STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAT L. MCCRORY
GOVERNOR

ANTHONY J. TATA
SECRETARY

December 12, 2014

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

ATTN: Mr. Andrew Williams
NCDOT Coordinator

Subject: **Application for Section 404 Nationwide Permit 13** for the proposed replacement of Bridge No. 29 over Cub Creek on SR 1001 (Oakwoods Road) in Wilkes County, Federal Aid Project No. BRZ-1001(29), Division 11, WBS Element No. 33831.1.1, TIP No. B-4676.

Dear Sir:

The North Carolina Department of Transportation (NCDOT) proposes to replace Bridge No. 29 over Cub Creek with a two-span box beam bridge in a new location adjacent to the existing alignment. Traffic will be maintained during construction via an off-site detour.

There will be 27 linear feet of stream bank stabilization due to protecting the outlets of three roadside ditches.

Please see enclosed copies of the Pre-Construction Notification (PCN), Approved Jurisdictional Determination Form, stormwater management plan, permit drawings and design plans for the above-referenced project. The Categorical Exclusion (CE) was completed in April 2014 and distributed shortly thereafter. Additional copies are available upon request.

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

TELEPHONE: 919-707-6000
FAX: 919-212-5785
WEBSITE:NCDOT.GOV

LOCATION:
CENTURY CENTER, BUILDING B
1020 BIRCH RIDGE DRIVE
RALEIGH NC 27610

This project is located in a trout county, therefore comments from the NCWRC will be required prior to authorization by the Corps of Engineers. By copy of this letter and attachment, NCDOT hereby requests NCWRC Review. NCDOT requests that NCWRC forward their comments to the Corps of Engineers and the NCDOT within 30 calendar days of receipt of this application.

This project calls for a letting date of August 18, 2015 and a review date of June 30, 2015; however, the let date may advance as additional funding becomes available.

A copy of this permit application and its distribution list will be posted on the NCDOT Website at: http://connect.ncdot.gov/resources/Environmental. If you have any questions or need additional information, please call Erin Cheely at (919) 707-6108.

Sincerely,

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

cc:
NCDOT Permit Application Standard Distribution List

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

Pre-Construction Notification (PCN) Form

A. Applicant Information

1. Processing

1a. Type(s) of approval sought from the Corps:	☒ Section 404 Permit	☐ Section 10 Permit
1b. Specify Nationwide Permit (NWP) number:	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 #29 over Cub Creek on SR 1001
2b. County:	Wilkes
2c. Nearest municipality / town:	Wilkesboro
2d. Subdivision name:	*not applicable*
2e. NCDOT only, T.I.P. or state project no:	B-4676

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) 707-6108
3g. Fax no.:	(919) 212-5785
3h. Email address:	ekcheely@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: 36.14882 (DD.DDDDDD) Longitude: - 81.14268 (-DD.DDDDDD)
1c. Property size:	0.9 acre
2. Surface Waters	
2a. Name of nearest body of water (stream, river, etc.) to proposed project:	Cub Creek
2b. Water Quality Classification of nearest receiving water:	C
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: Land use in the vicinity consists of about 30% forest land, 65% developed or disturbed lands (residential and urban areas, roadsides, utility corridors) and 5% cultivated land (agricultural fields and pastures).	
3b. List the total estimated acreage of all existing wetlands on the property: No wetlands within construction limits.	
3c. List the total estimated linear feet of all existing streams (intermittent and perennial) on the property: 350	
3d. Explain the purpose of the proposed project: The purpose of this project is to replace a structurally deficient and functionally obsolete bridge. Sufficiency rating 8.89 of 100, structural evaluation 3 of 9 and deck geometry 2 of 9.	
3e. Describe the overall project in detail, including the type of equipment to be used: The project involves replacing an 81-foot, three-span bridge with a 182-foot, two-span bridge on new location adjacent to the existing alignment while maintaining traffic with an off-site detour during construction. 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: Only one perennial stream, Cub Creek	☐ Yes ☒ No ☐ Unknown A JD is requested as part of this permit. Approved JD form (Rapanos) is included with this application.
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): Erin Cheely	Agency/Consultant Company: NCDOT Other:
4d. If yes, list the dates of the Corps jurisdictional determinations or State determinations and attach documentation.	
5. Project History	
5a. Have permits or certifications been requested or obtained for this project (including all prior phases) in the past?	☐ 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			☐ Yes ☐ No	☐ Corps ☐ DWQ	
Site 2 ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ	
Site 3 ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ	
Site 4 ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ	
				2g. **Total wetland impacts**	0 Permanent 0 Temporary

2h. Comments: No wetlands located within the construction footprint of this project.

3. Stream Impacts

If there are perennial or intermittent stream impacts (including temporary impacts) proposed on the site, then complete this question for all stream sites impacted.

3a. Stream impact number - Permanent (P) or Temporary (T)	3b. Type of impact	3c. Stream name	3d. Perennial (PER) or intermittent (INT)?	3e. Type of jurisdiction (Corps - 404, 10 DWQ – non-404, other)	3f. Average stream width (feet)	3g. Impact length (linear feet)
Site 1 ☒ P ☐ T	Bank Stabilization	Cub Creek	☒ PER ☐ INT	☒ Corps ☐ DWQ	20	27
Site ☐ P ☐ T			☐ PER ☐ INT	☐ Corps ☐ DWQ		
Site ☐ P ☐ T			☐ PER ☐ INT	☐ Corps ☐ DWQ		
Site ☐ P ☐ T			☐ PER ☐ INT	☐ Corps ☐ DWQ		
Site ☐ P ☐ T			☐ PER ☐ INT	☐ Corps ☐ DWQ		
Site ☐ P ☐ T			☐ PER ☐ INT	☐ Corps ☐ DWQ		
					3h. **Total stream and tributary impacts**	27 Permanent 0 Temporary

3i. Comments: All permanent stream impacts (27 linear feet) are from bank stabilization. No temporary access is required to remove existing bridge or construct new one.

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				
O3 ☐ P ☐ T				
O4 ☐ P ☐ T				
4f. Total open water impacts				0 Permanent 0 Temporary

4g. Comments: No open waters.

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**			
6i. Comments: This project is not located within a protected buffer area.					

D. Impact Justification and Mitigation

1. Avoidance and Minimization

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

The proposed bridge will span the creek and will be constructed near the existing alignment. It will be significantly longer than the existing structure (and also higher to allow clearance for a greenway under the bridge). Bridge deck drainage will not be allowed to discharge directly into the water. The proposed bank stabilization at the ditch outfalls will protect the slopes from erosion. All existing stormwater drainage patterns were maintained on the project to the fullest extent possible.

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

Best Management Practices (BMPs) will be utilized during construction to attempt to reduce the stormwater impacts to the receiving stream due to erosion and runoff. Traffic will be maintained via an off-site detour.

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: Bank stabilization impacts only.
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:	N/A
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: The NCDOT does not propose mitigation for the 27 linear feet of stream bank stabilization. These actions do not require permanent fill in the stream bed and, therefore, under Section 404 of the Clean Water Act, do not constitute Loss of Waters of the U.S. and are not subject to compensatory mitigation. Furthermore, the proposed bank stabilization activities are necessary to prevent erosion and sedimentation, i.e. preventing bank destabilization.

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:**			
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: If required from 1a, see attached buffer permit drawings.	☐ 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 N/A
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: Categorical Exclusion (CE) approved April 2014	☒ 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? As of January 14, 2014 the USFWS lists only one federally listed species for Wilkes County, the bog turtle. No habitat for the bog turtle exists within the project limits, therefore the biological conclusion for this species is "No Effect". A US Fish and Wildlife Service proposal for listing the Northern Long-eared Bat (*Myotis septentrionalis*) as an Endangered species was published in the Federal Register in October 2013. The listing will become effective on or before April, 2015. Furthermore, this species is included in USFWS's current list of protected species for Wilkes County. NCDOT is working closely with the USFWS to understand how this proposed listing may impact NCDOT projects. NCDOT will continue to coordinate appropriately with USFWS to determine if this project will incur potential effects to the Northern long-eared bat, and how to address these potential effects, if necessary.		
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		

for Richard W. Hancock, P.E. Applicant/Agent's Printed Name	Applicant/Agent's Signature (Agent's signature is valid only if an authorization letter from the applicant is provided.)	12/12/14 Date

APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD):

B. DISTRICT OFFICE, FILE NAME, AND NUMBER:

C. PROJECT LOCATION AND BACKGROUND INFORMATION: B-4676 (Bridge No.29 on SR 1001)
State: North Carolina County/parish/borough: Wilkes City: Wilkesboro
Center coordinates of site (lat/long in degree decimal format): Lat. 36.14882° **N**, Long. -81.14268° **W**.
Universal Transverse Mercator:
Name of nearest waterbody: Cub Creek
Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Yadkin River
Name of watershed or Hydrologic Unit Code (HUC): 03040101
☒ Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.
☐ Check if other sites (e.g., offsite mitigation sites, disposal sites, etc…) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):
☐ Office (Desk) Determination. Date:
☐ Field Determination. Date(s):

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There **Are no** *"navigable waters of the U.S."* within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [*Required*]
☐ Waters subject to the ebb and flow of the tide.
☐ Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.
Explain: .

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There **Are** "*waters of the U.S.*" within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [*Required*]

1. **Waters of the U.S.**
   a. **Indicate presence of waters of U.S. in review area (check all that apply):** [1]
      ☐ TNWs, including territorial seas
      ☐ Wetlands adjacent to TNWs
      ☒ Relatively permanent waters[2] (RPWs) that flow directly or indirectly into TNWs
      ☐ Non-RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
      ☐ Impoundments of jurisdictional waters
      ☐ Isolated (interstate or intrastate) waters, including isolated wetlands

   b. **Identify (estimate) size of waters of the U.S. in the review area:**
      Non-wetland waters: linear feet: width (ft) and/or acres.
      Wetlands: 0 acres.

   c. **Limits (boundaries) of jurisdiction** based on: **Established by OHWM.**
      Elevation of established OHWM (if known): .

2. **Non-regulated waters/wetlands (check if applicable):**[3]
   ☐ Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional.
   Explain: .

[1] Boxes checked below shall be supported by completing the appropriate sections in Section III below.
[2] For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).
[3] Supporting documentation is presented in Section III.F.

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. TNW
Identify TNW: .

Summarize rationale supporting determination: .

2. Wetland adjacent to TNW
Summarize rationale supporting conclusion that wetland is "adjacent": .

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody[4] is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. Characteristics of non-TNWs that flow directly or indirectly into TNW

(i) General Area Conditions:
Watershed size: **Pick List**
Drainage area: **Pick List**
Average annual rainfall: inches
Average annual snowfall: inches

(ii) Physical Characteristics:
(a) Relationship with TNW:
☐ Tributary flows directly into TNW.
☐ Tributary flows through **Pick List** tributaries before entering TNW.

Project waters are **Pick List** river miles from TNW.
Project waters are **Pick List** river miles from RPW.
Project waters are **Pick List** aerial (straight) miles from TNW.
Project waters are **Pick List** aerial (straight) miles from RPW.
Project waters cross or serve as state boundaries. Explain: .

Identify flow route to TNW[5]: .
Tributary stream order, if known: .

[4] Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.
[5] Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

(b) General Tributary Characteristics (check all that apply):

Tributary is: ☐ Natural
☐ Artificial (man-made). Explain: .
☐ Manipulated (man-altered). Explain: .

Tributary properties with respect to top of bank (estimate):
Average width: feet
Average depth: feet
Average side slopes: **Pick List.**

Primary tributary substrate composition (check all that apply):

☐ Silts	☐ Sands	☐ Concrete
☐ Cobbles	☐ Gravel	☐ Muck
☐ Bedrock	☐ Vegetation. Type/% cover:	
☐ Other. Explain: .		

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: .
Presence of run/riffle/pool complexes. Explain: .
Tributary geometry: **Pick List**
Tributary gradient (approximate average slope): %

(c) Flow:
Tributary provides for: **Pick List**
Estimate average number of flow events in review area/year: **Pick List**
Describe flow regime: .
Other information on duration and volume: .

Surface flow is: **Pick List.** Characteristics: .

Subsurface flow: **Pick List**. Explain findings: .
☐ Dye (or other) test performed: .

Tributary has (check all that apply):
☐ Bed and banks
☐ OHWM[6] (check all indicators that apply):

☐ clear, natural line impressed on the bank	☐ the presence of litter and debris
☐ changes in the character of soil	☐ destruction of terrestrial vegetation
☐ shelving	☐ the presence of wrack line
☐ vegetation matted down, bent, or absent	☐ sediment sorting
☐ leaf litter disturbed or washed away	☐ scour
☐ sediment deposition	☐ multiple observed or predicted flow events
☐ water staining	☐ abrupt change in plant community
☐ other (list):	

☐ Discontinuous OHWM.[7] Explain: .

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):

☐ High Tide Line indicated by:	☐ Mean High Water Mark indicated by:
☐ oil or scum line along shore objects	☐ survey to available datum;
☐ fine shell or debris deposits (foreshore)	☐ physical markings;
☐ physical markings/characteristics	☐ vegetation lines/changes in vegetation types.
☐ tidal gauges	
☐ other (list):	

(iii) Chemical Characteristics:
Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).
Explain: .
Identify specific pollutants, if known: .

[6]A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.
[7]Ibid.

(iv) Biological Characteristics. Channel supports (check all that apply):

- ☐ Riparian corridor. Characteristics (type, average width): .
- ☐ Wetland fringe. Characteristics: .
- ☐ Habitat for:
  - ☐ Federally Listed species. Explain findings: .
  - ☐ Fish/spawn areas. Explain findings: .
  - ☐ Other environmentally-sensitive species. Explain findings: .
  - ☐ Aquatic/wildlife diversity. Explain findings: .

2. Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW

(i) Physical Characteristics:

(a) General Wetland Characteristics:

Properties:

Wetland size: acres

Wetland type. Explain: .

Wetland quality. Explain: .

Project wetlands cross or serve as state boundaries. Explain: .

(b) General Flow Relationship with Non-TNW:

Flow is: **Pick List**. Explain: .

Surface flow is**: Pick List**

Characteristics: .

Subsurface flow: **Pick List**. Explain findings: .

- ☐ Dye (or other) test performed: .

(c) Wetland Adjacency Determination with Non-TNW:

- ☐ Directly abutting
- ☐ Not directly abutting
  - ☐ Discrete wetland hydrologic connection. Explain: .
  - ☐ Ecological connection. Explain: .
  - ☐ Separated by berm/barrier. Explain: .

(d) Proximity (Relationship) to TNW

Project wetlands are **Pick List** river miles from TNW.

Project waters are **Pick List** aerial (straight) miles from TNW.

Flow is from: **Pick List.**

Estimate approximate location of wetland as within the **Pick List** floodplain.

(ii) Chemical Characteristics:

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain: .

Identify specific pollutants, if known: .

(iii) Biological Characteristics. Wetland supports (check all that apply):

- ☐ Riparian buffer. Characteristics (type, average width): .
- ☐ Vegetation type/percent cover. Explain: .
- ☐ Habitat for:
  - ☐ Federally Listed species. Explain findings: .
  - ☐ Fish/spawn areas. Explain findings: .
  - ☐ Other environmentally-sensitive species. Explain findings: .
  - ☐ Aquatic/wildlife diversity. Explain findings: .

3. Characteristics of all wetlands adjacent to the tributary (if any)

All wetland(s) being considered in the cumulative analysis: **Pick List**

Approximately ( ) acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

Directly abuts? (Y/N)	Size (in acres)	Directly abuts? (Y/N)	Size (in acres)

Summarize overall biological, chemical and physical functions being performed: .

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D: .

2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:
   - ☐ TNWs: linear feet width (ft), Or, acres.
   - ☐ Wetlands adjacent to TNWs: acres.

2. **RPWs that flow directly or indirectly into TNWs.**
   - ☒ Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial: Cub Creek has strong bed and bank and strong baseflow.
   - ☐ Tributaries of TNW where tributaries have continuous flow "seasonally" (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally: .

Provide estimates for jurisdictional waters in the review area (check all that apply):
☒ Tributary waters: **350** linear feet **20** width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: .

3. Non-RPWs[8] that flow directly or indirectly into TNWs.
☐ Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional waters within the review area (check all that apply):
☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: .

4. Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.
☐ Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.
☐ Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

☐ Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

5. Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.
☐ Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisidictional. Data supporting this conclusion is provided at Section III.C.

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

6. Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.
☐ Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional wetlands in the review area: acres.

7. Impoundments of jurisdictional waters.[9]
As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.
☐ Demonstrate that impoundment was created from "waters of the U.S.," or
☐ Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
☐ Demonstrate that water is isolated with a nexus to commerce (see E below).

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):[10]
☐ which are or could be used by interstate or foreign travelers for recreational or other purposes.
☐ from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
☐ which are or could be used for industrial purposes by industries in interstate commerce.
☐ Interstate isolated waters. Explain: .
☐ Other factors. Explain: .

Identify water body and summarize rationale supporting determination: .

---

[8] See Footnote # 3.
[9] To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.
[10] Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA *Memorandum Regarding CWA Act Jurisdiction Following Rapanos.*

Provide estimates for jurisdictional waters in the review area (check all that apply):
☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: .
☐ Wetlands: acres.

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):
☐ If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
☐ Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
☐ Prior to the Jan 2001 Supreme Court decision in "*SWANCC*," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
☐ Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: .
☐ Other: (explain, if not covered above): .

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):
☐ Non-wetland waters (i.e., rivers, streams): linear feet width (ft).
☐ Lakes/ponds: acres.
☐ Other non-wetland waters: acres. List type of aquatic resource: .
☐ Wetlands: acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):
☐ Non-wetland waters (i.e., rivers, streams): linear feet, width (ft).
☐ Lakes/ponds: acres.
☐ Other non-wetland waters: acres. List type of aquatic resource: .
☐ Wetlands: acres.

SECTION IV: DATA SOURCES.

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):
☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: .
☐ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
☐ Office concurs with data sheets/delineation report.
☐ Office does not concur with data sheets/delineation report.
☐ Data sheets prepared by the Corps: .
☐ Corps navigable waters' study: .
☐ U.S. Geological Survey Hydrologic Atlas: .
☐ USGS NHD data.
☐ USGS 8 and 12 digit HUC maps.
☐ U.S. Geological Survey map(s). Cite scale & quad name: .
☐ USDA Natural Resources Conservation Service Soil Survey. Citation: .
☐ National wetlands inventory map(s). Cite name: .
☐ State/Local wetland inventory map(s): .
☐ FEMA/FIRM maps: .
☐ 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)
☐ Photographs: ☐ Aerial (Name & Date): .
or ☐ Other (Name & Date): .
☐ Previous determination(s). File no. and date of response letter: .
☐ Applicable/supporting case law: .
☐ Applicable/supporting scientific literature: .
☐ Other information (please specify): .

B. ADDITIONAL COMMENTS TO SUPPORT JD: .

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR LINEAR ROADWAY PROJECTS

(Version 1.2; Released July 2012)

Project/TIP No.: 33831.1.1 (B-4676) **County(ies):** Wilkes

General Project Information

Project No.:	33831.1.1 (B-4676)	**Project Type:**	Bridge Replacement	**Date:**	9/11/2014
NCDOT Contact:	William (Bill) Zerman, Jr, PE	**Contractor / Designer:**	Kevin Alford, PE (Wetherill Engineering, Inc.)		
Address:	1590 Mail Service Center Raleigh, NC 27699-1590	**Address:**	559 Jones Franklin Road Suite 164 Raleigh, NC 27606		
Phone:	919-707-6755	**Phone:**	919-851-8077		
Email:	bzerman@ncdot.gov	**Email:**	kalford@wetherilleng.com		
City/Town:	Town of Wilkesboro	**County(ies):**	Wilkes		
River Basin(s):	Yadkin-Pee Dee	**CAMA County?**	No		
Primary Receiving Water:	Cub Creek	**NCDWQ Stream Index No.:**	12-41		
NCDWQ Surface Water Classification for Primary Receiving Water	**Primary:**	Class C			
	Supplemental:				
Other Stream Classification:	None				
303(d) Impairments:	None				
Buffer Rules in Effect	N/A				

Project Description

Project Length (lin. Miles or feet):	0.192 Miles	**Surrounding Land Use:**	Rural Foothills

	Proposed Project	**Existing Site**
Project Built-Upon Area (ac.)	0.90 ac.	0.60 ac.
Typical Cross Section Description:	In the south bound direction, the travel lane is 12 foot with a 8 foot shoulder. In the north bound direction the travel lane is 14 foot with curb and sidewalk.	In the south bound direction, the travel lane is 10 foot with a 2 foot shoulder. In the north bound direction the travel lane is 10 foot with 4 foot shoulder.
Average Daily Traffic (veh/hr/day):	Design/Future: 8920	Existing: 7360

General Project Narrative:

The purpose of the project is to replace Bridge No. 29 on SR 1001 over Cub Creek in Wilkes County. The existing bridge is 80.7 feet long. The replacement structure will be 180 feet long providing a minimum 33.42 foot clear deck width. The roadway grade of the new structure will be higher than the existing structure in order to provide clearance for a greenway under the bridge. All existing stormwater drainage patterns were maintained on the project to the fullest extent possible. Rip rap at embankment was added to all outfalls entering the creek in order to protect the slopes.

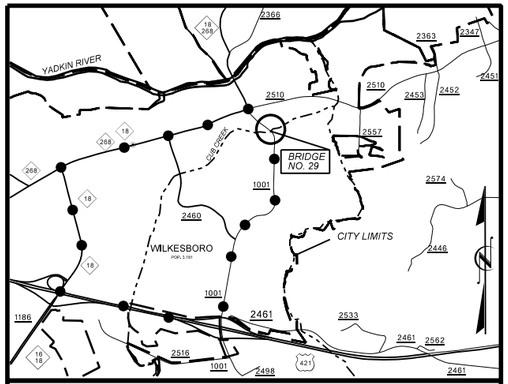
References

09/08/99

TIP PROJECT: B-4676

CONTRACT:

See Sheet 1-A For Index of Sheets



VICINITY MAP

OFF-SITE DETOUR

R/W PLANS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WILKES COUNTY

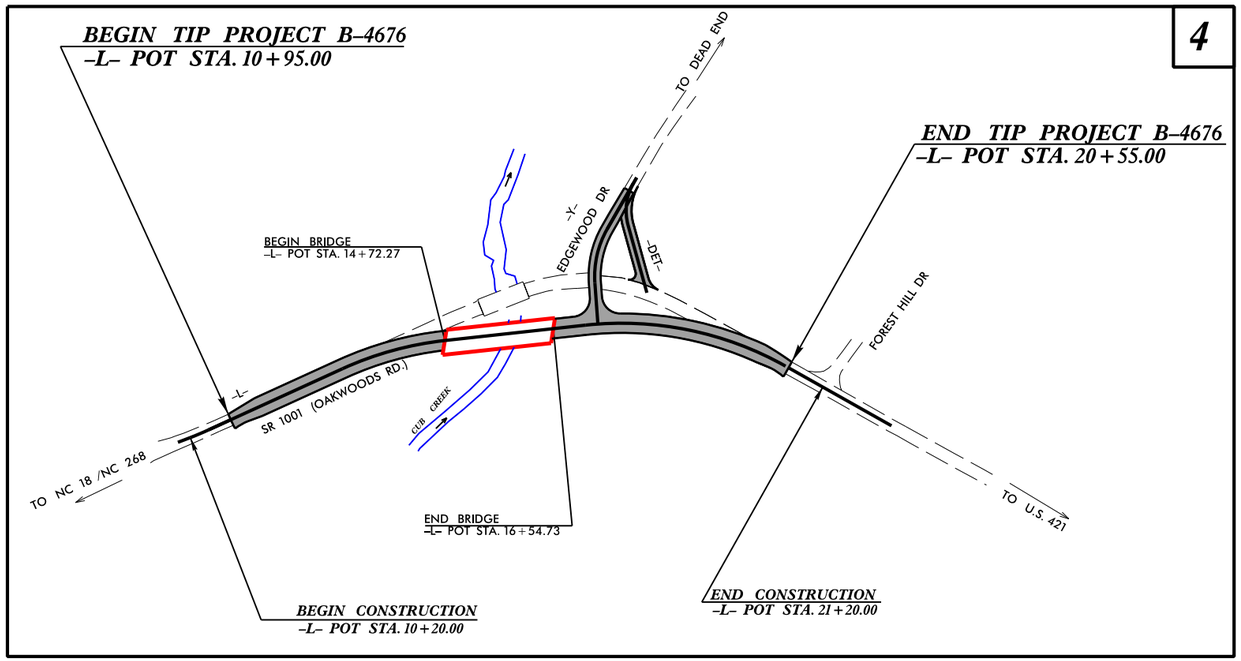
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4676	1	

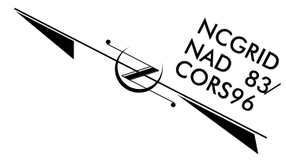
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
33831.1.1	BRZ-1001(29)	PE
33831.2.FDI	BRZ-1001(29)	R/W
33831.2.FDU1	BRZ-1001(29)	UTILITY

LOCATION: REPLACE BRIDGE NO. 29 OVER CUB CREEK ON SR 1001

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

WETLAND AND SURFACE WATER IMPACTS PERMIT

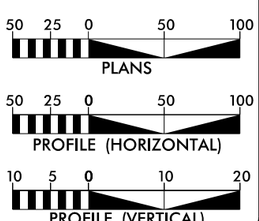




CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.
THIS PROJECT IS WITHIN THE MUNICPAL BOUNDARIES OF THE TOWN OF WILKESBORO.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES



DESIGN DATA

ADT 2015 = 7440
ADT 2035 = 9000
DHV = 9 %
D = 55 %
T = 4 % *
V = 40 MPH
* TTST = 1% DUAL 3%
FUNC CLASS = LOCAL
SUBREGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B-4676 =	0.147 MILES
LENGTH STRUCTURE TIP PROJECT B-4676 =	0.035 MILES
TOTAL LENGTH TIP PROJECT B-4676 =	0.182 MILES

Prepared for the North Carolina Department of Transportation in the Office of:
WETHERILL ENGINEERING
559 JONES FRANKLIN ROAD
SUITE 164
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: AUGUST 20, 2014

LETTING DATE: AUGUST 18, 2015

EDWARD G. WETHERILL, PE
PROJECT ENGINEER

GREG S. PURVIS, PE
PROJECT DESIGN ENGINEER

NCDOT CONTACT: BRENDA L. MOORE, PE
ROADWAY DESIGN: ENGINEERING COORDINATION SECTION PROJECT ENGINEER

HYDRAULICS ENGINEER

P.E.

SIGNATURE:

ROADWAY DESIGN ENGINEER

P.E.

SIGNATURE:

PERMIT DRAWING
SHEET 1 OF 8

9/11/2014
10:55:22 AM
E:\12176.01\B-4676\Hydraulics\PERMITS_Environmental\B4676_Hyd_prm_tsh.dgn

PERMIT DRAWING
SHEET 2 OF 8

DITCH DETAILS

PROJECT REFERENCE NO.	SHEET NO.
B-4676	2-C

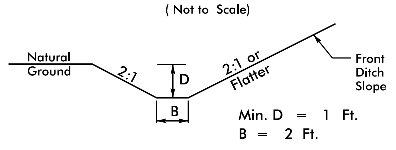
ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

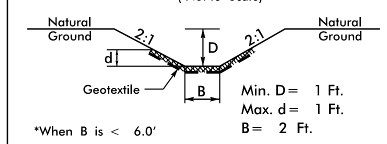
WETHERILL ENGINEERING
559 Jones Franklin Rd. Suite 164
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

DETAIL A
SPECIAL CUT BASE DITCH
(Not to Scale)



FROM –L– STA. 13+50 TO STA. 14+20 LT.
FROM –L– STA. 11+20 TO STA. 13+10 RT.

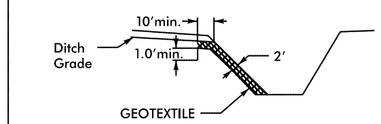
DETAIL B
STANDARD BASE DITCH
(Not to Scale)



Type of Liner= Class I Rip-Rap

FROM –L– STA. 15+11 TO STA. 15+50 RT.
FROM –Y– STA. 11+59.5 LT. TO –L– STA. 18+64 LT.
FROM –L– STA. 15+90 TO STA. 16+82 LT.

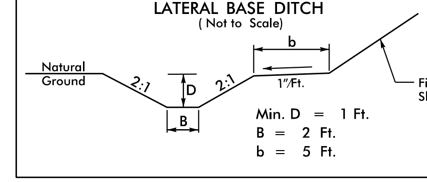
DETAIL C
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner= 'A' TONS,CL I Rip-Rap
Geotextile= 'B' sy

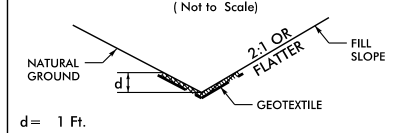
FROM –L– STA. 15+45 TO STA. 15+51 RT.
A = 2; B = 2
FROM –L– STA. 15+66 TO STA. 15+80 RT.
A = 23; B = 25
FROM –L– STA. 15+83 TO STA. 15+90 LT.
A = 5; B = 5

DETAIL D
LATERAL BASE DITCH
(Not to Scale)



FROM –L– STA. 15+80 TO STA. 16+80 RT.

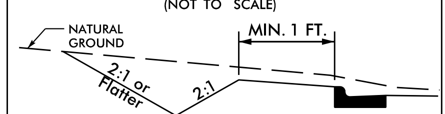
DETAIL E
TOE PROTECTION
(Not to Scale)



Type of Liner= Class B Rip-Rap

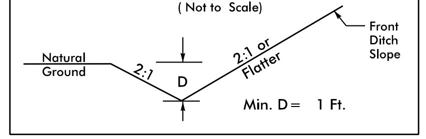
FROM –L– STA. 17+59 TO STA. 18+80 LT.

DETAIL F
SPECIAL BACK OF CURB CUT DITCH
(NOT TO SCALE)



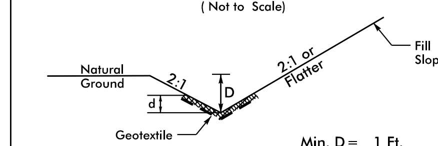
FROM –L– STA. 19+00 TO STA. 20+05 LT.

DETAIL G
SPECIAL CUT DITCH
(Not to Scale)



FROM –Y– STA. 10+50 TO STA. 11+59.5 LT.

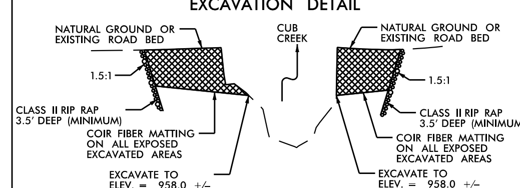
DETAIL H
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Type of Liner= Class B Rip-Rap

FROM –Y– STA. 11+59.5 TO STA. 12+08 LT.

DETAIL I
EXCAVATION DETAIL

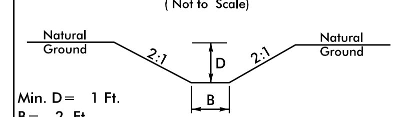


COIR FIBER MATTING = 1060 SY

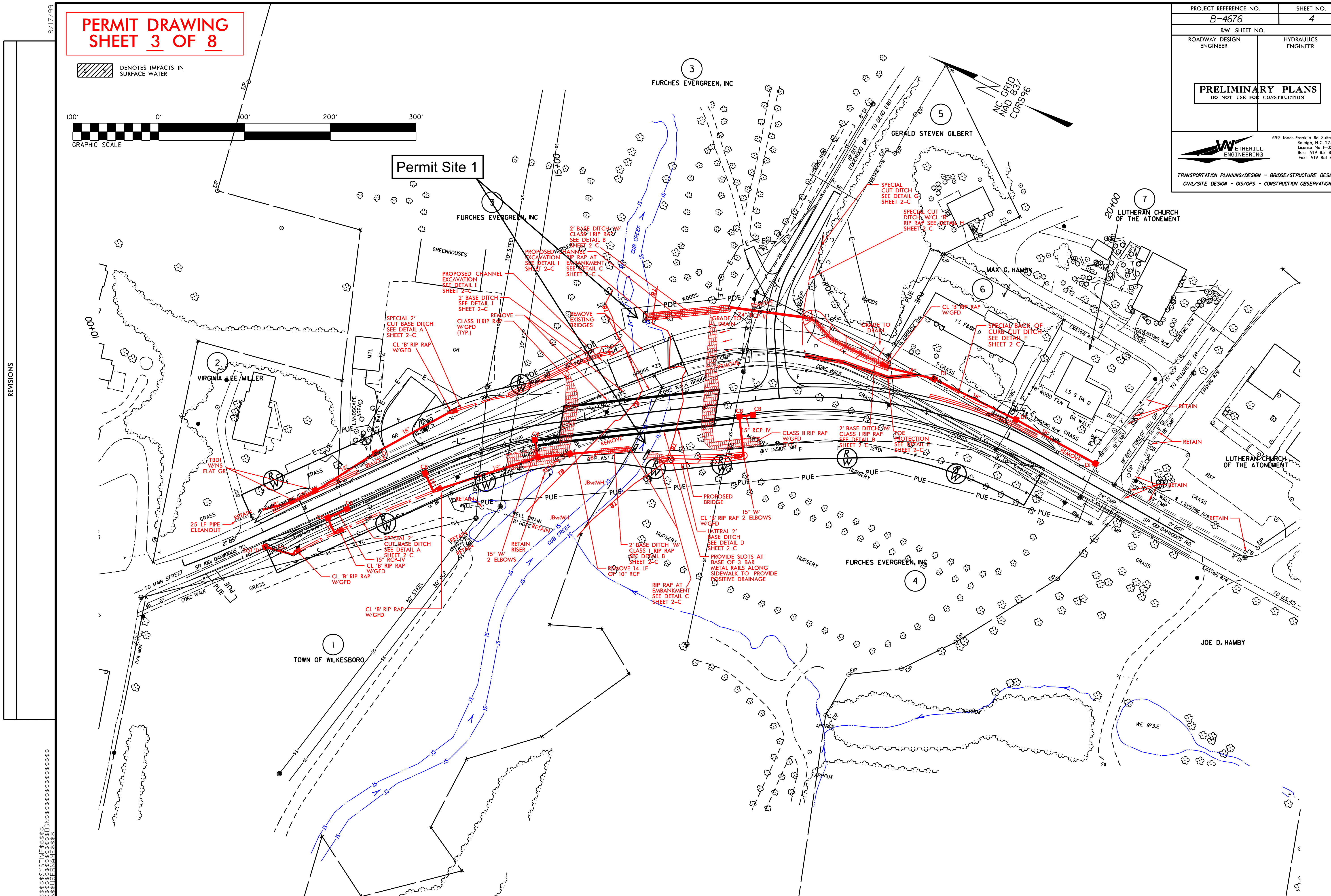
NOT TO SCALE

FROM –L– STA. 14+60 TO STA. 16+58

DETAIL J
STANDARD BASE DITCH
(Not to Scale)



FROM –L– STA. 14+20 TO STA. 15+41 LT.
FROM –DET– STA. 10+37 RT. TO –L– STA. 15+90 LT.



PERMIT DRAWING
SHEET 3 OF 8
DENOTES IMPACTS IN SURFACE WATER
GRAPHIC SCALE
100' 0' 100' 200' 300'
Permit Site 1
PROJECT REFERENCE NO.
B-4676
SHEET NO.
4
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
WETHERILL ENGINEERING
559 Jones Franklin Rd. Suite 164
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION
NC GRID NAD 83/ CORS96
REVISIONS
8/17/99
1 TOWN OF WILKESBORO
2 VIRGINIA LEE MILLER
3 FURCHES EVERGREEN, INC
4 FURCHES EVERGREEN, INC
5 GERALD STEVEN GILBERT
6 MAX G. HAMBY
7 LUTHERAN CHURCH OF THE ATONEMENT
JOE D. HAMBY
LUTHERAN CHURCH OF THE ATONEMENT
GREENHOUSES
NURSERY
WOODS
CUB CREEK
SR 1001 OAKWOODS RD.
TO MAIN STREET
TO U.S. 421
TO HILLCREST DR
TO DEAD END
FOREST HILL DR
EDGEWOOD DR.
10+00
15+00
20+00
PROPOSED CHANNEL EXCAVATION SEE DETAIL I SHEET 2-C
2' BASE DITCH SEE DETAIL J SHEET 2-C
CLASS II RIP RAP W/GFD (TYP.)
REMOVE EXISTING BRIDGES
SPECIAL 2' CUT BASE DITCH SEE DETAIL A SHEET 2-C
CL 'B' RIP RAP W/GFD
2' BASE DITCH W/ CLASS I RIP RAP SEE DETAIL B SHEET 2-C
PROPOSED CHANNEL EXCAVATION SEE DETAIL I SHEET 2-C
RIP RAP AT EMBANKMENT SEE DETAIL C SHEET 2-C
SPECIAL CUT DITCH SEE DETAIL G SHEET 2-C
SPECIAL CUT DITCH W/CL 'B' RIP RAP SEE DETAIL H SHEET 2-C
CL 'B' RIP RAP W/GFD
SPECIAL BACK OF CURB CUT DITCH SEE DETAIL F SHEET 2-C
GRADE TO DRAIN
15" RCP-IV
CLASS II RIP RAP W/GFD
2' BASE DITCH W/ CLASS I RIP RAP SEE DETAIL B SHEET 2-C
TOE PROTECTION SEE DETAIL E SHEET 2-C
PROPOSED BRIDGE
15" W/ 2 ELBOWS
CL 'B' RIP RAP W/GFD
LATERAL 2' BASE DITCH SEE DETAIL D SHEET 2-C
PROVIDE SLOTS AT BASE OF 3 BAR METAL RAILS ALONG SIDEWALK TO PROVIDE POSITIVE DRAINAGE
REMOVE 14 LF OF 10" RCP
RIP RAP AT EMBANKMENT SEE DETAIL C SHEET 2-C
RETAIN RISER
15" W/ 2 ELBOWS
SPECIAL 2' CUT BASE DITCH SEE DETAIL A SHEET 2-C
15" RCP-IV
CL 'B' RIP RAP W/GFD
CL 'B' RIP RAP W/GFD
TBDI W/NS FLAT GR
25 LF PIPE CLEANOUT
RETAIN
REMOVE
WE 973.2

8/17/99

PERMIT DRAWING
SHEET 4 OF 8

DENOTES IMPACTS IN SURFACE WATER

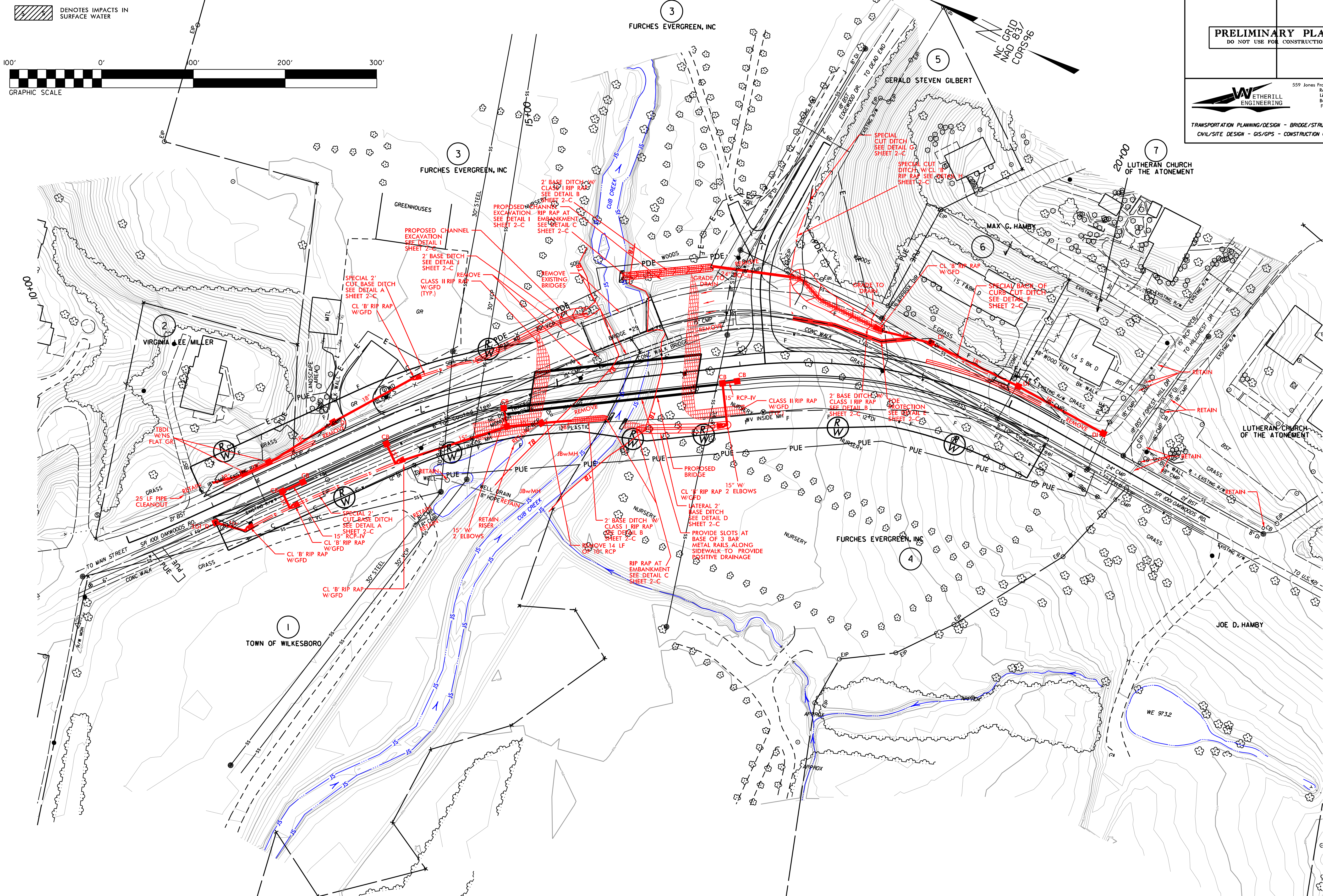
PROJECT REFERENCE NO.	SHEET NO.
B-4676	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

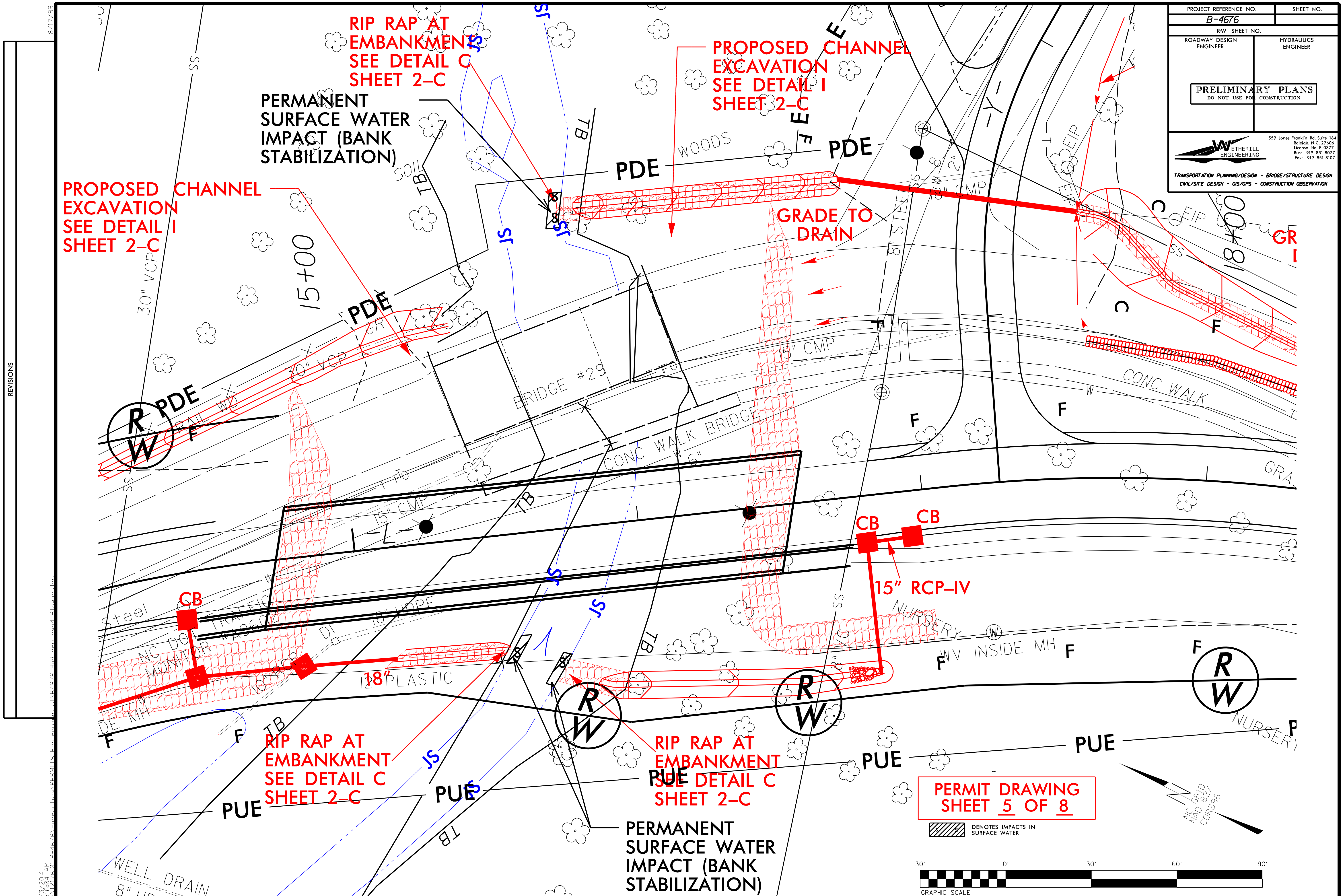
WETHERILL ENGINEERING
559 Jones Franklin Rd. Suite 164
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107

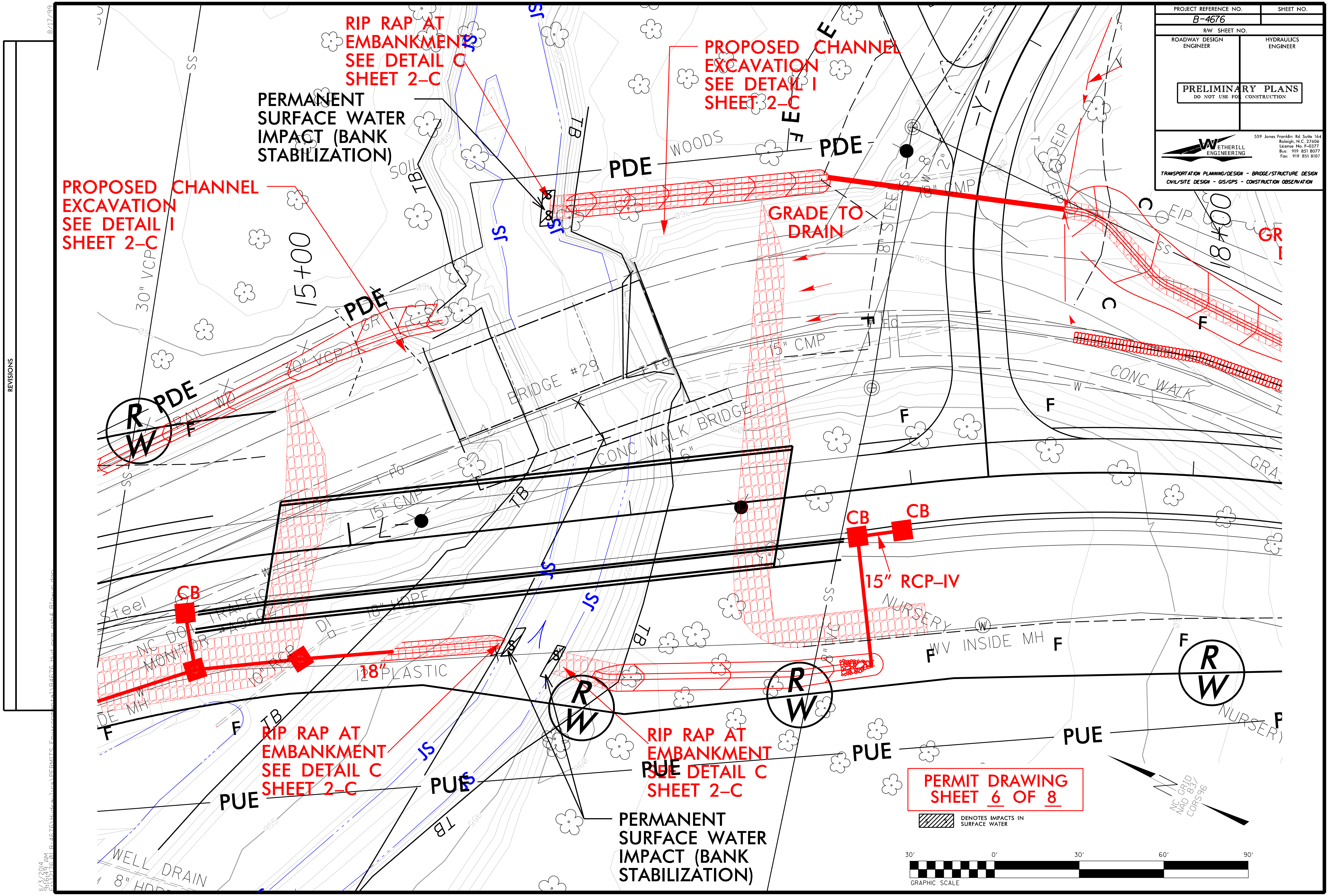
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

REVISIONS



$$$$$$SYSTIME$$$$$
$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$
$$$$$$USERNAME$$$$$


PROJECT REFERENCE NO. B-4676
SHEET NO.
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
WETHERILL ENGINEERING
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION
RIP RAP AT EMBANKMENT SEE DETAIL C SHEET 2-C
PROPOSED CHANNEL EXCAVATION SEE DETAIL I SHEET 2-C
PERMANENT SURFACE WATER IMPACT (BANK STABILIZATION)
PROPOSED CHANNEL EXCAVATION SEE DETAIL I SHEET 2-C
GRADE TO DRAIN
WOODS
PDE
15+00
18+00
BRIDGE #29
CONC WALK BRIDGE
CONC WALK
15" CMP
18" CMP
30" VCP
CB
15" RCP-IV
18" PLASTIC
NURSERY
WV INSIDE MH
RIP RAP AT EMBANKMENT SEE DETAIL C SHEET 2-C
RIP RAP AT EMBANKMENT SEE DETAIL C SHEET 2-C
PERMANENT SURFACE WATER IMPACT (BANK STABILIZATION)
PUE
WELL DRAIN
PERMIT DRAWING SHEET 5 OF 8
DENOTES IMPACTS IN SURFACE WATER
NC GRID NAD 83 CORS96
30' 0' 30' 60' 90'
GRAPHIC SCALE
REVISIONS

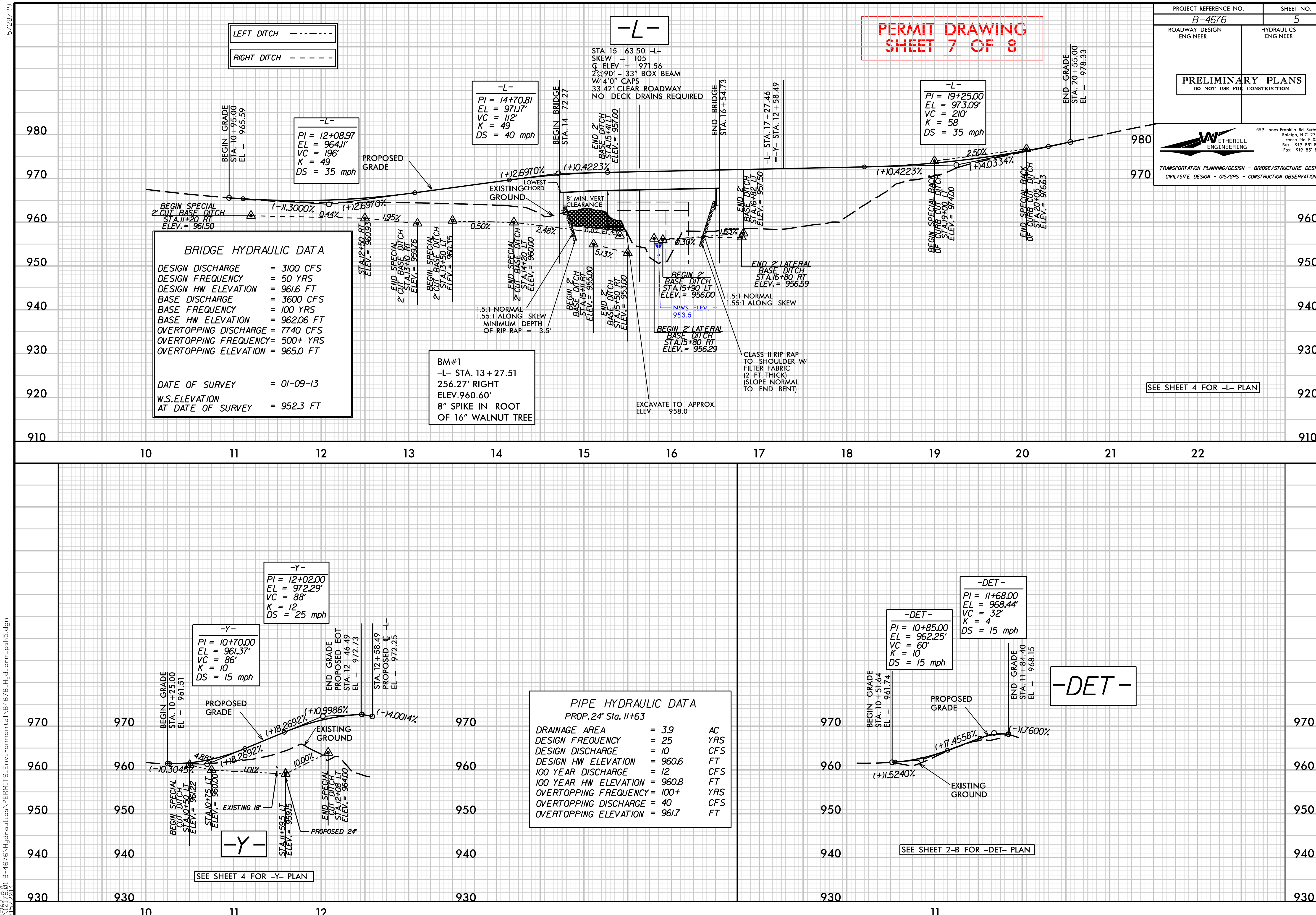

PROJECT REFERENCE NO.
SHEET NO.
B-4676
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
WETHERILL ENGINEERING
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION
RIP RAP AT EMBANKMENT SEE DETAIL C SHEET 2-C
PERMANENT SURFACE WATER IMPACT (BANK STABILIZATION)
PROPOSED CHANNEL EXCAVATION SEE DETAIL I SHEET 2-C
GRADE TO DRAIN
PDE
PUE
WOODS
BRIDGE #29
CONC WALK BRIDGE
CONC WALK
15+00
18+00
30" VCP
18" CMP
15" CMP
CB
15" RCP-IV
18" PLASTIC
NURSERY
WV INSIDE MH
WELL DRAIN
RW
PERMIT DRAWING SHEET 6 OF 8
DENOTES IMPACTS IN SURFACE WATER
NC GRID NAD 83 CORS96
30' 0' 30' 60' 90'
GRAPHIC SCALE
REVISIONS

PERMIT DRAWING
SHEET 7 OF 8

PROJECT REFERENCE NO.	SHEET NO.
B-4676	5
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

WETHERILL ENGINEERING
559 Jones Franklin Rd. Suite 164
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION



BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 3100 CFS
DESIGN FREQUENCY	= 50 YRS
DESIGN HW ELEVATION	= 961.6 FT
BASE DISCHARGE	= 3600 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 962.06 FT
OVERTOPPING DISCHARGE	= 7740 CFS
OVERTOPPING FREQUENCY	= 500+ YRS
OVERTOPPING ELEVATION	= 965.0 FT
DATE OF SURVEY	= 01-09-13
W.S. ELEVATION AT DATE OF SURVEY	= 952.3 FT

BM#1
-L- STA. 13+27.51
256.27' RIGHT
ELEV. 960.60'
8" SPIKE IN ROOT
OF 16" WALNUT TREE

PIPE HYDRAULIC DATA

PROP. 24" Sta. 11+63

DRAINAGE AREA	= 3.9	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 10	CFS
DESIGN HW ELEVATION	= 960.6	FT
100 YEAR DISCHARGE	= 12	CFS
100 YEAR HW ELEVATION	= 960.8	FT
OVERTOPPING FREQUENCY	= 100+	YRS
OVERTOPPING DISCHARGE	= 40	CFS
OVERTOPPING ELEVATION	= 961.7	FT

5/28/99

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	-L- STA. 15+49 TO	Bank Stabilization						< 0.01		14		
	STA. 15+79 RT.											
1	-L- STA. 15+80 LT.	Bank Stabilization						< 0.01		13		
TOTALS*:								< 0.01		27		

*Rounded totals are sum of actual impacts

NOTES:

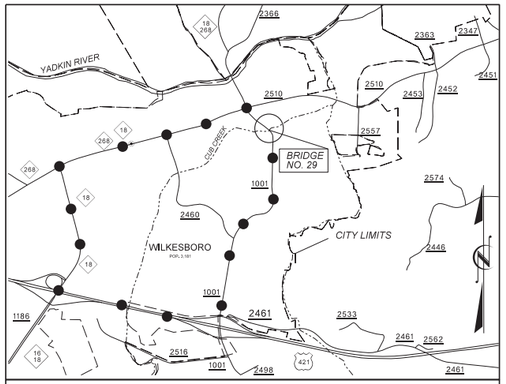
NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
9/25/2014
WILKES COUNTY
BRIDGE 29 ON SR 1001
OVER CUB CREEK

Revised 2013 10 24

09/08/99

TIP PROJECT: B–4676

See Sheet 1-A For Index of Sheets



VICINITY MAP

OFF–SITE DETOUR

R/W PLANS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

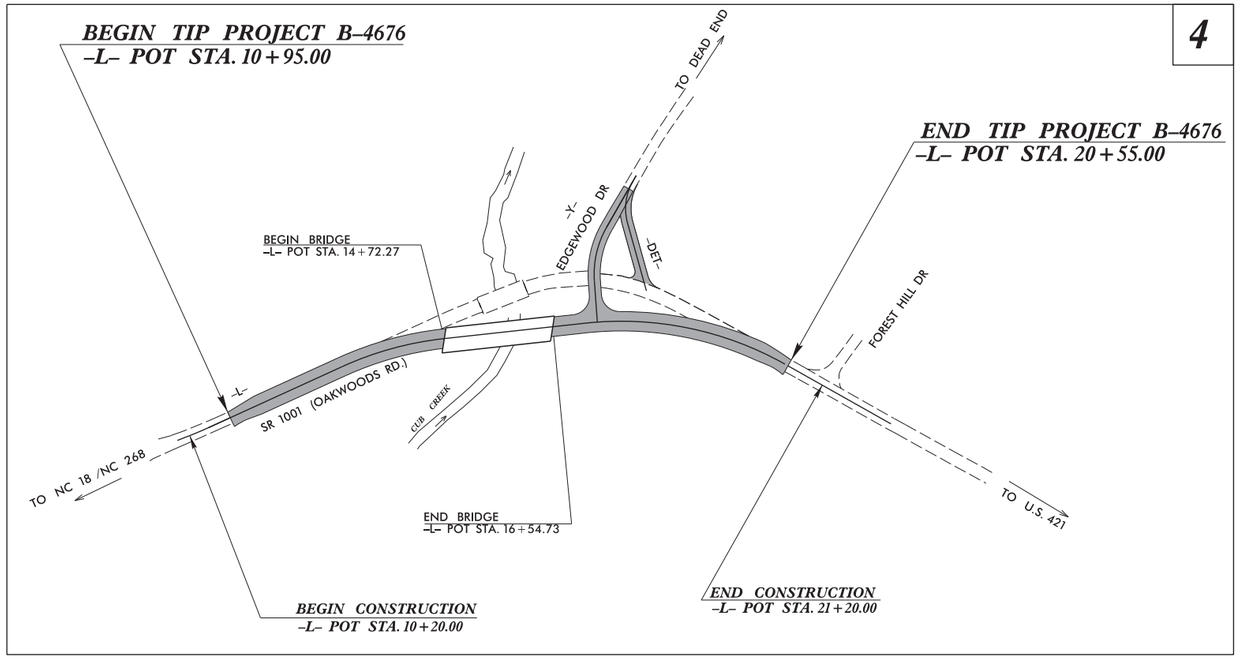
WILKES COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B–4676	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
33831.1.1	BRZ–1001(29)	PE
33831.2.FDI	BRZ–1001(29)	R/W
33831.2.FDU1	BRZ–1001(29)	UTILITY

LOCATION: REPLACE BRIDGE NO. 29 OVER CUB CREEK ON SR 1001

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



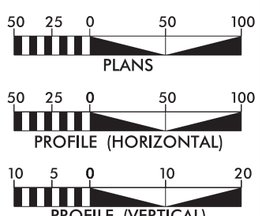
NCGRID
NAD 83/
CORS96

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.
THIS PROJECT IS WITHIN THE MUNICPAL BOUNDARIES OF THE TOWN OF WILKESBORO.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

CONTRACT:

GRAPHIC SCALES



DESIGN DATA

ADT 2015 = 7440
ADT 2035 = 9000
DHV = 9 %
D = 55 %
T = 4 % *
V = 40 MPH
* TTST =1% DUAL 3%
FUNC CLASS =
LOCAL
SUBREGIONAL TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT B–4676 =	0.147 MILES
LENGTH STRUCTURE TIP PROJECT B–4676 =	0.035 MILES
TOTAL LENGTH TIP PROJECT B–4676 =	0.182 MILES

Prepared for the North Carolina Department of Transportation in the Office of:

WETHERILL ENGINEERING
559 JONES FRANKLIN ROAD
SUITE 164
Raleigh, N.C. 27606
license No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
AUGUST 20, 2014

LETTING DATE:
AUGUST 18, 2015

EDWARD G. WETHERILL, PE
PROJECT ENGINEER

GREG S. PURVIS, PE
PROJECT DESIGN ENGINEER

NCDOT CONTACT:
BRENDA L. MOORE, PE
ROADWAY DESIGN: ENGINEERING COORDINATION SECTION PROJECT ENGINEER

HYDRAULICS ENGINEER

P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

P.E.
SIGNATURE:

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

$$$$SYSTIME$$$$
$$$$USERNAME$$$$ DGN$$$$

12/05/11

PROJECT REFERENCE NO.	SHEET NO.
B-4676	1-B

Note: Not to Scale

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin — 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:

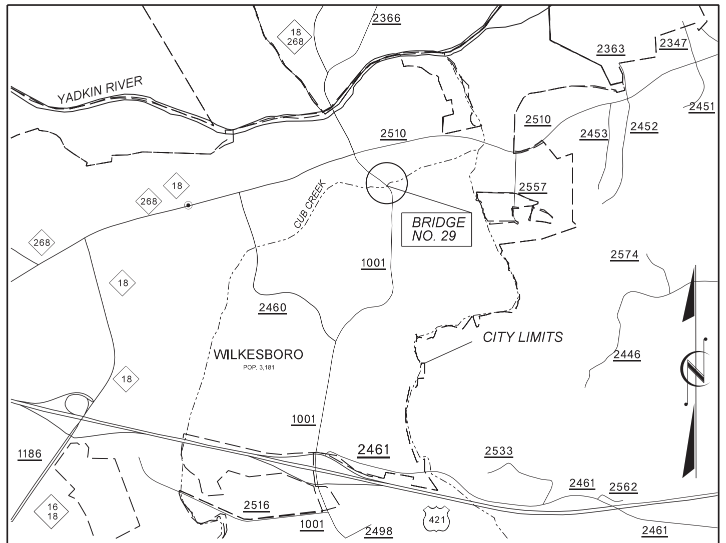
- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- Recorded SS Forced Main Line — FSS
- Designated SS Forced Main Line (S.U.E.*) — FSS

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.

6/2/99

SURVEY CONTROL SHEET B-4676



VICINITY MAP

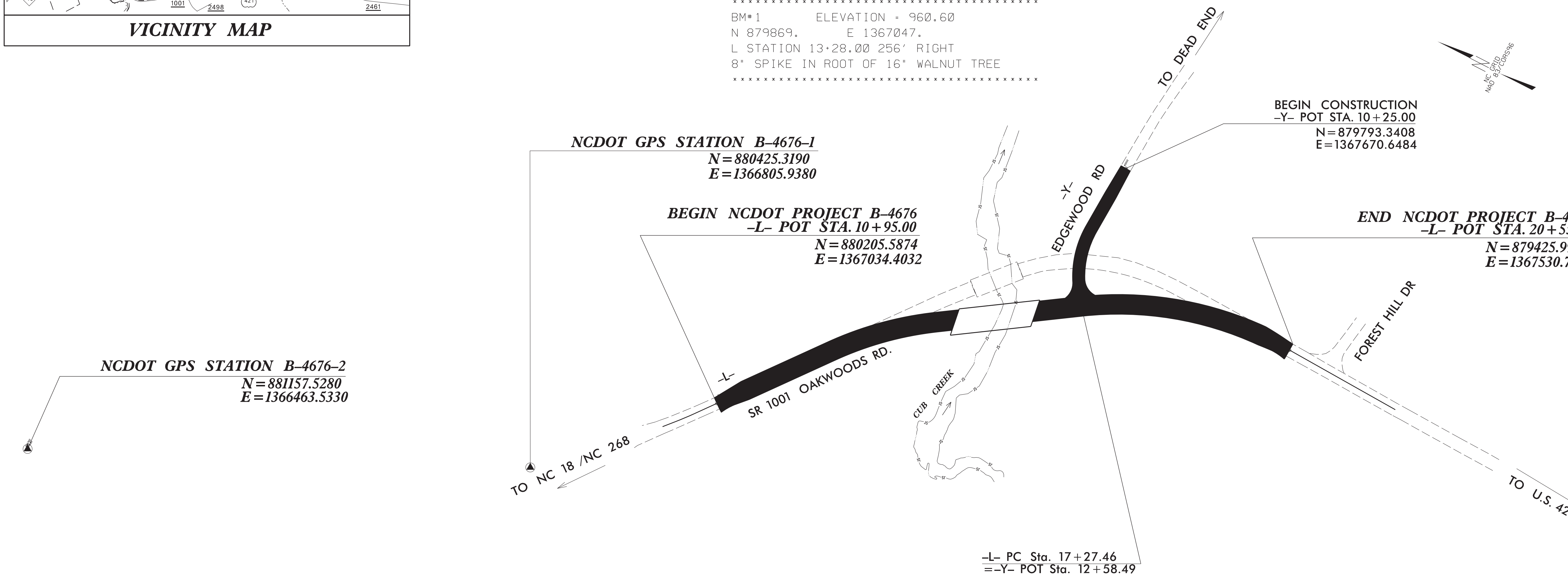
BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
B46761	GPS B4676-1	880425.3190	1366805.9380	976.58	OUTSIDE PROJECT LIMITS	
BL3	BL-3	879848.6212	1367489.5018	964.50	16+56.76	91.95 LT
BL4	BL-4	879213.8247	1367543.8585	987.64	OUTSIDE PROJECT LIMITS	

BY

POINT	DESC.	NORTH	EAST	ELEVATION	Y STATION	OFFSET
BY5	BY-5	879783.6672	1367633.9222	961.21	10+61.25	11.33 LT
BY6	BY-6	879848.6212	1367489.5018	964.50	11+89.57	59.42 RT

BM#1 ELEVATION = 960.60
N 879869. E 1367047.
L STATION 13+28.00 256' RIGHT
8" SPIKE IN ROOT OF 16" WALNUT TREE



DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "B4676-1"
WITH NAD 83/CORS96 STATE PLANE GRID COORDINATES OF NORTHING: 8800425.319(ft) EASTING: 1366805.938(ft)
ELEVATION: 976.58(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.9999542821
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B4676-1" TO -L- STATION 10+95.00 IS
S 46°06'59" E 316.98'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NGVD 29

NOTE: DRAWING NOT TO SCALE

NOTES:

1. *THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:*
   HTTP:/WWW.NCDOT.ORG/DOH/PRECONSTRUCT/HIGHWAY/LOCATION/PROJECT/

   THE FILES TO BE FOUND ARE AS FOLLOWS:
   B4676_LS_CONTROL.TXT

   SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. 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.

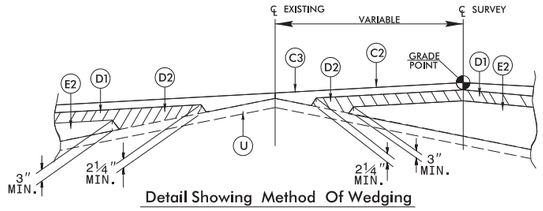
$$$$$$SYSTIME$$$$$ $$$$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$ $$$$$USERNAME$$$$

6/2/99

FINAL PAVEMENT SCHEDULE

C1	PROP. MIN. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	R1	2'-6" CONCRETE CURB AND GUTTER.
C2	PROP. MIN. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S98.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.	R2	EXPRESSWAY GUTTER.
C3	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 NOT TO EXCEED 2" IN DEPTH.	S	4" CONCRETE SIDEWALK.
D1	PROP. MIN. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	T	EARTH MATERIAL.
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 2.5" IN DEPTH OR GREATER THAN 4" IN DEPTH.	U	EXISTING PAVEMENT.
E1	PROP. MIN. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	V	MILLING BITUMINUS PAVEMENT 0" TO 1 1/2".
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5.5" IN DEPTH.	W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL).

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



Detail Showing Method Of Wedging

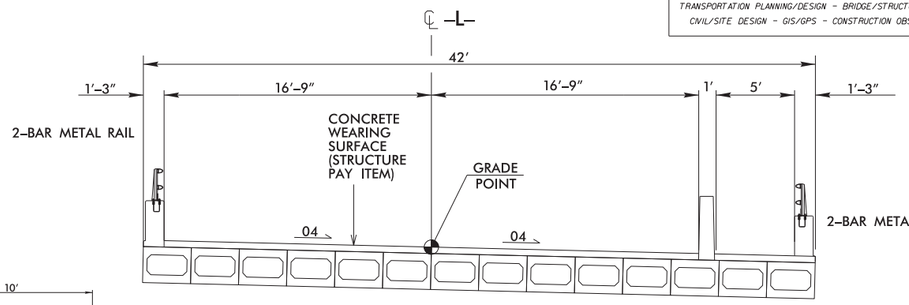
USE ON –L– & –Y– LINE

PROJECT REFERENCE NO.	SHEET NO.
B-4676	2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

WETHERILL ENGINEERING
559 Jones Franklin Rd. Suite 164
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107

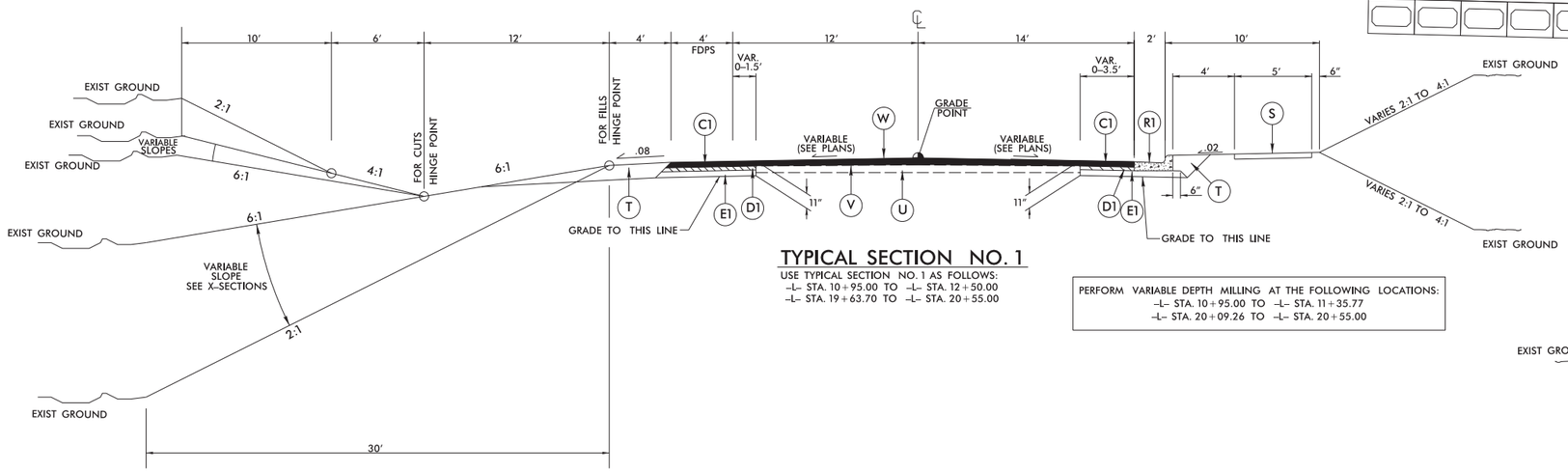
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION



TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3

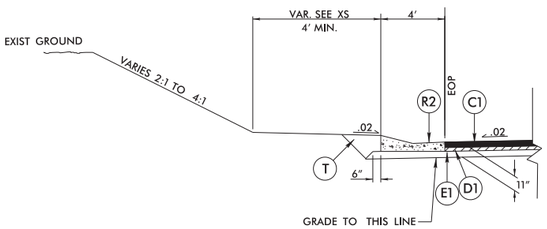
USE TYPICAL SECTION NO. 3 AS FOLLOWS:
–L– STA. 14+72.27 (BEGIN BRIDGE) TO
–L– STA. 16+54.73 (END BRIDGE)



TYPICAL SECTION NO. 1

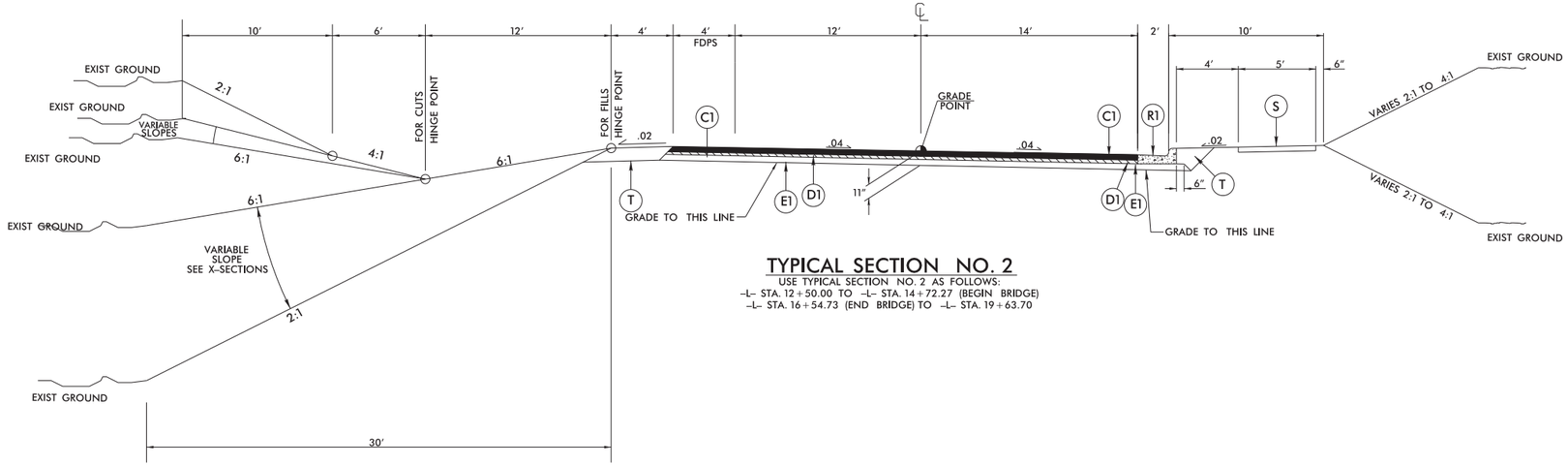
USE TYPICAL SECTION NO. 1 AS FOLLOWS:
–L– STA. 10+95.00 TO –L– STA. 12+50.00
–L– STA. 19+63.70 TO –L– STA. 20+55.00

PERFORM VARIABLE DEPTH MILLING AT THE FOLLOWING LOCATIONS:
–L– STA. 10+95.00 TO –L– STA. 11+35.77
–L– STA. 20+09.26 TO –L– STA. 20+55.00



DETAIL 1A:

USE DETAIL NO. 1A AS FOLLOWS:
–L– STA. 11+20.00 LT. TO –L– STA. 12+30.00 LT.
–L– STA. 19+00.00 LT. TO –L– STA. 20+30.00 LT.



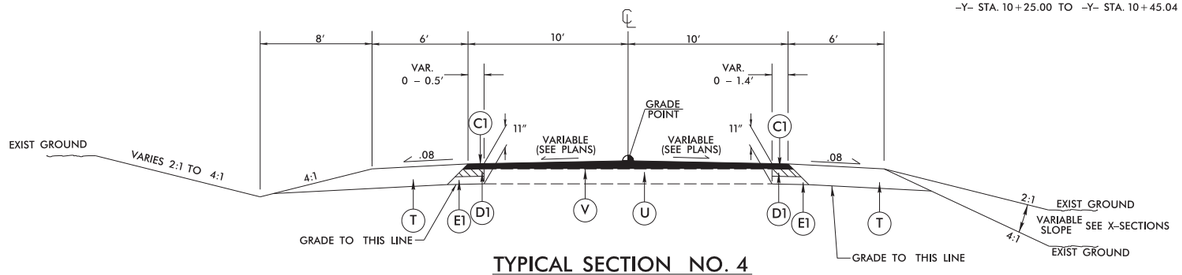
TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2 AS FOLLOWS:
–L– STA. 12+50.00 TO –L– STA. 14+72.27 (BEGIN BRIDGE)
–L– STA. 16+54.73 (END BRIDGE) TO –L– STA. 19+63.70

8/19/2014
8:45:03 PM
P:\2012\12176.01 B-4676\Roadway\Proj\B4676_Rdy_typ.dgn

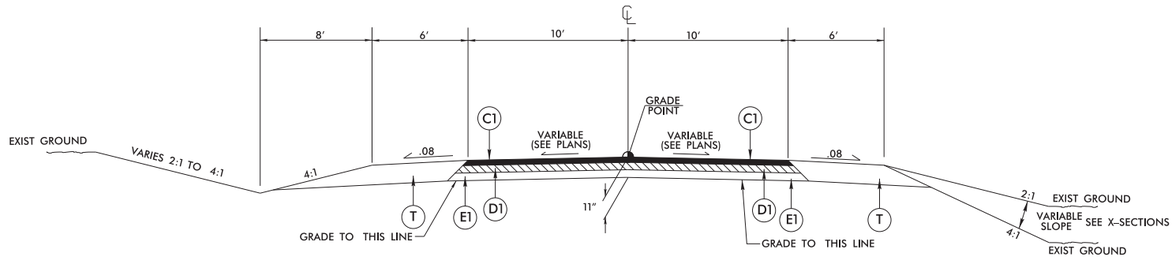
6/2/99

PERFORM VARIABLE DEPTH MILLING AT THE FOLLOWING LOCATIONS:
–Y– STA. 10+25.00 TO –Y– STA. 10+45.04



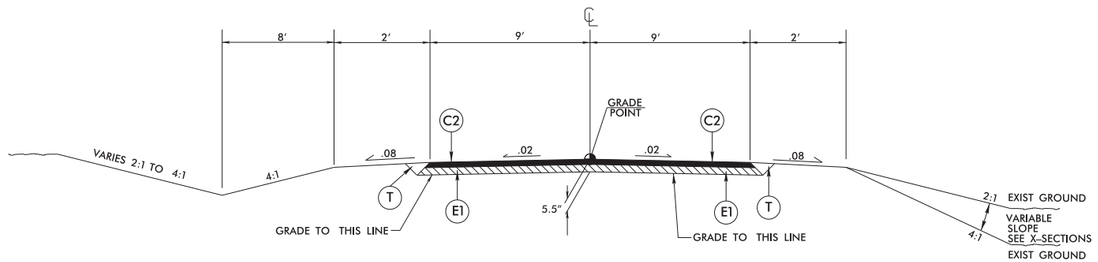
TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO. 4 AS FOLLOWS:
–Y– STA. 10+25.00 TO –Y– STA. 10+60.00



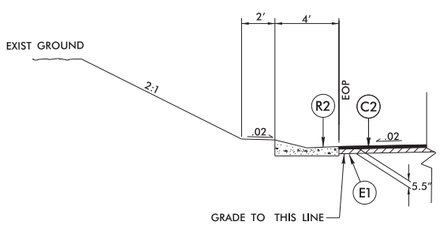
TYPICAL SECTION NO. 5

USE TYPICAL SECTION NO. 5 AS FOLLOWS:
–Y– STA. 10+60.00 TO –Y– STA. 12+47.77



TYPICAL SECTION NO. 6

USE TYPICAL SECTION NO. 6 AS FOLLOWS:
–DET– STA. 10+51.64 TO –DET– STA. 11+84.40



DETAIL 6A:

USE DETAIL NO. 6A AS FOLLOWS:
–DET– STA. 10+35.00 LT. TO –L– STA. 11+25.00 LT.

PROJECT REFERENCE NO.	SHEET NO.
B-4676	2-A

ROADWAY DESIGN ENGINEER

PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

WETHERILL ENGINEERING
559 Jones Franklin Rd. Suite 164
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PAVEMENT SCHEDULE (*)	
C1	3" S9.5B
C2	1.5" S9.5B
C3	VAR. DEPTH S9.5B
D1	4" I19.0B
D2	VAR. DEPTH I19.0B
E1	4" B25.0B
E2	VAR. DEPTH B25.0B
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
V	MILLING 0" TO 1 1/2".
W	WEDGINJ (SEE SHEET 2).

(*) = REFER TO SHEET NO. 2 FOR FULL DESCRIPTIONS.
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

8/18/2014
8:53:29 PM
P:\2012\12176.01 B-4676\Roadway\Proj\B4676_Rdy_typ.dgn

DETOUR

PROJECT REFERENCE NO.	SHEET NO.
B-4676	2-B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

WETHERILL ENGINEERING
559 Jones Franklin Rd. Suite 164
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

SEE SHEET 5 FOR –DET– PROFILE

REVISIONS 8/17/99

BEGIN CONSTRUCTION
–L– Sta. 10+20.00

BEGIN TIP PROJECT B-4676
–L– Sta. 10+95.00

END CONSTRUCTION
–L– Sta. 21+20.00

END TIP PROJECT B-4676
–L– Sta. 20+55.00

–Y–
PI Sta 11+45.76
Δ = 33° 54' 07.4" (LT)
D = 36° 57' 54.1"
L = 91.71'
T = 47.24'
R = 155.00'
SE = 0.04 FT/FT
RO = SEE PLANS

–DET–
PI Sta 10+48.79
Δ = 45° 18' 58.9" (LT)
D = 63° 39' 43.1"
L = 71.18'
T = 37.57'
R = 90.00'

–L–
PI Sta 10+38.31
Δ = 3° 19' 20.7" (LT)
D = 10° 00' 00.0"
L = 33.22'
T = 16.62'
R = 572.96'
SE = 0.04 FT/FT
RO = SEE PLANS

–L–
PI Sta 13+86.31
Δ = 18° 19' 11.8" (RT)
D = 10° 25' 02.7"
L = 175.86'
T = 88.69'
R = 550.00'
SE = 0.04 FT/FT
RO = SEE PLANS

–L–
PI Sta 18+84.12
Δ = 35° 36' 55.6" (RT)
D = 10° 25' 02.7"
L = 341.88'
T = 176.67'
R = 550.00'
SE = 0.04 FT/FT
RO = SEE PLANS

NC GRID
NAD 83/
CORS 96

4:02:52 PM
P:\2012\12176.01 B-4676\Roadway\Proj\B4676_Rdy_psh2B.dgn
8/19/2014

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
B-4676	2-C
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

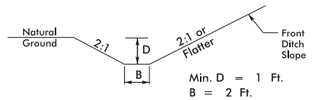
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

ETHERILL ENGINEERING
559 Jones Franklin Rd. Suite 164
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

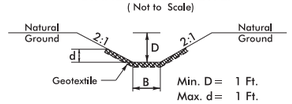
DITCH DETAILS

DETAIL A
SPECIAL CUT BASE DITCH
(Not to Scale)



FROM –L– STA. 13+50 TO STA. 14+20 LT.
FROM –L– STA. 11+20 TO STA. 13+10 RT.

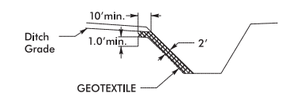
DETAIL B
STANDARD BASE DITCH
(Not to Scale)



Type of Liner= Class I Rip–Rap

FROM –L– STA. 15+11 TO STA. 15+50 RT.
FROM –Y– STA. 11+59.5 LT. TO –L– STA. 18+64 LT.
FROM –L– STA. 15+90 TO STA. 16+82 LT.

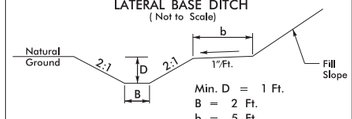
DETAIL C
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner= 'A' TONS,CL I Rip–Rap
Geotextile= 'B' sy

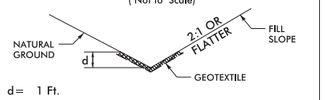
FROM –L– STA. 15+45 TO STA. 15+51 RT.
A = 2; B = 2
FROM –L– STA. 15+66 TO STA. 15+80 RT.
A = 23; B = 25
FROM –L– STA. 15+83 TO STA. 15+90 LT.
A = 5; B = 5

DETAIL D
LATERAL BASE DITCH
(Not to Scale)



FROM –L– STA. 15+80 TO STA. 16+80 RT.

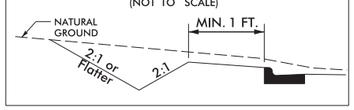
DETAIL E
TOE PROTECTION
(Not to Scale)



d= 1 Ft.
Type of Liner= Class B Rip–Rap

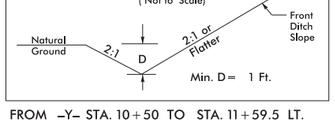
FROM –L– STA. 17+59 TO STA. 18+80 LT.

DETAIL F
SPECIAL BACK OF CURB CUT DITCH
(NOT TO SCALE)



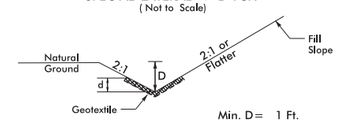
FROM –L– STA. 19+00 TO STA. 20+05 LT.

DETAIL G
SPECIAL CUT DITCH
(Not to Scale)



FROM –Y– STA. 10+50 TO STA. 11+59.5 LT.

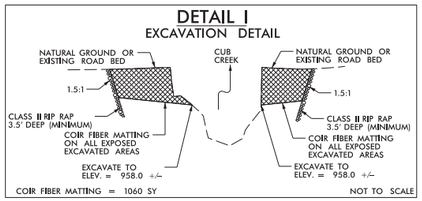
DETAIL H
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Type of Liner= Class B Rip–Rap

FROM –Y– STA. 11+59.5 TO STA. 12+08 LT.

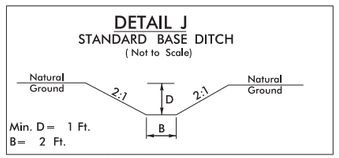
DETAIL I
EXCAVATION DETAIL



COIR FIBER MATTING = 1060 SY
NOT TO SCALE

FROM –L– STA. 14+60 TO STA. 16+58

DETAIL J
STANDARD BASE DITCH
(Not to Scale)



FROM –L– STA. 14+20 TO STA. 15+41 LT.
FROM –DET– STA. 10+37 RT. TO –L– STA. 15+90 LT.

PROJECT REFERENCE NO.	SHEET NO.
B-4676	4

R/W SHEET NO.

ROADWAY DESIGN ENGINEER — HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

WETHERILL ENGINEERING
559 Jones Franklin Rd. Suite 164
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

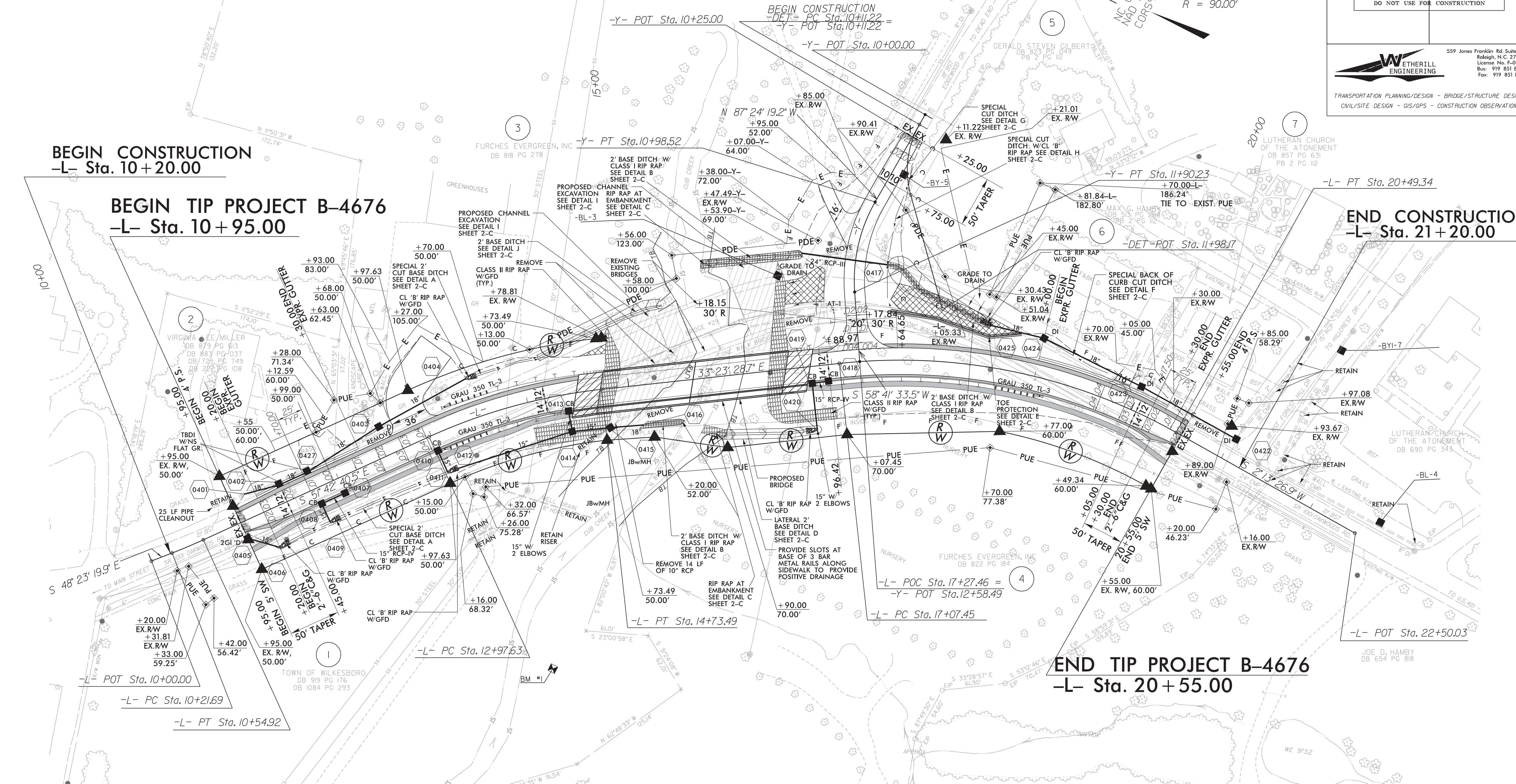
-L-
PI Sta 10+38.31
Δ = 3° 19' 20.7" (LT)
D = 10° 00' 00.0"
L = 33.22'
T = 16.62'
R = 572.96'
SE = 0.04 FT/FT
RO = SEE PLANS

-L-
PI Sta 13+86.31
Δ = 18° 19' 11.8" (RT)
D = 10° 25' 02.7"
L = 175.86'
T = 88.69'
R = 550.00'
SE = 0.04 FT/FT
RO = SEE PLANS

-L-
PI Sta 18+84.12
Δ = 35° 36' 55.6" (RT)
D = 10° 25' 02.7"
L = 341.88'
T = 176.67'
R = 550.00'
SE = 0.04 FT/FT
RO = SEE PLANS

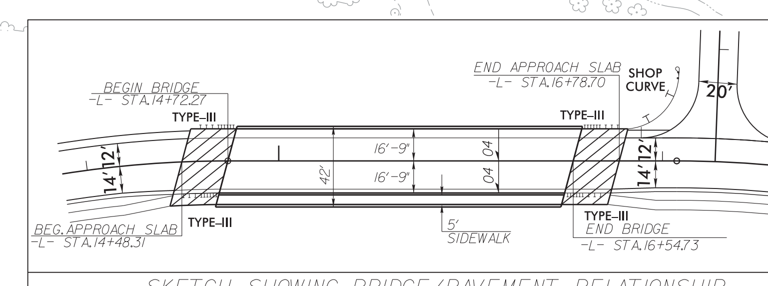
-Y-
PI Sta 11+45.76
Δ = 33° 54' 07.4" (LT)
D = 36° 57' 54.1"
L = 91.71'
T = 47.24'
R = 155.00'
SE = 0.04 FT/FT
RO = SEE PLANS

-DET-
PI Sta 10+48.79
Δ = 45° 18' 58.9" (LT)
D = 63° 39' 43.1"
L = 71.18'
T = 37.57'
R = 90.00'



(hatched)	STRUCTURE EXCAVATION
(cross-hatched)	PAVEMENT REMOVAL

SEE SHEET 5 FOR -L- PROFILE
SEE SHEET 5 FOR -Y- PROFILE
SEE SHEET S- THRU S- FOR STRUCTURE PLANS

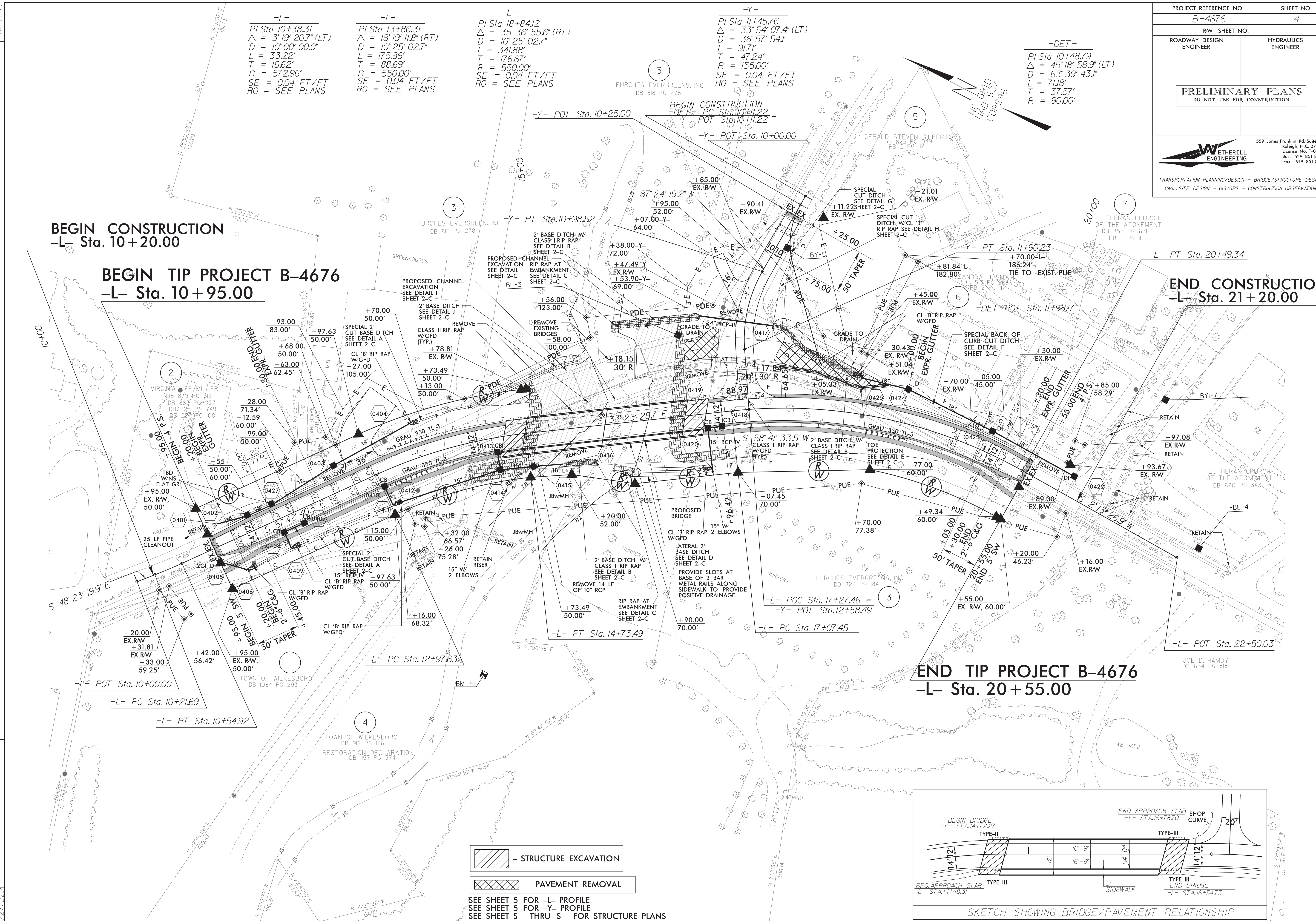


SKETCH SHOWING BRIDGE/PAVEMENT RELATIONSHIP

REVISIONS

8/17/99

9/25/2014



PROJECT REFERENCE NO. B-4676 | SHEET NO. 4

R/W SHEET NO.

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

WETHERILL ENGINEERING
559 Jones Franklin Rd. Suite 164
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

REVISIONS

10/30/14 - PARCEL 1 SEPERATED INTO TWO TRACTS - NEW PARCEL IS PARCEL 4. COMBINED PARCEL 3 & 4 INTO ONE PARCEL DENOTED AS PARCEL 3. PARCEL 1 NAME CORRECTION AND PARCEL 6 NAME CHANGE.

- STRUCTURE EXCAVATION
- PAVEMENT REMOVAL

SEE SHEET 5 FOR -L- PROFILE
SEE SHEET 5 FOR -Y- PROFILE
SEE SHEET S- THRU S- FOR STRUCTURE PLANS

8/17/99

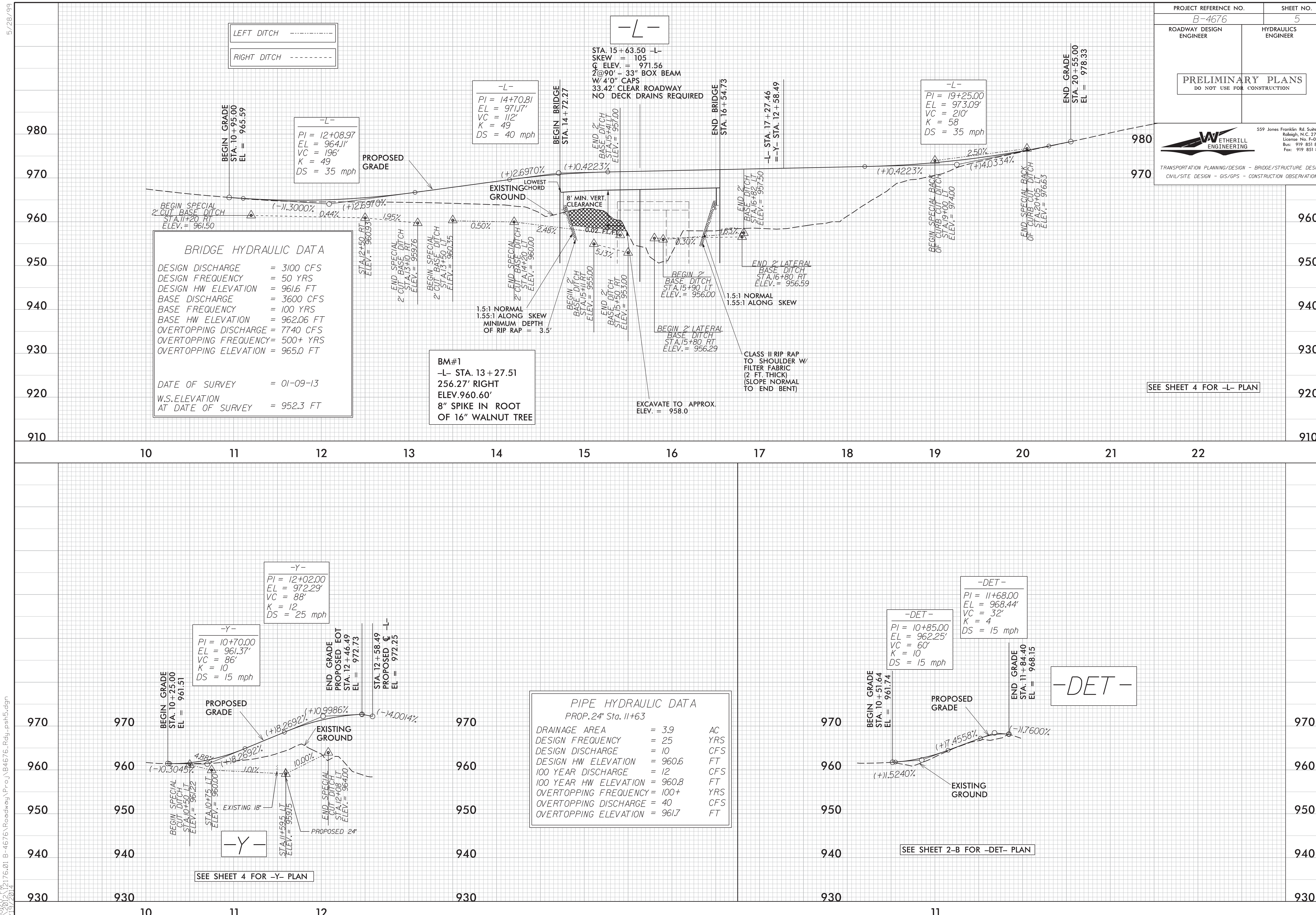
2:38:44 PM
R:\2012\12176.01 B-4676\Roadway\Proj\B4676_Rdy_psh4.dgn
10/27/2014

PROJECT REFERENCE NO.	SHEET NO.
B-4676	5

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

WETHERILL ENGINEERING
559 Jones Franklin Rd. Suite 164
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION


-L-
LEFT DITCH
RIGHT DITCH
STA. 15+63.50 -L-
SKEW = 105
℄ ELEV. = 971.56
2@90' - 33" BOX BEAM
W/ 4'0" CAPS
33.42' CLEAR ROADWAY
NO DECK DRAINS REQUIRED
BEGIN GRADE STA. 10+95.00 EL = 965.59
-L- PI = 12+08.97 EL = 964.11' VC = 196' K = 49 DS = 35 mph
-L- PI = 14+70.81 EL = 971.17' VC = 112' K = 49 DS = 40 mph
-L- PI = 19+25.00 EL = 973.09' VC = 210' K = 58 DS = 35 mph
BEGIN BRIDGE STA. 14+72.27
END BRIDGE STA. 16+54.73
-L- STA. 17+27.46 =-Y- STA. 12+58.49
END GRADE STA. 20+55.00 EL = 978.33
PROPOSED GRADE
EXISTING GROUND
LOWEST CHORD
8' MIN. VERT. CLEARANCE
(+)2.6970%
(+)0.4223%
(-)1.3000%
(+)4.0334%
1.5:1 NORMAL
1.55:1 ALONG SKEW
MINIMUM DEPTH OF RIP RAP = 3.5'
CLASS II RIP RAP TO SHOULDER W/ FILTER FABRIC (2 FT. THICK) (SLOPE NORMAL TO END BENT)
EXCAVATE TO APPROX. ELEV. = 958.0
BM#1
-L- STA. 13+27.51
256.27' RIGHT
ELEV.960.60'
8" SPIKE IN ROOT OF 16" WALNUT TREE
SEE SHEET 4 FOR -L- PLAN
-Y-
-Y- PI = 10+70.00 EL = 961.37' VC = 86' K = 10 DS = 15 mph
-Y- PI = 12+02.00 EL = 972.29' VC = 88' K = 12 DS = 25 mph
BEGIN GRADE STA. 10+25.00 EL = 961.51
END GRADE PROPOSED EOT STA. 12+46.49 EL = 972.73
STA. 12+58.49 PROPOSED ℄ -L- EL = 972.25
EXISTING 18"
PROPOSED 24"
SEE SHEET 4 FOR -Y- PLAN
-DET-
-DET- PI = 10+85.00 EL = 962.25' VC = 60' K = 10 DS = 15 mph
-DET- PI = 11+68.00 EL = 968.44' VC = 32' K = 4 DS = 15 mph
BEGIN GRADE STA. 10+51.64 EL = 961.74
END GRADE STA. 11+84.40 EL = 968.15
SEE SHEET 2-B FOR -DET- PLAN

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 3100 CFS
DESIGN FREQUENCY	= 50 YRS
DESIGN HW ELEVATION	= 961.6 FT
BASE DISCHARGE	= 3600 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 962.06 FT
OVERTOPPING DISCHARGE	= 7740 CFS
OVERTOPPING FREQUENCY	= 500+ YRS
OVERTOPPING ELEVATION	= 965.0 FT
DATE OF SURVEY	= 01-09-13
W.S.ELEVATION AT DATE OF SURVEY	= 952.3 FT

PIPE HYDRAULIC DATA
PROP.24" Sta. 11+63

DRAINAGE AREA	= 3.9	AC
DESIGN FREQUENCY	= 25	YRS
DESIGN DISCHARGE	= 10	CFS
DESIGN HW ELEVATION	= 960.6	FT
100 YEAR DISCHARGE	= 12	CFS
100 YEAR HW ELEVATION	= 960.8	FT
OVERTOPPING FREQUENCY	= 100+	YRS
OVERTOPPING DISCHARGE	= 40	CFS
OVERTOPPING ELEVATION	= 961.7	FT

5/28/99
4:10:20 PM P:\2012\12176.01 B-4676\Roadway\Proj\B4676_Rdy_psh5.dgn 8/19/2014

PROJ. REFERENCE NO.	SHEET NO.
B-4676	X-1A

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CROSS-SECTION SUMMARY

-L-

NOTE: EMBANKMENT COLUMN DOES NOT INCLUDE BACKFILL FOR UNDERCUT

Station L	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
10+95.00	0	0
11+20.00	8	26
11+50.00	14	58
12+00.00	56	94
12+50.00	54	134
12+97.63	17	318
13+50.00	11	519
14+00.00	7	605
14+50.00	5	829
14+72.27	0	459
Station L	**Uncl. Exc. (cu. yd.)**	**Embt (cu. yd.)**
16+54.73	0	0
17+00.00	0	1358
17+50.00	0	1241
18+00.00	0	1263
18+50.00	0	989
19+00.00	0	517
19+50.00	1	205
20+00.00	27	41
20+05.00	5	3
20+55.00	31	15

-Y-

NOTE: EMBANKMENT COLUMN DOES NOT INCLUDE BACKFILL FOR UNDERCUT

Station Y	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
10+25.00	0	0
10+50.00	3	5
10+75.00	2	16
11+00.00	7	52
11+50.00	73	294
12+00.00	67	510
12+47.77	11	568

-DET-

NOTE: EMBANKMENT COLUMN DOES NOT INCLUDE BACKFILL FOR UNDERCUT

Station DET	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
10+11.22	0	0
10+51.32	19	0
10+82.11	28	6
11+16.96	35	8
11+53.64	23	3
11+84.40	5	3

-DET- REMOVAL

NOTE: EMBANKMENT COLUMN DOES NOT INCLUDE BACKFILL FOR UNDERCUT

Station DET REMOVAL	Uncl. Exc. (cu. yd.)	Embt (cu. yd.)
10+11.22	0	0
10+51.32	0	0
10+82.11	6	0
11+16.96	7	0
11+53.64	0	0
11+84.40	0	0

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Note:
Approximate quantities only. Unclassified excavation, shoulder borrow, fine grading, clearing and grubbing, breaking of existing pavement and removal of existing pavement will be paid for at the lump sum price for "Grading".

Earthwork quantities are calculated by the Roadway Design Unit. These earthwork quantities are based in part on subsurface data provided by the Geotechnical Engineering Unit.

CROSS SECTION INDEX

SHEET	LINE	BEGIN STATION	END STATION
X-1	-L-	10+70.00	11+20.00
X-2	-L-	11+50.00	12+50.00
X-3	-L-	12+97.63	14+00.00
X-4	-L-	14+50.00	15+00.00
X-5	-L-	15+50.00	16+00.00
X-6	-L-	16+50.00	17+00.00
X-7	-L-	17+50.00	18+50.00
X-8	-L-	19+00.00	19+50.00
X-9	-L-	20+00.00	20+05.00
X-10	-L-	20+55.00	20+80.00
X-11	-Y-	10+00.00	10+50.00
X-12	-Y-	10+75.00	11+00.00
X-13	-Y-	11+50.00	12+00.00

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4676	X-1

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

985 980 975 970 965 960

964.74 0.030 0.020 964.83

965.19

2:1 2:1

961.50

11+20.00

0.040 0.010

965.59

10+95.00

966.02

10+70.00

9:41:22 AM
P:\2012\2176.01 B-4676\Roadway\Xsc\B4676_Rdy_xpl_L.dgn
8/8/2014

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4676	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

980 975 970 965 960 955

3:1 0.022 0.022 965.11 2:1

964.57

2:1 960.93 2:1

12 + 50.00

2:1 965.07 0.002 0.020 964.63 2:1

964.57

2:1 961.15 2:1

12 + 00.00

964.67 0.018 0.020 964.63

964.81

2:1 961.37 2:1

11 + 50.00

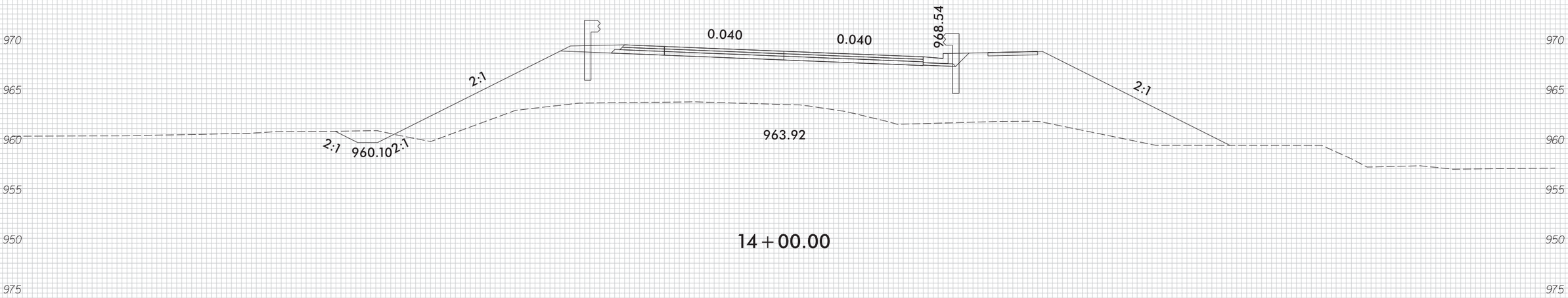
9:41:38 AM
P:\2176.01 B-4676\Roadway\Xsc\B4676_Rdy_xpll.dgn
8/8/2014

8/23/99

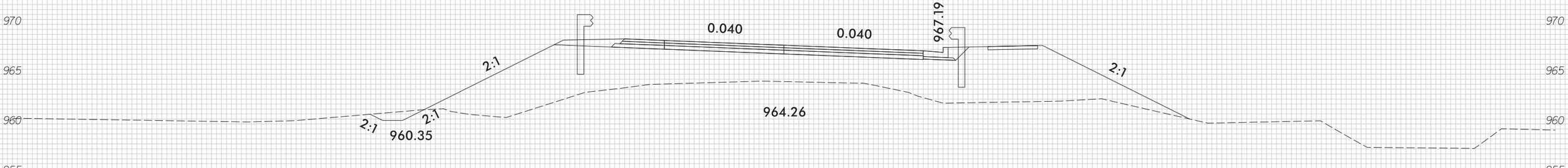
0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4676	X-3

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

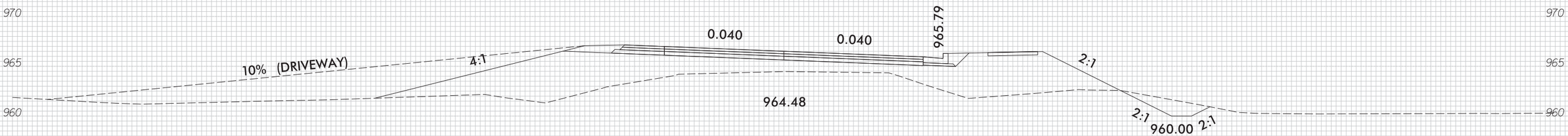
975 970 965 960 955 950



14+00.00



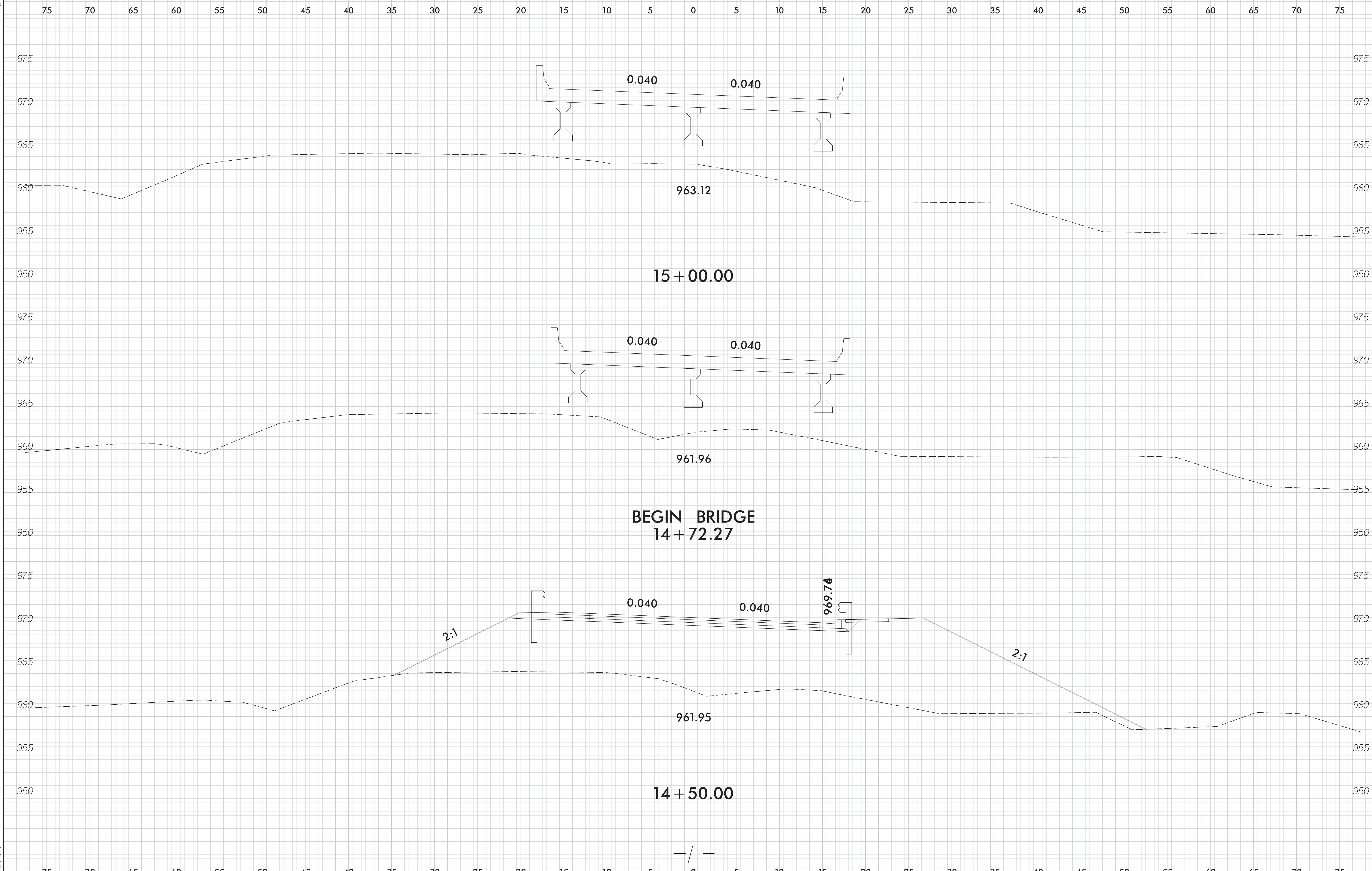
13+50.00



12+97.63

9:42:04 AM
P:\2012\12176.01 B-4676\Roadway\Xsc\B4676_Rdy_xpLL.dgn
8/8/2014

PROJ. REFERENCE NO.	SHEET NO.
B-4676	X-4



8/23/99

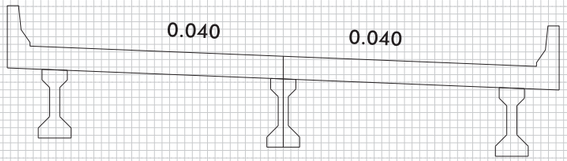
9:42:20 AM
P:\2012\12176.01 B-4676\Roadway\Xsc\B4676_Rdy_xpl_L.dgn
8/6/2014

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4676	X-5

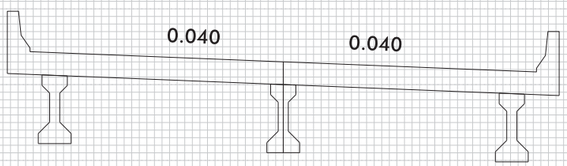
75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

980 975 970 965 960 955 950 945



953.00

16+00.00



957.28

15+50.00

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

9:42:48 AM
P:\2012\12176.01 B-4676\Roadway\Xsc\B4676_Rdy_xpl_L.dgn
8/8/2014

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4676	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

980 975 970 965 960 955 950

INTERSECTION SHEAR LINE

0.040 0.040 971.42 2:1

958.55

17+00.00

0.040 0.040

958.11

END BRIDGE

16+54.73

0.040 0.040

957.98

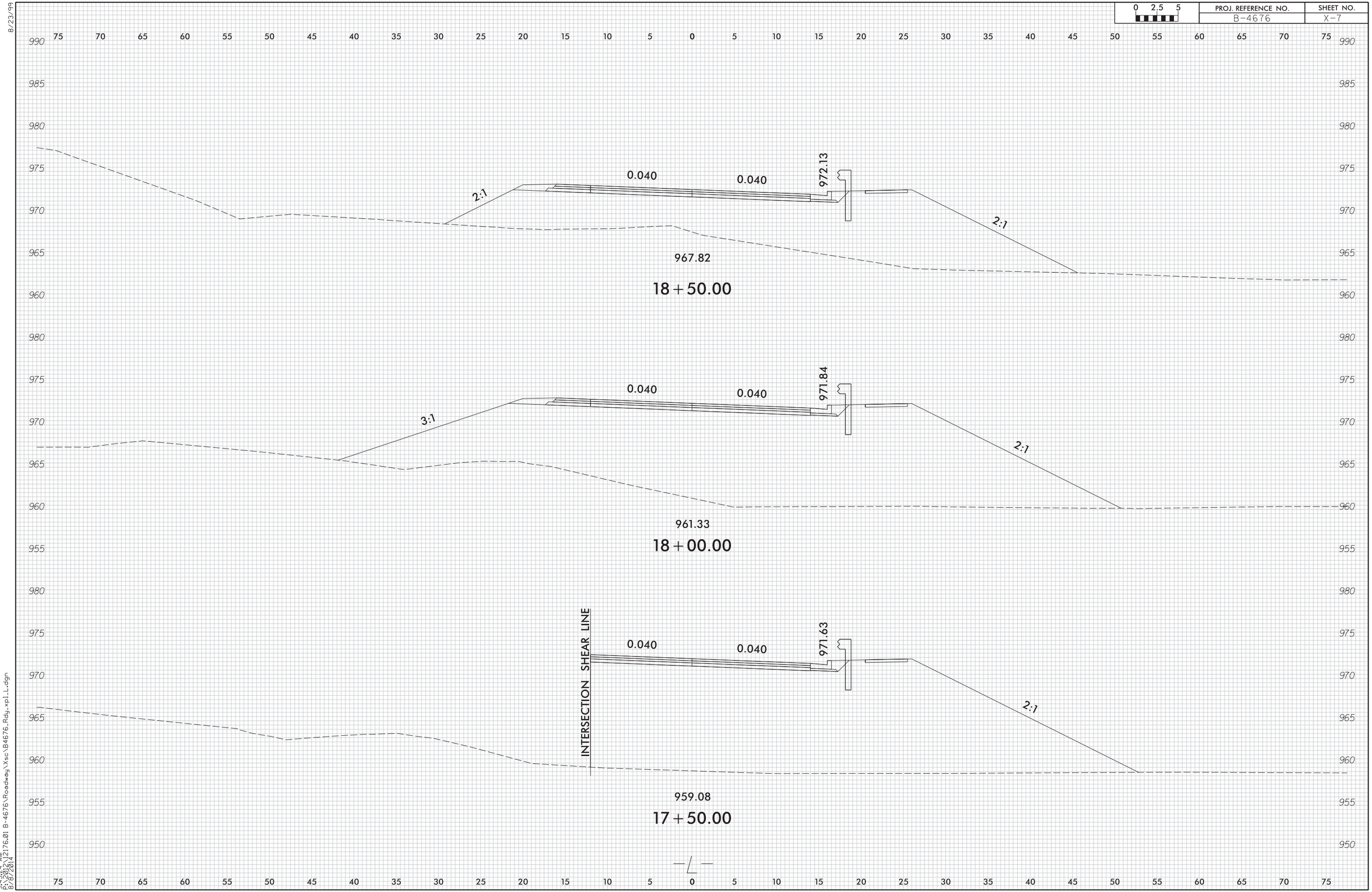
16+50.00

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

9:43:05 AM
8/27/2014
P:\2012\12176.01 B-4676\Roadway\Xsc\B4676_Rdy_xpl_L.dgn

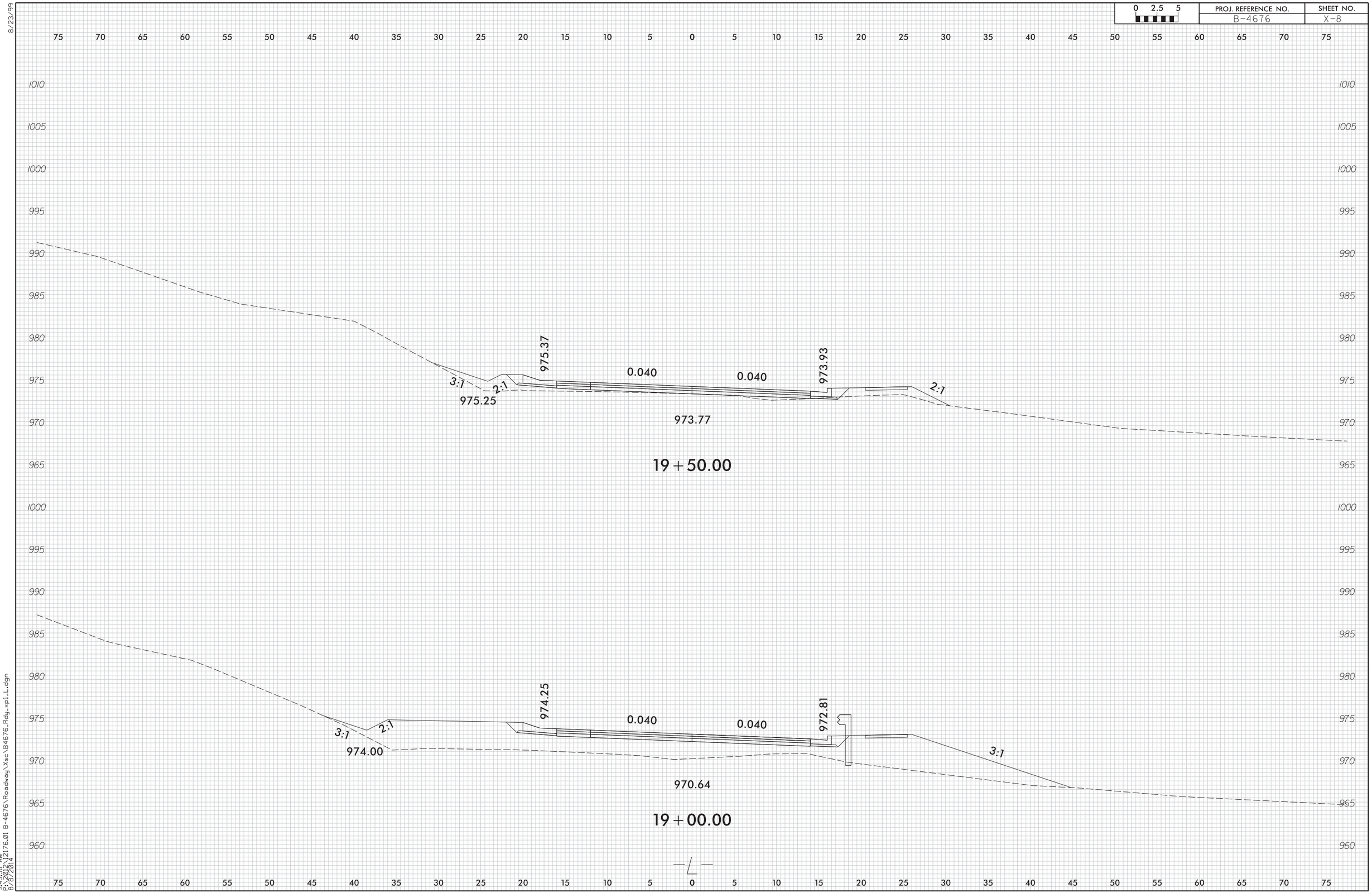
8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4676	X-7



8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4676	X-8



9:43:38 AM
P:\2012\12176.01 B-4676\Roadway\Xsc\B4676_Rdy_xpl_L.dgn
8/8/2014

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4676	X-9

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

1005 1000 995 990 985 980 975 970 965

2:1 976.62 2:1 976.82 0.025 0.025 975.89 2:1 976.21

20+05.00

2:1 976.50 2:1 976.68 0.027 0.027 975.68 2:1 976.00

20+00.00

9:43:57 AM
P:\2012\12176.01 B-4676\Roadway\Xsc\B4676_Rdy_xpl_L.dgn
8/8/2014

8/23/99

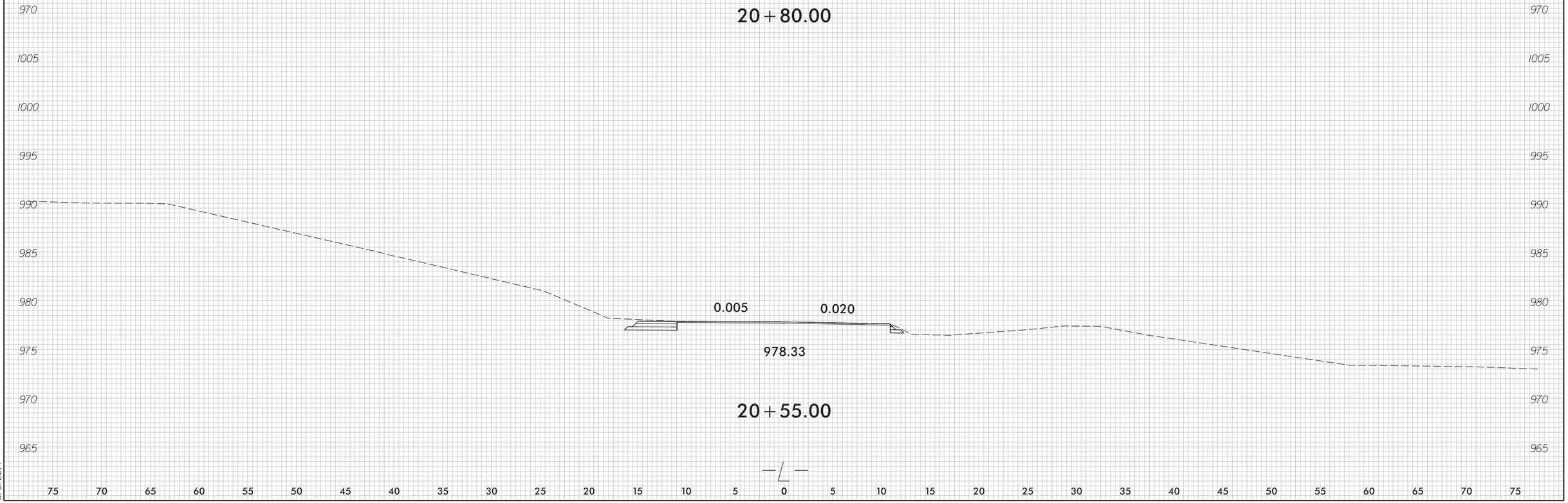
0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4676	X-10

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

1005
1000
995
990
985
980
975
970

979.43

20+80.00

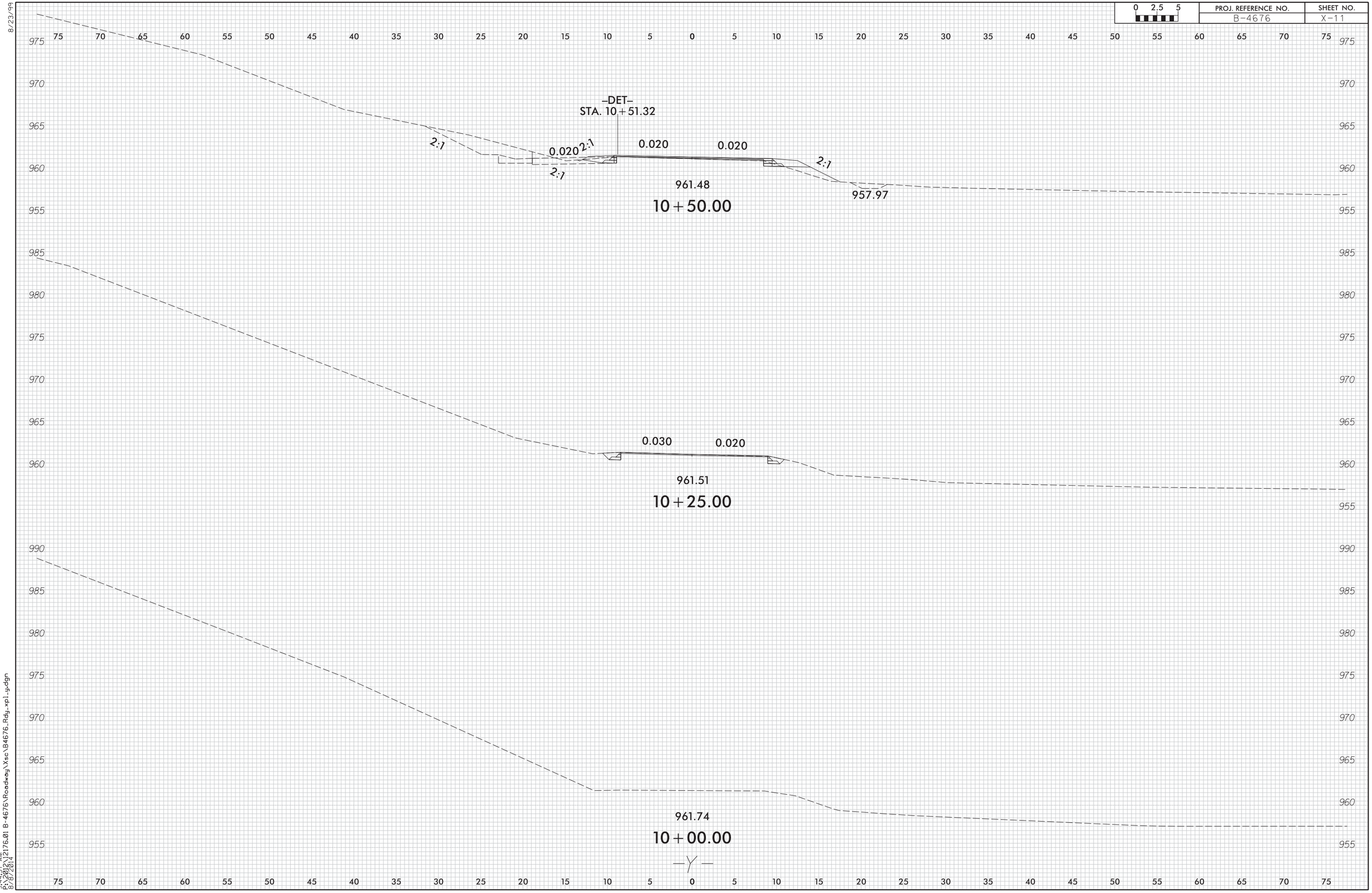


75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

9:44:44 AM
8/8/2014
P:\2012\2176.01 B-4676\Roadway\Xsc\B4676_Rdy_xpl_L.dgn

8/23/99

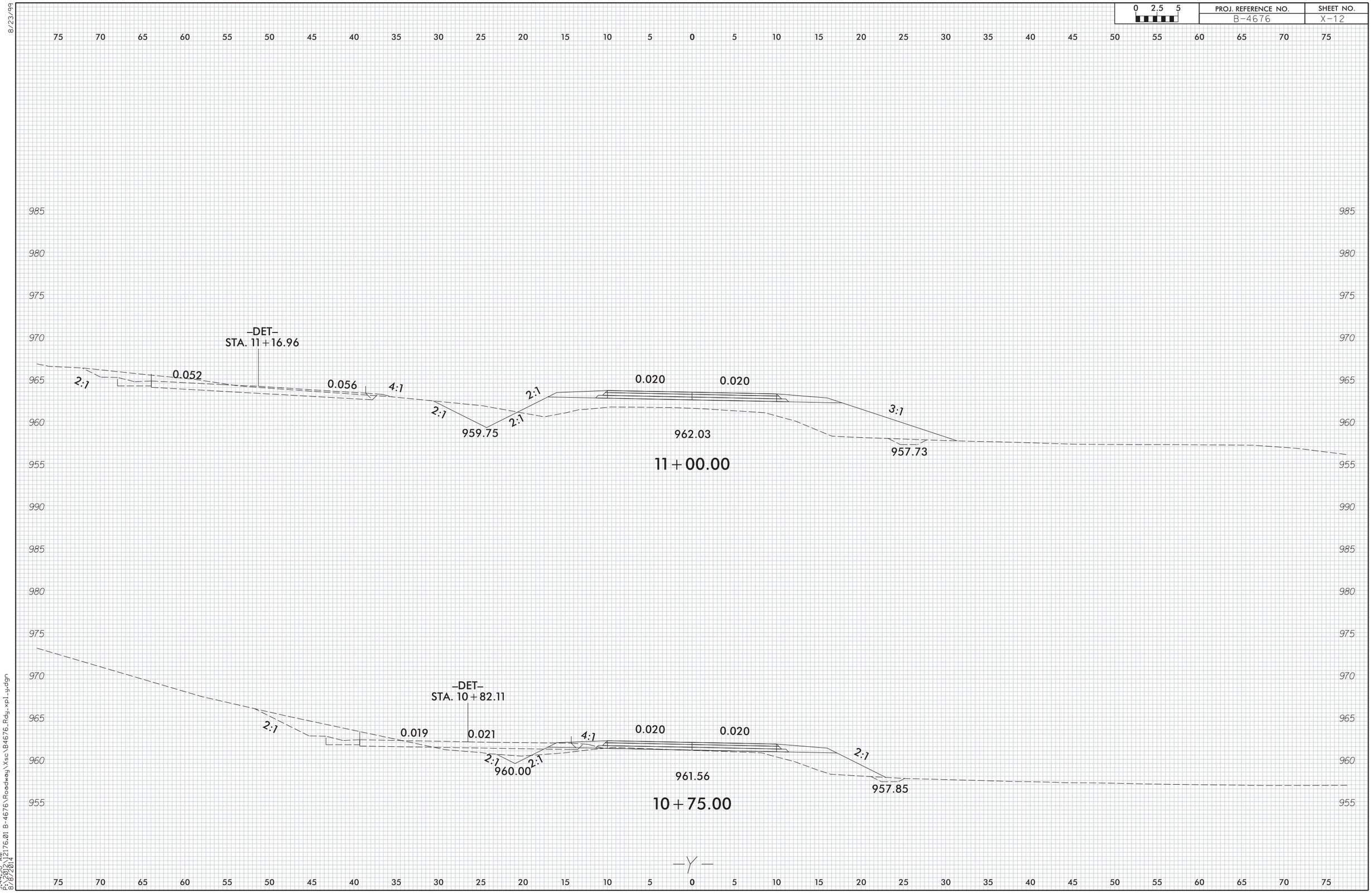
0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4676	X-11



9:44:37 AM
8/8/2014
P:\2012\12176.01 B-4676\Roadway\Xsc\B4676_Rdy_xpl_y.dgn

8/23/99

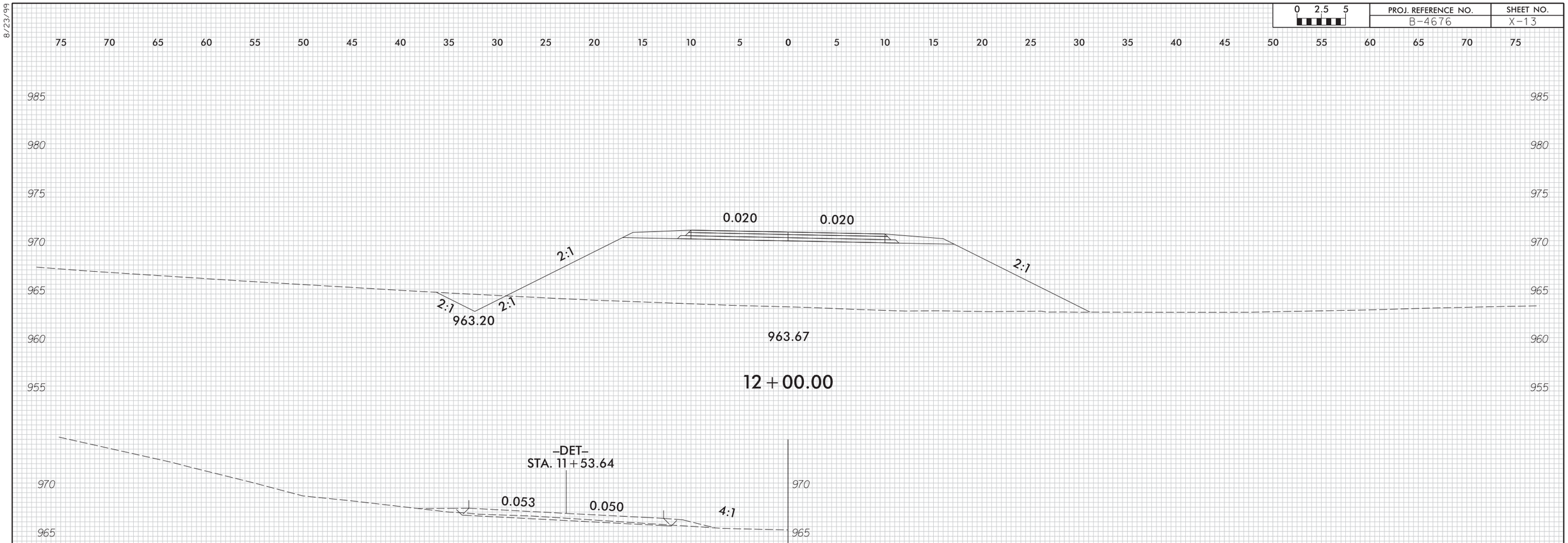
0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4676	X-12



9:44:50 AM
P:\2012\176.01 B-4676\Roadway\Xsc\B4676_Rdy_xpl_y.dgn
8/8/2014

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4676	X-13



9:45:08 AM
P:\2012\12176.01 B-4676\Roadway\Xsc\B4676_Rdy_xpl_y.dgn
8/8/2014