STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

May 29, 2008

U. S. Army Corps of Engineers
Regulatory Field Office
3331 Heritage Trade Drive, Suite 105
Wake Forest, North Carolina 27587

ATTENTION: Mr. Eric Alsmeyer
NCDOT Coordinator, Division 5

Dear Sir:

SUBJECT: **Application for Section 404 Nationwide Permits 13, 23, & 33.** Replacement of Bridge No. 200 on SR 1435 over Mountain Creek, Granville County, North Carolina. Federal Aid Project No. BRZ-1435(4), State Project No. 8.2371801, WBS Element 33750.1.1, TIP No. B-4526.

The North Carolina Department of Transportation (NCDOT) proposes to replace Bridge No. 200 on SR 1435 (Davis Chapel Rd.) over Mountain Creek, in Granville County. The existing 54-foot 3-span bridge was constructed in 1957 and received a sufficiency rating of 47.4 out of a possible 100 for a new structure. This bridge is considered functionally obsolete due to its deck geometry appraisal rating. The project proposes to demolish the existing bridge and replace with a single span, box beam structure with end bents on piles, spanning Mountain Creek. The new bridge will be approximately 90 feet long with approximately 25 feet of roadway width. During construction, traffic will be detoured off-site. Please see the enclosed Pre-Construction Notification (PCN), permit drawings, design plans, and North Carolina Division of Water Quality (DWQ) Stream Identification Form for the subject project. A Programmatic Categorical Exclusion was completed for this project in March of 2007 and distributed shortly thereafter. Additional copies are available upon request.

IMPACTS TO WATERS OF THE UNITED STATES

General Description: The project is located in sub basin 03-02-06 of the Roanoke River Basin in Granville County. This area is part of Hydrologic Cataloging Unit 03010102. The project area is located within the Central Piedmont ecoregion of North Carolina.

Two jurisdictional streams, Mountain Creek and an unnamed tributary to Mountain Creek (UT 1), located within the project study area will be impacted during the construction of this project. Another mapped stream, UT 2, lies outside of the construction limits of the project and will not be impacted. Each stream has been assigned Stream Index Number 23-2-(1) by DWQ. The unnamed tributaries and

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

TELEPHONE: 919-715-1334 or
919-715-1335

FAX: 919-715-5501

WEBSITE: WWW.NCDOT.ORG

LOCATION:
2728 CAPITAL BLVD. SUITE 240
RALEIGH NC 27604

the stretch of Mountain Creek in the project study area have been assigned a Best Usage Classification of **C**.

Mountain Creek enters the study area as a fourth order perennial stream. Mountain Creek is described as having a substrate consisting primarily of bedrock, with sand and gravel deposited throughout. Mountain Creek flows northeastward into Grassy Creek, then towards John H. Kerr Reservoir and eventually into the Roanoke River. Within the project study area, Mountain Creek is approximately 40 feet wide with banks ranging from 4 to 6 feet.

When the Natural Resources Technical Report (NRTR) was written, UT 1 was determined to be a jurisdictional stream, and an official jurisdictional determination was issued by USACE on January 18, 2005 based on this rating. For further clarification, a field investigation was conducted on April 3, 2008 by NCDOT biologists, Ashley Cox, Deanna Riffey, James Mason, and Sara Easterly. During this investigation it was determined that UT 1 rates as being a low intermittent stream, scoring a 22.5 on the DWQ Stream Identification Form. The substrate of UT 1 is comprised of silt and sand, and the channel of UT 1 is 12 to 18 inches wide with the banks ranging from 3 to 8 inches high south of SR 1435. North of the road, UT 1 appears to have been dug out and maintained in the past. Channel width ranges from 2 to 3 feet, reaching upwards of 5 feet at the mouth. The depth is between 1 and 3 feet, eventually deepening to 5 feet at the confluence with Mountain Creek. There will be no wetland impacts associated with this bridge replacement project.

No portion of Mountain Creek, its tributaries, or other surface waters within 1.0 mile of the project are listed on the North Carolina Division of Water Quality's (NCDWQ) 2006 Final 303(d) List of Impaired Waters.

No waters classified as High Quality Water (HQW), Water Supplies (WS-I or WS-II), nor Outstanding Resource Waters (ORW) occur within 1.0 mile of the project study area.

Permanent Impacts: Site 1 is associated with extending the piped portion of UT 1 to allow for a driveway relocation on the southern side of SR 1435 (Davis Chapel Rd.). It is anticipated that an additional 38 linear feet of stream will require piping to construct the driveway.

Rip rap will be placed along the banks at the existing bents providing bank stabilization, prior to removal, resulting in 63 linear feet of permanent impacts to Mountain Creek. This rip rap accounts for approximately 0.01 acres of surface water impacts.

Temporary Impacts: There will be less than 0.01 acres of jurisdictional impacts associated with the construction of a temporary causeway. The causeway will be constructed of Class II rip rap at the base and Class A rip rap for the crest. The causeway will be located on the western bank of Mountain Creek, to assist in pulling the existing bent in the channel.

Bridge Demolition: The existing structure has a timber deck with an asphalt wearing surface on timber joists. The substructure is composed of timber caps and piles with concrete mud sills. The existing bridge will be removed without dropping components into Mountain Creek. Currently there is a bent located in the channel of Mountain Creek. All guidelines for Bridge Demolition and Removal will be followed in addition to Best Management Practices for the Protection of Surface Waters.

Utility Impacts: There are no anticipated utility impacts associated with this project.

RESTORATION PLAN

The stone materials used as temporary fill in the construction of the causeways will be removed from the streambed. The temporary fill areas will be restored back to their pre-project elevations. NCDOT will also restore the streambed to its pre-project contours.

REMOVAL AND DISPOSAL PLAN

The temporary causeways will be removed from the stream after the in-water bents of the new structure is constructed. All stone material placed in the stream for construction of the causeways will be removed by the contractor using excavation equipment. The contractor will be required to submit a reclamation plan for the removal of and disposal of all material off-site at an upland location. The contractor will have the option of reusing any of the materials that the engineer deems suitable in the construction of project.

FEDERALLY PROTECTED SPECIES

Plants and animals with federal classifications of Endangered (E), Threatened (T), Proposed Endangered (PE), and Proposed Threatened (PT) are protected under provisions of Section 7 and Section 9 of the Endangered Species Act of 1973, as amended. The United States Fish and Wildlife Service (USFWS) lists three Federally Protected species, as of January 16, 2008, for Granville County. Table 1 lists the species and their federal status.

Table 1. Federally Protected Species in Granville County, NC

Common Name	Scientific Name	Federal Status	Biological Conclusion	Habitat Present
Dwarf wedgemussel	*Alasmidonta heterodon*	E	No Effect	Yes
Harperella	*Ptilimnium nodosum*	E	No Effect	Yes
Smooth coneflower	*Echinacea laevigata*	E	No Effect	Yes

Dwarf wedgemussel (DWM) has never been found or identified in the Roanoke River Basin; however, a mussel species survey was performed to ensure the protected species was not present. The DWM survey was conducted for this project on May 19, 2005 by Alderman Environmental Services, Inc. Biologists John Alderman, Logan Williams, and Karen Lynch performed a visual and tactile survey, 200 meters upstream from the subject bridge and down stream another 400 meters. No DWM were found in 3.0 man-hours of survey time. Given the results of the survey and the absence of a known population occurring within the Roanoke River basin, it can be concluded that this project will not affect the DWM.

An initial survey for harperella was conducted August 9, 2004. The survey resulted in a biological conclusion of "May Affect, Not Likely to Adversely Affect", as suitable habitat was present but no specimens were identified. An additional survey was performed on August 2, 2007. NCDOT biologists Ashley Cox, Deanna Riffey, James Mason, and Duncan Quinn surveyed the project area for harperella. Mountain Creek provides suitable habitat for harperella. During the survey, no individuals of harperella were observed. A search of the Natural Heritage Program database (updated February 2008) showed no populations of harperella within one mile of the project area, nor are there any known occurrences of the species upstream of the proposed project, thus warranting a biological conclusion of "No Effect".

A survey for smooth coneflower was conducted on August 9, 2004 where no individuals were observed. An additional survey was performed on August 2, 2007 by NCDOT biologists, Ashley Cox, Deanna Riffey, James Mason, and Duncan Quinn. Although potential habitat is present within the project study area in the form of regularly maintained roadside shoulders and fields, no individuals of smooth coneflower were observed. A search of the Natural Heritage Program database, updated in February 2008, revealed no occurrences of the species within one mile of the project area. Therefore, a biological conclusion for smooth coneflower of "No Effect" is warranted.

AVOIDANCE, MINIMIZATION and MITIGATION

The NCDOT is committed to incorporating all reasonable and practicable design features to avoid and minimize jurisdictional impacts, and to provide full compensatory mitigation of all remaining, unavoidable jurisdictional impacts. Avoidance measures were taken during the planning and NEPA compliance stages; minimization measures were incorporated as part of the project design.

According to the Clean Water Act (CWA) §404(b)(1) guidelines, NCDOT must avoid, minimize, and mitigate, in sequential order, impacts to waters of the US. The following is a list of the project's avoidance/minimization activities proposed or completed by NCDOT:

Avoidance/ Minimization: Avoidance examines all appropriate and practicable possibilities of averting impacts to "Waters of the US". The NCDOT is committed to incorporating all reasonable and practicable design features to avoid and minimize jurisdictional impacts and to minimize impacts as part of the project design.

- Temporary construction impacts due to erosion and sedimentation will be minimized through implementation of stringent erosion control methods and use of Best Management Practices (BMPs) highlighted in NCDOT's "Best Management Practices for Construction and Maintenance Activities".
- Best Management Practices for Protection of Surface Waters and Bridge Demolition and Removal will be implemented during the entirety of this project.
- During construction, traffic will utilize an off-site detour.
- No bents are to be placed in Mountain Creek.

Compensatory Mitigation: NCDOT proposes no mitigation for the 101 linear feet of surface water impacts associated with this bridge replacement. The 63 linear feet of impacts to Mountain Creek will be a result of bank stabilization. There is no foreseeable loss of aquatic habitat due to the rip rap being placed along the channel. Impacts to UT 1 are minimal (38 linear feet) and impact the most degraded stretch of the stream, at the immediate roadside. The existing channel is littered with roadside debris and refuse including tires and scrap metal.

SCHEDULE

The project calls for a let date of November 18, 2008 and a review date of September 30, 2008. This project has a date of availability of December 30, 2008. It is expected that the contractor will begin construction shortly after that date.

REGULATORY APPROVALS

Section 404 Permit: This project has been processed by the Federal Highway Administration as a "Categorical Exclusion" (CE) in accordance with 23 CFR 771.115(b). The NCDOT requests that the stream impacts to UT-1 be authorized by a Nationwide Permit 23 (72 FR 11092-11198; March 12, 2007), the bank stabilization be authorized by a Nationwide Permit 13, and activities associated with this project

resulting in temporary impacts to jurisdictional waters be authorized by a Nationwide Permit 33. Therefore, NCDOT is requesting the issuance of Nationwide Permits 23, 33, and 13 for the impacts sustained during the construction of this project.

Section 401 Permit: NCDOT anticipates that Section 401 General Water Quality Certifications (WQC) 3689, 3701, and 3688 will apply to this project, and no written concurrence will be required. In accordance with 15A NCAC 2H 0.0501(a) and 15A NCAC 2B 0.0200 we are providing two copies of this application to the North Carolina Department of Environment and Natural Resources, Division of Water Quality, for their review.

A copy of this permit application will be posted on the NCDOT website at: http://www.ncdot.org/doh/preconstruct/pe/neu/permit.html. If you have any questions or need additional information, please contact Ashley Cox at 919-715-5534 or acox@dot.state.nc.us.

Sincerely,

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

Cc:

w/attachment
- Mr. Brian Wrenn, NCDWQ (2 copies)
- Mr. Travis Wilson, NCWRC
- Mr. Gary Jordan, USFWS

w/o attachment (see website for attachments)
- Dr. David Chang, P.E., Hydraulics
- Mr. Mark Staley, Roadside Environmental
- Mr. Victor Barbour, P.E., Project Services Unit
- Mr. Greg Perfetti, P.E., Structure Design
- Mr. Wally Bowman, P.E., Division Engineer
- Mr. Chris Murray, DEO
- Mr. Jay Bennett, P.E., Roadway Design
- Mr. Majed Alghandour, P. E., Programming and TIP
- Mr. Art McMillan, P.E., Highway Design
- Mr. Scott McLendon, USACE, Wilmington
- Mr. Tracy Walter, PDEA Project Planning 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:
   - ☒ Section 404 Permit
   - ☐ Section 10 Permit
   - ☐ 401 Water Quality Certification
   - ☐ Riparian or Watershed Buffer Rules
   - ☐ Isolated Wetland Permit from DWQ
   - ☐ Express 401 Water Quality Certification

2. Nationwide, Regional or General Permit Number(s) Requested: Nationwides 13, 23, & 33

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

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

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

II. Applicant Information

1. Owner/Applicant Information
   Name: Gregory J. Thorpe, Ph.D., Environmental Management Director
   Mailing Address: North Carolina Department of Transportation
   1598 Mail Service Center
   Raleigh, NC 27699-1598
   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: Replacement of Bridge No. 200 over Mountain Creek on SR 1435 (Davis Chapel Rd.) in Granville County.

2. T.I.P. Project Number or State Project Number (NCDOT Only): B-4526

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

4. Location
   County: Granville Nearest Town: Stovall
   Subdivision name (include phase/lot number): N/A
   Directions to site (include road numbers/names, landmarks, etc.): Take I-85 North to Granville County. Exit onto US 15 North, follow US 15 into the community of Stovall. SR 1430 bares off to the lefft, follow to SR 1434 and turn right. Continue for about 3.5 miles and turn left on SR 1435, the bridge is straight ahead.

5. Site coordinates (For linear projects, such as a road or utility line, attach a sheet that separately lists the coordinates for each crossing of a distinct waterbody.)
   Decimal Degrees (6 digits minimum): _____ºN _____ºW

6. Property size (acres): N/A

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

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

9. Describe the existing conditions on the site and general land use in the vicinity of the project at the time of this application: Bridge 200 is approximately 54 feet long and was

constructed in 1957. Land use in the area is mainly agricultural and forestry-based, with some residential development.

10. Describe the overall project in detail, including the type of equipment to be used: The project proposes to demolish the existing bridge and construct a single span, box beam superstructure on the existing alignment. The new bridge will be 90 feet long and will have a clear roadway width of approximately 25 feet. During construction, SR 1435 will be closed near the existing bridge and traffic will be re-routed using an offsite detour. Heavy duty excavation equipment will be used such as trucks, dozers, cranes and other various equipment necessary for roadway construction

11. Explain the purpose of the proposed work: The current 54-foot bridge was constructed in 1957 and has a sufficiency rating of 47.4 out of a possible 100 (for a new structure). It is considered functionally obsolete due to its deck geometry appraisal rating and is eligible for FHWA's Highway Bridge Replacement Program.

IV. Prior Project History

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

V. Future Project Plans

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

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

It is the applicant's (or agent's) responsibility to determine, delineate and map all impacts to wetlands, open water, and stream channels associated with the project. Each impact must be listed separately in the tables below (e.g., culvert installation should be listed separately from rip rap 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: Please refer to Application Cover Letter.

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)					0.0

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

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

Stream Impact Number (indicate on map)	Stream Name	Type of Impact	Perennial or Intermittent ?	Average Stream Width Before Impact	Impact Length (linear feet)	Area of Impact (acres)
1	UT 1	Piping the stream	Intermittent	1	38	<0.01
2	Mountain Creek	Rip Rap	Perennial	40	63	0.01
2	Mountain Creek	Temp. causeways	Perennial	40	30	<0.01
Total Stream Impact (by length and acreage)					131	<0.03

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

Open Water Impact Site Number (indicate on map)	Name of Waterbody (if applicable)	Type of Impact	Type of Waterbody (lake, pond, estuary, sound, bay, ocean, etc.)	Area of Impact (acres)
Total Open Water Impact (acres)				0.0

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

Stream Impact (acres):	<0.03
Wetland Impact (acres):	0.0
Open Water Impact (acres):	0.0
Total Impact to Waters of the U.S. (acres)	<0.03
Total Stream Impact (linear feet):	131

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

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. See cover sheet.

VIII. Mitigation

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

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

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

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

2. Mitigation may also be made by payment into the North Carolina Ecosystem Enhancement Program (NCEEP). Please note it is the applicant's responsibility to contact the NCEEP at (919) 715-0476 to determine availability, and written approval from the NCEEP indicating that they are will to accept payment for the mitigation must be attached to this form. For additional information regarding the application process for the NCEEP, check the NCEEP

website at http://h2o.enr.state.nc.us/wrp/index.htm. If use of the NCEEP is proposed, please check the appropriate box on page five and provide the following information:

Amount of stream mitigation requested (linear feet): 0
Amount of buffer mitigation requested (square feet): 0
Amount of Riparian wetland mitigation requested (acres): 0.0
Amount of Non-riparian wetland mitigation requested (acres): 0.0
Amount of Coastal wetland mitigation requested (acres): 0.0

IX. Environmental Documentation (required by DWQ)

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

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

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

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

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

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

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

Zone*	Impact (square feet)	Multiplier	Required Mitigation
1		3 (2 for Catawba)	
2		1.5	
Total	0.0		0.0

* 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. N/A

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.N/A

XII. Sewage Disposal (required by DWQ)

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

XIII. Violations (required by DWQ)

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

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

XIV. Cumulative Impacts (required by DWQ)

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

XV. Other Circumstances (Optional):

It is the applicant's responsibility to submit the application sufficiently in advance of desired construction dates to allow processing time for these permits. However, an applicant may choose to list constraints associated with construction or sequencing that may impose limits on

work schedules (e.g., draw-down schedules for lakes, dates associated with Endangered and Threatened Species, accessibility problems, or other issues outside of the applicant's control).
N/A

E. L. Lusk 5-28-08

Applicant/Agent's Signature **Date**

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

North Carolina Division of Water Quality – Stream Identification Form; Version 3.1

Date: 4/3/08	**Project:** B-4526	**Latitude:**
Evaluator: Ashley B Cox	**Site:** UT-1	**Longitude:**
Total Points: *Stream is at least intermittent if ≥ 19 or perennial if ≥ 30* 22.5	**County:** GRANVILLE	**Other** *e.g. Quad Name:*

A. Geomorphology (Subtotal = 6.5)	Absent	Weak	Moderate	Strong
1[a]. Continuous bed and bank	0	1	(2)	3
2. Sinuosity	0	1	(2)	3
3. In-channel structure: riffle-pool sequence	0	(1) →	2	3
4. Soil texture or stream substrate sorting	0	(1)	2	3
5. Active/relic floodplain	(0)	1	2	3
6. Depositional bars or benches	(0)	1	2	3
7. Braided channel	(0)	1	2	3
8. Recent alluvial deposits	(0)	1	2	3
9[a] Natural levees	(0)	1	2	3
10. Headcuts	(0)	1	2	3
11. Grade controls	(0)	0.5	1	1.5
12. Natural valley or drainageway	0	(0.5)	1	1.5
13. Second or greater order channel on existing USGS or NRCS map or other documented evidence.	No = (0)		Yes = 3	

[a] Man-made ditches are not rated; see discussions in manual

B. Hydrology (Subtotal = 9)				
14. Groundwater flow/discharge	0	1	2	(3)
15. Water in channel and > 48 hrs since rain, **or** Water in channel – dry or growing season	0	1	2	(3)
16. Leaflitter	1.5	(1) →	0.5	0
17. Sediment on plants or debris	0	(0.5)	1	1.5
18. Organic debris lines or piles (Wrack lines)	0	0.5	1	(1.5)
19. Hydric soils (redoximorphic features) present?	No = (0)		Yes = 1.5	

C. Biology (Subtotal = 7)				
20[b]. Fibrous roots in channel	3	(2)	1	0
21[b]. Rooted plants in channel	(3)	2	1	0
22. Crayfish	(0)	0.5	1	1.5
23. Bivalves	(0)	1	2	3
24. Fish	(0)	0.5	1	1.5
25. Amphibians	(0)	0.5	1	1.5
26. Macrobenthos (note diversity and abundance)	0	0.5	(1)	1.5
27. Filamentous algae; periphyton	0	(1)	2	3
28. Iron oxidizing bacteria/fungus.	(0)	0.5	1	1.5
29[b]. Wetland plants in streambed	FAC = 0.5; FACW = 0.75; OBL = 1.5 SAV = 2.0; Other = (0)			

[b] Items 20 and 21 focus on the presence of upland plants, Item 29 focuses on the presence of aquatic or wetland plants.

Notes: (use back side of this form for additional notes.)

isopods } abundant
amphipods

Sketch:

09/08/99

See Sheet 1-A For Index of Sheets

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

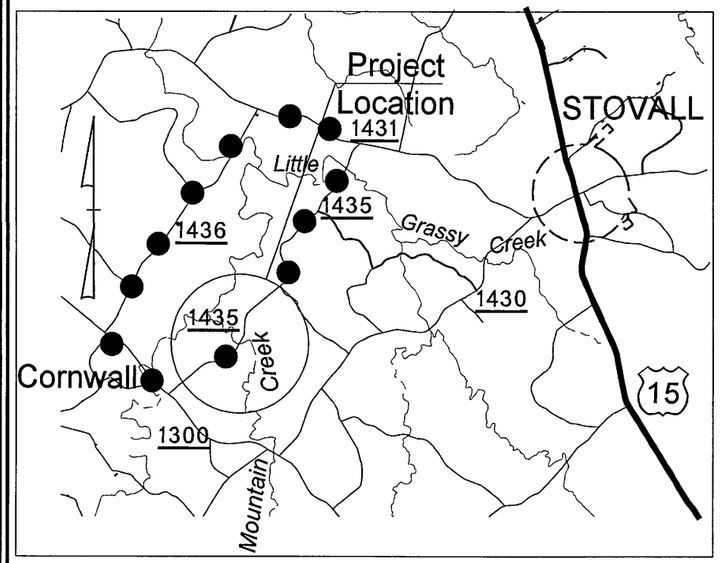
GRANVILLE COUNTY

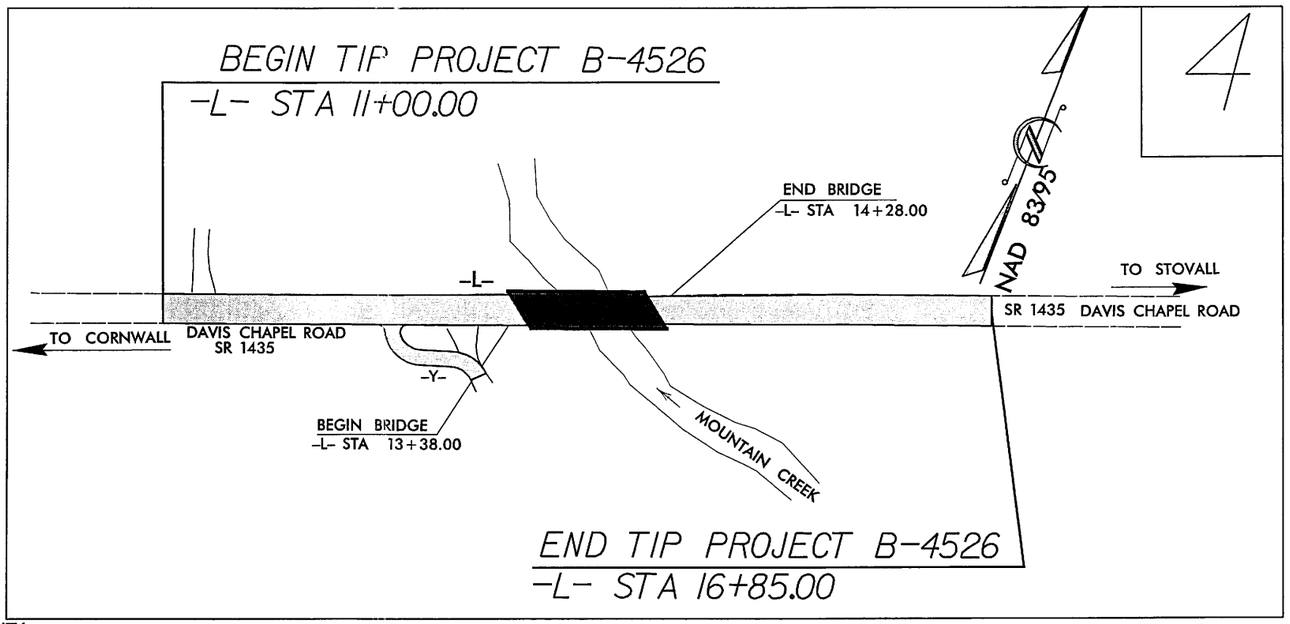
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4526	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
33750.1.1	BRZ-1435(4)	PE	

Permit Drawing
Sheet 1 of 5

LOCATION: *Bridge #200 over Mountain Creek on SR 1435, Davis Chapel Road*

TYPE OF WORK: *Grading, Paving, Drainage and Structure*





THIS PROJECT IS NOT WITHIN THE LIMITS OF ANY MUNICIPALITY
CLEARING ON THIS PROJECT SHALL BE PERFORMED BY METHOD III
DESIGN EXCEPTION REQUIRED FOR SAG VERTICAL CURVE K FACTOR AND STOPPING SIGHT DISTANCE

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

TIP PROJECT: B-4526

CONTRACT:

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2007 = 60 vpd
ADT 2030 = 110 vpd
DHV = 13 %
D = 60 %
T = 3 % *
V = 55 MPH

* TTST 1% * DUAL 2%

PROJECT LENGTH

Length Roadway TIP Project B-4526 = 0.094 Miles
Length Structure TIP Project B-4526 = 0.017 Miles
Total Length TIP Project B-4526 = 0.111 Miles

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

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
November 16, 2007

LETTING DATE:
November 18, 2008

James Speer, PE
PROJECT ENGINEER

John Lansford, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: _____ *P.E.*

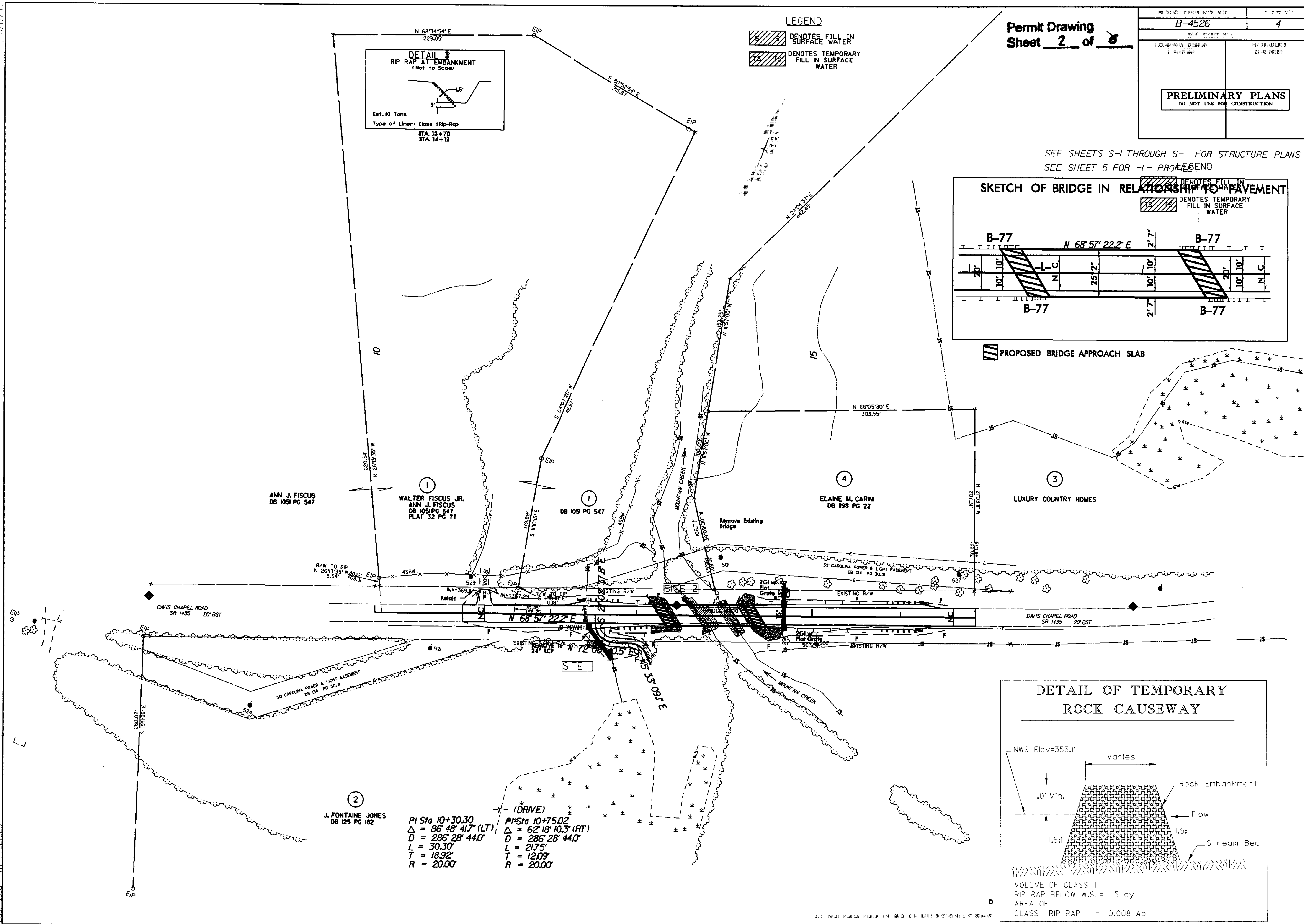
ROADWAY DESIGN ENGINEER

SIGNATURE: _____ *P.E.*

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE HIGHWAY DESIGN ENGINEER _____ *P.E.*

1/11/2008
R:\B-4526\permits\b4526_hyl_impacts_tsh.dgn
cmyers



Permit Drawing
Sheet 2 of 5
B-4526
4
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
LEGEND
DENOTES FILL IN SURFACE WATER
DENOTES TEMPORARY FILL IN SURFACE WATER
SEE SHEETS S-1 THROUGH S- FOR STRUCTURE PLANS
SEE SHEET 5 FOR -L- PROFILE
SKETCH OF BRIDGE IN RELATIONSHIP TO PAVEMENT
B-77
N 68°57′ 22.2″ E
PROPOSED BRIDGE APPROACH SLAB
DETAIL 2
RIP RAP AT EMBANKMENT
(Not to Scale)
Est. 10 Tons
Type of Liner: Class II Rip-Rap
STA. 13+70
STA. 14+12
ANN J. FISCUS
DB 1051 PG 547
WALTER FISCUS JR.
ANN J. FISCUS
DB 1051 PG 547
PLAT 32 PG 77
DB 1051 PG 547
ELAINE M. CARINI
DB 1198 PG 22
LUXURY COUNTRY HOMES
J. FONTAINE JONES
DB 125 PG 182
DAVIS CHAPEL ROAD
SR 1435 20′ BST
MOUNTAIN CREEK
Remove Existing Bridge
SITE 1
SITE 2
30′ CAROLINA POWER & LIGHT EASEMENT
EXISTING R/W
PI Sta 10+30.30
Δ = 86° 48′ 41.7″ (LT)
D = 286° 28′ 44.0″
L = 30.30′
T = 18.92′
R = 20.00′
-Y- (DRIVE)
PI Sta 10+75.02
Δ = 62° 18′ 10.3″ (RT)
D = 286° 28′ 44.0″
L = 21.75′
T = 12.09′
R = 20.00′
DETAIL OF TEMPORARY ROCK CAUSEWAY
NWS Elev=355.1′
Varies
1.0′ Min.
Rock Embankment
Flow
1.5:1
Stream Bed
VOLUME OF CLASS II RIP RAP BELOW W.S. = 15 cy
AREA OF CLASS II RIP RAP = 0.008 Ac
DO NOT PLACE ROCK IN BED OF JURISDICTIONAL STREAMS

R/W REVISION 2/11/08 JCL
ADDED NEW PROPERTY LINES AND PROPERTY OWNER NAME FOR PARCEL #4

8/17/99

25-MAR-2008 14:03

8/17/99

R/W REVISION 2/11/08 JCL
ADDED NEW PROPERTY LINES AND PROPERTY OWNER NAME FOR PARCEL #4

25-MAR-2008 14:06
r:\hgraulic\permits\b4526_hgl_impacts_psh04_nocon.dgn
Modified at 11:21:23

PROJECT REFERENCE NO.	SHEET NO.
B-4526	4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Permit Drawing Sheet 3 of 5

SEE SHEETS S-1 THROUGH S- FOR STRUCTURE PLANS
SEE SHEET 5 FOR -L- PROFILE

LEGEND
- DENOTES FILL IN SURFACE WATER
- DENOTES TEMPORARY FILL IN SURFACE WATER

DETAIL
RIP RAP AT EMBANKMENT
(Not to Scale)

Est. 80 Tons
Type of Liner: Class II Rip-Rap
STA. 13+70
STA. 14+12

SKETCH OF BRIDGE IN RELATIONSHIP TO PAVEMENT

PROPOSED BRIDGE APPROACH SLAB

DETAIL OF TEMPORARY ROCK CAUSEWAY

NWS Elev=355.1'
Varies
Rock Embankment
1.0' Min.
Flow
1.5:1
1.5:1
Stream Bed

VOLUME OF CLASS II RIP RAP BELOW W.S. = 15 cy
AREA OF CLASS II RIP RAP = 0.008 Ac

DO NOT PLACE ROCK IN BED OF INTERMITTENT STREAMS

AMY J. FISCUS DB 1051 PG 547

WALTER FISCUS JR, AMY J. FISCUS DB 1051 PG 547 PLAT 32 PG 73

DB 1051 PG 547

ELAINE M. CARINI DB 1198 PG 22

LUXURY COUNTRY HOMES

J. FONTAINE JONES DB 125 PG 182

DAVIS CHAPEL ROAD SR 1435 20' BST

SITE

Remove Existing Bridge

-Y1- (DRIVE)
PI Sta 10+30.30
Δ = 86°48'41.7" (LT)
D = 286°28'44.0"
L = 30.30'
T = 18.92'
R = 20.00'

-Y1- (DRIVE)
PI Sta 10+75.02
Δ = 62°18'10.3" (RT)
D = 286°28'44.0"
L = 21.75'
T = 12.09'
R = 20.00'

WETLAND PERMIT IMPACT SUMMARY

			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	12+47 - 12+73	Roadway Fill	0.00	0.00	0.00	0.00	0.00	<0.01	0.00	38	0	0
2	13+52 - 14+22	Embankment RR	0.00	0.00	0.00	0.00	0.00	0.01	0.00	63	0	0
2	13+73 - 13+93	Causeway	0.00	0.00	0.00	0.00	0.00	0.00	<0.01	0	30	0
TOTALS:			0.00	0.00	0.00	0.00	0.00	<0.02	<0.01	101	30	0

*Per structures, a causeway is needed for the removal of the bent located in the channel.

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

GRANVILLE COUNTY
33750.1.1 (B-4526)

SHEET 4 OF 5 3/25/2008

ATN Revised 3/31/05

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES	SITE NO.
1	WALTER FISCUS, JR. ANN J. FISCUS	2585 DAVIS CHAPEL RD. OXFORD, NC 27565	1
2	J. FONTAINE JONES	2562 DAVIS CHAPEL RD. OXFORD, NC 27565	1

NORTH CAROLINA

DIVISION OF HIGHWAYS

GRANVILLE COUNTY

PROJECT: 33750.1.1 (B-4526)

REPLACEMENT OF BRIDGE #200 OVER MOUNTAIN CREEK ON SR 1435

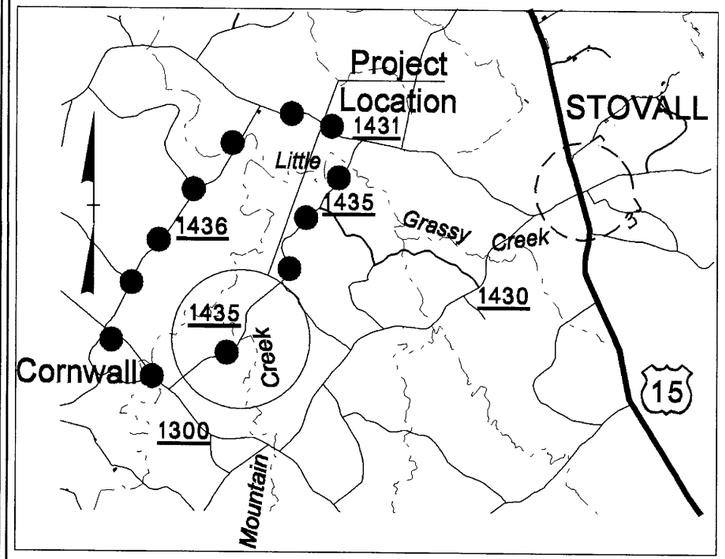
SHEET 5 OF 5 10/23/07

09/08/99

TIP PROJECT: B-4526

CONTRACT: C201975

See Sheet 1-A For Index of Sheets



Offsite Detour Route

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

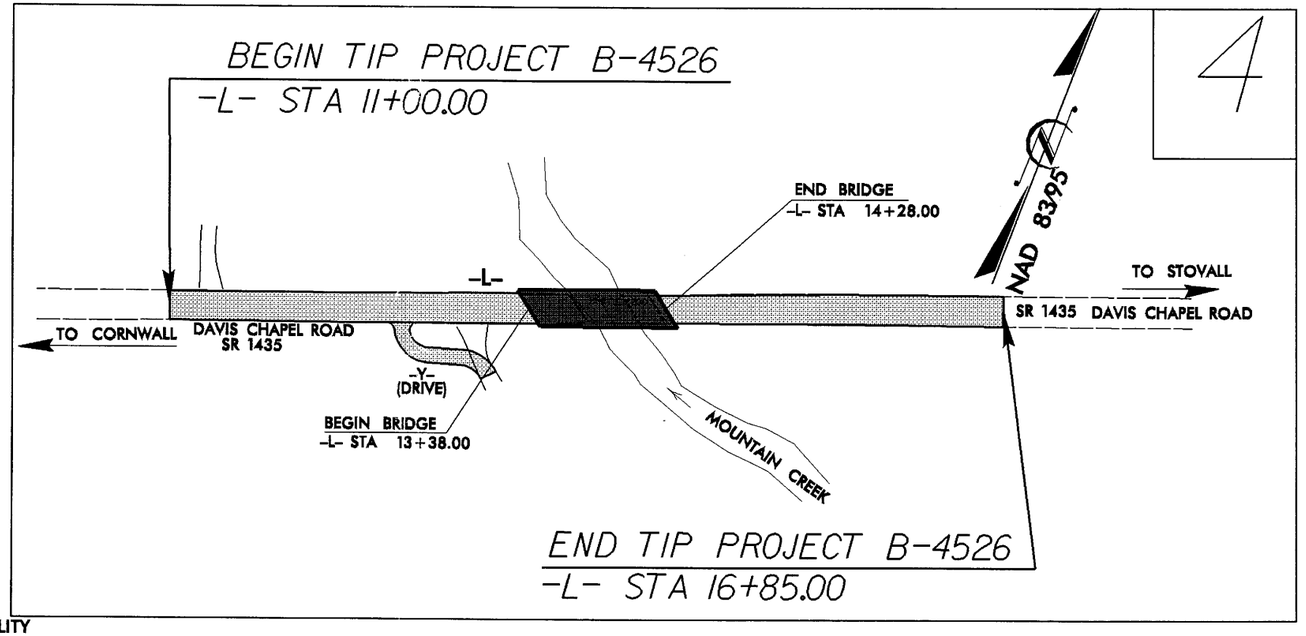
GRANVILLE COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4526	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
33750.1.1	BRZ-1435(4)	PE
33750.2.1	BRZ-1435(4)	R/W & Utilities
33750.3.1	BRZ-1435(4)	Construction

LOCATION: ***Bridge #200 over Mountain Creek on SR 1435, Davis Chapel Road***

TYPE OF WORK: ***Grading, Paving, Drainage and Structure***



4

THIS PROJECT IS NOT WITHIN THE LIMITS OF ANY MUNICIPALITY
CLEARING ON THIS PROJECT SHALL BE PERFORMED BY METHOD III
DESIGN EXCEPTION REQUIRED FOR SAG VERTICAL CURVE K FACTOR AND STOPPING SIGHT DISTANCE

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2007 = 60 vpd
ADT 2030 = 110 vpd
DHV = 13 %
D = 60 %
T = 3 % *
V = 55 MPH

* TTST 1% * DUAL 2%

PROJECT LENGTH

Length Roadway TIP Project B-4526 = 0.094 Miles
Length Structure TIP Project B-4526 = 0.017 Miles
Total Length TIP Project B-4526 = 0.111 Miles

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

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
November 1, 2007

LETTING DATE:
November 18, 2008

James Speer, PE
PROJECT ENGINEER

John Lansford, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

P.E.
SIGNATURE:

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION

P.E.
STATE HIGHWAY DESIGN ENGINEER

22-JAN-2008 09:49
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$$$$USERNAME$$$$

8/17/99

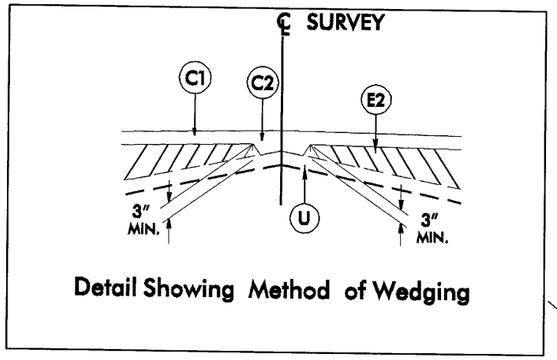
PROJECT REFERENCE NO.	SHEET NO.
B-4526	2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

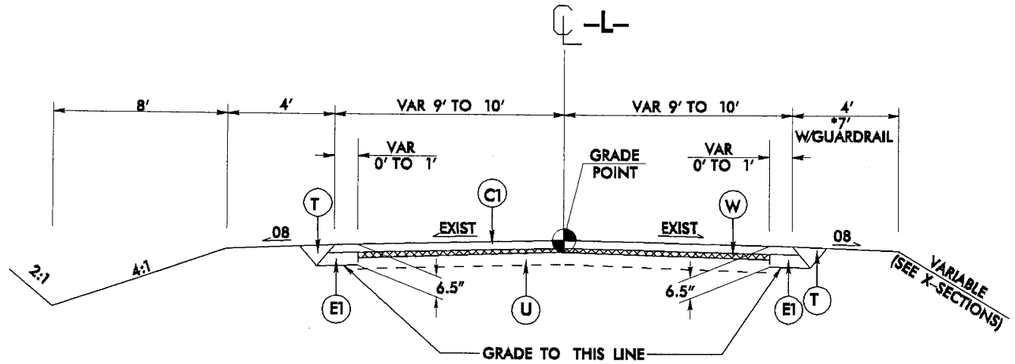
PAVEMENT SCHEDULE

C1	PROP. APPROX. 2½" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 137.5 LBS. PER SQ. YD. IN EACH OF TWO LAYERS
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH.
J	6" AGGREGATE BASE COURSE
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	ASPHALT WEDGING (SEE DETAIL)

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

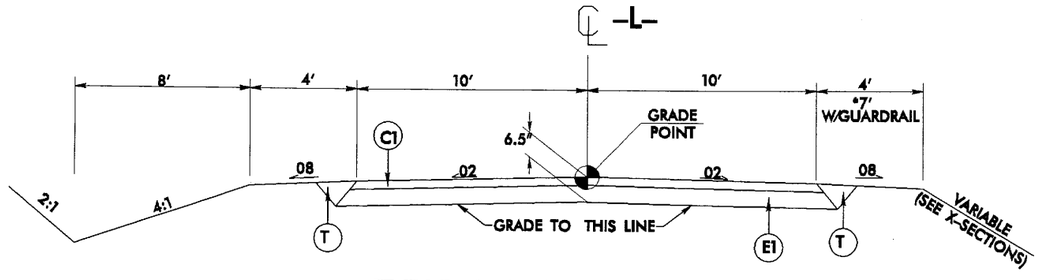


Detail Showing Method of Wedging



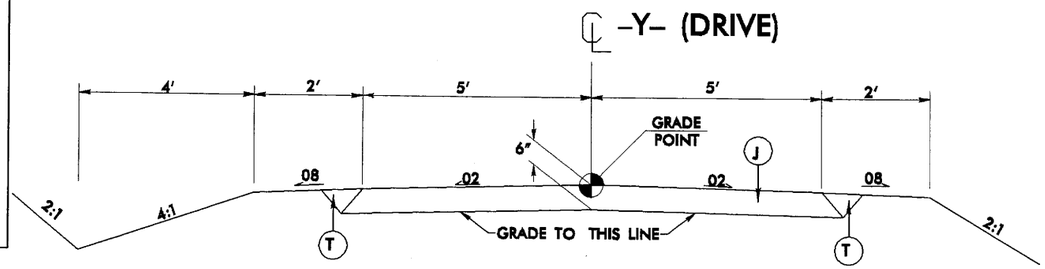
TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1:
-L- STA 11+00.00 TO 12+00.00
-L- STA 15+50.00 TO 16+85.00



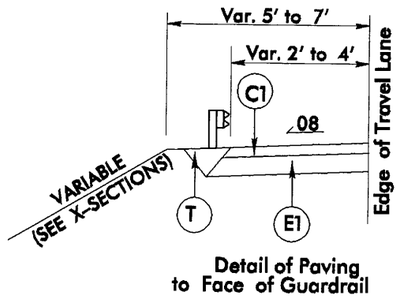
TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2:
-L- STA 12+00.00 TO -L- STA 13+38.00 BEGIN BRIDGE
-L- STA 14+28.00 END BRIDGE TO -L- STA 15+50.00



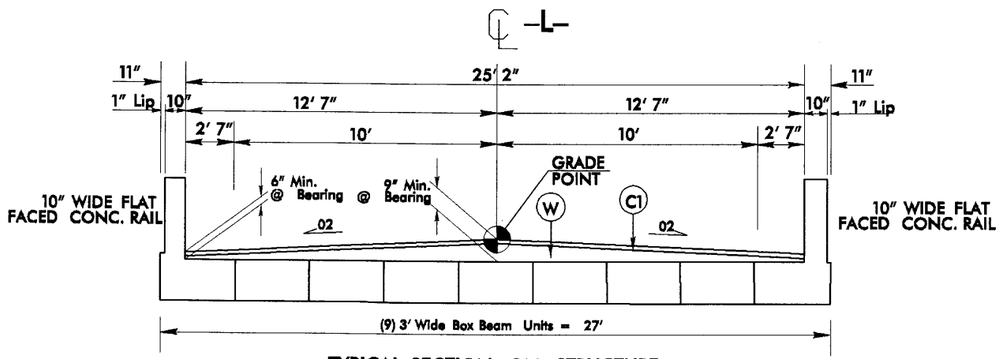
TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3:
-Y- STA 10+10.00 to -Y- STA. 10+85.00



Detail of Paving to Face of Guardrail

USE WITH TYPICAL SECTION #2



TYPICAL SECTION ON STRUCTURE

-L- STA. 13+38.00 TO -L- STA 14+28.00

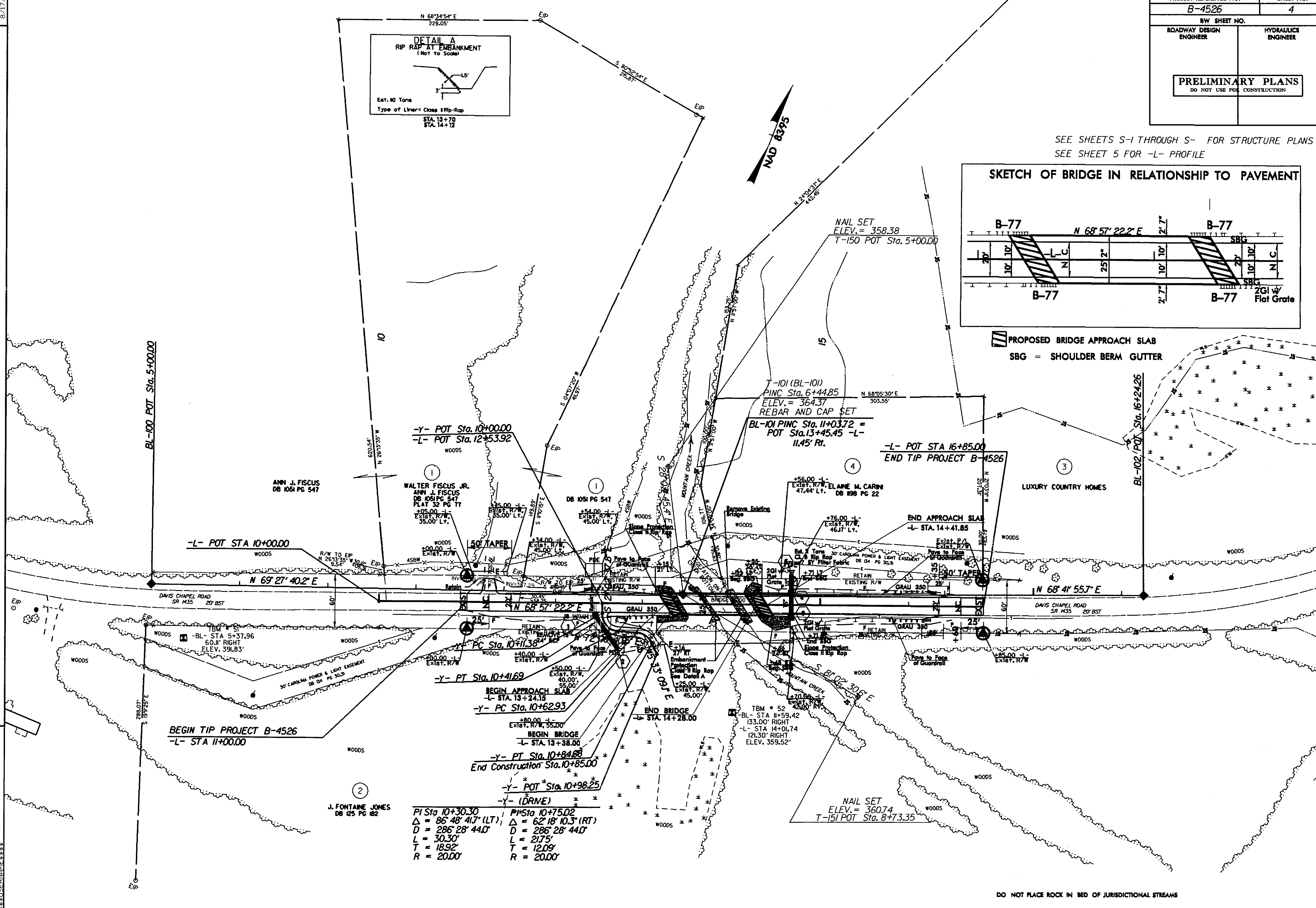
PROJECT REFERENCE NO.	SHEET NO.
B-4526	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SEE SHEETS S-1 THROUGH S- FOR STRUCTURE PLANS
SEE SHEET 5 FOR -L- PROFILE

REVISIONS

R/W REVISION 2/11/08 JCL
ADDED NEW PROPERTY LINES AND PROPERTY OWNER NAME FOR PARCEL #4



DETAIL A
RIP RAP AT EMBANKMENT
(Not to Scale)
Est. 10 Tons
Type of Liner= Class II Rip-Rap
STA. 13+70
STA. 14+12
SKETCH OF BRIDGE IN RELATIONSHIP TO PAVEMENT
B-77
N 68° 57' 22.2" E
PROPOSED BRIDGE APPROACH SLAB
SBG = SHOULDER BERM GUTTER
2GI W/ Flat Grate
NAD 83/95
NAIL SET
ELEV.= 358.38
T-150 POT Sta. 5+00.00
T-101 (BL-101)
PINC Sta. 6+44.85
ELEV.= 364.37
REBAR AND CAP SET
BL-101 PINC Sta. 11+03.72 =
POT Sta. 13+45.45 -L-
11.45' Rt.
-L- POT STA 16+85.00
END TIP PROJECT B-4526
LUXURY COUNTRY HOMES
ELAINE M. CARINI
DB 1198 PG 22
BL-100 POT Sta. 5+00.00
BL-102 POT Sta. 16+24.26
-Y- POT Sta. 10+00.00
-L- POT Sta. 12+53.92
ANN J. FISCUS
DB 1051 PG 547
WALTER FISCUS JR.
ANN J. FISCUS
DB 1051 PG 547
PLAT 32 PG 77
-L- POT STA 10+00.00
N 69° 27' 40.2" E
N 68° 57' 22.2" E
N 68° 41' 55.7" E
DAVIS CHAPEL ROAD
SR 1435 20' BST
END APPROACH SLAB
-L- STA. 14+41.85
TBM # 51
-BL- STA 5+37.96
60.11' RIGHT
ELEV. 391.83'
-Y- PC Sta. 10+11.38
-Y- PT Sta. 10+41.69
BEGIN APPROACH SLAB
-L- STA. 13+24.15
-Y- PC Sta. 10+62.93
BEGIN BRIDGE
-L- STA. 13+38.00
END BRIDGE
-L- STA. 14+28.00
-Y- PT Sta. 10+84.88
End Construction Sta. 10+85.00
-Y- POT Sta. 10+98.25
-Y- (DRIVE)
BEGIN TIP PROJECT B-4526
-L- STA 11+00.00
TBM # 52
-BL- STA 11+59.42
133.00' RIGHT
-L- STA 14+01.74
121.30' RIGHT
ELEV. 359.52'
J. FONTAINE JONES
DB 125 PG 182
PI Sta 10+30.30
Δ = 86° 48' 41.7" (LT)
D = 286° 28' 44.0"
L = 30.30'
T = 18.92'
R = 20.00'
PI Sta 10+75.02
Δ = 62° 18' 10.3" (RT)
D = 286° 28' 44.0"
L = 21.75'
T = 12.09'
R = 20.00'
NAIL SET
ELEV.= 360.74
T-151 POT Sta. 8+73.35
MOUNTAIN CREEK
S 81° 02' 30.6" E
S 33° 09' E
30' CAROLINA POWER & LIGHT EASEMENT
DB 134 PG 30.31
WOODS

DO NOT PLACE ROCK IN BED OF JURISDICTIONAL STREAMS

8/17/99

21-FEB-2008 13:53
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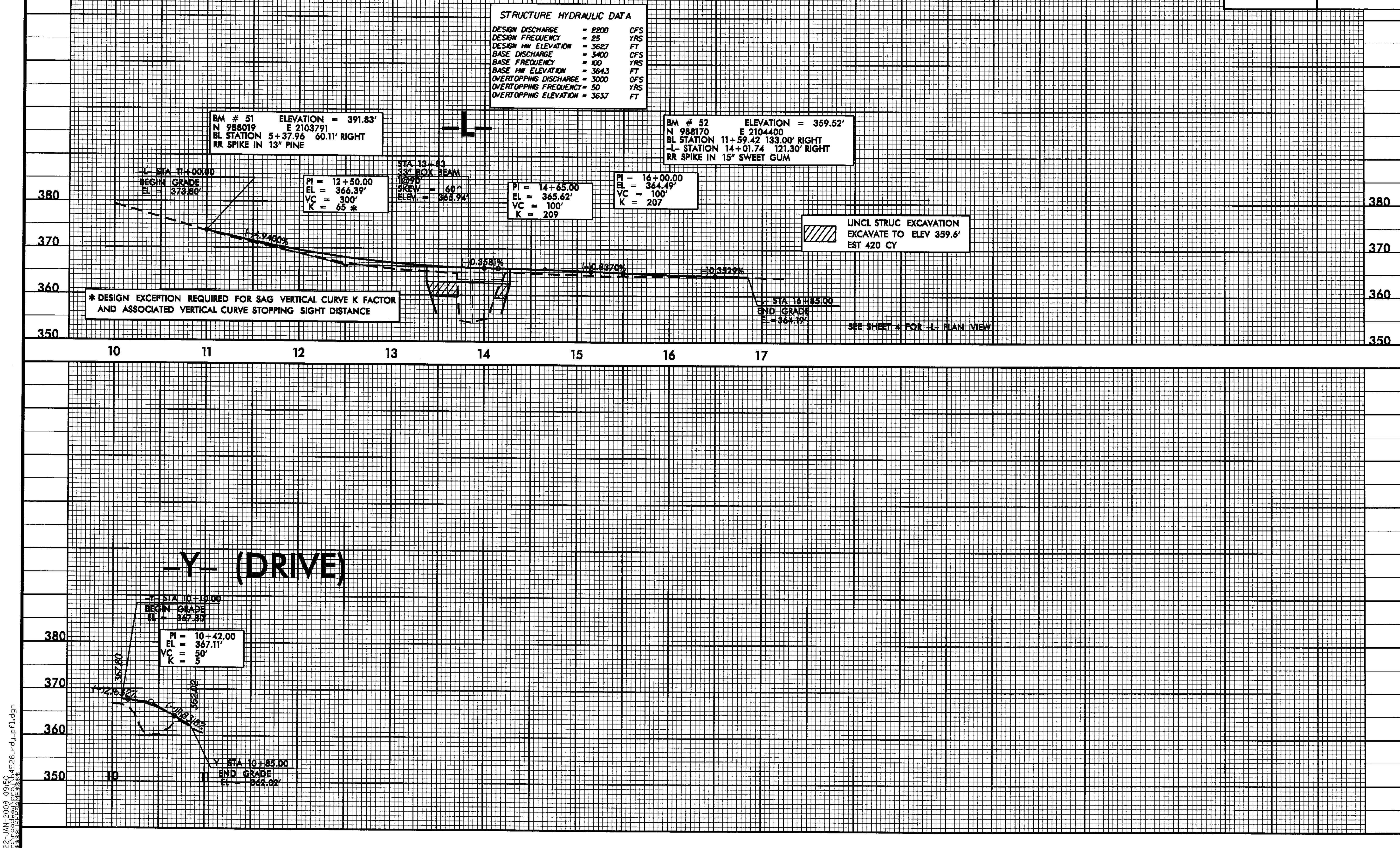
PROJECT REFERENCE NO.	SHEET NO.
B-4526	5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



5/28/99
STRUCTURE HYDRAULIC DATA
DESIGN DISCHARGE = 2200 CFS
DESIGN FREQUENCY = 25 YRS
DESIGN HW ELEVATION = 362.7 FT
BASE DISCHARGE = 3400 CFS
BASE FREQUENCY = 100 YRS
BASE HW ELEVATION = 364.3 FT
OVERTOPPING DISCHARGE = 3000 CFS
OVERTOPPING FREQUENCY = 50 YRS
OVERTOPPING ELEVATION = 363.7 FT
-L-
BM # 51 ELEVATION = 391.83'
N 988019 E 2103791
BL STATION 5+37.96 60.11' RIGHT
RR SPIKE IN 13" PINE
BM # 52 ELEVATION = 359.52'
N 988170 E 2104400
BL STATION 11+59.42 133.00' RIGHT
-L- STATION 14+01.74 121.30' RIGHT
RR SPIKE IN 15" SWEET GUM
-L- STA 11+00.00
BEGIN GRADE
EL = 373.80'
PI = 12+50.00
EL = 366.39'
VC = 300'
K = 65 *
STA 13+83
33" BOX BEAM
1@90'
SKEW = 60°
ELEV. = 365.94'
PI = 14+65.00
EL = 365.62'
VC = 100'
K = 209
PI = 16+00.00
EL = 364.49'
VC = 100'
K = 207
UNCL STRUC EXCAVATION
EXCAVATE TO ELEV 359.6'
EST 420 CY
(-)4.9400%
(-)0.3581%
(-)0.8370%
(-)0.3529%
* DESIGN EXCEPTION REQUIRED FOR SAG VERTICAL CURVE K FACTOR AND ASSOCIATED VERTICAL CURVE STOPPING SIGHT DISTANCE
-L- STA 16+85.00
END GRADE
EL = 364.19'
SEE SHEET 4 FOR -L- PLAN VIEW
380
370
360
350
10
11
12
13
14
15
16
17
-Y- (DRIVE)
-Y- STA 10+10.00
BEGIN GRADE
EL = 367.80'
PI = 10+42.00
EL = 367.11'
VC = 50'
K = 5
367.80
362.02
(-)2.6432%
(-)11.8316%
-Y- STA 10+85.00
END GRADE
EL = 362.02'
22-JAN-2008 09:50
r:\roadway\proj\b4526_rdy_pfl.dgn

8/23/99

0 2.5 5

PROJ. REFERENCE NO.	SHEET NO.
B-4526	X-1

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

375 370 365 360

3:1 0.020 0.020 4:1

368.86

12+00.00

375 370 365 360

4:1 0.020 0.020 4:1

369.99

11+75.00

375 370 365 380

4:1 0.020 0.020 4:1

371.13

11+50.00

375 370 365 380

DRIVEWAY 0.020 0.020 4:1

372.35

11+25.00

375 370 365 380

373.59

11+00.00

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

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

22-JAN-2008 09:50
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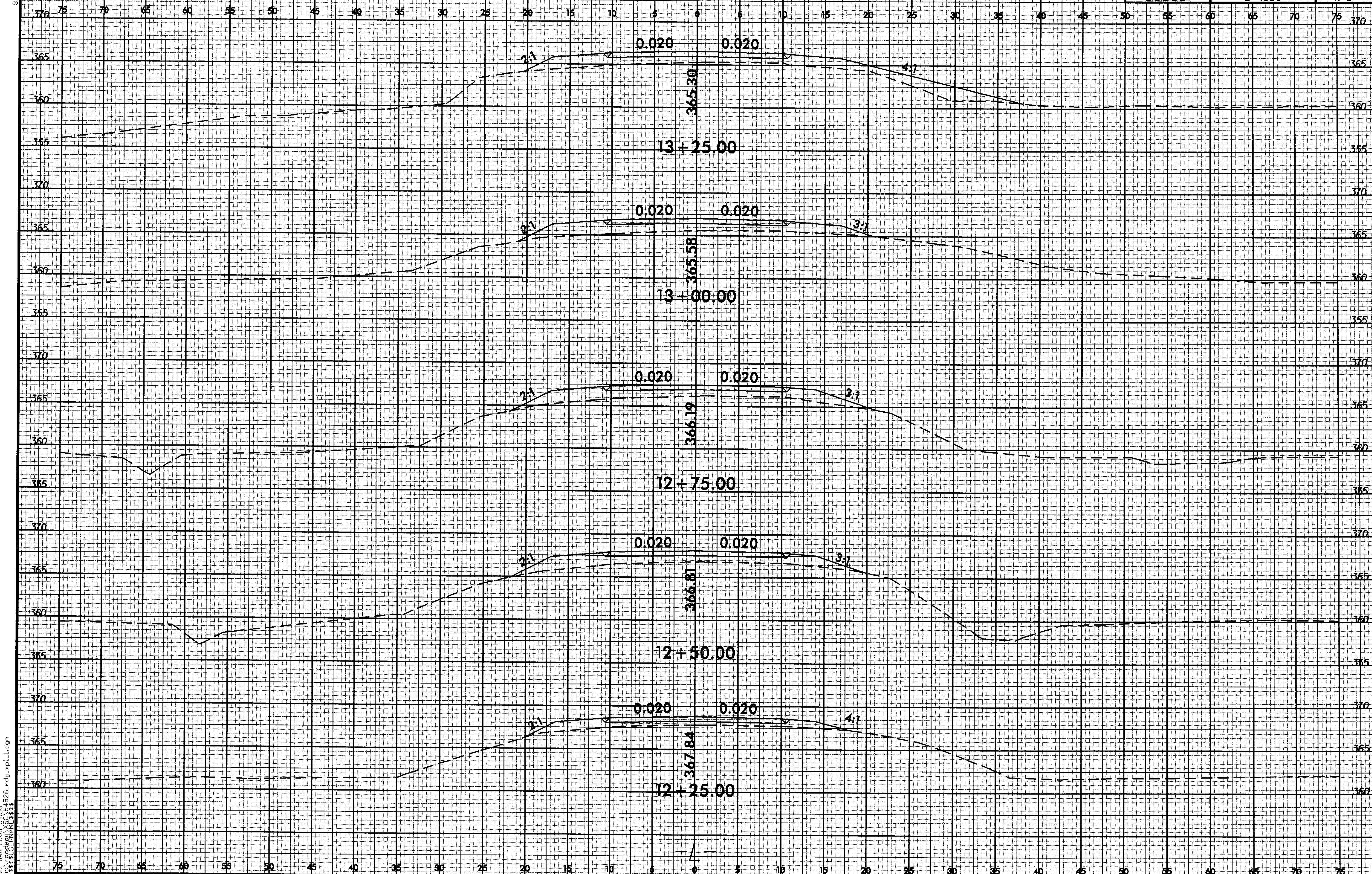
$$$$USERNAME$$$$

PROJ. REFERENCE NO.	SHEET NO.
B-4526	X-2



8/23/99

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$$$$USERNAME$$$$

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4526	X-3

BRIDGE
364.88
14+25.00

BRIDGE
354.79
14+00.00

BRIDGE
354.47
13+75.00

BRIDGE
365.04
13+50.00

22-JAN-2008 09:50
r:\roadway\xsc\b4526_rdy_xpl.dgn
$$$$USERNAME$$$$

8/22/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4526	X-4

15+25.00

364.26

0.020 0.020

2:1 3:1

15+00.00

364.40

0.020 0.020

2:1 3:1

14+75.00

364.55

0.020 0.020

2:1 3:1

14+50.00

364.72

0.020 0.020

2:1 2:1

22-JAN-2008 09:51
r:\roadway\xsc\b4526_rdy_xpl1.dgn
$$$$USERNAME$$$$

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4526	X-5

EXIST EXIST

364.02

16+75.00

2:1 0.020 0.020 4:1

364.11

16+50.00

2:1 0.020 0.020 4:1

364.20

16+25.00

2:1 0.020 0.020 3:1

364.21

16+00.00

2:1 0.020 0.020 3:1

364.22

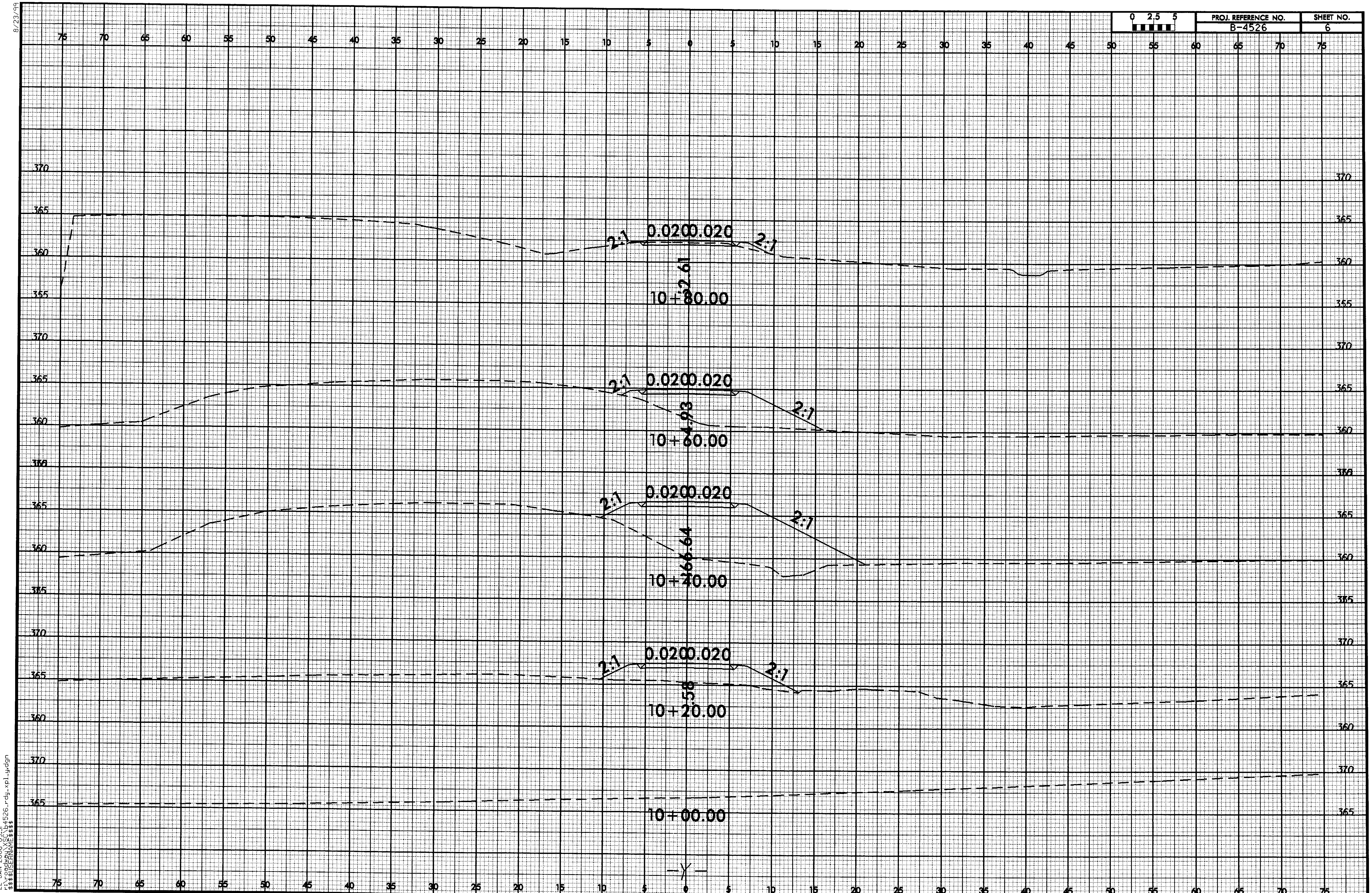
15+75.00

2:1 0.020 0.020 3:1

364.24

15+50.00

PROJ. REFERENCE NO.	SHEET NO.
B-4526	6



8/23/99

22-JAN-2008 09:51
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