STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAT L. MCCRORY
GOVERNOR

ANTHONY J. TATA
SECRETARY

June 24, 2013

U. S. Army Corps of Engineers
Regulatory Field Office
151 Patton Avenue, Room 208
Asheville, NC 28801-5006

ATTN: Ms. Amanda Fuemmeler
NCDOT Coordinator

Subject: **Application for Section 404 Nationwide Permit 23, 13 and 33 and Section 401 Water Quality Certification** for the proposed replacement of Bridge No. 271 over Irish Buffalo Creek on SR 1157 in Cabarrus County, Federal Aid Project No. BRSTP-1157(5), Division 10, TIP No. B-4973, Debit $570 from WBS 40097.1.1.

Dear Madam:

The North Carolina Department of Transportation (NCDOT) proposes to replace Bridge No. 271 over Irish Buffalo Creek on SR 1157 with a three-span, 165' long prestressed concrete girder bridge on the existing alignment. Traffic will be maintained during construction via an offsite detour.

There will be 53 linear feet of permanent impacts due to realignment of a UT, 144 linear feet of bank stabilization under the bridge and at ditch/UT outlets, and 0.05 acre (73 linear feet) of temporary stream impacts from two temporary causeways and installation of bank stabilization.

Please see enclosed copies of the Pre-Construction Notification (PCN), EEP acceptance letter, stormwater management plan, permit drawings and design plans for the above-referenced project. The Programmatic Categorical Exclusion (PCE) was completed in May 2011 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 calls for a letting date of November 19, 2013 and a review date of October 1, 2013; 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,

for E. L. Lush

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

cc:
NCDOT Permit Application Standard Distribution List

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

Pre-Construction Notification (PCN) Form

A. Applicant Information

1. Processing

1a. Type(s) of approval sought from the Corps:	☒ Section 404 Permit	☐ Section 10 Permit
1b. Specify Nationwide Permit (NWP) number: 23 13 33 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 271 over Irish Buffalo Creek on SR 1157
2b. County:	Cabarrus
2c. Nearest municipality / town:	Concord
2d. Subdivision name:	*not applicable*
2e. NCDOT only, T.I.P. or state project no:	B-4973

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:35.38596 (DD.DDDDDD)	Longitude: - 80.57944 (-DD.DDDDDD)
1c. Property size:	3 acres	
2. Surface Waters		
2a. Name of nearest body of water (stream, river, etc.) to proposed project:	Irish Buffalo Creek	
2b. Water Quality Classification of nearest receiving water:	C	
2c. River basin:	Yadkin	
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: The land use within the vicinity of the project consists of about 5% forest land (including mixed hardwood forests), 90% developed or disturbed lands (commercial/industrial development, roadsides and residential areas) and 5% cultivated land (agricultural fields and pastures).		
3b. List the total estimated acreage of all existing wetlands on the property: 0		
3c. List the total estimated linear feet of all existing streams (intermittent and perennial) on the property: 425		
3d. Explain the purpose of the proposed project: The purpose of this project is to replace a functionally obsolete bridge (deck geometry of 2 out of 9).		
3e. Describe the overall project in detail, including the type of equipment to be used: The project involves replacing a 135-foot three-span bridge with a 165-foot long, three-span prestressed concrete girder bridge on the existing alignment, maintaining traffic via an offsite 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 perennial streams, no JD needed earlier	☐ Yes	☒ No ☐ Unknown
4b. If the Corps made the jurisdictional determination, what type of determination was made?	☐ Preliminary	☐ Final
4c. If yes, who delineated the jurisdictional areas? Name (if known):	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 within construction limits

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	Irish Buffalo Creek	☒ PER ☐ INT	☒ Corps ☐ DWQ	40	124
Site 1 ☐ P ☒ T	Installation of Bank Stabilization	Irish Buffalo Creek	☒ PER ☐ INT	☒ Corps ☐ DWQ	40	20 (<0.01ac)
Site 1 ☐ P ☒ T	Temporary Causeways	Irish Buffalo Creek	☒ PER ☐ INT	☒ Corps ☐ DWQ	40	53 (0.05ac)
Site 2 ☒ P ☐ T	Stream relocation	UT2 to Irish Buffalo Creek	☒ PER ☐ INT	☒ Corps ☐ DWQ	3.5	53
Site 2 ☒ P ☐ T	Bank Stabilization	Irish Buffalo Creek	☒ PER ☐ INT	☒ Corps ☐ DWQ	40	20
Site 3 ☐ P ☐ T			☐ PER ☐ INT	☐ Corps ☐ DWQ		
					3h. **Total stream and tributary impacts**	197 Perm 73 Temp (0.05ac Temp)

3i. Comments: The temporary causeways will be used for both the removal of the existing bridge as well as the construction of the new drilled piers. The impact due to the drilled piers will be 43 sq ft. The lengthwise extent of the temporary impacts from the causeway is included within the limits of the permanent impacts from bank stabilization. The temporary causeway will be comprised of Class II riprap, and the portion on the banks will be left after construction as bank stabilization under the bridge. UT2 will likely be relocated (shifted to the north) to accommodate the construction of the causeways. There will be additional bank stabilization on Irish Buffalo Creek at two ditch outlets as well as at the outlet of UT2.

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 water within construction limits.

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 bridge will be replaced on the existing alignment. Despite the slight raise in grade, the roadway slopes in the northeast quadrant were kept tight to avoid lengthy impacts to the parallel UT2 to Irish Buffalo Creek. No water will directly discharge from the new bridge to the creek. Drainage systems within the project area outlet to riprap pads. Systems on the east side of the bridge outlet into a ditch and existing ditches have been riprapped to stabilize them. There will be promotion of sheet flow and infiltration with grass shoulders except where there is curb and gutter around the bridge. The removal/excavation of existing road fill under the new bridge will improve bridge conveyance and reduce the bridge opening velocities.

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 during construction via an offsite detour, eliminating the need to increase the construction footprint to construct an onsite detour. The temporary causeways will still leave over 19' of stream width open on the thalweg side, allowing sufficient maintenance of flow during construction.

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:
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:	53 linear feet
4c. If using stream mitigation, stream temperature:	☒ warm ☐ cool ☐ cold
4d. Buffer mitigation requested (DWQ only):	0 square feet
4e. Riparian wetland mitigation requested:	0 acres
4f. Non-riparian wetland mitigation requested:	0 acres
4g. Coastal (tidal) wetland mitigation requested:	0 acres

4h. Comments: The NCDOT does not propose mitigation for the 73 linear feet (0.05ac) temporary impacts from the temporary causeways and installation of bank stabilization, nor does it propose mitigation for the bank stablization impacts. These impacts do not require 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 total less than 150 linear feet per stream and 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: Programmatic Categorical Exclusion (PCE) approved 5/5/11	☒ 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, ind icate 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? Of the two federally listed species for Cabarrus County, only Schweinitz's sunflower has suitable habitat located within the construction limits of this project. The project area was surveyed by NCDOT biologists in 2007, 2009 and 2011 for this species, and no individuals were found. No suitable habitat exists within the project for Carolina heelsplitter. This project will have no effect on any Federally Threatened or Endangered species listed for Cabarrus County.		
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		

Dr. Gregory J. Thorpe, Ph D Applicant/Agent's Printed Name	E. L. Luck Applicant/Agent's Signature (Agent's signature is valid only if an authorization letter from the applicant is provided.)	6.24.13 Date

Ecosystem Enhancement PROGRAM

June 18, 2013

Mr. Gregory J. Thorpe, Ph.D.
Manager, Project Development and Environmental Analysis Unit
North Carolina Department of Transportation
1548 Mail Service Center
Raleigh, North Carolina 27699-1548

Dear Dr. Thorpe:

Subject: EEP Mitigation Acceptance Letter:

B-4973, Replace Bridge Number 271 over Irish Buffalo Creek on SR 1157, Cabarrus County

The purpose of this letter is to notify you that the Ecosystem Enhancement Program (EEP) will provide the compensatory stream mitigation for the subject project. Based on the information supplied by you on June 13, 2013, the impacts are located in CU 03040105 of the Yadkin River basin in the Northern Mountains (SP) Eco-Region, and are as follows:

Yadkin 03040105 SP	Stream			Wetlands			Buffer (Sq. Ft.)	
	Cold	Cool	Warm	Riparian	Non-Riparian	Coastal Marsh	Zone 1	Zone 2
Impacts (feet/acres)	0	0	53.0	0	0	0	0	0

*Some of the stream and wetland impacts may be proposed to be mitigated at a 1:1 mitigation ratio. See permit application for details.

This impact and associated mitigation need were under projected by the NCDOT in the 2013 impact data. EEP will commit to implement sufficient compensatory stream mitigation credits to offset the impacts associated with this project as determined by the regulatory agencies using the delivery timeline listed in Section F.3.c.iii of the N.C. Department of Environment and Natural Resources' Ecosystem Enhancement Program In-Lieu Fee Instrument dated July 28, 2010. If the above referenced impact amounts are revised, then this mitigation acceptance letter will no longer be valid and a new mitigation acceptance letter will be required from EEP.

If you have any questions or need additional information, please contact Ms. Beth Harmon at 919-707-8420.

Sincerely,

James B. Stanfill

James B. Stanfill
EEP Asset Management Supervisor

cc: Ms. Amanda Fuemmeler, USACE – Asheville Regulatory Field Office
Ms. Amy Chapman, Division of Water Quality, Wetlands/401 Unit
File: B-4973

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR LINEAR ROADWAY PROJECTS

(Version 1.2; Released July 2012)

General Project Information

Project No.:	40097.1.1 B-4973		**Project Type:**	Bridge Replacement		**Date:**	12/14/2012
NCDOT Contact:	Galen Cail		**Contractor / Designer:**				
Address:	1020 Birch Ridge Rd Raleigh, NC 27610		**Address:**				
Phone:	919-707-6711		**Phone:**				
Email:	gcail@ncdot.gov		**Email:**				
City/Town:	Concord		**County(ies):**	Cabarrus			
River Basin(s):	Yadkin-Pee Dee		**CAMA County?**	No			
Primary Receiving Water:	Irish Buffalo Creek		**NCDWQ Stream Index No.:**	13-17-9-(2)			
NCDWQ Surface Water Classification for Primary Receiving Water	**Primary:**		Class C				
	Supplemental:						
Other Stream Classification:							
303(d) Impairments:	None						
Buffer Rules in Effect	N/A						

Project Description

Project Length (lin. Miles or feet):	0.181 miles	**Surrounding Land Use:**	Residential, Business and Farmland

	Proposed Project	**Existing Site**
Project Built-Upon Area (ac.)	0.74 ac.	0.46 ac.
Typical Cross Section Description:	2 12 ft. lanes with 6 ft shoulders (4' paved) Bridge will be 2 12 ft lanes wth 5.5 ft sidewalk and 5.5 ft wide shoulder.	2 11 ft. lanes with variable shoulder width. Bridge is 2 10 ft. lanes with 1 ft shoulder.
Average Daily Traffic (veh/hr/day):	Design/Future: 6450/ 9900	Existing:

General Project Narrative:

The project consists of replacing Bridge #71 on SR 1157 (Wilshire Ave) over Irish Buffalo Creek. The approach work will consist of raising the existing roadway grade and providing grass shoulders and guardrails. Bridge # 71 existing 3 span structure (135" total length) will be replaced with a 3 span (2 @ 50' and 1 @ 60' prestressed concrete girder bridge) 160' total length.

Best Management Practices:
- Promotion of sheet flow and infiltration with grass shoulders except where curb and gutter around the bridge.
-Drainage systems outlet to rip rap pad. Systems on the east side of the bridge outlet into the ditch. Existing ditches have been rip rapped to stabilize.
-Removal of existing road fill under bridge will improve bridge conveyance and reduce the bridge opening velocties

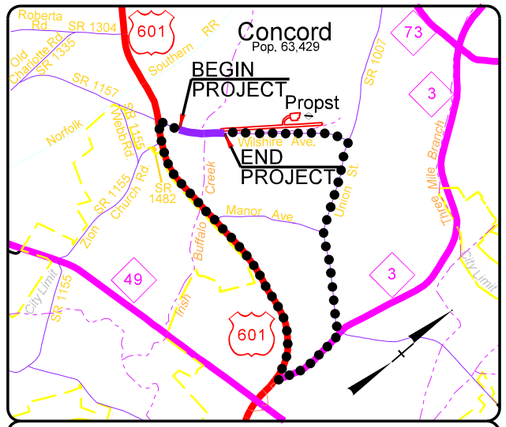
References

09/08/99

TIP PROJECT: B-4973

CONTRACT:

See Sheet 1-A For Index of Sheets



WITHIN THE MUNICIPAL BOUNDARIES
OF THE CITY OF CONCORD

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CABARRUS COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4973	1	

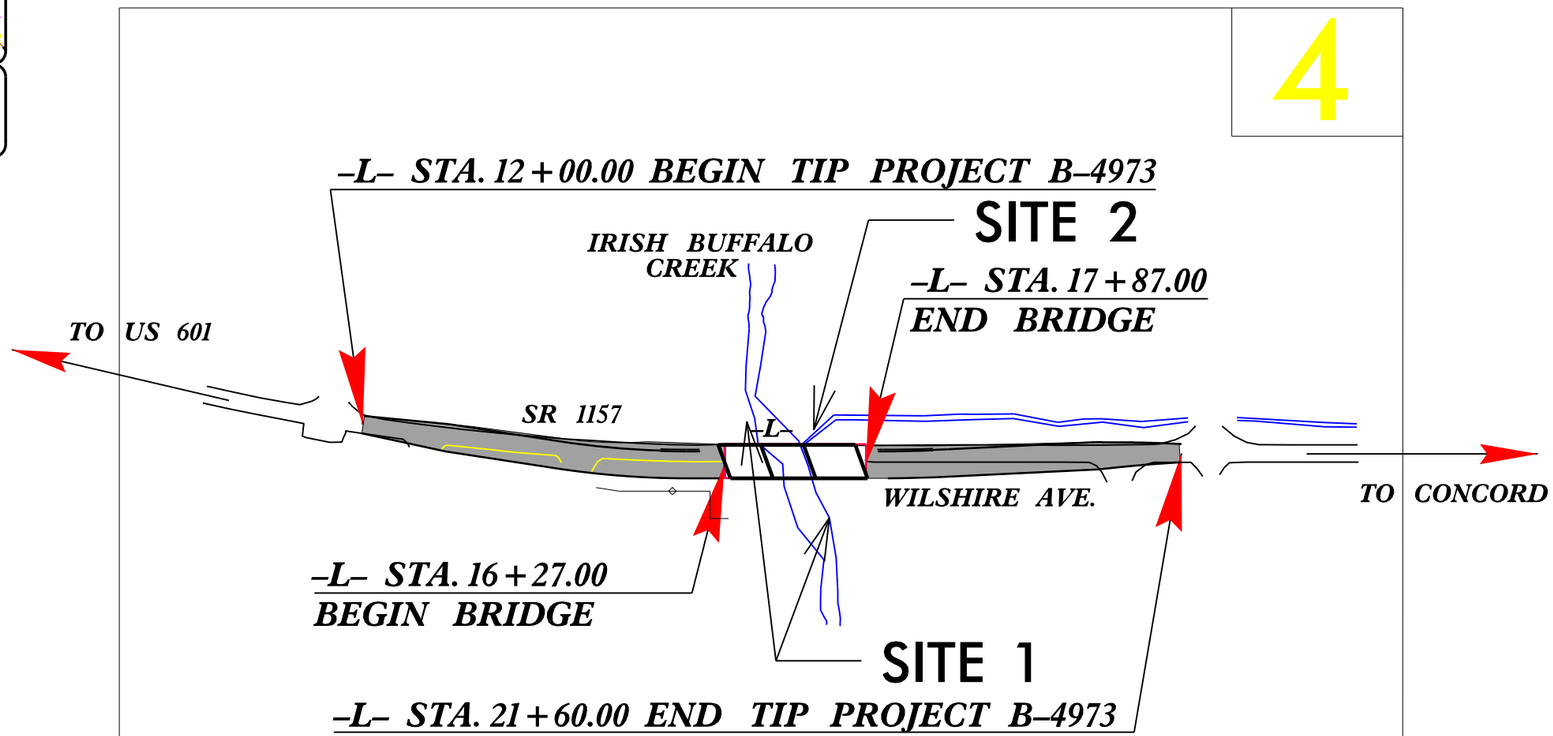
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
40097.1.1	BRSTP-1157(5)	PE
40097.2.1	BRSTP-1157(5)	R/W & UTIL

PERMIT DRAWING
SHEET 1 OF 8

LOCATION: BRIDGE NO. 271 OVER IRISH BUFFALO CREEK ON SR 1157 (WILSHIRE AVE.)

TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURE

4



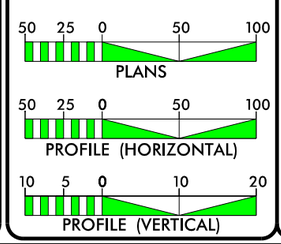
NAD 83/
NSRS 2007

SURFACE WATER IMPACTS PERMIT

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES



DESIGN DATA

ADT 2012	=	6,450
ADT 2035	=	9,900
DHV	=	9 %
D	=	60 %
T	=	4 %**
*V	=	50 MPH

*SUB-REGIONAL TIER
FUNC. CLASS = COLLECTOR
**TTST 1% + DUAL 3%

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT B-4973 = 0.152 MI.
LENGTH OF STRUCTURE TIP PROJECT B-4973 = 0.030 MI.
TOTAL LENGTH OF PROJECT B-4973 = 0.182 MI.

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

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: OCTOBER 24, 2012

LETTING DATE: NOVEMBER 19, 2013

G. E. BREW, PE
PROJECT ENGINEER

W. T. BEST
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

P.E.
SIGNATURE:

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION ·

3/1/2013
amkeeter
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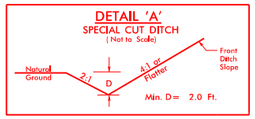

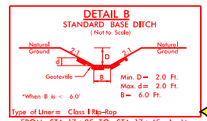

PROJECT REFERENCE NO.	SHEET NO.
B-4973	4

R/W SHEET NO. ____

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 2 OF 8

FROM STA. 16+50 -L- Lt Cl. I
Rip Rap 15 TONS Geotextile= 55 sy
FROM STA. 17+15 -L- Lt Cl. I
Rip Rap 7 TONS Geotextile= 15 sy
FROM STA. 16+85 -L- Lt Cl. II
Rip Rap 90 TONS Geotextile= 125 sy
FROM STA. 17+30 -L- Lt Cl. II
Rip Rap 80 TONS Geotextile= 110 sy

8/17/99

3/1/2013
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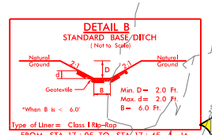

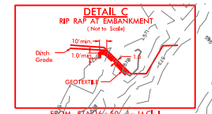

PROJECT REFERENCE NO.	SHEET NO.
B-4973	4

R/W SHEET NO.

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING SHEET 3 OF 8

DETAIL 'A'
SPECIAL CUT DITCH
(Not to Scale)

Natural Ground
2:1
D
4:1 or Flatter
Front Ditch Slope
Min. D= 2.0 Ft.

FROM STA. 12+50 TO STA. 14+00 -L- LT

Sta.= 12+50 - 14+35 L LT
Q(10)= 15.3CFS
V= 2.66FPS
d= 1.61FT
s= 0.003FT/FT
n=0.045
T=0.33

DETAIL B
STANDARD BASE DITCH
(Not to Scale)

Natural Ground
2:1
D
d
Geotextile
B
Min. D= 2.0 Ft.
Max. d= 2.0 Ft.
B= 6.0 Ft.
*When B is < 6.0'
Type of Liner= Class I Rip-Rap

FROM STA. 17+05 TO STA. 17+45 -L- Lt
Excavation: Est. 90 cu yds
Rip Rap: Est. 15 ton Cl I
Geotextile: Est. 700 sq. ft.

DETAIL C
RIP RAP AT EMBANKMENT
(Not to Scale)

10'min.
1.0'min.
Ditch Grade
1.5
GEOTEXTILE

FROM STA. 16+50 -L- Lt Cl. I
Rip Rap 15 TONS Geotextile= 55 sy
FROM STA. 17+15 -L- Lt Cl. I
Rip Rap 7 TONS Geotextile= 15 sy
FROM STA. 16+85 -L- Lt Cl. II
Rip Rap 90 TONS Geotextile= 125 sy
FROM STA. 17+30 -L- Lt Cl. II
Rip Rap 80 TONS Geotextile= 110 sy

▨ S	DENOTES IMPACTS IN SURFACE WATER
▨ TS	DENOTES TEMPORARY IMPACTS IN SURFACE WATER

8/17/99

3/1/2013
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PROJECT REFERENCE NO.	SHEET NO.
B-4973	
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 4 OF 8

REVISIONS 8/17/99

3/1/2013
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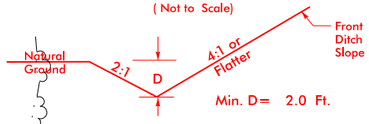
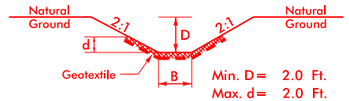
DETAIL 'A'
SPECIAL CUT DITCH
(Not to Scale)



Min. D= 2.0 Ft.

FROM STA. 12+50 TO STA. 14+00 -L- LT

DETAIL B
STANDARD BASE DITCH
(Not to Scale)



*When B is < 6.0'

Min. D= 2.0 Ft.
Max. d= 2.0 Ft.
B= 6.0 Ft.

Type of Liner= Class I Rip-Rap

FROM STA. 17+05 TO STA. 17+45 -L- Lt
Excavation: Est. 90 cu yds
Rip Rap: Est. 15 ton Cl I
Geotextile: Est. 700 sq. ft.

JPL

Sta.= 12+50 - 14+35 L LT
Q(10)= 15.3CFS
V= 2.66FPS
d= 1.61FT
s= 0.003FT/FT
n=0.045
T=0.33

NC GRID NAD 83/NSRS 2007

5

GLENN B. HACKNEY, JR
LYNNE HACKNEY

3

METAL WAREHOUSE

8' CHL W/ BARB WIRE

TOP=585.89'

68.00'
DUKE ENERGY EASEMENT 68' WIDE

60.00'

48"DIP

30" CMP

RETAIN

CLASS B RIP RAP
EST. 1 TONS
EST. Geotextile
5 S.Y.

TAIL 'A'

SEE DETAIL C
CLASS I RIP RAP
EST. 15 TONS
EST. Geotextile
55 S.Y.

CLASS II RIP RAP
STRUCTURE PAY ITEM

TEMP. CAUSEWAY

SITE 2

SEE DETAIL C

SEE DETAIL B

TUE

JS

TB

4 SBW

15+00

20+00

30" RCP

15" RCP-IV

CB

8" LOW PROFILE TYPE

12"DIP

8" CHL W/ BARB WIRE

BST

End SBG
18+25 -L-

15" CSP w/ 2 elbows

JB w/MH

48" WOOD

IRISH BUFFALO CREEK

EXCAVATION

PDE

42"DIP

I-STORY METAL SIDING

CLASS I RIP RAP
EST. 35 TONS
EST. Geotextile 120 S.Y.

12"PVC
20' SEWER EASEMENT CITY OF CONCORD

DUKE ENERGY EASEMENT 68' WIDE

40' SEWER EASEMENT

40.00'

SITE 1

DONALD W. BRADFORD
CAROL P. BRADFORD

6

S S — DENOTES IMPACTS IN SURFACE WATER

TS TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER

50' 0' 50'
SCALE 1"=50'

PROJECT REFERENCE NO.	SHEET NO.
B4973	

RW SHEET NO.

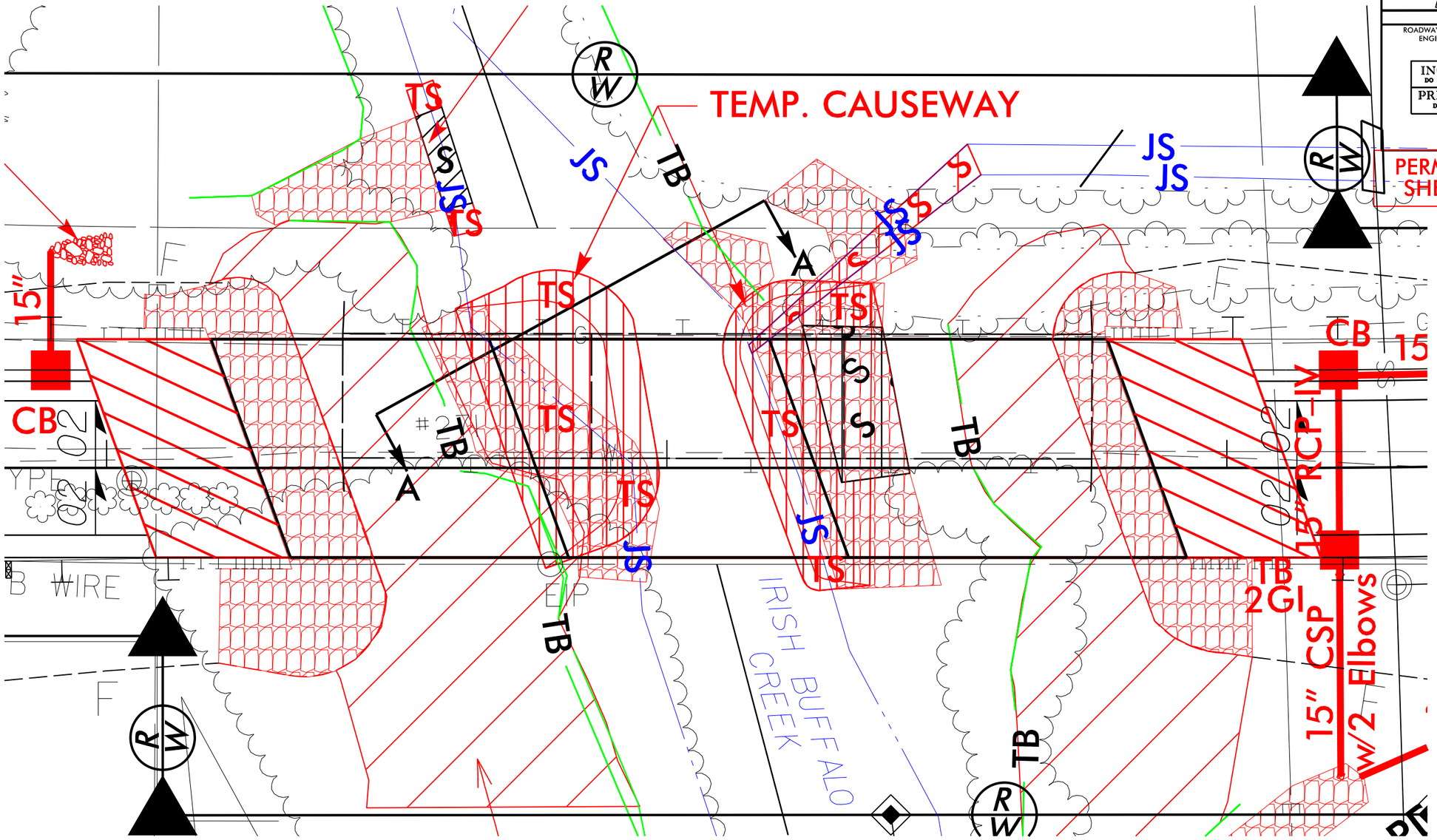
ROADWAY DESIGN ENGINEER

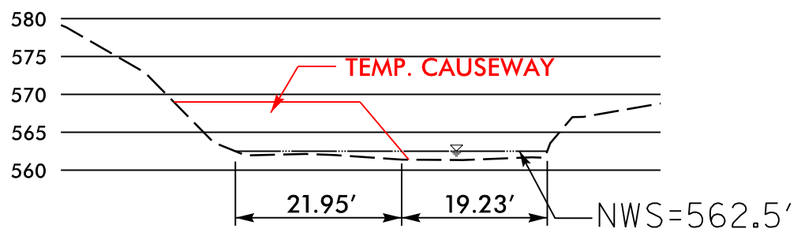
HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 5 OF 8





SECTION A–A

REVISIONS

8/17/99

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5/14/99

PROJECT REFERENCE NO.	SHEET NO.
B-4973	

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PERMIT DRAWING
SHEET 6 OF 8

12+00 13+00 14+00 15+00 16+00 17+00 18+00 19+00 20+00 21+00

600
590
580
570
560
550

℄ STATION 17+07 -L-
PROPOSED 2@50', 1@60' 4' E.B. CAPS
45-INCH PRESTRESSED CONCRETE BRIDGE
LENGTH = 160'
GRADE POINT ELEVATION = 583.3'
SKEW = 70 DEGREE

PROPOSED GRADE

EXIST. ROADWAY
CLASS II RIP RAP (TYP.)

ABUTMENT EXCAVATION
TO ELEVATION 572.0'
EST. 600 C.Y.

100 YR WSEL = 575.2'
25 YR WSEL = 574.1'

22' MIN.

10' MIN.

NWSE = 562.3' +/-
(02/10/2012)

FUTURE GREENWAY
ELEVATION = 569.0'
EST. 160 C.Y.

TEMP. CAUSEWAY
CI II Rip Rap Base
CI B Rip Rap Top

N/A
575.26
575.31

3/1/2013
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$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$
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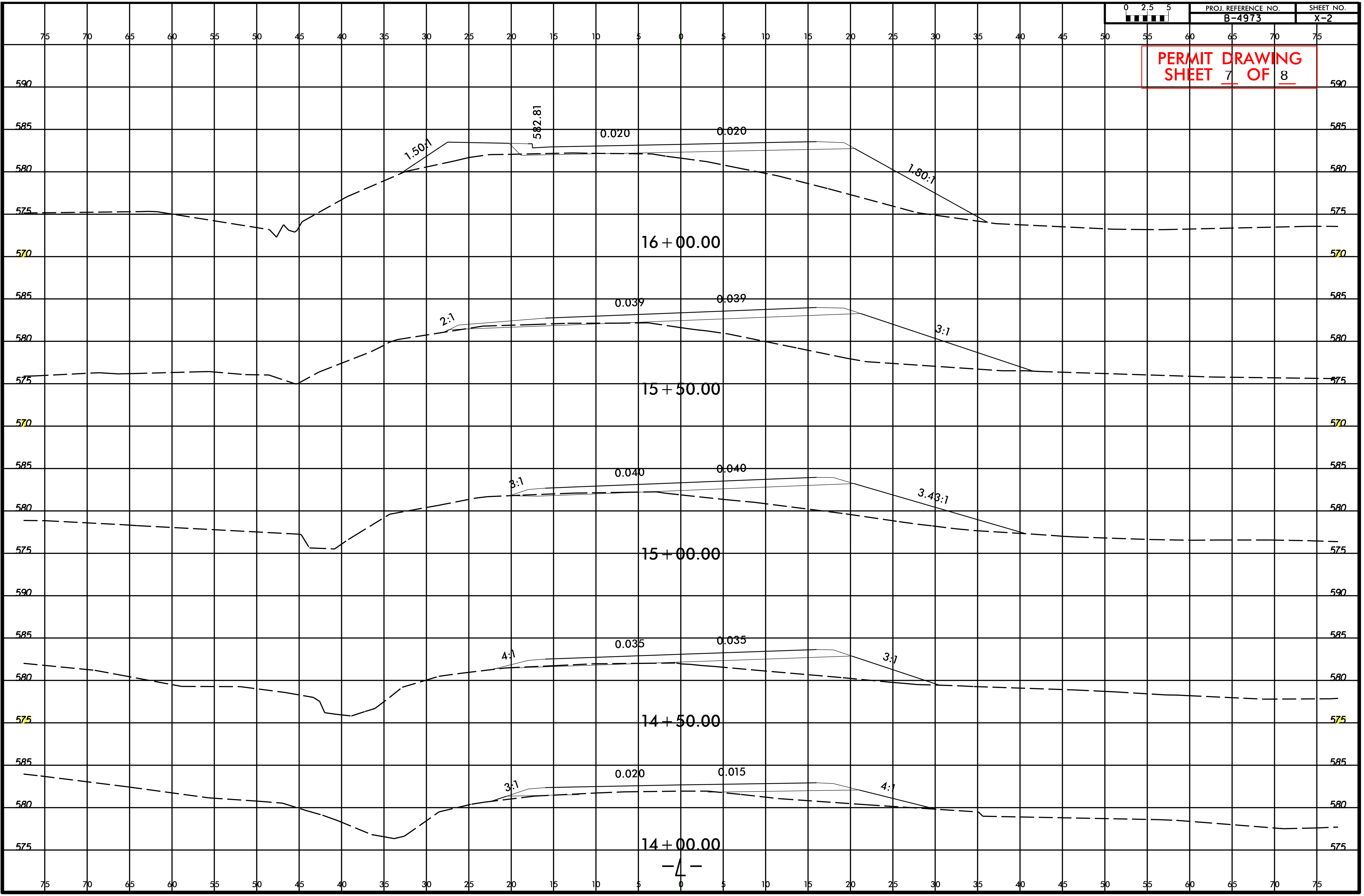
PROJ. REFERENCE NO. B-4973

SHEET NO. X-2

PERMIT DRAWING
SHEET 7 OF 8



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$$$$$USERNAME$$$$

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	16+54 TO 17+54	BANK STABLIZATION Lt						<0.01	<0.01	124	20	
		TEMP. CAUSEWAY							0.05		53	
2	17+05 to 17+42-L-LT	RELOCATION						<0.01		53		
	16+93 to 17+15 -L- LT	BANK STABLIZATION						<0.01		20		
TOTALS:								0.01	0.05	197	73	

TOTAL IMPACT DUE TO DRILLED PIERS - 0.001ac (42.42 sq.ft)

Site 2: Potential relocation of channel during construction

Temporary impacts due to causeway are included in the permanent impacts

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

CABARRUS COUNTY

WBS - 40097.1.1 (B-4973)

SHEET 8 of 8 6/13/2013

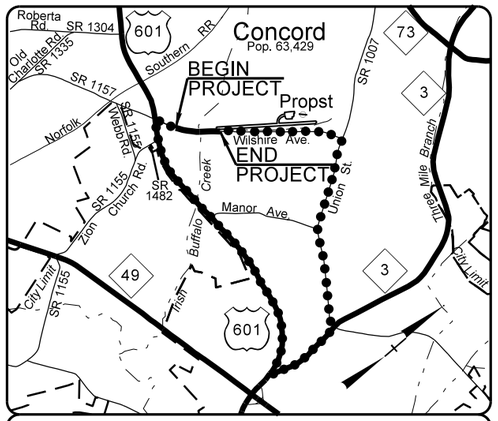
ATN Revised 3/31/05

09/08/99

TIP PROJECT: B-4973

CONTRACT:

See Sheet 1-A For Index of Sheets



Vicinity Map

●●●● - Offsite Detour

WITHIN THE MUNICIPAL BOUNDARIES
OF THE CITY OF CONCORD

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CABARRUS COUNTY

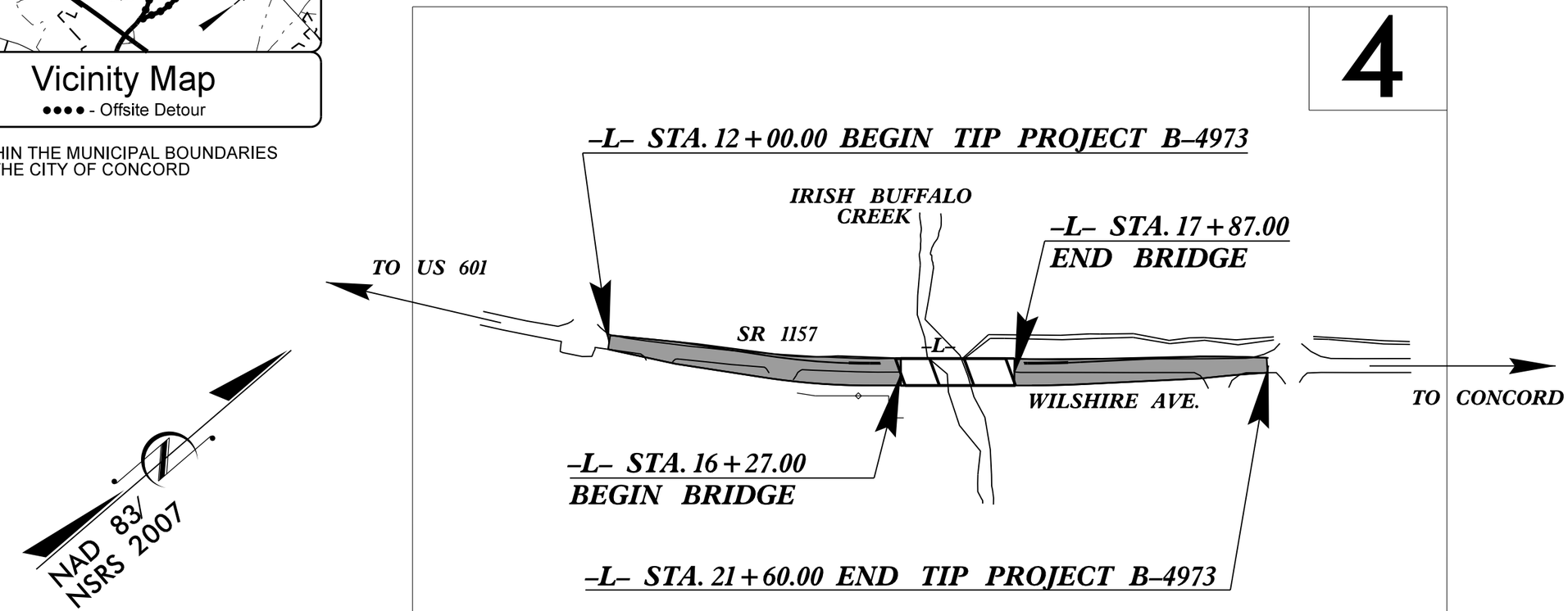
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-4973	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
40097.1.1	BRSTP-1157(5)	PE
40097.2.1	BRSTP-1157(5)	R/W & UTIL

LOCATION: BRIDGE NO. 271 OVER IRISH BUFFALO CREEK ON SR 1157 (WILSHIRE AVE.)

TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURE

4



CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2012 = 6,450
ADT 2035 = 9,900
DHV = 9 %
D = 60 %
T = 4 %**
*V = 50 MPH
*SUB-REGIONAL TIER
FUNC. CLASS = COLLECTOR
**TTST 1% + DUAL 3%

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT B-4973 = 0.152 MI.
LENGTH OF STRUCTURE TIP PROJECT B-4973 = 0.030 MI.
TOTAL LENGTH OF PROJECT B-4973 = 0.182 MI.

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

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: OCTOBER 24, 2012

LETTING DATE: NOVEMBER 19, 2013

G. E. BREW, PE
PROJECT ENGINEER

W. T. BEST
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

28-NOV-2012 08:00
R:\Roadway\Proj\b4973_rdy_tsh.dgn
$$$$USERNAME$$$$

04/16/11

PROJECT REFERENCE NO.	SHEET NO.
B-4973	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:

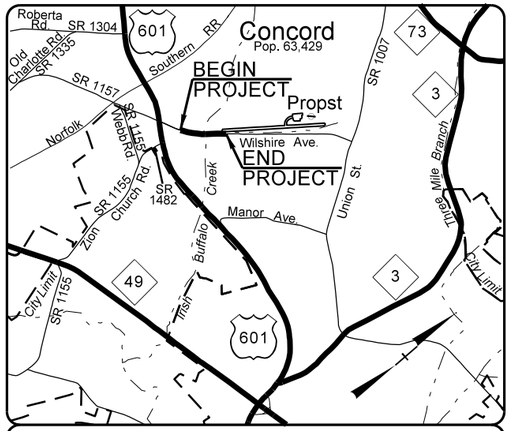
- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- Recorded SS Forced Main Line — FSS
- Designated SS Forced Main Line (S.U.E.*) — FSS

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.

PROJECT REFERENCE NO.	SHEET NO.
B-4973	1 C
Location and Surveys	

SURVEY CONTROL SHEET – Preliminary –



Vicinity Map

DATUM DESCRIPTION

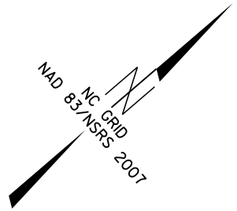
THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCGS FOR MONUMENT "PENNEY"
WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF
NORTHING: 599937.681(ft) EASTING: 1530036.730(ft)
ELEVATION: 579.56(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.999852
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "PENNEY" TO -L- STATION 10+00.00 IS
S 44°57'12.9" W 1807.461'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

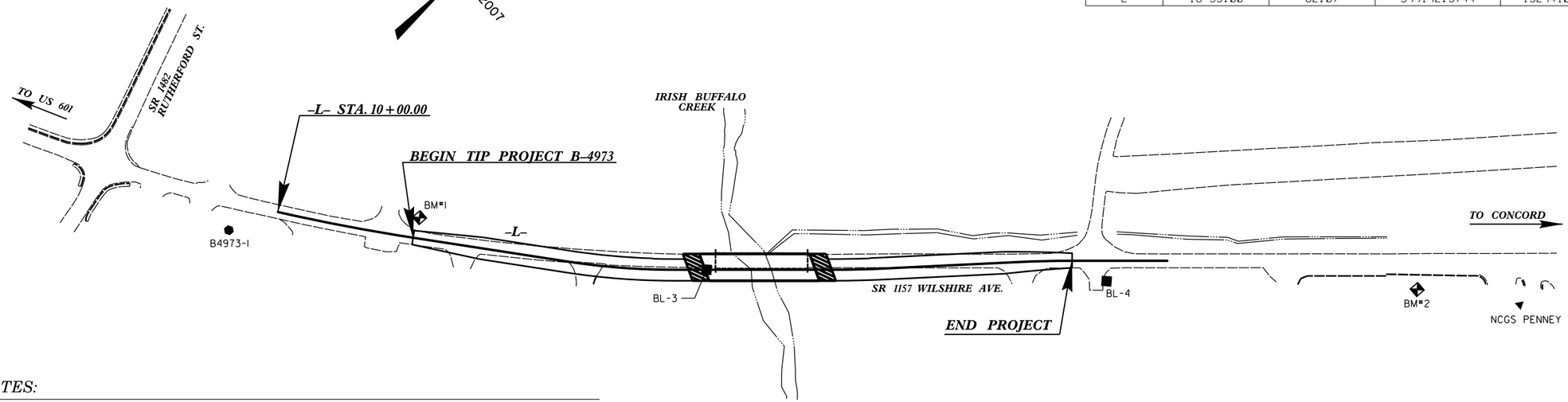
ROW MARKER IRON PIN AND CAP

ALIGN	STATION	OFFSET	NORTH	EAST
L	12+00.00	-60.00	598828.7853	1528877.0692
L	12+00.00	-29.88	598805.8972	1528896.6529
L	12+00.00	30.12	598760.3076	1528935.6604
L	14+30.00	-60.00	598978.2472	1529051.7488
L	15+05.00	33.00	598960.3162	1529169.1664
L	16+10.00	62.00	599020.9359	1529263.4728
L	16+10.00	30.00	599041.7937	1529239.2044
L	18+20.00	-70.00	599265.9391	1529299.9551
L	18+20.00	-42.80	599248.3330	1529320.6866
L	18+70.00	63.00	599219.9772	1529434.3465
L	18+87.29	-41.05	599298.0493	1529363.4010
L	19+10.00	35.00	599269.2163	1529437.3438
L	21+40.00	30.01	599452.1843	1529574.9318
L	21+60.00	-29.89	599506.2002	1529542.2367
L	21+60.00	30.11	599467.0919	1529587.7399

ROW MARKER PERMANENT EASEMENT

ALIGN	STATION	OFFSET	NORTH	EAST
L	17+40.00	61.93	599119.5739	1529348.1519
L	17+50.00	129.00	599083.4390	1529405.5374
L	18+35.00	62.07	599192.3744	1529410.6500





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:
   B4973_LS_CONTROL.TXT
   B4973_LS_LOCAL.TXT
2. SITE CALIBRATION INFORMATION HAS NOT BEEN PROVIDED FOR THIS PROJECT. IF FURTHER INFORMATION IS NEEDED, PLEASE CONTACT THE LOCATION AND SURVEYS UNIT.
3. PROJECT CONTROL ESTABLISHED USING GLOBAL POSITIONING SYSTEM. NETWORK ESTABLISHED FROM NGS ONLINE POSITIONING SERVICE (OPUS)

▼ INDICATES EXISTING NCGS GEODETIC CONTROL MONUMENTS USED FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.

⬢ INDICATES GEODETIC CONTROL MONUMENTS USED OR SET FOR HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.

■ INDICATES BASELINE MONUMENTS SET FOR LOCAL HORIZONTAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.

⬖ INDICATES BENCHMARKS USED OR SET FOR VERTICAL PROJECT CONTROL BY THE NCDOT LOCATION AND SURVEYS UNIT.

BL

POINT	DESC.	NORTH	EAST	ELEVATION	L STATION	OFFSET
1	B4973-1	598587.4770	1528733.4560	583.79	OUTSIDE PROJECT LIMITS	
3	BL-3	599076.0420	1529228.8780	581.68	14+28.77	3.85 RT
4	BL-4	599505.2980	1529619.9010	579.16	OUTSIDE PROJECT LIMITS	
2	NCGS PENNEY	599937.6810	1530036.7300	579.56	OUTSIDE PROJECT LIMITS	

L

TYPE	STATION	NORTH	EAST
PC	10+00.00	598658.5782	1528759.6983
PT	12+00.00	598783.1957	1528916.0768
PC	14+28.25	598931.5888	1529089.5094
PT	15+81.34	599039.6102	1529197.7700
PC	18+10.55	599213.4415	1529347.1717
PT	18+87.29	599272.8179	1529395.7774
PC	20+81.68	599426.1454	1529515.2676
PT	21+58.42	599485.5218	1529563.8732
POT	22+98.39	599591.6758	1529655.1087

BM1 ELEVATION = 581.76
N 598809 E 1528900
L STATION 10+05 30 LEFT
RR SPIKE IN POWER POLE

BM2 ELEVATION = 580.82
N 599839 E 1529923
L STATION 19+58
N 45°25'31.6" E DIST 504.12
RR SPIKE IN TREE

NOTE: DRAWING NOT TO SCALE

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
B-4973	2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

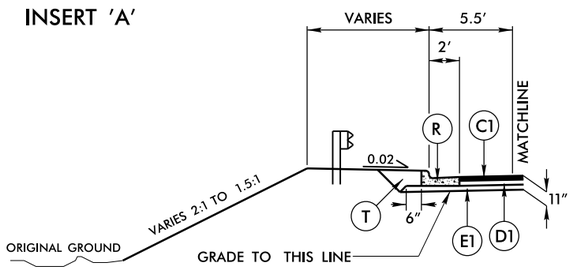
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PAVEMENT SCHEDULE

C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS
C2	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE SF9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1½" IN DEPTH.
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 2½" IN DEPTH OR GREATER GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH.
R1	2' X 6" CONCRETE CURB.
R2	SHOULDER BERM SHOULDER.
S	4" CONCRETE SIDEWALK.
T	EARTH MATERIAL.
U	EXISTING PAVEMENT.
W	VARIABLE DEPTH ASPHALT PAVEMENT.

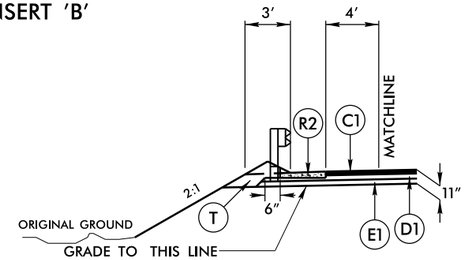
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.

INSERT 'A'

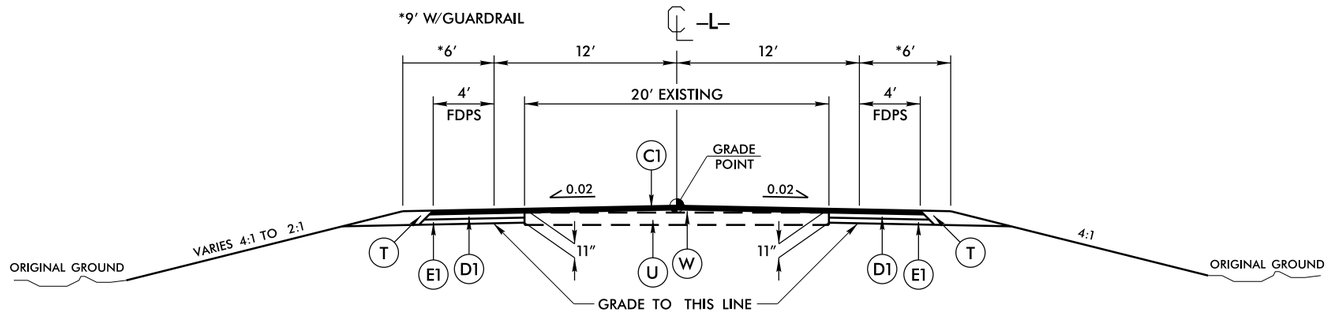


USE INSERT 'A' IN CONJUNCTION WITH TYPICAL SECTION NO. 2
LT. FROM STA. 15+50.00 TO STA. 15+97.39
LT. FROM STA. 18+05.30 TO STA. 18+67.00

INSERT 'B'

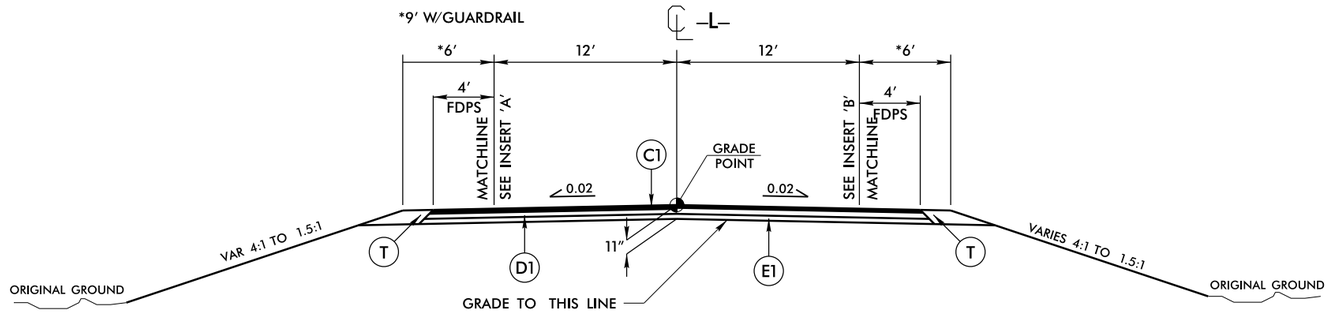


USE INSERT 'B' IN CONJUNCTION WITH TYPICAL SECTION NO. 2
RT. FROM STA. 18+16.70 TO STA. 18+25.00



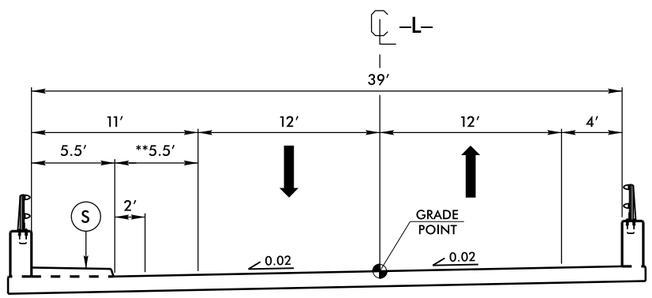
TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1
FROM STA. 12+00.00 TO STA. 13+00.00
TRANSITION FROM EXISTING TO TYP. SECT. NO. 1
FROM STA. 13+00.00 TO STA. 14+25.00
FROM STA. 19+65.00 TO STA. 20+60.00
FROM STA. 20+60.00 TO STA. 21+60.00
TRANSITION FROM TYP. SECT. NO. 1 TO EXISTING



TYPICAL SECTION NO. 2

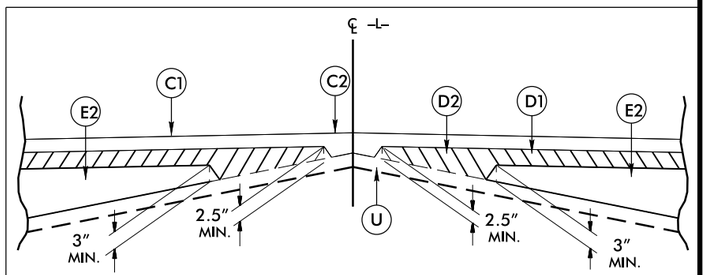
USE TYPICAL SECTION NO. 2
FROM STA. 14+25.00 TO STA. 16+27.00
FROM STA. 17+87.00 TO STA. 19+65.00



TYPICAL SECTION NO. 3

**ADDITIONAL 1.5' ADDED FOR DRAINAGE PURPOSES

USE TYPICAL SECTION NO. 3
FROM STA. 16+27.00 TO STA. 17+87.00



Detail Showing Method of Wedging

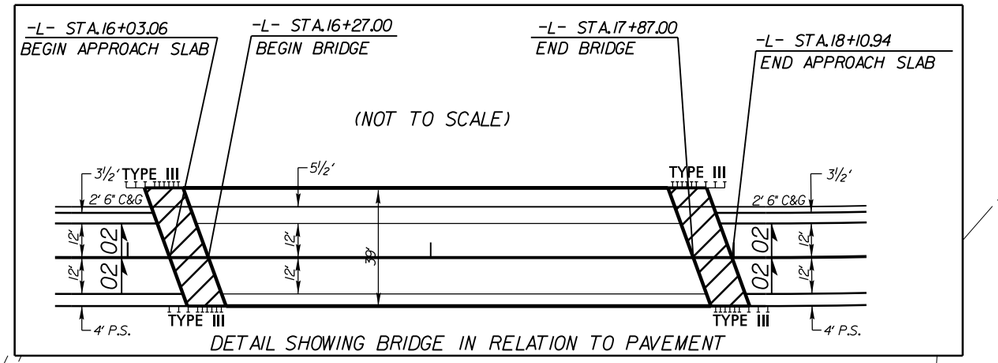
PROJECT REFERENCE NO.	SHEET NO.
B-4973	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

8/17/99

REVISIONS

R/W REV.: ADDED ADDITIONAL DEED BOOK INFORMATION TO PARCEL 5. WTB 12/19/12

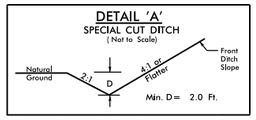


DETAIL SHOWING BRIDGE IN RELATION TO PAVEMENT

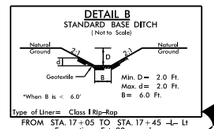
SEE SHEET 5 FOR -L- PROFILE

-L-

PI Sta 11+00.04	PI Sta 15+04.94	PI Sta 18+48.93	PI Sta 21+20.06
Δ = 3° 59' 58.9" (LT)	Δ = 8° 46' 15.8" (LT)	Δ = 2° 44' 53.1" (LT)	Δ = 2° 44' 53.1" (RT)
D = 1° 59' 59.5"	D = 5° 43' 46.5"	D = 3° 34' 51.6"	D = 3° 34' 51.6"
L = 200.00'	L = 153.08'	L = 76.74'	L = 76.74'
T = 100.04'	T = 76.69'	T = 38.38'	T = 38.38'
R = 2,865.00'	R = 1,000.00'	R = 1,600.00'	R = 1,600.00'



FROM STA. 12+50 TO STA. 14+00 -L- LT



Type of Liner= Class I Rip-Rap
FROM STA. 17+05 TO STA. 17+45 -L- Lt
Excavation: Est. 90 cu yds
Rip Rap: Est. 15 ton CII
Geotextile: Est. 700 sq. ft.

NAD 83/NSRS 2007

-L- PC Sta. 10+00.00
BEGIN TIP PROJECT B-4973
-L- PT Sta. 12+00.00
-L- PC Sta. 14+28.25
-L- STA.16+03.06
BEGIN APPROACH SLAB
-L- PT Sta. 15+81.34
-L- STA.16+27.00
BEGIN BRIDGE
-L- STA.17+87.00
END BRIDGE
-L- STA.18+10.94
END APPROACH SLAB
-L- PC Sta. 18+10.55
-L- PT Sta. 18+87.29
-L- POT Sta. 22+98.39
END TIP PROJECT B-4973
-L- Sta. 21+60.00

THE UNITED STATES OF AMERICA
DB 573 PG 333
1

GLENN B. HACKNEY, JR
LYNNE HACKNEY
DB 9456 PG 308
3

JPL HOLDINGS II, LLC
DB 9010 PG 291
DB 9010 PG 295
5

JAMES HUNTLEY
KAREN HUNTLEY
DB 1612 PG 134

CHAD EUGENE SMITH
DB 5372 PG 143
2

AFFORDABLE STORAGE
DB 3201 PG 207
4

DONALD W. BRADFORD
CAROL P. BRADFORD
DB 918 PG 64
6

CRAVER PROPERTIES, OF CONCORD, LLC
DB 3438 PG 171
7

-L- PC Sta. 20+81.68
-L- PT Sta. 21+58.42

BL-3
-BL- PINC 11+95.80

BL-4
-BL- PINC 17+76.46

N 08°12'31" W
109.24'

N 13°27'05" W
207.14'

N 27°40'34" W
82.59'

N 45°51'10" W
(392.72' TOTAL)
356.22'

N 49°26'56" E -L-

N 40°40'40.3" E

N 37°55'47.2" E -L-

N 37°12'09" E
103.64'

N 28°32'28" E
557.06'

S 84°50'55" E
210.51'

S 27°21'55" E
234.62'

S 22°23'36" E
323.55'

S 57°44'26" E
255.94'

I-STORY BRICK ARMORY
I-STORY METAL
I-STORY BLOCK GARAGE
I-STORY BRICK
METAL WAREHOUSE
GRAVEL
CONC.
BST
BST - PRIVATE RUNWAY
I-STORY METAL SIDING
CONCRETE STAIRS

RETAIN 24" RCP
EXISTING R/W
12" DIP
8" UNK TYPE
4" STEEL
6" UNK TYPE
8" CHL W/ BARB WIRE
4 SBW
15" RCP
72" CMP
30" RCP
18" RCP
4' P.S.
25' INC.
100' TAPER
TRANSITIONAL CURB
CLASS B RIP RAP EST. 8 TONS EST. Geotextile 21 S.Y.
CLASS B RIP-RAP EST. 1 TONS EST. Geotextile 5 S.Y.
CLASS I RIP RAP EST. 15 TONS EST. Geotextile 55 S.Y.
CLASS II RIP RAP (STRUCTURE PAY ITEM)
CLASS I RIP RAP EST. 35 TONS EST. Geotextile 120 S.Y.
TL-3 GRAU 350
TL-3 GRAU 380
TL-3 w/MH
TYPE III
REMOVE
CONVERT DI
End SBG 18+25 -L-
SEE DETAIL 'A'
SEE DETAIL 'B'
CHORD
DUKE ENERGY EASEMENT 68' WIDE
IRISH CREEK BUFFALO CREEK
PL-CENTER OF CREEK
SR 1157 WILSHIRE AVENUE SW
20' BST
CYPVC 20' POWER EASEMENT 10' DUKE ENERGY EASEMENT 68' WIDE

BM #1
-BL- STA 7+74
41' LEFT
ELEV=581.76'

WIRE=625.02'
GROUND=581.76'
WIRE=624.63'
GROUND=581.71'
WIRE=624.93'
GROUND=582.28'
WIRE=625.02'
GROUND=582.26'
WIRE=629.19'
WIRE=629.17'
WIRE=618.47'
WIRE=630.97'

+00.00 29.88' 60.00'
+00.00 60.00'
+30.00 60.00'
+00.00 30.12'
+55.00 30.09' 40.00'
+05.00 30.00'
+00.00 60.00' 72.00'
+05.00 61.95' 72.00'
+40.00 61.93'
+10.00 30.00' 62.00'
+50.00 129.00'
+95.00 40.68' 110.00'
+20.00 42.80' 70.00'
+27.29 41.05'
+60.00 29.89'
+40.00 30.01'
+60.00 30.11'
+10.00 35.00'
+70.00 63.00'
+35.00 62.07'

0401 2GI Type 'D'
0402
0403
0404
0405
0406
0407
0408
0409
0410
0411
0412
0413
0414
0415
0416
0417
0418

I9-DEC-2012 10:35
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5/14/99

SEE SHEET 4 FOR -L- PLAN

PROJECT REFERENCE NO.	SHEET NO.
B-4973	5

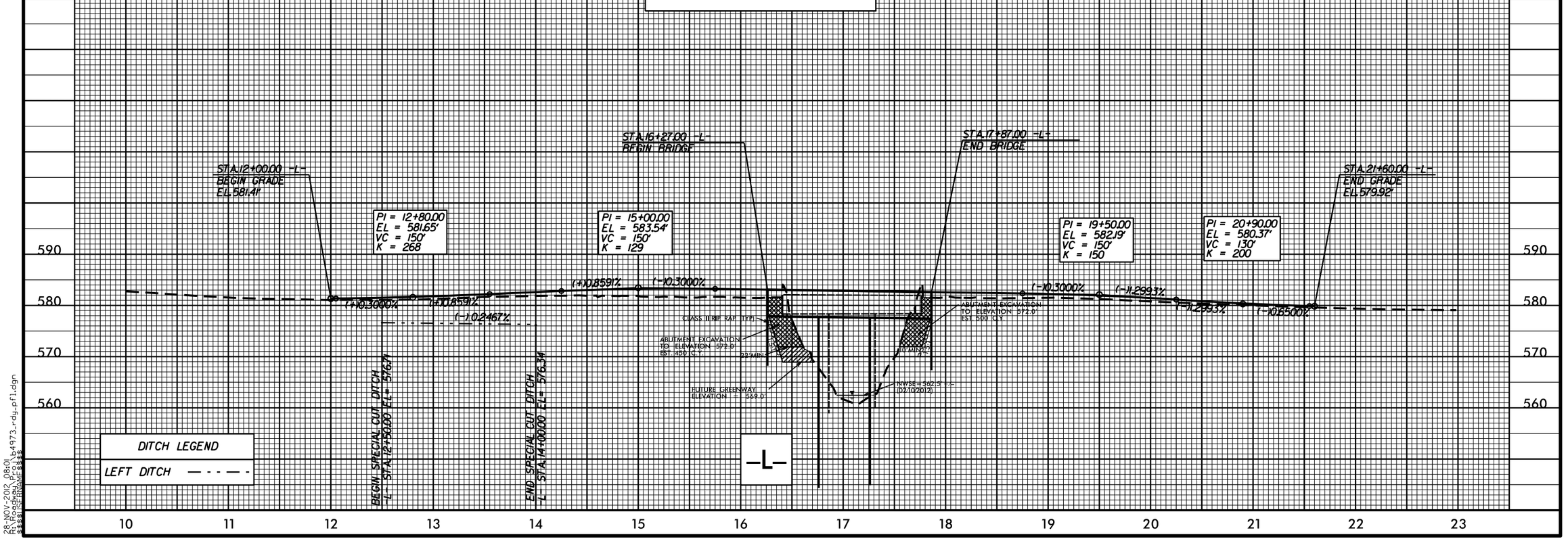
ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

BRIDGE HYDRAULIC DATA

DESIGN DISCHARGE	= 5630	CFS
DESIGN FREQUENCY	= 25	YRS
DESIGN HW ELEVATION	= 574.1	FT
BASE DISCHARGE	= 7280	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 575.2	FT
OVERTOPPING DISCHARGE	= 10950	CFS
OVERTOPPING FREQUENCY	= 500	YRS
OVERTOPPING ELEVATION	= 578.8	FT
	=	FT
DATE OF SURVEY	= 2/10/12	
W.S. ELEVATION AT DATE OF SURVEY	= 562.5+/-	FT



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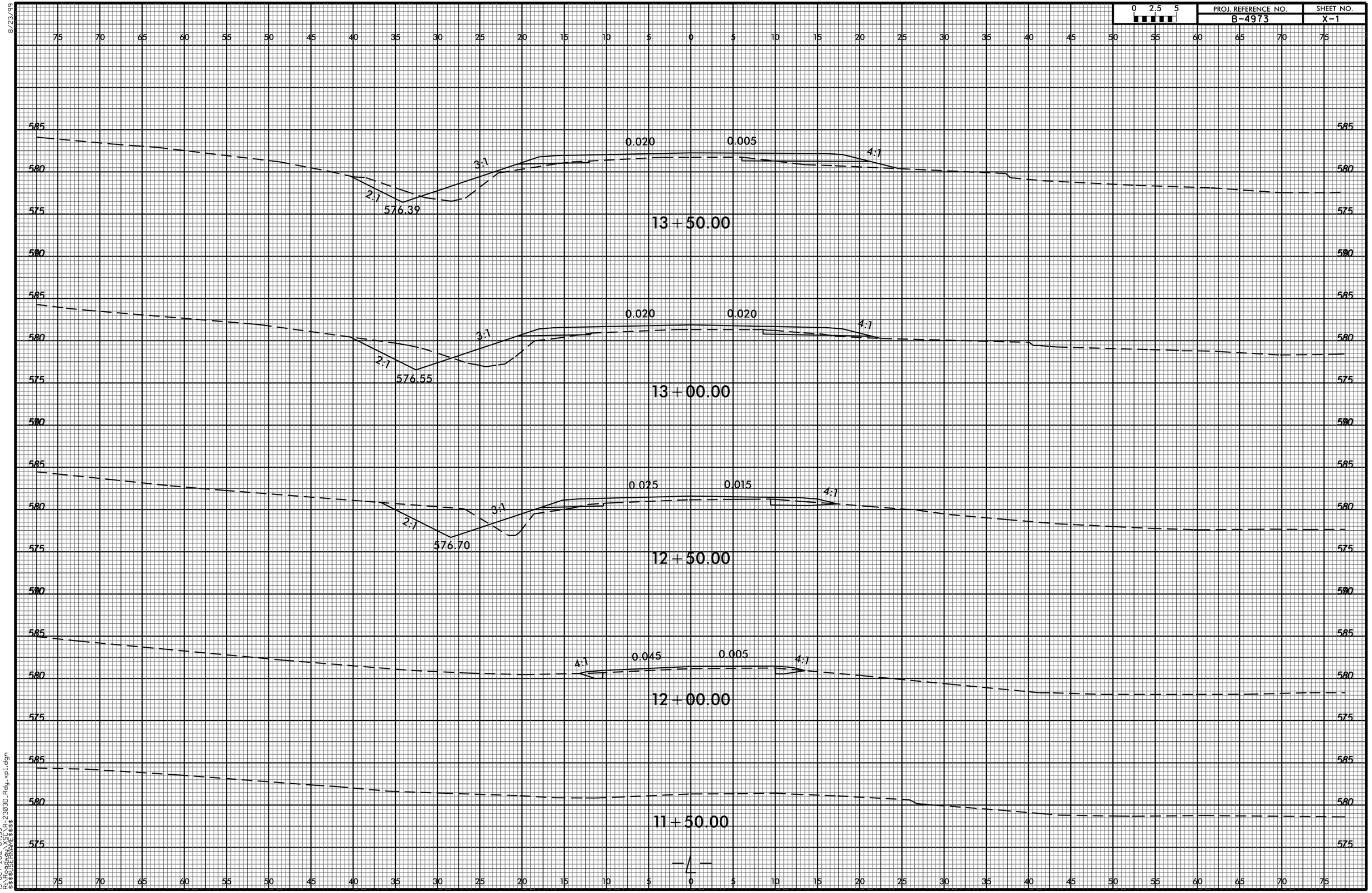
58.00'
E ENERGY
ASEMENT
58' WIDE
48"DIP
60.00'
SS
TUE
TUE
TUE
TUE
TUE
TUE
3.5'
150.44'
NSITIONAL
CURB
30"
RCP
BEGIN C&G
0404
RETAIN
0403
15"
TYPE III
4"STEEL
TL-3 GRAU 350
12'
12'
0403
0402
0404
CB
8"UNK TYPE
8' OHW W/ BARB WIRE
TYPE III
JS
JS
JS
JS
JS
JS
JS
JS
43°16'17" W
43.93'
45" W
58.47'
11" W
31.50'
N 68°05'28" W
45.41'
R
W
4 SBW
#271
N 40° 40' 40.3" E
EIP
IRIST
S 6
TYPE III
TYPE III
40.68'
110.00'
+20.00
42.80'
70.00'
SEE DETAIL B
+87.29
41.05'
3.5'
JS
JS
JS
JS
CHORD
JS
JS
R
W
EW&C&G
CB
15" RCP-IV
CB
0405
0408
12'
12'
0402
0401
8"UNK
TB
2GI
SP
SWWS
0406
JB
w/MH
TL-3 GRAU 3

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4973	X-1



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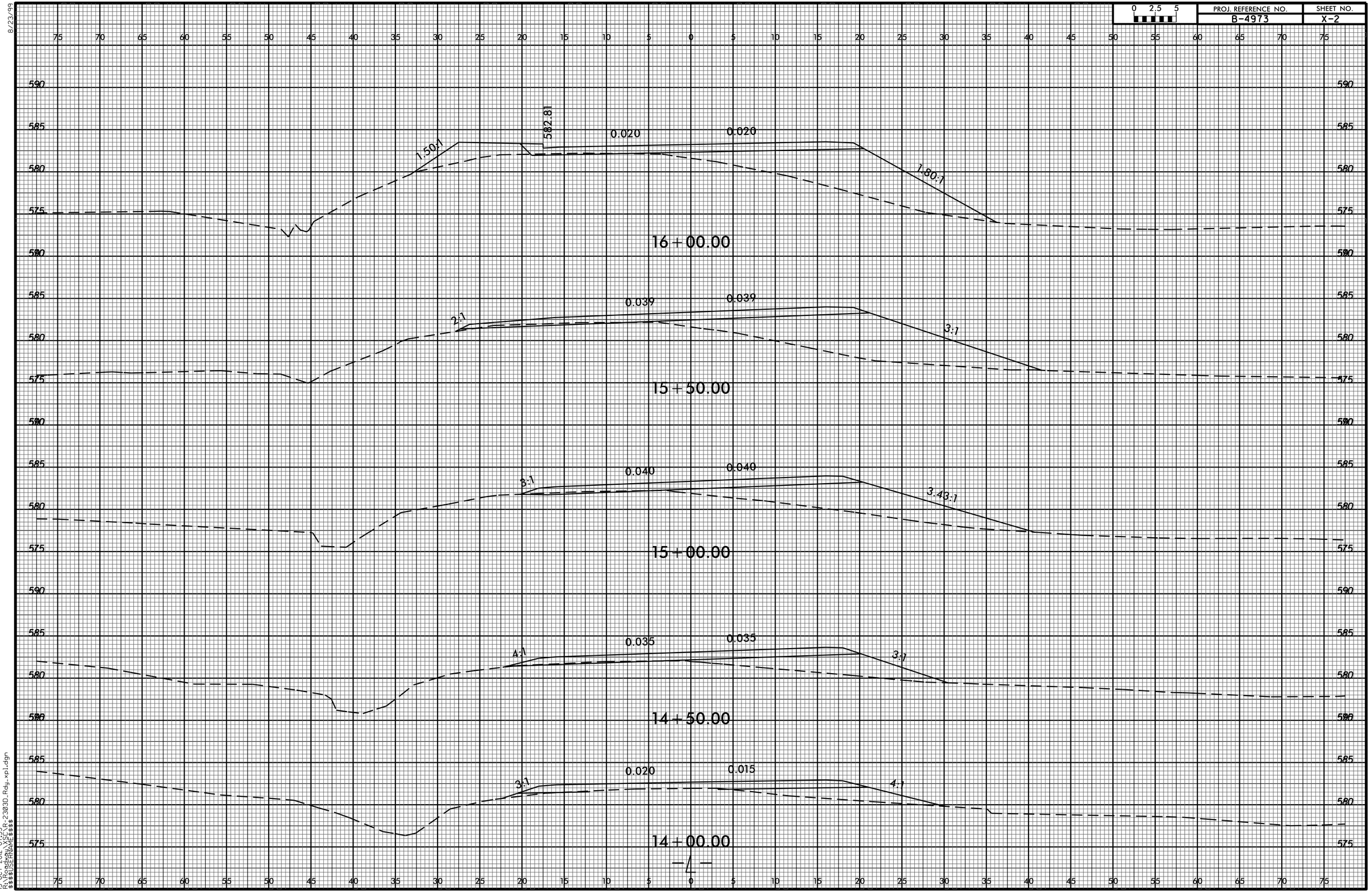
8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4973	X-2



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8/23/99

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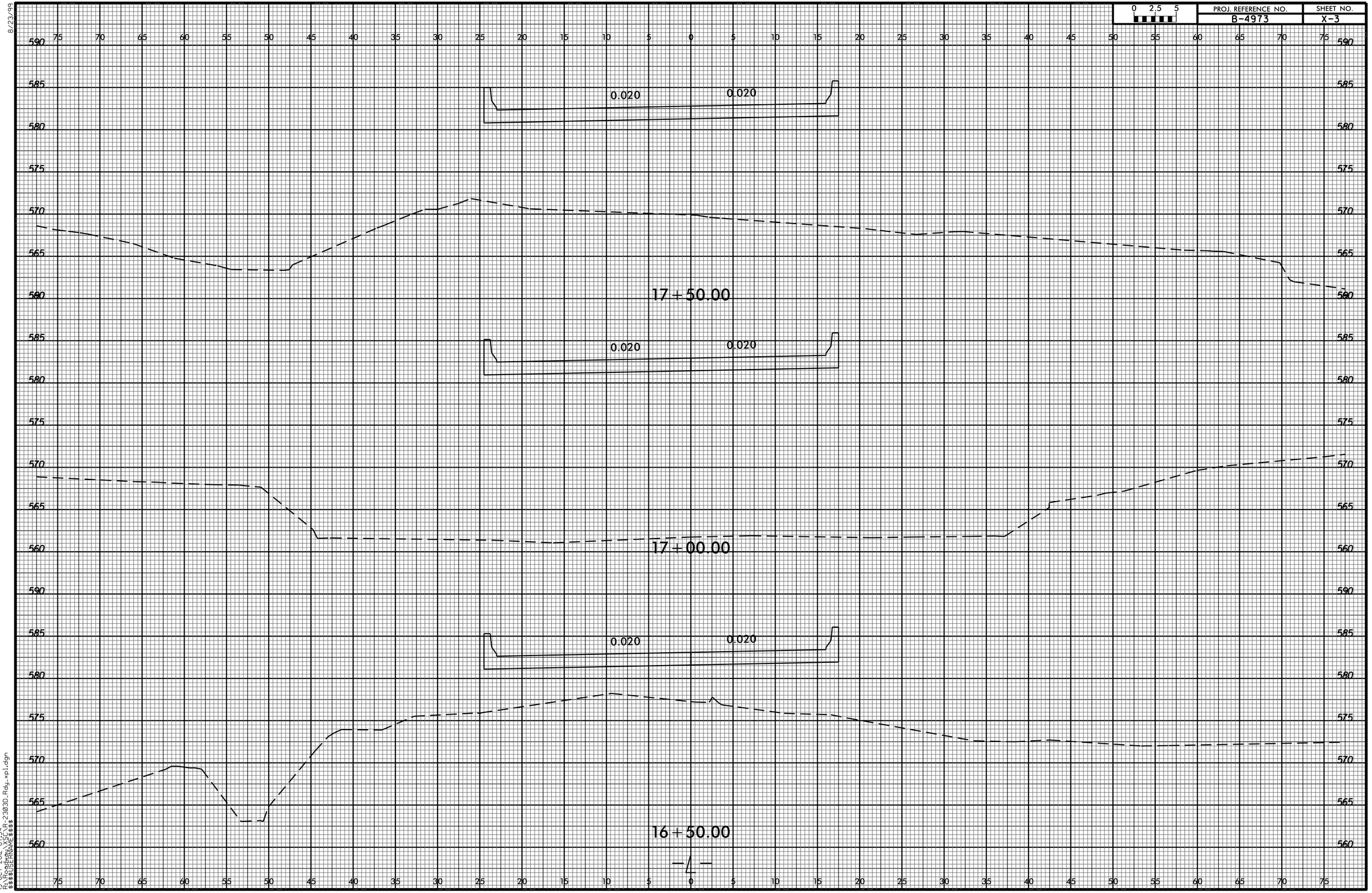
	B-4973	X-3



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8/23/99

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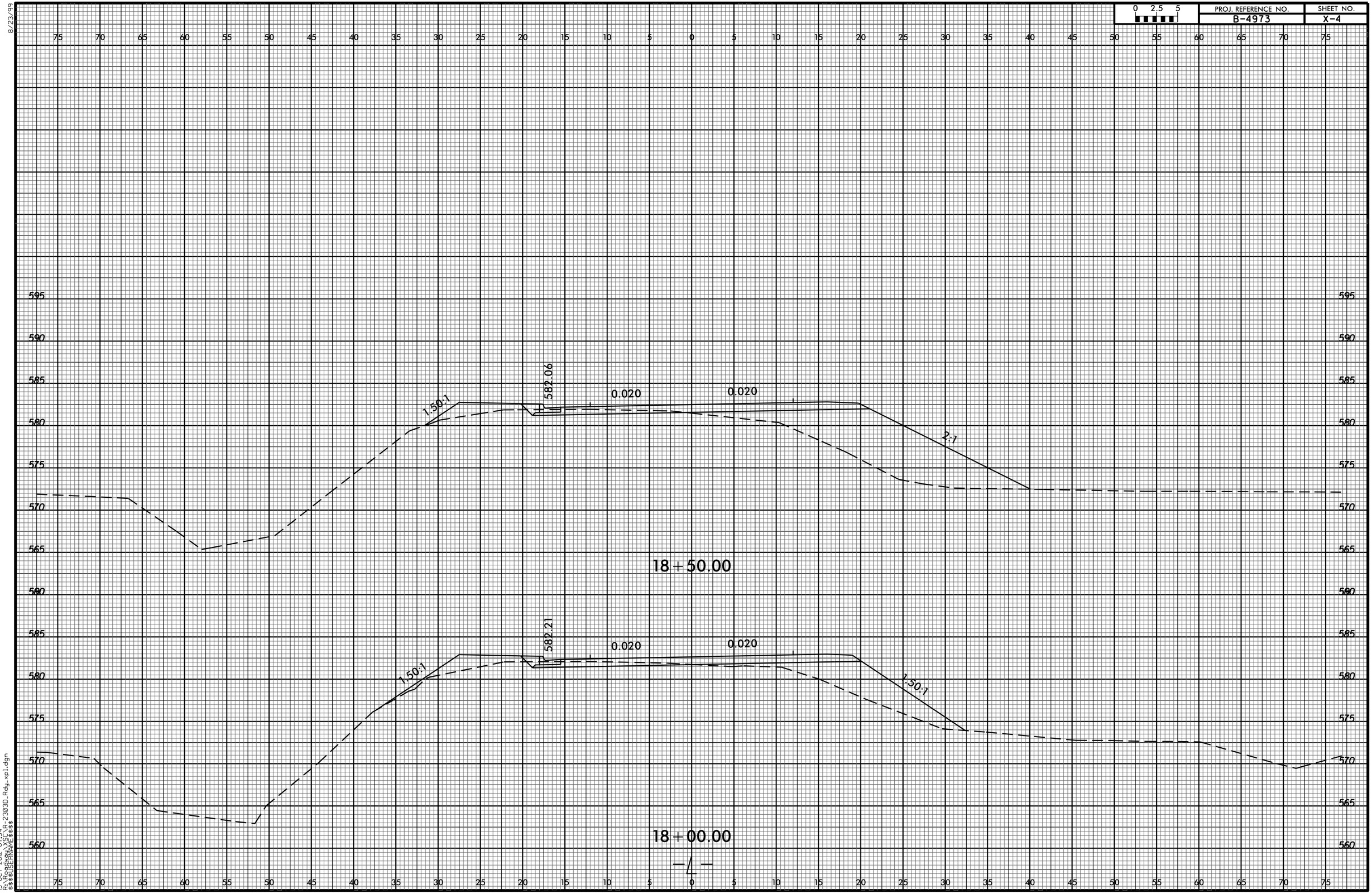
	B-4973	X-4



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8/23/99

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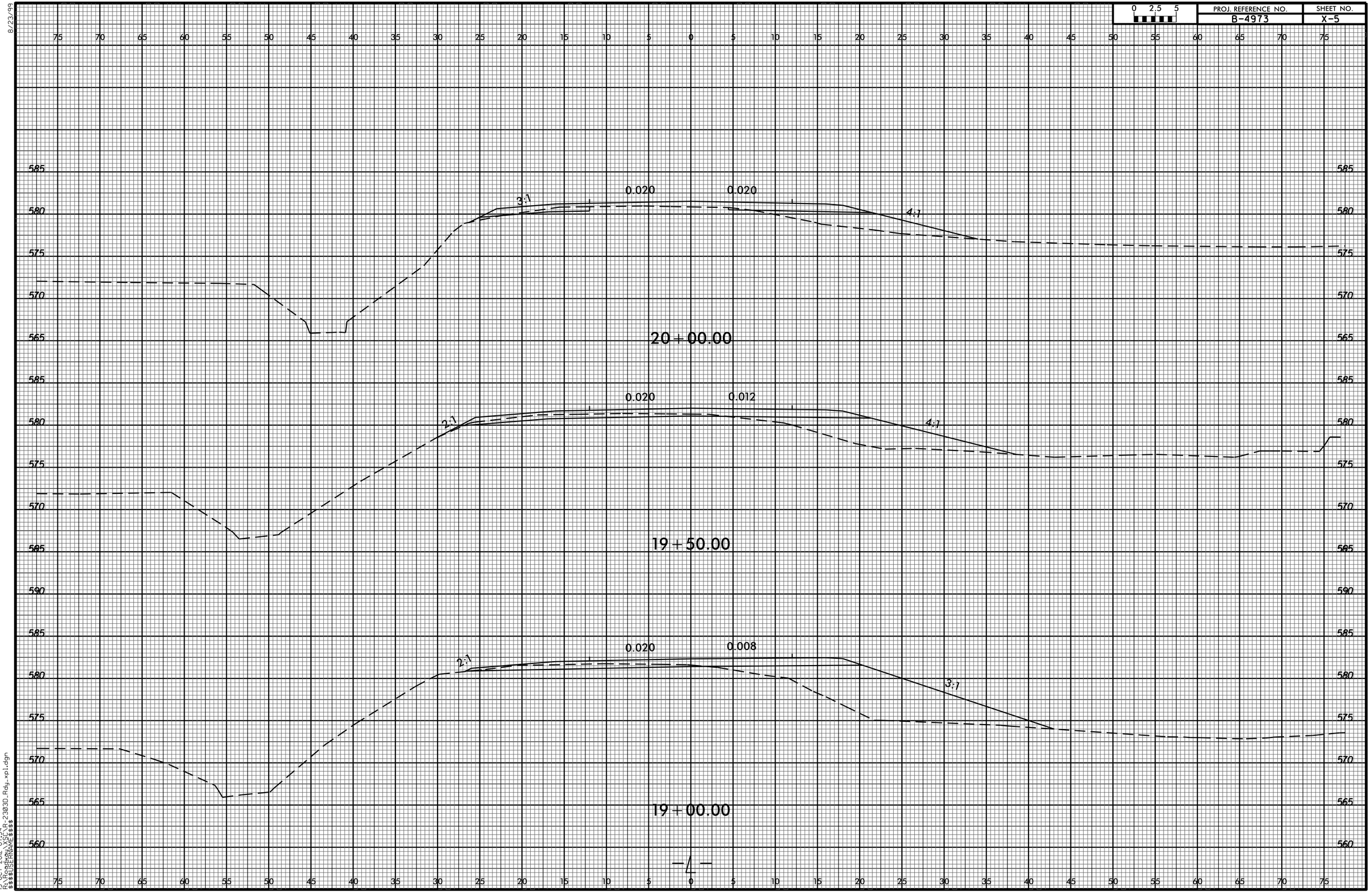
	B-4973	X-5



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8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-4973	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

580 575 585 580 575 570 565

22+00.00

3:1 0.023 0.001 4:1

21+50.00

2:1 0.020 0.019 4:1

21+00.00

2.40:1 0.020 0.020 4:1

20+50.00

—4—

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