



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

BEVERLY EAVES PERDUE
GOVERNOR

EUGENE A. CONTI, JR.
SECRETARY

March 2, 2012

North Carolina Division of Water Quality
1650 Mail Service Center
Raleigh, NC 27699-1650

ATTN: Mr. Rob Ridings
NCDOT Project Coordinator

SUBJECT: **Application for Neuse Riparian Buffer Authorization** for the proposed replacement of Bridge No. 230 over the Poplar Creek on SR 2511 (Grasshopper Road), Wake County, Division 5., F.A. Project No. BRZ-2511(1), T.I.P. Project No. B-4832.

Dear Sir:

The North Carolina Department of Transportation (NCDOT) proposes to replace Bridge No. 230 over Poplar Creek on SR 2511 (Grasshopper Road). There will be no impacts to jurisdictional resources due to the replacement of the bridge. Allowable impacts to the Neuse riparian buffers will result in 5,969 square feet of impact to the buffers, due to the road crossing and bridge. No mitigation is proposed for these activities. Utility relocations will be handled by the City of Raleigh and they will be getting the necessary permits for these activities. This action was cleared by the U.S. Army Corps of Engineers.

Please see the enclosed copies of the Pre-Construction Notification (PCN), stormwater management plan, buffer impact drawings, and roadway design plans for the subject project. A Programmatic Categorical Exclusion (PCE) was completed for this project in December 2010 and distributed shortly after completion. Additional copies are available upon request.

This project calls for a letting date of December 18, 2012 and a review date of October 30, 2012; however, the let date may advance as additional funding becomes available.

A copy of this notice 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 Jason Dilday at either (919) 707-6111 or jldilday@ncdot.gov.

Sincerely,



fev

Gregory J. Thorpe, Ph.D., Manager
Project Development and Environmental Analysis Unit

CC:

NCDOT Permit Application Standard Distribution List



Office Use Only:
 Corps action ID no. _____
 DWQ project no. _____
 Form Version 1.3 Dec 10 2008

Pre-Construction Notification (PCN) Form

A. Applicant Information

1. Processing

1a. Type(s) of approval sought from the Corps:	<input type="checkbox"/> Section 404 Permit	<input type="checkbox"/> Section 10 Permit
1b. Specify Nationwide Permit (NWP) number:		or General Permit (GP) number:
1c. Has the NWP or GP number been verified by the Corps?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
1d. Type(s) of approval sought from the DWQ (check all that apply):		
<input type="checkbox"/> 401 Water Quality Certification – Regular <input type="checkbox"/> Non-404 Jurisdictional General Permit <input type="checkbox"/> 401 Water Quality Certification – Express <input checked="" type="checkbox"/> Riparian Buffer Authorization		
1e. Is this notification solely for the record because written approval is not required?	For the record only for DWQ 401 Certification: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	For the record only for Corps Permit: <input type="checkbox"/> Yes <input type="checkbox"/> No
1f. Is payment into a mitigation bank or in-lieu fee program proposed for mitigation of impacts? If so, attach the acceptance letter from mitigation bank or in-lieu fee program.	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
1g. Is the project located in any of NC's twenty coastal counties. If yes, answer 1h below.	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
1h. Is the project located within a NC DCM Area of Environmental Concern (AEC)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

2. Project Information

2a. Name of project:	Replacement of Bridge 230 over Poplar Creek on SR 2511 (Grasshopper Road)
2b. County:	Wake
2c. Nearest municipality / town:	Shotwell
2d. Subdivision name:	<i>not applicable</i>
2e. NCDOT only, T.I.P. or state project no.:	B-4832

3. Owner Information

3a. Name(s) on Recorded Deed:	North Carolina Department of Transportation
3b. Deed Book and Page No.	<i>not applicable</i>
3c. Responsible Party (f or LLC if applicable):	<i>not applicable</i>
3d. Street address:	1598 Mail Service Center
3e. City, state, zip:	Raleigh, NC 27699-1598
3f. Telephone no.:	(919) 707-6111
3g. Fax no.:	(919) 212-5785
3h. Email address:	jldilday@ncdot.gov

4. Applicant Information (if different from owner)	
4a. Applicant is:	<input type="checkbox"/> Agent <input type="checkbox"/> Other, specify:
4b. Name:	<i>not applicable</i>
4c. Business name (if applicable):	
4d. Street address:	
4e. City, state, zip:	
4f. Telephone no.:	
4g. Fax no.:	
4h. Email address:	
5. Agent/Consultant Information (if applicable)	
5a. Name:	<i>not applicable</i>
5b. Business name (if applicable):	
5c. Street address:	
5d. City, state, zip:	
5e. Telephone no.:	
5f. Fax no.:	
5g. Email address:	

B. Project Information and Prior Project History	
1. Property Identification	
1a. Property identification no. (tax PIN or parcel ID):	<i>not applicable</i>
1b. Site coordinates (in decimal degrees):	Latitude: 35.738779 (DD.DDDDDD) Longitude: -78.470028 (-DD.DDDDDD)
1c. Property size:	1.0 acres
2. Surface Waters	
2a. Name of nearest body of water (stream, river, etc.) to proposed project:	Poplar Creek
2b. Water Quality Classification of nearest receiving water:	C, NSW
2c. River basin:	Neuse
3. Project Description	
3a. Describe the existing conditions on the site and the general land use in the vicinity of the project at the time of this application: SR 2511 is a rural local route. Land use within the project vicinity consists of agriculture, interspersed with residential development.	
3b. List the total estimated acreage of all existing wetlands on the property: 0	
3c. List the total estimated linear feet of all existing streams (intermittent and perennial) on the property: 200	
3d. Explain the purpose of the proposed project: To replace a structurally deficient and functionally obsolete bridge.	
3e. Describe the overall project in detail, including the type of equipment to be used: The project involves replacing a single span, 55-foot bridge with a single span, 72-foot box bridge on the existing alignment with an off-site detour. Standard road building equipment, such as trucks, dozers, and cranes will be used.	
4. Jurisdictional Determinations	
4a. Have jurisdictional wetland or stream determinations by the Corps or State been requested or obtained for this property / project (including all prior phases) in the past? Comments:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Unknown
4b. If the Corps made the jurisdictional determination, what type of determination was made?	<input type="checkbox"/> Preliminary <input type="checkbox"/> Final
4c. If yes, who delineated the jurisdictional areas? Name (if known):	Agency/Consultant Company: Other:
4d. If yes, list the dates of the Corps jurisdictional determinations or State determinations and attach documentation.	
5. Project History	
5a. Have permits or certifications been requested or obtained for this project (including all prior phases) in the past?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Unknown
5b. If yes, explain in detail according to "help file" instructions.	
6. Future Project Plans	
6a. Is this a phased project?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
6b. If yes, explain.	

C. Proposed Impacts Inventory						
1. Impacts Summary						
1a. Which sections were completed below for your project (check all that apply):						
<input type="checkbox"/> Wetlands		<input type="checkbox"/> Streams - tributaries		<input checked="" type="checkbox"/> Buffers		
<input type="checkbox"/> Open Waters		<input type="checkbox"/> Pond Construction				
2. Wetland Impacts						
If there are wetland impacts proposed on the site, then complete this question for each wetland area impacted.						
2a. Wetland impact number – Permanent (P) or Temporary (T)	2b. Type of impact	2c. Type of wetland (if known)	2d. Forested	2e. Type of jurisdiction (Corps - 404, 10 DWQ – non-404, other)	2f. Area of impact (acres)	
Site 1 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ		
Site 2 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ		
Site 3 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ		
Site 4 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ		
Site 5 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ		
Site 6 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ		
2g. Total wetland impacts					0 Permanent 0 Temporary	
2h. Comments: There are no wetland impacts associated with this project.						
3. Stream Impacts						
If there are perennial or intermittent stream impacts (including temporary impacts) proposed on the site, then complete this question for all stream sites impacted.						
3a. Stream impact number - Permanent (P) or Temporary (T)	3b. Type of impact	3c. Stream name	3d. Perennial (PER) or intermittent (INT)?	3e. Type of jurisdiction (Corps - 404, 10 DWQ – non-404, other)	3f. Average stream width (feet)	3g. Impact length (linear feet)
Site 1 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> PER <input type="checkbox"/> INT	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ		
Site 2 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> PER <input type="checkbox"/> INT	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ		
Site 3 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> PER <input type="checkbox"/> INT	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ		
Site 4 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> PER <input type="checkbox"/> INT	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ		
Site 5 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> PER <input type="checkbox"/> INT	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ		
Site 6 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> PER <input type="checkbox"/> INT	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ		
3h. Total stream and tributary impacts						
3i. Comments: There are no stream impacts associated with this project.						

4. Open Water Impacts								
If there are proposed impacts to lakes, ponds, estuaries, tributaries, sounds, the Atlantic Ocean, or any other open water of the U.S. then individually list all open water impacts below.								
4a.	4b.	4c.			4d.	4e.		
Open water impact number – Permanent (P) or Temporary (T)	Name of waterbody (if applicable)	Type of impact			Waterbody type	Area of impact (acres)		
O1 <input type="checkbox"/> P <input type="checkbox"/> T								
O2 <input type="checkbox"/> P <input type="checkbox"/> T								
O3 <input type="checkbox"/> P <input type="checkbox"/> T								
O4 <input type="checkbox"/> P <input type="checkbox"/> T								
4f. Total open water impacts						0 Permanent 0 Temporary		
4g. Comments:								
5. Pond or Lake Construction								
If pond or lake construction proposed, then complete the chart below.								
5a.	5b.	5c.			5d.			5e.
Pond ID number	Proposed use or purpose of pond	Wetland Impacts (acres)			Stream Impacts (feet)			Upland (acres)
		Flooded	Filled	Excavated	Flooded	Filled	Excavated	Flooded
P1								
P2								
5f. Total								
5g. Comments:								
5h. Is a dam high hazard permit required?				<input type="checkbox"/> Yes <input type="checkbox"/> No If yes, permit ID no:				
5i. Expected pond surface area (acres):								
5j. Size of pond watershed (acres):								
5k. Method of construction:								

6. Buffer Impacts (for DWQ)

If project will impact a protected riparian buffer, then complete the chart below. If yes, then individually list all buffer impacts below. If any impacts require mitigation, then you **MUST** fill out Section D of this form.

6a. Project is in which protected basin?			<input checked="" type="checkbox"/> Neuse <input type="checkbox"/> Catawba	<input type="checkbox"/> Tar-Pamlico <input type="checkbox"/> Randleman	<input type="checkbox"/> Other:
6b. Buffer impact number – Permanent (P) or Temporary (T)	6c. Reason for impact	6d. Stream name	6e. Buffer mitigation required?	6f. Zone 1 impact (square feet)	6g. Zone 2 impact (square feet)
B1 <input checked="" type="checkbox"/> P <input type="checkbox"/> T	Bridge Impact	Poplar Creek	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	2679	
B2 <input checked="" type="checkbox"/> P <input type="checkbox"/> T	Road Crossing Impact	Poplar Creek	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	1511	1779
B3 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> Yes <input type="checkbox"/> No		
6h. Total buffer impacts				4190	1779
6i. Comments: Buffer impacts will occur due to fill slopes and construction access.					

D. Impact Justification and Mitigation

1. Avoidance and Minimization

1a. Specifically describe measures taken to avoid or minimize the proposed impacts in designing project.

The proposed bridge is 17 feet longer than the existing bridge; the replacement bridge will be a spanning structure; the proposed bridge will be at approximately the same grade and alignment as the existing structure; the new bridge will have no deck drains or direct discharge to Poplar Creek, bridge deck drainage will be captured with a gutter system, all roadway drainage is by sheet flow, discharge velocities are non-erosive, no impacts will occur to Poplar Creek. An off-site detour will be used during construction.

1b. Specifically describe measures taken to avoid or minimize the proposed impacts through construction techniques.

NCDOT Best Management Practices for Bridge Demolition and Removal will be implemented during the removal of the existing bridge; Best Management Practices for the Protection of Surface Waters will be employed; Design Standards in Sensitive Watersheds will be employed.

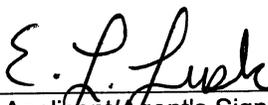
2. Compensatory Mitigation for Impacts to Waters of the U.S. or Waters of the State

2a. Does the project require Compensatory Mitigation for impacts to Waters of the U.S. or Waters of the State?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If no, explain: No impacts will occur to Poplar Creek or any other jurisdictional resource.
2b. If yes, mitigation is required by (check all that apply):	<input type="checkbox"/> DWQ <input type="checkbox"/> Corps
2c. If yes, which mitigation option will be used for this project?	<input type="checkbox"/> Mitigation bank <input type="checkbox"/> Payment to in-lieu fee program <input type="checkbox"/> Permittee Responsible Mitigation

3. Complete if Using a Mitigation Bank				
3a. Name of Mitigation Bank: not applicable				
3b. Credits Purchased (attach receipt and letter)		Type	Quantity	
3c. Comments:				
4. Complete if Making a Payment to In-lieu Fee Program				
4a. Approval letter from in-lieu fee program is attached.		<input type="checkbox"/> Yes		
4b. Stream mitigation requested:		linear feet		
4c. If using stream mitigation, stream temperature:		<input type="checkbox"/> warm <input type="checkbox"/> cool <input type="checkbox"/> cold		
4d. Buffer mitigation requested (DWQ only):		square feet		
4e. Riparian wetland mitigation requested:		acres		
4f. Non-riparian wetland mitigation requested:		acres		
4g. Coastal (tidal) wetland mitigation requested:		acres		
4h. Comments:				
5. Complete if Using a Permittee Responsible Mitigation Plan				
5a. If using a permittee responsible mitigation plan, provide a description of the proposed mitigation plan.				
6. Buffer Mitigation (State Regulated Riparian Buffer Rules) – required by DWQ				
6a. Will the project result in an impact within a protected riparian buffer that requires buffer mitigation?			<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
6b. If yes, then identify the square feet of impact to each zone of the riparian buffer that requires mitigation. Calculate the amount of mitigation required.				
Zone	6c. Reason for impact	6d. Total impact (square feet)	Multiplier	6e. Required mitigation (square feet)
Zone 1			3 (2 for Catawba)	
Zone 2			1.5	
6f. Total buffer mitigation required:				0
6g. If buffer mitigation is required, discuss what type of mitigation is proposed (e.g., payment to private mitigation bank, permittee responsible riparian buffer restoration, payment into an approved in-lieu fee fund).				
6h. Comments: All buffer impacts are Allowable.				

E. Stormwater Management and Diffuse Flow Plan (required by DWQ)	
1. Diffuse Flow Plan	
1a. Does the project include or is it adjacent to protected riparian buffers identified within one of the NC Riparian Buffer Protection Rules?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
1b. If yes, then is a diffuse flow plan included? If no, explain why. Comments: See attached permit drawings.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
2. Stormwater Management Plan	
2a. What is the overall percent imperviousness of this project?	N/A
2b. Does this project require a Stormwater Management Plan?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
2c. If this project DOES NOT require a Stormwater Management Plan, explain why:	
2d. If this project DOES require a Stormwater Management Plan, then provide a brief, narrative description of the plan: See attached permit drawings.	
2e. Who will be responsible for the review of the Stormwater Management Plan?	<input type="checkbox"/> Certified Local Government <input type="checkbox"/> DWQ Stormwater Program <input type="checkbox"/> DWQ 401 Unit
3. Certified Local Government Stormwater Review	
3a. In which local government's jurisdiction is this project?	not applicable
3b. Which of the following locally-implemented stormwater management programs apply (check all that apply):	<input type="checkbox"/> Phase II <input type="checkbox"/> NSW <input type="checkbox"/> USMP <input type="checkbox"/> Water Supply Watershed <input type="checkbox"/> Other:
3c. Has the approved Stormwater Management Plan with proof of approval been attached?	<input type="checkbox"/> Yes <input type="checkbox"/> No
4. DWQ Stormwater Program Review	
4a. Which of the following state-implemented stormwater management programs apply (check all that apply):	<input type="checkbox"/> Coastal counties <input type="checkbox"/> HQW <input type="checkbox"/> ORW <input type="checkbox"/> Session Law 2006-246 <input type="checkbox"/> Other:
4b. Has the approved Stormwater Management Plan with proof of approval been attached?	<input type="checkbox"/> Yes <input type="checkbox"/> No
5. DWQ 401 Unit Stormwater Review	
5a. Does the Stormwater Management Plan meet the appropriate requirements?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
5b. Have all of the 401 Unit submittal requirements been met?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

F. Supplementary Information	
1. Environmental Documentation (DWQ Requirement)	
1a. Does the project involve an expenditure of public (federal/state/local) funds or the use of public (federal/state) land?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
1b. If you answered "yes" to the above, does the project require preparation of an environmental document pursuant to the requirements of the National or State (North Carolina) Environmental Policy Act (NEPA/SEPA)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
1c. If you answered "yes" to the above, has the document review been finalized by the State Clearing House? (If so, attach a copy of the NEPA or SEPA final approval letter.) Comments:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
2. Violations (DWQ Requirement)	
2a. Is the site in violation of DWQ Wetland Rules (15A NCAC 2H .0500), Isolated Wetland Rules (15A NCAC 2H .1300), DWQ Surface Water or Wetland Standards, or Riparian Buffer Rules (15A NCAC 2B .0200)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
2b. Is this an after-the-fact permit application?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
2c. If you answered "yes" to one or both of the above questions, provide an explanation of the violation(s):	
3. Cumulative Impacts (DWQ Requirement)	
3a. Will this project (based on past and reasonably anticipated future impacts) result in additional development, which could impact nearby downstream water quality?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
3b. If you answered "yes" to the above, submit a qualitative or quantitative cumulative impact analysis in accordance with the most recent DWQ policy. If you answered "no," provide a short narrative description. Due to the minimal transportation impact resulting from this bridge replacement, this project will neither influence nearby land uses nor stimulate growth. Therefore, a detailed indirect or cumulative effects study will not be necessary.	
4. Sewage Disposal (DWQ Requirement)	
4a. 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. not applicable	

5. Endangered Species and Designated Critical Habitat (Corps Requirement)		
5a. Will this project occur in or near an area with federally protected species or habitat?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
5b. Have you checked with the USFWS concerning Endangered Species Act impacts?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
5c. If yes, indicate the USFWS Field Office you have contacted.	<input checked="" type="checkbox"/> Raleigh	<input type="checkbox"/> Asheville
5d. What data sources did you use to determine whether your site would impact Endangered Species or Designated Critical Habitat? N.C. Natural Heritage Program database; USFWS-Raleigh Field Office website; biological surveys for protected species listed for Wake County, which include red-cockaded woodpecker, Michaux's sumac and dwarf wedgemussel. All species received a Biological Conclusion of "No Effect". No habitat is present in the study area for red-cockaded woodpecker or dwarf wedgemussel. Habitat is present for Michaux's sumac, but surveys conducted of the study area resulted in no specimens being found.		
6. Essential Fish Habitat (Corps Requirement)		
6a. Will this project occur in or near an area designated as essential fish habitat?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
6b. What data sources did you use to determine whether your site would impact Essential Fish Habitat? NMFS County Index		
7. Historic or Prehistoric Cultural Resources (Corps Requirement)		
7a. Will this project occur in or near an area that the state, federal or tribal governments have designated as having historic or cultural preservation status (e.g., National Historic Trust designation or properties significant in North Carolina history and archaeology)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
7b. What data sources did you use to determine whether your site would impact historic or archeological resources? NEPA Documentation		
8. Flood Zone Designation (Corps Requirement)		
8a. Will this project occur in a FEMA-designated 100-year floodplain?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
8b. If yes, explain how project meets FEMA requirements: NCDOT Hydraulics Unit coordination with FEMA		
8c. What source(s) did you use to make the floodplain determination? FEMA Maps		
Dr. Gregory J. Thorpe, Ph D Applicant/Agent's Printed Name	 Applicant/Agent's Signature (Agent's signature is valid only if an authorization letter from the applicant is provided.)	3.5.12 Date

STORMWATER MANAGEMENT PLAN

Project: 38602.1.1

TIP No. B-4832

County: Wake

Date: 01/27/12

Hydraulics Project Manager: Andrew Nottingham, PE (NCDOT Hydraulics Unit)

ROADWAY DESCRIPTION

Project B-4832 consists of replacing bridge number 230 in Wake County. The proposed 70' long bridge will replace an existing 55' long bridge. The bridge will be constructed in the same location and at approximately the same grade as the existing bridge. The existing paved roadway is 20' wide, and the proposed paved roadway will be 22' wide with 4' paved shoulders in front of the guardrail locations. Minor reshaping of the roadway shoulders and fill slopes will be required. The total project length is 345 feet (0.065 mile).

ENVIRONMENTAL DESCRIPTION

The project is located within the Neuse River Basin. Poplar Branch has a stream classification of C, NSW. The existing stream banks are stable with vegetation and have adequate floodplain relief. The surrounding land is generally wooded and rural. Wetlands located in the northwest quadrant of the bridge will not be impacted by the project. The proposed bridge elements will span the stream and cause no stream impacts.

BEST MANAGEMENT PRACTICES AND MAJOR STRUCTURES

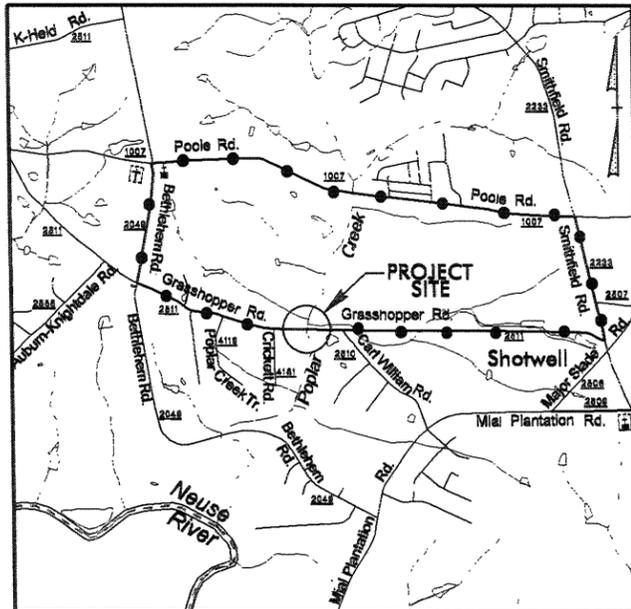
- The proposed bridge will have no deck drains or direct discharge to Poplar Creek.
- Proposed roadway work is only the minimum required for adequate tie-in to the existing road.
- Other than capturing the bridge deck drainage with a gutter system, all roadway drainage is by sheet flow.
- Discharge velocities are non-erosive.

09/08/11
 CONTRACT: B-4832
 SYSTEM: \$\$\$\$
 DONOR: \$\$\$\$
 USER: \$\$\$\$

TIP PROJECT: B-4832

CONTRACT:

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



VICINITY MAP
●—● DETOUR ROUTE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

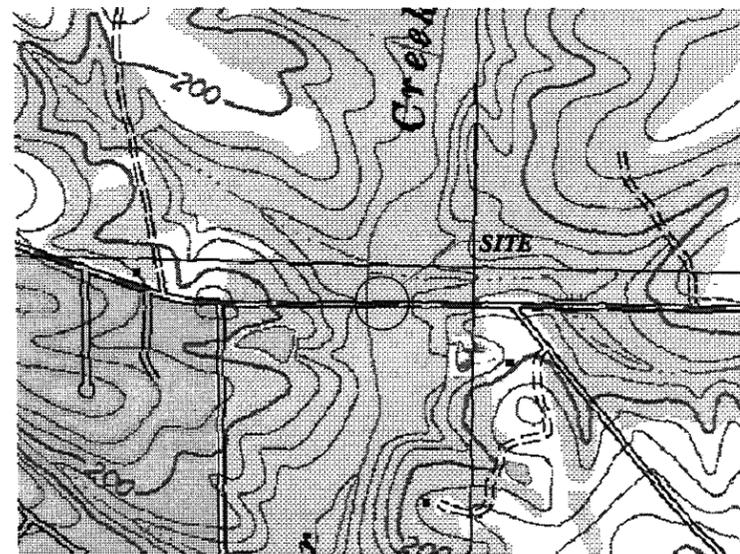
WAKE COUNTY

**LOCATION: BRIDGE NO. 230 OVER POPLAR CREEK ON
SR 2511 (GRASSHOPPER ROAD)**

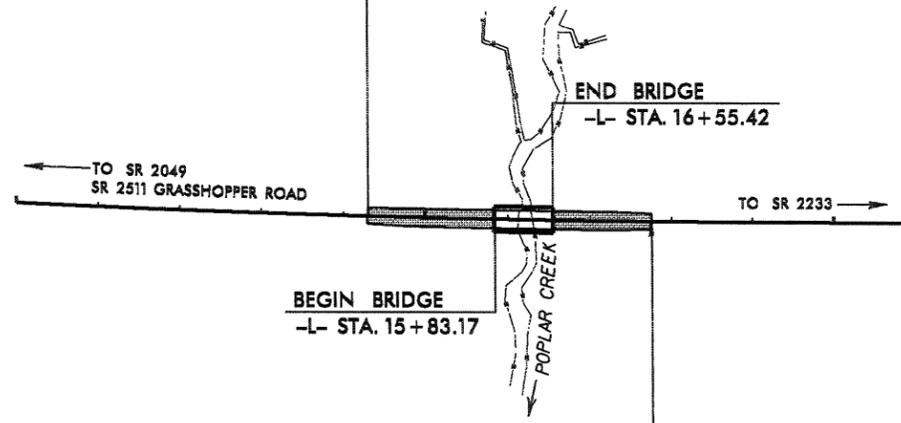
**BUFFER IMPACTS
PERMIT DRAWINGS**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4832	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
38602.1.1	BRZ-2511(1)	PE	
38602.2.1	BRZ-2511(1)	RW & UTILITIES	

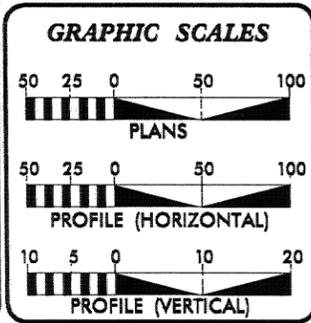
Buffer Drawing
Sheet 1 of 5



BEGIN TIP PROJECT B-4832
-L- STA 14+30.00



END TIP PROJECT B-4832
-L- STA 17+75.00



DESIGN DATA

ADT 2012 =	3827
ADT 2032 =	9131
DHV =	13 %
D =	65 %
T =	6 % *
V =	60 MPH
* TTST =	1% DUAL 5%
FUNC CLASS =	RURAL LOCAL
SUB-REGIONAL TIER	

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT B-4832	=	.051 MILES
LENGTH OF STRUCTURE TIP PROJECT B-4832	=	.014 MILES
TOTAL LENGTH OF TIP PROJECT B-4832	=	.065 MILES

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

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
DECEMBER 16, 2011

LETTING DATE:
DECEMBER 18, 2012

GARY LOVERING, PE
PROJECT ENGINEER

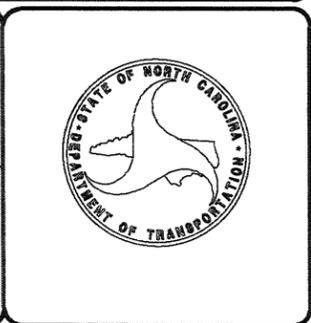
ANTHONY C. WEST
PROJECT DESIGN ENGINEER

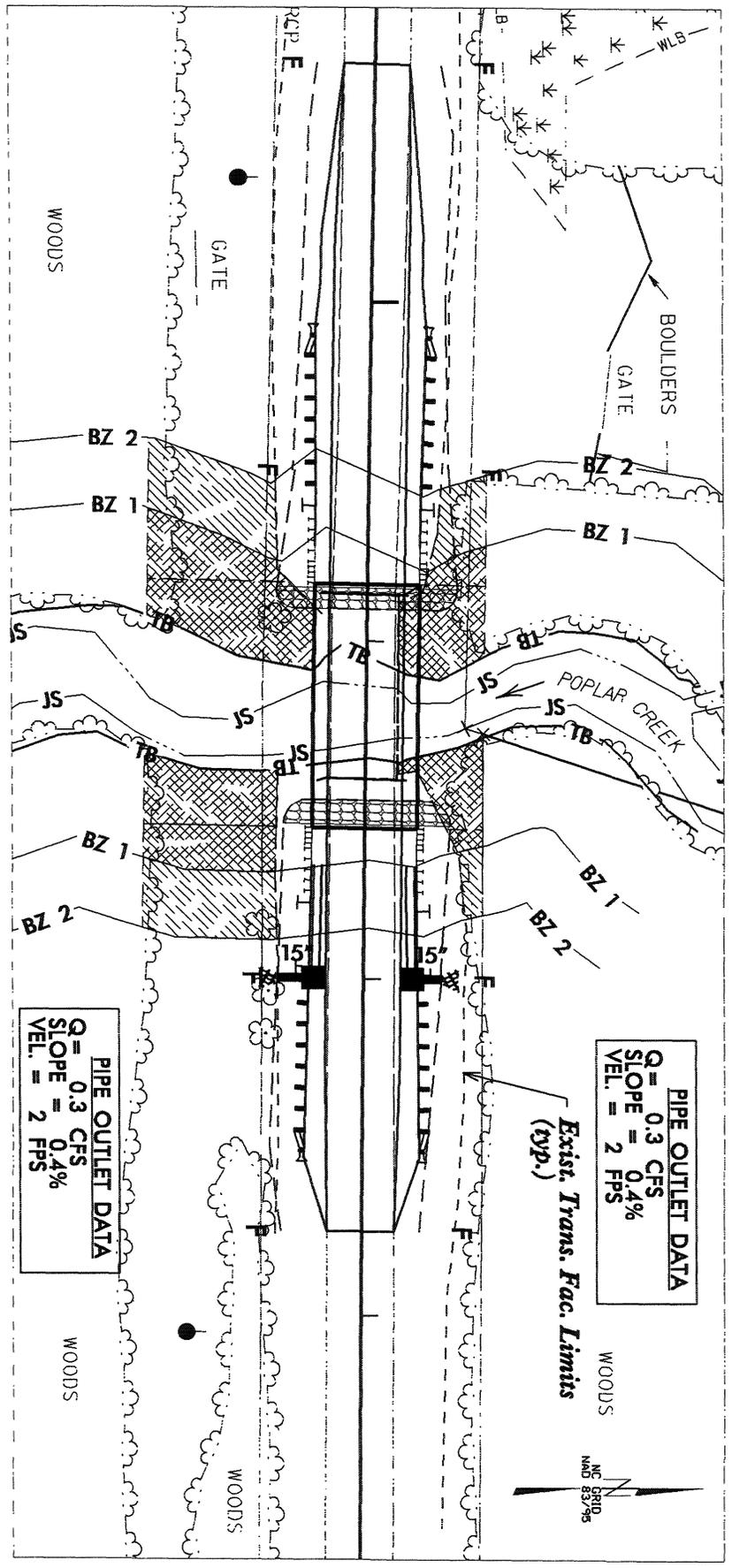
HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.

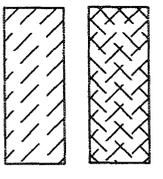
ROADWAY DESIGN ENGINEER

SIGNATURE: _____ P.E.





BUFFER ZONE IMPACTS ENLARGEMENT



ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2



PIPE OUTLET DATA
 Q = 0.3 CFS
 Slope = 0.4%
 Vel. = 2 FPS

PIPE OUTLET DATA
 Q = 0.3 CFS
 Slope = 0.4%
 Vel. = 2 FPS

Exist. Trans. Fac. Limits
 (typ.)

N. C. DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 WAKE COUNTY
 PROJECT 38602.11 (B-4832)
 BRIDGE NO. 230
 OVER POPLAR CREEK
 ON SR 2511

PROPERTY OWNERS

Willis Shitley Parker	5210 Pine Way Dr.	Durham	NC 27712
KRJ, Inc.	246 Valleyfield Ln.	Southern Pines	NC 28387
Mandrino Michael	113 E Meriin Dr.	Knightdale	NC 27545

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
WBS - 38602.1.1 (B-4832)
SHEET 1/27/2012

BUFFER IMPACTS SUMMARY

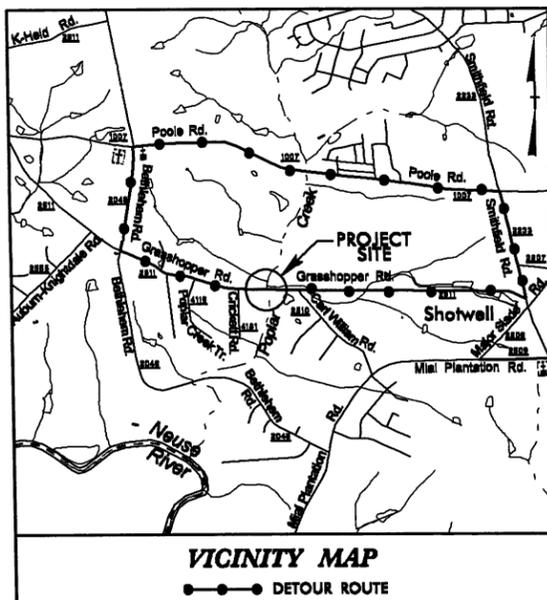
SITE NO.	STRUCTURE SIZE / TYPE	STATION (FROM/TO)	TYPE				IMPACT			MITIGABLE		BUFFER REPLACEMENT	
			ROAD CROSSING	BRIDGE	PARALLEL IMPACT	ALLOWABLE			ZONE 1 (ft ²)	ZONE 2 (ft ²)	TOTAL (ft ²)	ZONE 1 (ft ²)	ZONE 2 (ft ²)
						ZONE 1 (ft ²)	ZONE 2 (ft ²)	TOTAL (ft ²)					
1	Roadway	15+50/15+85	x			957	888	1815					
1	Bridge	15+85/16+55		x		2679		2679					
1	Roadway	16+55/16+80	x			554	921	1475					
TOTALS:						4190	1779	5969					

Buffer Drawing
Sheet 5 of 5

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 38602.1.1 (B-4832)
1/27/2012
SHEET OF
Rev. May 2006

09/08/99

See Sheet 1-A For Index of Sheets
See Sheet 1-B for Conventional Symbology



STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

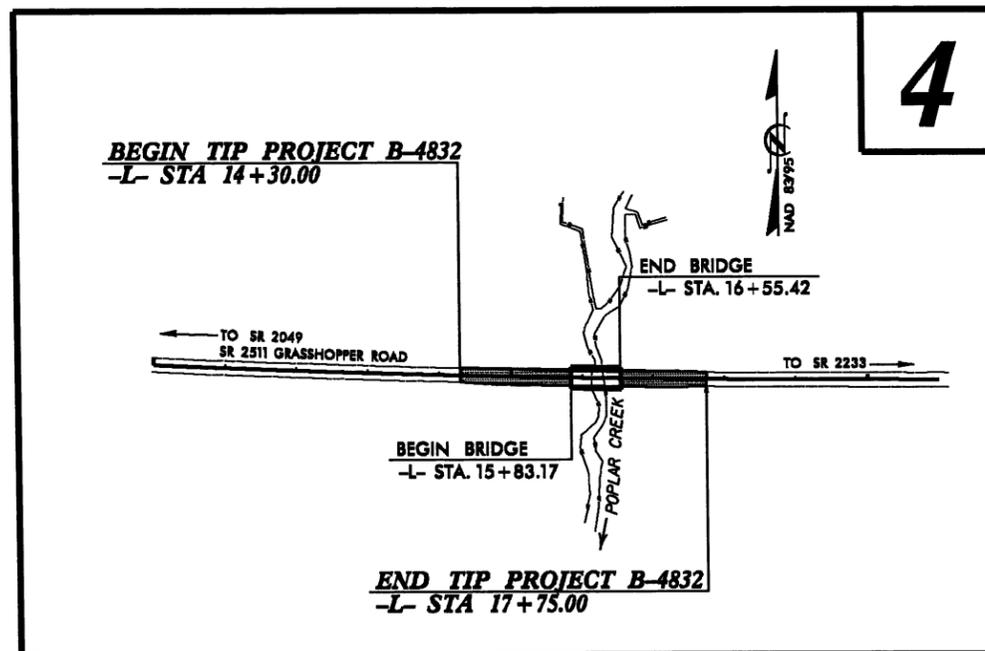
WAKE COUNTY

**LOCATION: BRIDGE NO. 230 OVER POPLAR CREEK ON
SR 2511 (GRASSHOPPER ROAD)**

TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURES

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4832	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
38602.1.1	BRZ-2511(1)	PE	
38602.2.1	BRZ-2511(1)	RW & UTILITIES	

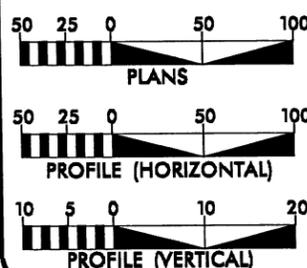
TIP PROJECT: B-4832



- NOTE:**
1. THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.
 2. CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.
 3. SUB REGIONAL TIER DESIGN GUIDELINES FOR BRIDGE PROJECTS WERE USED TO DEVELOP THIS PROJECT.
 4. THIS PROJECT WILL HAVE A DESIGN EXCEPTION FOR SAG VERTICAL CURVE (K=64) AND VERTICAL SSD (305').

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES



DESIGN DATA

ADT 2012 = 3827
ADT 2032 = 9131
DHV = 13 %
D = 65 %
T = 6 % *
V = 60 MPH
* TTST = 1% DUAL 5%
FUNC CLASS =
RURAL LOCAL
SUB-REGIONAL TIER

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT B-4832 - .051 MILES
LENGTH OF STRUCTURE TIP PROJECT B-4832 - .014 MILES
TOTAL LENGTH OF TIP PROJECT B-4832 - .065 MILES

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

2012 STANDARD SPECIFICATIONS
RIGHT OF WAY DATE:
DECEMBER 16, 2011
LETTING DATE:
DECEMBER 18, 2012

GARY LOVERING, PE
PROJECT ENGINEER

ANTHONY C. WEST
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: _____ P.E.



JAN-2012 13:59
\\Roadway\Proj\B-4832_Rdy_rsh.dgn
\$\$\$USERNAME\$\$\$

CONTRACT:

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale
**S.U.E. = Subsurface Utility Engineering*

BOUNDARIES AND PROPERTY:

State Line	_____
County Line	_____
Township Line	_____
City Line	_____
Reservation Line	_____
Property Line	_____
Existing Iron Pin	⊙
Property Corner	_____
Property Monument	⊠
Parcel/Sequence Number	Ⓜ
Existing Fence Line	-x-x-x-
Proposed Woven Wire Fence	○
Proposed Chain Link Fence	□
Proposed Barbed Wire Fence	◇
Existing Wetland Boundary	-w-
Proposed Wetland Boundary	-w-
Existing Endangered Animal Boundary	-eab-
Existing Endangered Plant Boundary	-epb-
Known Soil Contamination: Area or Site	☠ ☠
Potential Soil Contamination: Area or Site	☠ ?

BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or UG Tank Cap	○
Sign	Ⓜ
Well	Ⓜ
Small Mine	Ⓜ
Foundation	Ⓜ
Area Outline	Ⓜ
Cemetery	Ⓜ
Building	Ⓜ
School	Ⓜ
Church	Ⓜ
Dam	Ⓜ

HYDROLOGY:

Stream or Body of Water	_____
Hydro, Pool or Reservoir	Ⓜ
Jurisdictional Stream	-js-
Buffer Zone 1	-bz 1-
Buffer Zone 2	-bz 2-
Flow Arrow	→
Disappearing Stream	→
Spring	Ⓜ
Wetland	Ⓜ
Proposed Lateral, Tail, Head Ditch	Ⓜ
False Sump	Ⓜ

RAILROADS:

Standard Gauge	_____
RR Signal Milepost	Ⓜ
Switch	Ⓜ
RR Abandoned	_____
RR Dismantled	_____

RIGHT OF WAY:

Baseline Control Point	Ⓜ
Existing Right of Way Marker	Ⓜ
Existing Right of Way Line	_____
Proposed Right of Way Line	_____
Proposed Right of Way Line with Iron Pin and Cap Marker	_____
Proposed Right of Way Line with Concrete or Granite R/W Marker	_____
Proposed Control of Access Line with Concrete C/A Marker	_____
Existing Control of Access	_____
Proposed Control of Access	_____
Existing Easement Line	_____
Proposed Temporary Construction Easement	_____
Proposed Temporary Drainage Easement	_____
Proposed Permanent Drainage Easement	_____
Proposed Permanent Drainage / Utility Easement	_____
Proposed Permanent Utility Easement	_____
Proposed Temporary Utility Easement	_____
Proposed Aerial Utility Easement	_____
Proposed Permanent Easement with Iron Pin and Cap Marker	_____

ROADS AND RELATED FEATURES:

Existing Edge of Pavement	_____
Existing Curb	_____
Proposed Slope Stakes Cut	_____
Proposed Slope Stakes Fill	_____
Proposed Curb Ramp	_____
Existing Metal Guardrail	_____
Proposed Guardrail	_____
Existing Cable Guiderail	_____
Proposed Cable Guiderail	_____
Equality Symbol	Ⓜ
Pavement Removal	_____
VEGETATION:	
Single Tree	Ⓜ
Single Shrub	Ⓜ
Hedge	_____
Woods Line	_____

Orchard	Ⓜ
Vineyard	Ⓜ

EXISTING STRUCTURES:

MAJOR:	
Bridge, Tunnel or Box Culvert	_____
Bridge Wing Wall, Head Wall and End Wall	_____
MINOR:	
Head and End Wall	_____
Pipe Culvert	_____
Footbridge	_____
Drainage Box: Catch Basin, DI or JB	_____
Paved Ditch Gutter	_____
Storm Sewer Manhole	Ⓜ
Storm Sewer	_____

UTILITIES:

POWER:	
Existing Power Pole	Ⓜ
Proposed Power Pole	Ⓜ
Existing Joint Use Pole	Ⓜ
Proposed Joint Use Pole	Ⓜ
Power Manhole	Ⓜ
Power Line Tower	Ⓜ
Power Transformer	Ⓜ
UG Power Cable Hand Hole	Ⓜ
H-Frame Pole	Ⓜ
Recorded UG Power Line	_____
Designated UG Power Line (S.U.E.*)	_____

TELEPHONE:

Existing Telephone Pole	Ⓜ
Proposed Telephone Pole	Ⓜ
Telephone Manhole	Ⓜ
Telephone Booth	Ⓜ
Telephone Pedestal	Ⓜ
Telephone Call Tower	Ⓜ
UG Telephone Cable Hand Hole	Ⓜ
Recorded UG Telephone Cable	_____
Designated UG Telephone Cable (S.U.E.*)	_____
Recorded UG Telephone Conduit	_____
Designated UG Telephone Conduit (S.U.E.*)	_____
Recorded UG Fiber Optics Cable	_____
Designated UG Fiber Optics Cable (S.U.E.*)	_____

WATER:

Water Manhole	Ⓜ
Water Meter	Ⓜ
Water Valve	Ⓜ
Water Hydrant	Ⓜ
Recorded UG Water Line	_____
Designated UG Water Line (S.U.E.*)	_____
Above Ground Water Line	_____

TV:

TV Satellite Dish	Ⓜ
TV Pedestal	Ⓜ
TV Tower	Ⓜ
UG TV Cable Hand Hole	Ⓜ
Recorded UG TV Cable	_____
Designated UG TV Cable (S.U.E.*)	_____
Recorded UG Fiber Optic Cable	_____
Designated UG Fiber Optic Cable (S.U.E.*)	_____

GAS:

Gas Valve	Ⓜ
Gas Meter	Ⓜ
Recorded UG Gas Line	_____
Designated UG Gas Line (S.U.E.*)	_____
Above Ground Gas Line	_____

SANITARY SEWER:

Sanitary Sewer Manhole	Ⓜ
Sanitary Sewer Cleanout	Ⓜ
UG Sanitary Sewer Line	_____
Above Ground Sanitary Sewer	_____
Recorded SS Forced Main Line	_____
Designated SS Forced Main Line (S.U.E.*)	_____

MISCELLANEOUS:

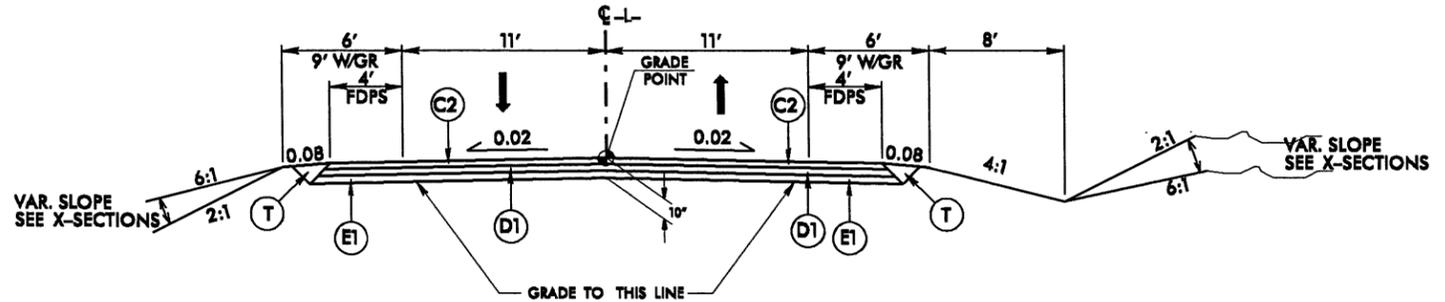
Utility Pole	Ⓜ
Utility Pole with Base	Ⓜ
Utility Located Object	Ⓜ
Utility Traffic Signal Box	Ⓜ
Utility Unknown UG Line	_____
UG Tank; Water, Gas, Oil	Ⓜ
Underground Storage Tank, Approx. Loc.	Ⓜ
AG Tank; Water, Gas, Oil	Ⓜ
Geoenvironmental Boring	Ⓜ
UG Test Hole (S.U.E.*)	Ⓜ
Abandoned According to Utility Records	AATUR
End of Information	E.O.I.

6/2/99

PROJECT REFERENCE NO. B-4832	SHEET NO. 2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
PRELIMINARY PLANS	

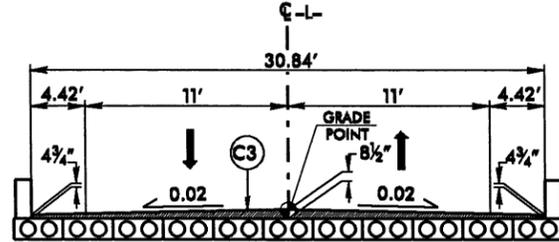
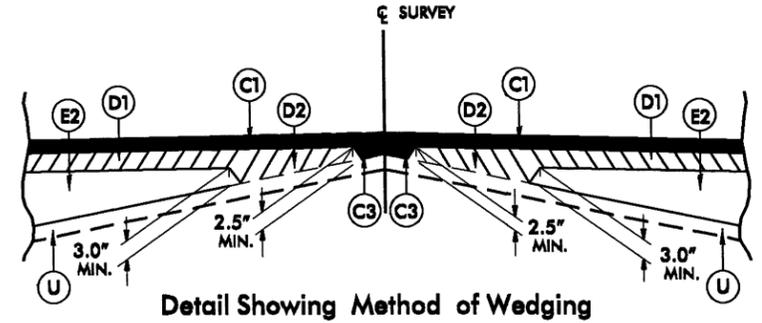
FINAL PAVEMENT SCHEDULE	
C1	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE 99.5B, AT AN AVERAGE RATE OF 188 LBS. PER SQ. YD.
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE 99.5B, AT AN AVERAGE RATE OF 188 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE 99.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 2" IN DEPTH.
D1	PROP. APPROX. 2½" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 285 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2½" IN DEPTH OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 4.5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 513 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL THIS SHEET.)

ALL PAVEMENT EDGE SLOPES ARE 1:1



ROADWAY TYPICAL SECTION NO. 1

-L- STA. 14+30.00 TO STA. 15+83.17 (BEGIN BRIDGE)
-L- STA. 16+55.42 (END BRIDGE) TO STA. 17+75.00



TYPICAL SECTION ON STRUCTURE

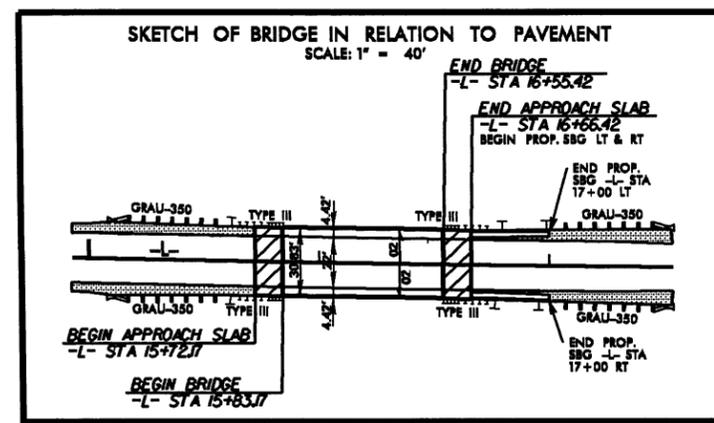
-L- STA. 15+83.17 (BEGIN BRIDGE) TO 16+55.42 (END BRIDGE)

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5/14/99

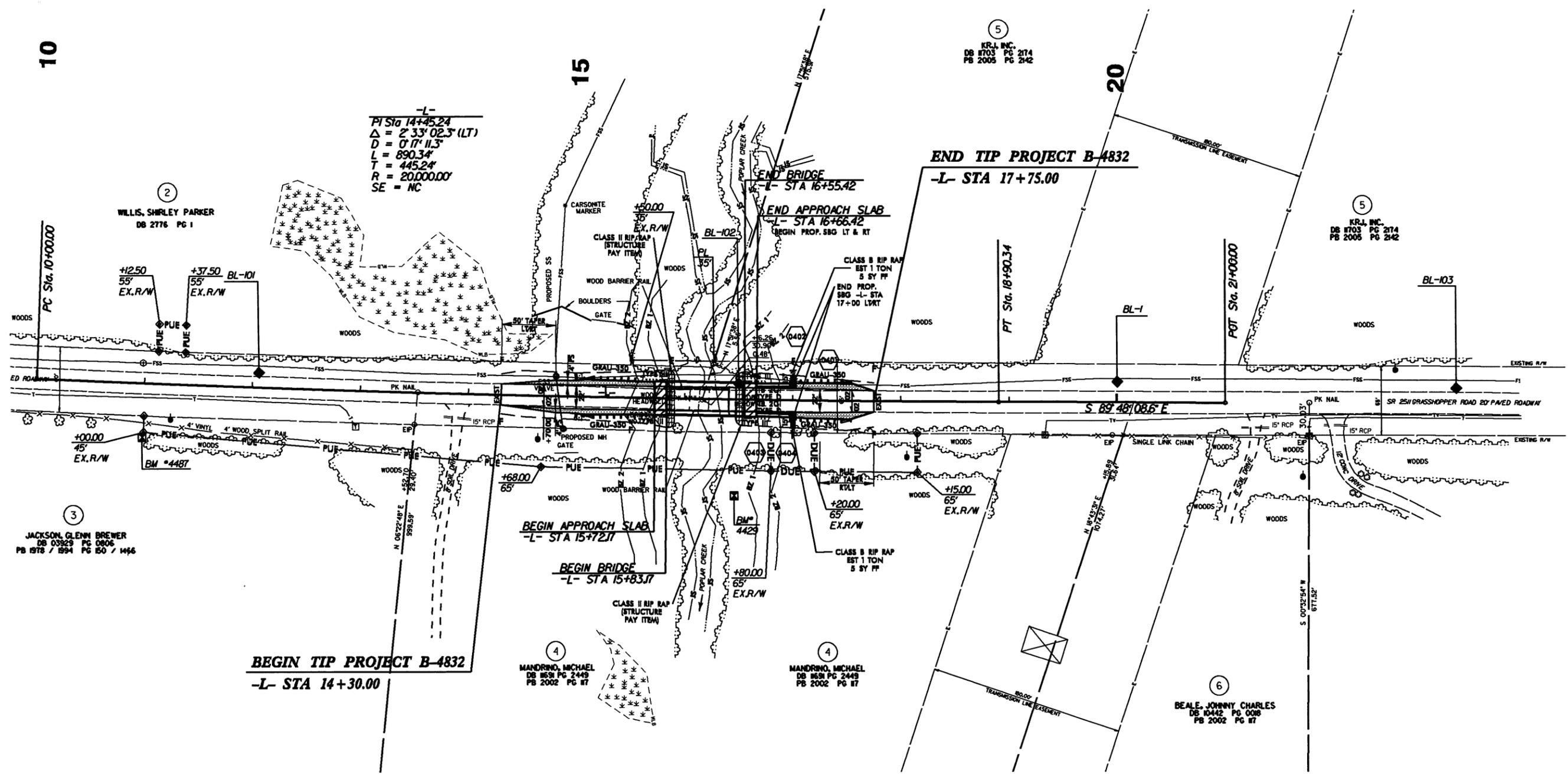
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PROJECT REFERENCE NO. B-4832	SHEET NO. 4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS <small>DO NOT USE FOR CONSTRUCTION</small>	



NAD 83/95

PROP. PAVED SHOULDER



10

15

20

2
WILLIS, SHIRLEY PARKER
DB 2776 PG 1

3
JACKSON, GLENN BREWER
DB 03529 PG 0806
PB 1978 / 1994 PG 150 / 1466

4
MANDRINO, MICHAEL
DB 1859 PG 2449
PB 2002 PG 17

4
MANDRINO, MICHAEL
DB 1859 PG 2449
PB 2002 PG 17

5
K.R.I. INC.
DB 1703 PG 2174
PB 2005 PG 242

5
K.R.I. INC.
DB 1703 PG 2174
PB 2005 PG 242

6
BEALE, JOHNNY CHARLES
DB 10442 PG 0008
PB 2002 PG 17

-L-
PI Sta 14+45.24
 $\Delta = 2' 33'' 02.3''$ (LT)
 $D = 0' 17'' 11.3''$
 $L = 890.34'$
 $T = 445.24'$
 $R = 20,000.00'$
SE = NC

END TIP PROJECT B-4832
-L- STA 17+75.00

BEGIN TIP PROJECT B-4832
-L- STA 14+30.00

FOR -L- PROFILE, SEE SHEET 5
FOR STRUCTURE PLANS, SEE SHEET S1-

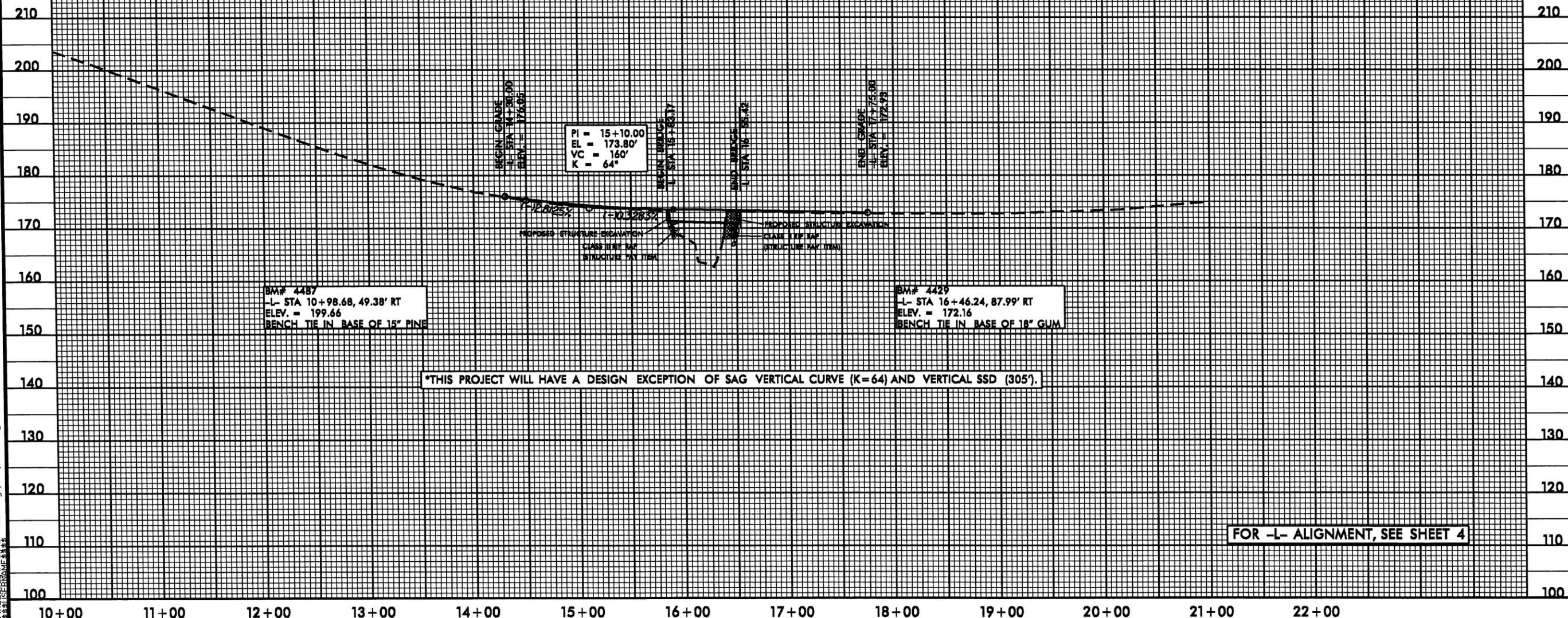
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PROJECT REFERENCE NO. B-4832	SHEET NO. 5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS	

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE = 1320 CFS
DESIGN FREQUENCY = 10 YRS
DESIGN HW ELEVATION = 171.53 FT
BASE DISCHARGE = 3320 CFS
BASE FREQUENCY = 100 YRS
BASE HW ELEVATION = 175.04 FT
OVERTOPPING DISCHARGE = 1650 CFS
OVERTOPPING FREQUENCY = 10+ YRS
OVERTOPPING ELEVATION = 172.46 FT

DATE OF SURVEY = January, 2011
W.S. ELEVATION AT DATE OF SURVEY = 163.60 FT



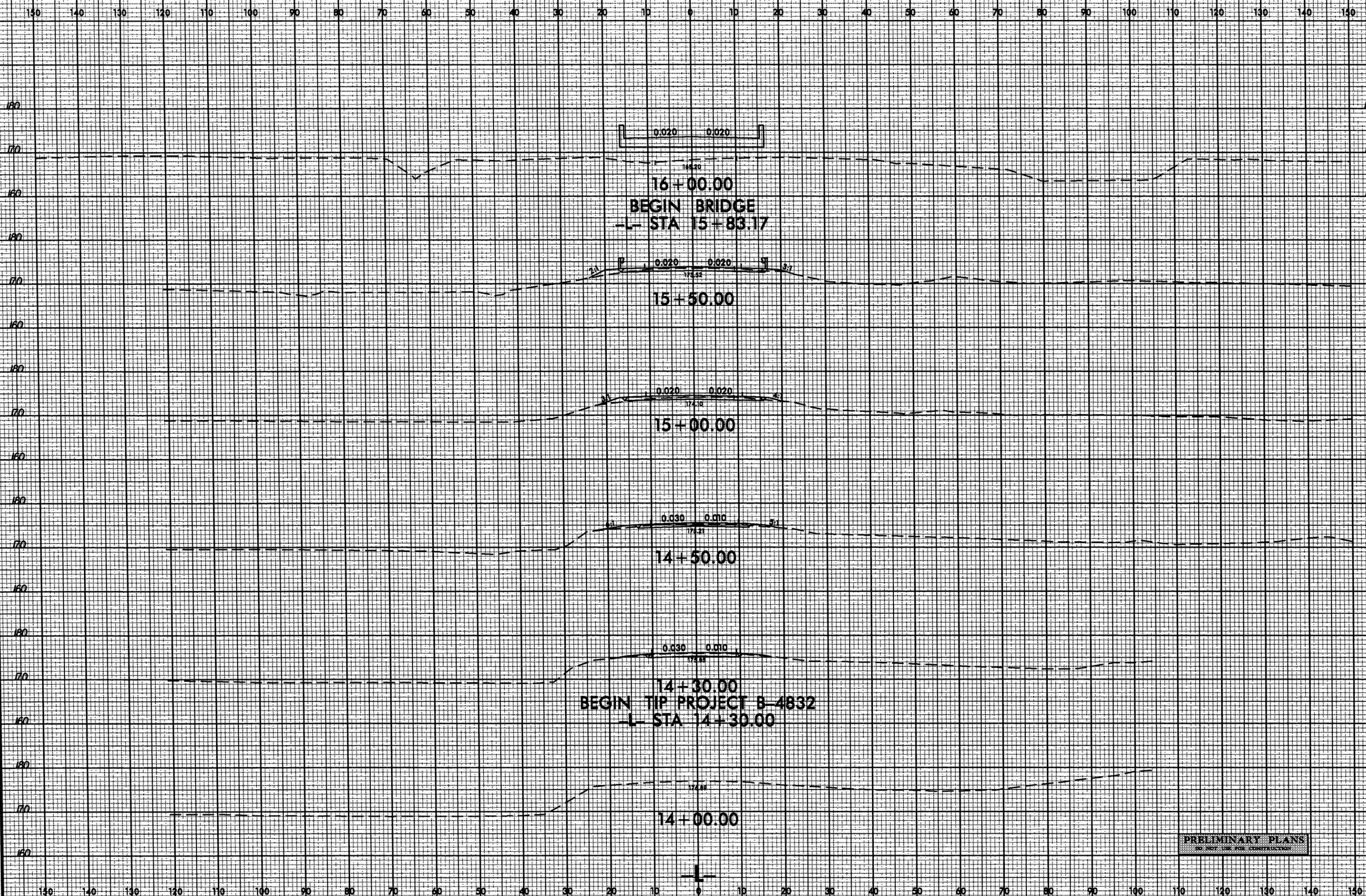
*THIS PROJECT WILL HAVE A DESIGN EXCEPTION OF SAG VERTICAL CURVE (K=64) AND VERTICAL SSD (305').

FOR -L- ALIGNMENT, SEE SHEET 4

8/23/99



PROJ. REFERENCE NO. B-4832	SHEET NO. X-1
-------------------------------	------------------



0.020 0.020

16+00.00
 BEGIN BRIDGE
 -L- STA 15+83.17

2.1 0.020 0.020 3.7

15+50.00

3.1 0.020 0.020 4.1

15+00.00

4.1 0.030 0.010 5.1

14+50.00

0.030 0.010

14+30.00
 BEGIN TIP PROJECT B-4832
 -L- STA 14+30.00

14+00.00

PRELIMINARY PLANS

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