



PAT McCRORY
Governor

NICHOLAS J. TENNYSON
Secretary

June 29, 2016

North Carolina Division of Water Resources
1617 Mail Service Center
Raleigh, NC 27699-1617

ATTN: Mr. Rob Ridings
NCDOT Project Coordinator

SUBJECT: **Application for Section 401 Water Quality Certification and Neuse Riparian Buffer Authorization** for the proposed widening of the I-540 ramp at Falls of Neuse Road, Wake County, Division 5. F.A. Project No. NHPP-0540(030), T.I.P. Project No. I-5710; Debit \$270 from WBS No. 50125.1.FS1

Dear Sir:

The North Carolina Department of Transportation (NCDOT) proposes to widen ramps in four locations along I-540 in Wake County. Of these sites, jurisdictional impacts will occur at only the Falls of Neuse Road location. There will be <0.01 acre of temporary impact to an unnamed tributary to Falls Lake due to the installation of a rip rap apron at the outfall of a 15-inch stormwater pipe. Total impacts to the Neuse River Riparian buffers are 1,837 square feet.

Please see the enclosed copies of the Pre-Construction Notification (PCN), stormwater management plan, permit drawings, buffer impact drawings, and roadway design plans for the subject project. A Programmatic Categorical Exclusion (PCE) was completed for this project in April 2016 and distributed shortly after completion. Additional copies are available upon request.

This project calls for a letting date of September 20, 2016 and a review date of August 2, 2016.

Regulatory Approvals

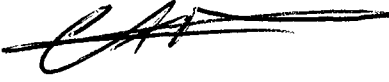
Section 404 Permit: We anticipate that due to the limited impact of the project, Nationwide Permit 3 would be applicable. No written authorization is anticipated for the project.

Section 401 Permit: We anticipate a 401 Water Quality Certification number 3883 and Neuse River Buffer Authorization will apply to this project. NCDOT is requesting written concurrence from the North Carolina Department of Environmental Quality, Division of Water Resources.



A copy of this notice will be posted on the NCDOT website at:
<http://connect.ncdot.gov/resources/Environmental/>. If you have any questions or need additional information, please contact Jason Dilday at either (919) 707-6111 or jldilday@ncdot.gov.

Sincerely,



for

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

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:	<input checked="" type="checkbox"/> Section 404 Permit	<input type="checkbox"/> Section 10 Permit
1b. Specify Nationwide Permit (NWP) number: 3 or General Permit (GP) number:		
1c. Has the NWP or GP number been verified by the Corps?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
1d. Type(s) of approval sought from the DWQ (check all that apply):		
<input checked="" type="checkbox"/> 401 Water Quality Certification – Regular <input type="checkbox"/> Non-404 Jurisdictional General Permit <input type="checkbox"/> 401 Water Quality Certification – Express <input checked="" type="checkbox"/> 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: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	For the record only for Corps Permit: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
1f. Is payment into a mitigation bank or in-lieu fee program proposed for mitigation of impacts? If so, attach the acceptance letter from mitigation bank or in-lieu fee program.	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
1g. Is the project located in any of NC's twenty coastal counties. If yes, answer 1h below.	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
1h. Is the project located within a NC DCM Area of Environmental Concern (AEC)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No

2. Project Information

2a. Name of project:	Ramp metering on I540 at Falls of the Neuse Road
2b. County:	Wake
2c. Nearest municipality / town:	Raleigh
2d. Subdivision name:	<i>not applicable</i>
2e. NCDOT only, T.I.P. or state project no.:	I-5710

3. Owner Information

3a. Name(s) on Recorded Deed:	North Carolina Department of Transportation
3b. Deed Book and Page No.	<i>not applicable</i>
3c. Responsible Party (for LLC if applicable):	<i>not applicable</i>
3d. Street address:	1598 Mail Service Center
3e. City, state, zip:	Raleigh, NC 27699-1598
3f. Telephone no.:	(919) 707-6111
3g. Fax no.:	(919) 212-5785
3h. Email address:	jldilday@ncdot.gov

4. Applicant Information (if different from owner)	
4a. Applicant is:	<input type="checkbox"/> Agent <input type="checkbox"/> Other, specify:
4b. Name:	<i>not applicable</i>
4c. Business name (if applicable):	
4d. Street address:	
4e. City, state, zip:	
4f. Telephone no.:	
4g. Fax no.:	
4h. Email address:	
5. Agent/Consultant Information (if applicable)	
5a. Name:	<i>not applicable</i>
5b. Business name (if applicable):	
5c. Street address:	
5d. City, state, zip:	
5e. Telephone no.:	
5f. Fax no.:	
5g. Email address:	

B. Project Information and Prior Project History	
1. Property Identification	
1a. Property identification no. (tax PIN or parcel ID):	<i>not applicable</i>
1b. Site coordinates (in decimal degrees):	Latitude: 35.8999 (DD.DDDDDD) Longitude: -78.6128 (-DD.DDDDDD)
1c. Property size:	2.5 acres
2. Surface Waters	
2a. Name of nearest body of water (stream, river, etc.) to proposed project:	UT to Falls Lake
2b. Water Quality Classification of nearest receiving water:	WS-IV; NSW
2c. River basin:	Neuse
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 is predominately urban/residential.	
3b. List the total estimated acreage of all existing wetlands on the property: 0.1	
3c. List the total estimated linear feet of all existing streams (intermittent and perennial) on the property: 205	
3d. Explain the purpose of the proposed project: The widening of I-540 on ramps from single lane to double lane, at four locations to accommodate installation of ramp metering and other ITS/signal equipment.	
3e. Describe the overall project in detail, including the type of equipment to be used: The project involves lane widening of on-ramp to I-540 at four locations, in which jurisdictional impacts occur only at the Falls of the Neuse Road ramp. Standard road building equipment, such as trucks, dozers, and cranes will be used. There will be grading, paving, drainage improvements associated with the work.	
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:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Unknown
4b. If the Corps made the jurisdictional determination, what type of determination was made?	<input type="checkbox"/> Preliminary <input type="checkbox"/> Final
4c. If yes, who delineated the jurisdictional areas? Name (if known):	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?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Unknown
5b. If yes, explain in detail according to "help file" instructions.	
6. Future Project Plans	
6a. Is this a phased project?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> 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):						
<input type="checkbox"/> Wetlands <input checked="" type="checkbox"/> Streams - tributaries <input checked="" type="checkbox"/> Buffers <input type="checkbox"/> Open Waters <input type="checkbox"/> 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 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ		
Site 1 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ		
Site 1 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ		
Site 1 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ		
Site 1 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ		
Site 1 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Corps <input type="checkbox"/> 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 <input type="checkbox"/> P <input checked="" type="checkbox"/> T	Rip Rap Outlet	UT to Falls Lake	<input checked="" type="checkbox"/> PER <input type="checkbox"/> INT	<input checked="" type="checkbox"/> Corps <input type="checkbox"/> DWQ	3	25 (<0.01 ac)
Site 2 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> PER <input type="checkbox"/> INT	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ		
Site 3 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> PER <input type="checkbox"/> INT	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ		
Site 4 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> PER <input type="checkbox"/> INT	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ		
Site 5 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> PER <input type="checkbox"/> INT	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ		
Site 6 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> PER <input type="checkbox"/> INT	<input type="checkbox"/> Corps <input type="checkbox"/> DWQ		
3h. Total stream and tributary impacts						25 If temporary (<0.01 ac)
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) O1 <input type="checkbox"/> P <input type="checkbox"/> T	4b. Name of waterbody (if applicable)	4c. Type of impact	4d. Waterbody type	4e. Area of impact (acres)
O2 <input type="checkbox"/> P <input type="checkbox"/> T				
O3 <input type="checkbox"/> P <input type="checkbox"/> T				
O4 <input type="checkbox"/> P <input type="checkbox"/> T				
4f. Total open water impacts				0 Permanent 0 Temporary

4g. Comments:

5. Pond or Lake Construction

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

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

5g. Comments:

5h. Is a dam high hazard permit required?	<input type="checkbox"/> Yes	<input type="checkbox"/> No	If yes, permit ID no:
5i. Expected pond surface area (acres):			
5j. Size of pond watershed (acres):			
5k. Method of construction:			

6. Buffer Impacts (for DWQ)

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

6a. Project is in which protected basin?			<input checked="" type="checkbox"/> Neuse <input type="checkbox"/> Catawba	<input type="checkbox"/> Tar-Pamlico <input type="checkbox"/> Randleman	<input type="checkbox"/> Other: Jordan
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 <input checked="" type="checkbox"/> P <input type="checkbox"/> T	Road Crossing	UT to Falls Lake	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	245	1592
B1 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> Yes <input type="checkbox"/> No		
B3 <input type="checkbox"/> P <input type="checkbox"/> T			<input type="checkbox"/> Yes <input type="checkbox"/> No		
6h. Total buffer impacts				245	1592
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.
Riprap aprons will be used at the end of stormwater pipes to reduce flows before entering streams. A retaining wall will be installed to minimize slopes in the area of jurisdictional streams and riparian buffers. See Stormwater Management Plan for measures.

1b. Specifically describe measures taken to avoid or minimize the proposed impacts through construction techniques.
Best Management Practices for the Protection of Surface Waters will be employed; Design Standards in Sensitive Watersheds will be employed.

2. Compensatory Mitigation for Impacts to Waters of the U.S. or Waters of the State

2a. Does the project require Compensatory Mitigation for impacts to Waters of the U.S. or Waters of the State?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If no, explain
2b. If yes, mitigation is required by (check all that apply):	<input type="checkbox"/> DWQ <input type="checkbox"/> Corps
2c. If yes, which mitigation option will be used for this project?	<input type="checkbox"/> Mitigation bank <input type="checkbox"/> Payment to in-lieu fee program <input type="checkbox"/> Permittee Responsible Mitigation

3. Complete if Using a Mitigation Bank

3a. Name of Mitigation Bank: not applicable

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

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

4a. Approval letter from in-lieu fee program is attached.	<input type="checkbox"/> Yes
4b. Stream mitigation requested:	linear feet
4c. If using stream mitigation, stream temperature:	<input type="checkbox"/> warm <input type="checkbox"/> cool <input type="checkbox"/> cold
4d. Buffer mitigation requested (DWQ only):	square feet
4e. Riparian wetland mitigation requested:	acres
4f. Non-riparian wetland mitigation requested:	acres
4g. Coastal (tidal) wetland mitigation requested:	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?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
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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?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
1b. If yes, then is a diffuse flow plan included? If no, explain why. Comments: See attached permit drawings.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> 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?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
2c. If this project DOES NOT require a Stormwater Management Plan, explain why:	
2d. If this project DOES require a Stormwater Management Plan, then provide a brief, narrative description of the plan: See attached permit drawings.	
2e. Who will be responsible for the review of the Stormwater Management Plan?	<input type="checkbox"/> Certified Local Government <input type="checkbox"/> DWQ Stormwater Program <input checked="" type="checkbox"/> DWQ 401 Unit
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):	<input type="checkbox"/> Phase II <input type="checkbox"/> NSW <input type="checkbox"/> USMP <input type="checkbox"/> Water Supply Watershed <input type="checkbox"/> Other:
3c. Has the approved Stormwater Management Plan with proof of approval been attached?	<input type="checkbox"/> Yes <input type="checkbox"/> No
4. DWQ Stormwater Program Review	
4a. Which of the following state-implemented stormwater management programs apply (check all that apply):	<input type="checkbox"/> Coastal counties <input type="checkbox"/> HQW <input type="checkbox"/> ORW <input type="checkbox"/> Session Law 2006-246 <input type="checkbox"/> Other:
4b. Has the approved Stormwater Management Plan with proof of approval been attached?	<input type="checkbox"/> Yes <input type="checkbox"/> No N/A
5. DWQ 401 Unit Stormwater Review	
5a. Does the Stormwater Management Plan meet the appropriate requirements?	<input type="checkbox"/> Yes <input type="checkbox"/> No N/A
5b. Have all of the 401 Unit submittal requirements been met?	<input type="checkbox"/> Yes <input type="checkbox"/> No N/A

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?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
1b. If you answered "yes" to the above, does the project require preparation of an environmental document pursuant to the requirements of the National or State (North Carolina) Environmental Policy Act (NEPA/SEPA)?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
1c. If you answered "yes" to the above, has the document review been finalized by the State Clearing House? (If so, attach a copy of the NEPA or SEPA final approval letter.) Comments:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
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)?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
2b. Is this an after-the-fact permit application?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
2c. If you answered "yes" to one or both of the above questions, provide an explanation of the violation(s):	
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?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
3b. If you answered "yes" to the above, submit a qualitative or quantitative cumulative impact analysis in accordance with the most recent DWQ policy. If you answered "no," provide a short narrative description. Due to the minimal transportation impact, 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?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
5b. Have you checked with the USFWS concerning Endangered Species Act impacts?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
5c. If yes, indicate the USFWS Field Office you have contacted.	<input checked="" type="checkbox"/> Raleigh	<input type="checkbox"/> Asheville
5d. What data sources did you use to determine whether your site would impact Endangered Species or Designated Critical Habitat? N.C. Natural Heritage Program database; USFWS-Raleigh Field Office website; biological surveys for protected species listed for Wake County, which includes red-cockaded woodpecker, dwarf wedgemussel and Michaux's sumac. The species received Biological Conclusions of "No Effect". Northern long-eared bat has been added to the species list for Wake County. A programmatic biological opinion (PBO) has been issued for the species. The PBO covers projects in Divisions 1-8. The programmatic determination for NLEB for this project is "May Affect, Likely to Adversely Affect".		
6. Essential Fish Habitat (Corps Requirement)		
6a. Will this project occur in or near an area designated as essential fish habitat?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
6b. What data sources did you use to determine whether your site would impact Essential Fish Habitat? NMFS County Index		
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)?	<input type="checkbox"/> Yes	<input checked="" type="checkbox"/> No
7b. What data sources did you use to determine whether your site would impact historic or archeological resources? NEPA Documentation		
8. Flood Zone Designation (Corps Requirement)		
8a. Will this project occur in a FEMA-designated 100-year floodplain?	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
8b. If yes, explain how project meets FEMA requirements: NCDOT Hydraulics Unit coordination with FEMA		
8c. What source(s) did you use to make the floodplain determination? FEMA Maps		
for Philip S. Harris III, 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.)	06-29-2016 Date



North Carolina Department of Transportation
Highway Stormwater Program
STORMWATER MANAGEMENT PLAN
FOR LINEAR ROADWAY PROJECTS



(Version 1.2; Released July 2012)

Project/TIP No.: I-5710 County(ies): Wake Page 1 of 3

General Project Information

Project No.:	I-5710	Project Type:	Roadway Widening	Date:	6/15/2016
NCDOT Contact:	Anthony Houser	Contractor / Designer:	Atkins - Dean Goodison		
Address:	1000 Birch Ridge Dr Raleigh, NC 27610	Address:	1616 E. Millbrook Road Suite 310 Raleigh, NC 27609		
Phone:	(919) 707-6253	Phone:	919-876-6888		
Email:	thouser@ncdot.gov	Email:	dean.goodison@atkinsglobal.com		
City/Town:	Raleigh	County(ies):	Wake		
River Basin(s):	Neuse	CAMA County?	No		
Primary Receiving Water:	Unnamed Tributary at Camp New Life	NCDWQ Stream Index No.:	27-20.5(2)		
NCDWQ Surface Water Classification for Primary Receiving Water		Primary:	Water Supply IV (WS-IV)		
		Supplemental:	Nutrient Sensitive Waters (NSW)		
Other Stream Classification:					
303(d) Impairments:	None				
Buffer Rules in Effect	Neuse				

Project Description

Project Length (lin. Miles or feet):	0.25	Surrounding Land Use:	Residential		
	Proposed Project		Existing Site		
Project Built-Upon Area (ac.)	0.95	ac.	0.82	ac.	
Typical Cross Section Description:	Roadway (I-540 WB on-ramp at Falls of Neuse Road): two (2) lanes at 12' each with 3' shoulder berm gutter. Embankment side slope varies 3:1 to 4:1.		Roadway (I-540 WB on-ramp at Falls of Neuse Road): one (1) lane at 16' with 3' shoulder berm gutter.		
Average Daily Traffic (veh/hr/day):	Design/Future:	7300 - 15200 (year 2036)	Existing:	6700 - 13900 (year 2016)	

General Project Narrative: Project involves widening of I-540 on ramps, from single lane to double lane, at four locations to accommodate installation of ramp metering and other ITS/signal equipment. Four locations are I-540 WB at (1) Leesville Road, (2) Creedmoor Road, (3) Six Forks Road, and (4) Falls of Neuse Road. Stream and Buffer impacts occur at only the Falls of Neuse ramp due to the installation of slope drains/outfall protection, and a retaining wall located on the embankment slope.

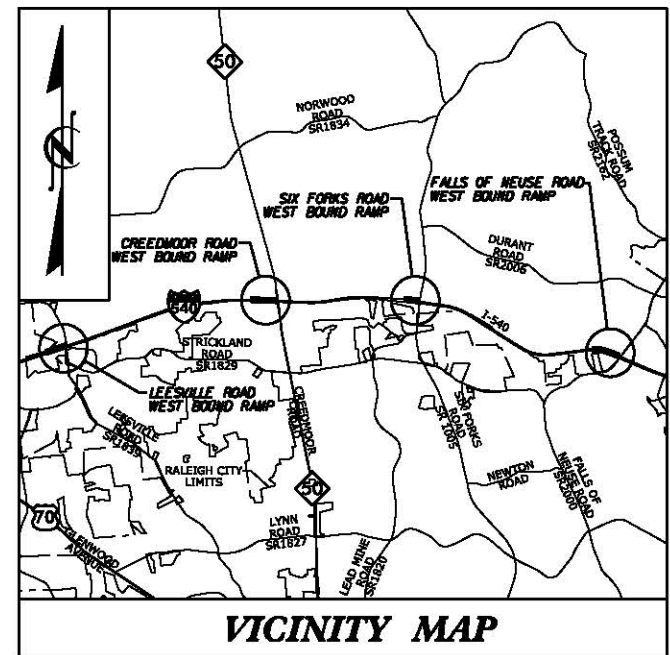
References

09/28/19

TIP PROJECT: I-5710

CONTRACT: C203791

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



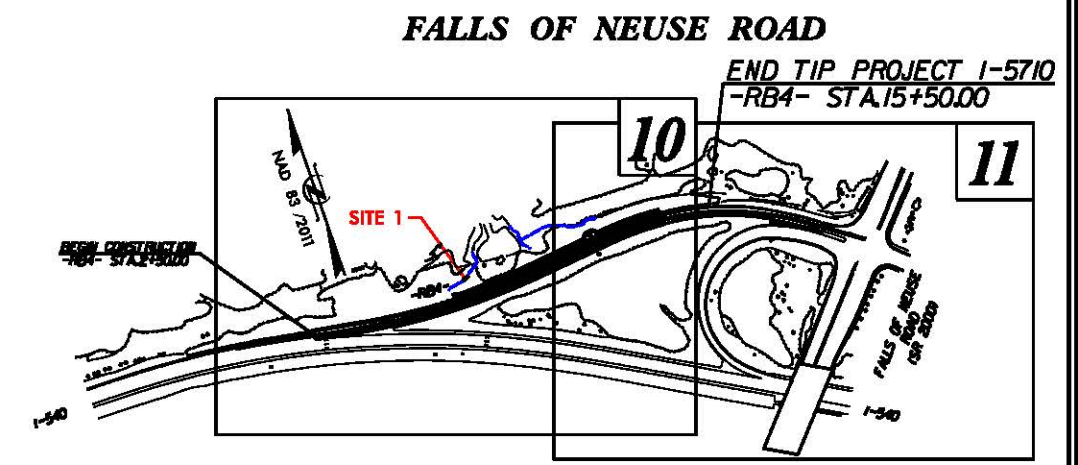
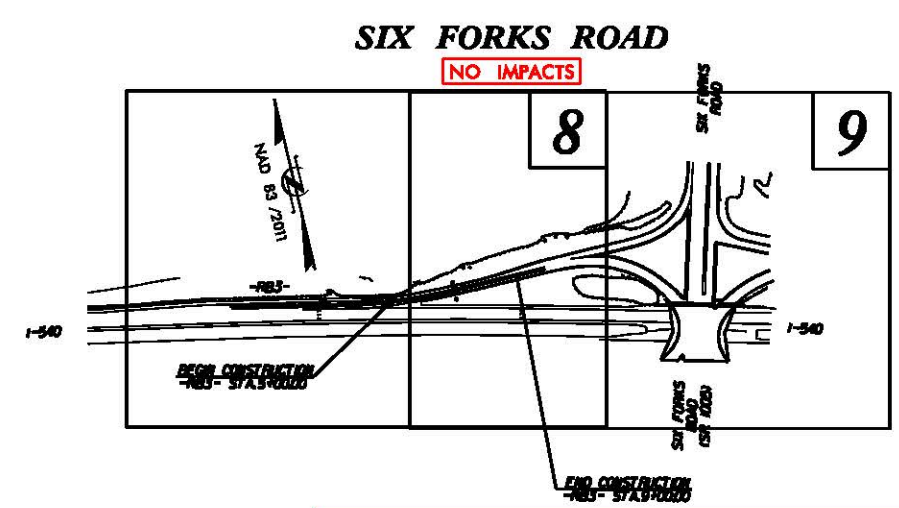
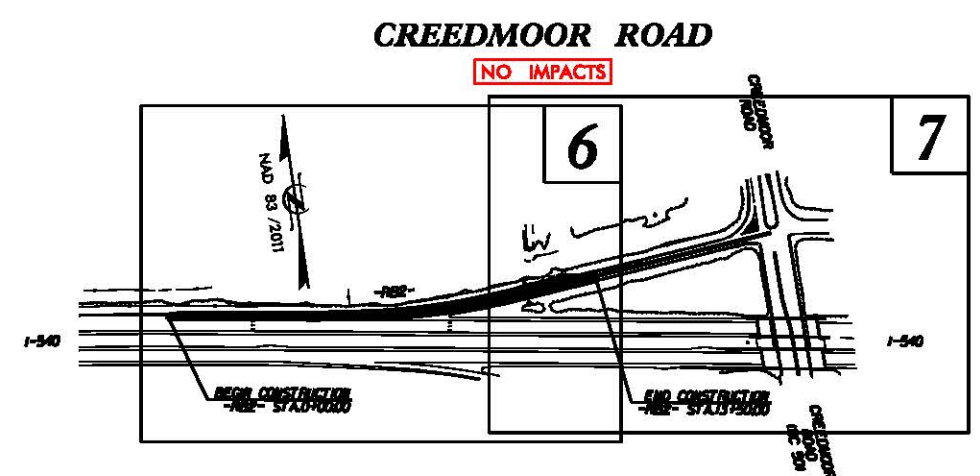
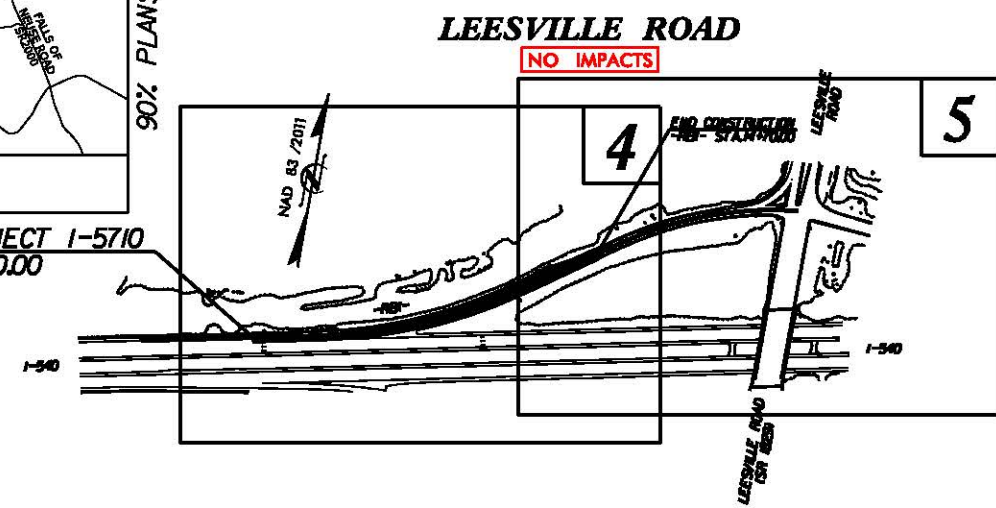
STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS WAKE COUNTY

LOCATION: WEST BOUND RAMP ALONG I-540 AT SR 1839 (LEESVILLE ROAD), NC 50 (CREEDMOOR ROAD), SR 1005 (SIX FORKS ROAD), AND SR 2000 (FALLS OF NEUSE ROAD).

TYPE OF WORK: INSTALLING RAMP METERS - WIDENING, GRADING, PAVING, DRAINAGE, RETAINING WALL, ITS, AND SIGNALS

STATE	STATE PROJECT EXPERIENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-5710	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
50125.1.FS1	NHPP-0540(030)	P.E.	
50125.3.1	NHPP-0540(030)	CONST.	

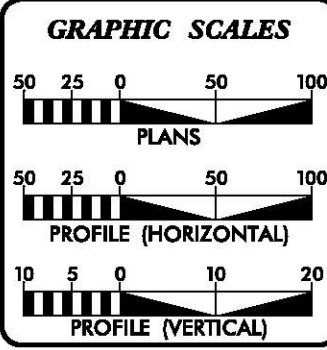
PERMIT DRAWING
SHEET 1 OF 5



WETLAND AND SURFACE WATER IMPACTS PERMIT

THIS IS A FULL CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



DESIGN DATA

ADT 2016	= 6,700-13,900
ADT 2036	= 7,300-15,200
DHV	= 11-20 %
D	= 100 %
*T	= 3-7 %
V	= 60 MPH
* (TTST 1% + DUAL 2-6%)	
FUNC. CLASS.	= INTERSTATE STATEWIDE TIER

PROJECT LENGTH

LENGTH ROADWAY T.I.P. PROJECT I-5710	= 0.790 MILE
TOTAL LENGTH T.I.P. PROJECT I-5710	= 0.790 MILE

Prepared in the Office of:

ATKINS
202 STANDARD SPECIFICATIONS

1616 E. MILLBROOK ROAD, SUITE #310
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEEB #F-0326

RIGHT OF WAY DATE: N/A

LETTING DATE: SEPTEMBER 20, 2016

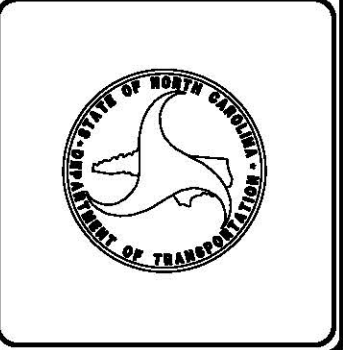
CLINTON MORGAN, P.E. PROJECT ENGINEER
IAN BERDEAU, E.I. PROJECT DESIGN ENGINEER
TONY HOUSER, P.E. NCDOT CONTACT

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: _____ P.E.

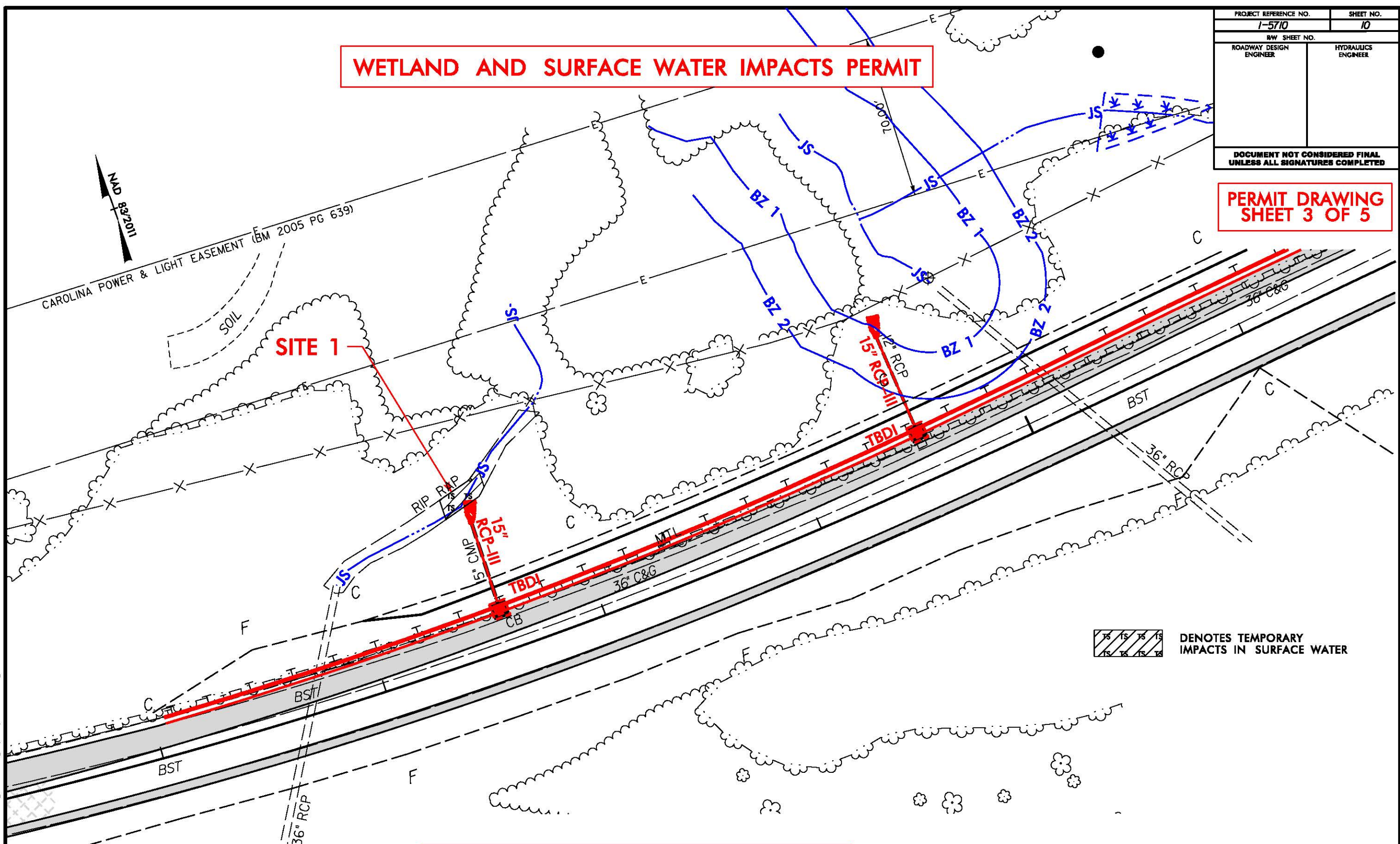


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PROJECT REFERENCE NO. 1-5710	SHEET NO. 10
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

WETLAND AND SURFACE WATER IMPACTS PERMIT

PERMIT DRAWING SHEET 3 OF 5



ENLARGED VIEW OF IMPACT AREAS

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

- PAVED SHOULDER
- MILL AND RESURFACE

NOTE: SEE TMP PLANS FOR TEMPORARY SHORING

NOTE: SEE SHEET 13 FOR -RB4- PROFILE VIEW

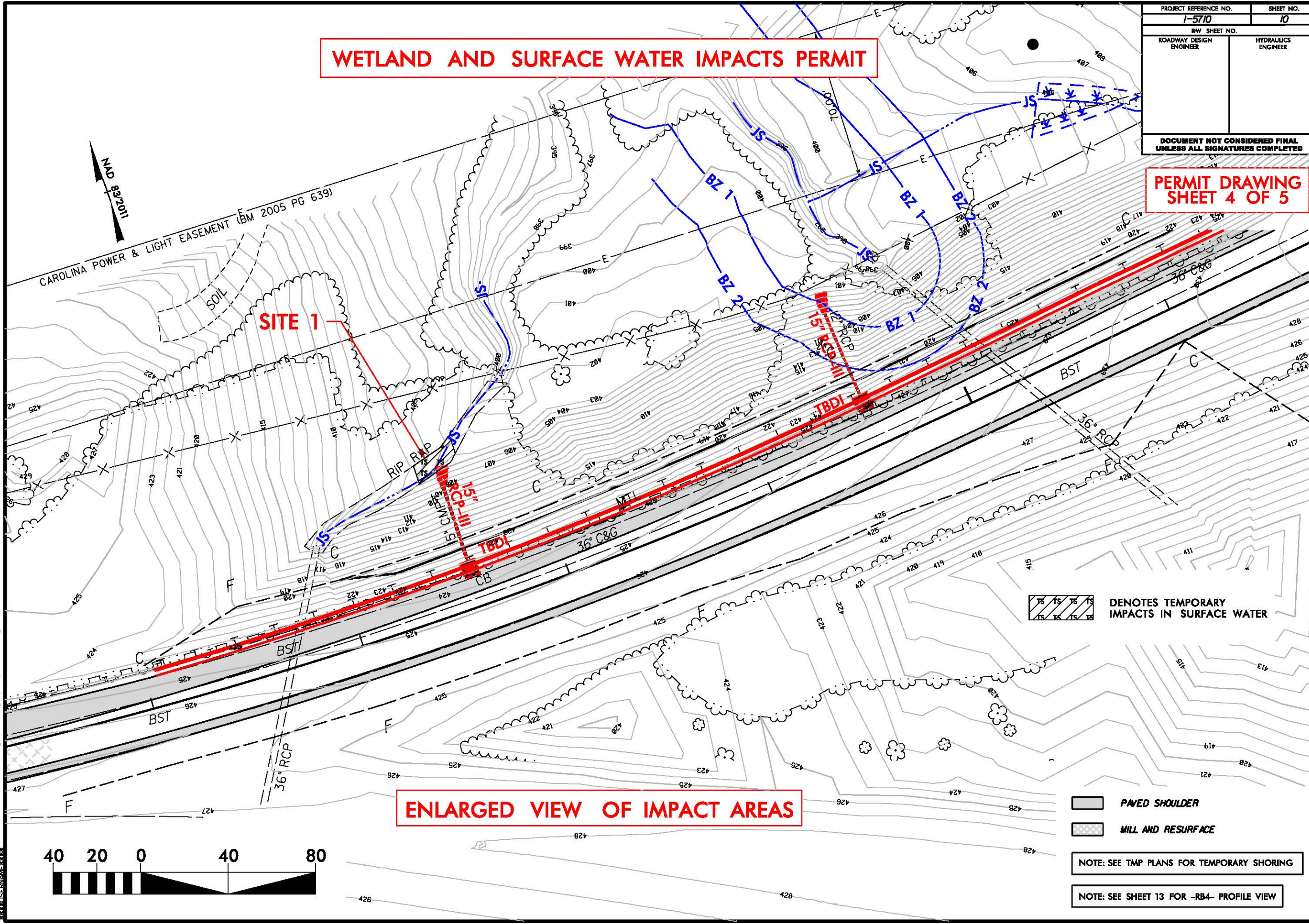


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PROJECT REFERENCE NO. 1-5710	SHEET NO. 10
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

WETLAND AND SURFACE WATER IMPACTS PERMIT

PERMIT DRAWING
SHEET 4 OF 5



ENLARGED VIEW OF IMPACT AREAS

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

- PAVED SHOULDER
- MILL AND RESURFACE

NOTE: SEE TMP PLANS FOR TEMPORARY SHORING

NOTE: SEE SHEET 13 FOR -RB4- PROFILE VIEW



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WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS					SURFACE WATER IMPACTS				
			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	-RB4- 7+48 TO 7+69	RIP RAP OUTLET						< 0.01			25	
TOTALS*:								< 0.01	0		25	0

*Rounded totals are sum of actual impacts

NOTES:

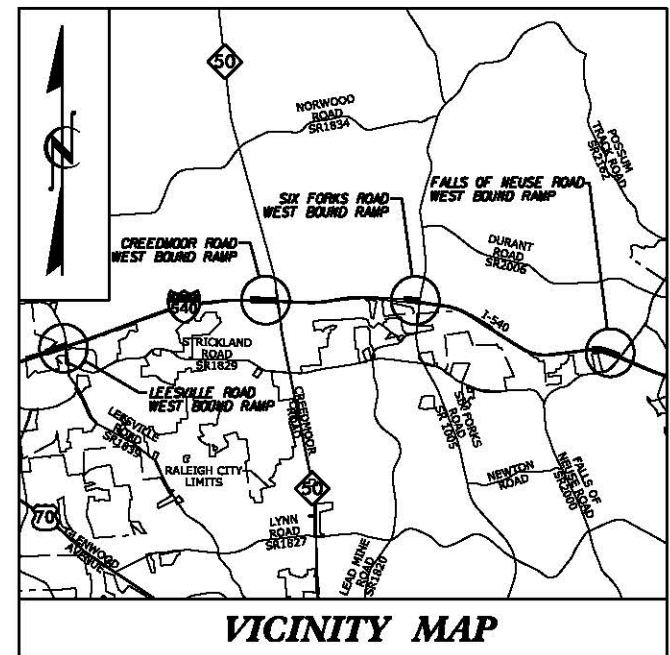
NC DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 06/15/16
 WAKE COUNTY
 I-5710
 SHEET 5 OF 5

09/28/19

TIP PROJECT: I-5710

CONTRACT: C203791

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



BEGIN TIP PROJECT I-5710
-RBI- STA.3+50.00

90% PLANS

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

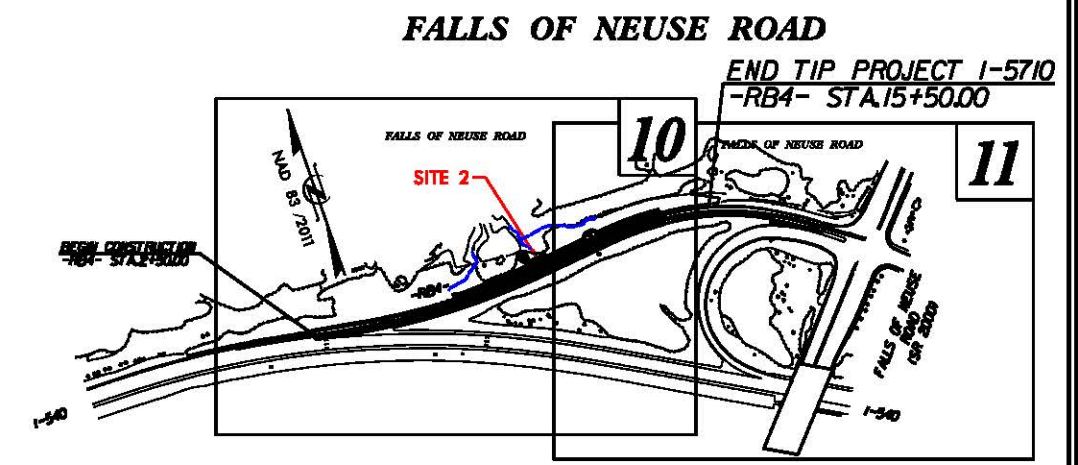
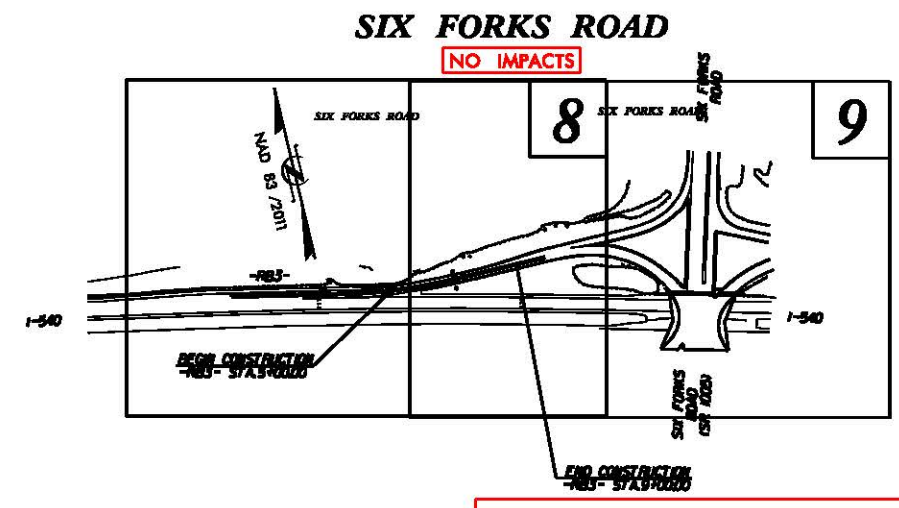
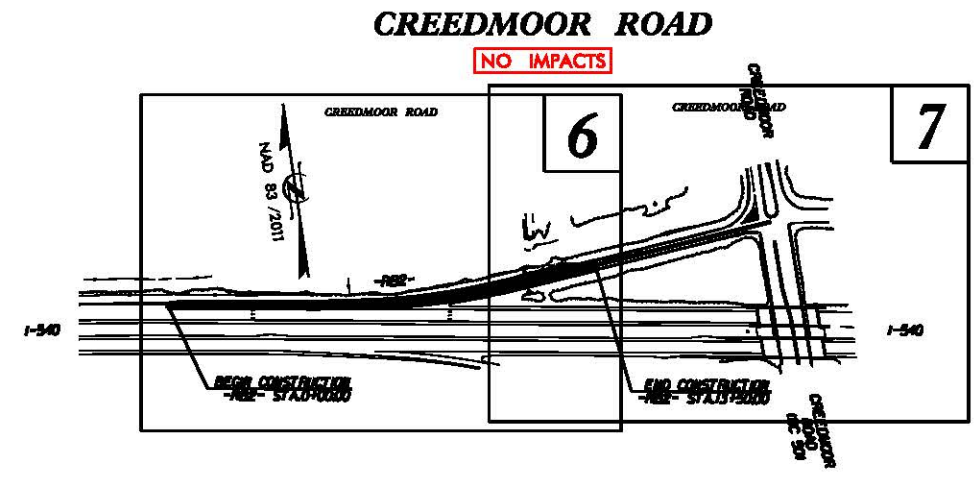
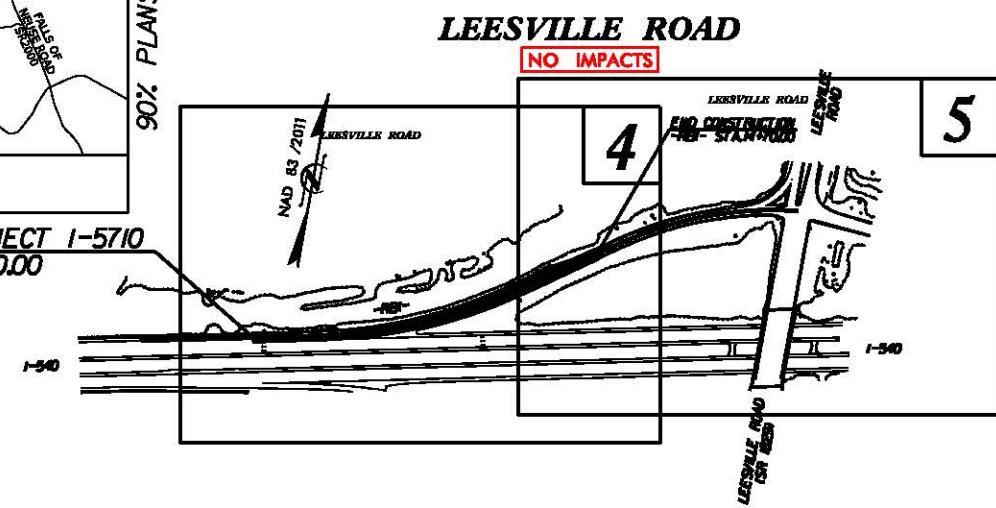
WAKE COUNTY

LOCATION: WEST BOUND RAMP ALONG I-540 AT SR 1839 (LEESVILLE ROAD), NC 50 (CREEDMOOR ROAD), SR 1005 (SIX FORKS ROAD), AND SR 2000 (FALLS OF NEUSE ROAD).

TYPE OF WORK: INSTALLING RAMP METERS - WIDENING, GRADING, PAVING, DRAINAGE, RETAINING WALL, ITS, AND SIGNALS

STATE	STATE PROJECT EXPERIENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-5710	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
50125.1.FS1	NHPP-0540(030)	P.E.	
50125.3.1	NHPP-0540(030)	CONST.	

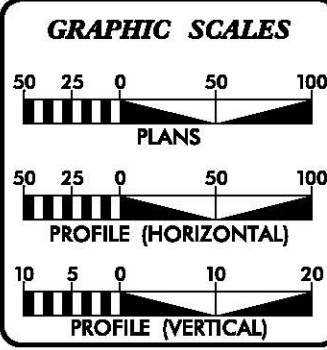
**PERMIT DRAWING
SHEET 1 OF 5**



BUFFER ZONE IMPACTS PERMIT

THIS IS A FULL CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED



DESIGN DATA

ADT 2016	= 6,700-13,900
ADT 2036	= 7,300-15,200
DHV	= 11-20 %
D	= 100 %
*T	= 3-7 %
V	= 60 MPH
* (TTST 1% + DUAL 2-6%)	
FUNC. CLASS.	= INTERSTATE STATEWIDE TIER

PROJECT LENGTH

LENGTH ROADWAY T.I.P. PROJECT I-5710	= 0.790 MILE
TOTAL LENGTH T.I.P. PROJECT I-5710	= 0.790 MILE

Prepared in the Office of:

ATKINS
202 STANDARD SPECIFICATIONS

1616 E. MILLBROOK ROAD, SUITE #310
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBEEB #F-0326

RIGHT OF WAY DATE:	N/A
LETTING DATE:	SEPTEMBER 20, 2016

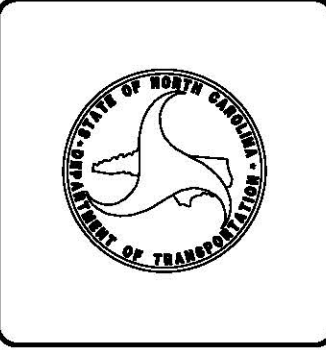
CLINTON MORGAN, P.E. PROJECT ENGINEER
IAN BERDEAU, E.I. PROJECT DESIGN ENGINEER
TONY HOUSER, P.E. NCDOT CONTACT

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: _____ P.E.



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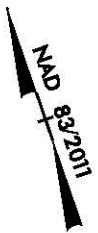
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PROJECT REFERENCE NO. 1-5710	SHEET NO. 10
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

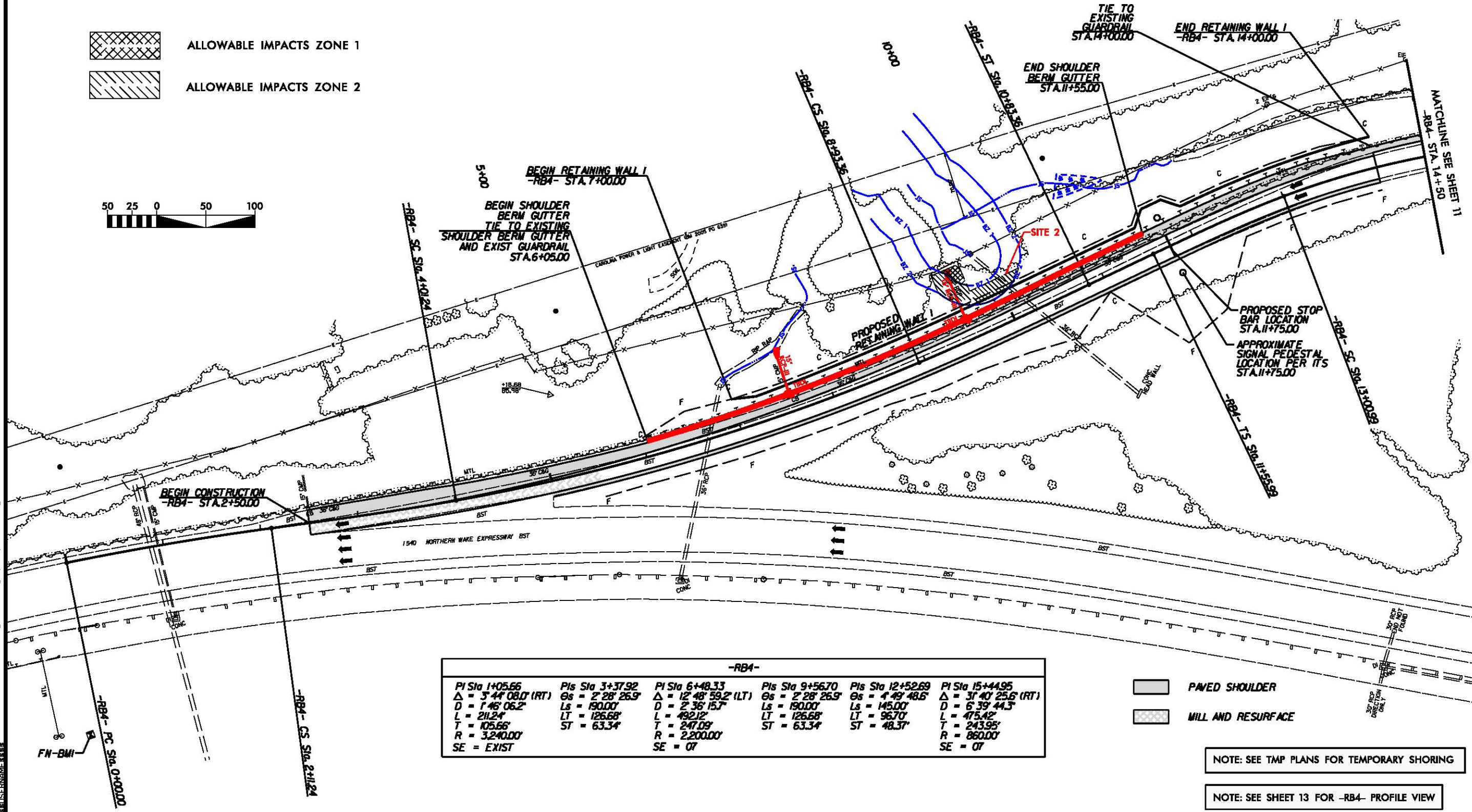
BUFFER ZONE IMPACTS PERMIT

PERMIT DRAWING SHEET 2 OF 5

FALLS OF NEUSE ROAD



- ALLOWABLE IMPACTS ZONE 1
- ALLOWABLE IMPACTS ZONE 2



-RB4-					
PI Sta 1+05.66	PIs Sta 3+37.92	PI Sta 6+48.33	PIs Sta 9+56.70	PIs Sta 12+52.69	PI Sta 15+44.95
$\Delta = 3^{\circ} 44' 08.0''$ (RT)	$\Theta_s = 2^{\circ} 28' 26.9''$	$\Delta = 12^{\circ} 48' 59.2''$ (LT)	$\Theta_s = 2^{\circ} 28' 26.9''$	$\Theta_s = 4^{\circ} 49' 48.6''$	$\Delta = 31^{\circ} 40' 25.6''$ (RT)
D = 1^{\circ} 46' 06.2''	Ls = 190.00'	D = 2^{\circ} 36' 15.7''	Ls = 190.00'	Ls = 145.00'	D = 6^{\circ} 39' 44.3''
L = 211.24'	LT = 126.68'	L = 492.12'	LT = 126.68'	LT = 96.70'	L = 475.42'
T = 105.66'	ST = 63.34'	T = 247.09'	ST = 63.34'	ST = 48.37'	T = 243.95'
R = 3,240.00'		R = 2,200.00'			R = 860.00'
SE = EXIST		SE = 07			SE = 07

- PAVED SHOULDER
- MILL AND RESURFACE

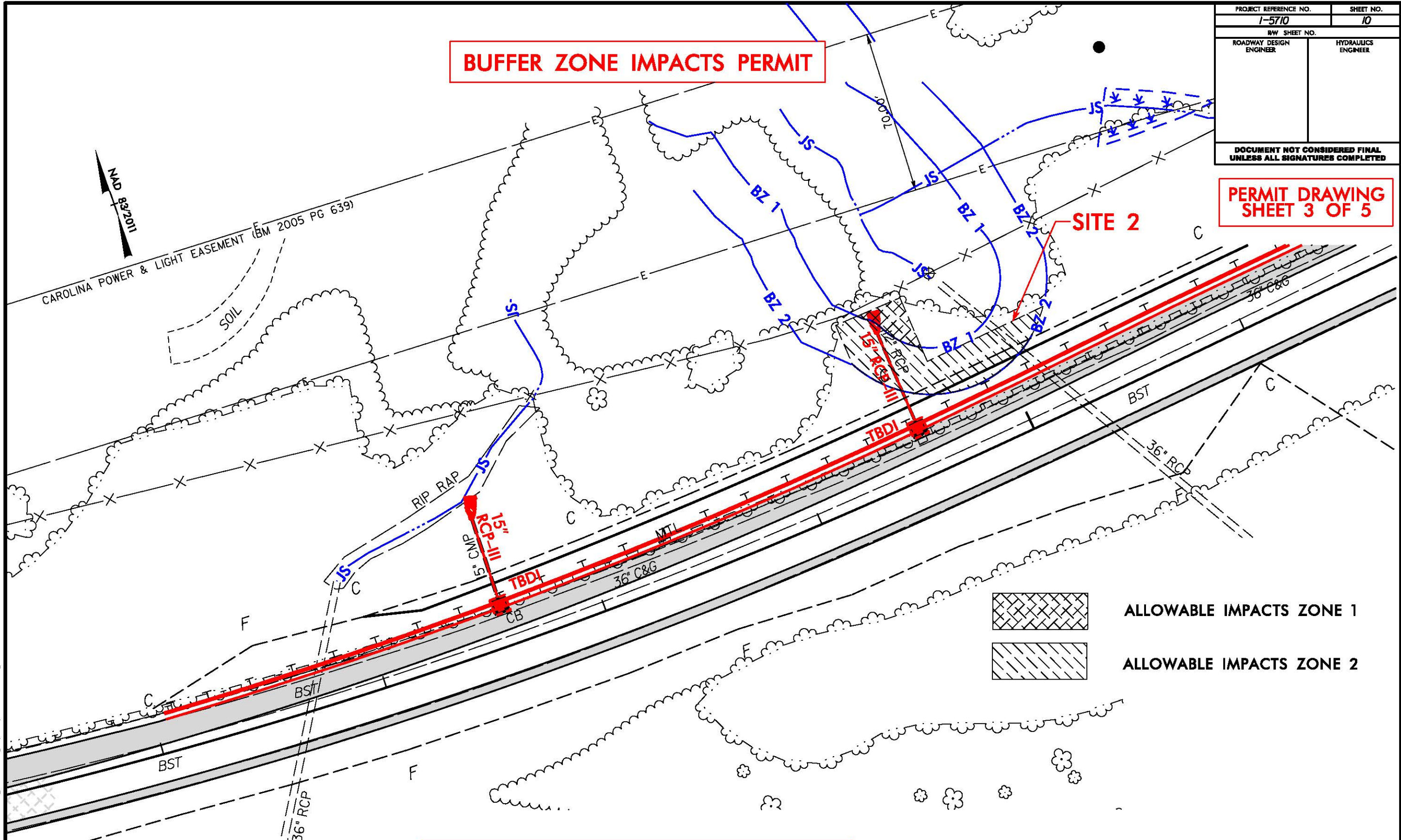
NOTE: SEE TMP PLANS FOR TEMPORARY SHORING

NOTE: SEE SHEET 13 FOR -RB4- PROFILE VIEW



PROJECT REFERENCE NO. 1-5710	SHEET NO. 10
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



BUFFER ZONE IMPACTS PERMIT

PERMIT DRAWING SHEET 3 OF 5



ENLARGED VIEW OF IMPACT AREAS

-  ALLOWABLE IMPACTS ZONE 1
-  ALLOWABLE IMPACTS ZONE 2

-  PAVED SHOULDER
-  MILL AND RESURFACE

NOTE: SEE TMP PLANS FOR TEMPORARY SHORING

NOTE: SEE SHEET 13 FOR -RB4- PROFILE VIEW

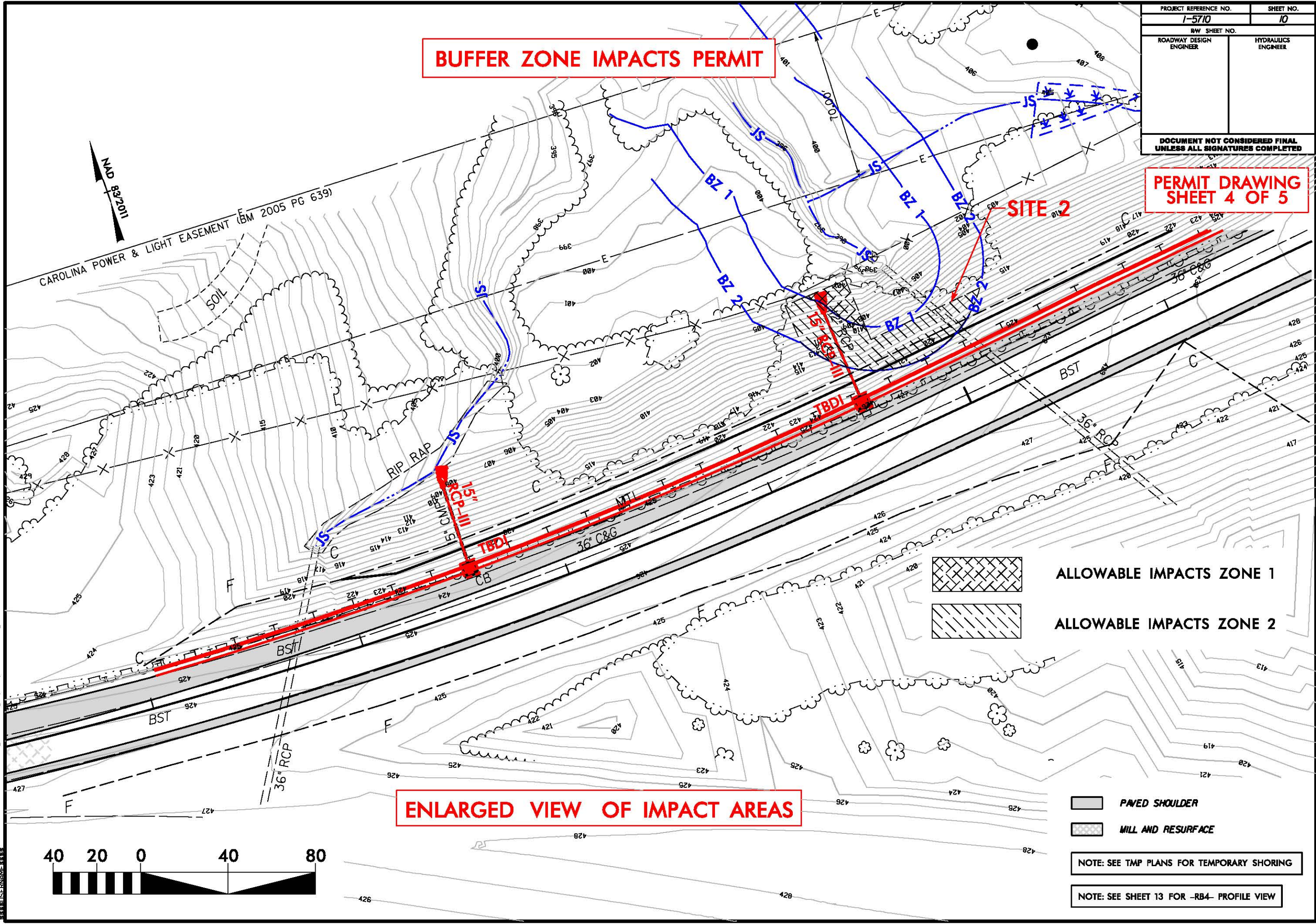


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PROJECT REFERENCE NO. 1-5710	SHEET NO. 10
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



BUFFER ZONE IMPACTS PERMIT

PERMIT DRAWING SHEET 4 OF 5



ENLARGED VIEW OF IMPACT AREAS

-  ALLOWABLE IMPACTS ZONE 1
-  ALLOWABLE IMPACTS ZONE 2

-  PAVED SHOULDER
-  MILL AND RESURFACE

NOTE: SEE TMP PLANS FOR TEMPORARY SHORING

NOTE: SEE SHEET 13 FOR -RB4- PROFILE VIEW



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 15710_HYD_PRM_PSH_BUFF_3.dwg

BUFFER IMPACTS SUMMARY

			IMPACT									BUFFER REPLACEMENT	
SITE NO.	STRUCTURE SIZE / TYPE	STATION (FROM/TO)	TYPE			ALLOWABLE			MITIGABLE			ZONE 1 (ft ²)	ZONE 2 (ft ²)
			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)		
2	Pipe / Rip Rap Outlet	-RB4- 9+40 TO 10+25	X				1592	1592					
2	Pipe / Rip Rap Outlet	-RB4- 9+50 TO 9+70	X			245		245					
TOTAL:						245	1592	1837					

N.C. DEPT. OF TRANSPORTATION
 DIVISION OF HIGHWAYS

 WAKE COUNTY
 PROJECT: I-5710

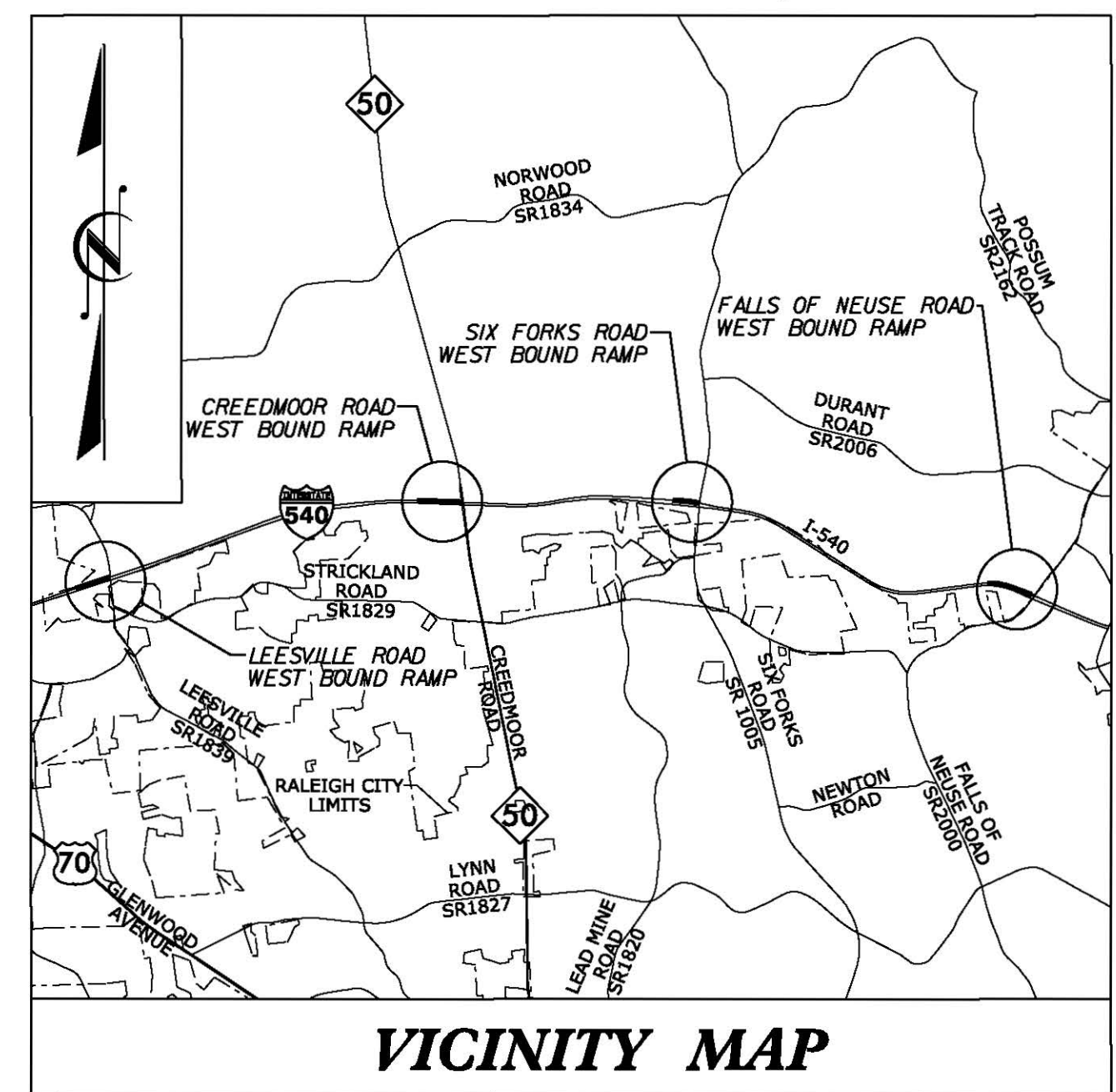
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 SHEET 5 OF 5

09/08/19

TIP PROJECT: I-5710

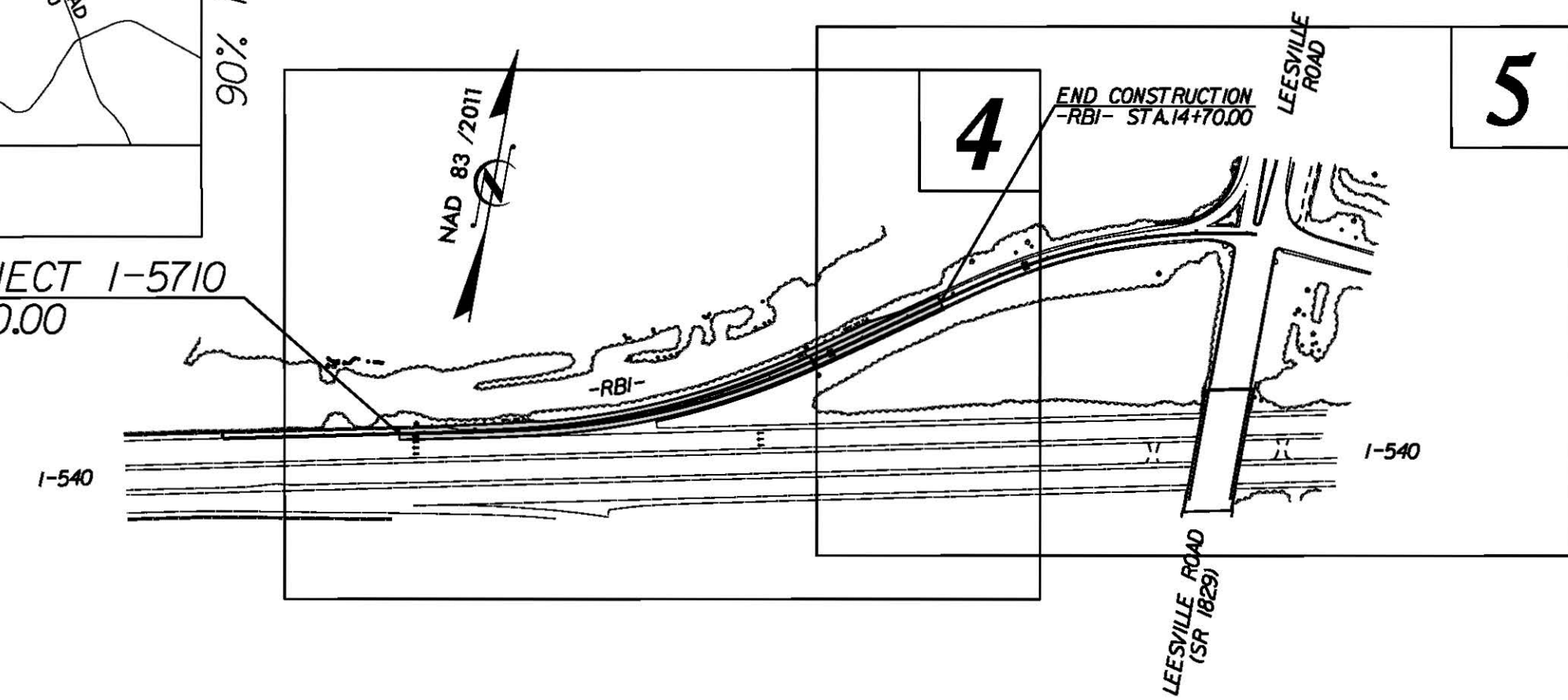
CONTRACT: C203791

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

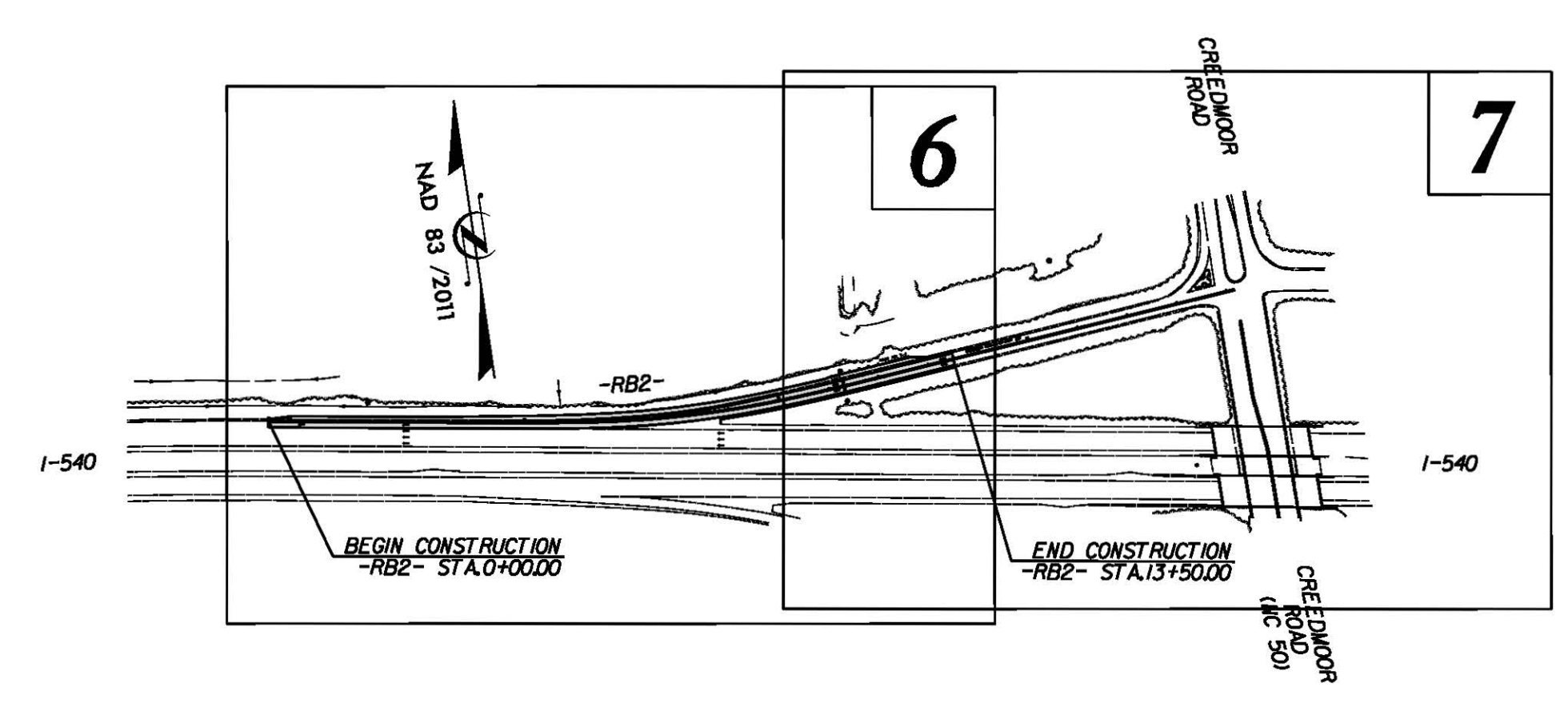


VICINITY MAP

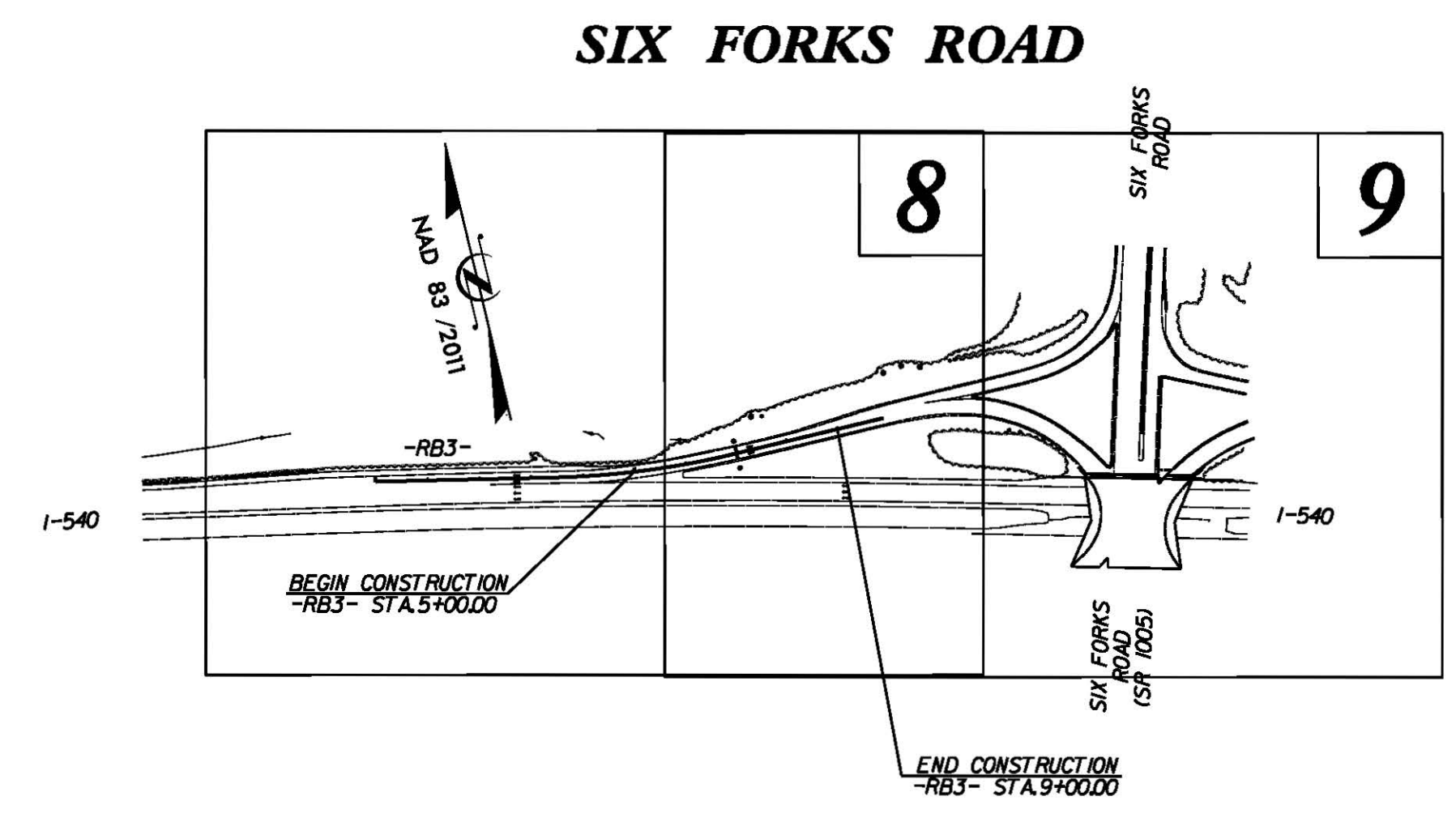
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-RBI- STA. 3+50.00



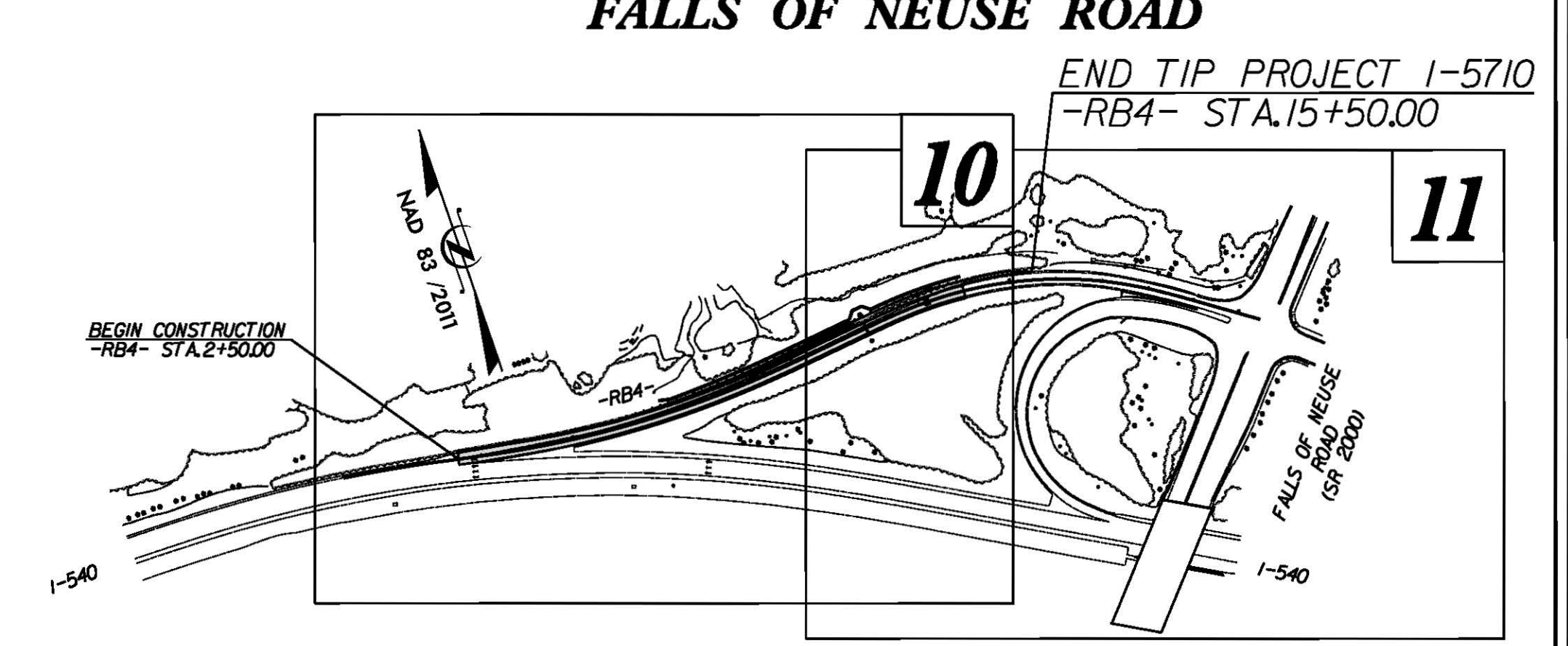
LEESVILLE ROAD



CREEDMOOR ROAD



SIX FORKS ROAD



FALLS OF NEUSE ROAD

END TIP PROJECT I-5710
-RB4- STA. 15+50.00

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS WAKE COUNTY

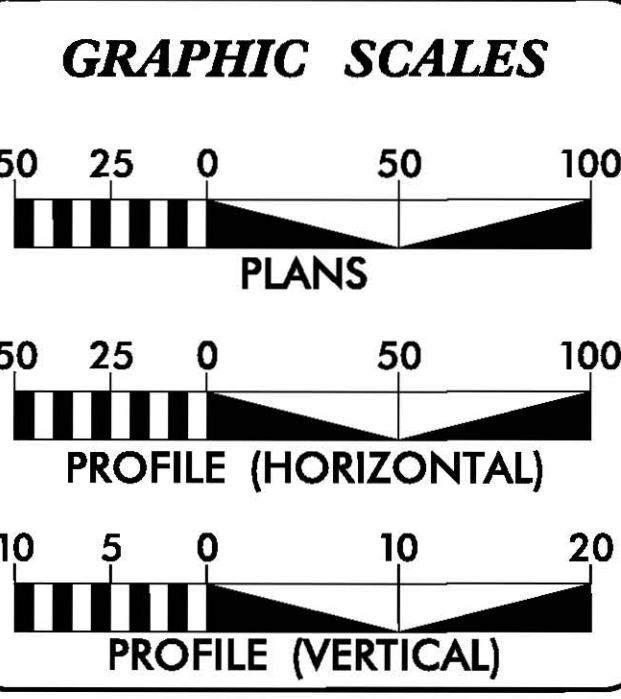
LOCATION: WEST BOUND RAMP ALONG I-540 AT SR 1839 (LEESVILLE ROAD), NC 50 (CREEDMOOR ROAD), SR 1005 (SIX FORKS ROAD), AND SR 2000 (FALLS OF NEUSE ROAD).

TYPE OF WORK: INSTALLING RAMP METERS - WIDENING, GRADING, PAVING, DRAINAGE, RETAINING WALL, ITS, AND SIGNALS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-5710	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
50125.1.FS1	NHPP-0540(030)	P.E.	
50125.3.1	NHPP-0540(030)	CONST.	

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DESIGN DATA

ADT 2016	= 6,700-13,900
ADT 2036	= 7,300-15,200
DHV	= 11-20 %
D	= 100 %
* T	= 3-7 %
V	= 60 MPH
* (TTST 1% + DUAL 2-6%)	
FUNC. CLASS.	= INTERSTATE STATEWIDE TIER

PROJECT LENGTH

LENGTH ROADWAY T.I.P. PROJECT I-5710	= 0.790 MILE
TOTAL LENGTH T.I.P. PROJECT I-5710	= 0.790 MILE

Prepared In the Office of:

ATKINS
1616 E. MILLBROOK ROAD, SUITE #310
RALEIGH, NORTH CAROLINA 27609
(919) 876-6888 NCBES #F-0326

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: N/A

LETTING DATE: SEPTEMBER 20, 2016

CLINTON MORGAN, P.E.
PROJECT ENGINEER

IAN BERDEAU, E.I.
PROJECT DESIGN ENGINEER

TONY HOUSER, P.E.
NCDOT CONTACT

HYDRAULICS ENGINEER

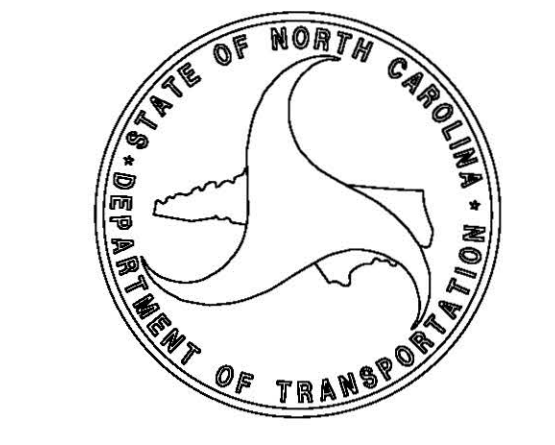
SEAL 041957
DEAN ROBERT BOODJON
P.E.

SIGNATURE: _____

ROADWAY DESIGN ENGINEER

SEAL 024929
CLINTON J. MORGAN
P.E.

SIGNATURE: _____



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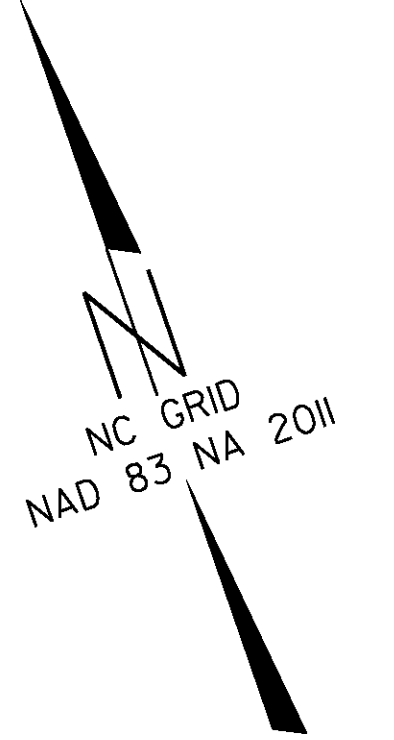
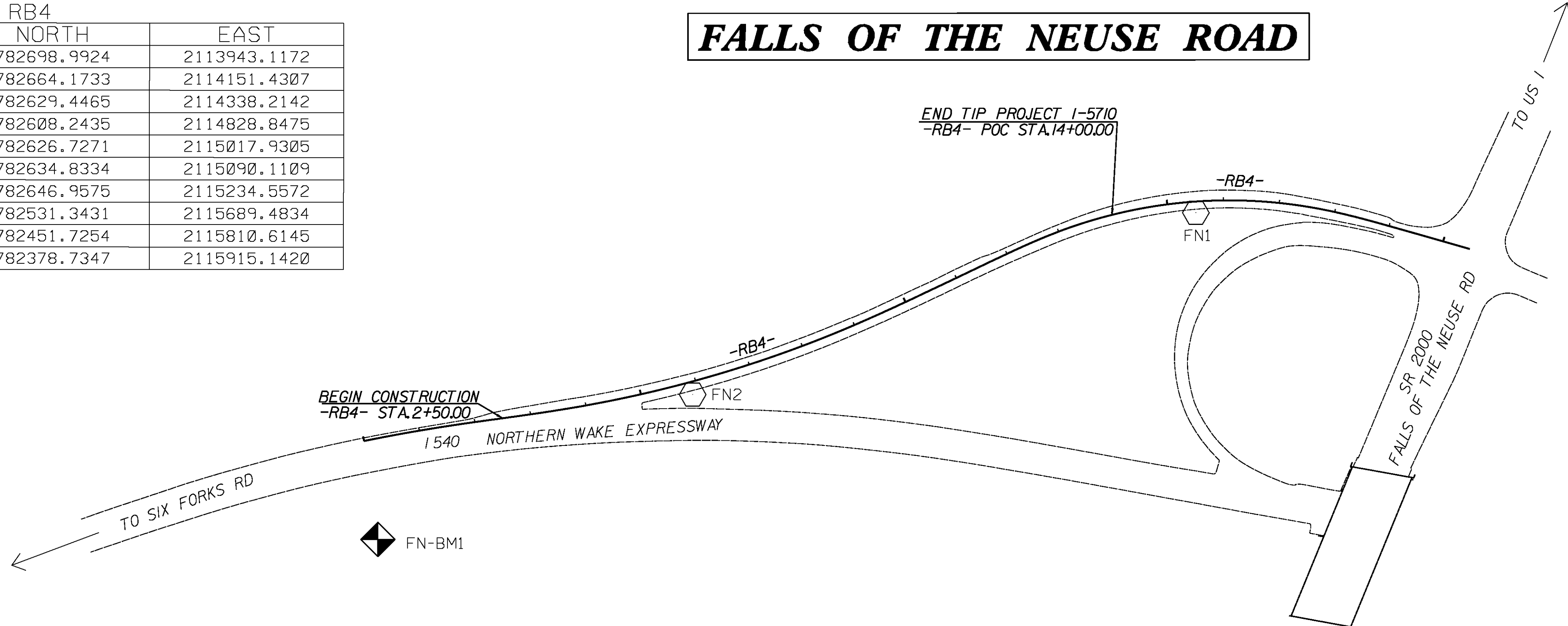
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SURVEY CONTROL SHEET I-5710

PROJECT REFERENCE NO.	SHEET NO.
50125.1.FS1	1C-4
Location and Surveys	

RB4			
TYPE	STATION	NORTH	EAST
PC	0+00.00	782698.9924	2113943.1172
TS	2+11.24	782664.1733	2114151.4307
SC	4+01.24	782629.4465	2114338.2142
CS	8+93.36	782608.2435	2114828.8475
ST	10+83.36	782626.7271	2115017.9305
TS	11+55.99	782634.8334	2115090.1109
SC	13+00.99	782646.9575	2115234.5572
CS	17+76.41	782531.3431	2115689.4834
ST	19+21.41	782451.7254	2115810.6145
POT	20+48.90	782378.7347	2115915.1420

FALLS OF THE NEUSE ROAD



CONTROL POINT	DESC.	NORTH	EAST	ELEVATION	RB4 STATION	OFFSET
201	FN1	782598.847	2115475.569	437.54	15+49.70	19.84 RT
202	FN2	782585.825	2114523.061	426.53	5+88.91	22.84 RT

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "SF1"

WITH NAD 83/NA 2011 STATE PLANE GRID COORDINATES OF
 NORTHING: 787201.655(±) EASTING: 2103250.412(±)
 ELEVATION: 466.509(±)

THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99992221

THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "SF1" TO -RB4- STATION 2+50.00 IS
 S 67°26'14.79" E 11845.69'

ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
 VERTICAL DATUM USED IS NAVD 88

NOTES:

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.

BENCH MARK DATA

FN-BM1 ELEVATION = 417.97
 N 782525 E 2113909
 FROM STATION 2+50.00 -RB4-
 S 64°56'25.40" W DIST 309.47'
 BENCH NAIL W/TAG SET IN CAMERA POLE

GEOID G12NC
 NOTE: DRAWING NOT TO SCALE

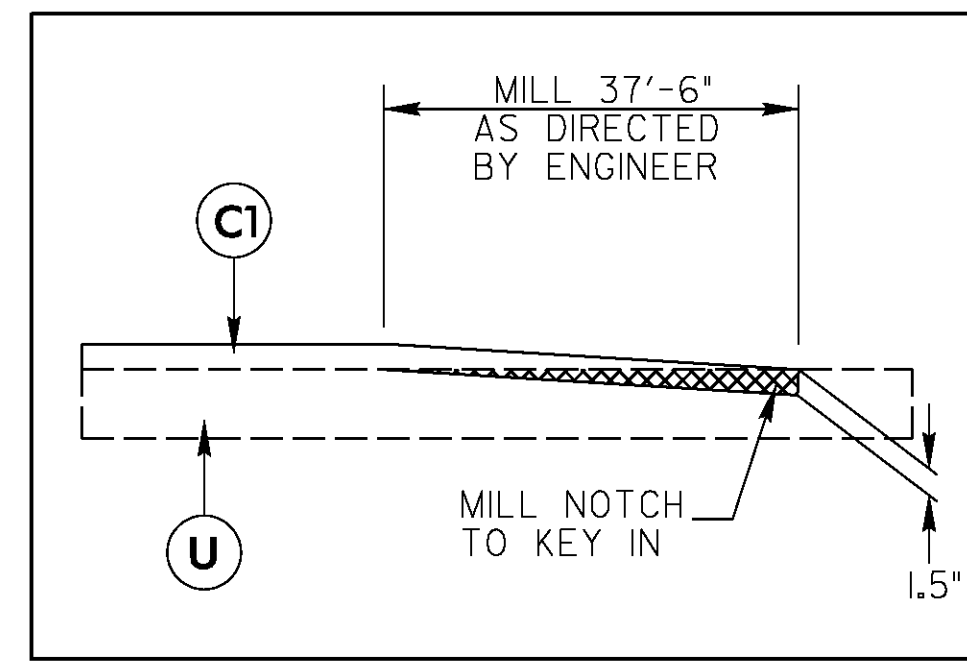
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PAVEMENT SCHEDULE
(FINAL PAVEMENT DESIGN)

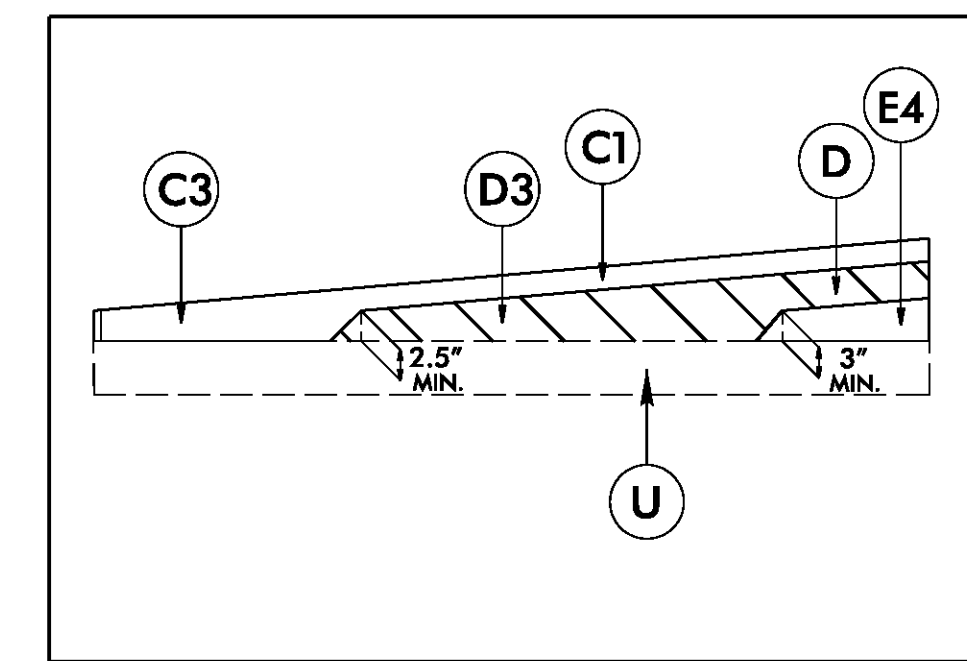
C1	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT GREATER THAN 2" IN DEPTH.
D1	PROP. APPROX. 3.5" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 399 LBS. PER SQ. YD.
D2	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D3	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2.5" OR GREATER THAN 4" DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. APPROX. 4.5" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 513 LBS. PER SQ. YD.
E3	PROP. APPROX. 7" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 399 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
E4	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5.5" IN DEPTH.
J	PROP. VAR. DEPTH AGGREGATE BASE COURSE.
R1	SHOULDER BERM GUTTER
T	EARTH MATERIAL
U	EXISTING PAVEMENT
V	1.5" MILLING
W	VARIABLE DEPTH ASPHALT PAVEMENT (SEE WEDGING DETAIL)
Y	MILLED RUMBLE STRIPS (SEE ROADWAY STANDARD DRAWING 665.01)

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

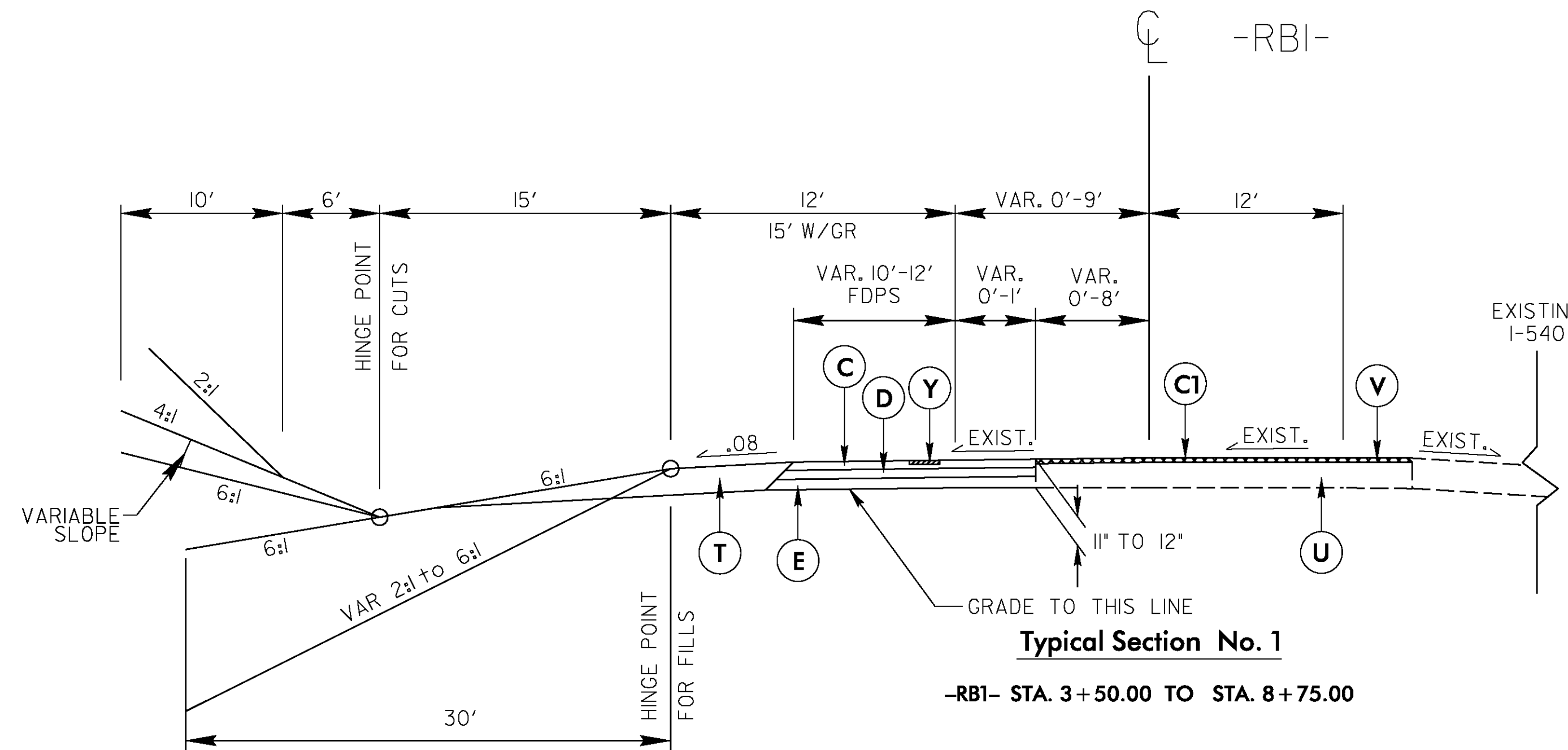
ALIGNMENT	SURFACE COURSE	INTERMEDIATE COURSE	BASE COURSE
-RB1-	C2	D2	E1
-RB2-	C2	D2	E2
-RB4-	C1	D1	E3



DETAIL OF INCIDENTAL MILLING



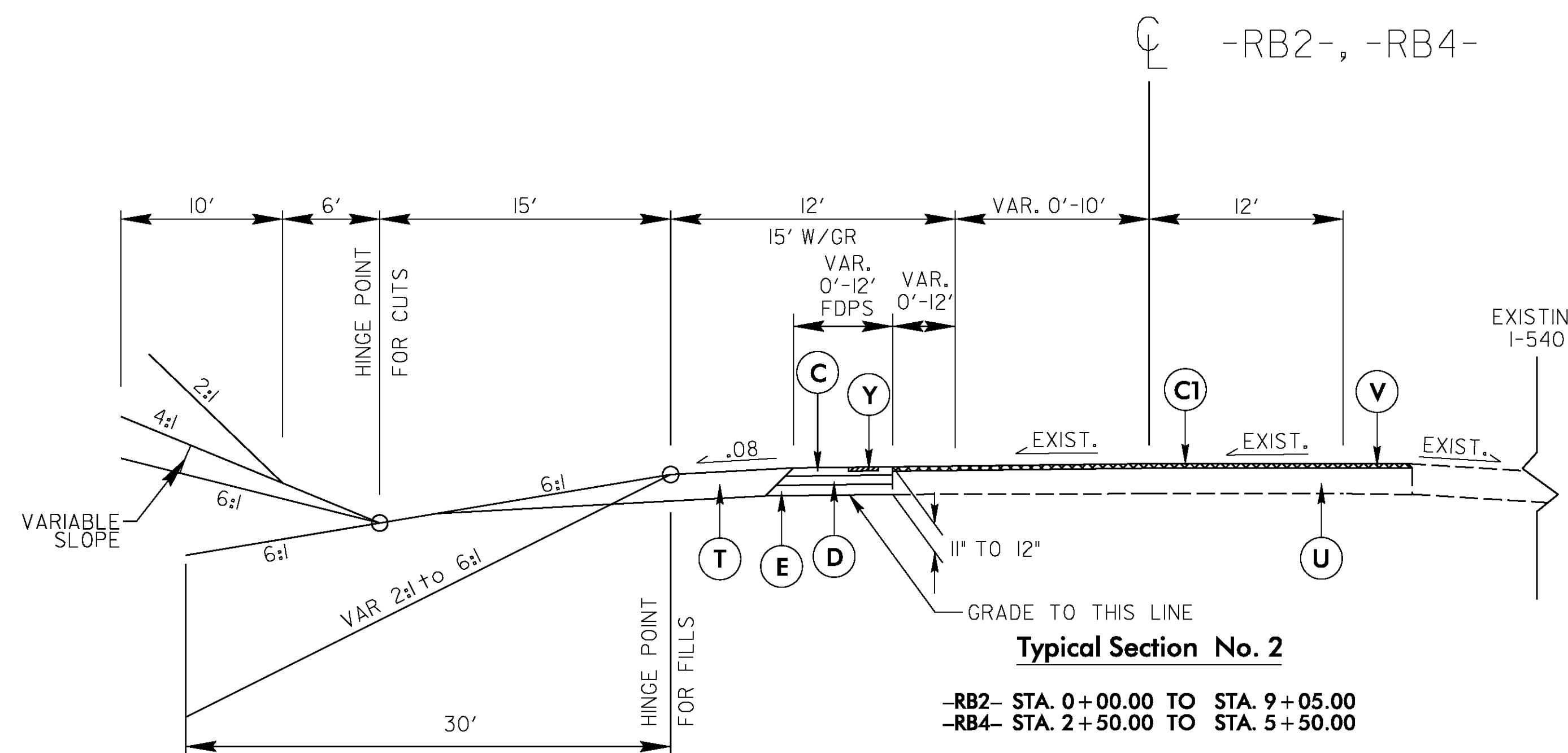
WEDGING DETAIL FOR RESURFACING



Typical Section No. 1

-RBI- STA. 3+50.00 TO STA. 8+75.00

NOTE: MILL, RESURFACE, AND WIDEN EXISTING PAVEMENT ON -RB1-, -RB2-, AND -RB4-. MATCH EXISTING GRADE AND SUPERELEVATION.



Typical Section No. 2

-RB2- STA. 0+00.00 TO STA. 9+05.00
-RB4- STA. 2+50.00 TO STA. 5+50.00

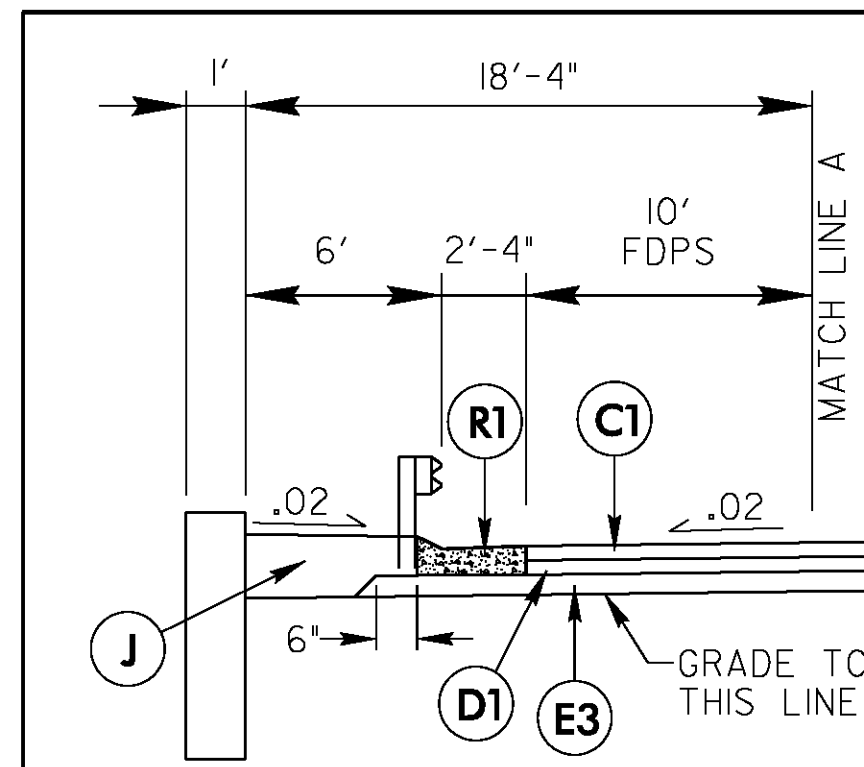
NOTE: MILL, RESURFACE, AND WIDEN EXISTING PAVEMENT ON -RB1-, -RB2-, AND -RB4-. MATCH EXISTING GRADE AND SUPERELEVATION.

PROJECT REFERENCE NO. 1-5710	SHEET NO. 2A-1
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
<p>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</p>	

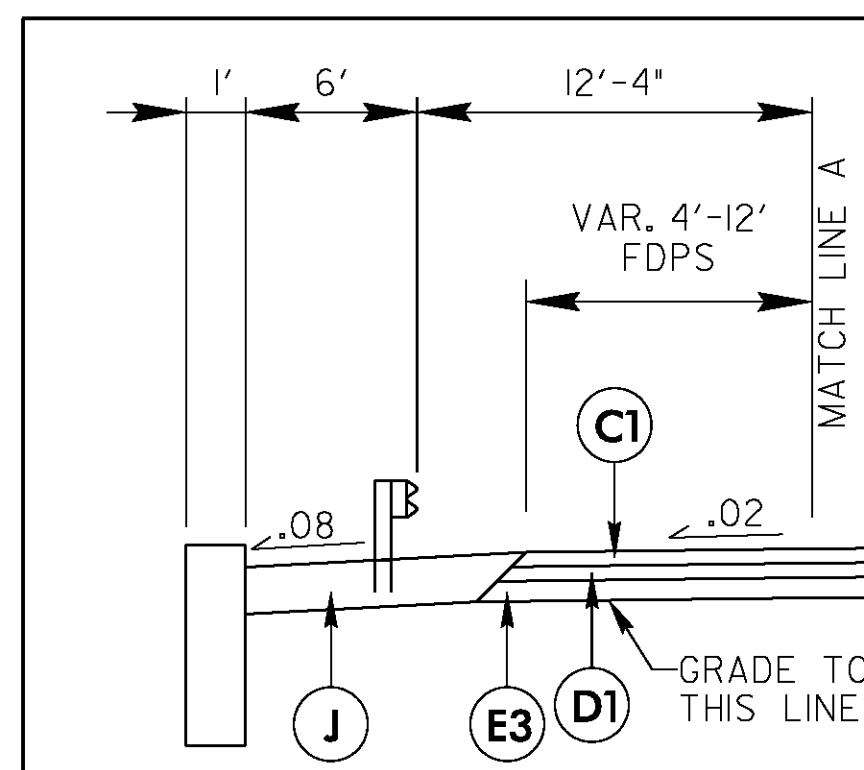
PAVEMENT SCHEDULE			
C1	1.5" TYPE S9.5B	E3	7" TYPE B25.0B
C2	3" TYPE S9.5B	J	VAR. DEPTH ABC
D1	3.5" TYPE I19.0B	R1	SHOULDER BERM GUTTER
D2	4" TYPE I19.0B	T	EARTH MATERIAL
E1	4" TYPE B25.0B	U	EXISTING PAVEMENT
E2	4.5" TYPE B25.0B	W	WEDGING

ALIGNMENT	SURFACE COURSE	INTERMEDIATE COURSE	BASE COURSE
-RB1-	C2	D2	E1
-RB2-	C2	D2	E2
-RB4-	C1	D1	E3

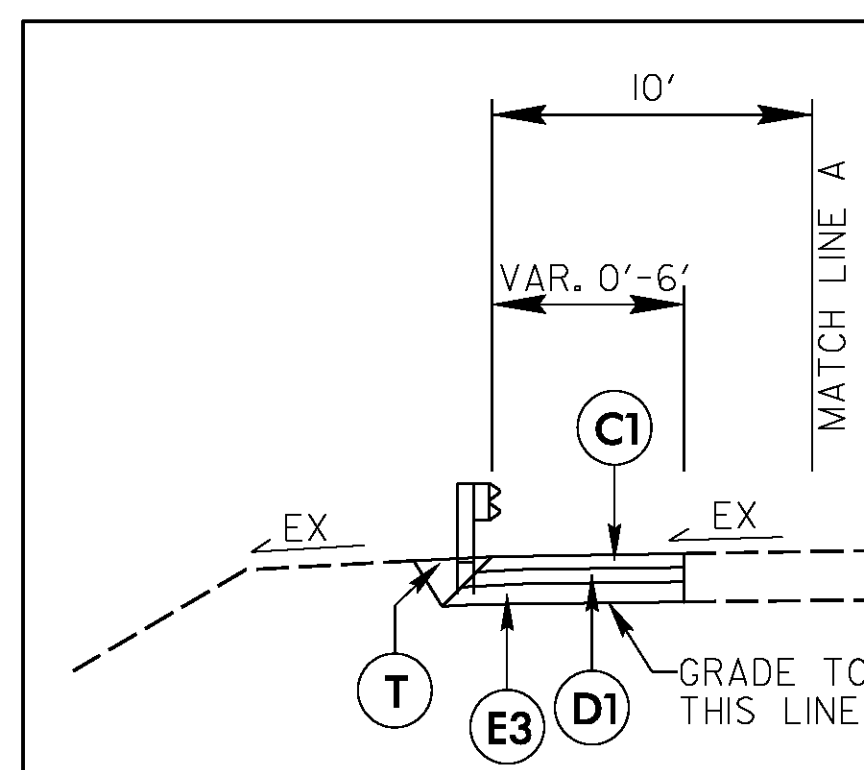
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



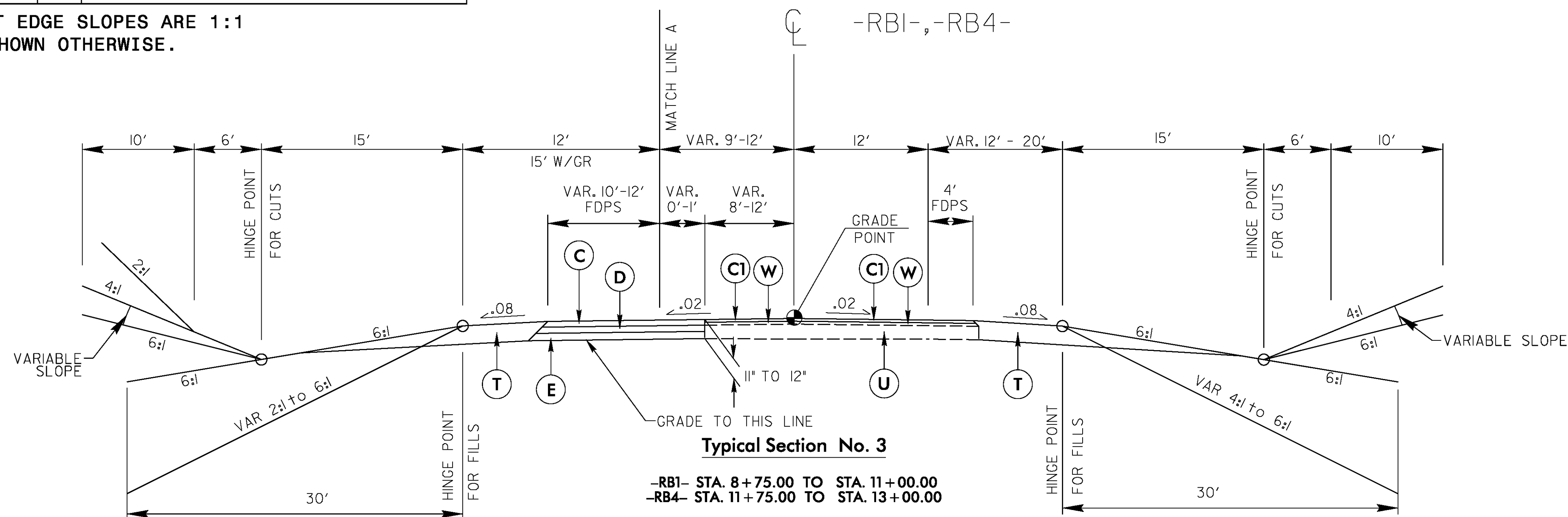
Detail Showing Retaining Wall With Shoulder Berm Gutter Section
Use in conjunction with Typical Section No. 2
-RB4- STA. 7+00.00 TO STA. 11+55.00



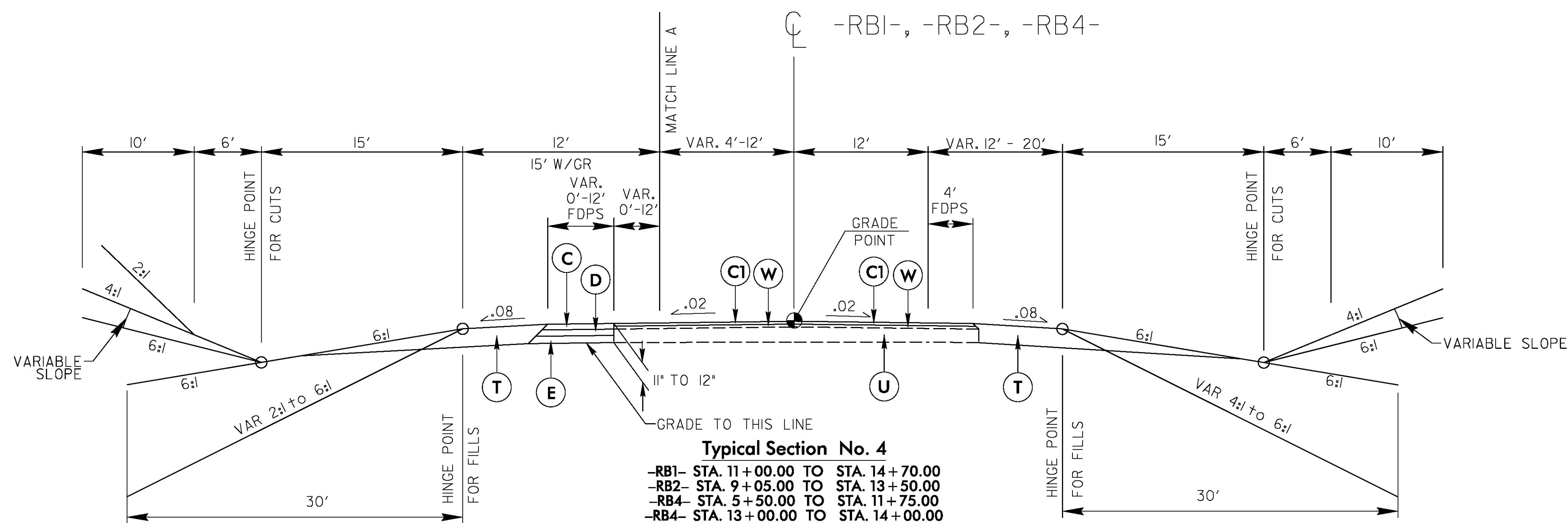
Detail Showing Retaining Wall Section
Use in conjunction with Typical Section No. 3 & 4
-RB4- STA. 11+55.00 TO STA. 14+00.00



Detail Showing Temporary Pavement
Use in conjunction with Typical Section No. 4
-RB4- STA. 14+00.00 TO STA. 15+50.00



Typical Section No. 3
-RB1- STA. 8+75.00 TO STA. 11+00.00
-RB4- STA. 11+75.00 TO STA. 13+00.00

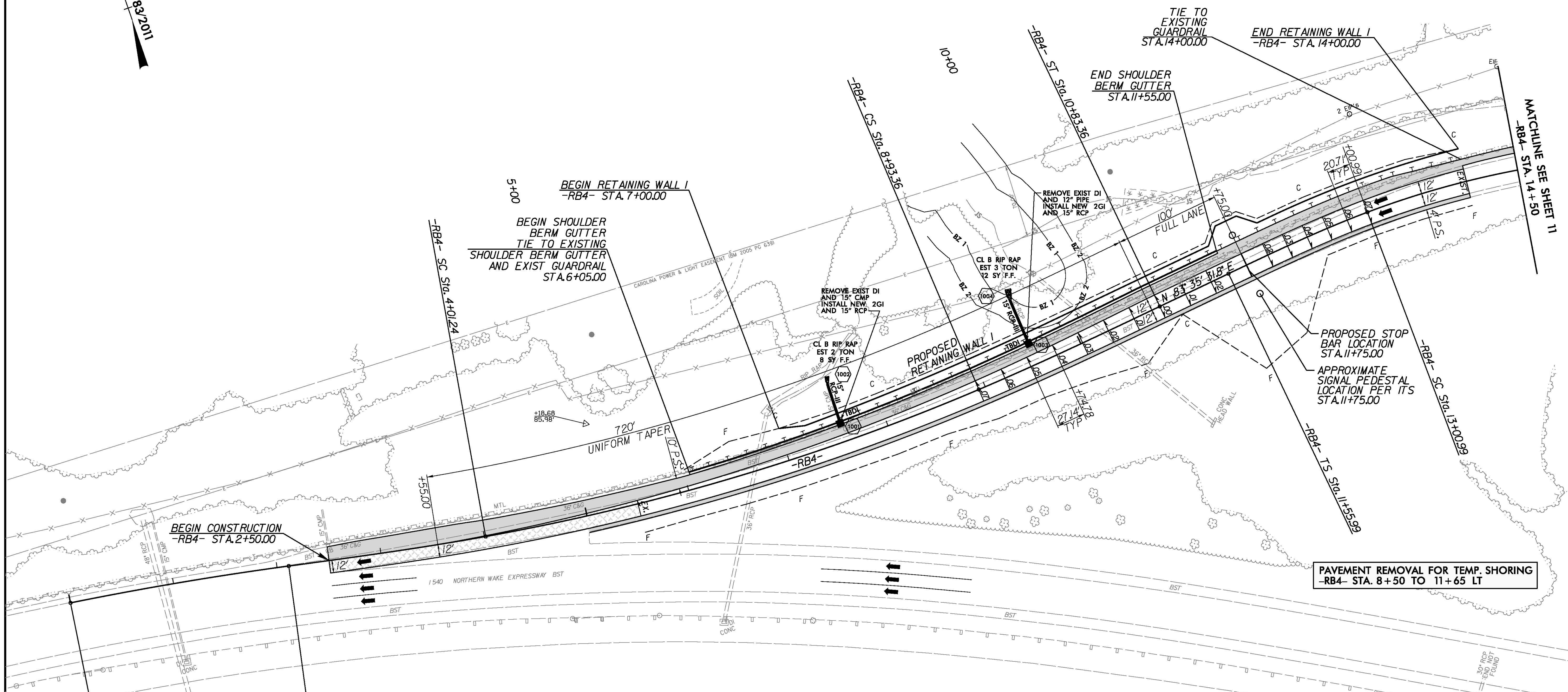
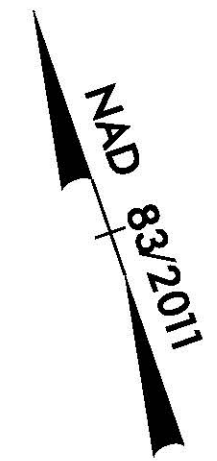


Typical Section No. 4
-RB1- STA. 11+00.00 TO STA. 14+70.00
-RB2- STA. 9+05.00 TO STA. 13+50.00
-RB4- STA. 5+50.00 TO STA. 11+75.00

8/17/99

PROJECT REFERENCE NO. 1-5710	SHEET NO. 10
RW SHEET NO.	
ROADWAY DESIGN ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 024929 CLINTON J. MORRAN	HYDRAULICS ENGINEER NORTH CAROLINA PROFESSIONAL SEAL 041957 DAVID ROBERT GOODSON
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	

FALLS OF NEUSE ROAD



-RB4-					
PI Sta 1+05.66	PIs Sta 3+37.92	PI Sta 6+48.33	PIs Sta 9+56.70	PIs Sta 12+52.69	PI Sta 15+44.95
$\Delta = 3' 44' 08.0''$ (RT)	$\Theta_s = 2' 28' 26.9''$	$\Delta = 12' 48' 59.2''$ (LT)	$\Theta_s = 2' 28' 26.9''$	$\Theta_s = 4' 49' 48.6''$	$\Delta = 31' 40' 25.6''$ (RT)
$D = 1' 46' 06.2''$	$L_s = 190.00'$	$D = 2' 36' 15.7''$	$L_s = 190.00'$	$L_s = 145.00'$	$D = 6' 39' 44.3''$
$L = 211.24'$	$LT = 126.68'$	$L = 492.12'$	$LT = 126.68'$	$LT = 96.70'$	$L = 475.42'$
$T = 105.66'$	$ST = 63.34'$	$T = 247.09'$	$ST = 63.34'$	$ST = 48.37'$	$T = 243.95'$
$R = 3,240.00'$		$R = 2,200.00'$			$R = 860.00'$
$SE = EXIST$		$SE = 07$			$SE = 07$

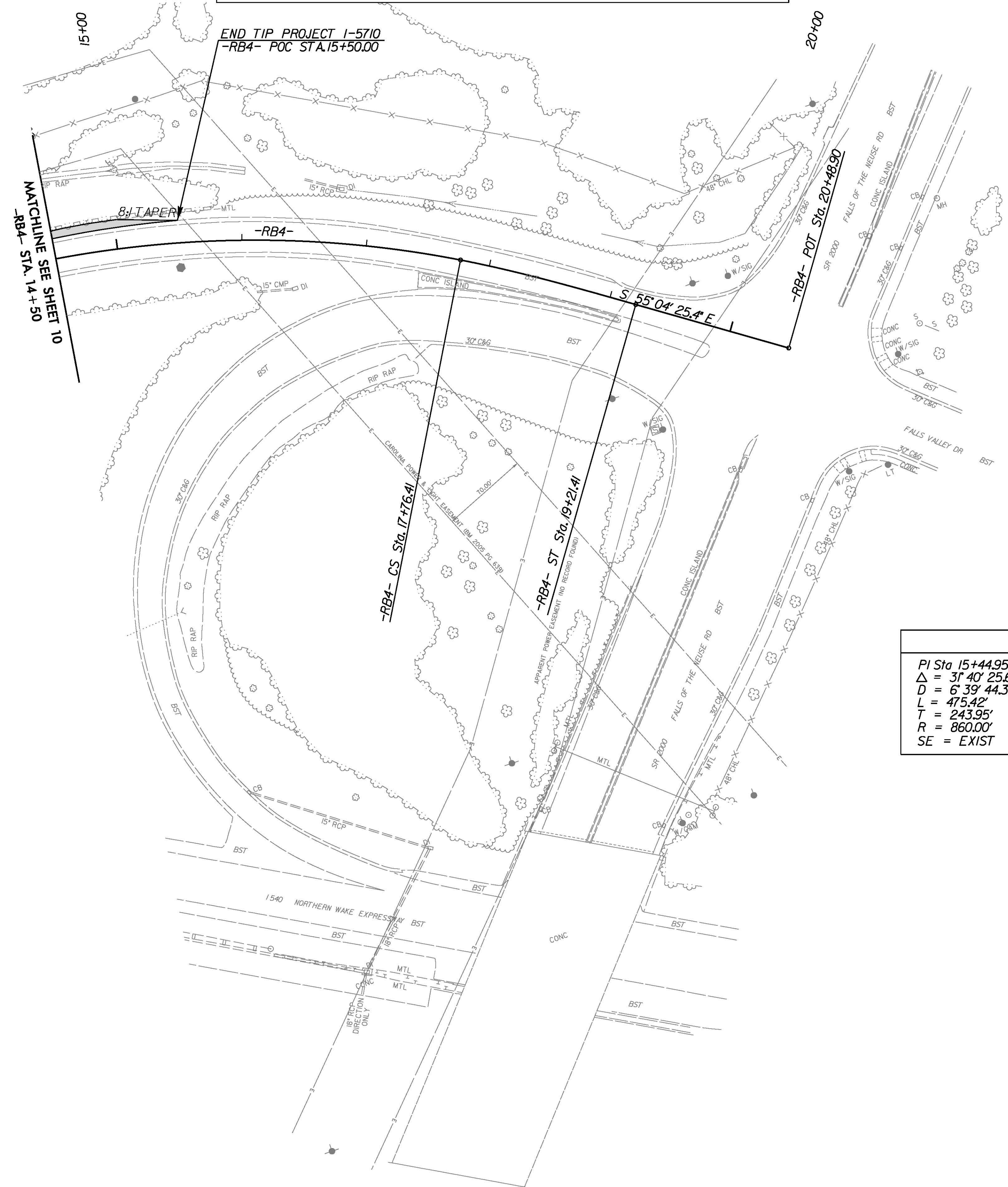
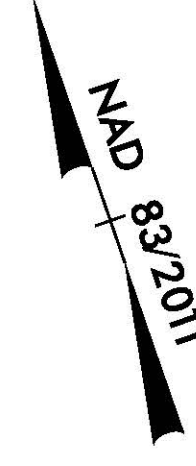
- PAVED SHOULDER
- MILL AND RESURFACE

NOTE: SEE TMP PLANS FOR TEMPORARY SHORING

NOTE: SEE SHEET 13 FOR -RB4- PROFILE VIEW

OR: JUN-2016, 14:32
C:\Projects\15710_Rdy_PSH10.dgn
8/17/99

FALLS OF NEUSE ROAD



-RB4-	
PI Sta 15+44.95	PIs Sta 18+24.78
$\Delta = 31^{\circ} 40' 25.6''$ (RT)	$\Theta s = 4^{\circ} 49' 48.6''$
$D = 6^{\circ} 39' 44.3''$	$Ls = 145.00'$
$L = 475.42'$	$LT = 96.70'$
$T = 243.95'$	$ST = 48.37'$
$R = 860.00'$	
$SE = EXIST$	

NOTE: SEE SHEET 13 FOR -RB4- PROFILE VIEW

