Design Unit, Structure Design Unit, Bridge Maintenance Unit, Project Development & Environmental Analysis Branch (Permits), Resident Engineer:

Bridge Demolition:

The existing bridge has an asphalt wearing surface, and the remainder of the bridge, both superstructure and substructure, is composed of reinforced concrete. The reinforced concrete bridge deck is formed integrally with the girders. There is a potential for reinforced concrete components of the bridge to be dropped into Waters of the United States during construction.

Components of the demolition process are addressed as follows:

(a) The asphalt wearing surface will be removed prior to further demolition, without dropping into the water.

(b) The bridge rails and the deck portion of the deck/girder system will be removed by non-fracturing methods without dropping into the water. Causeways may be used. However, to the maximum extent practicable, the work to remove rails and decking will be performed without the use of causeways and without having equipment enter the water.

(c) Removal of the bridge girders and interior bents may utilize causeways. To the maximum extent practicable, girders and bents will be dropped onto causeways or onto the shore rather than into the water.

The resulting temporary fill associated with the reinforced concrete components of the bridge may be as much as approximately 43 cubic yards. This assumes that all components except one bent in the center of the stream will either be lifted clear, dropped onto causeways, or onto the shore.

During construction, Best Management Practices for Bridge Demolition and Removal will be followed.

Construction Let Date / In-Water Construction:

The South Yadkin River contains game fish species such as white perch, white bass, largemouth bass, and black crappie. In order to accommodate Wildlife Resources Commission concerns for periods of fish migration, spawning or larval recruitment, the construction Let Date will not be before May of the Let year. In-water construction or other in-water activities will be scheduled to begin after June 30 and to conclude by March 15 of the following year.

The streambed in the project area may have a large amount of gravel, sand, and silt. To reduce sedimentation, use of a turbidity curtain will be considered.

Rowan-Davie Counties
Bridge No. 80 on NC 801
over South Yadkin River
Federal Aid Project No. BRSTP-801(1)
State Project No. 8.1632101
T.I.P. No. B-4256

INTRODUCTION: Bridge No. 80 is included in the latest approved North Carolina Department of Transportation (NCDOT) Transportation Improvement Program (TIP) and is eligible for the Federal-Aid Bridge Replacement and Rehabilitation Program. The location is shown in Figure 1. No substantial environmental impacts are anticipated. The project is classified as a Federal "Categorical Exclusion".

I. PURPOSE AND NEED STATEMENT

Bridge Maintenance Unit records indicate the bridge has a sufficiency rating of 41.3 out of a possible 100 for a new structure. The bridge is considered to be structurally deficient and functionally obsolete. The replacement of this inadequate structure will result in safer traffic operations.

II. EXISTING CONDITIONS

The project is located at the southern town limits of Cooleemee in Davie County, and connects the two counties, Rowan and Davie, across the South Yadkin River (see Figure 1). Development in the area is industrial and residential in nature.

NC 801 is classified as a rural major collector in the Statewide Functional Classification System. NC 801 is not a National Highway System Route. This route is not a designated bicycle route and there is no indication that an unusual number of bicyclists use this roadway. The existing bridge is not designed to accommodate pedestrian traffic, and there is no indication that an unusual number of pedestrians use this bridge. In addition, there are no areas near the bridge that would generate substantial pedestrian traffic across the structure.

In the vicinity of the bridge, NC 801 has a 20-foot (6-meter) pavement width with 6-foot (1.8-meter) grass shoulders (see Figure 3). The roadway grade is in a horizontal curve through the project area. The roadway is situated approximately 42.0 feet (12.8 meters) above the creek bed.

Bridge No. 80 is a seven-span structure that consists of a reinforced concrete deck with an asphalt wearing surface. The abutments and bents are constructed of reinforced concrete with pile footings. The existing bridge (see Figure 3) was constructed in 1940. The overall length of the structure is 368 feet (112 meters). The clear roadway width is 25.8 feet (7.7 meters). The bridge is not posted for weight limits.

There are no utilities attached to the existing structure, but overhead power and telephone lines cross the river just east of the bridge. Water and sewer utilities are located in the town of

Cooleemee, approximately 600 feet (183 m) north of the bridge. Utility impacts are anticipated to be moderate.

There is a USGS survey marker located on the wheel guard at the northwest corner of the bridge. This marker is stamped "39JAS1965."

The current traffic volume of 5,400 vehicles per day (VPD) is expected to increase to 10,000 VPD by the year 2025. The projected volume includes two percent truck-tractor semi-trailer (TTST) and three percent dual-tired vehicles (DT). The posted speed limit is 55 miles (90 kilometers) per hour on the south in Rowan County, and 45 mph (72 kph) on the north in Davie County.

There was one accident reported in the vicinity of Bridge No. 80 during a recent three year period. This accident resulted in a non-fatal injury.

There are no school buses crossing this bridge from either county.

III. ALTERNATIVES

A. Project Description

The replacement structure will consist of a 380-foot (115.9-meter) long bridge. The bridge cross-section will be of sufficient width to provide for two 12-foot (3.6 meter) lanes with 4-foot (1.2 meter) offsets on each side. Total clear width will be 32 feet (9.8 m). However, the cross-section will be wider if curve widening is required in the final design.

The roadway elevation of the new structure will be approximately the same as the existing elevation at this location.

The existing roadway will be widened to a 24-foot (7.2-meter) pavement width to provide two 12-foot (3.6-meter) lanes. Eight-foot (2.4-meter) shoulders will be provided on each side; four feet (1.2 meters) of which will be paved in accordance with the current NCDOT Design Policy. This roadway will be designed as a major collector.

Initial design indicates that completed project will provide a design speed of 60 mph (90 km/hr). A design exception may be necessary due to the alignment of the north approach. This approach is within the town of Cooleemee, and will likely remain posted at a lower speed due to the existing adjacent residential and business development.

B. Reasonable and Feasible Alternatives

One alternative was studied for replacing Bridge No. 80:

The studied Alternative involves replacement of the existing structure with a new bridge placed to the west of the existing alignment. Traffic will be maintained on the existing bridge during

construction. Because of the volume of traffic carried by NC 801, and the distance to alternative river crossings, there is no feasible off-site detour route.

C. Alternatives Eliminated From Further Consideration

The "do-nothing" alternative will eventually necessitate closure of the bridge. This is not acceptable due to the traffic service provided by NC 801.

"Rehabilitation" of the old bridge is not practical due to its age and deteriorated condition. The bridge was constructed over 60 years ago, and has deteriorated to the extent of having a sufficiency rating of only 41.3 out of a possible 100.

D. Preferred Alternative

Bridge No. 80 will be replaced with a new bridge placed to the west of the existing alignment.

The NCDOT Division 9 Engineer concurs with the selected alternate.

IV. ESTIMATED COSTS

The estimated costs are as follows:

	Alternative 1
Structure	$790,000
Roadway Approaches	709,000
Structure Removal	82,000
Misc. & Mob.	479,000
Eng. & Contingencies	340,000
Total Construction Cost	2,400,000
Right-of-way Costs	67,000
Total Project Cost	$2,467,000

V. NATURAL RESOURCES

Soils

The map units in the project area are Chewacla loam, urban land, Enon fine sandy loam, Mocksville sandy loam, Poindexter-Mocksville complex, and Zion-Enon complex.

- **Chewacla loam,** with 0-2 percent slopes and frequently flooded soils (ChA), is mapped in Davie County immediately adjacent to the South Yadkin River and on the west side of NC 801. This soil is commonly found on flood plains along creeks and rivers throughout the county. It is somewhat poorly drained and frequently flooded for brief periods. Water and air move through this soil at a moderate rate. The seasonal high water table is within 1.5 feet

(0.45 m) of the surface. The NRCS classifies this soil as a hydric soil when frequently flooded.

- **Urban land** (Ur) is mapped in the northwest portion of the project area, adjacent to the Chewacla soils. This map unit consists of areas where more than 85 percent of the surface is covered by asphalt, concrete, buildings, or other impervious material. The rest is used for lawns, playgrounds, cemeteries, parks, or drainageways. The original soils and drainage patterns have been greatly altered. Runoff is excessive. This classification is not a technical classification and carries no hydric/nonhydric designation by the NRCS.
- A small area of **Enon fine sandy loam** with 8-15 percent slopes (EnC) is mapped on the east side of NC 801 at the northern end of the project area. This soil type is well drained and occurs on narrow ridges and side slopes on uplands. Permeability is slow and the depth to the water table is greater than 5 feet (1.5 m). This soil is not classified as a hydric soil by the NRCS.
- **Mocksville sandy loam** with 8-15 percent slopes (MsD) is mapped along the South Yadkin River on the east side of NC 801. This soil is well drained and occurs on narrow ridges and side slopes in the uplands. Permeability is moderate and the water table remains below 6 feet (1.8 m). This soil is not classified as a hydric soil by the NRCS.
- In Rowan County, **Poindexter-Mocksville complex** with 15-25 percent slopes (PxD) is mapped along the South Yadkin River throughout the width of the project area. Soils of this series are moderately deep to very deep, and well drained. They have moderate permeability and are found on Piedmont uplands. This soil is not classified as a hydric soil by the NRCS.
- **Zion-Enon complex** soils with 2 to 8 percent slopes or with 8 to 15 percent slopes (no publication symbol given) are mapped along both sides of NC 801 in Rowan County, adjacent to the Poindexter-Mocksville complex. These soils are moderately to very deep, well drained, and have slow to moderately slow permeability. They are typically found on gently to strongly sloping uplands in the Piedmont. This soil is not classified as a hydric soil by the NRCS.

Water Resources

Physical Characteristics of Surface Waters

The project is located in the Yadkin River basin (YAD04 and YAD06 sub-basin, HUC 03040102). The South Yadkin River originates about 50 miles (81 km) northwest of the project area in Alexander County. Less than one mile (1.62 km) upstream from the project site, the River is dammed to form impoundments. From the project area, the river meanders in a southeasterly direction about 7.8 miles (12.5 km) to its confluence with the Yadkin River.

The South Yadkin River is approximately 75 feet (23 m) wide in the study area, and flows in a southeasterly direction. On the day of the site visit, the water level was above normal because of rainfall during the previous four days. The water was turbid and the flow was swift. Because of the high water conditions it was not possible to determine the substrate of the river, but it is believed to be mainly silt, sand, and gravel. The depth of the water was also indeterminable, but is believed to be 4-10 feet (1.2-3 m) deep.

Upstream of Bridge No. 80, the riverbanks are approximately 10 feet (3 m) tall, and downstream from the bridge the banks are only 4 feet (1.2 m) tall. The banks are steep and vegetated with mature trees and shrubs. The canopy covers approximately 40 percent of the river.

West of NC 801, an unnamed tributary flows into the South Yadkin River on its north side. This intermittent stream roughly parallels NC 801 within the project vicinity, and meanders approximately 10-50 feet (3-15.2 m) outside of the project area. The average channel width is 6 feet (2 m) at the top of the banks and it is slightly sinuous. The water in the channel varies from 1 to 5 feet (0.3-1.5 m). The stream has a good pool and riffle sequence. The banks are 2-6 feet (0.7-2 m) high, heavily eroded, and undercut. The overall condition of the stream worsens as it nears the South Yadkin River. The substrate is gravel and hardpan clay. On the day of the site visit the flow was swift, and the water was slightly turbid. The average water depth was 6 inches (15.2 cm). A set of powerlines crosses over this stream, and the vegetation has been cleared in this area. The remainder of the channel has 100 percent canopy cover. This stream will be referred to as unnamed tributary 1 (UT1) for the remainder of the report.

Another unnamed tributary flows in a westerly direction under NC 801 to its confluence with UT1, and is located within the project area. A four-foot box culvert is used to direct the stream under the road. This ephemeral channel has well-vegetated banks 4 feet (1.2 m) high. The tops of the banks are an average of 3 feet (1 m) apart, but the active channel is only 1 foot (0.3 m) wide. These banks are heavily eroded in some places, although the overall condition of the stream is not as poor as that of UT1. The substrate is gravel and cobbles, with areas of some sediment deposits. A large amount of leaf litter and other woody debris also fills the channel. On the day of the site visit the water was moderately clear and the flow was moderate. The water depth ranged from 2 to 6 inches (5-15 cm). This stream will be referred to as unnamed tributary 2 (UT2) for the remainder of the report. A third tributary flows into the South Yadkin River within the project area. It flows adjacent to NC 801 on the west side before crossing under it and emptying into the river just to the east of the bridge. This intermittent stream actually flows under the bridge rather than through a culvert. The banks of this stream average 6 feet (2 m) in height, although they attain a height of 15 feet (4.6 m) just upstream from the confluence with the South Yadkin River. This stream is heavily degraded, so the banks are very steep and support little to no vegetation. The water channel is 3 feet (1 m) wide and the banks average 8 feet (2.6 m) wide at the top of the banks. The substrate is gravel and sand. On the day of the site visit the water was turbid and the flow was strong. The water depth averaged 8 inches (20.3 cm). It will be referred to as unnamed tributary 3 (UT3) for the remainder of the report.

Best Usage Classification

This portion of the South Yadkin River [Index # 12-108-19.5] is classified as a *Class C* water body (NCDENR, 2002). *Class C* water resources are waters protected for aquatic life propagation and survival, fishing, wildlife, secondary recreation, and agriculture. There are no restrictions on watershed development activities. The unnamed tributaries present within the project area and project vicinity have not been classified individually by DWQ, therefore they carry the same *Class C* rating as their receiving stream.

No waters classified as High Quality Water (HQW), Water Supplies (WS-I or WS-II) or Outstanding Resource Waters (ORW) occur within 1.0 miles (1.6 km) of the project study area.

Water Quality

General Watershed Characteristics

The watershed in which the project is located is primarily agricultural, although it does contain several moderately sized towns. Because of development, many disturbances to the landscape were observed in the immediate vicinity. In the northeast quadrant of the project area there are several private residences, and a large industrial facility is located in the northwest quadrant. The southwest quadrant is forested, however, a wastewater treatment facility is approximately 2000 feet (610 m) upstream from the project area. In the southeast quadrant a gas station and convenience store are present.

Basin-wide Assessment Report

There are two monitoring stations on the South Yadkin River. One station is located about 6 miles (9.72 km) upstream of the project area. It was sampled in August 1986, July 1989, August 1994, and August 1996 and received classifications of Good, Excellent, Excellent, and Good, respectively. Another station is located about 20 miles (32.4 km) upstream of the project area. It was sampled in August 1996 and was classified as Excellent.

Point Source Discharge Permits

There is one permit issued to discharge in the South Yadkin River as of January 2002 (NCDENR 2002). The Davie County Water System holds Permit NC0024872 to discharge from the Cooleemee Waste Water Treatment Plant about 2000 feet (610 m) upstream of the project area. This is a Major Municipal permit classified as "Municipal, Large".

Summary of Anticipated Impacts

Alternative 1 would fill approximately 63 linear feet (19 linear m) of UT2 and 161 linear feet (49 linear m) of UT3 as described above.

Project construction may result in the following impacts to surface water resources:

- Increased sediment loading and siltation as a consequence of watershed vegetation removal, erosion, and/or construction.
- Decreased light penetration/water clarity from increased sedimentation.
- Changes in water temperature with vegetation removal.
- Changes in the amount of available organic matter with vegetation removal.
- Increased concentration of toxic compounds from highway runoff, construction activities and construction equipment, and spills from construction equipment.

- Alteration of water levels and flows as a result of interruptions and/or additions to surface and groundwater flow from construction.

NCDOT's Best Management Practices for the Protection of Surface Waters will be implemented, as applicable, during the construction phase of the project in an effort to ensure that no sediment leaves the construction site.

BIOTIC RESOURCES

Terrestrial Communities

Maintained Landscape Community

This community covers the area along the road shoulders, commercial areas, and pastures or lawns within the project area. This community is dominated by fescue (*Festuca* sp.), ground ivy, (*Glechoma hederacea*), plantain (*Plantago* sp.), and other various grasses and weeds. In roadside areas and in transitional areas along the periphery of lawns and pastures, other species such as blackberry (*Rubus* sp.), Japanese honeysuckle (*Lonicera japonica*), crown vetch (*Coronilla varia*) and various asters (*Aster* spp.) become the dominant species. A few scattered trees are found in the pasture area, including red cedar (*Juniperus virginiana*), American sycamore (*Platanus occidentalis*), and northern red oak (*Quercus rubra*).

The animal species present in these disturbed habitats are opportunistic and capable of surviving on a variety of resources, ranging from vegetation to both living and dead faunal components. American crow (*Corvus brachyrhynchos*), European starling (*Sturnus vulgaris*), and American robin (*Turdus migratorius*) are common birds that use these habitats. The area may also be used by the woodchuck (*Marmota monax*), Virginia opossum (*Didelphis virginiana*), various species of mice (*Peromyscus* spp.), Eastern garter snake (*Thamnophis sirtalis*), and American toad (*Bufo americanus*). No livestock were observed in the pastures on the day of the site visit.

Floodplain Forest Community

This community occurs along the banks of the South Yadkin River. Canopy species include box elder (*Acer negundo*), American sycamore, silver maple (*Acer saccharinum*), willow oak (*Quercus phellos*), river birch (*Betula nigra*), white ash (*Fraxinus americana*), and American elm (*Ulmus americana*). Chinese privet (*Ligustrum sinense*) is the primary shrub species and Japanese honeysuckle, blackberry, and muscadine (*Vitis rotundifolia*) are the **dominant vines.** The herbaceous layer consists primarily of violet (*Viola* sp.), ground ivy, and wild onion (*Allium* sp.). This community probably represents a marginal example of a Piedmont/Low Mountain Alluvial Forest described by Schafale and Weakley (1990). The TNC classification is most likely an I.B.2.N.d.3 *Acer negundo* Temporarily Flooded Forest Alliance.

Raccoon (*Procyon lotor*) and white-tailed deer (*Odocoileus virginianus*) tracks were observed in this community. Other mammal species that can be expected include white-footed mouse (*Peromyscus leucopus*), and eastern mole (*Scalopus aquaticus*). On the day of the site visit, Earth Tech biologists observed the following bird species; eastern phoebe (*Sayornis phoebe*),

blue jay (*Cyanocitta cristata*), northern flicker (*Colaptes auratus*), white-throated sparrow (*Zonotricha albicollis*), and American goldfinch (*Carduelis tristis*). Other bird species that can be expected include great blue heron (*Ardea herodias*), belted kingfisher (*Megaceryle alcyon*), eastern towhee (*Pipilo erythrophthalmus*), and Carolina wren (*Thryothorus ludovicianus*). The species of herpetofauna that can be expected include eastern box turtle (*Terrapene carolina*), northern dusky salamander (*Desmognathus fuscus fuscus*), and northern water snake (*Nerodia sipedon sipedon*).

Mesic Hardwood Forest Community

A mesic hardwood forest community is located on the south side of the South Yadkin River adjacent to the floodplain forest community. This area is dominated by American sycamore, sweetgum, tulip poplar, white ash, and black willow (*Salix nigra*). Other dominant species include Chinese privet, blackberry, Japanese honeysuckle, and cross vine (*Bignonia capreolata*). A small portion of this community directly across from a convenience store has been disturbed due to clearing, and is now regenerating as a dense thicket. This community probably represents a marginal example of a Basic Mesic Forest (Piedmont subtype) described by Schafale and Weakley (1990). The TNC classification is most likely an I.B.2.N.a.24 *Liriodendron tulipifera* forest alliance or I.B.2.N.a.22 *Liquidambar styraciflua* forest alliance.

Mammal species that may be commonly seen in this community include eastern cottontail (*Sylvilagus floridanus*), gray squirrel (*Sciurus carolinensis*), and Virginia opossum. Bird species expected here may include tufted titmouse (*Parus bicolor*), Carolina chickadee (*Parus carolinensis*), gray catbird (*Dumetella carolinensis*), and downy woodpecker (*Picoides pubescens*). The black rat snake (*Elaphe obsoleta*) and spotted salamander (*Ambystoma maculatum*) are also likely inhabitants.

Piedmont Hardwood Forest Community

A very small area on the north side of the South Yadkin River and on the east side of NC 801 between the maintained landscapes contains a Piedmont hardwood forest community. This area is used as pasture, and has a sparse herbaceous layer of fescue. The shrub layer is also sparse and is generally composed of red maple (*Acer rubrum*). The other dominant species include northern red oak, American beech (*Fagus grandifolia*), American sycamore, and tulip poplar. This community probably represents a marginal example of a Basic Mesic Forest (Piedmont subtype) described by Schafale and Weakley (1990). This community contains elements of the TNC classifications of I.B.2.N.a.17 *Fagus grandifolia – Quercus rubra – Quercus alba* Forest Alliance and I.B.2.N.d.9 *Fagus grandifolia* temporarily flooded forest alliance

Because of the small size of this area, the animal species that utilize this community will be similar to those found in the maintained landscape community.

Aquatic Communities

Within the project area, the South Yadkin River is a mid-gradient, fourth-order stream. On the day of the site visit, the water was muddy with high levels of suspended sediment. Because of

high water conditions the bed material was unable to be sampled, however it is presumed to be gravel, sand, and silt. The riparian community is mostly deciduous trees and mixed evergreen-deciduous shrubs. No rooted aquatic vegetation was observed.

According to Kin Hodges, District 7 Fisheries Biologist with the North Carolina Wildlife Resources Commission (NCWRC), the South Yadkin River was sampled in April 1994, approximately 3 miles (4.86 km) downstream from the project site. During this survey the following species were collected: white perch (*Morone americana*), white bass (*Morone chrysops*), striped bass (*Morone saxatilis*), largemouth bass (*Micropterus salmoides*), pumpkinseed (*Lepomis gibbosus*), bluegill (*Lepomis macrochirus*), black crappie (*Promoxis nigromaculatus*), flathead catfish (*Pylodictis olivaris*), channel catfish (*Ictalurus punctatus*), fieryblack shiner (*Cyprinella pyrrhomelas*), and white shiner (*Luxilus albeolus*). A time limitation on in-water construction activities (similar to a construction moratorium) may be required. The tentative time limit is to exclude in-water construction activities from March 15 through June 30 of any year. This limit is to accommodate NCWRC concerns for spawning activities of white perch, white bass, largemouth bass, and black crappie. It is anticipated that NCWRC Habitat Conservation Division biologists will review the project plans during the permit process and recommend whether these time limits will actually be necessary. Such items as bents to be constructed in the water will affect the need for time limits.

Summary of Anticipated Impacts

Terrestrial Communities

Terrestrial communities in the project area will be impacted permanently by project construction from clearing and paving. Estimated impacts are based on the length of the alternate and the entire study corridor width. Alternate 1 was considered to be approximately 80 feet (24 m) wide and approximately 1300 feet (396 m) long. Table 1 describes the potential impacts to terrestrial communities by habitat type. Because impacts are based on the entire study corridor width, the actual loss of habitat will likely be less than the estimate.

Table 1. Estimated Area of Impact to Terrestrial Communities

Area of Impact in Acres (Hectares)	
	Alternate 1
Community	**Permanent**
Maintained Landscape	0.62 (0.25)
Floodplain forest	1.02 (0.41)
Mesic Hardwood Forest	0.52 (0.21)
Piedmont Hardwood Forest	0.00 (0.00)
Total Impact	**2.16 (0.87)**

Destruction of natural communities along the project alignment will result in the loss of foraging and breeding habitats for the various animal species that utilize the area. Animal species will be displaced into surrounding communities. The plants and animals that are found in the upland communities are generally common throughout the Piedmont of North Carolina.

Aquatic Communities

Temporary and permanent impacts to aquatic organisms may result from increased sedimentation. Aquatic invertebrates may drift downstream during construction and recolonize the disturbed area once it has been stabilized. Sediments have the potential to affect fish and other aquatic life in several ways, including the clogging and abrading of gills and other respiratory surfaces, affecting the habitat by scouring and filling of pools and riffles, altering water chemistry, and smothering different life stages. Increased sedimentation may cause decreased light penetration through an increase in turbidity.

Wet concrete should not come into contact with surface water during bridge construction as it can adversely affect aquatic life. Potential adverse effects will be minimized through the implementation of NCDOT *Best Management Practices for Protection of Surface Waters*.

JURISDICTIONAL TOPICS

Waters of the United States

Wetlands and surface waters fall under the broad category of "Waters of the United States" as defined in 33 CFR § 328.3 and in accordance with provisions of Section 404 of the Clean Water Act (33 U.S.C. 1344). These waters are regulated by the U.S. Army Corps of Engineers (USACE). Any action that proposes to dredge or place fill material into surface waters or wetlands falls under these provisions.

Characteristics of Wetlands and Surface Waters

The Cooleemee, North Carolina National Wetland Inventory (NWI) map shows no wetlands in the project vicinity. No jurisdictional wetlands were observed within the project area during the field evaluation. The South Yadkin River and two tributaries meet the definition of surface waters, and are therefore classified as Waters of the United States. UT2 is an ephemeral channel and does not meet the definition of jurisdictional surface water. The channel of the South Yadkin River is 75 feet (22.5 m) wide within the project area. The unnamed tributaries UT1 and UT3 are 6 feet (1.8 m), and 8 feet (2.4 m) wide, respectively.

Bridge Demolition

Demolition and removal of a highway bridge over Waters of the United States must be addressed when applying to the U.S. Corps of Engineers (COE) for a permit. A worst-case scenario of dropping components of the bridge in the water is assumed. NCDOT's Standard Specifications for Roads and Structures will be followed. To meet these specifications, NCDOT shall adhere to Best Management Practices for the Protection of Surface Waters, as supplemented with Best Management Practices for Bridge Demolition and Removal.

The South Yadkin River in the vicinity of the proposed project is Class C water; therefore no restrictions are imposed on watershed development activities. The South Yadkin River has not

been identified as a special resource water, and does not contain any threatened or endangered species, however, it is associated with fish migration, spawning or larval recruitment. For these reasons, Case 2 applies to the proposed project and certain limits on in-water construction activities apply. See the attached Project Commitments (Greensheet) for details.

The superstructure consists of a reinforced concrete deck and girders supported by reinforced concrete piles and caps. The existing bridge end bents are protected by spill-through abutments armored with rip-rap. Two reinforced concrete abutments are in the water. There is a potential for reinforced concrete components of the bridge to be dropped into the Waters of the United States during construction. The maximum potential fill is 390 cubic yards (298 cubic meters).

The streambed in the project area is most likely gravel, sand, and silt. These conditions in the stream raise sediment concerns, therefore a turbidity curtain will be considered.

Summary of Anticipated Impacts

No wetlands occur within the project area; therefore no wetlands will be impacted by the proposed project.

Anticipated surface water impacts fall under the jurisdiction of the USACE and the DWQ. Table 2 shows the impacts to the South Yadkin River and UT 3 within the project area. A corridor width of 80 feet (24.4 m) is assumed.

Table 2. Estimated Area of Impact to Jurisdictional Surface Waters

Water body	Width in Feet (Meters)	Impact in Linear Feet (Meters)	Impact in Square Feet (Meters)
South Yadkin River	**75 (22.2)**	**80 (24)**	**6000 (1800)**
UT3	**8 (2.4)**	**160.9 (48.3)**	**1287.2 (386.2.)**
Total Impacts	--	240.9 (72.3)	7287.2 (2186.2)

Permits

Impacts to jurisdictional surface waters are anticipated from the proposed project. Permits and certifications from various state and federal agencies may be required prior to construction activities.

Construction is anticipated to be authorized by Nationwide Permit (NWP) No. 23, as promulgated under 67 FR 2020, 2002; January 15, 2002. This permit authorizes activities undertaken, assisted, authorized, regulated, funded, or financed in whole or in part, by another Federal agency or department where that agency or department has determined that, pursuant to the Council on Environmental Quality Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act:

- the activity, work, or discharge is categorically excluded from environmental documentation because it is included within a category of actions that neither individually nor cumulatively have a significant effect on the human environment; and
- the Office of the Chief Engineer has been furnished notice of the agency's or department's application for the categorical exclusion and concurs with that determination.

This project will also require a 401 Water Quality Certification No. 3361 or waiver thereof, from the Department of Environment and Natural Resources (DENR) prior to issuance of the NWP 23. Section 401 of the Clean Water Act requires that the state issue or deny water certification for any federally permitted or licensed activity that results in a discharge into Waters of the United States. Final permit decision rests with the USACE.

Avoidance, Minimization, Mitigation

The function of avoidance, minimization, and mitigation is to restore and maintain the chemical, biological, and physical integrity of waters of the United States by avoiding impacts, minimizing impacts, and rectifying impacts. Each of these three aspects (avoidance, minimization, and compensatory mitigation) must be considered sequentially.

Avoidance mitigation examines all appropriate and practical possibilities of averting impacts to waters of the United States.

Minimization includes the examination of appropriate and practical steps to reduce the adverse impacts to waters of the United States. Implementation of these steps will be required through project modifications and permit conditions. Practical means to minimize impacts to surface waters and wetlands impacted by the proposed project include:

- Decreasing the footprint of the proposed project through the reduction of median width, ROW widths, fill slopes and/or road shoulder widths
- Installation of temporary silt fences, earth berms, and temporary ground cover during construction
- Strict enforcement of sedimentation and erosion control BMPs for the protection of surface waters and wetlands
- Reduction of clearing and grubbing activity in and adjacent to water bodies.
- Judicious pesticide and herbicide usage
- Possible use of turbidity curtains during construction of permanent bridge bents
- Use of a temporary work bridge instead of a construction causeway or haul road across the South Yadkin River
- Implementation of a proposed time limitation on in-water construction activities (similar to a construction moratorium) from March 15 to June 30 of any year in order to minimize impacts on fish migration, spawning, and larval recruitment into nursery areas.

Compensatory mitigation is not normally considered until anticipated impacts to waters of the United States have been avoided and minimized to the maximum extent possible. Appropriate

and practicable compensatory mitigation is required for unavoidable adverse impacts which remain after all appropriate and practicable minimization has been required.

Because this project will likely be authorized under a Nationwide Permit, mitigation for impacts to surface waters may or may not be required by the USACE. In accordance with the Division of Water Quality Wetland Rules [15A NCAC 2H .0506 (h)] "Fill or alteration of more than one acre of wetlands will require compensatory mitigation; and fill or alteration of more than 150 linear feet of streams may require compensatory mitigation." Written approval of the final mitigation plan is required from NCDWQ before the regulatory agency issues a Water Quality Certification. Furthermore, in accordance with 67 FR 2020; 2092; January 15, 2002, the US Army Corps of Engineers requires compensatory mitigation when necessary to ensure that adverse effects to the aquatic environment are minimal. The size and type of proposed project impact and function and value of the impacted aquatic resource are factors considered in determining acceptability of appropriate and practicable compensatory mitigation. Final compensatory stream mitigation requirements will be determined by the US Army Corps of Engineers under the statutory provisions of CWA § 404 and the January 15, 2002 Final Notice of Issuance of Nationwide Permits.

There are no wetland impacts associated with this project. A total of 75 linear feet (24.6 m) of the South Yadkin River are located within the project area for the proposed project. In addition, 160.9 linear feet (48.3 m) of UT3 are also located within the study corridor. If the final length of stream impact is greater than 150 linear feet (45.7 m), compensatory mitigation may be required. The environmental regulatory agencies will ultimately provide final permit and compensatory mitigation decisions for the project.

Rare and Protected Species

Some populations of plants and animals are declining either as a result of natural forces or their difficulty competing with humans for resources. Rare and protected species listed for Rowan and Davie Counties, and any likely impacts to these species as a result of the proposed project construction, are discussed in the following sections.

Species Under Federal Protection

Plants and animals with a federal classification 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.

The USFWS lists 2 species under federal protection in Rowan County, and one species for Davie County as of May 31, 2002, and February 11, 2003, respectively. These species are listed in Table 3 below.

Table 3. Species Under Federal Protection in Rowan and Davie Counties

Common Name	Scientific Name	County	Federal Status
Vertebrates			
Bald Eagle	*Haliaeetus leucocephalus*	Rowan	T
Vascular Plants			
Michaux's sumac	*Rhus michauxii*	Davie	E
Schweinitz's sunflower	*Helianthus schweinitzii*	Rowan	E
Sources: USFWS 2002 Key: T = Threatened, E = Endangered			

NOTE: In addition to the above list for Rowan and Davie Counties, a survey was conducted for the **Carolina heelsplitter** (*Lasmigora decorata*). This survey was conducted due to the USFWS listing of the species for the Yadkin River Basin.

A brief description of the characteristics and habitat requirements of each species follows, along with a conclusion regarding potential project impact.

***Haliaeetus leucocephalus* (bald eagle)** **Threatened**
Family: Accipitridae
Date First Listed: March 11, 1967 (Endangered)
Date Down Listed: July 12, 1995 (Threatened)

The bald eagle is a large raptor with a wingspan reaching 7 feet (2.1 m). Adults have a dark brown body with a pure white head and tail, whereas the juvenile plumage is chocolate brown to blackish with white mottling on the tail, belly and underwings. Adult plumage is fully acquired by the fifth or sixth year.

The bald eagle is primarily associated with coasts, rivers, and lakes, usually nesting near large bodies of water where it feeds. It preys primarily on fish, but will feed on birds, mammals, turtles, and carrion when fish are unavailable.

In the southeast, the nesting and breeding season runs from September to December. Large nests up to 6 feet (2 m) across and weighing hundreds of pounds are constructed from large sticks, weeds, cornstalks, grasses, and sod. Preferred nesting sites are usually within one-half mile of water, have an open view of the surrounding area, and are in the largest living tree, usually a pine or cypress. Excessive human activity may exclude an otherwise suitable site from use. Wintering areas generally have the same characteristics as nesting sites, but may be farther from shores.

"Habitat Management Guidelines for the Bald Eagle in the Southeast Region" have been prepared by the USFWS (1987). A Primary Zone extends 750 to 1,500 feet radius from nest, and a Secondary Zone extends 750 feet to one mile radius around nest.

Biological Conclusion: **No Effect**

In light of the USFWS's "Habitat Management Guidelines for the bald eagle in the Southeast Region", on July 12, 2002 Earth Tech biologists conducted a search for bald eagles, their nests, and suitable foraging sites within a 1.5-mile (2.43 km) radius of the project area. No eagles or eagle nests were observed. The South Yadkin River is of marginal size to provide an adequate food source for bald eagles. In addition, the canopy over the river is somewhat closed, and would impair foraging activity. Other large ponds are within the search area, but are generally too small and shallow to support foraging activities. No suitable nesting sites were observed within this search area. In many places, the edges of water bodies have been cleared due to residential or agricultural practices. The remaining wooded areas around the River and ponds are covered in hardwoods. Furthermore, the area surrounding the bridge is highly developed which creates excessive levels of disturbance for nesting or foraging eagles. A review of the NHP files did not reveal any records of bald eagles in the project vicinity. It can be determined that the project will not impact this threatened species.

***Rhus michauxii* (Michaux's sumac)** **Endangered**
Family: Anacardiaceae
Federally Listed: 1989

Michaux's sumac or false poison sumac is a densely hairy colonial shrub with erect stems, which are 1 to 3 feet (0.3-0.9 m) in height. The shrub's compound leaves are narrowly winged at the base, dull on the top, and veiny and slightly hairy on the bottom. Each leaf is finely toothed on its edges. Flowers are greenish-yellow to white and are 4 to 5 parted. Each plant is unisexual. With a male plant the flowers and fruits are solitary, with a female plant all flowers are grouped in 3 to 5 stalked clusters. The plant flowers from April to June; its fruit, a dull red drupe, is produced in October and November.

Michaux's sumac grows in sandy or rocky open woods in association with basic soils. Apparently, this plant survives best in areas where some form of disturbance has provided an open area. Most of the plant's remaining populations are on highway rights-of-way, roadsides, or on the edges of artificially maintained clearings. Other populations are in areas with periodic fires, or on sites undergoing natural succession. One population is situated in a natural opening on the rim of a Carolina bay. Currently, the plant survives in the following North Carolina Counties: Richmond; Hoke, Scotland, Franklin, Davie, Robeson, and Wake.

Biological Conclusion: **No Effect**

No suitable habitat exists in the project area for Michaux's sumac. The soils within the project area range from strongly acidic to neutral, and are generally not rocky. No individuals of this species were observed on the day of the site visit. A search of the NHP database found no occurrences of Michaux's sumac in the project vicinity. It can be concluded that the project will not impact this endangered species.

Helianthus schweinitzii **(Schweinitz's sunflower)** **Endangered**

Plant Family: Asteraceae
Federally Listed: 1991

Schweinitz's sunflower is a rhizomatous perennial herb that grows from 3 to 6 ft (1 to 2 m) tall from a cluster of carrot-like tuberous roots. Stems are usually solitary, branching only at or above mid-stem. The stem is usually pubescent but can be nearly glabrous; it is often purple. The lanceolate leaves are opposite on the lower stem, changing to alternate above. They are variable in size, being generally larger on the lower stem, and gradually reduced upwards. The pubescence of the underside of the leaves is distinctive and is one of the best characters to distinguish Schweinitz's sunflower from its relatives. The upper surface of the leaves is rough, with the broad-based spinose hairs directed toward the tip of the leaf. From September to frost, Schweinitz's sunflower blooms with comparatively small heads of yellow flowers.

The species occurs in clearings and edges of upland woods on moist to dryish clays, clay-loams, or sandy clay-loams that often have high gravel content and are moderately podzolized. Schweinitz's sunflower usually grows in open habitats not typical of the current general landscape in the Piedmont of the Carolinas. Some of the associated species, many of which are also rare, have affinities to glade and prairie habitats of the Midwest. Other species are associated with fire-maintained sandhills and savannas of the Atlantic Coastal Plain and piedmont. The habitat of this sunflower tends to be dominated by members of the aster, pea, and grass families, an association emphasizing affinities of the habitat to both longleaf pine-dominated sandhills and savannas of the southeastern coastal plain and to glades, barrens, and prairies of the Midwest and Plains.

Biological Conclusion **No Effect**

Suitable habitat for Schweinitz's sunflower does not occur within the project area, and no individuals of this species were observed. The adjoining terrestrial communities do not include any of the natural community types associated with this species. Soils of the area are of low quality to support this species. Furthermore, NHP records show no occurrence of this species within 2 miles (3.2 km) of the project site. The proposed project should have no effect on this species.

Lasmigora decorata **(Carolina heelsplitter)**

Mussel surveys were conducted 900 feet (300 meters) above and 300 feet (100 meters) below the bridge crossing. The survey was conducted on August 20, 2002, by NCDOT biologists Jeff Burleson, Tim Howell, and Tom Dickinson. No live mussels were found during the 2.25 man-hour survey period.

Biological Conclusion **No Effect**

Given the survey results, it is apparent that the Carolina heelsplitter does not occur in the project footprint. The North Carolina Natural Heritage Program does not list any known locations within the proximity of the project. In conclusion, project construction will not affect this species.

Federal Species of Concern and State Status

Federal Species of Concern (FSC) are not legally protected under the Endangered Species Act and are not subject to any of its provisions, including Section 7, until they are formally proposed or listed as Threatened or Endangered. Table 4 includes FSC species listed for Rowan and Davie Counties and their state classifications. Organisms that are listed as Endangered (E), Threatened (T), or Special Concern (SC) on the North Carolina Natural Heritage Program list of Rare Plant and Animal Species are afforded state protection under the State Endangered Species Act and the North Carolina Plant Protection and Conservation Act of 1979. However, the level of protection given to state-listed species does not apply to NCDOT activities.

Table 4. Federal Species of Concern in Rowan and Davie Counties

Common Name	Scientific Name	County	State Status	Habitat present
Vertebrates				
Carolina darter	*Etheostoma collis collis*	Rowan	SC	YES
Robust redhorse	*Moxostoma robustum*	Rowan Davie	SC	NO
Insects				
Cherokee clubtail	*Gomphus consanguis*	Davie	SR	NO
Vascular Plants				
Virginia quillwort	*Isoetes virginica*	Rowan	SR-L	NO
Heller's trefoil	*Lotus helleri*	Rowan Davie	SR-T	NO
Georgia aster	*Aster georgianus*	Rowan	C	NO
Sources: Amoroso, ed., 2002; LeGrand, Hall, Finnegan, 2001 Key: SC=Special Concern, SR=Significantly Rare, L=limited range or endemic, T=rare throughout range				

Two elements listed by the NC NHP occur approximately two miles from the project site. The Fourth Creek floodplain, listed as a State Priority Area, and a Floodplain Pond Natural Community both occur south of the project site along Fourth Creek.

No FSC species were observed during the site visit, and none are recorded at NHP as occurring within 2 miles (3.2 km) of the project area.

VI. CULTURAL RESOURCES

A. Compliance Guidelines

This project is subject to compliance with Section 106 of the National Historic Preservation Act of 1966, as amended, implemented by the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106, codified at Title 36 CFR Part 800. Section 106 requires Federal agencies to take into account the effect of their undertakings (federally funded,

licensed, or permitted) on properties included in or eligible for inclusion in the National Register of Historic Places and afford the Advisory Council a reasonable opportunity to comment on such undertakings.

B. Historic Architecture

The area of potential impact was surveyed for historic architectural resources, in accordance with recommendations of the State Historic Preservation Office (SHPO). A Concurrence Form for Properties not eligible for the National Register of Historic Places was signed on October 18, 2001 (see appendix). Thus there will be no effect on historic architectural resources.

C. Archaeology

The SHPO recommended that no archeological investigation be conducted for this project. Thus it is judged that there will be no effect on archeological resources.

VII. GENERAL ENVIRONMENTAL EFFECTS

The project is expected to have an overall positive impact. Replacement of an inadequate bridge will result in safer traffic operations.

The project is considered to be a Federal "Categorical Exclusion" due to its limited scope and lack of substantial environmental consequences.

The bridge replacement will not have an adverse effect on the quality of the human or natural environment with the use of the current North Carolina Department of Transportation standards and specifications.

The project is not in conflict with any plan, existing land use, or zoning regulation. No change in land use is expected to result from the construction of the project.

No adverse impact on families or communities is anticipated. Right-of-Way acquisition will be limited. No relocatees are expected with implementation of the proposed alternative.

No adverse effect on public facilities or services is expected. The project is not expected to adversely affect social, economic, or religious opportunities in the area.

The proposed project will not require right-of-way acquisition or easement from any land protected under Section 4(f) of the Department of Transportation Act of 1966.

The Farmland Protection Policy Act of 1981 requires that all federal agencies or their representatives, to consider the impact of land acquisition and construction projects on prime and important farmland soils. These soils are determined by the US Natural Resources Conservation Service (NRCS) based on criteria such as potential crop yield and possible level of input of economic resources. The project will result in the conversion of a small amount of land but the

area to be converted is void of agricultural uses. Therefore, no further consideration of impacts to farmland is required.

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

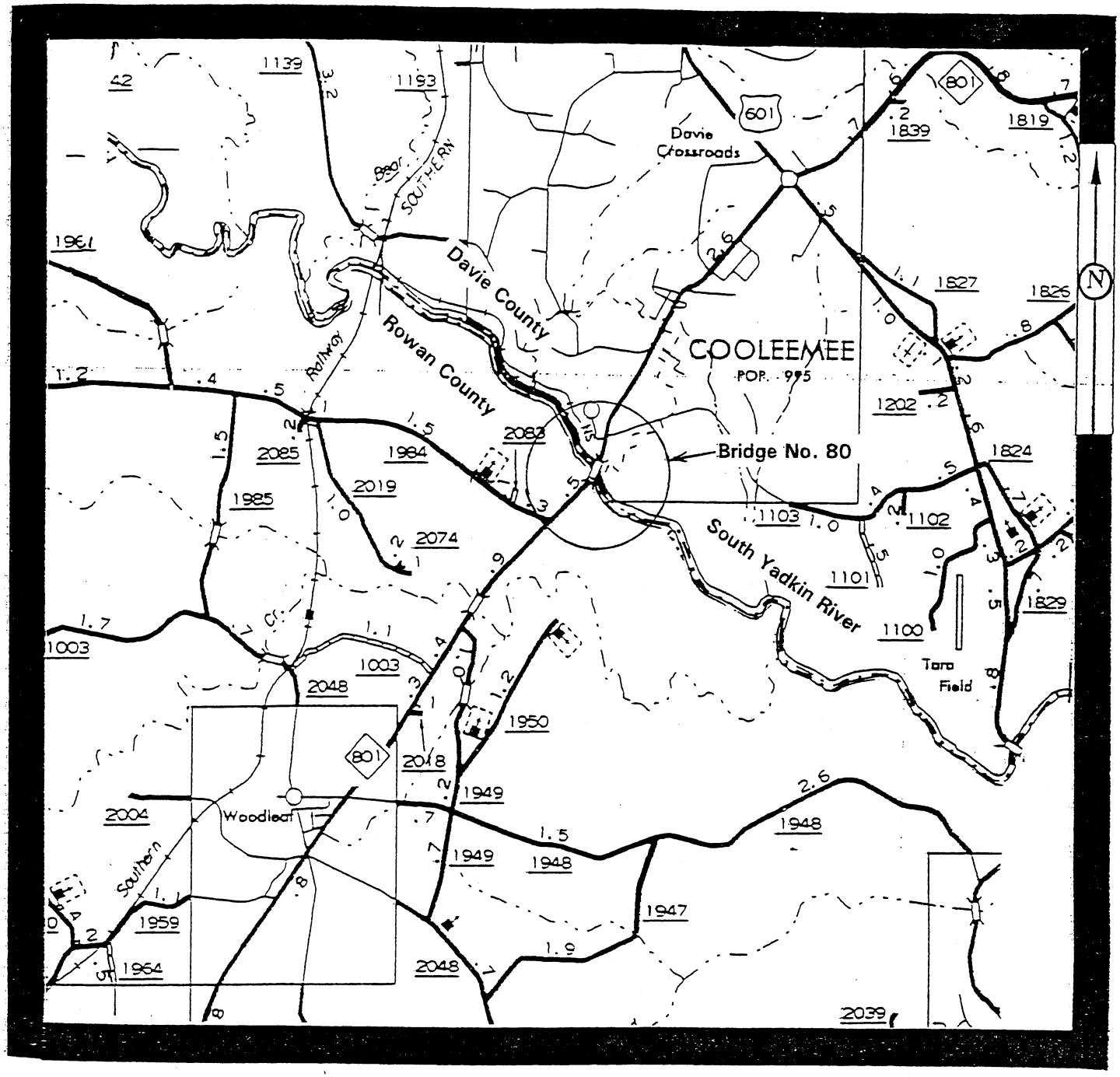
Noise levels could increase during construction but will be temporary. This evaluation completes the assessment requirements for highway traffic noise of Title 23, Code of Federal Regulation (CFR), Part 772 and for air quality (1990 Clean Air Act Amendments and the National Environmental Policy Act)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

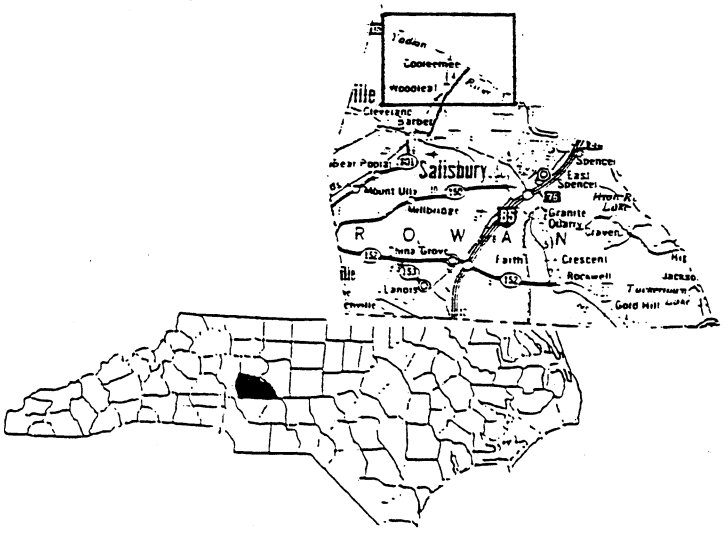
An examination of records at the North Carolina Department of Environment and Natural Resources, Division of Environmental Management, Groundwater Section and the North Carolina Department of Human Resources, Solid Waste Management Section revealed no hazardous waste sites in the project area.

There are underground storage tanks located at a service station in the southeast quadrant of the project. It is anticipated that these tanks will not be disturbed by the construction.

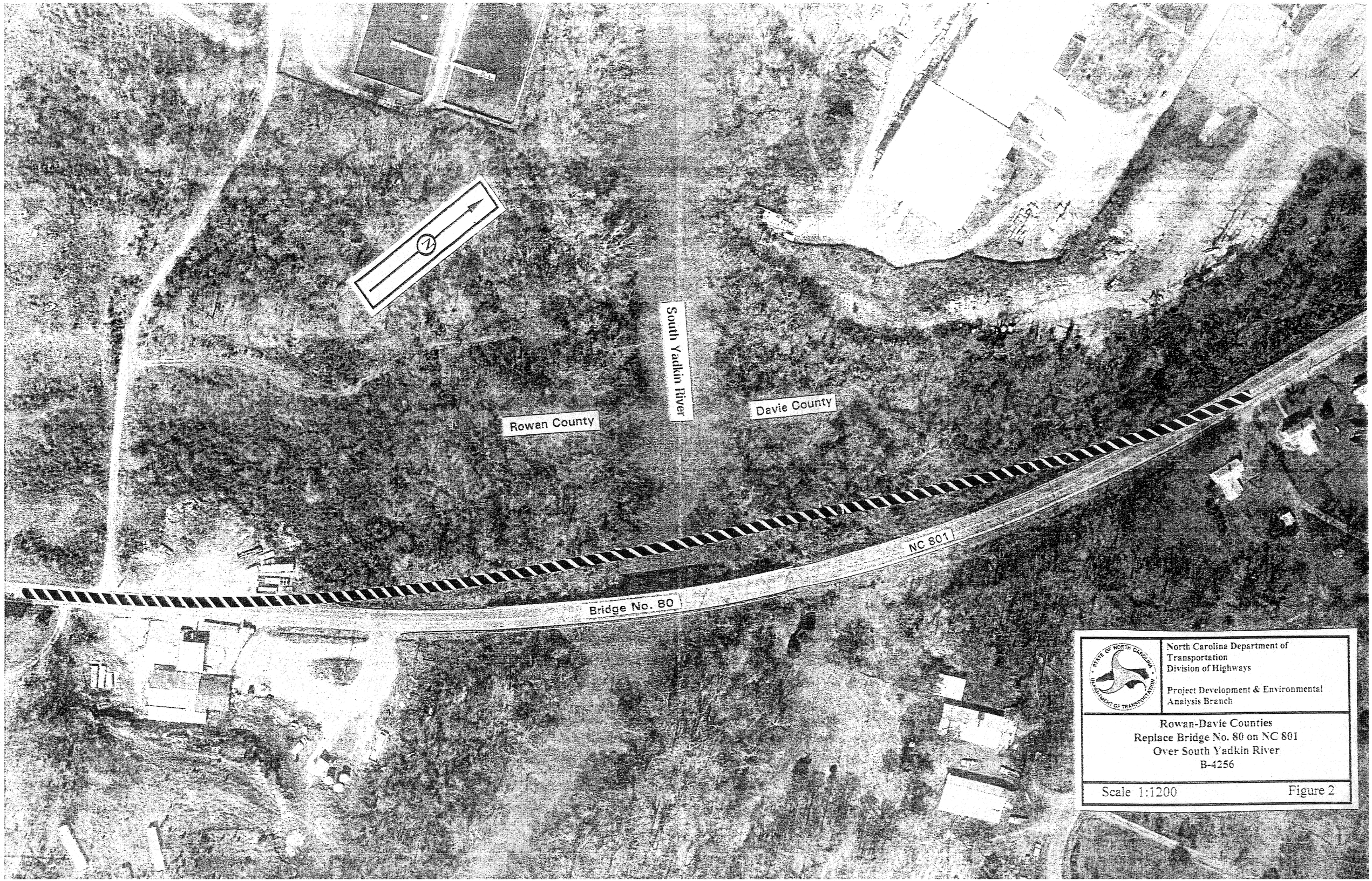
Both Rowan and Davie Counties are a participants in the National Flood Insurance Program. The crossing is in a designated flood hazard zone, where a detailed study has not been performed under this Program . There are no practical alternatives to crossing the floodplain area. There are no buildings located on either the upstream or the downstream floodplain, which consists primarily of woodlands. The proposed project is not anticipated to increase the level or extent of upstream flood potential.

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





	North Carolina Department of Transportation Division of Highways Project Development & Environmental Analysis Branch
Rowan County Replace Bridge No. 80 on NC 801 Over South Yadkin River B-4256	
Figure 1	

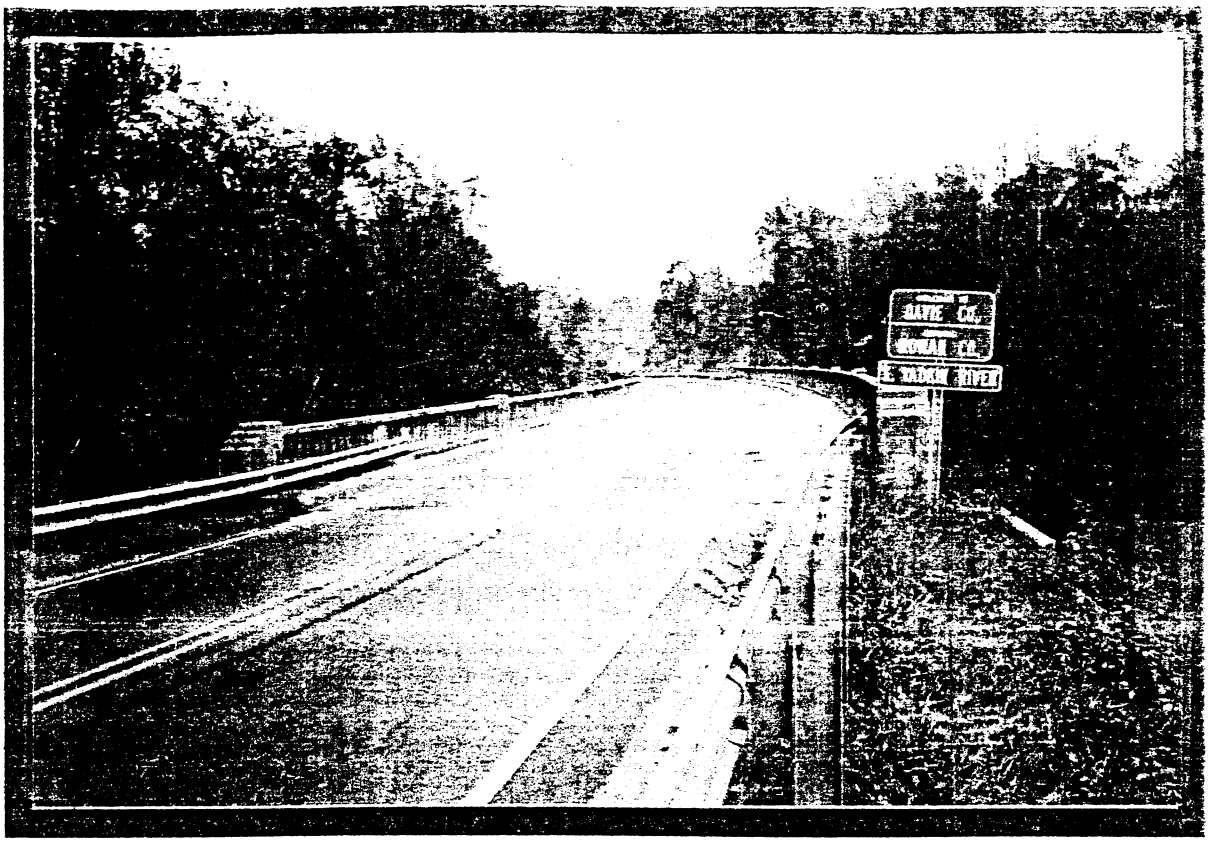


North Carolina Department of Transportation
Division of Highways

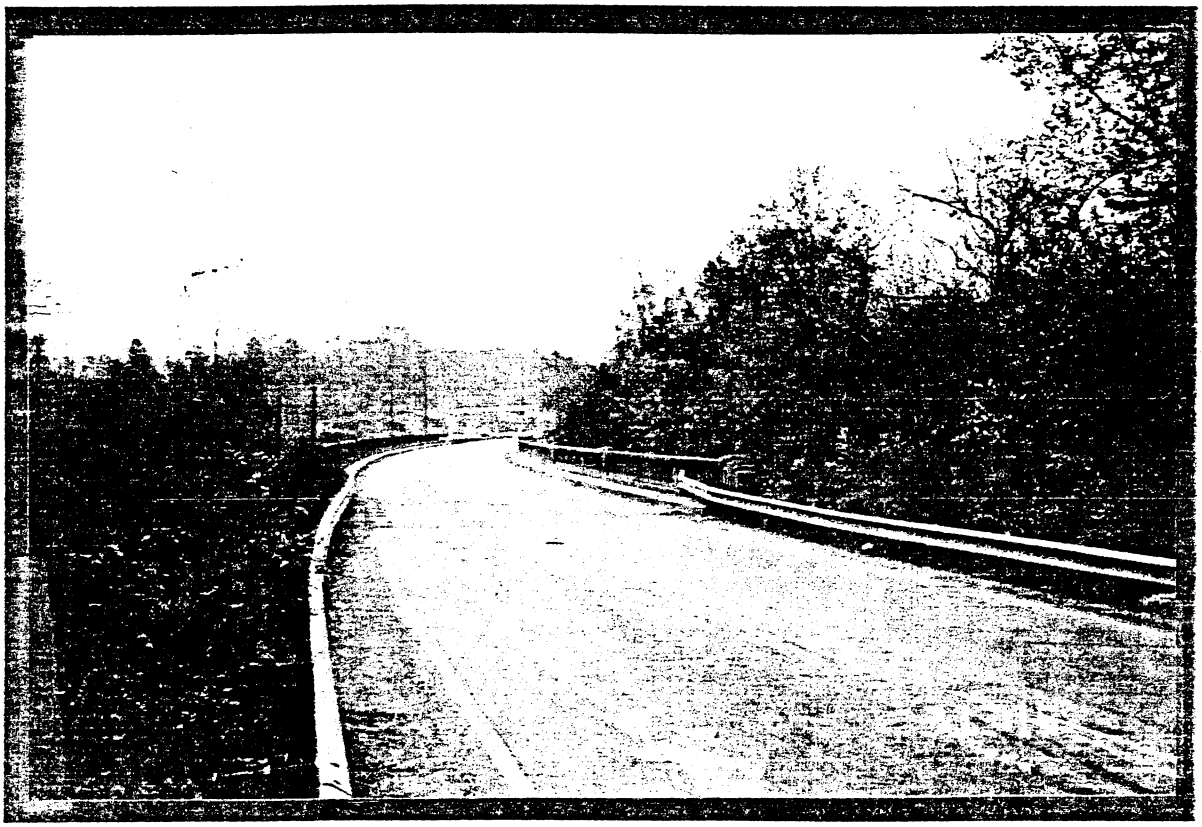
Project Development & Environmental Analysis Branch

Rowan-Davie Counties
Replace Bridge No. 80 on NC 801
Over South Yadkin River
B-4256

Scale 1:1200 Figure 2



Looking north across Bridge No. 80



Looking south across Bridge No. 80

North Carolina Department of Transportation
Division of Highways
Project Development & Environmental Analysis Branch

Rowan-Davie Counties
Replace Bridge No. 80 on NC 801
Over South Yadkin River
B-4256

Figure Three

North Carolina Department of Cultural Resources

State Historic Preservation Office

David L. S. Brook, Administrator

Michael F. Easley, Governor
Lisbeth C. Evans, Secretary

Division of Archives and History
Jeffrey J. Crow, Director

March 30, 2001

MEMORANDUM

To: William D. Gilmore, P.E., Manager
Project Development and Environmental Analysis Branch

From: David Brook
Deputy State Historic Preservation Officer

Re: Replacement of Bridge No. 80 on NC 801 over South Yadkin River, TIP No. B-4256, Davie County, ER 01-7913

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

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

In terms of historic architectural resources we are aware of one historic structures located within the area of potential effect:

Bridge No. 80

We recommend that an historic architectural survey be conducted for this project.

There are no known archaeological sites within the proposed project area. Based on our present knowledge of the area, it is unlikely that any archaeological resources which may be eligible for inclusion in the National Register of Historic Places, will be affected by the project construction. We, therefore, recommend that no archaeological investigation be conducted in connection with this project.

	Location	Mailing Address	Telephone/Fax
ADMINISTRATION	507 N. Blount St., Raleigh NC	4617 Mail Service Center, Raleigh NC 27699-4617	(919) 733-4763 • 733-8653
RESTORATION	515 N. Blount St., Raleigh NC	4613 Mail Service Center, Raleigh NC 27699-4613	(919) 733-6547 • 715-4801
SURVEY & PLANNING	515 N. Blount St., Raleigh NC	4618 Mail Service Center, Raleigh NC 27699-4618	(919) 733-6545 • 715-4801

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

Thank you for your cooperation and consideration. If you have any questions concerning the above comment, contact Renee Gledhill-Earley, Environmental Review Coordinator, at 919 733-4763.

CC: Mary Pope Furr
Tom Padgett

Federal Aid # BRSTP-801(1) *TIP #*B-4256 *County*: Rowan and Davie

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

Project Description: Replacement of Bridge No. 80 over NC 801 over South Yadkin River. Rowan and Davie Counties

On October 18, 2001, representatives of the

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

Reviewed the subject project at

- [ ] Scoping meeting
- [x] Historic architectural resources photograph review session/consultation
- [ ] Other

All parties present agreed

- [ ] There are no properties over fifty years old within the project's area of potential effects.
- [ ] There are no properties less than fifty years old which are considered to meet Criteria Consideration G within the project's area of potential effects.
- [x] There are properties over fifty years old within the project's Area of Potential Effects (APE), but based on the historical information available and the photographs of each property, the property identified as (**List Attached**) is considered not eligible for the National Register and no further evaluation of it is necessary. BRIDGE # 80
- [ ] There are no National Register-listed or Study Listed properties within the project's area of potential effects.
- [ ] All properties greater than 50 years of age located in the APE have been considered at this consultation, and based upon the above concurrence, all compliance for historic architecture with Section 106 of the National Historic Preservation Act and GS 121-12(a) has been completed for this project.
- [ ] There are no historic properties affected by this project. (*Attach any notes or documents as needed*)

Signed:

Representative, NCDOT	Date 10-18-01
FHWA, for the Division Administrator, or other Federal Agency	Date 10/18/01
Representative, HPO	Date 10-18-01
State Historic Preservation Officer	Date 10/18/01