STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAT L. MCCRORY
GOVERNOR

ANTHONY J. TATA
SECRETARY

September 30, 2015

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

ATTN: Mr. Steve Kichefski
NCDOT Coordinator

Subject: **Application for Section 404 Nationwide Permits 23, 33, Section 401 Water Quality Certification and Catawba River Mainstem Buffer Certification** for the Proposed Bridge Replacement on SR 1302 over Lake Norman, Iredell County, Federal Aid Project No. BRZ-1302(41); Division 12; TIP No. B-5142; $570.00 debit WBS No. 42303.1.1.

Dear Madam:

The North Carolina Department of Transportation (NCDOT) proposes to replace bridge number 57 on SR 1302 over Lake Norman/Cornelius Creek in Iredell County with a 3 span, 200' concrete girder bridge on a new alignment to the north. The existing bridge will be utilized as an onsite detour during construction. There will be 162 lf (0.67ac) of permanent impacts to surface waters consisting of rock embankment and excavation for the new bridge. There will be no temporary impacts to surface waters resulting from this action. This project will result in 12,598 square feet of allowable impacts to the Catawba River Mainstem riparian buffer from roadway fill. No mitigation is required for the permanent surface water impacts nor for the buffer impacts for this project.

Please see enclosed copies of the Pre-Construction Notification (PCN), US Fish and Wildlife Concurrence Letter, Stormwater Management Plan, Permit Drawings, Buffer Drawings and Roadway Plansheets. A 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 & ENVIRONMENTAL ANALYSIS UNIT
1598 MAIL SERVICE CENTER
RALEIGH NC 27699-1548

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 January 19, 2016 and a review date of December 1, 2015; however, the let date may advance as additional funding becomes available.

A letter from USFWS dated September 17, 2015, granted concurrence for the northern long-eared bat and Indiana bat with a call of May Affect, Not Likely to Adversely Affect for both species and a tree cutting moratorium was issued for the project extending from April 15 to August 15.

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 Jeff Hemphill at (919) 707-6126.

Sincerely,

for 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: 23,33	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 57 over Cornelius Creek (Lake Norman) on SR 1302 (Cornelius Road)
2b. County:	Iredell
2c. Nearest municipality / town:	Mooresville
2d. Subdivision name:	*not applicable*
2e. NCDOT only, T.I.P. or state project no:	B-5142

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) 707-6126
3g. Fax no.:	(919) 212-5785
3h. Email address:	jhemphill@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: 35.62640 (DD.DDDDDD) Longitude: - 80.86650 (-DD.DDDDDD)
1c. Property size:	8.5 acres
2. Surface Waters	
2a. Name of nearest body of water (stream, river, etc.) to proposed project:	Cornelius Creek (Lake Norman)
2b. Water Quality Classification of nearest receiving water:	WS-IV; B;CA
2c. River basin:	Catawba
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: Forest communities, agriculture, historic mill site, minor residential development	
3b. List the total estimated acreage of all existing wetlands on the property: 0.0 acre	
3c. List the total estimated linear feet of all existing streams (intermittent and perennial) on the property: N/A	
3d. Explain the purpose of the proposed project: To replace a structurally deficient and functionally obsolete bridge.	
3e. Describe the overall project in detail, including the type of equipment to be used: The project involves replacing a 5 span 200-foot I beam bridge with a 200-foot, 3-span concrete girder bridge on a new alignment to the north with the existing bridge utilized as an onsite detour. Standard road building equipment, such as trucks, dozers, and cranes will be used.	
4. Jurisdictional Determinations	
4a. Have jurisdictional wetland or stream determinations by the Corps or State been requested or obtained for this property / project (including all prior phases) in the past? Comments:	☐ Yes ☒ No ☐ Unknown
4b. If the Corps made the jurisdictional determination, what type of determination was made?	☐ Preliminary ☐ Final
4c. If yes, who delineated the jurisdictional areas? Name (if known):	Agency/Consultant Company: Other:
4d. If yes, list the dates of the Corps jurisdictional determinations or State determinations and attach documentation.	
5. Project History	
5a. Have permits or certifications been requested or obtained for this project (including all prior phases) in the past?	☐ 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	
Site 1 ☐ P ☐ T Utility Impacts			☐ Yes ☐ No	☐ Corps ☐ DWQ	
				2g. **Total wetland impacts**	

2h. Comments:

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			☐ PER ☐ INT	☒ Corps ☐ DWQ		
Site 1 ☐ P ☐ T			☐ PER ☐ INT	☐ Corps ☐ DWQ		
Site 2 ☐ P ☐ T			☐ PER ☐ INT	☐ Corps ☐ DWQ		
Site 3 ☐ P ☐ T			☐ PER ☐ INT	☐ Corps ☐ DWQ		
Site 4 ☐ P ☐ T			☐ PER ☐ INT	☐ Corps ☐ DWQ		
Site 5 ☐ P ☐ T			☐ PER ☐ INT	☐ Corps ☐ DWQ		
					3h. **Total stream and tributary impacts**	0 Perm 0 Temp

3i. Comments:

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	Lake Norman	Roadway fill	Lake	0.67
O2 ☐ P ☐ T				
O3 ☐ P ☐ T				
O4 ☐ P ☐ T				
		4f. Total open water impacts		0.67ac Permanent 0 Temporary

4g. Comments:

5. Pond or Lake Construction

If pond or lake construction proposed, then complete the chart below.

5a. Pond ID number	5b. Proposed use or purpose of pond	5c. Wetland Impacts (acres)			5d. Stream Impacts (feet)			5e. Upland (acres)
		Flooded	Filled	Excavated	Flooded	Filled	Excavated	Flooded
P1								
P2								
	5f. Total							

5g. Comments:

5h. Is a dam high hazard permit required?	☐ Yes ☐ No If yes, permit ID no:
5i. Expected pond surface area (acres):	
5j. Size of pond watershed (acres):	
5k. Method of construction:	

6. Buffer Impacts (for DWQ)

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

6a. Project is in which protected basin?			☐ Neuse ☐ Tar-Pamlico ☐ Other: ☒ Catawba ☐ Randleman		
6b. Buffer impact number – Permanent (P) or Temporary (T)	6c. Reason for impact	6d. Stream name	6e. Buffer mitigation required?	6f. Zone 1 impact (square feet)	6g. Zone 2 impact (square feet)
B1 ☒ P ☐ T	Bridge/Roadway Embankment		☐ Yes ☒ No	8,356	4,242
B2 ☐ P ☐ T			☐ Yes ☐ No		
B3 ☐ P ☐ T			☐ Yes ☐ No		
		6h. **Total buffer impacts**		8,356	4,242
6i. Comments:					

D. Impact Justification and Mitigation

1. Avoidance and Minimization

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

See Stormwater Management Plan. Existing roadway drainage consists of grass shoulders with ditches. Existing ditches flow through buffers in grass swales to lake. Proposed roadway includes hazardous spill basin / dry detention basins that collect roadway drainage and discharge on each side of bridge. The existing bridge will be utilized as an onsite detour.

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

Best Management Practices for Surface Waters will be used during all phases of 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
	☐ DWQ ☐ Corps
2c. If yes, which mitigation option will be used for this project?	☐ Mitigation bank ☐ Payment to in-lieu fee program ☐ Permittee Responsible Mitigation

3. Complete if Using a Mitigation Bank

3a. Name of Mitigation Bank: not applicable

3b. Credits Purchased (attach receipt and letter)	Type	Quantity

3c. Comments:

4. Complete if Making a Payment to In-lieu Fee Program

4a. Approval letter from in-lieu fee program is attached.	☐ Yes
4b. Stream mitigation requested:	0 linear feet
4c. If using stream mitigation, stream temperature:	☐ warm ☐ cool ☐ cold
4d. Buffer mitigation requested (DWQ only):	0 square feet
4e. Riparian wetland mitigation requested:	0 acres
4f. Non-riparian wetland mitigation requested:	0 acres
4g. Coastal (tidal) wetland mitigation requested:	0 acres

4h. Comments:

5. Complete if Using a Permittee Responsible Mitigation Plan

5a. If using a permittee responsible mitigation plan, provide a description of the proposed mitigation plan.

6. Buffer Mitigation (State Regulated Riparian Buffer Rules) – required by DWQ				
6a. Will the project result in an impact within a protected riparian buffer that requires buffer mitigation?			☐ Yes	☒ No
6b. If yes, then identify the square feet of impact to each zone of the riparian buffer that requires mitigation. Calculate the amount of mitigation required.				
Zone	6c. Reason for impact	6d. Total impact (square feet)	Multiplier	6e. Required mitigation (square feet)
Zone 1				
Zone 2				
	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 no, explain why. Comments:	☒ Yes ☐ No
2. Stormwater Management Plan	
2a. What is the overall percent imperviousness of this project?	N/A
2b. Does this project require a Stormwater Management Plan?	☒ Yes ☐ No
2c. If this project DOES NOT require a Stormwater Management Plan, explain why:	
2d. If this project DOES require a Stormwater Management Plan, then provide a brief, narrative description of the plan: See attached.	
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): NA	☐ Phase II ☐ NSW ☐ USMP ☐ Water Supply Watershed ☐ Other:
3c. Has the approved Stormwater Management Plan with proof of approval been attached?	☐ Yes NA ☐ 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 NA
5. DWQ 401 Unit Stormwater Review	
5a. Does the Stormwater Management Plan meet the appropriate requirements?	☐ Yes ☐ No NA
5b. Have all of the 401 Unit submittal requirements been met?	☐ Yes ☐ No NA

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

5. Endangered Species and Designated Critical Habitat (Corps Requirement)		
5a. Will this project occur in or near an area with federally protected species or habitat?	☒ Yes	☐ No
5b. Have you checked with the USFWS concerning Endangered Species Act impacts?	☒ Yes	☐ No
5c. If yes, indicate the USFWS Field Office you have contacted.	☐ Raleigh ☒ Asheville	
5d. What data sources did you use to determine whether your site would impact Endangered Species or Designated Critical Habitat? N.C. Natural Heritage Program database; USFWS-website; biological surveys for protected species listed for Iredell County, which includes Dwarf-flower heartleaf. Biological Conclusions of "No Effect" were rendered for this species. Habitat for the species exists, but surveys conducted in the study area in 2009, 2011 and 2014 resulted in no specimens being found. An eagle survey was conducted in 2014 with no nests observed. Concurrence was received for the NLEB from USFWS on September 17, 2015 with a call of MANLTAA and a tree cutting moratorium from April 15 to August 15.		
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.)	9-30-2015 Date

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Asheville Field Office
160 Zillicoa Street
Asheville, North Carolina 28801

September 17, 2015

Mr. Richard W. Hancock
North Carolina Department of Transportation
Project Development and Environmental Analysis Unit
1598 Mail Service Center
Raleigh, NC 27699-1598

Subject: Endangered Species Concurrence for the Proposed Replacement of Bridge No. 57 on SR 1302 over Lake Norman, Iredell County, North Carolina. TIP B-5142, WBS No. 42303.1.1.

Dear Richard:

We have reviewed your concurrence request and supporting documentation regarding impacts to the federally listed threatened northern long-eared bat (NLEB) (Myotis septentrionalis) for the subject project. We provide the following comments in accordance with the provisions of section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. 1531-1543) (Act).

The North Carolina Department of Transportation (NCDOT) proposes to replace Bridge No 57 over Lake Norman. Some habitat for the NLEB exists in the vicinity of the project and has been evaluated for potential impacts from project implementation. According to the information provided, a search for mines and caves was conducted in the project footprint and within a quarter mile of the project and none were found. The existing bridge was checked for bat use and none was observed. Potential summer roosting habitat clearing is estimated at 0.56 acres.

Based on the absence of wintering habitat, no evidence of bat use on the existing structure, and NCDOT's commitment to restrict tree cutting to the time from August 15 to April 15 (of any year) we agree that implementation of this project is "not likely to adversely affect" NLEB in the project area. In view of this, we believe the requirements under Section 7(c) of the Act are fulfilled. However, obligations under Section 7 of the Act must be reconsidered if: (1) new information reveals impacts of this identified action that may affect listed species or critical habitat in a manner not previously considered, (2) this action is subsequently modified in a manner that was not considered in this review, or (3) a new species is listed or critical habitat is determined that may be affected by the identified action.

If you have questions about these comments, please contact Ms. Marella Buncick of our staff at 828/258-3939, Ext. 237. In any future correspondence concerning this project, please reference our Log No. 4-2-15-137.

Sincerely,
- - original signed - -
Janet Mizzi
Field Supervisor

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.0; Released April 2014)

WBS Element: 42303.1.1 **TIP No.:** B-5142 **County(ies):** Iredell

General Project Information

WBS Element:	42303.1.1	**TIP Number:**	B-5142	**Project Type:** Bridge Replacement	**Date:** 3/5/2015
NCDOT Contact:	Shawn Harris	**Contractor / Designer:**	Steven Bondor, Stantec Consulting Inc		
Address:	NCDOT Hydraulics Unit 1020 Birch Ridge Road Raleigh, NC 27610	**Address:**	5565 Centerview Drive, Suite 107 Raleigh, NC 27606		
Phone:	919-707-6725	**Phone:**	919-532-2305		
Email:	shawnharris@ncdot.gov	**Email:**	steven.bondor@stantec.com		
City/Town:	Mooresville	**County(ies):**	Iredell		
River Basin(s):	Catawba	**CAMA County?**	No		
Wetlands within Project Limits?	No				

Project Description

Project Length (lin. miles or feet):	2300 ft	**Surrounding Land Use:**	rural / residential

	Proposed Project	**Existing Site**
Project Built-Upon Area (ac.)	2.3 ac.	1.3 ac.
Typical Cross Section Description:	two 12' travel lanes with 4' paved shoulder	two 11' travel lanes
Annual Avg Daily Traffic (veh/hr/day):	Design/Future: 10,884 / 17,800 Year: 2016 / 2035	Existing: Year:

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

Existing roadway drainage consists of grass shoulders with ditches. Existing ditches flow through buffers in grass swales to lake. Existing bridge includes 3" diameter deck drains at approximate 6' spacing. Proposed roadway includes hazardous spill basin / dry detention basins that collect roadway drainage and discharge on each side of bridge. Proposed bridge does not include deck drains. Roadway includes shoulder berm gutter, pipe system, and ditches directing runoff to the basins. Outfall structure at the basins include sluice gates and pipes with riprap aprons located upstream of buffer zones. Remainder of roadway drainage consists of grass ditches draining to existing outfalls.

Waterbody Information

Surface Water Body (1):	Lake Norman / Cornelius Creek	**NCDWR Stream Index No.:**	11-88-(2)
NCDWR Surface Water Classification for Water Body	**Primary Classification:**	Water Supply IV (WS-IV)	
	Supplemental Classification:	None	
Other Stream Classification:			
Impairments:			
Threatened/Endangered Species?		Comments:	
NRTR Stream ID:		**Buffer Rules in Effect:**	Catawba

Project Includes Bridge Spanning Water Body?	Yes	**Deck Drains Discharge Over Buffer?**	No	**Dissipator Pads Provided in Buffer?**	N/A
Deck Drains Discharge Over Water Body?	No	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)	
(If yes, provide justification in the General Project Narrative)					

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.0; Released April 2014)

WBS Element: 42303.1.1 **TIP No.:** B-5142 **County(ies):** Iredell

Other Best Management Practices

Sheet No.	Stations (Road Projects) or Coordinates (Non-Road Projects)	Surface Water Body	BMP Type	Drainage Area (ac)	New Built-Upon Area (ac)	Volume Treated (ac-ft)	Precipitation Depth Treated over NBUA (in)	BMP Associated w/ Buffer Rules?
5	-L- 17+34 RT	(1)Lake Norman / Cornelius	Dry Detention Basin	2.3	0.8	0.07	1.06	Yes
5	-L- 24+50 RT	(1)Lake Norman / Cornelius	Dry Detention Basin	1.2	0.6	0.05	1.05	Yes

Additional Comments

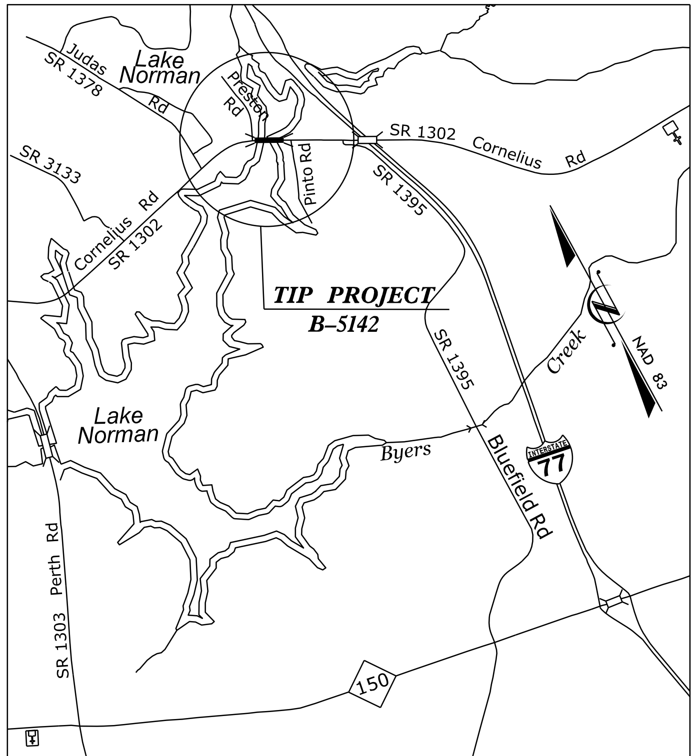
09/08/99

TIP PROJECT: B-5142

CONTRACT: C203662

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

See Sheet 1-A For Index of Sheets



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

IREDELL COUNTY

LOCATION: REPLACE BRIDGE NO. 57 ON SR 1302 OVER CORNELIUS CREEK

WETLAND AND SURFACE WATER IMPACTS PERMIT

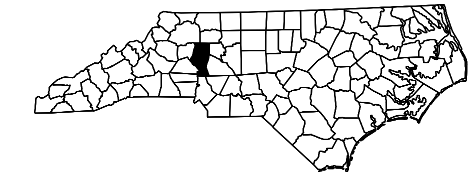
TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURES

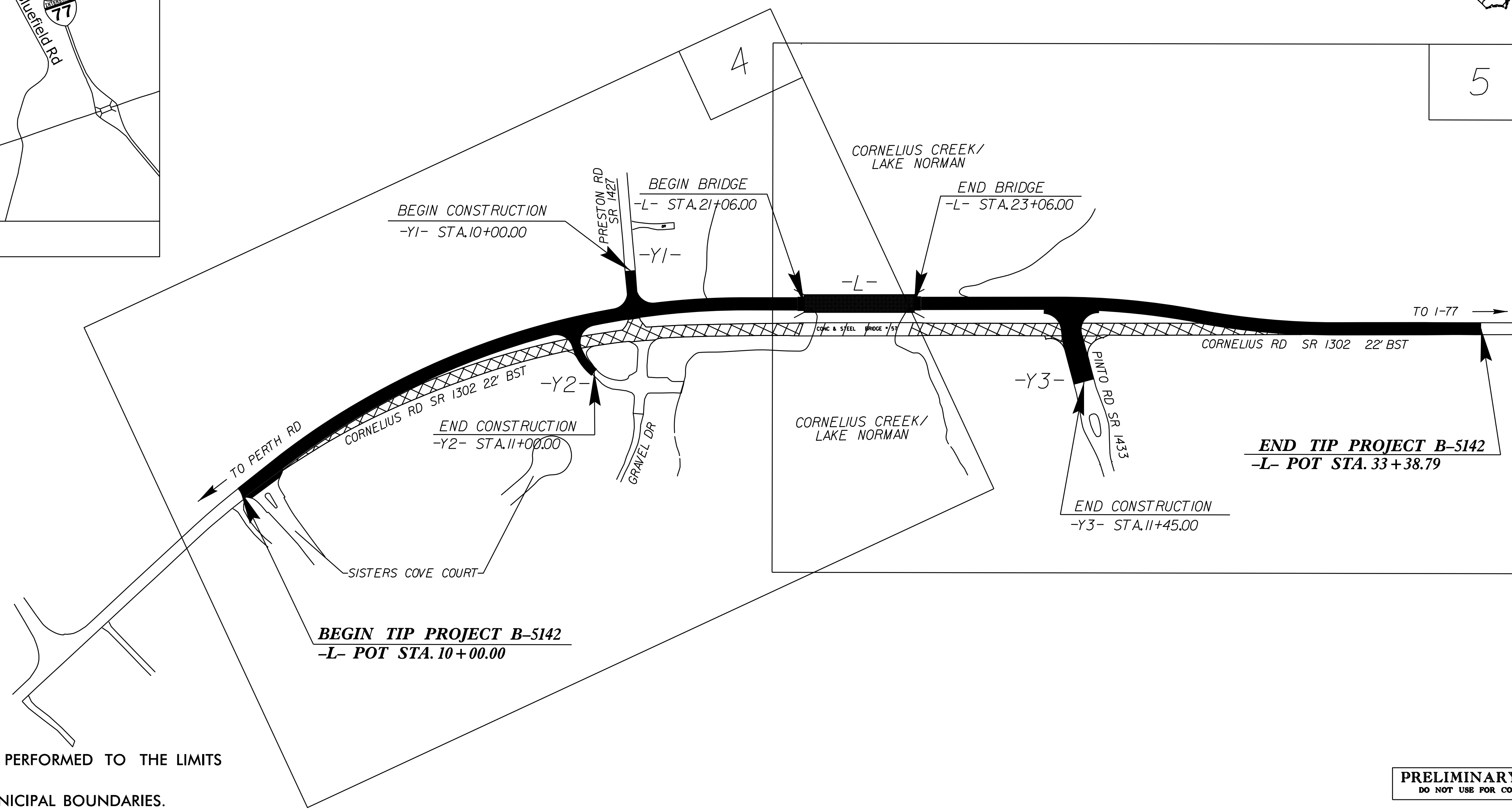
PERMIT DRAWING SHEET 1 OF 8

NAD 83/ NSRS 2007

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5142	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
42303.1.1	BRZ-1302(41)	PE
42303.2.FD1	BRZ-1302(41)	R/W, UTIL
42303.3.FD1	BRZ-1302(41)	CONST.





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

THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

5 2.5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2016 = 10,884
ADT 2036 = 18,164
K = 12 %
D = 70 %
T = 4 % *
V = 60 MPH
* TTST = 3 DUAL 1
FUNC CLASS = Collector
SUB-REGIONAL TIER

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT B-5142 = 0.405 MILES

LENGTH OF STRUCTURE TIP PROJECT B-5142 = 0.038 MILES

TOTAL LENGTH OF TIP PROJECT B-5142 = 0.443 MILES

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

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JANUARY 29, 2015

LETTING DATE:
JANUARY 19, 2016

JASON MOORE, P.E.
PROJECT ENGINEER

BRYAN KEY, P.E.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

DENOTES IMPACTS IN SURFACE WATER

PERMIT DRAWING
SHEET 2 OF 8

PROJECT REFERENCE NO.	SHEET NO.
B-5142	1
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NC GRID
NAD 83/NSRS 2007

SITE 1

C. PRESTON CORNELIUS AND MARSHA H. CORNELIUS

SLF II-NC MAGNOLIA BAYS JV, LLC

AREA UNDER CONSTRUCTION

SISTERS COVE COURT (PRIVATE)

GRADE TO DRAIN TO EXISTING DITCH

DRY DETENTION / HAZARDOUS SPILL BASIN
SEE DETAIL SHEET 2D-01 DDE= 228CY

SEE DRAWING 2G-1 FOR ROCK PLATING AND ROCK EMBANKMENT DETAIL.

CORNELIUS CREEK/ LAKE NORMAN

MATCHLINE SEE SHEET 5 -L- STA. 20+25.00

REVISIONS

8/17/99

2/4/2015
Stantec
B-5142 Permit Drawings 20150204.pdf

DENOTES IMPACTS IN SURFACE WATER

PERMIT DRAWING
SHEET 3 OF 8

PROJECT REFERENCE NO.	SHEET NO.
B-5142	1
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NC GRID
NAD 83/NSRS 2007

SITE 1

MATCHLINE SEE SHEET 5
-L- STA. 20+25.00

SEE DRAWING 2G-1 FOR ROCK PLATING AND ROCK EMBANKMENT DETAIL.

GRADE TO DRAIN TO EXISTING DITCH

DRY DETENTION / HAZARDOUS SPILL BASIN
SEE DETAIL SHEET 2D-01 DDE= 228CY

CL B RIP RAP

REMOVE

PUE

REVISIONS

8/17/99

2/4/2015
Stantec
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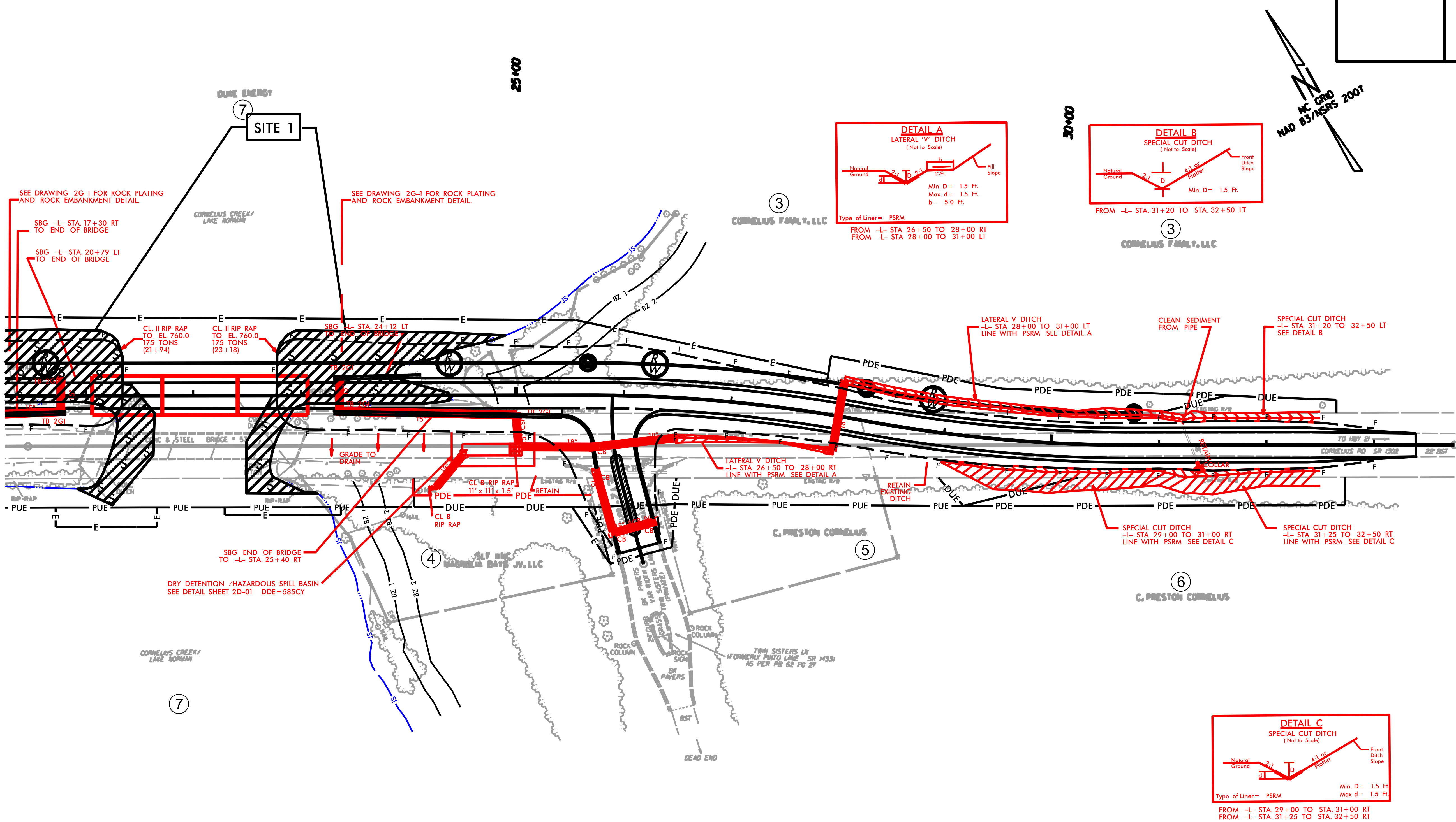
PROJECT REFERENCE NO.	SHEET NO.
B-5142	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING
SHEET 4 OF 8

S S DENOTES IMPACTS IN SURFACE WATER

8/17/99

REVISIONS



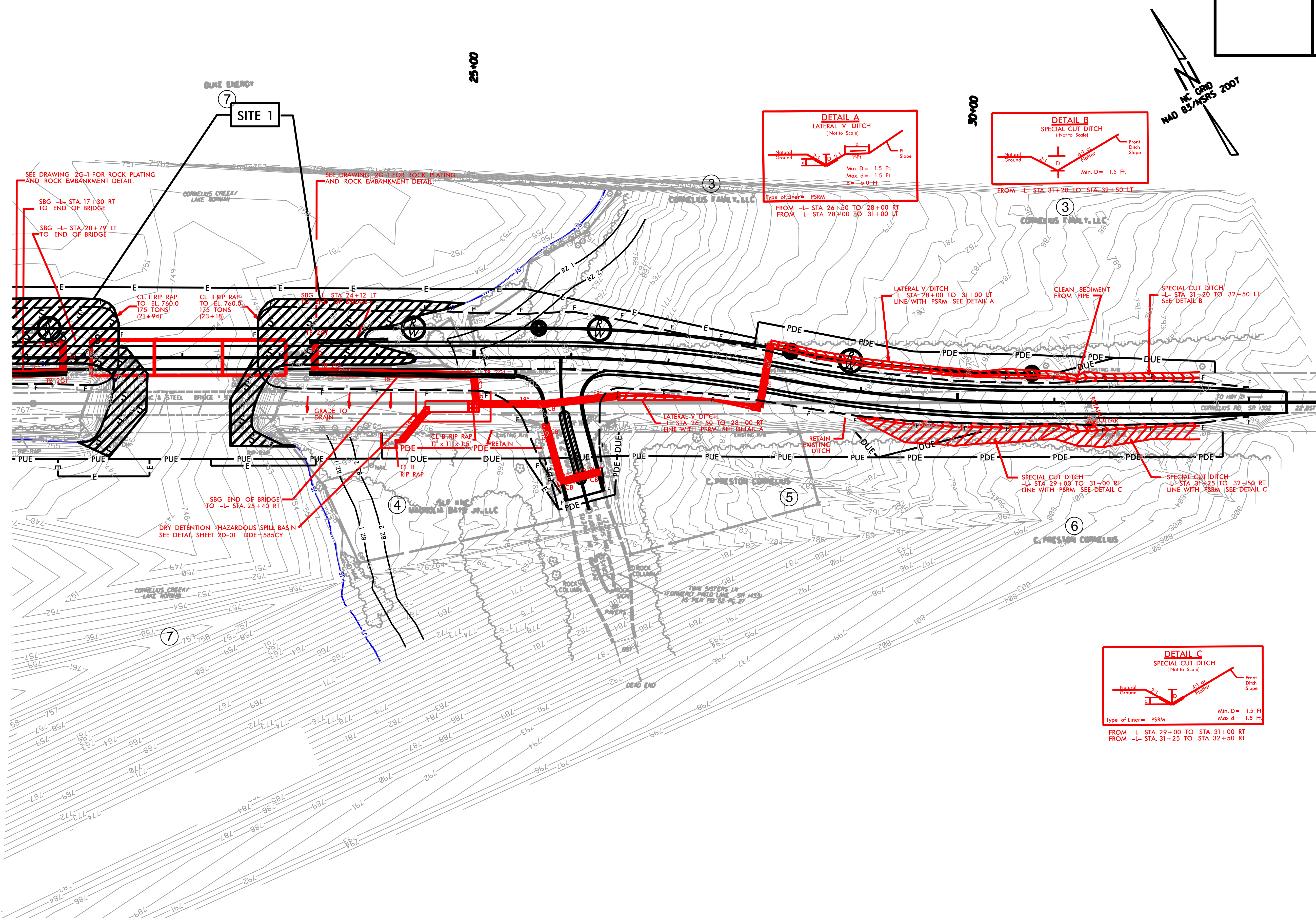
SITE 1
DUKE ENERGY
CORNELIUS CREEK/ LAKE NORMAN
SEE DRAWING 2G-1 FOR ROCK PLATING AND ROCK EMBANKMENT DETAIL.
SBG -L- STA. 17+30 RT TO END OF BRIDGE
SBG -L- STA. 20+79 LT TO END OF BRIDGE
CL. II RIP RAP TO EL. 760.0 175 TONS (21+94)
CL. II RIP RAP TO EL. 760.0 175 TONS (23+18)
SBG -L- STA. 24+12 LT
25+00
30+00
CORNELIUS FAMILY, LLC
DETAIL A
LATERAL 'V' DITCH
(Not to Scale)
Natural Ground
Fill Slope
Min. D= 1.5 Ft.
Max. d= 1.5 Ft.
b= 5.0 Ft.
Type of Liner= PSRM
FROM -L- STA 26+50 TO 28+00 RT
FROM -L- STA 28+00 TO 31+00 LT
DETAIL B
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground
Front Ditch Slope
4:1 or Flatter
Min. D= 1.5 Ft.
FROM -L- STA. 31+20 TO STA. 32+50 LT
NC GRID NAD 83/NSRS 2007
LATERAL V DITCH -L- STA 28+00 TO 31+00 LT LINE WITH PSRM SEE DETAIL A
CLEAN SEDIMENT FROM PIPE
SPECIAL CUT DITCH -L- STA 31+20 TO 32+50 LT SEE DETAIL B
GRADE TO DRAIN
CL B RIP RAP 11' x 11' x 1.5'
CL B RIP RAP
RETAIN
LATERAL V DITCH -L- STA 26+50 TO 28+00 RT LINE WITH PSRM SEE DETAIL A
RETAIN EXISTING DITCH
SPECIAL CUT DITCH -L- STA 29+00 TO 31+00 RT LINE WITH PSRM SEE DETAIL C
SPECIAL CUT DITCH -L- STA 31+25 TO 32+50 RT LINE WITH PSRM SEE DETAIL C
C. PRESTON CORNELIUS
SBG END OF BRIDGE TO -L- STA. 25+40 RT
DRY DETENTION /HAZARDOUS SPILL BASIN SEE DETAIL SHEET 2D-01 DDE=585CY
TWIN SISTERS LN (FORMERLY PHOTO LANE SR 1331) AS PER PB 62 PG 27
ROCK COLUMN
DEAD END
CORNELIUS RD SR 1302
TO HWY 21
DETAIL C
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground
Front Ditch Slope
4:1 or Flatter
Min. D= 1.5 Ft.
Max d= 1.5 Ft.
Type of Liner= PSRM
FROM -L- STA. 29+00 TO STA. 31+00 RT
FROM -L- STA. 31+25 TO STA. 32+50 RT

2/4/2015
STANTEC
B-5142_Permit Drawings_20150204.pdf

PROJECT REFERENCE NO.	SHEET NO.
B-5142	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING
SHEET 5 OF 8

DENOTES IMPACTS IN SURFACE WATER



NC GRID
NAD 83/NSRS 2007
25+00
30+00
SITE 1
DUKE ENERGY
SEE DRAWING 2G-1 FOR ROCK PLATING AND ROCK EMBANKMENT DETAIL
SBG -L- STA. 17+30 RT TO END OF BRIDGE
SBG -L- STA. 20+79 LT TO END OF BRIDGE
CL. II RIP RAP TO EL. 760.0 175 TONS (21+94)
CL. II RIP RAP TO EL. 760.0 175 TONS (23+18)
SBG -L- STA. 24+12 LT
CORNELIUS CREEK/ LAKE NORMAN
CORNELIUS FAMILY, LLC
GRADE TO DRAIN
CL B RIP RAP 11' x 11' x 1.5'
RETAIN
CL B RIP RAP
SBG END OF BRIDGE TO -L- STA. 25+40 RT
DRY DETENTION /HAZARDOUS SPILL BASIN SEE DETAIL SHEET 2D-01 DDE=585CY
LATERAL V DITCH -L- STA 26+50 TO 28+00 RT LINE WITH PSRM SEE DETAIL A
LATERAL V DITCH -L- STA 28+00 TO 31+00 LT LINE WITH PSRM SEE DETAIL A
CLEAN SEDIMENT FROM PIPE
SPECIAL CUT DITCH -L- STA 31+20 TO 32+50 LT SEE DETAIL B
RETAIN EXISTING DITCH
SPECIAL CUT DITCH -L- STA 29+00 TO 31+00 RT LINE WITH PSRM SEE DETAIL C
SPECIAL CUT DITCH -L- STA 31+25 TO 32+50 RT LINE WITH PSRM SEE DETAIL C
C. PRESTON CORNELIUS
CORNELIUS RD. SR 1302
TO HWY 21
DEAD END
ROCK COLUMN
DETAIL A
LATERAL 'V' DITCH
(Not to Scale)
Natural Ground
Fill Slope
1"/Ft.
Min. D = 1.5 Ft.
Max. d = 1.5 Ft.
b = 5.0 Ft.
Type of Liner = PSRM
FROM -L- STA 26+50 TO 28+00 RT
FROM -L- STA 28+00 TO 31+00 LT
DETAIL B
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground
4:1 or Flatter
Front Ditch Slope
Min. D = 1.5 Ft.
FROM -L- STA. 31+20 TO STA. 32+50 LT
DETAIL C
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground
4:1 or Flatter
Front Ditch Slope
Min. D = 1.5 Ft.
Max d = 1.5 Ft.
Type of Liner = PSRM
FROM -L- STA. 29+00 TO STA. 31+00 RT
FROM -L- STA. 31+25 TO STA. 32+50 RT

REVISIONS

8/17/99

2/4/2015
STANTEC
B-5142_Permit Drawings_20150204.pdf

5/28/99

PERMIT DRAWING
SHEET 6 OF 8

PROJECT REFERENCE NO.	SHEET NO.
B-5142	6
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PI = 13+00.00
EL = 786.80'

PI = 18+15.00
EL = 767.94'

(-)10.2900%

(-)13.6612%

BEGIN PROFILE
-L- STA.10+00.00
ELEV.787.67

(-)13.6612%

PROP GRADE

(+)10.9000%

G.P. ELEV = 771.47 -L- STA. 22+06
SKEW = 90°
1@ 65', 1@ 70', 1@ 65', 45" CONCRETE GIRDER

EXIST. BRIDGE TO BE REMOVED

4'-0" END BENT

100 YR WSEL = 760.2'
EXCAVATE EXISTING EMBANKMENT FROM EL. 747.0 AT 2HW SLOPE, TYP.

WSEL=757.95' (5/28/2014)

CL. RIP RAP TO TOP OF BERM

LOW SIDE LOW STEEL

3.5' MIN TYP

1.5 H :1V

-L-

10+00 11+00 12+00 13+00 14+00 15+00 16+00 17+00 18+00 19+00 20+00 21+00 22+00 23+00 24+00

730 740 750 760 770 780 790 800 810

PI = 26+98.00
EL = 775.80'

PI = 29+75.00
EL = 785.49'

PI =30+50.000
EI = 786.50

END RT. DITCH GRADE
-L- STA. 31+00.000
EI = 789.50

BEG. RT. DITCH GRADE
-L- STA. 31+25.000
EI = 789.50

PI =31+50.000
EI = 789.00

PI =32+00.000
EI = 792.50

END RT. DITCH GRADE
-L- STA. 32+050.000
EL = 794.50

END PROFILE
-L- STA. 33+38.79
ELEV. 801.47

(+)10.9000%

(+)13.3756%

(+)14.3926%

(+) 5.0%
(+) 6.0%
(+) 2.0%
(+) 3.3%
(+) 6.0%
(+) 3.4%
(+) 5.6%
(+) 6.9%
(+) 2.0%
(+) 5.3%
(+) 4.0%
(+) 7.0%
(+) 4.0%
(+) 4.0%

BEG. RT. DITCH GRADE
-L- STA. 26+50.00
EL = 768.50

PI =27+00.000
EI = 771.00

PI =27+50.000
EI = 774.00

END RT. DITCH GRADE
-L- STA. 28+00.00
EI = 775.00

BEG. LT. DITCH GRADE
-L- STA. 28+00.000
EL = 776.00

PI =30+00.000
EI = 784.00

PI =29+50.000
EI = 781.00

PI =30+50.000
EI = 785.70

PI =29+50.000
EI = 781.50

BEG. RT. DITCH GRADE
-L- STA. 29+00.000
EI = 780.20

END LT. DITCH GRADE
-L- STA. 31+00.000
EI = 788.50

BEG. LT. DITCH GRADE
-L- STA. 31+20.000
EI = 788.40

END LT. DITCH GRADE
-L- STA. 32+50.000
EL = 794.00

PI =32+00.000
EI = 792.00

PI =31+50.000
EI = 790.00

LEFT DITCH

RIGHT DITCH

-L-

24+00 25+00 26+00 27+00 28+00 29+00 30+00 31+00 32+00 33+00 34+00

730 740 750 760 770 780 790 800 810

2/4/2015
Stantec
B-5142_Permit Drawings_20150204.pdf

NOTE: PROPOSED UPPER LIMITS OF ROCK EMBANKMENT BASED ON 761' CONTOUR ELEVATION WICHI IS 1' ABOVE NORMAL POOL. ACTUAL LIMIT WILL VARY BASED ON WATER ELEVATION AT TIME OF CONSTRUCTION.

PERMIT DRAWING
SHEET 7 OF 8

PROJECT REFERENCE NO.	SHEET
B-5142	_

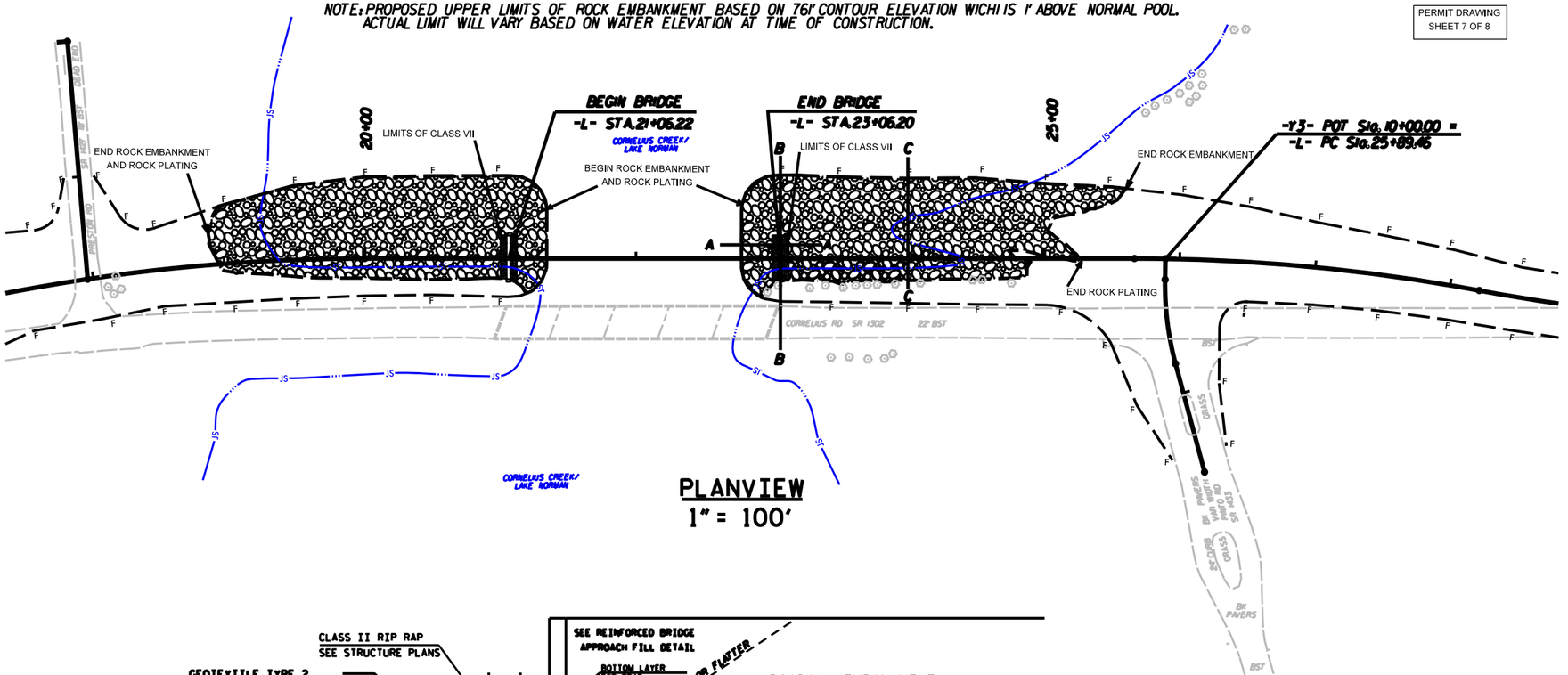
GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL PE # ENGINEER PRINT NAME

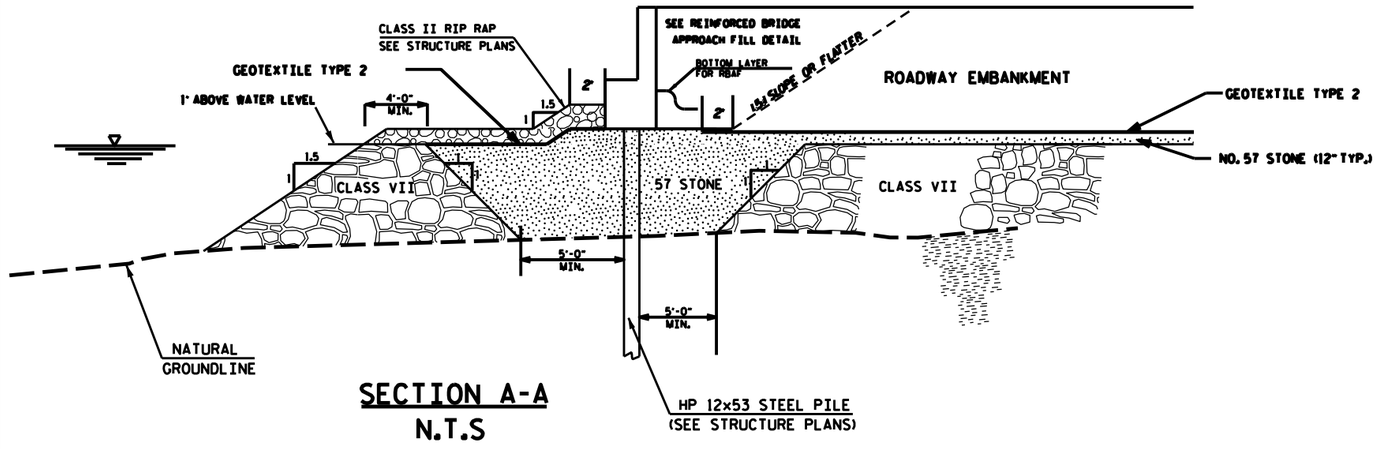
SIGNATURE DATE

ENGINEER

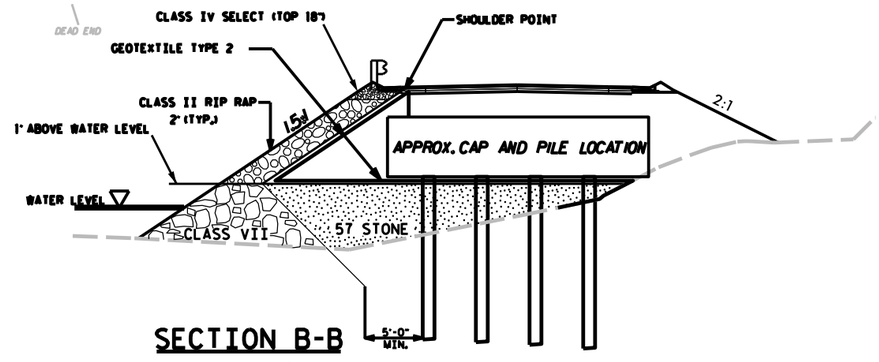
SIGNATURE DATE



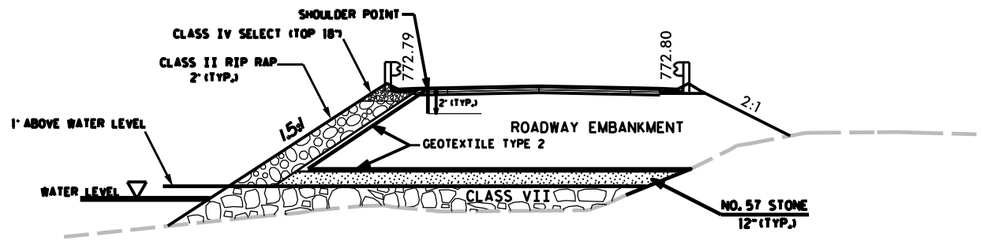
PLANVIEW
1" = 100'



SECTION A-A
N.T.S



SECTION B-B
N.T.S



SECTION C-C
N.T.S

ROCK EMBANKMENT
18+85 TO 21+34 & 23+78 TO 25+59 –L–

* ESTIMATED QUANTITIES	
SELECT MATERIAL, CLASS VII	9,200 TONS
SELECT MATERIAL, CLASS VI (NO. 57 STONE)	8,200 TONS
GEOTEXTILE TYPE 2 FOR DRAINAGE	3,900 SY

ROCK PLATING
18+85 TO 21+34 & 23+78 TO 25+28 –L–

* ESTIMATED QUANTITIES	
PLAIN RIP RAP, CLASS II	950 TONS
GEOTEXTILE TYPE 2 FOR DRAINAGE	900 SY

* ESTIMATED QUANTITIES BASED ON WATER ELEVATION OF 760'

NOTES ON PLANS:

CONSTRUCT ROCK EMBANKMENT 1' ABOVE WATER SURFACE AT TIME OF CONSTRUCTION AND ACCORDING TO THE SPECIAL PROVISION FOR ROCK EMBANKMENT.

CONSTRUCT ROCK PLATING FROM TOP OF ROCK EMBANKMENT TO THE SHOULDER POINT AND ACCORDING TO SECTION 275 OF THE STANDARD SPECIFICATIONS.

PREPARED BY: J.E. BEVERLY	DATE: 10-2014
REVIEWED BY: SHANE CLARK, PE	DATE: 10-2014

GEOTECHNICAL ENGINEERING UNIT

- ☐ EASTERN REGIONAL OFFICE
- ☒ WESTERN REGIONAL OFFICE
- ☐ CONTRACT OFFICE

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

ROCK PLATING AND
ROCK EMBANKMENT DETAIL

REVISIONS

NO.	BY	DATE	NO.	BY	DATE
1	_	_	3	_	_
2			4		

2/4/2015
Stantec
B-5142_Permit Drawings_20150204.pdf

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. 18+86 TO 25+58	ROCK EMBANKMENT & EXCAVATION						0.67		162		
TOTALS*:								0.67		162		

*Rounded totals are sum of actual impacts

NOTES:
Impacts from Pipe Piles @Interior Bents:
Total Area = 2(bents) x 4(pipe piles) x 3.14= 25.12 sq.ft.

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
3/5/2015
Iredell
B-5142
42303.1.1

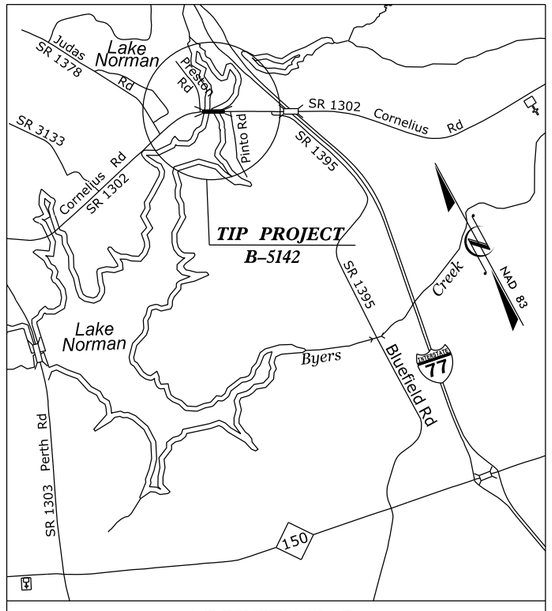
09/08/99

TIP PROJECT: B–5142

CONTRACT: C203662

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

See Sheet 1-A For Index of Sheets



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

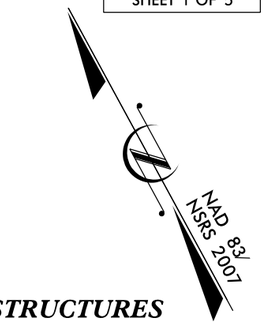
IREDELL COUNTY

LOCATION: REPLACE BRIDGE NO. 57 ON SR 1302 OVER CORNELIUS CREEK

TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURES

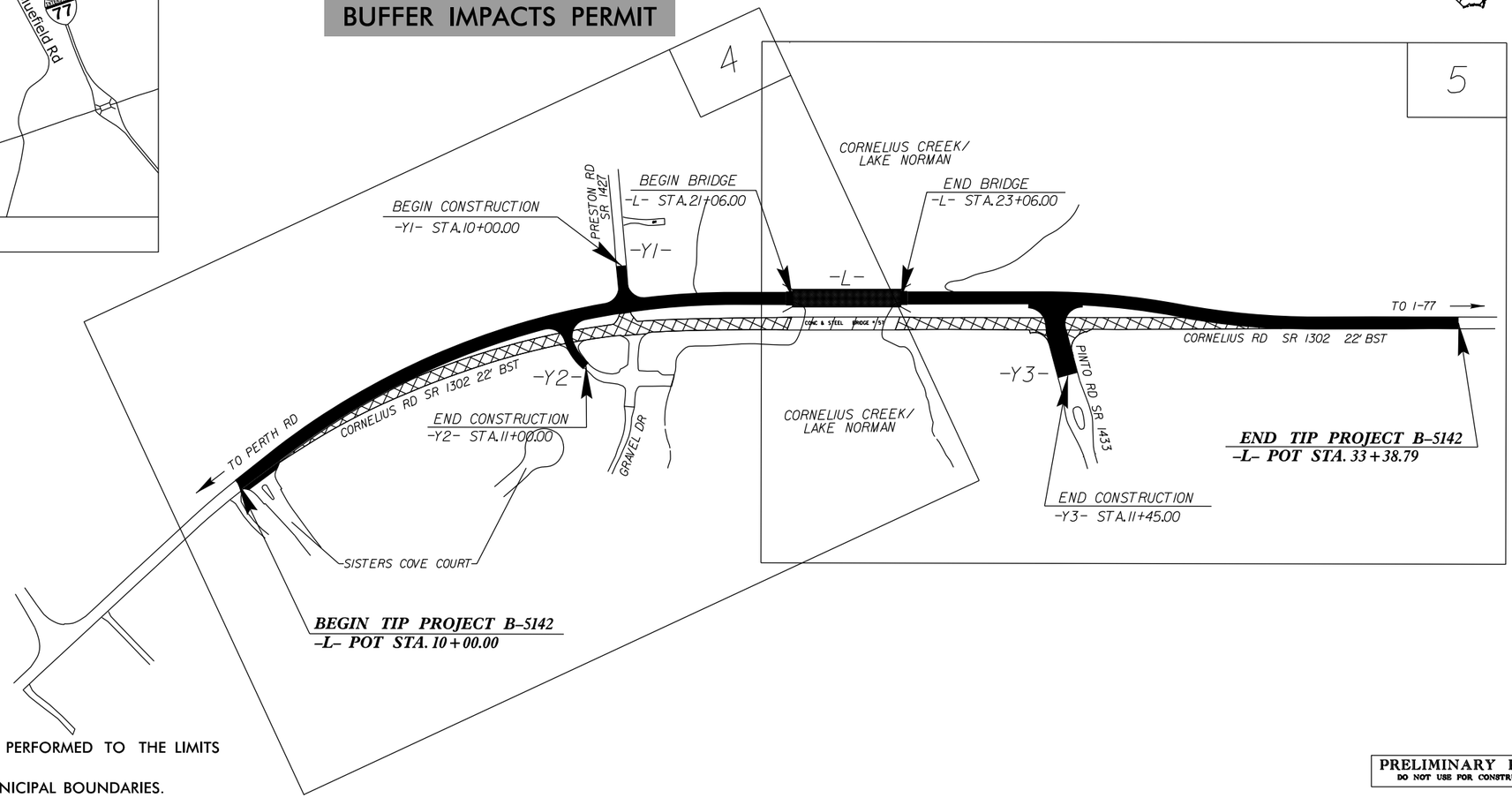
BUFFER IMPACTS PERMIT

BUFFER DRAWING SHEET 1 OF 5



STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B–5142	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
42303.1.1	BRZ–1302(41)	PE
42303.2.FD1	BRZ–1302(41)	R/W, UTIL
42303.3.FD1	BRZ–1302(41)	CONST.

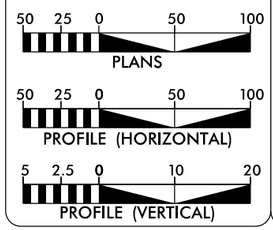


CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.

THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES



DESIGN DATA

ADT 2016 = 10,884
ADT 2036 = 18,164
K = 12 %
D = 70 %
T = 4 % *
V = 60 MPH
* TTST = 3 DUAL 1
FUNC CLASS = Collector
SUB–REGIONAL TIER

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT B–5142 = 0.405 MILES

LENGTH OF STRUCTURE TIP PROJECT B–5142 = 0.038 MILES

TOTAL LENGTH OF TIP PROJECT B–5142 = 0.443 MILES

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

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: JANUARY 29, 2015

LETTING DATE: JANUARY 19, 2016

JASON MOORE, P.E.
PROJECT ENGINEER

BRYAN KEY, P.E.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

P.E.
SIGNATURE:

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION ·

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

PERMIT DRAWING
SHEET 2 OF 5

PROJECT REFERENCE NO.	SHEET NO.
B-5142	1
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NC GRID
NAD 83/NSRS 2007

15:00

SITE 1

C. PRESTON CORNELIUS AND MARSHA H. CORNELIUS

MAGNOLIA BAYS JV, LLC

SEE DRAWING 2G-1 FOR ROCK PLATING AND ROCK EMBANKMENT DETAIL.

CORNELIUS CREEK/ LAKE NORMAN DUKE ENERGY

GRADE TO DRAIN TO EXISTING DITCH

AREA UNDER CONSTRUCTION

SISTERS COVE COURT (PRIVATE)

DRY DETENTION / HAZARDOUS SPILL BASIN
SEE DETAIL SHEET 2D-01 DDE= 228CY

CL B RIP RAP

REMOVE

MATCHLINE SEE SHEET 5
-L- STA. 20+25.00

REVISIONS

8/17/99

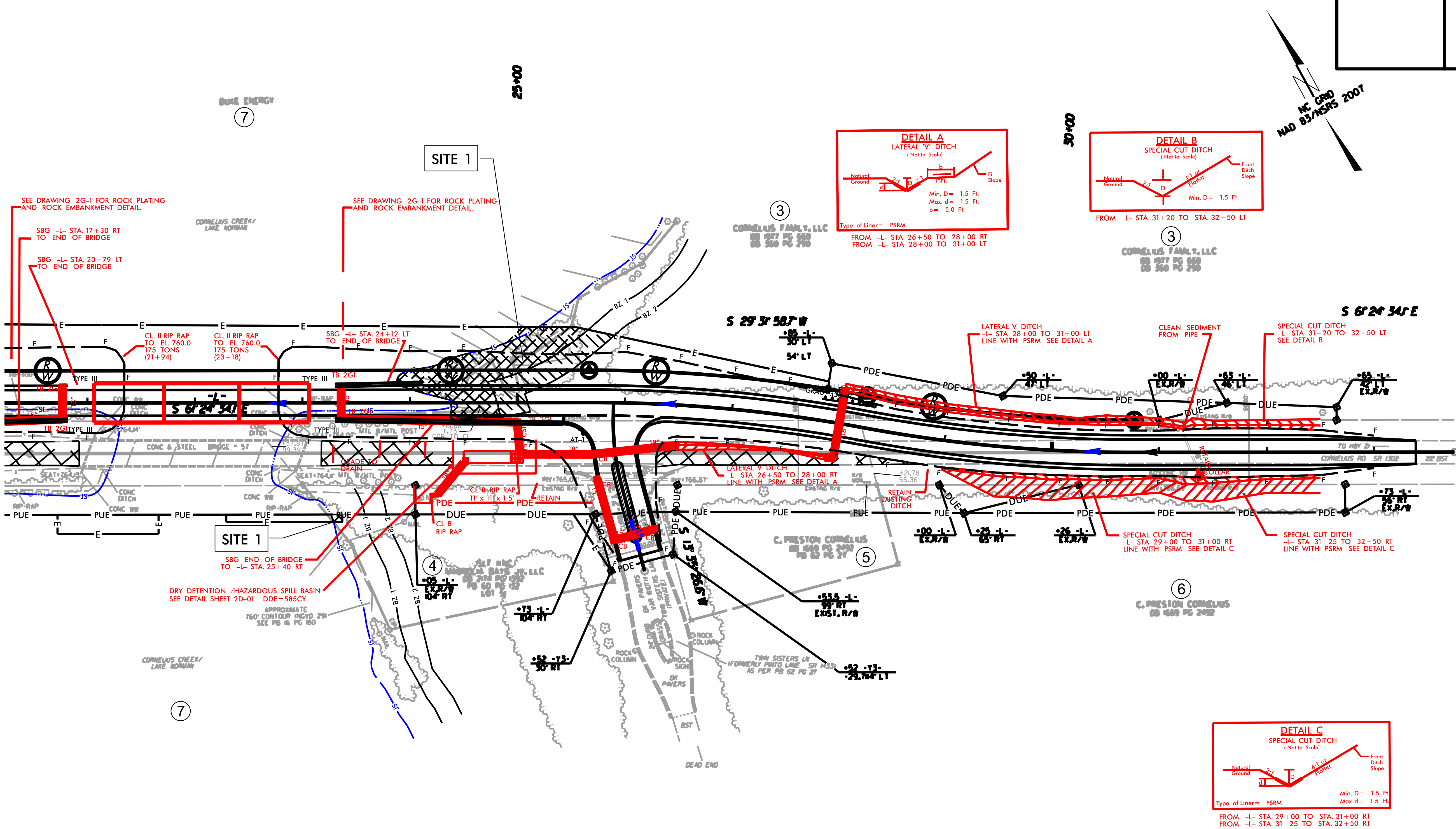
2/4/2015
Stantec
B-5142 Permit Drawings BUFFER 20150204.pdf

PROJECT REFERENCE NO.	SHEET NO.
B-5142	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING
SHEET 3 OF 5

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2



NC GRID NAD 83/NSRS 2007
DUKE ENERGY
SITE 1
SEE DRAWING 2G-1 FOR ROCK PLATING AND ROCK EMBANKMENT DETAIL.
SBG -L- STA. 17+30 RT TO END OF BRIDGE
SBG -L- STA. 20+79 LT TO END OF BRIDGE
CL. II RIP RAP TO EL. 760.0 175 TONS (21+94)
CL. II RIP RAP TO EL. 760.0 175 TONS (23+18)
SBG -L- STA. 24+12 LT TO END OF BRIDGE
CORNELIUS CREEK/ LAKE NORMAN
25+00
30+00
CORNELIUS FAMILY, LLC
S 29° 31' 58.7" W
S 61° 24' 34.1" E
DETAIL A
LATERAL 'V' DITCH (Not to Scale)
Type of Liner= PSRM
FROM -L- STA 26+50 TO 28+00 RT
FROM -L- STA 28+00 TO 31+00 LT
DETAIL B
SPECIAL CUT DITCH (Not to Scale)
Min. D= 1.5 Ft.
FROM -L- STA. 31+20 TO STA. 32+50 LT
LATERAL V DITCH -L- STA 28+00 TO 31+00 LT LINE WITH PSRM SEE DETAIL A
CLEAN SEDIMENT FROM PIPE
SPECIAL CUT DITCH -L- STA 31+20 TO 32+50 LT SEE DETAIL B
LATERAL V DITCH -L- STA 26+50 TO 28+00 RT LINE WITH PSRM SEE DETAIL A
RETAIN EXISTING DITCH
SPECIAL CUT DITCH -L- STA 29+00 TO 31+00 RT LINE WITH PSRM SEE DETAIL C
SPECIAL CUT DITCH -L- STA 31+25 TO 32+50 RT LINE WITH PSRM SEE DETAIL C
SBG END OF BRIDGE TO -L- STA. 25+40 RT
DRY DETENTION /HAZARDOUS SPILL BASIN SEE DETAIL SHEET 2D-01 DDE=585CY
CL B RIP RAP
CL B RIP RAP 11' x 111' x 1.5'
RETAIN
C. PRESTON CORNELIUS
TO NEY 21
CORNELIUS RD SR 1302
TWIN SISTERS LN (FORMERLY PHOTO LANE SR 1431) AS PER PB 62 PG 27
DEAD END
DETAIL C
SPECIAL CUT DITCH (Not to Scale)
Type of Liner= PSRM
Min. D= 1.5 Ft
Max d= 1.5 Ft
FROM -L- STA. 29+00 TO STA. 31+00 RT
FROM -L- STA. 31+25 TO STA. 32+50 RT

REVISIONS

8/17/99

2/4/2015
STANTEC
B-5142_Permit Drawings_BUFFER_20150204.pdf

NOTE: PROPOSED UPPER LIMITS OF ROCK EMBANKMENT BASED ON 761' CONTOUR ELEVATION WICHI IS 1' ABOVE NORMAL POOL. ACTUAL LIMIT WILL VARY BASED ON WATER ELEVATION AT TIME OF CONSTRUCTION.

PERMIT DRAWING
SHEET 4 OF 5

PROJECT REFERENCE NO.	SHEET
B-5142	_

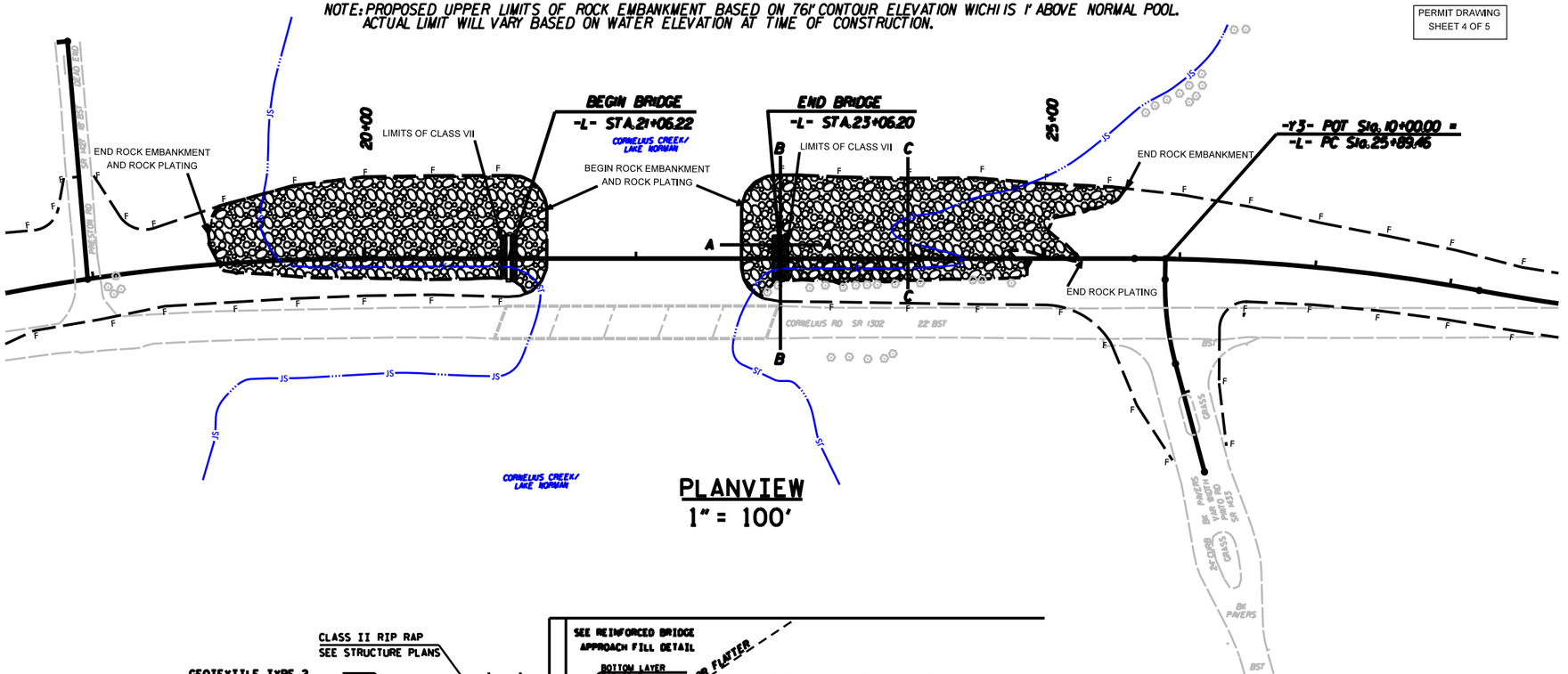
GEOTECHNICAL ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL PE # ENGINEER SEAL NAME

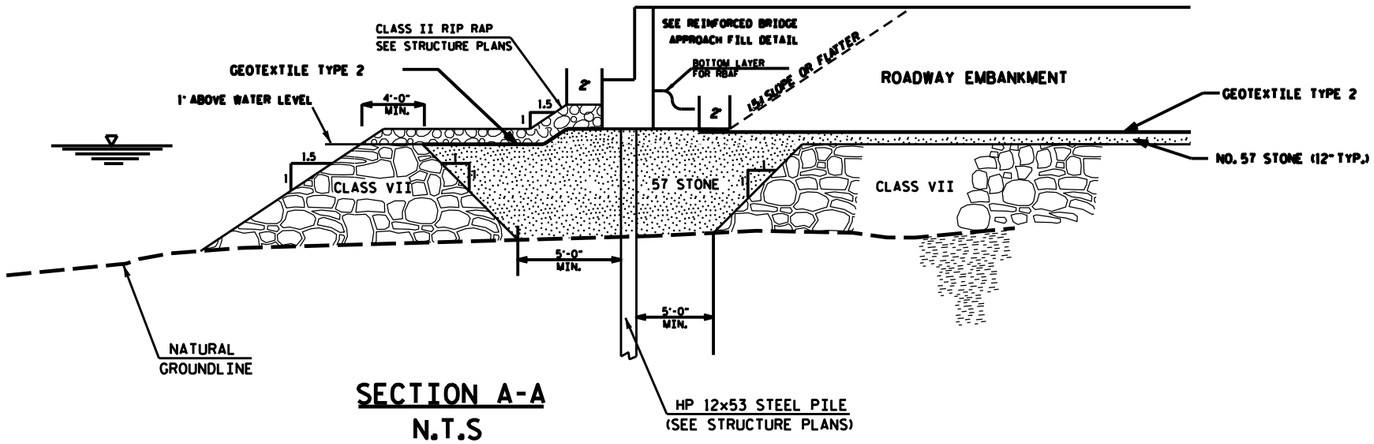
SIGNATURE DATE

ENGINEER

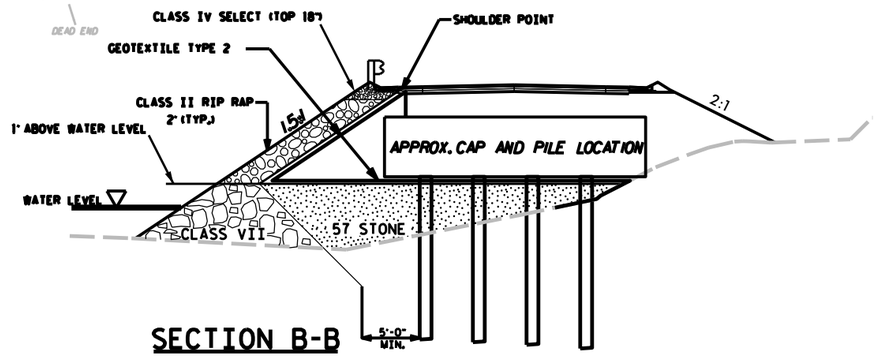
SIGNATURE DATE



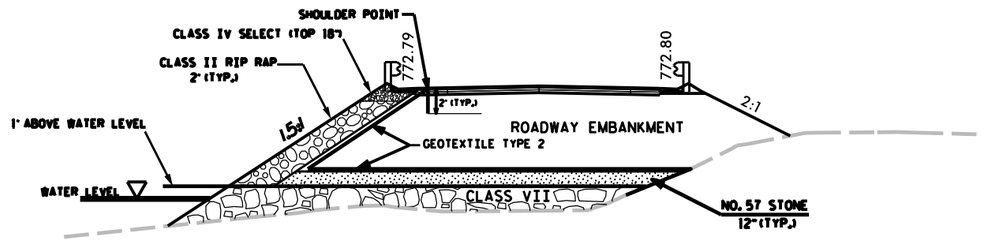
PLANVIEW
1" = 100'



SECTION A-A
N.T.S



SECTION B-B
N.T.S



SECTION C-C
N.T.S

ROCK EMBANKMENT
18+85 TO 21+34 & 23+78 TO 25+59 –L–

* ESTIMATED QUANTITIES	
SELECT MATERIAL, CLASS VII	9,200 TONS
SELECT MATERIAL, CLASS VI (NO. 57 STONE)	8,200 TONS
GEOTEXTILE TYPE 2 FOR DRAINAGE	3,900 SY

ROCK PLATING
18+85 TO 21+34 & 23+78 TO 25+28 –L–

* ESTIMATED QUANTITIES	
PLAIN RIP RAP, CLASS II	950 TONS
GEOTEXTILE TYPE 2 FOR DRAINAGE	900 SY

* ESTIMATED QUANTITIES BASED ON WATER ELEVATION OF 760'

NOTES ON PLANS:

CONSTRUCT ROCK EMBANKMENT 1' ABOVE WATER SURFACE AT TIME OF CONSTRUCTION AND ACCORDING TO THE SPECIAL PROVISION FOR ROCK EMBANKMENT.

CONSTRUCT ROCK PLATING FROM TOP OF ROCK EMBANKMENT TO THE SHOULDER POINT AND ACCORDING TO SECTION 275 OF THE STANDARD SPECIFICATIONS.

PREPARED BY: J.E. BEVERLY	DATE: 10-2014
REVIEWED BY: SHANE CLARK, PE	DATE: 10-2014

GEOTECHNICAL ENGINEERING UNIT

☐ EASTERN REGIONAL OFFICE
☒ WESTERN REGIONAL OFFICE
☐ CONTRACT OFFICE

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
RALEIGH

ROCK PLATING AND
ROCK EMBANKMENT DETAIL

REVISIONS

NO.	BY	DATE	NO.	BY	DATE
1	_	_	3	_	_
2			4		

11/7/2014
Stantec
B-5142_Permit Drawings_BUFFER_20141107.pdf

BUFFER IMPACTS SUMMARY

			IMPACT									BUFFER REPLACEMENT	
			TYPE			ALLOWABLE			MITIGABLE				
SITE NO.	STRUCTURE SIZE / TYPE	STATION (FROM/TO)	ROAD CROSSING	BRIDGE	PARALLEL IMPACT	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)
1	Rock Embakment & Roadway Fill	-L- STA. 18+50 TO 19+41	X			2268	1475	3743					
1	Rock Embakment & Roadway Fill	-L- STA. 23+30 TO 25+58	X			6088	2767	8855					
TOTAL:						8356	4242	12598					

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

IREDELL COUNTY
PROJECT: 42303.1.1 (B-5142)

3/5/2015
SHEET 5 OF 5

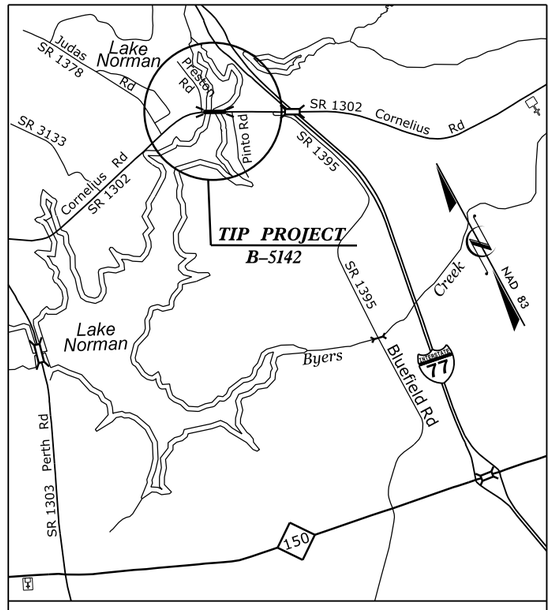
Rev. May 2006

09/08/99

TIP PROJECT: B-5142

CONTRACT: C203662

See Sheet 1-A For Index of Sheets



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

IREDELL COUNTY

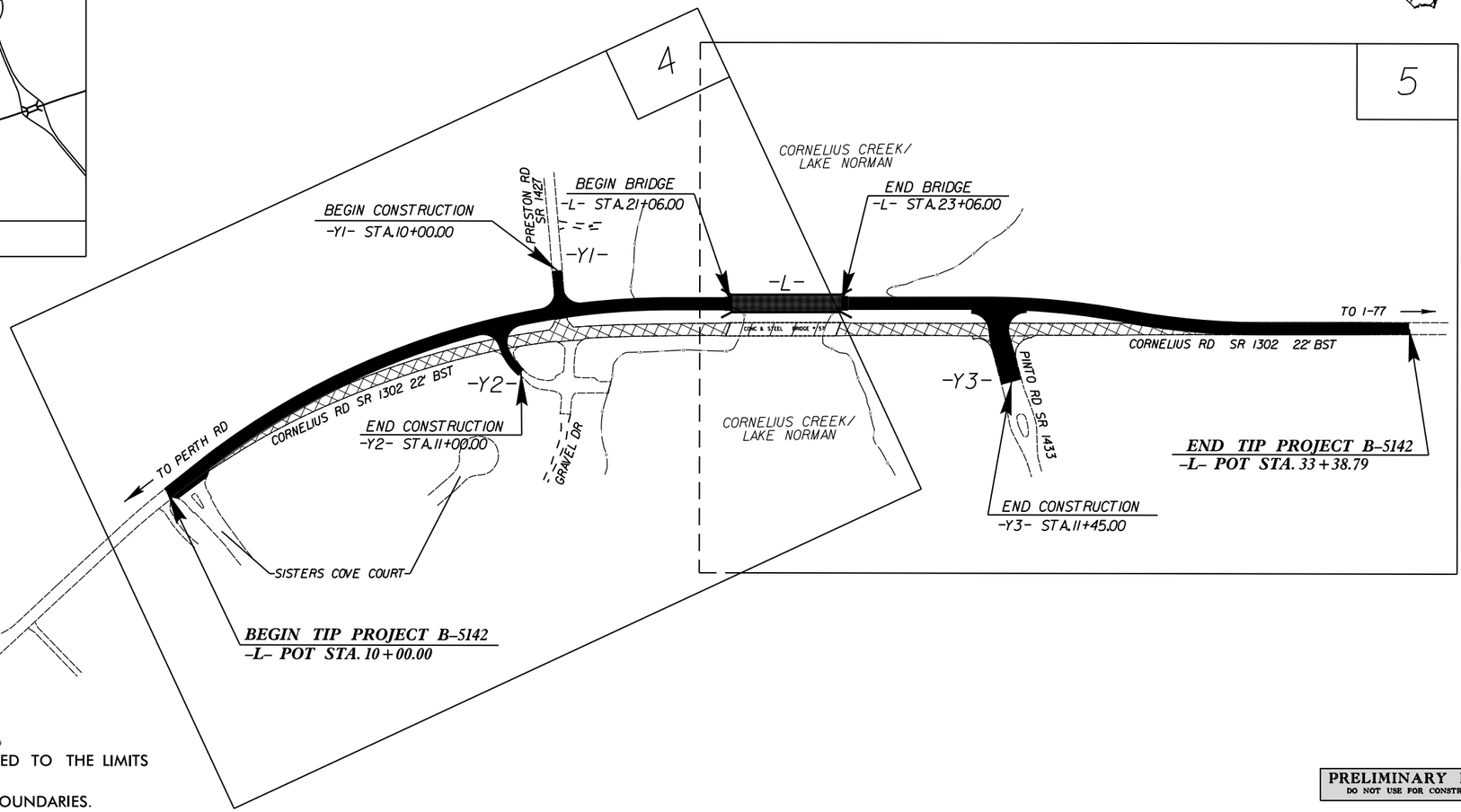
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	B-5142	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
42303.1.1	BRZ-1302(41)	PE
42303.2.FD1	BRZ-1302(41)	R/W, UTIL
42303.3.FD1	BRZ-1302(41)	CONST.

LOCATION: REPLACE BRIDGE NO. 57 ON SR 1302 OVER CORNELIUS CREEK

TYPE OF WORK: GRADING, DRAINAGE, PAVING AND STRUCTURES

NAD 83/ NSRS 2007

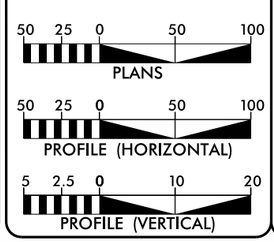


CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.

THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES



DESIGN DATA

ADT 2016 = 10,884
ADT 2036 = 18,164
K = 12 %
D = 70 %
T = 4 % *
V = 60 MPH
* TTST = 3 DUAL 1
FUNC CLASS = Collector
SUB-REGIONAL TIER

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT B-5142 = 0.405 MILES

LENGTH OF STRUCTURE TIP PROJECT B-5142 = 0.038 MILES

TOTAL LENGTH OF TIP PROJECT B-5142 = 0.443 MILES

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

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
JANUARY 29, 2015

LETTING DATE:
JANUARY 19, 2016

JASON MOORE, P.E.
PROJECT ENGINEER

BRYAN KEY, P.E.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: *P.E.*

ROADWAY DESIGN ENGINEER

SIGNATURE: *P.E.*

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

25-FEB-2015 19:31
R:\Roadway\Proj\B-5142_Rdy_tsh.dgn
$$$$USERNAME$$$$

12/05/11

PROJECT REFERENCE NO.	SHEET NO.
B-5142	1B

Note: Not to Scale

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin — EIP
- Property Corner
- Property Monument — ECM
- Parcel/Sequence Number — 123
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary — WLB
- Proposed Wetland Boundary — WLB
- Existing Endangered Animal Boundary — EAB
- Existing Endangered Plant Boundary — EPB
- Known Soil Contamination: Area or Site
- Potential Soil Contamination: Area or Site

BUILDINGS AND OTHER CULTURE:

- Gas Pump Vent or U/G Tank Cap
- Sign — S
- Well — W
- Small Mine
- Foundation
- Area Outline
- Cemetery
- Building
- School
- Church
- Dam

HYDROLOGY:

- Stream or Body of Water
- Hydro, Pool or Reservoir
- Jurisdictional Stream — JS
- Buffer Zone 1 — BZ 1
- Buffer Zone 2 — BZ 2
- Flow Arrow
- Disappearing Stream
- Spring
- Wetland
- Proposed Lateral, Tail, Head Ditch — FLOW
- False Sump

RAILROADS:

- Standard Gauge — CSX TRANSPORTATION
- RR Signal Milepost — MILEPOST 35
- Switch — SWITCH
- RR Abandoned
- RR Dismantled

RIGHT OF WAY:

- Baseline Control Point
- Existing Right of Way Marker
- Existing Right of Way Line
- Proposed Right of Way Line — RW
- Proposed Right of Way Line with Iron Pin and Cap Marker — RW
- Proposed Right of Way Line with Concrete or Granite R/W Marker — RW
- Proposed Control of Access Line with Concrete C/A Marker — CA
- Existing Control of Access — CA
- Proposed Control of Access — CA
- Existing Easement Line — E
- Proposed Temporary Construction Easement — E
- Proposed Temporary Drainage Easement — TDE
- Proposed Permanent Drainage Easement — PDE
- Proposed Permanent Drainage / Utility Easement — DUE
- Proposed Permanent Utility Easement — PUE
- Proposed Temporary Utility Easement — TUE
- Proposed Aerial Utility Easement — AUE
- Proposed Permanent Easement with Iron Pin and Cap Marker

ROADS AND RELATED FEATURES:

- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut — C
- Proposed Slope Stakes Fill — F
- Proposed Curb Ramp — CR
- Existing Metal Guardrail
- Proposed Guardrail
- Existing Cable Guiderail
- Proposed Cable Guiderail
- Equality Symbol
- Pavement Removal

VEGETATION:

- Single Tree
- Single Shrub
- Hedge
- Woods Line
- Orchard
- Vineyard — Vineyard

EXISTING STRUCTURES:

MAJOR:

- Bridge, Tunnel or Box Culvert — CONC
- Bridge Wing Wall, Head Wall and End Wall — CONC WW

MINOR:

- Head and End Wall — CONC HW
- Pipe Culvert
- Footbridge
- Drainage Box: Catch Basin, DI or JB — CB
- Paved Ditch Gutter
- Storm Sewer Manhole — S
- Storm Sewer — S

UTILITIES:

POWER:

- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole — P
- Power Line Tower
- Power Transformer
- U/G Power Cable Hand Hole
- H-Frame Pole
- Recorded U/G Power Line — P
- Designated U/G Power Line (S.U.E.*) — P

TELEPHONE:

- Existing Telephone Pole
- Proposed Telephone Pole
- Telephone Manhole — T
- Telephone Booth
- Telephone Pedestal — T
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole — HH
- Recorded U/G Telephone Cable — T
- Designated U/G Telephone Cable (S.U.E.*) — T
- Recorded U/G Telephone Conduit — TC
- Designated U/G Telephone Conduit (S.U.E.*) — TC
- Recorded U/G Fiber Optics Cable — T FO
- Designated U/G Fiber Optics Cable (S.U.E.*) — T FO

WATER:

- Water Manhole — W
- Water Meter
- Water Valve
- Water Hydrant
- Recorded U/G Water Line — W
- Designated U/G Water Line (S.U.E.*) — W
- 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

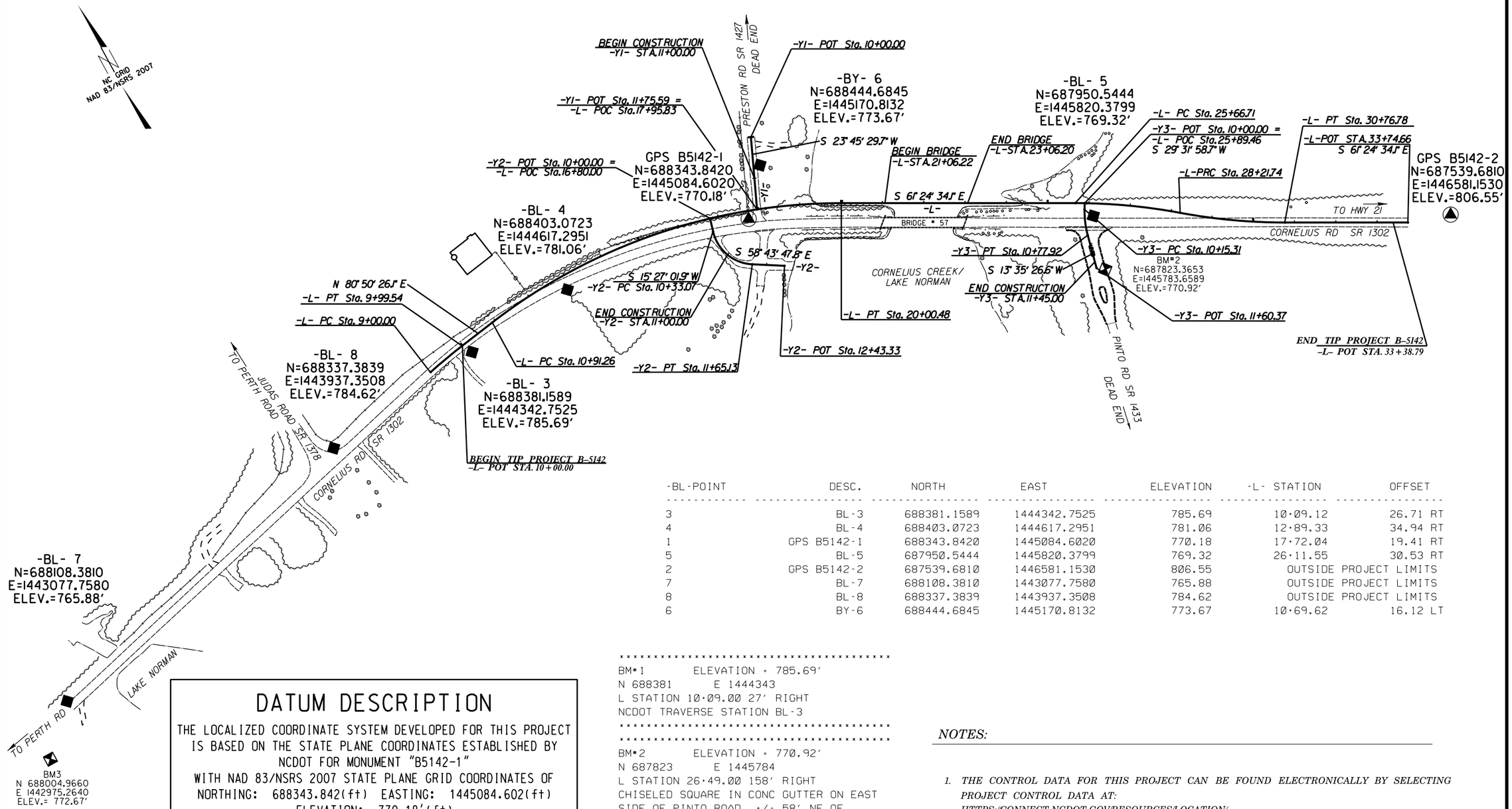
MISCELLANEOUS:

- 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

PROJECT REFERENCE NO.	SHEET NO.
B-5142	1C-01
Location and Surveys	

SURVEY CONTROL SHEET B-5142



-BL-POINT	DESC.	NORTH	EAST	ELEVATION	-L- STATION	OFFSET
3	BL-3	688381.1589	1444342.7525	785.69	10+09.12	26.71 RT
4	BL-4	688403.0723	1444617.2951	781.06	12+89.33	34.94 RT
1	GPS B5142-1	688343.8420	1445084.6020	770.18	17+72.04	19.41 RT
5	BL-5	687950.5444	1445820.3799	769.32	26+11.55	30.53 RT
2	GPS B5142-2	687539.6810	1446581.1530	806.55	OUTSIDE PROJECT LIMITS	
7	BL-7	688108.3810	1443077.7580	765.88	OUTSIDE PROJECT LIMITS	
8	BL-8	688337.3839	1443937.3508	784.62	OUTSIDE PROJECT LIMITS	
6	BY-6	688444.6845	1445170.8132	773.67	10+69.62	16.12 LT

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B5142-1" WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 688343.842(ft) EASTING: 1445084.602(ft) ELEVATION: 770.18'(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99986215 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B5142-1" TO -L- STATION 9+00.00 IS N 87°07'48.33" W 854.24' ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

```
**************************************
BM#1       ELEVATION = 785.69'
N 688381       E 1444343
L STATION 10+09.00 27' RIGHT
NCDOT TRAVERSE STATION BL-3
**************************************
**************************************
BM#2       ELEVATION = 770.92'
N 687823       E 1445784
L STATION 26+49.00 158' RIGHT
CHISELED SQUARE IN CONC GUTTER ON EAST
SIDE OF PINTO ROAD. +/- 58' NE OF
SUBDIVISION SIGN
**************************************
**************************************
BM#3       ELEVATION = 772.67'
N 688005       E 1442975
L STATION 10+00.00
S 73°30'05" W  DIST   1412.39'
RAILROAD SPIKE IN NORTH EAST
ROOT OF A 48" WILLOW OAK
**************************************
```

NOTE: DRAWING NOT TO SCALE

NOTES:

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

   THE FILES TO BE FOUND ARE AS FOLLOWS: B5142_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.

25-FEB-2015 19:31
R:\Roadway\Proj\B5142_LS_1C-01.dgn
$$$$ICENAME$$$$

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
B-5142	1C-02
Location and Surveys	

SURVEY CONTROL SHEET B-5142

-L-

TYPE	STATION	NORTH	EAST
PC	9+00.00	688386.6130	1444231.4354
PT	9+99.54	688406.0006	1444329.0491
PC	10+91.26	688420.5998	1444419.5936
PT	20+00.48	688269.9216	1445299.6587
PC	25+66.71	687998.9580	1445796.8370
PRC	28+21.74	687856.9691	1446008.2587
PT	30+76.78	687714.9802	1446219.6803
POT	33+74.66	687572.4321	1446481.2350

-Y1-

TYPE	STATION	NORTH	EAST
POT	10+00.00	688514.9039	1445184.1089
POT	11+75.59	688354.1991	1445113.3694

-Y2-

TYPE	STATION	NORTH	EAST
POT	10+00.00	688389.3838	1445003.0483
PC	10+33.07	688357.5054	1444994.2373
PT	11+65.13	688243.1494	1445039.6057
POT	12+43.33	688202.5591	1445106.4437

-Y3-

TYPE	STATION	NORTH	EAST
POT	10+00.00	687987.9048	1445816.7260
PC	10+15.31	687974.5816	1445809.1780
PT	10+77.92	687916.5453	1445786.2444
POT	11+60.37	687836.3978	1445766.8685

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B5142-1" WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 688343.842(ft) EASTING: 1445084.602(ft) ELEVATION: 770.18(ft)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99986215

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B5142-1" TO -L- STATION 9+00.00 IS N 87° 07' 48.33" W 854.24'

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES

VERTICAL DATUM USED IS NAVD 88

NOTES:

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

   THE FILES TO BE FOUND ARE AS FOLLOWS: B5142_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.

NOTE: DRAWING NOT TO SCALE

25-FEB-2015 09:31
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$$$$USERNAME$$$$

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
B-5142	1C-03
Location and Surveys	

SURVEY CONTROL SHEET B-5142
PRELIMINARY

ROW MARKER CONCRETE/GRANITE MONUMENT

ALIGN	STATION	OFFSET	NORTH	EAST
L	10+00.00	-30.00	688435.6910	1444324.7256
L	10+91.26	-30.00	688450.2173	1444414.8181
L	17+37.78	-30.00	688401.5726	1445067.5622
L	18+52.49	-30.00	688361.3728	1445177.6229
L	20+00.48	-30.00	688296.2635	1445314.0151
L	25+66.71	-30.00	688025.2998	1445811.1934
L	28+21.74	-30.00	687880.2242	1446027.2112
L	30+76.78	-30.00	687741.3220	1446234.0367

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y2	10+76.00	26.00	688311.0540	1444966.0111

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
Y3	11+52.00	30.00	687851.5869	1445739.6763
Y3	11+52.00	-29.71	687837.5556	1445797.7157

ROW MARKER PERMANENT EASEMENT-E

ALIGN	STATION	OFFSET	NORTH	EAST
L	9+85.00	-30.00	688433.1722	1444309.6169
L	9+85.00	-70.00	688472.5956	1444302.8318
L	13+40.00	-73.00	688510.8939	1444668.8853
L	16+09.00	-95.00	688499.1368	1444954.4057
L	16+48.00	64.74	688334.6358	1444956.4725
L	17+06.00	-30.00	688411.0788	1445036.5147
L	17+98.00	71.27	688286.5618	1445090.8153
L	18+45.00	73.42	688268.4774	1445131.5714
L	18+45.00	89.00	688254.0470	1445125.7015
L	18+73.50	98.50	688235.0235	1445146.5304
L	20+00.48	104.00	688178.6032	1445249.8898
L	24+05.00	77.00	688008.7309	1445618.0012
L	24+05.00	104.00	687985.0232	1445605.0804
L	25+73.00	104.00	687904.8428	1445752.1720
L	26+53.50	74.42	687892.0778	1445832.0423
L	25+53.50	99.00	687871.2759	1445818.9456
L	27+85.00	-54.00	687922.5533	1446012.4575
L	27+85.00	-30.00	687903.5522	1445997.7962
L	29+00.00	41.65	687775.5520	1446045.8485
L	29+25.00	65.00	687741.4766	1446053.4814
L	29+50.00	-47.00	687819.7084	1446137.4809
L	30+26.00	30.96	687713.4761	1446159.7402
L	31+00.00	-30.00	687730.2120	1446254.4220
L	31+63.00	-46.00	687714.1125	1446317.3967
L	32+65.00	-42.00	687661.7885	1446405.0448
L	32+65.00	-30.00	687651.2518	1446399.3023
L	32+73.00	30.00	687594.7397	1446377.6140
L	32+73.00	56.00	687571.9101	1446365.1718

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "B5142-1" WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 688343.842(ft) EASTING: 1445084.602(ft) ELEVATION: 770.18(ft)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99986215

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "B5142-1" TO -L- STATION 9+00.00 IS N 87° 07' 48.33" W 854.24'

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES

VERTICAL DATUM USED IS NAVD 88

NOTES:

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

   THE FILES TO BE FOUND ARE AS FOLLOWS: B5142_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.

NOTE: DRAWING NOT TO SCALE

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6/2/99

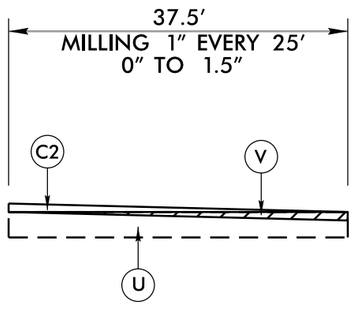
PROJECT REFERENCE NO.	SHEET NO.
B-5142	2A-01
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PRELIMINARY PAVEMENT SCHEDULE

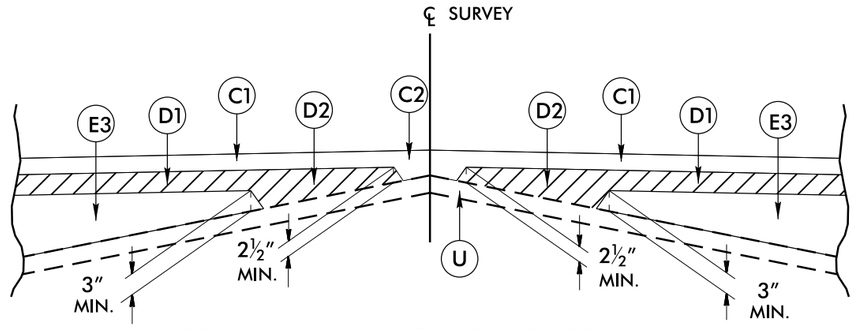
C1	*PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 336 LBS. PER SQ. YD.*	***R1***	*2'-6" CONCRETE CURB AND GUTTER, STD. 846.01*
C2	*PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 1" IN DEPTH OR GREATER THAN 1 1/2" IN DEPTH.*	***R2***	*1'-6" CONCRETE CURB AND GUTTER, STD. 846.01*
D1	*PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.*	***R3***	*CONCRETE SHOULDER BERM GUTTER, STD. 846.01*
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 THAT 2½" IN DEPTH OR GREATER THAN 4" IN DEPTH.*	***T***	*EARTH MATERIAL.*
E1	*PROP. APPROX. 5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.*	***U***	*EXISTING PAVEMENT.*
E2	*PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.*	***V***	*MILLING ASPHALT PAVEMENT, VARIABLE DEPTH*
E3	*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 THAT 3" IN DEPTH OR GREATER THAN 5 1/2" IN DEPTH.*	***W***	*VARIABLE DEPTH ASPHALT PAVEMENT (SEE DETAIL SHOWING METHOD OF WEDGING).*

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

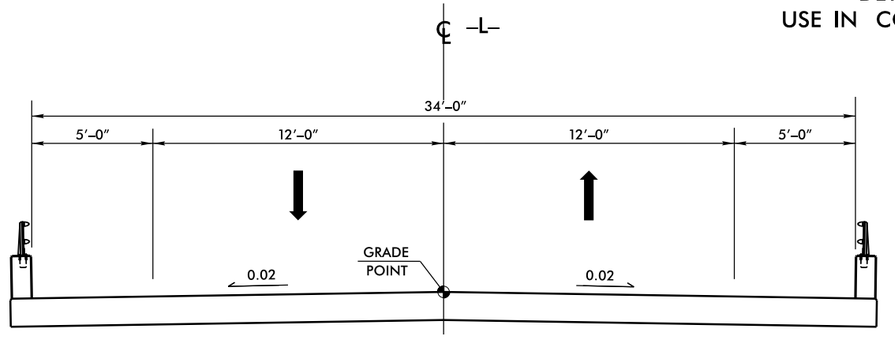


MILLING DETAIL

USE MILLING DETAIL AT RESURFACING TIES



DETAIL SHOWING METHOD OF WEDGING
USE IN CONJUNCTION WITH TYPICAL SECTION NO. 1 & 3



TYPICAL SECTION ON STRUCTURE

USE TYPICAL SECTION ON STRUCTURE
–L– STA. 21+06.00 TO STA. 23+06.00

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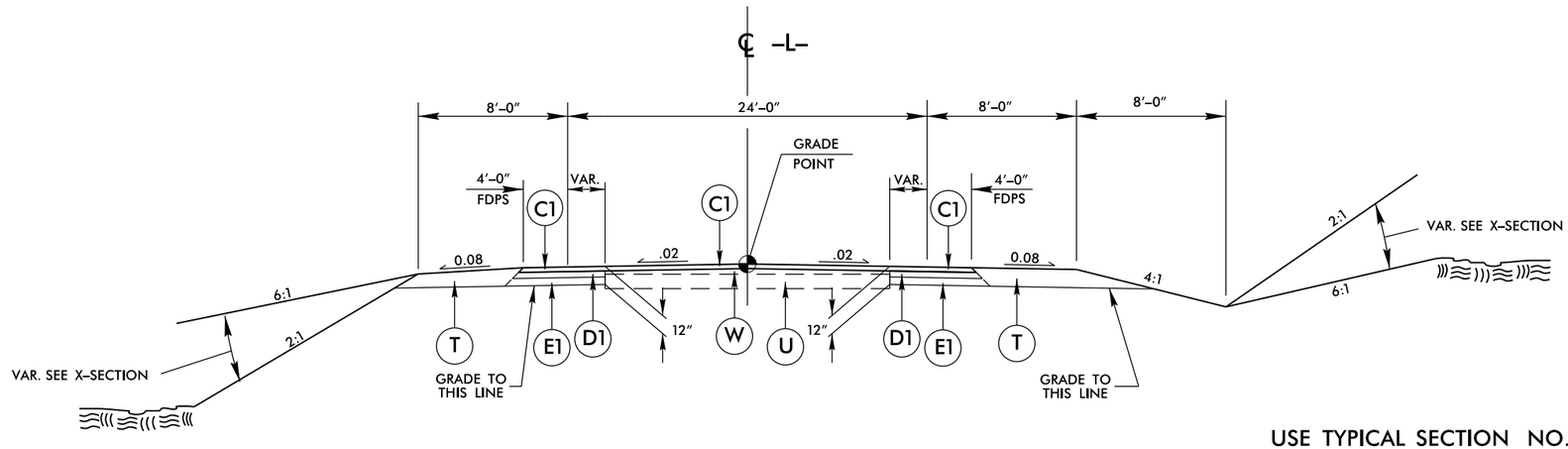
6/2/99

PROJECT REFERENCE NO.	SHEET NO.
B-5142	2A-02
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

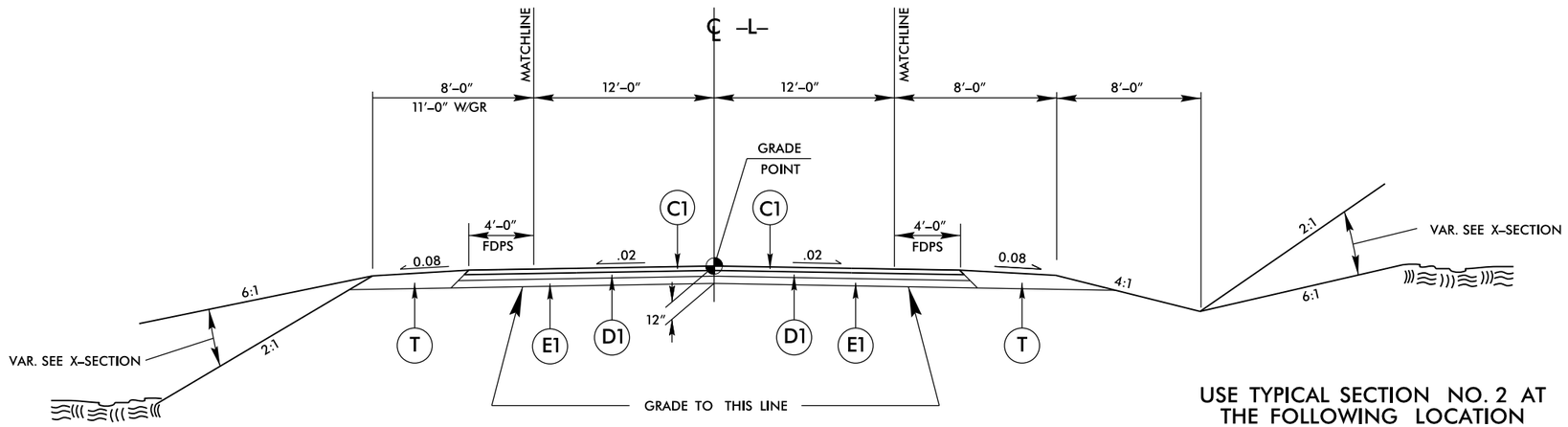
C1	3" S9.5B
D1	4" I19.0B
E1	5" B25.0B
R3	SHLDR. BERM GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
W	WEDGING



TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1

–L– STA. 10+00.00 TO STA. 12+00.00
–L– STA. 29+75.00 TO STA. 33+38.79

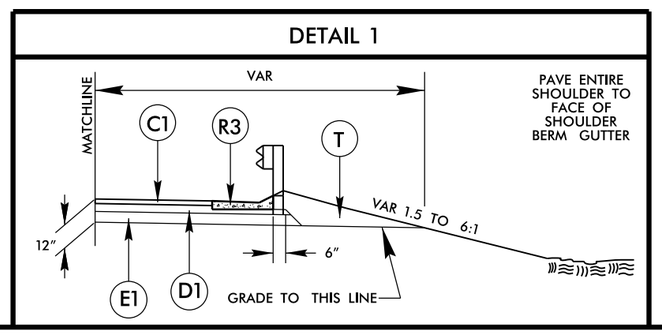


TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2 AT THE FOLLOWING LOCATION

–L– STA. 12+00.00 TO STA. 21+06.00
–L– STA. 23+06.00 TO STA. 29+75.00
USE DETAIL 1 FOR ALL SHOULDER BERM GUTTER LOCATIONS (MIRROR FOR LEFT SIDE)

DETAIL 1



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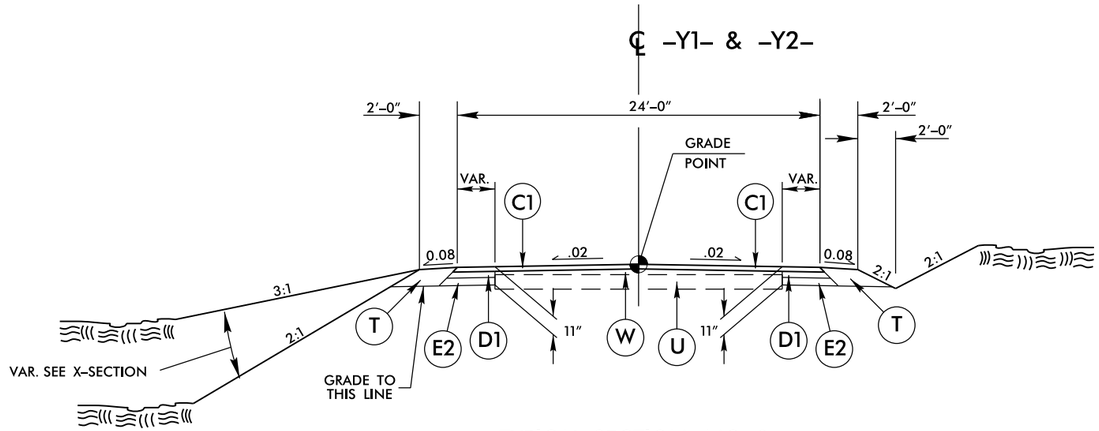
PROJECT REFERENCE NO.	SHEET NO.
B-5142	2A-03
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

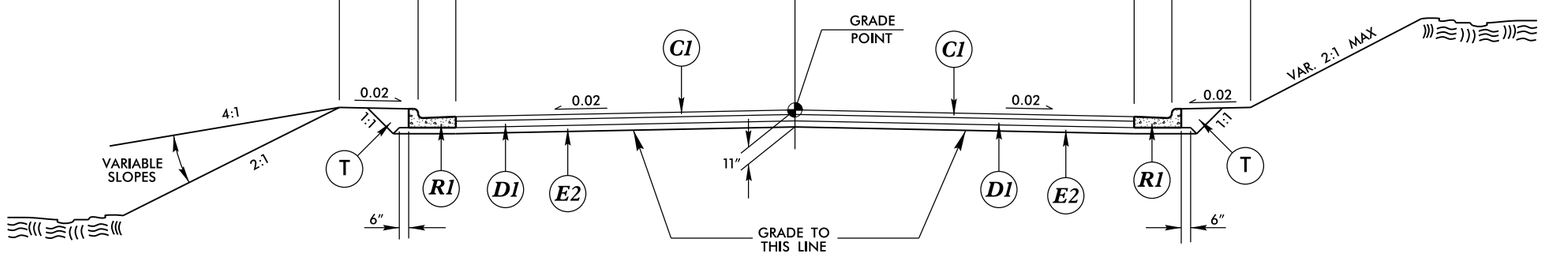
C1	*3" S9.5B*
D1	*4" I19.0B*
E2	*4" B25.0B*
R1	*2'-6" CURB & GUTTER*
R2	*1'-6" CURB & GUTTER*
T	*EARTH MATERIAL*
U	*EXISTING PAVEMENT*
W	*WEDGING*



TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3 AT THE FOLLOWING LOCATION

–Y1– STA. 11+00.00 TO STA. 11+63.56
–Y2– STA. 10+12.00 TO STA. 11+00.00

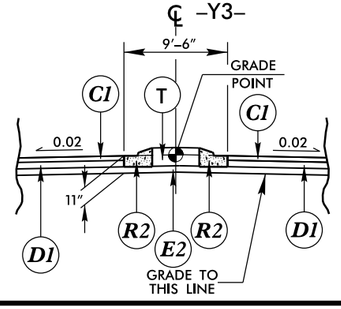


TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO. 4 AT THE FOLLOWING LOCATION:

–Y3– STA. 10+12.00 TO STA. 11+45.00
USE DETAIL 2 FROM –Y3– STA.10+55.92 TO STA.11+32.15

DETAIL 2



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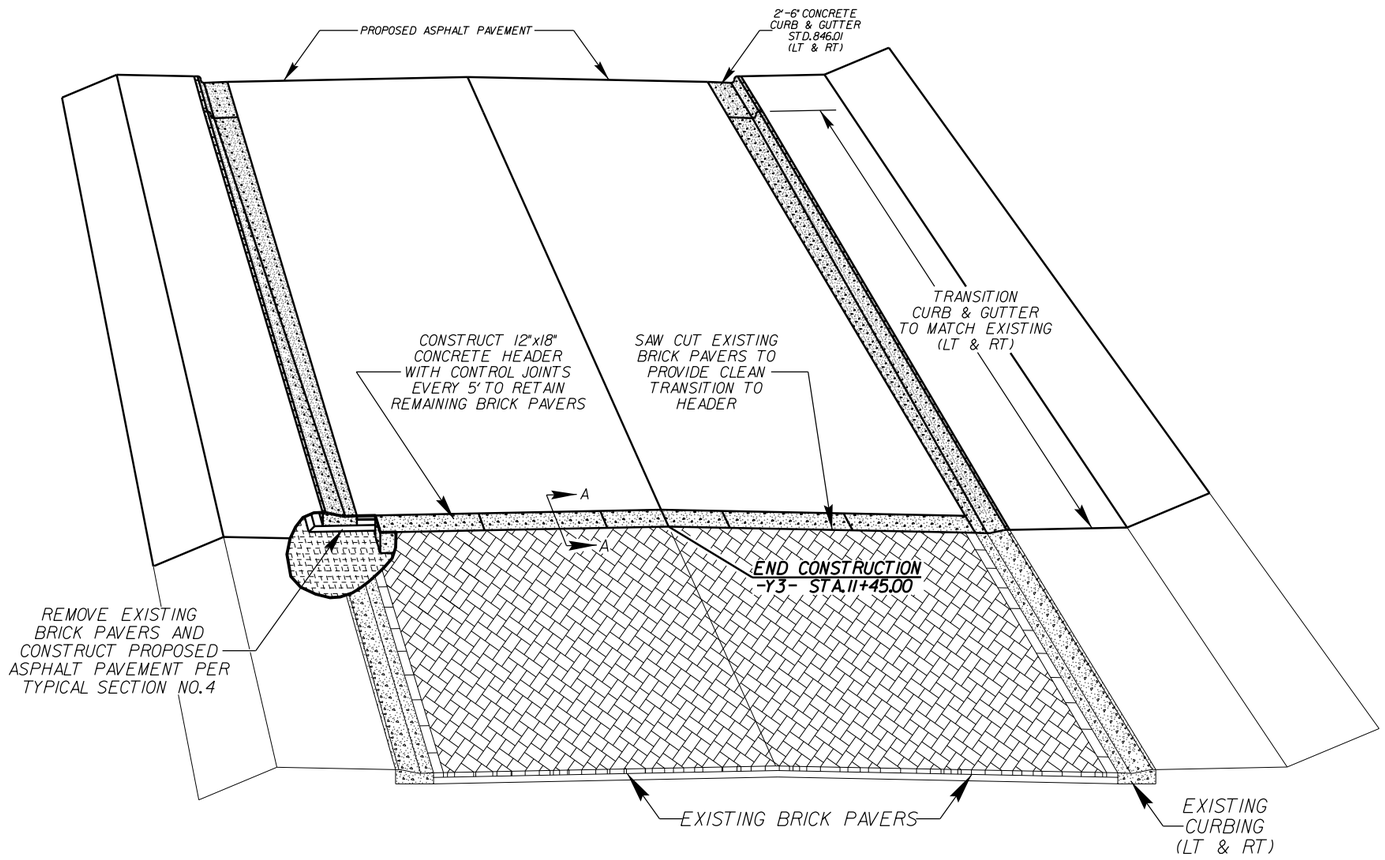
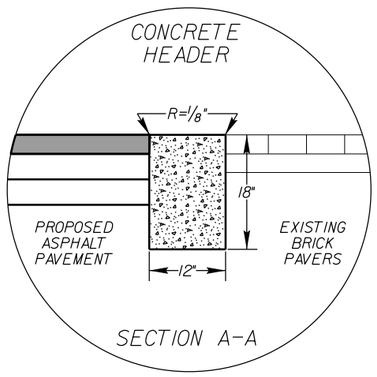
PROJECT REFERENCE NO.	SHEET NO.
B-5142	2B-01

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION





SEE SHEET 2A-03 FOR -Y3- TYPICAL SECTION
SEE SHEET 5 FOR -Y3- PLAN VIEW

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PROJECT REFERENCE NO.	SHEET NO.
B-5142	2D-01
R/W SHEET NO.	
HYDRAULICS ENGINEER	

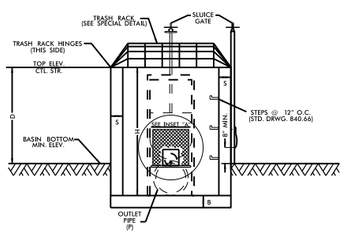
8/17/99

REVISIONS

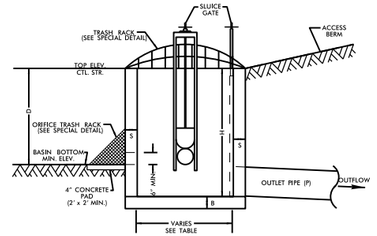
DETAIL

DRY DETENTION/HAZARDOUS SPILL BASIN
DRAWDOWN STRUCTURE

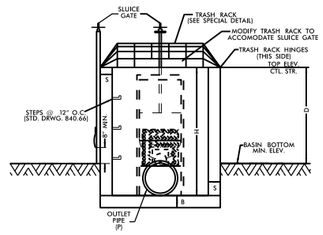
NOT TO SCALE



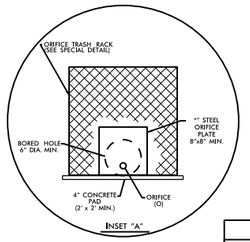
SIDE 1



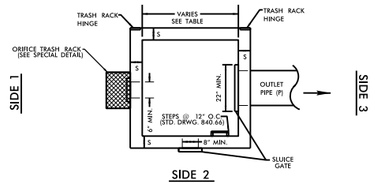
SIDE 2



SIDE 3



INSET "A"



SIDE 2

PLAN VIEW

TRASH RACK NOT SHOWN FOR CLARITY

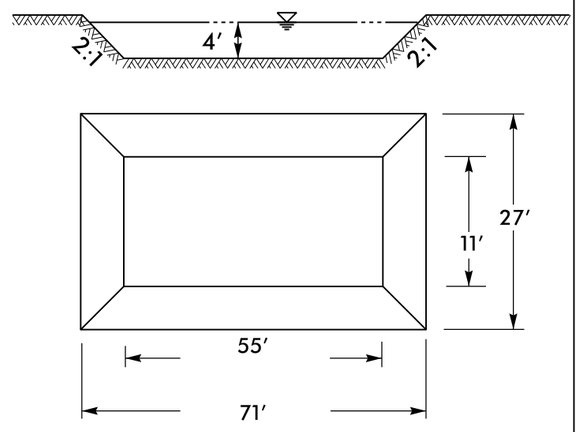
NOTES:
1. THE BASIN SHOULD BE DESIGNED TO HOLD THE HAZARDOUS SPILL VOLUME ABOVE THE WATER QUALITY VOLUME (WQ_V) ELEVATION.
2. TOP ELEVATION OF CONTROL STRUCTURE (WEIR ELEVATION) SHOULD BE SET AT THE WQ_V ELEVATION.
3. 15" MINIMUM DIAMETER FOR OUTLET PIPE.
4. 2" MINIMUM DIAMETER ORIFICE. IF ORIFICE IS GREATER THAN 6", A STEEL PLATE IS NOT REQUIRED.
5. NO BEDDING MATERIAL TO BE USED. THEREFORE, DO NOT FOLLOW STANDARD DRAWINGS FOR METHOD OF PIPE INSTALLATION FOR OUTLET PIPE THROUGH EMBANKMENT.
6. 8" MIN. SLUICE GATE IS FOR MAINTENANCE AND SHOULD REMAIN CLOSED DURING NORMAL OPERATION. A GATE VALVE MAY BE USED IN LIEU OF THE 8" SLUICE GATE.
7. 22" MIN. SLUICE GATE AT THE OUTLET PIPE IS FOR SPILL CONTAINMENT AND SHOULD REMAIN OPEN DURING NORMAL OPERATION.
8. SLUICE GATE SHALL PROVIDE WATERTIGHT SEAL. PROVIDE ADEQUATE CLEARANCE FOR GATE OPERATION AND FOR PROPER SEATING OF GATE OVER PIPE.
9. SELECT BOX STANDARD AS REQUIRED TO ACCOMMODATE SLUICE GATE AND ORIFICE TRASH RACK WIDTH.
10. ENSURE TRASH RACK OPENS FREELY AND WITHOUT INTERFERENCE WITH SLUICE GATES.
11. ADJUST FOOTER DIMENSIONS AS NEEDED FOR ANTI-FLOTATION.

MINIMUM DIMENSIONS FOR DRY DETENTION/HAZARDOUS SPILL BASIN DRAWDOWN STRUCTURE

STATION	STRUCTURE NUMBER	S (INCHES) 6" MIN.	B (INCHES) 6" MIN.	BASIN BOTTOM MINIMUM ELEV.	TOP ELEVATION CONTROL STRUCTURE	MAX. STORAGE DEPTH(D) FEET	INV. ELEV. CTL. STR.	CTL. STR. DIMENSIONS (W x L x H)	ORIFICE DIAMETER (O) INCHES	ORIFICE INV. ELEV.	OUTLET PIPE DIAMETER(P) INCHES
18+00 RT	0400	6	6	763.0	766.0	3.0	762.5	4 x 4 x 3.5	2	763.1	18
24+52 RT	0500	6	6	762.0	766.0	4.0	760.5	4 x 4 x 5.5	2	762.1	18

DETAIL
HAZARDOUS SPILLBASIN

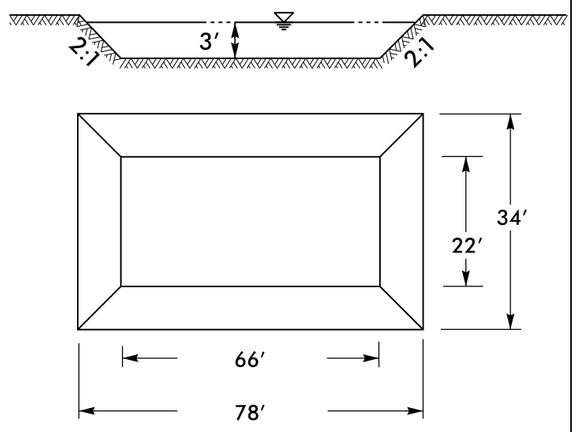
TOTAL CAPACITY REQUIRED: 4495 cf
TOTAL CAPACITY PROVIDED: 5368 cf
@ ELEV. 766.0 w/1.0 FT. FREEBOARD



FROM –L– STA. 24+50 TO STA. 25+05 RT

DETAIL
HAZARDOUS SPILLBASIN

TOTAL CAPACITY REQUIRED: 5895 cf
TOTAL CAPACITY PROVIDED: 5940 cf
@ ELEV. 766.0 w/1.0 FT. FREEBOARD



FROM –L– STA. 17+34 TO STA. 18+00 RT

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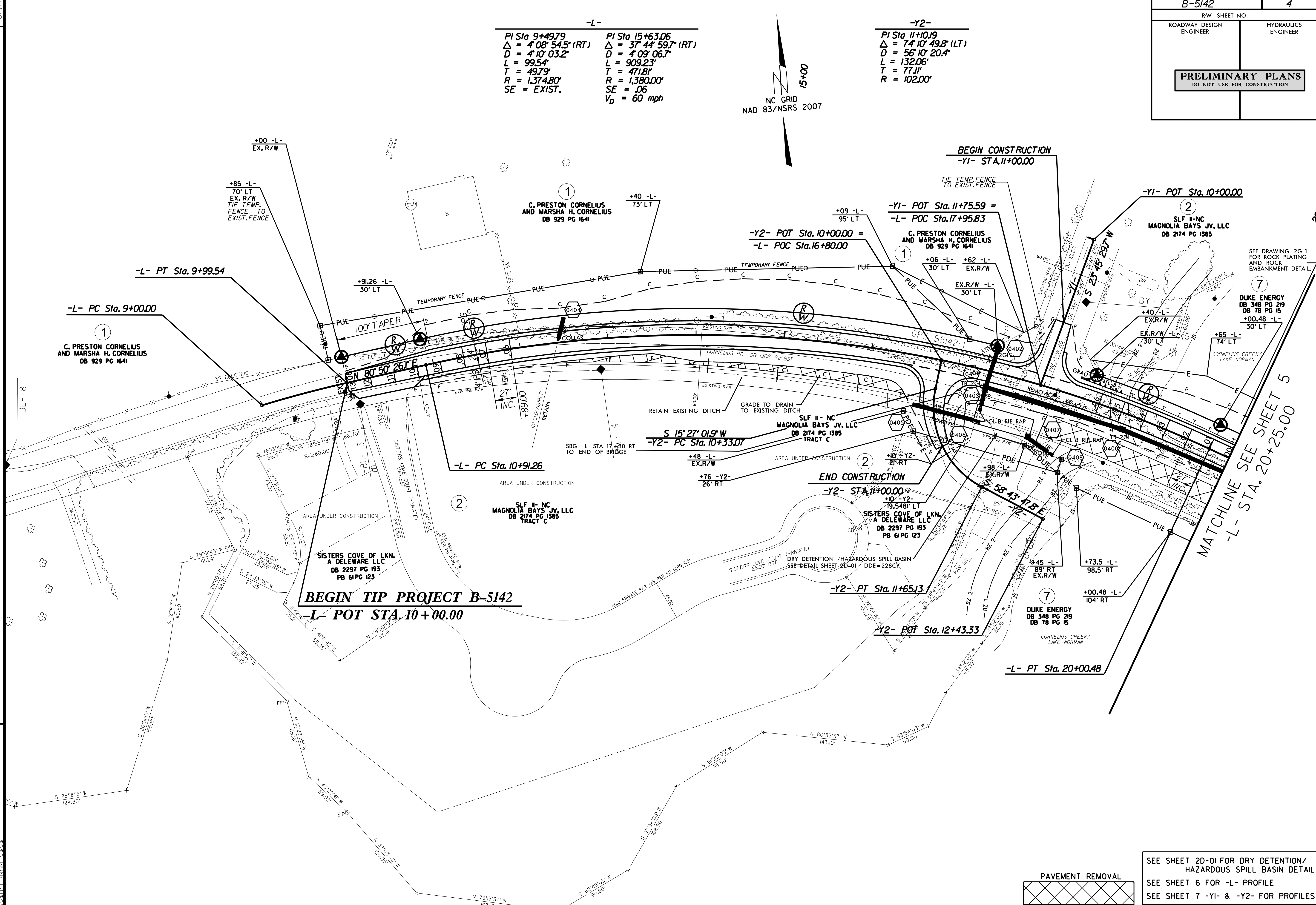
PROJECT REFERENCE NO.	SHEET NO.
B-5142	4
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



-L-
PI Sta 9+49.79
Δ = 4° 08' 54.5" (RT)
D = 4° 10' 03.2"
L = 99.54'
T = 49.79'
R = 1,374.80'
SE = EXIST.
PI Sta 15+63.06
Δ = 37° 44' 59.7" (RT)
D = 4° 09' 06.7"
L = 909.23'
T = 471.81'
R = 1,380.00'
SE = .06
V_D = 60 mph
-Y2-
PI Sta 11+10.19
Δ = 74° 10' 49.8" (LT)
D = 56° 10' 20.4"
L = 132.06'
T = 77.11'
R = 102.00'
NC GRID
NAD 83/NSRS 2007
C. PRESTON CORNELIUS AND MARSHA H. CORNELIUS DB 929 PG 1641
SLF II-NC MAGNOLIA BAYS JV, LLC DB 2174 PG 1385
DUKE ENERGY DB 348 PG 219 DB 78 PG 15
SISTERS COVE OF LKN, A DELEWARE LLC DB 2297 PG 193 PB 61 PG 123
-L- PC Sta. 9+00.00
-L- PT Sta. 9+99.54
-L- PC Sta. 10+91.26
BEGIN TIP PROJECT B-5142
-L- POT STA. 10+00.00
BEGIN CONSTRUCTION
-Y1- STA. 11+00.00
-Y1- POT Sta. 11+75.59 =
-L- POC Sta. 17+95.83
-Y1- POT Sta. 10+00.00
-Y2- POT Sta. 10+00.00 =
-L- POC Sta. 16+80.00
S 15° 27' 01.9" W
-Y2- PC Sta. 10+33.07
END CONSTRUCTION
-Y2- STA. 11+00.00
-Y2- PT Sta. 11+65.13
-Y2- POT Sta. 12+43.33
-L- PT Sta. 20+00.48
N 80° 50' 26.1" E
S 58° 43' 47.8" E
S 25° 45' 29.7" W
100' TAPER
TEMPORARY FENCE
RETAIN EXISTING DITCH
GRADE TO DRAIN TO EXISTING DITCH
AREA UNDER CONSTRUCTION
SBG -L- STA. 17+30 RT TO END OF BRIDGE
DRY DETENTION /HAZARDOUS SPILL BASIN SEE DETAIL SHEET 2D-01 DDE=228CY
SEE DRAWING 2G-1 FOR ROCK PLATING AND ROCK EMBANKMENT DETAIL
CORNELIUS CREEK/ LAKE NORMAN
CORNELIUS RD SR 1302 22' BST
SISTERS COVE COURT (PRIVATE)
MATCHLINE SEE SHEET 5
-L- STA. 20+25.00
PAVEMENT REMOVAL

SEE SHEET 2D-01 FOR DRY DETENTION/ HAZARDOUS SPILL BASIN DETAIL
SEE SHEET 6 FOR -L- PROFILE
SEE SHEET 7 -Y1- & -Y2- FOR PROFILES

REVISIONS

8/17/99

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PROJECT REFERENCE NO.	SHEET NO.
B-5142	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

8/17/99

REVISIONS

-L- STA. 20+25.00
MATCHLINE SEE SHEET 4

-L-
PI Sta 26+94.59
Δ = 10° 35' 20.0" (RT)
D = 4° 09' 06.7"
L = 255.04'
T = 127.88'
R = 1,380.00'
SE = .06
V_D = 60 mph

-L-
PI Sta 29+49.63
Δ = 10° 35' 20.0" (LT)
D = 4° 09' 06.7"
L = 255.04'
T = 127.88'
R = 1,380.00'
SE = .06
V_D = 60 mph

-Y3-
PI Sta 10+46.82
Δ = 15° 56' 32.1" (LT)
D = 25° 27' 53.2"
L = 62.61'
T = 31.51'
R = 225.00'

NC GRID
NAD 83/NSRS 2007

25+00

30+00

7
DUKE ENERGY
DB 348 PG 219
DB 78 PG 15

SEE DRAWING 2G-1 FOR ROCK PLATING AND ROCK EMBANKMENT DETAIL.

SEE DRAWING 2G-1 FOR ROCK PLATING AND ROCK EMBANKMENT DETAIL.

CORNELIUS CREEK/ LAKE NORMAN

SBG -L- STA. 17+30 RT TO END OF BRIDGE

SBG -L- STA. 20+79 LT TO END OF BRIDGE

BEGIN BRIDGE
-L- STA. 21+06.00

END BRIDGE
-L- STA. 23+06.00

SBG -L- STA. 24+12 LT TO END OF BRIDGE

PROPERTY LINE FOLLOWS 760' CONTOUR (NGVD 29) PER DB 360 PG 290

+55 -L- 70' LT

+66.71 -L- 30' LT

-L- PC Sta. 25+66.71

-Y3- POT Sta. 10+00.00 =
-L- PC Sta. 25+89.46
S 29° 31' 58.7" W

-L- PRC Sta. 28+21.74

-L- PT Sta. 30+76.78

-L- POT STA. 33+74.66
S 61° 24' 34.1" E

3
CORNELIUS FAMILY, LLC
DB 1977 PG 668
DB 360 PG 290

DETAIL A
LATERAL "V" DITCH
(Not to Scale)
Natural Ground, 2:1, b, 1' Ft., Fill Slope, d
Min. D = 1.5 Ft.
Max. d = 1.5 Ft.
b = 5.0 Ft.
Type of Liner = PSRM
FROM -L- STA 26+50 TO 28+00 RT
FROM -L- STA 28+00 TO 31+00 LT

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground, 2:1, D, 4:1 or Flatter, Front Ditch Slope
Min. D = 1.5 Ft.
FROM -L- STA. 31+20 TO STA. 32+50 LT

3
CORNELIUS FAMILY, LLC
DB 1977 PG 668
DB 360 PG 290

CL II RIP RAP TO EL. 760.0 175 TONS (21+94)

CL II RIP RAP TO EL. 760.0 175 TONS (23+18)

27' INC. +31.71

+85 -L- 30' LT 37' LT 54' LT

+21.74 -L- 30' LT

LATERAL V DITCH -L- STA 28+00 TO 31+00 LT LINE WITH PSRM SEE DETAIL A

CLEAN SEDIMENT FROM PIPE

SPECIAL CUT DITCH -L- STA 31+20 TO 32+50 LT SEE DETAIL B

100' TAPER

+50 -L- 47' LT

+76.78 -L- EX. R/W

+00 -L- EX.R/W

+63 -L- 46' LT

+65 -L- 42' LT EX.R/W

TO HWY 21

CORNELIUS RD SR 1302

22' BST

EXCAVATE EXISTING EMBANKMENT FROM EL. 747.0 AT 3H:1V SLOPE, TYP. EXCAVATION = 710CY
EXCAVATION = 730CY

CONC & STEEL BRIDGE * 57

GRADE TO DRAIN

CL B-RIP RAP 11' x 11' x 1.5'

LATERAL V DITCH -L- STA. 26+50 TO 28+00 RT LINE WITH PSRM SEE DETAIL A

+21.78 55.36'

RETAIN EXISTING DITCH

+00 -L- EX.R/W

+25 -L- 65' RT

+26 -L- EX.R/W

SPECIAL CUT DITCH -L- STA 29+00 TO 31+00 RT LINE WITH PSRM SEE DETAIL C

SPECIAL CUT DITCH -L- STA 31+25 TO 32+50 RT LINE WITH PSRM SEE DETAIL C

+73 -L- 56' RT EX.R/W

+29 -L- 104' RT 111' RT

+72 -L- 104' RT 122' RT

+66 -L- 104' RT 122' RT

+52 -L- 104' RT 111' RT

-Y3- PT Sta. 10+77.92

-Y3- PC Sta. 10+15.31

C. PRESTON CORNELIUS
DB 1669 PG 2492
PB 62 PG 27
5

4
SLF IINC
MAGNOLIA BAYS JV, LLC
DB 2174 PG 1392
PB 60 PG 132
LOT 5

+05 -L- EX.R/W 104' RT

+52 -L- 104' RT

+73 -L- 104' RT

LOT LINE PER PB 52 PG 119

DRY DETENTION /HAZARDOUS SPILL BASIN SEE DETAIL SHEET 2D-01 DDE=585CY

APPROXIMATE 760' CONTOUR (NGVD 29) SEE PB 16 PG 180

SBG END OF BRIDGE TO -L- STA. 25+40 RT

S 04°28'59" E 55.04'

N 73°23'51" W 212.84'

CORNELIUS CREEK/ LAKE NORMAN

+52 -Y3- 30' RT

+53.5 -L- 99' RT EXIST. R/W

N 76°19'43" W 200.00'

S 13° 35' 26.6" W

ROCK COLUMN

ROCK SIGN

BK PAVERS

TWIN SISTERS LN (FORMERLY PINTO LANE SR 1433) AS PER PB 62 PG 27

+52 -Y3- 29.711' LT

6
C. PRESTON CORNELIUS
DB 1669 PG 2492

7
DUKE ENERGY
DB 348 PG 219
DB 78 PG 15

TRANSITION CURB & GUTTER TO MATCH EXISTING (-Y3- LT & RT)

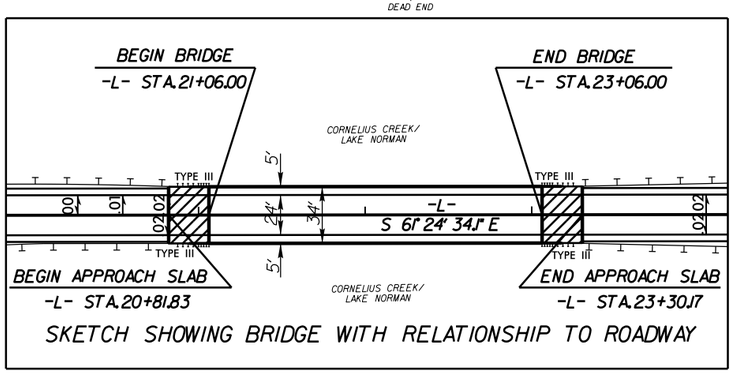
END CONSTRUCTION
-Y3- STA. 11+45.00

-Y3- POT Sta. 11+60.37

DEAD END

END TIP PROJECT B-5142
-L- POT STA. 33+38.79

DETAIL C
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground, 2:1, D, 4:1 or Flatter, Front Ditch Slope
Min. D = 1.5 Ft.
Max d = 1.5 Ft.
Type of Liner = PSRM
FROM -L- STA. 29+00 TO STA. 31+00 RT
FROM -L- STA. 31+25 TO STA. 32+50 RT



SKETCH SHOWING BRIDGE WITH RELATIONSHIP TO ROADWAY

PAVEMENT REMOVAL

SEE SHEET 2B-01 FOR -Y3- BRICK PAVER TRANSITION AND CONCRETE HEADER

SEE SHEET 2D-01 FOR DRY DETENTION/ HAZARDOUS SPILL BASIN DETAIL

SEE SHEET 6 FOR -L- PROFILE

SEE SHEET 7 FOR -Y3- PROFILE

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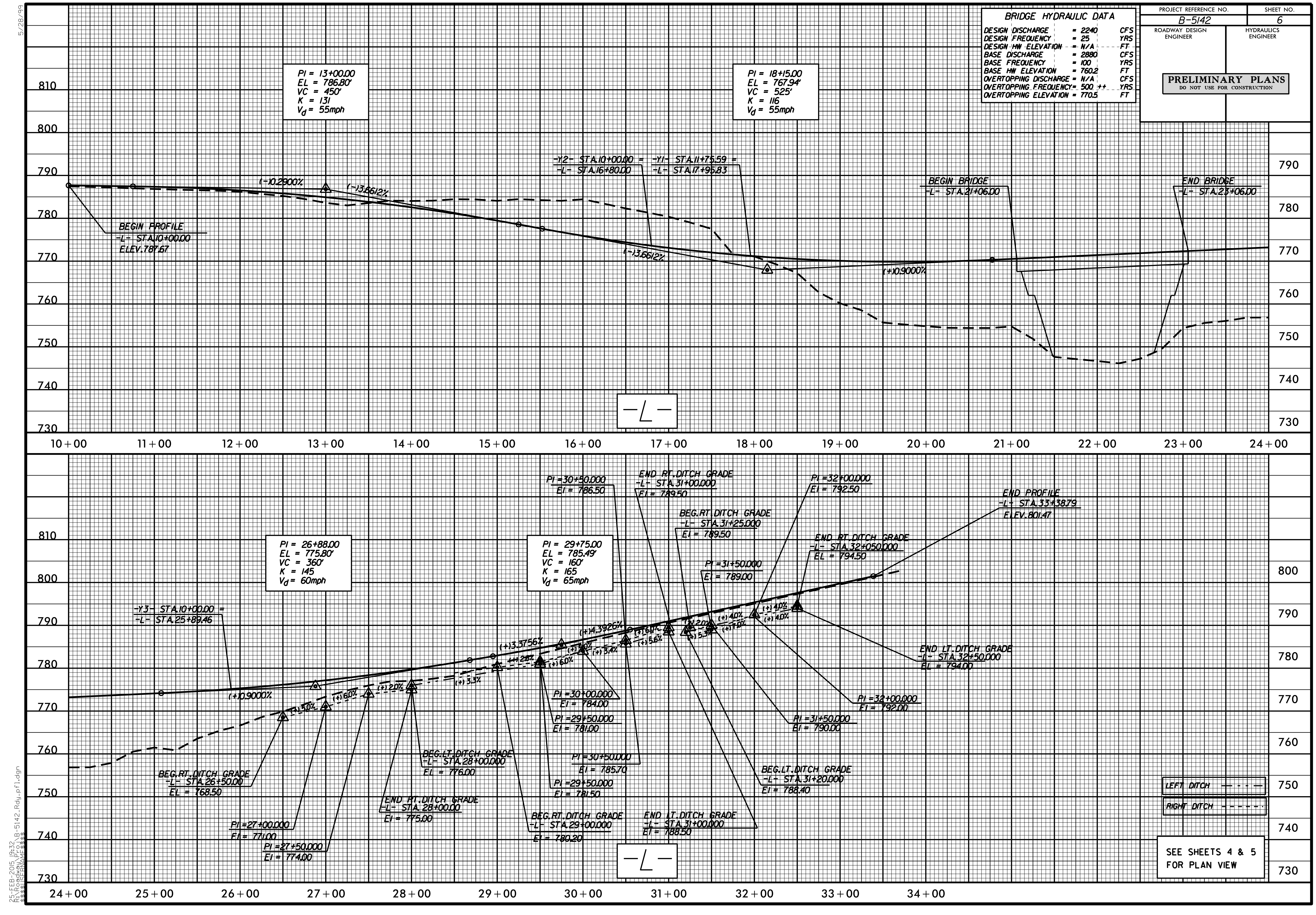
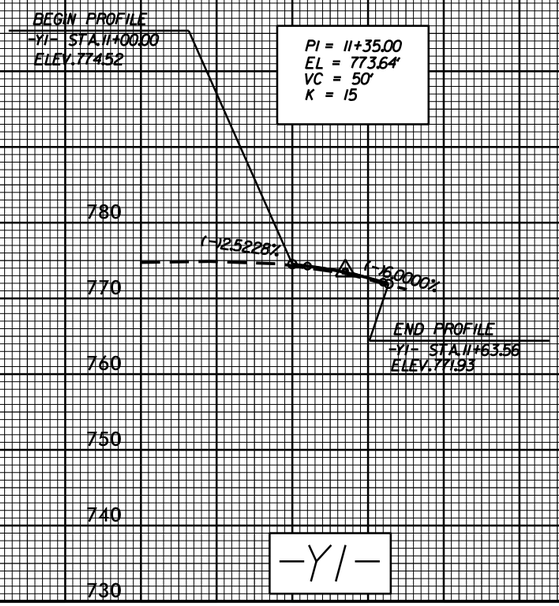


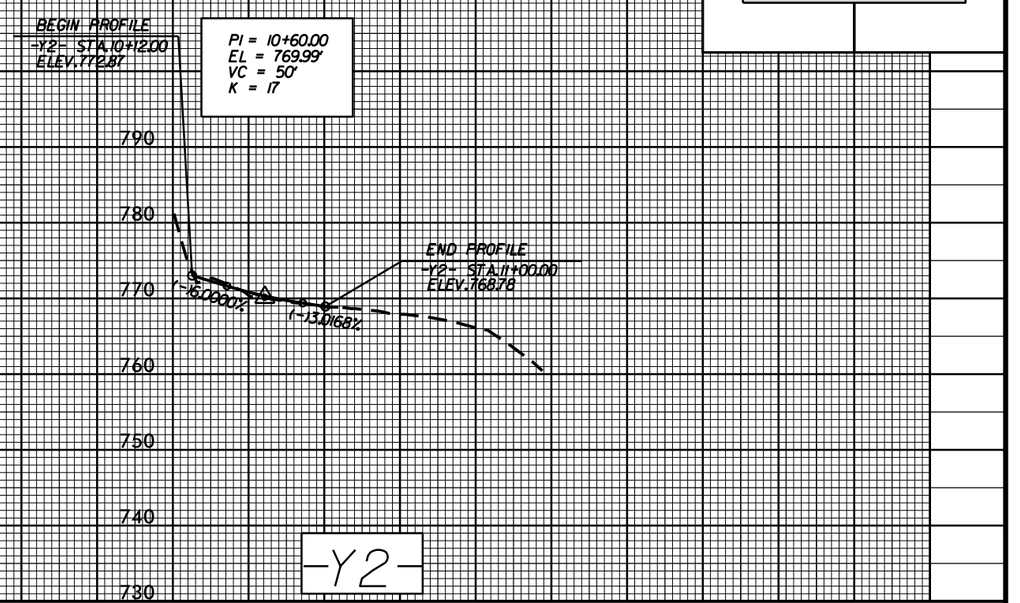
BRIDGE HYDRAULIC DATA
DESIGN DISCHARGE = 2240 CFS
DESIGN FREQUENCY = 25 YRS
DESIGN HW ELEVATION = N/A FT
BASE DISCHARGE = 2880 CFS
BASE FREQUENCY = 100 YRS
BASE HW ELEVATION = 760.2 FT
OVERTOPPING DISCHARGE = N/A CFS
OVERTOPPING FREQUENCY = 500 ++ YRS
OVERTOPPING ELEVATION = 770.5 FT
PROJECT REFERENCE NO.
B-5142
SHEET NO.
6
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
PI = 13+00.00
EL = 786.80'
VC = 450'
K = 131
Vd = 55mph
PI = 18+15.00
EL = 767.94'
VC = 525'
K = 116
Vd = 55mph
-Y2- STA.10+00.00 =
-L- STA.16+80.00
-Y1- STA.11+75.59 =
-L- STA.17+95.83
BEGIN BRIDGE
-L- STA.21+06.00
END BRIDGE
-L- STA.23+06.00
BEGIN PROFILE
-L- STA.10+00.00
ELEV.787.67
(-)0.2900%
(-)3.6612%
(-)3.6612%
(+)0.9000%
-L-
PI = 26+88.00
EL = 775.80'
VC = 360'
K = 145
Vd = 60mph
PI = 29+75.00
EL = 785.49'
VC = 160'
K = 165
Vd = 65mph
-Y3- STA.10+00.00 =
-L- STA.25+89.46
PI =30+50.000
EI = 786.50
END RT.DITCH GRADE
-L- STA.31+00.000
EI = 789.50
PI =32+00.000
EI = 792.50
END PROFILE
-L- STA.33+38.79
ELEV.801.47
BEG.RT.DITCH GRADE
-L- STA.31+25.000
EI = 789.50
END RT.DITCH GRADE
-L- STA.32+050.000
EL = 794.50
PI =31+50.000
EI = 789.00
(+)0.9000%
(+)3.3756%
(+)4.3926%
END LT.DITCH GRADE
-L- STA.32+50.000
EL = 794.00
PI =32+00.000
EI = 792.00
PI =31+50.000
EI = 790.00
PI =30+00.000
EI = 784.00
PI =29+50.000
EI = 781.00
PI =30+50.000
EI = 785.70
PI =29+50.000
EI = 781.50
BEG.LT.DITCH GRADE
-L- STA.28+00.000
EL = 776.00
BEG.RT.DITCH GRADE
-L- STA.26+50.000
EL = 768.50
END RT.DITCH GRADE
-L- STA.28+00.00
EI = 775.00
BEG.RT.DITCH GRADE
-L- STA.29+00.000
EI = 780.20
END LT.DITCH GRADE
-L- STA.31+00.000
EI = 788.50
BEG.LT.DITCH GRADE
-L- STA.31+20.000
EI = 788.40
PI =27+00.000
EI = 771.00
PI =27+50.000
EI = 774.00
LEFT DITCH
RIGHT DITCH
SEE SHEETS 4 & 5 FOR PLAN VIEW
25-FEB-2015 10:32
5/28/99

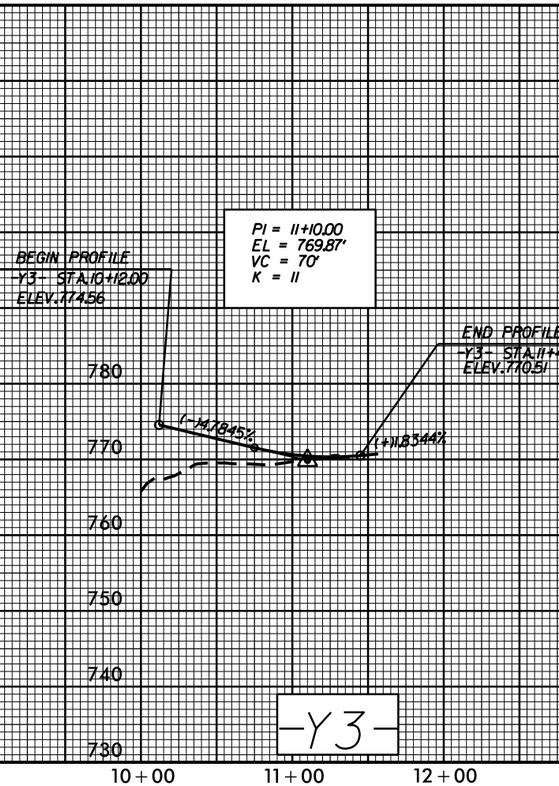
5/28/99

PROJECT REFERENCE NO.	SHEET NO.
B-5142	7
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION







SEE SHEETS 4 & 5
FOR PLAN VIEW

25-FEB-2015 19:32
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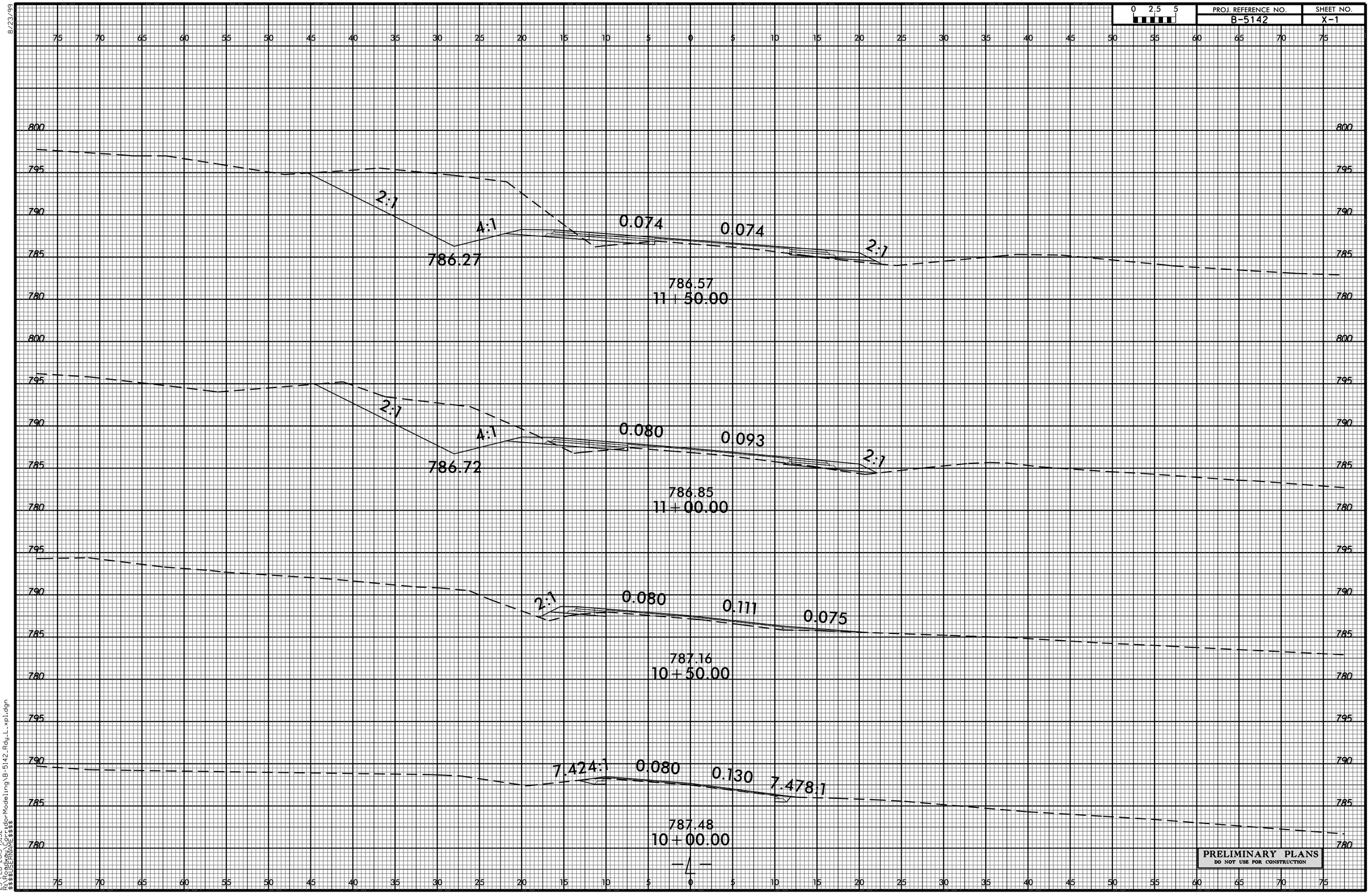
0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-5142	X-1



PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

8/23/99

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$$$$USERNAME$$$$

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0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-5142	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

795
790
785
780
806

2:1
4:1
783.86
0.060
0.060
2:1
783.58
13+00.00

795
790
785
780
806

2:1
4:1
784.76
0.060
0.060
2:1
785.21
12+50.00

795
790
785
780
806

2:1
4:1
785.46
0.060
0.060
2:1
786.20
12+00.00

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

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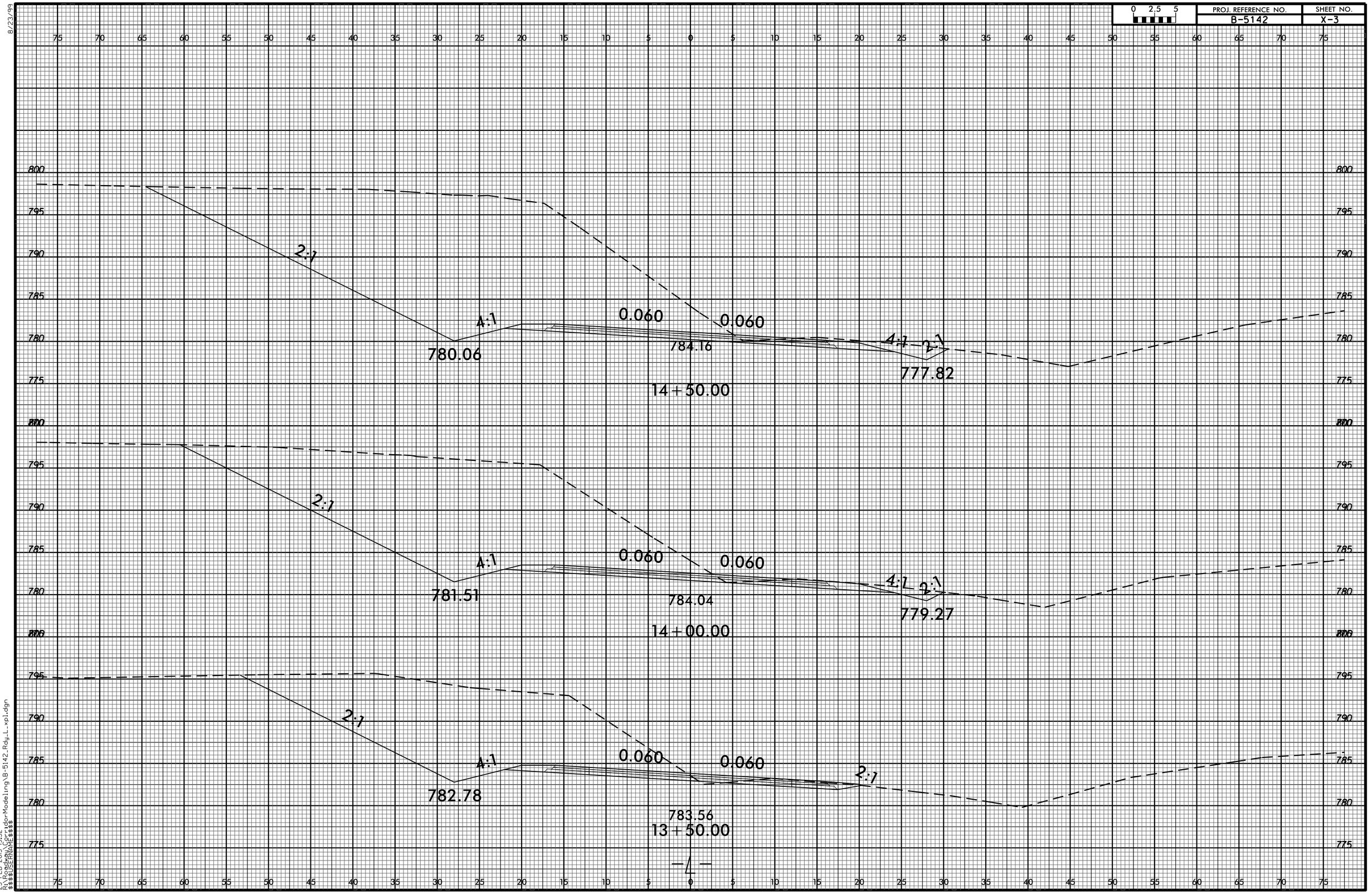
8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-5142	X-3



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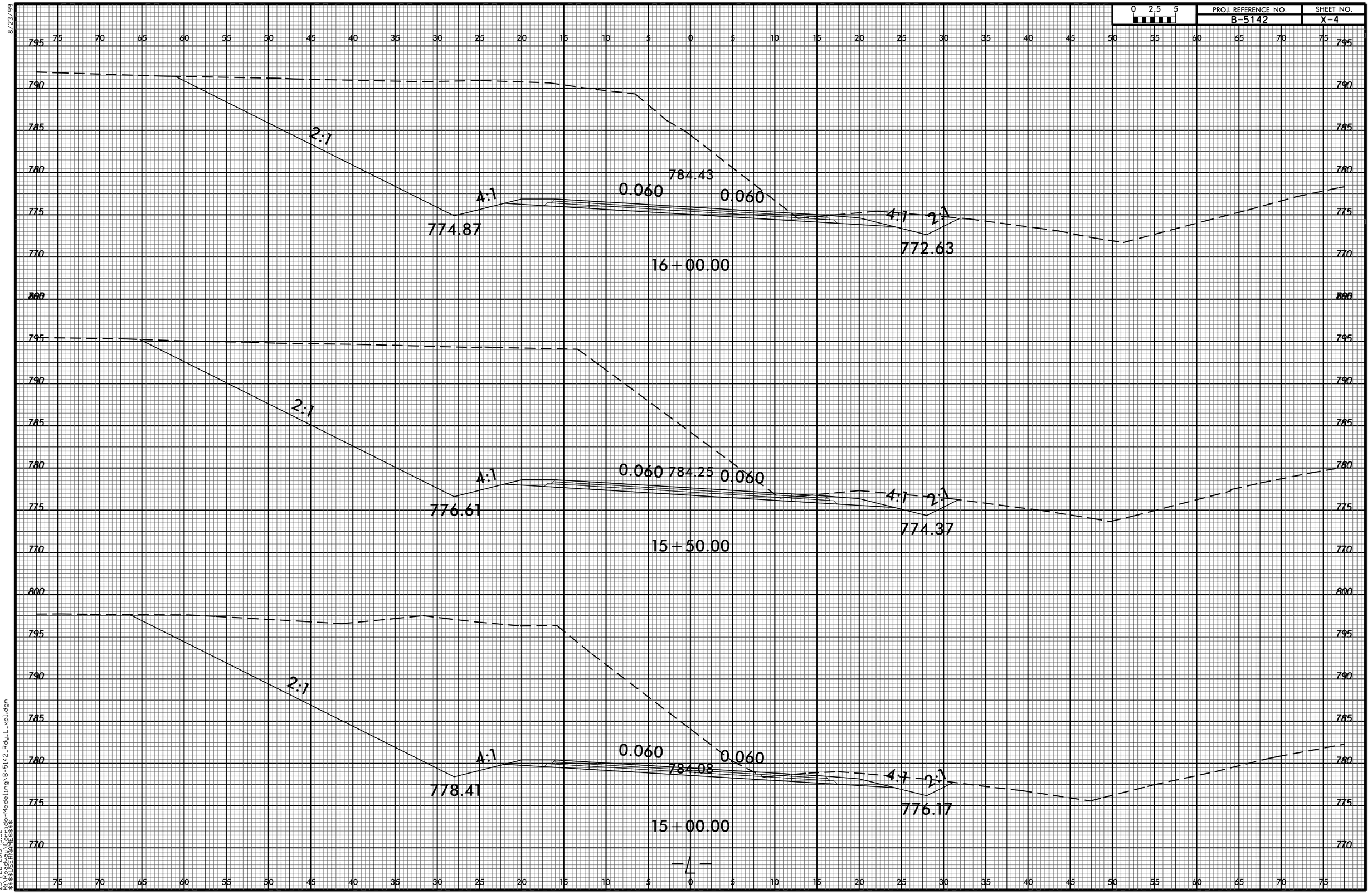
8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-5142	X-4



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$$$$USERNAME$$$$

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-5142	X-5

-Y1-

0.060

0.060

770.00

4:1

2:1

768.35

771.08

18+00.00

780

775

770

765

2:1

4:1

770.98

0.060

777.53

0.060

770.87

4:1

769.21

17+50.00

785

780

775

770

765

2:1

4:1

772.06

0.060

780.36

0.060

-Y2-

17+00.00

785

780

775

770

765

2:1

4:1

773.36

0.060

782.29

0.060

-Y2-

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

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R:\Roadway\Corridor Modeling\B-5142_Rdy_L_xpl.dgn
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8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-5142	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

780 775 770 765 760 755 750 745

0.029 0.029

769.27

3.27:1

1.5:1

EL. 761.00

755.68
19+50.00

0.047 0.047

769.15

6.23:1

1.5:1

EL. 761.00

760.16
19+00.00

0.060 0.060

769.35

6.23:1

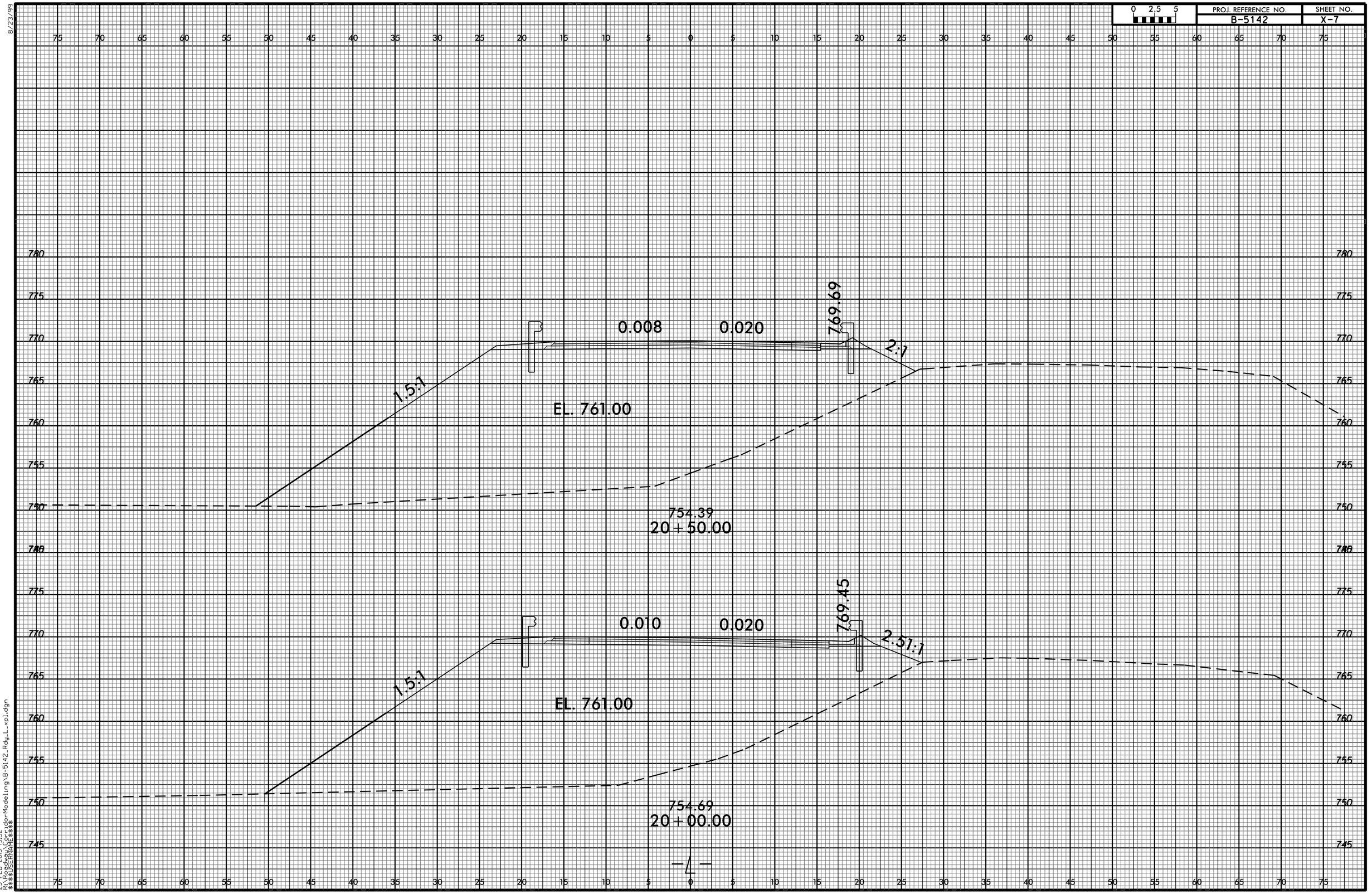
2:1

767.21
18+50.00

25-FEB-2015 19:32
R:\Roadway\CorridorModeling\B-5142_Rdy_L_xpl.dgn
$$$$USERNAME$$$$

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-5142	X-7



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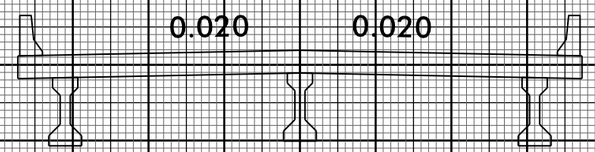
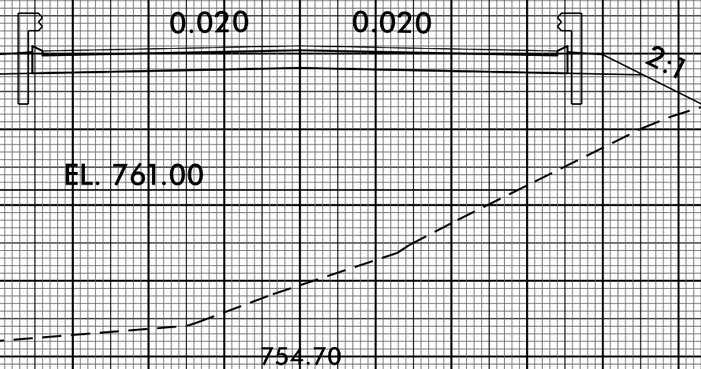
8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-5142	X-8



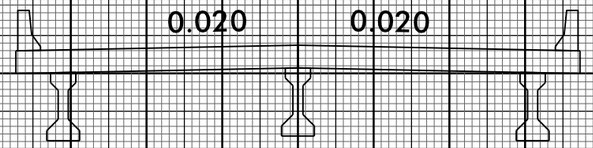
747.65
21+50.00



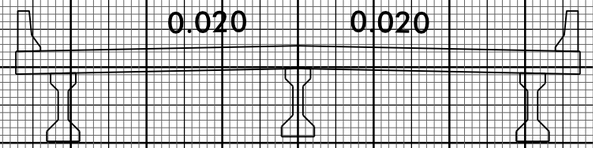
754.70
21+00.00

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-5142	X-9



747.21
22+50.00



746.69
22+00.00

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8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-5142	X-10

772.36

772.37

0.020

0.020

1.5:1

2:1

EL. 761.00

755.54
23 + 50.00

0.020

0.020

754.11
23 + 00.00

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8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-5142	X-11

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

785 780 775 770 765 760 755 750

0.003 0.020 773.24

1.5:1 2:1

EL. 761.00

757.89
24+50.00

772.79 0.020 0.020 772.80

1.5:1 2:1

EL. 761.00

756.86
24+00.00

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$$$$USERNAME$$$$

8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-5142	X-12

0.052 0.052 -Y3-

2:1

766.63
26+00.00

0.034 0.034 -Y3-

1.5:1

EL. 761.00

763.56
25+50.00

773.67

0.015 0.020

2:1

1.5:1

EL. 761.00

761.48
25+00.00

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0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-5142	X-13

0.008 0.008

2:1 2:1 2:1 2:1

777.17
28+00.00

775.00

0.027 0.027

2:1 2:1 2:1 2:1

775.97
27+50.00

774.00

0.045 0.045

2:1 2:1 2:1 2:1

773.37
27+00.00

771.00

0.060 0.060

2:1 2:1

769.89
26+50.00

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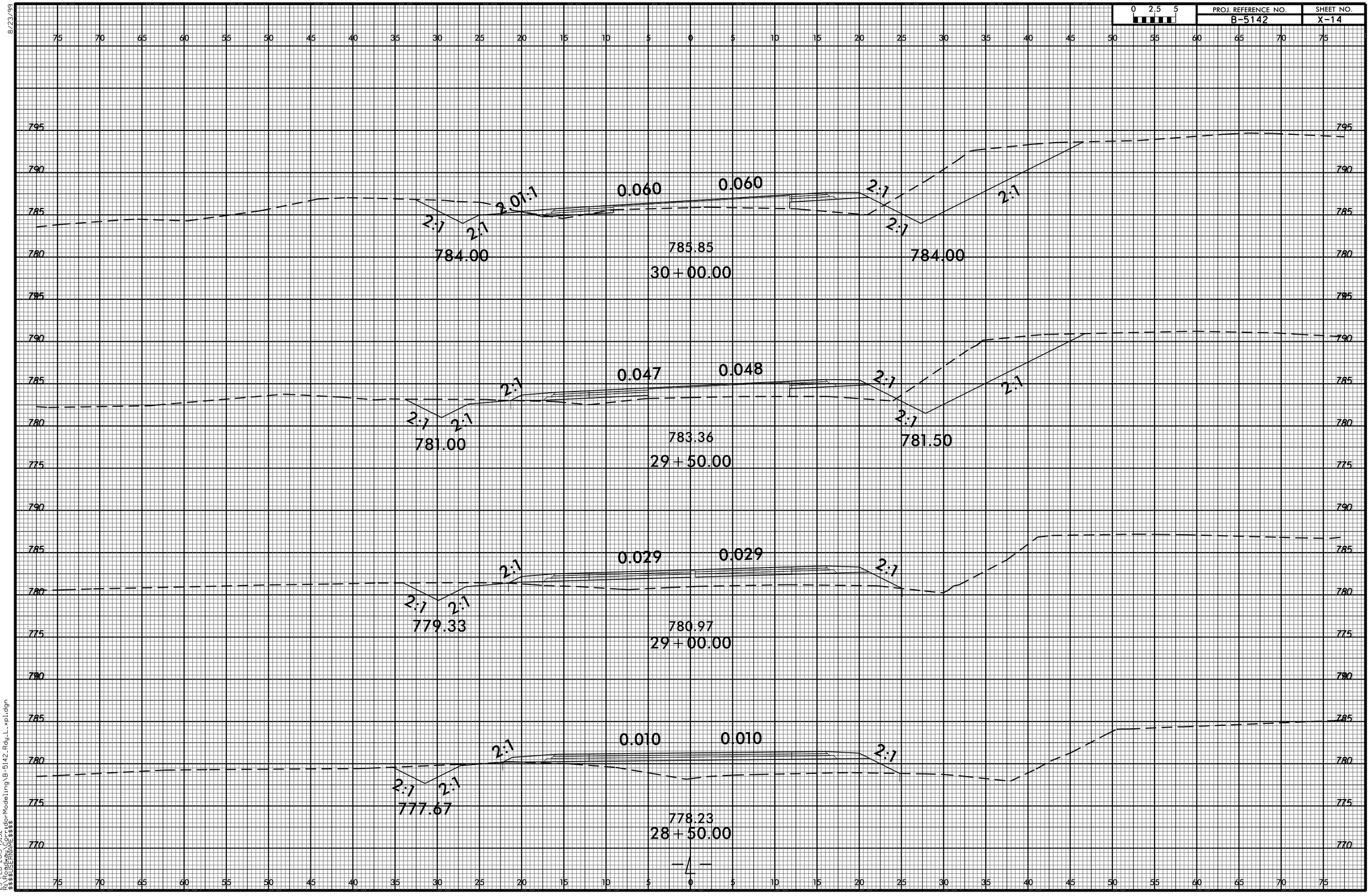

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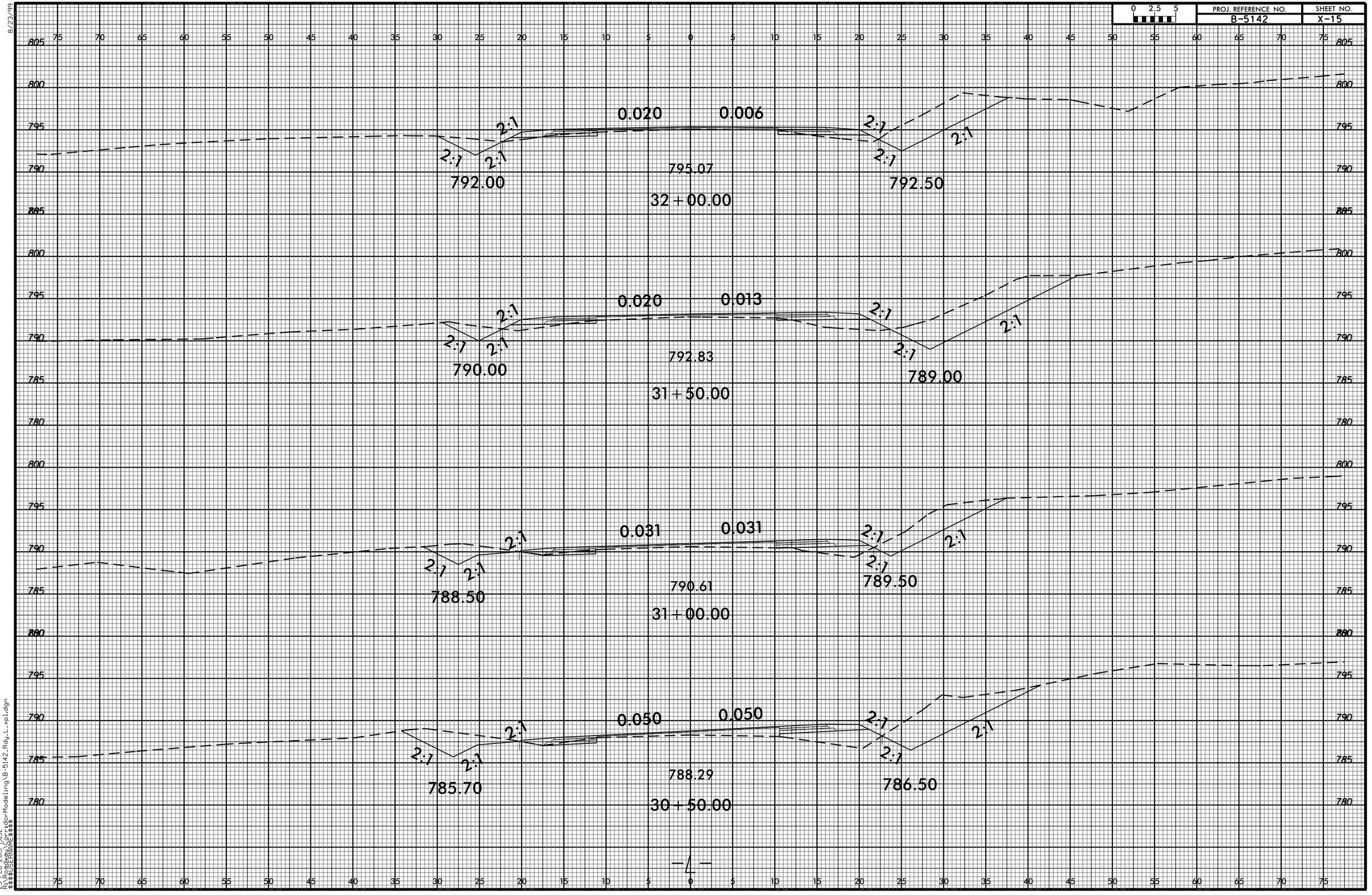
0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-5142	X-15



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0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-5142	X-16

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

805 800 795 810 805 800 795 800 795 790 785

801.82
33 + 50.00

2:1 0.020 0.020 2:1

799.53
33 + 00.00

0.020 0.020

2:1 2:1 2:1 2:1 2:1 2:1

797.33
794.00 794.50
32 + 50.00

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0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-5142	X-17

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

780
775
770
765

0.016 0.008

772.51
11+50.00

780
775
770
765

6:1 0.020 0.020 5:1

774.31
11+00.00

780
775
770
765

774.86
10+50.00

780
775
770
765

774.75
10+00.00

—Y1—

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

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8/23/99

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	B-5142	X-18

765.92
12+00.00

767.75
11+50.00

0.025 0.025 0.025 3.566:1

768.73
11+00.00

2:1 4:1 0.003 0.003 4:1 2:1

770.18
10+50.00

781.05
10+00.00

-Y2-

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$$$$USERNAME$$$$

770.60
11+50.00

4:1 770.53 0.002 0.002 770.60 4:1

769.71
11+00.00

4:1 772.82 0.008 0.008 772.50 4:1

769.56
10+50.00

765.77
10+00.00

-Y3-