STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

July 30, 2008

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

ATTENTION: Mr. Steve Lund
NCDOT Coordinator

SUBJECT: **Application for Nationwide Permits 23, 33 and Section 401 Water Quality Certification** for the proposed replacement of Bridge No. 33 over Long Creek on NC 73 in Stanly County, Division 10, Federal Aid Project No. BRSTP-73(5), State Project No. 8.1680501, WBS Element 33617.1.1, **TIP No. B-4276**. $240 Debit work order 8.1680501

Dear Sir:

Please see the enclosed PCN, Rapanos form, permit drawings and design plans. A Categorical Exclusion and Right of Way Consultation were completed for this project in January 2003 and September 2006 respectively, and distributed shortly thereafter. Additional copies are available upon request. NCDOT proposes to replace the existing 114-foot long Bridge No. 33 with a 148-foot long bridge. There will be 0.06 acre of permanent surface water (pond) impacts and 0.53 acre of temporary surface water (pond) impacts incurred from the construction of this project.

IMPACTS TO WATERS OF THE UNITED STATES

General Description:
The water resource on project B-4276 includes Long Creek/ Lake. Long Creek is located in the Yadkin-Pee Dee River Basin (Division of Water Quality (DWQ)) subbasin 03-07-13. The DWQ Index number for Long Creek is 13-17-31 and the Hydrological Cataloguing Unit is 03040105.

Water resource classifications have not changed since the approval of the CE. At the time of the CE, the lake was drained and the riparian zone along Long Creek was described as a wetland. The area is now inundated and is considered surface water (pond). The DWQ best usage classification for Long Creek remains class "C". There are no High Quality Waters (HQW), Water Supplies (WS-I or WSII), or Outstanding Resource Waters (ORW) within 1.0 mile of the project study area. Long Creek does not appear on the North Carolina DWQ 303(d) List (updated 2006) and there are no 303(d) streams within one mile of the project. Stanly County is not a trout county.

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

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

WEBSITE: WWW.NCDOT.ORG

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

Permanent Impacts:
There will be 0.06 acre of permanent impacts to Long Creek/ Lake associated with the installation of the new bridge. Bridge No. 33 will be replaced with a significantly wider structure which will change the current total clear roadway width from 26 feet to 32 feet. The 0.06 acre of permanent impacts is due to raising the grade and widening the approaches to accommodate the new structure.

Temporary Impacts:
There will be 0.53 acre of temporary impacts associated with the installation of a causeway for the on-site detour. This causeway will be removed when the installation of the new structure is complete and traffic can be routed away from the temporary onsite detour.

Utility Impacts:
There will be no jurisdictional impacts associated with relocation of utilities for this project.

Bridge Demolition
Bridge No. 33 is constructed of a concrete deck on steel I-beams, concrete piles capped in concrete and concrete abutments. It should be possible to remove the existing structure without dropping any debris into Long Creek.

PROJECT SCHEDULE

The project schedule calls for a November 18, 2008 let date with a review date of September 30, 2008.

FEDERALLY PROTECTED SPECIES

Plants and animals with federal classifications of Endangered (E), Threatened (T), Proposed Endangered (PE), or Proposed Threatened (PT), are protected under provisions of Section 7 and Section 9 of the Endangered Species Act of 1973, as amended. As of January 31, 2008, the United States Fish and Wildlife Service lists one federally protected species for Stanly County (Table 1). A survey for Schweinitz's sunflower was conducted in September 2006. A follow-up survey for this species is scheduled for August of 2008. A description of each species and biological conclusion is provided in the referenced CE document.

Table 1. Federally Protected Species for Stanly County.

Common Name	Scientific name	Federal Status	Habitat Present	Biological Conclusion
Bald eagle	*Haliaeetus leucocephalus*	BGPA	No	N/A
Schweinitz's sunflower	*Helianthus schweinitzii*	T	Yes	No Effect

It should be noted that the Bald Eagle was previously listed as "Threatened", however it was delisted August 8, 2007. It is still protected under the Bald and Golden Eagle Protection Act. Suitable habitat for the bald eagle may exist within the project study area. Long Creek and Long Lake are considered large bodies of water. A check of the NHP database on July 25, 2008 showed no known occurrences of the bald eagle within 1.0 mile of the project study area.

AVOIDANCE, MINIMIZATION AND MITIGATION

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

- The existing bridge demolition will not result in any fill being dropped into waters of the United States.
- Water will not be directly discharged into Long Creek via deck drains.

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

Compensatory Mitigation:
The NCDOT proposes no mitigation for the 0.06 acre of minimal permanent impacts to a pond associated with this project.

REGULATORY APPROVALS

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

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

Thank you for your assistance with this project. If you have any questions or need additional information, please contact Jeremy T. Leamer at jtleamer@dot.state.nc.us or (919) 715-7726.

Sincerely,

E. L. Lusk

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

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

W/o attachment (see website for attachments)
Dr. David Chang, P.E., Hydraulics
Mr. Victor Barbour, P.E., Project Services Unit
Mr. Greg Perfetti, P.E., Structure Design
Mr. Mark Staley, Roadside Environmental
Mr. Barry Moose, P.E., Div. 10 Engineer
Mr. Larry Thompson, PWS, LSS, Div. 10 DEO
Mr. Jay Bennett, P.E., Roadway Design
Mr. Majed Alghandour, P.E., Program.
Mr. Art McMillan, P.E., Highway Design
Mr. Scott McLendon, USACE, Wilmington
Ms. Hank Schwab, PDEA Engineer

Office Use Only: Form Version March 05

USACE Action ID No. _____ **DWQ No.** _____

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

I. Processing

1. Check all of the approval(s) requested for this project:
   - x Section 404 Permit
   - ☐ Section 10 Permit
   - x 401 Water Quality Certification
   - ☐ Riparian or Watershed Buffer Rules
   - ☐ Isolated Wetland Permit from DWQ
   - ☐ Express 401 Water Quality Certification

2. Nationwide, Regional or General Permit Number(s) Requested: 23, 33

3. If this notification is solely a courtesy copy because written approval for the 401 Certification is not required, check here: ☐

4. If payment into the North Carolina Ecosystem Enhancement Program (NCEEP) is proposed for mitigation of impacts, attach the acceptance letter from NCEEP, complete section VIII, and check here: ☐

5. If your project is located in any of North Carolina's twenty coastal counties (listed on page 4), and the project is within a North Carolina Division of Coastal Management Area of Environmental Concern (see the top of page 2 for further details), check here: ☐

II. Applicant Information

1. Owner/Applicant Information
   Name: Gregory J. Thorpe, Ph.D., Environmental Management Director
   Mailing Address: NC DOT - PDEA
   1598 Mail Service Center, Raleigh, NC 27699-1548
   Telephone Number: (919) 733-3141 Fax Number: (919) 733-9794
   E-mail Address:

2. Agent/Consultant Information (A signed and dated copy of the Agent Authorization letter must be attached if the Agent has signatory authority for the owner/applicant.)
   Name:
   Company Affiliation:
   Mailing Address:
   Telephone Number: Fax Number:
   E-mail Address:

III. Project Information

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

1. Name of project: N/A

2. T.I.P. Project Number or State Project Number (NCDOT Only): **B-4276**

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

4. Location
   County: Stanly Nearest Town: Albemarle
   Subdivision name (include phase/lot number):
   Directions to site (include road numbers/names, landmarks, etc.):
   Bridge # 33 on NC 73 over Long Creek (Long Lake)

5. Site coordinates (For linear projects, such as a road or utility line, attach a sheet that separately lists the coordinates for each crossing of a distinct waterbody.)
   One water body: Garden Creek
   Decimal Degrees (6 digits minimum): 352134 °N 801415 °W

6. Property size (acres): N/A

7. Name of nearest receiving body of water: Long Lake to Rocky River

8. River Basin: Yadkin-Pee Dee
   (Note – this must be one of North Carolina's seventeen designated major river basins. The River Basin map is available at http://h2o.enr.state.nc.us/admin/maps/.)

9. Describe the existing conditions on the site and general land use in the vicinity of the project at the time of this application: Bridge No. 33 is located on NC 73 (Concord Road) over Long Creek (Long Lake) 2.5 miles west of Albemarle. The bridge was constructed in 1939 and is in poor condition.

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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.

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10. Describe the overall project in detail, including the type of equipment to be used:
Bridge removal project involving heavy construction equipment and manual labor to replace a spanning structure with another spanning structure.

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

IV. Prior Project History

If jurisdictional determinations and/or permits have been requested and/or obtained for this project (including all prior phases of the same subdivision) in the past, please explain. Include the USACE Action ID Number, DWQ Project Number, application date, and date permits and certifications were issued or withdrawn. Provide photocopies of previously issued permits, certifications or other useful information. Describe previously approved wetland, stream and buffer impacts, along with associated mitigation (where applicable). If this is a NCDOT project, list and describe permits issued for prior segments of the same T.I.P. project, along with construction schedules. No prior permits have been issued/ withdrawn for this project.

V. Future Project Plans

Are any future permit requests anticipated for this project? If so, describe the anticipated work, and provide justification for the exclusion of this work from the current application.
No.

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

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

1. Provide a written description of the proposed impacts: There will be 0.06 acre of permanent surface water (pond) impacts associated with the bridge replacement. Temporary impacts for a causeway used for an on-site detour will result in 0.53 acre of surface water impacts. The temporary causeway is to be removed post-construction.

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

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

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

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

Stream Impact Designation (indicate on map)	Stream Name	Type of Impact	Perennial or Intermittent?	Average Stream Width Before Impact	Impact Length (linear feet)	Area of Impact (acres)
S	Long Creek/Lake	permanent	perennial	92	NA	0.06
TS	Long Creek/Lake	temporary	perennial	92	NA	0.53
Total Stream Impact (by length and acreage)					NA	0.59

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

Open Water Impact Site Number (indicate on map)	Name of Waterbody (if applicable)	Type of Impact	Type of Waterbody (lake, pond, estuary, sound, bay, ocean, etc.)	Area of Impact (acres)
Site 1	Long Lake	Permanent	Lake	0.06
Site 1	Long Lake	Temporary	Lake	0.53
Total Open Water Impact (acres)				0.59

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

Stream Impact (acres):	N/A
Wetland Impact (acres):	N/A
Open Water Impact (acres):	0.59
Total Impact to Waters of the U.S. (acres) Permanent	0.06
Total Impact to Waters of the U.S. (acres) Temporary	0.53
Total Stream Impact (linear feet) Permanent	N/A
Total Stream Impact (linear feet) Temporary	N/A

7. Isolated Waters
   Do any isolated waters exist on the property? ☐ Yes x No
   Describe all impacts to isolated waters, and include the type of water (wetland or stream) and the size of the proposed impact (acres or linear feet). Please note that this section only applies to waters that have specifically been determined to be isolated by the USACE.

   _____

8. Pond Creation
   If construction of a pond is proposed, associated wetland and stream impacts should be included above in the wetland and stream impact sections. Also, the proposed pond should be described here and illustrated on any maps included with this application.
   Pond to be created in (check all that apply): ☐ uplands ☐ stream ☐ wetlands
   Describe the method of construction (e.g., dam/embankment, excavation, installation of draw-down valve or spillway, etc.):_____
   Proposed use or purpose of pond (e.g., livestock watering, irrigation, aesthetic, trout pond, local stormwater requirement, etc.):_____
   Current land use in the vicinity of the pond:_____
   Size of watershed draining to pond:_____ Expected pond surface area:_____

VII. Impact Justification (Avoidance and Minimization)

Specifically describe measures taken to avoid the proposed impacts. It may be useful to provide information related to site constraints such as topography, building ordinances, accessibility, and financial viability of the project. The applicant may attach drawings of alternative, lower-impact site layouts, and explain why these design options were not feasible. Also discuss how impacts were minimized once the desired site plan was developed. If applicable, discuss construction techniques to be followed during construction to reduce impacts. The "do-nothing" alternative was not considered due to it eliminating the use of NC 73 and closing the bridge. Rehabilitation was not considered due to the poor condition of the bridge. Impacts will be minimized by

replacing the existing bridge with another spanning structure and surficial bridge runoff will not be directed into Long Creek via deck drains.

VIII. Mitigation

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

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

If mitigation is required for this project, a copy of the mitigation plan must be attached in order for USACE or DWQ to consider the application complete for processing. Any application lacking a required mitigation plan or NCEEP concurrence shall be placed on hold as incomplete. An applicant may also choose to review the current guidelines for stream restoration in DWQ's Draft Technical Guide for Stream Work in North Carolina (see DWQ website for most current version.).

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

2. Mitigation may also be made by payment into the North Carolina Ecosystem Enhancement Program (NCEEP). Please note it is the applicant's responsibility to contact the NCEEP at (919) 715-0476 to determine availability, and written approval from the NCEEP indicating

that they are will to accept payment for the mitigation must be attached to this form. For additional information regarding the application process for the NCEEP, check the NCEEP website at http://www.nceep.net/pages/inlieureplace.htm. If use of the NCEEP is proposed, please check the appropriate box on page five and provide the following information:

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

IX. Environmental Documentation (required by DWQ)

1. Does the project involve an expenditure of public (federal/state/local) funds or the use of public (federal/state) land? Yes x No ☐

2. If yes, does the project require preparation of an environmental document pursuant to the requirements of the National or North Carolina Environmental Policy Act (NEPA/SEPA)? Note: If you are not sure whether a NEPA/SEPA document is required, call the SEPA coordinator at (919) 733-5083 to review current thresholds for environmental documentation. Yes x - A Programmatic Categorical Exclusion dated September 2006 has been submitted. No ☐

3. If yes, has the document review been finalized by the State Clearinghouse? If so, please attach a copy of the NEPA or SEPA final approval letter. Yes x No ☐

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

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

1. Will the project impact protected riparian buffers identified within 15A NCAC 2B .0233 (Neuse), 15A NCAC 2B .0259 (Tar-Pamlico), 15A NCAC 02B .0243 (Catawba) 15A NCAC 2B .0250 (Randleman Rules and Water Supply Buffer Requirements), or other (please identify_____)? Yes ☐ No x

2. If "yes", identify the square feet and acreage of impact to each zone of the riparian buffers. If buffer mitigation is required calculate the required amount of mitigation by applying the buffer multipliers.

Zone*	Impact (square feet)	Multiplier	Required Mitigation

1		3 (2 for Catawba)	
2		1.5	
Total			

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

3. If buffer mitigation is required, please discuss what type of mitigation is proposed (i.e., Donation of Property, Riparian Buffer Restoration / Enhancement, or Payment into the Riparian Buffer Restoration Fund). Please attach all appropriate information as identified within 15A NCAC 2B .0242 or .0244, or .0260. _____

XI. Stormwater (required by DWQ)

Describe impervious acreage (existing and proposed) versus total acreage on the site. Discuss stormwater controls proposed in order to protect surface waters and wetlands downstream from the property. If percent impervious surface exceeds 20%, please provide calculations demonstrating total proposed impervious level. Impervious acreage is not expected to significantly increase as a result of this bridge replacement project. Deck drains will not be used.

XII. Sewage Disposal (required by DWQ)

Clearly detail the ultimate treatment methods and disposition (non-discharge or discharge) of wastewater generated from the proposed project, or available capacity of the subject facility.
N/A

XIII. Violations (required by DWQ)

Is this site in violation of DWQ Wetland Rules (15A NCAC 2H .0500) or any Buffer Rules?
Yes ☐ No x

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

XIV. Cumulative Impacts (required by DWQ)

Will this project (based on past and reasonably anticipated future impacts) result in additional development, which could impact nearby downstream water quality? Yes ☐ No x
If yes, please submit a qualitative or quantitative cumulative impact analysis in accordance with the most recent North Carolina Division of Water Quality policy posted on our website at http://h2o.enr.state.nc.us/ncwetlands. If no, please provide a short narrative description:_____

XV. Other Circumstances (Optional):

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

E. L. Lusk 7.31.08

Applicant/Agent's Signature **Date**

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

APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD):

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: B-4276 (Replacement of Bridge 33 on NC 73 over Long Creek/ Lake)

C. PROJECT LOCATION AND BACKGROUND INFORMATION:

State:NC County/parish/borough: Stanly City: Albemarle
Center coordinates of site (lat/long in degree decimal format): Lat. 352134° **N**, Long. 0801415'° **W**.
Universal Transverse Mercator:
Name of nearest waterbody: Long Lake
Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Long Lake
Name of watershed or Hydrologic Unit Code (HUC): 03050101

☒ Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.
☐ Check if other sites (e.g., offsite mitigation sites, disposal sites, etc…) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

☒ Office (Desk) Determination. Date: June/2/2008
☐ Field Determination. Date(s):

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There **Are** *"navigable waters of the U.S."* within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [*Required*]

☐ Waters subject to the ebb and flow of the tide.
☒ Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.
Explain: Long Lake is large enough for navigation uses.

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There **Are** *"waters of the U.S."* within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [*Required*]

1. **Waters of the U.S.**
   a. **Indicate presence of waters of U.S. in review area (check all that apply):** [1]
      ☒ TNWs, including territorial seas
      ☐ Wetlands adjacent to TNWs
      ☐ Relatively permanent waters[2] (RPWs) that flow directly or indirectly into TNWs
      ☐ Non-RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
      ☐ Impoundments of jurisdictional waters
      ☐ Isolated (interstate or intrastate) waters, including isolated wetlands

   b. **Identify (estimate) size of waters of the U.S. in the review area:**
      Non-wetland waters: linear feet: width (ft) and/or acres.
      Wetlands: acres.

   c. **Limits (boundaries) of jurisdiction** based on: **Not Applicable.**
      Elevation of established OHWM (if known): .

2. **Non-regulated waters/wetlands (check if applicable):**[3]
   ☐ Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional.
   Explain: .

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[1] Boxes checked below shall be supported by completing the appropriate sections in Section III below.
[2] For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).
[3] Supporting documentation is presented in Section III.F.

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. **TNW**
   Identify TNW: .

   Summarize rationale supporting determination: .

2. **Wetland adjacent to TNW**
   Summarize rationale supporting conclusion that wetland is "adjacent": .

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody[4] is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. **Characteristics of non-TNWs that flow directly or indirectly into TNW**

   (i) General Area Conditions:
   Watershed size: **square miles**
   Drainage area: **square miles**
   Average annual rainfall: inches
   Average annual snowfall: inches

   (ii) Physical Characteristics:
   (a) Relationship with TNW:
   ☐ Tributary flows directly into TNW.
   ☐ Tributary flows through **10 (or more)** tributaries before entering TNW.

   Project waters are **30 (or more)** river miles from TNW.
   Project waters are **1 (or less)** river miles from RPW.
   Project waters are **30 (or more)** aerial (straight) miles from TNW.
   Project waters are **1 (or less)** aerial (straight) miles from RPW.
   Project waters cross or serve as state boundaries. Explain: .

   Identify flow route to TNW[5]: 1,000 feet downstream to the Catawba River.
   Tributary stream order, if known: .

---

[4] Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.

[5] Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

(b) General Tributary Characteristics (check all that apply):

Tributary is:
- ☐ Natural
- ☐ Artificial (man-made). Explain: .
- ☐ Manipulated (man-altered). Explain: .

Tributary properties with respect to top of bank (estimate):
- Average width: feet
- Average depth: feet
- Average side slopes: **Vertical (1:1 or less).**

Primary tributary substrate composition (check all that apply):

☐ Silts	☐ Sands	☐ Concrete
☐ Cobbles	☐ Gravel	☐ Muck
☐ Bedrock	☐ Vegetation. Type/% cover:	
☐ Other. Explain: .		

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: .
Presence of run/riffle/pool complexes. Explain: .
Tributary geometry: **Relatively straight**
Tributary gradient (approximate average slope): %

(c) Flow:

Tributary provides for: **Intermittent but not seasonal flow**
Estimate average number of flow events in review area/year: **20 (or greater)**
Describe flow regime: .
Other information on duration and volume: .

Surface flow is: **Discrete and confined.** Characteristics: .

Subsurface flow: **Unknown**. Explain findings: .
- ☐ Dye (or other) test performed: .

Tributary has (check all that apply):
- ☐ Bed and banks
- ☐ OHWM[6] (check all indicators that apply):

☐ clear, natural line impressed on the bank	☐ the presence of litter and debris
☐ changes in the character of soil	☐ destruction of terrestrial vegetation
☐ shelving	☐ the presence of wrack line
☐ vegetation matted down, bent, or absent	☐ sediment sorting
☐ leaf litter disturbed or washed away	☐ scour
☐ sediment deposition	☐ multiple observed or predicted flow events
☐ water staining	☐ abrupt change in plant community
☐ other (list):	

- ☐ Discontinuous OHWM.[7] Explain: .

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):

☒ High Tide Line indicated by:	☒ Mean High Water Mark indicated by:
☐ oil or scum line along shore objects	☐ survey to available datum;
☐ fine shell or debris deposits (foreshore)	☐ physical markings;
☐ physical markings/characteristics	☐ vegetation lines/changes in vegetation types.
☐ tidal gauges	
☐ other (list):	

(iii) Chemical Characteristics:

Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).
Explain: .
Identify specific pollutants, if known: .

---

[6]A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.
[7]Ibid.

(iv) Biological Characteristics. Channel supports (check all that apply):

- ☐ Riparian corridor. Characteristics (type, average width): .
- ☐ Wetland fringe. Characteristics: .
- ☐ Habitat for:
  - ☐ Federally Listed species. Explain findings: .
  - ☐ Fish/spawn areas. Explain findings: .
  - ☐ Other environmentally-sensitive species. Explain findings: .
  - ☐ Aquatic/wildlife diversity. Explain findings: .

2. Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW

(i) Physical Characteristics:

(a) General Wetland Characteristics:

Properties:

Wetland size: acres

Wetland type. Explain: .

Wetland quality. Explain: .

Project wetlands cross or serve as state boundaries. Explain: .

(b) General Flow Relationship with Non-TNW:

Flow is: **Intermittent flow**. Explain: .

Surface flow is: **Discrete and confined**

Characteristics: .

Subsurface flow: **Unknown**. Explain findings: .

- ☐ Dye (or other) test performed: .

(c) Wetland Adjacency Determination with Non-TNW:

- ☐ Directly abutting
- ☐ Not directly abutting
  - ☐ Discrete wetland hydrologic connection. Explain: .
  - ☐ Ecological connection. Explain: .
  - ☐ Separated by berm/barrier. Explain: .

(d) Proximity (Relationship) to TNW

Project wetlands are **30 (or more)** river miles from TNW.

Project waters are **30 (or more)** aerial (straight) miles from TNW.

Flow is from: **Wetland to/from navigable waters.**

Estimate approximate location of wetland as within the **500-year or greater** floodplain.

(ii) Chemical Characteristics:

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain: .

Identify specific pollutants, if known: .

(iii) Biological Characteristics. Wetland supports (check all that apply):

- ☐ Riparian buffer. Characteristics (type, average width): .
- ☐ Vegetation type/percent cover. Explain: .
- ☐ Habitat for:
  - ☐ Federally Listed species. Explain findings: .
  - ☐ Fish/spawn areas. Explain findings: .
  - ☐ Other environmentally-sensitive species. Explain findings: .
  - ☐ Aquatic/wildlife diversity. Explain findings: .

3. Characteristics of all wetlands adjacent to the tributary (if any)

All wetland(s) being considered in the cumulative analysis: **30 (or more)**

Approximately ( ) acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

Directly abuts? (Y/N)	Size (in acres)	Directly abuts? (Y/N)	Size (in acres)

Summarize overall biological, chemical and physical functions being performed: .

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D: .

2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:
   - ☒ TNWs: linear feet width (ft), Or, acres.
   - ☐ Wetlands adjacent to TNWs: acres.

2. **RPWs that flow directly or indirectly into TNWs.**
   - ☐ Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial: .
   - ☐ Tributaries of TNW where tributaries have continuous flow "seasonally" (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally: .

Provide estimates for jurisdictional waters in the review area (check all that apply):
- ☐ Tributary waters: linear feet width (ft).
- ☐ Other non-wetland waters: acres.
  Identify type(s) of waters: .

3. **Non-RPWs[8] that flow directly or indirectly into TNWs.**
   ☐ Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

   Provide estimates for jurisdictional waters within the review area (check all that apply):
   - ☐ Tributary waters: linear feet width (ft).
   - ☐ Other non-wetland waters: acres.
     Identify type(s) of waters: .

4. **Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.**
   ☐ Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.
   - ☐ Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

   - ☐ Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

   Provide acreage estimates for jurisdictional wetlands in the review area: acres.

5. **Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.**
   ☐ Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisidictional. Data supporting this conclusion is provided at Section III.C.

   Provide acreage estimates for jurisdictional wetlands in the review area: acres.

6. **Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.**
   ☐ Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

   Provide estimates for jurisdictional wetlands in the review area: acres.

7. **Impoundments of jurisdictional waters.[9]**
   As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.
   - ☐ Demonstrate that impoundment was created from "waters of the U.S.," or
   - ☐ Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
   - ☐ Demonstrate that water is isolated with a nexus to commerce (see E below).

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):[10]
- ☐ which are or could be used by interstate or foreign travelers for recreational or other purposes.
- ☐ from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
- ☐ which are or could be used for industrial purposes by industries in interstate commerce.
- ☐ Interstate isolated waters. Explain: .
- ☐ Other factors. Explain: .

Identify water body and summarize rationale supporting determination: .

---

[8] See Footnote # 3.
[9] To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.
[10] **Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA *Memorandum Regarding CWA Act Jurisdiction Following Rapanos.***

Provide estimates for jurisdictional waters in the review area (check all that apply):
- ☒ Tributary waters: linear feet width (ft).
- ☒ Other non-wetland waters: acres.
  - Identify type(s) of waters: .
- ☐ Wetlands: acres.

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):
- ☒ If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
- ☒ Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
  - ☐ Prior to the Jan 2001 Supreme Court decision in "*SWANCC*," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
- ☒ Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: .
- ☒ Other: (explain, if not covered above): .

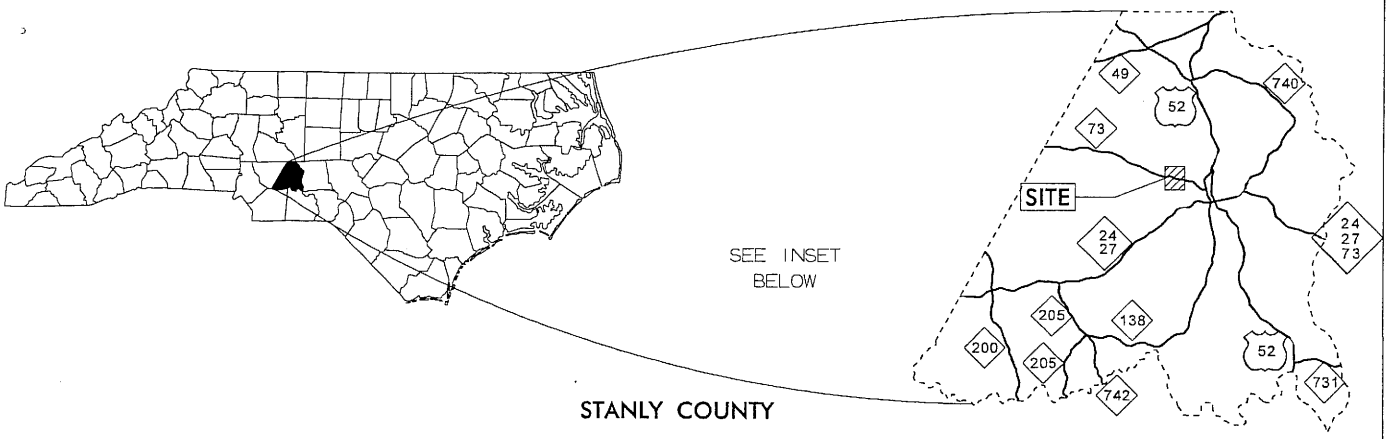
Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):
- ☒ Non-wetland waters (i.e., rivers, streams): linear feet width (ft).
- ☒ Lakes/ponds: acres.
- ☒ Other non-wetland waters: acres. List type of aquatic resource: .
- ☒ Wetlands: acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):
- ☒ Non-wetland waters (i.e., rivers, streams): linear feet, width (ft).
- ☒ Lakes/ponds: acres.
- ☒ Other non-wetland waters: acres. List type of aquatic resource: .
- ☒ Wetlands: acres.

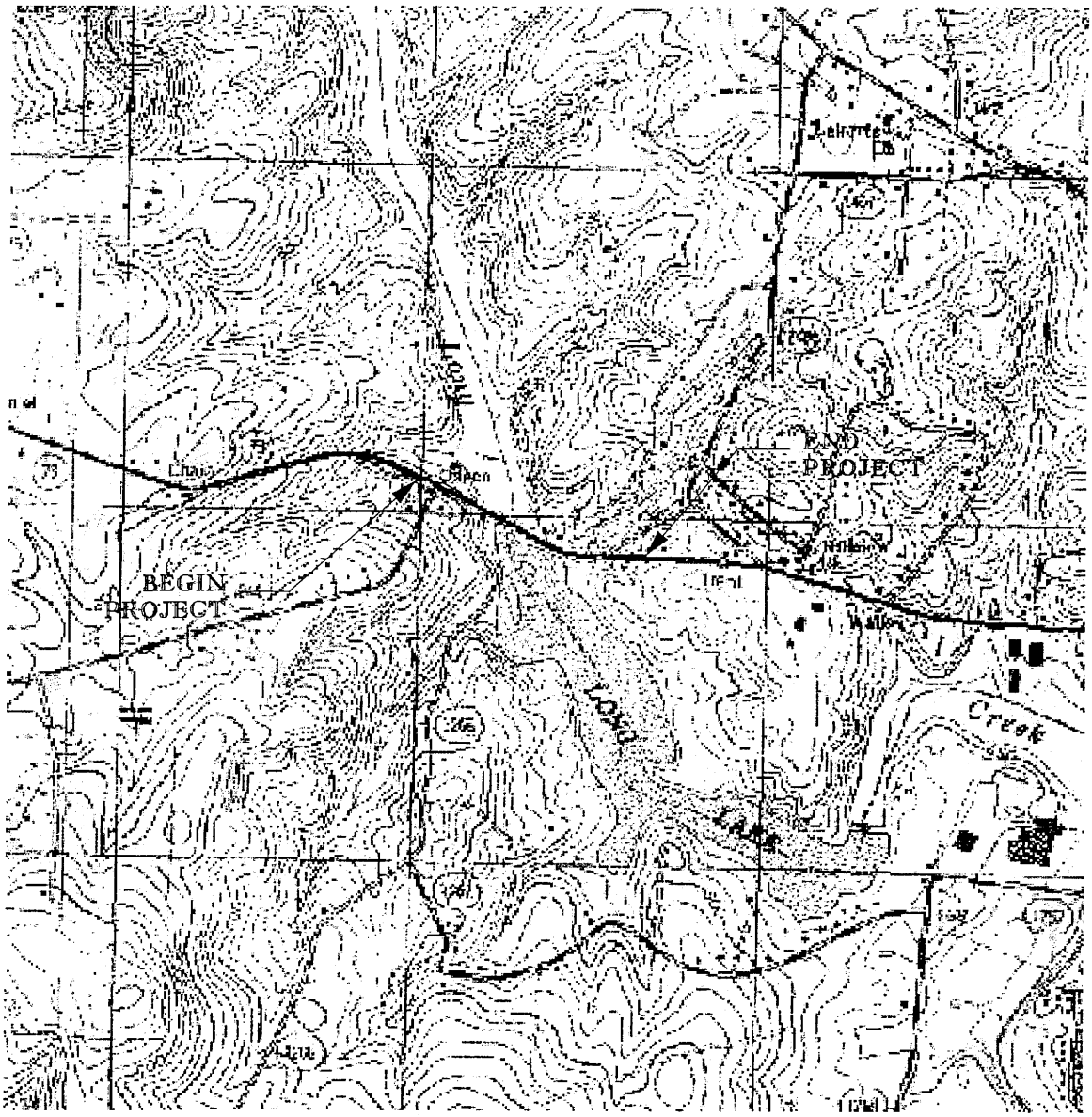
SECTION IV: DATA SOURCES.

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):
- ☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: .
- ☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
  - ☐ Office concurs with data sheets/delineation report.
  - ☐ Office does not concur with data sheets/delineation report.
- ☒ Data sheets prepared by the Corps: .
- ☒ Corps navigable waters' study: .
- ☒ U.S. Geological Survey Hydrologic Atlas: .
  - ☐ USGS NHD data.
  - ☐ USGS 8 and 12 digit HUC maps.
- ☒ U.S. Geological Survey map(s). Cite scale & quad name: .
- ☒ USDA Natural Resources Conservation Service Soil Survey. Citation: .
- ☒ National wetlands inventory map(s). Cite name: .
- ☒ State/Local wetland inventory map(s): .
- ☒ FEMA/FIRM maps: .
- ☒ 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)
- ☒ Photographs: ☐ Aerial (Name & Date): .
  - or ☐ Other (Name & Date): .
- ☒ Previous determination(s). File no. and date of response letter: .
- ☒ Applicable/supporting case law: .
- ☒ Applicable/supporting scientific literature: .
- ☒ Other information (please specify): .

B. ADDITIONAL COMMENTS TO SUPPORT JD: .



STANLY COUNTY



WETLAND IMPACTS
VICINITY MAP

Permit Drawing
Sheet ____ of ____

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

STANLY COUNTY
PROJECT: 33617.1.1 (B-4276)
BRIDGE NO. 33
OVER LONG CREEK

SHEET ____ OF ____

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
5	CITY OF ALBEMARLE	P.O. BOX 190 ALBEMARLE, NC 28001

Permit Drawing
Sheet 2 of 9

NCDOT

DIVISION OF HIGHWAYS

STANLY COUNTY

PROJECT: 33617.1.1 (B-4276)

BRIDGE NO. 33 ON NC 73

OVER LONG CREEK

SHEET OF

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS: Permanent Fill In Wetlands (ac)	WETLAND IMPACTS: Temp. Fill In Wetlands (ac)	WETLAND IMPACTS: Excavation in Wetlands (ac)	WETLAND IMPACTS: Mechanized Clearing in Wetlands (ac)	WETLAND IMPACTS: Hand Clearing in Wetlands (ac)	SURFACE WATER IMPACTS: Permanent SW impacts (ac)	SURFACE WATER IMPACTS: Temp. SW impacts (ac)	SURFACE WATER IMPACTS: Existing Channel Impacts Permanent (ft)	SURFACE WATER IMPACTS: Existing Channel Impacts Temp. (ft)	SURFACE WATER IMPACTS: Natural Stream Design (ft)
1	17+50-25+40 -L-	-L- BRIDGE						0.06				
	18+50-25+40-L-	-DET- BRIDGE							0.53			
TOTALS:								0.06	0.53			

AREA OF PROPOSED PIER IMPACTS=58 SQ FT

Permit Drawing Sheet 3 of 12

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

STANLY COUNTY
PROJECT: 33617.1.1 (B-4276)

SHEET 6/08

ATN Revised 3/31/05

PROJECT REFERENCE NO.	SHEET NO.
B-4276	2A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

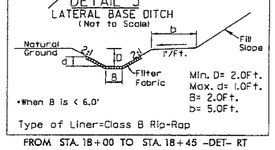
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

421 Fayetteville Street Mall Suite 1603 RALEIGH, N. C. 27601

SUNGATE DESIGN GROUP, P.A. P.O. KING'S PRINCE ROAD RALEIGH, NORTH CAROLINA 27615

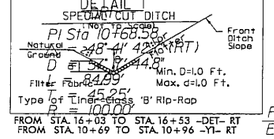
REVISIONS

DETAIL 3
LATERAL BASE DITCH
(Not to Scale)



Type of Liner=Class B Rip-Rap
FROM STA. 18+00 TO STA. 18+45 -DET- RT

DETAIL 1
SPECIAL CUT DITCH
(Not to Scale)

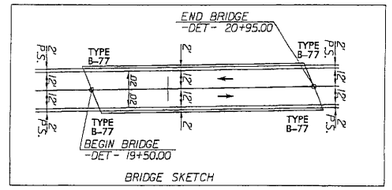


Type of Liner=Class 'B' Rip-Rap
FROM STA. 16+03 TO STA. 16+53 -DET- RT
FROM STA. 10+69 TO STA. 10+96 -Y1- RT

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NC GRID - NAD 83

POT Sta. 12+35.00 -DRI-
END CONSTRUCTION



BRIDGE SKETCH

PROPOSED 56' - 6' CHL W/ 3S BW
STA 16+03 TO STA 16+53 -DET- RT
SPECIAL CUT DITCH W/CL 'B' RIP RAP SEE DETAIL #1

PC Sta. 10+23.33
PT Sta. 11+08.32

PUMP STATION
GRAVEL
S 60° 47' 58.8" E
+43.83
39.44'
+22.72
56.17'
+52.66
50'
EX R/W
MTL
TO MT. PLEASANT
S 58° 21' 29.8" E
N.C. HIGHWAY 73
22.56' BST
N 19° 31' 07.5" E
+63.30
0.30'
WOODS
S 13° 58' 51.6" W
11.42' BST
HADLEY FARM ROAD
SR 1714
GRAU 350
15" CPP
15" CPP TEMP SLOPE DRAIN
SPECIAL CUT DITCH W/CL 'B' RIP RAP STA 10+69 TO STA 10+96 -Y1- RT SEE DETAIL #1
PC 10+85.69 -Y1-
POC 11+30.00 -Y1-
END CONSTRUCTION
PT 12+24.82 -Y1-
CL B RIP-RAP
2' LAT BASE DITCH W/CL 'B' RIP RAP STA 18+00 TO STA 18+45 -DET- RT SEE DETAIL #3
LONG LAKE
SITE 1
LONG CREEK
EXISTING BRIDGE TO BE REMOVED
HEADWALL
BRIDGE #33
N.C. 73
22.50' BST
22.36' BST
ROCK EMBANKMENT
MATCHLINE SEE SHEET 2B Sta. 23+00.00 -DET-

NOTES

FOR CROSS SECTIONS OF:	SEE SHEET:
-DET-	X-9 THRU X-13
-Y1-(TEMP)	X-15

2. STA 11+30.00 TO STA 12+00.00 -Y1-(TEMP) TO REMAIN & TIE W/ -Y1- AFTER DETOUR REMOVAL

FOR DETOUR USE ONLY

BM# 1
-L- Sta. 11+37.30, 69.72 (LT)
ELEV. 499.68
R/R SPIKE SET IN BASE OF 15" POPLAR

BEGIN GRADE
STA 12+61.69
ELEV. 499.21'

PI = 14+00.00
EL = 495.54'
VC = 275'
K = 105

EXISTING GROUND
PROPOSED GRADE
(-)2.6534%
(-)5.2800%

BEGIN GRADE -Y1-
STA. 10+57.41
ELEV. 479.32

-DET-

PI = 11+65.00
EL = 472.44'
VC = 70'
K = 10

(-)6.3948%
(+)0.6286%

END GRADE -Y1-
STA. 12+00.00
ELEV. 472.66

BEGIN SPECIAL CUT DITCH
10+69 RT EL. 468.89
END SPECIAL CUT DITCH
10+96 RT EL 467.50

BEGIN SPECIAL CUT DITCH
16+03 RT EL. 484.51

END SPECIAL CUT DITCH
16+53 RT EL. 481.00

PI = 18+00.00
EL = 474.42'
VC = 500'
K = 105

-DET- STA. 17+29.94
-Y1- 10+45.10
ELEV. 479.66'

PROPOSED GRADE
(-)5.2800%
(-)0.5200%

TEMP SURFACE WATER IMPACTS
BEGIN BRIDGE
-DET- STA. 19+50.00

BM# 2
-L- Sta. 19+03.33, 16.33 (RT)
ELEV. 470.68
CHISLED SQUARE ON SW
HEADWALL OF BRIDGE # 33

TEMP SURFACE WATER IMPACTS

PI = 21+50.00
EL = 472.60'
VC = 150'
K = 750

TEMP SURFACE WATER IMPACTS
END BRIDGE
-DET- STA. 20+95.00

(-)0.5200%
(-)0.3200%

EXISTING GROUND

END LATERAL BASE DITCH
18+45 RT EL. 464.90

BEGIN LATERAL BASE DITCH
18+00 RT EL. 466.42

WSE 465.2 ON 9/2/02

-DET- STA. 12+61.69 TO 23+00.00

ELEV. 490.19
ELEV. 490.19
ELEV. 472.12

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 2440 CFS
DESIGN FREQUENCY	= 5 YRS
DESIGN HW ELEVATION	= 467.5 FT
BASE DISCHARGE	= 6280 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 470.6 FT
OVERTOPPING DISCHARGE	= 9140± CFS
OVERTOPPING FREQUENCY	= 500± YRS
OVERTOPPING ELEVATION	= 472.8 FT
DATE OF SURVEY	= 9/02/02
W.S. ELEVATION AT DATE OF SURVEY	= 465.2 FT

Permit Drawing Sheet ___ of ___

FILE: 5FILES
DATE: 5DATES
STAKES

PROJECT REFERENCE NO.	SHEET NO.
B-4276	2A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

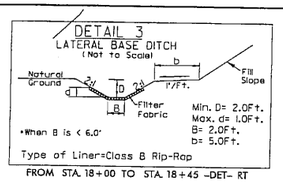
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

William Smith Associates — 421 Fayetteville Street Mall, Suite 1303, RALEIGH, N. C. 27601

SUNGATE DESIGN GROUP, P.A. — 711 JONES FRANKLIN ROAD, RALEIGH, NORTH CAROLINA 27606

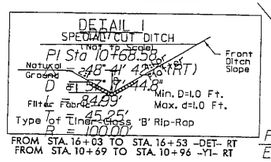
REVISIONS

DETAIL 3
LATERAL BASE DITCH
(Not to Scale)



Type of Liner=Class B Rip-Rap
FROM STA. 18+00 TO STA. 18+45 -DET- RT

DETAIL 1
SPECIAL CUT DITCH
(Not To Scale)



Type of Liner=Class 'B' Rip-Rap
FROM STA. 16+03 TO STA. 16+53 -DET- RT
FROM STA. 10+69 TO STA. 10+96 -Y1- RT

T/S T/S DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NC GRID - NAD 83

POT Sta. 12+35.00 -DRI-
END CONSTRUCTION

PROPOSED 56' - 6' CHL W/ 3S BW

SPECIAL CUT DITCH W/CL 'B' RIP RAP STA 16+03 TO STA 16+53 -DET- RT SEE DETAIL #1

PC Sta. 10+23.33
PT Sta. 11+08.32

S 58° 21' 29.8" E
S 13° 58' 51.6" W

TO MT. PLEASANT
N.C. HIGHWAY 73
EX R/W
22.56' BST
WOODS
+63.30
0.30'
+43.83
39.44'
PUMP STATION
GARAGE
S 60° 47' 39.8" E
WOODS
HARDY FARM ROAD SR 1744
15 BRK D

15" CPP TEMP SLOPE DRAIN
SPECIAL CUT DITCH W/CL 'B' RIP RAP STA 10+69 TO STA 10+96 -Y1- RT SEE DETAIL #1
PC 10+85.69 -Y1-
POC 11+30.00 -Y1-
END CONSTRUCTION
PT 12+24.82 -Y1-

END BRIDGE -DET- 20+95.00
BEGIN BRIDGE -DET- 19+50.00
TYPE B-77
BRIDGE SKETCH

LONG CREEK
EXISTING BRIDGE TO BE REMOVED
HEADWALL
BRIDGE # 33
22.36' BST
22.60' BST
GRAVEL SOD
CL B RIP-RAP
18" CPP
ROCK EMBANKMENT
LONG LAKE
SITE 1

2' LAT BASE DITCH W/CL 'B' RIP RAP STA 18+00 TO STA 18+45 -DET- RT SEE DETAIL #3

MATCHLINE SEE SHEET 2B Sta. 23+00.00 -DET-

NOTES

FOR CROSS SECTIONS OF:	SEE SHEET:
-DET-	X-9 THRU X-13
-Y1-(TEMP)	X-15

1. -DET- -Y1-(TEMP)
2. STA 11+30.00 TO STA 12+00.00 -Y1-(TEMP) TO REMAIN & TIE W/ -Y1- AFTER DETOUR REMOVAL

FOR DETOUR USE ONLY

BM# 1
-L- Sta. 11+37.30, 69.72 (LT)
ELEV. 499.68
R/R SPIKE SET IN BASE OF 15" POPLAR

EXISTING GROUND
PROPOSED GRADE

BEGIN GRADE
STA 12+61.69
ELEV. 499.21'
PI = 14+00.00
EL = 495.54'
VC = 275'
K = 105

(-)2.6534%
(-)5.2800%

BEGIN GRADE -Y1-
STA. 10+57.41
ELEV. 479.32
-DET-
PI = 11+65.00
EL = 472.44'
VC = 70'
K = 10
(-)6.3948%
END GRADE -Y1-
STA. 12+00.00
ELEV. 472.66
(+)0.6286%

BEGIN SPECIAL CUT DITCH
10+69 RT EL. 468.89
END SPECIAL CUT DITCH
10+96 RT EL 467.50

ELEV. 490.19

BEGIN SPECIAL CUT DITCH
16+03 RT EL. 484.51
END SPECIAL CUT DITCH
16+53 RT EL. 481.00

PI = 18+00.00
EL = 474.42'
VC = 500'
K = 105
-DET- STA.17+29.94
-Y1- 10+45.10
ELEV. 479.66

BM# 2
-L- Sta. 19+03.33, 16.33 (RT)
ELEV. 470.68
CHISLED SQUARE ON SW HEADWALL OF BRIDGE # 33

PI = 21+50.00
EL = 472.60'
VC = 150'
K = 750

TEMP SURFACE WATER IMPACTS
TEMP SURFACE WATER IMPACTS
TEMP SURFACE WATER IMPACTS

BEGIN BRIDGE -DET- STA. 19+50.00
END BRIDGE -DET- STA. 20+95.00

(-)5.2800%
(-)0.5200%
(-)0.5200%
(-)0.3200%

ELEV. 472.12

BEGIN LATERAL BASE DITCH
18+00 RT EL. 466.42
END LATERAL BASE DITCH
18+45 RT EL. 464.90

EXISTING GROUND
WSE 465.2 ON 9/2/02

-DET- STA. 12+61.69 TO 23+00.00

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 2440 CFS
DESIGN FREQUENCY	= 5 YRS
DESIGN HW ELEVATION	= 467.5 FT
BASE DISCHARGE	= 6280 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 470.6 FT
OVERTOPPING DISCHARGE	= 9140± CFS
OVERTOPPING FREQUENCY	= 500± YRS
OVERTOPPING ELEVATION	= 472.8 FT
DATE OF SURVEY	= 9/02/02
W.S. ELEVATION AT DATE OF SURVEY	= 465.2 FT

Permit Drawing Sheet 5 of 9

FILE: STATES
DATE: STATES

PROJECT REFERENCE NO.	SHEET NO.
B-4276	2B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Wilbur Smith Associates — 421 Fayetteville Street Mall, Suite 1300, RALEIGH, N. C. 27601
SUNGATE DESIGN GROUP, P.A. — 717 JONES FRANKLIN ROAD, RALEIGH, NORTH CAROLINA 27606

ENGLISH

REVISIONS

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NC GRID NAD 83

MATCHLINE SEE SHEET 2A STA. 23+00.00 -DET-

S16° 53' 39.6"E

DB. 504, PG. 260

DB. 728, PG. 491

CS 27+58.88 -L-

END CONSTRUCTION
POC 27+50.00 -L-
TIE TO EXIST. PVM'T.

SC 25+81.01 -L-

APEX DRIVE SR 1493

DB. 571, PG. 678

POT 33+00.71 -L-

ST 29+98.88 -L-

INVERT = 46.74

TS 23+41.01 -L-
ROCK EMBANKMENT

POT 11+50.00 -Y3-
POS 23+76.04 -L-
END CONSTRUCTION

PT 24+98.57 -DET-

S 74° 28' 33.9" E

5'H X 4'W BOX CULVERT

N.C. HIGHWAY 73
22.25' BST

S 89° 17' 18.0" E

TO ALBEMARLE

LONG LAKE

DB. 504, PG. 673

SITE 1

END DETOUR
POT 26+52.34 -DET-
POC 26+45.00 -L-

PUMP STATION

5' CH. LNK 3 STRND BW

ISTO BRK

DB. 860, PG. 636

DB. 741, PG. 624

-DET-	-L-		
PI = 23+32.68	PIs = 25+01.16	PI = 26+70.23	PIs = 28+39.01
Δ = 11° 39' 09.6" (LT)	θs = 7° 36' 00.0"	Δ = 11° 15' 53.9" (LT)	θs = 7° 36' 00.0"
D = 3° 30' 00.0"	Ls = 240.00'	D = 6° 20' 00.0"	Ls = 240.00'
L = 332.93'	LT = 160.15'	L = 177.87'	LT = 160.15'
T = 167.04'	ST = 80.13'	T = 89.22'	ST = 80.13'
R = 1637.02'		R = 904.67'	
SE = 0.05		SE = 0.08	
RUNOFF = 110.00'		RUNOFF = 213.00'	

NOTES

FOR CROSS SECTIONS OF:	SEE SHEET:
1. DETOUR	X-13 THRU X-14

FOR DETOUR USE ONLY

PI = 24+25.00
EL = 471.72'
VC = 150'
K = 815

ELEV. 472.12

(-)0.3200%

(-)0.5041%

END GRADE
STA 25+04.76
ELEV. 471.32

BM# 3
-L- Sta. 31+60.60, 41.09 (LT)
ELEV. 494.91
R/R SPIKE SET IN BASE OF 14" PINE

-DET- STA. 23+00.00 TO 25+04.76

500 490 480 470 460

23 24 25 26

Permit Drawing Sheet 6 of 37

FILE: STILES STIMES
DATE: STATES

PROJECT REFERENCE NO.	SHEET NO.
B-4276	2B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

William Smith Associates — 421 Fayetteville Street Mall, Suite 1303, RALEIGH, N. C. 27601
SUNGATE DESIGN GROUP, P.A. — 712 JONES FRANKLIN ROAD, RALEIGH, NORTH CAROLINA 27606

ENGLISH

REVISIONS

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NC GRID NAD 83

MATCHLINE SEE SHEET 2A
Sta. 23+00.00 -DET-

S16° 53' 39.6"E

DB. 504, PG. 260

DB. 728, PG. 491

CS 27+58.88 -L-

END CONSTRUCTION
POC 27+50.00 -L-
TIE TO EXIST. PVM'T.

SC 25+81.01 -L-

ARENDRIVE
SR 1403

DB. 571, PG. 678

POT 33+00.71 -L-

ST 29+98.88 -L-

TS 23+41.01 -L-
ROCK EMBANKMENT

POT 11+50.00 -Y3-
POS 23+76.04 -L-
END CONSTRUCTION

PT 24+98.57 -DET-

S 74° 28' 33.8" E

DB. 504, PG. 673

LONG LAKE

SITE 1

END DETOUR
POT 26+52.34 -DET-
POC 26+45.00 -L-

PUMP STATION

5' CH. LNK 3 STRND BW

WOODS

MTL CANOPY

NC HIGHWAY 73
22.25' BST

S 89° 17' 18" E

TO ALBEMARLE

60'

ISTO BRK

DB. 860, PG. 636

DB. 741, PG. 624

-DET-	-L-	-L-
PI = 23+32.68	PIs = 25+01.16	PI = 26+70.23
Δ = 11° 39' 09.6" (LT)	Θs = 7° 36' 00.0"	Δ = 11° 15' 53.9" (LT)
D = 3° 30' 00.0"	Ls = 240.00'	D = 6° 20' 00.0"
L = 332.93'	LT = 160.15'	L = 177.87'
T = 167.04'	ST = 80.13'	T = 89.22'
R = 1,637.02'		R = 904.67'
SE = 0.05		SE = 0.08
RUNOFF = 110.00'		RUNOFF = 213.00'

PIs = 28+39.01
Θs = 7° 36' 00.0"
Ls = 240.00'
LT = 160.15'
ST = 80.13'

NOTES

FOR CROSS SECTIONS OF:	SEE SHEET:
1. DETOUR	X-13 THRU X-14

FOR DETOUR USE ONLY

PI = 24+25.00
EL = 471.72'
VC = 150'
K = 815

ELEV. 472.12

(-)0.3200%

(-)0.5041%

END GRADE
STA 25+04.76
ELEV. 471.32

BM# 3
-L- Sta. 31+60.60, 41.09 (LT)
ELEV. 494.91
R/R SPIKE SET IN BASE OF 14" PINE

-DET- STA. 23+00.00 TO 25+04.76

500 490 480 470 460

23 24 25 26

Permit Drawing Sheet 7 of 9

FILE: STILES
DATE: STATES
STIMES

PROJECT REFERENCE NO.	SHEET NO.
B-4276	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Wilbur Smith Associates — 421 Fayetteville Street Mall, Suite 1303, RALEIGH, N. C. 27601

SUNGATE DESIGN GROUP, P.A. — P.O. JONES FRANKLIN ROAD, RALEIGH, NORTH CAROLINA 27615

ENGLISH

NOTES

FOR PROFILE OF:	SEE SHEET:
1. -L-	5
-Y1-	6
-Y2-	7

2. FOR CROSS SECTIONS OF:	SEE SHEET:
-L-	X-2 THRU X-5
-Y1-	X-8
-Y2-	X-16

3. STA 11+30.00 TO STA 12+00.00 -Y1-(TEMP) TO REMAIN & TIE W/ -Y1- AFTER DETOUR REMOVAL

REVISIONS

STILES
STAKES

FILE:
DATE:

Permit Drawing
Sheet ___ of ___

DENOTES IMPACTS IN SURFACE WATER

LONG LAKE

NC GRID NAD 83

-DRI-
PI Sta 10+68.58
Δ = 48° 41' 42.7" (RT)
D = 57° 17' 44.8"
L = 84.99'
T = 45.25'
R = 100.00'

POT Sta. 12+35.00 -DRI-
END CONSTRUCTION

POT 10+00.00 -Y2- =
POT 10+00.00 -DRI- =
POC 11+63.30 -L-

PC Sta. 10+23.33

PT Sta. 11+08.32

BEGIN CONSTRUCTION
POT 10+75.00 -L-
TIE TO EXIST. PVM'T.

PC 10+90.30 -L-

PROPOSED 56' - 6' CHL W/ 35 BW

PT 14+64.99 -L-

PUMP STATION

REMOVE

TEMP. WORK BRIDGE PHASE II

APPROACH SLAB POT 18+71.50 -L-
BEGIN BRIDGE POT 18+95.50 -L-
END BRIDGE POT 20+96.50 -L-
APPROACH SLAB POT 21+20.50 -L-
TYPE B-77
EXP. GUTTER
4" P.S.
S 62° 49' 24.2" E
BRIDGE SKETCH

REMOVE EXISTING GUARDRAIL (ALL APPROACHES)

CL 'II' RIP RAP

CLASS B RIP-RAP

18" CSP

2GI W/FLAT GRATE

N.C. 73

22.60' BST

S 62° 49' 24.2" E
22.36' BST

HEADWALL

DETOUR CENTERLINE

SHOULDER BERM GUTTER END OF BRIDGE TO STA 22+50 -L- LT AND RT

TEMP. WORK BRIDGE PHASE I

LONG CREEK

SITE 1

MATCHLINE SEE SHEET 5 Sta.23+00.00 -L-

POT 10+21.68 BEGIN CONS

TO MT. PLEASANT

N.C. HIGHWAY 73

S 58° 21' 29.8" E
22.56' BST

EX R/W

MTL

-L-

-N 70° 31' 07.5" E

S 13° 58' 51.6" W

POT 11+09.66 -Y2-
END CONSTRUCTION

HADLEY FARM ROAD SR 1244

WOODS

CHORD

SPECIAL CUT DITCH W/CL 'B' RIP RAP
STA 15+00 TO 16+65 -L- RT(SEE DETAIL #1)

SPECIAL CUT DITCH W/CL 'B' RIP RAP
STA 10+50 TO STA 11+00 -Y1- RT
SEE DETAIL #1

POT 10+00.00 -Y1- =
POT 17+19.55 -L-
BEGIN CONSTRUCTION

PC 10+85.69 -Y1-

POC 11+30.00 -Y1-
END CONSTRUCTION

PT 12+24.82 -Y1-

-L-
PI = 12+77.74
Δ = 4° 27' 54.3" (LT)
D = 1° 11' 30.0"
L = 374.69'
T = 187.44'
R = 4,808.04'
SE = RC
RUNOFF = 53.00'

DETAIL 1
SPECIAL CUT DITCH
(Not to Scale)

Natural Ground
4:1 or Flatter
Front Ditch Slope
Filter Fabric
Min. D=1.0 Ft.
Max. d=1.0 Ft.
Type of Liner=Class 'B' Rip-Rap

FROM STA. 15+00 TO STA. 16+65 RT -L-
FROM STA. 10+50 TO STA. 11+00 RT -Y1-

PROJECT REFERENCE NO.	SHEET NO.
B-4276	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Wilbur Smith Associates — 421 Fayetteville Street Mall, Suite 1301, RALEIGH, N. C. 27601
SUNGATE DESIGN GROUP, P.A. — 912 JONES FRANKLIN ROAD, RALEIGH, NORTH CAROLINA 27606

ENGLISH

NOTES

	FOR PROFILE OF:	SEE SHEET:
1.	-L-	6
	-Y1-	6
	-Y2-	7

2. FOR CROSS SECTIONS OF:	SEE SHEET:
-L-	X-2 THRU X-5
-Y1-	X-8
-Y2-	X-16

3. STA 11+30.00 TO STA 12+00.00 -Y1-(TEMP) TO REMAIN & TIE W/ -Y1- AFTER DETOUR REMOVAL

REVISIONS

DENOTES IMPACTS IN SURFACE WATER

LONG LAKE

NC GRID NAD 83

-DRI-
PI Sta 10+68.58
△ = 48° 41' 42.7" (RT)
D = 57° 17' 44.8"
L = 84.99'
T = 45.25'
R = 100.00'

POT Sta. 12+35.00 -DRI-
END CONSTRUCTION

POT 10+00.00 -Y2- =
POT 10+00.00 -DRI- =
POC 11+63.30 -L-

PROPOSED 56' - 6" CHL W/ 3S BW

BEGIN CONSTRUCTION
POT 10+75.00 -L-
TIE TO EXIST. PVM'T.

PC 10+90.30 -L-

PC Sta. 10+23.33

PT Sta. 11+08.32

PT 11+64.99 -L-

TEMP. WORK BRIDGE PHASE II

APPROACH SLAB POT 18+71.50 -L-
BEGIN BRIDGE POT 18+95.50 -L-
END BRIDGE POT 20+96.50 -L-
APPROACH SLAB POT 21+20.50 -L-
TYPE B-77
EXP. GUTTER
P.S.
S 62° 49' 24.2" E
BRIDGE SKETCH

REMOVE EXISTING GUARDRAIL AT APPROACHES

REMOVE

TO MT. PLEASANT

EX R/W

N.C. HIGHWAY 73

S 58° 21' 29.8" E
22.56' BST

N 20° 37' 07.5" E

S 13° 58' 51.6" W

POT 11+09.66 -Y2-
END CONSTRUCTION

HADLEY FARM ROAD SR 1244

SPECIAL CUT DITCH W/CL 'B' RIP RAP STA 15+00 TO 16+65 -L- RT SEE DETAIL #1

SPECIAL CUT DITCH W/CL 'B' RIP RAP STA 10+50 TO STA 11+00 -Y1- RT SEE DETAIL #1

POT 10+00.00 -Y1- =
POT 17+19.55 -L-
BEGIN CONSTRUCTION

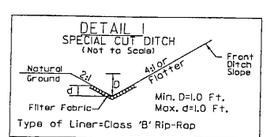
PC 10+85.69 -Y1-

-L-
PI = 12+77.74
△ = 4° 27' 54.3" (LT)
D = 1° 11' 30.0"
L = 374.69'
T = 187.44'
R = 4,808.04'
SE = RC
RUNOFF = 53.00'

POC 11+30.00 -Y1-
END CONSTRUCTION

PT 12+24.82 -Y1-

DETAIL 1
SPECIAL CUT DITCH
(Not to Scale)



Type of Liner=Class 'B' Rip-Rap
FROM STA. 15+00 TO STA. 16+65 RT -L-
FROM STA. 10+50 TO STA. 11+00 RT -Y1-

CL 'I' RIP RAP
CLASS B RIP-RAP
18" CSP
EX. R/W
N.C.73
22.60' BST
2GI W/FLAT GRATE
HEADWALL
EX R/W
S 62° 49' 24.2" E
22.36' BST
CL 'I' RIP RAP
DETOUR CENTERLINE
SHOULDER BERM GUTTER END OF BRIDGE TO STA 22+50 -LL- LT AND RT
LONG LAKE
TEMP. WORK BRIDGE PHASE I
SITE 1
2' BASE DITCH W/CLASS 'B' RIP RAP (RETAIN FROM DETOUR)
PDE
WOODS
EX R/W
POT 10+21.69
BEGIN CONSTRUCTION

MATCHLINE SEE SHEET 5
Sta. 23+00.00 -L-

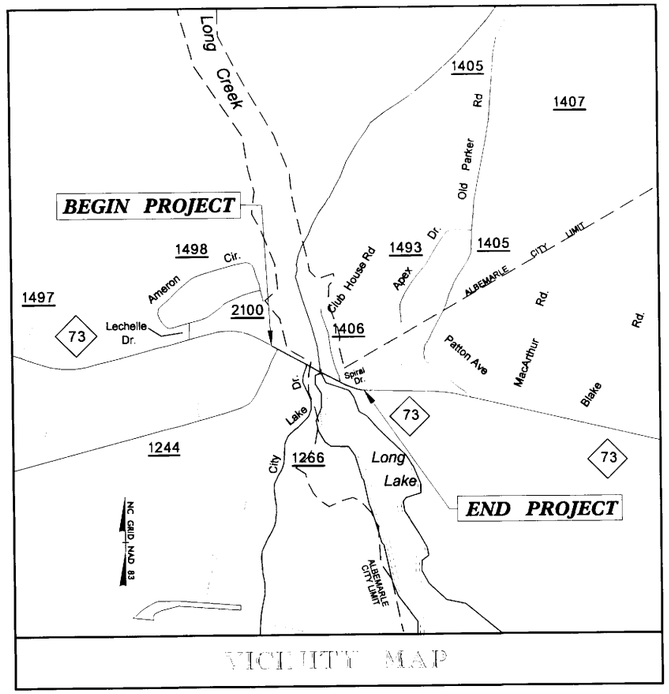
Permit Drawing
Sheet 9 of 9

FILE: STYLES
DATE: SCALES STYLES

TIP PROJECT B-4276

CONTRACT: C201831 TIP PROJECT B-4276

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



VICINITY MAP

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4276	1	

WBS NO.	F. A. PROJ. NO.	DESCRIPTION
33617.1.1	BRSTP-73(5)	P.E.
33617.2.2	BRSTP-73(5)	ROW & UTILITIES
33617.3.1	BRSTP-73(5)	CONSTRUCTION

STANLY COUNTY

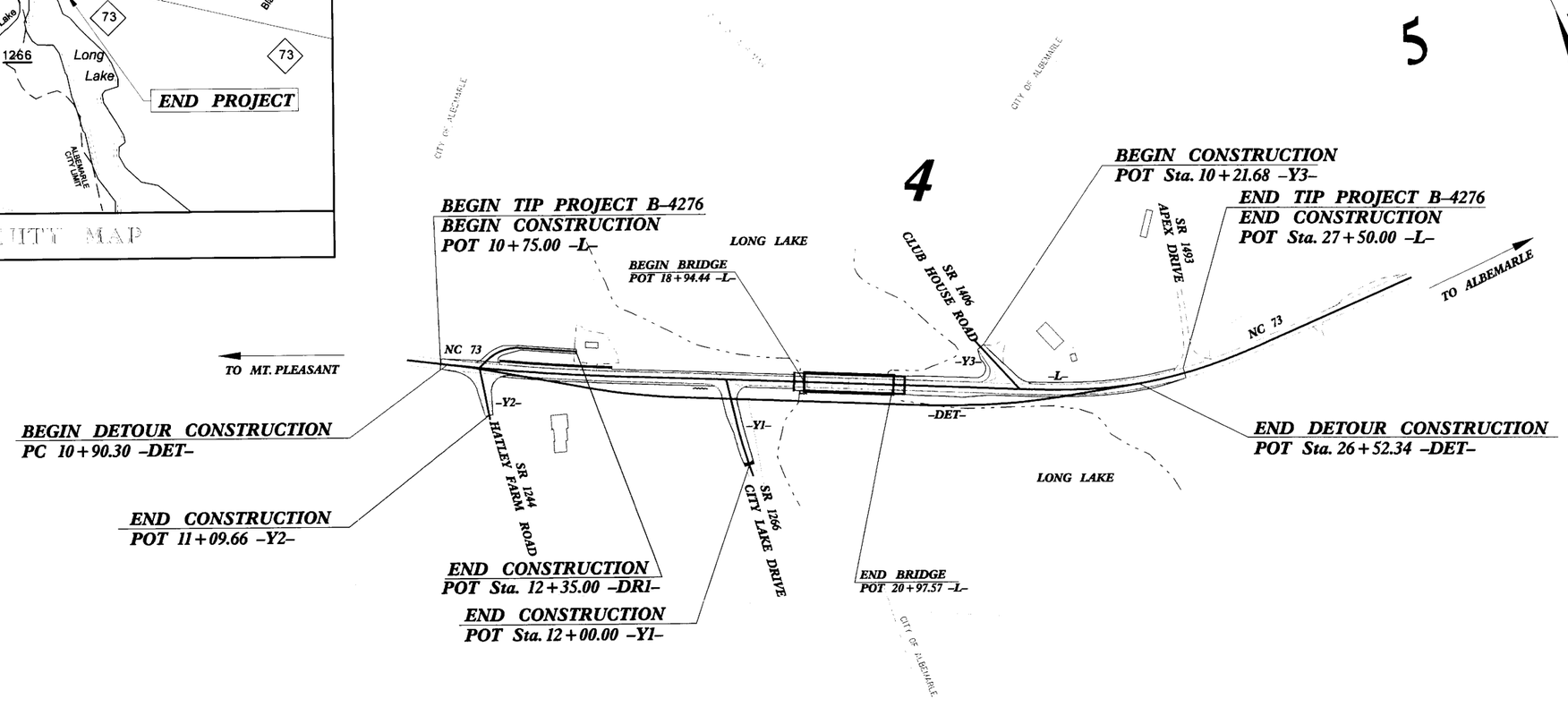
LOCATION: BRIDGE NO. 33 OVER LONG CREEK ON NC 73

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

NC GRID NAD 83

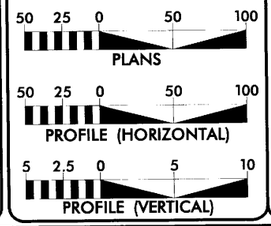
5

4



NCDOT CONTACT: DOUG TAYLOR, P.E. - PROJECT ENGINEER - ROADWAY DESIGN

GRAPHIC SCALES



DESIGN DATA

ADT 2008 = 11,500
ADT 2030 = 20,000
DHV = 10 %
D = 60 %
T = 7 % *
V = 60 MPH **
* TTST 3% & DUAL 4%
FUNCTIONAL CLASSIFICATION = URBAN MINOR ARTERIAL
**DESIGN EXCEPTION REQUIRED FOR DESIGN SPEED (40 MPH)

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT B-4276 =	0.279 MILES
LENGTH OF STRUCTURE TIP PROJECT B-4276 =	0.038 MILES
TOTAL LENGTH OF TIP PROJECT B-4276 =	0.317 MILES

Prepared In the Office of:
WILBUR SMITH ASSOCIATES
421 FAYETTEVILLE ST. STE. 1303 RALEIGH, NC 27601 PHONE (919) 7[illegible]

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
SEPT. 21, 2007

LETTING DATE:
SEPT. 16, 2008

DAVID L. WILVER, P.E.
PROJECT ENGINEER

DAVID L. WILVER, P.E.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS

DO NOT USE FOR CONSTRUCTION

NORTH CAROLINA PROFESSIONAL SEAL 026 ENGINEER DAVID L. WILVER

SIGNATURE:

ROADWAY DESIGN ENGINEER

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

P.E.

STATE HIGHWAY DESIGN ENGINEER

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PROJECT REFERENCE NO.	SHEET NO.
B-4276	1B

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL SYMBOLS

*S.U.E = SUBSURFACE UTILITY ENGINEER

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 — CFF
- 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 (Concrete or Granite) R/W Marker
- R/W Marker (Iron Pin & Cap)
- Prop. Right of Way Line with Proposed
- 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 — SEE
- 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
- U/G Telephone Cable Hand Hold — PH
- Cable TV Pedestal — C
- U/G TV Cable Hand Hold — PH
- U/G Power Cable Hand Hold — PH
- 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
- Storm Sewer Manhole — S
- 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 — 0
- U/G Test Hole (S.U.E.*) — AATUR
- 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 & ISEW
- 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 — G
- 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
- 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

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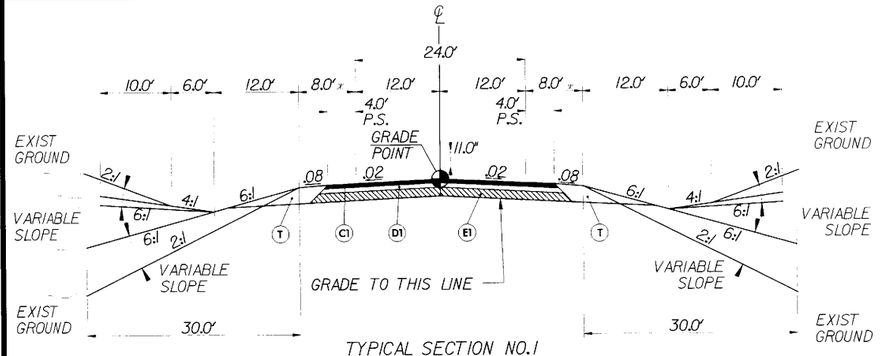
PROJECT REFERENCE NO.	SHEET NO.
B-4276	2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS

DO NOT USE FOR CONSTRUCTION

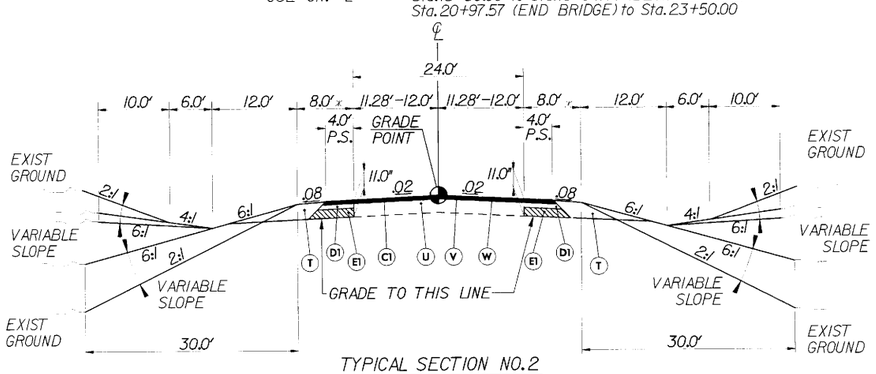
NORTH CAROLINA 19026 ENGINEER DAVID L. MILLER

REVISIONS



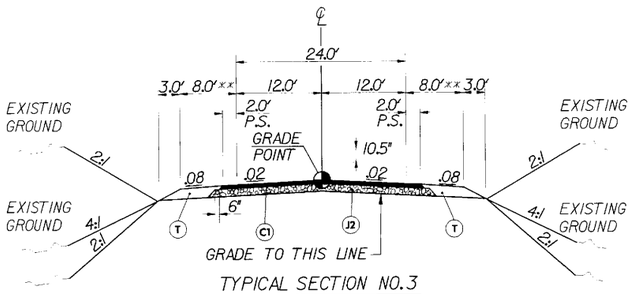
TYPICAL SECTION NO.1

USE ON: -L- Sta.15+50.00 to Sta.18+94.44 (BEGIN BRIDGE)
Sta.20+97.57 (END BRIDGE) to Sta.23+50.00



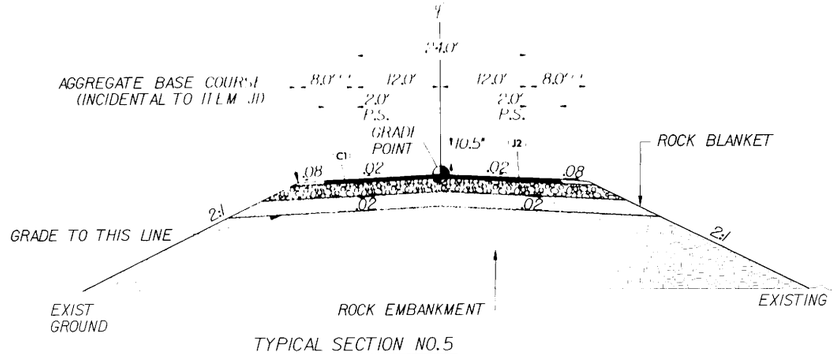
TYPICAL SECTION NO.2

USE ON: -L- Sta.10+75.00 to Sta.15+50.00
-L- Sta.23+50.00 to Sta.27+50.00



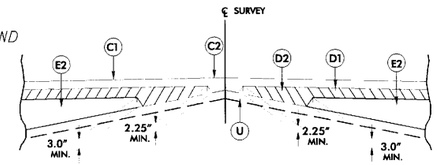
TYPICAL SECTION NO.3

USE ON: DETOUR Sta.13+70.00 to Sta.17+50.00

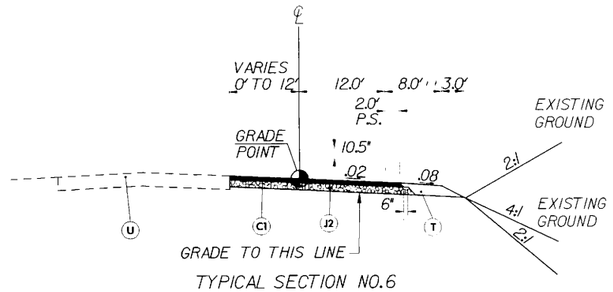


TYPICAL SECTION NO.5

USE ON: DETOUR Sta.17+50.00 to Sta.19+50.00 (BEGIN DETOUR BRIDGE)
Sta.20+95.00 (END DETOUR BRIDGE) to Sta.23+60.65

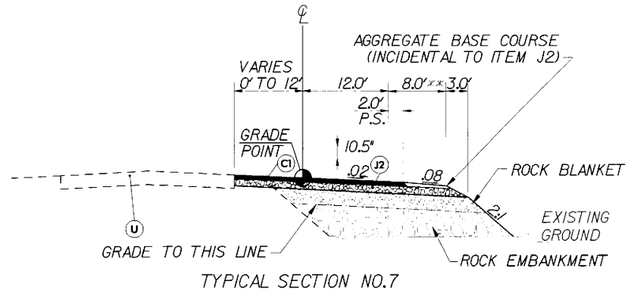


Detail Showing Method of Wedging



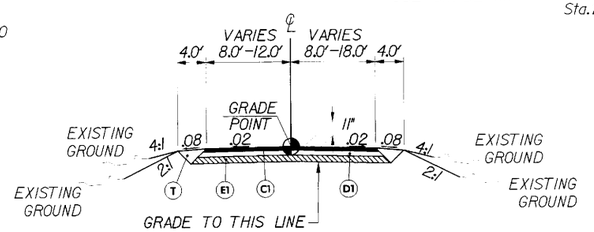
TYPICAL SECTION NO.6

USE ON: DETOUR Sta.10+90.30 to Sta.13+70.00
Sta.25+57.00 to Sta.26+52.34



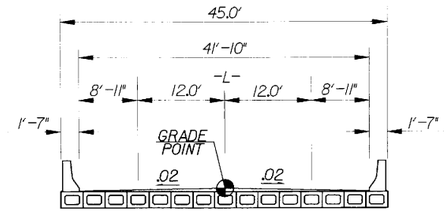
TYPICAL SECTION NO.7

USE ON: DETOUR Sta.23+60.65 to Sta.25+57.00



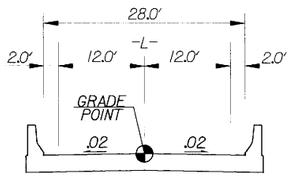
TYPICAL SECTION NO.4

USE ON: -Y1- Sta.10+57.41 TO Sta.12+00.00 (DETOUR)
Sta.10+12.41 TO Sta.11+30.00 (FINAL)
-Y2- Sta.10+12.53 TO Sta.11+09.66
-Y3- Sta.10+21.68 TO Sta.11+33.33



TYPICAL SECTION ON STRUCTURE

USE ON: -L- Sta.18+94.44 (BEGIN BRIDGE) to
Sta.20+97.57 (END BRIDGE)



DETOUR BRIDGE

USE ON: DETOUR Sta.19+50.00 to Sta.20+95.00

PAVEMENT SCHEDULE

ITEM	DESCRIPTION
C1	PROP. APPROX. 3 IN. ASPHALT SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS/SY IN EACH OF TWO LAYERS
C2	PROP. VAR. DEPTH ASPHALT SURFACE. COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS/SY PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 1.5" OR GREATER THAN 2.0" IN DEPTH
D1	PROP. APPROX. 4 IN. ASPHALT INT. COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS/SY
D2	PROP. VAR. DEPTH ASPHALT INT. COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS/SY PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 2.25" IN DEPTH OR GREATER THAN 4" IN DEPTH
E1	PROP. APPROX. 5.5 IN. ASPHALT BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 627 LBS/SY

ITEM	DESCRIPTION
E2	PROP.VAR. DEPTH ASPHALT BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS/SY PER 1" DEPTH TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5.5" IN DEPTH
J1	PROP. 8 IN. AGGREGATE BASE COURSE
J2	PROP. 10 IN. AGGREGATE BASE COURSE
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING
V	MILLING

NOTES

* INCREASE SHOULDER WIDTH 5' WHEN GUARDRAIL IS USED.

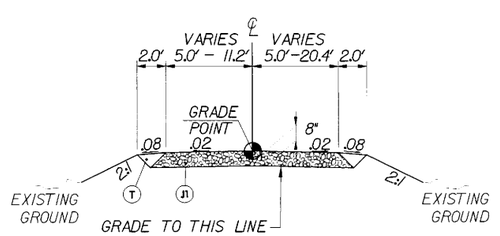
** INCREASE SHOULDER WIDTH 2' WHEN GUARDRAIL IS USED.

ALL PAVEMENT EDGE SLOPES ARE 1:1 UNLESS OTHERWISE NOTED.

4' P.S. WITH SHOULDER BERM GUTTER FROM -L- STA 21+08.50 TO STA 22+50.00 LT & RT

MILL NOTCH TO TIE INTO EXISTING ASPHALT PAVEMENT AT BEGIN AND END CONSTRUCTION

SAWCUT EXISTING PAVEMENT TO PROVIDE A MINIMUM 1' WIDTH OF FULL DEPTH PAVEMENT



TYPICAL SECTION NO.8

USE ON: -DRI- Sta.10+21.00 TO Sta.12+35.00

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PROJECT REFERENCE NO.	SHEET NO.
B-4276	2A
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — SEAL 19026 — ENGINEER DAVID L. SILVER

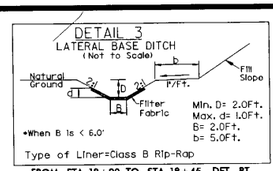
HYDRAULICS ENGINEER — SEAL 9334 — ENGINEER HENRY WELLS II

SUNGATE DESIGN GROUP, P.A.

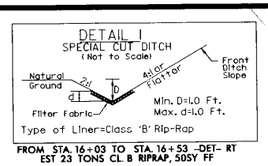
PRELIMINARY PLANS

DO NOT USE FOR CONSTRUCTION

REVISIONS



FROM STA. 18+00 TO STA. 18+45 -DET- RT
EST 25 TONS CL. B RIPRAP, 55SY FF, 13CY DDE



FROM STA. 16+03 TO STA. 16+53 -DET- RT
EST 23 TONS CL. B RIPRAP, 50SY FF

FROM STA. 10+69 TO STA. 10+96 -Y1- RT
EST 12 TONS CL. B RIPRAP, 27SY FF

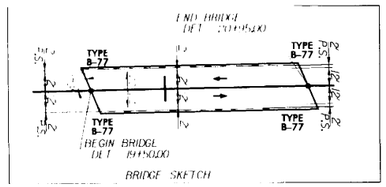
NCGS "ODEEN" 12+22.37 PINC
POC 11+21.23 -L- 17.77' LT.
ELEV = 499.12

(1) RAY D. LOWDER, INC.
P.I.N. 6528-0298-3576
DB. 339, PG. 164

SPECIAL CUT DITCH
W/CL 'B' RIP RAP
STA 16+03 TO STA 16+53 -DET- RT
SEE DETAIL #1

(3) COUNTY OF STANLY
P.I.N. 6538-0108-6346
DB. 931, PG. 158

(5) CITY OF ALBEMARLE
P.I.N. 6538-0344-9903
DB. 504, PG. 673



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EXISTING BRIDGE TO BE REMOVED

-BL-2 22+16.07 PINC
POT 21+11.76 -L- 24.35' RT.
ELEV = 468.07

POT 10+45.00 -Y1-=
POT 17+34.28 -DET-

S 54° 36' 20.5" E

S 62° 49' 24.2" E

GRAU 350

PC 14+03.51 -DET-

PT 16+38.30 -DET-

-BL-1 16+37.08 PINC
POT 15+32.82 -L- 32.09' RT.
ELEV = 489.53

PT 11+97.51 -DET-

15" CPP

R=80.00

15" CPP TEMP SLOPE DRAIN

SPECIAL CUT DITCH W/CL 'B' RIP RAP
STA 10+69 TO STA 10+96 -Y1- RT
SEE DETAIL #1

PC 10+85.69 -Y1-

POC 12+00.00 -Y1-
END CONSTRUCTION

PT 12+24.82 -Y1-

CL B RIP-RAP

ROCK EMBANKMENT

ROCK EMBANKMENT

PC 21+65.64 -DET-

MATCHLINE SEE SHEET 2B
Sta. 23+00.00 -DET-

2' LAT BASE DITCH W/CL 'B' RIP RAP
STA 18+00 TO STA 18+45 -DET- RT
SEE DETAIL #3

BEGIN DETOUR
PC 10+90.30 -DET =
PC 10+90.30 -L-

(1) RAY D. LOWDER, INC.
P.I.N. 6528-0298-3576
DB. 339, PG. 164

-DET-
PI = 11+43.92
Δ = 3° 45' 09.3" (RT)
D = 3° 30' 00.0"
L = 107.22'
T = 53.63'
R = 1,637.02'
SE = MATCH EXIST.

(2) THOMAS A. ECTON
and wife, SHARRIE T. ECTON
P.I.N. 6538-0108-4214
DB. 392, PG. 800

(4) FRANCIS E. STARNES, JR.
and PATRICIA S. BRAMLETT
P.I.N. 6538-0116-0306
DB. 690, PG. 707

-DET-
PI = 15+21.11
Δ = 8° 13' 03.6" (LT)
D = 3° 30' 00.0"
L = 234.79'
T = 117.60'
R = 1,637.02'
SE = 0.05
RUNOFF = 110.00'

-Y1-
PI = 11+55.33
Δ = 6° 36' 30.9" (LT)
D = 4° 45' 00.0"
L = 139.13'
T = 69.64'
R = 1,206.23'

(5) CITY OF ALBEMARLE
P.I.N. 6538-0344-9903
DB. 504, PG. 673

-DET-
PI = 23+32.68
Δ = 11° 39' 09.6" (LT)
D = 3° 30' 00.0"
L = 332.93'
T = 167.04'
R = 1,637.02'
SE = 0.05
RUNOFF = 110.00'

NOTES

FOR CROSS SECTIONS OF:	SEE SHEET:
-DET-	X-9 THRU X-13
-Y1-(TEMP)	X-15

1. STA 11+30.00 TO STA 12+00.00 -Y1-(TEMP) TO REMAIN & TIE W/ -Y1- AFTER DETOUR REMOVAL

FOR DETOUR USE ONLY

BM# 1
-L- Sta. 11+37.30, 69.72 (LT)
ELEV. 499.68
R/R SPIKE SET IN BASE OF 15" POPLAR

EXISTING GROUND

BEGIN GRADE
STA 12+61.69
ELEV. 499.21'

PI = 14+00.00
EL = 495.54'
VC = 275'
K = 105

PROPOSED GRADE

(-)2.6534%

(-)15.2800%

FOR -Y1- TEMPORARY USE ONLY

BEGIN GRADE -Y1-
STA. 10+57.41
ELEV. 479.32

-DET-

PI = 11+65.00
EL = 472.44'
VC = 70'
K = 10

(-)6.3948%

(+)0.6286%

END GRADE -Y1-
STA. 12+00.00
ELEV. 472.66

BEGIN SPECIAL CUT DITCH
10+69 RT EL. 468.89

END SPECIAL CUT DITCH
10+96 RT EL 467.50

ELEV. 490.19

BEGIN SPECIAL CUT DITCH
16+03 RT EL. 484.61

PI = 18+00.00
EL = 474.42'
VC = 500'
K = 105

-DET- STA.17+29.94
-Y1- 10+45.10
ELEV. 479.66'

PROPOSED GRADE

BM# 2
-L- Sta. 19+03.33, 16.33 (RT)
ELEV. 470.68
CHISLED SQUARE ON SW
HEADWALL OF BRIDGE # 33

PI = 21+50.00
EL = 472.60'
VC = 150'
K = 750

BEGIN BRIDGE
-DET- STA. 19+50.00

END BRIDGE
-DET- STA. 20+95.00

END SPECIAL CUT DITCH
16+53 RT EL. 481.00

(-)15.2800%

(-)0.5200%

(-)0.3200%

ELEV. 472.12

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 2440 CFS
DESIGN FREQUENCY	= 5 YRS
DESIGN HW ELEVATION	= 467.5 FT
BASE DISCHARGE	= 6280 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 470.6 FT
OVERTOPPING DISCHARGE	= 9140± CFS
OVERTOPPING FREQUENCY	= 500± YRS
OVERTOPPING ELEVATION	= 472.8 FT
DATE OF SURVEY	= 9/02/02
W.S. ELEVATION AT DATE OF SURVEY	= 465.2 FT

END LATERAL BASE DITCH
18+45 RT EL. 464.90

BEGIN LATERAL BASE DITCH
18+00 RT EL. 466.42

EXISTING GROUND

-DET- STA. 12+61.69 TO 23+00.00

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PROJECT REFERENCE NO.	SHEET NO.
B-4276	2B
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER — SEAL 19026 — ENGINEER DAVID L. WILLIAMS

HYDRAULICS ENGINEER — SEAL 9334 — ENGINEER HENRY WELLS

SUNGATE DESIGN GROUP, P.A.

PRELIMINARY PLANS

DO NOT USE FOR CONSTRUCTION

REVISIONS

MATCHLINE SEE SHEET 2A Sta. 23+00.00 -DET-

ROCK EMBANKMENT

ARVIN FRANK BALDWIN (6)
P.I.N. 6538-0117-5906
DB. 604, PG. 260

RONALD I. WHITLEY
and wife, JOYCE S. WHITLEY
P.I.N. 6538-0118-6092
DB. 728, PG. 491
(7)

TERESA G. HUNSUCKER
and husband, KENNETH J. HUNSUCKER
P.I.N. 6538-01-7-2089
DB. 571, PG. 678

S 74° 28' 33.8" E
GRAD 350

PT 24+98.57 -DET-

(5)

CITY OF ALBEMARLE
P.I.N. 6538-0344-9903
DB. 504, PG. 673

END DETOUR
POT 26+52.34 -DET-=
POC 26+45.00 -L-

NCGS 'GUARDRAIL' 27+83.18 PINC
POC 26+74.20 -L- 25.99' RT.
ELEV = 470.98

KEVIN L. JORDAN
and wife, PATSY B. JORDAN
P.I.N. 6538-0127-1666
DB. 860, PG. 636

MELVIN K. HUNEYCUTT
and wife, MARIE T. HUNEYCUTT
P.I.N. 6538-0137-1258
DB. 741, PG. 624

-DET-

PI = 23+32.68
△ = 11° 39' 09.6" (LT)
D = 3° 30' 00.0"
L = 332.93'
T = 167.04'
R = 1,637.02'
SE = 0.05
RUNOFF = 110.00'

25

NOTES

FOR CROSS SECTIONS OF:	SEE SHEET:
1. DETOUR	X- 13 THRU X-14

FOR DETOUR USE ONLY

PI = 24+25.00
EL = 471.72'
VC = 150'
K = 815

ELEV. 472.12

(-)0.3200%

(-)0.5041%

END GRADE
STA 25+04.76
ELEV. 471.32

BM# 3
-L- Sta. 31+60.60, 41.09 (LT)
ELEV. 494.91
R/R SPIKE SET IN BASE OF 14" PINE

-DET- STA. 23+00.00 TO 25+04.76

500
490
480
470
460

23 24 25 26

FILE: n:\roddt\b4276\roadway\Proj\b4276_RDY_PSH_02b.dgn
DATE: 6/10/2008 7:59:59 AM

PROJECT REFERENCE NO.	SHEET NO.
B-4276	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLAN

DO NOT USE FOR CONSTRUCTION

NOTES

1. FOR PROFILE OF: SEE SHEET:
   -L- 6
   -Y1- 6
   -Y2- 7
2. FOR CROSS SECTIONS OF:
   -L- X-1 thru X-8
   -Y1- X-8
   -Y2- X-16
3. STA 11+30.00 TO STA 12+00.00 -Y1-(TEMP) TO REMAIN & TIE W/ -Y1- AFTER DETOUR REMOVAL

REVISIONS

-DRI-
PI Sta 10+68.58
Δ = 48° 41' 42.7" (RT)
D = 57° 17' 44.8"
L = 84.99'
T = 45.25'
R = 100.00'

POT Sta. 12+35.00 -DRI-
END CONSTRUCTION

NC GRID NAD 83

NCGS "ODEEN" 12+22.37 PINC
POC 11+21.23 -L- 17.77' LT.
ELEV = 499.12

POT 10+00.00 -Y2- =
POT 10+00.00 -DRI- =
POC 11+63.30 -L-

BEGIN CONSTRUCTION
POT 10+75.00 -L-
TIE TO EXIST.PVM'T.

PC 10+90.30 -L-

PC Sta. 10+23.33

PT Sta. 11+08.32

RETAIN

S 58° 21' 29.8" E

S 13° 58' 51.6" W

POT 11+09.66 -Y2-
END CONSTRUCTION

RAY D. LOWDER, INC.
P.I.N. 6528-0298-3576
DB. 339, PG. 164

RAY D. LOWDER, INC.
P.I.N. 6528-0298-3576
DB. 339, PG. 164

PROPOSED 56' - 6" C/L W/ 35' BW

PUMP STATION

END EXPSWY GUTTER
-L- Sta. 14+64.99

BEGIN EXPSWY GUTTER
-L- Sta. 12+07.97

PT 14+64.99 -L-

COUNTY OF STANLY
P.I.N. 6538-0108-6346
DB. 931, PG. 158

GRAU 350

REMOVE

2Gs

N 70° 31' 07.5" E

-BL-1 16+37.08 PINC
POT 15+32.82 -L- 32.09' RT.
ELEV = 489.53

EST. 2 TONS CL. B
EST. 7 SY FF

SPECIAL CUT DITCH W/CL 'B' RIP RAP
STA 15+00 TO 16+65 -L- RT(SEE DETAIL #1)

THOMAS A. ECTON
and wife, SHARRIE T. ECTON
P.I.N. 6538-0108-4214
DB. 392, PG. 800

POT 10+00.00 -Y1- =
POT 17+19.55 -L-
BEGIN CONSTRUCTION

SPECIAL CUT DITCH W/CL 'B' RIP RAP
STA 10+50 TO STA 11+00 -Y1- RT
SEE DETAIL #1

PC 10+85.69 -Y1-

-L-
PI = 12+77.74
Δ = 4° 27' 54.3" (LT)
D = 1° 11' 30.0"
L = 374.69'
T = 187.44'
R = 4,808.04'
SE = RC
RUNOFF = 53.00'

FRANCIS E. STARNES, JR.
and PATRICIA S. BRAMLETT
P.I.N. 6538-0116-0306
DB. 690, PG. 707

POC 11+30.00 -Y1-
END CONSTRUCTION

PT 12+24.82 -Y1-

CITY OF ALBEMARLE
P.I.N. 6538-0344-9903
DB. 504, PG. 673

APPROACH SLAB
POT 18+70.45 -L-

BEGIN BRIDGE
POT 18+94.44 -L-

END BRIDGE
POT 20+97.57 -L-

APPROACH SLAB
POT 21+21.57 -L-

TYPE B-77

EXP. GUTTER

S 62° 49' 24.2" E

BRIDGE SKETCH

TEMPORARY SHORING
SEE TRAFFIC CONTROL PLAN

REMOVE EXISTING GUARDRAIL
(ALL APPROACHES)

-BL-2 22+16.07 PINC
POT 21+11.76 -L- 24.35' RT.
ELEV = 468.07

CL 'H' RIP RAP

S 62° 49' 24.2" E

℄ DETOUR

TEMPORARY SHORING
SEE TRAFFIC CONTROL PLAN

SHOULDER BERM GUTTER
END OF BRIDGE TO
STA 22+50 -L- LT AND RT

2' BASE DITCH
W/CLASS 'B' RIP RAP
(RETAIN FROM DETOUR)

CITY OF ALBEMARLE
P.I.N. 6538-0344-9903
DB. 504, PG. 673

MATCHLINE SEE SHEET 5
Sta. 22+00.00 -L-

DETAIL I
SPECIAL CUT DITCH
(Not to Scale)

Natural Ground
2d
d
b
4:1 or Flatter
Front Ditch Slope
Filter Fabric
Min. d=1.0 Ft.
Max. d=1.0 Ft.
Type of Liner=Class 'B' Rip-Rap

FROM STA. 15+00 TO STA. 16+65 RT -L-
EST. 77 TONS CL. B RIPRAP, 170 SY FF

FROM STA. 10+50 TO STA. 11+00 RT -Y1-
EST. 23 TONS CL. B RIPRAP, 50 SY FF

TRAFFIC DATA

4200 9000 — NC73 (-L-) — 4150 8700 — 50 300 — 4200 9000

4200 9000 — 4150 8700 — 50 300 — 50 300 — 4200 9000

2000 ADT 2500 ADT — 100 600 — 100 600 — SR 1266 (-Y1-)

FILE: c:\nodot\b4276\roadway\proj\b4276_RDY_PSH_04.dgn
DATE: 6/10/2008 7:29:12 AM

PROJECT REFERENCE NO.	SHEET NO.
B-4276	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NOTES

FOR PROFILE OF: SEE SHEET:
1. -L- 6
-Y3- 7

2. FOR CROSS SECTIONS OF: SEE SHEET:
-L- X-6 THRU X-7
-Y3- X-17

PRELIMINARY PLANS

DO NOT USE FOR CONSTRUCTION

NC GRID NAD 83

MATCHLINE SEE SHEET 4 Sta. 22+00.00 -L-

EST 1 TONS CLASS B RIPRAP, 5 SY FF

EST 2 TONS CLASS B RIPRAP, 7 SY FF

POT 10+21.68 -Y3-
BEGIN CONSTRUCTION

S 16° 53' 39.6" E

+77.62 59.00

17.00

15" CSP

2GI W/FLAT GRATE

+60

+56.32 58.00

+10.00 40.00

ARVIN FRANK BALDWIN
P.I.N. 6538-0117-5906
DB. 604, PG. 260

RONALD I. WHITLEY
and wife, JOYCE S. WHITLEY
P.I.N. 6538-0118-6092
DB. 728, PG. 491

SPECIAL CUT DITCH
STA 23+80 TO
STA 25+50 -L- LT
SEE DETAIL #2

+00.00 80.00

+00.00 110.00

CS 27+58.88 -L-

END CONSTRUCTION
POC 27+50.00 -L-
TIE TO EXIST. PVMT.

SC 25+81.01 -L-

REMOVE

CHORD

+81.01 40.00

+58.23 61.00

+25.00 40.00

TERESA J. HUNSUCKER
and husband, KENNETH J. HUNSUCKER
P.I.N. 6538-0127-2989
DB. 571, PG. 678

POT 33+00.71 -L-

ST 29+98.88 -L-

GRAD. 350' +/-

2GI W/FLAT GRATE

R 21

R 25

-Y3

C DETOUR

+41.01 50.00

+50.00 100.00

S 62° 49' 24.2" E

TS 23+41.01 -L-

POT 11+50.00 -Y3-
POS 23+76.04 -L-
END CONSTRUCTION

+00.00 80.00

+81.01 50.00

S 89° 17' 18.0" E

TO ALBEMARLE

N 87° 38' 12.5" W 243.50'

CITY OF ALBEMARLE
P.I.N. 6538-0344-9903
DB. 504, PG. 673

+58.88 50.00

+58.88 30.03

NCGS 'GUARDRAIL' 27+83.18 PINC
POC 26+74.20 -L- 25.99' RT.
ELEV = 470.98

KEVIN L. JORDAN
and wife, PATSY B. JORDAN
P.I.N. 6538-0127-1666
DB. 860, PG. 636

MELVIN K. HUNEYCUTT
and wife, MARIE T. HUNEYCUTT
P.I.N. 6538-0137-1258
DB. 741, PG. 624

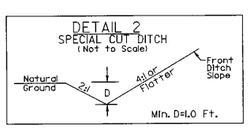
-L-

Pls = 25+01.16
Θs = 1° 36' 00.0"
Ls = 240.00'
LT = 160.15'
ST = 80.13'

PI = 26+70.23
△ = 11° 15' 53.9" (LT)
D = 6° 20' 00.0"
L = 177.87'
T = 89.22'
R = 904.67'
SE = 0.08
RUNOFF = 213.00'

Pls = 28+39.01
Θs = 1° 36' 00.0"
Ls = 240.00'
LT = 160.15'
ST = 80.13'

DETAIL 2
SPECIAL CUT DITCH
(Not to Scale)



FROM STA. 23+80 TO STA. 25+50 -L- LT

REVISIONS

FILE: c:\models\b4276\roadway\proj\b4276_RDY_PRP_05.dgn
DATE: 6/12/2008 1:29:15 AM

PROJECT REFERENCE NO.	SHEET NO.
B-4276	6
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS

DO NOT USE FOR CONSTRUCTION

421 Fayetteville Street Mall
Suite 1203
RALEIGH, N. C. 27601

SUNGATE DESIGN GROUP, P.A.
919 JONES FRANKLIN ROAD
RALEIGH, NORTH CAROLINA 27606

-L-

BEGIN GRADE
STA 11+50.00
ELEV. 500.33'

FEATHER TO MATCH EXIST

PI = 13+00.00
EL = 500.78'
VC = 275'
K = 44

(+)0.3000%

(-)5.9200%

STA 11+63.30 -L- =
STA 10+00.00 -Y2-
EL 500.37

BM# 1
-L- Sta. 11+37.30, 69.72 (LT)
ELEV. 499.68
R/R SPIKE SET IN BASE OF 15" POPLAR

EL = 489.11'

BEGIN SPECIAL CUT DITCH
15+00 RT EL. 486.80

STA 17+14.84 -L- =
STA 10+00.00 -Y1-
EL 479.57

PI = 17+50.00
EL = 474.14'
VC = 625'
K = 115

(-)5.9200%

(-)0.4800%

END SPECIAL CUT DITCH
16+65 RT EL. 469.83

BM# 2
-L- Sta. 19+03.33, 16.33 (RT)
ELEV. 470.68
CHISLED SQUARE ON SW
HEADWALL OF BRIDGE # 33

BEGIN BRIDGE
-L- STA 18+94.44
EL 474.68

END BRIDGE
-L- STA 20+97.57
EL 472.47

STA 23+76.04 -L- =
STA 11+50.00 -Y3-
EL 471.14

EL = 471.02'

REMOVE EXISTING ROADWAY FILL & ABUTMENTS TO 1' ABOVE NORMAL WSE EST 1100 CY

BEGIN SPECIAL CUT DITCH
23+80 LT EL. 466.80

REMOVE EXISTING ROAD FILL AND ABUTMENTS TO 1' ABOVE NORMAL WSE EST 1100 CY

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 5109 CFS
DESIGN FREQUENCY	= 50 YRS
DESIGN HW ELEVATION	= 469.2 FT
BASE DISCHARGE	= 5791 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 469.7 FT
OVERTOPPING DISCHARGE	= 8062± CFS
OVERTOPPING FREQUENCY	= 500± YRS
OVERTOPPING ELEVATION	= 470.6 FT
DATE OF SURVEY	= 9/02/02
W.S. ELEVATION AT DATE OF SURVEY	= 465.2 FT

SEE SHEETS 4 & 5 FOR PLAN

-L- STA. 10+75.00 TO 24+00.00

-L-

PI = 27+50.00
EL = 469.34'
VC = 575'
K = 86

END GRADE
STA 27+00.00
ELEV. 472.85'

FEATHER TO MATCH EXIST

(+)6.1900%

EL = 471.02'

(-)0.4800%

END SPECIAL CUT DITCH
25+50 LT EL. 467.31

BM# 3
-L- Sta. 31+60.60, 41.09 (LT)
ELEV. 494.91
R/R SPIKE SET IN BASE OF 14" PINE

SEE SHEET 5 FOR PLAN

-L- STA. 24+00.00 TO 27+50.00

-Y1-

BEGIN GRADE -Y1-
STA. 10+12.41
ELEV. 479.06

PI = 11+00.00
EL = 476.60'
VC = 60'
K = 17

END GRADE -Y1-
STA. 11+30.00
ELEV. 474.68

(-)2.8070%

(-)6.3948%

END SPECIAL CUT DITCH
11+00 RT EL. 467.50

BEGIN SPECIAL CUT DITCH
10+50 RT EL. 469.82

SEE SHEET 4 FOR PLAN

-Y1- STA. 10+16.59 TO 11+25.00

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DATE: 6/2/2008 12:28 AM

PROJECT REFERENCE NO.	SHEET NO.
B-4276	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 032... ENGINEER KEVIN L. WILLIAMS

NORTH CAROLINA PROFESSIONAL SEAL 032... ENGINEER HENRY WELLS JR.

421 Fayetteville Street Mall Suite 1301 RALEIGH, N. C. 27601

SUNGATE DESIGN GROUP, P.A. 716 WEST PEARCE ROAD RALEIGH, NORTH CAROLINA 27603

-Y2-

PRELIMINARY PLANS

DO NOT USE FOR CONSTRUCTION

POT 10+00.00 -Y2-
POT 11+63.33 -L-
ELEV 500.37'

BEGIN GRADE -Y2-
STA. 10+12.53
ELEV. 500.50'

PI = 10+64.00
EL = 502.72'
VC = 42'
K = 44

END GRADE -Y2-
STA. 11+09.66
ELEV. 504.64'

(+)5.1500%

(+)4.2000%

(+)2.4005%

PI = 10+28.00
EL = 500.87'
VC = 30'
K = 11

510 500 490 480

SEE SHEET 4 FOR PLAN

-Y2- STA. 10+12.53 TO 11+09.66

10 11

-Y3-

BEGIN GRADE -Y3-
STA. 10+21.68
ELEV. 472.49'

END GRADE -Y3-
STA. 11+33.33
ELEV. 470.95'

PI = 10+50.00
EL = 472.41'
VC = 16'
K = 4

POT 11+50.00 -Y3-
POT 23+76.03 -L-
ELEV. 471.13'

(-)4.6400%

(-)0.3000%

(+)1.1038%

PI = 10+90.00
EL = 470.47'
VC = 64'
K = 11

480 470 460

SEE SHEETS 4 & 5 FOR PLAN

-Y3- STA. 10+21.68 TO 11+33.33

10 11

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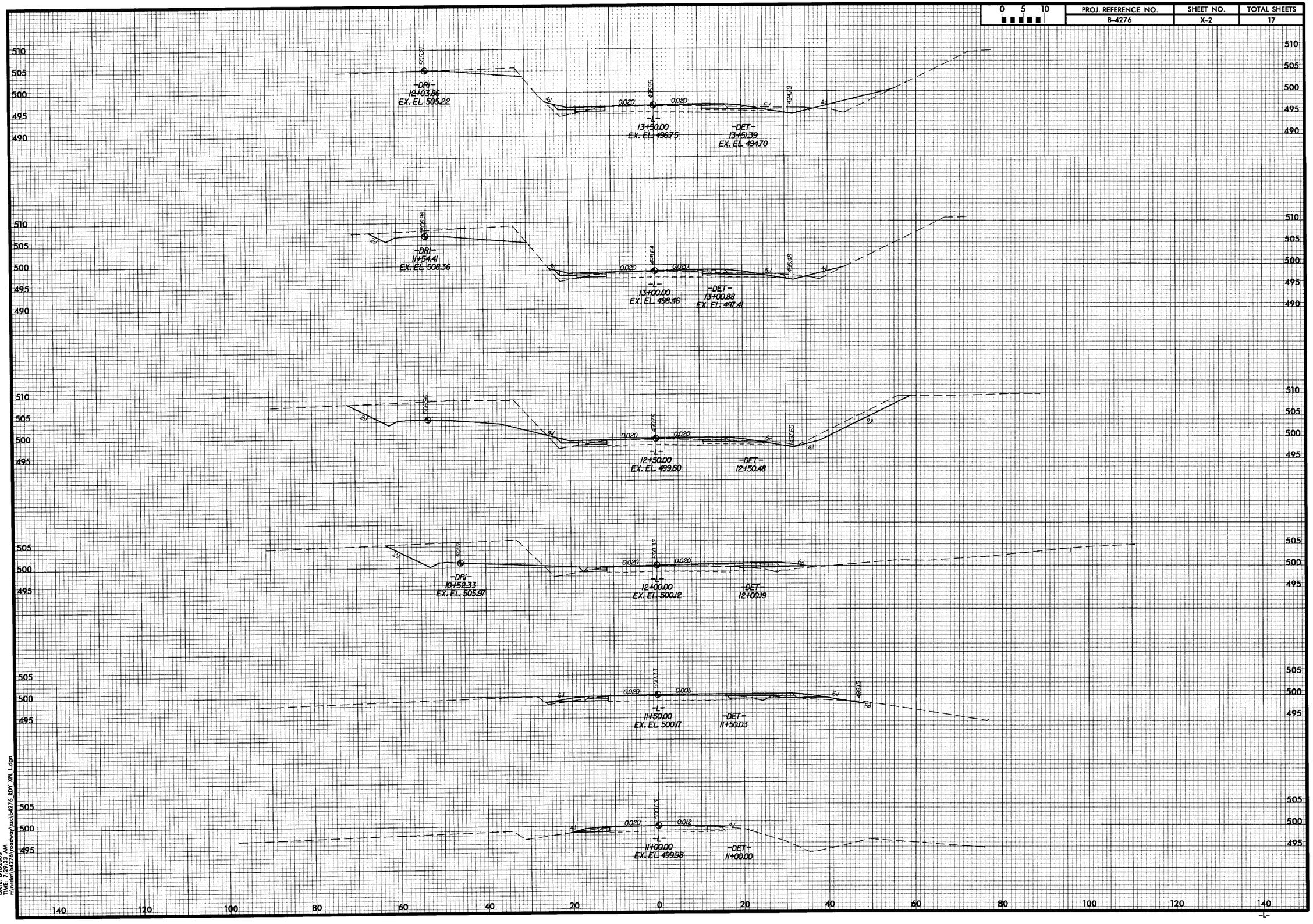
	B-4276	X-2	17



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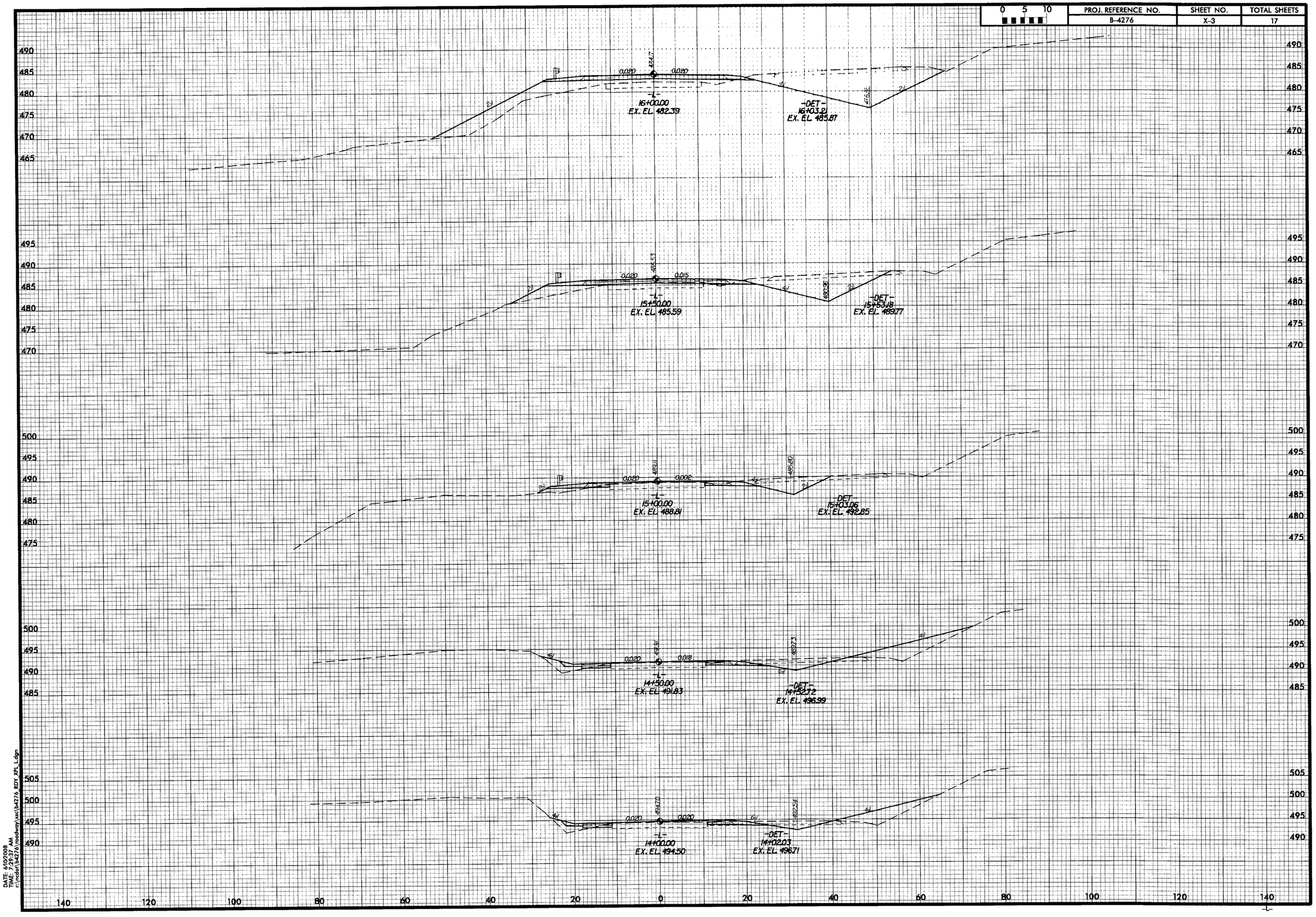
	B-4276	X-3	17



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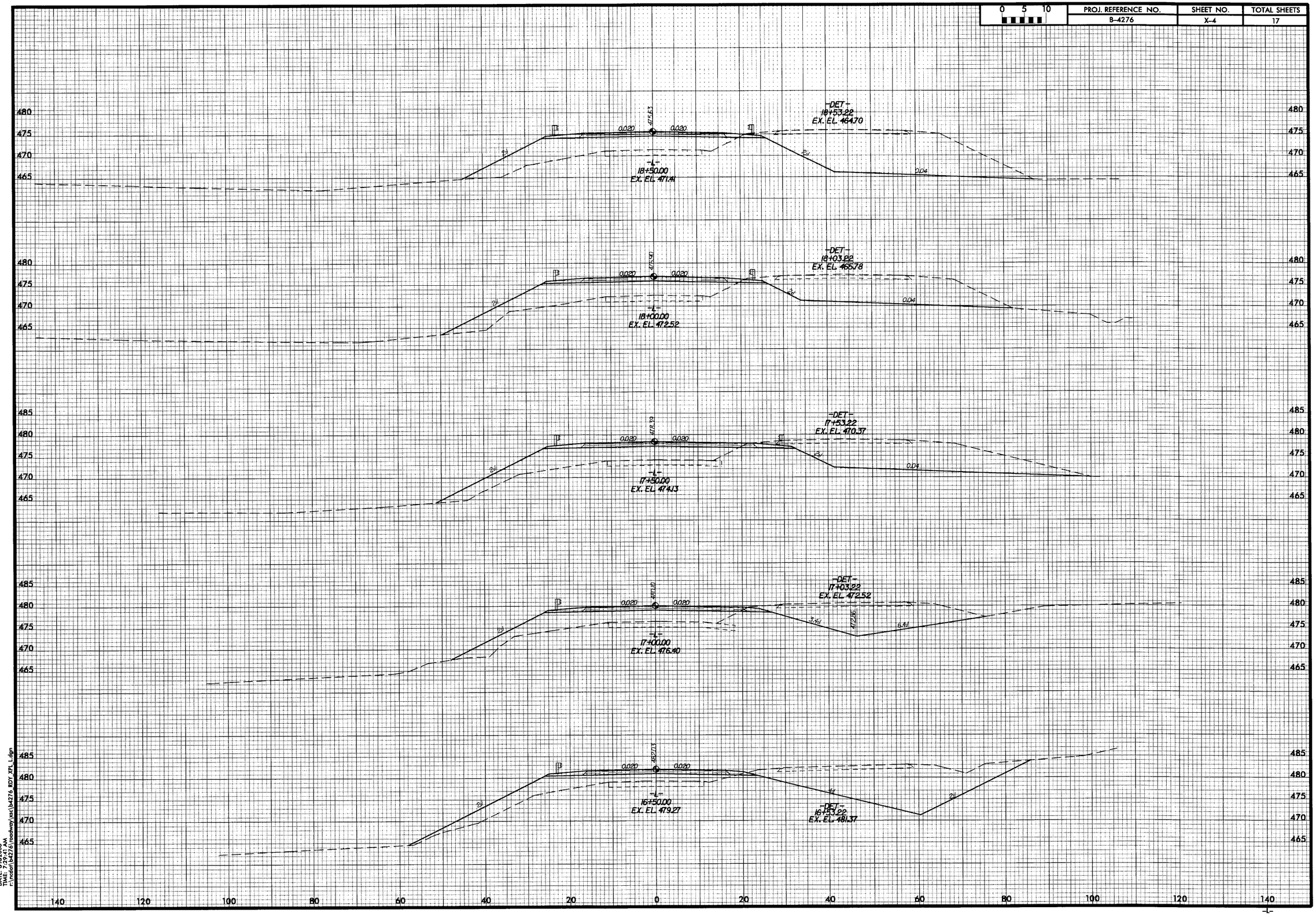
	B-4276	X-4	17



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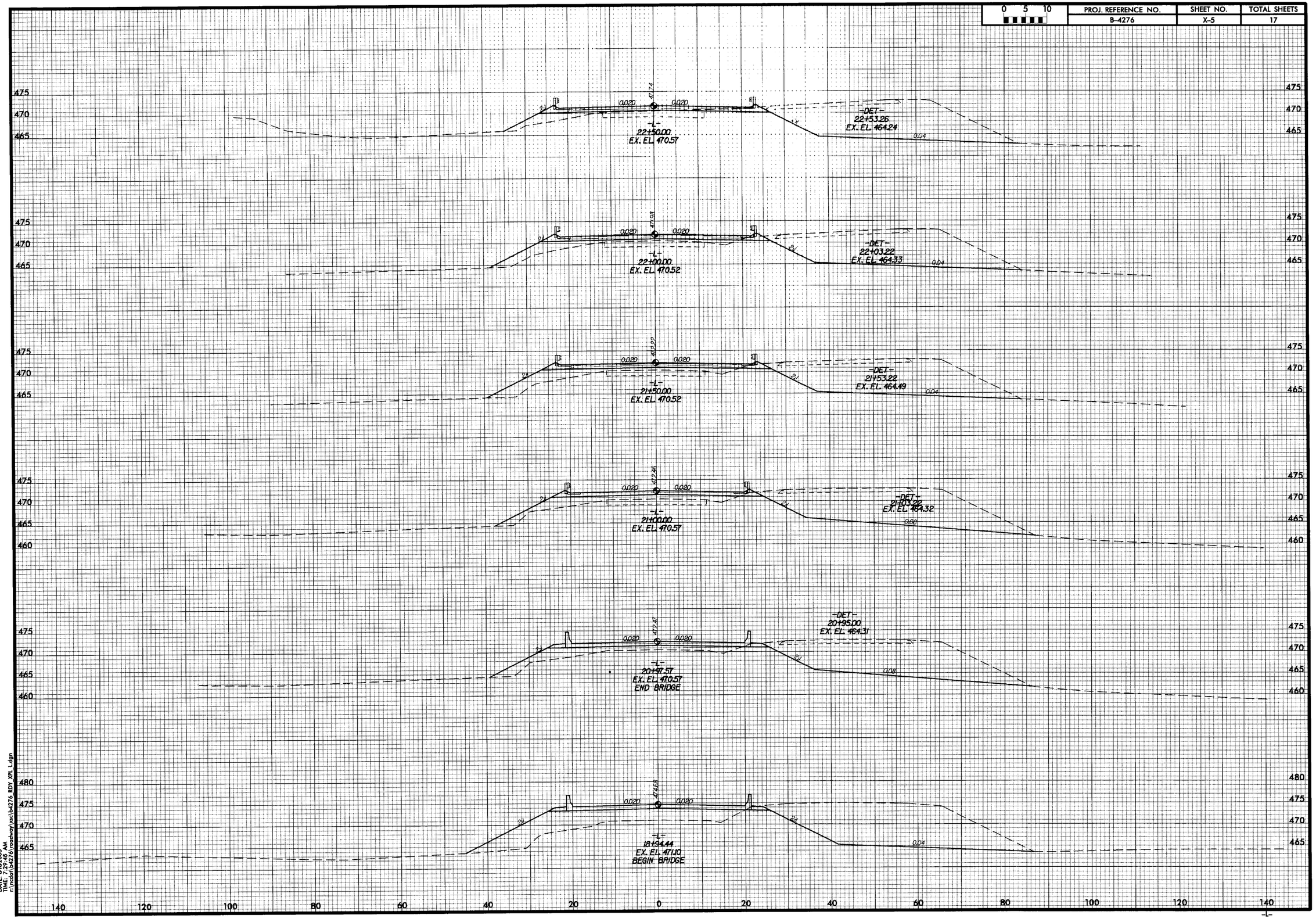
-L-

0 5 10	PROJ. REFERENCE NO.	SHEET NO.	TOTAL SHEETS
	B-4276	X-5	17



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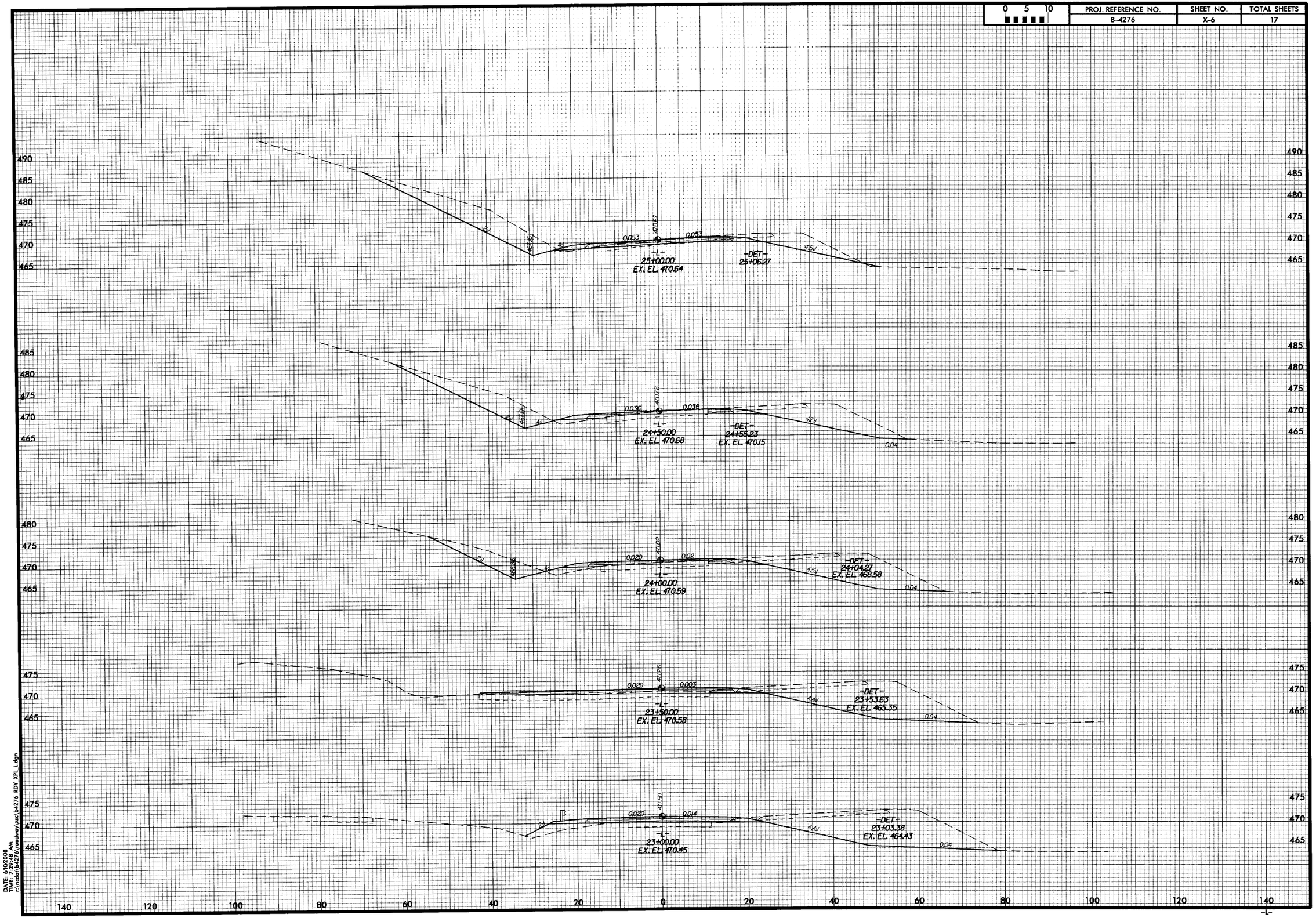
	B-4276	X-6	17



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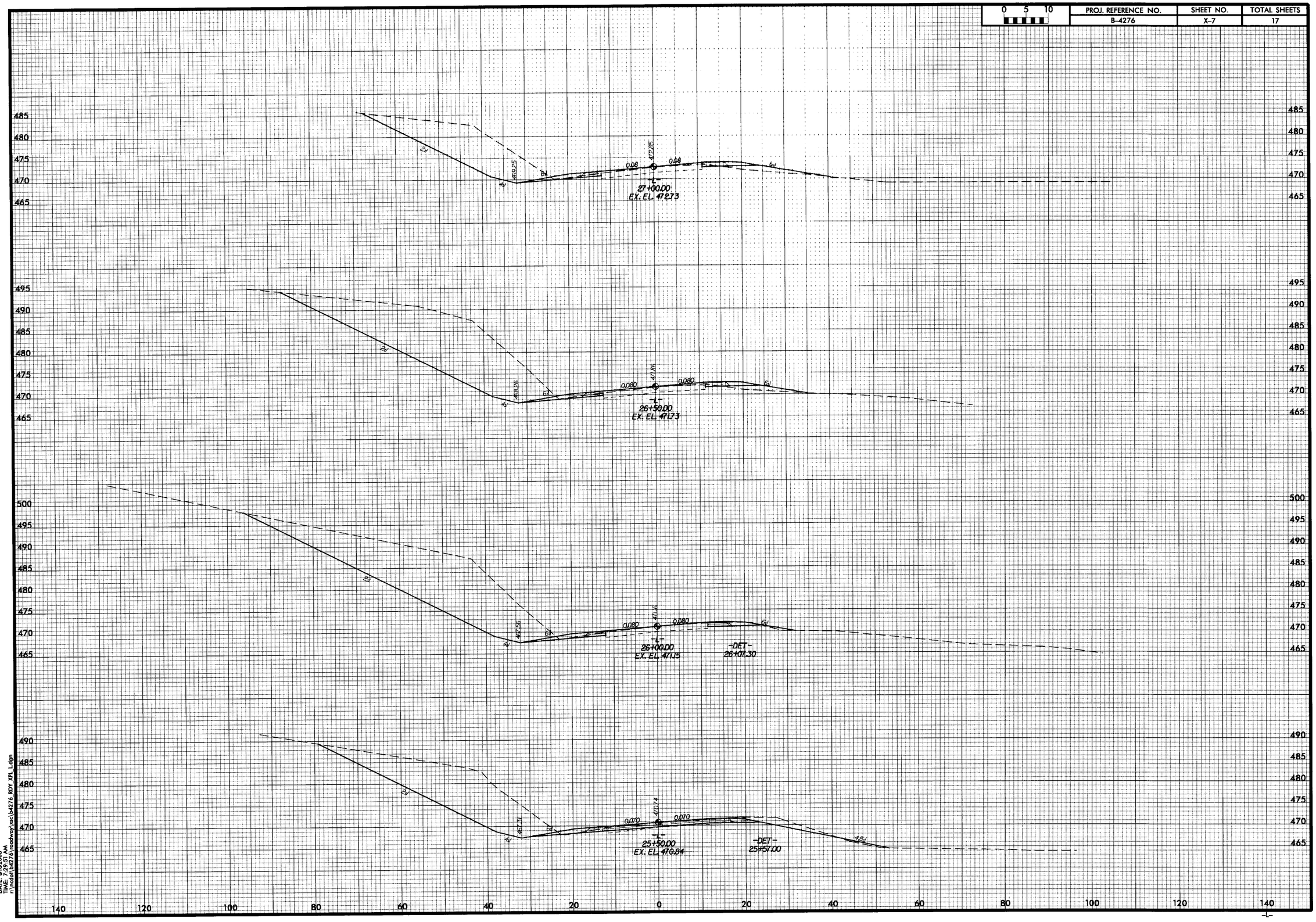
	B-4276	X-7	17



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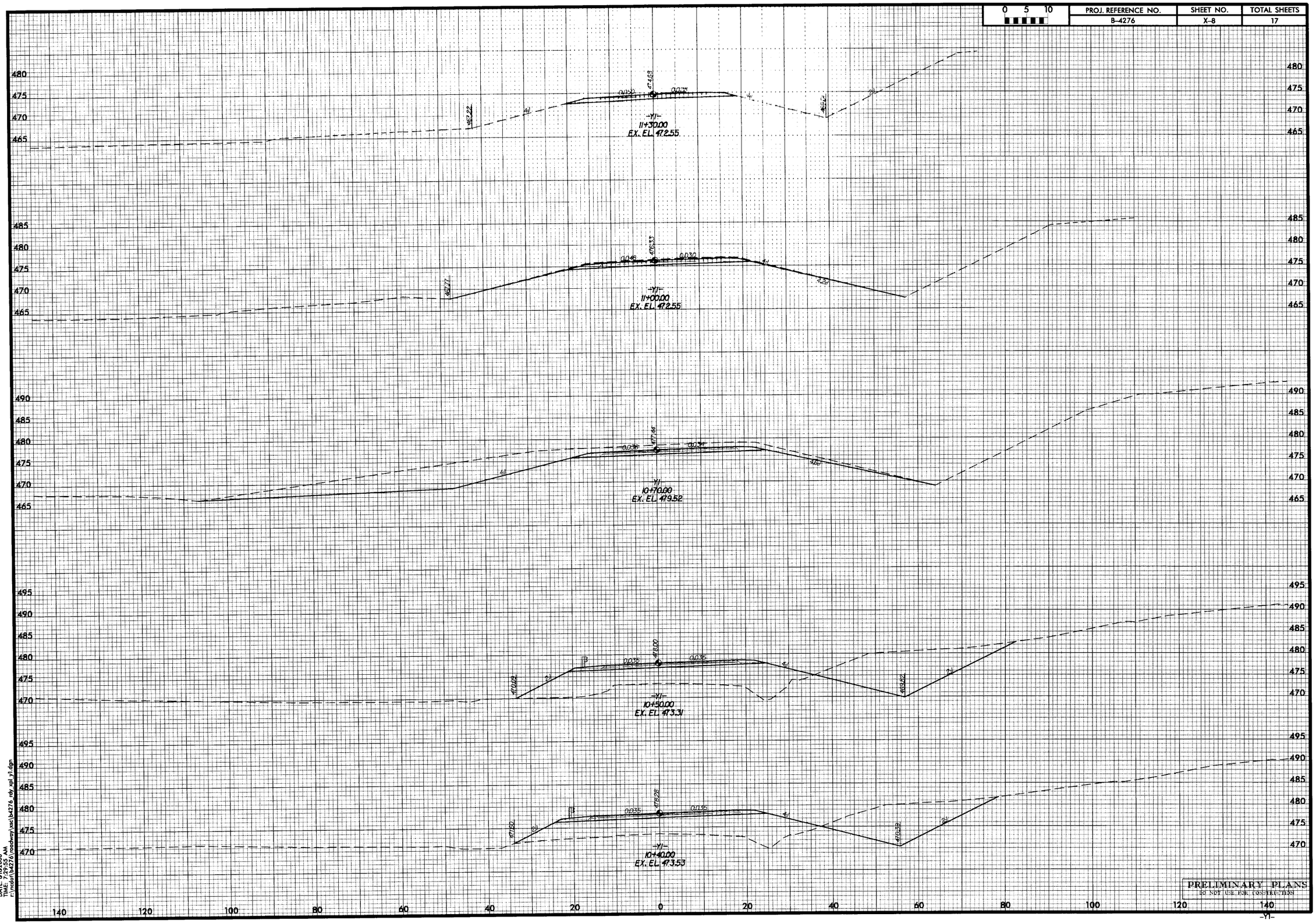
0 5 10	PROJ. REFERENCE NO.	SHEET NO.	TOTAL SHEETS
	B-4276	X-8	17



PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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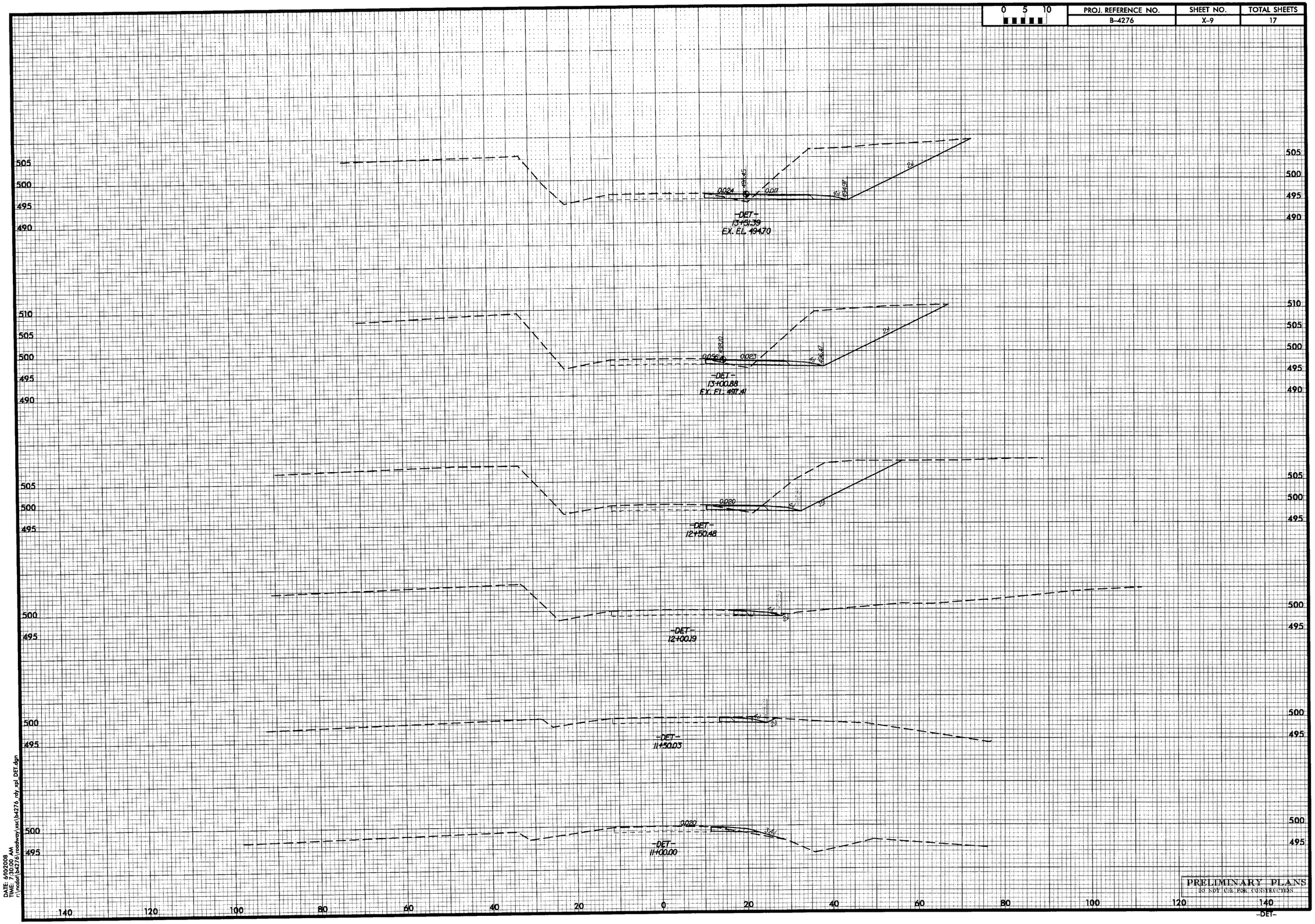
	B-4276	X-9	17



PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DATE: 6/10/2008
TIME: 7:30:00 AM
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0 5 10	PROJ. REFERENCE NO.	SHEET NO.	TOTAL SHEETS
	B-4276	X-10	17

-DET-
16+53.22
EX. EL. 481.37

-DET-
16+03.24
EX. EL. 485.87

-DET-
15+53.18
EX. EL. 489.77

-DET-
15+03.06
EX. EL. 492.85

-DET-
14+52.72
EX. EL. 496.99

-DET-
14+02.03
EX. EL. 497.71

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DATE: 6/02/2008
TIME: 7:30:04 AM
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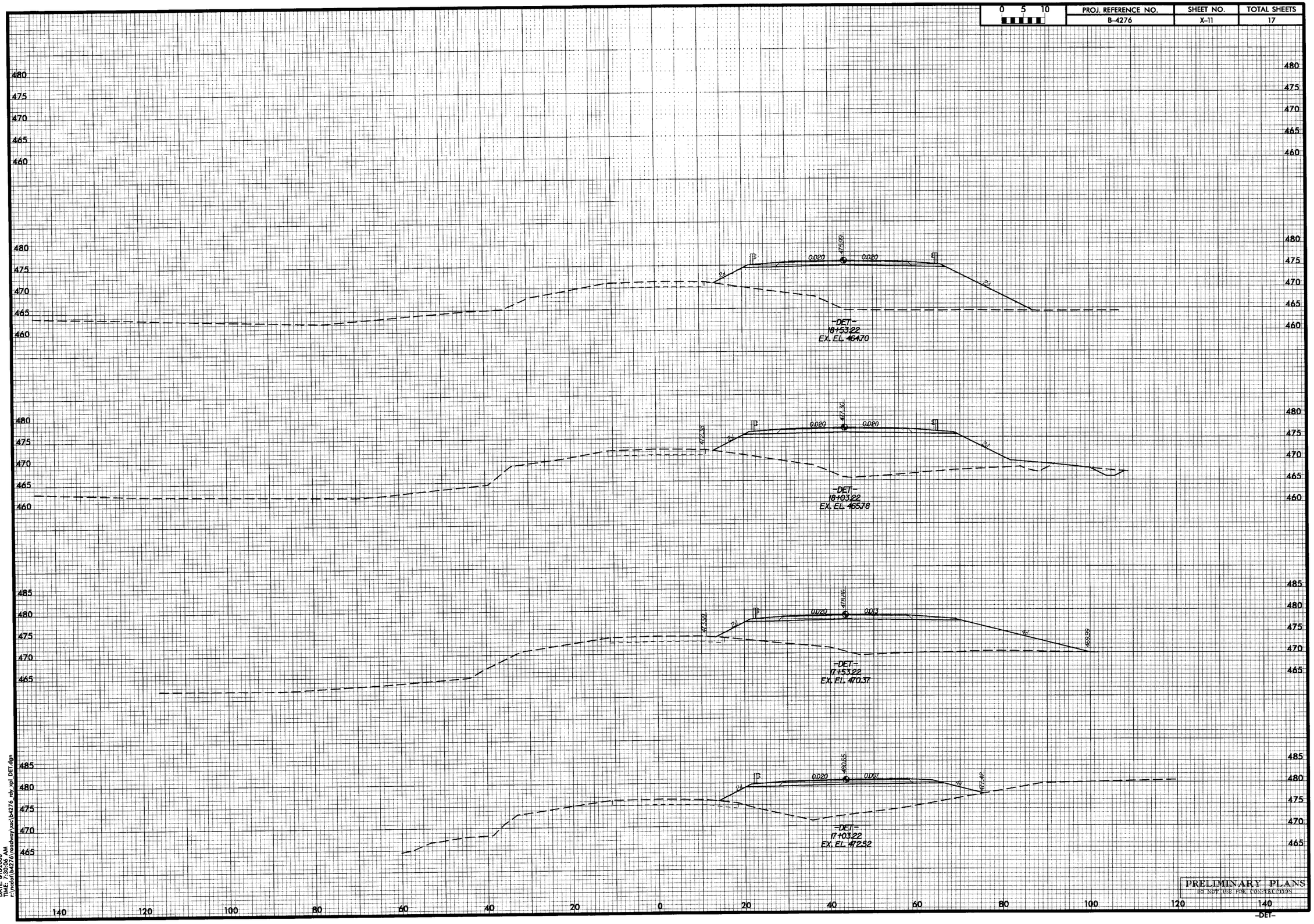
-DET-

0 5 10	PROJ. REFERENCE NO.	SHEET NO.	TOTAL SHEETS
	B-4276	X-11	17



PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DATE: 6/10/2008
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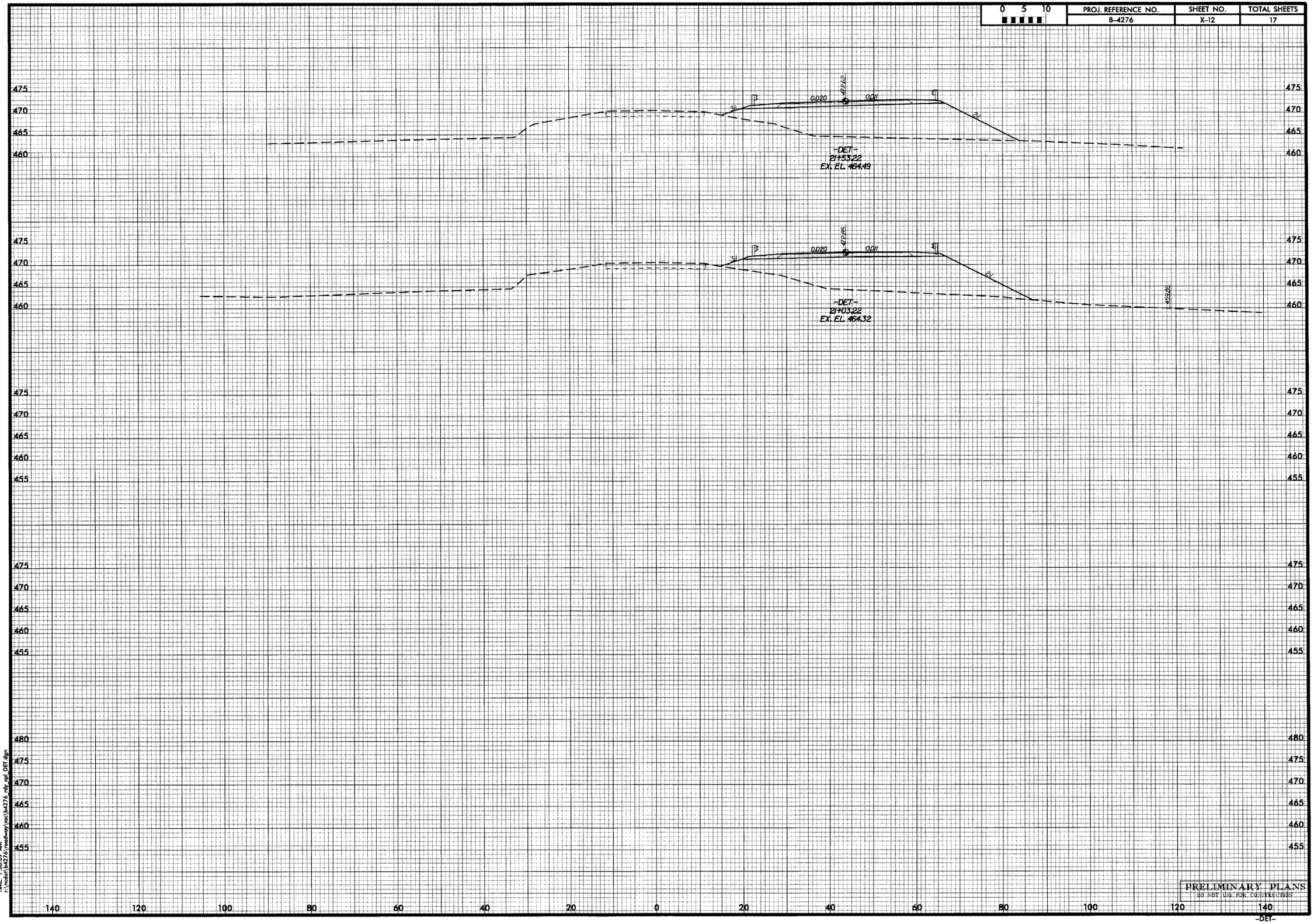
	B-4276	X-12	17



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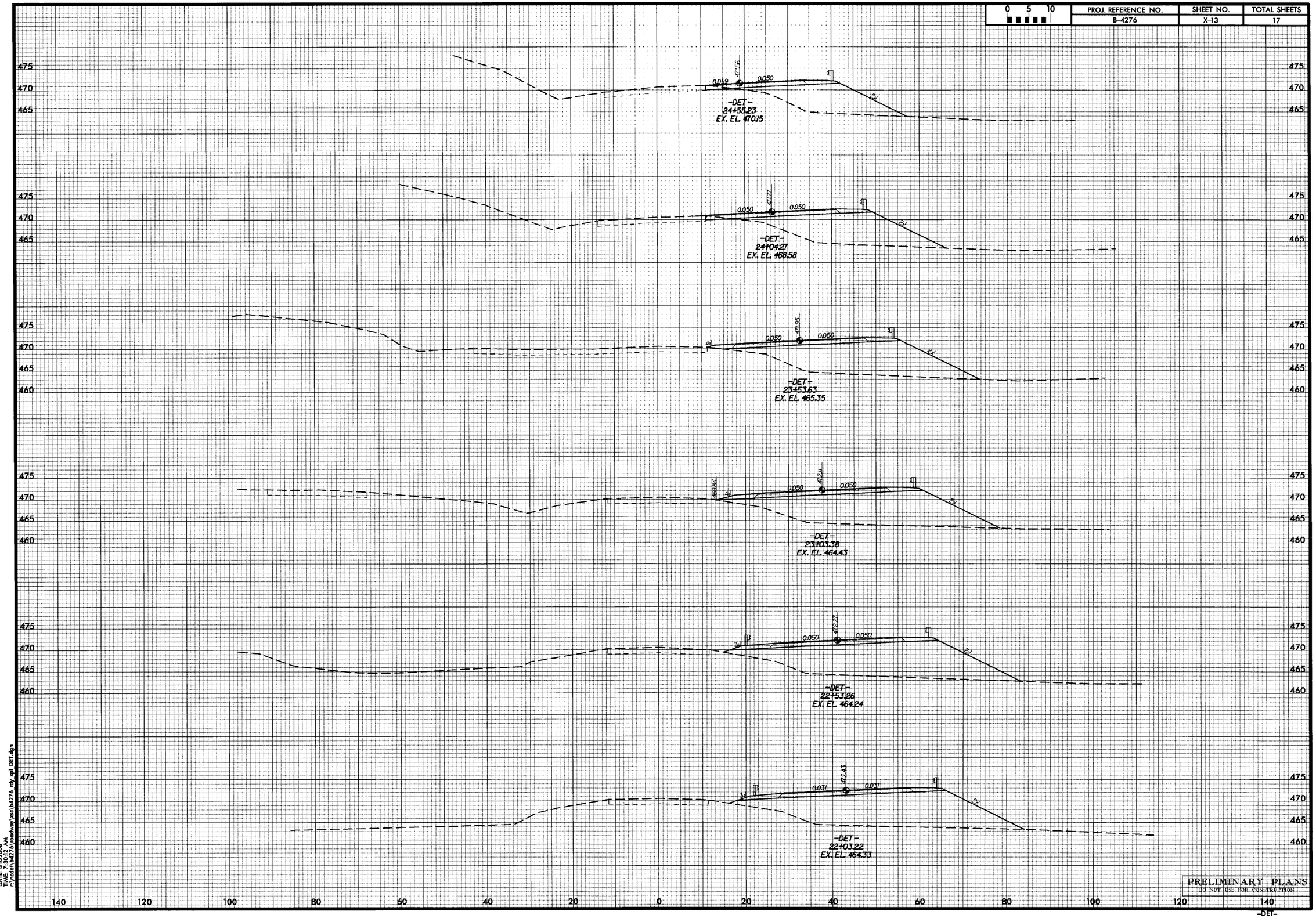
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-DET-

0 5 10	PROJ. REFERENCE NO.	SHEET NO.	TOTAL SHEETS
	B-4276	X-13	17



PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DATE: 6/02/2008
TIME: 7:30:12 AM
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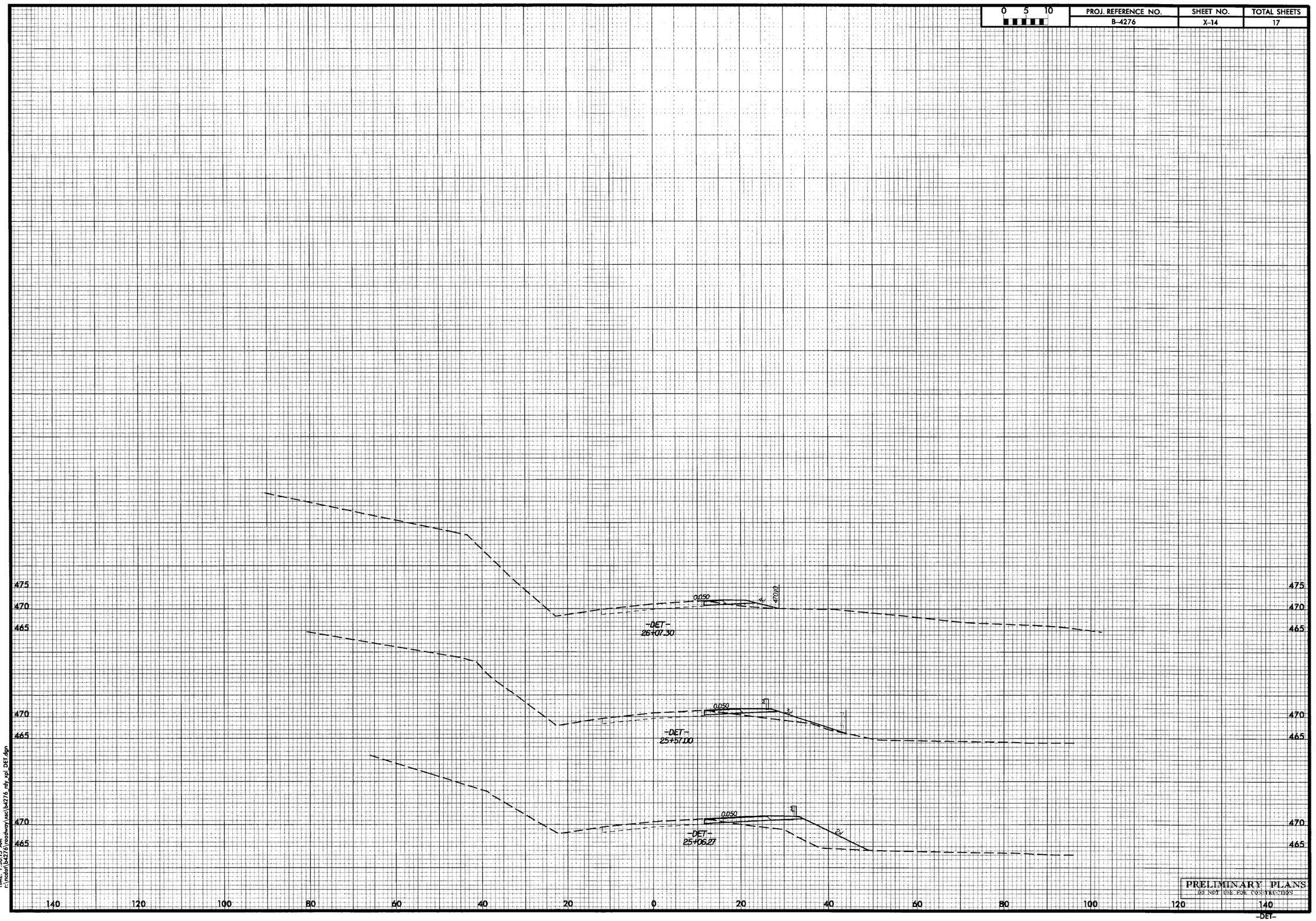
0 5 10	PROJ. REFERENCE NO.	SHEET NO.	TOTAL SHEETS
	B-4276	X-14	17



PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DATE: 6/02/2008
TIME: 7:30:15 AM
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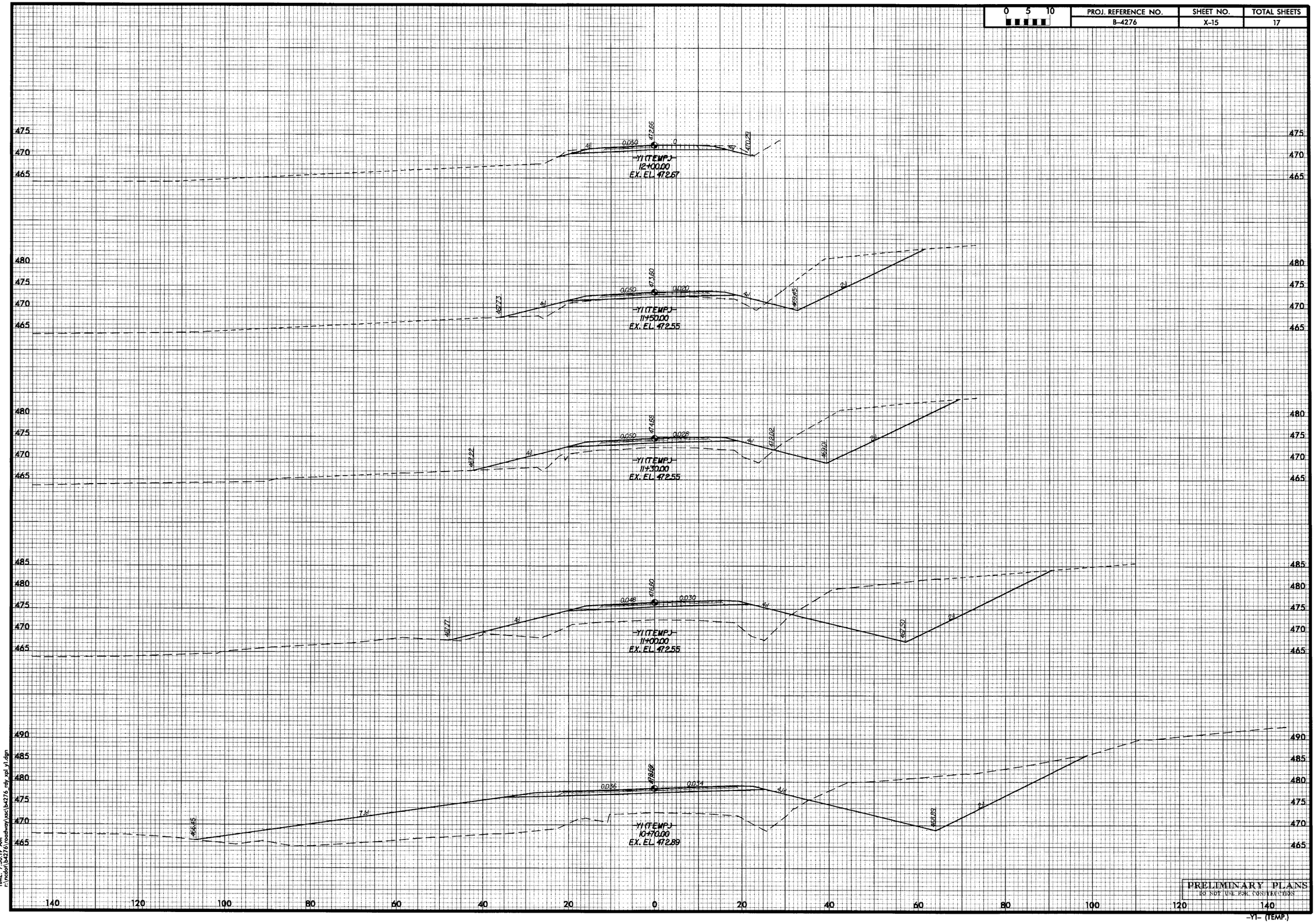
	B-4276	X-15	17



PRELIMINARY PLANS
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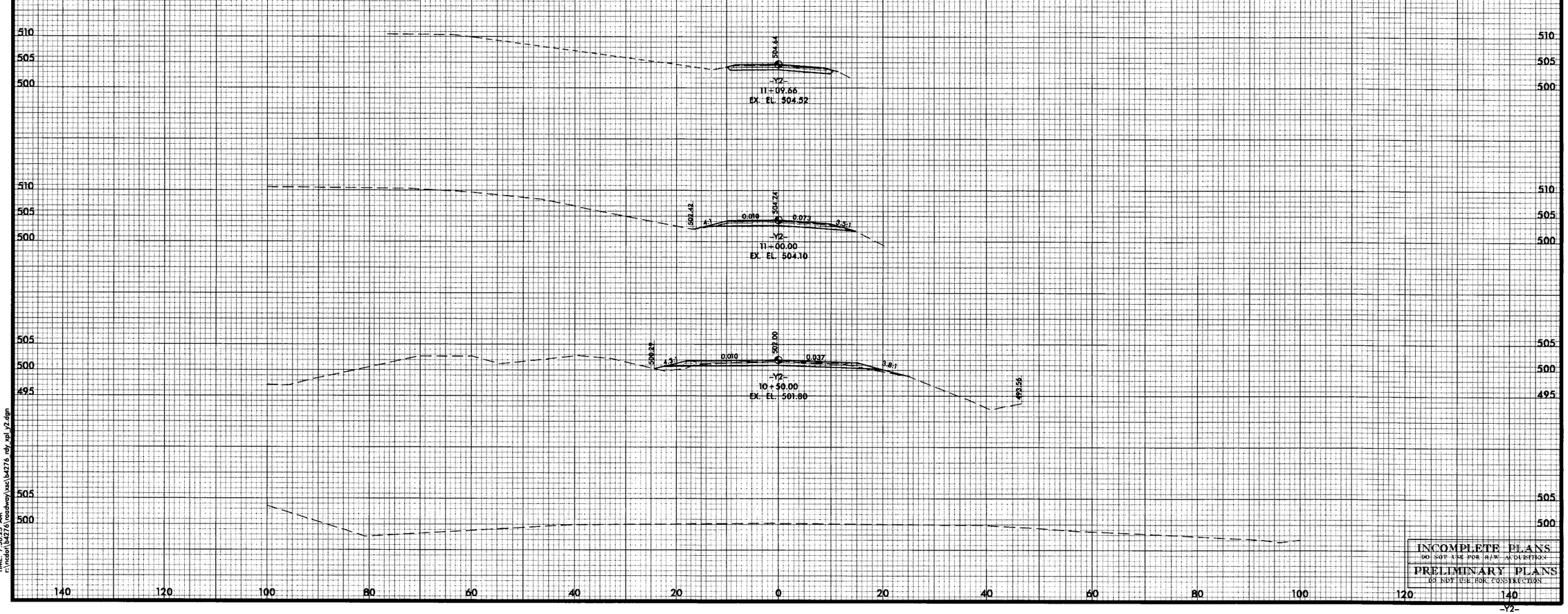

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INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
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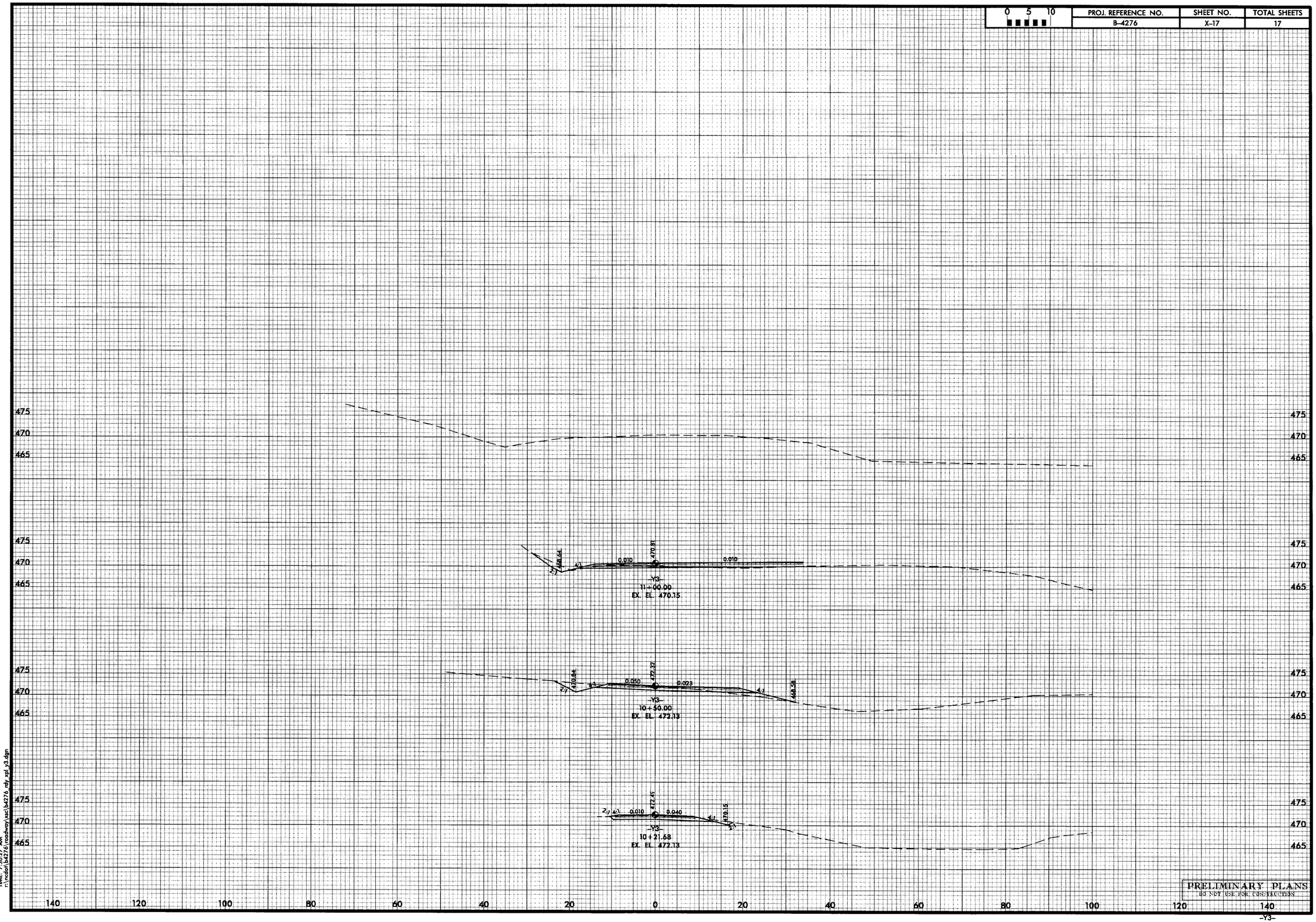

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PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NC 73
Bridge No. 33 Over Long Creek
Stanly County
Federal-Aid Project No. BRSTP-73(5)
State Project No. 8.1680501
T.I.P. No. B-4276

Categorical Exclusion
US Department of Transportation
Federal Highway Administration
and
NC Department of Transportation
Division of Highways

Approved

1/31/03
Date

for Gregory J. Thorpe, PhD, Environmental Management Director
Project Development & Environmental Analysis Branch
North Carolina Department of Transportation

1/31/03
Date

for Donald J. Voelker
Acting Division Administrator,
Federal Highway Administration

NC 73
Bridge No. 33 Over Long Creek
Stanly County
Federal-Aid Project No. BRSTP-73(5)
State Project No. 8.1680501
T.I.P. No. B-4276

Categorical Exclusion
US Department of Transportation
Federal Highway Administration
and
NC Department of Transportation
Division of Highways

January 2003

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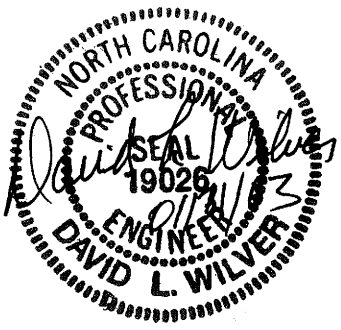

For the

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

Teresa Hart, P.E., CPM
Consultant Unit Head

John M. Penney, P.E.
Project Planning Engineer

PROJECT COMMITMENTS

NC 73
Bridge No. 33 Over Long Creek;
Stanly County
State Project No.: 8.1680501
Federal Aid Project No.: BRSTP-73(5)
TIP No.: B-4276

In addition to the standard Nationwide Permit #33 and #23 Conditions, the General Nationwide Permit Conditions, Section 404 Individual Permit (IP) Special Conditions, Section 401 Water Quality Certification (WQC) Conditions, Regional Conditions, State Consistency Conditions, NCDOT's Guidelines for Best Management Practices for Protection of Surface Waters, NCDOT's Guidelines for Best Management Practices for Bridge Demolition and Removal, General Certification Conditions, and Section 401 Conditions of Certification, the following special commitments have been agreed to by NCDOT:

Commitments Developed Through Project Development and Design

All commitments developed during the project development and design phase have been incorporated into the design and were standard commitments. Current status, changes, or additions to the project commitments as shown in the environmental document for the project are printed in *italic* font.

Design Services/Roadside Environmental/Division 10 Construction
Ensure that sediment and erosion control measures are not placed in wetlands.

This standard will be implemented during construction to the best ability of the Department in coordination with existing standards and laws.

Design Services/ Division 10 Construction
Borrow/waste areas should avoid wetlands to the maximum extent practicable. Prior to the approval of any borrow/waste site in a wetland, the contractor must obtain all necessary permits.

This standard will be used during design and will be implemented during construction of the project.

Division 10 Construction
Disturbance of the stream channels must be limited to only what is necessary to perform the bridge demolition/removal and construction of the replacement structure and what is permitted. Heavy equipment must be operated from the banks rather than in the stream channel in order to minimize sedimentation and reduce the likelihood of introducing other pollutants into the stream.

This environmental commitment will be implemented during construction of the project.

Division 10 Construction
All work shall be preformed during low flow conditions

This environmental commitment will be implemented during construction of the project.

NC 73
Bridge No. 33 Over Long Creek
Stanly County
Federal-Aid Project No. BRSTP-73(5)
State Project No. 8.1680501
T.I.P. No. B-4276

Bridge No. 33 is included in the Draft 2004-2010 North Carolina Department of Transportation (NCDOT) Transportation Improvement Program and in the Federal-Aid Bridge Replacement Program. The location of this bridge is shown in Figure 1. No substantial environmental impacts are anticipated. The project is classified as a Federal "Categorical Exclusion."

I. PURPOSE AND NEED

NCDOT's Bridge Maintenance Unit records indicated that Bridge No. 33 has a sufficiency rating of 40.4 out of a possible 100 for a new structure. This Bridge is considered functionally obsolete and structurally deficient. Replacement of this inadequate structure will result in safer and more efficient traffic operations.

II. EXISTING CONDITIONS

This project involves the replacement of Bridge No. 33 on NC 73 over Long Creek in Stanly County (See Figure 1). The existing bridge, built in 1939, is in poor condition. Long Creek is in the Yadkin - Pee Dee River Basin. The area of the drainage basin for the creek at the subject location is 30.3 square miles (78.7 square kilometers). The existing Bridge No. 33 consists of three (3) spans of 38 feet (11.5 meters) each. Total length is 114 feet (34.7 m), the bed to crown height is 18.8 feet (5.7 m). Construction consists of steel I-Beams, a concrete deck and steel piles capped in concrete and concrete abutments. There are two 11 foot travel lanes with a total clear roadway width of 26.0 feet (7.9 m). Bridge No. 33 is in a horizontal tangent and is on a 90 degree skew to the roadway. Vertical grade on the bridge slopes slightly from west to east. Both approaches are in a horizontal tangent near the bridge with good sight distance (See Figure 3). There is a slight curve approximately 500 feet (152 m) from the bridge on the east approach.

There are multiple utility conduits attached to the downstream side of the bridge. Overhead power lines run parallel to the upstream side of the bridge and overhead telephone lines run parallel to the downstream side. There were no structures or utilities observed in the floodplain.

A substantial amount of debris was collected at the base of one of the bents. No scour was observed at any of the bents. The channel banks appear to be stable with trees and small bushes upstream of the bridge. According to NCDOT's Bridge Maintenance Unit the bridge and portions of the east approach were underwater in July 1998. There was evidence of debris caught in the I-beam substructure substantiating the reported overtopping. An old lakebed is evident downstream of the bridge and the channel narrows considerably 400 to 500 feet (121 to 152 m) downstream of the bridge. The channel at this point is eroding. According to the Albemarle Engineering Department, the lake (Long Lake) was drained approximately 10 year ago. There are plans in the works to refill the lake; however, no permits have been obtained from the US Army Corps of Engineers or the Environmental Protection Agency, and there is no set timetable. The dam and lake were originally constructed in 1922 for drinking water purposes.

NC 73 is classified as an urban minor arterial. The posted speed limit is 55 miles per hour (MPH). The 2001 average daily traffic volume is 8,400 vehicles per day (vpd). The projected traffic volume is expected to increase to 18,000 vpd by the design year 2025. Currently two (2) school buses (one in AM and one in PM) use this bridge daily.

Thirteen accidents were reported in the vicinity of the bridge during the period from January 1, 1997 to December 31, 1999. None of these accidents were fatal. Eight resulted in property damage and five resulted in injury. Three crashes were caused by collisions with deer.

III. ALTERNATIVES

A. Project Description

The recommended bridge length is based on a preliminary hydraulic analysis in conjunction with a field reconnaissance of the site. The proposed replacement structure is a bridge approximately 148 feet (45 m) long. The grade of the roadway will be approximately the same as the existing road grade. Since overtopping of the road occurs during the 100-year storm, raising of the roadway grade over the existing could necessitate a floodway modification. The minimum deck grade will be three tenths (0.3) of a percent The length of the proposed bridge and the recommended roadway elevation may be adjusted (increased or decreased) to accommodate peak flow as determined in the final hydrologic study and hydraulic design.

Stanly County is a participant in the Federal Flood Insurance Program. The bridge is within a Detailed Study Area. The Federal Flood Insurance Program mapping for Stanly County, which was updated on September 21, 2000 still shows the Long

Lake Dam and associated backwater. This backwater impacts the bridge site. The new structure will be designed such that the elevation upstream of the roadway is not encroached upon by the existing 100-year storm. The proposed replacement for Bridge No. 33 will be a structure similar in waterway opening size, therefore, it is not anticipated that it will have any significant adverse impact on the existing floodplain and floodway.

B. Build Alternatives (Figure 2)

The alternative for replacing Bridge No. 33 is described below.

Alternate 1 (Preferred) includes replacement of the existing 114 foot (ft) [34.7 meter (m)] two-lane structure with a new two-lane structure in the same location as the existing structure. The proposed structure will consist of two 12 foot (3.6 m) travel lanes and two 4 foot (1.2 m) shoulders for a total clear roadway width of 32 feet (9.7 m). The new structure will be approximately 148 ft (45 m) in length and 35 feet (10.6 m) wide. The approach work will extend from approximately 700 ft (213 m) west to approximately 550 ft (168 m) east of the existing structure. Traffic will be maintained with a temporary on-site detour located approximately 10 ft (3 m) downstream (south) of the existing structure. Approach work for the temporary detour will extend from approximately 450 ft (137 m) west to 550 ft (168 m) east of the approximately 105 ft (32 m) temporary structure. The total project length including the temporary detour is approximately 1400 ft (427 m).

C. Alternatives Eliminated From Further Study

Alternate 2 includes replacement of the existing 114 ft (34.7 m) two-lane structure with a new two-lane structure located approximately 15 ft (5 m) downstream (south) of the existing structure. The new structure will be approximately 148 ft (45 m) in length. The approach work will extend from approximately 1050 ft (320 m) west to approximately 990 ft (302 m) east of the existing structure. Traffic will be maintained on the existing structure during construction. The total project length is approximately 2200 ft (670 m).

No Action Alternate The "do-nothing" alternative would eventually necessitate removal of the bridge effectively removing NC 73 from traffic service. Investigation of the existing structure by the Bridge Maintenance Unit indicates the rehabilitation of the old bridge is not feasible due to its age and deteriorated condition.

D. Preferred Alternative

Alternate 1 is the preferred alternative. It is proposed to replacing the existing structure in place with a new bridge. Alternate 1 was selected because of fewer impacts to wetlands and better horizontal alignment.

NCDOT Division 10 concurs with the preferred Alternative.

IV. ESTIMATED COST

TABLE 1: Estimated Costs

	Alternate 1 (Preferred)	Alternate 2
Structure Removal (Existing)	$36,800	$36,800
Structure (Proposed)	$384,000	$384,000
Detour and Approaches	$127,720	$15,000
Roadway Approaches	$725,490	$653,950
Miscellaneous and Mobilization	$411,490	$364,120
Engineering and Contingencies	$264,500	$196,130
ROW/Const. Easement/Utilities	$62,600	$83,600
Total	$2,012,600	$1,733,600

V. NATURAL RESOURCES

A. Methodolgy

The purpose of this study is to provide an evaluation of natural resources in the project study area. Specifically, tasks performed for this study include: 1) a delineation of jurisdictional wetlands and/or surface waters and preparation of a map depicting the jurisdictional areas based on Global Positioning System (GPS) data; 2) an assessment of natural resource features within the project study area including descriptions of vegetation, wildlife, protected species, streams, wetlands, and water quality; 3) an evaluation of probable impacts resulting from construction and alternatives; and 4) a preliminary determination of permit needs.

The project study area is located on NC 73 over Long Creek (Long Lake), in Stanly County, North Carolina. The bridge is located approximately four tenths (0.4) of a mile (0.6 km) west of the intersection SR 1405 and NC 73. The project study area is approximately 2200 ft (671 m) in length and approximately 600 ft (183 m) in width. The project study area is rural in nature and is dominated by agricultural areas and forested natural communities.

Materials and research data in support of this investigation have been derived from a number of sources including applicable United States Geological Survey (USGS) 7.5-minute quadrangle topographic mapping [Albemarle, NC (USGS 1993), U.S. Fish and Wildlife Service (FWS) National Wetlands Inventory (NWI) mapping, the *Soil Survey of Stanly County, North Carolina* (United States Department of Agriculture 1989) as prepared by the Natural Resources Conservation Service (NRCS), and recent aerial photography (scale 1:2400) furnished by Wilbur Smith Associates.

Aerial photography served as the basis for mapping plant communities and wetlands. Plant community patterns were identified from available mapping sources and then field verified. Plant community descriptions were based on a classification system utilized by North Carolina Natural Heritage Program (NHP) (Schafale and Weakley 1990). When appropriate, community classifications were modified to better reflect field observations. Vascular plant names generally follow nomenclature found in Radford *et al.* (1968).

Jurisdictional wetlands were identified using the three parameter approach (hydrophytic vegetation, hydric soils, wetland hydrology) following U.S. Army Corps of Engineers (COE) delineation guidelines (DOA 1987). Jurisdictional areas were characterized according to a classification scheme established by Cowardin *et al.* (1979). Jurisdictional surface waters (*i.e.*, streams) were delineated pursuant to current COE and North Carolina Division of Water Quality (DWQ) protocol. All jurisdictional areas were located using Trimble™ GPS units and the collected data were differentially corrected and plotted to produce working maps and site plans.

Water quality information for area streams and tributaries was obtained from the *Yadkin-Pee Dee Basinwide Water Quality Management Plan* (DWQ 1998), and the North Carolina Department of Environment and Natural Resources (DENR). Quantitative sampling was not undertaken to support existing data. Benthic macroinvertebrates were collected using current DWQ protocol. Fish populations were sampled using seine and dip nets. Fisheries sampling is conducted by Environmental Services, Inc. (ESI) under North Carolina Wildlife Resources Commission (NCWRC) Permit # 0616.

Additional resources utilized for this natural systems investigation include the most recent list (March 7, 2002) of federally listed Threatened and Endangered species by county published by FWS. Records kept by the North Carolina Natural Heritage Program (NHP) were also reviewed on June 4, 2001 and periodically updated to determine if there are any documented cases of listed species occurring within the project study area or within a three (3) mile (mi) [4.8 kilometer (km)] radius of the

project study area (most recent update February 25, 2002). When appropriate, natural community descriptions were based on a classification system utilized by NHP and developed by Schafale and Weakley (1990). Community classifications were modified to better reflect field observations when community characteristics did not fit a Schafale and Weakley community type. Vascular plant names generally follow nomenclature found in Radford *et al.* (1968). Habitat used by terrestrial wildlife and aquatic organisms, as well as expected population distributions, were determined through field observations, evaluation of available habitat, and supportive documentation (Martof *et al.* 1980, Webster *et al.* 1985, Menhinick 1991, Hamel 1992, Rohde *et al.* 1994, Palmer and Braswell 1995).

B. Physiography and Soils

The project study area is located in the Piedmont physiographic province. Topography in the project study area is generally characterized as nearly level to gently sloping land. Elevations in the project study area range from 460 ft (140 m) to 510 ft (155 m) above mean sea level (USGS Albemarle, NC 1993).

The project study area contains four soil mapping units. Three nonhydric soil mapping units are present within the project study area and include the Badin channery silt loam (*Typic Hapludults*), the Goldston very channery silt loam (*Typic Dystrochrepts*), and the Badin-Urban land complex (*Typic Hapludults*). One nonhydric soil mapping unit that may contain inclusions of hydric soils is present within the project study area, the Oakboro silt loam (*Fluvaquentic Dystrochrepts*). No hydric soils are mapped as occurring in the project study area. However, field tests show that inclusions of hydric soils do occur in the project study area.

C. Water Resources

1. Waters Impacted

The project study area is located within the Yadkin-Pee Dee River Basin (DENR 1998, DENR 2002a) and is part of USGS hydrologic unit 03040105 (USGS 1974). Three stream channels are located in the project study area, Long Creek and two unnamed tributaries to Long Creek. Long Creek originates in extreme southern Rowan County approximately two tenths (0.2) of a mile (0.3 km) west of US 52 at the Rowan–Cabarrus County boundary and flows through the project study area to its confluence with Rocky River. Long Creek, from its source to Rocky River, has been assigned Stream Index Number (SIN) 13-17-31 by the DWQ. Unnamed Tributary 1 to Long Creek (UT 1) originates approximately 0.5 mi (0.8 km) northeast of the project study area near the intersection of SR 1405 and SR

1493 and flows to its confluence with Long Creek downstream of the project study area. Unnamed Tributary 2 to Long Creek (UT 2) originates west of the project study area and has its confluence with Long Creek upstream of the project study area. Neither UT 1 nor UT 2 have been designated a separate SIN.

2. Water Resource Characteristics

A Best Usage Classification is assigned to waters of the State of North Carolina based on the existing or contemplated best usage of various streams or segments of streams in the basin. Long Creek has been assigned a Best Usage Classification of **C** (DEM 1993, DENR 2002a). The classification **C** indicates fresh waters that support aquatic life propagation and survival, fishing, wildlife, secondary recreation, and agriculture. Secondary recreation is any activity involving human body contact with water on an infrequent or incidental basis. UT 1 and UT 2 have not been assigned a separate Best Usage Classifications and therefore share the Best Usage Classification of their receiving water, **C**.

No Outstanding Resource Waters (**ORW**), High Quality Waters (**HQW**), **WS-I**, or **WS-II** Waters occur within three (3) miles (4.8 km) upstream or downstream of the project study area (DEM 1993, DENR 2002a). Neither Long Creek nor its tributaries are designated as a North Carolina Natural and Scenic River, nor as a national Wild and Scenic River.

The National Pollutant Discharge Elimination System (NPDES) regulates permits for projects involving the construction, alteration, and/or operation of any sewer system, treatment works or disposal system and certain stormwater runoff, which would result in a discharge into surface waters (DPA 1991). There is one permitted point source discharger located on Long Creek within five (5) miles (8.0 km) of the project study area. The City of Albemarle Waste Water Treatment Plant (WWTP) is located 2.2 mi (3.5 km) downstream of the project study area and is permitted (Permit # NC0024244) to discharge 16 Million Gallons per Day (MGD) (DENR 2002b).

The Benthic Macroinvertebrate Ambient Network (BMAN) addresses long-term trends in water quality at monitoring sites by sampling for selected benthic macroinvertebrates (DEM 1989). This program has been replaced by the benthic macroinvertebrate monitoring program associated with the *Basinwide Assessment Report for the Yadkin-Pee Dee River Basin* (DENR 1998, DENR 2002b). DWQ assigns bioclassifications to streams and portions of streams based on species richness and overall biomass, which

are considered reflections of water quality. The closest benthic monitoring station on Long Creek is located approximately nine (9) miles (14.5 km) downstream from the project study area. This monitoring station received a bioclassification of Good-Fair in 1996 (DENR 1998). On August 22, 1989 a special study of Long Creek was performed above and below the Albemarle WWTP to determine the effect of its effluent. The WWTP is located at the intersection of Long Creek and SR 1967 approximately 2.2 mi (3.5 km) downstream from the project study area. Long Creek received a rating of Good-Fair above the plant, and a rating of Fair below the WWTP (DENR 1998). There are no benthic monitoring stations located on either UT 1 or UT 2.

Another measure of water quality being used by the DWQ is the North Carolina Index of Biotic Integrity (NCIBI), which assesses biological integrity using the structure and health of the fish community. Long Creek and its tributaries have not been sampled to determine a NCIBI score as of the most recent *Yadkin-Pee Dee River Basinwide Water Quality Management Plan* (DENR 1998).

3. Potential Impacts to Water Resources

Long Creek is not designated as a Trout Water or an Anadromous Fish Spawning Area. There are no federally Threatened and Endangered species documented within three (3) miles (4.8 km) upstream or downstream of the project study area. It is ESI's opinion that this project can be classified as a Case 3 by the BMPs for Bridge Demolition and Removal (NCDOT 1999). Case 3 bridge replacements have no special restrictions beyond those outlined in the BMPs for Protection of Surface Waters and BMPs for Bridge Demolition and Removal (NCDOT 1999). However, this project may be elevated to a Case 2 at the discretion of the NCWRC in the event that a moratorium is established to protect sunfish (*Lepomis* spp.). Case 2 allows no work at all in the water during the moratorium periods associated with fish migration, spawning, and larval recruitment into nursery areas (NCDOT 1999). If a sunfish moratorium is established in-stream work would likely be banned during the period of March 15 through June 30, inclusive.

4. Impacts Related to Bridge Demolition and Removal

Section 402-2 of NCDOT's Standard Specifications for Roads and Structures is labeled *Removal of Existing Structure*. This section outlines restrictions and Best Management Practices for Bridge Demolition and

Removal (BMP-BDRs), as well as guidelines for calculating maximum potential fill in the creek resulting from demolition.

The superstructure consists of reinforced concrete deck on I-beams. Although these components are slated for removal in a manner, which will avoid dropping any component into Long Creek, the potential exists for temporary fill of up to 45 cubic yards (34 cubic meters).

The substructure includes two concrete interior bents located within the stream channel. Although these components are slated for removal in a manner, which will avoid dropping any component into Long Creek, the maximum potential fill is approximately 110 cubic yards (84 cubic meters).

Bridge components are slated for removal in a manner, which will avoid dropping any bridge components into Long Creek. However, due to the presence of concrete in both the superstructure and substructure of the bridge, the potential exists for up to approximately 155 cubic yards (118 cubic meters).

During bridge removal procedures, NCDOT's BMP's will be utilized, including erosion control measures; therefore it is anticipated that removing the existing bents will result in no impact to surrounding surface waters.

Short-term impacts to water quality, such as sedimentation and turbidity, may result from construction-related activities. BMPs can minimize impacts during construction, including implementation of stringent erosion and sedimentation control measures, and avoidance of using wetlands as staging areas. Additional measures, which can be taken to minimize water quality impacts include avoiding the placement of live concrete directly into the stream channel and preventing heavy equipment operations from being conducted in the stream channel. If in-stream work is necessary the use of a turbidity curtain is recommended to minimize impacts to water resources downstream of the project study area.

Other impacts to water quality, such as changes in water temperature as a result of increased exposure to sunlight due to the removal of stream-side vegetation or increased shade due to the construction of the bridges, and changes in stormwater flows due to changes in the amount of impervious surface adjacent to the stream channels, can be anticipated as a result of this project. However, due to the limited amount of overall change in the surrounding areas, impacts are expected to be temporary in nature.

No adverse long-term impacts to water resources are expected to result from the alternatives being considered. New location alternatives will result in limited clearing of some canopy along the stream bank, resulting in the potential for localized increase in sunlight and stream temperature. All alternatives allow for continuation of present stream flow within the existing channel, thereby protecting stream integrity.

D. Biotic Resources

1. Existing Vegetation Patterns

Terrestrial distribution and composition of vegetation communities throughout the project study area reflect landscape-level variations in topography, soils, hydrology, and past and present land use practices. When appropriate, the vegetation community names have been adopted and modified from the NHP classification system (Schafale and Weakley 1990) and the descriptions written to reflect local variations within the project study area. Two natural communities were identified within the project study area: Mesic Mixed Hardwood Forest and Successional Forest. In addition to these natural communities, there are also areas of maintained/disturbed lands.

Mesic Mixed Hardwood Forest – This community is common in the upland areas in the project study area. This is a hardwood dominated community with scattered concentrations of loblolly pine (*Pinus taeda*) in openings and along edges. The canopy is dominated by hardwood species such as tulip poplar (*Liriodendron tulipifera*), sweetgum (*Liquidambar styraciflua*), white oak (*Quercus alba*), northern red oak (*Q. rubra*), eastern red cedar (*Juniperus virginiana*) and scattered loblolly pine. The understory and shrub layer consists primarily of individuals of canopy species but also includes sparkleberry (*Vaccinium arboreum*) and viburnum (*Viburnum acerifolium*). The herbaceous layer is often moderately dense and diverse and includes may-apple (*Podophyllum peltatum*), wild ginger (*Hexastylis arifolia*), and violet (*Viola* spp.).

Successional Forest – This community is located in recently disturbed areas that are not being maintained. With few exceptions this is a shrub dominated community with few mature trees. The more mesic portions of this community most closely resemble mesic mixed hardwood forest and portions of this community located within the historic lakebed are more typical of Piedmont/low mountain alluvial forest. Mesic portions of this community are dominated by early successional species and other shade

intolerant plants including loblolly pine, sweetgum, and red maple (*Acer rubrum*). The historic lake bed was exposed after the dam was breached and colonization by early successional species initiated. Common species observed in the historic lakebed include green ash (*Fraxinus pennsylvanica*), black willow (*Salix nigra*), and river birch (*Betula nigra*), as well as various rushes (*Juncus* spp.), sedges (*Carex* spp.), touch-me-not (*Impatiens capensis*), and knotweed (*Polygonum punctatum*).

Maintained/Disturbed Land – The maintained/disturbed land within the project study area include such areas as roadsides, residential areas, and dirt roads and driveways and are dominated by a mixture of ornamental and early successional species. Typical species observed in this community are fescue (*Festuca* sp.), Bermuda grass (*Cynodon dactylon*), broom sedge (*Andropogon virginicus*), bahia grass (*Paspalum notatum*), crab grass (*Digitaria sanguinalis*), dog fennel (*Eupatorium capillifolium*), and golden rod (*Solidago* sp.). Shrubs typically include wax myrtle (*Myrica cerifera*), Chinese privet (*Ligustrum sinense*), and autumn olive (*Elaeagnus umbellata*).

2. Potential Impacts to Vegetation Communities

Potential impacts to vegetation communities are estimated based on the area of each vegetation community present within the proposed construction. A summary of potential vegetation community impacts is presented in Table 2.

Table 2. Potential Impacts to Vegetation Communities.

VEGETATION COMMUNITY	Potential Impacts Acres (hectares)			
	Alternative 1 (Preferred)		Alternative 2	
	Impacts	Temp. Const. Impacts[a]	Impacts	Temp. Const. Impacts[a]
Mesic Mixed Hardwood Forest	0.40 (0.16)	0.93 (0.38)	1.54 (0.62)	0.70 (0.28)
Successional Forest	0.75 (0.30)	0.55 (0.22)	0.96 (0.39)	0.32 (0.13)
Maintained/Disturbed Land	0.59 (0.24)	0.57 (0.23)	1.46 (0.59)	0.43 (0.17)
Total:	1.74 (0.70)	2.05 (0.83)	3.96 (1.60)	1.45 (0.58)
Total For Alternative[b]:	3.79 (1.53)		5.41 (2.18)	

[a] Temporary construction impacts are based on the portion of the impacts not included in the construction limits for the permanent structure.

[b] Totals for vegetation communities do not include the open water area attributed to Long Creek or any impervious road surfaces.

Potential impacts associated with a bridge replacement are generally limited to narrow strips adjacent to the existing bridge structure and roadway approach segments. Alternative 2 includes the replacement of the existing bridge on new location and more extensive approach work than Alternative 1. Therefore, Alternative 2 has a higher amount of potential impacts to vegetated communities than does Alternative 1. Both Alternative 1 and Alternative 2 have similar amounts of temporary impacts associated with bridge construction, with 0.93 ac (0.38 ha) and 0.70 ac (0.28 ha), respectively.

3. Wildlife

The project study area was visually surveyed for signs of terrestrial and aquatic wildlife. Little evidence of wildlife was observed during the field effort. Forests along streams such as Long Creek provide cover and food and function as a migration corridor linking areas of more optimal habitats. Other expected wildlife species are those adapted to ecotones between the maintained roadsides and adjacent natural forest.

a. Terrestrial

Several bird species were observed within or adjacent to the project study area. Bird species observed include northern cardinal (*Cardinalis cardinalis*), common yellowthroat (*Geothlypis trichas*), and American goldfinch (*Carduelis tristis*). Other species expected to occur in the project study area include great blue heron (*Ardea herodias*), belted kingfisher (*Megaceryle alcyon*), American crow (*Corvus brachyrhynchos*), blue jay (*Cyanocitta cristata*), and American robin (*Turdus migratorius*).

Mammal signs observed within the project study area include white-tailed deer (*Odocoileus virginiana*), beaver (*Castor canadensis*) and raccoon (*Procyon lotor*). Other species expected to be found in and around the study area include Virginia opossum (*Didelphis virginiana*), muskrat (*Ondatra zibethicus*), red fox (*Vulpes vulpes*), gray squirrel (*Sciurus carolinensis*), and eastern cottontail (*Sylvilagus floridanus*).

Terrestrial reptiles observed within the project study area include black rat snake (*Elaphe obsoleta*) and eastern box turtle (*Terrapene carolina*). Other species expected to occur within the project study area include copperhead (*Agkistrodon contortrix*), eastern garter

snake (*Thamnophis sirtalis*) and ringneck snake (*Diadophis punctatus*).

Terrestrial amphibians observed within the project study area are juvenile Fowler's toad (*Bufo woodhousei*). Other species expected to occur within the project study area include white-spotted slimy salamander (*Plethodon cylindraceus*), marbled salamander (*Ambystoma opacum*), spring peeper (*Pseudacris crucifer*), and northern cricket frog (*Pseudacris crepitans*).

b. Aquatic

The aquatic habitat located within the project study are limited to Long Creek, UT 1 Long Creek, and UT 2 Long Creek. Limited kick-netting, seining, dip-netting, and visual observation of stream banks and channel within the project study area were conducted in Long Creek to document the resident aquatic wildlife populations. The water depth and excessive turbidity limited the amount of benthic sampling that could be conducted. Samples were collected from the edge of the deep channel along mud banks and sand bars. Sampling was not conducted in the UTs.

Benthic invertebrate organisms collected within Long Creek were identified to at least Order, Family, and Species if possible and include Asiatic clam (*Corbicula fluminea*), eastern floater (*Pyganodon cataracta*), dragonflies (Odonata: Gomphidae), alder flies (Megaloptera: Sialidae, Corydalidae), flies (Diptera: Chironomidae, Simuliidae), beetles (Coleoptera: Elmidae, Dytiscidae, Haliplidae), caddisflies (Trichoptera: Hydropsychidae), mayflies (Ephemeroptera: Heptageniidae, Baetidae, Caenidae), and segmented worms (Annelida: Oligochaeta, and Hirudinea).

The presence of potential mussel fauna led ESI biologists to forego electro-shocking in favor of seining and dip-netting to document fish species. Fish species documented from Long Creek within the project study area include eastern mosquitofish (*Gambusia holbrooki*), yellow bullhead (*Ameiurus natalis*), snail bullhead (*A. brunneus*), bluegill (*Lepomis macrochirus*), and tessellated darter (*Etheostoma olmstedi*).

Three aquatic reptile species were observed within the project study area, and included painted turtles (*Chrysemys picta*), eastern musk turtle (*Sternotherus odoratus*), and yellowbelly slider (*C. scripta*).

Other species expected to occur within the project study area include northern watersnake (*Nerodia sipedon*), and snapping turtle (*Chelydra serpentina*).

The only aquatic amphibian species observed in the project study area was the bullfrog (*Rana catesbeiana*). Other species expected to occur within the project study area include such species as green frog (*Rana clamitans*), southern leopard frog (*R. utricularia*), and pickerel frog (*R. palustris*).

4. Potential Impacts to Wildlife

Due to the lack of, or limited, infringement on natural communities, the proposed bridge replacement will not result in significant loss or displacement of known animal populations. Wildlife movement corridors are not expected to be significantly altered by the proposed project. Potential down-stream impacts to aquatic habitat will be avoided by bridging Long Creek to maintain regular flow and stream integrity. Temporary impacts to downstream habitat from increased sediment during construction are expected to be reduced by limiting in-stream work to an absolute minimum and use of a turbidity curtain, except for the removal of the portion of the sub-structure below the water. Best Management Practices for Bridge demolition and Removal (BMP-BDRs) will be followed to minimize impacts due to anticipated bridge demolition. BMP-BDRs for the protection of surface should be strictly enforced to reduce impacts.

E. Special Topics

1. Waters of the United States

Surface waters within the embankments of Long Creek and its two unnamed tributaries are subject to jurisdictional consideration under Section 404 of the Clean Water Act as "waters of the United States" (33 CFR 328.3). The waters in Long Creek within the project study area exhibit characteristics of riverine, unconsolidated bottom, sand (R2UB2) waters (Cowardin *et al.* 1979). The waters in UT 1 within the project study area exhibit characteristics of riverine, unconsolidated bottom, sand (R3UB2) waters (Cowardin *et al.* 1979). The waters in UT 2 within the project study area exhibit characteristics of riverine, unconsolidated bottom, cobble-gravel (R2UB1) waters (Cowardin *et al.* 1979).

Long Creek is a perennial stream with moderate flow over substrate consisting of sand and silt. This section of Long Creek was formerly

impounded as part of Long Lake. The Long Lake dam has been breached and historic stream flow temporarily restored. Plans currently exist to restore the dam to its original configuration. The reach located upstream of the bridge still shows evidence of having been widened and channelized with little pattern and low sinuosity. This reach has a bankfull width of approximately 50 ft (15 m) and an average depth of approximately four (4) ft (1.2 m) in the riffles. A geomorphic characterization of this reach of Long Creek indicates that this reach is an "F" stream type (Rosgen 1996). "F" type stream channels are generally unstable entrenched, relatively wide and shallow channels on low gradient slopes. The reach located downstream of the bridge shows evidence of a more natural channel forming in the lake sediments. This reach has a bankfull width of approximately 12 ft (4 m) and an average depth of two (2) ft (0.6 m). This reach has been geomorphically characterized as a "G" stream type (Rosgen 1996). This stream type occurs in narrow valleys that are unstable, with grade control problems and high bank erosion rates. The "G" designation indicates that the stream is an entrenched "gully" with a low width/depth ratio on moderate gradients (Rosgen 1996).

UT 1 is a small first order perennial stream located at the eastern end of the project study area. This stream has a bankfull width of approximately three (3) ft (1 m) and an average depth of less than five tenths (0.5) of a foot (<0.1 m). A geomorphic characterization of the stream section within the project study area indicates that UT 1 is a "B" stream type (Rosgen 1996). This stream type is characterized by very stable plan and profile in narrow, gently sloping valleys. The "B" designation indicates that the stream is moderately entrenched with a moderate gradient. "B" channels are riffle dominated with infrequently spaced pools (Rosgen 1996).

UT 2 is a perennial stream located at the western end of the project study area. This stream has a bankfull width of approximately 12 ft (4 m) and an average depth of one (1) ft (0.3 m). A geomorphic characterization of the stream section within the project study area indicates that UT 2 is a "C" stream type (Rosgen 1996). This stream type occurs in broad, alluvial valleys with terraces and have variable sinuosity. "C" streams also have well-developed floodplains and point bars in the meander bends. The "C" designation indicates that the stream is slightly entrenched with well-defined meandering channels (Rosgen 1996).

Wetlands subject to review under Section 404 of the Clean Water Act (33 U.S.C. 1344) are defined by the presence of three primary criteria: hydric soils, hydrophytic vegetation, and evidence of hydrology within 12 inches (31 cm) of the soil surface for a portion (12.5 percent) of the growing season

(DOA 1987). Based on this three parameter approach, one jurisdictional wetland area was located within the project study area. This wetland area is located in the historic Long Lake bottom throughout the project study area. Vegetation within these areas is hydrophytic in nature and includes green ash, black willow, and river birch, rushes, sedges, touch-me-not, and knotweed. Soils exhibit hydric characteristics (Munsell color 5Y 6/2 with 7.5YR 5/6 mottles). Hydrological indicators observed include the presence of drainage patterns and saturation and oxidized root channels within 12 inches (31 cm) of the soil surface. This wetland exhibits characteristics of palustrine, scrub shrub, broad-leaved deciduous, temporarily flooded, diked/impounded (PSS1Ah) wetlands based upon NWI mapping (Cowardin *et al.* 1979).

2. Potential Impacts to Waters of the United States

Potential impacts to wetlands and open water areas are estimated based on the amount of each jurisdictional area within the proposed construction limits. Open water areas of Long Creek (R2UB2) are included in this analysis, although impacts are not expected due to the use of channel-spanning structures. During Bridge Removal Procedures, NCDOT's BMP's will be utilized, including Erosion Control Measures. Therefore it is anticipated that removing the existing bents will result in no impact to surrounding surface waters. A summary of potential jurisdictional impacts is presented in Table 3.

Table 3. Potential Impacts to Jurisdictional Areas.

JURISDICTIONAL AREAS	**Potential Wetlands Impacts Acres (hectares)**			
	Alternative 1 (Preferred)		**Alternative 2**	
	Impacts	Temp. Construction Impacts[a]	Impacts	Temp. Construction Impacts[a]
PSS1Ah	0.74 (0.30)	0.45 (0.18)	0.96 (0.39)	0.38 (0.15)
R2UB2 (Long Creek)	0.04 (0.02)	0.18 (0.07)	0.06 (0.02)	0.14 (0.06)
R3UB2 (UT 1)	0.0	0.0	0.01 (<0.01)	0.01 (<0.01)
R2UB1 (UT 2)	0.0	0.0	0.0	0.0
Total:	0.78 (0.32)	0.63 (0.25)	1.03 (0.41)	0.53 (0.21)
Total Wetland Impacts:	**1.41 (0.57)**		**1.56 (0.62)**	
	Potential Stream Impacts Linear feet (meters)			
Long Creek	42 (13)	150 (46)	40 (12)	120 (37)
UT 1	0	0	82 (25)	86 (26)
UT 2	0	0	0	0
Total:	42 (13)	150 (46)	122 (37)	206 (63)
Total Stream Impacts:	**192 (59)**		**328 (100)**	

[a] Temporary construction impacts are based on the portion of the impacts not included in the construction limits for the permanent structure.

Both alternatives have similar unavoidable potential impacts jurisdictional wetlands. Temporary impacts to jurisdictional wetlands associated with bridge construction are similar for both Alternative 1 and Alternative 2. Both alternatives avoid potential impacts to UT 2 Long Creek and include use of a channel spanning structure that would avoid impacts to Long Creek. Alternative 2 impacts 82 linear feet (25 m) of UT 2, this impact is avoided by Alternative 1.

a. Permits

This project is being processed as a Categorical Exclusion (CE) under Federal Highway Administration (FHWA) guidelines. Nationwide Permit (NWP) #23 [33 CFR 330.5(a)(23)] has been issued by the Army Corps of Engineers (COE) for CEs due to expected minimal impact. NCDENR Division of Water Quality (DWQ) has issued a General 401 Water Quality Certification for NWP #23. However, use of this permit will require written notice to DWQ. In the event that NWP #23 will not suffice, minor impacts attributed to bridging and associated approach improvements are expected to qualify under General Bridge Permit 031 issued by the Wilmington COE District. Notification to the Wilmington COE office is required if this general permit is utilized. NWP #33 may be required if temporary structures, work and discharges, including cofferdams are necessary for this project and not covered within the CE.

3. Mitigation Evaluation

Avoidance – Due to the presence of surface waters and jurisdictional wetland areas within the project study area, avoidance of all impacts is not possible. Wetland and stream impacts are previously discussed in Section V.E.2.

Minimization – The alternatives presented were developed in part to demonstrate minimization of stream impacts. Impacts to the stream will be minimized during demolition by removing bridge components in a manner, which will avoid dropping any components into the creek channel. Bridge demolition impacts have been previously discussed in Section V.C.4. Employing 2 to1 slopes where practicable can further minimize wetland impacts.

Mitigation - Compensatory mitigation is probable for this project due to the nature of project impacts. However, utilization of BMPs is recommended in an effort to minimize impacts, including avoiding placing staging areas within wetlands. Temporary impacts associated with the construction activities could be mitigated by replanting disturbed areas with native species and removal of any temporary fill material within the floodplain upon project completion. Final mitigation requirements rest with the COE. Mitigation may be required for wetland impacts less than one tenth (0.1) of an acre (>0.04 ha).

F. Protected Species

1. Federal Protected Species

Species with the federal classification of Endangered (E) or Threatened (T), or officially proposed (P) for such listing, are protected under the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531 *et seq.*). Federally protected species listed with ranges that extend into Stanly County are presented in Table 4 (US Fish and Wildlife Service list dated March 7, 2002).

Table 4. Federally Protected Species.

Common Name	Scientific Name	Status	Biological Conclusion
Bald eagle	***Haliaeetus leucocephalus***	T[a]	No Effect
Schweinitz's sunflower	***Helianthus schweinitzii***	E	Not likely to adversely effect

[a] Officially proposed for delisting

Bald eagle - The bald eagle is a large raptor with a wingspan greater than six (6) ft (2 m). Adult bald eagles are dark brown with white head and tail. Immature eagles are brown with whitish mottling on their tail, belly, and wing linings. Bald eagles typically feed on fish but may also take birds and small mammals. In the Carolinas, nesting season extends from December through May (Potter *et al.* 1980).

Bald eagles typically nest in tall, living trees in a conspicuous location near water and forage over large bodies of water with adjacent trees available for perching (Hamel 1992). Preventing disturbance activities within a primary zone extending 750 to 1500 ft (229 to 457 m) outward from a nest tree is considered critical for maintaining acceptable conditions for eagles (FWS 1987). FWS recommends avoiding any disturbance activities, including construction and tree-cutting, within this primary zone. Within a secondary zone extending from the primary zone boundary out to a distance of one (1)

mi (1.6 km) from a nest tree, construction and land-clearing activities should be restricted to the non-nesting period. FWS also recommends avoiding alteration of natural shorelines where bald eagles forage, and avoiding significant land-clearing activities within 1500 ft (457 m) of roosting sites.

Biological Conclusion: No Effect
No large lakes or other large bodies of water, providing easy access to food, or snags for nesting are found within the project study area. Since no suitable nesting or foraging habitat for the bald eagle exists in the project study area, this project is not expected to affect the bald eagle. A review of NHP records revealed no documentation of this species within three (3) mi (4.8 km) of the project study area.

Schweinitz's sunflower - Schweinitz's sunflower is an erect, unbranched, rhizomatous, perennial herb that grows to approximately six (6) ft (2 m) in height. The stem may be purple, usually pubescent, but sometimes nearly smooth. Leaves are sessile, opposite on the lower stem but alternate above; in shape they are lanceolate and average five (5) to ten (10) times as long as wide. The leaves are rather thick and stiff, with a few small serrations. The upper leaf surface is rough and the lower surface is usually pubescent with soft white hairs. Schweinitz's sunflower blooms from late August to frost; the yellow flower heads are about six tenths (0.6) of an inch (1.5 cm) in diameter. The current range of this species is within 60 mi (97 km) of Charlotte, North Carolina, occurring on upland interstream flats or gentle slopes, in soils that are thin or clayey in texture. The species needs open areas protected from shade or excessive competition, reminiscent of Piedmont prairies. Disturbances such as fire maintenance or regular mowing help sustain preferred habitat (FWS 1994).

Biological Conclusion: Not Likely to Adversely Effect
Potentially suitable habitat for Schweinitz's sunflower was identified within the project study area. Potentially suitable habitat consists of the roadside shoulders, a sewer line in the northeast portion of the project study area, and other open areas. A systematic survey of all potentially suitable habitat was conducted by ESI biologists in July 2001. Since, this survey was conducted prior to the flowering season for Schweinitz's sunflower, search efforts focused on the identification of all members of the genus *Helianthus* (if present) using vegetative characteristics in the field. During this survey no members of the genus *Helianthus* were observed. Therefore, construction of the proposed project should not affect Schweinitz's' sunflower. A review of NHP records revealed no

documentation of this species within three (3) mi (4.8 km) of the project study area.

Federal Species of Concern

The March 7, 2002 FWS list also includes a category of species designated as "Federal species of concern" (FSC). The FSC designation provides no federal protection under the ESA for the species listed. However, these are listed since they may attain federal protected status in the future. The presence of potential suitable habitat (Amoroso 1999, LeGrand *et al.* 2001) within the project study area has been evaluated for the following FSC species listed for Stanly County. (Table 5)

Table 5. Federal Species of Concern (FSC).

Common Name	Scientific Name	Potential Habitat	State Status[a]
Carolina darter	Etheostoma collis collis	Y	SC
Brook floater	*Alasmidonta varicosa*	Y	T (PE)
Carolina creekshell	*Villosa vaughaniana*	Y	SC (PE)
Georgia aster	**Aster georgianus**	Y	T
Butternut	*Juglans cinerea*	N	W5
Heller's trefoil	*Lotus helleri*	Y	C
Savanna cowbane	*Oxypolis ternata*	N	W1
Yadkin River goldenrod	*Solidago plumosa*	Y	E
Riverbank vervain	*Verbena riparia*	N	C

[a] E-Endangered, T-Threatened, SC- Special Concern, C -Candidate, W - Watch List, P – Proposed, SR – Significantly Rare.

NHP records indicate one FSC occurrence has been documented within three (3) mi (4.8 km) of the project study area. The Carolina darter has been found in Long Creek approximately 2.7 mi (4.3 km) downstream of the project study area.

C. State Protected Species

Plant and animal species which are on the North Carolina state list as Endangered (E), Threatened (T), or Special Concern (SC), receive limited protection under the North Carolina Endangered Species Act (G.S. 113-331 *et seq.*) and the North Carolina Plant Protection Act of 1979 (G.S. 106-202 *et seq.*). NHP records do not

document any occurrences of state protected species occurring within three (3) mi (4.8 km) of the project study area.

VI. CULTURAL RESOURCES

A. Compliance Guidelines

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

B. Historic Architecture

The November 5, 2001 memorandum from the NC State Historic Preservation Office (HPO), see attached, requested a survey and evaluation of Bridge No. 33 since the structure was built in 1912. A field survey of the Area of Potential Effects (APE) was conducted on March 19, 2002. The findings of the survey were presented to the HPO on June 18, 2002 and was determined not eligible for NRHP, see attached concurrence dated June 18, 2002.

C. Archaeology

No Archaeological survey was recommended by the HPO, see attached memorandum dated November 5, 2002.

VII ENVIRONMENTAL EFFECTS

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

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

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

The project does not conflict with any plan, existing land use, or zoning regulation. No significant change in land use is expected to result from 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 anticipated. The project is not expected to adversely affect social, economic, or religious opportunities in the area. The are no publicly owned recreational facilities, or wildlife and waterfowl refuges of national, state, or local significance in the vicinity of the project.

No North Carolina Geodetic Survey control monuments will be impacted during construction of this project.

The Farmland Protection Policy Act requires all federal agencies or the representatives to consider potential impacts to prime and important farmland soils be all land acquisition and construction projects. Prime and important farmland soils are defined by the Natural Resources Conservation Service (NRCS). Since there are no prime or important farmlands in the immediate vicinity of the proposed bridge the Farmland Protection Policy does not apply.

This project is an air quality "neutral" project, so it is not required to be included in the regional emission analysis (if applicable) and a project level CO analysis is not required.

This project is located in Stanly County, which has been determined to be in compliance with the National Ambient Air Quality Standards. 40 CFR Part 51 is not applicable, because the proposed project is located in an attainment area. This project is not anticipated to create any adverse effects on the air quality of this attainment area.

The traffic volumes will not increase or decrease because of this project. There are no receptors located in the immediate project area. The project's impact on noise and air quality will not be significant.

Any noise levels increases during construction will be temporary. If vegetation is disposed of by burning, all burning shall be done in accordance with applicable local laws and regulations of the North Carolina SIP for air quality in compliance with 15

NCAC 2D.0520. This evaluation completes the assessment requirements for highway traffic noise (23 CFR Part 722) and for air quality (1990 CAAA and NEPA) and no additional reports are required.

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

Stanly County is a participant in the Federal Flood Insurance Program. The bridge is within a Detailed Study Area. The FIS for Stanly County, which was updated on September 21, 2000 still shows the Long Lake Dam and associated backwater. This backwater impacts the bridge site. The new structures should be designed to match or lower the existing 100-year storm elevation upstream of the roadway. Since the proposed replacement for Bridge No. 33 would be a structure similar in waterway opening size, it is not anticipated that it will have any significant adverse impact on the existing floodplain and floodway.

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

VIII. PUBLIC INVOLVEMENT

Efforts were taken early in the planning process to contact local officials to involve them in the project development with a scoping letter. Additionally, 36 newsletters detailing the alternatives considered were mailed to citizens in the vicinity of the project. Newsletters were also mailed to local officials. No comments were received in response to the newsletter mailing.

IX. AGENCY COMMENTS

The North Carolina Department of Crime Control and Public Safety responded to the scoping letter locating B-4276 in the Special Flood Hazard Area – Zone A5 (100-Year Floodplain). US Fish & Wildlife & NCDENR division of Water Quality provided comments, as did the State Historic Preservation office. The US Army Corps of Engineers provided jurisdictional wetland determination.

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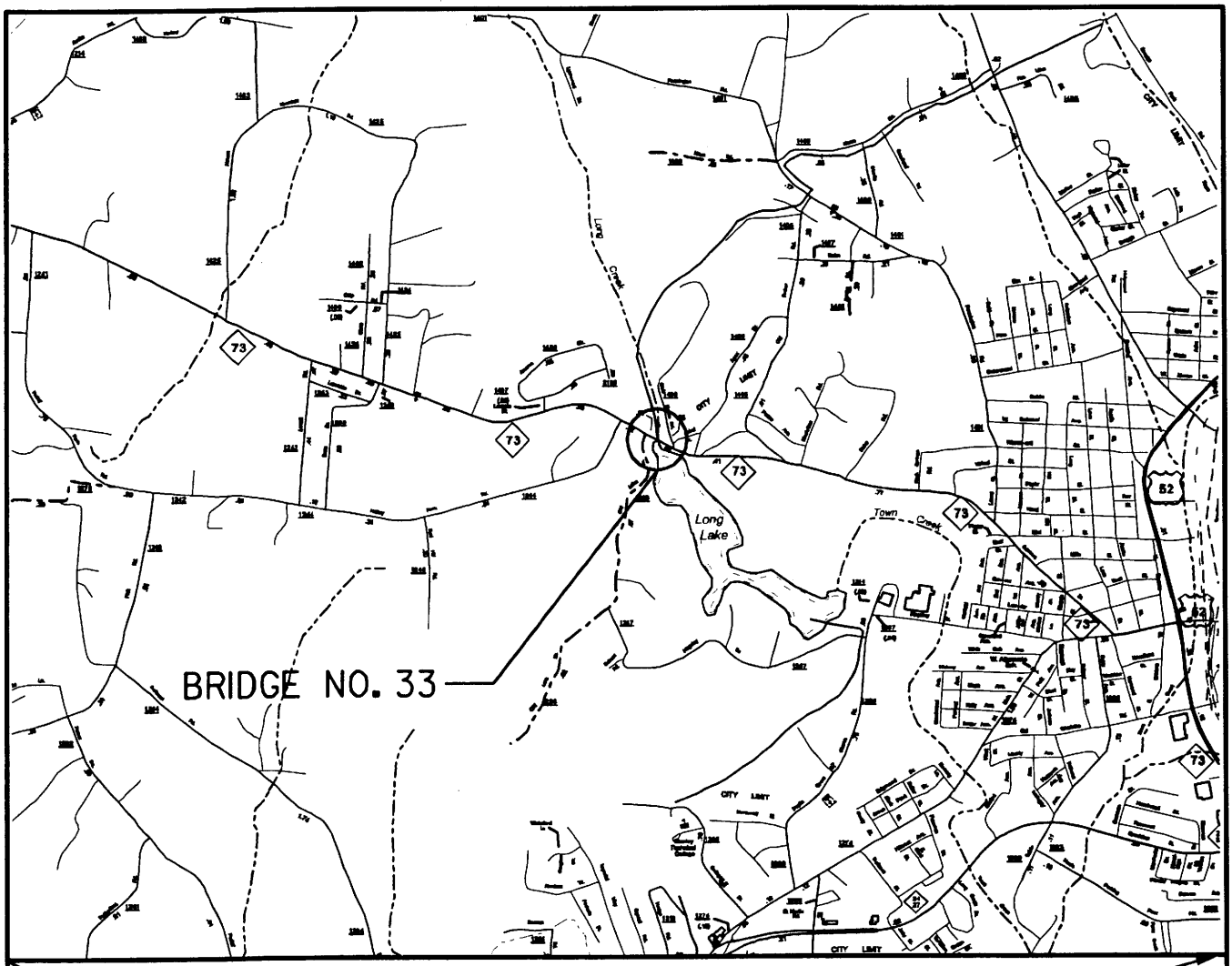
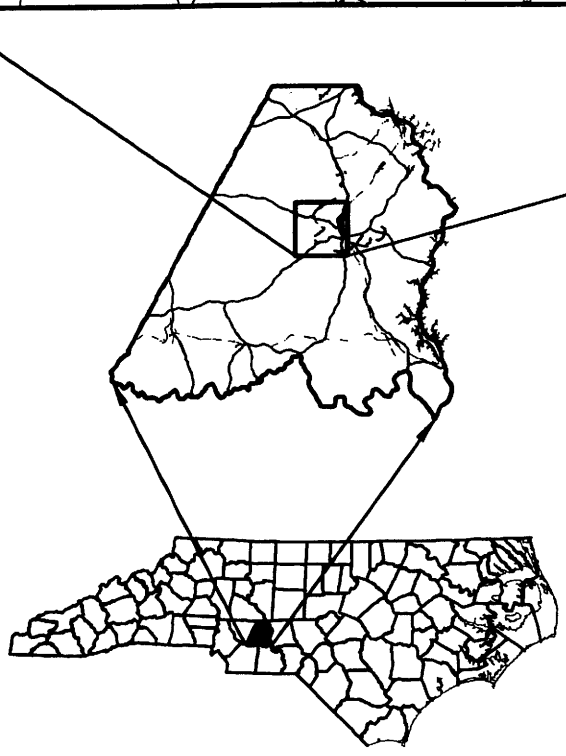
FIGURES





STANLY COUNTY

N

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

BRIDGE NO. 33
NC 73 OVER LONG CREEK
STANLY COUNTY
B-4276

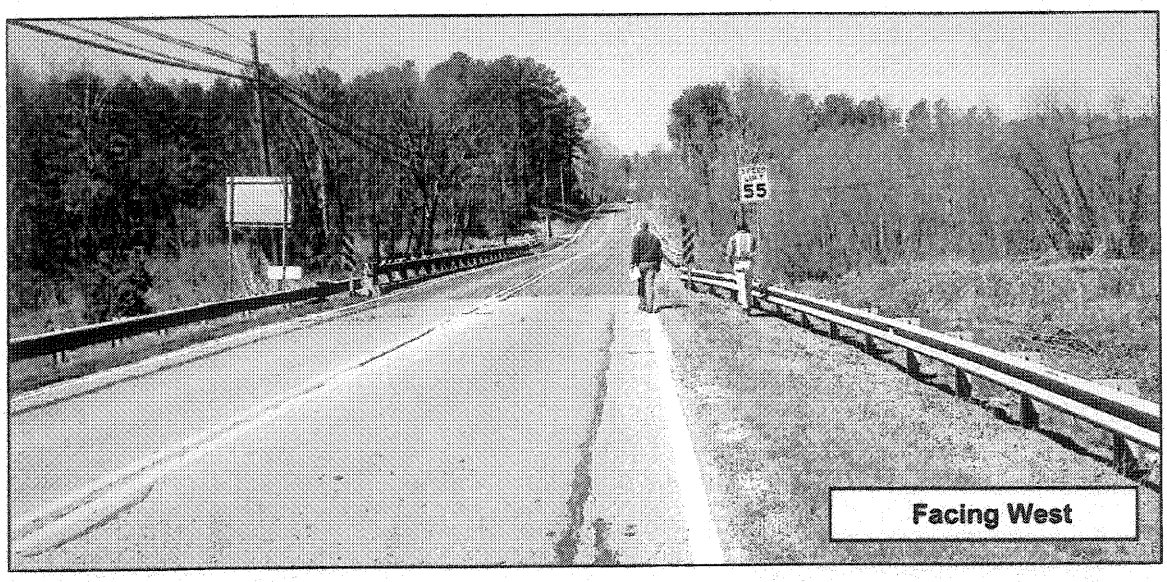
VICINITY MAP

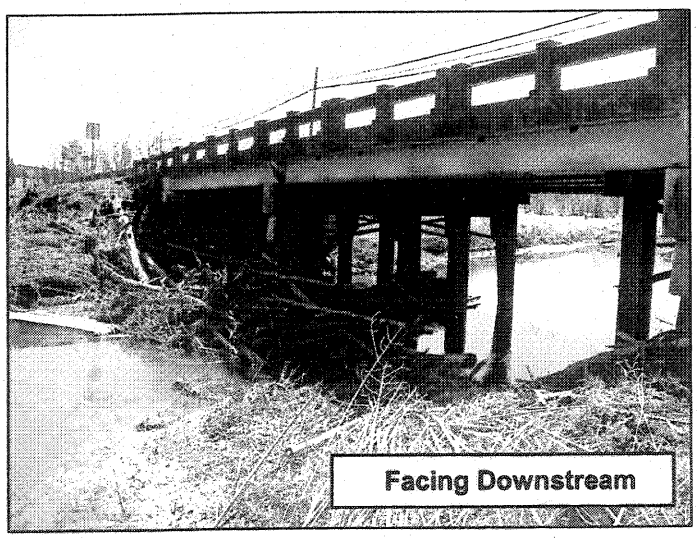
FIGURE 1

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

B-4276
STANLY COUNTY
BRIDGE #33 OVER LONG CREEK

SEPTEMBER 2002	NOT TO SCALE	FIGURE 2

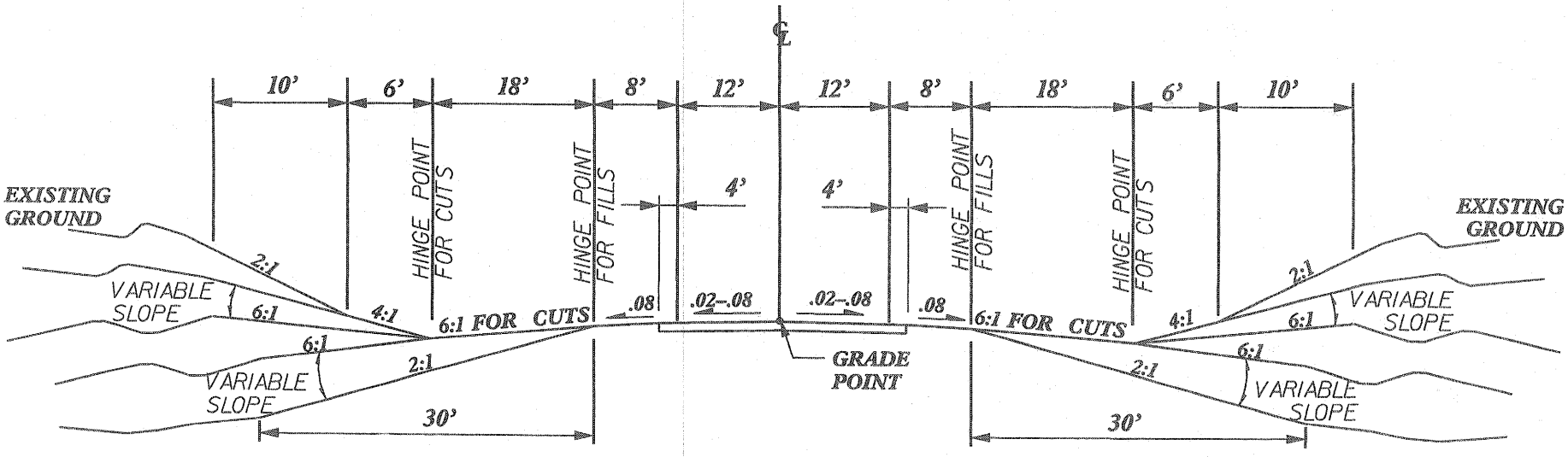




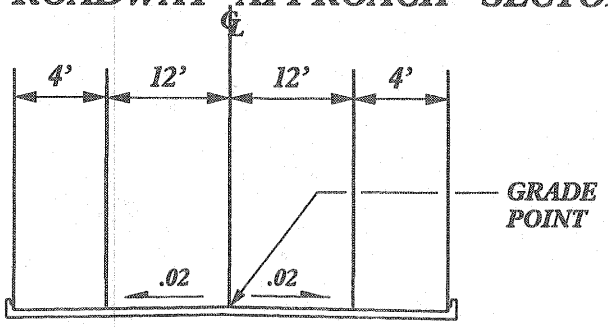
B-4276
Replacement of Bridge
Bridge No. 33
NC 73 over
Long Creek
Stanly County

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

FIGURE 3



TYPICAL ROADWAY APPROACH SECTON



TYPICAL BRIDGE SECTION

TRAFFIC DATA	
ADT 1998	7900
ADT 2010	10660
DUAL	4%
TTST	3%

FUNCTIONAL CLASSIFICATION: MINOR ARTERIAL (URBAN)

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

STANLY COUNTY

BRIDGE NO. 33 ON NC 73
OVER LONG CREEK

B-4276

FIGURE 4

APPENDIX

U.S. ARMY CORPS OF ENGINEERS
Wilmington District

Action ID: 200230734 County: **Stanly**

Notification of Jurisdictional Determination

Property Owner: NCDOT
Address: William D. Gilmore, Project Development and Environmental Analysis
1548 Mail Service Center
Raleigh, NC 27699-1548
Telephone: 919-733-3141

Authorized Agent: Environmental Services, Inc.
Attn. Matt K Smith
Address: 524 New Hope Road
Raleigh, NC 27610
Telephone:919-212-1760

Size and Location of Property (waterbody, Highway name/number, town, etc.):
TIP No. B-4276, Bridge over Long Creek on NC 73 west of Albemarle, Stanly County

Basis for Determination: Delineation Map and Data Forms dated March 6, 2002

Indicate Which of the Following apply:

◊ There are wetlands on the above described property which we strongly suggest should be delineated and surveyed. The surveyed wetland lines must be verified by our staff before the Corps will make a final jurisdictional determination on your property.

◊ On _____ the undersigned inspected the Section 404 jurisdictional line as determined by the NCDOT and/or its representatives for the subject NCDOT project/corridor. A select number of sites were inspected and all were found to accurately reflect the limits of Corps jurisdiction. The Corps believes that this jurisdictional delineation can be relied on for planning purposes and impact assessment.

✱ The surface waters and wetlands on this project have been delineated and the limits of the Corps jurisdiction have been explained to you. Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.

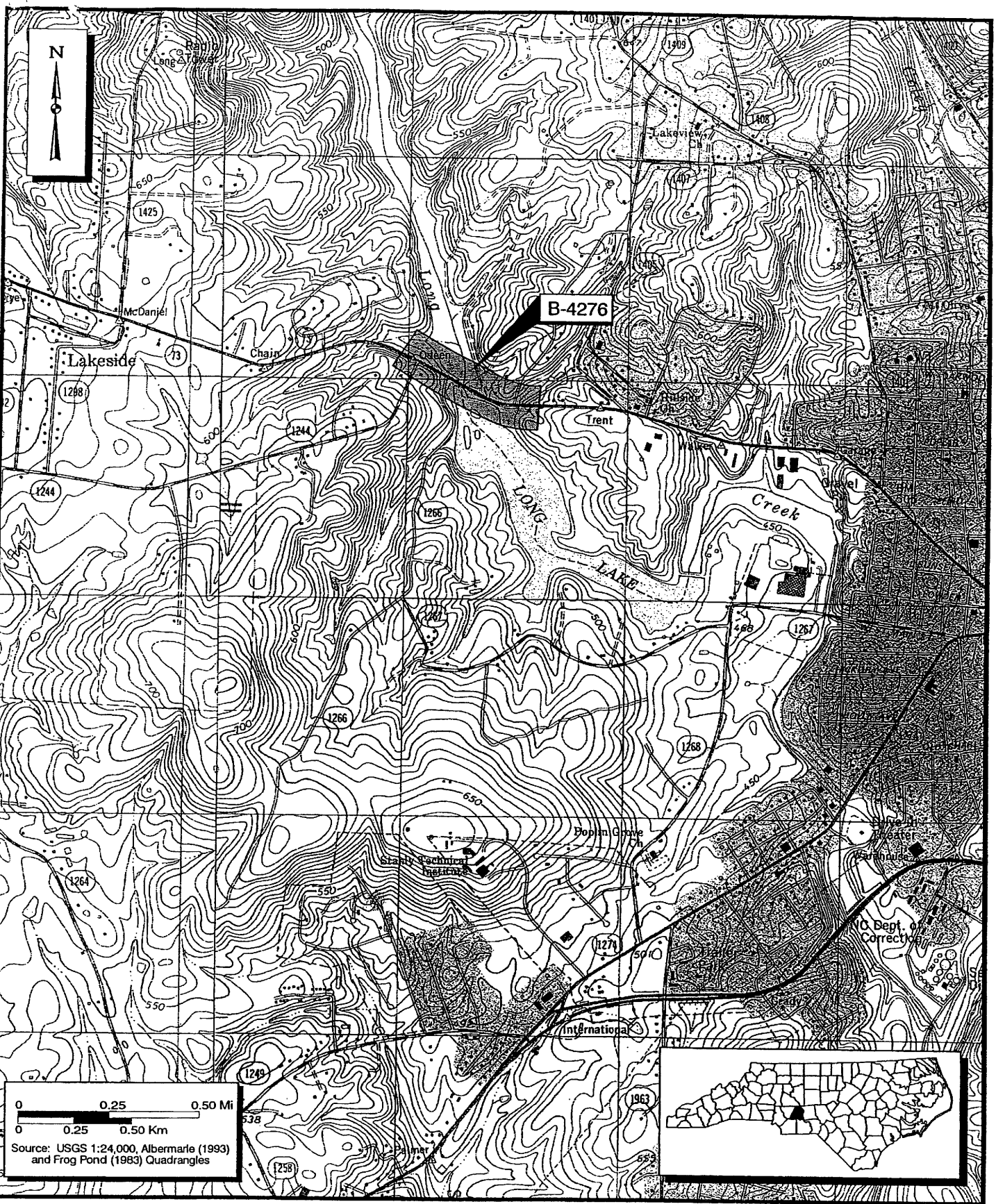
◊ There are no wetlands present on the above described property which are subject to the permit requirements of section 404 of the Clean Water Act (33 USC 1344). Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.

◊ The project is located in one of the 20 Coastal Counties. You should contact the nearest State Office of Coastal Management to determine their requirements.

Placement of dredged or fill material in wetlands on this property without a Department of the Army permit is in most cases a violation of Section 301 of the Clean Water Act (33 USC 1311). A permit is not required for work on the property restricted entirely to existing high ground. If you have any questions regarding the Corps of Engineers regulatory program, please contact Steven W. Lund **at** 828-271-7980 x 4.

Project Manager Signature _____
Date: April 23, 2002 **Expiration Date: April 23, 2007**

SURVEY PLAT OR FIELD SKETCH OF DESCRIBED PROPERTY AND THE WETLAND DELINEATION FORM MUST BE ATTACHED TO THIS FORM.



Environmental Services, Inc.

Location Map Bridge B-4276
Bridge Group 35
Stanly County, North Carolina

Figure:	1
Project:	ER01049
Date:	February 2002

ER01049/b4276_loc.cdr

EE
YC
YD WET
EF
ED

DATA FORM
ROUTINE WETLAND DETERMINATION
(1987 COE Wetlands Delineation Manual)

Project/Site: GROUP C BRIDGES B-4276	Date: 7/10/2001
Applicant/Owner: NCDOT	County: STANLY
Investigator: ESI	State: NC
Do Normal Circumstances exist on the site? (Yes) No	Community ID: LAKE BOTTOM
Is the site significantly disturbed (Atypical Situation)? Yes (No)	Transect ID: EE7
Is the area a potential Problem Area? Yes (No)	Plot ID: EE7 WET
(If needed, explain on reverse)	

VEGETATION

Dominant Plant Species	Stratum	Indicator	Dominant Plant Species	Stratum	Indicator
1. SALIX NIGRA	T	OBL	9.		
2. FRAXINUS PENNSYLVANICA	T	FACW	10.		
3. BETULA NIGRA	T	FACW	11.		
4. POLYGONUM SAGITTATUM	H	OBL	12.		
5. CAREX spp	—	—	13.		
6. IMPATIENS CAPENSIS	H	FACW	14.		
7. TYPHA LATIFOLIA	H	OBL	15.		
8.			16.		

Percent of Dominant Species that are OBL, FACW or FAC (excluding FAC-) 7/7 = 100%

Remarks:

HYDROLOGY

___ Recorded Data (Describe in Remarks):
- ___ Stream, Lake or Tide Gauge
- ___ Aerial Photographs
- ___ Other
- ✓ No Recorded Data Available

Field Observations:
- Depth of Surface Water: 0 (in.)
- Depth to Free Water in Pit: 3" (in.)
- Depth to Saturated Soil: 0 (in.)

Wetland Hydrology Indicators:
Primary Indicators:
- ___ Inundated
- ✓ Saturated in Upper 12 Inches
- ___ Water Marks
- ___ Drift Lines
- ___ Sediment Deposits
- ✓ Drainage Patterns in Wetlands

Secondary Indicators (2 or more required):
- ✓ Oxidized Root Channels in Upper 12 Inches
- ✓ Water-Stained Leaves
- ___ Local Soil Survey Data
- ✓ FAC-Neutral Test
- ___ Other (Explain in Remarks)

Remarks:

SOILS

Map Unit Name (Series and Phase): CHEWACLA SILT LOAM (CK)

Drainage Class: POORLY DRAINED

Taxonomy (Subgroup): FLUVAQUENTIC DYSTROCHREPTS

Field Observations Confirm Mapped Type: Yes (No)

Profile Description:

Depth (inches)	Horizon	Matrix Color (Munsell Moist)	Mottle Colors (Munsell Moist)	Mottle Abundance/Contrast	Texture, Concretions, Structure, etc.
0-8		5Y 6/2	7.5YR 5/6	F/D	SANDY CLAY LOAM
8-18		5Y 5/2	7.5YR 5/8	C/D	CLAY LOAM

Hydric Soil Indicators:

- ___ Histosol
- ___ Histic Epipedon
- ___ Sulfidic Odor
- ___ Aquic Moisture Regime
- ___ Reducing Conditions
- ✓ Gleyed or Low-Chroma Colors
- ___ Concretions
- ___ High Organic Content in Surface layer in Sandy Soils
- ___ Organic Streaking in Sandy Soils
- ___ Listed on Local Hydric Soils List
- ___ Listed on National Hydric Soils List
- ___ Other (Explain in Remarks)

Remarks:

WETLAND DETERMINATION

Hydrophytic Vegetation Present? (Yes) No (Circle)

Wetland Hydrology Present? (Yes) No

Hydric Soils Present? (Yes) No

(Circle)

Is this Sampling Point Within a Wetland? (Yes) No

Remarks:

Approved by HOUSACE 2/92

HJL
8/93

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Asheville Field Office
160 Zillicoa Street
Asheville, North Carolina 28801

April 5, 2002

Ms. Iona L. Hauser
Wilbur Smith Associates
333 Fayetteville Street Mall, Suite 1450
Raleigh, North Carolina 27601

Dear Ms. Hauser:

Subject: Review of Bridge Replacement Group 35 for the North Carolina Department of Transportation, Stanly and Anson Counties, North Carolina

We have reviewed the subject projects and are providing these comments in accordance with the Fish and Wildlife Coordination Act, as amended (16 U.S.C. 661-667e), and Section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531-1543) (Act).

EFFECTS TO WATERS AND WETLANDS

We are pleased with the decision to replace bridges with bridges. The new bridge designs should include provisions for roadbed and deck drainage to flow through a vegetated buffer prior to reaching the affected stream. This buffer should be large enough to alleviate any potential effects from the run-off of storm water and pollutants. The bridge designs should not alter the natural stream and stream-bank morphology or impede fish passage. Any piers or bents should be placed outside the bank-full width of the stream. The bridges and approaches should be designed to avoid any fill that will result in damming or constriction of the channel or floodplain. If spanning the floodplain is not feasible, culverts should be installed in the floodplain portion of the approach to restore some of the hydrological functions of the floodplain and reduce high velocities of flood waters within the affected area.

For the two bridges where the preferred alternative is to replace the structure on its current location, we recommend that, if possible, an off-site detour be provided rather than using temporary structures near the existing bridge. This will minimize the amount of riparian vegetation that must be removed and, in general, reduce the amount of disturbance to the stream. We recommend that erosion- and sedimentation-control measures be in place prior to any

ground-disturbing activities. Wet concrete should never be allowed to come into contact with the stream.

FEDERALLY LISTED SPECIES

Stanly County - B-3908 - Bridge 246 over Big Bear Creek and B-3909 and B-4276 - Bridges 99 and 73 over Long Creek (our Log Numbers 4-2-02-235, 4-2-02-236, and 4-2-02-237, respectively).

In the Natural Resources Technical Reports for each of these projects, biologists considered the two federally listed species in Stanly County--the threatened bald eagle (*Haliaeetus leucocephalus)* and the endangered Schweinitz's sunflower (*Helianthus schweinitzii*). No suitable habitat for the bald eagle exists within the project areas, and there are no documented occurrences in the vicinity of the projects. Surveys for Schweinitz's sunflower revealed no individuals within the project areas. Based on the lack of habitat and negative survey information, we concur with the conclusion of "no effect" to federally listed species for these projects. In view of this, we believe the requirements under Section 7(c) of the Act are fulfilled. However, obligations under Section 7 of the Act must be reconsidered if: (1) new information reveals impacts of this identified action that may affect listed species or critical habitat in a manner not previously considered, (2) this action is subsequently modified in a manner that was not considered in this review, or (3) a new species is listed or critical habitat is determined that may be affected by the identified action.

Anson County - B-4009 - Bridge 33 over Brown Creek (our Log Number 4-2-02-238).

In the Natural Resources Technical Report for this project, biologists considered the five federally listed species in Anson County--the threatened bald eagle (*Haliaeetus leucocephalus)* and the endangered Schweinitz's sunflower (*Helianthus schweinitzii*), shortnose sturgeon *(Acipenser brevirostrum*), red-cockaded woodpecker (*Picoides borealis*), and Carolina heelsplitter (*Lasmigona decorata).* No suitable habitat for the bald eagle, shortnose sturgeon, red-cockaded woodpecker, or Schweinitz's sunflower exists within the project area, and there are no documented occurrences in the vicinity of the project. Suitable habitat for the Carolina heelsplitter was determined to occur in Brown Creek; therefore, field surveys were conducted for this species. Although seven species of native freshwater mussels were found during surveys in Brown Creek and Little Brown Creek, no federally listed species were found. With over 35 person-hours of surveys conducted for this project and in the vicinity of the project, no Carolina heelsplitter mussels were located. Therefore, we concur with your conclusion of "no effect" to the Carolina heelsplitter for this project. In view of this, we believe the requirements under Section 7(c) of the Act are fulfilled. However, obligations under Section 7 of the Act must be reconsidered if: (1) new information reveals impacts of this identified action that may affect listed species or critical habitat in a manner not previously considered, (2) this action is subsequently modified in a manner that was not considered in this review, or (3) a new species is listed or critical habitat is determined that may be affected by the identified action.

As further protection for the native freshwater mussels that may be affected by the construction of this project, we recommend that, if possible, they be removed from the area of impact. They could be moved to suitable habitat upstream of the project or held in a secure location until the construction is completed and then be placed back in Brown Creek at their original location.

We appreciate the opportunity to provide these comments. If you have any questions or concerns, please contact Ms. Marella Buncick of our staff at 828/258-3939, Ext. 237. As noted above, we have assigned log numbers to each project. Please reference these numbers in any future correspondence concerning these projects.

Sincerely,

Brian P. Cole
State Supervisor

Federal Aid # BRSTP-73(5) *TIP* # B-4276 *County*: Stanly

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

Project Description: Replace Bridge No. 33 on NC 73 over Long Creek

On 06/18/2002, representatives of the

- [x] North Carolina Department of Transportation (NCDOT)
- [ ] Federal Highway Administration (FHWA)
- [x] 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.
- [x] 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 Bridge #33 is considered not eligible for the National Register and no further evaluation of it is necessary.
- [x] There are no National Register-listed or Study Listed properties within the project's area of potential effects.
- [x] 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.
- [x] There are no historic properties affected by this project. (*Attach any notes or documents as needed*)

Signed:

Mary Pope Furr — 6/18/02
Representative, NCDOT — Date

Ruth H Ayer — 6/21/02
FHWA, for the Division Administrator, or other Federal Agency — Date

Ann Swallow — 6/18/02
Representative, HPO — Date

David Brook by BJS — 6/19/02
State Historic Preservation Officer — Date

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

NOV 8

Vance

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

November 5, 2001

MEMORANDUM

TO: William D. Gilmore, Manager
Project Development and Environmental Analysis Branch
Division of Highways
Department of Transportation

FROM: David Brook RLG for David Brook

SUBJECT: Bridge #33 on NC 73 over Long Creek, TIP B-4276, Stanly County, ER 02-7901

Thank you for your letter of September 26, 2001, concerning the above project.

We have conducted a search of our maps and files and located the following structure of historical or architectural importance within the general area of this project:

Bridge #33 built in 1912

We recommend that a Department of Transportation architectural historian identify and evaluate any structures over fifty years of age within the project area, and report the findings to us.

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

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

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

DB:kgc

cc: Mary Pope Furr, NCDOT

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

William G. Ross Jr., Secretary
North Carolina Department of Environment and Natural Resources
Gregory J. Thorpe, Ph.D.
Acting Director
Division of Water Quality

October 31, 2001

MEMORANDUM

To: Elmo Vance, NCDOT Project Development & Environmental Analysis Branch
Through: John Dorney, NC Division of Water Quality
From: Cynthia F. Van Der Wiele, NCDOT Coordinator

Subject: Scoping Comments for Bridge Replacement Projects: B-3908, B-3909, B-4009, B-4205, B-4276, B-3680.

This memo is in reference to your correspondence dated October 3, 2001, in which you requested scoping comments for the above projects. The Division of Water Quality (DWQ) requests that the following topics be addressed:

1. DWQ requests that best management practices (BMPs) for bridge demolition shall be adhered to, particularly on TIP Project B-4205 in Montgomery County, as Doomas Creek is listed as a High Quality Water (HQW).

2. Disturbance of the stream channels must be limited to only what is necessary to perform the bridge demolition and removal. Heavy equipment must be operated from the banks rather than in the stream channel in order to minimize sedimentation and reduce the likelihood of introducing other pollutants into the stream.

3. Project B-4205 in Montgomery County shall comply with the requirements for High Quality Waters with regards to stormwater management, sedimentation and erosion control and buffer requirements.

4. Ensure that sediment & erosion control measures are not placed in wetlands.

5. Borrow/waste areas should avoid wetlands to the maximum extent practicable. Prior to the approval of any borrow/waste site in a wetland, the contractor must obtain a 401 certification from DWQ.

6. The information packet did not include information regarding the types of structures that will be replacing the deficient bridges. Two voice mail messages were left in regard to a request for more information (and not returned). DWQ prefers that the structures that will be replacing the deficient bridges will be bridges. All structures shall be installed in such a manner that the original stream profiles are not altered (i.e. the depth of the channel must not be reduced by a widening of the streambed). Existing stream dimensions are to be maintained above and below locations of culvert extensions.

7. All work shall be performed during low flow conditions.

8. All mechanized equipment operated near surface waters should be regularly inspected and maintained to prevent contamination of stream waters from fuels, lubricants, hydraulic fluids, or other toxic materials.

North Carolina Division of Water Quality, 401 Wetlands Certification Unit,
1650 Mail Service Center, Raleigh, NC 27699-1650 (Mailing Address)
2321 Crabtree Blvd., Raleigh, NC 27604-2260 (Location)
919-733-1786 (phone), 919-733-6893 (fax), http://h2o.enr.state.nc.us/ncwetlands/

9. Written concurrence of 401 Water Quality Certification may be required for these projects (e.g., applications requesting coverage under NW 14 or Regional General Permit 198200031). Please be aware that 401 certification may be denied if wetland or water impacts have not been avoided and minimized to the maximum extent practicable.

Thank you for requesting our input at this time. The DOT is reminded that issuance of a 401 Water Quality Certification requires that appropriate measures be instituted to ensure that water quality standards are met and designated uses are not degraded or lost. If you have any questions or require additional information, please contact Cynthia Van Der Wiele at (919) 733.5715.

Pc: USACE Wilmington Field Office
USACE Asheville Field Office
Marella Buncick, USFWS Asheville Field Office
MaryEllen Haggard, NCWRC
File Copy

Clmo Vance

North Carolina Department of Crime Control and Public Safety
Division of Emergency Management

Michael F. Easley, Governor — Bryan E. Beatty, Secretary

October 19, 2001

Mr. William D. Gilmore, P.E.,
Manager of the Project Development and Environmental Analysis Branch
Division of Highways
1549 Mail Service Center
Raliegh, NC 27699-1549

OCT 22 2001

Subject: **RE: Bridge Replacement Projects**

Dear Mr. Gilmore:

Thank you for your letters dated September 26, 2001 regarding the review of nine bridge replacement projects. The North Carolina Division of Emergency Management has reviewed the proposed projects and would like to provide comments to the Department of Transportation.

My staff has reviewed the Flood Insurance Rate Maps (FIRMs) for your project areas. The majority of these projects are located in Special Flood Hazard Areas, also know as the 100-year floodplain. Please ensure that the proposed projects do not cause an increase in the Base Flood Elevation (BFE) in these areas and that they comply with Nation Flood Insurance Program guidelines.

Projects Located in Special Flood Hazard Areas (100-year floodplain)
- B-4009, Bridge No. 33 in Anson County - Zone A
- B-3830, Bridge No. 363 in Columbus County - Zone A
- B-4205, Bridge No. 133 in Montgomery County - Zone A
- B-4273, Bridge No. 37 in Scotland County - Zone A
- B-3908, Bridge No. 246 in Stanly County - Zone A
- B-3909, Bridge No. 99 in Stanly County - Zone A
- B-4276, Bridge No. 33 in Stanly County - Zone A5

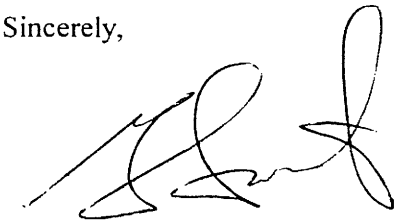
Projects Not Located in Special Flood Hazard Areas (100-year floodplain)
- B-4093, Bridge No. 81 in Cumberland County - Zone B (500-year floodplain)
- B-3680, Bridge No. 2 in Moore County - Zone X (500-year floodplain)

The Division of Emergency Management does not oversee the routing of Emergency Response Units on a day-to-day basis. However, utilizing off-site detour routes has the potential to increase response times of these units, especially if alternate routes are not available. Your agency should contact local emergency management officials or the local representatives responsible for roadways. NCEM would

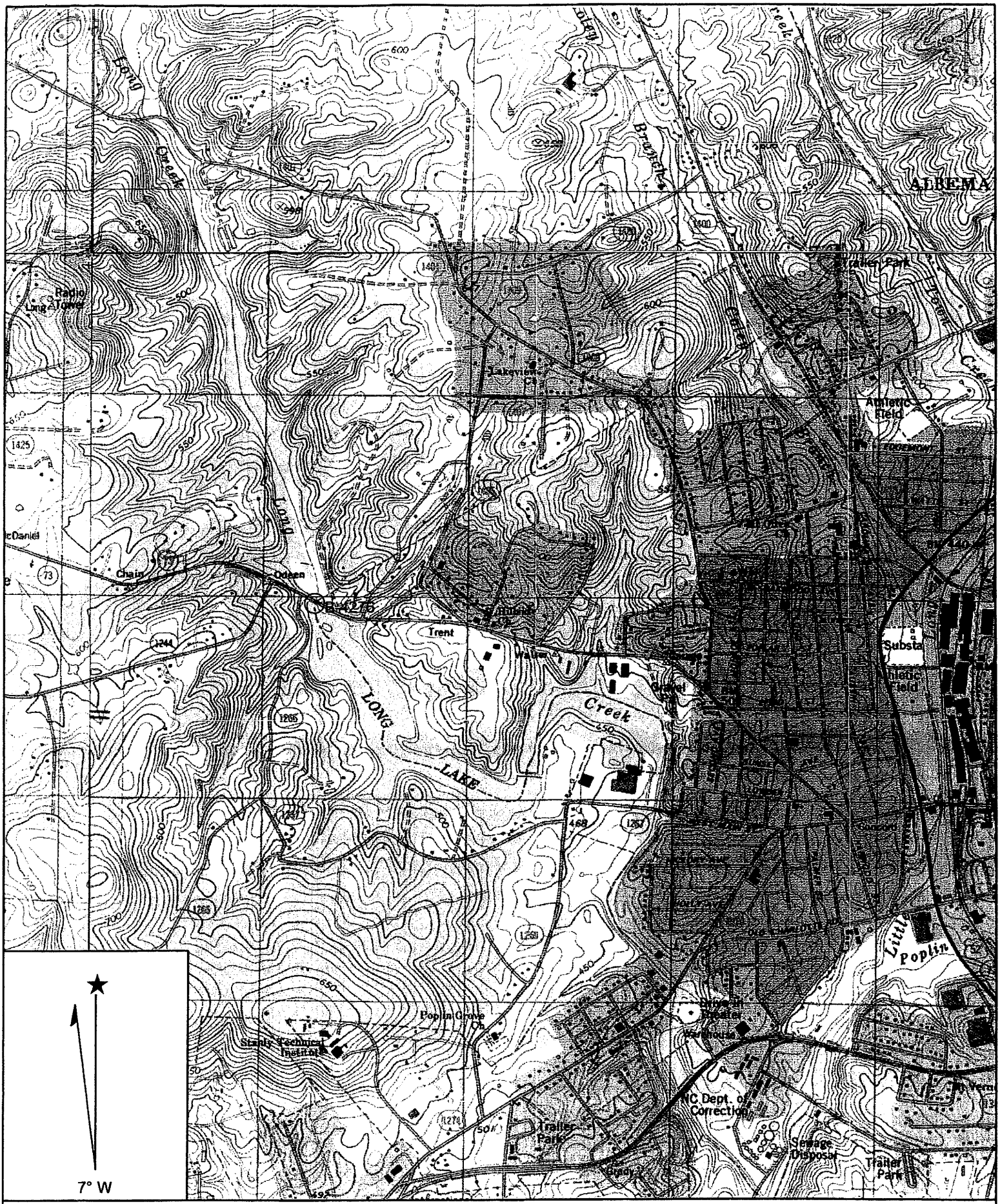
also like to advise that you pay close attention to roadways that have been identified as evacuation routes and the potential impacts your projects may have on evacuation travel.

If you have any further questions or need additional information, please do not hesitate to contact Steve Garrett at (919) 715-8000, extension 349.

Sincerely,

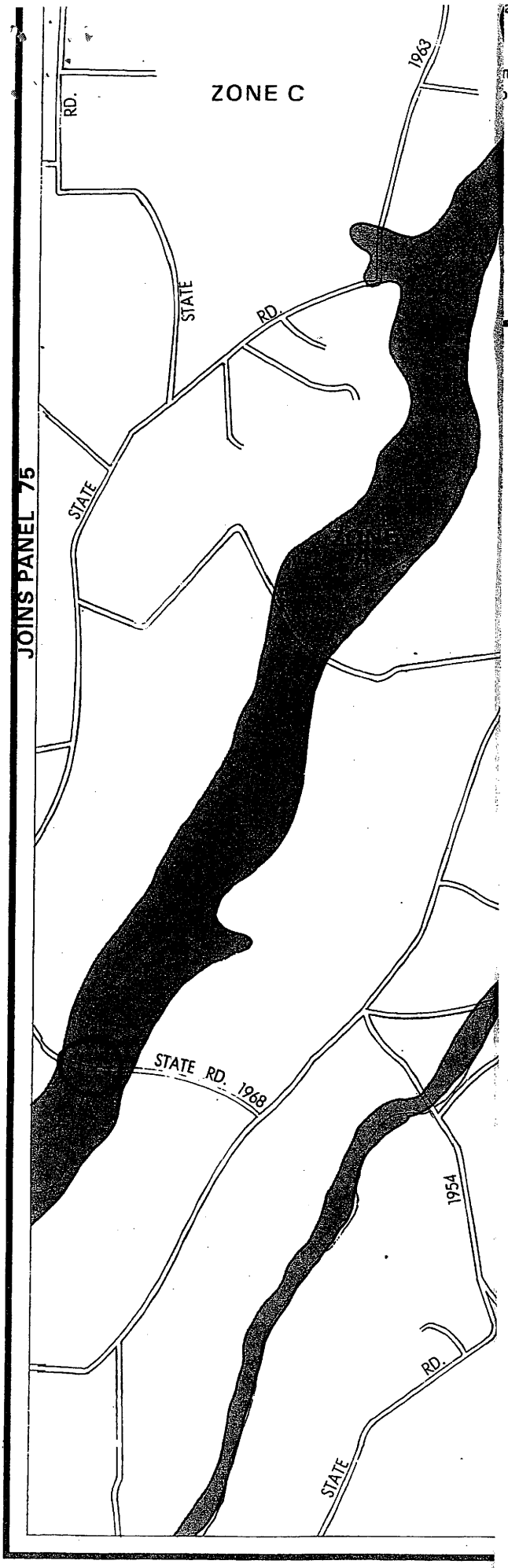


Gavin Smith, Ph.D.
Assistant Director, Hazard Mitigation
North Carolina Division of Emergency Management



Name: ALBEMARLE
Date: 10/10/2001
Scale: 1 inch equals 2000 feet

Location: 17 570135 E 3912972 N
Caption: Stanly County, B-4276
Bridge no. 33 on NC 73 over Long Creek. L=114ft, W=27.9ft
yr built 1912



ablished.

determine if flood insurance is available in this community, ntact your insurance agent, or call the National Flood Insurance ogram at (800) 638-6620.

APPROXIMATE SCALE

2000 0 2000 FEET

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

STANLY COUNTY, NORTH CAROLINA (UNINCORPORATED AREAS)

PANEL 100 OF 175

COMMUNITY-PANEL NUMBER
370361 0100 B

EFFECTIVE DATE:
DECEMBER 1, 1981

federal emergency management agency