STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

August 29, 2007

US Army Corps of Engineers
Regulatory Field Office
6508 Falls of Neuse Road, Suite 120
Raleigh, NC 27615

ATTENTION: Mr. Andy Williams
NCDOT Coordinator

Dear Sir:

Subject: **Notice of Intent to Use Section 404 Nationwide Permit 13** for the replacement of Bridge No. 89 on SR 2627 (Candy Creek Rd.) over Rose Creek, Rockingham County. Federal Project No. BRZ-2627(1), WBS No. 33596.1.1, State Project No. 8.2511601, T.I.P. B-4254, Division 7.

Please see the enclosed permit drawings, and design plans for the subject project. A copy of the Categorical Exclusion (CE) is available upon request. The North Carolina Department of Transportation (NCDOT) proposes to replace Bridge No. 89 over Rose Creek. The project involves replacing the current bridge on its existing location. The proposed structure will be a 100-foot, precast/prestressed box beam bridge and will span Rose Creek. The bridge will provide a clear roadway width of 29-feet 10-inches. The approaches will consist of two 12-foot lanes with 8-foot shoulders on either side. During construction, traffic will be detoured onto existing secondary roads.

IMPACTS TO WATERS OF THE UNITED STATES

The project is located in the Cape Fear River Basin (sub-basin 03-06-01). This area is part of Hydrologic Cataloging Unit 03030002 of the South Atlantic-Gulf Coast Region. Four wetlands and two jurisdictional streams, Rose Creek and an unnamed tributary to Rose Creek (UT1), are located within the project area. The section of Rose Creek crossed by the subject bridge has been assigned Stream Index Number 16-8 (8/3/92) by the N.C Division of Water Quality. Rose Creek has a best usage classification of C, NSW. UT1 does not have separate best usage classification and therefore share that of its receiving waters, Rose Creek.

No designated Outstanding Resource Waters (ORW), High Quality Waters (HQW), Water Supply I (WS-I), or Water Supply (WS-II), waters occur within 1.0 mile of the study corridor. Rose Creek is not listed on the Final 2006 303(d) list of impaired waters for the Cape Fear River Basin. Little Troublesome Creek is located within 1-mile of the project area and is listed on the Final 2006 303(d) list due to impaired biological integrity and fecal coliform. Little Troublesome Creek is not listed due to sedimentation and Rose Creek does not drain directly into Little Troublesome Creek.

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

LOCATION:
2728 CAPITAL BLVD. SUITE 240
RALEIGH NC 27604

WEBSITE: WWW.NCDOT.ORG

Temporary Impacts

There will be no temporary impacts to wetlands or jurisdictional streams resulting from construction of the proposed bridge.

Permanent Impacts

A lateral "v" ditch will be used to direct stormwater runoff into Rose Creek. There will be 20 linear feet (0.01 acre) of impacts to Rose Creek resulting from the placement of fill on the channel bank for bank stabilization. The fill is necessary to evenly distribute the flow from the ditch into Rose Creek and prevent erosion.

There will be no permanent impacts to wetlands resulting from the construction of the proposed bridge.

Utility Impacts

Construction of the proposed bridge will require the relocation of aerial and underground telephone lines currently located north of the existing bridge. The lines will be relocated to existing power poles located south of the bridge. There will be no impacts to jurisdictional resources resulting from the removal or relocation of the telephone lines.

Bridge Demolition

Existing Bridge No. 89 is approximately 70-feet long with a deck width of 22-feet. The superstructure is composed a reinforced concrete deck with asphalt wearing surface. The substructure consists of timber joists supported by timber caps and piles. One bent is located within the water.

All components of the bridge will be removed without dropping any of their components into Waters of the United States. Best Management Practices for Bridge Demolition and Removal and Protection of Surface Waters will be followed.

Moratorium

In a letter dated March 19, 2004, the North Carolina Wildlife Resources Commission (WRC) requested a moratorium on in-stream work from April 1 to June 30 due to a significant fishery for sunfish at the bridge location. However, the letter incorrectly states that the bridge will cross Little Troublesome Creek. The proposed project will bridge Rose Creek, which has not been sampled by NCDWQ as part of the Stream Fish Community Assessment Program.

Therefore, based on the lack of fishery data for Rose Creek as well as the lack of statutory regulations requiring this moratorium, NCDOT does not believe that this moratorium is warranted.

MITIGATION OPTIONS

Avoidance and Minimization and Compensatory 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 jurisdictional stream avoidance/minimization activities proposed or completed by NCDOT:

Avoidance/Minimization

- The new bridge will be 30 feet longer than the existing bridge, increasing the floodplain under the bridge.
- The proposed bridge will be replaced on its existing location.
- The proposed project will completely span Rose Creek, allowing for pre-project stream flows to maintain the current water quality, aquatic habitat, and flow regime.
- Fill slopes will not be located within the wetlands.
- An off-site detour will be utilized during construction.
- Temporary construction impacts due to erosion and sedimentation will be minimized through implementation of stringent erosion control schedule and use of Best Management Practices (BMPs).

Compensatory Mitigation:

NCDOT is not proposing mitigation for the 20 linear feet of bank stabilization because there will be no adverse effects to the stream nor will the project incur loss of Waters of the United States.

FEDERALLY PROTECTED SPECIES

Plants and animals with federal classifications of Endangered (E), Threatened (T), Proposed Endangered (PE), and Proposed Threatened (PT) are protected under provisions of Section 7 and Section 9 of the Endangered Species Act of 1973, as amended. As May 10, 2007 the United States Fish and Wildlife Service (USFWS) website lists two federally protected species for Rockingham County. Table 1 lists the species and their federal status.

Table 1. Federally Protected Species in Rockingham County, NC

Common Name	Scientific Name	Federal Status	Biological Conclusion	Habitat Present
James spinymussel	*Pleurobema collina*	E	No Effect	No
Smooth coneflower	*Echinacea laevigata*	E	No Effect	No

A biological conclusion of "No Effect" was given in the CE for the James spinymussel and the smooth coneflower. The James spinymussel is known to occur within the Roanoke River Basin in Rockingham County. However, the project area is located within the Cape Fear River Basin where the James spinymussel is not known to occur, therefore, no surveys were necessary. North Carolina Natural Heritage Program (NCNHP) documents no occurrences of the James spinymussel within 1.0 miles of the project area.

A biological conclusion of "No Effect" was given in the CE for the smooth coneflower. Surveys for the smooth coneflower were conducted on August 18, 2004 by EcoScience biologists Sandy Smith, Elizabeth Scherrer, and Scott Davis and on August 2, 2006 by NCDOT biologists Erica McLamb, Susan Thebert, Sara Easterly, and Chris Underwood. No specimens were observed during either survey and the biological conclusion of "No Effect" remains valid. North Carolina Natural Heritage Program (NCNHP) documents no occurrences of the smooth coneflower within 1.0 miles of the project area.

SCHEDULE

The project calls for a letting of February 19, 2008 (review date of January 22, 2008) with a date of availability of April 1, 2008. It is expected that contractor will choose to start construction in April 2008.

REGULATORY APPROVALS

Section 404 Permit: This document hereby serves as a notice of intent to use Section 404 Nationwide Permit 13 for bank stabilization. Since the activities associated with this project meet all conditions related to this permit, we are not requesting written authorization.

Section 401 Permit: We anticipate that Section 401 General Water Quality Certification (WQC) 3626 will apply to this project. The NCDOT will adhere to all general conditions of this WQC. Therefore, written concurrence from the NCDWQ is not required. In accordance with 15A NCAC 2H, Section .0500 (a) and 15A NCAC 2B, Section .0200, we are providing two copies of this notice to the North Carolina Department of Environment and Natural Resources (NCDENR), NCDWQ, as notification.

A copy of this application will be posted on the NCDOT website at http://www.ncdot.org/doh/preconstruct/pe/. If you have any questions or need additional information, please call Erica McLamb at 715-1521.

Sincerely,

E. L. Thorpe

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

w/attachment
- Mr. John Hennessy, NCDWQ (2 Copies)
- Mr. Travis Wilson, NCWRC
- Mr. Gary Jordan, USFWS
- Dr. David Chang, P.E., Hydraulics
- Mr. Greg Perfetti, P.E., Structure Design
- Mr. Victor Barbour, P.E., Project Services Unit
- Mr. Mark Staley, Roadside Environmental
- Mr. J. M. Mills, P.E., Division 7 Engineer
- Mr. Jerry Parker, Division 7 Environmental Officer

w/o attachment
- Mr. Jay Bennett, P.E., Roadway Design
- Mr. Majed Alghandour, P. E., Programming and TIP
- Mr. Art McMillan, P.E., Highway Design
- Mr. S. Wade Kirby, PDEA
- Mr. Scott McLendon, USACE, Wilmington

Office Use Only: Form Version March 05

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

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

I. Processing

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

2. Nationwide, Regional or General Permit Number(s) Requested: NW13

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

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

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

II. Applicant Information

1. Owner/Applicant Information
   Name: Gregory J. Thorpe, Ph.D., Environmental Management Director
   Mailing Address: 1598 Mail Service Center
   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: N/A
   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 89 on SR 2627 over Rose Creek.

2. T.I.P. Project Number or State Project Number (NCDOT Only): B-4254

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

4. Location
   County: Rockingham Nearest Town: Reidsville
   Subdivision name (include phase/lot number): N/A
   Directions to site (include road numbers/names, landmarks, etc.): From US29 take exit onto Candy Creek Rd. (SR2627).

5. Site coordinates (For linear projects, such as a road or utility line, attach a sheet that separately lists the coordinates for each crossing of a distinct waterbody.)
   Decimal Degrees (6 digits minimum): 36.2581 °N 79.6134°W

6. Property size (acres): N/A

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

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

9. Describe the existing conditions on the site and general land use in the vicinity of the project at the time of this application: The project area consists of a mixture agricultural and forested land.

10. Describe the overall project in detail, including the type of equipment to be used: Bridge No. 89 will be replaced on existing location. 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: To replace a deteriorating bridge.

IV. Prior Project History

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

V. Future Project Plans

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

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

It is the applicant's (or agent's) responsibility to determine, delineate and map all impacts to wetlands, open water, and stream channels associated with the project. 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: Jusrisdictional impacts include placement of permanent fill into Rose Creek.

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)
NA					
Total Wetland Impact (acres)					0

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

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	Rose Creek	Permanent Fill	Perennial	20	20	0.01
Total Stream Impact (by length and acreage)					20	0.01

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

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

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

Stream Impact (acres):	0.01
Wetland Impact (acres):	0
Open Water Impact (acres):	0
Total Impact to Waters of the U.S. (acres)	0.01
Total Stream Impact (linear feet):	20

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

_____

_____

8. Pond Creation
If construction of a pond is proposed, associated wetland and stream impacts should be included above in the wetland and stream impact sections. Also, the proposed pond should be described here and illustrated on any maps included with this application.
Pond to be created in (check all that apply): ☐ uplands ☐ stream ☐ wetlands
Describe the method of construction (e.g., dam/embankment, excavation, installation of draw-down valve or spillway, etc.): NA
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. Please refer to the cover letter page 3.

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.
   Compensatory mitigation is not proposed for the minimal stream impacts (20 linear feet).

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

IX. Environmental Documentation (required by DWQ)

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	NA	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. NA

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. NA

XII. Sewage Disposal (required by DWQ)

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

XV. Other Circumstances (Optional):

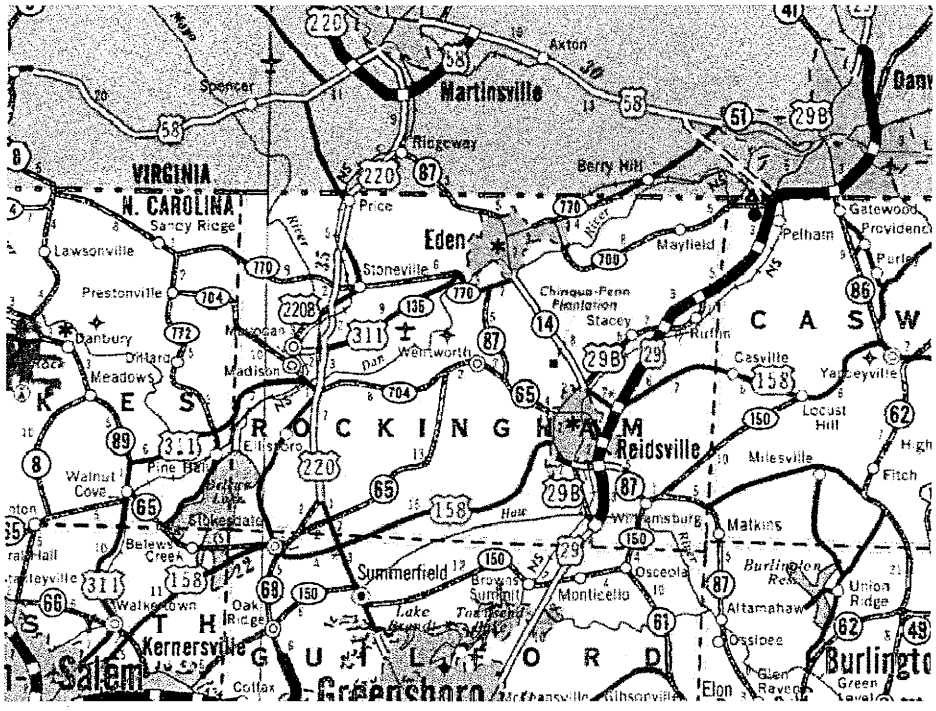
It is the applicant's responsibility to submit the application sufficiently in advance of desired construction dates to allow processing time for these permits. However, an applicant may choose to list constraints associated with construction or sequencing that may impose limits on work schedules (e.g.,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

None

E. L. Lusk 8.30.07

Applicant/Agent's Signature **Date**

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



VICINITY MAP

NCDOT

DIVISION OF HIGHWAYS
ROCKINGHAM COUNTY
PROJECT: 33596.1.1 (R-4254)
BRIDGE NO. 89 OVER
ROSE CREEK
ON SR 2627

SHEET 1 OF 6 4/24/06

WETLAND LEGEND

WLB WETLAND BOUNDARY

WETLAND

F F DENOTES FILL IN WETLAND

S S DENOTES PERMANENT SURFACE WATER IMPACTS

P P DENOTES PERMANENT SURFACE WATER IMPACTS (POND)

T T DENOTES TEMPORARY FILL IN WETLAND

E E DENOTES EXCAVATION IN WETLAND

TS TS DENOTES TEMPORARY SURFACE WATER IMPACTS

DENOTES MECHANIZED CLEARING

FLOW DIRECTION

TB TOP OF BANK

WE EDGE OF WATER

C PROP. LIMIT OF CUT

F PROP. LIMIT OF FILL

PROP. RIGHT OF WAY

NG NATURAL GROUND

PL PROPERTY LINE

TDE TEMP. DRAINAGE EASEMENT

PDE PERMANENT DRAINAGE EASEMENT

EAB EXIST. ENDANGERED ANIMAL BOUNDARY

EPB EXIST. ENDANGERED PLANT BOUNDARY

WATER SURFACE

LIVE STAKES

BOULDER

COIR FIBER ROLLS

PROPOSED BRIDGE

PROPOSED BOX CULVERT

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

(DASHED LINES DENOTE EXISTNG STRUCTURES)

SINGLE TREE

WOODS LINE

DRAINAGE INLET

ROOTWAD

RIP RAP

5 ADJACENT PROPERTY OWNER OR PARCEL NUMBER IF AVAILABLE

PREFORMED SCOUR HOLE

LEVEL SPREADER (LS)

DITCH / GRASS SWALE

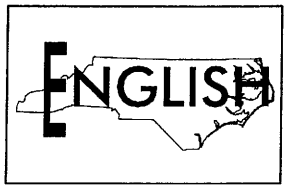
NCDOT

DIVISION OF HIGHWAYS
ROCKINGHAM COUNTY
PROJECT: 33596.1.1 (R-4254)
BRIDGE NO. 89 OVER ROSE CREEK
ON SR 2627

SHEET 2 **OF** 6 **4/26/07**

SUMMARY OF AFFECTED PROPERTY OWNERS

TRACT NO.	PROPERTY OWNER	ADDRESS	SITE NO.
(1)	GREEN, ERNEST & SUSAN JOY	5564 OSCEOLA OSSIPEE ROAD BROWNS SUMMIT, NC 27214	1



NCDOT
DIVISION OF HIGHWAYS
ROCKINGHAM COUNTY
PROJECT: 33596.1.1 (R-4254)
BRIDGE NO. 89 OVER
ROSE CREEK
ON SR 2627

SHEET 3 OF 10 4/26/07

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS: Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	SURFACE WATER IMPACTS: Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	-L- 17+65 RT	Class I Rip Rap Embankment						0.01		20		
TOTALS:			0.00	0.00	0.00	0.00	0.00	0.01	0.00	20	0	0

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

ROCKINGHAM COUNTY
WBS - 33596.1.1 (B-4254)

SHEET 4 of 6 7/18/2007

ATN Revised 3/31/05

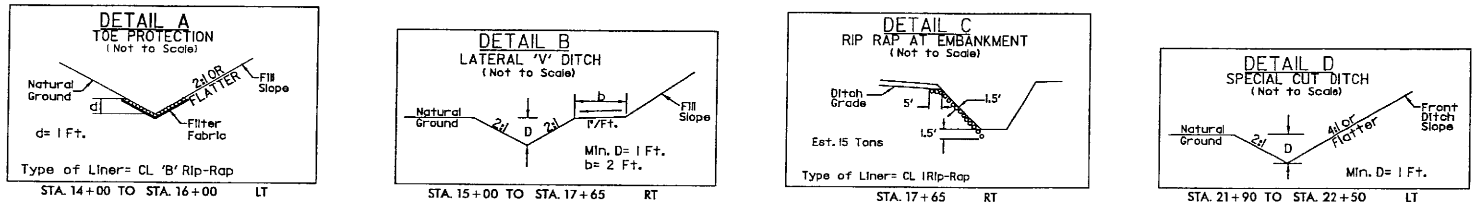
KO & ASSOCIATES, P.C.
Consulting Engineers
1011 SCHAUB DR., SUITE *202 RALEIGH, N.C. 27606
(919) 851-6066

PROJECT REFERENCE NO.	SHEET NO.
B-4254	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

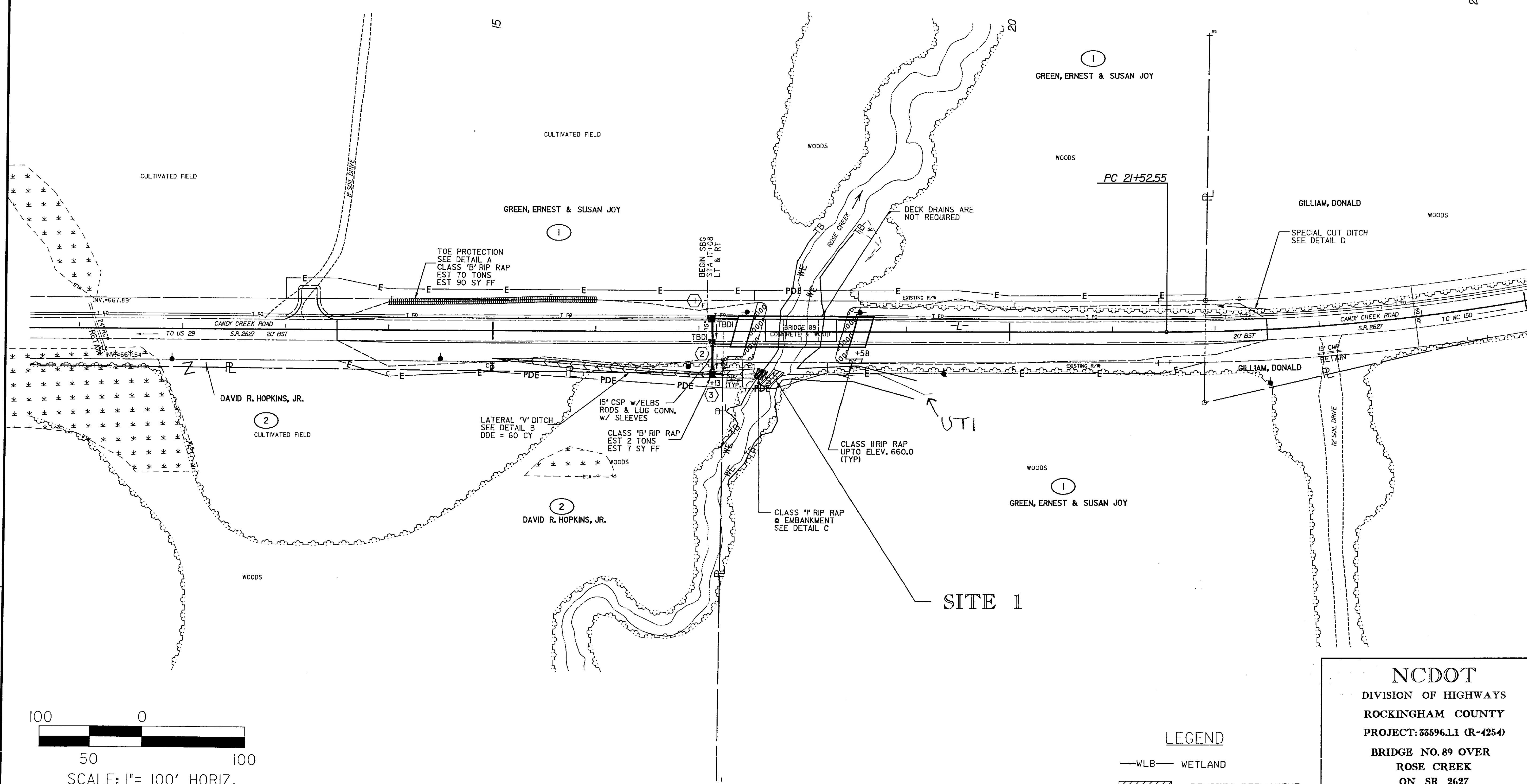
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

ENGLISH

Permit Drawing
Sheet 5 of 6



DETAIL A
TOE PROTECTION
(Not to Scale)
Natural Ground
2:1 OR FLATTER
Fill Slope
Filter Fabric
d= 1 Ft.
Type of Liner= CL 'B' Rip-Rap
STA. 14+00 TO STA. 16+00 LT
DETAIL B
LATERAL 'V' DITCH
(Not to Scale)
Natural Ground
Fill Slope
Min. D= 1 Ft.
b= 2 Ft.
STA. 15+00 TO STA. 17+65 RT
DETAIL C
RIP RAP AT EMBANKMENT
(Not to Scale)
Ditch Grade
Est. 15 Tons
Type of Liner= CL I Rip-Rap
STA. 17+65 RT
DETAIL D
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground
Front Ditch Slope
Min. D= 1 Ft.
STA. 21+90 TO STA. 22+50 LT



NAD 83
GREEN, ERNEST & SUSAN JOY
CULTIVATED FIELD
WOODS
PC 21+52.55
GILLIAM, DONALD
DECK DRAINS ARE NOT REQUIRED
SPECIAL CUT DITCH SEE DETAIL D
TOE PROTECTION SEE DETAIL A CLASS 'B' RIP RAP EST 70 TONS EST 90 SY FF
ROSE CREEK
CANDY CREEK ROAD
TO US 29
S.R.2627
20' BST
BRIDGE 89 CONCRETE & WOOD
TO NC 150
DAVID R. HOPKINS, JR.
LATERAL 'V' DITCH SEE DETAIL B DDE = 60 CY
15' CSP w/ELBS RODS & LUG CONN. w/ SLEEVES
CLASS 'B' RIP RAP EST 2 TONS EST 7 SY FF
CLASS II RIP RAP UPTO ELEV. 660.0 (TYP)
CLASS 'I' RIP RAP @ EMBANKMENT SEE DETAIL C
UT1
SITE 1
100 0
50 100
SCALE: 1"= 100' HORIZ.

LEGEND

—WLB— WETLAND

DENOTES PERMANENT SURFACE WATER IMPACTS

NCDOT
DIVISION OF HIGHWAYS
ROCKINGHAM COUNTY
PROJECT: 33596.1.1 (R-4254)
BRIDGE NO. 89 OVER ROSE CREEK ON SR 2627

SHEET OF 7/25/07

REVISIONS

8/17/99

7/25/2007
R:\Hydraulics\dgn\B4254_Permits\B4254_hyd_prm_wet_04.dgn
Ko & Associates, P.C.

KO & ASSOCIATES, P.C.
Consulting Engineers
1011 SCHAUB DR., SUITE 202 RALEIGH, N.C. 27606
(919) 851-6066

PROJECT REFERENCE NO.	SHEET NO.
B-4254	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

ENGLISH

NAD 83

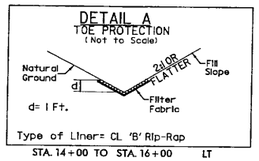
Permit Drawing
Sheet 6 of 6

25

8/17/99

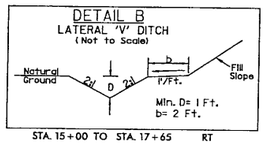
REVISIONS

DETAIL A
TOE PROTECTION
(Not to Scale)



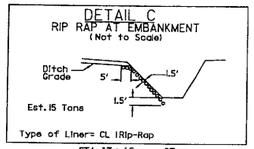
Type of Liner= CL 'B' Rip-Rap
STA. 14+00 TO STA. 16+00 LT

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



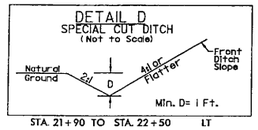
STA. 15+00 TO STA. 17+65 RT

DETAIL C
RIP RAP AT EMBANKMENT
(Not to Scale)

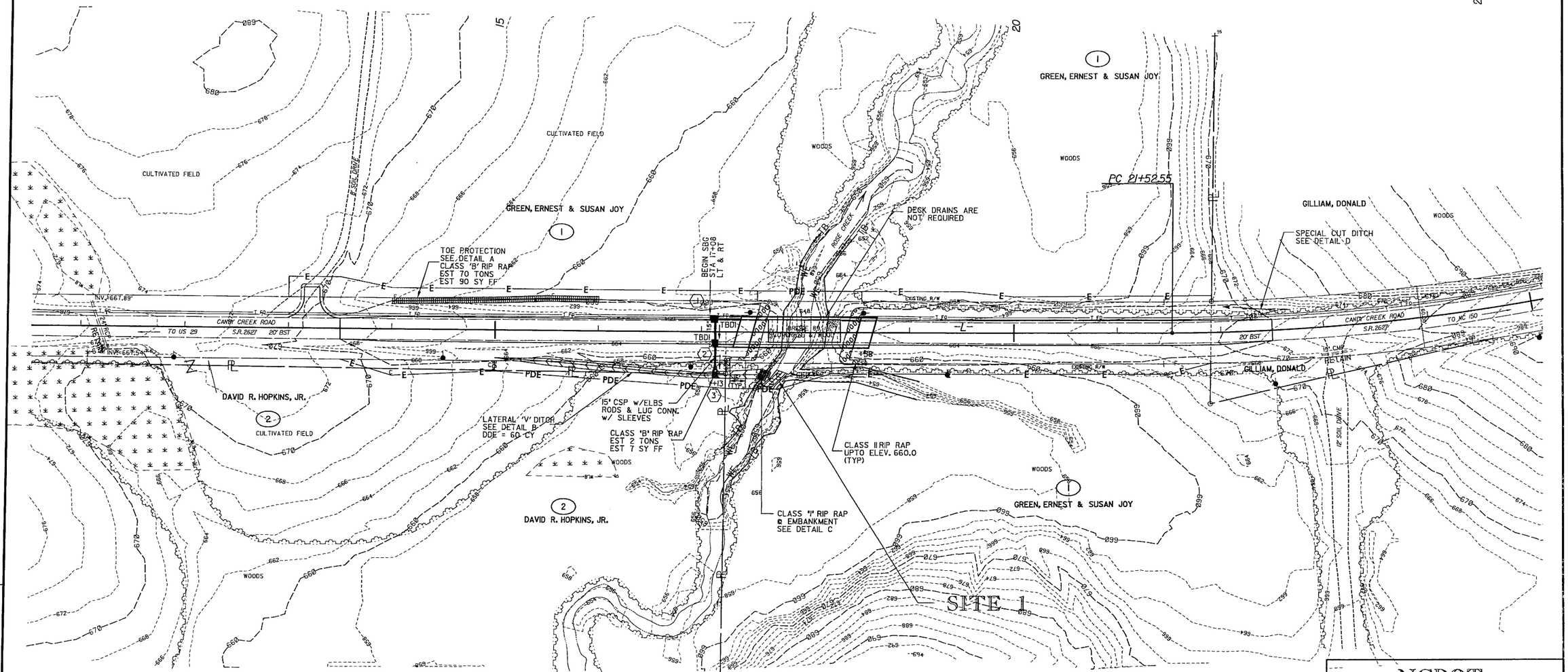


Type of Liner= CL I Rip-Rap
STA. 17+65 RT

DETAIL D
SPECIAL CUT DITCH
(Not to Scale)



STA. 21+90 TO STA. 22+50 LT



LEGEND

—WLB— WETLAND

DENOTES PERMANENT SURFACE WATER IMPACTS

NCDOT
DIVISION OF HIGHWAYS
ROCKINGHAM COUNTY
PROJECT: 33596.1.1 (R-4254)
BRIDGE NO. 89 OVER ROSE CREEK
ON SR 2627

SHEET OF 7/25/07

7/25/2007
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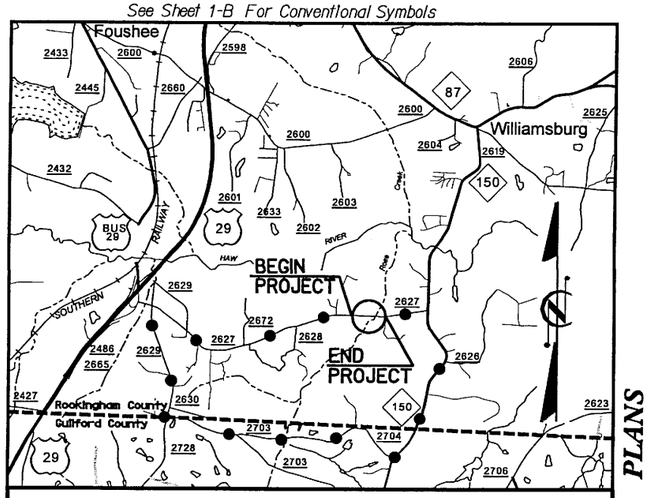
KO & Associates, P.C.

05/08/99

TIP PROJECT: B-4254

CONTRACT:

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



VICINITY MAP

PROPOSED OFFSITE DETOUR

90% PLANS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

ROCKINGHAM COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4254	1	

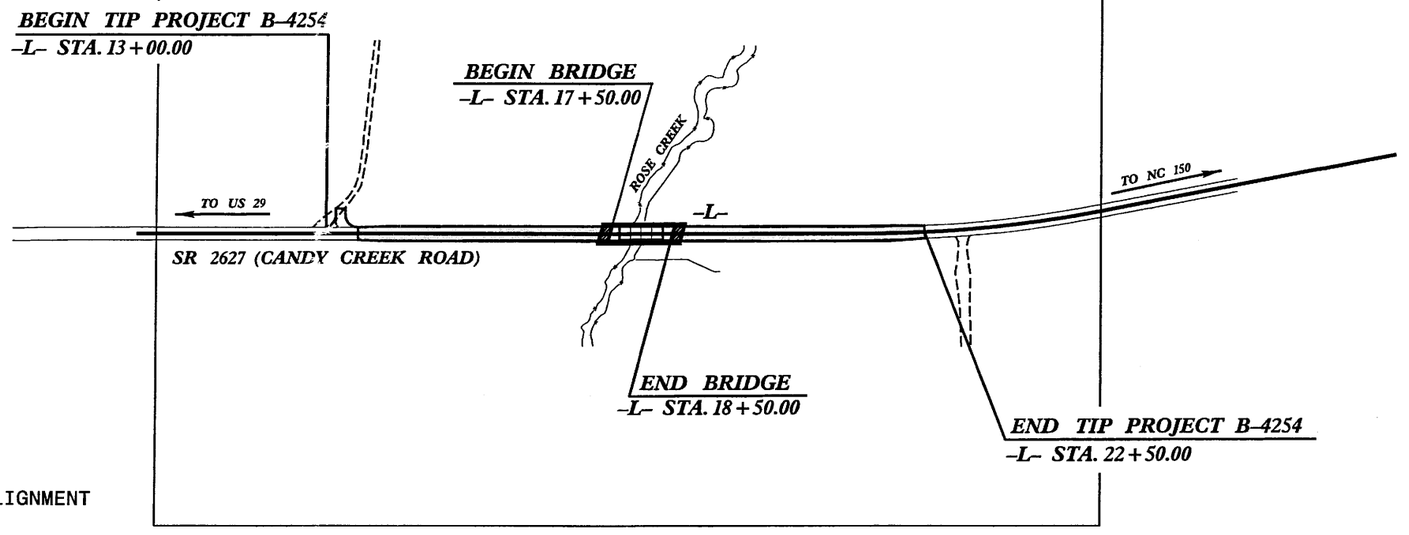
WBS PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
33596.1.1	BRZ-2627(1)	P.E.
33596.2.1	BRZ-2627(1)	RW & UTIL

LOCATION: ***BRIDGE NO. 89 OVER ROSE CREEK ON SR 2627 (CANDY CREEK ROAD)***

TYPE OF WORK: ***GRADING, DRAINAGE, PAVING & STRUCTURE***

NC GRID
NAD 83

4



** DESIGN EXCEPTION REQUIRED FOR VERTICAL ALIGNMENT

NCDOT CONTACT: CATHY HOUSER, P.E.
ROADWAY DESIGN - ENGINEERING COORDINATION

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 2008 = 1835
ADT 2028 = 2735
DHV = 10 %
D = 65 %
T = 3 % *
** V = 60 MPH
* TTST 1% DUAL 2%

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4254 = *0.161 MI.*
LENGTH STRUCTURE TIP PROJECT B-4254 = *0.019 MI.*
TOTAL LENGTH OF TIP PROJECT B-4254 = *0.180 MI.*

Prepared In the Office of:
KO & ASSOCIATES, P.C.
Consulting Engineers
1011 Schaub Dr. Suite 202 Raleigh NC 27606
(919) 851-6066

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: SEPTEMBER 15, 2006

LETTING DATE: FEBRUARY 19, 2008

STEPHEN R. WHITLEY, PE
PROJECT ENGINEER

BRIAN A. WILES, 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.*

3/28/2007
r:\roadway\proj\B4254_Rdy_tsh.dgn
Ko & Associates, P.C.

10/25/05

PROJECT REFERENCE NO.	SHEET NO.
B-4254	1-B

Note: Not to Scale

****S.U.E. = Subsurface Utility Engineering***

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin — IP
- Property Corner
- Property Monument — ECM
- Parcel/Sequence Number — 123
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary — WLB
- Proposed Wetland Boundary — WLB
- Existing Endangered Animal Boundary — EAB
- Existing Endangered Plant Boundary — EPB

BUILDINGS AND OTHER CULTURE:

- Gas Pump Vent or U/G Tank Cap
- Sign — S
- Well — W
- Small Mine
- Foundation
- Area Outline
- Cemetery
- Building
- School
- Church
- Dam

HYDROLOGY:

- Stream or Body of Water
- Hydro, Pool or Reservoir
- Jurisdictional Stream — JS
- Buffer Zone 1 — BZ 1
- Buffer Zone 2 — BZ 2
- Flow Arrow
- Disappearing Stream
- Spring
- Swamp Marsh
- Proposed Lateral, Tail, Head Ditch
- False Sump

RAILROADS:

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

RIGHT OF WAY:

- Baseline Control Point — PI
- Existing Right of Way Marker
- Existing Right of Way Line
- Proposed Right of Way Line — RW
- Proposed Right of Way Line with Iron Pin and Cap Marker — RW
- Proposed Right of Way Line with Concrete or Granite Marker — RW
- Existing Control of Access — CA
- Proposed Control of Access — CA
- Existing Easement Line — E
- Proposed Temporary Construction Easement — E
- Proposed Temporary Drainage Easement — TDE
- Proposed Permanent Drainage Easement — PDE
- Proposed Permanent Utility Easement — PUE

ROADS AND RELATED FEATURES:

- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut — C
- Proposed Slope Stakes Fill — F
- Proposed Wheel Chair Ramp — WCR
- Curb Cut for Future Wheel Chair Ramp — CCFR
- Existing Metal Guardrail
- Proposed Guardrail
- Existing Cable Guiderail
- Proposed Cable Guiderail
- Equality Symbol
- Pavement Removal

VEGETATION:

- Single Tree
- Single Shrub
- Hedge
- Woods Line
- Orchard
- Vineyard — Vineyard

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

- Head and End Wall — CONC HW
- Pipe Culvert
- Footbridge
- Drainage Box: Catch Basin, DI or JB — CB
- Paved Ditch Gutter
- Storm Sewer Manhole — S
- Storm Sewer — S

UTILITIES:

POWER:

- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole — P
- Power Line Tower
- Power Transformer
- U/G Power Cable Hand Hole — HH
- H-Frame Pole
- Recorded U/G Power Line — P
- Designated U/G Power Line (S.U.E.*) — P

TELEPHONE:

- Existing Telephone Pole
- Proposed Telephone Pole
- Telephone Manhole — T
- Telephone Booth
- Telephone Pedestal — T
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole — HH
- Recorded U/G Telephone Cable — T
- Designated U/G Telephone Cable (S.U.E.*) — T
- Recorded U/G Telephone Conduit — TC
- Designated U/G Telephone Conduit (S.U.E.*) — TC
- Recorded U/G Fiber Optics Cable — T FO
- Designated U/G Fiber Optics Cable (S.U.E.*) — T FO

WATER:

- Water Manhole — W
- Water Meter
- Water Valve
- Water Hydrant
- Recorded U/G Water Line — W
- Designated U/G Water Line (S.U.E.*) — W
- Above Ground Water Line — A/G Water

TV:

- TV Satellite Dish
- TV Pedestal — C
- TV Tower
- U/G TV Cable Hand Hole — HH
- Recorded U/G TV Cable — TV
- Designated U/G TV Cable (S.U.E.*) — TV
- Recorded U/G Fiber Optic Cable — TV FO
- Designated U/G Fiber Optic Cable (S.U.E.*) — TV FO

GAS:

- Gas Valve
- Gas Meter
- Recorded U/G Gas Line — G
- Designated U/G Gas Line (S.U.E.*) — G
- Above Ground Gas Line — A/G Gas

SANITARY SEWER:

- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- Recorded SS Forced Main Line — FSS
- Designated SS Forced Main Line (S.U.E.*) — FSS

MISCELLANEOUS:

- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box — S
- Utility Unknown U/G Line — ?UTL
- U/G Tank; Water, Gas, Oil
- A/G Tank; Water, Gas, Oil
- U/G Test Hole (S.U.E.*)
- Abandoned According to Utility Records — AATUR
- End of Information — E.O.I.

KO & ASSOCIATES, P.C.
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1011 SCHAUB DR., SUITE *202 RALEIGH, N.C. 27606
(919) 851-6066

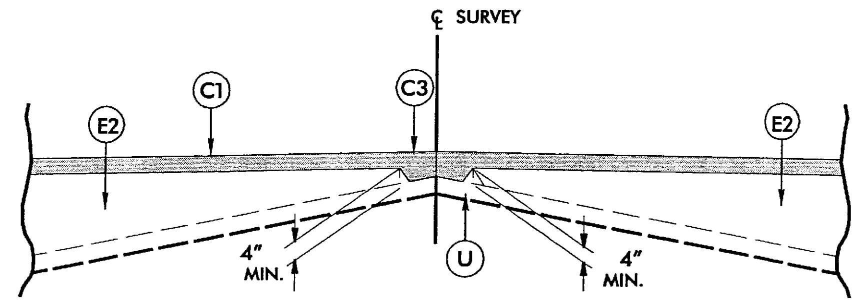
PROJECT REFERENCE NO.	SHEET NO.
B-4254	2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PAVEMENT SCHEDULE

C1	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C3	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 1½" IN DEPTH.
E1	PROP. APPROX. 5.5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 4" IN DEPTH OR GREATER THAN 5½" IN DEPTH.
U	EXISTING PAVEMENT.
T	EARTH MATERIAL.
W	VARIABLE DEPTH ASPHALT PAVEMENT.

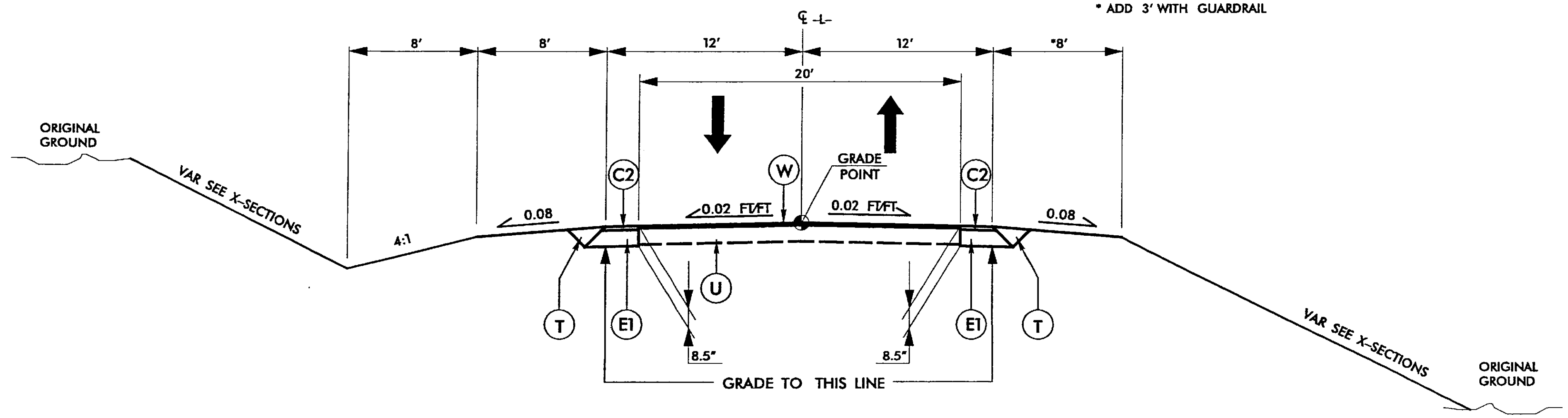
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



Detail Showing Method of Wedging

TRANSITION FROM EXISTING TO TYPICAL NO. 1
-L- STA. 13+50 TO 14+00

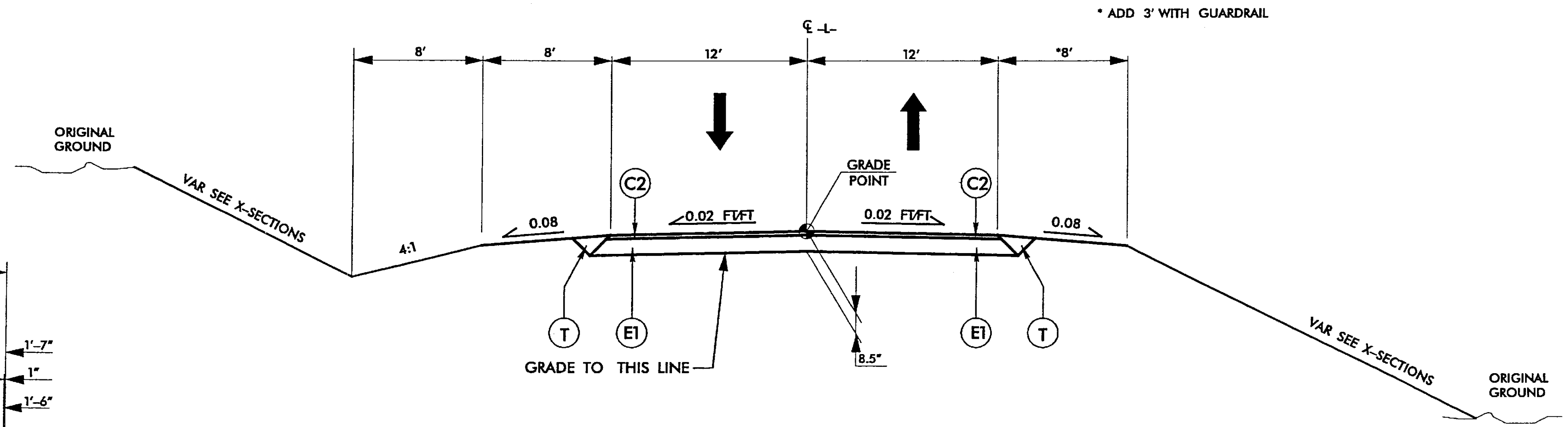
USE TYPICAL SECTION NO. 1
-L- STA. 14+00 TO 16+86
-L- STA. 19+25 TO 22+00



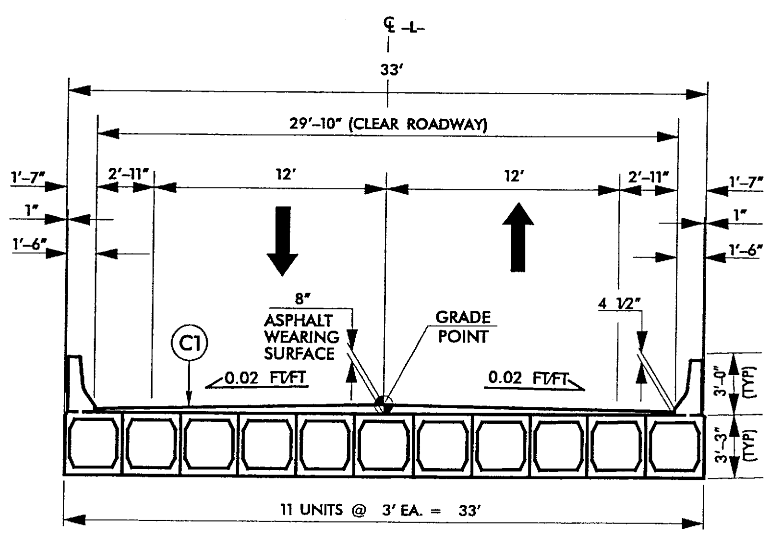
TYPICAL SECTION NO. 1
-L- (SR 2627)

TRANSITION FROM EXISTING TO TYPICAL NO. 1
-L- STA. 22+00 TO 22+50

USE TYPICAL SECTION NO. 2
-L- STA. 16+86 TO (APPRO. SLAB) 17+36
-L- (APPRO. SLAB) STA. 18+64 TO 19+25



TYPICAL SECTION NO. 2
-L- (SR 2627)



TYPICAL SECTION NO. 3
STRUCTURE ON SR 2627

USE TYPICAL SECTION NO. 3
-L- STA. 17+50 TO 18+50

3/28/2007
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Ko & Associates P.C.

8/17/99

REVISIONS

KO & ASSOCIATES, P.C.
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PROJECT REFERENCE NO.	SHEET NO.
B-4254	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

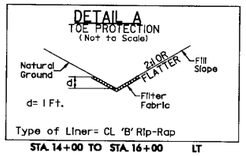
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

ENGLISH

NAD 83

DETAIL A
TOE PROTECTION
(Not to Scale)

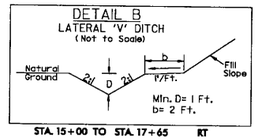


d= 1 Ft.

Type of Liner= CL 'B' Rip-Rap

STA. 14+00 TO STA. 16+00 LT

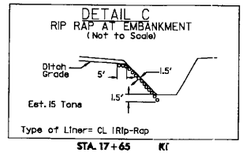
DETAIL B
LATERAL 'V' DITCH
(Not to Scale)



Min. D= 1 Ft.
b= 2 Ft.

STA. 15+00 TO STA. 17+65 RT

DETAIL C
RIP RAP AT EMBANKMENT
(Not to Scale)

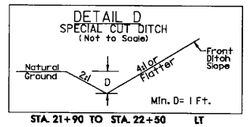


Est. 15 Tons

Type of Liner= CL 1 Rip-Rap

STA. 17+65 RT

DETAIL D
SPECIAL CUT DITCH
(Not to Scale)



Min. D= 1 Ft.

STA. 21+90 TO STA. 22+50 LT

15

20

25

CULTIVATED FIELD

8' SOIL DRIVE

GREEN, ERNEST & SUSAN JOY

(1)

WOODS

PC 21+52.55

DECK DRAINS ARE NOT REQUIRED

GILLIAM, DONALD

WOODS

SPECIAL CUT DITCH SEE DETAIL D

TOE PROTECTION SEE DETAIL A
CLASS 'B' RIP RAP
EST 70 TONS
EST 90 SY FF

BEGIN SBC STA 17+08 LT & RT

INV.=667.69'

24" RCP

INV.=667.54'

CANDY CREEK ROAD S.R.2627 20' BST

TO US 29

TO NC 150

EXISTING R/W

TBDI

BRIDGE 89
CONCRETE & WOOD

+58

+13 (TYP.)

DAVID R. HOPKINS, JR.

(2)

CULTIVATED FIELD

15" CSP w/ELBS RODS & LUG CONN. w/ SLEEVES

LATERAL 'V' DITCH SEE DETAIL B
DDE = 60 CY

CLASS 'B' RIP RAP
EST 2 TONS
EST 7 SY FF

CLASS II RIP RAP UPTO ELEV. 660.0 (TYP)

CLASS 'I' RIP RAP @ EMBANKMENT SEE DETAIL C

SITE 1

15" CMP RETAIN

12' SOIL DRIVE

100 0 50 100
SCALE: 1"= 100' HORIZ.

LEGEND

—WLB— WETLAND

DENOTES PERMANENT SURFACE WATER IMPACTS

7/25/2007
K:\Projects\dgn\B4254_Permits\B4254_hyd_prm_wet_04.dgn
KO & Associates, P.C.

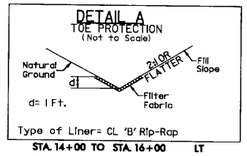
NCDOT

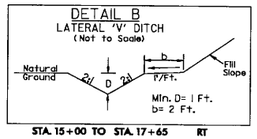
DIVISION OF HIGHWAYS
ROCKINGHAM COUNTY
PROJECT: 33596.1.1 (R-4254)
BRIDGE NO. 89 OVER
ROSE CREEK
ON SR 2627

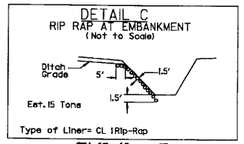
SHEET OF 7/25/07

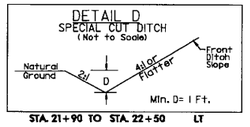
8/17/99

REVISIONS









KO & ASSOCIATES, P.C.
Consulting Engineers
1811 BCHAUB DR., SUITE 202 RALEIGH, N.C. 27606
(919) 851-6066

PROJECT REFERENCE NO.	SHEET NO.
B-4254	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

ENGLISH

NAD 83

25

15

20

CULTIVATED FIELD

GREEN, ERNEST & SUSAN JOY (1)

TOE PROTECTION SEE DETAIL A CLASS 'B' RIP RAP EST 70 TONS EST 90 SY FF

BEGIN SBC STA 17+08 LT & RT

DECK DRAINS ARE NOT REQUIRED

WOODS

PC 21+52.55

GILLIAM, DONALD

SPECIAL CUT DITCH SEE DETAIL D

CANDY CREEK ROAD S.R.2627 20' BST

TO US 29

TO NC 150

INV. 667.89

INV. 667.54

DAVID R. HOPKINS, JR. (2)

LATERAL 'V' DITCH SEE DETAIL B DDE = 60 CY

15" CSP W/ELBS RODS & LUG CONN. W/ SLEEVES

CLASS 'B' RIP RAP EST 2 TONS EST 7 SY FF

CLASS II RIP RAP UPTO ELEV. 660.0 (TYP)

CLASS 'I' RIP RAP @ EMBANKMENT SEE DETAIL C

12' SOIL DRIVE

ROSE CREEK

SITE 1

100 0 50 100
SCALE: 1"= 100' HORIZ.

LEGEND

—WLB— WETLAND

DENOTES PERMANENT SURFACE WATER IMPACTS

7/25/2007
H:\Hydraulics\dgn\B4254_Permits\B4254_hyd_prm_wet_04.dgn
KO & Associates, P.A.

NCDOT
DIVISION OF HIGHWAYS
ROCKINGHAM COUNTY
PROJECT: 33596.1.1 (R-4254)
BRIDGE NO. 89 OVER ROSE CREEK ON SR 2627

SHEET OF 7/25/07

5/14/99

BM#1
R/R SPIKE IN BASE OF 30" HICKORY TREE
-L- STA 17+27.91, 61.80' RT
ELEV= 657.59

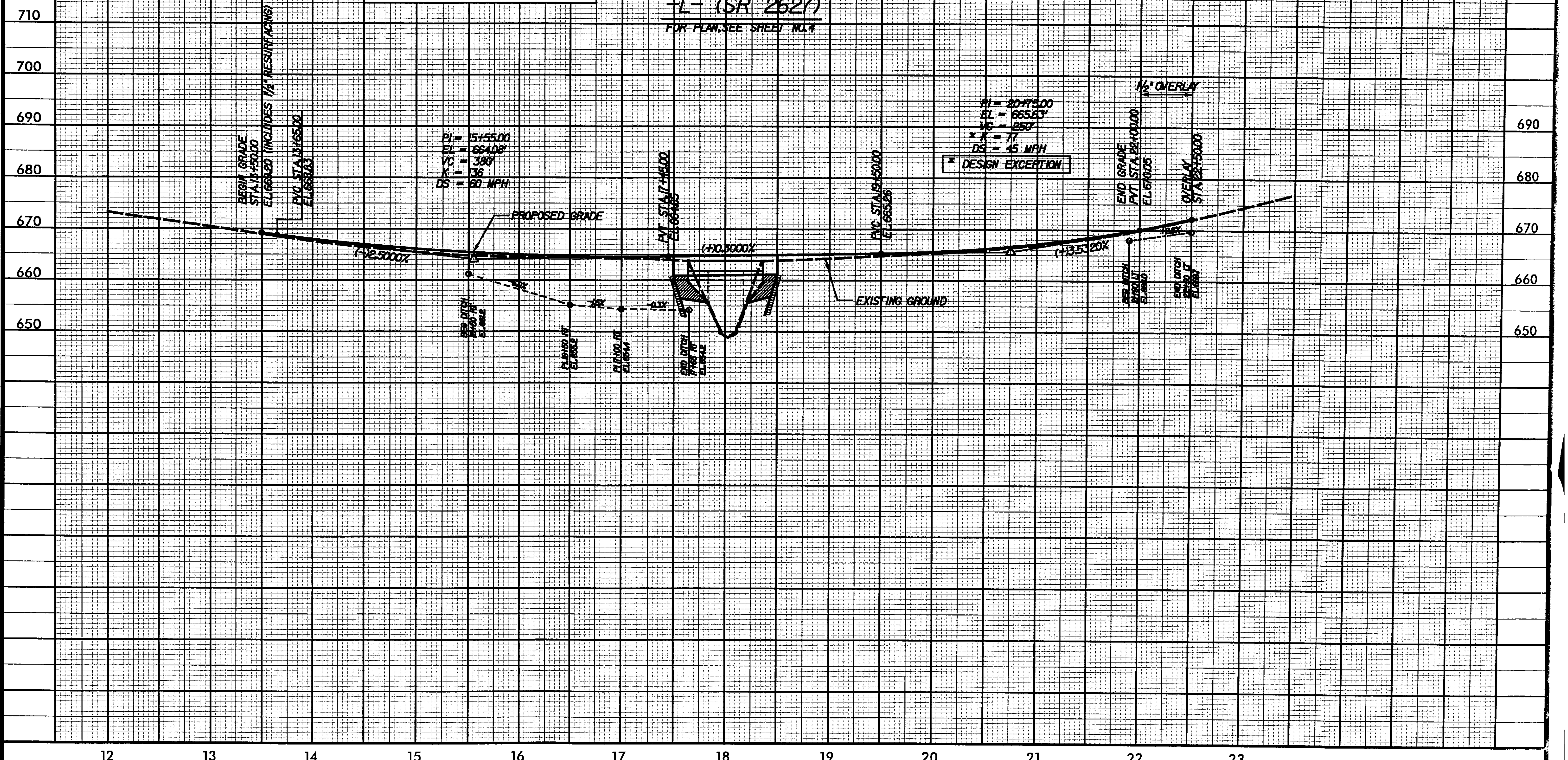
PROJECT REFERENCE NO.	SHEET NO.
B-4254	5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 1400 CFS
DESIGN FREQUENCY	= 25 YRS
DESIGN HW ELEVATION	= 658.4 FT
BASE DISCHARGE	= 2100 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 659.6 FT
OVERTOPPING DISCHARGE	= 6300 CFS
OVERTOPPING FREQUENCY	= 500+ YRS
OVERTOPPING ELEVATION	= 664.7 FT
DATE OF SURVEY	= 2-25-04
W.S. ELEVATION AT DATE OF SURVEY	= 650 FT

-L- (SR 2627)
FOR PLAN, SEE SHEET NO. 4



3/28/2007
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