STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAT L. MCCRORY
GOVERNOR

ANTHONY J. TATA
SECRETARY

February 26, 2014

N.C. Division of Water Resources
585 Waughtown Street
Winston-Salem, NC 27107

ATTN: Mr. Dave Wanucha
NCDOT Division 9 Project Coordinator

SUBJECT: **Application for Section 401 Water Quality Certification Nos. 3883, 3884, and 3885** for the replacement of Bridge No. 201 over Kerner's Mill Creek on SR 2667 (Hastings Hill Road), Forsyth County, North Carolina. Federal Aid Project No. BRZ-2667(1), TIP No. B-4511.

Debit $240.00 from WBS Element No. 38398.1.1

Please find enclosed the Pre-Construction Notification (PCN), Preliminary Jurisdictional Determination (JD), Stormwater Management Plan, permit drawings, and roadway design plans for the subject project. A Programmatic Categorical Exclusion (PCE) was completed for this project in June 2013.

The proposed let date for this project is November 18, 2014, with a let review date of September 30, 2014. However, the let date may advance as additional funds become available.

A copy of this permit application will be posted on the NCDOT Website at https://connect.ncdot.gov/resources/Environmental/Pages/default.aspx, under *Quick Links > Permit Applications*. A copy of the PCE is also available at the above website address under *Quick Links > Environmental Documents*. Thank you for your assistance with this project. If you have any questions or need additional information, please contact Jim Mason at either jsmason@ncdot.gov or (919) 707-6136.

Sincerely,

for E. L. Lush

Richard W. Hancock, P.E., Manager
Project Development and Environmental Analysis Unit

cc: NCDOT Permit Application Standard Distribution List
Mr. John Thomas, USACE Division 9 Project Coordinator

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

TELEPHONE: 919-707-6100

FAX: 919-212-5785

WEBSITE: WWW.NCDOT.ORG

PHYSICAL ADDRESS:
Century Center - Building B
1020 Birch Ridge Dr
Raleigh, NC 27610-4328

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:	☒ Section 404 Permit ☐ Section 10 Permit	
1b. Specify Nationwide Permit (NWP) number: 3 12 13 or General Permit (GP) number:		
1c. Has the NWP or GP number been verified by the Corps?	☐ Yes ☒ No	
1d. Type(s) of approval sought from the DWQ (check all that apply): ☒ 401 Water Quality Certification – Regular ☐ Non-404 Jurisdictional General Permit ☐ 401 Water Quality Certification – Express ☐ 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: ☐ Yes ☒ No	For the record only for Corps Permit: ☒ Yes ☐ 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.	☐ Yes ☒ No	
1g. Is the project located in any of NC's twenty coastal counties. If yes, answer 1h below.	☐ Yes ☒ No	
1h. Is the project located within a NC DCM Area of Environmental Concern (AEC)?	☐ Yes ☒ No	

2. Project Information

2a. Name of project:	Replacement of Bridge No. 201 over Kerner's Mill Creek on SR 2667 (Hastings Hill Rd)
2b. County:	Forsyth
2c. Nearest municipality / town:	Winston-Salem
2d. Subdivision name:	*not applicable*
2e. NCDOT only, T.I.P. or state project no:	B-4511

3. Owner Information

3a. Name(s) on Recorded Deed:	North Carolina Department of Transportation
3b. Deed Book and Page No.	*not applicable*
3c. Responsible Party (for LLC if applicable):	*not applicable*
3d. Street address:	1598 Mail Service Center
3e. City, state, zip:	Raleigh, NC 27699-1598
3f. Telephone no.:	(919) 707-6136
3g. Fax no.:	(919) 212-5785
3h. Email address:	jsmason@ncdot.gov

4. Applicant Information (if different from owner)	
4a. Applicant is:	☐ Agent ☐ Other, specify:
4b. Name:	*not applicable*
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:	*not applicable*
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):	*not applicable*
1b. Site coordinates (in decimal degrees):	Latitude: 36.1163 (DD.DDDDDD) Longitude: - 80.1462 (-DD.DDDDDD)
1c. Property size:	2.9 acres
2. Surface Waters	
2a. Name of nearest body of water (stream, river, etc.) to proposed project:	Kerner's Mill Creek
2b. Water Quality Classification of nearest receiving water:	WS-III
2c. River basin:	Yadkin-Pee Dee
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 2667 (Hastings Hill Rd) is classified as a Rural Local Route in the Statewide Functional Classification System and is not a National Highway System Route. Land use within the vicinity includes Forested Land, Agriculture, Low- to Mid-Density Residential, Commercial, Industrial, and Local Government.	
3b. List the total estimated acreage of all existing wetlands on the property: 0.014 acres	
3c. List the total estimated linear feet of all existing streams (intermittent and perennial) on the property: 223 linear feet	
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 consists of replacing the existing two-span, 60-foot long bridge with a one-span, 92.25-foot bridge on the existing alignment. Traffic will be maintained via 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:	☒ Yes ☐ No ☐ Unknown
4b. If the Corps made the jurisdictional determination, what type of determination was made?	☒ Preliminary ☐ Final
4c. If yes, who delineated the jurisdictional areas? Name (if known): Principal Investigator: Keven Duerr	Agency/Consultant Company: Arcadis Other:
4d. If yes, list the dates of the Corps jurisdictional determinations or State determinations and attach documentation. September 18, 2009	
5. Project History	
5a. Have permits or certifications been requested or obtained for this project (including all prior phases) in the past?	☐ Yes ☒ No ☐ Unknown
5b. If yes, explain in detail according to “help file” instructions.	
6. Future Project Plans	
6a. Is this a phased project?	☐ Yes ☒ 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):

☒ Wetlands ☒ Streams - tributaries ☐ Buffers

☐ Open Waters ☐ 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 ☒ P ☐ T	Perm. Fill	Bottomland Hardwood Forest	☒ Yes ☐ No	☒ Corps ☐ DWQ	<0.01
Site 1 ☒ P ☐ T	Mechanized Clearing	Bottomland Hardwood Forest	☒ Yes ☐ No	☒ Corps ☐ DWQ	<0.01
Site ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ	
Site ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ	
Site ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ	
Site ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ	
				2g. **Total wetland impacts**	<0.01 ac Perm. 0 ac Temp.

2h. Comments: Prior to NCDOT construction, the City of Winston-Salem will be relocating their existing 16-inch water line that runs parallel to the road on the south side. This relocation will result in: 1) temporary wetland impacts due to trenching within the wetland in the southwest quadrant (same wetland as above) and 2) permanent stream impacts due to open-cutting and rip rap placement within Kerner's Mill Creek. The city will be acquiring a Nationwide Permit No. 12 for these impacts, which is separate from the Nationwide No. 12 NCDOT plans to use for utility impacts associated with the bridge replacement (see Section 3 below). The permanent stream impacts associated with the water line do not overlap with any NCDOT-related stream impacts. A portion of the city's temporary wetland impacts will overlap with the permanent fill/mechanized clearing impacts associated with NCDOT's work. However, since Winston-Salem will be performing construction first and will restore their temporary wetland impacts prior to NCDOT work, the permanent wetland impact/mechanized clearing by NCDOT in the area of overlap between the two projects still requires permitting.

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 ☒ P ☐ T	Bank Stabilization	Kerner's Mill Creek	☒ PER ☐ INT	☒ Corps ☐ DWQ	25-30	60
Site 1 ☐ P ☒ T	Temp. Fill from Bank Stabilization	Kerner's Mill Creek	☒ PER ☐ INT	☒ Corps ☐ DWQ	25-30	22
Site 1 ☐ P ☒ T	Utility Removal	Kerner's Mill Creek	☒ PER ☐ INT	☒ Corps ☐ DWQ	25-30	10
				3h. **Total stream and tributary impacts**		60ft Perm. 32ft Temp.

3i. Comments: Utility removal includes removing two abandoned conduits laying through the stream.

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. Open water impact number – Permanent (P) or Temporary (T)	4b. Name of waterbody (if applicable)	4c. Type of impact	4d. Waterbody type	4e. Area of impact (acres)
O1 ☐ P ☐ T				
O2 ☐ P ☐ 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. Pond ID number	5b. Proposed use or purpose of pond	5c. Wetland Impacts (acres)			5d. Stream Impacts (feet)			5e. Upland (acres)
		Flooded	Filled	Excavated	Flooded	Filled	Excavated	Flooded
P1								
P2								
	5f. Total							

5g. Comments:

5h. Is a dam high hazard permit required?	☐ Yes ☐ 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?			☐ Neuse ☐ Catawba ☐ Tar-Pamlico ☐ Randleman ☐ 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 ☐ P ☐ T			☐ Yes ☐ No		
B2 ☐ P ☐ T			☐ Yes ☐ No		
B3 ☐ P ☐ T			☐ Yes ☐ No		
		6h. **Total buffer impacts**		0	0
6i. Comments:					

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 new bridge will be longer than the existing one; An off-site detour will be employed; Stormwater runoff from the bridge will drain into two drainage structures at the end of the bridge, which will discharge into a pre-formed scour hole that will be installed at STA. -L- 17+98 RT; No deck drains will be required.

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

NCDOT Best Management Practices for Construction and Maintenance Activities and Best Management Practices for the Protection of Surface Waters 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?	☐ Yes ☒ No If no, explain: No mitigation is required by USACE for the bank stabilization impacts; for DWR, permanent stream impacts are less than 150 linear ft; wetland impacts are less than 0.10 ac.
2b. If yes, mitigation is required by (check all that apply):	☐ DWQ ☐ Corps
2c. If yes, which mitigation option will be used for this project?	☐ Mitigation bank ☐ Payment to in-lieu fee program ☐ 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.	☐ Yes
4b. Stream mitigation requested:	0 linear feet
4c. If using stream mitigation, stream temperature:	☐ warm ☐ cool ☐ cold
4d. Buffer mitigation requested (DWQ only):	0 square feet
4e. Riparian wetland mitigation requested:	0 acres
4f. Non-riparian wetland mitigation requested:	0 acres
4g. Coastal (tidal) wetland mitigation requested:	0 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?			☐ Yes	☒ 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:				

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?	☐ Yes ☒ No
1b. If yes, then is a diffuse flow plan included? If not, explain why. Comments:	☐ Yes ☐ 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?	☒ Yes ☐ 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?	☐ Certified Local Government ☐ DWQ Stormwater Program ☒ 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):	☐ Phase II ☐ NSW ☐ USMP ☐ Water Supply Watershed ☐ Other:
3c. Has the approved Stormwater Management Plan with proof of approval been attached?	☐ Yes ☐ No
4. DWQ Stormwater Program Review	
4a. Which of the following state-implemented stormwater management programs apply (check all that apply):	☐ Coastal counties ☐ HQW ☐ ORW ☐ Session Law 2006-246 ☐ Other:
4b. Has the approved Stormwater Management Plan with proof of approval been attached?	☐ Yes ☐ No
5. DWQ 401 Unit Stormwater Review	
5a. Does the Stormwater Management Plan meet the appropriate requirements?	☐ Yes ☐ No N/A
5b. Have all of the 401 Unit submittal requirements been met?	☐ Yes ☐ No N/A

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?	☒ Yes	☐ 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)?	☒ Yes	☐ 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:	☒ Yes	☐ 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)?	☐ Yes	☒ No
2b. Is this an after-the-fact permit application?	☐ Yes	☒ 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?	☐ Yes ☒ 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?	☐ Yes	☒ No
5b. Have you checked with the USFWS concerning Endangered Species Act impacts?	☒ Yes	☐ No
5c. If yes, indicate the USFWS Field Office you have contacted.	☒ Raleigh ☐ Asheville	
5d. What data sources did you use to determine whether your site would impact Endangered Species or Designated Critical Habitat? NC Natural Heritage Program data, USFWS website, NCDOT field surveys		
6. Essential Fish Habitat (Corps Requirement)		
6a. Will this project occur in or near an area designated as essential fish habitat?	☐ Yes	☒ 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)?	☐ Yes	☒ 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?	☒ Yes	☐ 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		

Richard W. Hancock, P.E. Applicant/Agent's Printed Name	E. L. Lusk Applicant/Agent's Signature (Agent's signature is valid only if an authorization letter from the applicant is provided.)	2.25.14 Date

U.S. ARMY CORPS OF ENGINEERS
WILMINGTON DISTRICT

Action Id. **200901742** County: **Forsyth** U.S.G.S. Quad: **Winston-Salem East**

NOTIFICATION OF JURISDICTIONAL DETERMINATION Mason

Property Owner/Agent: **Deanna Riffey / James Mason**
Address: **NC DOT**
1598 Mail Service Center
Raleigh, NC 27699-1598
Telephone No.: **919 715-7217**

Property description:
Size (acres) **02** Nearest Town **Clemmons**
Nearest Waterway **Kerners Mill Creek** River Basin **Yadkin River**
USGS HUC **03040101** Coordinates N **36.0254690** W **-80.4197665**
Location description **Bridge 201 on SR 2667, adjacent to Kerners Mill Creek, west of Kernersville, in Forsyth County, North Carolina. TIP B-4511**

Indicate Which of the Following Apply:

A. Preliminary Determination

_ Based on preliminary information, there may be wetlands on the above described property. We strongly suggest you have this property inspected to determine the extent of Department of the Army (DA) jurisdiction. To be considered final, a jurisdictional determination must be verified by the Corps. This preliminary determination is not an appealable action under the Regulatory Program Administrative Appeal Process (Reference 33 CFR Part 331).

B. Approved Determination

_ There are Navigable Waters of the United States within the above described property subject to the permit requirements of Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act. Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.

X There are waters of the U.S. on the above described project area subject to the permit requirements of Section 404 of the Clean Water Act (CWA)(33 USC § 1344). Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.

_ We strongly suggest you have the wetlands on your property delineated. Due to the size of your property and/or our present workload, the Corps may not be able to accomplish this wetland delineation in a timely manner. For a more timely delineation, you may wish to obtain a consultant. To be considered final, any delineation must be verified by the Corps.

X The waters of the U.S. including wetland on your project area have been delineated and the delineation has been verified by the Corps. We strongly suggest you have this delineation surveyed. Upon completion, this survey should be reviewed and verified by the Corps. Once verified, this survey will provide an accurate depiction of all areas subject to CWA jurisdiction on your property which, provided there is no change in the law or our published regulations, may be relied upon for a period not to exceed five years.

_ The wetlands have been delineated and surveyed and are accurately depicted on the plat signed by the Corps Regulatory Official identified below on _____. Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.

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

_ The property is located in one of the 20 Coastal Counties subject to regulation under the Coastal Area Management Act (CAMA). You should contact the Division of Coastal Management in Washington, NC, at (252) 946-6481 to determine their requirements.

Action ID: _____

Placement of dredged or fill material within waters of the US and/or wetlands without a Department of the Army permit may constitute a violation of Section 301 of the Clean Water Act (33 USC § 1311). If you have any questions regarding this determination and/or the Corps regulatory program, please contact **John Thomas** at **919 554-4884 ext. 25**.

C. Basis For Determination

There are stream channels within your project site which are tributaries of Kerners Mill Creek which flows into the Yadkin River and the Atlantic Ocean.

D. Remarks

Site inspection conducted on September 15, 2009, confirm flagged limits. No Rapanos determination completed for site.

E. Appeals Information (This information applies only to approved jurisdictional determinations as indicated in B. above)

This correspondence constitutes an approved jurisdictional determination for the above described site. If you object to this determination, you may request an administrative appeal under Corps regulations at 33 CFR part 331. Enclosed you will find a Notification of Appeal Process (NAP) fact sheet and request for appeal (RFA) form. If you request to appeal this determination you must submit a completed RFA form to the following address:

District Engineer, Wilmington Regulatory Division
Attn:Jean Manuele, Project Manager,
Raleigh Regulatory Field Office
3331 Heritage Trade Drive, Suite 105
Wake Forest, North Carolina 27587

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 CFR part 331.5, and that it has been received by the District Office within 60 days of the date of the NAP. Should you decide to submit an RFA form, it must be received at the above address by **November 18, 2009**.

It is not necessary to submit an RFA form to the District Office if you do not object to the determination in this correspondence.

Corps Regulatory Official: _____

Date **09/18/2009** Expiration Date **09/18/2014**

The Wilmington District is committed to providing the highest level of support to the public. To help us ensure we continue to do so, please complete the Customer Satisfaction Survey located at our website at http://regulatory.usacesurvey.com/ to complete the survey online.

Copy furnished:
Keven Duerr, Arcadis G&M of North Carolina, Inc., 801 Corporate Center Drive, Suite 300, Raleigh, NC 27607-5073

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL		
Applicant: NC DOT / Deanna Riffey - James Mason / TIP B-4511	File Number: SAW 2008 01742	Date: September 18, 2009
Attached is:		See Section below
☐ INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)		A
☐ PROFFERED PERMIT (Standard Permit or Letter of permission)		B
☐ PERMIT DENIAL		C
☐ APPROVED JURISDICTIONAL DETERMINATION		D
☒ PRELIMINARY JURISDICTIONAL DETERMINATION		E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at http://www.usace.army.mil/inet/functions/cw/cecwo/reg or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the district engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact: John Thomas @ 919 554-4884 ext. 25	If you only have questions regarding the appeal process you may also contact: Mr. Mike Bell, Administrative Appeal Review Officer CESAD-ET-CO-R U.S. Army Corps of Engineers, South Atlantic Division 60 Forsyth Street, Room 9M15 Atlanta, Georgia 30303-8801

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

_____ Signature of appellant or agent.	Date:	Telephone number:

For appeals on Initial Proffered Permits and approved Jurisdictional Determinations send this form to:

District Engineer, Wilmington Regulatory Division, Attn:Jean Manuele, Project Manager, Raleigh Regulatory Field Office, 3331 Heritage Trade Drive , Suite 105, Wake Forest, North Carolina 27587

For Permit denials and Proffered Permits send this form to:

Division Engineer, Commander, U.S. Army Engineer Division, South Atlantic, Attn: Mr. Mike Bell, Administrative Appeal Officer, CESAD-ET-CO-R, 60 Forsyth Street, Room 9M15, Atlanta, Georgia 30303-8801

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR LINEAR ROADWAY PROJECTS

(Version 1.2; Released September 2011)

Project/TIP No.: B-4511 **County(ies):** Forsyth

General Project Information

Project No.:	B-4511		**Project Type:**	Bridge Replacement	**Date:** 12/3/2013
NCDOT Contact:	Marshall Clawson		**Contractor / Designer:**	RK&K Engineers - Eleni Riggs, PE	
	Address: NCDOT Hydraulics Unit 1590 Mail Service Center Raleigh, NC 27699-1590			**Address:** 900 Ridgefield Drive Suite 350 Raleigh, NC 27609	
	Phone: 919-707-6713			**Phone:** 919-878-9560	
	Email: mclawson@ncdot.gov			**Email:** eriggs@rkk.com	
City/Town:	Winston-Salem		**County(ies):**	Forsyth	
River Basin(s):	Yadkin-Pee Dee		**CAMA County?**	No	
Primary Receiving Water:	Kerners Mill Creek		**NCDWQ Stream Index No.:**	12-94-12-2-(0.3)	
NCDWQ Surface Water Classification for Primary Receiving Water	**Primary:**		Water Supply III (WS-III)		
	Supplemental:		None		
Other Stream Classification:	None				
303(d) Impairments:	None				
Buffer Rules in Effect	N/A				

Project Description

Project Length (lin. Miles or feet):	0.189 miles	**Surrounding Land Use:**	Rural - Wooded

	Proposed Project	**Existing Site**
Project Built-Upon Area (ac.)	0.87 ac.	0.71 ac.
Typical Cross Section Description:	Two lanes, each 12' wide with 4' paved shoulder on north side and 8.5' paved shoulder with possible future sidewalk on south side.	Two lanes, each approx. 10' wide with approx. 6' wide unpaved shoulders.
Average Daily Traffic (veh/hr/day):	Design/Future: 8,300 (2030)	Existing: 4,500 (2005)

General Project Narrative:

This project is replacing existing structure #201 on SR 2667 (Hastings Hill Road). The existing structure is a two span (2 @ 30'-3"), prestressed concrete channel superstructure, approximately 60'-6" long. The proposed bridge is a single span (1 @ 90'-0"), 33" box beams, approximately 90-0"' long. An offsite detour will be utilized during construction. No deck drains will be required. Stormwater runoff from the bridge will drain into two drainage structures at the end of the bridge which will discharge into a preformed scour hole.

References

North Carolina Department of Transportation

Highway Stormwater Program
STORMWATER MANAGEMENT PLAN
FOR LINEAR ROADWAY PROJECTS

(Version 1.2; Released September 2011)

Project/TIP No.: B-4511 **County(ies):** Forsyth

Preformed Scour Holes and Energy Dissipators

Sheet No.	Station	Energy Dissipator Type	Riprap Type	Drainage Area (ac)	Conveyance Structure	Pipe/Structure Dimensions (in)	Q10 (cfs)	V10 (fps)
4	L 17+98 RT	PFSH	Class 'B'	0.10	Pipe	15	0.5	0.3

☑ YES ☐ NO Have minimum design criteria, as presented in the NCDOT Best Management Practices Toolbox (2008), NCDOT Standard Details, or FHWA HEC-14 (July 2006), been met and verified, as applicable? If No, provide further explanantion of why design criteria was not met.

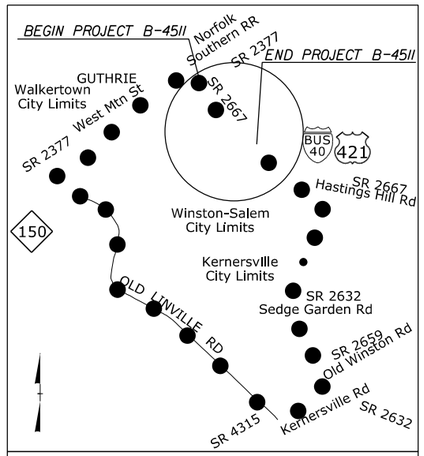
Additional Comments

* Refer to the NCDOT Best Management Practices Toolbox, Version 1 (March 2008), NCDOT Standard Details, the Federal Highway Administration (FHWA) Hydraulic Engineering Circular No. 14 (HEC-14), Third Edition, Hydraulic Design of Energy Dissipators for Culverts and Channels (July 2006), as applicable, for design guidance and criteria.

09/08/99

TIP PROJECT: B-4511

See Sheet 1-A For Index of Sheets



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

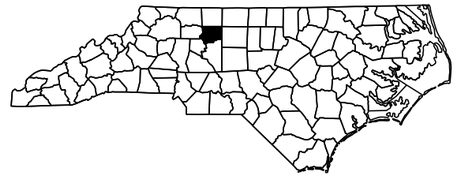
FORSYTH COUNTY

LOCATION: BRIDGE 201 OVER A TRIBUTARY OF SALEM CREEK ON SR 2667

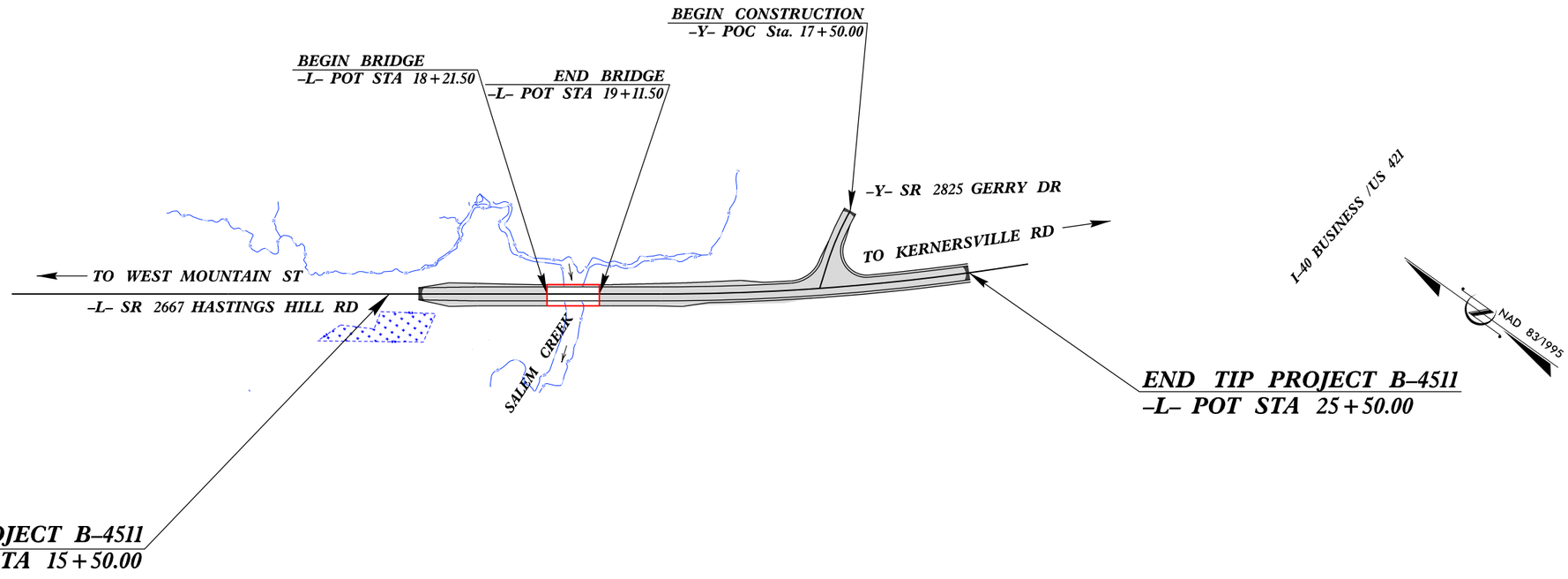
TYPE OF WORK: GRADING, DRAINAGE, PAVING, AND STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4511	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
38398.1.1	BRZ-2657(1)	P.E.
38398.2.1	BRZ-2667(1)	R/W, UTL



PERMIT DRAWING
SHEET 1 OF 6



CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD ???
THERE IS NO CONTROL OF ACCESS ON THIS PROJECT.
THIS PROJECT IS WITHIN WINSTON-SALEM CITY LIMITS.

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

GRAPHIC SCALES

PLANS: 50 25 0 50 100
PROFILE (HORIZONTAL): 50 25 0 50 100
PROFILE (VERTICAL): 10 5 0 10 20

DESIGN DATA

ADT 2014 = 5868
ADT 2034 = 8908
DHV = 60 %
D = 10 %
T = 3 % *
V = 50 MPH
FUNCTIONAL CLASS = LOCAL RURAL
* TTST 1% DUAL 2%
SUBREGIONAL TIER

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT B-4511 = .214 MILES
LENGTH OF STRUCTURE TIP PROJECT B-4511 = .017 MILES
TOTAL LENGTH TIP PROJECT B-4511 = .197 MILES

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

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: NOVEMBER 20, 2013

LETTING DATE: NOVEMBER 18, 2014

TONY HOUSER, PE
PROJECT ENGINEER

BRUCE PAYNE, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE:

ROADWAY DESIGN ENGINEER

SIGNATURE:

CONTRACT:

12/13/2013
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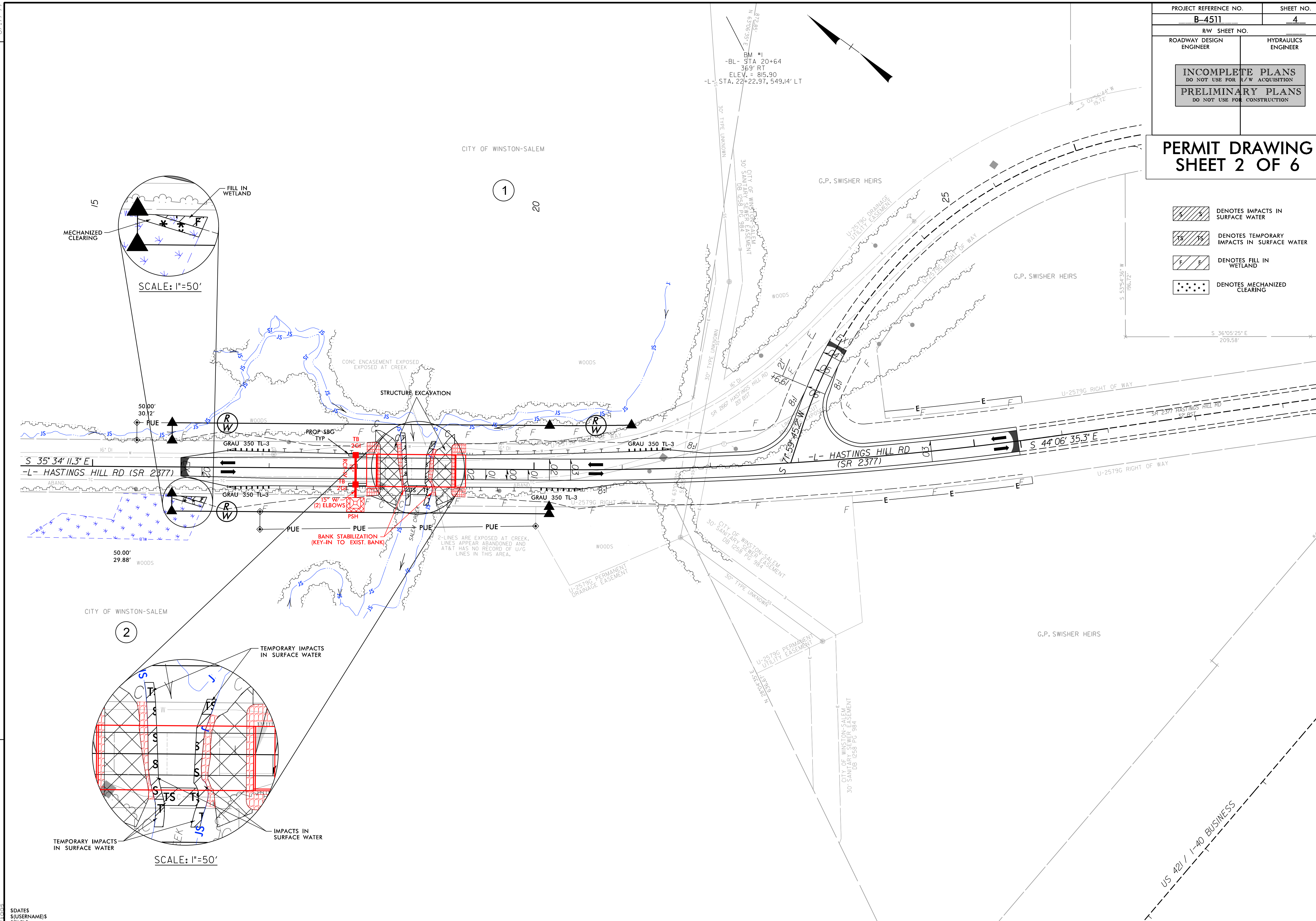
PROJECT REFERENCE NO.	SHEET NO.
B-4511	4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 2 OF 6

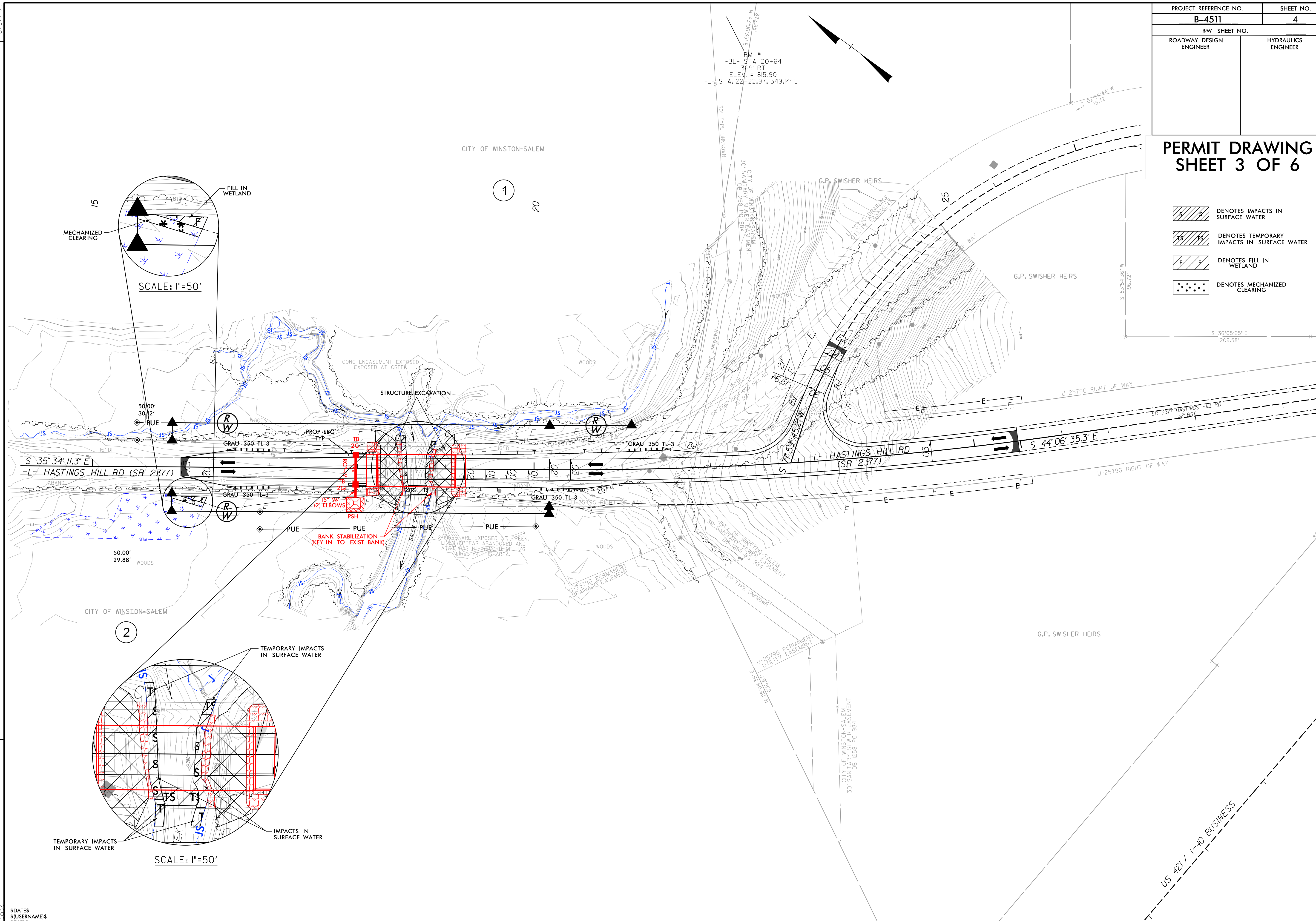
- DENOTES IMPACTS IN SURFACE WATER
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER
- DENOTES FILL IN WETLAND
- DENOTES MECHANIZED CLEARING



CITY OF WINSTON-SALEM
BM #1
-BL- STA 20+64
369' RT
ELEV. = 815.90
-L- STA. 22+22.97, 549.14' LT
G.P. SWISHER HEIRS
FILL IN WETLAND
MECHANIZED CLEARING
SCALE: 1"=50'
CONC ENCASEMENT EXPOSED AT CREEK
STRUCTURE EXCAVATION
WOODS
PROP SBG TYP
GRAU 350 TL-3
S 35° 34' 11.3" E
-L- HASTINGS HILL RD (SR 2377)
-L- HASTINGS HILL RD (SR 2377)
S 44° 06' 35.3" E
S 71° 59' 45.2" W
PUE
BANK STABILIZATION (KEY-IN TO EXIST. BANK)
15" W/ (2) ELBOWS
PSH
2-LINES ARE EXPOSED AT CREEK. LINES APPEAR ABANDONED AND AT&T HAS NO RECORD OF U/G LINES IN THIS AREA.
U-2579G RIGHT OF WAY
U-2579G PERMANENT DRAINAGE EASEMENT
U-2579G PERMANENT UTILITY EASEMENT
30' CITY OF WINSTON-SALEM SANITARY SEWER EASEMENT DB 1258 PG 984
30' TYPE UNKNOWN
50.00'
30.12'
50.00'
29.88'
TEMPORARY IMPACTS IN SURFACE WATER
IMPACTS IN SURFACE WATER
SCALE: 1"=50'
US 421 / I-40 BUSINESS
REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
B-4511	4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING SHEET 3 OF 6



DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
DENOTES FILL IN WETLAND
DENOTES MECHANIZED CLEARING
BM #1
-BL- STA 20+64
369' RT
ELEV. = 815.90
-L- STA. 22+22.97, 549.14' LT
CITY OF WINSTON-SALEM
G.P. SWISHER HEIRS
FILL IN WETLAND
MECHANIZED CLEARING
SCALE: 1"=50'
STRUCTURE EXCAVATION
CONC ENCASEMENT EXPOSED AT CREEK
PROP SBG TYP
GRAU 350 TL-3
S 35° 34' 11.3" E
-L- HASTINGS HILL RD (SR 2377)
S 71° 59' 45.2" W
S 44° 06' 35.3" E
15" W (2) ELBOWS
PSH
BANK STABILIZATION (KEY-IN TO EXIST. BANK)
PUE
WOODS
U-2579G RIGHT OF WAY
US 421 / I-40 BUSINESS
TEMPORARY IMPACTS IN SURFACE WATER
IMPACTS IN SURFACE WATER
SCALE: 1"=50'
REVISIONS

8/17/99

12/13/2013
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$FILEL$

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
B-4511	5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING SHEET 4 OF 6

-L- SR 2377 HASTINGS HILL RD

BM #1
-BL- STA 20+64.00
369' RT
-L- STA 22+22.97, 549.14' LT
ELEV = 815.90'

BEGIN GRADE B-4511
-L- STA 16+00.00 ELEV = 813.80'

BEGIN BRIDGE -L- STA 18+21.50

END BRIDGE -L- STA 19+11.50

-L- STA 22+91.00
-Y- STA 18+93.78

PI = 17+75.00
EL = 812.38'
VC = 280'
K = 100

PI = 22+15.00
EL = 821.19'
VC = 600'
K = 100

50' INCIDENTAL MILLING AS NEEDED

(-)0.8100%

(+)2.0018%

(+)7.9971%

NWS 803.7
SURVEYED 03/2013

END GRADE B-4511
ELEV = 847.98'
-L- STA 25+50.00

NOTE: EXISTING GRADE ON -L-, FROM -L- STA 19+30.00 TO -L- STA 25+50.00 IS GENERATED FROM THE PROPOSED GRADE -Y5A- ON THE U-2579G PROJECT.

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 2000	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 811.9	FT
BASE DISCHARGE	= 2800	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 812.16	FT
OVERTOPPING DISCHARGE	= 3600	CFS
OVERTOPPING FREQUENCY	= 100+	YRS
OVERTOPPING ELEVATION	= 813.2	FT
N.W.S. ELEVATION	= 803.7	FT
DATE OF SURVEY	= 03/2013	
W.S. ELEVATION AT DATE OF SURVEY	= 803.7	FT

NOTES:
SEE SHEET 4 FOR PLAN VIEW

930 920 910 900 890 880 870 860 850 840 830 820 810 800 790 780 770 760 750 740 730

15+00 16+00 17+00 18+00 19+00 20+00 21+00 22+00 23+00 24+00 25+00 26+00 27+00 28+00

12/12/2013
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8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4511	X-1

PERMIT DRAWING
SHEET 5 OF 6

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

820 / 815 / 810 / 805

0.020 0.020

4:1 2:1

813.07

18+00.00

820 / 815 / 810 / 805

0.020 0.020

4:1 2:1

813.03

17+50.00

820 / 815 / 810 / 805

0.020 0.020

2:1 2:1

813.07

17+00.00

820 / 815 / 810 / 805

0.020 0.020

2:1 2:1

813.22

16+50.00

820 / 815 / 810 / 805

WETLANDS

813.55

16+00.00

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

12/12/2013
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WETLAND PERMIT IMPACT SUMMARY

			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	18+48 to 18+89	Bank Stabilization						0.01	<0.01	60	22	
1	18+58 to 18+80 RT	Utility Removal							<0.01		10	
1	15+90 to 16+30 RT	Roadway	<0.01			<0.01						
TOTALS:			<0.01			<0.01		0.01	0.01	60	32	

Notes:

Temporary and Permanent Surface Water Impacts are due to Bank Stabilization.

Utility Removal includes removing the two abandoned conduits laying through the stream. Waterline will be abandoned in place.

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

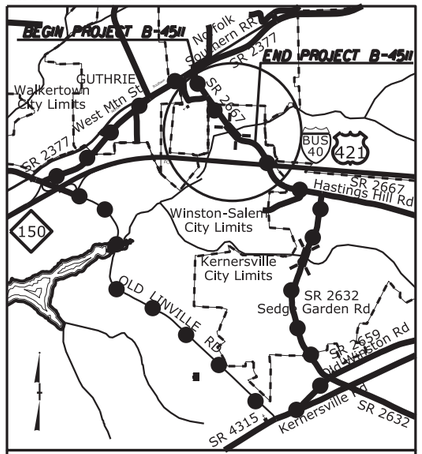
FORSYTH COUNTY
WBS - 38398.1.1 (B-4511)

09/08/99

TIP PROJECT: B-4511

CONTRACT:

See Sheet 1-A For Index of Sheets



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

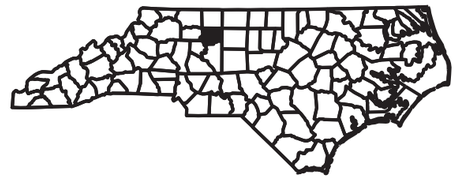
FORSYTH COUNTY

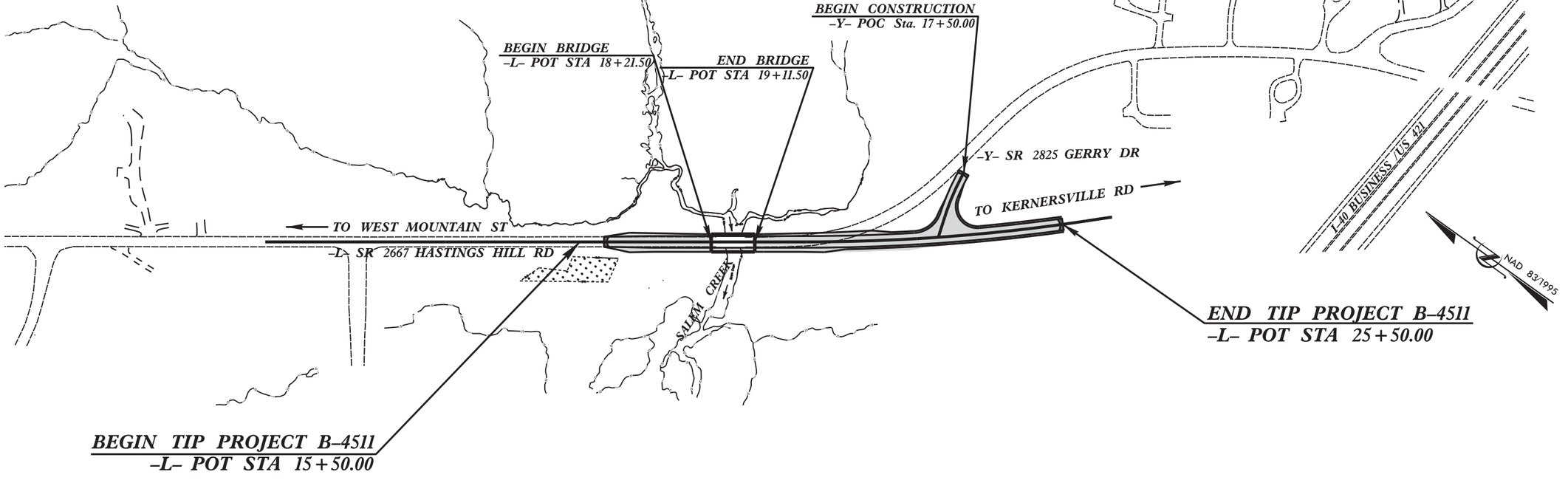
LOCATION: BRIDGE 201 OVER A TRIBUTARY OF SALEM CREEK ON SR 2667

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4511	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
38398.1.1	BRZ-2657(1)	P.E.
38398.2.1	BRZ-2667(1)	R/W, UTL





CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD ???
THERE IS NO CONTROL OF ACCESS ON THIS PROJECT.
THIS PROJECT IS WITHIN WINSTON-SALEM CITY LIMITS.

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

GRAPHIC SCALES

PLANS: 50 25 0 50 100
PROFILE (HORIZONTAL): 50 25 0 50 100
PROFILE (VERTICAL): 10 5 0 10 20

DESIGN DATA

ADT 2014 = 5868
ADT 2034 = 8908
DHV = 60 %
D = 10 %
T = 3 % *
V = 50 MPH
FUNCTIONAL CLASS = LOCAL RURAL
* TTST 1% DUAL 2%
SUBREGIONAL TIER

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT B-4511 = .214 MILES
LENGTH OF STRUCTURE TIP PROJECT B-4511 = .017 MILES
TOTAL LENGTH TIP PROJECT B-4511 = .197 MILES

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

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: NOVEMBER 20, 2013

LETTING DATE: NOVEMBER 18, 2014

TONY HOUSER, PE
PROJECT ENGINEER

BRUCE PAYNE, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE:

ROADWAY DESIGN ENGINEER

SIGNATURE:

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION

21-NOV-2013 16:02
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$$$$USERNAME$$$$

12/05/11

PROJECT REFERENCE NO.	SHEET NO.
B-4511	1B

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 — EIP
- 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
- Known Soil Contamination: Area or Site
- Potential Soil Contamination: Area or Site

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
- Wetland
- Proposed Lateral, Tail, Head Ditch — FLOW
- False Sump

RAILROADS:

- Standard Gauge — CSX TRANSPORTATION
- RR Signal Milepost — MILEPOST 35
- Switch — 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 — RW
- Proposed Right of Way Line with Iron Pin and Cap Marker — RW
- Proposed Right of Way Line with Concrete or Granite R/W Marker — RW
- Proposed Control of Access Line with Concrete C/A Marker — CA
- 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 Drainage / Utility Easement — DUE
- Proposed Permanent Utility Easement — PUE
- Proposed Temporary Utility Easement — TUE
- Proposed Aerial Utility Easement — AUE
- Proposed Permanent Easement with Iron Pin and Cap Marker

ROADS AND RELATED FEATURES:

- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut — C
- Proposed Slope Stakes Fill — F
- Proposed Curb Ramp — CR
- 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
- 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
- Designated U/G Water Line (S.U.E.*)
- 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:

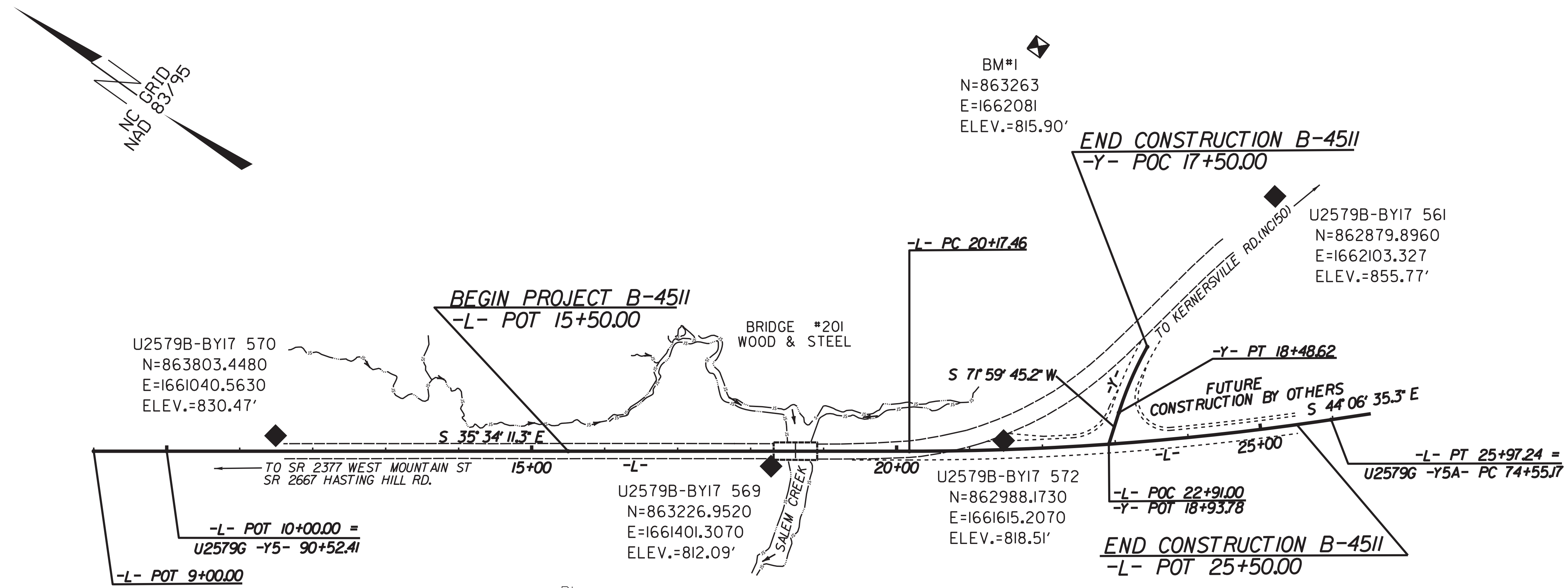
- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- Recorded SS Forced Main Line — FSS
- Designated SS Forced Main Line (S.U.E.*) — FSS

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
- Underground Storage Tank, Approx. Loc. — UST
- A/G Tank; Water, Gas, Oil
- Geoenvironmental Boring
- U/G Test Hole (S.U.E.*)
- Abandoned According to Utility Records — AATUR
- End of Information — E.O.I.

PROJECT REFERENCE NO.	SHEET NO.
B-4511	1C
Location and Surveys	

SURVEY CONTROL SHEET B-4511



BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
570	BY17-570	863803.4480	1661040.5630	830.47	11+48.97	21.57 LT
569	BY17-569	863226.9520	1661401.3070	812.09	18+27.74	20.34 RT
572	BY17-572	862988.1730	1661615.2070	818.51	21+46.84	12.60 LT
561	BY17-561	862879.8960	1662103.3270	855.77	25+64.12	313.55 LT

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "U2579C-1"
WITH NAD 83/95 STATE PLANE GRID COORDINATES OF
NORTHING: 876419.285(ft) EASTING: 1651591.602(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99995453
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "U2579C-1" TO -L- STATION 9+00.00 IS
S 36°53'30" E 17430.37'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

****
BM1 ELEVATION = 815.90'
N 863263 E 1662081
-L- STATION 22+23.00 549' LEFT
CHISLED SQUARE ON THE NORTH EDGE OF A CONCRETE PLATFORM FOR A SANITARY SEWER MANHOLE BEING 4.6' NORTH OF VENT PIPE.
****

NOTE: DRAWING NOT TO SCALE

NOTES:

1. THE SITE CALIBRATION SHOWN IS BASED UPON A NETWORK TIED TO THE HARN (HIGH ACCURACY REFERENCE NETWORK) NAD 83/95 ADJUSTMENT. THIS CALIBRATION WILL ALLOW THE END USER TO WORKWITHIN THE SAME COORDINATE SYSTEM WHEN USING RTK (REAL TIME KINEMATIC) GPS AND A LOCAL BASE STATION. IF ANOTHER SYSTEM SUCH AS VRS (VIRTUAL REFERENCE STATION) IS USED, ADDITIONAL FIELD TIES MAY BE NEEDED TO REDUCE POSSIBLE ERRORS, OR BIASES.

2. THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:
HTTP://CONNECT.NCDOT.GOV/RESOURCES/LOCATION/

THE FILES TO BE FOUND ARE AS FOLLOWS:
U2579B_LS_GPSCALIB_071217.PDF
U2579B_LS_WGS84_071217.TXT
U2579B_LS_LOCAL_071217.TXT
B4511_LS_CONTROL.TXT

THE WGS84 AND LOCAL FILES ARE COMMA DELIMITED AND CAN BE USED TO REPRODUCE THE SITE CALIBRATION FOR THE END USER'S GPS EQUIPMENT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

▲ INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.
PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.
NETWORK ESTABLISHED FROM EXISTING HARN MONUMENTATION
SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
B-4511	1D
Location and Surveys	

SURVEY CONTROL SHEET B-4511
PRELIMINARY

ROW MARKER IRON PIN AND CAP-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	15+90.00	50.00	863403.0844	1661238.8911
L	15+90.00	-50.00	863461.2538	1661320.2318
L	15+90.00	-30.12	863449.6885	1661304.0595
L	15+90.00	29.88	863414.7866	1661255.2548
L	20+17.46	50.00	863055.3861	1661487.5415
L	20+17.46	-50.00	863113.5556	1661568.8822
L	20+17.46	42.00	863060.0397	1661494.0487
L	21+11.37	-50.00	863038.8082	1661623.7121

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	15+50.00	-30.24	863482.2943	1661280.8889
L	15+50.00	-50.00	863493.7901	1661296.9640
L	16+90.00	50.00	863321.7436	1661297.0605
L	16+90.00	70.00	863310.1097	1661280.7923
L	20+02.41	64.00	863059.4852	1661467.3985

L

TYPE	STATION	NORTH	EAST
POT	9+00.00	863993.4202	1660878.1923
PC	20+17.46	863084.4731	1661528.2103
PT	25+97.24	862639.7071	1661899.2962
POT	28+21.11	862478.9636	1662055.1184

Y

TYPE	STATION	NORTH	EAST
POT	10+00.00	862514.4183	1662423.9478
PC	12+46.95	862711.8335	1662275.5824
PT	18+48.61	862881.7031	1661737.9628
POT	18+93.77	862867.7461	1661695.0180

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "U2579C-1" WITH NAD 83/95 STATE PLANE GRID COORDINATES OF NORTHING: 876419.285(ft) EASTING: 1651591.602(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99995453 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "U2579C-1" TO -L- STATION 9+00.00 IS S 36°53'30" E 17430.37' ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

NOTES:

1. *THE SITE CALIBRATION SHOWN IS BASED UPON A NETWORK TIED TO THE HARN (HIGH ACCURACY REFERENCE NETWORK) NAD 83/95 ADJUSTMENT. THIS CALIBRATION WILL ALLOW THE END USER TO WORKWITHIN THE SAME COORDINATE SYSTEM WHEN USING RTK (REAL TIME KINEMATIC) GPS AND A LOCAL BASE STATION. IF ANOTHER SYSTEM SUCH AS VRS (VIRTUAL REFERENCE STATION) IS USED, ADDITIONAL FIELD TIES MAY BE NEEDED TO REDUCE POSSIBLE ERRORS, OR BIASES.*

2. *THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:*
   HTTP://CONNECT.NCDOT.GOV/RESOURCES/LOCATION/

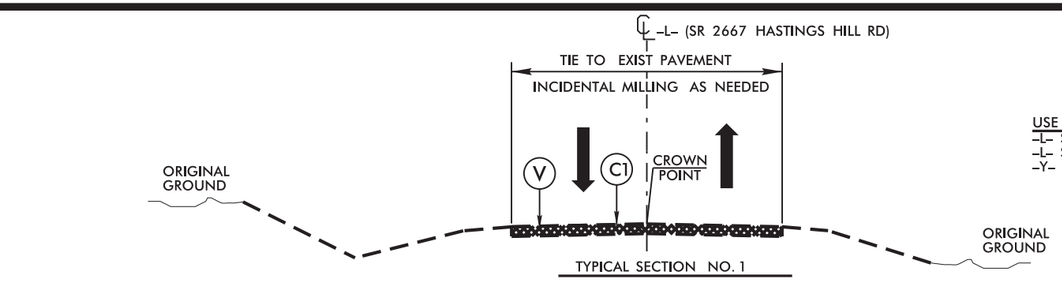
   THE FILES TO BE FOUND ARE AS FOLLOWS:
   U2579B_LS_GPSCALIB_071217.PDF
   U2579B_LS_WGS84_071217.TXT
   U2579B_LS_LOCAL_071217.TXT
   B4511_LS_CONTROL.TXT

   THE WGS84 AND LOCAL FILES ARE COMMA DELIMITED AND CAN BE USED TO REPRODUCE THE SITE CALIBRATION FOR THE END USER'S GPS EQUIPMENT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.

▲ *INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.*
PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM.
NETWORK ESTABLISHED FROM EXISTING HARN MONUMENTATION
SEE GPS CALIBRATION SHEET FOR HORIZONTAL AND VERTICAL COORDINATE VALUES.

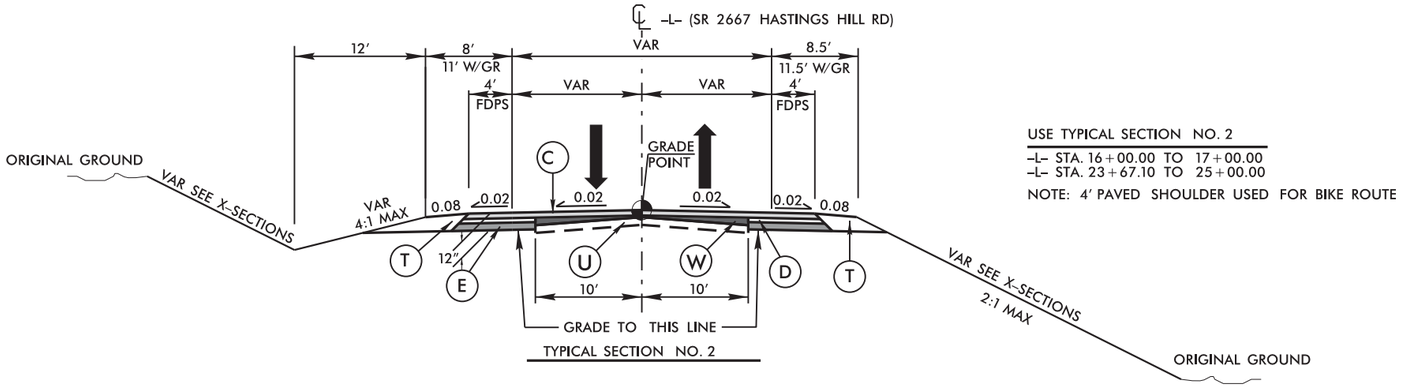
NOTE: DRAWING NOT TO SCALE

6/2/99



TYPICAL SECTION NO. 1

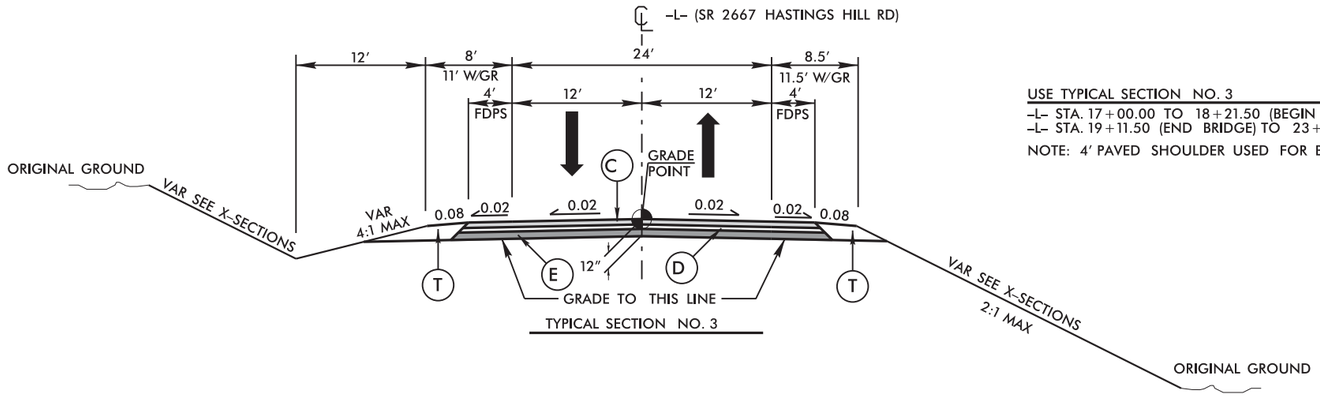
USE TYPICAL SECTION NO. 1
–L– STA. 15+50.00 TO 16+00.00
–L– STA. 25+00.00 TO 25+50.00
–Y– STA. 17+50.00 TO 18+00.00



TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2
–L– STA. 16+00.00 TO 17+00.00
–L– STA. 23+67.10 TO 25+00.00

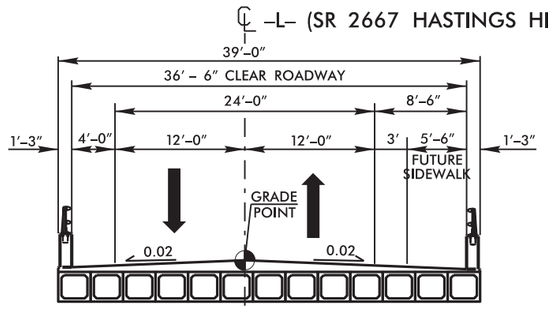
NOTE: 4′ PAVED SHOULDER USED FOR BIKE ROUTE



TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3
–L– STA. 17+00.00 TO 18+21.50 (BEGIN BRIDGE)
–L– STA. 19+11.50 (END BRIDGE) TO 23+67.10

NOTE: 4′ PAVED SHOULDER USED FOR BIKE ROUTE



TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO. 4
–L– STA. 18+21.50 TO 19+11.50

PROJECT REFERENCE NO.	SHEET NO.
B-4511	2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

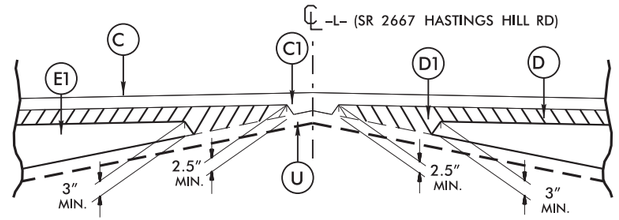
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PAVEMENT SCHEDULE

(PER FINAL PAVEMENT DESIGN MARCH 25,2013)

C	PROP. APPROX. 3″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C1	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1″ DEPTH. TO BE PLACED IN LAYERS LESS THAN 1.5″ IN DEPTH OR GREATER THAN 2″ IN DEPTH.
D	PROP. APPROX. 3.5″ ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 399 LBS. PER SQ. YD.
D1	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 2.5″ IN DEPTH OR GREATER THAN 4″ IN DEPTH.
E	PROP. APPROX. 5.5″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.
E1	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 5.5″ IN DEPTH.
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	INCIDENTAL MILLING
W	VARIABLE DEPTH ASPHALT PAVEMENT

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



Detail Showing Method of Wedging

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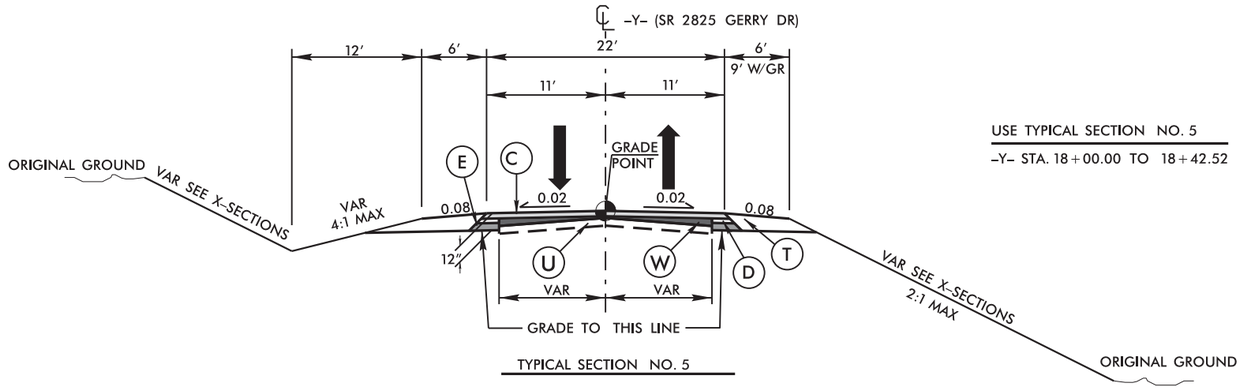
6/2/99

PROJECT REFERENCE NO.	SHEET NO.
B-4511	2A
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

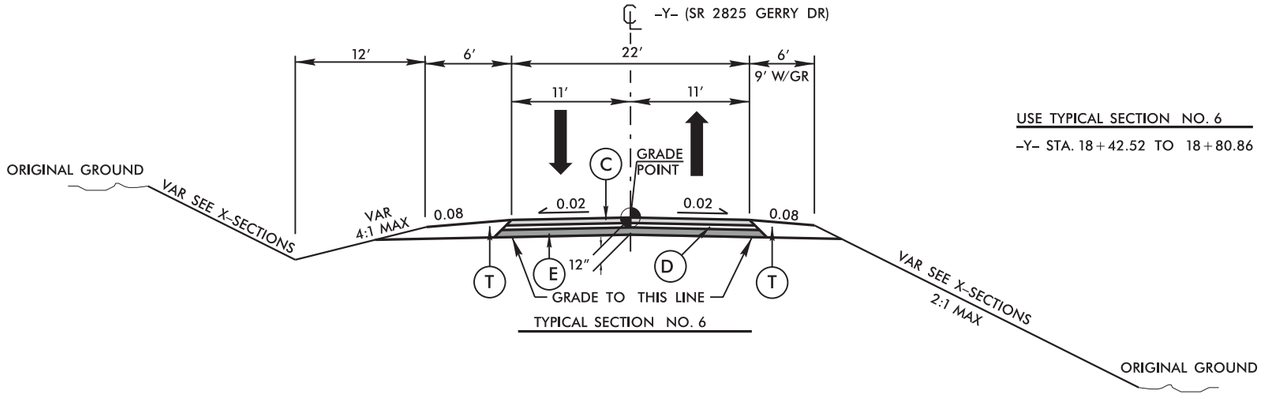
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



TYPICAL SECTION NO. 5

USE TYPICAL SECTION NO. 5

-Y- STA. 18+00.00 TO 18+42.52



TYPICAL SECTION NO. 6

USE TYPICAL SECTION NO. 6

-Y- STA. 18+42.52 TO 18+80.86

PAVEMENT SCHEDULE	
C	3.0", S9.5B
C1	VAR, S9.5B
D	3.5", I19.0B
D1	VAR, I19.0B
E	5.5", B25.0B
E1	VAR, B25.0B
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	INCIDENTAL MILLING
W	VARIABLE DEPTH ASPHALT PAVEMENT

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

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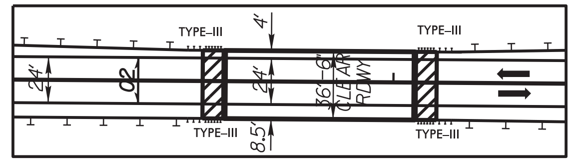
PROJECT REFERENCE NO.	SHEET NO.
B-4511	4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

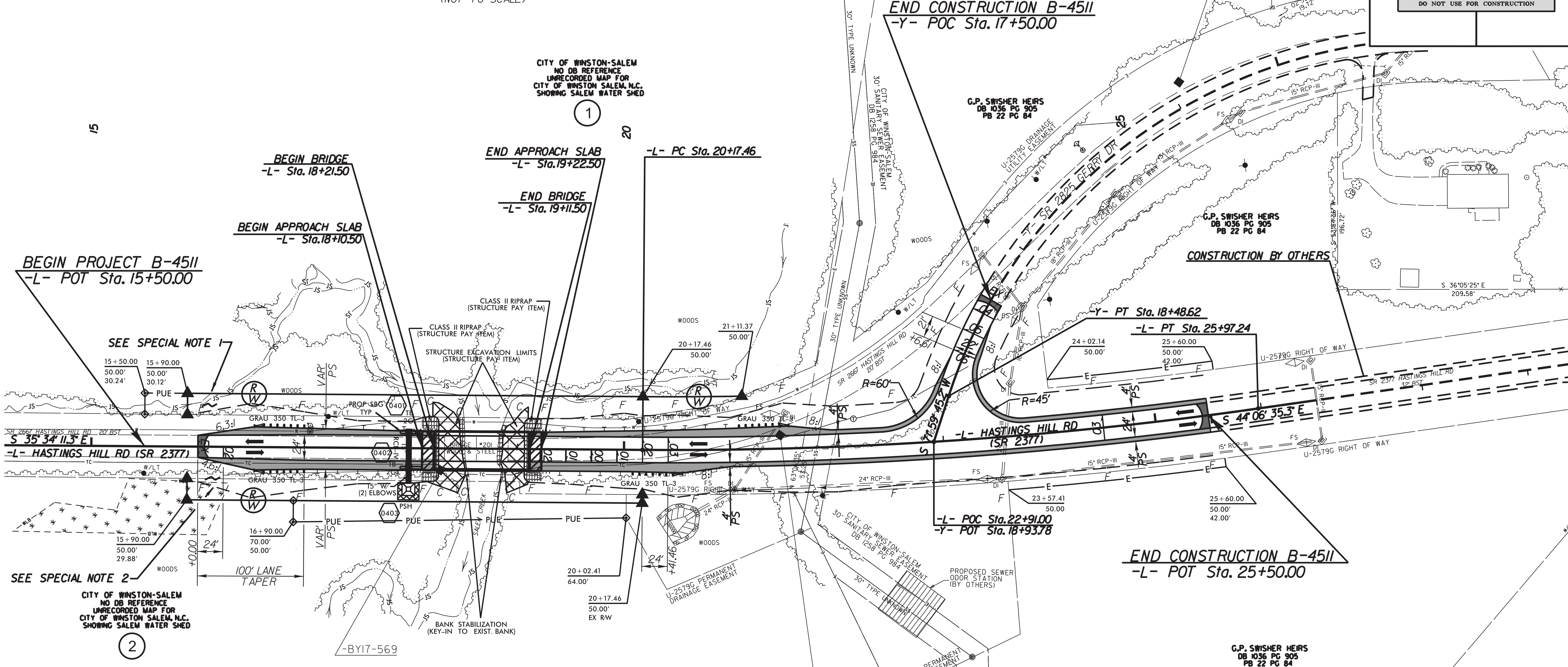
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

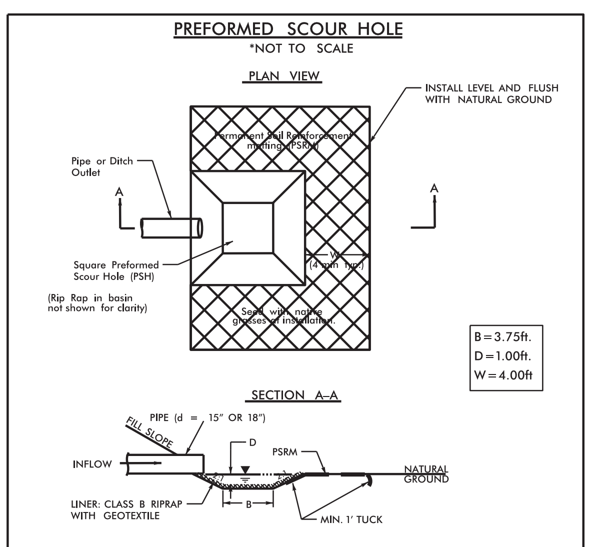
-L-	-Y-
PI Sta 23+07.89	PI Sta 15+93.40
Δ = 8° 32' 22.4" (LT)	Δ = 71° 04' 40.0" (LT)
D = 1° 28' 22.4"	D = 11° 48' 48.8"
L = 579.78'	L = 601.66'
T = 290.43'	T = 346.44'
R = 3,890.00'	R = 485.00'
SE = .03	SE = .06



DETAIL SHOWING PAVEMENT AND BRIDGE RELATIONSHIP
(NOT TO SCALE)



BM #1
-BL- STA 20+64
369' RT
ELEV. = 815.90
-L- STA. 22+22.97, 549.14' LT
END CONSTRUCTION B-4511
-Y- POC Sta. 17+50.00
-BY17-561
CITY OF WINSTON-SALEM
NO DB REFERENCE
UNRECORDED MAP FOR
CITY OF WINSTON SALEM, N.C.
SHOWING SALEM WATER SHED
G.P. SWISHER HEIRS
DB 1036 PG 905
PB 22 PG 84
SR 2825 GERRY DR
BEGIN BRIDGE
-L- Sta. 18+21.50
END APPROACH SLAB
-L- Sta. 19+22.50
-L- PC Sta. 20+17.46
END BRIDGE
-L- Sta. 19+11.50
BEGIN APPROACH SLAB
-L- Sta. 18+10.50
BEGIN PROJECT B-4511
-L- POT Sta. 15+50.00
CONSTRUCTION BY OTHERS
CLASS II RIPRAP (STRUCTURE PAY ITEM)
STRUCTURE EXCAVATION LIMITS (STRUCTURE PAY ITEM)
SEE SPECIAL NOTE 1
-Y- PT Sta. 18+48.62
-L- PT Sta. 25+97.24
S 35° 34' 11.3" E
-L- HASTINGS HILL RD (SR 2377)
SR 2667 HASTINGS HILL RD 20' BST
R=60'
R=45'
-L- HASTINGS HILL RD (SR 2377)
S 44° 06' 35.3" E
U-2579G RIGHT OF WAY
-L- POC Sta. 22+91.00
-Y- POT Sta. 18+93.78
END CONSTRUCTION B-4511
-L- POT Sta. 25+50.00
SEE SPECIAL NOTE 2
100' LANE TAPER
BANK STABILIZATION (KEY-IN TO EXIST. BANK)
-BY17-569
U-2579G PERMANENT DRAINAGE EASEMENT
CITY OF WINSTON-SALEM 30' SANITARY SEWER EASEMENT DB 1258 PG 984
PROPOSED SEWER ODOR STATION (BY OTHERS)
U-2579G PERMANENT UTILITY EASEMENT
-BY17-572
G.P. SWISHER HEIRS
DB 1036 PG 905
PB 22 PG 84
CITY OF WINSTON-SALEM
NO DB REFERENCE
UNRECORDED MAP FOR
CITY OF WINSTON SALEM, N.C.
SHOWING SALEM WATER SHED
US 421 / I-40 BUSINESS



PREFORMED SCOUR HOLE
*NOT TO SCALE
PLAN VIEW
INSTALL LEVEL AND FLUSH WITH NATURAL GROUND
Pipe or Ditch Outlet
Square Preformed Scour Hole (PSH)
(Rip Rap in basin not shown for clarity)
B=3.75ft.
D=1.00ft.
W=4.00ft
SECTION A-A
PIPE (d = 15" OR 18")
FILL SLOPE
INFLOW
PSRM
NATURAL GROUND
LINER: CLASS B RIPRAP WITH GEOTEXTILE
MIN. 1' TUCK
3/08

FROM -L- STA. 17+68.50 TO STA. 17+86.25 RT

PAVED SHOULDER

NOTES:
SEE SHEET 5 FOR -L- PROFILE
SEE SHEET 6 FOR -Y- PROFILE
SEE SHEETS S-? THRU S-? FOR STRUCTURE PLANS

NOTE: EXISTING R/W AROUND THE PROPOSED DESIGN NEEDS TO BE VERIFIED. EXISTING UTILITIES AND DRAINAGE STRUCTURES EAST OF THE BRIDGE ARE TAKEN FROM THE U-2579G PLANS AND NEED TO BE VERIFIED. UPDATED SURVEYS WILL NEED TO BE REQUESTED UPON THE COMPLETION OF U-2579G.

ABANDONED UTILITIES TO BE REMOVED AROUND THE BRIDGE.

SPECIAL NOTE 1: ADD ORANGE SAFETY FENCE TO PROTECT JURISDICTIONAL STREAM AT -L- Sta.15+90.00 +/- LT.

SPECIAL NOTE 2: ADD ORANGE SAFETY FENCE -L- Sta.15+90.00 +/- RT TO PROTECT WETLANDS. DO NOT CLEAR WETLANDS.

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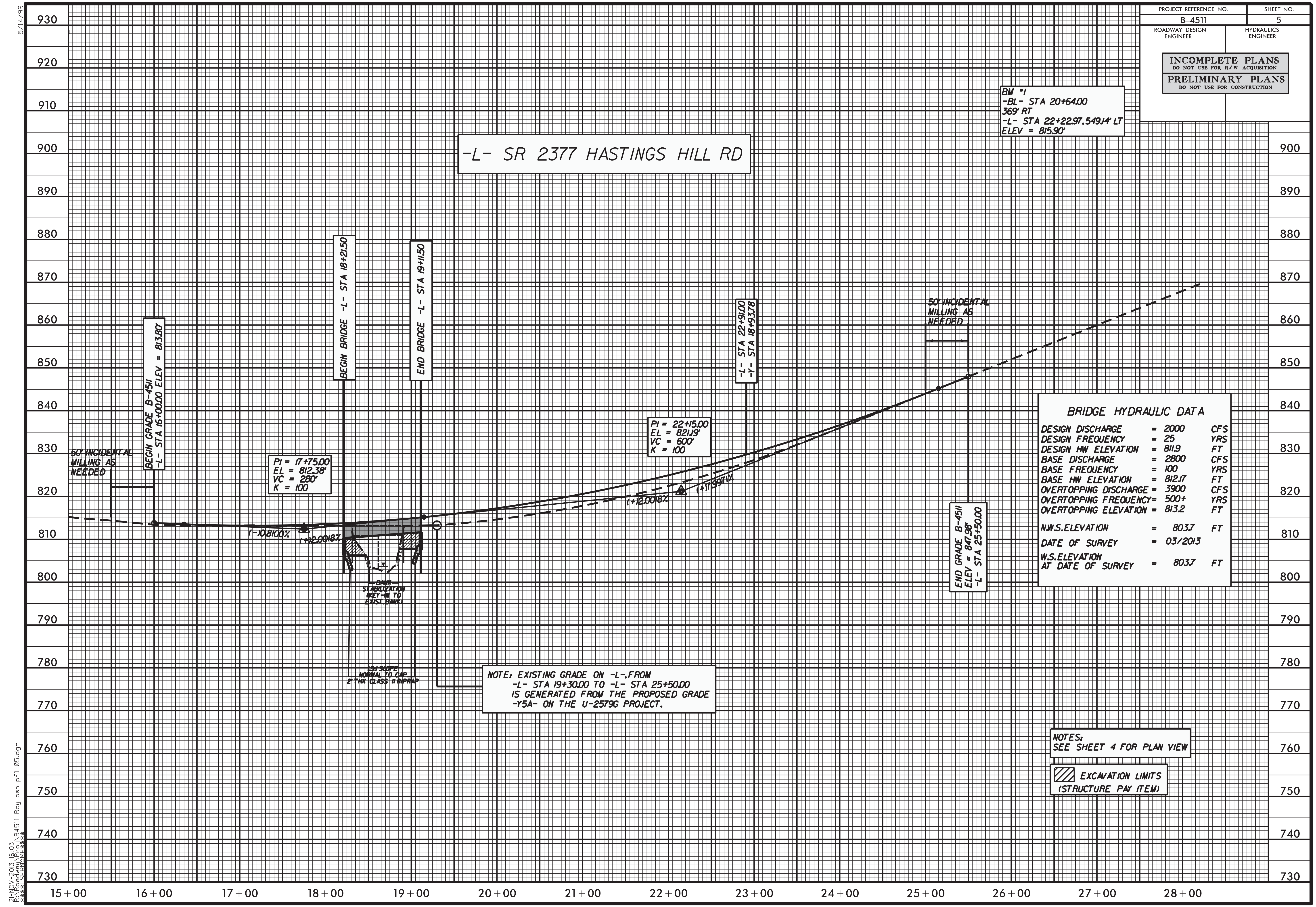

PROJECT REFERENCE NO.
B-4511
SHEET NO.
5
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
BM #1
-BL- STA 20+64.00
369' RT
-L- STA 22+22.97, 549.14' LT
ELEV = 815.90'
-L- SR 2377 HASTINGS HILL RD
50' INCIDENTAL MILLING AS NEEDED
BEGIN GRADE B-4511 -L- STA 16+00.00 ELEV = 813.80'
PI = 17+75.00
EL = 812.38'
VC = 280'
K = 100
(-)0.8100%
(+)2.0018%
BEGIN BRIDGE -L- STA 18+21.50
END BRIDGE -L- STA 19+11.50
BANK STABILIZATION (KEY-IN TO EXIST. BANK)
1.5:1 SLOPE NORMAL TO CAP 2' THK CLASS II RIPRAP
NOTE: EXISTING GRADE ON -L-, FROM -L- STA 19+30.00 TO -L- STA 25+50.00 IS GENERATED FROM THE PROPOSED GRADE -Y5A- ON THE U-2579G PROJECT.
PI = 22+15.00
EL = 821.19'
VC = 600'
K = 100
(+)2.0018%
(+)7.9971%
-L- STA 22+91.00 -Y- STA 18+93.78
50' INCIDENTAL MILLING AS NEEDED
END GRADE B-4511 ELEV = 847.98' -L- STA 25+50.00
NOTES:
SEE SHEET 4 FOR PLAN VIEW
EXCAVATION LIMITS (STRUCTURE PAY ITEM)
930
920
910
900
890
880
870
860
850
840
830
820
810
800
790
780
770
760
750
740
730
15+00
16+00
17+00
18+00
19+00
20+00
21+00
22+00
23+00
24+00
25+00
26+00
27+00
28+00
5/14/99
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$$$$USERNAME$$$$

BRIDGE HYDRAULIC DATA

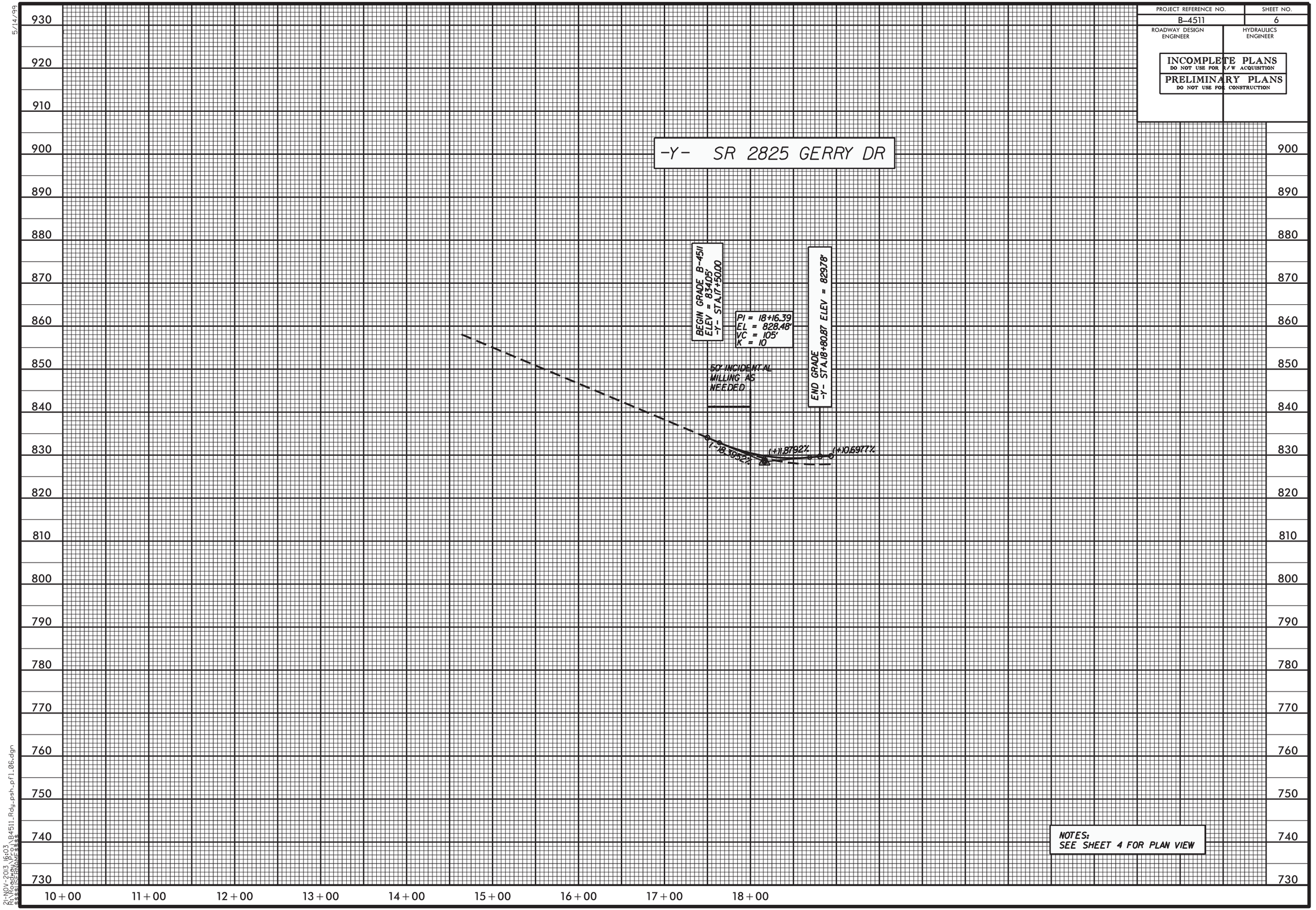
DESIGN DISCHARGE	=	2000	CFS
DESIGN FREQUENCY	=	25	YRS
DESIGN HW ELEVATION	=	811.9	FT
BASE DISCHARGE	=	2800	CFS
BASE FREQUENCY	=	100	YRS
BASE HW ELEVATION	=	812.17	FT
OVERTOPPING DISCHARGE	=	3900	CFS
OVERTOPPING FREQUENCY	=	500+	YRS
OVERTOPPING ELEVATION	=	813.2	FT
N.W.S. ELEVATION	=	803.7	FT
DATE OF SURVEY	=	03/2013	
W.S. ELEVATION AT DATE OF SURVEY	=	803.7	FT

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
B-4511	6
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



NOTES:
SEE SHEET 4 FOR PLAN VIEW

21-NOV-2013 16:03
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$$$$USERNAME$$$$

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4511	X-1

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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

820 815 810 805

0.020 0.020 2:1 2:1

813.07

18+00.00

0.020 0.020 2:1 2:1

813.03

17+50.00

0.020 0.020 3:1 3:1

813.07

17+00.00

0.020 0.020 4:1 4:1

813.22

16+50.00

813.55

16+00.00

21-NOV-2013 16:03
R:\Roadway\Corridor Modeling\B4511_Rdy_xpl_L.dgn
$$$$USERNAME$$$$

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4511	X-2

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

820 815 810 805

0.020 0.020

2:1 2:1

813.22

19+11.52

END BRIDGE –L– STA. 19+11.50

812.92

0.020 0.020

812.13

BEGIN BRIDGE –L– STA. 18+21.50

0.020 0.020

2:1 2:1

813.08

18+11.48

–L–

820 815 810 805 800

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

21-NOV-2013 16:03
R:\Roadway\Corridor Modeling\B4511_Rdy_xpl_L.dgn
$$$$USERNAME$$$$

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4511	X-3

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

825 820 815 810 805

0.030 0.030

2:1 2.13:1

816.05

20+50.00

0.020 0.020

2:1 2:1

815.10

20+17.46

0.020 0.013

2:1 2:1

814.64

20+00.00

0.020 0.008

2:1 2:1

813.60

19+50.00

825 820 815 810 805 800

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

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4511	X-4

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

845 840 835 830 825 820 815 810 805

–L– EOTL
INTERSECTION WITH
–Y1– PAVEMENT

0.030 0.030 3:7:1

825.29
22+50.00

0.030 0.030 3:28:1 4:1

822.44
22+00.00

0.030 0.030 3:4:1 3:7:1

818.95
21+50.00

0.030 0.030 2:1 3:1

817.82
21+00.00

–L–

21-NOV-2013 16:03
R:\Roadway\Corridor Modeling\B4511_Rdy_xpl_L.dgn
$$$$USERNAME$$$$

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4511	X-5

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

855 850 845 840 835 830 825

5:1

0.030 0.030

835.98

24+00.00

4.8:1

-L- EOTL
INTERSECTION WITH
-Y- PAVEMENT

0.030 0.030

832.07

23+50.00

4.1:1

-L- EOTL
INTERSECTION WITH
-Y- PAVEMENT

0.030 0.030

828.50

23+00.00

3.7:1

-4-

21-NOV-2013 16:03
R:\Roadway\Corridor Modeling\B4511_Rdy_xpl_L.dgn
$$$$USERNAME$$$$

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4511	X-6

875
870
865
860
855
850
845
840
835

6:1
0.030
0.030
6:1
843.98
25+00.00

5.6:1
0.030
0.030
5.5:1
839.98
24+50.00
—L—

21-NOV-2013 16:03
R:\Roadway\Corridor Modeling\B4511_Rdy_xpl_L.dgn
$$$$USERNAME$$$$

8/23/99

0 2.5 5

PROJ. REFERENCE NO.	SHEET NO.
B-4511	X-7

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

880 875 870 865 860 855 850 845 840

6:1

0.030

0.030

6:1

847.98

25+50.00

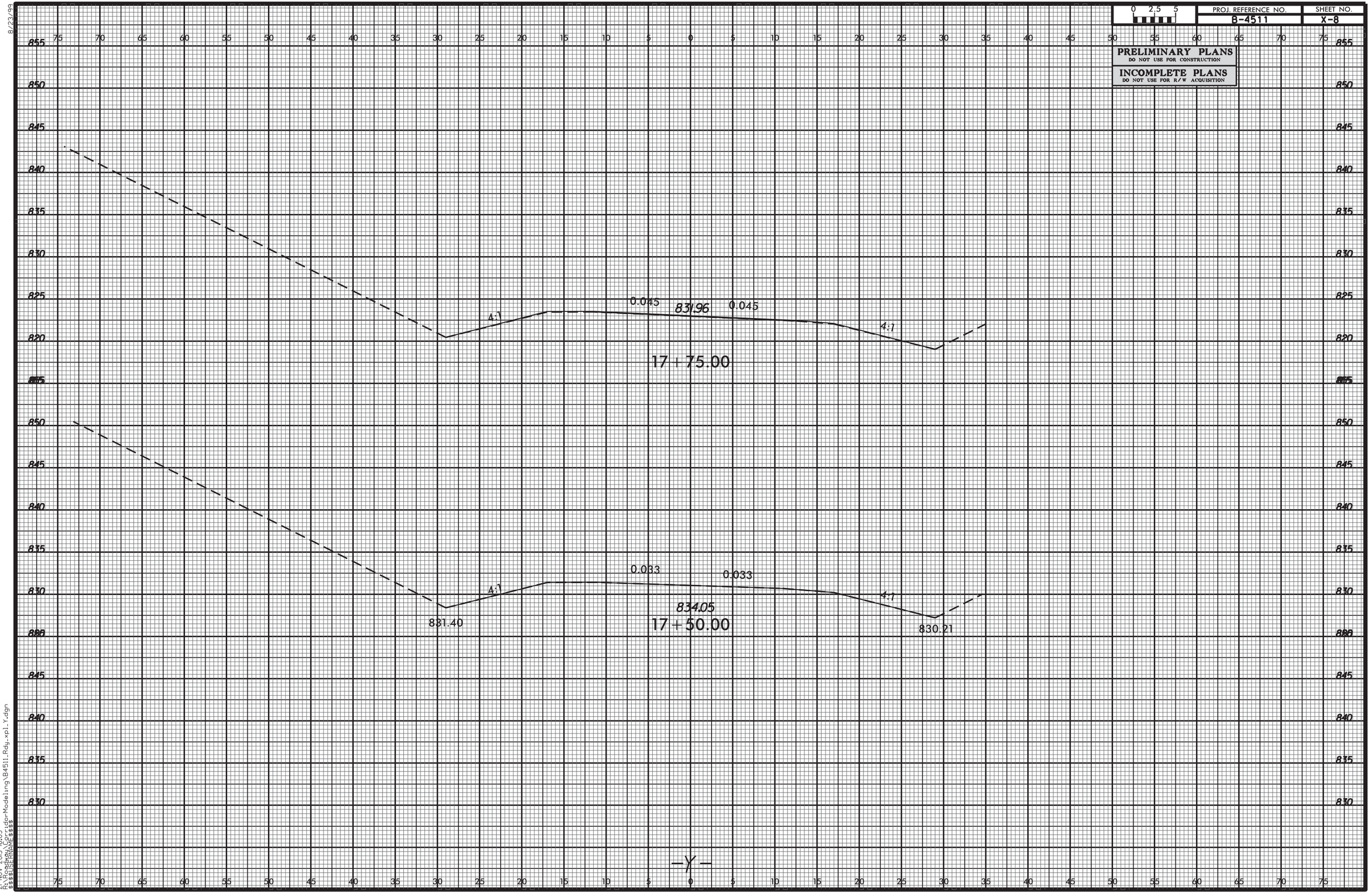
21-NOV-2013 16:03
R:\Roadway\Corridor Modeling\B4511_Rdy_xpl_L.dgn
$$$$USERNAME$$$$

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4511	X-8

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION



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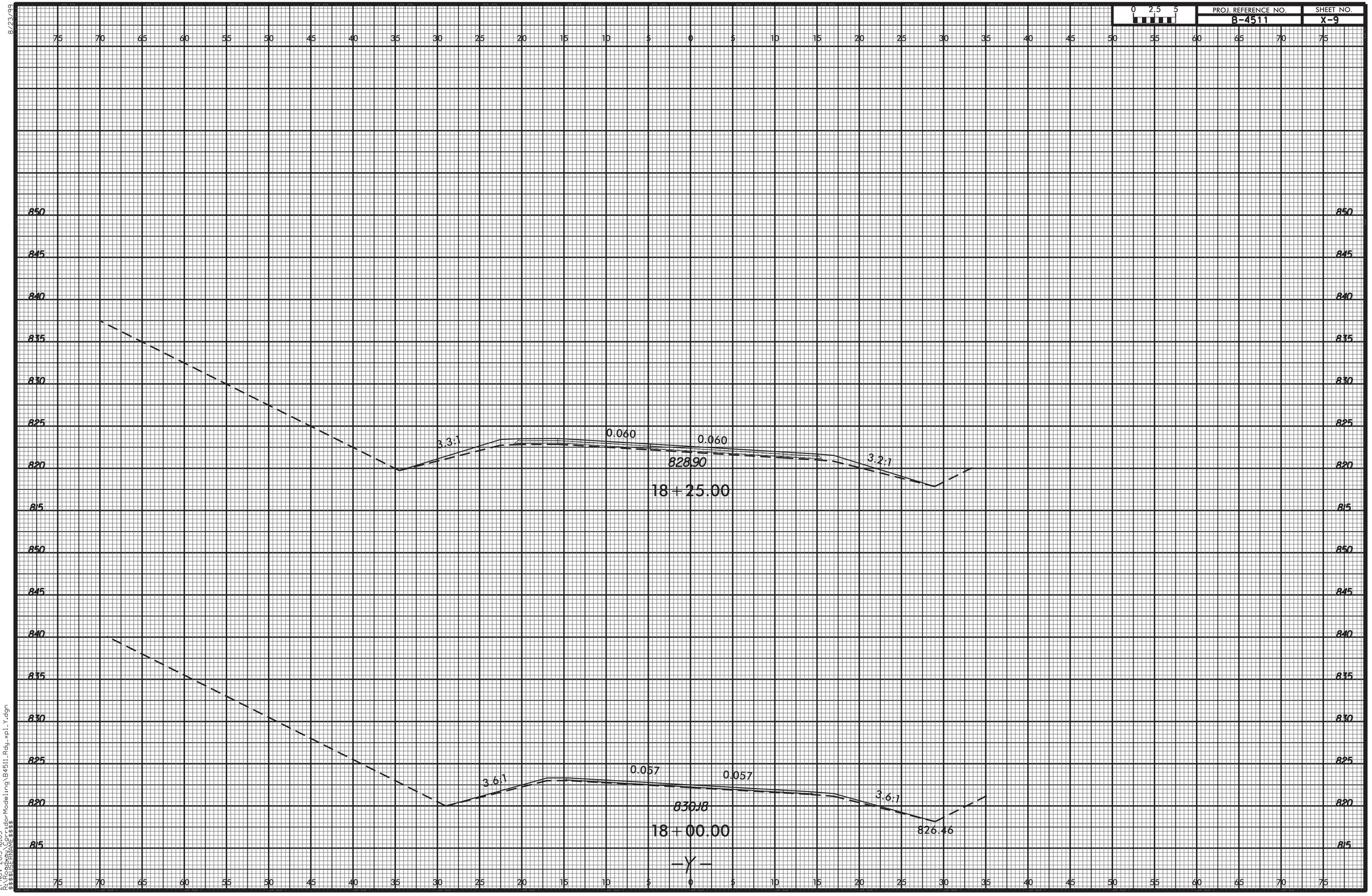
8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4511	X-9



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$$$$USERNAME$$$$

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4511	X-10

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

835 830 825 820 815

–Y– EOT
SHEAR LINE

0.114

0.091

2.9:1

828.2

18+50.00

–Y–

21-NOV-2013 16:03
R:\Roadway\Corridor Modeling\B4511_Rdy_xpl_Y.dgn
$$$$USERNAME$$$$