



PAT McCRORY  
Governor

NICHOLAS J. TENNYSON  
Secretary

September 12, 2016

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

ATTN: Mr. Eric Alsmeyer  
NCDOT Division 5 Project Coordinator

SUBJECT: **Application for Section 404 Nationwide Permit Nos. 13 and 33** for the Replacement of Bridge No. 138 over Grassy Creek on SR 1300 (Cornwall Road), Division 5, Granville County, North Carolina. Federal Aid Project No. BRSTP – 1300(9), TIP Project No. B-5166.

Dear Sir:

Please find enclosed the Pre-Construction Notification, Stormwater Management Plan, permit drawings, and roadway plans for the subject project. A Programmatic Categorical Exclusion (PCE) was completed for this project in October 2015.

The proposed let date for this project is April 18, 2017, with a let review date of February 28, 2017. 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](mailto:jsmason@ncdot.gov) or (919) 707-6136.

Sincerely,

A handwritten signature in black ink, appearing to read 'PHS' followed by a stylized flourish.

*for* Philip S. Harris III, P.E., C.P.M.  
Natural Environment Section Head

cc:  
NCDOT Permit Application Standard Distribution List

Nothing Compares<sup>SM</sup>



Office Use Only:  
 Corps action ID no. \_\_\_\_\_  
 DWQ project no. \_\_\_\_\_  
 Form Version 1.4 January 2009

## Pre-Construction Notification (PCN) Form

### A. Applicant Information

#### 1. Processing

1a. Type(s) of approval sought from the Corps:	<input checked="" type="checkbox"/> Section 404 Permit	<input type="checkbox"/> Section 10 Permit
1b. Specify Nationwide Permit (NWP) number: 13 33 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 checked="" type="checkbox"/> 401 Water Quality Certification – Regular <span style="margin-left: 100px;"><input type="checkbox"/> Non-404 Jurisdictional General Permit</span> <input type="checkbox"/> 401 Water Quality Certification – Express <span style="margin-left: 100px;"><input type="checkbox"/> Riparian Buffer Authorization</span>		
1e. Is this notification solely for the record because written approval is not required?	For the record only for DWQ 401 Certification: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	For the record only for Corps Permit: <input type="checkbox"/> Yes <input checked="" 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 No. 138 over Grassy Creek on SR 1300 (Cornwall Rd)
2b. County:	Granville
2c. Nearest municipality / town:	Cornwall
2d. Subdivision name:	<i>not applicable</i>
2e. NCDOT only, T.I.P. or state project no.:	B-5166

#### 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 (for 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) 707-6136
3g. Fax no.:	(919) 212-5785
3h. Email address:	jasmason@ncdot.gov

<b>4. Applicant Information (if different from owner)</b>	
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:	
<b>5. Agent/Consultant Information (if applicable)</b>	
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>B. Project Information and Prior Project History</b>	
<b>1. Property Identification</b>	
1a. Property identification no. (tax PIN or parcel ID):	<i>not applicable</i>
1b. Site coordinates (in decimal degrees):	Latitude: 36.4725 (DD.DDDDDD) Longitude: - 78.6642 (-DD.DDDDDD)
1c. Property size:	2.68 acres
<b>2. Surface Waters</b>	
2a. Name of nearest body of water (stream, river, etc.) to proposed project:	Grassy Creek
2b. Water Quality Classification of nearest receiving water:	C
2c. River basin:	Roanoke
<b>3. Project Description</b>	
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 1300 (Cornwall Rd) is classified as a Rural Minor Collector in the Statewide Functional Classification System and is not a National Highway System Route. Land use within the vicinity primarily consists of Forested Land, Agriculture, and Residential.	
3b. List the total estimated acreage of all existing wetlands on the property:  0.0 acres	
3c. List the total estimated linear feet of all existing streams (intermittent and perennial) on the property:  147 linear feet (Grassy Creek)	
3d. Explain the purpose of the proposed project:  To replace a structurally deficient bridge	
3e. Describe the overall project in detail, including the type of equipment to be used:  The project consists of replacing the existing 3-span 106-foot long bridge with a 2-span, 122-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.	
<b>4. Jurisdictional Determinations</b>	
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): Jim Mason	Agency/Consultant Company: NCDOT Other:
4d. If yes, list the dates of the Corps jurisdictional determinations or State determinations and attach documentation. No wetlands on site; only Grassy Creek (perennial) will be impacted.	
<b>5. Project History</b>	
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.	
<b>6. Future Project Plans</b>	
6a. Is this a phased project?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
6b. If yes, explain.	

<b>C. Proposed Impacts Inventory</b>						
<b>1. Impacts Summary</b>						
1a. Which sections were completed below for your project (check all that apply):						
<input type="checkbox"/> Wetlands		<input checked="" type="checkbox"/> Streams - tributaries		<input type="checkbox"/> Buffers		
<input type="checkbox"/> Open Waters		<input type="checkbox"/> Pond Construction				
<b>2. Wetland Impacts</b>						
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	2f. Area of impact (acres)	
Site <input type="checkbox"/> P <input type="checkbox"/> T		Choose One	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ		
Site <input type="checkbox"/> P <input type="checkbox"/> T		Choose One	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ		
Site <input type="checkbox"/> P <input type="checkbox"/> T		Choose One	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ		
Site <input type="checkbox"/> P <input type="checkbox"/> T		Choose One	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ		
Site <input type="checkbox"/> P <input type="checkbox"/> T		Choose One	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ		
Site <input type="checkbox"/> P <input type="checkbox"/> T		Choose One	<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ		
<b>2g. Total wetland impacts</b>					0 ac Permanent 0 ac Temporary	
2h. Comments:						
<b>3. Stream Impacts</b>						
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 checked="" type="checkbox"/> P <input type="checkbox"/> T	Bank Stabilization	Grassy Creek	<input checked="" type="checkbox"/> PER <input type="checkbox"/> INT	<input checked="" type="checkbox"/> Corps <input type="checkbox"/> DWQ	35	88
Site 1 <input type="checkbox"/> P <input checked="" type="checkbox"/> T	Temp. Fill (Causeways)	Grassy Creek	<input checked="" type="checkbox"/> PER <input type="checkbox"/> INT	<input checked="" type="checkbox"/> Corps <input type="checkbox"/> DWQ	35	46*
Site <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 <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 <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 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> PER <input type="checkbox"/> INT	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ		
<b>3h. Total stream and tributary impacts</b>						88 ft. Perm. 46 ft Temp.

3i. Comments: \* Acreage of temp. causeway impacts is 0.02 acres. 2 causeways will be installed, but not simultaneously.

Temp. channel impacts are concurrent with perm. channel impacts; however, since they extend into the creek beyond the bank stabilization footprint, it was decided that they should be listed separately.

An additional 21 sq. ft. of perm. impact will occur due to the placement of the interior bent in the creek.

**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)  O <input type="checkbox"/> P <input type="checkbox"/> T	4b. Name of waterbody (if applicable)	4c. Type of impact	4d. Waterbody type	4e. Area of impact (acres)
O <input type="checkbox"/> P <input type="checkbox"/> T				
O <input type="checkbox"/> P <input type="checkbox"/> T				
O <input type="checkbox"/> P <input type="checkbox"/> T				
O <input type="checkbox"/> P <input type="checkbox"/> T				
<b>4f. Total open water impacts</b>				0 ac Permanent 0 ac 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								
<b>5f. Total</b>								

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 type="checkbox"/> Neuse <input type="checkbox"/> Tar-Pamlico <input type="checkbox"/> Other: <input type="checkbox"/> Catawba <input type="checkbox"/> Randleman			
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)
Site <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> Yes <input type="checkbox"/> No		
Site <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> Yes <input type="checkbox"/> No		
Site <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> Yes <input type="checkbox"/> No		
Site <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> Yes <input type="checkbox"/> No		
Site <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> Yes <input type="checkbox"/> No		
<b>6h. Total buffer impacts</b>					
6i. Comments:					

<b>D. Impact Justification and Mitigation</b>		
<b>1. Avoidance and Minimization</b>		
1a. Specifically describe measures taken to avoid or minimize the proposed impacts in designing project. The proposed bridge is 16 feet longer than the existing bridge; An off-site detour will be employed during construction; The proposed bridge will provide more hydraulic opening than the existing bridge. Two stormwater outfalls are proposed which will be placed at a distance to minimize disturbance to adjacent stream. A Rip Rap pad will be utilized to dissipate the energy. There are also a combination of special cut ditches, standard, 'V' ditches, and berm ditches present on the project, which are intended to reduce stormwater velocity. No deck drains are required for the proposed bridge.		
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.		
<b>2. Compensatory Mitigation for Impacts to Waters of the U.S. or Waters of the State</b>		
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: Bank stabilization impacts (which are less than 150 linear ft), do not require mitigation.	
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	
<b>3. Complete if Using a Mitigation Bank</b>		
3a. Name of Mitigation Bank: not applicable		
3b. Credits Purchased (attach receipt and letter)	Type	Quantity
3c. Comments:		
<b>4. Complete if Making a Payment to In-lieu Fee Program</b>		
4a. Approval letter from in-lieu fee program is attached.	<input type="checkbox"/> Yes	
4b. Stream mitigation requested:	0 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):	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:		
<b>5. Complete if Using a Permittee Responsible Mitigation Plan</b>		
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	
<b>6f. Total buffer mitigation required:</b>				

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:

<b>E. Stormwater Management and Diffuse Flow Plan (required by DWQ)</b>	
<b>1. Diffuse Flow Plan</b>	
1a. Does the project include or is it adjacent to protected riparian buffers identified within one of the NC Riparian Buffer Protection Rules?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
1b. If yes, then is a diffuse flow plan included? If not, explain why. Comments:	<input type="checkbox"/> Yes <input type="checkbox"/> No
<b>2. Stormwater Management Plan</b>	
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 checked="" type="checkbox"/> DWQ 401 Unit
<b>3. Certified Local Government Stormwater Review</b>	
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
<b>4. DWQ Stormwater Program Review</b>	
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 N/A
<b>5. DWQ 401 Unit Stormwater Review</b>	
5a. Does the Stormwater Management Plan meet the appropriate requirements?	<input type="checkbox"/> Yes <input type="checkbox"/> No N/A
5b. Have all of the 401 Unit submittal requirements been met?	<input type="checkbox"/> Yes <input type="checkbox"/> No N/A

<b>F. Supplementary Information</b>	
<b>1. Environmental Documentation (DWQ Requirement)</b>	
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
<b>2. Violations (DWQ Requirement)</b>	
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):	
<b>3. Cumulative Impacts (DWQ Requirement)</b>	
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.	
<b>4. Sewage Disposal (DWQ Requirement)</b>	
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	

<b>5. Endangered Species and Designated Critical Habitat (Corps Requirement)</b>		
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? NC Natural Heritage Program data, USFWS website, NCDOT field surveys (harperella and smooth coneflower, habitat but No Effect, July 10, 2015; dwarf wedgemussel, No Effect due to the project being located in the Roanoke River basin); The northern long-eared bat (NLEB) is covered by the Programmatic Biological Opinion for Divisions 1 through 8.		
<b>6. Essential Fish Habitat (Corps Requirement)</b>		
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		
<b>7. Historic or Prehistoric Cultural Resources (Corps Requirement)</b>		
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		
<b>8. Flood Zone Designation (Corps Requirement)</b>		
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		
<i>PH</i> <u>Philip S. Harris III, P.E., C.P.M.</u> Applicant/Agent's Printed Name	 Applicant/Agent's Signature (Agent's signature is valid only if an authorization letter from the applicant is provided.)	<u>09-12-2016</u> Date



North Carolina Department of Transportation  
 Highway Stormwater Program  
**STORMWATER MANAGEMENT PLAN**  
 FOR NCDOT PROJECTS



(Version 2.01; Released December 2014)

**WBS Element:**                      **TIP No.:** B5166                      **County(ies):** Wake                      **Page** 1 **of** 1

**General Project Information**

<b>WBS Element:</b>		<b>TIP Number:</b>	B5166	<b>Project Type:</b>	Bridge Replacement	<b>Date:</b>	4/29/2016
<b>NCDOT Contact:</b>	William Elam			<b>Contractor / Designer:</b>	Reid Robol, EI - Ecological Engineering		
	<b>Address:</b>	1000 Birch Ridge Drive Raleigh, NC 27610		<b>Address:</b>	1151 SE Cary Parkway Suite 101 Cary, NC 27518		
	<b>Phone:</b>	919-707-6718		<b>Phone:</b>	919-557-0929		
	<b>Email:</b>	belam@ncdot.gov		<b>Email:</b>	rrobol@ecologicaleng.com		
<b>City/Town:</b>	Stovall			<b>County(ies):</b>	Wake		
<b>River Basin(s):</b>	Roanoke			<b>CAMA County?</b>	No		
<b>Wetlands within Project Limits?</b>	No						

**Project Description**

<b>Project Length (lin. miles or feet):</b>	0.17 Miles	<b>Surrounding Land Use:</b>	Forest, agricultural, and rural residential					
	<b>Proposed Project</b>			<b>Existing Site</b>				
<b>Project Built-Upon Area (ac.)</b>	0.6	ac.	0.4	ac.				
<b>Typical Cross Section Description:</b>	2@ 11 ft lane, 4.3 ft shoulders, with total bridge width of 33.0 ft and total bridge length of 120 ft.			2@ 10 ft lanes, 2 ft shoulders with total bridge width of 24 ft and total bridge length of 105.4 ft.				
<b>Annual Avg Daily Traffic (veh/hr/day):</b>	<b>Design/Future:</b>	6909	<b>Year:</b>	2037	<b>Existing:</b>	4822	<b>Year:</b>	2017

**General Project Narrative:**  
**(Description of Minimization of Water Quality Impacts)**

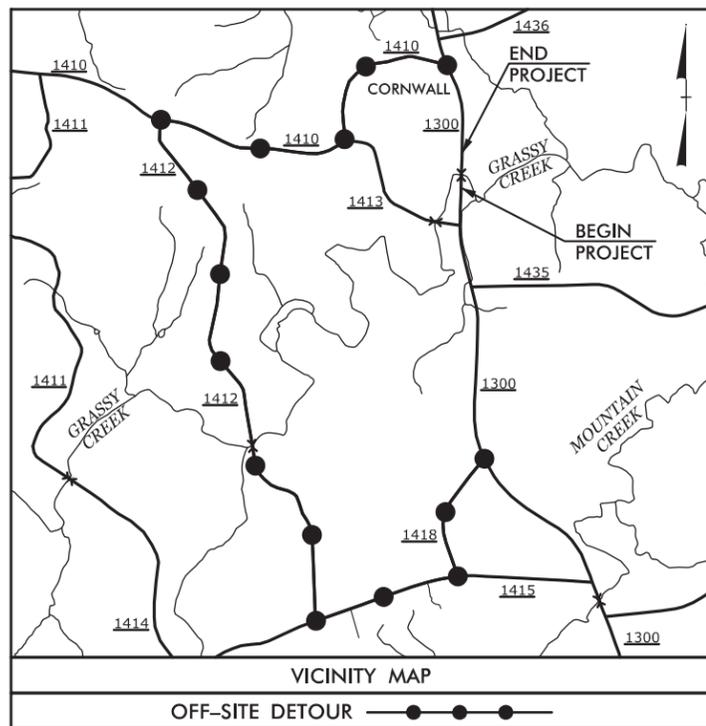
State project B-5166 involves the replacement of the existing NCDOT Bridge #380138 on SR 1300 over Grassy Creek. Bridge #380138 consists of 1@35'-3", 1@35'-0", 1@35'-3" RC deck on I-beams with RC caps, and timber piles. The existing bridge has horizontal deck drains that allow direct runoff into the surface waters. The proposed crossing is located in Zone AE of FIRM Map number 3720099900J and was studied by Detailed methods. The proposed bridge will provide more hydraulic opening than the existing bridge. Two stormwater outfalls are proposed which will be placed at a distance to minimize disturbance to adjacent stream. A Rip Rap pad will be utilized to dissipate the energy. No deck drains are required for the proposed bridge.

**Waterbody Information**

<b>Surface Water Body (1):</b>	Grassy Creek			<b>NCDWR Stream Index No.:</b>	23-2-(1)		
<b>NCDWR Surface Water Classification for Water Body</b>	<b>Primary Classification:</b>	Class C					
	<b>Supplemental Classification:</b>	None					
<b>Other Stream Classification:</b>	None						
<b>Impairments:</b>	None						
<b>Threatened/Endangered Species?</b>	No	<b>Comments:</b>					
<b>NRTR Stream ID:</b>				<b>Buffer Rules in Effect:</b>	N/A		
<b>Project Includes Bridge Spanning Water Body?</b>	Yes	<b>Deck Drains Discharge Over Buffer?</b>	No	<b>Dissipator Pads Provided in Buffer?</b>	No		
<b>Deck Drains Discharge Over Water Body?</b>	No	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)			
	(If yes, provide justification in the General Project Narrative)						

09/26/99

**T.I.P. PROJECT: B-5166**



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

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

# GRANVILLE COUNTY

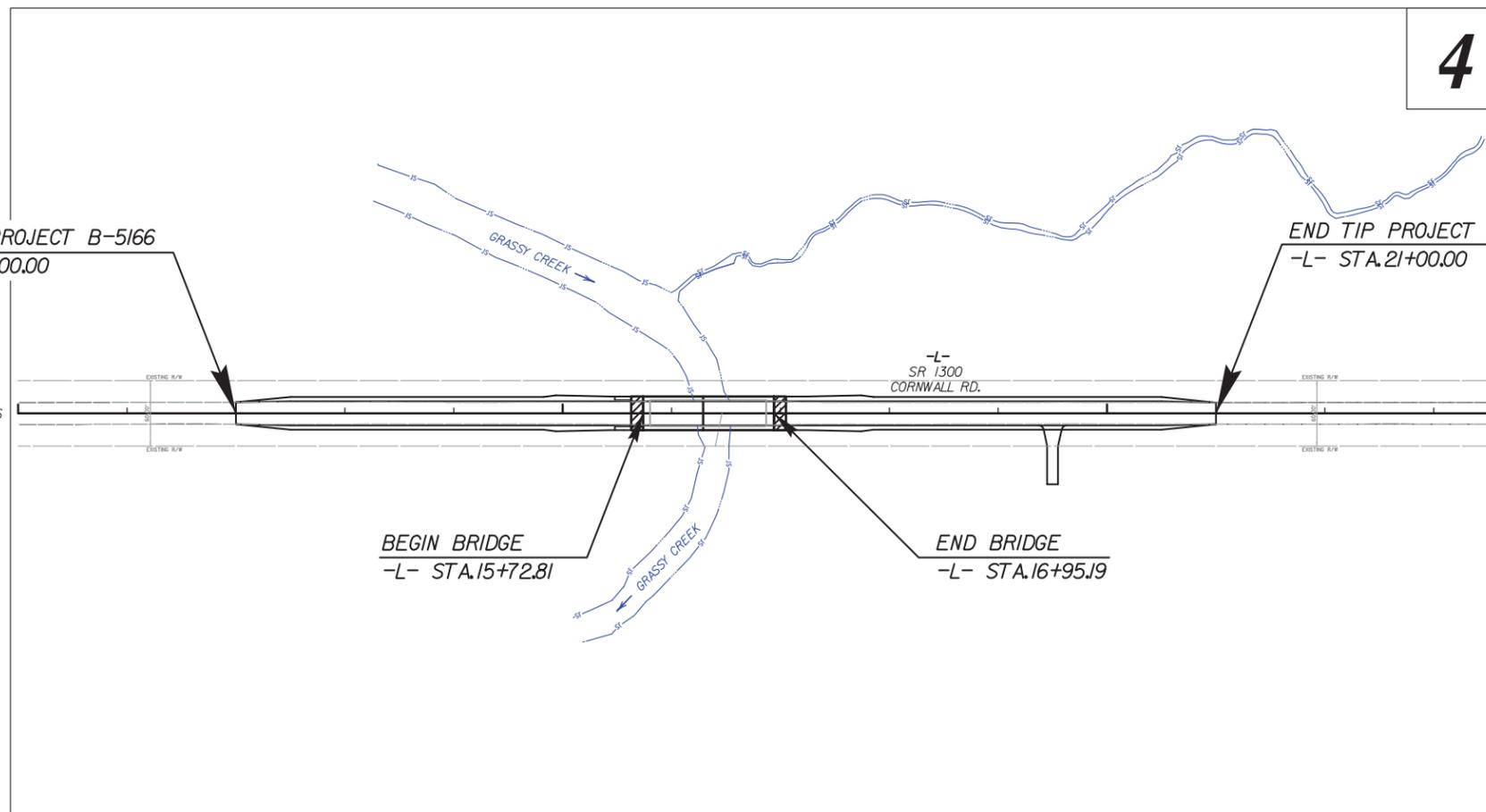
**LOCATION:** BRIDGE NO. 138 OVER GRASSY CREEK  
ON SR 1300 (CORNWALL RD.)

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

**WETLAND AND SURFACE WATER IMPACTS PERMIT**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5166	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
42342.1.1	BRSTP-1300(9)	PE	

**PERMIT DRAWING SHEET 1 OF 7**

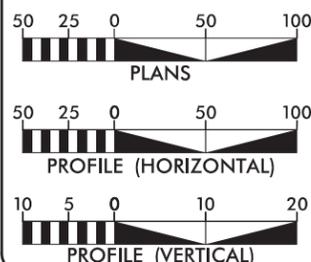


CLEARING ON THIS PROJECT SHALL BE TO LIMITS ESTABLISHED USING METHOD III.  
THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

**CONTRACT:**

**GRAPHIC SCALES**



**DESIGN DATA**

2017 ADT = 1,146 VPD  
 2037 ADT = 1,762 VPD  
 DHV = 12%  
 D = 65%  
 T = 8% \*  
 V = 60 MPH  
 \* (TTST 4% + DUAL 4%)  
 FUNC. CLASS. = RURAL MINOR COLLECTOR  
 SUBREGIONAL TIER

**PROJECT LENGTH**

LENGTH ROADWAY TIP PROJECT B-5166 = 0.147 mi.  
 LENGTH STRUCTURES TIP PROJECT B-5166 = 0.023 mi.  
 TOTAL LENGTH TIP PROJECT B-5166 = 0.170 mi.

Prepared in the Offices of:



2012 STANDARD SPECIFICATIONS

**RIGHT OF WAY DATE:**  
APRIL 15, 2016

**LETTING DATE:**  
APRIL 18, 2017

**ANDY YOUNG, PE**  
PROJECT ENGINEER

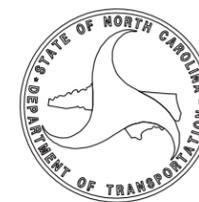
**MICHAEL BURNS, EI**  
PROJECT DESIGN ENGINEER

**TONY HOUSER, P.E.**  
NCDOT CONTACT

**HYDRAULICS ENGINEER**

SIGNATURE: \_\_\_\_\_  
**ROADWAY DESIGN ENGINEER**

SIGNATURE: \_\_\_\_\_  
P.E.



\$\$\$\$\$ SYSTEM \$\$\$\$\$\$ DGN \$\$\$\$\$\$ USERNAME \$\$\$\$\$\$

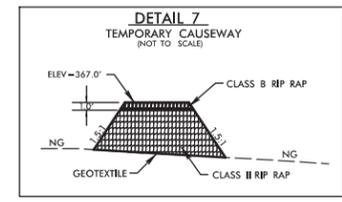
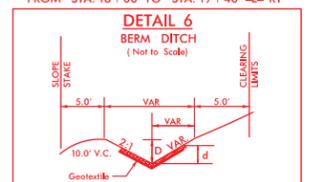
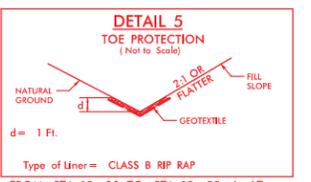
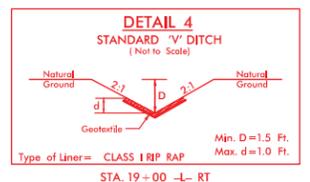
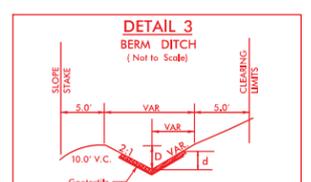
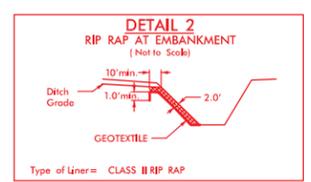
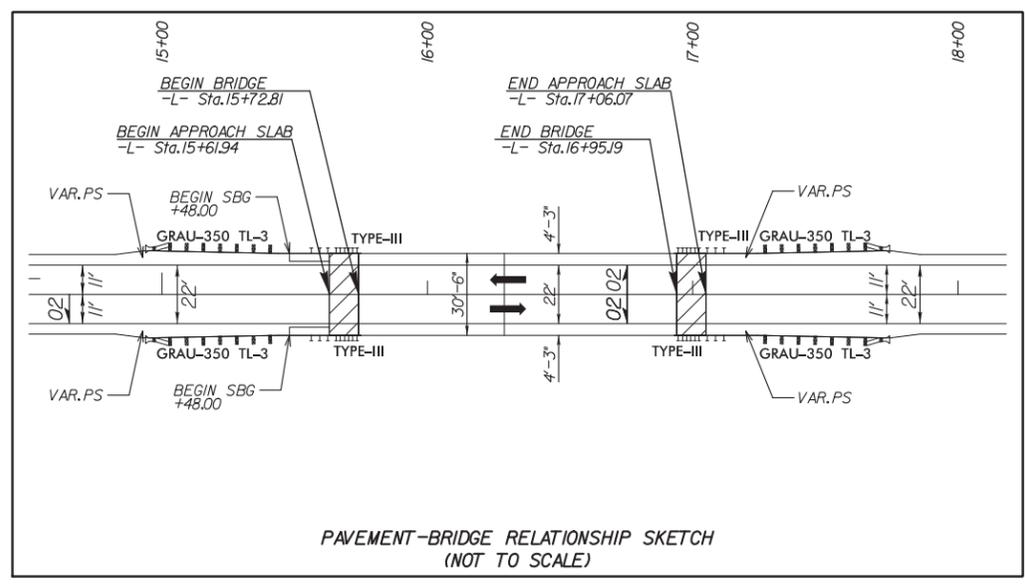
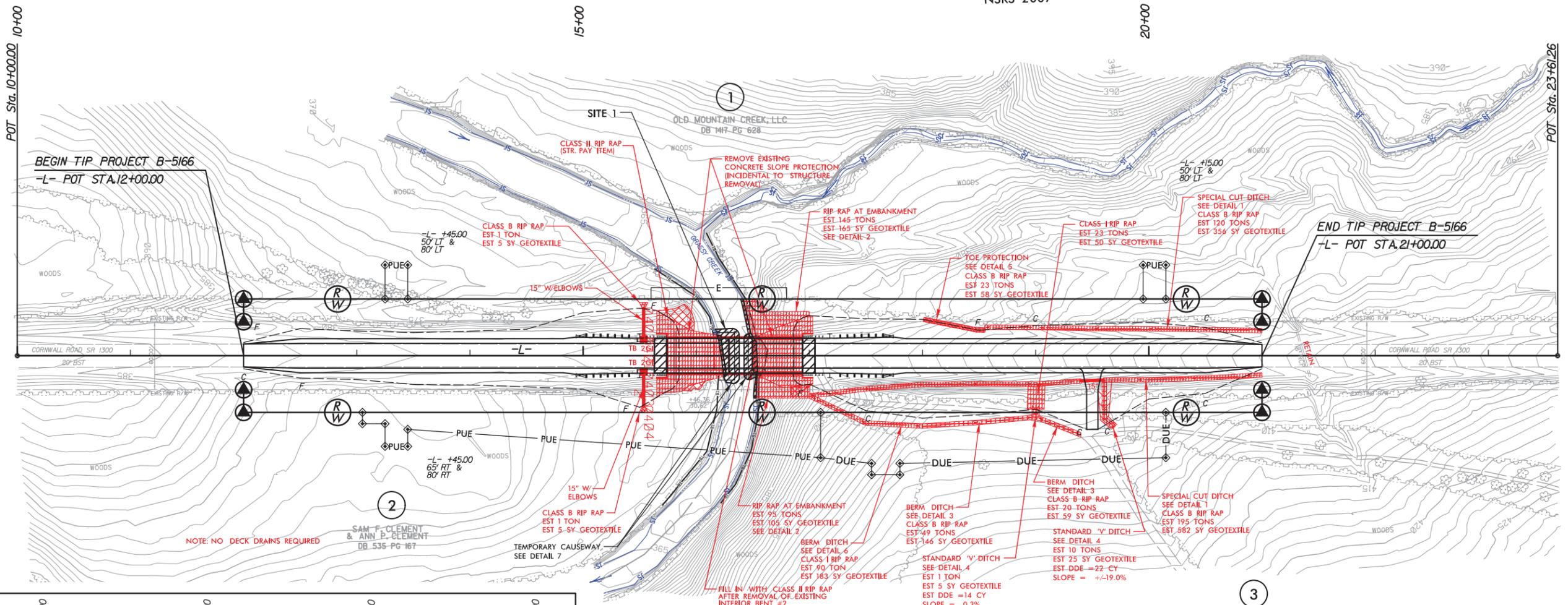


**PERMIT DRAWING**  
**SHEET 3 OF 7**



NOTE: ONLY ONE TEMPORARY CAUSEWAY IS PERMITTED IN THE STREAM AT ANY TIME

NAD 83  
NSRS 2007



DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

END BENT EXCAVATION SEE STRUCTURE PLANS (STRUCTURE PAY ITEM)

FOR -L- PROFILE, SEE SHEET 5

PROPOSED PAVED SHOULDER

ALL DRIVEWAY RADII ARE 5' UNLESS OTHERWISE NOTED ON PLANS

FOR STRUCTURE PLANS, SEE SHEETS S-1 THRU S-7

REVISIONS

8/17/99

1. 08/17/99  
 2. 08/17/99  
 3. 08/17/99  
 4. 08/17/99  
 5. 08/17/99  
 6. 08/17/99  
 7. 08/17/99  
 8. 08/17/99  
 9. 08/17/99  
 10. 08/17/99  
 11. 08/17/99  
 12. 08/17/99  
 13. 08/17/99  
 14. 08/17/99  
 15. 08/17/99  
 16. 08/17/99  
 17. 08/17/99  
 18. 08/17/99  
 19. 08/17/99  
 20. 08/17/99  
 21. 08/17/99  
 22. 08/17/99  
 23. 08/17/99  
 24. 08/17/99  
 25. 08/17/99  
 26. 08/17/99  
 27. 08/17/99  
 28. 08/17/99  
 29. 08/17/99  
 30. 08/17/99  
 31. 08/17/99  
 32. 08/17/99  
 33. 08/17/99  
 34. 08/17/99  
 35. 08/17/99  
 36. 08/17/99  
 37. 08/17/99  
 38. 08/17/99  
 39. 08/17/99  
 40. 08/17/99  
 41. 08/17/99  
 42. 08/17/99  
 43. 08/17/99  
 44. 08/17/99  
 45. 08/17/99  
 46. 08/17/99  
 47. 08/17/99  
 48. 08/17/99  
 49. 08/17/99  
 50. 08/17/99  
 51. 08/17/99  
 52. 08/17/99  
 53. 08/17/99  
 54. 08/17/99  
 55. 08/17/99  
 56. 08/17/99  
 57. 08/17/99  
 58. 08/17/99  
 59. 08/17/99  
 60. 08/17/99  
 61. 08/17/99  
 62. 08/17/99  
 63. 08/17/99  
 64. 08/17/99  
 65. 08/17/99  
 66. 08/17/99  
 67. 08/17/99  
 68. 08/17/99  
 69. 08/17/99  
 70. 08/17/99  
 71. 08/17/99  
 72. 08/17/99  
 73. 08/17/99  
 74. 08/17/99  
 75. 08/17/99  
 76. 08/17/99  
 77. 08/17/99  
 78. 08/17/99  
 79. 08/17/99  
 80. 08/17/99  
 81. 08/17/99  
 82. 08/17/99  
 83. 08/17/99  
 84. 08/17/99  
 85. 08/17/99  
 86. 08/17/99  
 87. 08/17/99  
 88. 08/17/99  
 89. 08/17/99  
 90. 08/17/99  
 91. 08/17/99  
 92. 08/17/99  
 93. 08/17/99  
 94. 08/17/99  
 95. 08/17/99  
 96. 08/17/99  
 97. 08/17/99  
 98. 08/17/99  
 99. 08/17/99  
 100. 08/17/99



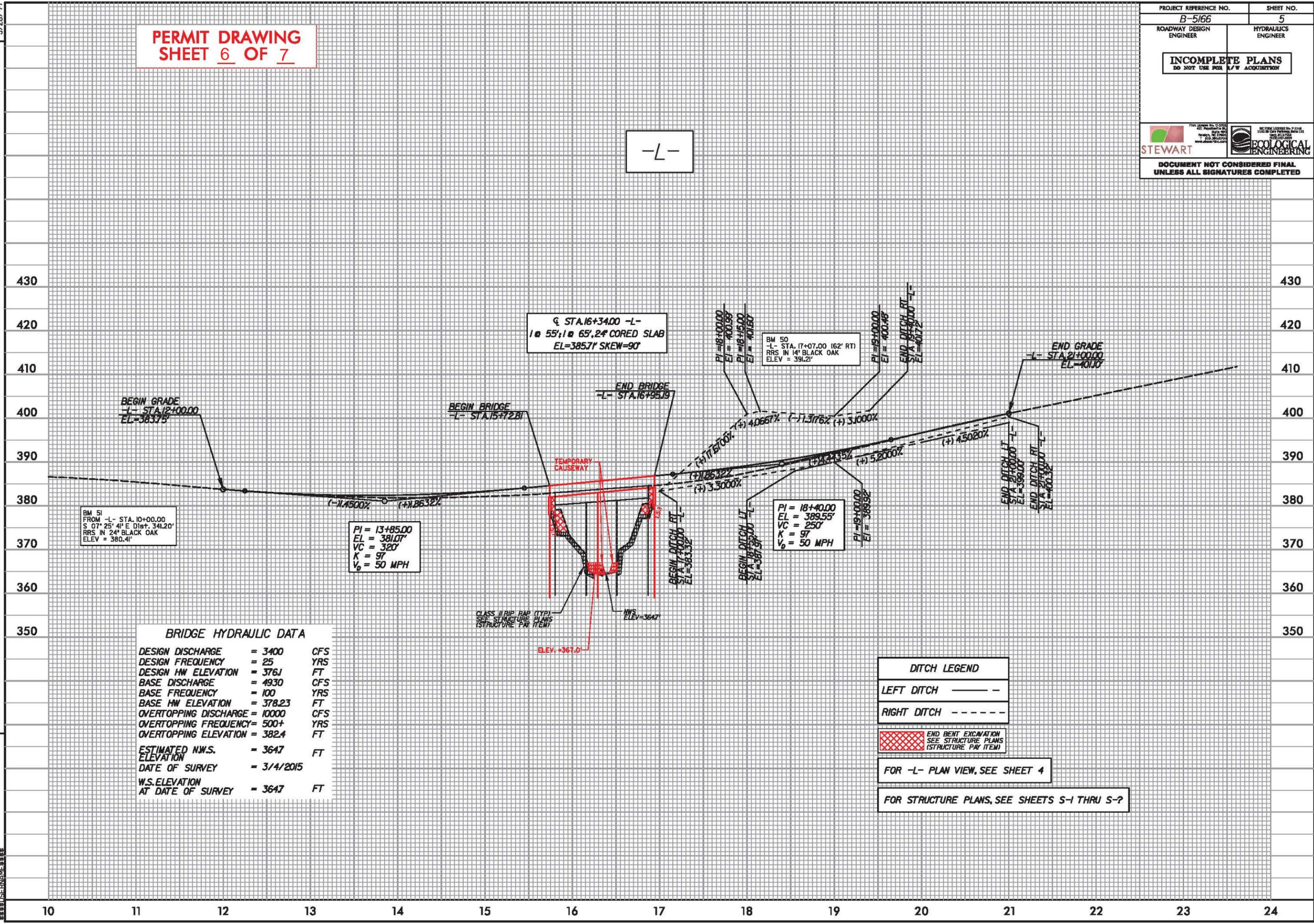


5/28/99

# PERMIT DRAWING SHEET 6 OF 7

PROJECT REFERENCE NO. <b>B-5166</b>	SHEET NO. <b>5</b>
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>INCOMPLETE PLANS</b> DO NOT USE FOR R/W ACQUISITION	
 <b>STEWART</b>	 <b>ECOLOGICAL ENGINEERING</b>
<b>DOCUMENT NOT CONSIDERED FINAL</b> UNLESS ALL SIGNATURES COMPLETED	

-L-



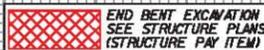
**BRIDGE HYDRAULIC DATA**

DESIGN DISCHARGE	= 3400	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 376.1	FT
BASE DISCHARGE	= 4930	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 378.23	FT
OVERTOPPING DISCHARGE	= 10000	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 382.4	FT
ESTIMATED N.W.S. ELEVATION	= 3647	FT
DATE OF SURVEY	= 3/4/2015	
W.S. ELEVATION AT DATE OF SURVEY	= 3647	FT

**DITCH LEGEND**

LEFT DITCH ————

RIGHT DITCH - - - - -

 END BENT EXCAVATION  
SEE STRUCTURE PLANS  
(STRUCTURE PAY ITEM)

FOR -L- PLAN VIEW, SEE SHEET 4

FOR STRUCTURE PLANS, SEE SHEETS S-1 THRU S-7

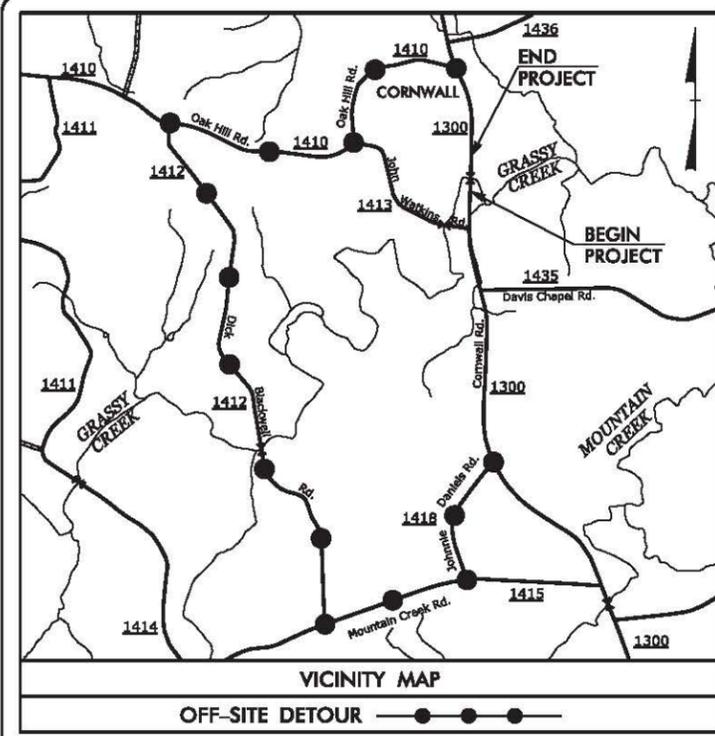
REVISIONS

\*\*\*\*\*SYSTIME\*\*\*\*\*  
\*\*\*\*\*DESIGN\*\*\*\*\*  
\*\*\*\*\*USE\*\*\*\*\*



09/20/19

**T.I.P. PROJECT: B-5166**



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

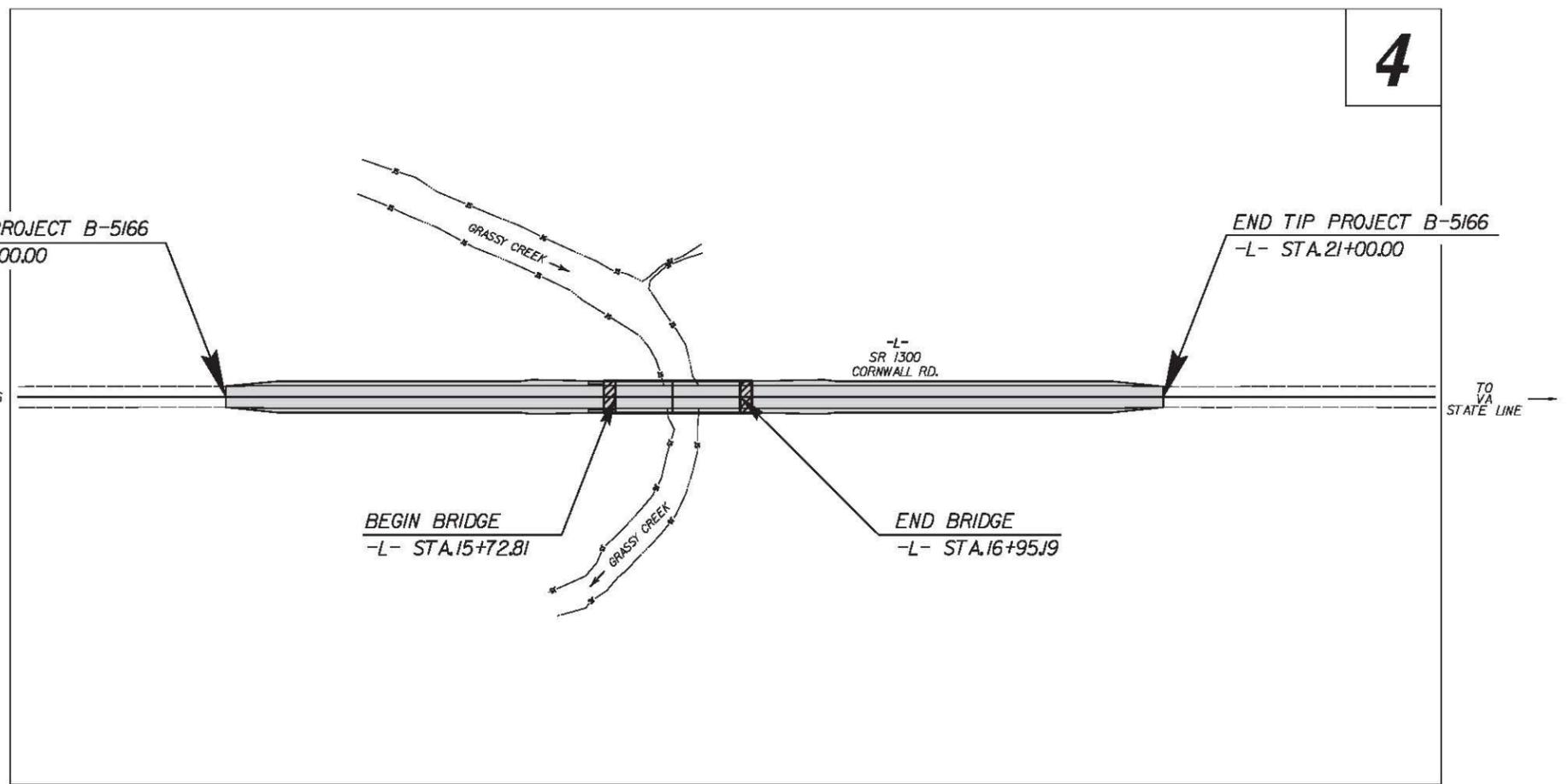
STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS  
**GRANVILLE COUNTY**

**LOCATION:** BRIDGE NO. 138 OVER GRASSY CREEK  
ON SR 1300 (CORNWALL RD.)  
**TYPE OF WORK:** GRADING, DRAINAGE, PAVING, AND STRUCTURE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	<b>B-5166</b>	<b>1</b>	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
42342.1.1	BRSTP-1300(9)	PE	
42342.2.1		ROW & UTILITY	



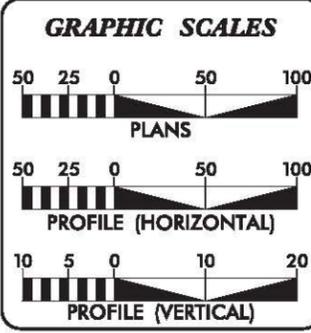
4



CLEARING ON THIS PROJECT SHALL BE TO LIMITS ESTABLISHED USING METHOD III.  
THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

**CONTRACT:**



**DESIGN DATA**  
2017 ADT = 1,146 VPD  
2037 ADT = 1,762 VPD  
DHV = 12%  
D = 65%  
T = 8% \*  
V = 60 MPH  
\* (TTST 4% + DUAL 4%)  
FUNC. CLASS. = RURAL MINOR COLLECTOR  
SUBREGIONAL TIER

**PROJECT LENGTH**

LENGTH ROADWAY TIP PROJECT B-5166	= 0.147 mi.
LENGTH STRUCTURES TIP PROJECT B-5166	= 0.023 mi.
TOTAL LENGTH TIP PROJECT B-5166	= 0.170 mi.

Prepared in the Offices of:

**STEWART**  
421 RIVERCHASE BLVD. STE. 400  
FARMERSVILLE, NC 27834  
734.260.4700

**ECOLOGICAL ENGINEERING**  
11515 Old City Parkway, Suite 101  
Cary, NC 27513  
(919) 227-0929

2012 STANDARD SPECIFICATIONS

**RIGHT OF WAY DATE:**  
APRIL 15, 2016

**LETTING DATE:**  
APRIL 18, 2017

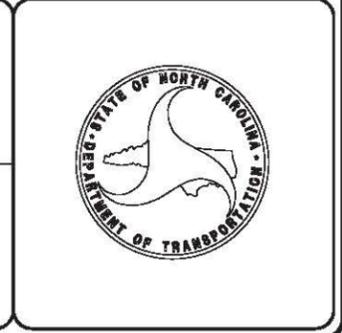
<b>ANDY YOUNG, PE</b> PROJECT ENGINEER
<b>MICHAEL BURNS, EI</b> PROJECT DESIGN ENGINEER
<b>TONY HOUSER, P.E.</b> NCDOT CONTACT

**HYDRAULICS ENGINEER**

SIGNATURE: \_\_\_\_\_ P.E.

**ROADWAY DESIGN ENGINEER**

SIGNATURE: \_\_\_\_\_ P.E.



4/7/2016  
\\Roadway\Proj\B5166\_rdy\_tsh.dgn  
USER:mrburns

# 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	(23)
Existing Fence Line	-x-x-x-
Proposed Woven Wire Fence	-o-o-o-
Proposed Chain Link Fence	-□-□-□-
Proposed Barbed Wire Fence	-◇-◇-◇-
Existing Wetland Boundary	-----
Proposed Wetland Boundary	-----
Existing Endangered Animal Boundary	-----
Existing Endangered Plant Boundary	-----
Existing Historic Property Boundary	-----
Known Contamination Area: Soil	☠
Potential Contamination Area: Soil	☠
Known Contamination Area: Water	☠
Potential Contamination Area: Water	☠
Contaminated Site: Known or Potential	☠

### BUILDINGS AND OTHER CULTURE:

Gas Pump Vent or U/G 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	-----
Buffer Zone 1	-----
Buffer Zone 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 RW Marker	-----
Proposed Control of Access Line with Concrete CA 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	-----
U/G Power Cable Hand Hole	-----
H-Frame Pole	-----
U/G Power Line LOS B (S.U.E.*)	-----
U/G Power Line LOS C (S.U.E.*)	-----
U/G Power Line LOS D (S.U.E.*)	-----

### TELEPHONE:

Existing Telephone Pole	-----
Proposed Telephone Pole	-----
Telephone Manhole	-----
Telephone Pedestal	-----
Telephone Cell Tower	-----
U/G Telephone Cable Hand Hole	-----
U/G Telephone Cable LOS B (S.U.E.*)	-----
U/G Telephone Cable LOS C (S.U.E.*)	-----
U/G Telephone Cable LOS D (S.U.E.*)	-----
U/G Telephone Conduit LOS B (S.U.E.*)	-----
U/G Telephone Conduit LOS C (S.U.E.*)	-----
U/G Telephone Conduit LOS D (S.U.E.*)	-----
U/G Fiber Optics Cable LOS B (S.U.E.*)	-----
U/G Fiber Optics Cable LOS C (S.U.E.*)	-----
U/G Fiber Optics Cable LOS D (S.U.E.*)	-----

### WATER:

Water Manhole	-----
Water Meter	-----
Water Valve	-----
Water Hydrant	-----
U/G Water Line LOS B (S.U.E.*)	-----
U/G Water Line LOS C (S.U.E.*)	-----
U/G Water Line LOS D (S.U.E.*)	-----
Above Ground Water Line	-----

### TV:

TV Pedestal	-----
TV Tower	-----
U/G TV Cable Hand Hole	-----
U/G TV Cable LOS B (S.U.E.*)	-----
U/G TV Cable LOS C (S.U.E.*)	-----
U/G TV Cable LOS D (S.U.E.*)	-----
U/G Fiber Optic Cable LOS B (S.U.E.*)	-----
U/G Fiber Optic Cable LOS C (S.U.E.*)	-----
U/G Fiber Optic Cable LOS D (S.U.E.*)	-----

### GAS:

Gas Valve	-----
Gas Meter	-----
U/G Gas Line LOS B (S.U.E.*)	-----
U/G Gas Line LOS C (S.U.E.*)	-----
U/G Gas Line LOS D (S.U.E.*)	-----
Above Ground Gas Line	-----

### SANITARY SEWER:

Sanitary Sewer Manhole	-----
Sanitary Sewer Cleanout	-----
U/G Sanitary Sewer Line	-----
Above Ground Sanitary Sewer	-----
SS Forced Main Line LOS B (S.U.E.*)	-----
SS Forced Main Line LOS C (S.U.E.*)	-----
SS Forced Main Line LOS D (S.U.E.*)	-----

### MISCELLANEOUS:

Utility Pole	-----
Utility Pole with Base	-----
Utility Located Object	-----
Utility Traffic Signal Box	-----
Utility Unknown U/G Line LOS B (S.U.E.*)	-----
U/G Tank; Water, Gas, Oil	-----
Underground Storage Tank, Approx. Loc.	-----
AG Tank; Water, Gas, Oil	-----
Geoenvironmental Boring	-----
U/G Test Hole LOS A (S.U.E.*)	-----
Abandoned According to Utility Records	-----
End of Information	-----

04/06/15

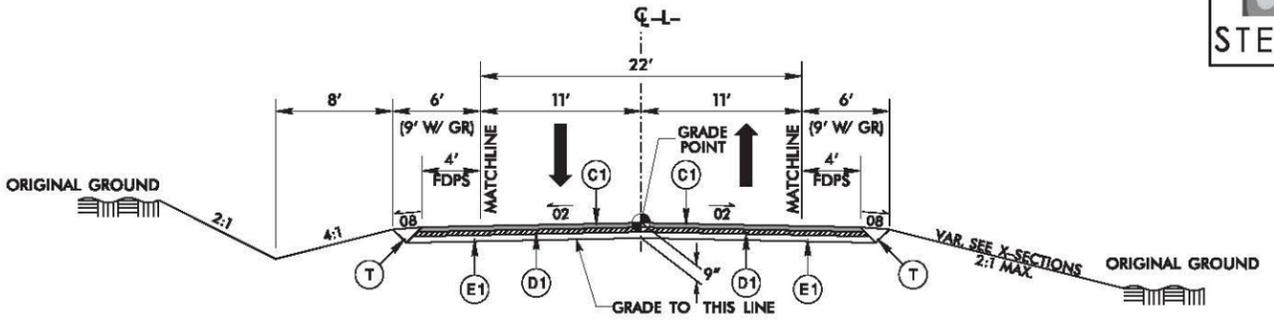
B-17/99

**STEWART**  
 Firm License No. C-1051  
 421 Fayetteville St.  
 Suite 400  
 Raleigh, NC 27601  
 T 919.380.8700  
 www.stewartinc.com

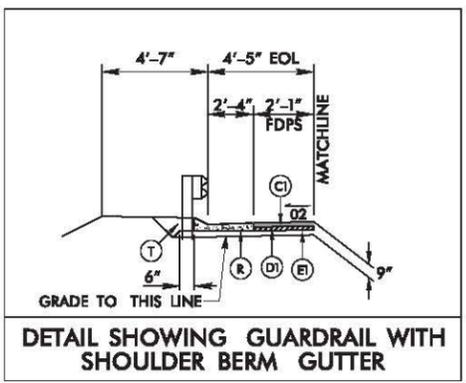
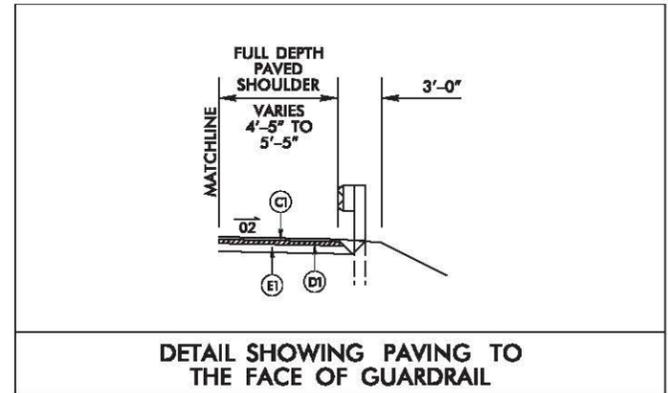
PROJECT REFERENCE NO. <b>B-5166</b>	SHEET NO. <b>2A-1</b>
ROADWAY DESIGN ENGINEER	PAYMENT DESIGN ENGINEER
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	

PAVEMENT SCHEDULE (FINAL PAVEMENT DESIGN)	
C1	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 165 LBS. PER SQ. YD.
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5A, AT AN AVERAGE RATE OF 110 LBS. PER SQ. YD. PER 1" DEPTH TO BE PLACED IN LAYERS NOT TO EXCEED 1½" IN DEPTH.
D1	PROP. APPROX. 3½" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 399 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" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 468 LBS. PER SQ. YD.
R	SHOULDER BERM GUTTER
T	EARTH MATERIAL
W	ASPHALT WEDGING (SEE DETAIL)

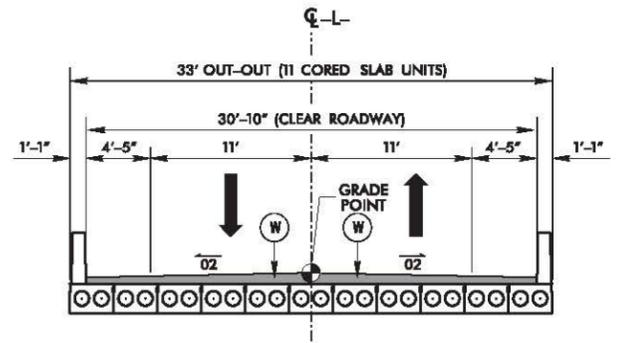
NOTE: PAVEMENT EDGE SLOPES ARE 1:1, UNLESS SHOWN OTHERWISE



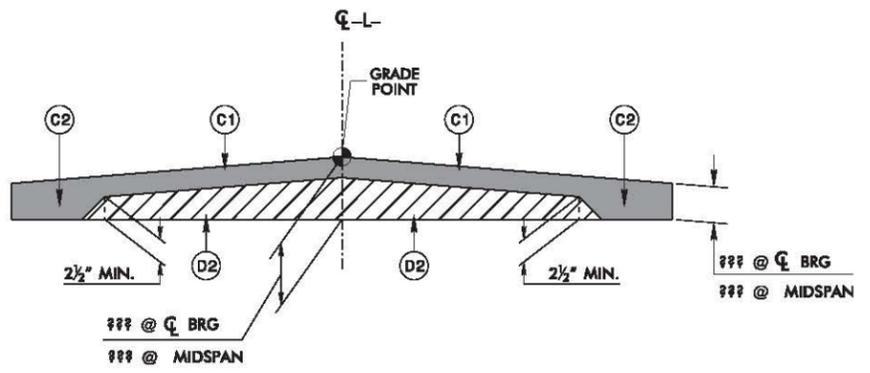
**TYPICAL SECTION NO. 1**  
 -L- STA. 12+00.00 TO -L- STA. 15+72.81 (BEGIN BRIDGE)  
 -L- STA. 16+95.19 (END BRIDGE) TO -L- STA. 21+00.00



USE SHOULDER BERM GUTTER AT THE FOLLOWING LOCATIONS:  
 -L- STA. 15+48.00 TO -L- STA. 15+61.94 (BEGIN APPROACH SLAB) (LEFT)  
 -L- STA. 15+48.00 TO -L- STA. 15+61.94 (BEGIN APPROACH SLAB) (RIGHT)



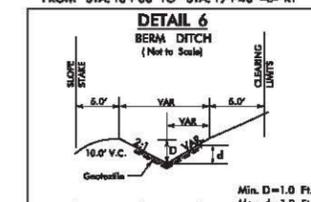
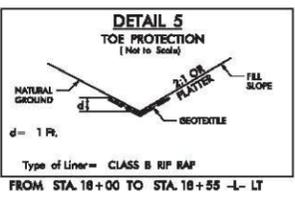
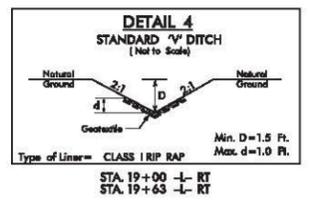
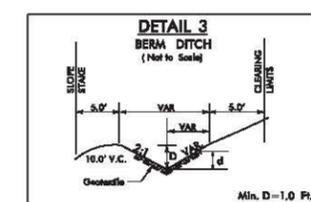
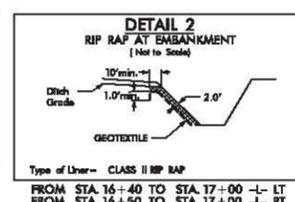
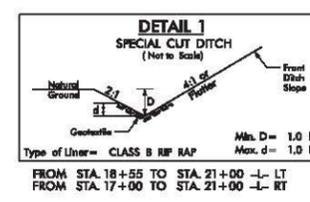
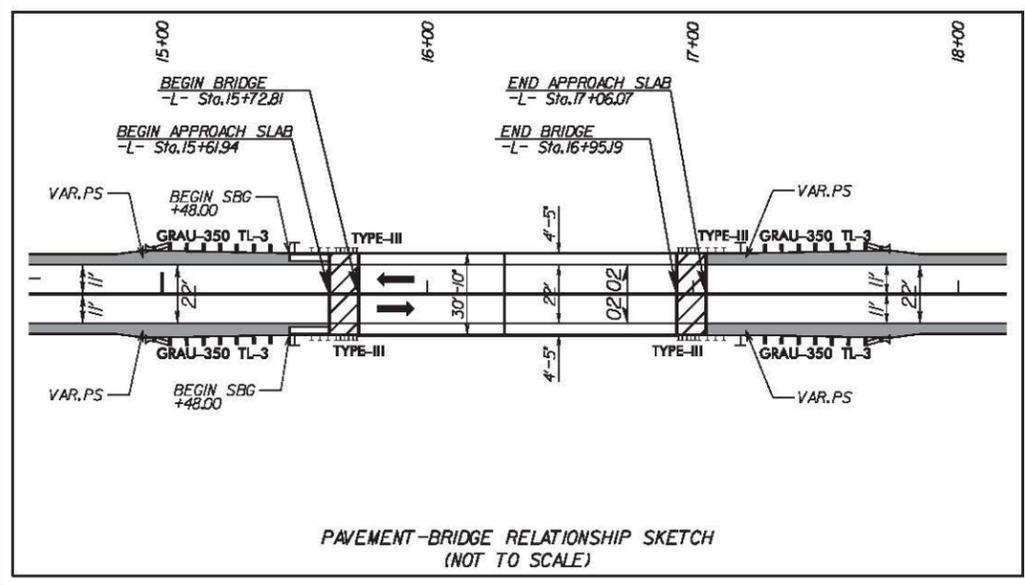
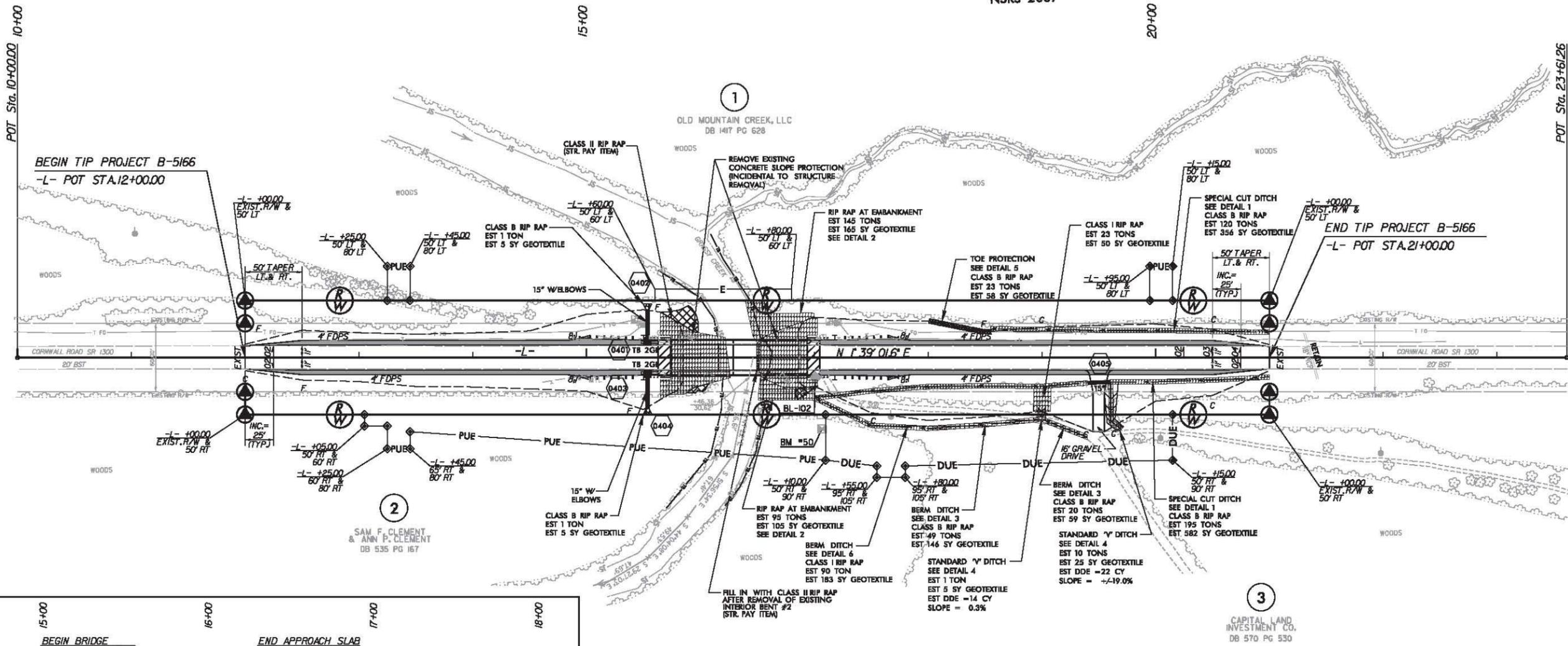
**TYPICAL SECTION NO. 2**  
 -L- STA. 15+72.81 (BEGIN BRIDGE) TO -L- STA. 16+95.19 (END BRIDGE)  
**CORED SLAB BRIDGE**  
 (SEE STRUCTURE PLANS)

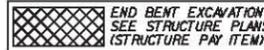
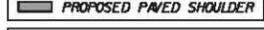


**DETAIL SHOWING METHOD OF WEDGING ON BRIDGE**  
 USE IN CONJUNCTION WITH TYPICAL SECTION NO. 2  
 (SEE STRUCTURE PLANS)

4/7/2016 11:58:00 AM N:\Projects\B5166.rdlj-tup.dgn

NAD 83  
NSRS 2007



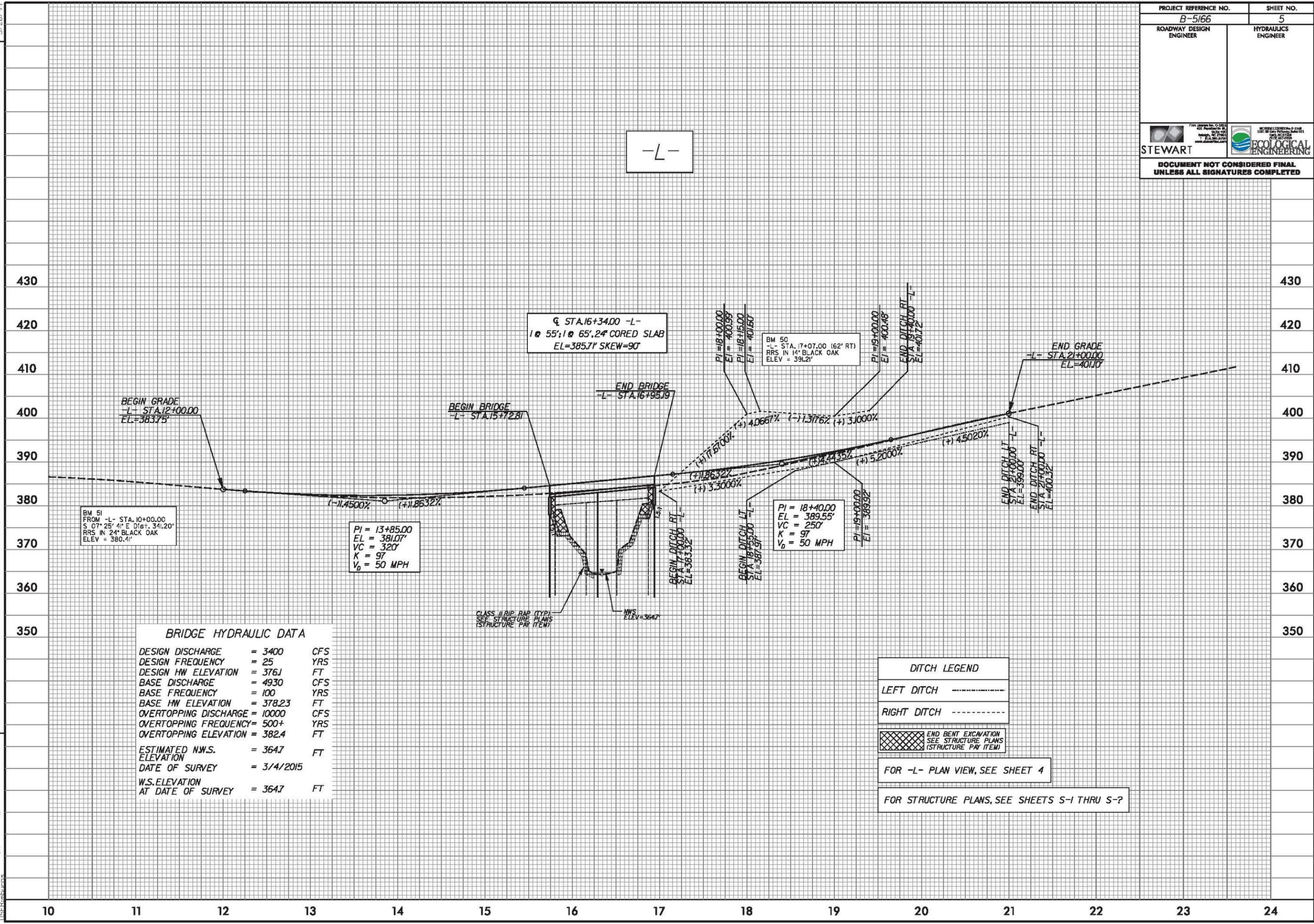
-  END BENT EXCAVATION  
SEE STRUCTURE PLANS  
(STRUCTURE PAY ITEM)
-  FOR -L- PROFILE, SEE SHEET 5
-  PROPOSED PAVED SHOULDER
- ALL DRIVEWAY RADII ARE 5' UNLESS OTHERWISE NOTED ON PLANS
- FOR STRUCTURE PLANS, SEE SHEETS S-1 THRU S-7

REVISIONS

4/7/2016 8:51:56 AM r.dj.psh.d4.dgn  
115818

5/28/99

REVISIONS



**BRIDGE HYDRAULIC DATA**

DESIGN DISCHARGE	= 3400	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 376.1	FT
BASE DISCHARGE	= 4930	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 378.23	FT
OVERTOPPING DISCHARGE	= 10000	CFS
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING ELEVATION	= 382.4	FT
ESTIMATED N.W.S. ELEVATION	= 364.7	FT
DATE OF SURVEY	= 3/4/2015	
W.S. ELEVATION AT DATE OF SURVEY	= 364.7	FT

**DITCH LEGEND**

LEFT DITCH -----  
 RIGHT DITCH -----

 END BENT EXCAVATION  
 SEE STRUCTURE PLANS  
 (STRUCTURE PAY ITEM)

FOR -L- PLAN VIEW, SEE SHEET 4  
 FOR STRUCTURE PLANS, SEE SHEETS S-1 THRU S-?

4/7/2016 8:51:56 AM rdj: psh: 05.dgn

8/17/99

# STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

PROJ. REFERENCE NO.	SHEET NO.
B-5166	X-1A
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	

NOTE: EMBANKMENT COLUMN DOES NOT INCLUDE BACKFILL FOR UNDERCUT

## CROSS-SECTION SUMMARY

APPROXIMATE QUANTITIES ONLY.  
UNCLASSIFIED EXCAVATION, FINE GRADING,  
CLEARING AND GRUBBING, AND REMOVAL OF  
EXISTING PAVEMENT WILL BE PAID FOR AT  
THE CONTRACT LUMP SUM PRICE FOR  
"GRADING"

Station	Uncl. Exc.	Embt
L	(cu. yd.)	(cu. yd.)
12+00.00	0	0
12+50.00	34	6
13+00.00	33	8
13+50.00	26	10
14+00.00	13	19
14+50.00	3	31
15+00.00	0	78
15+50.00	0	186
15+72.81 (BR)	0	128

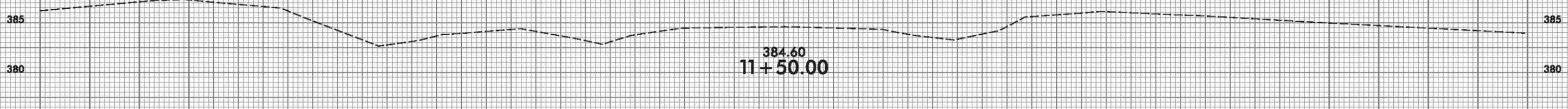
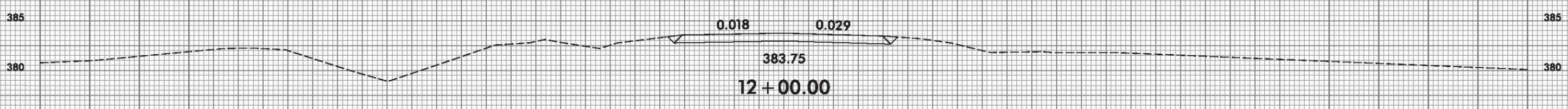
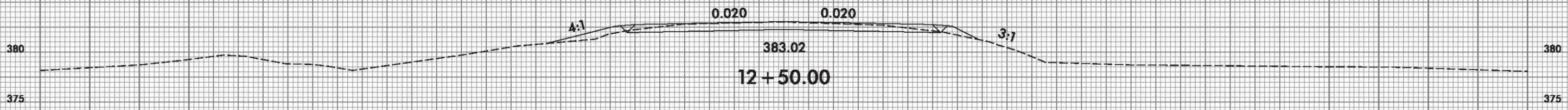
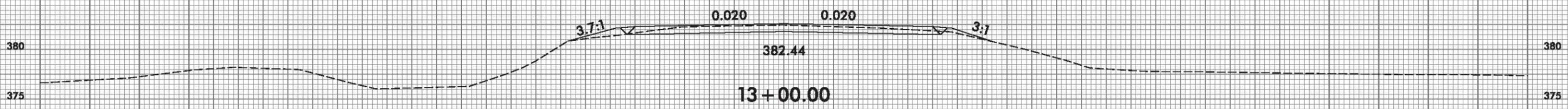
Station	Uncl. Exc.	Embt
L	(cu. yd.)	(cu. yd.)
16+95.19 (BR)	0	0
17+00.00	0	20
17+50.00	87	177
18+00.00	232	125
18+50.00	281	64
19+00.00	224	30
19+50.00	181	19
20+00.00	169	9
20+50.00	117	7
21+00.00	56	5

REVISIONS

4/7/2016  
15:11:00  
C:\Users\jw\Documents\XSC\B5166\_xpl\_x1a.dgn



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



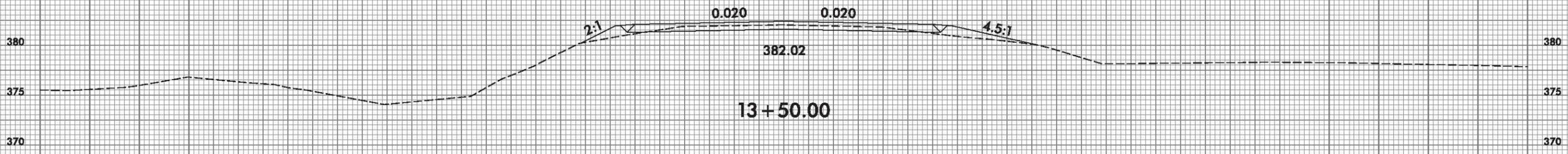
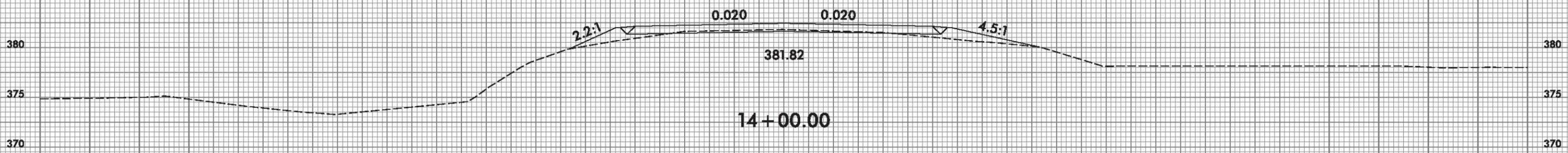
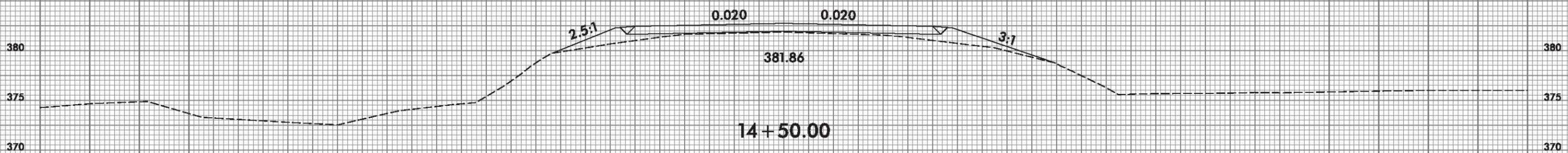
75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

8/23/99



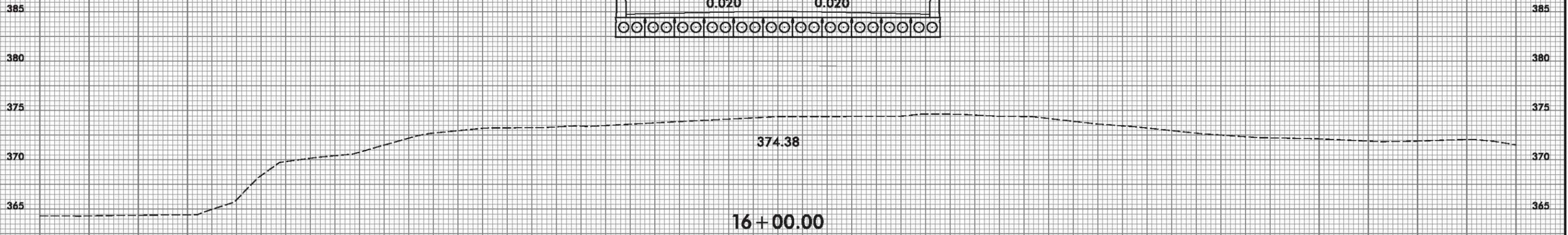
PROJ. REFERENCE NO.	SHEET NO.
B-5166	X-2

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

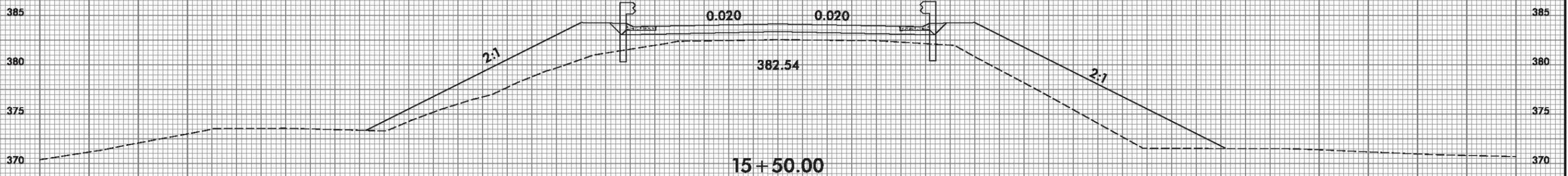


4/7/2016  
 I:\Projects\XSC\B5166\_xpl.L.dgn  
 JSE/mburris

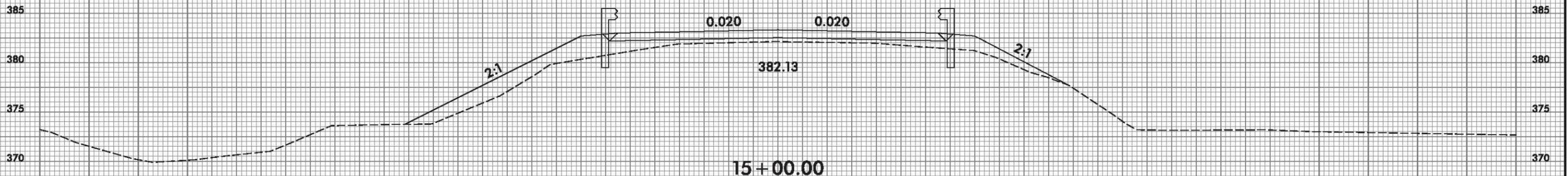
75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75



16+00.00



15+50.00



15+00.00

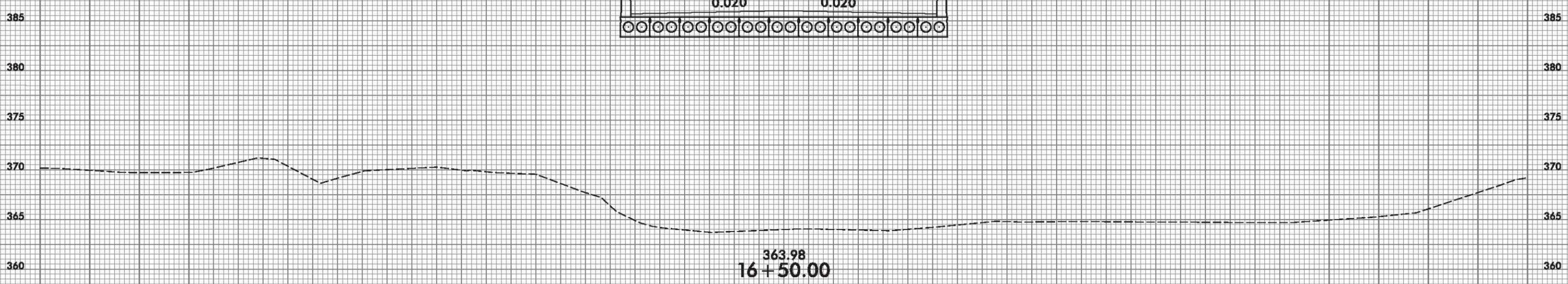
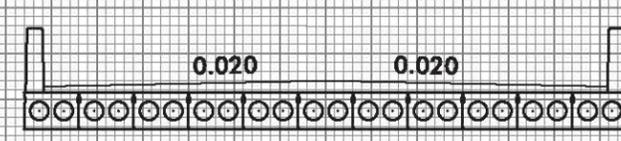
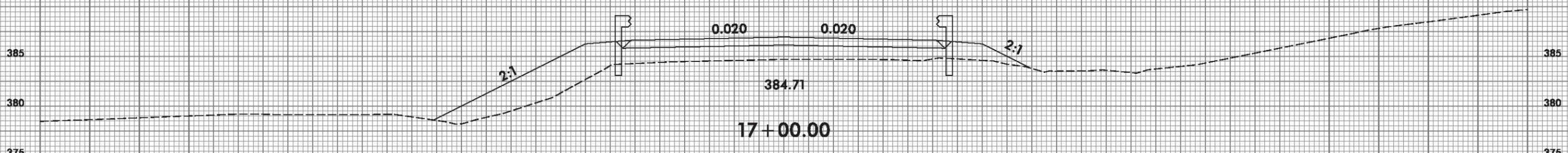
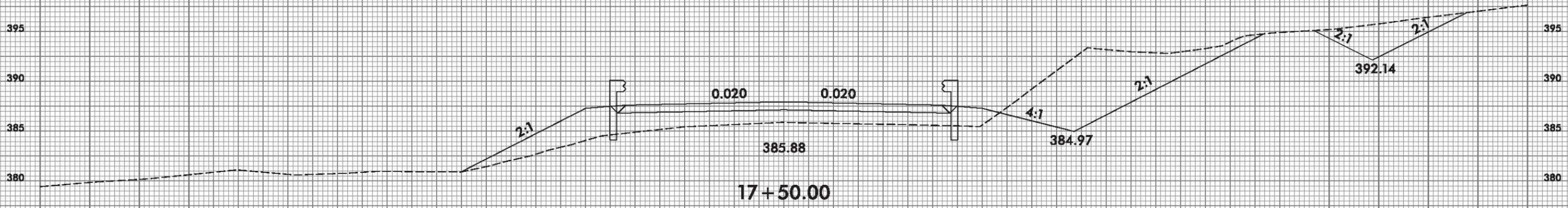


8/23/99



PROJ. REFERENCE NO.	SHEET NO.
B-5166	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



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

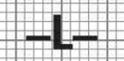
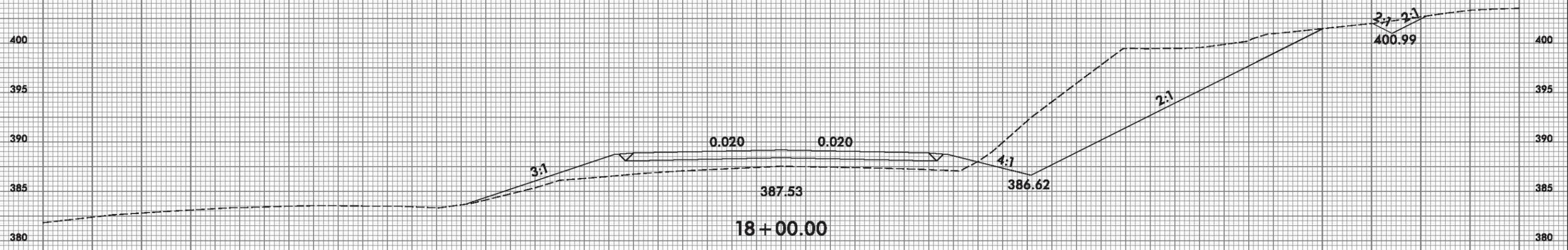
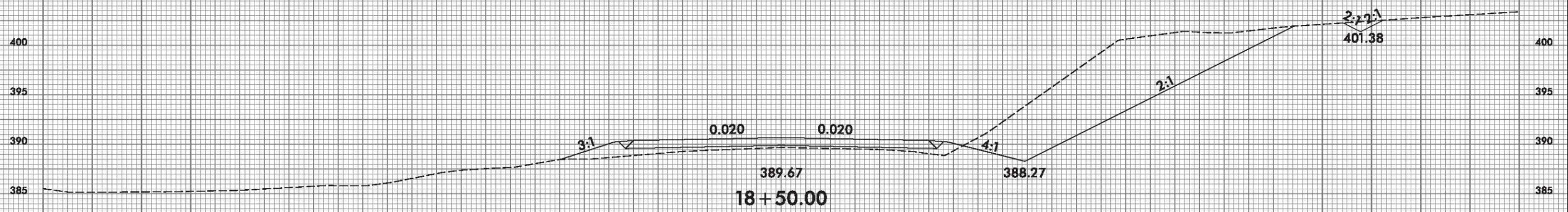
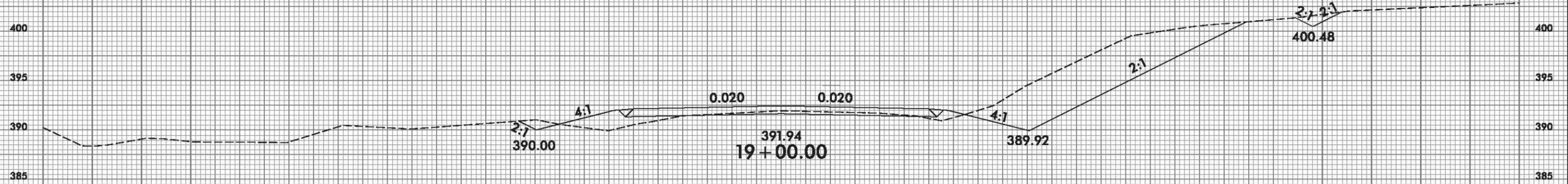
4/7/2016  
 I:\Projects\XSC\B5166\_xpl.L.dgn  
 JSE\mrburbs

8/23/99



PROJ. REFERENCE NO.	SHEET NO.
B-5166	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



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

4/7/2016  
 I:\Projects\XSC\B5166\_xpl.L.dgn  
 JSE

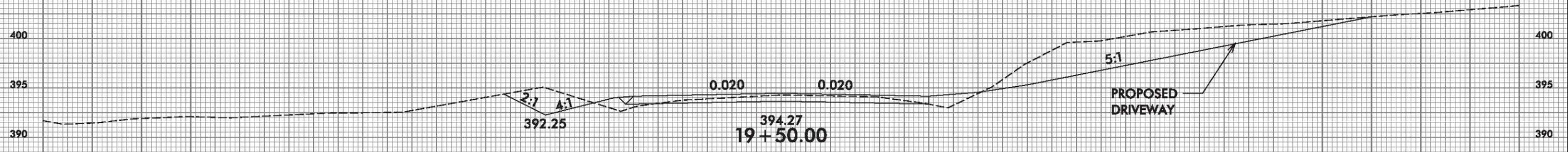
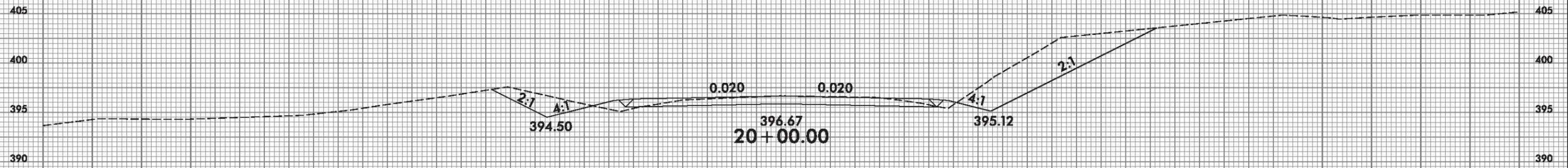
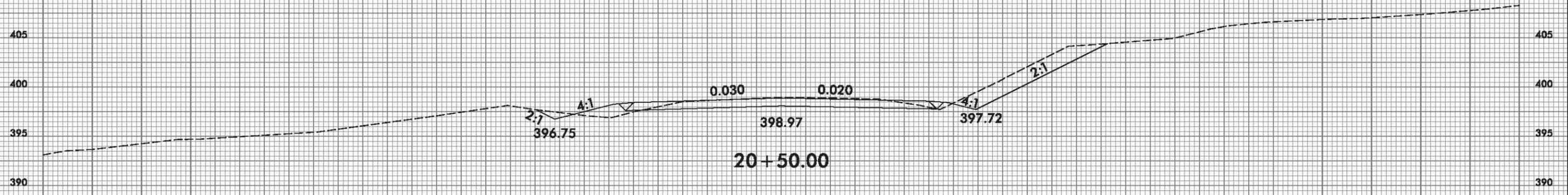
8/23/99



PROJ. REFERENCE NO.	SHEET NO.
B-5166	X-6

PROJ. REFERENCE NO.	SHEET NO.
B-5166	X-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 60 65 70 75



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

4/7/2016  
 I:\Projects\XSC\B5166\_xpl.L.dgn  
 J:\E\m\m\m



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

