STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAT L. MCCRORY
GOVERNOR

ANTHONY J. TATA
SECRETARY

August 18, 2014

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

ATTN: Mr. Eric Alsmeyer
NCDOT Division 5 Project Coordinator

SUBJECT: **Application for Section 404 Nationwide Permits 13, 23, and 33, Section 401 Water Quality Certification, and Neuse River Riparian Buffer Authorization** for the I-40/440 Pavement Reconstruction – Areas 1, 2A, and 2B Project, Wake County, North Carolina. Federal Aid Project No. IMS-040-4(147)298, TIP No. I-5338.

Debit $570.00 from WBS Element No. 46157.1.1

Dear Sir:

The North Carolina Department of Transportation (NCDOT) proposes pavement reconstruction of I-40/440, beginning at the I-40/US 64/US 1 interchange west of SR 1319 (Jones Franklin Road), continuing east along I-40/440 and onto I-440/US 64, and terminating north of the I-440 interchange with US 64/US 264. This reconstruction project is comprised of three smaller projects, each of which will be permitted separately. The three smaller projects include: 1) the initial 3-lane maintenance of traffic (MOT) temporary widening project (TIP No. I-5338), 2) the Area 3 project (TIP Nos. I-5311 and I-5338), which begins near the I-40/440 interchange (Station 444+00) and continues northeast to the end of the project, just north of the I-440 interchange with US 64/US 264 (Station 628+60), and 3) the final project consisting of Areas 1, 2A, and 2B (TIP No. I-5338), beginning at Station 19+02 near the I-40/US 64/US 1 interchange and continuing east to Station 444+00, just west of the I-40/440 interchange.

A Neuse River Riparian Buffer Authorization and North Carolina State General Permit for Impacts to Isolated and Other Non-404 Jurisdictional Wetlands and Waters was issued for the initial MOT project on December 6, 2013 (DWR Project No. 20131248 ver.1). A Section 404 Nationwide Permit (SAW-2013-00068) and a Section 401 Water Quality Certification and Neuse River Riparian Buffer Authorization (DWR Project No. 20131248 ver. 2) were issued for the Area 3 project on December 26, 2013 and January 7, 2014, respectively.

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

TELEPHONE: 919-707-6100

FAX: 919-212-5785

WEBSITE: WWW.NCDOT.ORG

PHYSICAL ADDRESS:
Century Center - Building B
1020 Birch Ridge Dr
Raleigh, NC 27610-4328

This Section 404/401 permit application and Neuse River Riparian Buffer Authorization request is for the final, Areas 1, 2A, and 2B project phase. Authorization for a minor stream repair (58 linear feet [lf]) in the Area 3 project is also being requested as part of this application submittal. This permit site has been added to repair this stream reach within existing NCDOT right-of-way to help alleviate the sedimentation problems associated with this stream and culvert.

Please find enclosed the Pre-construction Notification (PCN), Stormwater Management Plan, Marks Creek Mitigation Site Debit Ledger, permit drawings, buffer drawings, and roadway design plans for the subject projects. A copy of the U.S. Army Corps of Engineers (USACE) Jurisdictional Determination was provided with the previously-submitted MOT project permit application. A Categorical Exclusion (CE) was completed for I-5338 in December 2012.

This TIP project had a Design Build let date of May 13, 2013. Construction of the Area 1, 2A, and 2B project is projected to commence in September/October of 2014, contingent on issuance of permits.

A copy of this permit application will be posted on the NCDOT Website at https://connect.ncdot.gov/resources/Environmental/Pages/default.aspx, under *Quick Links > Permit Applications*. Copies of the environmental documents are also available at the above website address under *Quick Links > Environmental Documents*. Thank you for your assistance with this project. If you have any questions or need additional information, please contact Jim Mason at either jsmason@ncdot.gov or (919) 707-6136.

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: 13 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:	I-40/440 Pavement Reconstruction - Areas 1, 2A, and 2B
2b. County:	Wake
2c. Nearest municipality / town:	Raleigh
2d. Subdivision name:	*not applicable*
2e. NCDOT only, T.I.P. or state project no:	I-5338

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) 707-6136
3g. Fax no.:	(919) 212-5785
3h. Email address:	jsmason@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: 35.452563 (DD.DDDDDD) Longitude: - 78.395597 (-DD.DDDDDD)
1c. Property size:	680 acres
2. Surface Waters	
2a. Name of nearest body of water (stream, river, etc.) to proposed project:	Walnut Creek, Walnut Creek (Lake Johnson), and Wildcat Branch
2b. Water Quality Classification of nearest receiving water:	C;NSW (Walnut Creek and Wildcat Branch), B;NSW (Walnut Creek [Lake Johnson])
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: I-40/I-440 is classified as Interstate based on the North Carolina Functional Classification System. The project area consists of maintained NCDOT right-of-way along I-40/440 and is primarily composed of maintained fill slopes, paved shoulders and interchanges, and forested edges adjacent to the roadway. Land use within the vicinity includes forested, commercial, industrial, medium- to high-density residential, agricultural, recreational, and infrastructure-related.	
3b. List the total estimated acreage of all existing wetlands on the property: 4.32 acres jurisdictional wetland; 0.27 acre non-jurisdictional, isolated wetland	
3c. List the total estimated linear feet of all existing streams (intermittent and perennial) on the property: 9,561 LF	
3d. Explain the purpose of the proposed project: The purpose of the pavement reconstruction project is to address deteriorating road conditions by replacing deficient pavement and road-bed material in order to improve the quality of the road along the project corridor, while still maintaining traffic during project construction. The purpose of the Area 1, 2A, and 2B project is to reconstruct pavement within the Area 1, 2A, and 2B footprint, while also improving the stormwater drainage and overall hydraulic drainage system.	
3e. Describe the overall project in detail, including the type of equipment to be used: The Area 1 project begins near the I-40/US 64/US 1 interchange (Station 19+02) and continues east to Areas 2A and 2B, which begin at Station 68+12.63 and end at Station 444+00, just west of the I-40/I-440 interchange. Construction activities associated with the Area 1, 2A, and 2B project include pavement reconstruction, minor modifications to existing fill slopes associated with the pavement reconstruction, storm drain system pipe replacement, maintenance and protection of existing drainage structures, culvert preservation/slip lining, sediment removal from culverts and streams, temporary stream dewatering, and stream bank stabilization. All practical alternatives will be utilized to minimize the project footprint associated with the pavement reconstruction project. Standard road building equipment such as trucks, dozers, backhoes, 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): Elizabeth Workman-Maurer (I-5338)	Agency/Consultant Company: RK&K (I-5338) Other:
4d. If yes, list the dates of the Corps jurisdictional determinations or State determinations and attach documentation. I-5338 Approved JD issued on April 1, 2013. JD was provided with the previously-submitted MOT permit application.	

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. A Neuse River Riparian Buffer Authorization and North Carolina State General Permit for Impacts to Isolated and Other Non-404 Jurisdictional Wetlands and Waters has been issued for the initial Maintenance of Traffic (MOT) project (NCDWR Project No. 20131248 ver.1) and a USACE Section 404 Nationwide permit (Action ID SAW-2013-0068) and NCDWR Section 401 Certification and Buffer Authorization (Project No. 20131248 ver.2) has been issued for the Area 3 project.		
6.	**Future Project Plans**		
6a.	Is this a phased project?	☒ Yes	☐ No
6b.	If yes, explain. This reconstruction project is comprised of three smaller projects, each of which has been/will be permitted separately. The three smaller projects include: 1) the initial 3-lane maintenance of traffic (MOT) temporary widening project (TIP No. I-5338), 2) the Area 3 project (TIP Nos. I-5311 and I-5338), which begins near the I-40/440 interchange (Station 444+00) and continues northeast to the end of the project, just north of the I-440 interchange with US 64/US 264 (Station 628+60), and 3) the final project consisting of Areas 1, 2A, and 2B (TIP No. I-5338), beginning at Station 19+02 near the I-40/US 64/US 1 interchange and continuing east to Station 444+00, just west of the I-40/440 interchange. A Neuse River Riparian Buffer Authorization and North Carolina State General Permit for Impacts to Isolated and Other Non-404 Jurisdictional Wetlands and Waters have been issued for the initial MOT project. A Section 404/401 permit and Neuse River Riparian Buffer Authorization have been issued for the Area 3 project. This application request is being submitted for the final Areas 1, 2A, and 2B project phase, plus one permit site within Area 3 that has been recently added to the project.		

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 5 ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ	
Site 6 ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ	
				2g. **Total wetland impacts**	Perm.: 0.07 ac. .

2h. Comments: See the attached wetland impact table for site-by-site impacts.

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 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		
Site 6 ☐ P ☐ T			☐ PER ☐ INT	☐ Corps ☐ DWQ		
					3h. **Total stream and tributary impacts**	Perm:668 LF Temp:743 LF

3i. Comments: See the attached stream impact table for site-by-site impacts.

4. Open Water Impacts

If there are proposed impacts to lakes, ponds, estuaries, tributaries, sounds, the Atlantic Ocean, or any other open water of the U.S. then individually list all open water impacts below.

4a. Open water impact number – Permanent (P) or Temporary (T)	4b. Name of waterbody (if applicable)	4c. Type of impact	4d. Waterbody type	4e. Area of impact (acres)
O1 ☐ P ☐ T				
O2 ☐ P ☐ T				
O3 ☐ P ☐ T				
O4 ☐ P ☐ T				
		4f. Total open water impacts		Perm.: 0 Temp.: 0

4g. Comments: No open water impacts will result from the Area 1, 2A, and 2B project.

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			☐ Yes ☐ No		
B2 ☐ P ☐ T			☐ Yes ☐ No		
B3 ☐ P ☐ T			☐ Yes ☐ No		
		6h. **Total buffer impacts**		122,516	78,654
6i. Comments: See the attached buffer impact table for site-by-site impacts.					

D. Impact Justification and Mitigation

1. Avoidance and Minimization

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

For the Area 1, 2A, and 2B project, jurisdictional impacts to wetlands have been minimized to less than 0.10 acre with impacts primarily limited to mechanized land clearing associated with the installation of erosion control structures. Jurisdictional stream impacts have been minimized to only those impacts associated with the maintenance and protection of existing drainage structures and to areas requiring bank stabilization. Sediment removal within the culverts and streams has been limited only to the areas required to achieve positive drainage. A majority of buffer impacts have also been minimized to affect only those areas where maintenance and protection of existing structures will occur.

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

NCDOT's Best Management Practices (BMP) for Construction and Maintenance Activities, BMPs for the Protection of Surface Waters as well as Design Standards for Sensitive Watersheds will be used to reduce stormwater impacts to receiving waters and minimize erosion and runoff from the construction sites. Where feasible, all equipment and material staging areas will be located outside of protected riparian buffers, wetlands, and streams and will be located within uplands.

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

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

3. Complete if Using a Mitigation Bank

3a. Name of Mitigation Bank: not applicable

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

3c. Comments:

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

4a. Approval letter from in-lieu fee program is attached.	☐ Yes
4b. Stream mitigation requested:	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.

40 lf of permanent impact (fill) to perennial streams @2:1 = 80 lf of mitigation required. Please see the attached Marks Creek Mitigation Site Debit Ledger.

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	Parallel Impacts	6,915	3 (2 for Catawba)	20,745
Zone 2	Parallel Impacts	9,292	1.5	13,938
		6f. **Total buffer mitigation required:**		34,683

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).

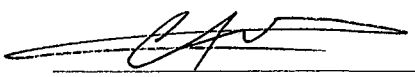
Permittee responsible mitigation will be used to offset mitigation buffer impacts for this project. Please see the attached Marks Creek Mitigation Site debit ledger.

6h. Comments:

E. Stormwater Management and Diffuse Flow Plan (required by DWQ)	
1. Diffuse Flow Plan	
1a. Does the project include or is it adjacent to protected riparian buffers identified within one of the NC Riparian Buffer Protection Rules?	☒ Yes ☐ No
1b. If yes, then is a diffuse flow plan included? If not, explain why. Comments: See attached permit drawings.	☒ Yes ☐ No
2. Stormwater Management Plan	
2a. What is the overall percent imperviousness of this project?	N/A
2b. Does this project require a Stormwater Management Plan?	☒ Yes ☐ No
2c. If this project DOES NOT require a Stormwater Management Plan, explain why:	
2d. If this project DOES require a Stormwater Management Plan, then provide a brief, narrative description of the plan: See attached Stormwater Management Plan.	
2e. Who will be responsible for the review of the Stormwater Management Plan?	☐ Certified Local Government ☐ DWQ Stormwater Program ☒ DWQ 401 Unit
3. Certified Local Government Stormwater Review	
3a. In which local government's jurisdiction is this project?	not applicable
3b. Which of the following locally-implemented stormwater management programs apply (check all that apply):	☐ Phase II ☐ NSW ☐ USMP ☐ Water Supply Watershed ☐ Other:
3c. Has the approved Stormwater Management Plan with proof of approval been attached?	☐ Yes ☐ No
4. DWQ Stormwater Program Review	
4a. Which of the following state-implemented stormwater management programs apply (check all that apply):	☐ Coastal counties ☐ HQW ☐ ORW ☐ Session Law 2006-246 ☐ Other:
4b. Has the approved Stormwater Management Plan with proof of approval been attached?	☐ Yes ☐ No n/a
5. DWQ 401 Unit Stormwater Review	
5a. Does the Stormwater Management Plan meet the appropriate requirements?	☒ Yes ☐ No
5b. Have all of the 401 Unit submittal requirements been met?	☒ Yes ☐ No

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): n/a		
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. The proposed pavement reconstruction project will modernize and improve existing transportation facilities but will not increase traffic volumes or result in additional development. 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. n/a		

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? NHP, USFWS website, NCDOT habitat assessments and field surveys. Surveys/habitat assessments were conducted most recently on July 13, 2011 (I-5311) and September 16, 2011 (I-5338) for the red-cockaded woodpecker, September 19, 2013 (both I-5311 and I-5338) for Michaux's sumac, and April 7, 2011 (I-5311) and March 14, 2012 for dwarf wedgemussel. All species have a biological conclusion of No Effect.		
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; no construction activities, including storage of materials and equipment, will occur outside the existing right-of-way near the National Register-listed Oak View property and Samaria Baptist Church located in the vicinity of the Poole Road interchange.		
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.)	8-18-14 Date

Wetland Impacts Table

Site Number	TIP #	2a. Wetland Impact Permanent (P) or Temporary (T)	2b. Type of Impact	2c. Type of Wetland (if known)	2d. Forested (Y/N)	2e. Type of jurisdiction (Corps-404, 10 DWQ-non-404, other	2f. Area of impact (acres)
2002	I-5338	P	Mechanized Clearing	Headwater Forest (WF)	Y	Corps - 404	0.02
2201	I-5338	P	Mechanized Clearing	Headwater Forest/Non-tidal Freshwater Marsh (WC)	Y	Corps - 404	0.01
2501	I-5338	P	Mechanized Clearing	Bottomland Hardwood Forest (WN)	Y	Corps - 404	<0.01
2502	I-5338	P	Mechanized Clearing	Bottomland Hardwood Forest (WN)	Y	Corps - 404	<0.01
2801	I-5338	P	Excavation	Non-Tidal Freshwater Marsh (WM)	N	Corps - 404	0.03
3001	I-5338	P	Mechanized Clearing	Floodplain Pool (WK)	N	Corps - 404	<0.01
						2g. **Total Wetland Impacts**	Perm: 0.07

2h. Comments: There is no significant loss of jursidictional wetlands resulting from impacts associated with this project. Therefore, no mitigation is being proposed for these impacts.

Stream Impact Table

Site Number	TIP #	3a. Stream Impact 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)
801	I-5338	T	Dewatering[1]	UT Walnut Creek (Lake Johnson) (SA)	PER	Corps - 404	3	61
801	I-5338	P	Bank Stabilization	UT Walnut Creek (Lake Johnson) (SA)	PER	Corps - 404	3	41
1101	I-5338	T	Dewatering[1]	UT Walnut Creek (Lake Johnson) (SD)	PER	Corps - 404	4	46
1101[5]	I-5338	P	Permanent Fill	UT Walnut Creek (Lake Johnson) (SD)	PER	Corps - 404	4	10
1101	I-5338	P	Bank Stabilization	UT Walnut Creek (Lake Johnson) (SD)	PER	Corps - 404	4	30
1102	I-5338	T	Dewatering[1]	UT Walnut Creek (Lake Johnson) (SF)	INT	Corps - 404	5	32
1102	I-5338	P	Permanent Fill	UT Walnut Creek (Lake Johnson) (SF)	INT	Corps - 404	5	10
1102	I-5338	P	Bank Stabilization	UT Walnut Creek (Lake Johnson) (SF)	INT	Corps - 404	5	33
1103	I-5338	T	Dewatering[1]	UT Walnut Creek (Lake Johnson) (SE)	PER	Corps - 404	7	27
1103	I-5338	P	Bank Stabilization	UT Walnut Creek (Lake Johnson) (SE)	PER	Corps - 404	7	20
1301	I-5338	T	Dewatering[1]	UT Walnut Creek (SG)	PER	Corps - 404	3	39
1301[5]	I-5338	P	Permanent Fill	UT Walnut Creek (SG)	PER	Corps - 404	3	10
1301	I-5338	P	Bank Stabilization	UT Walnut Creek (SG)	PER	Corps - 404	3	35
1302	I-5338	T	Dewatering[1]	UT Walnut Creek (SH)	INT	Corps - 404	8	148
1302	I-5338	P	Permanent Fill	UT Walnut Creek (SH)	INT	Corps - 404	8	86
1302	I-5338	P	Bank Stabilization	UT Walnut Creek (SH)	INT	Corps - 404	8	20
1303	I-5338	T	Dewatering[1]	UT Walnut Creek (SI)	INT	Corps - 404	4	13
1303	I-5338	P	Bank Stabilization	UT Walnut Creek (SI)	INT	Corps - 404	4	21
1304	I-5338	P	Bank Stabilization	UT Walnut Creek (SH/SI)	PER	Corps - 404	7	23
1501	I-5338	T	Dewatering[1]	UT Walnut Creek (SK)	PER	Corps - 404	8	46
1501[5]	I-5338	P	Permanent Fill	UT Walnut Creek (SK)	PER	Corps - 404	8	10
1501	I-5338	P	Bank Stabilization	UT Walnut Creek (SK)	PER	Corps - 404	8	32
1701	I-5338	T	Dewatering[1]	UT Walnut Creek (SL)	PER	Corps - 404	9	39
1701[2]	I-5338	P	Stream Relocation	UT Walnut Creek (SL)	PER	Corps - 404	9	15
1701	I-5338	T	Dewatering[1]	UT Walnut Creek (SL)	PER	Corps - 404	9	17
1702	I-5338	T	Dewatering[1]	UT Walnut Creek (SM)	INT	Corps - 404	4	32
1702	I-5338	P	Bank Stabilization	UT Walnut Creek (SM)	INT	Corps - 404	4	40
1901	I-5338	T	Dewatering[1]	UT Walnut Creek (SN)	PER	Corps - 404	4	46

1901	I-5338	P	Bank Stabilization	UT Walnut Creek (SN)	PER	Corps - 404	4	42
1901[5]	I-5338	P	Permanent Fill	UT Walnut Creek (SN)	PER	Corps - 404	4	10
1901	I-5338	P	Bank Stabilization	UT Walnut Creek (SN)	PER	Corps - 404	4	15
2101	I-5338	T	Dewatering[1]	UT Walnut Creek (SP)	INT	Corps - 404	4	15
2101	I-5338	P	Bank Stabilization	UT Walnut Creek (SP)	INT	Corps - 404	4	20
2301	I-5338	T	Dewatering[1]	UT Walnut Creek (SR)	PER	Corps - 404	6	54
2301	I-5338	P	Bank Stabilization	UT Walnut Creek (SR)	PER	Corps - 404	6	10
2301	I-5338	T	Dewatering[1]	UT Walnut Creek (SR)	PER	Corps - 404	5	56
2301	I-5338	P	Bank Stabilization	UT Walnut Creek (SR)	PER	Corps - 404	5	10
2302	I-5338	T	Dewatering[1]	Walnut Creek (SDD)	PER	Corps - 404	18	45
2302	I-5338	P	Bank Stabilization	Walnut Creek (SDD)	PER	Corps - 404	18	17
2802	I-5338	T	Dewatering[1]	UT Walnut Creek (SV)	INT	Corps - 404	4	10
2802	I-5338	P	Bank Stabilization	UT Walnut Creek (SV)	INT	Corps - 404	4	20
2901	I-5338	T	Dewatering[1]	UT Walnut Creek (SW)	PER	Corps - 404	6	17
2901[3]	I-5338	P	Permanent Fill	UT Walnut Creek (SW)	PER	Corps - 404	6	10
2901	I-5338	P	Bank Stabilization	UT Walnut Creek (SW)	PER	Corps - 404	6	20
3101[4]	I-5338	P	Stream Repair	UT Walnut Creek (SY)	INT	Corps - 404	4	58
						3h. **Total Stream and Tributary Impacts**	Temp:	743
							Perm:	668

3i. Comments:

1. Temporary dewatering is required for the maintenance and protection of existing drainage structures and sediment removal within the culverts and streams to achieve positive drainage.
2. Site 1701 (Stream relocation) will not require compensatory mitigation per USACE.
3. Site 2901 (Permanent fill) will not require compensatory mitigation per USACE.
4. Site 3101 is in Area 3.
5. Sites 1101 (Permanent fill), 1301 (Permanent fill), 1501 (Permanent fill), and 1901 (Permanent fill) will require compensatory mitigation.

Buffer Impacts Table

Site Number	TIP #	6b. Buffer Impact 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
801	I-5338	P	Parallel	Unnamed Trib to Walnut Creek (Lake Johnson) (SA)	Yes	0	801
802	I-5338	P	Protection of Existing Structure	Unnamed Trib to Walnut Creek (Lake Johnson) (SA)	No	8567	3434
1101	I-5338	P	Protection of Existing Structure	Unnamed Trib to Walnut Creek (Lake Johnson) (SD)	No	7756	3566
1102	I-5338	P	Protection of Existing Structure	Unnamed Trib to Walnut Creek (Lake Johnson) (SF)	No	7703	2925
1103	I-5338	P	Protection of Existing Structure	Unnamed Trib to Walnut Creek (Lake Johnson) (SE)	No	3514	1220
1301	I-5338	P	Protection of Existing Structure	Unnamed Trib to Walnut Creek (SG)	No	7629	6527
1302	I-5338	P	Protection of Existing Structure	Unnamed Trib to Walnut Creek (SH/SI)	No	19071	6464
1303	I-5338	P	Protection of Existing Structure	Unnamed Trib to Walnut Creek (SI)	No	3136	2950
1501	I-5338	P	Protection of Existing Structure	Unnamed Trib to Walnut Creek (SK)	No	8514	5535
1701	I-5338	P	Road Crossing	Unnamed Trib to Walnut Creek (SL)	No	12556	9149
1702	I-5338	P	Protection of Existing Structure	Unnamed Trib to Walnut Creek (SM)	No	6557	3680
1901	I-5338	P	Protection of Existing Structure	Unnamed Trib to Walnut Creek (SN)	No	8870	2959
2001	I-5338	P	Road Crossing	Unnamed Trib to Walnut Creek (SO)	No	0	903
2002	I-5338	P	Parallel	Unnamed Trib to Walnut Creek (SP)	Yes	96	195
2003	I-5338	P	Parallel	Unnamed Trib to Walnut Creek (SN)	Yes	0	504
2005	I-5338	P	Protection of Existing Structure	Unnamed Trib to Walnut Creek (SN)	No	3274	838
2006	I-5338	P	Parallel	Unnamed Trib to Walnut Creek (SN)	Yes	60	2256
2007	I-5338	P	Protection of Existing Structure	Unnamed Trib to Walnut Creek (SN)	No	1805	2289
2008	I-5338	P	Road Crossing	Unnamed Trib to Walnut Creek (SDD)	No	0	1161
2101	I-5338	P	Road Crossing	Unnamed Trib to Walnut Creek (SP)	No	1511	995
2201	I-5338	P	Stormwater Device	Unnamed Trib to Walnut Creek (SQ)	No	0	46
2301	I-5338	P	Road Crossing	Unnamed Trib to Walnut Creek (SQ)	No	126	162
2302	I-5338	P	Parallel	Unnamed Trib to Walnut Creek (SDD)	Yes	5458	1194
2303	I-5338	P	Protection of Existing Structure	Unnamed Trib to Walnut Creek (SDD)	No	309	0
2304	I-5338	P	Protection of Existing Structure	Unnamed Trib to Walnut Creek (SDD)	No	183	508
2305	I-5338	P	Parallel	Unnamed Trib to Walnut Creek (SR)	Yes	1301	3748
2306	I-5338	P	Protection of Existing Structure	Unnamed Trib to Walnut Creek (SR)	No	1988	595
2307	I-5338	P	Protection of Existing Structure	Unnamed Trib to Walnut Creek (SR)	No	2068	1417

2308	I-5338	P	Road Crossing	Unnamed Trib to Walnut Creek (SR)	No	278	1162
2501	I-5338	P	Road Crossing	Wildcat Branch (SS)	No	0	899
2601	I-5338	P	Road Crossing	Unnamed Trib to Walnut Creek (ST)	No	112	121
2801	I-5338	P	New Structure	Unnamed Trib to Walnut Creek (SU)	No	896	844
2802	I-5338	P	Protection of Existing Structure	Unnamed Trib to Walnut Creek (SV)	No	2377	2332
2901	I-5338	P	Protection of Existing Structure	Unnamed Trib to Walnut Creek (SW)	No	4898	4826
3001	I-5338	P	Road Crossing	Unnamed Trib to Walnut Creek (SX)	No	1903	1766
4301	I-5338	P	Parallel	Walnut Creek (SDD)	Yes	0	594
4401	I-5338	P	Protection of Existing Structure	Wildcat Branch (SS)	No	0	89
					6h. **Total Buffer Impacts**	122516	78654
6i. Comments							

Marks Creek Mitigation Site
ONEID 092-011

The Marks Creek Mitigation Site is located in Wake County within the USGS hydrologic unit 03020201 of the Neuse River. NCDOT acquired the 66 acre site to mitigate for unavoidable, jurisdictional impacts associated with TIP R-2547. Monitoring requirements were performed from 2004 to 2008 and the site was closed out in 2009. Table 1 shows the final mitigation quantities approved for the site. The site has been placed on the NCDOT On-site Debit Ledger for use within HUC 03020201. Tables 2-5 indicate all mitigation debits that have occurred per regulatory agency approval.

To offset unavoidable buffer and stream impacts associated with T.I.P. I-5338 (Areas 1, 2A, and 2b), the Marks Creek Mitigation Site will be debited 80 lin. Ft of stream restoration and 34,683 sq. ft. of buffer restoration. This debit is reflected in the debit ledger below.

Table 1. Mitigation Quantities Approved

HUC	Mitigation Type	Starting Amount	Additional Notes
3020201	Stream Preservation	3247 (Ln.Ft.)	
3020201	Riparian Wetland Restoration	3.33 (Ac.)	No debits as of 8/7/14
3020201	Riparian Wetland Preservation	11 (Ac.)	
3020201	Riparian Wetland Enhancement	13 (Ac)	
3020201	Buffer Restoration	324700 (Sq.Ft.)	

Table 2. Mitigation Debits – Stream Restoration

Mitigation Type	Debit Amount (Ln.Ft.)	Status	Site TIP	Action ID#	NOTES
Stream Restoration	2873	Close Out	R-2814A&B	2008-01316	Mod
Stream Restoration	80	Close Out	I-5338 (Areas 1, 2A, and 2b)		Impacts were 40 lin. Ft. @ 2:1 ratio

Table 3. Mitigation Debits – Riparian Wetland Enhancement

Mitigation Type	Debit Amount (Ac)	Status	Site TIP	Action ID#	NOTES
Riparian Wetland Enhancement	10.9	Close Out	R-2000F&G	199920387	
Riparian Wetland Enhancement	0.98	Close Out	R-3825A	201101695	.49 @2:1
Riparian Wetland Enhancement	.14	Close Out	B-5113		

Table 4. Mitigation Debits – Buffer Restoration

Mitigation Type	Debit Amount (Sq.Ft.)	Status	Site TIP	Action ID#	NOTES
Buffer Restoration	114659	Close Out	U-3804	200421647	
Buffer Restoration	114	Close Out	R-2814-B Mod	2008-01316	
Buffer Restoration	75581	Close Out	B-3528	2008-00153	
Buffer Restoration	1655	Close Out	B-4944	2009-00207	
Buffer Restoration	4242	Close Out	B-5113		
Buffer Restoration	34683	Close Out	I-5338 (Areas 1, 2A, and 2b)		6,915 sq ft of impacts for zone 1 and 9292 sq ft of zone 2 totaling 34,683 sq ft with 3:1 ratio for zone 1 and 1.5:1 for zone 2

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR LINEAR ROADWAY PROJECTS

(Version 1.2; Released September 2011)

Project/TIP No.: I-5338 **County(ies):** Wake

General Project Information

Project No.:	I-5338	**Project Type:**	Roadway Widening	**Date:**	7/1/2014
NCDOT Contact:	Michael Shumsky	**Contractor / Designer:**	Kimley-Horn and Associates		
Address:	NCDOT - Transportation Program Management Unit 1020 Birch Ridge Road Raleigh, NC 27610	**Address:**	3001 Weston Parkway Cary, NC 27513		
Phone:	919-707-6627	**Phone:**	919-677-2000		
Email:	mshumsky@ncdot.gov	**Email:**	dan.robinson@kimley-horn.com		
City/Town:	Raleigh	**County(ies):**	Wake		
River Basin(s):	Neuse	**CAMA County?**	No		
Primary Receiving Water:	See Environmental Summary	**NCDWQ Stream Index No.:**	See Environmental Summary		
NCDWQ Surface Water Classification for Primary Receiving Water	**Primary:**	See Environmental Summary			
	Supplemental:	See Environmental Summary			
Other Stream Classification:	See Environmental Summary				
303(d) Impairments:	See Environmental Summary				
Buffer Rules in Effect	Neuse				

Project Description

Project Length (lin. Miles or feet):	8.007 mi. (Areas 1 & 2 only)	**Surrounding Land Use:**	Urban

	Proposed Project	**Existing Site**
Project Built-Upon Area (ac.)	175.09 ac.	152.33 ac.
Typical Cross Section Description:	-L1- (Areas 1 & 2 only) 3 @ 12' lanes divided by a median barrier and 11' interior shoulders and 11' to 26' outside shoulders with lateral and cut ditches where necessary	-L1- (Areas 1 & 2 only): 3 @ 12' lanes divided by a grass median and 10' to 11' interior shoulder and 11' outside shoulders with lateral and cut ditches
Average Daily Traffic (veh/hr/day):	Design/Future: 184,600	Existing: 126,025

General Project Narrative:

The Design-Build project combining I5338 and I5311 consists of pavement reconstruction of I-40/440 from the I-40/US 64 Interchange west of SR 1319 (Jones Franklin Road) continuing along I-440/US 64 to north of US 64/US 264. This Storm Water Management Plan pertains to Areas 1 & 2 of the project and is located in Wake County. Area 1 begins from Sta. 19+02 -L1- (at the Jones Franklin Interchange) and continues east to Sta. 68+18.62. Area 2A begins at Sta. 68+18.62 and continues east to Sta. 285+00. Area 2B begins at Sta. 285+00 and continures east to Sta. 444+00 (immediately before the I40/440 interchange). The majority of Areas 1 & 2 is the replacement of the road surface with very little increase in total impervious area and storm drain systems to be replaced at the same location with the same size pipes as the existing storm drain system. BMPs were used where ever possible to minimize the effects of stormwater runoff from the project. Although the majority of the project consists of replacing existing storm drain system in place, any new pipe system outfalls were stategically located to not outlet into wetlands/buffers and incorporated BMPs for treatment where practical.

References

Project/TIP No.: I-5338 **County(ies):** Wake

Project Environmental Summary

Surface Water Impacts

Sheet No.	Station (From / To)	Feature Impacted	Water / Wetland / Buffer Type	Receiving Surface Water Name	NRTR Map ID	NCDWQ Stream Index	NCDWQ Surface Water Classification	303(d) Impairments	Type of Impact	Existing SCM	Proposed SCM
801	70+71 -L1- 71+19 -L1-	Buffer	Neuse	Unnamed Trib to Walnut Creek		27-34-(1.5)	B, NSW	Aquatic life, Fish consumption	Clearing	N/A	
801	72+08 -L1- 75+24 -L1-	Stream	Perennial	Unnamed Trib to Walnut Creek		27-34-(1.5)	B, NSW	Aquatic life, Fish consumption	Dewatering/ Bank stabilization	N/A	
802	71+53 -L1- 75+74 -L1-	Buffer	Neuse	Unnamed Trib to Walnut Creek		27-34-(1.5)	B, NSW	Aquatic life, Fish consumption	Clearing	N/A	
1101	101+89 -L1- 105+33 -L1-	Buffer	Neuse	Unnamed Trib to Walnut Creek		27-34-(1.5)	B, NSW	Aquatic life, Fish consumption	Clearing	N/A	
1101	102+72 -L1- 104+60 -L1-	Stream	Perennial	Unnamed Trib to Walnut Creek		27-34-(1.5)	B, NSW	Aquatic life, Fish consumption	Dewatering/ Bank stabilization	N/A	
1102	113+55 -L1- 116+16 -L1-	Buffer	Neuse	Unnamed Trib to Walnut Creek		27-34-(1.5)	B, NSW	Aquatic life, Fish consumption	Clearing	N/A	
1102	113+86 -L1- 115+25 -L1-	Stream	Intermittent	Unnamed Trib to Walnut Creek		27-34-(1.5)	B, NSW	Aquatic life, Fish consumption	Dewatering/ Bank stabilization	N/A	
1103	104+97 -L1- 106+18 -L1-	Buffer	Neuse	Unnamed Trib to Walnut Creek		27-34-(1.5)	B, NSW	Aquatic life, Fish consumption	Clearing	N/A	
1103	105+32 -L1- 105+63 -L1-	Stream	Perennial	Unnamed Trib to Walnut Creek		27-34-(1.5)	B, NSW	Aquatic life, Fish consumption	Dewatering/ Bank stabilization	N/A	
1301	18+38 -RP4C- 25+24 -RP4B-	Buffer	Neuse	Unnamed Trib to Walnut Creek		27-34-(1.7)	C, NSW	Aquatic life, Fish consumption	Clearing	N/A	
1301	18+95 -RP4C- 24+69 -RP4B-	Stream	Perennial	Unnamed Trib to Walnut Creek		27-34-(1.7)	C, NSW	Aquatic life, Fish consumption	Dewatering/ Bank stabilization	N/A	
1302	28+40 -RP4D- 26+17 -RP4D-	Buffer	Neuse	Unnamed Trib to Walnut Creek		27-34-(1.7)	C, NSW	Aquatic life, Fish consumption	Clearing	N/A	
1302	26+57 -RP4D- 21+85 -RP4A-	Stream	Intermittent	Unnamed Trib to Walnut Creek		27-34-(1.7)	C, NSW	Aquatic life, Fish consumption	Dewatering/ Bank stabilization	N/A	
1303	15+65 -RP4D- 14+61 -RP4D-	Buffer	Neuse	Unnamed Trib to Walnut Creek		27-34-(1.7)	C, NSW	Aquatic life, Fish consumption	Clearing	N/A	
1303	14+88 -RP4D- 14+88 -RP4D-	Stream	Intermittent	Unnamed Trib to Walnut Creek		27-34-(1.7)	C, NSW	Aquatic life, Fish consumption	Dewatering/ Bank stabilization	N/A	
1302	21+52 -RP4A- 22+30 -RP4A-	Buffer	Neuse	Unnamed Trib to Walnut Creek		27-34-(1.7)	C, NSW	Aquatic life, Fish consumption	Clearing	N/A	
1304	21+78 -RP4A- 21+88 -RP4A-	Stream	Intermittent	Unnamed Trib to Walnut Creek		27-34-(1.7)	C, NSW	Aquatic life, Fish consumption	Dewatering/ Bank stabilization	N/A	

* List all stream and surface water impact locations regardless of jurisdiction or size.
Equalizer Pipes to be noted as a minimization of impacts.
All proposed SCMs listed must also be listed under Swales, Preformed Sour Holes and other Energy Dissipators, or Other Stormwater Control Measures.

Description of Minimization of Impacts or Mitigation

References

Project Environmental Summary

Surface Water Impacts

Sheet No.	Station (From / To)	Feature Impacted	Water / Wetland / Buffer Type	Receiving Surface Water Name	NRTR Map ID	NCDWQ Stream Index	NCDWQ Surface Water Classification	303(d) Impairments	Type of Impact	Existing SCM	Proposed SCM
1501	175+72 -L1- 181+78 -L1-	Buffer	Neuse	Unnamed Trib to Walnut Creek		27-34-(4)	C, NSW	Aquatic life, Fish consumption	Clearing	N/A	
1501	177+04 -L1- 180+21 -L1-	Stream	Perennial	Unnamed Trib to Walnut Creek		27-34-(4)	C, NSW	Aquatic life, Fish consumption	Dewatering/ Bank stabilization	N/A	
1701	197+57 -L1- 203+14 -L1-	Buffer	Neuse	Unnamed Trib to Walnut Creek		27-34-(4)	C, NSW	Aquatic life, Fish consumption	Clearing	N/A	
1701	198+72 -L1- 202+79 -L1-	Stream	Perennial	Unnamed Trib to Walnut Creek		27-34-(4)	C, NSW	Aquatic life, Fish consumption	Dewatering/ Bank stabilization	N/A	
1702	204+15 -L1- 206+55 -L1-	Buffer	Neuse	Unnamed Trib to Walnut Creek		27-34-(4)	C, NSW	Aquatic life, Fish consumption	Clearing	N/A	
1702	204+22 -L1- 206+30 -L1-	Stream	Intermittent	Unnamed Trib to Walnut Creek		27-34-(4)	C, NSW	Aquatic life, Fish consumption	Dewatering/ Bank stabilization	N/A	
1901	12+93 -RP6C- 15+05 -RP6B-	Buffer	Neuse	Unnamed Trib to Walnut Creek		27-34-(4)	C, NSW	Aquatic life, Fish consumption	Clearing	N/A	
1901	13+28 -RP6C- 14+72 -RP6B-	Stream	Perennial	Unnamed Trib to Walnut Creek		27-34-(4)	C, NSW	Aquatic life, Fish consumption	Dewatering/ Bank stabilization	N/A	
1901	22+12 -RP6B- 22+30 -RP6B-	Stream	Perennial	Unnamed Trib to Walnut Creek		27-34-(4)	C, NSW	Aquatic life, Fish consumption	Dewatering/ Bank stabilization	N/A	
2001	24+45 -RP6C- 25+23 -RP6C-	Buffer	Neuse	Unnamed Trib to Walnut Creek		27-34-(4)	C, NSW	Aquatic life, Fish consumption	Clearing	N/A	
2002	15+20 -RP6D- 15+99 -RP6D-	Buffer	Neuse	Unnamed Trib to Walnut Creek		27-34-(4)	C, NSW	Aquatic life, Fish consumption	Clearing	N/A	
2002	13+82 -RP6D- 15+22 -RP6D-	Wetland	Non-Tidal Freshwater Marsh	Unnamed Trib to Walnut Creek		27-34-(4)	C, NSW	Aquatic life, Fish consumption	Clearing	N/A	
2003	15+81 -RP6B- 16+07 -RP6B-	Buffer	Neuse	Unnamed Trib to Walnut Creek		27-34-(4)	C, NSW	Aquatic life, Fish consumption	Clearing	N/A	
2005	21+34 -RP6B- 22+47 -RP6B-	Buffer	Neuse	Unnamed Trib to Walnut Creek		27-34-(4)	C, NSW	Aquatic life, Fish consumption	Clearing	N/A	
2006	20+85 -RP6B- 24+20 -RP6B-	Buffer	Neuse	Unnamed Trib to Walnut Creek		27-34-(4)	C, NSW	Aquatic life, Fish consumption	Clearing	N/A	
2007	24+26 -RP6B- 25+25 -RP6B-	Buffer	Neuse	Unnamed Trib to Walnut Creek		27-34-(4)	C, NSW	Aquatic life, Fish consumption	Clearing	N/A	
2008	21+70 -RP6A- 22+29 -RP6A-	Buffer	Neuse	Unnamed Trib to Walnut Creek		27-34-(4)	C, NSW	Aquatic life, Fish consumption	Clearing	N/A	

* List all stream and surface water impact locations regardless of jurisdiction or size.
Equalizer Pipes to be noted as a minimization of impacts.
All proposed SCMs listed must also be listed under Swales, Preformed Sour Holes and other Energy Dissipators, or Other Stormwater Control Measures.

Description of Minimization of Impacts or Mitigation

References

Project Environmental Summary

Surface Water Impacts

Sheet No.	Station (From / To)	Feature Impacted	Water / Wetland / Buffer Type	Receiving Surface Water Name	NRTR Map ID	NCDWQ Stream Index	NCDWQ Surface Water Classification	303(d) Impairments	Type of Impact	Existing SCM	Proposed SCM
2101	267+06 -L1- 268+00 -L1-	Buffer	Neuse	Unnamed Trib to Walnut Creek		27-34-(4)	C, NSW	Aquatic life, Fish consumption	Clearing	N/A	
2101	267+13 -L1- 267+48 -L1-	Stream	Intermittent	Unnamed Trib to Walnut Creek		27-34-(4)	C, NSW	Aquatic life, Fish consumption	Dewatering/ Bank stabilization	N/A	
2201	285+53 -L1- 285+67 -L1-	Buffer	Neuse	Unnamed Trib to Walnut Creek		27-34-(4)	C, NSW	Aquatic life, Fish consumption	Clearing	N/A	
2201	285+04 -L1- 285+38 -L1-	Wetland	Non-Tidal Freshwater Marsh	Unnamed Trib to Walnut Creek		27-34-(4)	C, NSW	Aquatic life, Fish consumption	Clearing	N/A	
2301	25+65 -RP7C- 26+35 -RP7C-	Buffer	Neuse	Unnamed Trib to Walnut Creek		27-34-(4)	C, NSW	Aquatic life, Fish consumption	Clearing	N/A	
2301	10+65 -RP7DS- 11+31 -RP7DS-	Stream	Perennial	Unnamed Trib to Walnut Creek		27-34-(4)	C, NSW	Aquatic life, Fish consumption	Dewatering/ Bank stabilization	N/A	
2301	16+24 -RP7D- 16+88 -RP7D-	Stream	Perennial	Unnamed Trib to Walnut Creek		27-34-(4)	C, NSW	Aquatic life, Fish consumption	Dewatering/ Bank stabilization	N/A	
2302	18+95 -RP7B- 20+50 -RP7B-	Buffer	Neuse	Walnut Creek		27-34-(4)	C, NSW	Aquatic life, Fish consumption	Clearing	N/A	
2302	14+50 -RP7A- 22+31 -RP7A-	Buffer	Neuse	Walnut Creek		27-34-(4)	C, NSW	Aquatic life, Fish consumption	Clearing	N/A	
2302	20+16 -RP7A- 20+72 -RP7A-	Stream	Perennial	Walnut Creek		27-34-(4)	C, NSW	Aquatic life, Fish consumption	Dewatering/ Bank stabilization	N/A	
2303	20+12 -RP7A- 20+72 -RP7A-	Buffer	Neuse	Walnut Creek		27-34-(4)	C, NSW	Aquatic life, Fish consumption	Clearing	N/A	
2304	10+66 -RP7A- 10+92 -RP7A-	Buffer	Neuse	Walnut Creek		27-34-(4)	C, NSW	Aquatic life, Fish consumption	Clearing	N/A	
2305	19+65 -RP7D- 14+36 -RP7DS-	Buffer	Neuse	Unnamed Trib to Walnut Creek		27-34-(4)	C, NSW	Aquatic life, Fish consumption	Clearing	N/A	
2306	10+65 -RP7DS- 11+31 -RP7DS-	Buffer	Neuse	Unnamed Trib to Walnut Creek		27-34-(4)	C, NSW	Aquatic life, Fish consumption	Clearing	N/A	
2307	16+30 -RP7D- 17+00 -RP7D-	Buffer	Neuse	Unnamed Trib to Walnut Creek		27-34-(4)	C, NSW	Aquatic life, Fish consumption	Clearing	N/A	
2308	12+29 -RP7D- 13+70 -RP7D-	Buffer	Neuse	Unnamed Trib to Walnut Creek		27-34-(4)	C, NSW	Aquatic life, Fish consumption	Clearing	N/A	
2501	25+38 -RP9C- 26+19 -RP9C-	Buffer	Neuse	Wildcat Branch		27-34-7	C, NSW	None	Clearing	N/A	

* List all stream and surface water impact locations regardless of jurisdiction or size.
Equalizer Pipes to be noted as a minimization of impacts.
All proposed SCMs listed must also be listed under Swales, Preformed Sour Holes and other Energy Dissipators, or Other Stormwater Control Measures.

Description of Minimization of Impacts or Mitigation

References

Project Environmental Summary

Surface Water Impacts

Sheet No.	Station (From / To)	Feature Impacted	Water / Wetland / Buffer Type	Receiving Surface Water Name	NRTR Map ID	NCDWQ Stream Index	NCDWQ Surface Water Classification	303(d) Impairments	Type of Impact	Existing SCM	Proposed SCM
2501	15+62 -RP9B- 16+12 -RP9B-	Wetland	Bottomland Hardwood	Walnut Creek		27-34-(4)	C, NSW	Aquatic life, Fish consumption	Clearing	N/A	PFSH
2502	14+54 -RP9BSPUR- 16+12 -RP9BSPUR-	Wetland	Bottomland Hardwood	Walnut Creek		27-34-(4)	C, NSW	Aquatic life, Fish consumption	Clearing	N/A	PFSH
2601	365+42 -L1- 366+69 -L1-	Buffer	Neuse	Unnamed Trib to Walnut Creek		27-34-(4)	C, NSW	Aquatic life, Fish consumption	Clearing	N/A	
2801	388+37 -L1- 388+87 -L1-	Buffer	Neuse	Unnamed Trib to Walnut Creek		27-34-(4)	C, NSW	Aquatic life, Fish consumption	Clearing	N/A	
2802	395+61 -L1- 396+84 -L1-	Buffer	Neuse	Unnamed Trib to Walnut Creek		27-34-(4)	C, NSW	Aquatic life, Fish consumption	Clearing	N/A	
2801	395+13 -L1- 396+25 -L1-	Wetland	Non-Tidal Freshwater Marsh	Walnut Creek		27-34-(4)	C, NSW	Aquatic life, Fish consumption	Excavation	N/A	
2802	396+15 -L1- 396+25 -L1-	Stream	Intermittent	Unnamed Trib to Walnut Creek		27-34-(4)	C, NSW	Aquatic life, Fish consumption	Dewatering/ Bank stabilization	N/A	
2901	15+43 -RP13C- 18+96 -RP13C-	Buffer	Neuse	Unnamed Trib to Walnut Creek		27-34-(4)	C, NSW	Aquatic life, Fish consumption	Clearing	N/A	
2901	15+88 -RP13C- 16+12 -RP13C-	Stream	Perennial	Unnamed Trib to Walnut Creek		27-34-(4)	C, NSW	Aquatic life, Fish consumption	Dewatering/ Bank stabilization	N/A	
3001	437+39 -L1- 439+89 -L1-	Buffer	Neuse	Unnamed Trib to Walnut Creek		27-34-(4)	C, NSW	Aquatic life, Fish consumption	Fill	N/A	
3001	440+14 -L1- 440+24 -L1-	Wetland	Floodplain Pool	Unnamed Trib to Walnut Creek		27-34-(4)	C, NSW	Aquatic life, Fish consumption	Clearing	N/A	PFSH
3101	453+42 -L1- 453+56 -L1-	Stream	Intermittent	Unnamed Trib to Walnut Creek		27-34-(4)	C, NSW	Aquatic life, Fish consumption	Stabilization	N/A	
4301	-RP9BSPUR- -RP9BSPUR-	Buffer	Neuse	Walnut Creek		27-34-(4)	C, NSW	Aquatic life, Fish consumption	Fill	N/A	
4401	31+93 -Y9- 32+19 -Y9-	Buffer	Neuse	Wildcat Branch		27-34-7	C, NSW	Aquatic life, Fish consumption	Clearing	N/A	

* List all stream and surface water impact locations regardless of jurisdiction or size.
Equalizer Pipes to be noted as a minimization of impacts.
All proposed SCMs listed must also be listed under Swales, Preformed Sour Holes and other Energy Dissipators, or Other Stormwater Control Measures.

Description of Minimization of Impacts or Mitigation

References

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR LINEAR ROADWAY PROJECTS

(Version 1.2; Released September 2011)

Project/TIP No.: I-5338 **County(ies):** Wake

Preformed Scour Holes and Energy Dissipators

Sheet No.	Station	Energy Dissipator Type	Riprap Type	Drainage Area (ac)	Conveyance Structure	Pipe/Structure Dimensions (in)	Q10 (cfs)	V10 (fps)
23	13+90 -RP7D-	PFSH	Class 'B'	0.62	Pipe	15	3.3	1.1
25	24+55 -RP9C-	PFSH	Class 'B'	0.44	Pipe	15	2.3	1.0
25	15+25 -RP9B-	PFSH	Class 'B'	1.08	Pipe	18	5.4	1.2
25	15+90 -RP9B-	PFSH	Class 'B'	2.27	Pipe	18	8.2	1.4
25	14+70 -RP9BSPUR-	PFSH	Class 'B'	2.07	Pipe	18	5.6	1.3
25	23+70 -RP9A-	PFSH	Class 'B'	0.50	Pipe	18	2.3	0.9
28	391+83 -L1-	PFSH	Class 'B'	0.73	Pipe	15	3.9	1.2
30	440+33 -L1-	PFSH	Class 'B'	0.41	Pipe	15	2.1	0.9

☑ YES ☐ NO Have minimum design criteria, as presented in the NCDOT Best Management Practices Toolbox (2008), NCDOT Standard Details, or FHWA HEC-14 (July 2006), been met and verified, as applicable? If No, provide further explanantion of why design criteria was not met.

Additional Comments

* Refer to the NCDOT Best Management Practices Toolbox, Version 1 (March 2008), NCDOT Standard Details, the Federal Highway Administration (FHWA) Hydraulic Engineering Circular No. 14 (HEC-14), Third Edition, Hydraulic Design of Energy Dissipators for Culverts and Channels (July 2006), as applicable, for design guidance and criteria.

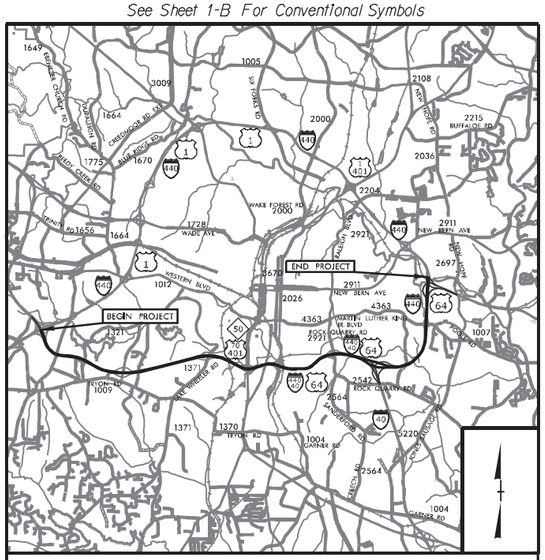
09/08/99

TIP PROJECT: I-5338 / I-5311

CONTRACT: C203166

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

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



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WAKE COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-5338 / I-5311	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
46265.3.1	IMS-0440(13)	PE
46265.3.1	IMS-0440(13)	R/W, UTIL
46265.3.1	IMS-0440(13)	CONST

AREA 1 & 2
PERMIT PLANS
SUBMITTAL NO: D-145R3
DATE: JULY 28, 2014

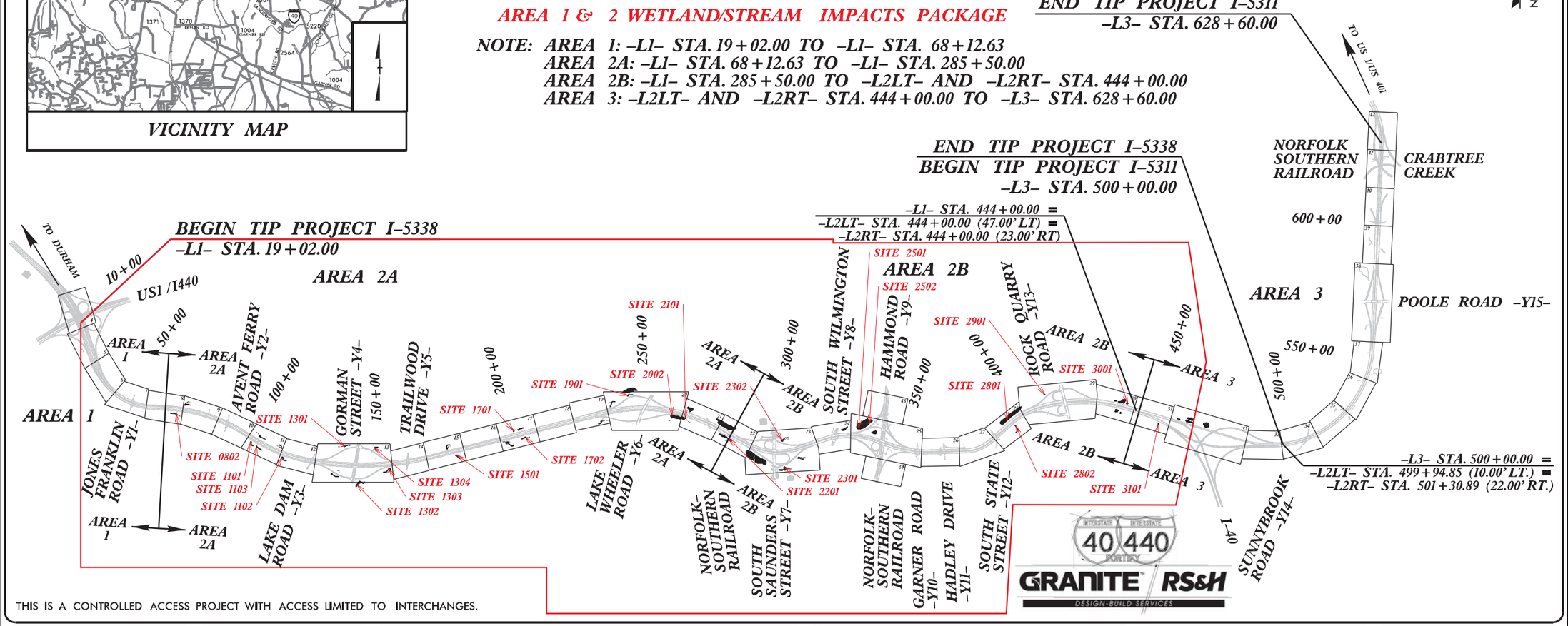
NAD 83/NSRS 2007

LOCATION: *I-40 / US 64 FROM WEST OF SR 1319 (JONES FRANKLIN RD) CONTINUING ALONG I-440 / US 64 TO NORTH OF US 64 / US 264*

TYPE OF WORK: *PAVING, GRADING, DRAINAGE, STRUCTURE REHABILITATION, STRUCTURE WIDENING, GUARDRAIL, SIGNING, LIGHTING, AND ITS*

AREA 1 & 2 WETLAND/STREAM IMPACTS PACKAGE

NOTE: *AREA 1: -L1- STA. 19+02.00 TO -L1- STA. 68+12.63*
AREA 2A: -L1- STA. 68+12.63 TO -L1- STA. 285+50.00
AREA 2B: -L1- STA. 285+50.00 TO -L2LT- AND -L2RT- STA. 444+00.00
AREA 3: -L2LT- AND -L2RT- STA. 444+00.00 TO -L3- STA. 628+60.00



THIS IS A CONTROLLED ACCESS PROJECT WITH ACCESS LIMITED TO INTERCHANGES.

GRANITE RS&H DESIGN-BUILD SERVICES

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2013	=	126,025
ADT 2035	=	184,600
DHV	=	9 %
D	=	55 %
T	=	8 % *
V	=	70 MPH

* (TTST =4% + DUAL =4%)
FUNC CLASS = INTERSTATE

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT I-5338 / I-5311	=	11.503 MILES
LENGTH STRUCTURE TIP PROJECT I-5338 / I-5311	=	0.042 MILES
TOTAL LENGTH TIP PROJECT I-5338 / I-5311	=	11.545 MILES

*NOTE: EASTBOUND LANES USED TO CALCULATE LENGTH OF PROJECT.

K. ZAK HAMIDI, PE
NCDOT CONTACT

Prepared in the Office of:
RS&H
ARCHITECTS-ENGINEERS-PLANNERS, INC.
8601 SIX FORKS ROAD, SUITE 260
RALEIGH, NC 27615

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
MAY 13, 2013

LETTING DATE:
MAY 13, 2013

JASON TALLEY, PE
PROJECT ENGINEER

JARED BOND, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 36188 ENGINEER WILL WEATHERS

NORTH CAROLINA PROFESSIONAL SEAL 026480 ENGINEER JERRY C. ROBINSON, JR.

P.E.

SIGNATURE:

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON W. TALLEY

P.E.

SIGNATURE:

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

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)
0801	72+32/74+94 -L1-	54" CMP							<0.01		61	
0801	72+32/74+94 -L1-	BANK STABILIZATION						<0.01		41		
1101	102+92/104+63 -L1-	36"/42" CMP						<0.01	<0.01	10	46	
1101	102+92/104+63 -L1-	BANK STABILIZATION						<0.01		30		
1102	114+03/115+62 -L1-	36" RCP						<0.01	<0.01	10	32	
1102	114+03/115+62 -L1-	BANK STABILIZATION						<0.01		33		
1103	105+35 -L1-	42" CMP							<0.01		27	
1103	105+35 -L1-	BANK STABILIZATION						<0.01		20		
1301	19+09 -RP4C-/24+75 -RP4B-	36" CMP						<0.01	<0.01	10	39	
1301	19+09 -RP4C-/24+75 -RP4B-	BANK STABILIZATION						<0.01		35		
1302	26+58 -RP4D-	36" CMP						<0.01	0.03	86	148	
1302	26+58 -RP4D-	BANK STABILIZATION						<0.01		20		
1303	15+08 -RP4D-	30" RCP							<0.01		13	
1303	15+08 -RP4D-	BANK STABILIZATION						<0.01		21		
1304	21+82 -RP4A-	BANK STABILIZATION						<0.01		23		
1501	177+31/179+66 -L1-	42" CMP						<0.01	<0.01	10	46	
1501	177+31/179+66 -L1-	BANK STABILIZATION						<0.01		32		
SHEET TOTALS (1 of 3):								0.05	0.06	381	412	

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

WAKE COUNTY
WBS - 46265.3.1 (I-5338/I-5311)

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)
1701	199+78/202+58 -L1-	6' x 8' BOX CULVERT							<0.01		39	
1701	199+78 -L1-	STREAM RELOCATION						0.03	<0.01	15	17	
1702	204+47/206+13 -L1-	42" CMP							<0.01		32	
1702	204+47/206+13 -L1-	BANK STABILIZATION						<0.01		40		
1901	13+43 -RP6C-/14+29 -RP6B-	72" CMP							<0.01		46	
1901	13+43 -RP6C-/14+29 -RP6B-	BANK STABILIZATION						<0.01		42		
1901	22+13 -RP6B-	36" CMP						<0.01		10		
1901	22+13 -RP6B-	BANK STABILIZATION						<0.01		15		
2002	13+82/15+22 -RP6D-	ROADWAY CUT				0.02						
2101	267+46 -L1-	48" RCP							<0.01		15	
2101	267+46 -L1-	BANK STABILIZATION						<0.01		20		
2201	285+04/285+52 -L1-	15" CSP				0.01						
2301	11+88/12+47 -RP7DSPUR-	18" CMP							<0.01		54	
2301	11+88/12+47 -RP7DSPUR-	BANK STABILIZATION						<0.01		10		
2301	17+99/18+66 -RP7D-	18" CMP							<0.01		56	
2301	17+99/18+66 -RP7D-	BANK STABILIZATION						<0.01		10		
2302	20+18/20+79 -RP7D-	15" CMP							0.02		45	
2302	20+18/20+79 -RP7D-	BANK STABILIZATION						<0.01		17		
SHEET TOTALS (2 of 3):						0.03		0.05	0.05	179	304	

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

WAKE COUNTY
WBS - 46265.3.1 (I-5338/I-5311)

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)
2501	15+62/16+12 -RP9B-	18" CMP				<0.01						
2502	14+54/14+78 -RP9BSPUR-	18" CMP				<0.01						
2801	395+13/395+98 -L1-	42" CMP			0.03							
2802	396+15/396+25 -L1-	42" CMP							<0.01		10	
2802	396+15/396+25 -L1-	BANK STABILIZATION						<0.01		20		
2901	15+88/16+12 -RP13C-	54" RCP						<0.01	<0.01	10	17	
2901	15+88/16+12 -RP13C-	BANK STABILIZATION						<0.01		20		
3001	440+14/440+24 -L1-	15" RCP				<0.01						
3101*	453+42/453+56 -L2RT-	36" CMP						<0.01		58		
SHEET TOTALS (1 of 3):								0.05	0.06	381	412	
SHEET TOTALS (2 of 3):						0.03		0.05	0.05	179	304	
SHEET TOTALS (3 of 3):					0.03	0.01		0.01	<0.01	108	27	
PROJECT TOTALS:					0.03	0.04		0.11	0.11	668	743	

*Site in Area 3

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

WAKE COUNTY
WBS - 46265.3.1 (I-5338/I-5311)

6/2/99

AREAS 1 & 2A

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	2-A

ROADWAY DESIGN ENGINEER

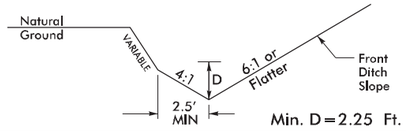
NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 36188 ENGINEER MILES J. WEATHERSBEE

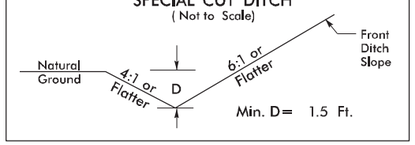
GRANITE RS&H DESIGN-BUILD SERVICES

DETAIL A
SPECIAL CUT DITCH w/HINGE
(Not to Scale)



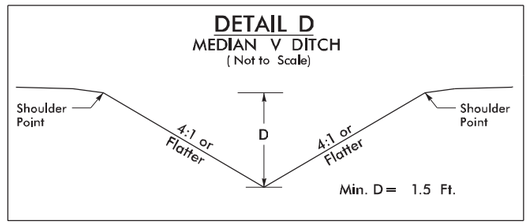
FROM STA. 39+00 TO STA. 44+00 –L1– (LT)
FROM STA. 56+50 TO STA. 57+50 –L1– (RT)
FROM STA. 57+00 TO STA. 57+50 –L1– (LT)
FROM STA. 22+00 TO STA. 24+50 –RP4C– (LT)
FROM STA. 27+80 TO STA. 28+30 –RP4B– (RT)
FROM STA. 17+51 TO STA. 19+48 –RP4D– (RT)
FROM STA. 237+00 TO STA. 242+40 –L1– (RT)

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)



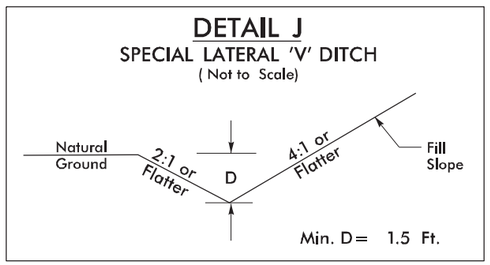
FROM STA. 84+00 TO STA. 89+00 –L1– (LT)
FROM STA. 119+00 TO STA. 119+50 –L1– (LT)
FROM STA. 128+50 TO STA. 130+26 –L1– (LT)
FROM STA. 128+50 TO STA. 131+50 –L1– (RT)
FROM STA. 16+00 TO STA. 17+50 –RP4C– (RT)
FROM STA. 16+30 TO STA. 19+80 –RP4B– (LT)
FROM STA. 20+98 TO STA. 23+50 –RP4D– (LT)
FROM STA. 152+00 TO STA. 153+14 –L1– (RT)
FROM STA. 15+55 TO STA. 17+55 –RP4A– (RT)
FROM STA. 155+50 TO STA. 161+50 –L1– (LT)
FROM STA. 156+00 TO STA. 159+00 –L1– (RT)
FROM STA. 164+00 TO STA. 166+00 –L1– (LT)
FROM STA. 164+00 TO STA. 166+81 –L1– (RT)
FROM STA. 167+02 TO STA. 168+50 –L1– (LT)
FROM STA. 186+50 TO STA. 189+50 –L1– (RT)
FROM STA. 221+68 TO STA. 227+50 –L1– (RT)
FROM STA. 232+00 TO STA. 236+50 –L1– (RT)
FROM STA. 234+50 TO STA. 236+00 –L1– (LT)
FROM STA. 242+40 TO STA. 244+00 –L1– (RT)
FROM STA. 252+00 TO STA. 254+50 –L1– (RT)

DETAIL D
MEDIAN V DITCH
(Not to Scale)



FROM STA. 19+17 TO STA. 39+00 –L1– (RT)
FROM STA. 21+00 TO STA. 31+25 –L1– (LT)
FROM STA. 33+50 TO STA. 39+00 –L1– (LT)

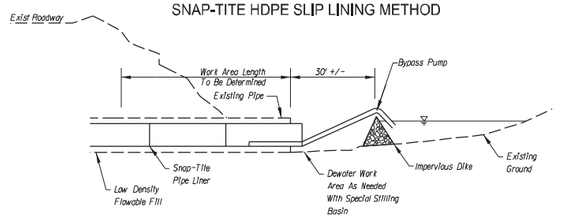
DETAIL J
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



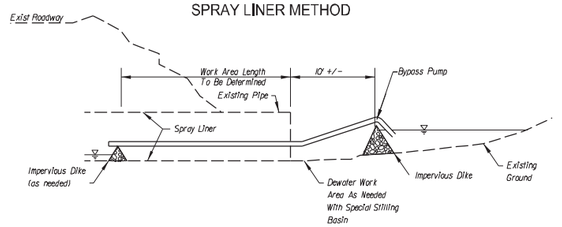
FROM STA. 17+31 TO STA. 18+31 –RP6B– (RT)
FROM STA. 21+40 TO STA. 21+90 –RP6D– (RT)
FROM STA. 15+05 TO STA. 18+55 –RP4A– (LT)
FROM STA. 15+83 TO STA. 16+80 –RP4B– (RT)
FROM STA. 15+52 TO STA. 16+50 –RP4C– (LT)

DETAIL H
CULVERT PRESERVATION

SNAP-TITE HDPE SLIP LINING METHOD



SPRAY LINER METHOD



CURED IN PLACE PIPE LINER (BALLOON METHOD)

- Same as Spray Liner Method above except for:
  - All curing water must be disposed of site
  - Pipe Liner must be installed per manufacturers specifications
  - Contractor is to remove all construction waste around pipe before pipe is placed back in service

Snap-Tite HPDE Slip Lining

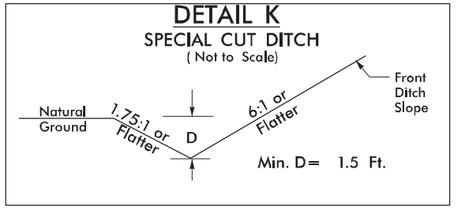
- Install silt fence, special sediment control fence, and all other erosion control devices in area as shown on Erosion Control Plans.
- Install orange tree protection fence (i.e. safety fence) along the outermost permit footprint (stream, wetland, and/or riparian buffer). The NCDOT Division 5 Environmental Supervisor will provide this information to the contractor. No construction impacts are allowed beyond the fence limits.
- Clear a maximum of 30' wide access path to the pipe end to be slip lined with Snap-Tite as shown on Erosion Control Plans. All clearing must stay within the permitted stream, wetland, and/or riparian buffer footprint.
- Install Special Stilling Basin (silt bag) on the upstream side to dewater work area.
- Install impervious Dike a maximum of 30' upstream of pipe to be lined to create work area. All in-stream activity must stay within the permitted stream footprint.
- Clean out existing pipe as needed to install carrier pipe. Install Special Stilling Basin (silt bag) and impervious Dike downstream during cleaning phase to pump out contaminated water.
- Use bypass pump to bypass water over work area and into Snap-Tite HDPE Pipe.
- After first section of Snap-Tite HDPE Pipe is installed pull hose out of first section, snap second section of pipe together and return bypass pump hose into pipe to bypass water through work area. Repeat until all pipe is lined.
- Fill void with low density flowable fill and seal off ends per manufacturer specifications.
- Remove impervious Dike and Special Stilling Basin (silt bag) and stabilize stream bank per plans and details.
- Permanently seed and mulch access path and work area; Use erosion control matting as required to stabilize existing slope.
- Remove all erosion control measures after site is stabilized and approved by NCDOT.

Spray Lining

- Install silt fence, special sediment control fence, and all other erosion control devices in area as shown on Erosion Control Plans.
- Install orange tree protection fence (i.e. safety fence) along the outermost permit footprint (stream, wetland, and/or riparian buffer). The NCDOT Division 5 Environmental Supervisor will provide this information to the contractor. No construction impacts are allowed beyond the fence limits.
- Clear a maximum of 25' wide access path to the pipe end to be spray lined as shown on Erosion Control Plans. All clearing must stay within the permitted stream, wetland, and/or riparian buffer footprint.
- Install Special Stilling Basin (silt bag) to dewater work area.
- Install impervious Dike a maximum of 10' upstream of pipe to be lined to create work area. All in-stream activity must stay within the permitted stream footprint.
- Clean out existing culvert as necessary. Install Special Stilling Basin (silt bag) and impervious Dike downstream during cleaning phase to pump out contaminated water.
- Install impervious Dike within pipe culvert at either end of work area as needed to prevent backflow.
- Use bypass pump to bypass water over work area from first impervious Dike to the second impervious Dike.
- Remove impervious Dikes and Special Stilling Basin (silt bag) and stabilize stream bank per Roadway Plans.
- Permanently seed and mulch access path and work area; Use erosion control matting as required to stabilize existing slope.
- Remove all erosion control measures after site is stabilized and approved by NCDOT.

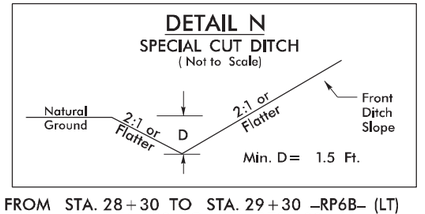
General Notes:
- Recommend slip lining pipes during low flow conditions only.
- The slip lining method used at each pipe location will be determined based on field conditions and approved by NCDOT prior to beginning work. See drainage detail sheet for culvert preservation method and site location.
- Any major deviations from this sequence need prior approval by NCDOT.

DETAIL K
SPECIAL CUT DITCH
(Not to Scale)



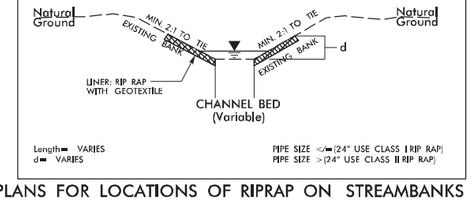
FROM STA. 39+50 TO STA. 44+15 –L1– (RT)
FROM STA. 44+00 TO STA. 51+50 –L1– (LT)
FROM STA. 46+25 TO STA. 49+00 –L1– (RT)
FROM STA. 49+99 TO STA. 55+25 –L1– (RT)
FROM STA. 52+76 TO STA. 55+08 –L1– (LT)
FROM STA. 56+25 TO STA. 56+50 –L1– (RT)
FROM STA. 56+00 TO STA. 57+00 –L1– (LT)
FROM STA. 57+50 TO STA. 60+00 –L1– (LT)
FROM STA. 57+50 TO STA. 69+00 –L1– (RT)
FROM STA. 61+23 TO STA. 64+41 –L1– (LT)
FROM STA. 77+50 TO STA. 88+50 –L1– (RT)
FROM STA. 93+50 TO STA. 101+50 –L1– (LT)
FROM STA. 182+50 TO STA. 194+94 –L1– (LT)
FROM STA. 208+00 TO STA. 213+50 –L1– (RT)
FROM STA. 208+50 TO STA. 212+00 –L1– (LT)
FROM STA. 216+83 TO STA. 234+09 –L1– (LT)
FROM STA. 230+50 TO STA. 231+50 –L1– (RT)
FROM STA. 254+50 TO STA. 257+89 –L1– (LT)
FROM STA. 271+00 TO STA. 274+84 –L1– (LT)
FROM STA. 268+00 TO STA. 276+00 –L1– (RT)

DETAIL N
SPECIAL CUT DITCH
(Not to Scale)



FROM STA. 28+30 TO STA. 29+30 –RP6B– (LT)
FROM STA. 276+00 TO STA. 279+00 –L1– (LT)

DETAIL L
RIPRAP ON STREAMBANKS ONLY
(Not to Scale)



SEE PLANS FOR LOCATIONS OF RIPRAP ON STREAMBANKS ONLY

SHEET LINK 1-5338 2-5311 2-5311 2-5311

6/2/99

AREA 2B

Kimley»Horn

GRANITE RS&H DESIGN-BUILD SERVICES

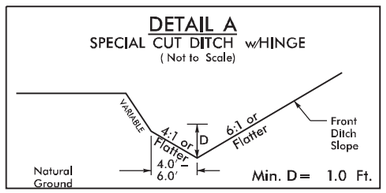
PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	2-B
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Temporary Median Deck Drain Summary
(to be filled after completion of MOT)

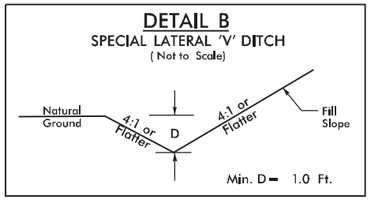
S. State Street (East Bound Median)			
Station	Alignment	Location	Deck Drain size (FT)
386+94	-L1-	CL	0.5
387+00	-L1-	CL	0.5
387+06	-L1-	CL	0.5
387+12	-L1-	CL	0.5
387+18	-L1-	CL	0.5
387+24	-L1-	CL	0.5
387+89	-L1-	CL	0.5
387+95	-L1-	CL	0.5
388+01	-L1-	CL	0.5
388+07	-L1-	CL	0.5
388+13	-L1-	CL	0.5
388+19	-L1-	CL	0.5
Deck Drains Required on Bridge =			12

DETAIL A
SPECIAL CUT DITCH w/HINGE
(Not to Scale)



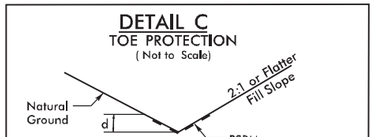
FROM STA. 376+50 TO STA. 378+00 –L1– (LT)
FROM STA. 397+00 TO STA. 401+50 –L1– (RT)
FROM STA. 401+50 TO STA. 404+00 –L1– (RT)
FROM STA. 405+50 –L1– TO STA. 15+70 –RP13C– (RT)
FROM STA. 15+70 TO STA. 20+40 –RP13C– (RT)
FROM STA. 407+50 –L1– TO STA. 17+60 –RP13B– (LT)
FROM STA. 21+10 TO STA. 23+60 –RP13B– (LT)
FROM STA. 420+00 TO STA. 422+50 –L1– (LT)
FROM STA. 423+50 TO STA. 427+00 –L1– (RT)
FROM STA. 428+50 TO STA. 432+00 –L1– (LT)
FROM STA. 441+00 TO STA. 444+00 –L1– (LT)
FROM STA. 441+50 TO STA. 443+00 –L1– (RT)

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



FROM STA. 15+45 TO STA. 17+45 –RP7D– (RT)
FROM STA. 21+90 TO STA. 20+60 –RP7A– (LT)
FROM STA. 15+80 TO STA. 20+20 –RP7B– (RT)
FROM STA. 22+80 TO STA. 21+49 –RP7B– (RT)
FROM STA. 12+41 TO STA. 12+91 –LP7B– (LT)
FROM STA. 414+50 TO STA. 415+00 –L1– (LT)
FROM STA. 15+60 TO STA. 17+10 –RP13B– (RT)
FROM STA. 15+00 TO STA. 16+90 –RP13C– (LT)

DETAIL C
TOE PROTECTION
(Not to Scale)

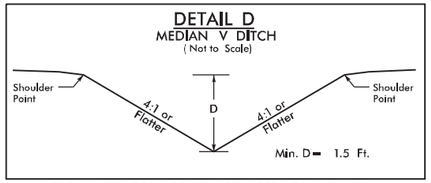


d= 1.0 Ft.

Type of Liner= PSRM

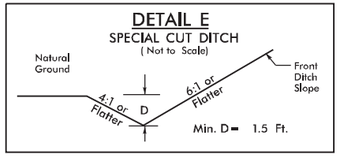
FROM STA. 14+67 TO STA. 15+10 –LP9C– (RT)
FROM STA. 25+15 TO STA. 27+60 –Y9– (LT)
FROM STA. 346+00 TO STA. 347+40 –L1– (LT)
FROM STA. 346+58 TO STA. 348+62 –L1– (RT)

DETAIL D
MEDIAN V DITCH
(Not to Scale)



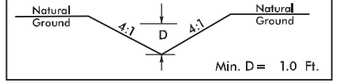
FROM STA. 290+50 TO STA. 291+98 –L1– (LT)

DETAIL E
SPECIAL CUT DITCH
(Not to Scale)



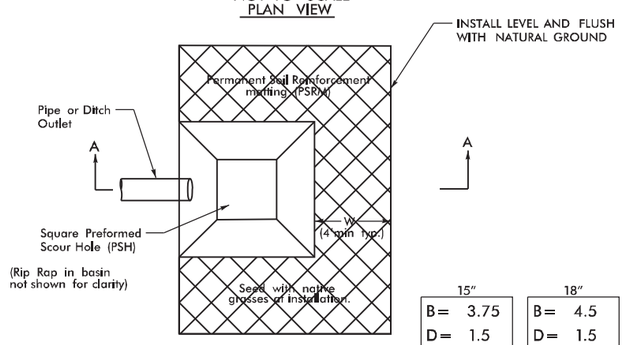
FROM STA. 20+95 TO STA. 20+45 –RP7D– (RT)

DETAIL I
STANDARD 'V' DITCH
(Not to Scale)



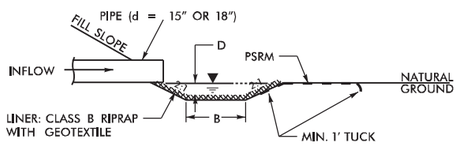
FROM STA. 294+75 TO STA. 294+84 –L1– (LT)

DETAIL G
PREFORMED SCOUR HOLE
*NOT TO SCALE
PLAN VIEW



15"	18"
B= 3.75	B= 4.5
D= 1.5	D= 1.5
W= 4.0	W= 4.0

SECTION A–A

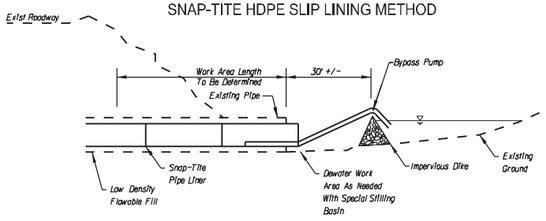


3-08

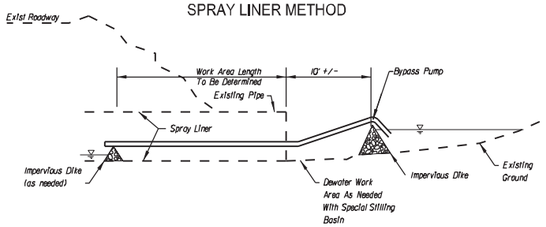
STA. 285+25 –L1– (RT)
STA. 23+88 –RP7C– (RT)
STA. 13+90 –RP7D– (LT)
STA. 24+55 –RP9C– (LT)
STA. 15+25 –RP9B– (LT)
STA. 15+90 –RP9B– (LT)
STA. 14+70 –RP9BSPUR– (LT)
STA. 391+83 –L1– (LT)
STA. 440+33 –L1– (LT)

DETAIL H
CULVERT PRESERVATION

SNAP-TITE HDPE SLIP LINING METHOD



SPRAY LINER METHOD



CURED IN PLACE PIPE LINER (BALLOON METHOD)

- Same as Spray Liner Method above except for:
  - All curing water must be disposed of site
  - Pipe Liner must be installed per manufacturers specifications
  - Contractor is to remove all construction waste around pipe before pipe is placed back in service

Snap-Tite HDPE Slip Lining

- Install silt fence, special sediment control fence, and all other erosion control devices in area as shown on Erosion Control Plans.
- Install orange tree protection fence (i.e. safety fence) along the outermost permit footprint (stream, wetland, and/or riparian buffer). The NCDOT Division 5 Environmental Supervisor will provide this information to the contractor. No construction impacts are allowed beyond the fence limits.
- Clear a maximum of 30' wide access path to the pipe end to be slip lined with Snap-Tite as shown on Erosion Control Plans. All clearing must stay within the permitted stream, wetland, and/or riparian buffer footprint.
- Install Special Stilling Basin (silt bag) on the upstream side to dewater work area.
- Install Impervious Dike a maximum of 30' upstream of pipe to be lined to create work area. All in-stream activity must stay within the permitted stream footprint.
- Clean out existing pipe as needed to install carrier pipe. Install Special Stilling Basin (silt bag) and Impervious Dike downstream during cleaning phase to pump out contaminated water.
- Use bypass pump to bypass water over work area and into Snap-Tite HDPE Pipe.
- After first section of Snap-Tite HDPE Pipe is installed pull hose out of first section, snap second section of pipe together and return bypass pump hose into pipe to bypass water through work area. Repeat until all pipe is lined.
- Fill void with low density flowable fill and seal off ends per manufacturer specifications.
- Remove Impervious Dike and Special Stilling Basin (silt bag) and stabilize stream bank per plans and details.
- Permanently seed and mulch access path and work area. Use erosion control matting as required to stabilize existing slope.
- Remove all erosion control measures after site is stabilized and approved by NCDOT.

Spray Lining

- Install silt fence, special sediment control fence, and all other erosion control devices in area as shown on Erosion Control Plans.
- Install orange tree protection fence (i.e. safety fence) along the outermost permit footprint (stream, wetland, and/or riparian buffer). The NCDOT Division 5 Environmental Supervisor will provide this information to the contractor. No construction impacts are allowed beyond the fence limits.
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- Install Special Stilling Basin (silt bag) to dewater work area.
- Install Impervious Dike a maximum of 10' upstream of pipe to be lined to create work area. All in-stream activity must stay within the permitted stream footprint.
- Clean out existing culvert as necessary. Install Special Stilling Basin (silt bag) and Impervious Dike downstream during cleaning phase to pump out contaminated water.
- Install Impervious Dike within pipe culvert at either end of work area as needed to prevent backflow.
- Use bypass pump to bypass water over work area from first Impervious Dike to the second Impervious Dike.
- Remove Impervious Dikes and Special Stilling Basin (silt bag) and stabilize stream bank per Roadway Plans.
- Permanently seed and mulch access path and work area. Use erosion control matting as required to stabilize existing slope.
- Remove all erosion control measures after site is stabilized and approved by NCDOT.

General Notes:
- Recommend slip lining pipes during low flow conditions only.
- The slip lining method used at each pipe location will be determined based on field conditions and approved by NCDOT prior to beginning work. See drainage detail sheet for culvert preservation method and site location.
- Any major deviations from this sequence need prior approval by NCDOT.

STA. 334+42 –L1–
STA. 32+05 –Y9–
STA. 396+10 –L1–

SYSTIME=$$$$
SYSNAME=$$$$
USERNAME=$$$$

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INTERSTATE 40 440 NORTH

GRANITE RS&H
DESIGN-BUILD SERVICES

NAD 83/NSRS 2007

8/17/99
REVISIONS

-LI- CURVE DATA

PIs Sta 61+92.31	PIs Sta 69+78.63	PI Sta 83+86.57
θs = 6° 15' 25.0"	θs = 1° 12' 00.0"	Δ = 26° 05' 53.4" (RT)
Ls = 500.00'	Ls = 240.00'	D = 1° 00' 00.0"
LT = 333.54'	LT = 160.00'	L = 2,609.82'
ST = 166.86'	ST = 80.00'	T = 1,327.95'
		R = 5,729.58'
		V = 70 MPH

MATCHLINE SHEET 7 –L1– STA. 61+00.00

MATCHLINE SHEET 9 –L1– STA. 74+50.00

S 86° 38' 53.4" E

65+00

70+00

CONSERVATION BUFFER
BM 1984 PG 276

EXISTING R/W

R/W MON

EIP

UNABLE TO LOCATE PIPE

SPECIAL CUT DITCH
SEE DETAIL K

RETAIN 42" RCP
INV=415.17'

RETAIN 36" RCP
TOP=427.34'
INV IN=422.39'
INV IN=RECESSED (S)
INV OUT=420.01'

RETAIN 24" RCP
TOP=426.08'
INV IN=416.36'
INV OUT=416.36'

RETAIN 15" RCP
INV=417.34'

RETAIN 2GI

GUARDRAIL

TB 2GI

15" RCP-III

18" RCP-III

15" RCP-IV

18" RCP-IV

M-47
TOP=425.14'
INV OUT=422.14'

M-47A
INV=400.10'
INV=399.52'

M-47B
TOP=423.78'
INV=420.76

REMOVE OR PLUG/FILL

PROBABLE JB

1440 VARIBLE WIDTH BST

M-50
TOP=425.86'
INV IN=421.07'

TOP=420.47'
INV=416.47'

TOP=420.50'
INV IN=422.60'
INV OUT=420.61'

PROPOSED SBG
BEG STA 69+69 RT

SPECIAL CUT DITCH
SEE DETAIL K

PLACE TRANSISTION STONE
AT OUTFALL OF DITCH

CLASS 'B' RIP RAP
EST 1 TON
EST 5 SY GEO

CULVERT PRESERVATION
SEE DETAIL K

CLASS II RIP RAP
EST 21 TON
EST 22 SY GEO
(BANKS ONLY)

STREAM IMPACTS DUE
TO CULVERT PRESERVATION
INSTALLATION

CLASS 'B' RIP RAP
EST 2 TON
EST 7 SY GEO

SITE 0801

SITE 0801 – IMPACT ZOOM-IN (SCALE: 1" = 50')

BZ 1
54" CMP
RETAIN
TOP 381.15
INV=376.09'
S 8
S 5
S 6
S 7
SF

FF–FF
11'
0.2'
2'
5'
INFALL

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES IMPACTS IN SURFACE WATER

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15538 / 15311
140 / US 64 FROM WEST OF
SR 1319 (JONES FRANKLIN RD)
CONTINUING ALONG I-440 / US 64
TO NORTH OF US 64 / US 264
DATE: 07 / 28 / 2014

FOR –L1– LT PROFILE, SEE SHEET NO. 49
FOR –L1– RT PROFILE, SEE SHEET NO. 49

50 0 100

7/28/2014
C:\pt_work\rsh_pw\hinsone\dms881461\dms78126\I5338_hyd_prm_wet_psh_08.dgn

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83/NSRS 2007

GRANITE RS&H
DESIGN-BUILD SERVICES

8/17/99
REVISIONS

-LI- CURVE DATA

PIs Sta 61+92.31	PIs Sta 69+78.63	PI Sta 83+86.57
θs = 6° 15' 25.0"	θs = 1° 12' 00.0"	Δ = 26° 05' 53.4" (RT)
Ls = 500.00'	Ls = 240.00'	D = 1° 00' 00.0"
LT = 333.54'	LT = 160.00'	L = 2,609.82'
ST = 166.86'	ST = 80.00'	T = 1,327.95'
		R = 5,729.58'
		V = 70 MPH

MATCHLINE SHEET 7 -L1- STA. 61+00.00

MATCHLINE SHEET 9 -L1- STA. 74+50.00

S 86° 38' 53.4" E

65+00

70+00

CONSERVATION BUFFER
BM 1984 PG 276

EXISTING R/W

R/W MON

EIP

UNABLE TO LOCATE PIPE

SPECIAL CUT DITCH SEE DETAIL K

RETAIN 42" RCP

RETAIN 15" RCP

RETAIN 2GI

RETAIN 36" RCP

RETAIN 24" RCP

RETAIN 18" RCP

TB 2GI

GUARDRAIL

M-47

M-47L

M-47R

M-48

M-50

PROBABLE JB

REMOVE OR PLUG/FILL

1440 VARIBLE WIDTH BST

15" RCP-III

18" RCP-III

15" RCP-IV

PROPOSED SDC
BEG STA 69+69 RT

PLACE TRANSITION STONE AT OUTFALL OF DITCH

CLASS 'B' RIP RAP
EST 1 TON
EST 5 SY GEO

CULVERT PRESERVATION
SEE DETAIL B

CLASS II RIP RAP
EST 21 TON
EST 22 SY GEO
(BANKS ONLY)

STREAM IMPACTS DUE TO CULVERT PRESERVATION INSTALLATION

CLASS 'B' RIP RAP
EST 2 TON
EST 7 SY GEO

SITE 0801

SITE 0801 - IMPACT ZOOM-IN (SCALE: 1" = 50')

BZ 1

BZ 2

54" CMP

RETAIN

TOP 381.15
INV=376.09'

FF-FF
11'
0.2'
2'
5'
INFALL

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES IMPACTS IN SURFACE WATER

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: I5338 / I5311
I40 / US 64 FROM WEST OF SR 1319 (JONES FRANKLIN RD) CONTINUING ALONG I-440 / US 64 TO NORTH OF US 64 / US 264
DATE: 07 / 28 / 2014

FOR -L1- LT PROFILE, SEE SHEET NO. 49
FOR -L1- RT PROFILE, SEE SHEET NO. 49

50 0 100

7/28/2014
c:\pw_work\rsh_pw\hunsone\dms81461\dms7812611338_hyd_prm_wet_psh_08.dgn

8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRANITE RS&H
DESIGN-BUILD SERVICES

-L1- CURVE DATA
PI Sta 83+86.57
Δ = 26° 05' 53.4" (RT)
D = 1° 00' 00.0"
L = 2,609.82'
T = 1,327.95'
R = 5,729.58'
V = 70 MPH

Maintenance Items Causing Impacts		
Item Number	RFP Required Repairs	Proposed Repairs
M-476	Remove fallen trees at pipe inlet, repair cracked headwall, and slip line pipe	Remove debris, repair headwall, preserve pipe

GG–GG
10'
0.5'
5'
5'
OUTFALL

SITE 0801 – IMPACT ZOOM-IN (SCALE: 1" = 50')

SITE 0801

M-476
INV=370.53'
54" CMP
SR 1319 JONES FRANKLIN RD

MATCHLINE SHEET 8 -L1- STA. 74+50.00

MATCHLINE SHEET 10 -L1- STA. 88+00.00

75+00
80+00
85+00

STREAM IMPACTS DUE TO CULVERT PRESERVATION INSTALLATION
CLASS II RIP RAP
EST 24 TON
EST 25 SY GEO
(BANKS ONLY)
PAVED DITCH
RETAIN
M-474
M-475
M-476
M-49
M-470
M-471
M-472
M-473
M-469
M-483
M-51
M-53
CULVERT PRESERVATION SEE DETAIL H
SPECIAL CUT DITCH SEE DETAIL B
SPECIAL CUT DITCH SEE DETAIL K
RETAIN BLIND JB
PROPOSED SBG
END STA 75+50 RT
CLASS 'B' RIP RAP
EST 2 TON
EST 7 SY GEO
GUARDRAIL
EXISTING R/W
EXISTING EIP
GREEN VALLEY DRIVE 60' R/W (SR 1319)
DUKE ROAD 60' R/W (SR 1319)

FOR -L1- LT PROFILE, SEE SHEET NO. 50
FOR -L1- RT PROFILE, SEE SHEET NO. 50

50 0 100

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15338 / 15311
140 / US 64 FROM WEST OF SR 1319 (JONES FRANKLIN RD) CONTINUING ALONG I-440 / US 64 TO NORTH OF US 64 / US 264
DATE: 07 / 28 / 2014

DENOTES TEMPORARY IMPACTS IN SURFACE WATER
DENOTES IMPACTS IN SURFACE WATER

7/25/2014
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8/17/99

REVISIONS

-L1- CURVE DATA
PI Sta 83+86.57
Δ = 26°05'53.4" (RT)
D = 1°00'00.0"
L = 2,609.82'
T = 1,327.95'
R = 5,729.58'
V = 70 MPH

Maintenance Items Causing Impacts		
Item Number	**RFP Required Repairs**	**Proposed Repairs**
M-476	Remove fallen trees at pipe inlet, repair cracked headwall, and slip line pipe	Remove debris, repair headwall, preserve pipe

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRANITE RS&H
DESIGN-BUILD SERVICES

GG–GG
10'
0.5'
5'
5'
OUTFALL

SITE 0801 – IMPACT ZOOM-IN (SCALE: 1" = 50')

SITE 0801

M-476
54" CMP
INV=370.53'
STREAM IMPACTS DUE TO CULVERT PRESERVATION INSTALLATION
CLASS II RIP RAP EST 24 TON EST 25 SY GEO (BANKS ONLY)
PAVED DITCH
INV=380.55'
RETAIN
M-474
18" CMP
RETAIN & PRESERVE
M-475
JB W/HH
18" CMP
18" RCP-III
15" RCP-III
TB 2GI
INV OUT=412.24'
M-49
2GI
36" CMP
PROPOSED SBG END STA 75+50 RT
CLASS 'B' RIP RAP EST 2 TON EST 7 SY GEO
SPECIAL CUT DITCH SEE DETAIL K
M-483
TB 2GI
15" RCP-III
TOP=409.43'
INV IN=404.02'
INV OUT=403.81'
M-51
DI
TOP=408.22'
2GI INV OUT=404.95'
M-470
DI
TOP=410.43'
INV IN=402.89'
INV OUT=402.68'
M-471
INV=400.20'
18" RCP
RETAIN
RETAIN DI
M-472
INV=367.85'
54" CMP
CULVERT PRESERVATION SEE DETAIL H
INV=395.15'
RETAIN & PRESERVE
SPECIAL CUT DITCH SEE DETAIL B
18" CMP
RETAIN
M-469
2GI
DI
TOP=406.75'
INV IN=397.40'
INV OUT=397.02'
18" RCP
RETAIN BLIND JB
TB 2GI
GUARDRAIL
15" RCP-III
TOP=405.03'
INV IN=398.69'
INV OUT=398.53'
M-53
DI
TOP=403.35'
2GI INV OUT=400.03'
SPECIAL CUT DITCH SEE DETAIL K
RETAIN 36" RCP
SPECIAL CUT DITCH SEE DETAIL B
80+00
85+00
EXISTING R/W
MATCHLINE SHEET 8 -L1- STA. 74+50.00
MATCHLINE SHEET 10 -L1- STA. 88+00.00
EXISTING R/W
R/W MON
EXISTING R/W
EXISTING R/W
OLD NC 10 (OLD 1957 R/W)
EXISTING R/W
EIP
GREEN VALLEY DRIVE 60' R/W (SR 1367 PG 118)
INV=384.17'
EIP
EIP
EXISTIN

FOR -L1- LT PROFILE, SEE SHEET NO. 50
FOR -L1- RT PROFILE, SEE SHEET NO. 50

50 0 100

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15338 / 15311
140 / US 64 FROM WEST OF SR 1319 (JONES FRANKLIN RD) CONTINUING ALONG I-440 / US 64 TO NORTH OF US 64 / US 264
DATE: 07 / 28 / 2014

DENOTES TEMPORARY IMPACTS IN SURFACE WATER
DENOTES IMPACTS IN SURFACE WATER

7/25/2014
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8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRANITE RS&H
DESIGN-BUILD SERVICES

INTERSTATE 40 INTERSTATE 440 BELTLINE

DATA 8.3 NRS 2007

-LI- CURVE DATA

PIs Sta 104+33.29	PI Sta 115+66.75
θs = 1°12'00.0"	Δ = 20°50'11.9" (LT)
Ls = 240.00'	D = 1°00'00.0"
LT = 160.00'	L = 2,083.66'
ST = 80.00'	T = 1,053.47'
	R = 5,729.58'
	V = 70 MPH

Maintenance Items Causing Impacts		
Item Number	**RFP Required Repairs**	**Proposed Repairs**
M-58	Restore rusted FES and washed out slopes above cross line, remove tree and slip line pipe	Remove FES, add countersunk rip rap pad, repair slope, remove tree, & preserve pipe.
M-59	Restore 60' rusted pipe and slip line pipe	Restore and Preserve
M-461	Repair/replace headwall and slip line pipes. Determine need for cross veins	Repair/replace bricks as needed. Preserve pipes.
M-454	Remove trees at FES and over the pipe	Remove trees

LL–LL: 6' wide, 0.8' deep, 1.5' high, 4' INFALL

MM–MM: 6' wide, 0.6' deep, 4' high, 2' INFALL

NN–NN: 13' wide, 0.5' deep, 7' high, 5' OUTFALL

OO–OO: 8' wide, 0.5' deep, 4' high, 4' OUTFALL

SITE 1101

SITE 1101 – IMPACT ZOOM-IN (SCALE: 1" = 50')

SITE 1102 – IMPACT ZOOM-IN (SCALE: 1" = 50')

SITE 1102

SITE 1103

SITE 1101 – IMPACT ZOOM-IN (SCALE: 1" = 50')

SITE 1103 – IMPACT ZOOM-IN (SCALE: 1" = 50')

MATCHLINE SHEET 10 –L1– STA. 101+00.00

MATCHLINE SHEET 12 –L1– STA. 114+50.00

CLASS 'B' RIP RAP EST 2 TON EST 7 SY GEO

PROPOSED SBG BEG STA 102+32 LT

SPECIAL CUT DITCH SEE DETAIL K

CLASS 'B' RIP RAP EST 2 TON EST 7 SY GEO

CLASS II RIP RAP EST 29 TON EST 31 SY GEO (BANKS ONLY)

STREAM IMPACTS DUE TO CULVERT PRESERVATION INSTALLATION

CULVERT PRESERVATION SEE DETAIL H

CLASS 'B' RIP RAP EST 3 TON EST 10 SY GEO

PROPOSED SBG END STA 107+31 LT

CLASS II RIP RAP EST 22 TON EST 24 SY GEO (BANKS ONLY)

CULVERT PRESERVATION SEE DETAIL H

UNABLE TO LOCATE PIPE

PROPOSED SBG BEG STA 113+31 LT

1440 VARIBLE WIDTH BST

S 58°09'00.0" E

CULVERT PRESERVATION SEE DETAIL H

PROPOSED SBG BEG STA 101+18 RT

CLASS 'B' RIP RAP EST 2 TON EST 7 SY GEO

CLASS I RIP RAP EST 2 TON EST 30 SY GEO

REMOVE FES AND REPLACE IN FOOTPRINT RIPRAP PAD TO BE COUNTERSUNK IN STREAM FLOW LINE

CLASS II RIP RAP EST 24 TON EST 26 SY GEO (BANKS ONLY)

PROPOSED SBG END STA 102+70 RT

CLASS II RIP RAP EST 24 TON EST 25 SY GEO (BANKS ONLY)

STREAM IMPACTS DUE TO CULVERT PRESERVATION INSTALLATION

STREAM IMPACTS DUE TO CULVERT PRESERVATION INSTALLATION

FOR –L1– LT PROFILE, SEE SHEET NO. 52

FOR –L1– RT PROFILE, SEE SHEET NO. 52

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15338 / 15311
140 / US 64 FROM WEST OF SR 1319 (JONES FRANKLIN RD) CONTINUING ALONG I-440 / US 64 TO NORTH OF US 64 / US 264
DATE: 07 / 28 / 2014

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES IMPACTS IN SURFACE WATER

50 0 100

7/25/2014
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8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

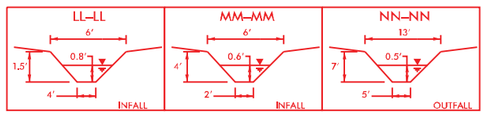
GRANITE RS&H
DESIGN-BUILD SERVICES

INTERSTATE 40 440 BUSINESS

DAN 8/3/2007

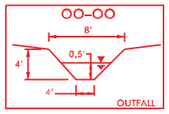
-LI- CURVE DATA

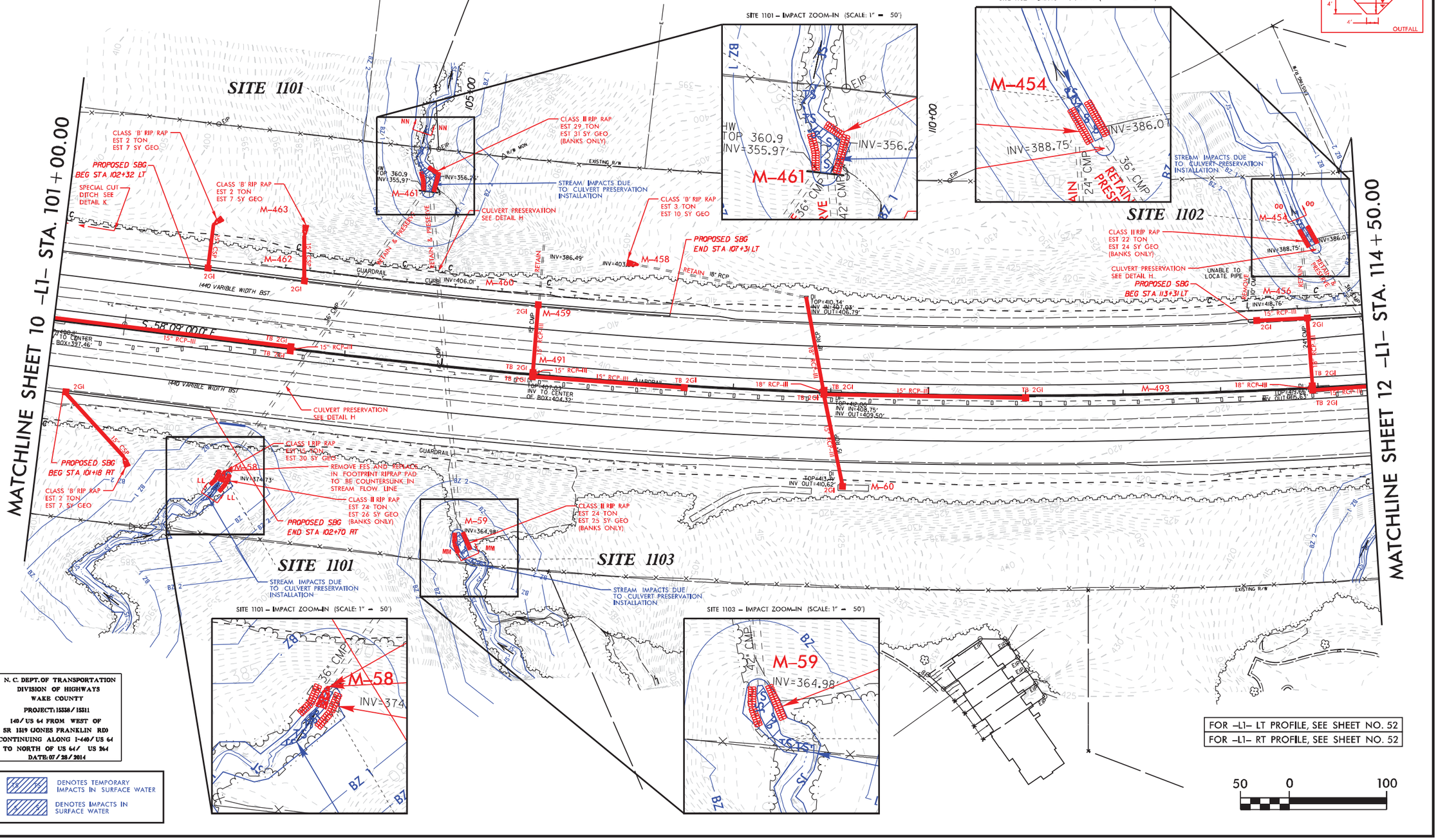
PIs Sta 104+33.29	PI Sta 115+66.75
Θs = 1°12'00.0"	Δ = 20°50'11.9" (LT)
Ls = 240.00'	D = 1°00'00.0"
LT = 160.00'	L = 2,083.66'
ST = 80.00'	T = 1,053.47'
	R = 5,729.58'
	V = 70 MPH



Maintenance Items Causing Impacts

Item Number	RFP Required Repairs	Proposed Repairs
M-58	Restore rusted FES and washed out slopes above cross line, remove tree and slip line pipe	Remove FES, add countersunk rip rap pad, repair slope, remove tree, & preserve pipe.
M-59	Restore 60' rusted pipe and slip line pipe	Restore and Preserve
M-461	Repair/replace headwall and slip line pipes. Determine need for cross veins	Repair/replace bricks as needed. Preserve pipes.
M-454	Remove trees at FES and over the pipe	Remove trees





N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15338 / 15311
140 / US 64 FROM WEST OF
SR 1319 (JONES FRANKLIN RD)
CONTINUING ALONG I-440 / US 64
TO NORTH OF US 64 / US 264
DATE: 07 / 28 / 2014

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES IMPACTS IN SURFACE WATER

FOR –L1– LT PROFILE, SEE SHEET NO. 52

FOR –L1– RT PROFILE, SEE SHEET NO. 52

50 0 100

7/25/2014
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8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83/NSRS 2007

INTERSTATE 40 INTERSTATE 440 BORTHWICK

GRANITE RS&H
DESIGN-BUILD SERVICES

-L1- CURVE DATA

PI Sta 115+66.75
Δ = 20° 50' 11.9" (LT)
D = 1° 00' 00.0"
L = 2,083.66'
T = 1,053.47'
R = 5,729.58'
V = 70 MPH

PIs Sta 127+03.62
θs = 0° 36' 00.0"
θs = 1° 12' 00.0"
Ls = 240.00'
LT = 133.34'
ST = 106.68'

-RP4B- CURVE DATA

PI Sta 10+42.77
Δ = 0° 51' 45.0" (LT)
D = 1° 00' 29.8"
L = 85.54'
T = 42.77'
R = 5,682.58'
V = 70 MPH

PIs Sta 12+10.19
θs = 1° 01' 39.3"
θs = 5° 04' 57.9"
Ls = 204.00'
LT = 124.65'
ST = 79.53'

-RP4C- CURVE DATA

PIs Sta 11+85.96
θs = 4° 00' 24.1"
Ls = 200.00'
LT = 133.37'
ST = 66.70'

MATCHLINE SHEET 11 -L1- STA. 114 + 50.00

MATCHLINE SHEET 13 -L1- STA. 127 + 50.00

115+00 120+00 125+00

EXISTING R/W

R/W MON

EIP

CLASS 'B' RIP RAP
EST 2 TON
EST 7 SY GEO

M-453 15" CMP

M-455 2GI

PROPOSED SBG
END STA 117+81 LT

M-452 24" RCP
INV=421.39'

RETAIN

SP. CONC MEDIAN 2GI
SEE SHEET 7-AR

DI
TOP=427.03'
INV IN=422.53'
INV OUT=421.34'

SPECIAL CUT DITCH
SEE DETAIL B

M-451

CURB

GUARDRAIL

C

1440 VARIBLE WIDTH BST

TB 2GI

15" RCP-III

24" RCP-III

24" RCP-IV

M-495

DI
TOP=430.00'
INV IN=426.61'
INV OUT=426.21'

18" RCP

15" RCP-IV

M-62 2GI

DI
TOP=432.40'
INV IN=429.45'
INV OUT=429.20'

RETAIN 18" RCP

M-64 RETAIN

DI
TOP=437.69'
INV IN=434.39'
INV OUT=434.28'

18" RCP

M-496

DI
TOP=439.00'
INV IN=434.92'
INV OUT=434.82'

15" RCP-III

M-497

DI
TOP=439.25'
INV IN=434.04'
INV OUT=433.94'

M-66

DI
TOP=440.63'
INV IN=437.13'(N)
INV IN=435.58'(S)
INV OUT=435.43'(W)

S 80° 11' 12.1" E

RETAIN 2GI

RETAIN JB & 15" RCP-III

S 28° 30' 59.4" W

LAKE DAM ROAD

-Y3- LAKE DAM RD

EXISTING R/W

POWER POLE

RETAIN

56" CMP

BZ 2

BZ 1

7 ZB

QQ

V=398.74'

CULVERT PRESERVATION
SEE DETAIL H

CLASS II RIP RAP
EST 28 TON
EST 29 SY GEO
(BANKS ONLY)

REMOVE FES AND REPLACE
IN FOOTPRINT RIPRAP PAD
TO BE COUNTERSUNK IN
STREAM FLOW LINE

CLASS I RIP RAP
EST 15 TON
EST 30 SY GEO

STREAM IMPACTS DUE
TO CULVERT PRESERVATION
INSTALLATION

SITE 1102

SITE 1102 - IMPACT ZOOM-IN (SCALE: 1" = 50')

QQ-QQ
7'
0.3'
4'
3'
INFALL

Maintenance Items Causing Impacts		
Item Number	RFP Required Repairs	Proposed Repairs
M-61	Remove trees over pipe and at outlet, replace FES, and slip line pipe	Remove trees, remove FES and replace with standard riprap pad, & preserve pipe.

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES IMPACTS IN SURFACE WATER

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 16338 / 16311
I-40 / US 64 FROM WEST OF SR 1319 (JONES FRANKLIN RD) CONTINUING ALONG I-440 / US 64 TO NORTH OF US 64 / US 264
DATE: 07 / 28 / 2014

FOR -L1- LT PROFILE, SEE SHEET NO. 53
FOR -L1- RT PROFILE, SEE SHEET NO. 53
FOR -RP4B- PROFILE, SEE SHEET NO. 91
FOR -RP4C- PROFILE, SEE SHEET NO. 92

50 0 100

7/28/2014
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8/17/99

REVISIONS

-LJ- CURVE DATA

PI Sta 115+66.75
Δ = 20° 50' 11.9" (LT)
D = 1° 00' 00.0"
L = 2,083.66'
T = 1,053.47'
R = 5,729.58'
V = 70 MPH

PIs Sta 127+03.62
Θs = 0° 36' 00.0"
Θs = 1° 12' 00.0"
Ls = 240.00'
LT = 133.34'
ST = 106.68'

-RP4B- CURVE DATA

PI Sta 10+42.77
Δ = 0° 51' 45.0" (LT)
D = 1° 00' 29.8"
L = 85.54'
T = 42.77'
R = 5,682.58'
V = 70 MPH

PIs Sta 12+10.19
Θs = 1° 01' 39.3"
Θs = 5° 04' 57.9"
Ls = 204.00'
LT = 124.65'
ST = 79.53'

-RP4C- CURVE DATA

PIs Sta 11+85.96
Θs = 4° 00' 24.1"
Ls = 200.00'
LT = 133.37'
ST = 66.70'

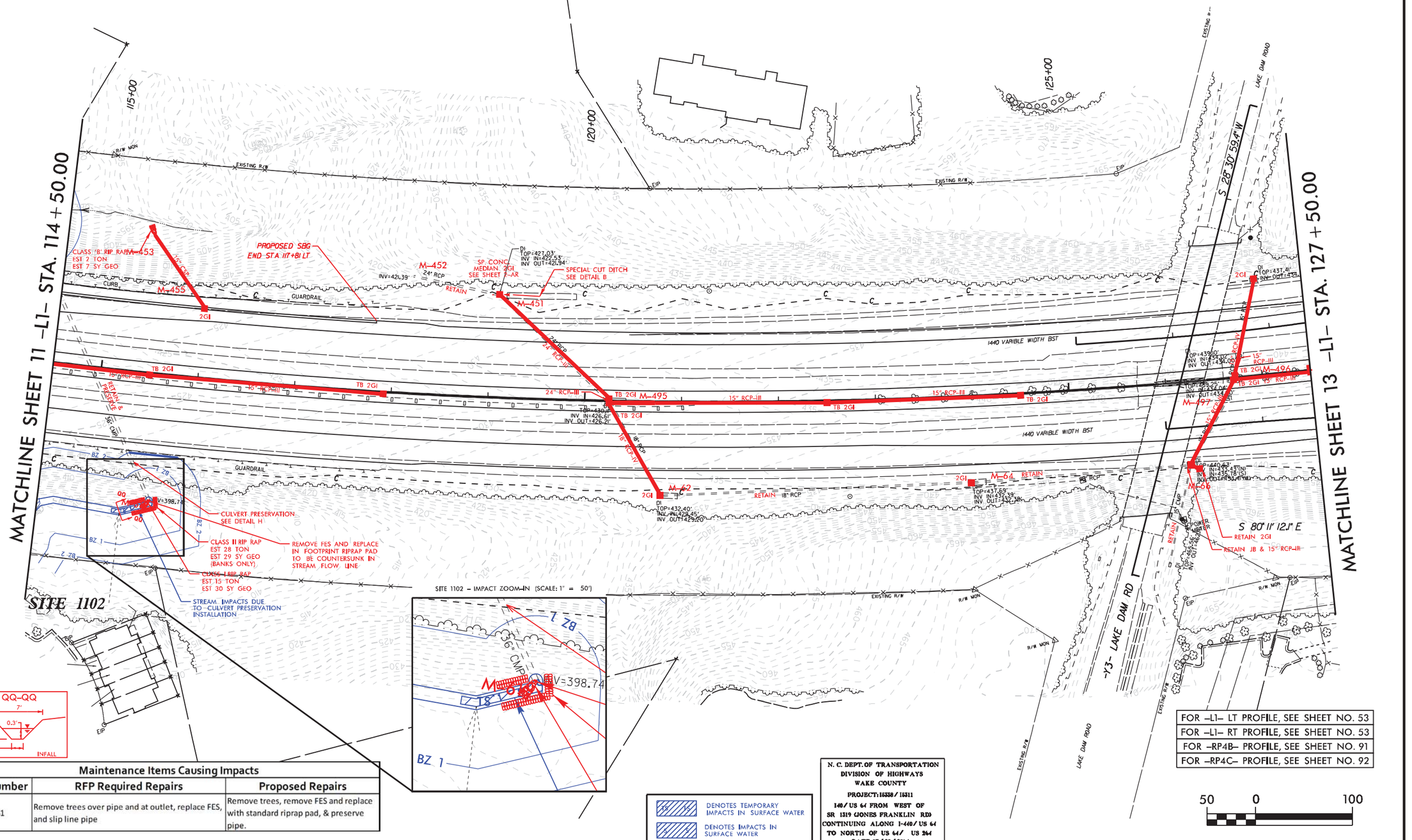
NAD 83/NSRS 2007

GRANITE RS&H DESIGN-BUILD SERVICES

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



Maintenance Items Causing Impacts		
Item Number	RFP Required Repairs	Proposed Repairs
M-61	Remove trees over pipe and at outlet, replace FES, and slip line pipe	Remove trees, remove FES and replace with standard riprap pad, & preserve pipe.

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES IMPACTS IN SURFACE WATER

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 16338 / 16311
140 / US 64 FROM WEST OF SR 1319 (JONES FRANKLIN RD) CONTINUING ALONG I-440 / US 64 TO NORTH OF US 64 / US 264
DATE: 07 / 28 / 2014

FOR -L1- LT PROFILE, SEE SHEET NO. 53
FOR -L1- RT PROFILE, SEE SHEET NO. 53
FOR -RP4B- PROFILE, SEE SHEET NO. 91
FOR -RP4C- PROFILE, SEE SHEET NO. 92

50 0 100

7/28/2014
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REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	13

RDWAY DSGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR BID OR CONSTRUCTION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83/NSRS 2007

GRANITE / RS&H

-RP4B- CURVE DATA

PI Sta 12+10.19	PI Sta 15+82.23	PI Sta 19+30.80	PI Sta 25+09.79	PI Sta 26+73.54
Bs = 1°01' 39.3"	Δ = 28° 33' 31.0" (LT)	Bs = 5°04' 54.8"	Δ = 17° 27' 13.0"	Δ = 15° 45' 08.8" (RT)
Bs = 5°04' 57.9"	D = 4°58' 56.1"	Ls = 204.00'	Ls = 240.00'	D = 9° 32' 57.5"
Ls = 204.00'	L = 573.27'	LT = 136.06'	LT = 160.34'	L = 174.91'
LT = 124.55'	T = 292.69'	ST = 68.05'	ST = 80.31'	T = 88.08'
ST = 79.53'	R = 1150.00'			R = 600.00'
	V = 55 MPH			V = 45 MPH

-RP4A- CURVE DATA

PI Sta 15+12.54	PI Sta 18+13.07	PI Sta 20+99.73	PI Sta 23+84.49
Δ = 30° 05' 05.4" (RT)	Bs = 5°59' 58.4"	Bs = 5°15' 31.3"	Δ = 22° 26' 05.4" (LT)
D = 5°59' 58.4"	Ls = 200.00'	Ls = 200.00'	D = 5°12' 31.3"
L = 294.46'	LT = 133.41'	LT = 133.19'	L = 430.15'
T = 296.64'	ST = 66.74'	ST = 66.72'	T = 218.16'
R = 955.00'			R = 1100.00'
V = 50 MPH			V = 40 MPH

SITE 1301 – IMPACT ZOOM-IN (SCALE: 1" = 50')

SITE 1304 – IMPACT ZOOM-IN (SCALE: 1" = 50')

SITE 1303 – IMPACT ZOOM-IN (SCALE: 1" = 50')

SITE 1301 – IMPACT ZOOM-IN (SCALE: 1" = 50')

SITE 1303 – IMPACT ZOOM-IN (SCALE: 1" = 50')

MATCHLINE SHEET 12 -L1- STA. 127+50.00

MATCHLINE SHEET 14 -L1- STA. 155+50.00

SITE 1301

SITE 1304

SITE 1303

SITE 1302

M-82

M-91

M-10

M-68

M-6

INV=364.02'

INV=344.69'

INV=382.18'

INV=404.43'

INV=407.1'

INV=388.65'

36" CMP

54" CMP

30" CMP

PROPOSED SBC END STA M6-32.17'

PLACE TRANSITION STONE AT OUTFALL OF DITCH

SPECIAL CUT DITCH SEE DETAIL B

CULVERT PRESERVATION SEE DETAIL H

STREAM IMPACTS DUE TO CULVERT PRESERVATION INSTALLATION

REMOVE PEG AND REPLACE W/ FOOTPRINT REPAIR PAD TO RE-COUNTERSINK POST

CLASS II RIP RAP EST 24 TON EST 26 SY GEO (BANKS ONLY)

CLASS I RIP RAP EST 7 TON EST 7 SY GEO

CLASS III RIP RAP EST 15 TON EST 29 SY GEO

CLASS II RIP RAP EST 22 TON EST 42 SY GEO

CLASS I RIP RAP EST 3 TON EST 3 SY GEO

CLASS III RIP RAP EST 11 TON EST 21 SY GEO

CLASS II RIP RAP EST 31 TON EST 59 SY GEO (BANKS ONLY)

CLASS III RIP RAP EST 1 TON EST 3 SY GEO

SPECIAL LATERAL V-DITCH SEE DETAIL J

SPECIAL CUT DITCH SEE DETAIL A

SPECIAL CUT DITCH SEE DETAIL B

SPECIAL CUT DITCH SEE DETAIL G

SPECIAL CUT DITCH SEE DETAIL I

PAVED DITCH SEE DETAIL K

RIP-RAP AT 90° OUTFALL

RIP-RAP AT 45° OUTFALL

RIP-RAP AT 135° OUTFALL

RIP-RAP AT 180° OUTFALL

RT-RP

OUTFALL

SS-SS

OUTFALL

UU-UU

OUTFALL

Maintenance Items Causing Impacts		
Item Number	RFP Required Repairs	Proposed Repairs
M-68	Clear trees at end over pipe outlet, grade to drain, and replace FES.	Remove trees, remove FES and rip-rap banks.
M-82	Remove tree at pipe outlet, regrade to ensure positive drainage, replace FES, and slip-line pipe.	Remove tree, minor regrading at outlet, remove FES, replace standard rip-rap pad, and preserve pipe.
M-91	Construct energy dissipator.	Outlet is stable; place rip rap at end of adjacent concrete swale, preserve pipe.

-RP4C- CURVE DATA

PI Sta 11+85.96	PI Sta 14+27.86	PI Sta 16+68.08	PI Sta 20+79.10	PI Sta 23+34.23
Bs = 4°00' 24.1"	Δ = 13° 58' 30.1" (RT)	Bs = 4°00' 24.1"	Bs = 4° 46' 28.7"	Δ = 17° 51' 23.0" (LT)
Ls = 200.00'	D = 4°00' 24.1"	Ls = 200.00'	Ls = 200.00'	D = 4° 46' 28.7"
LT = 133.37'	L = 348.79'	LT = 133.37'	LT = 133.38'	L = 371.98'
ST = 66.70'	T = 175.27'	ST = 66.70'	ST = 66.71'	T = 188.52'
	R = 1430.00'			R = 1200.00'
	V = 60 MPH			V = 40 MPH

-U- CURVE DATA

PI Sta 127+03.62	PI Sta 150+30.19
Bs = 0° 36' 00.0"	Δ = 21° 40' 48.2" (LT)
Bs = 1°12' 00.0"	D = 0° 30' 00.0"
Ls = 240.00'	L = 433.66'
LT = 133.34'	T = 219.29'
ST = 106.68'	R = 11,459.16'
	V = 70 MPH

-RP4D- CURVE DATA

PI Sta 14+28.88	PI Sta 16+51.97	PI Sta 18+73.69
Bs = 6°15' 01.6"	Δ = 14° 50' 02.1" (LT)	Bs = 6°15' 01.6"
Ls = 240.00'	D = 5°12' 31.3"	Ls = 240.00'
LT = 160.10'	L = 284.79'	LT = 160.10'
ST = 80.09'	R = 1100.00'	ST = 80.09'
	V = 55 MPH	

PI Sta 21+93.70	PI Sta 24+97.37
Bs = 7°11' 58.2"	Δ = 26° 22' 40.4" (RT)
Ls = 240.00'	D = 5°59' 58.4"
LT = 160.13'	L = 439.27'
ST = 80.12'	T = 223.80'
	R = 955.00'
	V = 50 MPH

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: I-5338 / I-5311
I-40 / I-95 AT PERSON STREET OVER
NC 50/US 401/US 64 FRANKLIN STREET
RECONSTRUCTION ALONG I-40 W/ CD-W
TO NORTH OF US 64 / US 264
DATE OF PE: TBD

DENOTES TEMPORARY IMPACTS BY SURFACE WATER

DENOTES IMPACTS BY SURFACE WATER

GRAPHIC SCALE
50 25 0 50 100
PLANS

FOR -L1- LT PROFILE, SEE SHEET NO. 54,55
FOR -L1- RT PROFILE, SEE SHEET NO. 54,55
FOR -RP1A- PROFILE, SEE SHEET NO. 91
FOR -RP4B- PROFILE, SEE SHEET NO. 91,92
FOR -RP4C- PROFILE, SEE SHEET NO. 92
FOR -RP4D- PROFILE, SEE SHEET NO. 93

LOCATION:

TIP NO.: COUNTY:

DESIGNED BY:

CHECKED BY: DATE:

6/2/08

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5/29/2014

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	13

RDWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR BID OR CONSTRUCTION
PRELIMINARY PLANS
NO RIGHT OF WAY
NO RIGHT USE FOR CONSTRUCTION

NAD 83/NSRS 2007

40/440

GRANITE / RS&H

-RP4B- CURVE DATA

PI Sta 12+10.19	PI Sta 15+82.23	PI Sta 19+30.80	PI Sta 25+05.79	PI Sta 26+73.54
Gs = 1.01' 39.3"	Δ = 28° 33' 31.0" (LT)	Gs = 5.04' 54.8"	Gs = 11° 27' 13.0"	Δ = 15° 45' 08.8" (RT)
Gs = 5.04' 57.9"	D = 4° 58' 56"	Ls = 204.00'	Ls = 240.00'	D = 9° 32' 57.5"
Ls = 204.00'	T = 57.37'	LT = 136.06'	LT = 160.34'	L = 17.48'
LT = 124.65'	L = 292.69'	ST = 68.05'	ST = 80.31'	T = 88.08'
ST = 79.53'	R = 1150.00'			R = 600.00'
	V = 55 MPH			V = 45 MPH

-RP4A- CURVE DATA

PI Sta 15+12.54	PI Sta 18+13.07	PI Sta 20+99.73	PI Sta 23+84.49
Δ = 30° 05' 05.4" (RT)	Gs = 5° 59' 58.4"	Gs = 5° 0' 3.3"	Δ = 22° 26' 05.4" (LT)
D = 5° 59' 58.4"	Ls = 200.00'	Ls = 200.00'	D = 5° 12' 31.3"
L = 294.46'	LT = 133.41'	LT = 133.19'	L = 430.15'
T = 150.64'	ST = 66.74'	ST = 66.72'	T = 218.19'
R = 955.00'			R = 1100.00'
V = 50 MPH			V = 40 MPH

SITE 1301 – IMPACT ZOOM–IN (SCALE: 1" = 50')

SITE 1304 – IMPACT ZOOM–IN (SCALE: 1" = 50')

SITE 1303 – IMPACT ZOOM–IN (SCALE: 1" = 50')

SITE 1301 – IMPACT ZOOM–IN (SCALE: 1" = 50')

SITE 1303 – IMPACT ZOOM–IN (SCALE: 1" = 50')

MATCHLINE SHEET 12 –L1– STA. 127+50.00

MATCHLINE SHEET 14 –L1– STA. 155+50.00

MATCHLINE

SITE 1301

SITE 1304

SITE 1303

SITE 1302

IMPROVEMENTS

-RP4C- CURVE DATA

PI Sta 11+85.96	PI Sta 14+27.86	PI Sta 16+68.08	PI Sta 20+79.10	PI Sta 23+34.23
Gs = 4.00' 24.1"	Δ = 13° 56' 30.1" (RT)	Gs = 4.00' 24.1"	Gs = 4° 46' 28.7"	Δ = 17° 51' 23.0" (LT)
Ls = 200.00'	D = 4.00' 24.1"	Ls = 200.00'	Ls = 200.00'	D = 4° 46' 28.7"
LT = 133.37'	L = 348.79'	LT = 133.37'	LT = 133.38'	L = 371.98'
ST = 66.70'	T = 175.27'	ST = 66.70'	ST = 66.71'	T = 188.52'
	R = 1,430.00'			R = 1200.00'
	V = 60 MPH			V = 40 MPH

-RP4D- CURVE DATA

PI Sta 14+28.88	PI Sta 16+51.91	PI Sta 18+73.69
Gs = 6° 15' 01.6"	Δ = 14° 50' 02.1" (LT)	Gs = 6° 15' 01.6"
Ls = 240.00'	D = 5° 12' 31.3"	Ls = 240.00'
LT = 160.10'	L = 284.79'	LT = 160.10'
ST = 80.09'	T = 143.20'	ST = 80.09'
	R = 1,100.00'	
	V = 55 MPH	

PI Sta 21+93.70	PI Sta 24+97.37
Gs = 7° 1' 58.2"	Δ = 26° 22' 41.4" (RT)
Ls = 240.00'	D = 5° 59' 58.4"
LT = 160.13'	L = 439.27'
ST = 80.12'	T = 223.80'
	R = 955.00'
	V = 50 MPH

-U- CURVE DATA

PI Sta 127+03.62	PI Sta 150+30.19
Gs = 0° 36' 00.0"	Δ = 21° 40' 48.2" (LT)
Gs = 1.12' 00.0"	D = 0.30' 00.0"
Ls = 240.00'	L = 4,336.00'
LT = 133.34'	T = 2,194.29'
ST = 106.68'	R = 11,459.16'
	V = 70 MPH

Maintenance Items Causing Impacts		
Item Number	RFP Required Repairs	Proposed Repairs
M-6R	Clear trees at end over pipe outlet, grade to drain, and replace FES.	Remove trees, remove FES and rip-rap banks.
M-82	Remove tree at pipe outlet, regrade to ensure positive drainage, replace FES, and slip line pipe.	Remove tree, reinforce regrading at outlet, remove FES, replace standard riprap pad, and preserve pipe.
M-91	Construct energy dissipator.	Outlet is stable; place rip rap at end of adjacent concrete swale, preserve pipe.

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT:I-5338/I-5311
I-40 TO BE FROM WEST OF SR 1011/LOUISBURG FRANKLIN RD
EXPERIENCE ALONG I-40 W/ CD 1-E
TO NORTH OF US 64 E, US 264
DATED:7/15/2014

DENOTES TEMPORARY IMPACTS BY SURFACE WATER

DENOTES IMPACTS BY SURFACE WATER

GRAPHIC SCALE
50 25 0 50 100
PLANS

FOR –L1– LT PROFILE,	SEE SHEET NO. 54,55
FOR –L1– RT PROFILE,	SEE SHEET NO. 54,55
FOR –RP1A– PROFILE,	SEE SHEET NO. 91
FOR –RP4B– PROFILE,	SEE SHEET NO. 91,92
FOR –RP4C– PROFILE,	SEE SHEET NO. 92
FOR –RP4D– PROFILE,	SEE SHEET NO. 93

LOCATION:

TIP NO.: COUNTY:

DESIGNED BY:

CHECKED BY: DATE:

6/2/15

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6/2/99

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	13A
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

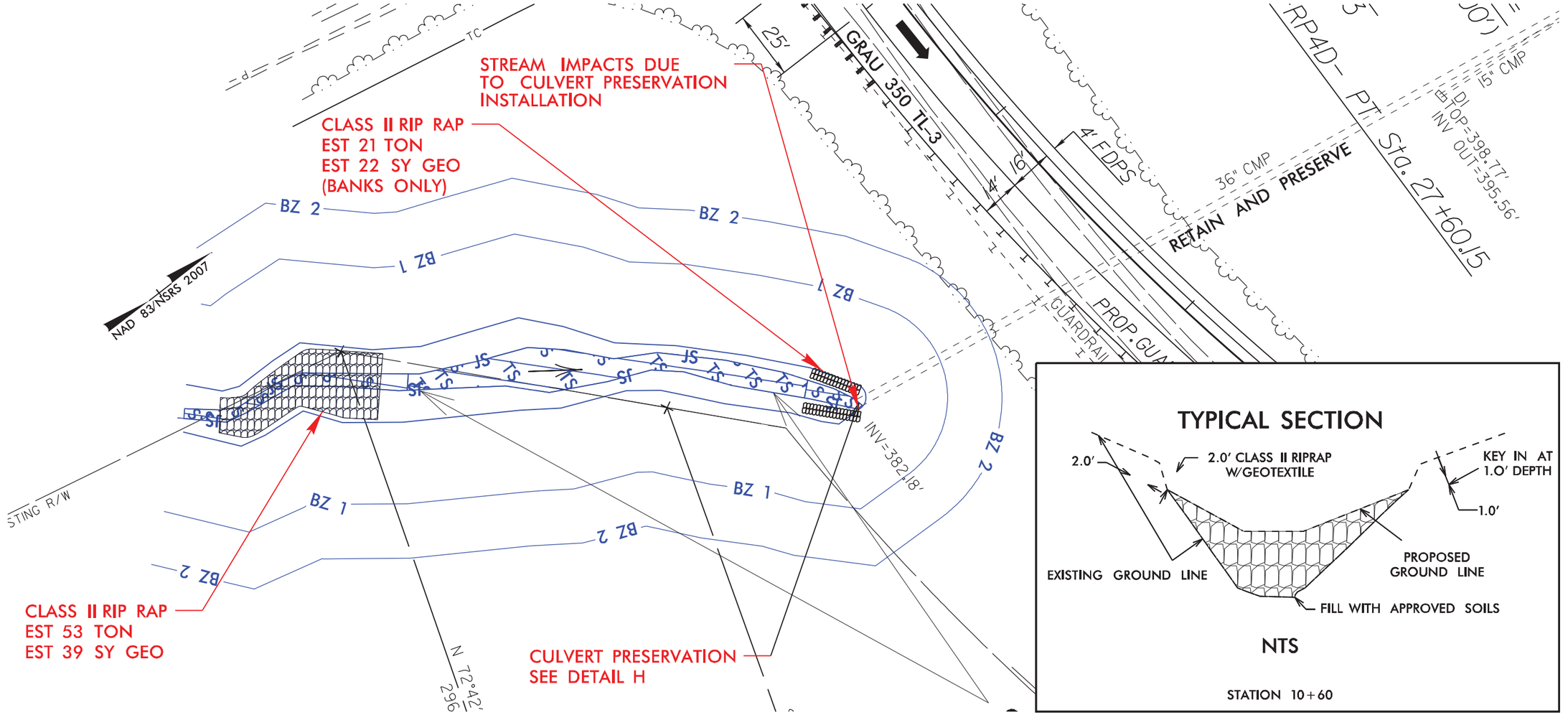
N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15338 / 15311
I-40 / US 64 FROM WEST OF
SR 1519 (JONES FRANKLIN RD)
CONTINUING ALONG I-40 / US 64
TO NORTH OF US 64 / US 264
DATE: 07 / 28 / 2014

SITE 1302

CHANNEL IMPROVEMENTS DETAIL SHEET
STA. –RP4D– 27 + 00 (LT)

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES IMPACTS IN SURFACE WATER



TYPICAL SECTION

NTS

STATION 10 + 60

SCALE 1" = 20'

7/28/2014
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6/2/99

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	13A
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

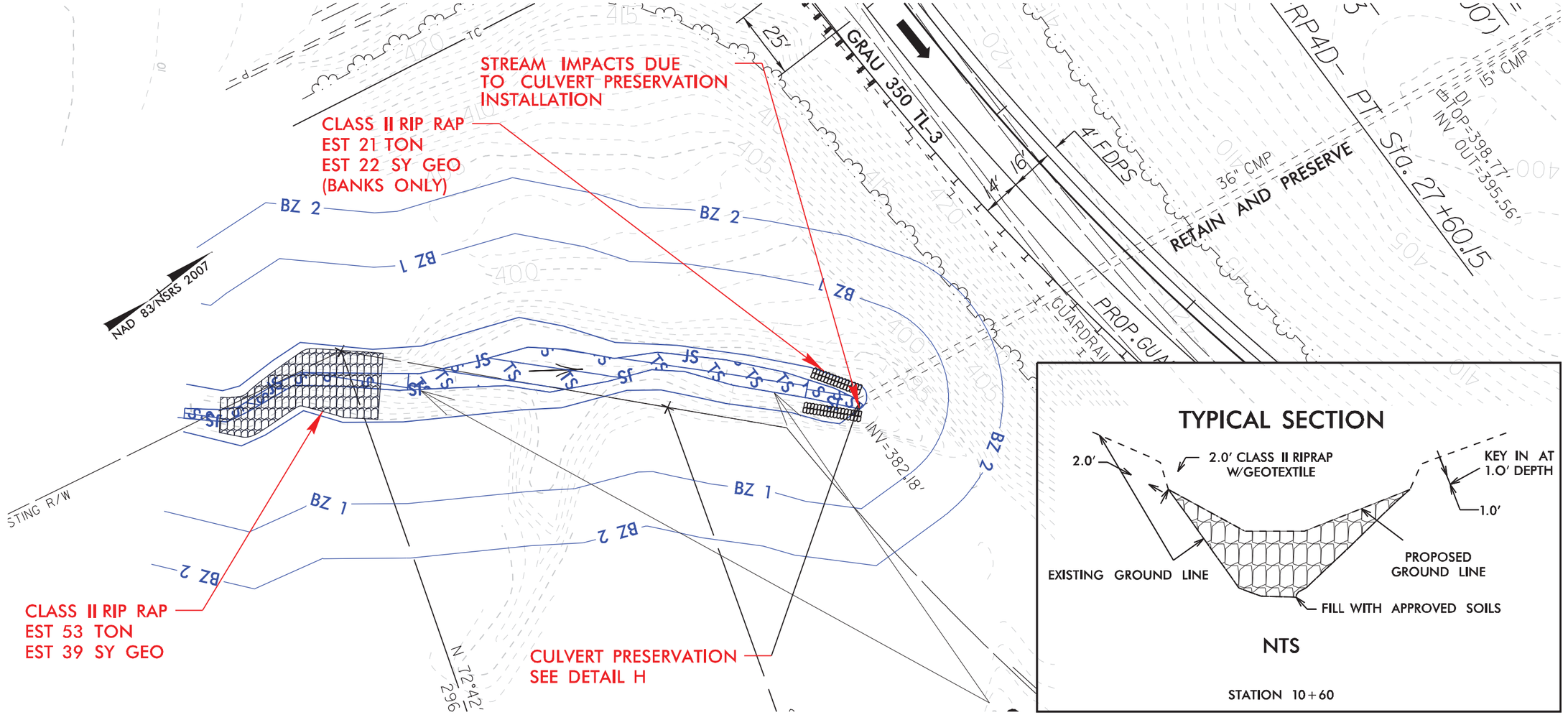
SITE 1302

CHANNEL IMPROVEMENTS DETAIL SHEET
STA. –RP4D– 27+00 (LT)

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES IMPACTS IN SURFACE WATER

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15338 / 15311
I-40 / US 64 FROM WEST OF
SR 1519 (JONES FRANKLIN RD)
CONTINUING ALONG I-40 / US 64
TO NORTH OF US 64 / US 264
DATE: 07 / 28 / 2014



TYPICAL SECTION

NTS

STATION 10+60

SCALE 1" = 20'

7/28/2014
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8/17/99

REVISIONS

-L1- CURVE DATA

PI Sta 150+31.19	PIs Sta 172+52.95
△ = 21° 40' 48.1" (LT)	Θs = 0° 36' 00.0"
D = 0° 30' 00.0"	Ls = 240.00'
L = 4,336.00'	LT = 160.00'
T = 2,194.25'	ST = 80.00'
R = 11,459.16'	
V = 70 MPH	

Maintenance Items Causing Impacts		
Item Number	**RFP Required Repairs**	**Proposed Repairs**
M-112	Grade and stabilize eroding ditch	Add standard riprap pad.
M-113	Repair last 2' of separated pipe, slip line pipe, replace FES and remove trees around pipe inlet	Remove FES, add countersunk rip rap pad, and preserve pipe. Remove trees.
M-441	Repair slope washout	Repair slope

NAD 83/NSRS 2007

GRANITE RS&H DESIGN-BUILD SERVICES

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

XX–XX
7'
0.2'
2'
4'
INFALL

SITE 1501 – IMPACT ZOOM-IN (SCALE: 1" = 50')
INV=34
42" CMP
8" CMP
BZ 1
CSP

MATCHLINE SHEET 14 –L1– STA. 169+00.00

170+00

175+00

180+00

MATCHLINE SHEET 16 –L1– STA. 183+00.00

EXISTING R/W

PROPOSED SBG
BEG STA 170+81 LT
INV=380.35'

CLASS 'B' RIP RAP
EST 1 TON
EST 5 SY GEO

REMOVE 8" CMP
UNABLE TO LOCATE PIPE

M-443
INV=384.13'
15" CSP

M-442
INV=381.14'

M-441
INV=377.84'

M-440

M-439
INV=374.99'

M-438

SPECIAL CUT DITCH
SEE DETAIL K

PROPOSED SBG
END STA 180+81 LT

STREAM IMPACTS DUE TO CULVERT PRESERVATION INSTALLATION

CLASS II RIP RAP
EST 22 TON
EST 23 SY GEO
(BANKS ONLY)

SITE 1501

INV=371.64'
RETAIN
30" RCP
TOP=389.99'
INV IN=385.19'
INV OUT=384.81'
RETAIN
GUARDRAIL
CURB
2GI
15" RCP-III
TB 2GI
M-508
TOP=386.96'
INV IN=383.63'
INV OUT=383.19'
M-509
TOP=386.60'
INV OUT=377.75'
M-511
TOP=372.36'
INV OUT=369.28'
18" RCP-III
INV=384.91'
M-108
M-109
PROPOSED SBG
BEG STA 174+75 RT
INV=364.98'
42" CMP
CULVERT PRESERVATION
SEE DETAIL H
15" CSP
15" CMP
RETAIN & PRESERVE
CLASS II RIP RAP
EST 20 TON
EST 39 SY GEO
CLASS II RIP RAP
EST 20 TON
EST 21 SY GEO
(BANKS ONLY)
CLASS 'B' RIP RAP
EST 1 TON
EST 5 SY GEO
PROPOSED SBG
END STA 182+75 RT
NOT SUBJECT TO RIPARIAN BUFFER RULES
REMOVE FES AND REPLACE IN FOOTPRINT RIPRAP PAD TO BE COUNTERSUNK IN STREAM FLOW LINE
M-112 /M-113
INV=344.02'
INV=339.45'
WW
JS
BZ 1
BZ 2
EXISTING R/W
R/W MON
EIP
E
SITE 1501 – IMPACT ZOOM-IN (SCALE: 1" = 50')
M-112 /M-113
=339.45
STREAM IMPACTS DUE TO CULVERT PRESERVATION INSTALLATION

WW–WW
10'
0.4'
3'
6'
OUTFALL

50 0 100

FOR –L1– LT PROFILE, SEE SHEET NO. 57
FOR –L1– RT PROFILE, SEE SHEET NO. 57

DENOTES TEMPORARY IMPACTS IN SURFACE WATER
DENOTES IMPACTS IN SURFACE WATER

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 16338 / 15311
I-40 / US 64 FROM WEST OF SR 1319 (JONES FRANKLIN RD) CONTINUING ALONG I-440 / US 64 TO NORTH OF US 64 / US 264
DATE: 07 / 28 / 2014

7/28/2014
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8/17/99

REVISIONS

-L1- CURVE DATA

PI Sta 150+31.19	PIs Sta 172+52.95
△ = 21° 40' 48.1" (LT)	Θs = 0° 36' 00.0"
D = 0° 30' 00.0"	Ls = 240.00'
L = 4,336.00'	LT = 160.00'
T = 2,194.25'	ST = 80.00'
R = 11,459.16'	
V = 70 MPH	

Maintenance Items Causing Impacts		
Item Number	**RFP Required Repairs**	**Proposed Repairs**
M-112	Grade and stabilize eroding ditch	Add standard riprap pad.
M-113	Repair last 2' of separated pipe, slip line pipe, replace FES and remove trees around pipe inlet	Remove FES, add countersunk rip rap pad, and preserve pipe. Remove trees.
M-441	Repair slope washout	Repair slope

NAD 83/NSRS 2007

GRANITE RS&H DESIGN-BUILD SERVICES

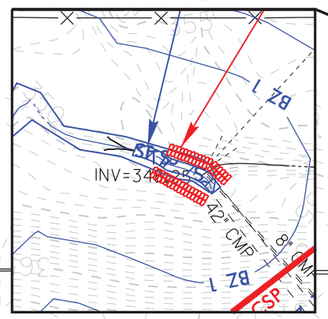
PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

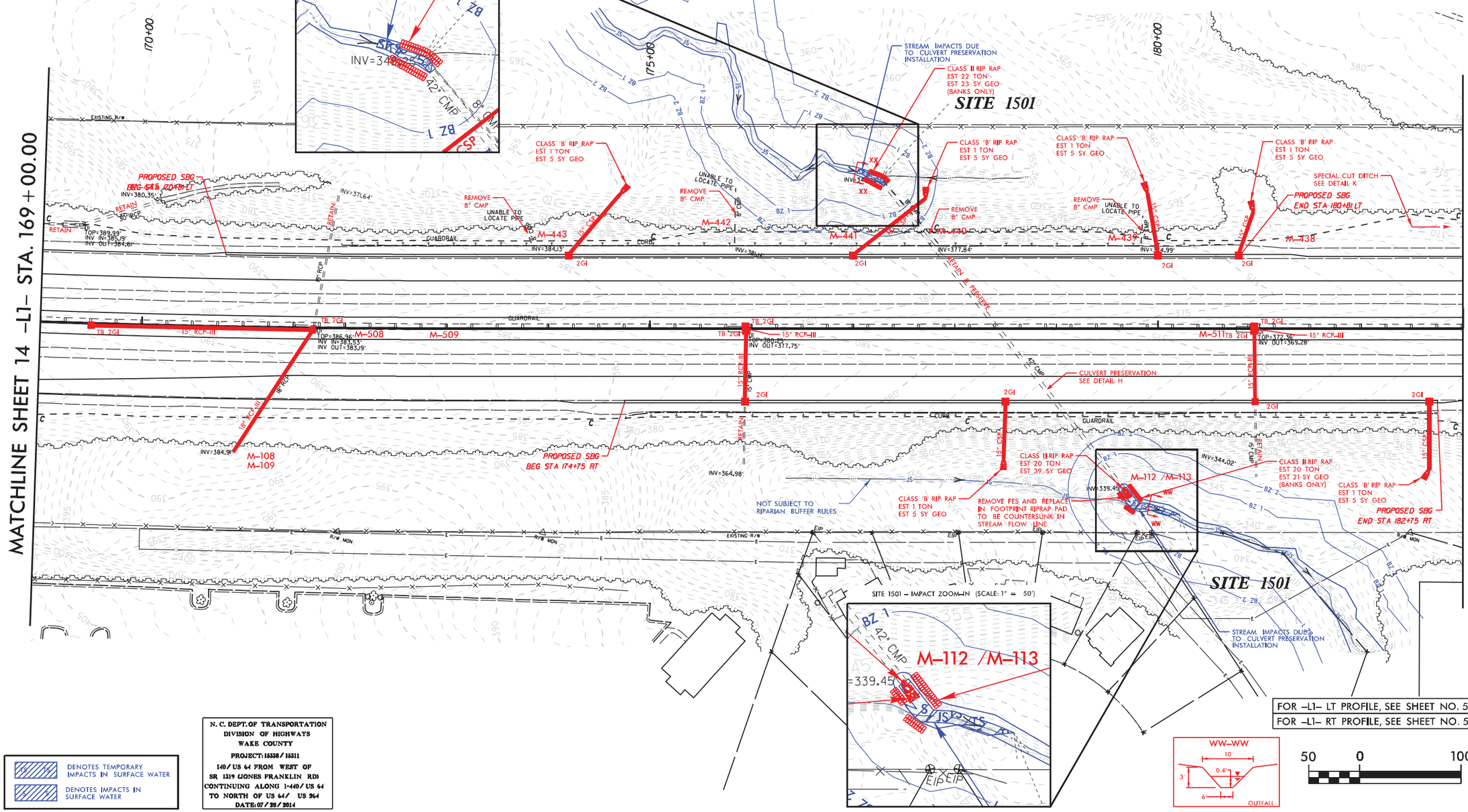
XX–XX
7'
0.2'
2'
4'
INFALL

SITE 1501 – IMPACT ZOOM-IN (SCALE: 1" = 50')



MATCHLINE SHEET 14 -L1- STA. 169+00.00

MATCHLINE SHEET 16 -L1- STA. 183+00.00



DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES IMPACTS IN SURFACE WATER

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 16338 / 15311
I-40 / US 64 FROM WEST OF SR 1319 (JONES FRANKLIN RD) CONTINUING ALONG I-440 / US 64 TO NORTH OF US 64 / US 264
DATE: 07 / 28 / 2014

FOR -L1- LT PROFILE, SEE SHEET NO. 57
FOR -L1- RT PROFILE, SEE SHEET NO. 57

7/28/2014
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8/17/99

REVISIONS

Maintenance Items Causing Impacts		
Item Number	**RFP Required Repairs**	**Proposed Repairs**
M-117	Replace exposed flume pipe (approximately 30' down slope) and repair slope.	Flume to be removed; repair slope.
M-118	Minor grading required and repair approximately 100' of chainlink fence. Repair lateral ditch and slope to culvert wing wall, remove trees behind wing wall and repair fence.	Repair lateral ditch and slope to culvert wing wall. Remove trees behind wing wall and repair ROW fence. Realign stream leading to headwall, and armor banks. (See Sheet 2-AS)
M-432	Repair ditch and riprap with fabric	Repair ditch with rip rap/fabric

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES IMPACTS IN SURFACE WATER

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15338 / 15311
I-40 / US 64 FROM WEST OF SR 1319 (JONES FRANKLIN RD) CONTINUING ALONG I-440 / US 64 TO NORTH OF US 64 / US 264
DATE: 07 / 28 / 2014

NAD 83/NSRS 2007

GRANITE RS&H DESIGN-BUILD SERVICES

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

ZZ–ZZ: 26' wide, 4' deep, 0.3' ditch, 17' OUTFALL

BBB–BBB: 7' wide, 2.5' deep, 0.4' ditch, 3.5' OUTFALL

SITE 1701 – IMPACT ZOOM-IN (SCALE: 1" = 50')

SITE 1702 – IMPACT ZOOM-IN (SCALE: 1" = 50')

SITE 1701

SITE 1702

200+00

205+00

210+00

6'X8' BOX CULVERT
TOP HW=302.84
INV=294.66'

M-432 M-430 M-429 M-428 M-427 M-426 M-515 M-516 M-120 M-117 M-118

CLASS 'B' RIP RAP
EST 2 TON
EST 7 SY GEO

CLASS II RIP RAP
ON STREAM BANK ONLY
EST 20 TON
EST 28 SY GEO

CLASS II RIP RAP
EST 21 TON
EST 22 SY GEO
(BANKS ONLY)

CLASS II RIP RAP
EST 22 TON
EST 23 SY GEO
(BANKS ONLY)

CLASS 'B' RIP RAP
EST 22 TON
EST 45 SY GEO

STREAM IMPACTS DUE TO CULVERT PRESERVATION INSTALLATION

PROPOSED SBG
BEG STA 198+82 LT

PROPOSED SBG
END STA 207+96 LT

PROPOSED SBG
END STA 207+54 RT

SPECIAL CUT DITCH
SEE DETAIL K

CULVERT PRESERVATION
SEE DETAIL H

UNABLE TO LOCATE PIPE

REMOVE OR PLUG/FILL

RE-ALIGNED CHANNEL WILL RESULT IN 15 LF OF STREAM LOSS
(SEE SHEET 17A FOR RIP RAP LIMITS)

RIP RAP BOUNDARY

AAA–AAA: 18' wide, 4' deep, 1.0' ditch, 10' INFALL

EXISTING R/W

MATCHLINE SHEET 16 –L1– STA. 197+00.00

MATCHLINE SHEET 18 –L1– STA. 211+00.00

FOR –L1– LT PROFILE, SEE SHEET NO. 59
FOR –L1– RT PROFILE, SEE SHEET NO. 59

50 0 100

7/25/2014
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8/17/99

REVISIONS

Maintenance Items Causing Impacts		
Item Number	**RFP Required Repairs**	**Proposed Repairs**
M-117	Replace exposed flume pipe (approximately 30' down slope) and repair slope.	Flume to be removed; repair slope.
M-118	Minor grading required and repair approximately 100' of chainlink fence. Repair lateral ditch and slope to culvert wing wall, remove trees behind wing wall and repair fence.	Repair lateral ditch and slope to culvert wing wall. Remove trees behind wing wall and repair ROW fence. Realign stream leading to headwall, and armor banks. (See Sheet 2-AS)
M-432	Repair ditch and riprap with fabric	Repair ditch with rip rap/fabric

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES IMPACTS IN SURFACE WATER

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15338 / 15311
140 / US 64 FROM WEST OF SR 1319 (JONES FRANKLIN RD) CONTINUING ALONG I-440 / US 64 TO NORTH OF US 64 / US 264
DATE: 07 / 28 / 2014

NAD 83/NSRS 2007

GRANITE RS&H DESIGN-BUILD SERVICES

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

ZZ–ZZ: 26' wide, 4' deep, 0.3' ditch, 17' OUTFALL

BBB–BBB: 7' wide, 2.5' deep, 0.4' ditch, 3.5' OUTFALL

SITE 1701 – IMPACT ZOOM-IN (SCALE: 1" = 50')

SITE 1702 – IMPACT ZOOM-IN (SCALE: 1" = 50')

MATCHLINE SHEET 16 –L1– STA. 197+00.00

MATCHLINE SHEET 18 –L1– STA. 211+00.00

SITE 1701

SITE 1702

200+00

205+00

210+00

M-432 — 6'X8' BOX CULVERT TOP HW=302.84 INV=294.66'

CLASS II RIP RAP ON STREAM BANK ONLY EST 20 TON EST 28 SY GEO

CLASS 'B' RIP RAP EST 2 TON EST 7 SY GEO

M-430 — 18" CMP — INV=317.55'

PROPOSED SBG BEG STA 198+82 LT

M-429 — 18" CMP — INV=342.55'

UNABLE TO LOCATE PIPE

REMOVE OR PLUGFILL

M-428 — 18" CMP — INV=339.17'

M-427 — 15" CMP — INV=336.77'

M-426 — 15" CMP — INV=334.23'

STREAM IMPACTS DUE TO CULVERT PRESERVATION INSTALLATION

CLASS II RIP RAP EST 21 TON EST 22 SY GEO (BANKS ONLY)

CLASS 'B' RIP RAP EST 2 TON EST 7 SY GEO

SPECIAL CUT DITCH SEE DETAIL K

PROPOSED SBG END STA 207+56 LT

M-515 — 15" RCP-III — TOP=343.26' INV OUT=340.67'

M-516 — 15" RCP-III — TOP=336.81' INV OUT=333.85'

BOX CULVERT

GUARDRAIL

CULVERT PRESERVATION SEE DETAIL H

M-120 — 15" CSP

M-117 / M-118 SEE STREAM RE-ALIGNMENT DETAIL SHEET 2-AS

M-117 — INV=309.48' — TOP HW=306.45' INV=298.27'

M-118

CLASS 'B' RIP RAP EST 2 TON EST 7 SY GEO

CLASS 'B' RIP RAP EST 22 TON EST 45 SY GEO

CLASS II RIP RAP EST 22 TON EST 23 SY GEO (BANKS ONLY)

END 60' CMP UNKNOWN (BURIED PIPE)

RE-ALIGNED CHANNEL WILL RESULT IN 15 LF OF STREAM LOSS (SEE SHEET 17A FOR RIP RAP LIMITS)

RIP RAP BOUNDARY

AAA–AAA: 18' wide, 4' deep, 1.0' ditch, 10' INFALL

FOR –L1– LT PROFILE, SEE SHEET NO. 59

FOR –L1– RT PROFILE, SEE SHEET NO. 59

50 0 100

7/25/2014
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6/2/99

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	17A
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

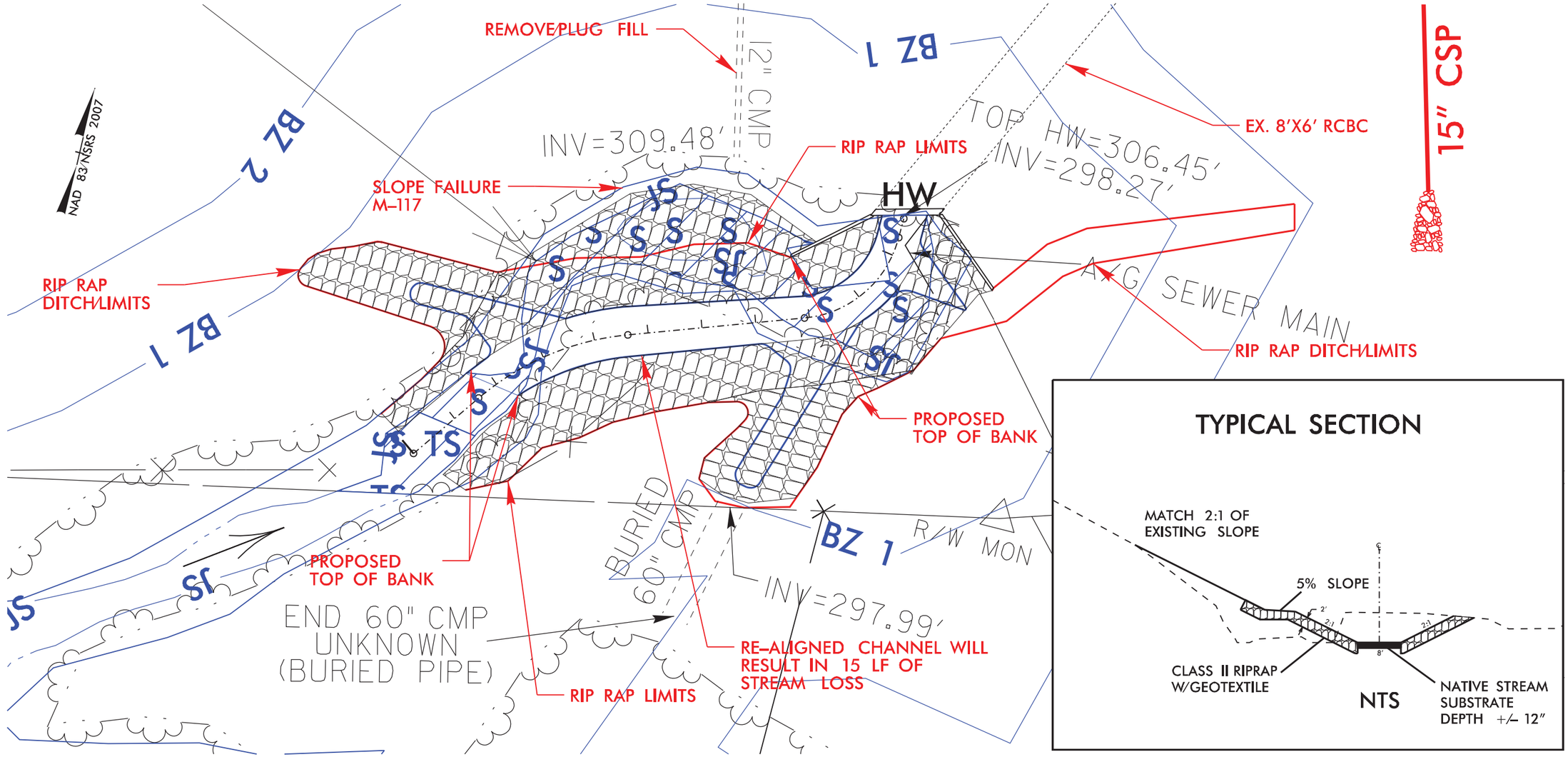
N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15338 / 15311
I40 / US 64 FROM WEST OF
SR 1519 (JONES FRANKLIN RD)
CONTINUING ALONG I-440 / US 64
TO NORTH OF US 64 / US 264
DATE: 07 / 28 / 2014

SITE 1701

STREAM RE–ALIGNMENT DETAIL SHEET
STA. –L– 200 + 00 (RT)

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES IMPACTS IN SURFACE WATER



TYPICAL SECTION

SCALE 1" = 10'

7/28/2014
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6/2/99

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	17A
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

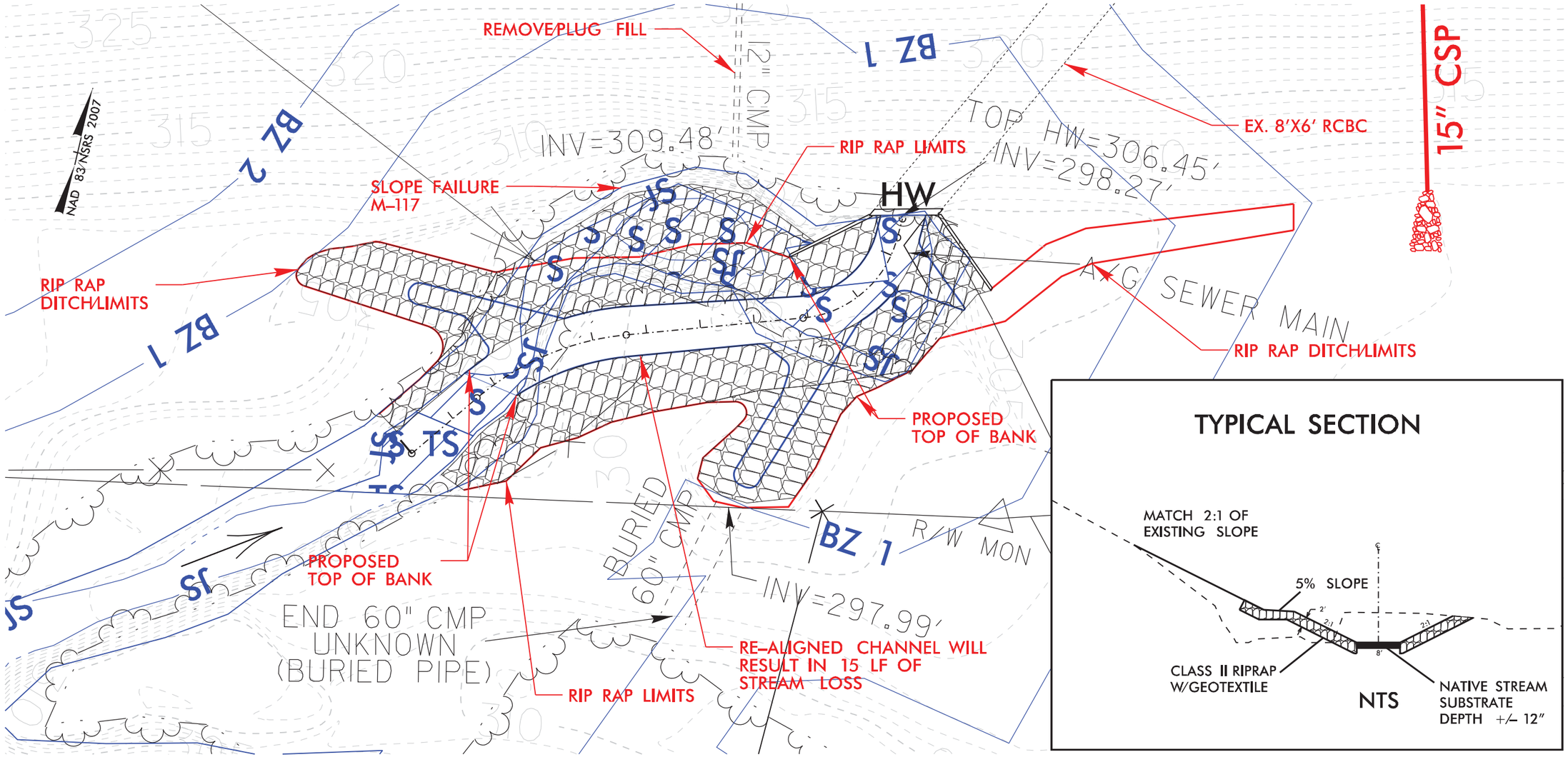
N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15338 / 15311
140 / US 64 FROM WEST OF
SR 1519 (JONES FRANKLIN RD)
CONTINUING ALONG I-440 / US 64
TO NORTH OF US 64 / US 264
DATE: 07 / 28 / 2014

SITE 1701

STREAM RE–ALIGNMENT DETAIL SHEET
STA. –L– 200 + 00 (RT)

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES IMPACTS IN SURFACE WATER



TYPICAL SECTION

NTS

SCALE 1" = 10'

7/28/2014
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8/17/99

REVISIONS

-RP6C- CURVE DATA

PIs Sta 11+40.06	PI Sta 13+76.42	PIs Sta 16+10.60
θs = 5° 13' 52.9"	Δ = 16° 28' 06.7" (RT)	θs = 5° 13' 52.9"
Ls = 210.00'	D = 4° 58' 56.1"	Ls = 210.00'
LT = 140.06'	L = 330.54'	LT = 140.06'
ST = 70.06'	T = 166.42'	ST = 70.06'
	R = 1,150.00'	
	V = 55 MPH	

-RP6B- CURVE DATA

PIs Sta 14+04.06
θs = 5° 09' 23.8"
Ls = 216.00'
LT = 144.06'
ST = 72.06'

-L1- CURVE DATA

PIs Sta 236+82.32	PI Sta 258+76.38
θs = 1° 11' 39.4"	Δ = 40° 19' 41.2" (RT)
Ls = 240.00'	D = 0° 59' 42.9"
LT = 160.00'	L = 4,052.11'
ST = 80.00'	T = 2,114.06'
	R = 5,757.00'
	V = 70 MPH

NAD 83/NSRS 2007

INTERSTATE 40 INTERSTATE 440 BYPASS

GRANITE RS&H DESIGN-BUILD SERVICES

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	19
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

MATCHLINE SHEET 18 –L1– STA. 225+00.00

MATCHLINE SHEET 20 –L1– STA. 238+00.00

230+00

235+00

15+00

N 75° 44' 00.0" E

SPECIAL CUT DITCH SEE DETAIL K

SPECIAL CUT DITCH SEE DETAIL B

SPECIAL CUT DITCH SEE DETAIL A

SPECIAL CUT DITCH SEE DETAIL H

PLACE TRANSITION STONE AT OUTFALL OF DITCH

CLASS 'B' RIP RAP EST 1 TON EST 5 SY GEO

CLASS II RIP RAP EST 17 TON EST 18 SY GEO (BANKS ONLY)

CULVERT PRESERVATION SEE DETAIL H

RETAIN

RETAIN AND PRESERVE

REMOVE OR PLUG/FILL

M-419 INV=280.19'

M-420 TOP=289.54' INV IN=281.97' INV IN=282.48' INV OUT=281.36'

M-421 TOP=298.36' INV IN=287.90' INV OUT=287.19'

M-520 TOP=303.70' INV IN=299.00' INV IN=297.98' INV IN=298.32' (I5') INV OUT=297.71'

M-521 TOP=297.01' INV IN=291.02' INV IN=291.26' INV OUT=290.96'

M-122B TOP=303.27' INV IN=299.97' INV IN=299.73' INV OUT=299.67'

M-122C TOP=288.23' INV OUT=285.08'

M-123 INV=278.68'

M-124 TOP=282.57' INV OUT=280.02'

INV=275.5'

SITE 1901

SITE 1901 – IMPACT ZOOM-IN (SCALE: 1" = 50')

STREAM IMPACTS DUE TO CULVERT PRESERVATION INSTALLATION

EXISTING R/W

AERIAL

GUARDRAIL

EIP

72" CMP

15" CMP

36" RCP

36" RCP-III

18" RCP-III

15" RCP-III

15" RCP

8" RCP

TB 2GI

TB 2GI-A

2GI

DI

DDD

BZ

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15338 / 15311
I-40 / US 64 FROM WEST OF SR 1319 (JONES FRANKLIN RD) CONTINUING ALONG I-440 / US 64 TO NORTH OF US 64 / US 264
DATE: 07 / 28 / 2014

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES IMPACTS IN SURFACE WATER

Maintenance Items Causing Impacts		
Item Number	RFP Required Repairs	Proposed Repairs
M-123	Repair/replace damaged pipe and slip line	Preserve pipe

FOR –L1– LT PROFILE, SEE SHEET NO. 61

FOR –L1– RT PROFILE, SEE SHEET NO. 61

FOR –RP6B– PROFILE, SEE SHEET NO. 94

FOR –RP6C– PROFILE, SEE SHEET NO. 95

DDD–DDD
9'
0.5'
3.5'
5'
INFALL

50 0 100

7/25/2014
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8/17/99

REVISIONS

-RP6C- CURVE DATA

PIs Sta 11+40.06	PI Sta 13+76.42	PIs Sta 16+10.60
θs = 5° 13' 52.9"	Δ = 16° 28' 06.7" (RT)	θs = 5° 13' 52.9"
Ls = 210.00'	D = 4° 58' 56.1"	Ls = 210.00'
LT = 140.06'	L = 330.54'	LT = 140.06'
ST = 70.06'	T = 166.42'	ST = 70.06'
	R = 1,150.00'	
	V = 55 MPH	

-RP6B- CURVE DATA

PIs Sta 14+04.06
θs = 5° 09' 23.8"
Ls = 216.00'
LT = 144.06'
ST = 72.06'

-L1- CURVE DATA

PIs Sta 236+82.32	PI Sta 258+76.38
θs = 1° 11' 39.4"	Δ = 40° 19' 41.2" (RT)
Ls = 240.00'	D = 0° 59' 42.9"
LT = 160.00'	L = 4,052.11'
ST = 80.00'	T = 2,114.06'
	R = 5,757.00'
	V = 70 MPH

NAD 83/NSRS 2007

INTERSTATE 40 INTERSTATE 440 BORTHWICK

GRANITE RS&H DESIGN-BUILD SERVICES

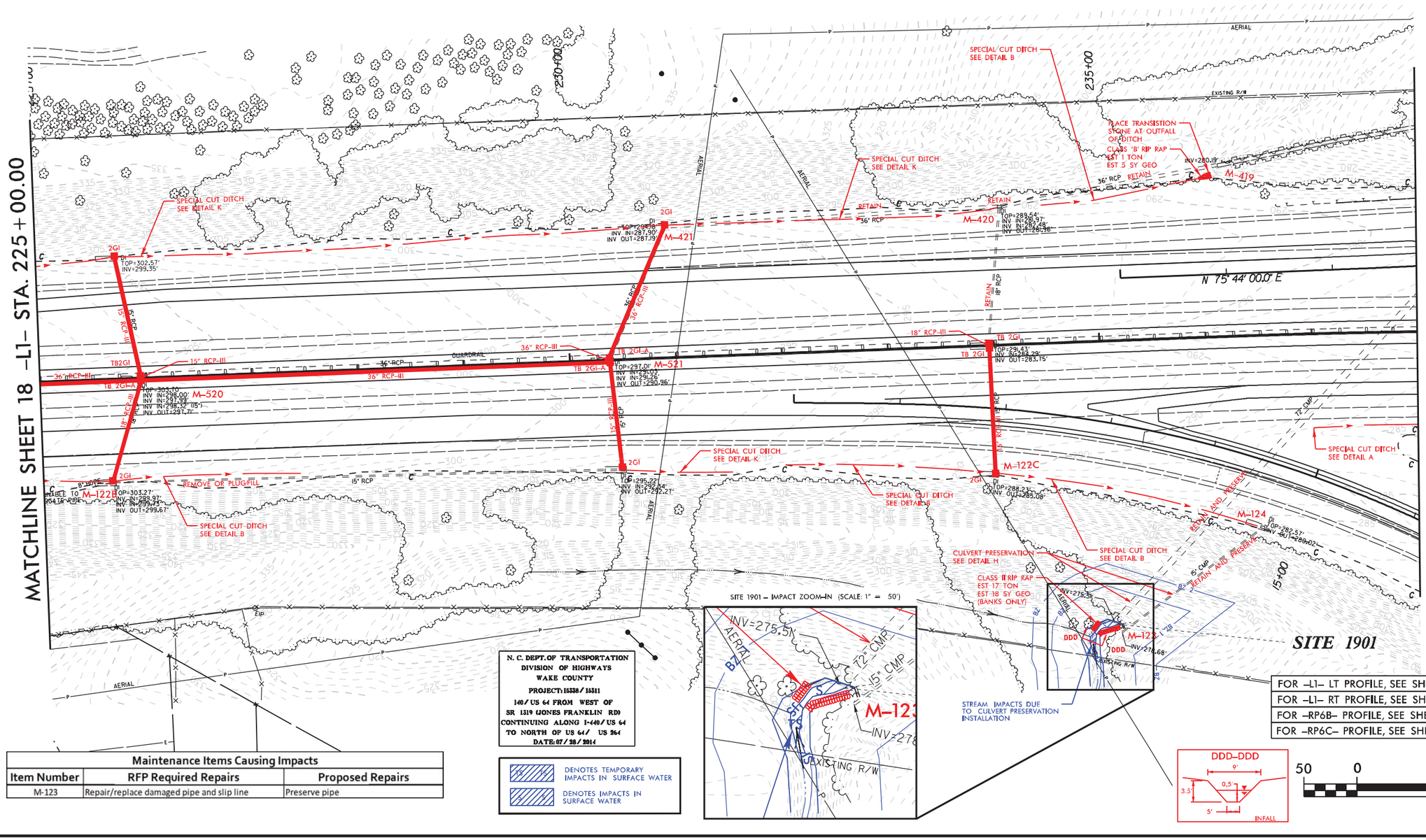
PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	19
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

MATCHLINE SHEET 18 –L1– STA. 225+00.00

MATCHLINE SHEET 20 –L1– STA. 238+00.00



Maintenance Items Causing Impacts		
Item Number	RFP Required Repairs	Proposed Repairs
M-123	Repair/replace damaged pipe and slip line	Preserve pipe

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15338 / 15311
I-40 / US 64 FROM WEST OF SR 1319 (JONES FRANKLIN RD) CONTINUING ALONG I-440 / US 64 TO NORTH OF US 64 / US 264
DATE: 07 / 28 / 2014

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES IMPACTS IN SURFACE WATER

FOR –L1– LT PROFILE, SEE SHEET NO. 61
FOR –L1– RT PROFILE, SEE SHEET NO. 61
FOR –RP6B– PROFILE, SEE SHEET NO. 94
FOR –RP6C– PROFILE, SEE SHEET NO. 95

7/25/2014
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REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5339	20
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR BID OR CONSTRUCTION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

40 440 — GRANITE RS&H — PLANNING AND ENGINEERING

NAD 83/NSRS 2007

Maintenance Items Causing Impacts		
Item Number	RFP Required Repairs	Proposed Repairs
M-414	Remove tree, construct energy dissipater, and slip line pipe.	Remove tree, construct rip rap pad and preserve pipe.

SITE 1901

SITE 1901 – IMPACT ZOOM-IN (SCALE: 1" = 50')

M-414 36" CMP INV=252.99'

SITE 1901

SITE 1901 – IMPACT ZOOM-IN (SCALE: 1" = 50')

63.6'

UNABLE TO LOCATE PIPE

SITE 2002

SITE 2002 – IMPACT ZOOM-IN (SCALE: 1" = 50')

MATCHLINE SHEET 19 –L1– STA. 238+00.00

MATCHLINE SHEET 21 –L1– STA. 266+00.00

-RP6B- CURVE DATA

Pis Sta 14+04.06	Pis Sta 16+21.25	Pis Sta 18+37.14	Pis Sta 21+25.27	Pis Sta 24+62.09
Gs = 5° 09' 23.8"	Δ = 13° 48' 10.3" (LT)	Gs = 5° 09' 23.8"	Gs = 8° 50' 23.7"	Δ = 41° 28' 15.2" (RT)
Ls = 216.00'	D = 4° 46' 29.7"	Ls = 216.00'	Ls = 216.00'	D = 8° 1' 05.4"
LT = 144.06'	L = 289.09'	LT = 144.06'	LT = 144.18'	L = 506.67'
ST = 72.06'	T = 145.25'	ST = 72.06'	ST = 72.16'	T = 265.00'
	R = 1,200.00'			R = 700.00'
	V = 60 MPH			V = 45 MPH

-RP6C- CURVE DATA

Pis Sta 16+10.60	Pis Sta 21+23.96	Pis Sta 23+47.91
Gs = 5° 13' 52.9"	Gs = 5° 43' 46.5"	Δ = 13° 46' 39.7" (LT)
Ls = 210.00'	Ls = 240.00'	D = 4° 46' 29.7"
LT = 140.06'	LT = 160.08'	L = 286.81'
ST = 70.06'	ST = 80.08'	T = 144.09'
		R = 1,200.00'
		V = 35 MPH

-L1- CURVE DATA

Pi Sta 258+76.69
Δ = 46° 20' 40.5" (RT)
D = 0° 59' 56.6"
L = 40.39.28
T = 2,216.52'
R = 5,735.00'
V = 70 MPH

-Y6- CURVE DATA

Pi Sta 14+36.77	Pi Sta 20+02.40
Δ = 14° 06' 11.0" (LT)	Δ = 8° 5' 50.4" (LT)
D = 1° 4' 58.2"	D = 3° 41' 40.1"
L = 806.12'	L = 328.56'
T = 405.1'	T = 164.62'
R = 5,271.00'	R = 2,100.00'

-RP6A- CURVE DATA

Pis Sta 14+66.02	Pis Sta 18+35.29
Gs = 2° 51' 53.2"	Δ = 13° 44' 41.2" (RT)
Ls = 240.00'	D = 2° 23' 14.4"
LT = 160.02'	L = 575.81'
ST = 80.02'	T = 289.25'
	R = 2,400.00'
	V = 50 MPH

-RP6D- CURVE DATA

Pis Sta 11+71.07'	Pis Sta 15+66.75	Pis Sta 19+39.07'
Gs = 1° 00' 18.3"	Δ = 22° 14' 14.3" (LT)	Gs = 3° 34' 51.6"
Ls = 9° 34' 55.2"	D = 3° 34' 51.6"	Ls = 200.00'
LS = 200.00'	L = 626.98'	LT = 133.36'
LT = 185.77'	T = 314.45'	ST = 66.69'
ST = 84.33'	R = 1600.00'	
	V = 60 MPH	

DENOTES TEMPORARY IMPACTS BY SURFACE WATER

DENOTES IMPACTS BY SURFACE WATER

DENOTES MECHANIZED CLEARING

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT:I-5338/I-5339
I-40/US 64 FROM WEST OF SR. 1003 GREENS FRANKLIN) SIGN CONSTRUCTING ALONG I-40/US 64 TO NORTH OF US 64/ US 264 BATES RD/SR1004

GRAPHIC SCALE
50 25 0 50 100
PLANS

FOR -L1- LT PROFILE, SEE SHEET NO. 62.63	
FOR -L1- RT PROFILE, SEE SHEET NO. 62.63	
FOR -RP6A- PROFILE, SEE SHEET NO. 93.94	
FOR -RP6B- PROFILE, SEE SHEET NO. 95	
FOR -RP6D- PROFILE, SEE SHEET NO. 95.96	
LOCATION:	
TIP NO.:	COUNTY:
DESIGNED BY:	
CHECKED BY:	DATE:

7/28/2014

REVISIONS

PROJECT REFERENCE NO. I-5338/I-5339 | SHEET NO. 20
R/W SHEET NO.
ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

INCOMPLETE PLANS
NO RIGHT OF WAY FOR R/W ACQUISITION
PRELIMINARY PLANS
NOT FOR CONSTRUCTION

GRANITE RS&H

NAD 83/NSRS 2007

Maintenance Items Causing Impacts		
Item Number	RFP Required Repairs	Proposed Repairs
M-414	Remove tree, construct energy dissipater, and slip line pipe.	Remove tree, construct rip rap pad and preserve pipe.

SITE 1901

SITE 1901 – IMPACT ZOOM-IN (SCALE: 1" = 50')

M-414

36" CMP

INV=252.99'

SITE 1901 – IMPACT ZOOM-IN (SCALE: 1" = 50')

63.6'

UNABLE TO LOCATE PIPE

SITE 2002

SITE 2002 – IMPACT ZOOM-IN (SCALE: 1" = 50')

MATCHLINE SHEET 19 –L1– STA. 238+00.00

MATCHLINE SHEET 21 –L1– STA. 266+00.00

-RP6B- CURVE DATA

Pt's Sta 14+04.06	Pt's Sta 15+21.25	Pt's Sta 18+37.14	Pt's Sta 21+25.27	Pt's Sta 24+62.09
Bs = S 1°09' 23.8"	Δ = 13° 48' 10.3" (LT)	Bs = S 1°09' 23.8"	Bs = S 1°50' 23.7"	Δ = 41° 28' 15.2" (RT)
Ls = 216.00'	D = 4° 46' 29.7"	Ls = 216.00'	Ls = 216.00'	D = 8° 1' 05.4"
LT = 144.06'	L = 289.09'	LT = 144.06'	LT = 144.18'	L = 506.67'
ST = 72.06'	T = 145.25'	ST = 72.06'	ST = 72.16'	T = 265.00'
	R = 1,200.00'			R = 700.00'
	V = 60 MPH			V = 45 MPH

-RP6C- CURVE DATA

Pt's Sta 16+10.60	Pt's Sta 21+23.96	Pt's Sta 23+47.58
Bs = S 1°13' 50.9"	Bs = S 4°43' 46.5"	Δ = 13° 46' 39.7" (LT)
Ls = 210.00'	Ls = 240.00'	D = 4° 46' 29.7"
LT = 140.06'	LT = 160.08'	L = 286.81'
ST = 70.06'	ST = 80.08'	T = 144.09'
		R = 1,200.00'
		V = 35 MPH

-L1- CURVE DATA

Pt Sta 258+76.69
Δ = 46° 20' 40.5" (RT)
D = 0° 59' 56.6"
L = 40.39.28
T = 2,216.32'
R = 5,735.00'
V = 70 MPH

-Y6- CURVE DATA

Pt Sta 14+36.77	Pt Sta 20+02.40
Δ = 14° 06' 11.0" (LT)	Δ = 8° 57' 50.4" (LT)
D = 1° 49' 58.2"	D = 3° 41' 40.1"
L = 806.12'	L = 328.56'
T = 405.11'	T = 164.62'
R = 3,271.00'	R = 2,100.00'

-RP6A- CURVE DATA

Pt Sta 14+66.02	Pt Sta 18+35.29
Bs = S 1° 53.2"	Δ = 13° 44' 41.2" (RT)
Ls = 240.00'	D = 2° 23' 14.4"
LT = 160.02'	L = 575.81'
ST = 80.02'	T = 289.25'
	R = 2,400.00'
	V = 50 MPH

-RP6D- CURVE DATA

Pt's Sta 11+71.07'	Pt's Sta 15+66.75
Bs = S 1°00' 18.3"	Δ = 29° 14' 14.3" (LT)
Es = S 3° 34' 53.2"	D = 5° 34' 51.6"
Ls = 200.00'	L = 626.98'
LT = 100.77'	T = 319.45'
ST = 84.33'	R = 1,600.00'
	V = 60 MPH

-RP6D- CURVE DATA

Pt's Sta 19+39.97'
Bs = S 3° 34' 51.6"
Ls = 200.00'
LT = 133.36'
ST = 66.69'

DENOTES TEMPORARY IMPACTS BY SURFACE WATER
DENOTES IMPACTS BY SURFACE WATER
DENOTES MECHANIZED CLEARING

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 5338/5331
I-40/US 64 FROM WEST OF SR. 1563 GRUPE FRANKLIN) NON CONTINUOUS ALONG I-40/US 64 TO NORTH OF US 64/ US 264
DATES: 07/26/2024

GRAPHIC SCALE
50 25 0 50 100
PLANS

TIP NO.	COUNTY:
LOCATION:	
DESIGNED BY:	
CHECKED BY:	DATE:

FOR -L1- LT PROFILE, SEE SHEET NO. 62.63
FOR -L1- RT PROFILE, SEE SHEET NO. 62.63
FOR -RP6A- PROFILE, SEE SHEET NO. 93.94
FOR -RP6B- PROFILE, SEE SHEET NO. 94
FOR -RP6C- PROFILE, SEE SHEET NO. 95
FOR -RP6D- PROFILE, SEE SHEET NO. 95.96

7/29/2024

8/17/99

REVISIONS

-RP6D- CURVE DATA

PI Sta 10+26.15
△ = 0° 31' 33.2" (LT)
D = 1° 00' 20.0"
L = 52.30'
T = 26.15'
R = 5,698.00'
V = 70 MPH

PIs Sta 11+71.07
Θs = 1° 00' 18.3"
Θs = 3° 34' 53.2"
Ls = 200.00'
LT = 118.77'
ST = 81.33'

-LI- CURVE DATA

PI Sta 258+76.38
△ = 40° 19' 41.2" (RT)
D = 0° 59' 42.9"
L = 4,052.11'
T = 2,114.06'
R = 5,757.00'
V = 70 MPH

PIs Sta 278+94.43
Θs = 1° 11' 39.4"
Ls = 240.00'
LT = 160.00'
ST = 80.00'

Maintenance Items Causing Impacts		
Item Number	RFP Required Repairs	Proposed Repairs
M-134	Pipe is too shallow. Replace if possible	Replace pipe to new 2GI at barrier

NAD 83 NSRS 2007

INTERSTATE 40 INTERSTATE 440 BELTLINE

GRANITE RS&H DESIGN-BUILD SERVICES

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	21
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

MATCHLINE SHEET 20 -L1- STA. 266+00.00

MATCHLINE SHEET 22 -L1- STA. 280+00.00

270+00

275+00

EXISTING R/W

S 14° 37' 42.2" E

CLASS 'B' RIP RAP EST 1 TON EST 5 SY GEO

PLACE TRANSISTION STONE AT OUTFALL OF DITCH

SPECIAL CUT DITCH SEE DETAIL K

SPECIAL CUT DITCH SEE DETAIL N

CLASS I RIP RAP EST 15 TON EST 30 SY GEO

INV=244.91'

INV=241.09'

M-396

35" RCP RETAIN

GUARDRAIL

1440 VARIBLE WIDTH BST

2GI DI TOP=263.62' INV OUT=250.93'

DI TOP=254.70' INV OUT=251.38'

DI TOP=253.91' INV OUT=250.86'

M-533/M-535

15" RCP-III

18" RCP-III

48" RCP RETAIN

TB 2GI-A DI TOP=253.79' INV IN=249.46' INV OUT=245.96'

TB 2GI DI TOP=251.30' INV OUT=248.20'

DI TOP=251.30' INV OUT=248.45'

DI TOP=250.61' INV OUT=247.96'

DI TOP=250.54' INV OUT=246.36'

M-142

M-143

JB w/MH POSSIBLE U/G JUNCTION BOX (NOT LOCATED)

36" RCP

DI TOP=248.50' INV IN=242.42' INV OUT=242.21'

M-145

DO NOT BURY 48" RCP

M-134

INV=248.72'

SPECIAL CUT DITCH SEE DETAIL K

CLASS II RIP RAP EST 22 TON EST 23 SY GEO (BANKS ONLY)

M-136

2GI-A DI TOP=249.56' INV IN=245.16' INV OUT=245.01'

M-137

2GI-A DI TOP=250.22' INV IN=245.47' INV IN=245.47' INV OUT=243.29'

RETAIN 24" RCP

RETAIN Θ 30" RCP

RETAIN 30" RCP

SPECIAL CUT DITCH SEE DETAIL K

LP -L1- STA. 275+48.12

LP -L1- STA. 276+69.82

NORFOLK SOUTHERN RAILROAD

SITE 2101

SITE 2101 – IMPACT ZOOM-IN (SCALE: 1" = 50')

48" RCP-III

INV=247

KKK–KKK

6'

0.3'

1.5'

3.5'

INFALL

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY

PROJECT: 15338 / 15311

140 / US 64 FROM WEST OF SR 1319 (JONES FRANKLIN RD) CONTINUING ALONG I-440 / US 64 TO NORTH OF US 64 / US 264

DATE: 07 / 28 / 2014

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES IMPACTS IN SURFACE WATER

FOR -L1- LT PROFILE, SEE SHEET NO. 64

FOR -L1- RT PROFILE, SEE SHEET NO. 64

FOR -RP6A- PROFILE, SEE SHEET NO. 93,94

FOR -RP6D- PROFILE, SEE SHEET NO. 95,96

50 0 100

7/25/2014
c:\pw_work\rsh_pw\corleyd\dms78126\I5338.hyd_prm_wet_psh_21.dgn

8/17/99

REVISIONS

-RP6D- CURVE DATA

PI Sta 10+26.15
△ = 0° 31' 33.2" (LT)
D = 1° 00' 20.0"
L = 52.30'
T = 26.15'
R = 5,698.00'
V = 70 MPH

PIs Sta 11+71.07
Θs = 1° 00' 18.3"
Θs = 3° 34' 53.2"
Ls = 200.00'
LT = 118.77'
ST = 81.33'

-LI- CURVE DATA

PI Sta 258+76.38
△ = 40° 19' 41.2" (RT)
D = 0° 59' 42.9"
L = 4,052.11'
T = 2,114.06'
R = 5,757.00'
V = 70 MPH

PIs Sta 278+94.43
Θs = 1° 11' 39.4"
Ls = 240.00'
LT = 160.00'
ST = 80.00'

Maintenance Items Causing Impacts		
Item Number	RFP Required Repairs	Proposed Repairs
M-134	Pipe is too shallow. Replace if possible	Replace pipe to new 2GI at barrier

NAD 83/NSRS 2007

INTERSTATE 40 INTERSTATE 440 BEATTIES FORD

GRANITE RS&H DESIGN-BUILD SERVICES

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	21
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

MATCHLINE SHEET 20 –L1– STA. 266+00.00

MATCHLINE SHEET 22 –L1– STA. 280+00.00

270+00

275+00

EXISTING R/W

S 14° 37' 42.2" E

CLASS 'B' RIP RAP
EST 1 TON
EST .5 SY GEO

PLACE TRANSISTION STONE AT OUTFALL OF DITCH

SPECIAL CUT DITCH
SEE DETAIL K

SPECIAL CUT DITCH
SEE DETAIL K

SPECIAL CUT DITCH
SEE DETAIL N

CLASS I RIP RAP
EST 15 TON
EST 30 SY GEO

INV=244.91'

INV=241.09'

M-396

GUARDRAIL

1440 VARIBLE WIDTH BST

2GI DI TOP=253.62' INV OUT=250.93'

2GI DI TOP=254.70' INV OUT=251.34'

DI TOP=253.91' INV OUT=250.86'

15" RCP-IV

18" RCP-IV

M-533/M-535

15" RCP-III

TB 2GI

TB 2GI-A DI TOP=253.79' INV IN=245.96' INV OUT=245.96'

18" RCP-III

48" RCP

48" RCP-III

RETAIN

DO NOT BURY 48" RCP

M-134

INV=248.72'

SPECIAL CUT DITCH
SEE DETAIL K

CLASS II RIP RAP
EST 22 TON
EST 23 SY GEO
(BANKS ONLY)

SITE 2101

SITE 2101 – IMPACT ZOOM-IN (SCALE: 1" = 50')

48" RCP-III

INV=247

BZ 1

BZ 2

KKK–KKK

6'
0.3'
1.5'
3.5'
INFALL

24" RCP

RETAIN

M-136

2GI DI TOP=249.56' INV IN=245.16' INV OUT=245.01'

M-137

RETAIN Ø30" RCP

M-142

2GI-A TOP=250.22' INV IN=245.47' INV IN=245.47' INV OUT=245.29'

RETAIN 30" RCP

SPECIAL CUT DITCH
SEE DETAIL K

JB w/MH M-143

POSSIBLE U/G JUNCTION BOX, NOT LOCATED

RETAIN 36" RCP

2GI-A DI TOP=248.50' INV IN=242.42' INV OUT=242.21'

M-145

NORFOLK SOUTHERN RAILROAD

LP –L1– STA. 275+48.12

LP –L1– STA. 276+69.82

EIP

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY

PROJECT: 15338 / 15311

140 / US 64 FROM WEST OF SR 1319 (JONES FRANKLIN RD) CONTINUING ALONG I-440 / US 64 TO NORTH OF US 64 / US 264

DATE: 07 / 28 / 2014

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES IMPACTS IN SURFACE WATER

FOR –L1– LT PROFILE, SEE SHEET NO. 64
FOR –L1– RT PROFILE, SEE SHEET NO. 64
FOR –RP6A– PROFILE, SEE SHEET NO. 93,94
FOR –RP6D– PROFILE, SEE SHEET NO. 95,96

50 0 100

7/25/2014
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PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	22
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83/NSRS 2007

GRANITE RS&H
DESIGN-BUILD SERVICES

-LI- CURVE DATA

PIs Sta 278+94.43	PIs Sta 293+66.36
Θs = 1° 11' 39.4"	Θs = 6° 03' 56.6"
Ls = 240.00'	Ls = 480.00'
LT = 160.00'	LT = 320.19'
ST = 80.00'	ST = 160.17'

-RP7B- CURVE DATA

PIs Sta 11+40.06	PI Sta 14+19.34	PIs Sta 17+39.37
Θs = 5° 00' 48.2"	Δ = 19° 47' 27.5" (LT)	Θs = 1° 13' 30.4"
Ls = 210.00'	D = 4° 46' 28.7"	Θs = 7° 09' 52.6"
LT = 140.06'	L = 414.50'	Ls = 300.00'
ST = 70.05'	T = 209.34'	LT = 185.62'
	R = 1,200.00'	ST = 114.87'
	V = 70 MPH	

-RP7C- CURVE DATA

PI Sta 12+58.17
Δ = 3° 41' 48.0" (RT)
D = 0° 42' 58.3"
L = 516.15'
T = 258.17'
R = 8,000.00'

MATCHLINE SHEET 21 -L1- STA. 280+00.00

MATCHLINE SHEET 23 -L1- STA. 294+00.00

280+00 285+00 290+00 15+00

DEPTH OF EX. CMP IS NOT KNOWN. IN THIS LOCATION, CONTRACTOR TO CONSTRUCT BRICK BOX TO DEPTH AS NECESSARY TO CONNECT PROPOSED & EX. PIPE.

BEGIN SBG -L1- STA. 286+00

*M-391 SEE DRAINAGE MAINTENANCE TABLE

*M-388 SEE DRAINAGE MAINTENANCE TABLE

MEDIAN V DITCH SEE DETAIL D SHEET 2-BJ

SPECIAL LATERAL V DITCH SEE DETAIL B SHEET 2-BJ

CLASS 'B' RIP RAP EST 1 TON EST 5 SY GEO

REMOVE

M-392 M-393 M-391 M-388 M-536

INV=238.62' INV=258.01' INV=238.10' INV=239.87' INV=255.65' INV=253.63' INV=239.05' INV=239.89' INV=241.15'

15" RCP-III 15" CMP 18" CMP 24" RCP-III

JB w/MH

RETAIN

2GI 3GI-A TB 2GI

GUARDRAIL

BEGIN SBG -L1- STA. 285+54

15" W/ELBOWS, ROD, & LUG CONNECTORS

CLASS 'B' RIP RAP EST 1 TONS EST 5 SY GEO

CLASS 'B' RIP RAP EST 1 TON EST 5 SY GEO

15" W/ELBOWS, ROD, & LUG CONNECTORS

SITE 2201 – IMPACT ZOOM-IN (SCALE: 1" = 50')

SITE 2201

15" CSP

54

BZ 2

V_{10} = 2.29 FPS
Q_{10} = 2.3 CFS

FOR -L1- LT PROFILE, SEE SHEET NO. 65
FOR -L1- RT PROFILE, SEE SHEET NO. 65
FOR -RP7B- PROFILE, SEE SHEET NO. 97
FOR -RP7C- PROFILE, SEE SHEET NO. 98

DENOTES MECHANIZED CLEARING

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15538 / 15311
I40 / US 64 FROM WEST OF SR 1319 (JONES FRANKLIN RD) CONTINUING ALONG I-440 / US 64 TO NORTH OF US 64 / US 264
DATE: 07 / 28 / 2014

50 0 100

REVISIONS

8/17/99

7/28/2014
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8/17/99

REVISIONS

-L1- CURVE DATA

PIs Sta 278+94.43	PIs Sta 293+66.36
Θs = 1° 11' 39.4"	Θs = 6° 03' 56.6"
Ls = 240.00'	Ls = 480.00'
LT = 160.00'	LT = 320.19'
ST = 80.00'	ST = 160.17'

-RP7B- CURVE DATA

PIs Sta 11+40.06	PI Sta 14+19.34	PIs Sta 17+39.37
Θs = 5° 00' 48.2"	Δ = 19° 47' 27.5" (LT)	Θs = 1° 13' 30.4"
Ls = 210.00'	D = 4° 46' 28.7"	Θs = 7° 09' 52.6"
LT = 140.06'	L = 414.50'	Ls = 300.00'
ST = 70.05'	T = 209.34'	LT = 185.62'
	R = 1,200.00'	ST = 114.87'
	V = 70 MPH	

-RP7C- CURVE DATA

PI Sta 12+58.17
Δ = 3° 41' 48.0" (RT)
D = 0° 42' 58.3"
L = 516.15'
T = 258.17'
R = 8,000.00'

NAD 83/NSRS 2007

GRANITE RS&H
DESIGN-BUILD SERVICES

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	22
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

MATCHLINE SHEET 21 -L1- STA. 280+00.00

MATCHLINE SHEET 23 -L1- STA. 294+00.00

285+00 250+00 15+00

DEPTH OF EX. CMP IS NOT KNOWN. INSTALL THIS LOCATION, CONTRACTOR TO CONSTRUCT BRICK BOX TO DEPTH AS NECESSARY TO CONNECT PROPOSED & EX. PIPE.

BEGIN SBG -L1- STA. 286+00

EXISTING R/W

INV=238.62'

M-393

M-392

*M-391 SEE DRAINAGE MAINTENANCE TABLE

M-391

INV=238.01'

INV=238.10'

RETAIN

INV=239.87'

JB w/MH1

2GI

15" RCP-III

RETAIN - BOX CHEVRON

S 61° 33' 00.00" E

TOP=251.82'
INV OUT=248.48'

TOP=251.33'
INV OUT=253.63'

TOP=251.54'
INV OUT=253.54'

M-536

GUARDRAIL

MEDIAN V DITCH SEE DETAIL D SHEET 2-BJ

*M-388 SEE DRAINAGE MAINTENANCE TABLE

M-388

SPECIAL LATERAL V DITCH SEE DETAIL B SHEET 2-BJ

CLASS 'B' RIP RAP EST. 1 TON EST. 5 SY GEO

REMOVE

INV=255.65'

JB w/MH

3GI-A

BEGIN SBG -L1- STA. 285+54

15" W/ELBOWS, ROD, & LUG CONNECTORS

CLASS 'B' RIP RAP EST 1 TONS EST 5 SY GEO

INV=239.05'

INV=239.89'

INV=241.15'

CLASS 'B' RIP RAP EST 1 TON EST 5 SY GEO

15" W/ELBOWS, ROD, & LUG CONNECTORS

SITE 2201 – IMPACT ZOOM-IN (SCALE: 1" = 50')

15" CSP

54

BZ 2

EXIST. R/W

V_{10} = 2.29 F/S
Q_{10} = 2.3 CFS

SITE 2201

FOR -L1- LT PROFILE, SEE SHEET NO. 65
FOR -L1- RT PROFILE, SEE SHEET NO. 65
FOR -RP7B- PROFILE, SEE SHEET NO. 97
FOR -RP7C- PROFILE, SEE SHEET NO. 98

DENOTES MECHANIZED CLEARING

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15538 / 15311
140 / US 64 FROM WEST OF SR 1319 (JONES FRANKLIN RD) CONTINUING ALONG I-440 / US 64 TO NORTH OF US 64 / US 264
DATE: 07 / 28 / 2014

50 0 100

7/28/2014
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REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	23
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR BIDDING PURPOSES

PRELIMINARY PLANS
NOT FOR CONSTRUCTION

40 | 440

GRANITE RS&H

NAD 83/NSRS 2007

-RPTD- CURVE DATA

Pi Sta 111+44.04	Pi Sta 14+09.52	Pi Sta 16+57.02	Pi Sta 21+54.87	Pi Sta 23+81.34
θs = 4°07'16.5"	Δ = 14°45'47.2" (LT)	θs = 4°19'15.5"	θs = 12°19'18.0"	Δ = 17°58'57.1" (RT)
Ls = 216.00'	D = 4°00.04.1"	Ls = 216.00'	Ls = 200.00'	D = 17°19'18.0"
LT = 144.04'	L = 368.98'	LT = 144.04'	LT = 133.56'	L = 308.25'
ST = 72.04'	T = 185.53'	ST = 72.04'	ST = 66.96'	T = 160.03'
	R = 1,432.00'			R = 465.00'

-RPTB- CURVE DATA

Pi Sta 17+39.37	Pi Sta 21+36.93
θs = 7°13'30.4"	Δ = 3°28'34.9" (RT)
θs = 7°29'52.6"	D = 0°49'06.8"
Ls = 300.00'	L = 494.75'
LT = 185.62'	T = 247.46'
ST = 114.81'	R = 1,200.00'

-LPTB- CURVE DATA

Pi Sta 10+78.59	Pi Sta 38+56.37
Δ = 4°06'10.7" (RT)	Δ = 11°07'51.4" (RT)
D = 2°36'41.3"	D = 3°22'04.0"
L = 157.11'	L = 489.52'
T = 78.59'	T = 245.96'
R = 2,194.00'	R = 1,700.00'

-RPTC- CURVE DATA

Pi Sta 23+56.68
Δ = 1°45'58.9" (RT)
D = 0°34'22.6"
L = 308.25'
T = 154.16'
R = 10,000.00'

-I7- CURVE DATA

Pi Sta 6+39.88
Δ = 5°19'10.9" (LT)
D = 0°34'22.6"
L = 386.38'
T = 193.21'
R = 10,000.00'

-U- CURVE DATA

Pi Sta 293+66.36	Pi Sta 302+58.43	Pi Sta 311+02.90
θs = 0°03'56.6"	Δ = 15°48'08.8" (LT)	θs = 0°03'56.6"
Ls = 480.00'	D = 2°35'33.6"	Ls = 480.00'
LT = 320.19'	L = 1,465.56'	LT = 320.19'
ST = 160.11'	T = 737.25'	ST = 160.11'
	R = 2,267.00'	
	V = 65 MPH	

-RPTA- CURVE DATA

Pi Sta 114+40.06	Pi Sta 116+41.71
θs = 5°00'49.2"	Δ = 159°34'41.8" (RT)
Ls = 210.00'	D = 4°46'28.7"
LT = 140.06'	L = 828.93'
ST = 70.05'	T = 431.71'
	R = 1,200.00'

-LPTD- CURVE DATA

Pi Sta 10+37.53	Pi Sta 14+30.23
Δ = 13°37'00.7" (LT)	θs = 42°58'18.6"
D = 2°07'47.8"	Ls = 240.00'
L = 293.04'	L = 164.58'
T = 151.56'	ST = 84.55'
R = 2,326.00'	
Pi Sta 16+85.21	Pi Sta 18+87.06
Δ = 96°47'15.0" (RT)	Δ = 40°51'19.2" (RT)
D = 35°48'35.5"	D = 18°05'54.9"
L = 270.28'	L = 213.92'
T = 180.01'	T = 112.79'
R = 160.00'	R = 300.00'

Maintenance Items Causing Impacts		
Item Number	RFP Required Repairs	Proposed Repairs
M-150	Clean out outlet.	Retain and preserve pipe

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES IMPACTS IN SURFACE WATER

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: I-5338/I-5311
I-40 / US 64 FROM WEST OF SR 1579 GREENS FRANKLIN RDS OVERPASSING ALONG I-40/US 64 TO NORTH OF US 64/ US 264
DATE: 08/28/2014

SITE 2302 – IMPACT ZOOM-IN (SCALE: 1" = 50')

SITE 2301 – IMPACT ZOOM-IN (SCALE: 1" = 50')

SITE 2301 – IMPACT ZOOM-IN (SCALE: 1" = 50')

SITE 2302

SITE 2301

MATCHLINE SHEET 22 -L1- STA. 294+00.00

MATCHLINE SHEET 24 -L1- STA. 319+00.00

FOR -L1- LT PROFILE, SEE SHEET NO. 66.67	
FOR -L1- RT PROFILE, SEE SHEET NO. 66.67	
FOR -RPTA- PROFILE, SEE SHEET NO. 96	
FOR -RPTB- PROFILE, SEE SHEET NO. 97	
FOR -RPTB- PROFILE, SEE SHEET NO. 97	
FOR -RPTC- PROFILE, SEE SHEET NO. 98	
FOR -LPTD- PROFILE, SEE SHEET NO. 98.99	
FOR -LPTD- PROFILE, SEE SHEET NO. 99	

LOCATION: _____

TIP NO.: _____ COUNTY: _____

DESIGNED BY: _____

CHECKED BY: _____ DATE: _____

GRAPHIC SCALE
50 25 0 50 100
PLANS

7/28/2015

REVISIONS

-RPTD- CURVE DATA

PI Sta 11+44.04	PI Sta 14+09.52	PI Sta 16+57.02	PI Sta 21+54.87	PI Sta 23+81.34
θs = 4°17'16.5"	Δ = 14°45'47.2" (LT)	θs = 4°19'15.5"	θs = 12°19'18.0"	Δ = 17°58'57.1" (RT)
Ls = 216.00'	D = 4°00.04.1"	Ls = 216.00'	Ls = 200.00'	D = 17°19'18.0"
LT = 144.04'	L = 368.98'	LT = 144.04'	LT = 133.56'	L = 308.29'
ST = 72.04'	T = 185.53'	ST = 72.04'	ST = 66.96'	T = 160.03'
	R = 1,432.00'			R = 465.00'

-RPTB- CURVE DATA

PI Sta 17+39.37	PI Sta 21+36.93
θs = 7°13'30.4"	Δ = 3°28'34.9" (RT)
θs = 7°29'52.6"	D = 0°49'06.8"
Ls = 300.00'	L = 494.75'
LT = 185.62'	T = 247.46'
ST = 114.81'	R = 1,200.00'

-LPTB- CURVE DATA

PI Sta 10+78.59	PI Sta 38+56.37
Δ = 4°06'10.7" (RT)	Δ = 11°07'51.4" (RT)
D = 2°36'41.3"	D = 35°22'04.0"
L = 157.17'	L = 489.52'
T = 78.59'	T = 249.26'
R = 2,194.00'	R = 162.00'

-RPTC- CURVE DATA

PI Sta 23+56.68
Δ = 1°45'58.9" (RT)
D = 0°34'22.6"
L = 308.29'
T = 154.16'
R = 10,000.00'

-I7- CURVE DATA

PI Sta 4+39.88
Δ = 2°19'10.9" (LT)
D = 0°34'22.6"
L = 386.18'
T = 193.21'
R = 10,000.00'

-U- CURVE DATA

PI Sta 293+66.36	PI Sta 302+58.43	PI Sta 311+02.90
θs = 0°03'56.6"	Δ = 15°48'08.8" (LT)	θs = 0°01'56.6"
Ls = 480.00'	D = 2°35'.316"	Ls = 480.00'
LT = 320.19'	L = 1,465.56'	LT = 320.19'
ST = 160.17'	T = 737.25'	ST = 160.17'
	R = 2,267.00'	
	V = 65 MPH	

-RPTA- CURVE DATA

PI Sta 11+40.06	PI Sta 16+41.71
θs = 5°00'.48.2"	Δ = 19°34'.418" (RT)
Ls = 210.00'	D = 4°46'.282"
LT = 140.06'	L = 828.33'
ST = 70.05'	T = 419.17'
	R = 1,200.00'

-LPTD- CURVE DATA

PI Sta 10+37.53	PI Sta 14+30.03
Δ = 13°37'.001" (LT)	θs = 12°58'.186"
D = 2°.27'.47.8"	Ls = 240.00'
L = 254.04'	L = 164.58'
T = 127.5'	ST = 84.55'
R = 2,526.00'	
PI Sta 16+85.21	PI Sta 18+87.06
Δ = 96°47'.152" (RT)	Δ = 90°51'.922" (RT)
D = 35°48'.15.5"	D = 18°05'.54.9"
L = 270.28'	L = 213.92'
T = 180.07'	T = 137.9'
R = 160.00'	R = 300.00'

Maintenance Items Causing Impacts		
Item Number	RFP Required Repairs	Proposed Repairs
M-150	Clean out outlet.	Retain and preserve pipe

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES IMPACTS IN SURFACE WATER

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: I-5538/I-5539
I-40 / US 64 FROM WEST OF SR 1579 GREENS FRANKLIN RD
WIDEN/RECONSTRUCTION ALONG I-40/US 64
TO NORTH OF US 64/ US 264
BATH/W/SR/BRG

SITE 2302 – IMPACT ZOOM-IN (SCALE: 1" = 50')

SITE 2301 – IMPACT ZOOM-IN (SCALE: 1" = 50')

SITE 2301 – IMPACT ZOOM-IN (SCALE: 1" = 50')

SITE 2302

SITE 2301

SITE 2301

MATCHLINE SHEET 22 -L1- STA. 294+00.00

MATCHLINE SHEET 24 -L1- STA. 319+00.00

N 89°03'48.2" E

S 77°59'08.4" W

S 30°08'35.5" E

S 46°31'18.4" W

NAD 83/NSRS 2007

40 | 440

GRANITE RS&H

PROJECT REFERENCE NO.	SHEET NO.
I-5538/I-5539	23
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR BID OR ADMINISTRATION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR -L1- LT PROFILE, SEE SHEET NO. 66.67	
FOR -L1- RT PROFILE, SEE SHEET NO. 66.67	
FOR -RPTA- PROFILE, SEE SHEET NO. 96	
FOR -LPTB- PROFILE, SEE SHEET NO. 97	
FOR -RPTB- PROFILE, SEE SHEET NO. 97	
FOR -RPTC- PROFILE, SEE SHEET NO. 98	
FOR -LPTD- PROFILE, SEE SHEET NO. 98.99	
FOR -RPTD- PROFILE, SEE SHEET NO. 99	

LOCATION:

TIP NO.: COUNTY:

DESIGNED BY:

CHECKED BY: DATE:

GRAPHIC SCALE
50 25 0 50 100
PLANS

7/28/2021

REVISIONS

SITE 2502 – IMPACT ZOOM-IN (SCALE: 1" = 50')

PREFORMED SCOUR HOLE DATA
Q10 = 5.6 CFS

18" WELBOWS, ROD, & LUG CONNECTORS

SITE 2501

MATCHLINE SHEET 43 –Y9– STA. 15+50.00

MATCHLINE SHEET 24 –L1– STA. 332+00.00

MATCHLINE SHEET 26 –L1– STA. 359+00.00

MATCHLINE SHEET 44 –Y9– STA. 30+00.00

-RP9ASPUR- CURVE DATA
PI Sta 14+64.55
Δ = 9° 22' 13.7" (LT)
D = 14° 19' 26.2"
L = 65.42'
T = 32.78'
R = 400.00'
V = 15 MPH
SE = 03

PI Sta 10+24.46
Δ = 17° 44' 40.3" (RT)
D = 1° 31' 24.7"
L = 469.9'
T = 236.46'
R = 3,760.72'
V = 70 MPH
SE = 06

PI Sta 11+55.42
Δ = 6° 01' 32.5"
Ls = 180.00'
LT = 106.52'
ST = 73.85'

PI Sta 18+96.25
Δ = 62° 29' 14.4" (RT)
D = 5° 16' 31.4"
L = 1,096.57'
T = 667.33'
R = 1,050.00'
V = 50 MPH
SE = 08

-RP9A- CURVE DATA

PI Sta 25+12.08
Ls = 7° 40' 37.9"
Ls = 180.00'
LT = 96.78'
ST = 83.49'

PI Sta 27+53.16
Δ = 9° 36' 42.5" (RT)
D = 3° 19' 17.4"
L = 289.36'
T = 145.06'
R = 1,725.00'
V = 55 MPH
SE = 05

PI Sta 29+64.64
Ls = 3° 19' 17.4"
Ls = 200.00'
LT = 133.36'
ST = 66.69'

-RP9D- CURVE DATA

PI Sta 16+18.44
Ls = 7° 09' 43.7"
Ls = 200.00'
LT = 133.44'
ST = 66.71'

PI Sta 20+00.52
Δ = 43° 02' 56.7" (LT)
D = 7° 09' 43.7"
L = 601.08'
T = 315.52'
R = 800.00'
V = 50 MPH
SE = 08

PI Sta 25+33.28
Δ = 24° 21' 56.7" (LT)
D = 5° 01' 14.9"
L = 486.93'
T = 247.20'
R = 1,145.00'
V = 59 MPH
SE = 08

-U- CURVE DATA

PI Sta 340+21.62
Ls = 4° 13' 39.8"
Ls = 420.00'
LT = 280.08'
ST = 140.11'

PI Sta 348+58.01
Ls = 2° 15' 00.0"
Ls = 300.00'
LT = 200.02'
ST = 100.01'

PI Sta 354+88.40
Δ = 15° 48' 40.2" (LT)
D = 1° 30' 00.0"
L = 1,054.07'
T = 530.14'
R = 3,819.72'
V = 75 MPH
SE = 06

-Y9- CURVE DATA
PI Sta 31+72.35
Δ = 8° 35' 33.8" (RT)
D = 1° 07' 52.9"
L = 787.36'
T = 394.36'
R = 4,850.00'

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15538 / 15511
I-40 / US 64 FROM WEST OF SR 1319 (JONES FRANKLIN RD) CONTINUING ALONG I-440 / US 64 TO NORTH OF US 64 / US 264
DATE: 07 / 28 / 2014

DENOTES MECHANIZED CLEARING

NAD 83/2011

-RP9ASPUR- PC Sta. 10+00.00 (10.00' RT)
-RP9ASPUR- PT Sta. 10+00.00 (10.00' RT)
-RP9A- PC Sta. 10+00.00 (10.00' LT)
-RP9A- PT Sta. 10+00.00 (10.00' LT)
-Y10- POT Sta. 10+00.00
-U- POT Sta. 357+00.00 (10.00' RT)
-RP9A- CS Sta. 10+48.32
-RP9A- SC Sta. 12+28.92
-RP9A- ST Sta. 13+08.52
-RP9A- TS Sta. 13+28.92
-RP9A- SC Sta. 16+85.00
-RP9D- TS Sta. 14+85.00
-RP9D- PCC Sta. 22+86.08
-RP9C- PT Sta. 26+68.08
-RP9C- PC Sta. 25+39.72
-RP9C- ST Sta. 22+52.66
-RP9C- CS Sta. 20+03.66
-RP9C- SC Sta. 17+79.08
-RP9C- TS Sta. 15+87.16
-RP9ASPUR- PCC Sta. 16+10.00
-RP9ASPUR- PT Sta. 16+00.39 (10.00' RT)
-RP9ASPUR- PC Sta. 16+10.00 (10.00' LT)
-RP9ASPUR- CS Sta. 17+29.38
-RP9ASPUR- SC Sta. 19+29.38
-RP9ASPUR- ST Sta. 21+52.22 (10.00' RT)
-RP9ASPUR- PT Sta. 21+55.92
-RP9ASPUR- PC Sta. 21+55.92 (10.00' LT)
-RP9ASPUR- PT Sta. 18+40.00
-RP9B- PC Sta. 18+40.00
-RP9B- PT Sta. 24+33.73
-RP9B- SC Sta. 21+04.39
-RP9B- SRS Sta. 19+29.38
-RP9B- CS Sta. 17+79.08
-RP9ASPUR- PT Sta. 14+90.19
-RP9ASPUR- PC Sta. 14+34.77
-RP9A- SC Sta. 26+08.59
-RP9A- CS Sta. 24+28.59
-RP9A- PT Sta. 18+70.00
-RP9ASPUR- PT Sta. 10+00.00 (10.00' RT)
-RP9ASPUR- PC Sta. 10+00.00 (10.00' LT)
-U- PC Sta. 357+90.14
-U- PT Sta. 359+00.00
-U- PC Sta. 357+90.14
-U- PT Sta. 357+00.00
-U- TS Sta. 346+58.00
-U- SC Sta. 349+58.00
-U- ST Sta. 343+01.54
-U- CS Sta. 338+81.54
-U- PT Sta. 344+02.19
-U- PC Sta. 343+34.34
-Y9- PT Sta. 28+08.98
-Y9- PC Sta. 25+22.10
-Y9- POT Sta. 18+40.00
-Y9- POT Sta. 25+45.22 (10.00' RT)
-Y9- POT Sta. 18+40.00
-Y9- POT Sta. 18+00.39 (10.00' RT)
-Y9- POT Sta. 31+45.00
-Y9- POT Sta. 24+38.49
-Y9- POT Sta. 21+55.92 (10.00' RT)
-Y9- POT Sta. 21+55.92
-Y9- POT Sta. 28+08.98
-Y10- POT Sta. 15+67.87
-RP9D- SC Sta. 16+85.00
-RP9D- PT Sta. 14+85.00
-RP9D- POT Sta. 10+00.00 (10.00' RT)
-RP9D- POT Sta. 10+00.00 (159.07' RT)
-RP9D- POT Sta. 12+80.00
-RP9D- POT Sta. 12+80.00 (159.07' RT)
-RM5- ST A. 354+63.86
-RM5- PT A. 354+50.00 (12.00' RT)
-RP9D- ST A. 11+14.23, 24.18' LT)
-RP9D- ST A. 11+92.21, 30.37' LT)
-RM5- PC A. 354+50.00 (59.17' RT)
-RM5- PT A. 352+45.23
-RM5- ST A. 354+50.00 (12.00' RT)
-RM5- ST A. 354+63.86

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	25
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR BIDDING PURPOSES
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

MILES PARK 40|440 GRANITE RS&H DESIGN BUILD TEAM
Kimley»Horn

MATCHLINE SHEET 43 –Y9– STA. 15+50.00

MATCHLINE SHEET 24 –L1– STA. 332+00.00

MATCHLINE SHEET 26 –L1– STA. 359+00.00

MATCHLINE SHEET 44 –Y9– STA. 30+00.00

SITE 2502 – IMPACT ZOOM-IN (SCALE: 1" = 50')

PREFORMED SCOUR HOLE DATA
Q10 = 5.6 CFS

18" WELBOWS, ROD, & LUG CONNECTORS

SITE 2502

SITE 2501

SITE 2501 – IMPACT ZOOM-IN (SCALE: 1" = 50')

PREFORMED SCOUR HOLE DATA
Q10 = 8.2 CFS

18" WELBOWS, ROD, & LUG CONNECTORS

-RP9ASPUR- CURVE DATA

PI Sta 14+64.55	PI Sta 10+24.46	PI Sta 11+55.42	PI Sta 18+96.25	PI Sta 25+12.08	PI Sta 27+53.16	PI Sta 29+64.64
Δ = 9° 22' 13.7" (LT)	Δ = 17° 44' 40.3" (RT)	Θs = 6° 03' 32.5"	Δ = 62° 29' 14.4" (RT)	Θs = 7° 40' 37.9"	Δ = 9° 36' 42.5" (RT)	Θs = 3° 59' 17.4"
D = 14° 19' 26.2"	D = 1° 31' 24.7"	Ls = 180.00'	D = 5° 12' 31.4"	Ls = 180.00'	D = 3° 19' 17.4"	Ls = 200.00'
L = 65.42'	L = 469.92'	LT = 106.52'	L = 1,096.57'	LT = 96.78'	L = 289.36'	LT = 133.36'
T = 32.78'	T = 234.46'	ST = 73.85'	T = 667.33'	ST = 83.49'	T = 145.02'	ST = 66.69'
R = 400.00'	R = 3,760.72'		R = 1,050.00'		R = 1,725.00'	
V = 15 MPH	V = 70 MPH		V = 50 MPH		V = 55 MPH	
SE = 03	SE = 06		SE = 08		SE = 05	

-RP9A- CURVE DATA

PI Sta 16+18.44	PI Sta 20+00.52	PI Sta 25+33.28
Θs = 7° 09' 43.7"	Δ = 43° 02' 56.7" (LT)	Δ = 24° 21' 56.7" (LT)
Ls = 200.00'	D = 7° 09' 43.7"	D = 5° 01' 14.9"
LT = 133.44'	L = 601.08'	L = 486.93'
ST = 66.71'	T = 315.52'	T = 247.20'
	R = 800.00'	R = 1,145.00'
	V = 50 MPH	V = 59 MPH
	SE = 08	SE = 08

-RP9D- CURVE DATA

PI Sta 3+40.00	PI Sta 3+48.58
Δ = 15° 48' 40.2" (LT)	Δ = 7° 30' 00.0"
D = 7° 30' 00.0"	L = 1,054.07'
L = 1,054.07'	T = 530.14'
T = 530.14'	R = 3,819.72'
R = 3,819.72'	V = 75 MPH
V = 75 MPH	SE = 06
SE = 06	

-L1- CURVE DATA

PI Sta 3+40.00	PI Sta 3+48.58
Θs = 4° 13' 39.8"	Δ = 2° 15' 00.0"
Ls = 420.00'	Ls = 300.00'
LT = 280.08'	LT = 200.02'
ST = 140.01'	ST = 100.01'

-Y9- CURVE DATA

PI Sta 3+77.35
Δ = 8° 35' 33.8" (RT)
D = 7° 10' 53.2"
L = 797.36'
T = 399.36'
R = 800.00'

-RP9C- CURVE DATA

PI Sta 15+87.16	PI Sta 21+93.37	PI Sta 26+05.79
Δ = 47° 06' 57.8" (RT)	Θs = 4° 45' 17.4"	Δ = 13° 25' 49.6" (LT)
D = 4° 45' 17.4"	Ls = 200.00'	D = 26° 02' 36.7"
L = 990.34'	LT = 133.39'	L = 128.36'
T = 520.40'	ST = 66.71'	T = 64.60'
R = 1,205.00'		R = 220.00'
V = 50 MPH		V = 35 MPH
SE = 07		SE = 03

-L9C- CURVE DATA

PI Sta 13+10.51	PI Sta 17+03.85	PI Sta 20+56.98
Θs = 28° 41' 26"	Δ = 237° 09' 50.7" (LT)	Θs = 26° 41' 26.0"
Ls = 150.00'	D = 35° 35' 14.79"	Ls = 150.00'
LT = 109.15'	L = 646.51'	LT = 109.15'
ST = 57.06'	T = 344.50'	ST = 57.06'
	R = 161.00'	
	V = 27 MPH	
	SE = 08	

-RP9A- CURVE DATA

PI Sta 10+24.46	PI Sta 11+55.42	PI Sta 18+96.25	PI Sta 25+12.08	PI Sta 27+53.16	PI Sta 29+64.64
Δ = 17° 44' 40.3" (RT)	Θs = 6° 03' 32.5"	Δ = 62° 29' 14.4" (RT)	Θs = 7° 40' 37.9"	Δ = 9° 36' 42.5" (RT)	Θs = 3° 59' 17.4"
D = 1° 31' 24.7"	Ls = 180.00'	D = 5° 12' 31.4"	Ls = 180.00'	D = 3° 19' 17.4"	Ls = 200.00'
L = 469.92'	LT = 106.52'	L = 1,096.57'	LT = 96.78'	L = 289.36'	LT = 133.36'
T = 234.46'	ST = 73.85'	T = 667.33'	ST = 83.49'	T = 145.02'	ST = 66.69'
R = 3,760.72'		R = 1,050.00'		R = 1,725.00'	
V = 70 MPH		V = 50 MPH		V = 55 MPH	
SE = 06		SE = 08		SE = 05	

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: I-5338 / I-5311
I-40 / US 64 FROM WEST OF SR 1319 (JONES FRANKLIN RD) CONTINUING ALONG I-440 / US 64 TO NORTH OF US 64 / US 264
DATE: 07 / 28 / 2014

DENOTES MECHANIZED CLEARING

NAD 83 (2011) EPOCH 2007.00

-RP9A- PC Sta.10+00.00 = -RP9ASPUR- POT Sta.10+00.00 (10.00')

-RP9A- PT Sta.18+70.00 = -RP9ASPUR- POT Sta.18+70.00 (0.00')

-RP9A- SC Sta.12+28.92

-RP9A- CS Sta.24+28.59

-RP9A- PT Sta.14+90.19

-RP9ASPUR-PC Sta.14+34.77

-RP9B- SC Sta.16+85.00

-RP9B- PT Sta.14+85.00

-RP9C- PC Sta.25+39.22

-RP9C- PT Sta.26+68.08

-RP9C- CS Sta.20+05.98

-RP9C- ST Sta.22+52.66

-RP9C- SC Sta.21+55.92

-RP9C- CS Sta.20+03.66

-RP9C- SC Sta.3+69.39

-RP9C- PT Sta.26+80.08

-RP9D- PCC Sta.22+86.08

-RP9D- TS Sta.14+85.00

-L1- PC Sta.357+80.14 = -RP9D- POT Sta.10+00.00 (159.00' RT)

-L1- POT Sta.359+00.00 = -RP9D- POT Sta.10+00.00 (159.00' RT)

-L1- PC Sta.357+80.14 = -Y10- POT Sta.10+67.87

-Y10- POT Sta.10+67.87

-Y9- PC Sta.18+40.00 = -RP9ASPUR- POT Sta.18+00.39 (0.00')

-Y9- POT Sta.18+40.00 = -RP9ASPUR- POT Sta.18+00.39 (0.00')

-Y9- PT Sta.24+33.73

-Y9- POT Sta.28+03.98

-Y9- POT Sta.30+00.00

-Y9- POT Sta.21+34.34

-Y9- POT Sta.21+55.92 = -L9C- ST Sta.21+55.92 (0.00')

-Y9- POT Sta.24+38.49 = -L9C- ST Sta.21+55.92 (157.00' RT)

-L1- PC Sta.332+30.54

-L1- ST Sta.343+01.54

-L1- POT Sta.344+02.19 = -Y9- POT Sta.21+34.34

-L1- TS Sta.346+58.00

-L1- POT Sta.345+00.00 = -L9C- POT Sta.10+00.00 (150.00' RT)

-L1- SC Sta.349+58.00

-L1- POT Sta.354+80.00 = -RP9A- PC Sta.10+00.00 (159.00' LT)

-L1- POT Sta.352+45.00 = -RP9A- PC Sta.10+00.00 (159.00' LT)

-L1- PC Sta.354+63.86 = -RP9A- POT Sta.10+00.00 (159.00' LT)

-L1- POT Sta.354+50.00 = -RP9A- POT Sta.10+00.00 (159.00' LT)

-L1- PC Sta.354+63.86 = -RP9D- POT Sta.10+00.00 (159.00' RT)

-L1- POT Sta.354+50.00 = -RP9D- POT Sta.10+00.00 (159.00' RT)

-L1- PC Sta.354+63.86 = -RP9D- POT Sta.10+21.20 (30.37' LT)

-L1- POT Sta.354+50.00 = -RP9D- POT Sta.10+21.20 (30.37' LT)

-L1- PC Sta.354+63.86 = -RP9D- POT Sta.10+00.00 (159.00' RT)

-L1- POT Sta.354+50.00 = -RP9D- POT Sta.10+00.00 (159.00' RT)

-L1- PC Sta.354+63.86 = -RP9A- POT Sta.10+00.00 (159.00' LT)

-L1- POT Sta.354+50.00 = -RP9A- POT Sta.10+00.00 (159.00

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	28
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRANITE RS&H
DESIGN-BUILD SERVICES

Kimley»Horn

NAD 83/NSRS 2007

ETHEL G YOUNG
BM 1985 PG 232
BM 1985 PG 232
BM 2003 PG 810

8/17/99

REVISIONS

-Y12- CURVE DATA
PI Sta 14+55.70
Δ = 37° 21' 50.3" (RT)
D = 11° 27' 33.0"
L = 326.06'
T = 169.07'
R = 500.00'

-LI- CURVE DATA
PIs Sta 396+23.30
θs = 4° 48' 00.0"
Ls = 480.00'
LT = 320.12'
ST = 160.11'

PI Sta 402+89.61
Δ = 20° 02' 59.4" (RT)
D = 2° 00' 00.0"
L = 1,002.49'
T = 506.42'
R = 2,864.79'
V = 76 MPH
SE = 08

XXX–XXX
5'
NO WATER
1.0'
0.5'
2'
OUTFALL

-Y12- POT Sta.10+00.00
-LI- ST Sta.387+00.18
S 30°19'08.5"E
-Y12- SOUTH STATE ST
390+00
395+00
400+00

VVV–VVV
12'
1'
5'
4'
5'
OUTFALL

SITE 2801
SITE 2802

V_{10}= 1.55 FT/S
Q_{10}= 6.03 CFS

V_{10}= 1.53 FT/S
Q_{10}= 5.69 CFS

V_{10}= 1.41 FT/S
Q_{10}= 4.04 CFS

-LI- SC Sta.397+83.18
-LI- TS Sta.393+03.18
-LI- CS Sta.401+00.00
-LI- POT Sta.387+61.16
-Y12- POC Sta.13+01.12
-Y12- PC Sta.12+86.63

MATCHLINE SHEET 27 -LI- STA. 387+00.00

MATCHLINE SHEET 29 -LI- STA. 401+00.00

PREFORMED SCOUR HOLE
OUTLET PROTECTION
CLASS 'B' RIP RAP
EST 8 TONS
EST 16 SY GEO
EST 25 SY PSRM
SEE DETAIL GSHEET 2-BJ

CLASS 'B' RIP RAP
EST 3 TONS
EST 11 SY GEO

PLUG, FILL, AND ABANDON

CLASS 'B' RIP RAP
EST 5 TONS
EST 17 SY GEO

CLASS 'B' RIP RAP
EST 2 TONS
EST 7 SY GEO

PLUG, FILL, AND ABANDON

15" WELBOWS, ROD, & LUG CONNECTORS

18" WELBOWS, ROD, & LUG CONNECTORS

24" WELBOWS, ROD, & LUG CONNECTORS

*M-311
SEE DRAINAGE MAINTENANCE TABLE SHEET 2-BJ

RETAIN

RETAIN POST DECK DRAINS

REMOVE EXIST. GUARDRAIL

REMOVE 15" RCP END NOT FOUND

END SBG -LI- STA. 393+00

PROP. GUARDRAIL

25:1 TAPER

300' TAPER

500' ACCELERATION LANE

500' TAPER

CULVERT PRESERVATION SITE #24
SEE DETAIL H /SHEET 2-BJ

JB W/ MH COVER

1440 VARIABLE WIDTH BST

PROPOSED MEDIAN CONCRETE BARRIER

12 – 6" MEDIAN DECK DRAINS REQUIRED SEE SHEET 2-BJ FOR LOCATIONS (FILL AFTER COMPLETION OF MOT)

PLUG, FILL, AND ABANDON AFTER COMPLETION OF MOT

BRIDGE

N 48°17'00.0" E

RETAIN & PRESERVE

*M-197
SEE DRAINAGE MAINTENANCE TABLE

*M-198
SEE DRAINAGE MAINTENANCE TABLE

*M-199
SEE DRAINAGE MAINTENANCE TABLE

*M-194
SEE DRAINAGE MAINTENANCE TABLE

*M-195
SEE DRAINAGE MAINTENANCE TABLE

CLASS 'A' RIP RAP
EST 5 TONS

SPECIAL CUT DITCH w/HINGE
SEE DETAIL A /SHEET 2-BJ

BANKS ONLY
CLASS II RIP RAP
EST 25 TONS
EST 30 SY GEO

STREAM IMPACTS DUE TO CULVERT PRESERVATION INSTALLATION

SITE 2802 – IMPACT ZOOM-IN (SCALE: 1" = 50')

WWW–WWW
13'
0.5'
3'
4'
2'
INFALL

UUU–UUU
12'
1'
6'
4'
4'
INFALL

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES EXCAVATION IN WETLAND

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15338 / 15311
140 / US 64 FROM WEST OF SR 1319 (JONES FRANKLIN RD) CONTINUING ALONG I-440 / US 64 TO NORTH OF US 64 / US 264
DATE: 07 / 28 / 2014

Maintenance Items Causing Impacts

Item Number	RFP Required Repairs	Proposed Repairs
M-311	Clean out pipe & drainage outlet to provide positive drainage & slip-line pipe	Clean outlet and slip-line
M-195	Clear trees around headwall & slip-line pipe	Slipline pipe and clear trees
M-198	Repair paved ditches washed out near cross line 100-200' west of Exit 300 sign	Repair paved ditch

FOR –L1– LT PROFILE, SEE SHEET NO. 73
FOR –L1– RT PROFILE, SEE SHEET NO. 73

7/28/2014
c:\pw_work\rsh_pw\vickoryb\dms78126\15338_hyd_prm_set_sh_28.dgn

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	28
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRANITE RS&H DESIGN-BUILD SERVICES

Kimley»Horn

NAD 83/NSRS 2007

ETHEL G YOUNG
BM 1985 PG 232
BM 1985 PG 232
BM 2003 PG 810

8/17/99

REVISIONS

-Y12- CURVE DATA
PI Sta 14+55.70
Δ = 37° 21' 50.3" (RT)
D = 11° 27' 33.0"
L = 326.06'
T = 169.07'
R = 500.00'

-LI- CURVE DATA
PIs Sta 396+23.30
θs = 4° 48' 00.0"
Ls = 480.00'
LT = 320.12'
ST = 160.11'

PI Sta 402+89.61
Δ = 20° 02' 59.4" (RT)
D = 2° 00' 00.0"
L = 1,002.49'
T = 506.42'
R = 2,864.79'
V = 76 MPH
SE = 08

XXX–XXX
5'
NO WATER
1.0'
0.5'
2'
OUTFALL

-Y12- POT Sta.10+00.00
-LI- ST Sta.387+00.18
390+00
395+00
400+00
S 30°19'08.5" E
-Y12- SOUTH STATE ST
R/W MON
EXISTING R/W
ETF
BZ 1
BZ 2

VVV–VVV
12'
1'
5'
4'
5'
OUTFALL

SITE 2801
V_{10}= 1.55 FT/S
Q_{10}= 6.03 CFS
V_{10}= 1.53 FT/S
Q_{10}= 5.69 CFS
V_{10}= 1.41 FT/S
Q_{10}= 4.04 CFS

CLASS 'B' RIP RAP
EST 3 TONS
EST 3 SY GEO
PLUG, FILL AND ABANDON
18" WELBOWS, ROD, & LUG CONNECTORS
M-311
SEE DRAINAGE MAINTENANCE TABLE SHEET 2-J
EXISTING RCP
INV=212.06'
INV=213.03'
INV=213.25'
INV=215.22'
EST 2 TONS
EST 2 SY GEO
CLASS 'B' RIP RAP
EST 4 TONS
EST 7 SY GEO
15" WELBOWS, ROD, & LUG CONNECTORS
24" WELBOWS, ROD, & LUG CONNECTORS
-LI- SC Sta.397+83.18
300' TAPER
500' ACCELERATION LANE
CULVERT PRESERVATION SITE #24
SEE DETAIL H SHEET 2-BJ
GUARDRAIL
JB W/ MH COVER
1440 VARIBLE WIDTH BST
18" RCP-III
15" RCP-III
15" RCP-IV
TB2GI
2GI
T8 RCP-III
42" CMP
24" CMP
12" FDPS
500' TAPER
CLASS 'A' RIP RAP
EST 5 TONS
*M-197
SEE DRAINAGE MAINTENANCE TABLE
*M-198
SEE DRAINAGE MAINTENANCE TABLE
*M-199
SEE DRAINAGE MAINTENANCE TABLE
SPECIAL CUT DITCH w/HINGE
SEE DETAIL A SHEET 2-BJ
*M-194
SEE DRAINAGE MAINTENANCE TABLE
*M-195
SEE DRAINAGE MAINTENANCE TABLE
BANKS ONLY
CLASS II RIP RAP
EST 25 TONS
EST 30 SY GEO
INV=225.56'
INV=225.56'
INV=239.40'
INV=239.88'
INV OUT=238.29'
INV OUT=238.36'
INV OUT=238.86'
INV OUT=239.40'
INV OUT=240.44'
INV OUT=241.30'
TOP=240.95'
TOP=242.49'
TOP=243.48'
TOP=243.30'
TOP=240.44'

PREFORMED SCOUR HOLE
OUTLET PROTECTION
CLASS 'B' RIP RAP
EST 8 TONS
EST 16 SY GEO
EST 25 SY PSRM
SEE DETAIL G SHEET 2-BJ

END SBG
-LI- STA. 393+00
REMOVE
15" RCP END NOT FOUND
INV OUT=238.29'

REMOVE EXIST. GUARDRAIL
15" WELBOWS, ROD, & LUG CONNECTORS
12' FDSP
25:1 TAPER
PROP. GUARDRAIL
60'
63+18
RETAIN
"M-311
SEE DRAINAGE MAINTENANCE TABLE SHEET 2-J
3.5' RCP
INV=217.47'
INV=217.40'
INV=219.76'
INV=217.58'
REMOVE
RETAIN POST DECK DRAINS
PLUG, FILL, AND ABANDON AFTER COMPLETION OF MOT
BRIDGE
TOP=243.48'
INV OUT=238.39'
# 73
TOP=243.30'
INV OUT=240.36'
TB2GI
15" RCP-III
PROP. GUARDRAIL
CAT-1
PROPOSED MEDIAN CONCRETE BARRIER
-LI- TS Sta.393+03.18
REMOVE EXIST. GUARDRAIL
12 – 6" MEDIAN DECK DRAINS REQUIRED SEE SHEET 2-BJ FOR LOCATIONS (FILL AFTER COMPLETION OF MOT)
-Y12- PC Sta.12+86.63
-LI- POT Sta.387+61.16
-Y12- POC Sta.13+01.12
RETAIN
UUU
TOP HW=226.11'
INV=220.94'
INV=216.91'
5' RCP
RETAIN
SITE 2802
TUNISIA COOPER
DB 1872 PG 329
BM 2002 PG 172
ASONDRA JOHNSON
DB 10916 PG 1295
BM 2002 PG 172
RUSSELL KATHRYN L TRUSTEE
DB 1552 PG 1288
BM 2002 PG 172
SHANDA MASON
DB 10215 PG 1425
BM 2002 PG 172
CRYSTAL M POPE
DB 10868 PG 1973
BM 2002 PG 172
ANGELA WATSON
DB 10327 PG 1573
BM 2002 PG 172
TRIANGLE GREENWAYS COUNCIL
DB 10501 PG 347
BM 2003 PG 119
40' SEWER EASEMENT BM 2002 PG 172
20' SANITARY EASEMENT BM 2002 PG 172
20' STORM EASEMENT BM 2002 PG 172
N 84°50'10" E 205.92'
N 89°46'48" E 48.62'
N 89°46'48" E 73.00'
N 41°27'10" E 144.08'
15+00
N 89°46'14" E 133.00'
S 17°28'57" W 204.81'
S 65°17'59" W 213.90'
N 65°17'59" E
S 57°04'30" E 120.43'
S 29°00'38" E 50.79'
N 80°43'14" E 3.42'
N 61°36'
WWW–WWW
13'
0.5'
3'
4'
2'
INFALL
STREAM IMPACTS DUE TO CULVERT PRESERVATION INSTALLATION
SITE 2802 – IMPACT ZOOM-IN (SCALE: 1" = 50')
ETF
INV
UUU–UUU
12'
1'
6'
4'
4'
INFALL

DENOTES TEMPORARY IMPACTS IN SURFACE WATER
DENOTES EXCAVATION IN WETLAND

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15338 / 15311
140 / US 64 FROM WEST OF SR 1519 (JONES FRANKLIN RD) CONTINUING ALONG I-440 / US 64 TO NORTH OF US 64 / US 264
DATE: 07 / 28 / 2014

Maintenance Items Causing Impacts

Item Number	RFP Required Repairs	Proposed Repairs
M-311	Clean out pipe & drainage outlet to provide positive drainage & slip-line pipe	Clean outlet and slip-line
M-195	Clear trees around headwall & slip-line pipe	Slipline pipe and clear trees
M-198	Repair paved ditches washed out near cross line 100-200' west of Exit 300 sign	Repair paved ditch

MATCHLINE SHEET 27 –LI– STA. 387+00.00
MATCHLINE SHEET 29 –LI– STA. 401+00.00
FOR –LI– LT PROFILE, SEE SHEET NO. 73
FOR –LI– RT PROFILE, SEE SHEET NO. 73

7/28/2014
c:\pw_work\rsh_pw\vickory\dms78126\15338_hyd_prm_wet_psh_28.con.dgn

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5511	29
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR BIDDING PURPOSES

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

MATCH LINE 40|440

GRANITE RS&H DESIGN TEAM PARTNER

Kimley»Horn

NAD 83 NSRS 2007

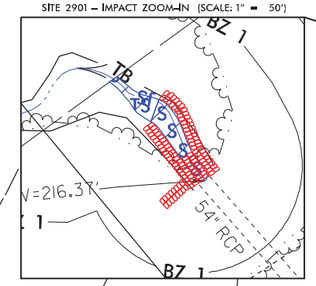
-RPI3B- CURVE DATA

PI Sta 13+50.17 Δs = 7° 13' 19.8" Ls = 300.00' LT = 200.11' ST = 100.15'	PI Sta 15+25.38 Δ = 7° 19' 56.4" (LT) D = 4° 48' 53.2" L = 150.56' T = 75.38' R = 1,190.00' V = 50 MPH SE = 0%	PI Sta 16+70.61 Δs = 5° 03' 19.8" Ls = 210.00' LT = 140.16' ST = 70.05'	PI Sta 19+50.72 Δs = 8° 24' 50.6" Ls = 210.00' LT = 140.16' ST = 70.14'	PI Sta 21+61.61 Δ = 82° 19' 09.8" (RT) D = 8° 09' 46.2" L = 274.53' T = 169.81' R = 715.00' V = 35 MPH SE = 0%	PI Sta 13+35.99 Δs = 34° 43' 29.0" Ls = 200.00' LT = 135.99' ST = 69.09'

-LPI3B- CURVE DATA

PI Sta 16+40.27 Δ = 103° 45' 24.8" (RT) D = 34° 43' 29.0" L = 296.80' T = 210.27' R = 165.00' V = 29 MPH SE = 0%	PI Sta 17+67.89 Δs = 34° 43' 29.0" Ls = 200.00' LT = 135.99' ST = 69.09'	

SITE 2901 – IMPACT ZOOM-IN (SCALE: 1" = 50')



SITE 2901

-RPI3B- PI Sta 22+33.07
Δ = 22° 21' 17.7" (LT)
D = 17° 41' 34.9"
L = 79.18'
T = 40.05'
R = 490.00'
V = 30 MPH
SE = 0%

-RPI3B- PI Sta 24+37.61
Δ = 8° 11' 30.0" (RT)
D = 76° 23' 35.7"
L = 106.64'
T = 64.39'
R = 75.00'
V = 15 MPH

-Y13- PI Sta 10+26.00

-Y13- POT Sta 11+53.00 =
-RPI3B- POT Sta 24+71.13 (0.00')

-Y13- POT Sta 11+83.12 =
-LPI3B- POT Sta 20+38.35 (0.00')

END CONSTRUCTION
-RPI3B- Sta 24+29.14

END CONSTRUCTION
-LPI3B- Sta 19+96.71

-RPI3B- PT Sta 22+99.08

-RPI3A- POT Sta 25+34.83 (44.99' LT)

END CONSTRUCTION
-RPI3A- Sta 25+90.00

-RPI3A- PT Sta 24+79.63

-RPI3A- SC Sta 21+36.25

-RPI3A- PC Sta 23+73.22

-RPI3A- SRS Sta 18+96.25

-RPI3A- PT Sta 23+27.43

-RPI3A- CS Sta 16+56.28

-RPI3A- SC Sta 13+00.00

-RPI3A- TS Sta 11+20.00

-LPI3B- CS Sta 16+98.80

-RPI3B- SC Sta 20+20.56

-RPI3B- SRS Sta 18+10.56

-LPI3B- ST Sta 18+98.80
N 79° 40' 57.8" E

-LPI3B- PC Sta 19+18.76

END 2'-6" CBG
STA 19+15.39 (18.00' RT)

-RPI3B- CS Sta 16+90.56

-RPI3B- SC Sta 14+50.00

-LPI3B- SC Sta 14+00.00

-LPI3B- TS Sta 12+00.00

BEGIN 2'-6" CBG
STA 13+07.54
(18.00' RT)

-U- CS Sta 407+85.68

-U- POC Sta 417+50.00 =
-LPI3B- POT Sta 10+00.00 (17.00' LT)

-U- POT Sta 403+50.00
-RPI3B- POT Sta 10+00.00 (17.00' LT)

-RPI3B- TS Sta 11+50.00

-U- SC Sta 410+25.68

-U- POC Sta 412+32.32 =
-Y13- POT Sta 15+35.76

-U- POT Sta 417+00.00 =
-LPI3C- PC Sta 10+00.00 (59.00' RT)

-LPI3C- CS Sta 10+56.81

-RPI3C- POC Sta 10+37.93

-U- POC Sta 402+35.00 =
-RPI3C- PC Sta 10+00.00 (59.00' RT)

-RPI3C- CS Sta 16+83.65

-RPI3C- SRS Sta 19+23.65

-RPI3C- PT Sta 24+14.81

-RPI3C- ST Sta 21+63.65

END CONSTRUCTION
-RPI3C- Sta 25+12.06

-Y13- POT Sta 20+85.00 =
-RPI3C- POT Sta 25+64.81 (0.00')

-Y13- POT Sta 19+41.73 =
-LPI3C- POT Sta 19+41.73 (0.00')

-Y13- PC Sta 20+84.07

-Y13- PT Sta 22+18.57

-Y13- POT Sta 22+25.40

-LPI3C- SC Sta 12+56.39

END CONSTRUCTION
-LPI3C- Sta 18+92.14

-LPI3B- ST Sta 18+62.68

-LPI3C- CS Sta 15+62.68

END 2'-6" CBG
STA 18+14.07 (18.00' RT)

-RPI3C-

MATCHLINE SHEET 28 -LT- STA 401+00.00

MATCHLINE SHEET 30 -LT- STA. 429+00.00

Maintenance Items Causing Impacts		
Item Number	RFP Required Repairs	Proposed Repairs
M-35	Restore possible sink hole over 54" pipe, draining from the gore I-40 West	Restore sink hole

-RPI3C- CURVE DATA

PI Sta 10+18.97 Δ = 17° 46' 29.7" (RT) D = 9° 09' 31.4" L = 37.33' T = 18.9' R = 625.79' V > 80 MPH SE = 0%	PI Sta 13+73.54 Δ = 38° 32' 17.2" (RT) D = 5° 58' 05.9" L = 645.71' T = 335.6' R = 960.00' V = 55 MPH SE = 0%	PI Sta 17+63.77 Δs = 7° 09' 43.1" Ls = 240.00' LT = 160.13' ST = 80.12'	PI Sta 20+63.88 Δs = 9° 36' 57.9" Ls = 240.00' LT = 160.24' ST = 80.22'	PI Sta 23+90.54 Δ = 20° 07' 35.2" (LT) D = 8° 00' 48.2" L = 254.61' T = 128.89' R = 715.00' V = 35 MPH SE = 0%

-LPI3C- CURVE DATA

PI Sta 10+28.41 Δ = 17° 34' 28.4" (LT) D = 1° 00' 37.5" L = 56.8' T = 28.41' R = 5,670.58' V = 75 MPH SE = 0%	PI Sta 11+90.77 Δs = 12° 57' 27.4" Δs = 32° 56' 51.5' Ls = 200.00' LT = 133.96' ST = 71.03'	PI Sta 14+66.84 Δ = 100° 43' 06.2" (LT) D = 32° 55' 43.0" L = 305.87' T = 210.3' R = 174.02' V = 28 MPH SE = 0%	PI Sta 16+70.34 Δs = 49° 23' 34.5' Ls = 300.00' LT = 206.38' ST = 101.66'

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15338 / 15511
I-40 / US 64 FROM WEST OF SR 1319 (JONES FRANKLIN RD) CONTINUING ALONG I-440 / US 64 TO NORTH OF US 64 / US 264
DATE: 07 / 28 / 2014

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

GRAPHIC SCALE
50 25 0 50 100
PLANS

FOR -L- LT PROFILE, SEE SHEET NO. 74,75	
FOR -L- RT PROFILE, SEE SHEET NO. 74,75	
FOR -RPI3A- PROFILE, SEE SHEET NO. 107	
FOR -LPI3B- PROFILE, SEE SHEET NO. 107	
FOR -RPI3B- PROFILE, SEE SHEET NO. 108	
FOR -LPI3C- PROFILE, SEE SHEET NO. 108	
FOR -RPI3C- PROFILE, SEE SHEET NO. 109	
LOCATION:	
TIP NO.	COUNTY:
DESIGNED BY:	
CHECKED BY:	DATE:

7/28/2014

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
I-5338 / I-5311	29
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER:	HYDRAULICS ENGINEER:

INCOMPLETE PLANS
DO NOT USE FOR BIDDING PURPOSES

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

MAP FOR 40/440 GRANITE RS&H DESIGN JOINT VENTURE

Kimley»Horn

NAD 83 NSRS 2007

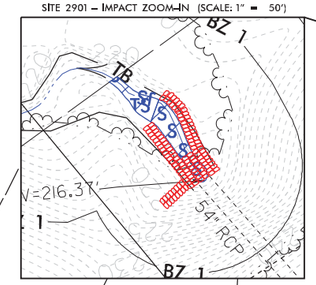
-RPI3B- CURVE DATA

PI Sta 13+50.17 Δs = 7° 13' 19.8" Ls = 300.00' LT = 200.11' ST = 100.15'	PI Sta 15+25.38 Δ = 7° 19' 56.4" (LT) D = 4° 48' 53.2" R = 1,192.00' T = 175.56' A = 1,750.00' V = 50 MPH SE = 07	PI Sta 16+70.61 Δs = 5° 03' 19.8" Ls = 210.00' LT = 140.16' ST = 70.05'	PI Sta 19+50.72 Δs = 8° 24' 50.6" Ls = 210.00' LT = 140.16' ST = 70.14'	PI Sta 21+61.61 Δ = 22° 19' 09.8" (RT) D = 8° 07' 48.2" L = 276.53' T = 140.05' R = 715.00' V = 35 MPH SE = 08	PI Sta 13+35.99 Δs = 34° 43' 29.0" Ls = 200.02' LT = 135.99' ST = 69.09'

-LPI3B- CURVE DATA

PI Sta 16+40.27 Δ = 103° 45' 24.8" (RT) D = 14° 43' 29.0" L = 298.80' T = 210.27' R = 165.00' V = 27 MPH SE = 08	PI Sta 17+67.89 Δs = 34° 43' 29.0" Ls = 200.02' LT = 135.99' ST = 69.09'	

SITE 2901 – IMPACT ZOOM-IN (SCALE: 1" = 50')



SITE 2901
SEE DRAINAGE MAINTENANCE TABLE

-RPI3B- PI Sta. 22+99.08
-LPI3B- CS Sta. 16+98.80
-RPI3B- SC Sta. 20+20.56
-RPI3B- SRS Sta. 18+10.56
-RPI3B- ST Sta. 18+98.66
N 79° 42' 57.8" E
-RPI3B- PC Sta. 19+18.76
-RPI3B- CS Sta. 16+10.56
-RPI3B- SC Sta. 14+50.00
-LPI3B- SC Sta. 14+00.00
-LPI3B- TS Sta. 12+00.00
BEGIN 2'-6" CBG STA.13+07.54 (18.00' RT)
-LI- CS Sta. 407+85.68
-LI- POT Sta. 403+50.00
-RPI3B- POT Sta. 10+00.00 (71.00' LT)
-RPI3B- TS Sta. 11+50.00
-LI- SC Sta. 410+25.68
-RPI3C- PCC Sta. 10+37.93
-LI- PCC Sta. 402+35.00 =
-RPI3C- PC Sta. 10+00.00 (59.00' RT)
-RPI3C- CS Sta. 16+83.65
-RPI3C- SRS Sta. 19+23.65
-RPI3C- ST Sta. 21+63.65
-RPI3C- PT Sta. 24+14.81
-RPI3C- SC Sta. 25+12.06
END CONSTRUCTION
-RPI3C- Sta. 25+12.06
-Y13- POT Sta. 20+85.00 =
-RPI3C- POT Sta. 25+64.81 (0.00') RT
-Y13- POT Sta. 22+25.40
-Y13- PC Sta. 20+84.07
-Y13- POT Sta. 19+41.73 =
-LPI3C- POT Sta. 19+41.73 (0.00')
-LPI3C- PC Sta. 10+00.00 (71.00' LT)
-LI- POC Sta. 417+50.00 =
-LPI3B- POT Sta. 10+00.00 (71.00' LT)
-LPI3C- CS Sta. 10+56.81
-LI- POC Sta. 412+32.32 =
-Y13- POT Sta. 16+35.76
-LI- POT Sta. 417+00.00 =
-LPI3C- PC Sta. 10+00.00 (59.00' RT)
-Y13- POT Sta. 10+26.02 =
-RPI3A- POT Sta. 25+34.63 (44.99' LT)
END CONSTRUCTION
-RPI3A- Sta. 25+00.00
-RPI3A- PT Sta. 24+79.63
-RPI3A- SC Sta. 21+36.25
-RPI3A- PC Sta. 23+73.22
-RPI3A- PT Sta. 23+27.43
S 84° 24' 38.0" W
-RPI3A- SRS Sta. 18+96.25
-RPI3A- CS Sta. 16+56.25
-RPI3A- SC Sta. 13+00.00
-RPI3A- TS Sta. 11+20.00
END 2'-6" CBG STA.15+15.39 (18.00' RT)
S 63° 58' 35.7" W
S 63° 58' 35.7" W
S 51° 14' 08.8" E
N 78° 50' 01.0" E
S 47° 50' 25.0" E
N 78° 50' 01.0" E
S 47° 50' 25.0" E
S 51° 14' 08.8" E
N 78° 50' 01.0" E
S 47° 50' 25.0" E
N 78° 50' 01.0" E
S 47° 50' 25.0" E
N 78° 50' 01.0" E
S 47° 50' 25.0

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	30
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRANITE RS&H
DESIGN-BUILD SERVICES

Kimley»Horn

NAD 83/NSRS 2007

8/17/99
REVISIONS

-L1- CURVE DATA
PIs Sta 439+60.68
θs = 1°12' 00.0"
Ls = 240.00'
LT = 160.00'
ST = 80.00'

PREFORMED SCOUR HOLE DATA
Q10= 2.1 CFS

SITE 3001 – IMPACT ZOOM-IN (SCALE: 1" = 50')

AAAA–AAAA
OUTFALL

BBBB–BBBB
INFALL

SITE 3001

PREFORMED SCOUR HOLE OUTLET PROTECTION CLASS 'B' STONE BAR
EST 8 TONS
EST 10 SY GEO
EST 25 SY PSRM
SEE DETAIL G SHEET 2-BJ

-L1- POT Sta.430+00.00 =
-RP13A- POT Sta.10+00.00 (83.00' LT)
Δ = 3° 31' 25"

-L1- ST Sta.441+20.68

-L1- CS Sta.438+80.68
-L1- LT GRADE POINT SHIFT 23' LT TO 47' LT

SPECIAL CUT DITCH w/HINGE
SEE DETAIL A SHEET 2-BJ

CLASS 'A' RIP RAP
EST 5 TONS

REMOVE EXIST. GUARDRAIL

PROPOSED MEDIAN CONCRETE BARRIER

PROP. GUARDRAIL

300' TAPER

8d TAPER

GRAD 350 TL-3

RETAIN

TIE TO EXIST 8' X 8' RCBC

FUTURE AUX. LANE AND 12' FDPS

DRAINAGE EASEMENT BM 1985 PG 2511

EXISTING R/W

R/W MON

CAT-1

TB2GI

DI
TOP=226.90'
INV IN=218.25'
INV OUT=216.59'

DI
TOP=228.56'
INV OUT=224.64'

DI
TOP=222.83'
INV IN=216.93'
INV OUT=216.93'

DI
TOP=223.26'
INV=218.78' (15" IN)
INV=218.03' (24" IN)
INV=218.03' (OUT)

DI
TOP=222.14'
INV OUT=219.74'

DI
TOP=222.32'
INV OUT=219.59'

INV=214.53'
INV=212.60'
INV=208.18'
INV=208.18'
INV=210.56'
INV=210.00'
INV=213.58'
INV=209.32'
INV=209.66'

TRUSTEES OF DELIVERANCE CATHERAL OF LOVE
DB 4708 PG 412

FOUNTAIN DRIVE LLC
DB 12527 PG 589

CITY OF RALEIGH
DB 1988 PG 268

N 80°00'00.0"W 429.00'

S 88°55'25" E 612.99'

S 36°48'32" E 500.02'

S 60°03'38" W 55.00'

S 45°29'38" W 97.19'

S 73°31'00.5" E

N 80°56'58" W 56.17'

N 81°39'03" E 56.49'

S 88°42'48" E 64.82'

S 80°56'58" E 64.77'

S 47°03'53" E 100.00'

MATCHLINE SHEET 29 -L1- STA. 429+00.00

MATCHLINE SHEET 31 -L1- STA. 443+00.00

DENOTES MECHANIZED CLEARING

FOR -L1- LT PROFILE, SEE SHEET NO. 76
FOR -L1- RT PROFILE, SEE SHEET NO. 76
FOR -RP13A- PROFILE, SEE SHEET NO. 107

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15338 / 15311
I40 / US 64 FROM WEST OF SR 1319 (JONES FRANKLIN RD) CONTINUING ALONG I-440 / US 64 TO NORTH OF US 64 / US 264
DATE: 07 / 28 / 2014

7/28/2014
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PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	30
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INTERSTATE 40 440 PORTION

GRANITE RS&H
DESIGN-BUILD SERVICES

Kimley»Horn

NAD 83/NSRS 2007

8/17/99

REVISIONS

-L1- CURVE DATA
PIs Sta 439+60.68
Θs = 1°12' 00.0"
Ls = 240.00'
LT = 160.00'
ST = 80.00'

PREFORMED SCOUR HOLE DATA
Q10= 2.1 CFS

SITE 3001 – IMPACT ZOOM-IN (SCALE: 1" = 50')

AAAA–AAAA
15'
1.0'
4'
2'
11'
OUTFALL

SITE 3001

435+00
430+00
440+00

PROPOSED
EXISTING R/W
R/W MON
DRAINAGE EASEMENT BK 4896 PG 2

SPECIAL CUT DITCH w/HINGE
SEE DETAIL A /SHEET 2-BJ

-L1- POT Sta.430+00.00 =
-RP13A- POT Sta.10+00.00 (83.00' LT)
Δ = 3° 31' 25"

CLASS 'A' RIP RAP
EST .5 TONS

300' TAPER
30'
SLOPE
CAT-1
GUARDRAIL

INV=214.53'
REMOVE EXIST. GUARDRAIL
PROPOSED MEDIAN CONCRETE BARRIER
PROP. GUARDRAIL
INV=212.60'
14' FDPS

RETAIN
TIE TO EXIST 8' X 8' RCBC
TB2GI
15" RCP-III
18" RCP-III
24" RCP-III
30" RCP-III
8' X 8' RCBC
8' X 6' RCBC
8' X 4' RCBC
6' X 6' RCBC
6' X 4' RCBC
4' X 4' RCBC
DI
TOP=226.90'
INV IN=218.25'
INV OUT=216.59'
TOP=228.56'
INV OUT=224.64'
TOP=223.26'
INV=218.78' (15" IN)
INV=218.03' (24" IN)
INV=218.03' (OUT)
TOP=222.83'
INV IN=216.93'
INV OUT=216.93'
TOP=222.32'
INV OUT=219.59'
TOP=223.14'
INV OUT=219.74'
2GI-A
24" RCP
30" RCP
8' TAPER
GRAD 350 TL-3
CA1-I
INV=213.58'
INV=209.32'
INV=209.68'
INV=208.18'
INV=208.18'
INV=210.56'
INV=210.00'
PREFORMED SCOUR HOLE OUTLET PROTECTION CLASS B SRC BAR EST 8 TONS EST 16 SY GBG EST 25 SY PSRM SEE DETAIL G/SHEET 2-BJ
-L1- ST Sta.441+20.68
FUTURE AUX. LANE AND 12' FDPS
-L1- CS Sta.438+80.68
-L1- LT GRADE POINT SHIFT 23' LT TO 47' LT
BBBB–BBBB
18'
1.0'
4'
3'
11'
INFALL

MATCHLINE SHEET 29 -L1- STA. 429+00.00

MATCHLINE SHEET 31 -L1- STA. 443+00.00

N 80°00'00.0"W

S 88°55'25" E
612.99'

S 36°48'35" W
500.00'

S 60°03'35" W
55.00'

S 45°29'35" W
97.19'

S 80°56'58" E
64.77'

S 88°42'48" E
64.82'

N 81°39'03" E
56.49'

S 17°03'53" E
100.00'

S 73°31'00.5" E -L1-

TRUSTEES OF DELIVERANCE CATHERAL OF LOVE
DB 4708 PG 412

FOUNTAIN DRIVE LLC
DB 12527 PG 589

CITY OF RALEIGH
DB 1988 PG 268

DENOTES MECHANIZED CLEARING

FOR -L1- LT PROFILE, SEE SHEET NO. 76
FOR -L1- RT PROFILE, SEE SHEET NO. 76
FOR -RP13A- PROFILE, SEE SHEET NO. 107

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15338 / 15311
I40 / US 64 FROM WEST OF SR 1319 (JONES FRANKLIN RD) CONTINUING ALONG I-440 / US 64 TO NORTH OF US 64 / US 264
DATE: 07 / 28 / 2014

7/28/2014
c:\pw_work\rsh_pw\vickoryb\dms7812615338_hyd_prm_set_psh_30_con.dgn

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	31
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INTERSTATE 40 / INTERSTATE 440 PORTION

GRANITE RS&H
DESIGN-BUILD SERVICES

Kimley»Horn

NAD 83/NSRS 2007

REVISIONS 8/17/99

MATCHLINE SHEET 30 –L1– STA. 443+00.00

MATCHLINE SHEET 32 –L2– LT STA. 457+00.00

MATCHLINE SHEET 32 –L2– RT STA. 457+00.00

445+00

450+00

455+00 -L2LT-

465+00 -L2RT-

JUDY T HARRIS DB 10685 PG 1345 BM 2003 PG 1862

CAROL M LEWIS DB 18712 PG 7663 BM 2003 PG 1862

SHARON DOCKERY DB 10708 PG 383 BM 2003 PG 1862

TAMMY SIMMONS DB 12906 PG 1462 BM 2003 PG 1862

ZAINAB DARAMY DB 10822 PG 2502 BM 2003 PG 1862

ANGELA V FARLEY DB0685 PG1329 BM2003 PG1862

ROGER MISSIE GANDZALI DB1480 PG566 BM2003 PG1862

EMMA N PETER DB 10811PG1323 BM 2003 PG 1862

HABITAT FOR HUMANITY OF WAKE DB 14606 PG 2366 BM 2003 PG 1862

KENNETH G KOUNG'U PID DB 10816 PG 2003 PG 1862 BM

GLORIA MEJIA DB 10822 PG 2486 BM 2003 PG 1862

DEBRA JOHNSON DB 9507 PG 1192 BM 1957 PG 101

ROSE LANE 60' R/W BM 1957 PG 101

ROBERT E WOOD DB 14742 PG 2398 BM 1957 PG 101

CHARLIE GORE WADE, III BM 1957 PG

EDDIE DB BM

END AREA 2B
BEGIN AREA 3
-LI- POT Sta. 444+00.00 =
L2LT - TS Sta. 444+00.00 (47.00' LT)

-LI- POT Sta. 444+00.00

END DOUBLE FACED MEDIAN CONCRETE BARRIER
-L2RT- Sta. 448+71.16

12' FDPS

-LI- S 73° 31' 00.5" E

-L2RT-

-L2LT-

440 VARIBLE WIDTH BST

FUTURE AUX. LANE AND 12' FDPS

S 73° 31' 00.5" E

DI TOP=217.28' BOTTOM=0" BOX INV=214.41'

DI TOP=219.28' INV IN=212.35' INV IN=212.46' INV OUT=212.35' TIE TB2GI-A INTO EXIST SYSTEM

DI TOP=214.21' INV OUT=210.86'

DI TOP=215.71' INV IN=207.36' INV IN=207.57' INV IN=208.84' INV OUT=207.26

DI TOP=212.67' C INV IN=209.25' INV OUT=203.25'

DI TOP=214.02' INV IN=203.62' INV IN=203.77' INV OUT=203.60'

DI TOP=214.53' INV IN=204.83' INV OUT=204.26'

DI TOP=216.60' INV OUT=214.22'

DI TOP=212.64' INV IN=209.92' INV OUT=209.34'

DI TOP=209.97' INV IN=UNAVAILABLE INV OUT=205.47'

BL-29

2GI-D

2GI

2GI-A

TB2GI

TB2GI-A

15" RCP-IV

18" RCP-III

24" RCP-III

24" RCP-IV

24" RCP

36" RCP

42" RCP-III

36" RCP-IV

MEDIAN V DITCH SEE DETAIL DSHEET 2-G

JB W/MH COVER

SPECIAL LATERAL 'V' DITCH SEE DETAIL CSHEET 2-G

REMOVE EXIST.GUARDRAIL

PROP.GUARDRAIL

GUARDRAIL (RETAIN)

TYPE B-77

35:1 TAPER

8:1 TAPER

RETAIN

TIE TO EXIST DITCH

REMOVE EXIST. GUARDRAIL

EXIST 36" CMP OUTLETS INTO SCOUR HOLE PRIOR TO EXIST 2GI. PROPOSED JB W/MH COVER TO TIE TO EXIST 36" CMP OUTLET AND WILL CONNECT TO PROPOSED SYSTEM AND RELOCATED CUT DITCH.

CAMERA POLE

SIGN (TYP)

CONC CHANNEL INV=223.50'

CONC H/W ATOP 227.65

*M-222 SEE DRAINAGE MAINTENANCE TABLE

*M-228 SEE DRAINAGE MAINTENANCE TABLE

*M-229 SEE DRAINAGE MAINTENANCE TABLE

SITE 3101

END AREA 2B
BEGIN AREA 3
-LI- POT Sta. 444+00.00 =
-L2RT- TS Sta. 444+00.00 (23.00' RT)

-L2RT- SC Sta. 447+60.00

-L2RT- POC Sta. 455+60.00 =
-LI40E- PC Sta. 10+00.00 (12.00' RT)

-L2RT- CS Sta. 455+80.30

SPECIAL CUT DITCH w/HINGE SEE DETAIL A /SHEET 2-G

NOT SUBJECT TO RIPARIAN BUFFER RULES

GRANITE ROCK HOMEOWNERS ASSOCIATION INC DB 8629 PG 2320 BM 2000 PG 855

FRANDREKA COOPER DB 10230 PG 533 BM 2002 PG 1237

DEBRA P WATSON DB 11121 PG 1213 BM 2002 PG 1237

R/W MON

EXISTING R/W

60'

100'

80'

Maintenance Items Causing Impacts

Item Number	RFP Required Repairs	Proposed Repairs
M-228	Regrade and replace paved ditch	Regrade and replace paved ditch
M-229	Replace ditch and remove trees	Replace ditch and remove trees

A–A
15'
0.3'
5'
5'
INFALL

36" CMP
NC
NNEL
223.50'
CONC TOP 2

SITE 3101 – IMPACT ZOOM-IN (SCALE: 1" = 50')

-L2RT- CURVE DATA

PIs Sta 446+40.03
Os = 2° 34' 41.9"
Ls = 360.00'
LT = 240.03'
ST = 120.02'

PI Sta 451+71.60
Δ = 11° 45' 00.0" (RT)
D = 1° 25' 56.6"
L = 820.30'
T = 411.60'
R = 4,000.00'
V = 76 MPH
SE = 06

PIs Sta 457+00.33
Os = 2° 34' 41.9"
Ls = 360.00'
LT = 240.03'
ST = 120.02'

DENOTES IMPACTS IN SURFACE WATER

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: I-5338 / I-5311
I-40 / US 64 FROM WEST OF SR 1319 (JONES FRANKLIN RD) CONTINUING ALONG I-440 / US 64 TO NORTH OF US 64 / US 264
DATE: 07 / 28 / 2014

A PERMANENT SOIL REINFORCEMENT MAT (PSRM) SHALL BE PLACED ON 1.75:1 (H:V) TO 2:1 (H:V) SLOPES FROM:
-L2RT- STA. 452+97 RT TO -L2RT- STA. 453+97 RT.
-L2RT- STA. 454+97 RT TO -L2RT- STA. 455+97 RT.
SEE PERMANENT SOIL REINFORCEMENT MAT SPECIAL PROVISION.

FOR –L2– LT PROFILE, SEE SHEET NO. 77
FOR –L2– RT PROFILE, SEE SHEET NO. 77
FOR –LI40E– PROFILE, SEE SHEET NO. 110

7/28/2014
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PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	31
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRANITE RS&H
DESIGN-BUILD SERVICES

Kimley»Horn

NAD 83/NSRS 2007

REVISIONS 8/17/99

MATCHLINE SHEET 30 -L1- STA. 443+00.00

MATCHLINE SHEET 32 -L2- LT STA. 457+00.00

MATCHLINE SHEET 32 -L2- RT STA. 457+00.00

END AREA 2B
BEGIN AREA 3
-L1- POT Sta. 444+00.00 =
-L2LT- TS Sta. 444+00.00 (47.00' LT)

-L1- POT Sta. 444+00.00

END AREA 2B
BEGIN AREA 3
-L1- POT Sta. 444+00.00 =
-L2RT- TS Sta. 444+00.00 (23.00' RT)

-L2RT- SC Sta. 447+60.00

END DOUBLE FACED MEDIAN CONCRETE BARRIER
-L2RT- Sta. 448+71.16

-L2RT- POC Sta. 455+60.00 =
-L140E- PC Sta. 10+00.00 (12.00' RT)

-L2RT- CS Sta. 455+80.30

-L2RT- CURVE DATA

PIs Sta 446+40.03
Es = 2° 34' 41.9"
Ls = 360.00'
LT = 240.03'
ST = 120.02'

PI Sta 451+71.60
Δ = 11° 45' 00.0" (RT)
D = 1° 25' 56.6"
L = 820.30'
T = 411.60'
R = 4,000.00'
V = 76 MPH
SE = 06

PIs Sta 457+00.33
Es = 2° 34' 41.9"
Ls = 360.00'
LT = 240.03'
ST = 120.02'

Maintenance Items Causing Impacts		
Item Number	RFP Required Repairs	Proposed Repairs
M-228	Regrade and replace paved ditch	Regrade and replace paved ditch
M-229	Replace ditch and remove trees	Replace ditch and remove trees

A-A
15'
0.3'
5'
5'
INFALL

SITE 3101 – IMPACT ZOOM-IN (SCALE: 1" = 50')

DENOTES IMPACTS IN SURFACE WATER

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: I-5338 / I-5311
I-40 / US 64 FROM WEST OF SR 1319 (JONES FRANKLIN RD) CONTINUING ALONG I-440 / US 64 TO NORTH OF US 64 / US 264
DATE: 07 / 28 / 2014

A PERMANENT SOIL REINFORCEMENT MAT (PSRM) SHALL BE PLACED ON 1.75:1 (H:V) TO 2:1 (H:V) SLOPES FROM:
-L2RT- STA. 452+97 RT TO -L2RT- STA. 453+97 RT.
-L2RT- STA. 454+97 RT TO -L2RT- STA. 455+97 RT.
SEE PERMANENT SOIL REINFORCEMENT MAT SPECIAL PROVISION.

FOR –L2– LT PROFILE, SEE SHEET NO. 77
FOR –L2– RT PROFILE, SEE SHEET NO. 77
FOR –L140E– PROFILE, SEE SHEET NO. 110

7/28/2014
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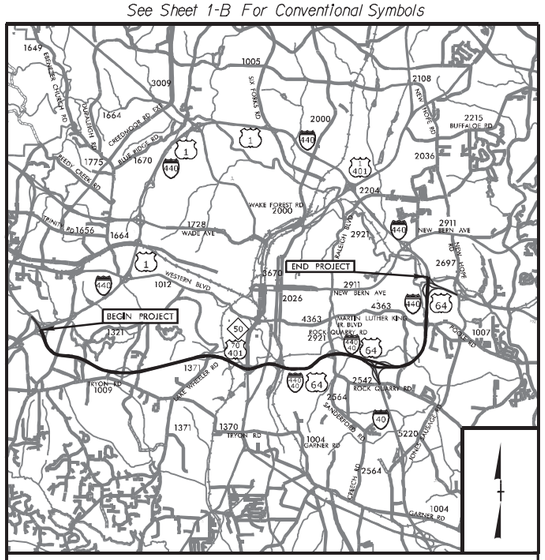
09/08/99

TIP PROJECT:I-5338 / I-5311

CONTRACT: C203166

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

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



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WAKE COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-5338 / I-5311	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
46265.3.1	IMS-0440(13)	PE
46265.3.1	IMS-0440(13)	R/W, UTIL
46265.3.1	IMS-0440(13)	CONST

AREA 1 & 2
PERMIT PLANS
SUBMITTAL NO: D-145R3
DATE: JULY 28, 2014

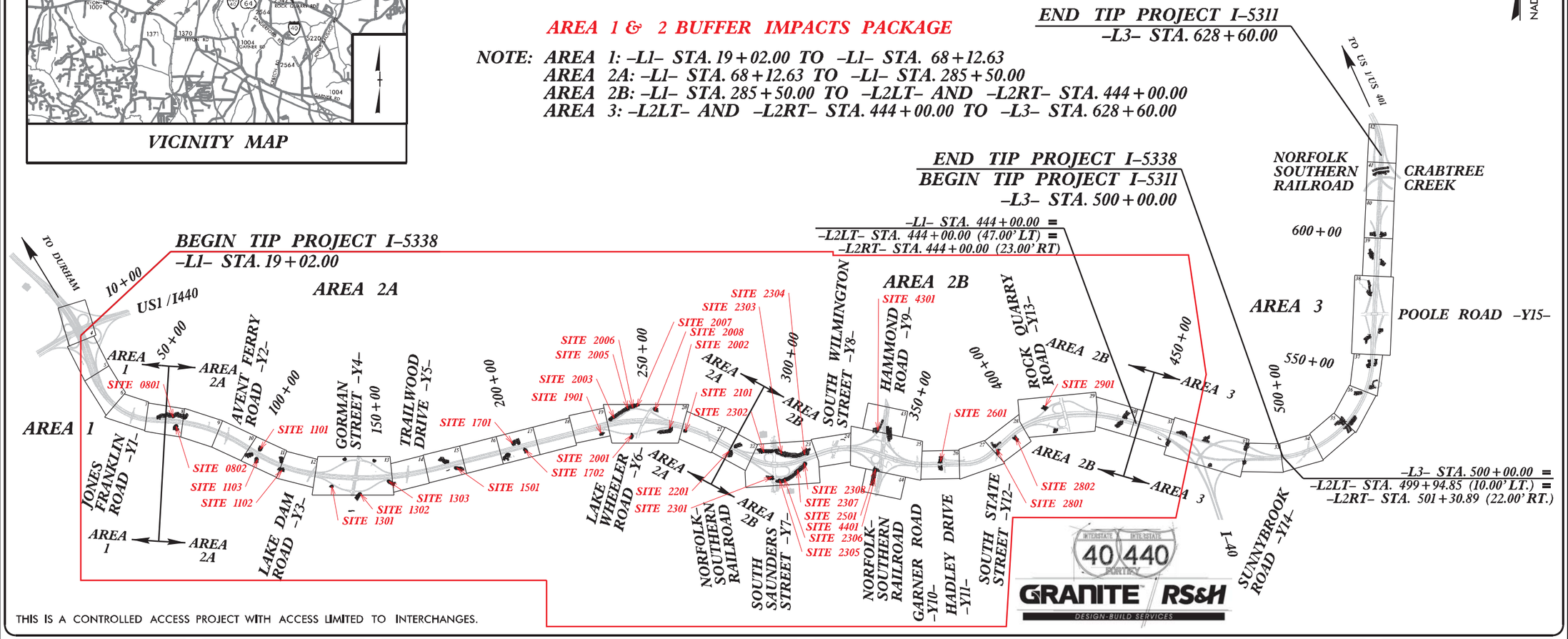
NAD 83/NSRS 2007

LOCATION: *I-40 / US 64 FROM WEST OF SR 1319 (JONES FRANKLIN RD) CONTINUING ALONG I-440 / US 64 TO NORTH OF US 64 / US 264*

TYPE OF WORK: *PAVING, GRADING, DRAINAGE, STRUCTURE REHABILITATION, STRUCTURE WIDENING, GUARDRAIL, SIGNING, LIGHTING, AND ITS*

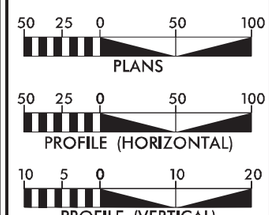
AREA 1 & 2 BUFFER IMPACTS PACKAGE

NOTE: *AREA 1: –L1– STA. 19+02.00 TO –L1– STA. 68+12.63*
AREA 2A: –L1– STA. 68+12.63 TO –L1– STA. 285+50.00
AREA 2B: –L1– STA. 285+50.00 TO –L2LT– AND –L2RT– STA. 444+00.00
AREA 3: –L2LT– AND –L2RT– STA. 444+00.00 TO –L3– STA. 628+60.00



THIS IS A CONTROLLED ACCESS PROJECT WITH ACCESS LIMITED TO INTERCHANGES.

GRAPHIC SCALES



DESIGN DATA

ADT 2013	=	126,025
ADT 2035	=	184,600
DHV	=	9 %
D	=	55 %
T	=	8 % *
V	=	70 MPH

* (TTST =4% + DUAL =4%)
FUNC CLASS = INTERSTATE

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT I-5338 / I-5311 = 11.503 MILES
LENGTH STRUCTURE TIP PROJECT I-5338 / I-5311 = 0.042 MILES
TOTAL LENGTH TIP PROJECT I-5338 / I-5311 = 11.545 MILES

*NOTE: EASTBOUND LANES USED TO CALCULATE LENGTH OF PROJECT.

K. ZAK HAMIDI, PE
NCDOT CONTACT

Prepared in the Office of:
RS&H
ARCHITECTS–ENGINEERS–PLANNERS, INC.
8601 SIX FORKS ROAD, SUITE 260
RALEIGH, NC 27615

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
MAY 13, 2013

LETTING DATE:
MAY 13, 2013

JASON TALLEY, PE
PROJECT ENGINEER

JARED BOND, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 36188 ENGINEER WILLIAM WEATHERS

NORTH CAROLINA PROFESSIONAL SEAL 026480 ENGINEER LARRY V. ROBINSON, JR.

P.E.

SIGNATURE:

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON W. TALLEY

P.E.

SIGNATURE:

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

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)
0801	ROADWAY	70+70 to 71+20 -L1-			X					801	801		
0802	ROADWAY	71+50 to 75+75 -L1-	PROTECTION OF EXISTING STRUCTURE			8567	3434	12001					
1101	ROADWAY	101+85 to 105+35 -L1-	PROTECTION OF EXISTING STRUCTURE			7756	3566	11322					
1102	ROADWAY	113+55 to 116+20 -L1-	PROTECTION OF EXISTING STRUCTURE			7703	2925	10628					
1103	ROADWAY	104+95 to 106+20 -L1-	PROTECTION OF EXISTING STRUCTURE			3514	1220	4734					
1301	ROADWAY	18+35 to 19+65 -RP4C- 24+10 to 25+25 -RP4B-	PROTECTION OF EXISTING STRUCTURE			7629	6527	14156					
1302	ROADWAY	26+10 to 28+15 -RP4D- 21+45 to 22+35 -RP4A-	PROTECTION OF EXISTING STRUCTURE			19071	6464	25535					
1303	ROADWAY	14+60 to 15+65 -RP4D-	PROTECTION OF EXISTING STRUCTURE			3136	2950	6086					
1501	ROADWAY	175+70 to 181+80 -L1-	PROTECTION OF EXISTING STRUCTURE			8514	5535	14049					
1701	ROADWAY	197+55 to 203+15 -L1-	X			12556	9149	21705					
SHEET TOTAL (1 OF 4):						78446	41770	120216	0	801	801		

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

WAKE COUNTY
PROJECT: 46265.3.1 (I5338/I5311)

7/28/2014

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)
1702	ROADWAY	204+10 to 206+55 -L1-	PROTECTION OF EXISTING STRUCTURE			6557	3680	10237					
1901	ROADWAY	12+90 to 14+65 -RP6C- 13+65 to 15+05 -RP6B-	PROTECTION OF EXISTING STRUCTURE			8870	2959	11829					
2001	ROADWAY	24+40 to 25+25 -RP6C-	X			0	903	903					
2002	ROADWAY	15+20 to 16+00 -RP6D-			X				96	195	291		
2003	ROADWAY	15+75 to 16+10 -RP6B-			X				0	504	504		
2005	ROADWAY	21+30 to 22+50 -RP6B-	PROTECTION OF EXISTING STRUCTURE			3274	838	4112					
2006	ROADWAY	20+85 to 24+25 -RP6B-			X				60	2256	2316		
2007	ROADWAY	24+25 to 25+30 -RP6B-	PROTECTION OF EXISTING STRUCTURE			1805	2289	4094					
2008	ROADWAY	21+70 to 22+30 -RP6A-	X			0	1161	1161					
2101	ROADWAY	267+05 to 268+00 -L1-	X			1511	995	2506					
2201	ROADWAY	285+50 to 285+70 -L1-	STORMWATER DEVICE			0	46	46					
SHEET TOTAL (2 OF 4):						22017	12871	34888	156	2955	3111		

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

WAKE COUNTY
PROJECT: 46265.3.1 (I5338/I5311)

7/28/2014

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)
2301	ROADWAY	25+70 to 26+50 -RP7C-	X			126	162	288					
2302	ROADWAY	20+05 to 24+85 -RP7B- 14+50 to 22+35 -RP7A-			X				5458	1194	6652		
2303	ROADWAY	20+10 to 20+80 -RP7A-	PROTECTION OF EXISTING STRUCTURE			309	0	309					
2304	ROADWAY	11+10 to 11+40 -RP7A-	PROTECTION OF EXISTING STRUCTURE			183	508	691					
2305	ROADWAY	10+00 to 15+15 -RP7DSPUR- 14+05 to 22+25 -RP7D-			X				1301	3748	5049		
2306	ROADWAY	11+85 to 12+55 -RP7DSPUR-	PROTECTION OF EXISTING STRUCTURE			1988	595	2583					
2307	ROADWAY	17+95 to 18+75 -RP7D-	PROTECTION OF EXISTING STRUCTURE			2068	1417	3485					
2308	ROADWAY	14+05 to 15+45 -RP7D-	X			278	1162	1440					
SHEET TOTAL (3 OF 4):						4952	3844	8796	6759	4942	11701		

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

WAKE COUNTY
PROJECT: 46265.3.1 (I5338/I5311)

7/28/2014

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)
2501	ROADWAY	25+38 to 26+19 -RP9C-	X			0	899	899					
2601	ROADWAY	365+42 to 366+69 -L1-	X			112	121	233					
2801	ROADWAY	388+37 to 388+87 -L1-	NEW STRUCTURE, 15" CSP			896	844	1740					
2802	ROADWAY	395+61 to 396+84 -L1-	PROTECTION OF EXISTING STRUCTURE			2377	2332	4709					
2901	ROADWAY	15+43 to 18+96 -RP13B-	X			4898	4826	9724					
3001	ROADWAY	437+93 to 439+89 -L1-	X			1903	1766	3669					
4301	ROADWAY	17+93 to 18+74 -RP9BSPUR-			X				0	594	594		
4401	ROADWAY	31+93 to 32+19 -Y9-	PROTECTION OF EXISTING STRUCTURE			0	89	89					
SHEET TOTAL (1 OF 4):						78446	41770	120216	0	801	801		
SHEET TOTAL (2 OF 4):						22017	12871	34888	156	2955	3111		
SHEET TOTAL (3 OF 4):						4952	3844	8796	6759	4942	11701		
SHEET TOTAL (4 OF 4):						10186	10877	21063	0	594	594		
PROJECT TOTAL:						115601	69362	184963	6915	9292	16207		

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

WAKE COUNTY
PROJECT: 46265.3.1 (I5338/I5311)

7/28/2014

SHEET 4 OF 4

Rev. May 2006

6/2/99

AREAS 1 & 2A

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	2-A

ROADWAY DESIGN ENGINEER

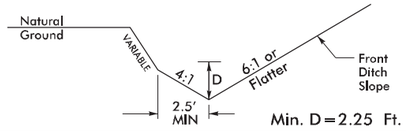
NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 36188 ENGINEER MILES J. WEATHERSBEE

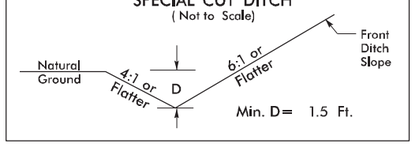
GRANITE RS&H DESIGN-BUILD SERVICES

DETAIL A
SPECIAL CUT DITCH w/HINGE
(Not to Scale)



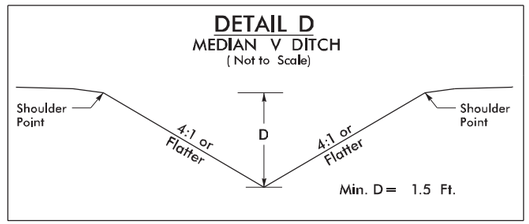
FROM STA. 39+00 TO STA. 44+00 –L1– (LT)
FROM STA. 56+50 TO STA. 57+50 –L1– (RT)
FROM STA. 57+00 TO STA. 57+50 –L1– (LT)
FROM STA. 22+00 TO STA. 24+50 –RP4C– (LT)
FROM STA. 27+80 TO STA. 28+30 –RP4B– (RT)
FROM STA. 17+51 TO STA. 19+48 –RP4D– (RT)
FROM STA. 237+00 TO STA. 242+40 –L1– (RT)

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)



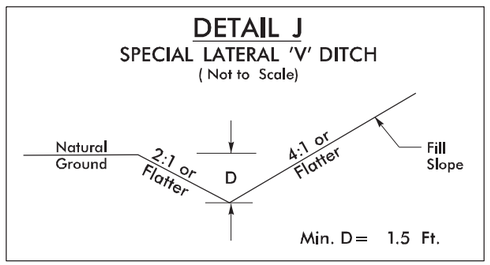
FROM STA. 84+00 TO STA. 89+00 –L1– (LT)
FROM STA. 119+00 TO STA. 119+50 –L1– (LT)
FROM STA. 128+50 TO STA. 130+26 –L1– (LT)
FROM STA. 128+50 TO STA. 131+50 –L1– (RT)
FROM STA. 16+00 TO STA. 17+50 –RP4C– (RT)
FROM STA. 16+30 TO STA. 19+80 –RP4B– (LT)
FROM STA. 20+98 TO STA. 23+50 –RP4D– (LT)
FROM STA. 152+00 TO STA. 153+14 –L1– (RT)
FROM STA. 15+55 TO STA. 17+55 –RP4A– (RT)
FROM STA. 155+50 TO STA. 161+50 –L1– (LT)
FROM STA. 156+00 TO STA. 159+00 –L1– (RT)
FROM STA. 164+00 TO STA. 166+00 –L1– (LT)
FROM STA. 164+00 TO STA. 166+81 –L1– (RT)
FROM STA. 167+02 TO STA. 168+50 –L1– (LT)
FROM STA. 186+50 TO STA. 189+50 –L1– (RT)
FROM STA. 221+68 TO STA. 227+50 –L1– (RT)
FROM STA. 232+00 TO STA. 236+50 –L1– (RT)
FROM STA. 234+50 TO STA. 236+00 –L1– (LT)
FROM STA. 242+40 TO STA. 244+00 –L1– (RT)
FROM STA. 252+00 TO STA. 254+50 –L1– (RT)

DETAIL D
MEDIAN V DITCH
(Not to Scale)



FROM STA. 19+17 TO STA. 39+00 –L1– (RT)
FROM STA. 21+00 TO STA. 31+25 –L1– (LT)
FROM STA. 33+50 TO STA. 39+00 –L1– (LT)

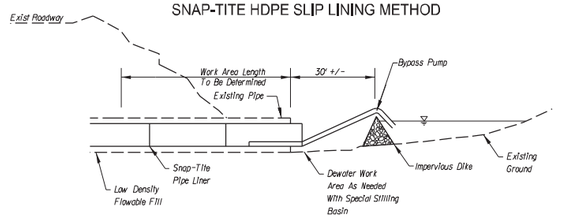
DETAIL J
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



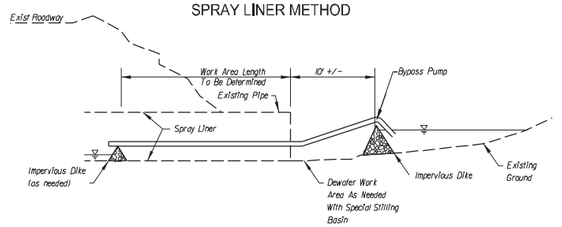
FROM STA. 17+31 TO STA. 18+31 –RP6B– (RT)
FROM STA. 21+40 TO STA. 21+90 –RP6D– (RT)
FROM STA. 15+05 TO STA. 18+55 –RP4A– (LT)
FROM STA. 15+83 TO STA. 16+80 –RP4B– (RT)
FROM STA. 15+52 TO STA. 16+50 –RP4C– (LT)

DETAIL H
CULVERT PRESERVATION

SNAP-TITE HDPE SLIP LINING METHOD



SPRAY LINER METHOD



CURED IN PLACE PIPE LINER (BALLOON METHOD)

- Same as Spray Liner Method above except for:
  - All curing water must be disposed of site
  - Pipe Liner must be installed per manufacturers specifications
  - Contractor is to remove all construction waste around pipe before pipe is placed back in service

Snap-Tite HPDE Slip Lining

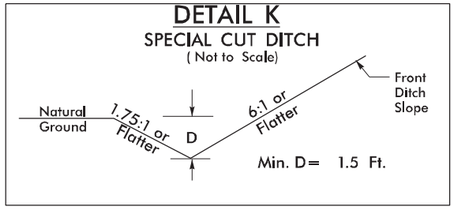
- Install silt fence, special sediment control fence, and all other erosion control devices in area as shown on Erosion Control Plans.
- Install orange tree protection fence (i.e. safety fence) along the outermost permit footprint (stream, wetland, and/or riparian buffer). The NCDOT Division 5 Environmental Supervisor will provide this information to the contractor. No construction impacts are allowed beyond the fence limits.
- Clear a maximum of 30' wide access path to the pipe end to be slip lined with Snap-Tite as shown on Erosion Control Plans. All clearing must stay within the permitted stream, wetland, and/or riparian buffer footprint.
- Install Special Stilling Basin (silt bag) on the upstream side to dewater work area.
- Install impervious Dike a maximum of 30' upstream of pipe to be lined to create work area. All in-stream activity must stay within the permitted stream footprint.
- Clean out existing pipe as needed to install carrier pipe. Install Special Stilling Basin (silt bag) and impervious Dike downstream during cleaning phase to pump out contaminated water.
- Use bypass pump to bypass water over work area and into Snap-Tite HDPE Pipe.
- After first section of Snap-Tite HDPE Pipe is installed pull hose out of first section, snap second section of pipe together and return bypass pump hose into pipe to bypass water through work area. Repeat until all pipe is lined.
- Fill void with low density flowable fill and seal off ends per manufacturer specifications.
- Remove impervious Dike and Special Stilling Basin (silt bag) and stabilize stream bank per plans and details.
- Permanently seed and mulch access path and work area; Use erosion control matting as required to stabilize existing slope.
- Remove all erosion control measures after site is stabilized and approved by NCDOT.

Spray Lining

- Install silt fence, special sediment control fence, and all other erosion control devices in area as shown on Erosion Control Plans.
- Install orange tree protection fence (i.e. safety fence) along the outermost permit footprint (stream, wetland, and/or riparian buffer). The NCDOT Division 5 Environmental Supervisor will provide this information to the contractor. No construction impacts are allowed beyond the fence limits.
- Clear a maximum of 25' wide access path to the pipe end to be spray lined as shown on Erosion Control Plans. All clearing must stay within the permitted stream, wetland, and/or riparian buffer footprint.
- Install Special Stilling Basin (silt bag) to dewater work area.
- Install impervious Dike a maximum of 10' upstream of pipe to be lined to create work area. All in-stream activity must stay within the permitted stream footprint.
- Clean out existing culvert as necessary. Install Special Stilling Basin (silt bag) and impervious Dike downstream during cleaning phase to pump out contaminated water.
- Install impervious Dike within pipe culvert at either end of work area as needed to prevent backflow.
- Use bypass pump to bypass water over work area from first impervious Dike to the second impervious Dike.
- Remove impervious Dikes and Special Stilling Basin (silt bag) and stabilize stream bank per Roadway Plans.
- Permanently seed and mulch access path and work area; Use erosion control matting as required to stabilize existing slope.
- Remove all erosion control measures after site is stabilized and approved by NCDOT.

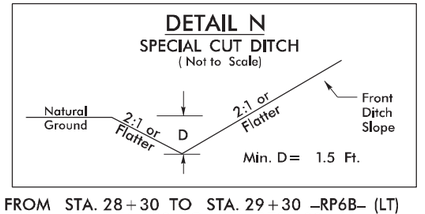
General Notes:
- Recommend slip lining pipes during low flow conditions only.
- The slip lining method used at each pipe location will be determined based on field conditions and approved by NCDOT prior to beginning work. See drainage detail sheet for culvert preservation method and site location.
- Any major deviations from this sequence need prior approval by NCDOT.

DETAIL K
SPECIAL CUT DITCH
(Not to Scale)



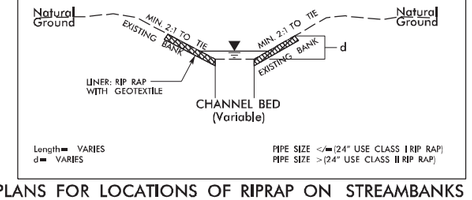
FROM STA. 39+50 TO STA. 44+15 –L1– (RT)
FROM STA. 44+00 TO STA. 51+50 –L1– (LT)
FROM STA. 46+25 TO STA. 49+00 –L1– (RT)
FROM STA. 49+99 TO STA. 55+25 –L1– (RT)
FROM STA. 52+76 TO STA. 55+08 –L1– (LT)
FROM STA. 56+25 TO STA. 56+50 –L1– (RT)
FROM STA. 56+00 TO STA. 57+00 –L1– (LT)
FROM STA. 57+50 TO STA. 60+00 –L1– (LT)
FROM STA. 57+50 TO STA. 69+00 –L1– (RT)
FROM STA. 61+23 TO STA. 64+41 –L1– (LT)
FROM STA. 77+50 TO STA. 88+50 –L1– (RT)
FROM STA. 93+50 TO STA. 101+50 –L1– (LT)
FROM STA. 182+50 TO STA. 194+94 –L1– (LT)
FROM STA. 208+00 TO STA. 213+50 –L1– (RT)
FROM STA. 208+50 TO STA. 212+00 –L1– (LT)
FROM STA. 216+83 TO STA. 234+09 –L1– (LT)
FROM STA. 230+50 TO STA. 231+50 –L1– (RT)
FROM STA. 254+50 TO STA. 257+89 –L1– (LT)
FROM STA. 271+00 TO STA. 274+84 –L1– (LT)
FROM STA. 268+00 TO STA. 276+00 –L1– (RT)

DETAIL N
SPECIAL CUT DITCH
(Not to Scale)



FROM STA. 28+30 TO STA. 29+30 –RP6B– (LT)
FROM STA. 276+00 TO STA. 279+00 –L1– (LT)

DETAIL L
RIPRAP ON STREAMBANKS ONLY
(Not to Scale)



SEE PLANS FOR LOCATIONS OF RIPRAP ON STREAMBANKS ONLY

SHEET LINK 1-5338 2-5311 2-5311 2-5311

6/2/99

AREA 2B

Kimley»Horn

GRANITE RS&H DESIGN-BUILD SERVICES

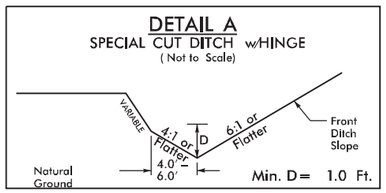
PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	2-B
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Temporary Median Deck Drain Summary
(to be filled after completion of MOT)

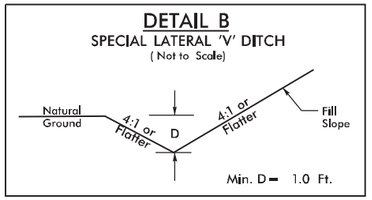
S. State Street (East Bound Median)			
Station	Alignment	Location	Deck Drain size (FT)
386+94	-L1-	CL	0.5
387+00	-L1-	CL	0.5
387+06	-L1-	CL	0.5
387+12	-L1-	CL	0.5
387+18	-L1-	CL	0.5
387+24	-L1-	CL	0.5
387+89	-L1-	CL	0.5
387+95	-L1-	CL	0.5
388+01	-L1-	CL	0.5
388+07	-L1-	CL	0.5
388+13	-L1-	CL	0.5
388+19	-L1-	CL	0.5
Deck Drains Required on Bridge =			12

DETAIL A
SPECIAL CUT DITCH w/HINGE
(Not to Scale)



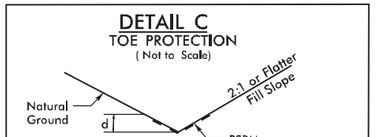
FROM STA. 376+50 TO STA. 378+00 –L1– (LT)
FROM STA. 397+00 TO STA. 401+50 –L1– (RT)
FROM STA. 401+50 TO STA. 404+00 –L1– (RT)
FROM STA. 405+50 –L1– TO STA. 15+70 –RP13C– (RT)
FROM STA. 15+70 TO STA. 20+40 –RP13C– (RT)
FROM STA. 407+50 –L1– TO STA. 17+60 –RP13B– (LT)
FROM STA. 21+10 TO STA. 23+60 –RP13B– (LT)
FROM STA. 420+00 TO STA. 422+50 –L1– (LT)
FROM STA. 423+50 TO STA. 427+00 –L1– (RT)
FROM STA. 428+50 TO STA. 432+00 –L1– (LT)
FROM STA. 441+00 TO STA. 444+00 –L1– (LT)
FROM STA. 441+50 TO STA. 443+00 –L1– (RT)

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



FROM STA. 15+45 TO STA. 17+45 –RP7D– (RT)
FROM STA. 21+90 TO STA. 20+60 –RP7A– (LT)
FROM STA. 15+80 TO STA. 20+20 –RP7B– (RT)
FROM STA. 22+80 TO STA. 21+49 –RP7B– (RT)
FROM STA. 12+41 TO STA. 12+91 –LP7B– (LT)
FROM STA. 414+50 TO STA. 415+00 –L1– (LT)
FROM STA. 15+60 TO STA. 17+10 –RP13B– (RT)
FROM STA. 15+00 TO STA. 16+90 –RP13C– (LT)

DETAIL C
TOE PROTECTION
(Not to Scale)

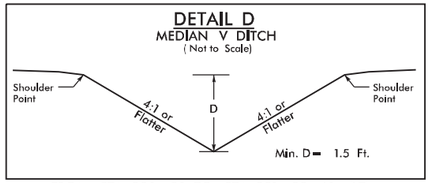


d= 1.0 Ft.

Type of Liner= PSRM

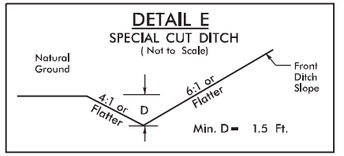
FROM STA. 14+67 TO STA. 15+10 –LP9C– (RT)
FROM STA. 25+15 TO STA. 27+60 –Y9– (LT)
FROM STA. 346+00 TO STA. 347+40 –L1– (LT)
FROM STA. 346+58 TO STA. 348+62 –L1– (RT)

DETAIL D
MEDIAN V DITCH
(Not to Scale)



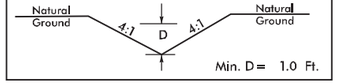
FROM STA. 290+50 TO STA. 291+98 –L1– (LT)

DETAIL E
SPECIAL CUT DITCH
(Not to Scale)



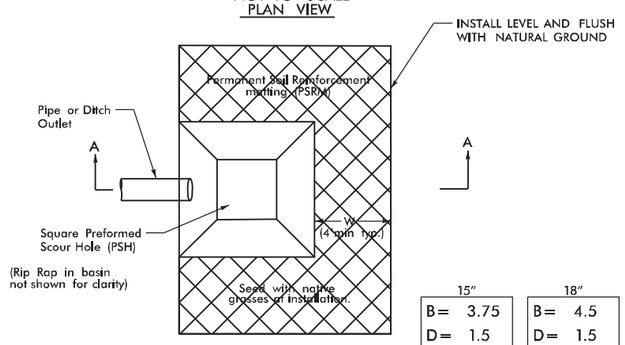
FROM STA. 20+95 TO STA. 20+45 –RP7D– (RT)

DETAIL I
STANDARD 'V' DITCH
(Not to Scale)



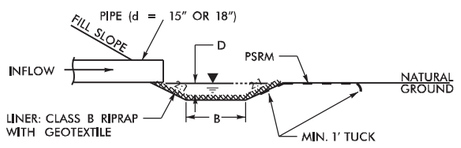
FROM STA. 294+75 TO STA. 294+84 –L1– (LT)

DETAIL G
PREFORMED SCOUR HOLE
*NOT TO SCALE
PLAN VIEW



15"	18"
B= 3.75	B= 4.5
D= 1.5	D= 1.5
W= 4.0	W= 4.0

SECTION A–A

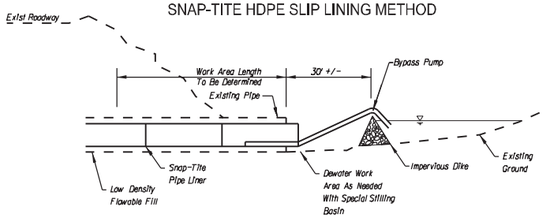


3-08

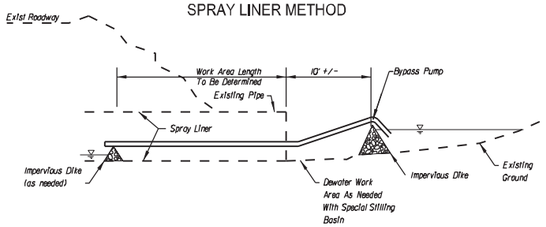
STA. 285+25 –L1– (RT)
STA. 23+88 –RP7C– (RT)
STA. 13+90 –RP7D– (LT)
STA. 24+55 –RP9C– (LT)
STA. 15+25 –RP9B– (LT)
STA. 15+90 –RP9B– (LT)
STA. 14+70 –RP9BSPUR– (LT)
STA. 391+83 –L1– (LT)
STA. 440+33 –L1– (LT)

DETAIL H
CULVERT PRESERVATION

SNAP-TITE HDPE SLIP LINING METHOD



SPRAY LINER METHOD



CURED IN PLACE PIPE LINER (BALLOON METHOD)

- Same as Spray Liner Method above except for:
  - All curing water must be disposed of site
  - Pipe Liner must be installed per manufacturers specifications
  - Contractor is to remove all construction waste around pipe before pipe is placed back in service

Snap-Tite HDPE Slip Lining

- Install silt fence, special sediment control fence, and all other erosion control devices in area as shown on Erosion Control Plans.
- Install orange tree protection fence (i.e. safety fence) along the outermost permit footprint (stream, wetland, and/or riparian buffer). The NCDOT Division 5 Environmental Supervisor will provide this information to the contractor. No construction impacts are allowed beyond the fence limits.
- Clear a maximum of 30' wide access path to the pipe end to be slip lined with Snap-Tite as shown on Erosion Control Plans. All clearing must stay within the permitted stream, wetland, and/or riparian buffer footprint.
- Install Special Stilling Basin (silt bag) on the upstream side to dewater work area.
- Install Impervious Dike a maximum of 30' upstream of pipe to be lined to create work area. All in-stream activity must stay within the permitted stream footprint.
- Clean out existing pipe as needed to install carrier pipe. Install Special Stilling Basin (silt bag) and Impervious Dike downstream during cleaning phase to pump out contaminated water.
- Use bypass pump to bypass water over work area and into Snap-Tite HDPE Pipe.
- After first section of Snap-Tite HDPE Pipe is installed pull hose out of first section, snap second section of pipe together and return bypass pump hose into pipe to bypass water through work area. Repeat until all pipe is lined.
- Fill void with low density flowable fill and seal off ends per manufacturer specifications.
- Remove Impervious Dike and Special Stilling Basin (silt bag) and stabilize stream bank per plans and details.
- Permanently seed and mulch access path and work area. Use erosion control matting as required to stabilize existing slope.
- Remove all erosion control measures after site is stabilized and approved by NCDOT.

Spray Lining

- Install silt fence, special sediment control fence, and all other erosion control devices in area as shown on Erosion Control Plans.
- Install orange tree protection fence (i.e. safety fence) along the outermost permit footprint (stream, wetland, and/or riparian buffer). The NCDOT Division 5 Environmental Supervisor will provide this information to the contractor. No construction impacts are allowed beyond the fence limits.
- Clear a maximum of 25' wide access path to the pipe end to be spray lined as shown on Erosion Control Plans. All clearing must stay within the permitted stream, wetland, and/or riparian buffer footprint.
- Install Special Stilling Basin (silt bag) to dewater work area.
- Install Impervious Dike a maximum of 10' upstream of pipe to be lined to create work area. All in-stream activity must stay within the permitted stream footprint.
- Clean out existing culvert as necessary. Install Special Stilling Basin (silt bag) and Impervious Dike downstream during cleaning phase to pump out contaminated water.
- Install Impervious Dike within pipe culvert at either end of work area as needed to prevent backflow.
- Use bypass pump to bypass water over work area from first Impervious Dike to the second Impervious Dike.
- Remove Impervious Dikes and Special Stilling Basin (silt bag) and stabilize stream bank per Roadway Plans.
- Permanently seed and mulch access path and work area. Use erosion control matting as required to stabilize existing slope.
- Remove all erosion control measures after site is stabilized and approved by NCDOT.

General Notes:
- Recommend slip lining pipes during low flow conditions only.
- The slip lining method used at each pipe location will be determined based on field conditions and approved by NCDOT prior to beginning work. See drainage detail sheet for culvert preservation method and site location.
- Any major deviations from this sequence need prior approval by NCDOT.

STA. 334+42 –L1–
STA. 32+05 –Y9–
STA. 396+10 –L1–

SYSTIME=$$$$
SYSNAME=$$$$
USERNAME=$$$$

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

8/17/99

REVISIONS

-L1- CURVE DATA

PIs Sta 61+92.31	PIs Sta 69+78.63	PI Sta 83+86.57
θs = 6° 15' 25.0"	θs = 1° 12' 00.0"	Δ = 26° 05' 53.4" (RT)
Ls = 500.00'	Ls = 240.00'	D = 1° 00' 00.0"
LT = 333.54'	LT = 160.00'	L = 2,609.82'
ST = 166.86'	ST = 80.00'	T = 1,327.95'
		R = 5,729.58'
		V = 70 MPH

NAD 83/NSRS 2007

INTERSTATE 40 INTERSTATE 440 BEATTIES FORD

GRANITE RS&H
DESIGN-BUILD SERVICES

MATCHLINE SHEET 7 -L1- STA. 61+00.00

MATCHLINE SHEET 9 -L1- STA. 74+50.00

65+00

70+00

SITE 0801 1440 VARIBLE WIDTH BST

SITE 0802 (WETLAND/STREAM 0801)

S 86° 38' 53.4" E

PROPOSED SBG BEG STA 69+69 RT

M-47 M-477 M-478 M-50

PROBABLE JB

REMOVE OR PLUG/FILL

SPECIAL CUT DITCH SEE DETAIL K

RETAIN

RETAIN 15" RCP

RETAIN 2GI

GUARDRAIL

edge of travelway

CULVERT PRESERVATION SEE DETAIL H

CLASS II RIP RAP EST 21 TON EST 22 SY GEO (BANKS ONLY)

CLASS 'B' RIP RAP EST 2 TON EST 7 SY GEO

PLACE TRANSISTION STONE AT OUTFALL OF DITCH

CLASS 'B' RIP RAP EST 1 TON EST 5 SY GEO

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

MITIGABLE IMPACTS ZONE 2

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: I-5338 / I-5311
I-40 / US 64 FROM WEST OF SR 1219 (JONES FRANKLIN RD) CONTINUING ALONG I-440 / US 64 TO NORTH OF US 64 / US 264
DATE: 07 / 28 / 2014

FOR -L1- LT PROFILE, SEE SHEET NO. 49
FOR -L1- RT PROFILE, SEE SHEET NO. 49

50 0 100

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

8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83/NSRS 2007

INTERSTATE 40 INTERSTATE 440 BEITLINE

GRANITE RS&H
DESIGN-BUILD SERVICES

-L1- CURVE DATA

PIs Sta 61+92.31	PIs Sta 69+78.63	PI Sta 83+86.57
θs = 6° 15' 25.0"	θs = 1° 12' 00.0"	Δ = 26° 05' 53.4" (RT)
Ls = 500.00'	Ls = 240.00'	D = 1° 00' 00.0"
LT = 333.54'	LT = 160.00'	L = 2,609.82'
ST = 166.86'	ST = 80.00'	T = 1,327.95'
		R = 5,729.58'
		V = 70 MPH

MATCHLINE SHEET 7 -L1- STA. 61+00.00

MATCHLINE SHEET 9 -L1- STA. 74+50.00

SITE 0801 1440 VARIABLE WIDTH BST

SITE 0802 (WETLAND/STREAM 0801)

S 86° 38' 53.4" E

PROPOSED SBG BEG STA 69+69 RT

M-47

M-477

M-478

M-50

PROBABLE JB

REMOVE OR PLUG/FILL

SPECIAL CUT DITCH SEE DETAIL K

RETAIN

RETAIN 15" RCP

RETAIN 2GI

TB 2GI

15" RCP-III

15" RCP-IV

18" RCP-III

CULVERT PRESERVATION SEE DETAIL H

PRESERVE

PLACE TRANSISTION STONE AT OUTFALL OF DITCH

CLASS 'B' RIP RAP EST 1 TON EST 5 SY GEO

CLASS II RIP RAP EST 21 TON EST 22 SY GEO (BANKS ONLY)

CLASS 'B' RIP RAP EST 2 TON EST 7 SY GEO

edge of revetment

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

MITIGABLE IMPACTS ZONE 2

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15338 / 15311
140 / US 64 FROM WEST OF SR 1219 (JONES FRANKLIN RD) CONTINUING ALONG I-440 / US 64 TO NORTH OF US 64 / US 264
DATE: 07 / 28 / 2014

FOR -L1- LT PROFILE, SEE SHEET NO. 49
FOR -L1- RT PROFILE, SEE SHEET NO. 49

50 0 100

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

8/17/99

REVISIONS

-L1- CURVE DATA
PI Sta 83+86.57
Δ = 26° 05' 53.4" (RT)
D = 1° 00' 00.0"
L = 2,609.82'
T = 1,327.95'
R = 5,729.58'
V = 70 MPH

Maintenance Items Causing Impacts		
Item Number	RFP Required Repairs	Proposed Repairs
M-476	Remove fallen trees at pipe inlet, repair cracked headwall, and slip line pipe	Remove debris, repair headwall, preserve pipe

GRANITE RS&H DESIGN-BUILD SERVICES

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

MATCHLINE SHEET 8 -L1- STA. 74+50.00

MATCHLINE SHEET 10 -L1- STA. 88+00.00

SITE 0802 (WETLAND/STREAM 0801)

75+00 80+00 85+00

EXISTING R/W

M-471 INV=400.20'

M-472 INV=467.85'

54" CMP

CULVERT PRESERVATION SEE DETAIL H

INV=395.15'

18" RCP RETAIN

18" CMP RETAIN

RETAIN & PRESERVE

RETAIN DI

SPECIAL CUT DITCH SEE DETAIL B

SPECIAL CUT DITCH SEE DETAIL B

M-470 M-473 M-474 M-475 M-476 M-483 M-469 M-51 M-53 M-49

2GI TOP=410.43' INV IN=402.85' INV OUT=402.68'

2GI TOP=406.75' INV IN=397.10' INV OUT=397.02'

TB 2GI TOP=410.43' INV OUT=402.24'

TB 2GI TOP=409.43' INV IN=404.82' INV OUT=403.81'

2GI TOP=405.03' INV IN=398.68' INV OUT=398.53'

2GI TOP=405.35' INV OUT=400.03'

2GI INV OUT=404.98'

15" RCP-III

18" RCP-III

15" CMP

GUARDRAIL

RETAIN BLIND JB

RETAIN 18" RCP

CLASS II RIP RAP EST 24 TON EST 25 SY GEO (BANKS ONLY)

PAVED DITCH

INV=380.55'

RETAIN

SPECIAL CUT DITCH SEE DETAIL K

SPECIAL CUT DITCH SEE DETAIL K

SPECIAL CUT DITCH SEE DETAIL K

PROPOSED SBG END STA 75+50 RT

CLASS 'B' RIP RAP EST 2 TON EST 7 SY GEO

EXISTING R/W

R/W MON

EXISTING R/W

EXISTING R/W

EIP

GREEN VALLEY DRIVE 60' R/W DB 1867 PG 118

INV=384.17'

OLIVE ROD 60' R/W DB 6857 PG 118

EXISTING R/W

EXISTIN

FOR -L1- LT PROFILE, SEE SHEET NO. 50
FOR -L1- RT PROFILE, SEE SHEET NO. 50

50 0 100

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15338 / 15311
I40 / US 64 FROM WEST OF SR 1319 (JONES FRANKLIN RD) CONTINUING ALONG I-440 / US 64 TO NORTH OF US 64 / US 264
DATE: 07 / 28 / 2014

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

$$$$SCXTIME$$$$ $$$$DESIGN$$$$ $$$$USERNAME$$$$

8/17/99

REVISIONS

-L1- CURVE DATA
PI Sta 83+86.57
Δ = 26° 05' 53.4" (RT)
D = 1° 00' 00.0"
L = 2,609.82'
T = 1,327.95'
R = 5,729.58'
V = 70 MPH

Maintenance Items Causing Impacts		
Item Number	**RFP Required Repairs**	**Proposed Repairs**
M-476	Remove fallen trees at pipe inlet, repair cracked headwall, and slip line pipe	Remove debris, repair headwall, preserve pipe

GRANITE RS&H DESIGN-BUILD SERVICES

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

MATCHLINE SHEET 8 -L1- STA. 74+50.00

MATCHLINE SHEET 10 -L1- STA. 88+00.00

SITE 0802 (WETLAND/STREAM 0801)

75+00 80+00 85+00

M-476 M-474 M-475 M-473 M-470 M-471 M-472 M-469 M-483 M-49 M-51 M-53

CLASS II RIP RAP
EST 24 TON
EST 25 SY GEO
(BANKS ONLY)

RETAIN

RETAIN & PRESERVE

CULVERT PRESERVATION
SEE DETAIL H

RETAIN DI

SPECIAL CUT DITCH
SEE DETAIL B

SPECIAL CUT DITCH
SEE DETAIL K

PROPOSED SBG
END STA 75+50 RT

CLASS 'B' RIP RAP
EST 2 TON
EST 7 SY GEO

15" RCP-III

TB 2GI

2GI

RETAIN BLIND JB

GUARDRAIL

EXISTING R/W

EXISTING D/W

EXISTING R/R

EXISTING R/W

W/W MON

W/W MON

W/W MON

EXISTING R/W

EXISTING R/R

EXISTING R/W

EXISTING R/W

EXISTING R/W

8/17/99

REVISIONS

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

-L1- CURVE DATA

PIs Sta 104+33.29	PI Sta 115+66.75
Θs = 1° 12' 00.0"	Δ = 20° 50' 11.9" (LT)
Ls = 240.00'	D = 1° 00' 00.0"
LT = 160.00'	L = 2,083.66'
ST = 80.00'	T = 1,053.47'
	R = 5,729.58'
	V = 70 MPH

Maintenance Items Causing Impacts		
Item Number	**RFP Required Repairs**	**Proposed Repairs**
M-58	Restore rusted FES and washed out slopes above cross line, remove tree and slip line pipe	Remove FES, add countersunk rip rap pad, repair slope, remove tree, & preserve pipe.
M-59	Restore 60' rusted pipe and slip line pipe	Restore and Preserve
M-461	Repair/replace headwall and slip line pipes. Determine need for cross veins	Repair/replace bricks as needed. Preserve pipes.
M-454	Remove trees at FES and over the pipe	Remove trees

NAD 83 NSRS 2007

INTERSTATE 40 INTERSTATE 440 FORTIFY

GRANITE RS&H DESIGN-BUILD SERVICES

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	11
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

MATCHLINE SHEET 10 -L1- STA. 101+00.00

MATCHLINE SHEET 12 -L1- STA. 114+50.00

SITE 1101 (WETLAND/STREAM 1101)

SITE 1101 (WETLAND/STREAM 1101) (MOT 1101)

SITE 1102 (WETLAND/STREAM 1102)

SITE 1102 (WETLAND/STREAM 1102) (MOT 1102)

SITE 1103 (WETLAND/STREAM 1103)

105+00

110+00

CLASS 'B' RIP RAP
EST 2 TON
EST 7 SY GEO

PROPOSED SBG
BEG STA 102+32 LT

SPECIAL CUT DITCH SEE DETAIL K

CLASS 'B' RIP RAP
EST 2 TON
EST 7 SY GEO

CLASS II RIP RAP
EST 29 TON
EST 31 SY GEO
(BANKS ONLY)

CULVERT PRESERVATION
SEE DETAIL H

CLASS 'B' RIP RAP
EST 3 TON
EST 10 SY GEO

PROPOSED SBG
END STA 107+31 LT

CLASS II RIP RAP
EST 22 TON
EST 24 SY GEO
(BANKS ONLY)

CULVERT PRESERVATION
SEE DETAIL H

PROPOSED SBG
BEG STA 113+31 LT

M-461 M-462 M-463 M-458 M-460 M-459 M-491 M-454 M-456 M-493 M-60

S 58°09'00.0" E

15" RCP-III 18" RCP-III

TB 2GI 2GI

GUARDRAIL

H40 VARIABLE WIDTH BST

CURB

RETAIN & PRESERVE

RETAIN

RETAIN 18" RCP

EXISTING R/W

EIP

CMP

UNABLE TO LOCATE PIPE

REMOVE 10" CMP

CLASS I RIP RAP
EST 15 TON
EST 30 SY GEO

REMOVE FES AND REPLACE IN FOOTPRINT RIPRAP PAD TO BE COUNTERSUNK IN STREAM FLOW LINE

CLASS II RIP RAP
EST 24 TON
EST 26 SY GEO
(BANKS ONLY)

PROPOSED SBG
END STA 102+70 RT

PROPOSED SBG
BEG STA 101+18 RT

CLASS 'B' RIP RAP
EST 2 TON
EST 7 SY GEO

M-58 M-59

CLASS II RIP RAP
EST 24 TON
EST 25 SY GEO
(BANKS ONLY)

BZ 1 BZ 2 1 ZB 2 ZB

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

IMPACTS PERMITTED ON MOT BUFFER PERMITS

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: I-5338 / I-5311
I-40 / US 64 FROM WEST OF SR 1519 (JONES FRANKLIN RD) CONTINUING ALONG I-440 / US 64 TO NORTH OF US 64 / US 264
DATE: 07 / 28 / 2014

FOR -L1- LT PROFILE, SEE SHEET NO. 52
FOR -L1- RT PROFILE, SEE SHEET NO. 52

50 0 100

8/17/99

REVISIONS

-L1- CURVE DATA

PIs Sta 104+33.29	PI Sta 115+66.75
Θs = 1°12' 00.0"	Δ = 20° 50' 11.9" (LT)
Ls = 240.00'	D = 1° 00' 00.0"
LT = 160.00'	L = 2,083.66'
ST = 80.00'	T = 1,053.47'
	R = 5,729.58'
	V = 70 MPH

Maintenance Items Causing Impacts		
Item Number	**RFP Required Repairs**	**Proposed Repairs**
M-58	Restore rusted FES and washed out slopes above cross line, remove tree and slip line pipe	Remove FES, add countersunk rip rap pad, repair slope, remove tree, & preserve pipe.
M-59	Restore 60' rusted pipe and slip line pipe	Restore and Preserve
M-461	Repair/replace headwall and slip line pipes. Determine need for cross veins	Repair/replace bricks as needed. Preserve pipes.
M-454	Remove trees at FES and over the pipe	Remove trees

NAD 83 NSRS 2007

GRANITE RS&H DESIGN-BUILD SERVICES

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: I-5338 / I-5311
I-40 / US 64 FROM WEST OF
SR 1519 (JONES FRANKLIN RD)
CONTINUING ALONG I-440 / US 64
TO NORTH OF US 64 / US 264
DATE: 07 / 28 / 2014

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

8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83/NSRS 2007

INTERSTATE 40 INTERSTATE 440 BYPASS

GRANITE RS&H
DESIGN-BUILD SERVICES

-LI- CURVE DATA

PI Sta 115+66.75
△ = 20° 50' 11.9" (LT)
D = 1° 00' 00.0"
L = 2,083.66'
T = 1,053.47'
R = 5,729.58'
V = 70 MPH

PIs Sta 127+03.62
Θs = 0° 36' 00.0"
Θs = 1° 12' 00.0"
Ls = 240.00'
LT = 133.34'
ST = 106.68'

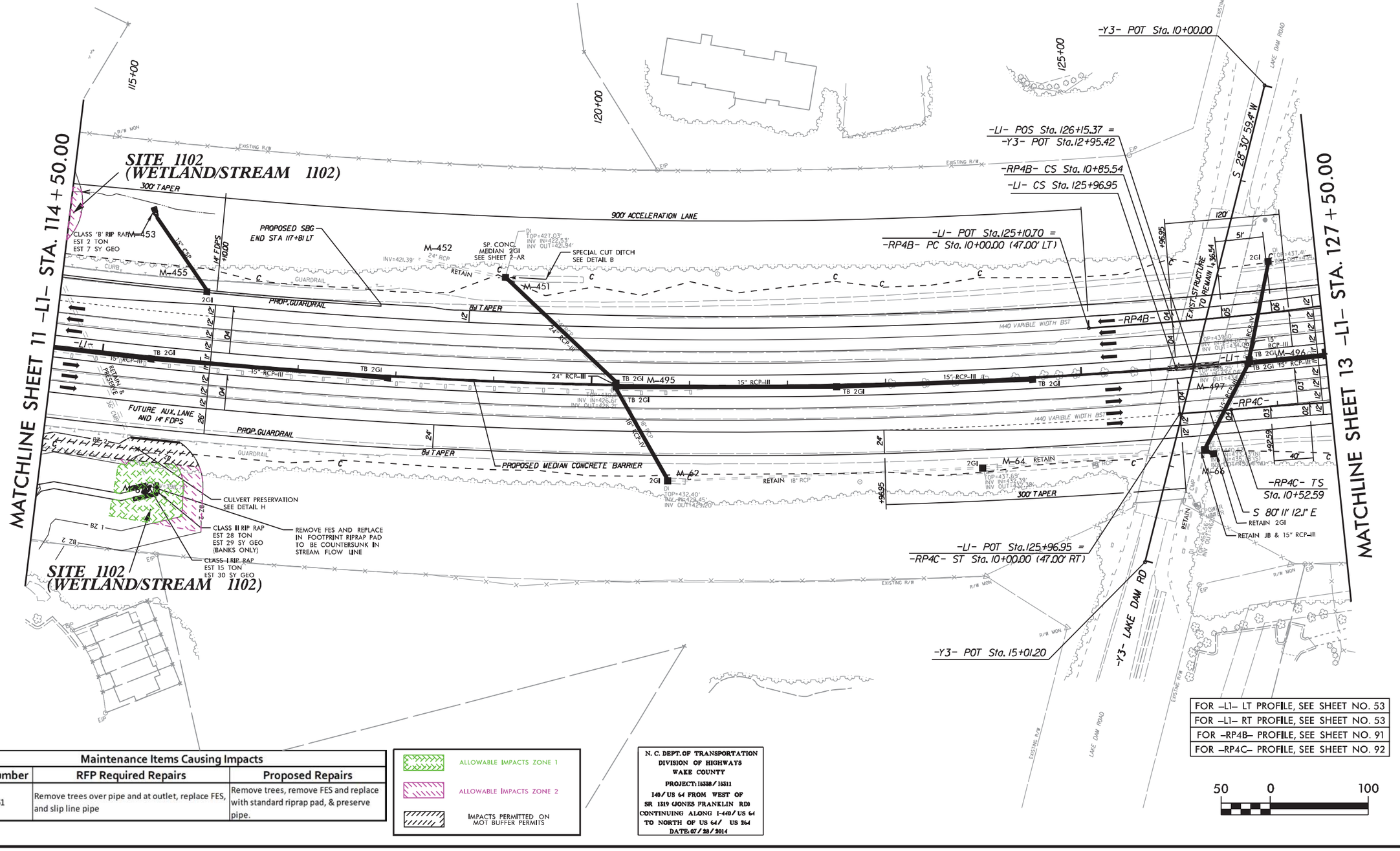
-RP4B- CURVE DATA

PI Sta 10+42.77
△ = 0° 51' 45.0" (LT)
D = 1° 00' 29.8"
L = 85.54'
T = 42.77'
R = 5,682.58'
V = 70 MPH

PIs Sta 12+10.19
Θs = 1° 01' 39.3"
Θs = 5° 04' 57.9"
Ls = 204.00'
LT = 124.65'
ST = 79.53'

-RP4C- CURVE DATA

PIs Sta 11+85.96
Θs = 4° 00' 24.1"
Ls = 200.00'
LT = 133.37'
ST = 66.70'



Maintenance Items Causing Impacts		
Item Number	RFP Required Repairs	Proposed Repairs
M-61	Remove trees over pipe and at outlet, replace FES, and slip line pipe	Remove trees, remove FES and replace with standard riprap pad, & preserve pipe.

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

IMPACTS PERMITTED ON MOT BUFFER PERMITS

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: I-5338 / I-5311
I-40 / US 64 FROM WEST OF SR 1319 (JONES FRANKLIN RD) CONTINUING ALONG I-440 / US 64 TO NORTH OF US 64 / US 264
DATE: 07 / 28 / 2014

FOR –LI– LT PROFILE, SEE SHEET NO. 53
FOR –LI– RT PROFILE, SEE SHEET NO. 53
FOR –RP4B– PROFILE, SEE SHEET NO. 91
FOR –RP4C– PROFILE, SEE SHEET NO. 92

50 0 100

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

8/17/99

REVISIONS

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

-LI- CURVE DATA

PI Sta 115+66.75
Δ = 20° 50' 11.9" (LT)
D = 1° 00' 00.0"
L = 2,083.66'
T = 1,053.47'
R = 5,729.58'
V = 70 MPH

PIs Sta 127+03.62
θs = 0° 36' 00.0"
θs = 1° 12' 00.0"
Ls = 240.00'
LT = 133.34'
ST = 106.68'

-RP4B- CURVE DATA

PI Sta 10+42.77
Δ = 0° 51' 45.0" (LT)
D = 1° 00' 29.8"
L = 85.54'
T = 42.77'
R = 5,682.58'
V = 70 MPH

PIs Sta 12+10.19
θs = 1° 01' 39.3"
θs = 5° 04' 57.9"
Ls = 204.00'
LT = 124.65'
ST = 79.53'

-RP4C- CURVE DATA

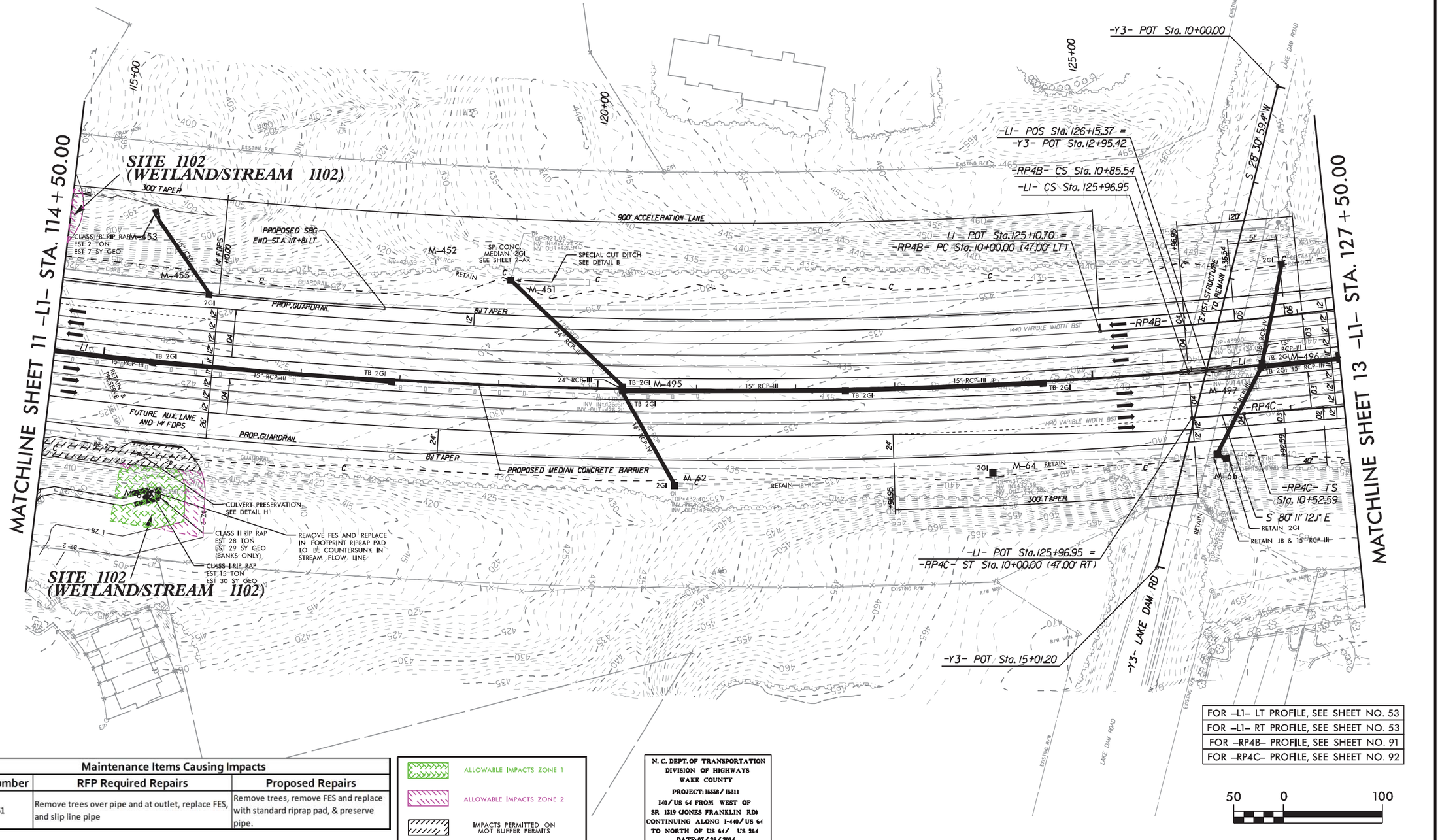
PIs Sta 11+85.96
θs = 4° 00' 24.1"
Ls = 200.00'
LT = 133.37'
ST = 66.70'

NAD 83/NSRS 2007

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



Maintenance Items Causing Impacts		
Item Number	RFP Required Repairs	Proposed Repairs
M-61	Remove trees over pipe and at outlet, replace FES, and slip line pipe	Remove trees, remove FES and replace with standard riprap pad, & preserve pipe.

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

IMPACTS PERMITTED ON MOT BUFFER PERMITS

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15338 / 15311
I40 / US 64 FROM WEST OF SR 1319 (JONES FRANKLIN RD) CONTINUING ALONG I-440 / US 64 TO NORTH OF US 64 / US 264
DATE: 07 / 28 / 2014

FOR –LI– LT PROFILE, SEE SHEET NO. 53
FOR –LI– RT PROFILE, SEE SHEET NO. 53
FOR –RP4B– PROFILE, SEE SHEET NO. 91
FOR –RP4C– PROFILE, SEE SHEET NO. 92

50 0 100

-RP4B- CURVE DATA

P.I. Sta 12+10.19	P.I. Sta 15+82.23	P.I. Sta 19+30.80	P.I. Sta 25+05.79	P.I. Sta 26+73.54
Gs = 1°01' 39.3"	Δ = 28° 33' 31.0" (LT)	Gs = 5°04' 54.8"	Gs = 11°27' 33.0"	Δ = 16°42' 08.8" (RT)
Gs = 5°04' 57.3"	D = 1°58' 56.1"	Ls = 204.00'	Ls = 240.00'	D = 9°32' 57.5"
Ls = 204.00'	L = 573.21'	LT = 136.06'	LT = 160.34'	L = 174.91'
LT = 124.65'	T = 292.69'	ST = 68.05'	ST = 80.34'	T = 88.08'
ST = 79.53'	R = 1,050.00'			R = 600.00'
	V = 55 MPH			V = 45 MPH

-RP4A- CURVE DATA

P.I. Sta 15+12.54	P.I. Sta 18+33.07'	P.I. Sta 20+99.73	P.I. Sta 23+84.49
Δ = 32°09'02.6" (RT)	Gs = 5°59' 58.4"	Gs = 5°12' 31.3"	Δ = 22°28' 09.4" (LT)
D = 5°59' 58.4"	Ls = 200.00'	Ls = 200.00'	D = 5°12' 31.3"
L = 536.64'	LT = 133.41'	LT = 133.09'	L = 1,092.27'
T = 276.64'	ST = 66.74'	ST = 66.72'	T = 551.15'
R = 955.00'			R = 1,100.00'
V = 50 MPH			V = 40 MPH

SITE 1301
(WETLAND/STREAM 1301)

SITE 1302
(WETLAND/STREAM 1304)

SITE 1303
(WETLAND/STREAM 1303)

SITE 1301
(WETLAND/STREAM 1301)

SITE 1302
(WETLAND/STREAM 1302)

MATCHLINE SHEET 12 -L1- STA. 127+50.00

MATCHLINE SHEET 14 -L1- STA. 155+50.00

NAD 83/NAVD 2007

40 440

GRANITE RS&H

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5339	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-RP4C- CURVE DATA

P.I. Sta 11+85.96	P.I. Sta 14+27.86	P.I. Sta 16+68.08	P.I. Sta 20+79.10	P.I. Sta 23+34.23
Gs = 4°00' 24.2"	Δ = 13°58' 30.2" (RT)	Gs = 4°00' 24.2"	Gs = 4°46' 28.7"	Δ = 17°51' 23.7" (LT)
Ls = 200.00'	D = 4°02' 24.4"	Ls = 200.00'	Ls = 200.00'	D = 4°46' 28.7"
LT = 133.37'	L = 348.79'	LT = 133.37'	LT = 133.38'	L = 374.96'
ST = 66.70'	T = 175.27'	ST = 66.70'	ST = 66.71'	T = 188.52'
	R = 1,430.00'			R = 1,200.00'
	V = 60 MPH			V = 40 MPH

Maintenance Items Causing Impacts		
Item Number	RFP Required Repairs	Proposed Repairs
M-68	Clear trees at and over pipe outlet, grade to drain, and replace FES.	Remove trees, remove FES and rip rap banks
M-68	Two pipe located here. DB Team shall replace FES and slip line crossline and construct Energy Dissipator.	New energy dissipator and proscribed pipe, smaller pipe from failed/funnel drain to be removed.
M-82	Remove tree at pipe outlet, regrade to ensure positive drainage, replace FES, and slip line pipe	Remove tree, minor regrading at outlet, remove FES, replace standard riprap pad, and proscribe pipe.
M-106	Slip line pipe, replace FES and remove trees from around outlet	Proscribe pipe, remove FES and rip rap banks, remove trees.

-L1- CURVE DATA

P.I. Sta 127+03.62	P.I. Sta 150+31.19
Gs = 0°36' 00.0"	Δ = 9°40' 48.1" (LT)
Gs = 1°12' 00.0"	D = 0°32' 00.0"
Ls = 240.00'	L = 4,336.00'
LT = 133.34'	T = 2,194.25'
ST = 106.68'	R = 11,459.16'
	V = 70 MPH

-RP4D- CURVE DATA

P.I. Sta 14+28.88	P.I. Sta 16+51.97	P.I. Sta 18+13.66	P.I. Sta 21+93.70	P.I. Sta 24+97.37
Gs = 6°15' 01.6"	Δ = 14°50' 02.1" (LT)	Gs = 6°15' 01.6"	Gs = 7°11' 58.7"	Δ = 26°22' 41.4" (RT)
Ls = 240.00'	D = 5°12' 31.3"	Ls = 240.00'	Ls = 240.00'	D = 5°59' 58.4"
LT = 160.10'	L = 284.75'	LT = 160.10'	LT = 160.13'	L = 439.67'
ST = 80.09'	T = 143.20'	ST = 80.09'	ST = 80.12'	T = 223.82'
	R = 1,100.00'			R = 955.00'
	V = 55 MPH			V = 50 MPH

N. C. DEPT OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: I-5338 / I-5339
I-40/I-540 FROM WEST OF SR 1241 (GREEN FRANKLIN) RD
CONSTRUCTION ALONG I-40/I-540 EB &/
TO NORTH OF US 64/ US 264
BATH/RP/RC/RM

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

GRAPHIC SCALE
50 25 0 50 100
PLANS

FOR -L1- LT PROFILE, SEE SHEET NO. 54,55
FOR -L1- RT PROFILE, SEE SHEET NO. 54,55
FOR -RP4A- PROFILE, SEE SHEET NO. 91
FOR -RP4B- PROFILE, SEE SHEET NO. 91,92
FOR -RP4C- PROFILE, SEE SHEET NO. 92
FOR -RP4D- PROFILE, SEE SHEET NO. 93

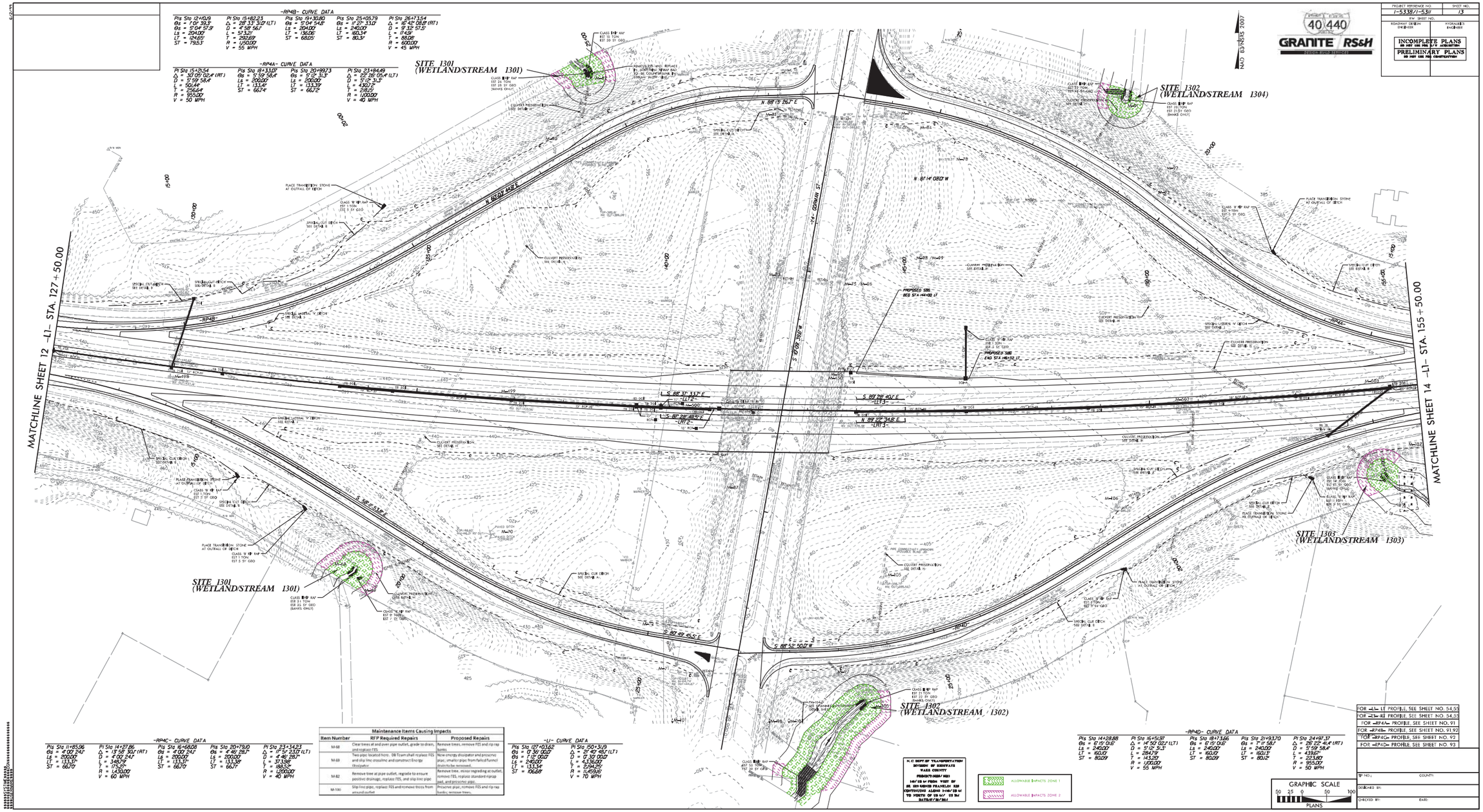
TIP NO.	COUNTY
DESIGNED BY:	
CHECKED BY:	DATE:

-RP4B- CURVE DATA

PI Sta 12+10.19	PI Sta 15+82.23	PI Sta 19+30.80	PI Sta 25+05.79	PI Sta 26+73.54
Gs = 1°01' 39.3"	Δ = 28° 33' 31.0" (LT)	Gs = 5°04' 54.8"	Gs = 11° 27' 13.0"	Δ = 16° 42' 08.8" (RT)
Gs = 5°04' 57.3"	D = 4° 58' 56.1"	Ls = 204.00'	Ls = 240.00'	D = 9° 32' 57.5"
Ls = 204.00'	L = 573.21'	L = 204.07'	L = 160.34'	L = 174.91'
LT = 124.65'	T = 292.69'	LT = 136.06'	T = 80.34'	T = 88.08'
ST = 79.53'	R = 1,150.00'	ST = 68.05'	R = 600.00'	R = 600.00'
	V = 55 MPH		V = 45 MPH	V = 45 MPH

-RP4A- CURVE DATA

PI Sta 15+12.54	PI Sta 18+33.07	PI Sta 20+99.73	PI Sta 23+84.49
Δ = 32° 05' 02.4" (RT)	Gs = 5°59' 58.4"	Gs = 5°12' 31.3"	Δ = 22° 28' 05.4" (LT)
D = 5° 59' 58.4"	Ls = 200.00'	Ls = 200.00'	D = 5° 12' 31.3"
L = 560.44'	LT = 133.41'	LT = 133.09'	L = 1,097.27'
T = 286.64'	ST = 66.74'	ST = 66.72'	T = 281.16'
R = 955.00'			R = 1,100.00'
V = 50 MPH			V = 40 MPH



-RP4C- CURVE DATA

PI Sta 11+85.96	PI Sta 14+27.86	PI Sta 16+68.08	PI Sta 20+79.10	PI Sta 23+34.23
Gs = 4°00' 24.2"	Δ = 13° 58' 30.2" (RT)	Gs = 4°00' 24.2"	Gs = 4° 46' 28.7"	Δ = 17° 51' 23.7" (LT)
Ls = 200.00'	D = 4°00' 24.1"	Ls = 200.00'	Ls = 200.00'	D = 4° 46' 28.7"
LT = 133.37'	L = 348.79'	LT = 133.37'	LT = 133.38'	L = 373.98'
ST = 66.70'	T = 175.27'	ST = 66.70'	ST = 66.71'	T = 188.52'
	R = 1,430.00'			R = 1,200.00'
	V = 60 MPH			V = 40 MPH

Maintenance Items Causing Impacts		
Item Number	RFP Required Repairs	Proposed Repairs
M-68	Clear trees at and over pipe outlet, grade to drain, and replace FES.	Remove trees, remove FES and rip rap banks
M-69	Two pipe located here. DB Team shall replace FES and slip line crossline and construct Energy Dissipator.	New energy dissipator and proscrivo pipe, smaller pipe from failed funnel drain to be removed.
M-82	Remove tree at pipe outlet, regrade to ensure positive drainage, replace FES, and slip line pipe	Remove tree, minor regrading at outlet, remove FES, replace standard riprap pad, and proscrivo pipe.
M-106	Slip line pipe, replace FES and remove trees from around outlet	Proscrivo pipe, remove FES and rip rap banks, remove trees.

-L1- CURVE DATA

PI Sta 127+03.62	PI Sta 150+31.19
Gs = 0° 36' 00.0"	Δ = 91° 40' 48.1" (LT)
Gs = 1°12' 00.0"	D = 0° 32' 00.0"
Ls = 240.00'	L = 4,336.00'
LT = 133.34'	T = 2,994.25'
ST = 106.68'	R = 11,459.16'
	V = 70 MPH

N. C. DEPT OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: I-5338 / I-5339
I-40/ US 64 FROM WEST OF SR 1304 GARNER FRANKLIN RD
CONSTRUCTION ALONG I-40/ US 64 TO NORTH OF US 64/ US 264 BUSINESS/ NC 264

ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2

-RP4D- CURVE DATA

PI Sta 14+28.88	PI Sta 16+51.97	PI Sta 18+17.66	PI Sta 21+93.70	PI Sta 24+97.37
Gs = 6°15' 01.6"	Δ = 14° 50' 02.1" (LT)	Gs = 6°15' 01.6"	Gs = 7° 11' 58.7"	Δ = 26° 02' 41.4" (RT)
Ls = 240.00'	D = 5°12' 31.3"	Ls = 240.00'	Ls = 240.00'	D = 5°59' 58.4"
LT = 160.10'	L = 284.75'	LT = 160.10'	LT = 160.13'	L = 439.67'
ST = 80.09'	T = 143.20'	ST = 80.09'	ST = 80.12'	T = 223.82'
	R = 1,100.00'			R = 955.00'
	V = 55 MPH			V = 50 MPH

TIP NO.	COUNTY
DESIGNED BY:	
CHECKED BY:	DATE:

8/17/99

REVISIONS

-L1- CURVE DATA

PI Sta 150+31.19	PIs Sta 172+52.95
△ = 21° 40' 48.1" (LT)	Θs = 0° 36' 00.0"
D = 0° 30' 00.0"	Ls = 240.00'
L = 4,336.00'	LT = 160.00'
T = 2,194.25'	ST = 80.00'
R = 11,459.16'	
V = 70 MPH	

Maintenance Items Causing Impacts		
Item Number	**RFP Required Repairs**	**Proposed Repairs**
M-112	Grade and stabilize eroding ditch	Add standard riprap pad.
M-113	Repair last 2' of separated pipe, slip line pipe, replace FES and remove trees around pipe inlet	Remove FES, add countersunk rip rap pad, and preserve pipe. Remove trees.
M-441	Repair slope washout	Repair slope
M-442	Replace with drainage structure and replace 12" pipe with 15" pipe	Remove funnel drain

NAD 83/NSRS 2007

GRANITE RS&H DESIGN-BUILD SERVICES

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

MATCHLINE SHEET 14 -L1- STA. 169+00.00

MATCHLINE SHEET 16 -L1- STA. 183+00.00

170+00

175+00

180+00

SITE 1501
(WETLAND/STREAM 1501)
(MOT 1501)

SITE 1501

CLASS II RIP RAP
EST 22 TON
EST 23 SY GEO
(BANKS ONLY)

V_{10} = 8.79 FT/S
Q_{10} = 1.80 CFS

CLASS 'B' RIP RAP
EST 1 TON
EST 5 SY GEO

PROPOSED SBG
BEG STA 170+81 LT

REMOVE
8" CMP

UNABLE TO
LOCATE PIPE

M-443
M-442
M-441
M-440
M-439
M-438

15" CSP

2GI

RETAIN

GUARDRAIL

EXISTING R/W

R/W MON

M-508
M-509
M-511

15" RCP-III

TB 2GI

M-108
M-109

PROPOSED SBG
BEG STA 174+75 RT

PROPOSED SBG
END STA 182+75 RT

SPECIAL CUT DITCH
SEE DETAIL K

CULVERT PRESERVATION
SEE DETAIL H

NOT SUBJECT TO
RIPARIAN BUFFER RULES

CLASS 'B' RIP RAP
EST 1 TON
EST 5 SY GEO

REMOVE FES AND REPLACE
IN FOOTPRINT RIPRAP PAD
TO BE COUNTERSUNK IN
STREAM FLOW LINE

CLASS II RIP RAP
EST 20 TON
EST 39 SY GEO

CLASS II RIP RAP
EST 20 TON
EST 21 SY GEO
(BANKS ONLY)

M-112
M-113

RETAIN & PRESERVE

DEER FOREST TRAIL

SITE 1501
(WETLAND/STREAM 1501)

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

IMPACTS PERMITTED ON
MOT BUFFER PERMITS

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY

PROJECT: 15338 / 15311

140 / US 64 FROM WEST OF
SR 1319 (JONES FRANKLIN RD)
CONTINUING ALONG I-440 / US 64
TO NORTH OF US 64 / US 264

DATE: 07 / 28 / 2014

FOR -L1- LT PROFILE, SEE SHEET NO. 57
FOR -L1- RT PROFILE, SEE SHEET NO. 57

50 0 100

$I:SYSTIME$ $USERNAME$ DGN

8/17/99

REVISIONS

-L1- CURVE DATA

PI Sta 150+31.19	PIs Sta 172+52.95
△ = 21° 40' 48.1" (LT)	Θs = 0° 36' 00.0"
D = 0° 30' 00.0"	Ls = 240.00'
L = 4,336.00'	LT = 160.00'
T = 2,194.25'	ST = 80.00'
R = 11,459.16'	
V = 70 MPH	

Maintenance Items Causing Impacts

Item Number	RFP Required Repairs	Proposed Repairs
M-112	Grade and stabilize eroding ditch	Add standard riprap pad.
M-113	Repair last 2' of separated pipe, slip line pipe, replace FES and remove trees around pipe inlet	Remove FES, add countersunk rip rap pad, and preserve pipe. Remove trees.
M-441	Repair slope washout	Repair slope
M-442	Replace with drainage structure and replace 12" pipe with 15" pipe	Remove funnel drain

NAD 83/NSRS 2007

GRANITE RS&H DESIGN-BUILD SERVICES

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

MATCHLINE SHEET 14 -L1- STA. 169+00.00

MATCHLINE SHEET 16 -L1- STA. 183+00.00

SITE 1501
(WETLAND/STREAM 1501)
(MOT 1501)

SITE 1501

CLASS II RIP RAP
EST 22 TON
EST 23 SY GEO
(BANKS ONLY)

V_{10} = 8.79 FT/S
Q_{10} = 1.80 CFS

CLASS 'B' RIP RAP
EST 1 TON
EST 5 SY GEO

PROPOSED SBG
BEG STA 170+81 LT

REMOVE 8" CMP

UNABLE TO LOCATE PIPE

RETAIN

M-443 M-442 M-441 M-440 M-439 M-438

2GI

SPECIAL CUT DITCH
SEE DETAIL K

PROPOSED SBG
END STA 182+81 LT

M-508 M-509 M-510 M-511

TB 2GI

15" RCP-III

M-108 M-109

PROPOSED SBG
BEG STA 174+75 RT

NOT SUBJECT TO RIPARIAN BUFFER RULES

CLASS 'B' RIP RAP
EST 1 TON
EST 5 SY GEO

REMOVE FES AND REPLACE IN FOOTPRINT RIPRAP PAD TO BE COUNTERSUNK IN STREAM FLOW LINE

CULVERT PRESERVATION
SEE DETAIL H

M-112 M-113

CLASS II RIP RAP
EST 20 TON
EST 39 SY GEO

CLASS II RIP RAP
EST 20 TON
EST 21 SY GEO
(BANKS ONLY)

CLASS 'B' RIP RAP
EST 1 TON
EST 5 SY GEO

PROPOSED SBG
END STA 182+75 RT

DEER FOREST TRAIL

SITE 1501
(WETLAND/STREAM 1501)

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

IMPACTS PERMITTED ON MOT BUFFER PERMITS

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY

PROJECT: 15338 / 15311

140 / US 64 FROM WEST OF SR 1319 (JONES FRANKLIN RD) CONTINUING ALONG I-440 / US 64 TO NORTH OF US 64 / US 264

DATE: 07 / 28 / 2014

FOR -L1- LT PROFILE, SEE SHEET NO. 57
FOR -L1- RT PROFILE, SEE SHEET NO. 57

50 0 100

$SYSTIME$ $USERNAME$ DGN

Maintenance Items Causing Impacts		
Item Number	**RFP Required Repairs**	**Proposed Repairs**
M-117	Replace exposed flume pipe (approximately 30' down slope) and repair slope.	Flume to be removed; repair slope.
M-118	Minor grading required and repair approximately 100' of chainlink fence. Repair lateral ditch and slope to culvert wing wall, remove trees behind wing wall and repair fence.	Repair lateral ditch and slope to culvert wing wall. Remove trees behind wing wall and repair ROW fence. Realign stream leading to headwall, and armor banks. (See Sheet 2-AS)
M-428	Replace with drainage structure	Remove funnel drain
M-432	Repair ditch and riprap with fabric	Repair ditch with rip rap/fabric

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15538 / 15511
140 / US 64 FROM WEST OF
SR 1319 (JONES FRANKLIN RD)
CONTINUING ALONG I-440 / US 64
TO NORTH OF US 64 / US 264
DATE: 07 / 28 / 2014

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

NAD 83/NSRS 2007

GRANITE RS&H DESIGN-BUILD SERVICES

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

8/17/99

REVISIONS

MATCHLINE SHEET 16 –L1– STA. 197+00.00

MATCHLINE SHEET 18 –L1– STA. 211+00.00

200+00

205+00

210+00

SITE 1701 (WETLAND/STREAM 1701)

SITE 1702 (WETLAND/STREAM 1702)

CLASS II RIP RAP ON STREAM BANK ONLY EST 20 TON EST 28 SY GEO

CLASS 'B' RIP RAP EST 2 TON EST 7 SY GEO

CLASS II RIP RAP EST 21 TON EST 22 SY GEO (BANKS ONLY)

CLASS 'B' RIP RAP EST 2 TON EST 7 SY GEO

SPECIAL CUT DITCH SEE DETAIL K

PROPOSED SBG BEG STA 198+82 LT

PROPOSED SBG END STA 207+56 LT

M-430 M-429 M-428 M-427 M-426 M-432 M-515 M-516 M-120

6'X8' BOX CULVERT TOP=302.84' INV=294.64'

UNABLE TO LOCATE PIPE

REMOVE OR PLUG/FILL

15" RCP-III

15" CSP

TB 2GI

2GI

CULVERT PRESERVATION SEE DETAIL H

M-117 / M-118 SEE STREAM RE-ALIGNMENT DETAIL SHEET 2-AS

SITE 1701 (WETLAND/STREAM 1701)

SITE 1702 (WETLAND/STREAM 1702)

CLASS 'B' RIP RAP EST 2 TON EST 7 SY GEO

CLASS 'B' RIP RAP EST 22 TON EST 45 SY GEO

CLASS II RIP RAP EST 22 TON EST 23 SY GEO (BANKS ONLY)

PROPOSED SBG END STA 207+54 RT

END 60" CMP UNKNOWN (BURIED PIPE)

V_{10} = 7.04 FPS
Q_{10} = 1.60 CFS

FOR –L1– LT PROFILE, SEE SHEET NO. 59

FOR –L1– RT PROFILE, SEE SHEET NO. 59

50 0 100

$$$$SYSTIME$$$$
$$$$USERNAME$$$$

8/17/99

REVISIONS

Maintenance Items Causing Impacts		
Item Number	**RFP Required Repairs**	**Proposed Repairs**
M-117	Replace exposed flume pipe (approximately 30' down slope) and repair slope.	Flume to be removed; repair slope.
M-118	Minor grading required and repair approximately 100' of chainlink fence. Repair lateral ditch and slope to culvert wing wall, remove trees behind wing wall and repair fence.	Repair lateral ditch and slope to culvert wing wall. Remove trees behind wing wall and repair ROW fence. Realign stream leading to headwall, and armor banks. (See Sheet 2-AS)
M-428	Replace with drainage structure	Remove funnel drain
M-432	Repair ditch and riprap with fabric	Repair ditch with rip rap/fabric

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15538 / 15511
140 / US 64 FROM WEST OF
SR 1319 (JONES FRANKLIN RD)
CONTINUING ALONG I-440 / US 64
TO NORTH OF US 64 / US 264
DATE: 07 / 28 / 2014

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

NAD 83/NSRS 2007

GRANITE RS&H
DESIGN-BUILD SERVICES

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

MATCHLINE SHEET 16 –L1– STA. 197+00.00

MATCHLINE SHEET 18 –L1– STA. 211+00.00

SITE 1701
(WETLAND/STREAM 1701)

SITE 1702
(WETLAND/STREAM 1702)

CLASS II RIP RAP
ON STREAM BANK ONLY
EST 20 TON
EST 28 SY GEO

CLASS 'B' RIP RAP
EST 2 TON
EST 7 SY GEO

CLASS II RIP RAP
EST 21 TON
EST 22 SY GEO
(BANKS ONLY)

PROPOSED SBG
BEG STA 198+82 LT

PROPOSED SBG
END STA 207+56 LT

PROPOSED SBG
END STA 207+54 RT

REMOVE OR PLUG/FILL

CULVERT PRESERVATION
SEE DETAIL H

SPECIAL CUT DITCH
SEE DETAIL K

CLASS 'B' RIP RAP
EST 22 TON
EST 45 SY GEO

CLASS II RIP RAP
EST 22 TON
EST 23 SY GEO
(BANKS ONLY)

V_{10} = 7.04 FT/S
Q_{10} = 1.60 CFS

FOR –L1– LT PROFILE, SEE SHEET NO. 59

FOR –L1– RT PROFILE, SEE SHEET NO. 59

50 0 100

$$$$SYSTMEF$$$$
$$$$USERNAME$$$$

8/17/99

REVISIONS

-RP6C- CURVE DATA

PIs Sta 11+40.06	PI Sta 13+76.42	PIs Sta 16+10.60
θs = 5° 13' 52.9"	△ = 16° 28' 06.7" (RT)	θs = 5° 13' 52.9"
Ls = 210.00'	D = 4° 58' 56.1"	Ls = 210.00'
LT = 140.06'	L = 330.54'	LT = 140.06'
ST = 70.06'	T = 166.42'	ST = 70.06'
	R = 1,150.00'	
	V = 55 MPH	

-RP6B- CURVE DATA

PIs Sta 14+04.06
θs = 5° 09' 23.8"
Ls = 216.00'
LT = 144.06'
ST = 72.06'

-LI- CURVE DATA

PIs Sta 236+82.32	PI Sta 258+76.38
θs = 1° 11' 39.4"	△ = 40° 19' 41.2" (RT)
Ls = 240.00'	D = 0° 59' 42.9"
LT = 160.00'	L = 4,052.11'
ST = 80.00'	T = 2,114.06'
	R = 5,757.00'
	V = 70 MPH

NAD 83/NSRS 2007

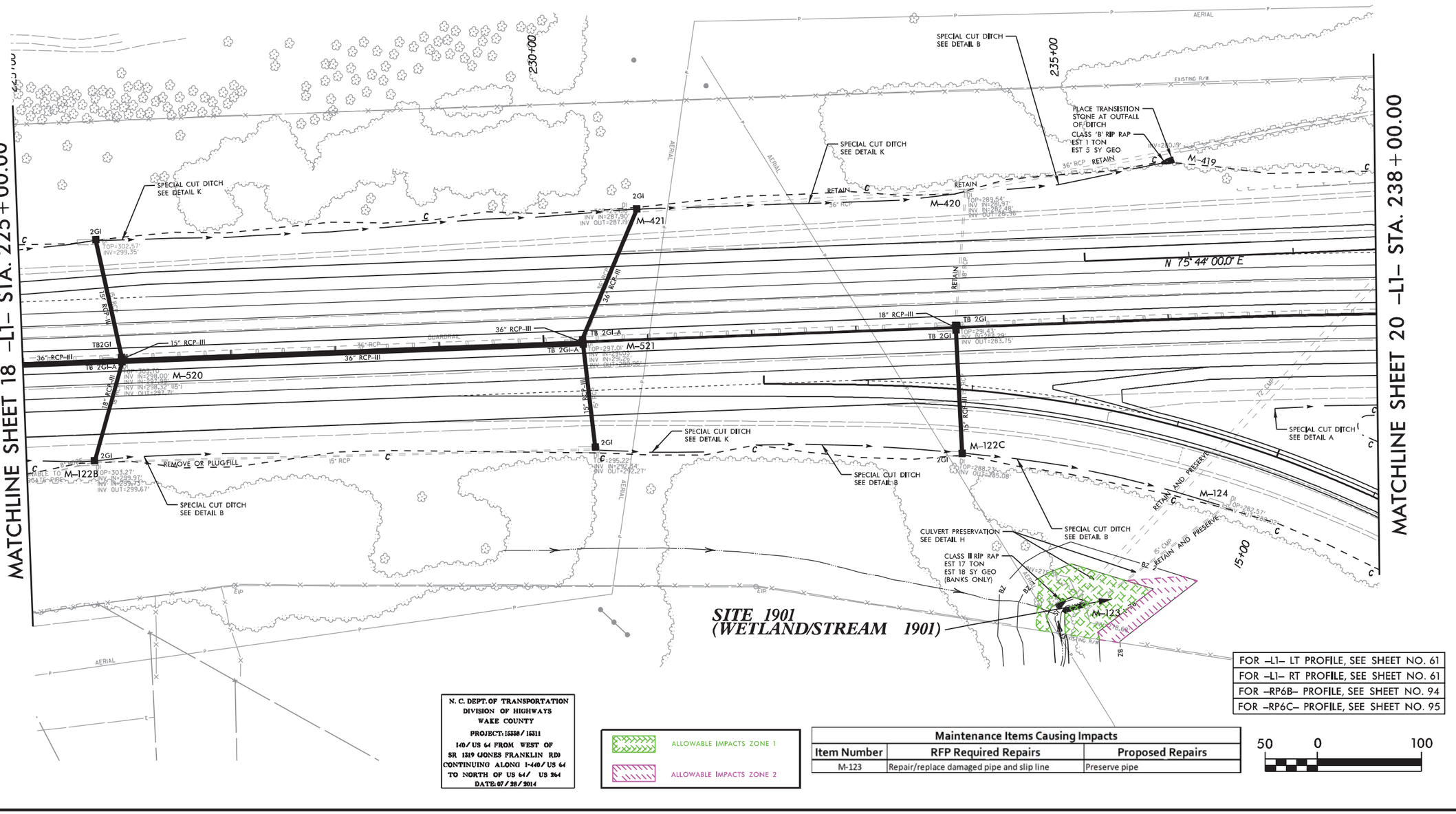
INTERSTATE 40 INTERSTATE 440 BEATTIE

GRANITE RS&H DESIGN-BUILD SERVICES

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	19
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15338 / 15311
I-40 / US 64 FROM WEST OF SR 1319 (JONES FRANKLIN RD) CONTINUING ALONG I-440 / US 64 TO NORTH OF US 64 / US 264
DATE: 07 / 28 / 2014

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

Maintenance Items Causing Impacts		
Item Number	RFP Required Repairs	Proposed Repairs
M-123	Repair/replace damaged pipe and slip line	Preserve pipe

FOR –L1– LT PROFILE, SEE SHEET NO. 61
FOR –L1– RT PROFILE, SEE SHEET NO. 61
FOR –RP6B– PROFILE, SEE SHEET NO. 94
FOR –RP6C– PROFILE, SEE SHEET NO. 95

50 0 100

$$$$SYSTIME$$$$
$$$$SYSNAME$$$$
$$$$USERNAME$$$$

8/17/99

REVISIONS

\$\$\$\$\$SCTLINE\$\$\$\$\$
\$\$\$\$\$SIGN\$\$\$\$\$
\$\$\$\$\$USERNAME\$\$\$\$\$

-RP6C- CURVE DATA

PIs Sta 11+40.06	PI Sta 13+76.42	PIs Sta 16+10.60
θs = 5° 13' 52.9"	Δ = 16° 28' 06.7" (RT)	θs = 5° 13' 52.9"
Ls = 210.00'	D = 4° 58' 56.1"	Ls = 210.00'
LT = 140.06'	L = 330.54'	LT = 140.06'
ST = 70.06'	T = 166.42'	ST = 70.06'
	R = 1,150.00'	
	V = 55 MPH	

-RP6B- CURVE DATA

PIs Sta 14+04.06
θs = 5° 09' 23.8"
Ls = 216.00'
LT = 144.06'
ST = 72.06'

-LI- CURVE DATA

PIs Sta 236+82.32	PI Sta 258+76.38
θs = 1° 11' 39.4"	Δ = 40° 19' 41.2" (RT)
Ls = 240.00'	D = 0° 59' 42.9"
LT = 160.00'	L = 4,052.11'
ST = 80.00'	T = 2,114.06'
	R = 5,757.00'
	V = 70 MPH

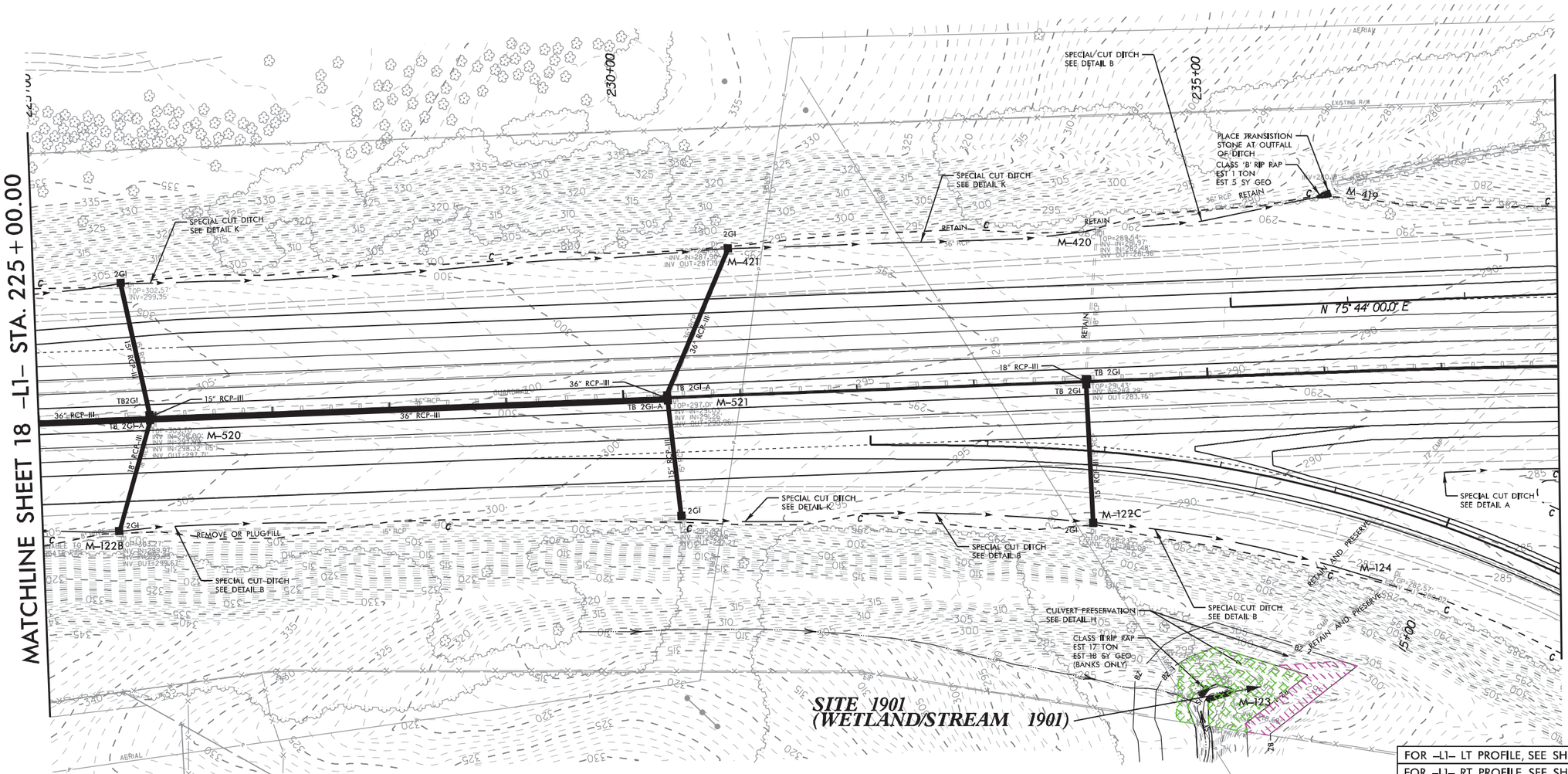
NAD 83/NSRS 2007

GRANITE RS&H
DESIGN-BUILD SERVICES

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	19
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15338 / 15311
140 / US 64 FROM WEST OF SR 1319 (JONES FRANKLIN RD) CONTINUING ALONG I-440 / US 64 TO NORTH OF US 64 / US 264
DATE: 07 / 28 / 2014

ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2

Maintenance Items Causing Impacts		
Item Number	RFP Required Repairs	Proposed Repairs
M-123	Repair/replace damaged pipe and slip line	Preserve pipe

50 0 100

FOR –L1– LT PROFILE, SEE SHEET NO. 61
FOR –L1– RT PROFILE, SEE SHEET NO. 61
FOR –RP6B– PROFILE, SEE SHEET NO. 94
FOR –RP6C– PROFILE, SEE SHEET NO. 95

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5339	20
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR BID OR CONSTRUCTION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRANITE RS&H
PARSONS BRINCKERHOFF

NAD 83/NSRS 2007

Maintenance Items Causing Impacts		
Item Number	RFP Required Repairs	Proposed Repairs
M-407	Remove trees at outlet and over pipe	Remove trees
M-413	Replace FES and slip line pipe if left in place	Remove FES & preserve pipe
M-414	Remove tree, construct energy dissipater, and slip line pipe	Remove tree, construct rip rap pad and preserve pipe.

SITE 2005
(WETLAND/STREAM 1901)

SITE 1901
(WETLAND/STREAM 1901)
(MOT 2001)

SITE 2003

SITE 2007

SITE 2006

SITE 2008

SITE 2001

SITE 2002
(WETLAND/STREAM 2002)

-76- LAKE WHEELER RD

MATCHLINE SHEET 19 -L1- STA. 238+00.00

MATCHLINE SHEET 21 -L1- STA. 266+00.00

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: R-2568/BH
SR/US 64 FROM WEST OF SR 1011/HODGE TRAIL/LO RD OVERPASS ALONG I-440/ US 64 TO NORTH OF US 64/ US 264 BATSE/BH/BH4

ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 3
ALLOWABLE IMPACTS ZONE 2
IMPACTS PERMITTED-ON MOT BUFFER PLEMENTS
UNALLOWABLE IMPACTS ZONE 3
UNALLOWABLE IMPACTS ZONE 2

-RPBB- CURVE DATA

Pt Sta 14+04.06	Pt Sta 16+21.25	Pt Sta 18+37.14	Pt Sta 21+25.27	Pt Sta 24+62.09
Bs = S 09° 23.8"	Δ = 13° 49' 10.3" (LT)	Bs = S 09° 23.8"	Bs = S 50° 23.7"	Δ = 41° 28' 15.2" (RT)
Ls = 216.00'	D = 4° 46' 29.7"	Ls = 216.00'	Ls = 216.00'	D = 11° 11' 09.4"
LT = 144.06'	L = 289.09'	LT = 144.06'	LT = 144.48'	L = 506.51'
ST = 72.06'	T = 145.29'	ST = 72.06'	ST = 72.61'	T = 265.00'
	R = 1,200.00'			R = 700.00'
	V = 60 MPH			V = 45 MPH

-RPBC- CURVE DATA

Pt Sta 16+10.60	Pt Sta 21+23.96	Pt Sta 23+47.92
Bs = S 13° 52.9"	Bs = S 43° 46.5"	Δ = 13° 46' 39.2" (LT)
Ls = 210.00'	Ls = 240.00'	D = 4° 46' 29.7"
LT = 140.06'	LT = 160.08'	L = 286.81'
ST = 70.06'	ST = 80.08'	T = 144.09'
		R = 1,200.00'
		V = 35 MPH

-L1- CURVE DATA

Pt Sta 258+78.69
Δ = 46° 20' 40.5" (RT)
D = 17° 59' 56.6"
L = 4,038.28'
T = 2,136.33'
R = 321.50.00'
V = 70 MPH

-Y6- CURVE DATA

Pt Sta 14+36.77	Pt Sta 20+02.40
Δ = 14° 06' 11.0" (LT)	Δ = 8° 50' 50.4" (LT)
D = 1° 44' 58.2"	D = 3° 41' 40.1"
L = 806.12'	L = 328.56'
T = 405.11'	T = 164.62'
R = 3,275.00'	R = 2,100.00'

-RPBA- CURVE DATA

Pt Sta 14+46.02	Pt Sta 18+35.29
Bs = 2° 5' 53.2"	Δ = 13° 44' 47.2" (RT)
Ls = 240.00'	D = 2° 23' 14.4"
LT = 160.02'	L = 571.58'
ST = 80.02'	T = 288.20'
	R = 2,400.00'
	V = 50 MPH

-RPBD- CURVE DATA

Pts Sta 11+71.07	Pts Sta 15+66.75	Pts Sta 19+39.97
Bs = 1° 00' 18.3"	Δ = 22° 14' 14.3" (LT)	Bs = 3° 34' 51.6"
Ls = 200.00'	D = 3° 14' 51.6"	Ls = 200.00'
LT = 118.07'	L = 676.98'	LT = 133.36'
ST = 59.13'	T = 344.45'	ST = 66.69'
	R = 1,650.00'	
	V = 60 MPH	

FOR -L1- LT PROFILE, SEE SHEET NO. 62.63
FOR -L1- RT PROFILE, SEE SHEET NO. 62.63
FOR -RPBA- PROFILE, SEE SHEET NO. 93.94
FOR -RPBB- PROFILE, SEE SHEET NO. 94
FOR -RPBC- PROFILE, SEE SHEET NO. 95
FOR -RPBD- PROFILE, SEE SHEET NO. 95.96

LOCATION:

TIP NO.: COUNTY:

DESIGNED BY:

CHECKED BY: DATE:

GRAPHIC SCALE
50 25 0 50 100
PLANS

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5339	20
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR BID OR CONSTRUCTION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

40 440

GRANITE RS&H
JOINT VENTURE

NAD 83/NSRS 2007

Maintenance Items Causing Impacts		
Item Number	RFP Required Repairs	Proposed Repairs
M-407	Remove trees at outlet and over pipe	Remove trees
M-413	Replace FES and slip line pipe if left in place	Remove FES & preserve pipe
M-414	Remove tree, construct energy dissipater, and slip line pipe	Remove tree, construct rip rap pad and preserve pipe.

SITE 2005
(WETLAND/STREAM 1901)

SITE 1901
(WETLAND/STREAM 1901)
(MOT 2001)

SITE 2003

SITE 2006

SITE 2007

SITE 2008

SITE 2001

SITE 2002
(WETLAND/STREAM 2002)

-L1- STA. 238+00.00

MATCHLINE SHEET 19

MATCHLINE SHEET 21 -L1- STA. 266+00.00

-RPBB- CURVE DATA

Pt's Sta 14+04.06	Pt Sta 16+12.25	Pt Sta 18+37.14	Pt Sta 21+25.27	Pt Sta 24+62.09
Bs = S 09° 23.8"	Δ = 13° 48' 10.3" (LT)	Bs = S 09° 23.8"	Bs = S 50° 23.7"	Δ = 41° 28' 16.2" (RT)
Ls = 216.00	D = 4° 46' 28.7"	Ls = 216.00	Ls = 216.00	D = 11° 06.4"
LT = 144.06	L = 289.09'	LT = 144.06'	LT = 144.18'	L = 506.67'
ST = 72.06'	T = 145.25'	ST = 72.06'	ST = 72.16'	T = 265.00'
	R = 1,200.00'			R = 700.00'
	V = 60 MPH			V = 45 MPH

-RPBC- CURVE DATA

Pt's Sta 16+10.60	Pt's Sta 21+23.96	Pt's Sta 23+47.59
Bs = S 13° 52.9"	Bs = S 43° 46.5"	Δ = 13° 46' 35.7" (LT)
Ls = 210.00	Ls = 240.00	D = 4° 46' 28.7"
LT = 140.00'	LT = 160.08'	L = 286.81'
ST = 70.06'	ST = 80.08'	T = 144.09'
		R = 1,200.00'
		V = 55 MPH

-L1- CURVE DATA

Pt Sta 25+87.69
Δ = 40° 29' 40.5" (RT)
D = 6° 59' 56.6"
L = 403.88.29'
T = 210.69.2'
R = 820.00'
V = 70 MPH

-Y6- CURVE DATA

Pt Sta 14+36.77	Pt Sta 20+02.40
Δ = 14° 06' 11.0" (LT)	Δ = 8° 57' 50.4" (LT)
D = 1° 44' 58.2"	D = 3° 43' 42.7"
L = 806.62'	L = 328.56'
T = 405.11'	T = 164.62'
R = 3,275.00'	R = 2,100.00'

-RPBA- CURVE DATA

Pt Sta 14+66.02	Pt Sta 18+35.29
Bs = S 5° 53.2"	Δ = 13° 46' 47.7" (RT)
Ls = 240.00'	D = 2° 23' 14.4"
LT = 160.02'	L = 573.81'
ST = 80.02'	T = 289.29'
	R = 2,400.00'
	V = 50 MPH

-RPBD- CURVE DATA

Pt's Sta 11+71.09'	Pt Sta 15+66.75	Pt Sta 19+39.97
Bs = S 07° 18.3"	Δ = 25° 14' 14.3" (LT)	Bs = S 34° 51.6"
Bs = S 34° 53.2"	D = 9° 34' 51.6"	Ls = 200.00
Ls = 200.00'	L = 620.98'	LT = 133.36'
LT = 118.77'	T = 314.45'	ST = 66.69'
ST = 81.33'	R = 600.00'	
	V = 60 MPH	

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 5338/5339
I-40/US 64 FROM WEST OF
SR 1304 (OLIVE CHAPEL) RD
CONVERTING ALONG I-40/US 64
TO WIDEN EB TO 4+/ WB TO 3+
DATUM: NAD 83

ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 3
ALLOWABLE IMPACTS ZONE 2
IMPACTS PERMITTED ON
HOT BUFFER MEASURES

FOR -L1- LT PROFILE, SEE SHEET NO. 62.63
FOR -L1- RT PROFILE, SEE SHEET NO. 92.63
FOR -RPBA- PROFILE, SEE SHEET NO. 93.94
FOR -RPBB- PROFILE, SEE SHEET NO. 94
FOR -RPBC- PROFILE, SEE SHEET NO. 95
FOR -RPBD- PROFILE, SEE SHEET NO. 95.96

GRAPHIC SCALE
50 25 0 50 100
PLANS

DESIGNED BY:	
TIP NO.:	COUNTY:
DESIGNED BY:	
CHECKED BY:	DATE:

8/17/99

REVISIONS

-RP6D- CURVE DATA

PI Sta 10+26.15
△ = 0° 31' 33.2" (LT)
D = 1° 00' 20.0"
L = 52.30'
T = 26.15'
R = 5,698.00'
V = 70 MPH

PIs Sta 11+71.07
Θs = 1° 00' 18.3"
Θs = 3° 34' 53.2"
Ls = 200.00'
LT = 118.77'
ST = 81.33'

-LI- CURVE DATA

PI Sta 258+76.38
△ = 40° 19' 41.2" (RT)
D = 0° 59' 42.9"
L = 4,052.11'
T = 2,114.06'
R = 5,757.00'
V = 70 MPH

PIs Sta 278+94.43
Θs = 1° 11' 39.4"
Ls = 240.00'
LT = 160.00'
ST = 80.00'

Maintenance Items Causing Impacts		
Item Number	RFP Required Repairs	Proposed Repairs
M-134	Pipe is too shallow. Replace if possible	Replace pipe to new 2GI at barrier

NAD 83/NSRS 2007

INTERSTATE 40 INTERSTATE 440 BELTLINE

GRANITE RS&H DESIGN-BUILD SERVICES

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	21
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

MATCHLINE SHEET 20 –L1– STA. 266+00.00

270+00

275+00

MATCHLINE SHEET 22 –L1– STA. 280+00.00

S 14° 37' 42.2" E

EXISTING R/W

–L1– STA. 275+45.28

–L1– STA. 276+69.73

CLASS 'B' RIP RAP
EST 1 TON
EST 5 SY GEO

PLACE TRANSISTION STONE
AT OUTFALL OF DITCH

SPECIAL CUT DITCH
SEE DETAIL K

SPECIAL CUT DITCH
SEE DETAIL N

CLASS I RIP RAP
EST 15 TON
EST 30 SY GEO

V_{10}= 6.43 FT/S
Q_{10}= 28.9 CFS

M-396

M-533/M-535

M-142

M-143

M-145

M-137

M-136

M-134

DO NOT BURY 48" RCP

V_2 = 0.84 FT/S
Q_2 = 0.70 CFS

V_{10}= 0.89 FT/S
Q_{10}= 0.90 CFS

CLASS II RIP RAP
EST 22 TON
EST 23 SY GEO
(BANKS ONLY)

SITE 2101
(WETLAND/STREAM 2101)

1440 VARIBLE WIDTH BST

GUARDRAIL

NORFOLK SOUTHERN RAILROAD

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: I5338 / I5311
I-40 / US 64 FROM WEST OF
SR 1319 GONES FRANKLIN RD)
CONTINUING ALONG I-440 / US 64
TO NORTH OF US 64 / US 264
DATE: 07 / 28 / 2014

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

FOR –L1– LT PROFILE, SEE SHEET NO. 64
FOR –L1– RT PROFILE, SEE SHEET NO. 64
FOR –RP6A– PROFILE, SEE SHEET NO. 93,94
FOR –RP6D– PROFILE, SEE SHEET NO. 95,96

50 0 100

$$$$SYSTIME $$$$
$$$$DESIGN $$$$
$$$$USERNAME $$$$

8/17/99

REVISIONS

$$$$SYSTIME$$$$
$$$$USERNAME$$$$

-RP6D- CURVE DATA

PI Sta 10+26.15
△ = 0° 31' 33.2" (LT)
D = 1° 00' 20.0"
L = 52.30'
T = 26.15'
R = 5,698.00'
V = 70 MPH

PIs Sta 11+71.07
Θs = 1° 00' 18.3"
Θs = 3° 34' 53.2"
Ls = 200.00'
LT = 118.77'
ST = 81.33'

-LI- CURVE DATA

PI Sta 258+76.38
△ = 40° 19' 41.2" (RT)
D = 0° 59' 42.9"
L = 4,052.11'
T = 2,114.06'
R = 5,757.00'
V = 70 MPH

PIs Sta 278+94.43
Θs = 1° 11' 39.4"
Ls = 240.00'
LT = 160.00'
ST = 80.00'

Maintenance Items Causing Impacts		
Item Number	RFP Required Repairs	Proposed Repairs
M-134	Pipe is too shallow. Replace if possible	Replace pipe to new 2GI at barrier

NAD 83 NSRS 2007

INTERSTATE 40 440 BYPASS

GRANITE RS&H
DESIGN-BUILD SERVICES

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	21
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

MATCHLINE SHEET 20 –L1– STA. 266+00.00

MATCHLINE SHEET 22 –L1– STA. 280+00.00

270+00

275+00

S 14° 37' 42.2" E

CLASS 'B' RIP RAP
EST 1 TON
EST 5 SY GEO

PLACE TRANSITION STONE AT OUTFALL OF DITCH

SPECIAL CUT DITCH
SEE DETAIL K

SPECIAL CUT DITCH
SEE DETAIL K

SPECIAL CUT DITCH
SEE DETAIL N

CLASS I RIP RAP
EST 15 TON
EST 30 SY GEO

V_{10}= 6.43 FT/S
Q_{10} = 28.9 CFS

M-396

M-533/M-535

M-142

M-143

M-137

M-136

M-145

M-134

DO NOT BURY 48" RCP

SPECIAL CUT DITCH
SEE DETAIL K

CLASS II RIP RAP
EST 22 TON
EST 23 SY GEO
(BANKS ONLY)

V_2 = 0.84 FT/S
Q_2 = 0.70 CFS

V_{10}= 0.89 FT/S
Q_{10}= 0.90 CFS

SITE 2101
(WETLAND/STREAM 2101)

1440 VARIBLE WIDTH BST

NORFOLK SOUTHERN RAILROAD

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15338 / 15311
140 / US 64 FROM WEST OF SR 1319 (JONES FRANKLIN RD) CONTINUING ALONG I-440 / US 64 TO NORTH OF US 64 / US 264
DATE: 07 / 28 / 2014

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

FOR –L1– LT PROFILE, SEE SHEET NO. 64
FOR –L1– RT PROFILE, SEE SHEET NO. 64
FOR –RP6A– PROFILE, SEE SHEET NO. 93,94
FOR –RP6D– PROFILE, SEE SHEET NO. 95,96

50 0 100

8/17/99

REVISIONS

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

8/17/99

REVISIONS

$$$$SYSTIME$$$$
$$$$DGN$$$$
$$$$FILENAME$$$$

-LI- CURVE DATA

PIs Sta 278+94.43	PIs Sta 293+66.36
Θs = 1° 11' 39.4"	Θs = 6° 03' 56.6"
Ls = 240.00'	Ls = 480.00'
LT = 160.00'	LT = 320.19'
ST = 80.00'	ST = 160.17'

-RP7B- CURVE DATA

PI Sta 14+19.34	PIs Sta 11+40.06	PIs Sta 17+39.37
Δ = 19° 47' 27.5" (LT)	Θs = 5° 00' 48.2"	Θs = 1° 13' 30.4"
D = 4° 46' 28.7"	Ls = 210.00'	Θs = 7° 09' 52.6"
L = 414.50'	LT = 140.06'	Ls = 300.00'
T = 209.34'	ST = 70.05'	LT = 185.62'
R = 1,200.00'		ST = 114.87'
V = 70 MPH		

-RP7C- CURVE DATA

PI Sta 12+58.17
Δ = 3° 41' 48.0" (RT)
D = 0° 42' 58.3"
L = 516.15'
T = 258.17'
R = 8,000.00'

NAD 83/NSRS 2007

INTERSTATE 40 INTERSTATE 440 BYPASS

GRANITE RS&H DESIGN-BUILD SERVICES

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	22
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

MATCHLINE SHEET 21 –L1– STA. 280+00.00

MATCHLINE SHEET 23 –L1– STA. 294+00.00

SITE 2201
(MOT 2201)

SITE 2201
(WETLAND/STREAM 2201)
(MOT 2201)

DEPTH OF EX. CMP IS NOT KNOWN IN THIS LOCATION, CONTRACTOR TO CONSTRUCT BRICK BOX TO DEPTH AS NECESSARY TO CONNECT PROPOSED & EX. PIPE.

BEGIN SBG –L1– STA 286+00

BEGIN SBG –L1– STA 285+54

*M-391 SEE DRAINAGE MAINTENANCE TABLE

*M-388 SEE DRAINAGE MAINTENANCE TABLE

MEDIAN V DITCH SEE DETAIL D SHEET 2-BJ

SPECIAL LATERAL V DITCH SEE DETAIL B SHEET 2-BJ

CLASS 'B' RIP RAP EST. 1 TON EST. 5 SY GEO

15" WELBOWS, ROD, & LUG CONNECTORS

REMOVE

RETAIN

M-392 M-393 M-391 M-388 M-536

JB w/MH

2GI 3GI-A TB 2GI

15" RCP-III

S 6° 33' 00.0" E

FOR –L1– LT PROFILE, SEE SHEET NO. 65
FOR –L1– RT PROFILE, SEE SHEET NO. 65
FOR –RP7B– PROFILE, SEE SHEET NO. 97
FOR –RP7C– PROFILE, SEE SHEET NO. 98

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

IMPACTS PERMITTED ON MOT BUFFER PERMITS

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15338 / 15311
140 / US 64 FROM WEST OF SR 1319 (JONES FRANKLIN RD) CONTINUING ALONG I-440 / US 64 TO NORTH OF US 64 / US 264
DATE: 07 / 28 / 2014

50 0 100

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5339	23
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR BID OR ADJUSTMENT

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83/NSRS 2007

40 440

GRANITE RS&H
A JACOBS JOINT VENTURE

-RPTB- CURVE DATA

Pt1 Sta 17+39.37	Pt2 Sta 21+36.93
θs = 7°13' 30.4"	Δ = 3°28' 34.9" (RT)
θs2 = 7°13' 52.6"	D = 0°49' 06.6"
Ls = 300.00'	L = 494.72'
LT = 185.62'	T = 252.40'
ST = 114.8ft²	R = 7,000.00'

-LPTB- CURVE DATA

Pt Sta 10+78.59	Pt Sta 38+56.37
Δ = 4°06' 10.7" (RT)	Δ = 11°3' 01.2" (RT)
D = 2° 36' 41.3"	D = 3°22' 04.1"
L = 157.31'	L = 489.52'
T = 78.59'	T = 245.09'
R = 2,194.00'	R = 1,700.00'

-RPTC- CURVE DATA

Pt Sta 23+56.48
Δ = 1°45' 58.9" (RT)
D = 0°34' 22.6"
L = 308.29'
T = 154.16'
R = 10,000.00'

-Y7- CURVE DATA

Pt Sta 6+39.89
Δ = 2°13' 30.9" (LT)
D = 0°34' 22.6"
L = 386.18'
T = 194.21'
R = 10,000.00'

-U- CURVE DATA

Pt1 Sta 293+66.36	Pt2 Sta 302+58.43	Pt3 Sta 311+02.90
θs = 6°03' 56.6"	Δ = 35° 48' 06.8" (LT)	θs = 6°03' 56.6"
Ls = 480.00'	D = 2° 31' 38.6"	Ls = 480.00'
LT = 320.19'	L = 1,416.56'	LT = 320.19'
ST = 166.01'	T = 732.26'	ST = 166.01'
	R = 2,267.00'	
	V = 65 MPH	

Maintenance Items Causing Impacts		
Item Number	RFP Required Repairs	Proposed Repairs
M-190	Clean out outlet	Retain and preserve pipe
M-368	Clean out curb line and drainage system	Install SBC, construct new structure; convert ex. structure to 2B

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: I-5338 / I-5339
I-40 / US 64 FROM WEST OF
NC 539 (GROSS PEACHTREE RD
CONTINUING ALONG I-440 / US 64
TO NORTH OF US 64 / US 264
DATE: 07/31/2024

ALLOWABLE IMPACTS ZONE 1 — MITIGABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2 — MITIGABLE IMPACTS ZONE 2
IMPACTS PROHIBITED (ON-HOST BUFFER STREAMS)

-RPTA- CURVE DATA

Pt1 Sta 11+40.06	Pt2 Sta 15+41.77
θs = 5°00' 48.2"	Δ = 39°34' 41.2" (RT)
Ls = 210.00'	D = 4°46' 28.7"
LT = 140.01'	L = 828.93'
ST = 70.05'	T = 431.71'
	R = 1,200.00'

-LPTD- CURVE DATA

Pt1 Sta 10+12.52	Pt2 Sta 14+30.03	Pt3 Sta 15+85.21	Pt4 Sta 18+87.05
Δ = 17°37' 00.7" (LT)	Δ = 42°58' 15.6"	Δ = 96°47' 13.0" (RT)	Δ = 40°54' 41.2" (RT)
D = 2°37' 47.8"	D = 4°00' 04.0"	D = 35°49' 35.5"	D = 19°66' 54.9"
L = 214.04'	Ls = 240.00'	L = 270.28'	L = 213.92'
T = 107.52'	L = 1,430.96'	T = 180.17'	T = 111.73'
R = 2,326.00'	ST = 84.55'	R = 160.00'	R = 300.00'

-RPTD- CURVE DATA

Pt1 Sta 11+44.04	Pt2 Sta 14+10.52	Pt3 Sta 15+57.02	Pt4 Sta 21+54.93	Pt5 Sta 23+81.34
θs = 4°19' 16.3"	Δ = 14°45' 47.2" (LT)	θs = 4°19' 16.3"	θs = 12°19' 16.0"	Δ = 31° 58' 51.7" (RT)
Ls = 216.00'	D = 4°00' 04.0"	Ls = 216.00'	Ls = 200.00'	D = 12°19' 18.0"
LT = 144.04'	L = 368.98'	LT = 144.04'	LT = 133.60'	L = 308.26'
ST = 72.04'	T = 185.52'	ST = 72.04'	ST = 66.96'	T = 160.03'
	R = 1,432.00'			R = 465.00'

FOR -L1- LT. PROFILE, SEE SHEET NO. 66,67
FOR -L1- RT. PROFILE, SEE SHEET NO. 66,67
FOR -RPTA- PROFILE, SEE SHEET NO. 96
FOR -RPTB- PROFILE, SEE SHEET NO. 97
FOR -RPTB- PROFILE, SEE SHEET NO. 97
FOR -RPTC- PROFILE, SEE SHEET NO. 98
FOR -LPTD- PROFILE, SEE SHEET NO. 98,99
FOR -RPTD- PROFILE, SEE SHEET NO. 99

GRAPHIC SCALE
50 25 0 50 100
PLANS

LOCATION:
TIP NO.: COUNTY:
DESIGNED BY:
CHECKED BY: DATE:

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5339	23
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR BID OR CONSTRUCTION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

40 440

GRANITE RS&H

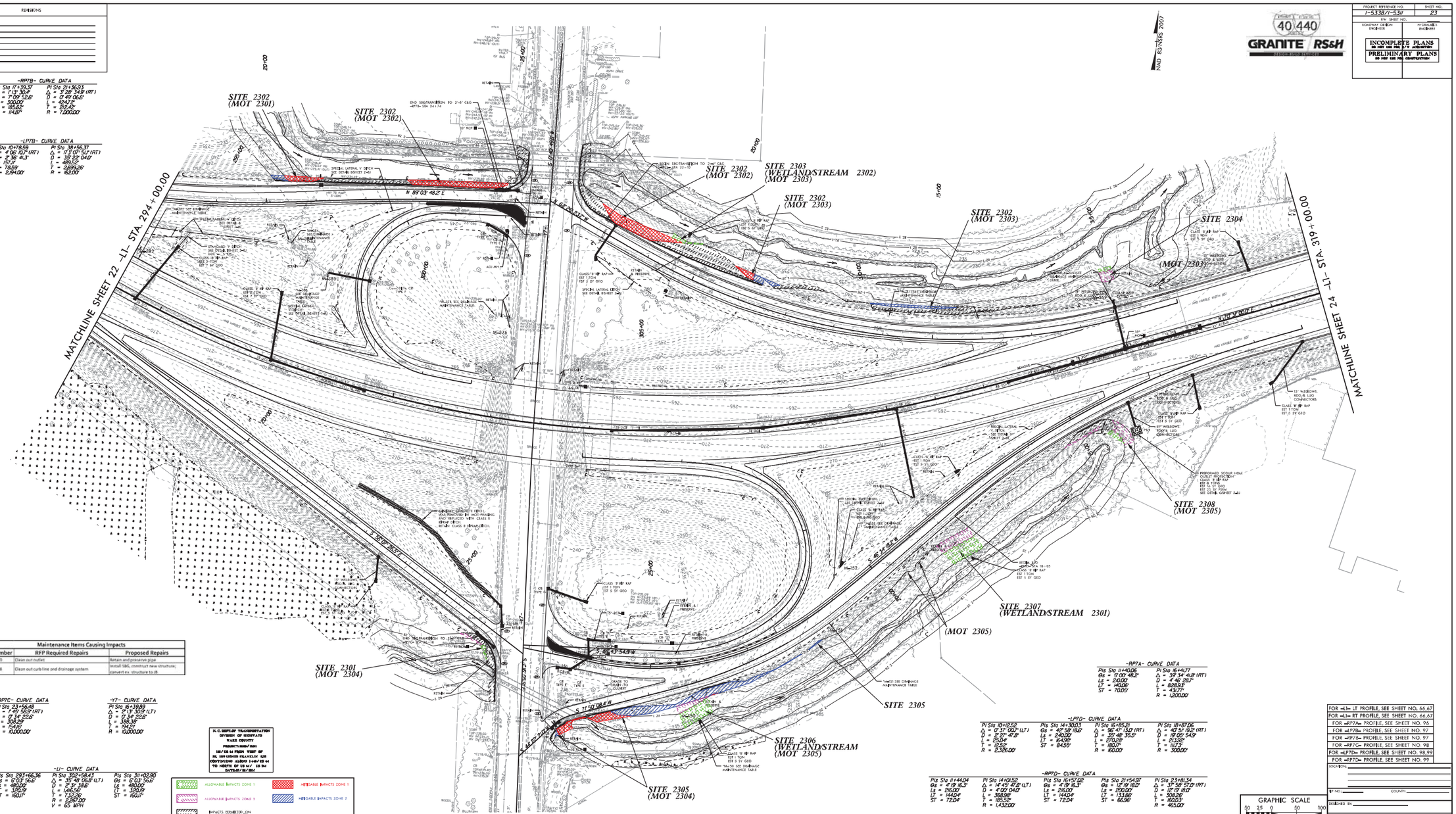
NAD 83/NSRS 2007

-RPTB- CURVE DATA

PI Sta 17+39.37	PI Sta 31+36.93
θs = 7°13'30.4"	Δ = 3°28'34.5" (RT)
θs = 7°29'52.6"	D = 0°49'06.6"
Ls = 300.00'	L = 494.75'
LT = 185.62'	T = 247.47'
ST = 114.81'	R = 1200.00'

-LPTB- CURVE DATA

PI Sta 10+78.59	PI Sta 38+56.37
Δ = 4°06'10.7" (RT)	Δ = 11°3'01.2" (RT)
D = 2°36'45.3"	D = 35°22'04.1"
L = 157.31'	L = 489.52'
T = 78.59'	T = 245.96'
R = 2,194.00'	R = 162.00'



REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	25
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR BIDDING PURPOSES

PRELIMINARY PLANS
NOT FOR USE FOR CONSTRUCTION

40/440 GRANITE RS&H Kimley»Horn

MATCHLINE SHEET 43 –Y9– STA. 15+50.00

MATCHLINE SHEET 24 –L1– STA. 332+00.00

MATCHLINE SHEET 26 –L1– STA. 359+00.00

MATCHLINE SHEET 44 –Y9– STA. 30+00.00

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15538 / 15511
I-40 / US 64 FROM WEST OF SR 1319 (JONES FRANKLIN RD) CONTINUING ALONG I-440 / US 64 TO NORTH OF US 64 / US 264
DATE: 07 / 28 / 2014

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

SITE 2501 – IMPACT ZOOM-IN (SCALE: 1" = 50')

SITE 2501

ROCHESTER HEIGHTS HISTORIC DISTRICT

-RP9A- CURVE DATA

PI Sta 10+24.46	PI Sta 11+55.42	PI Sta 18+96.25	PI Sta 25+12.08	PI Sta 27+53.36	PI Sta 29+64.64
Δ = 17°44'40.3" (RT)	Δ = 6°01'32.5"	Δ = 62°59'14.4" (RT)	Δ = 7°40'37.9"	Δ = 9°36'40.5" (RT)	Δ = 3°59'17.4"
D = 1°39'26.2"	Ls = 180.00'	D = 5°16'31.4"	Ls = 180.00'	D = 3°19'17.4"	Ls = 200.00'
L = 465.92'	L = 196.52'	L = 1,096.57'	LT = 96.78'	L = 289.36'	LT = 133.36'
T = 234.46'	ST = 73.65'	T = 667.33'	ST = 83.49'	T = 145.05'	ST = 66.69'
R = 3,760.72'		D = 1,050.00'		R = 1,725.00'	
V = 76 MPH		V = 58 MPH		V = 53 MPH	
SE = 06		SE = 08		SE = 05	

-RP9ASPUR- CURVE DATA

PI Sta 14+64.55
Δ = 9°22'13.7" (LT)
D = 14°19'26.2"
L = 65.42'
T = 32.78'
R = 400.00'
V = 15 MPH
SE = 03

-RP9B- CURVE DATA

PI Sta 13+85.12	PI Sta 16+35.12	PI Sta 19+29.39	PI Sta 20+46.25	PI Sta 22+75.98
Δs = 5°53'53.4"	Δ = 67°50'12.3" (LT)	Δs = 2°48'31.02"	Δs = 17°33'16.15"	Δ = 39°43'36.05" (RT)
Ls = 315.00'	D = 3°44'41.4"	Ls = 150.00'	Lt = 175.00'	D = 12°03'44.2"
Lt = 210.12'	L = 289.38'	Lt = 100.01'	Lt = 116.87'	L = 329.35'
St = 105.11'	T = 165.12'	St = 50.01'	St = 58.52'	T = 171.63'
	R = 1,530.00'			R = 475.00'
	V = 56 MPH			V = 29 MPH
	SE = 07			SE = 06

-RP9BSPUR- CURVE DATA

PI Sta 10+12.80	PI Sta 16+63.35
Δ = 12°57'57.905" (LT)	Δ = 55°58'33.6" (LT)
D = 3°48'27.9"	D = 4°46'28.7"
L = 254.19'	L = 472.36'
T = 127.80'	T = 637.73'
R = 1,505.00'	R = 1,200.00'
V = 56 MPH	V = 50 MPH
SE = 07	SE = 09

-RP9C- CURVE DATA

PI Sta 15+87.16	PI Sta 21+19.37	PI Sta 26+05.79
Δ = 47°09'57.2" (RT)	Δs = 2°45'17.4"	Δ = 13°25'49.5" (LT)
D = 4°45'17.4"	D = 2°51'53.4"	D = 26°02'36.7"
L = 990.51'	Ls = 200.00'	Ls = 128.58'
T = 525.42'	LT = 133.38'	L = 66.07'
R = 1,205.00'	ST = 66.71'	R = 220.00'
V = 50 MPH		V = 15 MPH
SE = 07		SE = 03

-LP9C- CURVE DATA

PI Sta 13+10.51	PI Sta 17+03.86	PI Sta 20+56.98
Δs = 26°41'26"	Δ = 230°05'50.77" (LT)	Δs = 26°41'26.0"
Ls = 150.00'	D = 35°35'14.79"	Ls = 150.00'
Lt = 19.16'	L = 646.57'	Lt = 19.16'
St = 5.06'	T = 344.50'	St = 5.06'
	R = 161.00'	
	V = 27 MPH	
	SE = 08	

-RP9D- CURVE DATA

PI Sta 16+18.44	PI Sta 20+00.52	PI Sta 25+33.28
Δs = 7°09'43"	Δ = 43°02'56.7" (LT)	Δ = 24°21'56.7" (LT)
Ls = 200.00'	D = 7°09'43"	D = 5°01'14.4"
Lt = 133.44'	L = 601.08'	L = 486.93'
St = 66.71'	T = 315.52'	T = 247.20'
	R = 800.00'	R = 1,145.00'
	V = 51 MPH	V = 59 MPH
	SE = 08	SE = 08

-U/- CURVE DATA

PI Sta 3+40+21.62	PI Sta 3+48+58.01	PI Sta 3+54+88.40
Δs = 4°13'39.8"	Δs = 2°15'00.0"	Δ = 15°48'40.2" (LT)
Ls = 420.00'	Ls = 300.00'	D = 1°30'00.0"
Lt = 288.08'	Lt = 200.02'	L = 1,054.07'
St = 144.01'	St = 100.01'	Lt = 530.14'
		R = 3,819.72'
		V = 75 MPH
		SE = 06

-Y9- CURVE DATA

PI Sta 3+17+73.35
Δ = 8°35'33.8" (RT)
D = 1°07'53.2"
L = 797.36'
T = 364.36'
R = 4,850.00'

-RP9ASPUR- PC Sta. 10+00.00 = -RP9A- POT Sta. 10+00.00 (0.00')

-RP9ASPUR- PT Sta. 14+97.19

-RP9ASPUR- PC Sta. 14+34.77

-RP9A- CS Sta. 24+28.59

-RP9A- SC Sta. 26+08.59

-Y9- POT Sta. 18+40.00 = -RP9ASPUR- POT Sta. 16+00.39 (0.00')

-RP9B- PT Sta. 24+33.73

-RP9B- SC Sta. 21+04.39

-RP9B- SRS Sta. 19+29.38

-RP9B- CS Sta. 17+79.38

-RP9B- SC Sta. 14+90.00

-RP9BSPUR- PCC Sta. 10+25.59

-RP9BSPUR- PC Sta. 10+00.00 (1.20' LT)

-U- CS Sta. 338+81.54

-U- ST Sta. 343+01.54

-U- POT Sta. 344+02.19 = -Y9- POT Sta. 23+34.34

-U- TS Sta. 346+58.00

-U- SC Sta. 349+58.00

-U- POT Sta. 345+10.00 = -LP9C- POT Sta. 10+00.00 (59.00' RT)

-LP9C- TS Sta. 12+09.35

-Y9- POT Sta. 24+38.41

-LP9C- ST Sta. 21+55.92

-LP9C- SC Sta. 13+59.35

-LP9C- CS Sta. 20+05.92

-U- POT Sta. 357+00.00 = -RP9A- PC Sta. 10+00.00 (159.00' LT)

-U- POT Sta. 359+00.00 = -RP9D- POT Sta. 10+00.00 (59.00' RT)

-RP9D- SC Sta. 16+85.00

-RP9D- TS Sta. 14+85.00

-Y10- POT Sta. 10+00.00

-Y10- POT Sta. 15+67.87

-RP9C- PC Sta. 25+39.72

-RP9C- POT Sta. 27+46.08 = -RP9C- POT Sta. 21+47.41' (0.00')

-RP9D- PCC Sta. 22+86.08

-RP9C- PT Sta. 26+68.08

END CONSTRUCTION -RP9C- / Sta. 26+88.19

END CONSTRUCTION -RP9B- Sta. 24+82.51

END CONSTRUCTION -Y9- POT Sta. 18+40.00 = -RP9B- POT Sta. 25+45.22 (0.00')

END CONSTRUCTION -RP9ASPUR- Sta. 15+32.55

-Y9- PT Sta. 28+07.98

BEGIN PERMANENT RETAINING WALL -RWL5- -RWL5- STA. 356+25.00 (-U- STA. 356+25.00, 87.88' LT)

END PERMANENT RETAINING WALL -RWL5- -RWL5- STA. 356+45.46 (-U- STA. 356+45.94, 88.45' LT)

BEGIN PERMANENT RETAINING WALL -RWRS- -RWRS- STA. 357+75.00 (-U- STA. 357+75.00, 150.17' RT) (-RP9D- STA. 11+14.25, 24.18' LT)

END PERMANENT RETAINING WALL -RWRS- -RWRS- STA. 354+63.86 (-U- STA. 354+50.00, 112.00' RT) (-RP9D- STA. 14+21.21, 30.37' LT)

FOR –L– LT PROFILE, SEE SHEET NO. 69,70	
FOR –L– RT PROFILE SEE SHEET NO. 69,70	
FOR –RP9A– PROFILE, SEE SHEET NO. 103	
FOR –RP9ASPUR– PROFILE, SEE SHEET NO. 103	
FOR –RP9B– PROFILE, SEE SHEET NO. 104	
FOR –RP9BSPUR– PROFILE, SEE SHEET NO. 104,105	
FOR –LP9C– PROFILE, SEE SHEET NO. 105	
FOR –RP9C– PROFILE, SEE SHEET NO. 105,106	
FOR –RP9D– PROFILE, SEE SHEET NO. 106	

LOCATIONS

TIP NO.: | COUNTY:

DESIGNED BY: | DATE:

CHECKED BY: | DATE:

GRAPHIC SCALE
50 25 0 50 100
PLANS

REVISIONS

MATCHLINE SHEET 43 –Y9– STA. 15+50.00

MATCHLINE SHEET 24 –L1– STA. 332+00.00

MATCHLINE SHEET 26 –L1– STA. 359+00.00

MATCHLINE SHEET 44 –Y9– STA. 30+00.00

-RP9B- CURVE DATA

Pt Sta 13+85.12	Pt Sta 16+35.12	Pt Sta 18+29.39	Pt Sta 20+46.25	Pt Sta 22+75.98
Bs = 5°53' 53.4"	Δ = 67°50' 12.3" (LT)	Bs = 2°48' 31.02"	Bs = 17°33' 16.15"	Δ = 39°43' 36.05" (RT)
Ls = 315.00'	D = 3°44' 41.4"	Ls = 150.00'	Ls = 175.00'	D = 12°03' 44.2"
Lt = 210.12'	L = 289.38'	Lt = 100.01'	Lt = 116.81'	L = 329.35'
St = 105.1'	T = 165.12'	St = 50.01'	St = 58.52'	T = 171.63'
	R = 153.00'			R = 475.00'
	V = 56 MPH			V = 29 MPH
	SE = 07			SE = 06

-RP9BSPUR- CURVE DATA

Pt Sta 10+12.80	Pt Sta 16+63.35
Δ = 12°57' 57.925" (LT)	Δ = 55°58' 33.6" (LT)
D = 3°46' 27.9"	D = 4°46' 28.7"
L = 25.19'	L = 472.36'
T = 12.80'	T = 637.73'
R = 1,516.00'	R = 1,200.00'
V = 56 MPH	V = 50 MPH
SE = 01'	SE = 09'

-RP9A- CURVE DATA

Pt Sta 10+24.46	Pt Sta 11+55.42	Pt Sta 18+96.25	Pt Sta 25+12.08	Pt Sta 27+53.61	Pt Sta 29+64.64
Δ = 17°44' 40.3" (RT)	Δ = 6°03' 32.5"	Δ = 62°29' 14.4" (RT)	Bs = 7°40' 37.9"	Δ = 9°36' 42.5" (RT)	Bs = 3°59' 17.4"
D = 1°31' 24.7"	Ls = 180.00'	D = 5°12' 31.4"	Ls = 180.00'	Bs = 3°59' 17.4"	Ls = 200.00'
L = 465.9'	Lt = 106.52'	L = 1,096.57'	Lt = 96.78'	L = 269.16'	Lt = 133.36'
T = 234.46'	St = 73.65'	T = 667.33'	St = 83.49'	T = 145.05'	St = 66.69'
R = 3,760.72'		R = 1,050.00'		R = 1,725.00'	
V = 76 MPH		V = 58 MPH		V = 53 MPH	
SE = 06		SE = 08		SE = 05	

-RP9A- CURVE DATA

Pt Sta 16+18.44	Pt Sta 20+00.52	Pt Sta 25+33.28
Bs = 7°09' 43.1"	Δ = 43°02' 56.7" (LT)	Δ = 24°21' 56.7" (LT)
Ls = 200.00'	D = 7°09' 43.1"	D = 5°01' 14.4"
Lt = 133.44'	L = 601.08'	L = 496.93'
St = 66.71'	T = 315.52'	T = 247.29'
	R = 800.00'	R = 1,145.00'
	V = 51 MPH	V = 59 MPH
	SE = 08	SE = 08

-RP9C- CURVE DATA

Pt Sta 15+87.16	Pt Sta 21+19.37	Pt Sta 26+05.79
Δ = 47°09' 57.2" (RT)	Bs = 2°45' 17.4"	Δ = 13°25' 49.5" (LT)
D = 4°45' 17.4"	Ls = 200.00'	D = 26°02' 36.7"
L = 990.51'	Lt = 133.38'	L = 128.58'
T = 525.42'	St = 66.71'	Lt = 65.07'
R = 1,205.00'		R = 220.00'
V = 50 MPH		V = 15 MPH
SE = 07'		SE = 03

-LP9C- CURVE DATA

Pt Sta 13+10.51	Pt Sta 17+03.86	Pt Sta 20+56.98
Bs = 26°41' 26"	Δ = 230°05' 50.77" (LT)	Bs = 26°41' 26.0"
Ls = 150.00'	D = 38°35' 14.79"	Ls = 150.00'
Lt = 131.05'	L = 646.57'	Lt = 131.05'
St = 51.06'	T = 344.50'	St = 51.06'
	R = 161.00'	
	V = 27 MPH	
	SE = 08	

-RP9A- CURVE DATA

Pt Sta 18+70.00 = -RP9ASPUR- POT Sta.18+00.00 (10.00')
Pt Sta 10+00.00 (159.00' LT)
Pt Sta 12+28.92
Pt Sta 13+25.00
Pt Sta 14+97.19
Pt Sta 14+34.77
Pt Sta 16+85.00
Pt Sta 17+95.35
Pt Sta 18+40.00 = -RP9B- POT Sta.25+46.22 (10.00')
Pt Sta 21+04.39
Pt Sta 21+55.92 (157.00' RT)
Pt Sta 22+86.08
Pt Sta 24+38.46
Pt Sta 24+83.28
Pt Sta 25+39.72
Pt Sta 26+08.59
Pt Sta 27+48.08 = -RP9C- POT Sta.27+47.41 (10.00')
Pt Sta 28+07.98

-RP9ASPUR- CURVE DATA

Pt Sta 14+64.55
Δ = 9°22' 13.7" (LT)
D = 14°19' 26.2"
L = 65.42'
T = 32.78'
R = 400.01'
V = 15 MPH
SE = 03

-RP9BSPUR- CURVE DATA

Pt Sta 10+10.00 = -RP9ASPUR- POT Sta.10+00.00 (10.00')
Pt Sta 10+25.59
Pt Sta 10+100.00 (159.00' LT)
Pt Sta 16+40.00 = -RP9B- POT Sta.18+00.39 (10.00')
Pt Sta 16+63.35

-RP9B- CURVE DATA

Pt Sta 14+00.00
Pt Sta 14+79.38
Pt Sta 19+29.38
Pt Sta 24+37.73

-L1- CURVE DATA

Pt Sta 340+21.62	Pt Sta 348+58.01	Pt Sta 354+88.40
Bs = 4°13' 39.8"	Bs = 2°15' 00.0"	Δ = 15°48' 40.2" (LT)
Ls = 420.00'	Ls = 300.00'	D = 7°30' 00.0"
Lt = 288.08'	Lt = 200.02'	L = 1,054.07'
St = 144.01'	St = 100.01'	Lt = 530.14'
		R = 763.94'
		V = 75 MPH
		SE = 06

-Y9- CURVE DATA

Pt Sta 9+72.35
Δ = 8°35' 33.8" (RT)
D = 7°07' 53.2"
L = 797.36'
T = 364.36'
R = 480.00'

-Y9- POT Sta.18+40.00 = -RP9ASPUR- POT Sta.18+00.39 (10.00')

-Y9- POT Sta.24+38.46 = -RP9B- POT Sta.25+46.22 (10.00')

-Y9- POT Sta.27+48.08 = -RP9C- POT Sta.27+47.41 (10.00')

-Y9- POT Sta.28+07.98

-Y9- PT Sta.28+07.98

-Y9- POT Sta.24+38.46 = -RP9A- POT Sta.10+00.00 (10.00')

-Y10- POT Sta.10+00.00

-Y10- POT Sta.15+67.87

-L1- POT Sta.357+00.00 = -RP9A- PC Sta.10+00.00 (159.00' LT)

-L1- POT Sta.344+02.19 = -Y9- POT Sta.23+34.34

-L1- POT Sta.345+00.00 = -LP9C- POT Sta.10+00.00 (159.00' RT)

-L1- POT Sta.359+00.00 = -RP9D- POT Sta.10+00.00 (159.00' RT)

-L1- ST Sta.343+01.54

-L1- TS Sta.346+58.00

-L1- SC Sta.349+58.00

-L1- PC Sta.357+00.00 = -Y10- POT Sta.12+80.57

-L1- PT Sta.359+00.00 = -RP9D- POT Sta.10+00.00 (159.00' RT)

-RP9ASPUR- PC Sta.10+25.59

-RP9ASPUR- PC Sta.10+100.00 (159.00' LT)

-RP9ASPUR- PT Sta.14+97.19

-RP9ASPUR- PC Sta.14+34.77

-RP9A- CS Sta.24+28.59

-RP9A- SC Sta.26+08.59

-RP9A- PC Sta.10+00.00 (159.00' LT)

-RP9A- SC Sta.12+28.92

-RP9A- CS Sta.20+05.92

-RP9A- PT Sta.21+55.92 (157.00' RT)

-RP9A- TS Sta.12+09.35

-RP9A- SC Sta.13+59.35

-RP9A- CS Sta.20+05.92

-RP9A- ST Sta.21+55.92 (157.00' RT)

-RP9A- PC Sta.25+39.72

-RP9A- PT Sta.26+68.08

-RP9A- PC Sta.22+86.08

-RP9A- PT Sta.26+68.08

-RP9A- PC Sta.26+68.59

-RP9D- SC Sta.16+85.00

-RP9D- TS Sta.14+85.00

-RP9D- PC Sta.12+80.57

-RP9D- PT Sta.10+00.00 (159.00' RT)

-LP9C- TS Sta.12+09.35

-LP9C- SC Sta.13+59.35

-LP9C- CS Sta.20+05.92

-LP9C- ST Sta.21+55.92 (157.00' RT)

-LP9C- PT Sta.21+55.92

BEGIN 2°-0' CSC
ST Δ 12°-30.89' (1249.94' LT)

END 2°-0' CSC
Sta.20+80.45 (18.00' LT)

BEGIN PERMANENT RETAINING WALL -RWL5-
-RWL5- ST A. 356+25.00, 87.89' LT)
(-L1- ST A. 356+25.00, 87.89' LT)

END PERMANENT RETAINING WALL -RWL5-
-RWL5- ST A. 356+45.46
(-L1- ST A. 356+45.94, 68.45' LT)

BEGIN PERMANENT RETAINING WALL -RWR5-
-RWR5- ST A. 352+75.00
(-L1- ST A. 354+75.00, 150.17' RT)
(-RP9D- ST A. 17+14.23, 24.18' LT)

END PERMANENT RETAINING WALL -RWR5-
-RWR5- ST A. 354+63.86
(-L1- ST A. 354+50.00, 112.00' RT)
(-RP9D- ST A. 14+21.21, 30.37' LT)

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15538 / 15511
I-40 / US 64 FROM WEST OF SR 1319 (JONES FRANKLIN RD) CONTINUING ALONG I-440 / US 64 TO NORTH OF US 64 / US 264
DATE: 07 / 28 / 2014

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

NAD 83 (2011)

SITE 2501 – IMPACT ZOOM-IN (SCALE: 1" = 50')

SITE 2501

ROCHESTER HEIGHTS HISTORIC DISTRICT

UNITED STATES OF AMERICA NO DEED ON RECORD

PROPOSED MEDIAN CONCRETE BARRIER

PROPOSED SCOUR HOLE OUTLET PROTECTION CLASS 'B' RIP RAP EST 8 TONS EST 25 SY GEO EST 25 SY FORM EST 25 LF GASKET

CLEAN OUT PIPE OUTLET

RETAIN & PRESERVE 19'

REMOVE EXIST. GUARDRAIL

RETAIN & PROTECT EXIST. GUARDRAIL

PROP. RETAINING WALL

CLASS 'B' RIP RAP EST 3 TONS EST 3 SY GEO

CLASS 'A' RIP RAP EST 2 TONS EST 2 SY GEO

CLASS 'B' RIP RAP EST 3 TONS EST 3 SY GEO

CLASS 'A' RIP RAP EST 2 TONS EST 2 SY GEO

CLASS 'B' RIP RAP EST 1 TONS EST 3 SY GEO

15" WELDOWS, RODS & LUGS CONNECTORS

10" WELDOWS, RODS & LUGS CONNECTORS

CLEAN OUT AND RETAIN EXIST SYSTEM

RETAIN INLET PAVED DITCH

END SSG1 -RP9C- STA. 24+88

CLEAN OUT AND RETAIN EXIST SYSTEM

TOE PROTECTION EST 140 SY PERM SEE DETAIL 'C' SHEET 3-40

TOE PROTECTION EST 20 SY PERM SEE DETAIL 'C' SHEET 3-40

REMOVE EXIST. GUARDRAIL

REMOVE EXIST. GUARDRAIL

REMOVE EXIST. GUARDRAIL

REMOVE EXIST. GUARDRAIL

CLEAN-WHITE OUT OF PIPE (EACH) TO ENSURE POSITIVE DRAINAGE

CLEAN-WHITE OUT OF PIPE (EACH) TO ENSURE POSITIVE DRAINAGE

CLEAN-WHITE OUT OF PIPE (EACH) TO ENSURE POSITIVE DRAINAGE

CLEAN-WHITE OUT OF PIPE (EACH) TO ENSURE POSITIVE DRAINAGE

BEGIN 2'-0" CSC

END 2'-0" CSC

END CONSTRUCTION

BEGIN CONSTRUCTION

GORE AREA TO BE FILLED DURING CONSTRUCTION GRADE BEYOND PROPOSED CONTOURS AS SHOWN ON DETAIL SHEETS 3-40 AND 3-41

GORE AREA TO BE FILLED DURING CONSTRUCTION GRADE BEYOND PROPOSED CONTOURS AS SHOWN ON DETAIL SHEETS 3-40 AND 3-41

FUSE, FILL AND ABANDON AS GORE AREA IS FILLED

FUSE, FILL AND ABANDON PIPE TO GORE AREA, FILL TO FINAL GRADE

RETAIN EXIST. FOR FUTURE DRAINAGE SYSTEM FUSE, FILL AND ABANDON PIPE TO GORE AREA, FILL TO FINAL GRADE

CULVERT PROPOSED STA. 351+22 SEE DETAIL 'A' SHEET 3-40

CULVERT PROPOSED STA. 351+22 SEE DETAIL 'A' SHEET 3-40

PROPOSED SCOUR HOLE OUTLET PROTECTION CLASS 'B' RIP RAP EST 8 TONS EST 25 SY GEO EST 25 SY FORM EST 25 LF GASKET

PROPOSED SCOUR HOLE OUTLET PROTECTION CLASS 'B' RIP RAP EST 8 TONS EST 25 SY GEO EST 25 SY FORM EST 25 LF GASKET

PROPOSED SCOUR HOLE OUTLET PROTECTION CLASS 'B' RIP RAP EST 8 TONS EST 25 SY GEO EST 25 SY FORM SEE DETAIL GASKET 3-40

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	26
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

8/17/99

REVISIONS

-LI- CURVE DATA
PIs Sta 361+12.08
Θs = 2° 15' 00.0"
Ls = 300.00'
LT = 200.02'
ST = 100.01'

ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2
IMPACTS PERMITTED ON MOT BUFFER PERMITS

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15338 / 15311
140 / US 64 FROM WEST OF SR 1319 (JONES FRANKLIN RD) CONTINUING ALONG I-440 / US 64 TO NORTH OF US 64 / US 264
DATE: 07 / 28 / 2014

NAD 83/NSRS 2007

INTERSTATE 40 INTERSTATE 440 BELTLINE

GRANITE RS&H
DESIGN-BUILD SERVICES

Kimley»Horn

ROCHESTER HEIGHTS HISTORIC DISTRICT

-Y- 54 G 74

GLADYS J WILLIAMS DB 13832 PG 1946 BM 1957 PG 74

SUE LEE WALLER HARRIS TRUST (BACK) DB 2915 PG 183 BM 1957 PG 74

KAREN SMITH DB 8018 PG 675 BM 1957 PG 74

RENEE SMITH DB 8018 PG 675 BM 1957 PG 74

J SAMUEL HEWITT DB 1291 PG 37 BM 1957 PG 74

LAWRENCE G BRADLEY DB 10996 PG 82 BM 1957 PG 74

LAWRENCE LINDSEY DB 1353 PG 569 BM 1957 PG 74

NEMIE C HICKS (BACK) DB 1353 PG 569 BM 1957 PG 74

GWENDOLYN W COX DB 18180 PG 1725 BM 1957 PG 74

JOYCE CRESS DB 13712 PG 2583 BM 1957 PG 74

PRIMROSE ROGERS JACKSON DB 4652 PG 556 BM 1957 PG 74

WALTER CHAVEZ DB 12919 PG 359 BM 1957 PG 75

HAMLET B WILKINS, JR BM 1957 PG 75

WILLIE T HICKS BM 1957 PG 75

WETONAH RI PARKER DB 5921 PG 10 BM 1957 PG

CALLOWAY DRIVE 60' R/W BM 1957 PG 74

8' DRAINAGE EASEMENT BM 1957 PG 74

EXISTING R/W

-Y11- POT Sta.10+00.00

-Y11- ⊙ HADLEY RD

CLEANOUT EXIST DITCH & PIPE TO ENSURE POSITIVE DRAINAGE

FILL DECK DRAINS INSTALLED DURING MOT

CLEANOUT EXIST DITCH TO ENSURE POSITIVE DRAINAGE

-LI- POT Sta. 367+44.09 =
-Y11- POT Sta.12+77.41

END PERMANENT
RETAINING WALL -RWL6-
-RWL6- 366+55.00
(-LI- STA. 366+55.00, 88.62' LT)

BEGIN PERMANENT
RETAINING WALL -RWL7-
-RWL7- STA. 368+13.00
(-LI- STA. 368+13.00, 88.78' LT)

END PERMANENT
RETAINING WALL -RWL7-
-RWL7- STA. 369+49.28
(-LI- STA. 369+50.00, 88.78' LT)

360+00

365+00

370+00

SITE 2601
(MOT 2601)

RETAIN SLOT DRAIN ALONG FACE OF PERMANENT TRAFFIC BARRIER

TIE 2GI TO EXIST 18" RCP

15" WELBOWS, ROD, & LUG CONNECTORS

END BARRIER WALL/BEGIN SBG STA. 369+50

END TRANSITION/ BEGIN EXPRESSWAY GUTTER STA. 372+75

END SBG/ BEGIN TRANSITION STA. 371+75

SBG INSTALLED IN MOT PHASE TO BE RETAINED STA 358+45 TO 366+25 -LI-

CLASS 'B' RIP RAP EST 2 TONS EST 7 SY GEO

18" WELBOWS, ROD, & LUG CONNECTORS

-LI- CS Sta.360+12.07

50'

+12.07

12" FDPS

BEGIN PERMANENT
RETAINING WALL -RWL6-
-RWL6- STA. 365+25.00
(-LI- STA. 365+25.00, 88.62' LT)

-LI- ST Sta.363+12.07

PROPOSED MEDIAN CONCRETE BARRIER

REMOVE EXIST.GUARDRAIL

TYPE B-77

15" RCP-III

PROP.GUARDRAIL

25:1 TAPER

50:1 TAPER

300' TAPER

RETAIN

REMOVE

2GI

TB2GI

BRIDGE

FILL DECK DRAINS INSTALLED DURING MOT

REMOVE

12" FDPS

BEGIN EXPRESSWAY GUTTER STA. 368+34

15" WELBOWS, ROD, & LUG CONNECTORS

N 89°00'20.0" E

S 4°18'12.9" E

MATCHLINE SHEET 25 -LI- STA. 359+00.00

MATCHLINE SHEET 27 -LI- STA. 373+00.00

REMOVE EXIST. GUARDRAIL

BEGIN SBG -LI- STA. 363+12

END SBG/BEGIN BARRIER WALL STA. 365+00

PROP. RETAINING WALL

RETAIN SLOT DRAIN ALONG FACE OF PERMANENT TRAFFIC BARRIER

BEGIN PERMANENT
RETAINING WALL -RWR7-
-RWR7- STA. 365+25.00
(-LI- STA. 365+25.00, 90.55' RT)

TIE JB W/MH COVER TO EXIST 18" CMP

JB W/MH COVER

END PERMANENT
RETAINING WALL -RWR7-
-RWR7- STA. 366+74.98
(-LI- STA. 366+75.00, (88.63' RT)

SITE 2601
(MOT 2601)

-Y11- POT Sta.14+60.48

HADLEY ROAD 60' R/W BM 1960 PG 38

SOUTHLIGHT INC DB 7228 PG 435 BM 1965 PG 197

JAMES P EVANS DB 1429 PG 407 BM 1960 PG 38

EDNA M ALLEN DB 9359 PG 140 BM 1960 PG 38

KIMARIE MACHINGA DB 14675 PG 2567 BM 1960 PG 38

AUSTIN CURTIS DB 2705 PG 233 BM 1960 PG 38

JOHN SCHIMME DB 13954 PG 1698 BM 1960 PG 38

RAYMOND PARKS DB 2346 PG 391 BM 1960 PG 38

ROBIN PIPKIN DB 1831 PG 799 BM 1960 PG 38

ELNEATER H COWAN DB 917 PG 2396 BM 1960 PG 38

SAUNDRA M BRYANT DB 10380 PG 637 BM 1960 PG 38

HOMEREACH 2008 LLC DB 13166 PG 1235 BM 1960 PG 38

SAUNDRA BRYANT DB 9689 PG BM 1960 P

S 0°17'24" W 150.00'

FOR -LI- LT PROFILE, SEE SHEET NO. 71

FOR -LI- RT PROFILE, SEE SHEET NO. 71

$USERNAME$
$USERNAME$
$USERNAME$

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	26
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

8/17/99

REVISIONS

-LI- CURVE DATA
PIs Sta 361+12.08
Θs = 2° 15' 00.0"
Ls = 300.00'
LT = 200.02'
ST = 100.01'

ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2
IMPACTS PERMITTED ON MOT BUFFER PERMITS

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15338 / 15311
I-40 / US 64 FROM WEST OF SR 1319 (JONES FRANKLIN RD) CONTINUING ALONG I-440 / US 64 TO NORTH OF US 64 / US 264
DATE: 07 / 28 / 2014

NAD 83/NSRS 2007

GRANITE RS&H DESIGN-BUILD SERVICES

Kimley»Horn

ROCHESTER HEIGHTS HISTORIC DISTRICT

-YII- POT Sta.10+00.00

FILL DECK DRAINS INSTALLED DURING MOT

CLEANOUT EXIST DITCH TO ENSURE POSITIVE DRAINAGE

CLEANOUT EXIST DITCH & PIPE TO ENSURE POSITIVE DRAINAGE

END PERMANENT RETAINING WALL -RWL6- -RWL6- 366+55.00 (-LI- STA. 366+55.00, 88.62' LT)

-LI- POT Sta. 367+44.09 =
-YII- POT Sta.12+77.41

BEGIN PERMANENT RETAINING WALL -RWL7- -RWL7- STA. 368+13.00 (-LI- STA. 368+13.00, 88.78' LT)

END PERMANENT RETAINING WALL -RWL7- -RWL7- STA. 369+49.28 (-LI- STA. 369+50.00, 88.78' LT)

SITE 2601 (MOT 2601)

SBG INSTALLED IN MOT PHASE TO BE RETAINED STA. 358+45 TO 366+25 -LI-

-LI- CS Sta.360+12.07

CLASS 'B' RIP RAP EST 2 TONS EST 1 SY GEO

18" WELBOWS, ROD, & LUG CONNECTORS

RETAIN SLOT DRAIN ALONG FACE OF PERMANENT TRAFFIC BARRIER

BEGIN PERMANENT RETAINING WALL -RWL6- -RWL6- STA. 365+25.00 (-LI- STA. 365+25.00, 88.62' LT)

-LI- ST Sta. 363+12.07

PROPOSED MEDIAN CONCRETE BARRIER

REMOVE EXIST. GUARDRAIL

TIE 2GI TO EXIST 18" RCP

15" WELBOWS, ROD, & LUG CONNECTORS

RETAIN SLOT DRAIN ALONG FACE OF PERMANENT TRAFFIC BARRIER

END BARRIER WALL/BEGIN SBG STA. 369+50

END SBG/BEGIN TRANSITION STA. 371+75

END TRANSITION/BEGIN EXPRESSWAY GUTTER STA. 372+75

BEGIN SBG -LI- STA. 363+12

END SBG/BEGIN BARRIER WALL STA. 365+00

PROP. RETAINING WALL

BEGIN EXPRESSWAY GUTTER STA. 368+34

BEGIN PERMANENT RETAINING WALL -RWR7- -RWR7- STA. 365+25.00 (-LI- STA. 365+25.00, 90.55' RT)

TIE JB W/MH COVER TO EXIST. 18" CMP

END PERMANENT RETAINING WALL -RWR7- -RWR7- STA. 366+74.98 (-LI- STA. 366+75.00, (88.63' RT)

SITE 2601 (MOT 2601)

-YII- POT Sta.14+60.48

N 89°00'20.0" E

S 41°18'12.9" E

MATCHLINE SHEET 25 -LI- STA. 359+00.00

MATCHLINE SHEET 27 -LI- STA. 373+00.00

FOR -LI- LT PROFILE, SEE SHEET NO. 71

FOR -LI- RT PROFILE, SEE SHEET NO. 71

$USERNAME$
$USERNAME$
$SYSTIME$ $SYSDATE$

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	28
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRANITE RS&H
DESIGN-BUILD SERVICES

Kimley»Horn

NAD 83/NSRS 2007

8/17/99

REVISIONS

-Y12- CURVE DATA
PI Sta 14+55.70
△ = 37° 21' 50.3" (RT)
D = 11° 27' 33.0"
L = 326.06'
T = 169.07'
R = 500.00'

-LI- CURVE DATA
PIs Sta 396+23.30
θs = 4° 48' 00.0"
Ls = 480.00'
LT = 320.12'
ST = 160.11'

PI Sta 402+89.61
△ = 20° 02' 59.4" (RT)
D = 2° 00' 00.0"
L = 1,002.49'
T = 506.42'
R = 2,864.79'
V = 76 MPH
SE = 08

ETHEL G. YOUNG HEIRS
BM 1983 PG 232
BM 1983 PG 703
BM 2003 PG 870

-LI- ST Sta. 387+00.18

-Y12- POT Sta. 10+00.00

-Y12- SOUTH STATE ST

S 30°19'08.5" E

SITE 2801

390+00

395+00

400+00

-LI- SC Sta. 397+83.18

-LI- TS Sta. 393+03.18

-LI- STA. 387+00.00

-LI- STA. 401+00.00

MATCHLINE SHEET 27

MATCHLINE SHEET 29

PREFORMED SCOUR HOLE
OUTLET PROTECTION
CLASS 'B' RIP RAP
EST 8 TONS
EST 16 SY GEO
EST 25 SY PSRM
SEE DETAIL G/SHEET 2-BJ

CLASS 'B' RIP RAP
EST 3 TONS
EST 11 SY GEO

*M-211
SEE DRAINAGE
MAINTENANCE
TABLE

18" W/ELBOWS,
ROD, & LUG
CONNECTORS

PLUG, FILL, AND
ABANDON

CLASS 'B' RIP RAP
EST 2 TONS
EST 7 SY GEO

15" W/ELBOWS,
ROD, & LUG
CONNECTORS

24" W/ELBOWS,
ROD, & LUG
CONNECTORS

PLUG, FILL, AND
ABANDON
300' TAPER

CULVERT PRESERVATION SITE #24
SEE DETAIL H /SHEET 2-BJ

500' ACCELERATION LANE

CLASS 'B' RIP RAP
EST 5 TONS
EST 5 SY GEO

RETAIN

*M-315
SEE DRAINAGE
MAINTENANCE
TABLE SHEET
2-C

RETAIN EXIST
DECK DRAINS

REMOVE

REMOVE EXIST.
GUARDRAIL

END SBG
-LI- STA. 393+00

REMOVE
15" FOR
END NOT
FOUND

15" W/ELBOWS,
ROD, & LUG
CONNECTORS

JB W/
MH COVER

BEGIN SBG
-LI- STA. 388+73

PLUG, FILL, AND
ABANDON AFTER
COMPLETION OF
MOT

25:1 TAPER

PROP. GUARDRAIL

N 48°17'00.0" E

PROPOSED MEDIAN
CONCRETE BARRIER

12 - 6" MEDIAN DECK DRAINS
REQUIRED SEE SHEET 2-BJ
FOR LOCATIONS (FILL AFTER
COMPLETION OF MOT)

-Y12- PC Sta. 12+86.63

-LI- POT Sta. 387+61.16 =
-Y12- POC Sta. 13+01.72

RETAIN & PRESERVE

*M-197
SEE DRAINAGE
MAINTENANCE
TABLE

*M-194
SEE DRAINAGE
MAINTENANCE
TABLE

*M-198
SEE DRAINAGE
MAINTENANCE
TABLE

*M-195
SEE DRAINAGE
MAINTENANCE
TABLE

CLASS 'A' RIP RAP
EST 5 TONS

*M-199
SEE DRAINAGE
MAINTENANCE
TABLE

500' TAPER

SPECIAL CUT DITCH w/HINGE
SEE DETAIL A /SHEET 2-BJ

BANKS ONLY
CLASS II RIP RAP
EST 25 TONS
EST 30 SY GEO

SITE 2802
(WETLAND/STREAM 2802)

SITE 2801
(MOT 2801)

15+00

TUNICIA COOPER
DB 18172 PG 379
BM 2002 PG 172

ASONDRA JOHNSON
DB 10818 PG 1295
BM 2002 PG 172

RUSSELL & KATHIE L. TRUSTEE
DB 18467 PG 668
BM 2002 PG 172

SHANDA MASON
DB 10271 PG 425
BM 2002 PG 172

CRYSTAL M. POPE
DB 10867 PG 2005

ANGELA WATSON
DB 10327 PG 557
BM 2002 PG 173

TRIANGLE GREENWAYS COUNCIL
DB 10900 PG 347
BM 2003 PG 119

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

IMPACTS PERMITTED ON
MOT BUFFER PERMITS

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15338 / 15311
I-40 / US 64 FROM WEST OF
SR 1319 (JONES FRANKLIN RD)
CONTINUING ALONG I-440 / US 64
TO NORTH OF US 64 / US 264
DATE: 07 / 28 / 2014

Maintenance Items Causing Impacts

Item Number	RFP Required Repairs	Proposed Repairs
M-195	Clear trees around headwall & slip-line pipe	Slipline pipe and clear trees
M-198	Repair paved ditches washed out near cross line 100-200' west of Exit 300 sign	Repair paved ditch

FOR -LI- LT PROFILE, SEE SHEET NO. 73
FOR -LI- RT PROFILE, SEE SHEET NO. 73

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

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	28
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRANITE RS&H
DESIGN-BUILD SERVICES

Kimley»Horn

NAD 83/NSRS 2007

8/17/99

REVISIONS

-Y12- CURVE DATA
PI Sta 14+55.70
Δ = 37° 21' 50.3" (RT)
D = 11° 27' 33.0"
L = 326.06'
T = 169.07'
R = 500.00'

-LI- CURVE DATA
PIs Sta 396+23.30
θs = 4° 48' 00.0"
Ls = 480.00'
LT = 320.12'
ST = 160.11'

PI Sta 402+89.61
Δ = 20° 02' 59.4" (RT)
D = 2° 00' 00.0"
L = 1,002.49'
T = 506.42'
R = 2,864.79'
V = 76 MPH
SE = 08

-Y12- POT Sta.10+00.00

-LI- ST Sta.387+00.18

-Y12- SOUTH STATE ST
S 30°19'08.5" E

SITE 2801

390+00

395+00

400+00

PREFORMED SCOUR HOLE OUTLET PROTECTION CLASS 'B' RIP RAP EST 8 TONS EST 16 SY GEO EST 25 SY PSRM SEE DETAIL G SHEET 2-BJ

CLASS 'B' RIP RAP EST 3 TONS EST 11 SY GEO

M-211 SEE DRAINAGE MAINTENANCE TABLE

18" WELBOWS, ROD, & LUG CONNECTORS

PLUG, FILL, AND ABANDON

PLUG, FILL, AND ABANDON

CLASS 'B' RIP RAP EST 2 TONS EST 7 SY GEO

15" WELBOWS, ROD, & LUG CONNECTORS

-LI- SC Sta.397+83.18

300' TAPER

500' ACCELERATION LANE

24" WELBOWS, ROD, & LUG CONNECTORS

CULVERT PRESERVATION SITE #24 SEE DETAIL H SHEET 2-BJ

JB W/ MH COVER

RETAIN

M-315 SEE DRAINAGE MAINTENANCE TABLE SHEET 2-C

RETAIN EXIST DECK DRAINS

REMOVE

REMOVE EXIST. GUARDRAIL

15" WELBOWS, ROD, & LUG CONNECTORS

END SBG -LI- STA. 393+00

REMOVE

25:1 TAPER

12" FDFS

PROP. GUARDRAIL

BEGIN SBG -LI- STA. 388+73

PLUG, FILL, AND ABANDON AFTER COMPLETION OF MOT

N 48° 17' 00.0" E

PROPOSED MEDIAN CONCRETE BARRIER

-LI- TS Sta.393+03.18

12 - 6" MEDIAN DECK DRAINS REQUIRED SEE SHEET 2-BJ FOR LOCATIONS (FILL AFTER COMPLETION OF MOT)

-Y12- PC Sta.12+86.63

-LI- POT Sta.387+61.16 =
-Y12- POC Sta.13+01.72

RETAIN

RETAIN & PRESERVE

CLASS 'A' RIP RAP EST 5 TONS

M-197 SEE DRAINAGE MAINTENANCE TABLE

M-198 SEE DRAINAGE MAINTENANCE TABLE

M-199 SEE DRAINAGE MAINTENANCE TABLE

500' TAPER

12" FDPS

SPECIAL CUT DITCH w/HINGE SEE DETAIL A SHEET 2-BJ

M-194 SEE DRAINAGE MAINTENANCE TABLE

M-195 SEE DRAINAGE MAINTENANCE TABLE

BANKS ONLY CLASS II RIP RAP EST 25 TONS EST 30 SY GEO

SITE 2802
(WETLAND/STREAM 2802)

SITE 2801
(MOT 2801)

15+00

-LI- STA. 387+00.00

-LI- STA. 401+00.00

MATCHLINE SHEET 27 -LI-

MATCHLINE SHEET 29 -LI-

ETHEL G. YOUNG HEIRS BM 1985 PG 232 BM 1985 PG 233 BM 2003 PG 870

TUNISIA COOPER DB 18870 PG 328 BM 2002 PG 172

ASHOKBHAI PATEL & MANJULA PATEL DB 10927 PG 857 BM 2002 PG 173

ANGELA WATSON DB 10927 PG 857 BM 2002 PG 173

TRIANGLE GREENWAYS COUNCIL INC DB 10952 PG 347 BM 2005 PG 119

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

IMPACTS PERMITTED ON MOT BUFFER PERMITS

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15338 / 15311
I-40 / US 64 FROM WEST OF SR 1519 (JONES FRANKLIN RD) CONTINUING ALONG I-440 / US 64 TO NORTH OF US 64 / US 264
DATE: 07 / 28 / 2014

Maintenance Items Causing Impacts

Item Number	RFP Required Repairs	Proposed Repairs
M-195	Clear trees around headwall & slip-line pipe	Slipline pipe and clear trees
M-198	Repair paved ditches washed out near cross line 100-200' west of Exit 300 sign	Repair paved ditch

FOR -LI- LT PROFILE, SEE SHEET NO. 73

FOR -LI- RT PROFILE, SEE SHEET NO. 73

SYSTIME
DGN
USERNAME

REVISIONS

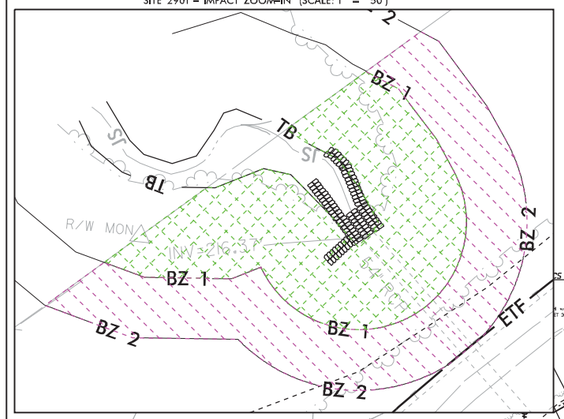
-RPI3B- CURVE DATA

PI Sta 13+50.17	PI Sta 15+25.38	PI Sta 16+70.61	PI Sta 19+50.72	PI Sta 21+61.61
Ds = 7° 13' 19.8"	Δ = 7° 19' 56.4" (LT)	Ds = 5° 03' 19.8"	Ds = 8° 24' 50.6"	Δ = 12° 19' 09.8" (RT)
Ls = 300.00'	D = 4° 48' 53.2"	Ls = 240.00'	Ls = 240.00'	D = 8° 07' 46.2"
LT = 200.11'	L = 150.56'	LT = 140.16'	LT = 140.16'	L = 271.53'
ST = 100.15'	T = 75.38'	ST = 70.05'	ST = 70.14'	T = 140.81'
	R = 1,190.00'			R = 715.00'
	V = 50 MPH			V = 35 MPH
	SE = 07			SE = 08

-LPI3B- CURVE DATA

PI Sta 13+35.99	PI Sta 16+40.21	PI Sta 17+67.89
Ds = 34° 43' 29.0"	Δ = 103° 45' 24.8" (RT)	Ds = 34° 43' 29.0"
Ls = 200.02'	D = 14° 43' 29.0"	Ls = 200.02'
LT = 135.99'	L = 298.80'	LT = 135.99'
ST = 69.09'	T = 210.27'	ST = 69.09'
	R = 165.00'	
	V = 29' MPH	
	SE = 08	

SITE 2901 – IMPACT ZOOM-IN (SCALE: 1" = 50')



SITE 2901
(WETLAND/STREAM 2901)

-RPI3B- SC Sta. 20+20.56
-RPI3B- SRS Sta. 18+10.56
-LPI3B- CS Sta. 16+98.80
-LPI3B- ST Sta. 18+98.80
N 77° 40' 57.8" E
-LPI3B- PC Sta. 19+18.76
-RPI3B- PT Sta. 22+99.08
-Y13- POT Sta. 10+00.00
-Y13- POT Sta. 11+53.00 = -RPI3B- POT Sta. 24+71.13 (0.00')
-Y13- POT Sta. 11+83.12 = -LPI3B- POT Sta. 20+30.35 (0.00')
END CONSTRUCTION -RPI3B- Sta. 24+29.14
END CONSTRUCTION -LPI3B- Sta. 19+96.71
END 2'-6" CBG STA. 19+15.39 (18.00' RT)
S 71° 47' 52.7" E
S 84° 24' 38.01" W
S 63° 58' 35.7" W
S 71° 47' 52.7" E
S 5° 14' 08.8" E
N 78° 54' 01.1" E
-RPI3A- PT Sta. 23+27.43
-RPI3A- PC Sta. 23+17.22
-RPI3A- SC Sta. 21+36.25
-RPI3A- PT Sta. 24+79.63
-Y13- POT Sta. 10+26.02 = -RPI3A- POT Sta. 25+34.63 (44.99' LT)
END CONSTRUCTION -RPI3A- Sta. 25+00.00
-RPI3A- SRS Sta. 18+96.25
-RPI3A- CS Sta. 16+56.25
-RPI3A- SC Sta. 13+00.00
-RPI3A- TS Sta. 11+20.00
-LI- POC Sta. 417+50.00 = -LPI3B- POT Sta. 10+00.00 (17.00' LT)
-LI- POT Sta. 403+50.00
-RPI3B- POT Sta. 10+00.00 (17.00' LT)
-RPI3B- TS Sta. 11+50.00
-LI- SC Sta. 410+25.68
-RPI3C- PCC Sta. 10+37.93
-LI- POC Sta. 402+35.00 = -RPI3C- PC Sta. 13+00.00 (159.00' RT)
-RPI3C- CS Sta. 16+83.65
-RPI3C- SRS Sta. 19+23.65
-RPI3C- ST Sta. 21+63.65
-RPI3C- PT Sta. 24+14.81
-RPI3C- CURVE DATA

PI Sta 10+18.57	PI Sta 13+73.54	PI Sta 17+46.37	PI Sta 19+48.88	PI Sta 22+90.54
Δ = 17° 46' 29.1" (RT)	Δ = 38° 32' 17.6" (RT)	Ds = 7° 09' 43.1"	Ds = 9° 36' 51.9"	Δ = 20° 01' 35.2" (LT)
D = 5° 02' 3.4"	D = 5° 58' 05.9"	Ls = 240.00'	Ls = 240.00'	D = 8° 00' 48.2"
L = 57.33'	L = 645.71'	LT = 160.15'	LT = 160.24'	L = 250.61'
T = 18.9"	T = 335.6"	ST = 80.12'	ST = 80.22'	T = 126.89'
R = 1,805.79'	R = 960.00'			R = 715.00'
V > 80 MPH	V = 55 MPH			V = 35 MPH
SE = 08	SE = 08			SE = 06

-LPI3C- CURVE DATA

PI Sta 10+28.41	PI Sta 11+90.77	PI Sta 14+66.84	PI Sta 16+70.34
Δ = 17° 34' 26.4" (LT)	Ds = 12° 57' 21.4"	Δ = 107° 43' 06.2" (LT)	Ds = 49° 23' 54.5"
D = 1° 00' 37.5"	Ls = 200.02'	D = 32° 55' 43.0"	Ls = 300.00'
L = 56.84'	Ls = 200.02'	L = 305.87'	LT = 208.38'
T = 28.41'	LT = 133.96'	T = 210.3'	ST = 101.66'
R = 5,670.58'	ST = 71.03'	R = 174.00'	
V = 75 MPH		V = 28 MPH	
SE = 04		SE = 08	

Maintenance Items Causing Impacts		
Item Number	RFP Required Repairs	Proposed Repairs
M-35	Restore possible sink hole over 54" pipe, draining from the gore I-40 West	Restore sink hole

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15338 / 15311
I40 / US 64 FROM WEST OF SR 1319 (JONES FRANKLIN RD) CONTINUING ALONG I-440 / US 64 TO NORTH OF US 64 / US 264
DATE: 07 / 28 / 2014

ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2

GRAPHIC SCALE
50 25 0 50 100
PLANS

MATCHLINE SHEET 28 -LI- STA. 401+00.00
MATCHLINE SHEET 30 -LI- STA. 429+00.00

PROJECT REFERENCE NO.	SHEET NO.
I-5338 / I-5311	29
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR BID OR CONSTRUCTION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

FOR -LI- LT PROFILE, SEE SHEET NO. 74,75
FOR -LI- RT PROFILE, SEE SHEET NO. 74,75
FOR -RPI3A- PROFILE, SEE SHEET NO. 107
FOR -RPI3B- PROFILE, SEE SHEET NO. 107
FOR -RPI3B- PROFILE, SEE SHEET NO. 108
FOR -RPI3C- PROFILE, SEE SHEET NO. 108
FOR -RPI3C- PROFILE, SEE SHEET NO. 109

LOCATION:
TIP NO.: COUNTY:
DESIGNED BY:
CHECKED BY: DATE:

REVISIONS

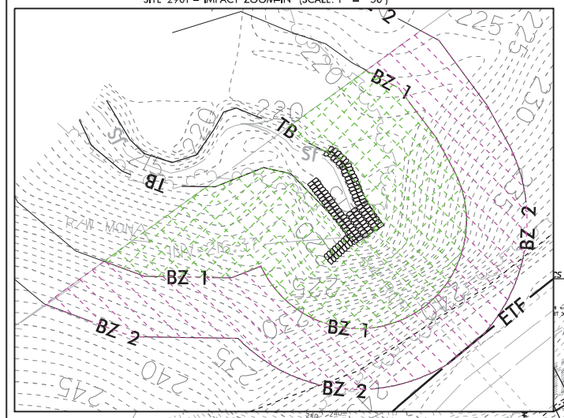
-RPI3B- CURVE DATA

PI Sta 13+50.17	PI Sta 15+25.38	PI Sta 16+70.61	PI Sta 19+50.72	PI Sta 21+61.61
Δs = 7° 13' 19.8"	Δ = 7° 19' 56.4" (LT)	Δs = 5° 03' 19.8"	Δs = 8° 24' 50.6"	Δ = 82° 19' 09.8" (RT)
Ls = 300.00'	D = 4° 48' 53.2"	Ls = 240.00'	Ls = 240.00'	D = 11° 27' 46.2"
LT = 200.17'	L = 150.56'	LT = 140.86'	LT = 140.86'	L = 214.53'
ST = 100.15'	T = 75.38'	ST = 70.05'	ST = 70.14'	T = 141.05'
	R = 1,190.00'			R = 75.00'
	V = 50 MPH			V = 35 MPH
	SE = 07			SE = 08

-LPI3B- CURVE DATA

PI Sta 13+35.99	PI Sta 16+40.27	PI Sta 17+67.89
Δs = 34° 43' 29.0"	Δ = 103° 45' 29.0" (RT)	Δs = 34° 43' 29.0"
Ls = 200.00'	D = 14° 43' 29.0"	Ls = 200.00'
LT = 135.99'	L = 298.80'	LT = 135.99'
ST = 69.09'	T = 210.27'	ST = 69.09'
	R = 165.00'	
	V = 29' MPH	
	SE = 08	

SITE 2901 – IMPACT ZOOM-IN (SCALE: 1" = 50')



SITE 2901
(WETLAND/STREAM 2901)

-RPI3B- CS Sta. 16+98.80
-RPI3B- SC Sta. 20+20.56
-RPI3B- SRS Sta. 18+10.56
-LPI3B- ST Sta. 18+98.86
-LPI3B- PC Sta. 19+18.76
-RPI3B- PT Sta. 22+99.08
-Y13- POT Sta. 10+00.00
-Y13- POT Sta. 11+53.00 = -RPI3B- POT Sta. 24+71.13 (0.00')
-Y13- POT Sta. 11+83.12 = -LPI3B- POT Sta. 20+30.35 (0.00')
END CONSTRUCTION -RPI3B- Sta. 24+29.14
END CONSTRUCTION -LPI3B- Sta. 19+98.71
-Y13- POT Sta. 10+26.02 = -RPI3A- POT Sta. 25+34.83 (44.99' LT)
END CONSTRUCTION -RPI3A- Sta. 25+00.00
-RPI3A- PT Sta. 24+79.63
-RPI3A- SC Sta. 21+36.25
-RPI3A- PC Sta. 23+17.22
-RPI3A- SRS Sta. 18+96.25
-RPI3A- PT Sta. 23+27.43
S 84° 24' 38.0" W
-RPI3A- CS Sta. 16+56.25
-RPI3A- SC Sta. 13+00.00
-RPI3A- TS Sta. 11+20.00
-LI- POC Sta. 417+50.00 = -LPI3B- POT Sta. 10+90.00 (17.00' LT)
-LI- POT Sta. 403+50.00 = -RPI3B- POT Sta. 10+00.00 (17.00' LT)
-RPI3B- TS Sta. 11+50.00
-LI- SC Sta. 410+25.68
-RPI3C- PCC Sta. 10+37.93
-RPI3C- PC Sta. 13+00.00 (-59.00' RT)
-LI- POC Sta. 402+35.00 = -RPI3C- PC Sta. 13+00.00 (-59.00' RT)
-RPI3C- CS Sta. 16+83.65
-RPI3C- SRS Sta. 19+23.65
-RPI3C- ST Sta. 21+65.65
-RPI3C- SC Sta. 12+56.28
-LPI3C- CS Sta. 10+56.81
-LPI3B- ST Sta. 18+62.68
-LPI3C- CS Sta. 15+62.68
-RPI3C- PT Sta. 24+14.81
-LI- POC Sta. 418+32.32 = -Y13- POT Sta. 16+35.76
-LI- POT Sta. 417+00.00 = -LPI3C- PC Sta. 10+00.00 (-59.00' RT)
-Y13- POT Sta. 19+41.73 = -LPI3C- POT Sta. 19+41.73 (0.00')
-Y13- PC Sta. 20+84.07
-Y13- PT Sta. 22+18.51
-Y13- POT Sta. 20+85.00 = -RPI3C- POT Sta. 25+64.81 (0.00')
-Y13- POT Sta. 22+25.40
END CONSTRUCTION -RPI3C- Sta. 25+12.26
BEGIN 2°-6' CRG STA. 13+07.54 (18.00' RT)
END 2°-6' CRG STA. 19+15.39 (18.00' RT)
BEGIN 2°-6' CRG STA. 11+99.27 (19.95' LT)
END 2°-6' CRG STA. 18+14.01 (18.00' LT)
N 77° 42' 57.8" E
S 83° 58' 35.1" E
S 51° 41' 08.8" E
N 78° 54' 01.0" E
S 47° 50' E
N 78° 37' 35.7" E
PROPOSED MEDIAN CONCRETE BARRIER
TRANSITION STANDARD CUT DITCH TO FLAT GROUND
CLASS A-1 RIP RAP EST 5 TONS
REPAIR FAILING CONCRETE LINED DITCH W/CLASS II RIP RAP EST 5 TONS EST 8 SY GEO
SPECIAL CUT DITCH - SHAPE SEE DETAIL & SHEET 2MD
SPECIAL CUT DITCH - W/FENCE SEE DETAIL & SHEET 2MD
SPECIAL LATERAL V-DITCH SEE DETAIL & SHEET 2MD
SEE DRAINAGE MAINTENANCE TABLE
CLASS B RIP RAP EST 8 TONS EST 16 SY GEO
CONVERT DRIVE TO 18 INSIDE DITCH
MATCHLINE SHEET 28 -LT- STA. 401+00.00
MATCHLINE SHEET 30 -LI- STA. 429+00.00
A
B
C
D
NAD 83 (NSRS 2007)
GRANITE RS&H
Kimley»Horn
40 440

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	29
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR BID OR CONSTRUCTION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Maintenance Items Causing Impacts		
Item Number	RFP Required Repairs	Proposed Repairs
M-35	Restore possible sink hole over 54" pipe, draining from the gore I-40 West	Restore sink hole

-RPI3C- CURVE DATA

PI Sta 10+18.57	PI Sta 13+73.54	PI Sta 17+46.37	PI Sta 19+77.93	PI Sta 22+90.54
Δ = 17° 46' 29.1" (RT)	Δ = 38° 32' 17.6" (RT)	Δs = 7° 09' 43.1"	Δs = 9° 38' 51.9"	Δ = 20° 01' 35.2" (LT)
D = 9° 02' 3.4"	D = 5° 58' 05.9"	Ls = 240.00'	Ls = 240.00'	D = 8° 00' 48.2"
L = 57.33'	L = 645.71'	LT = 160.15'	LT = 160.24'	L = 250.61'
T = 18.29'	T = 335.61'	ST = 80.12'	ST = 80.22'	T = 126.89'
R = 634.79'	R = 960.00'			R = 715.00'
V > 80 MPH	V = 55 MPH			V = 35 MPH
SE = 08	SE = 08			SE = 06

-LPI3C- CURVE DATA

PI Sta 10+28.41	PI Sta 11+90.77	PI Sta 14+66.84	PI Sta 16+70.34
Δ = 17° 34' 26.4" (LT)	Δ = 12° 37' 21.4"	Δ = 100° 43' 06.2" (LT)	Δs = 49° 23' 34.5"
D = 1° 00' 37.5"	Ds = 32° 56' 51.5"	D = 32° 55' 43.0"	Ls = 300.00'
L = 56.81'	Ls = 200.00'	L = 305.87'	LT = 208.38'
T = 28.61'	LT = 133.96'	T = 210.03'	ST = 101.66'
R = 5,670.58'	ST = 71.03'	R = 174.00'	
V = 75 MPH		V = 28 MPH	
SE = 04		SE = 08	

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15338 / 15311
I-40 / US 64 FROM WEST OF SR 1319 (JONES FRANKLIN RD) CONTINUING ALONG I-440 / US 64 TO NORTH OF US 64 / US 264
DATE: 07 / 28 / 2014

ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2

FOR -L- LT PROFILE, SEE SHEET NO. 74,75
FOR -L- RT PROFILE, SEE SHEET NO. 74,75
FOR -RPI3A- PROFILE, SEE SHEET NO. 107
FOR -LPI3B- PROFILE, SEE SHEET NO. 107
FOR -RPI3B- PROFILE, SEE SHEET NO. 108
FOR -RPI3C- PROFILE, SEE SHEET NO. 108
FOR -LPI3C- PROFILE, SEE SHEET NO. 109

LOCATION:
TIP NO.: COUNTY:
DESIGNED BY:
CHECKED BY: DATE:

GRAPHIC SCALE
50 25 0 50 100
PLANS

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	30
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRANITE RS&H
DESIGN-BUILD SERVICES

Kimley»Horn

NAD 83/NSRS 2007

8/17/99

REVISIONS

-LI- CURVE DATA
PIs Sta 439+60.68
Θs = 1° 12' 00.0"
Ls = 240.00'
LT = 160.00'
ST = 80.00'

SITE 3001

MATCHLINE SHEET 29 -L1- STA. 429+00.00

MATCHLINE SHEET 31 -L1- STA. 443+00.00

430+00

435+00

440+00

-LI- POT Sta.430+00.00 =
-RP13A- POT Sta.10+00.00 (83.00' LT)
Δ = 3° 31' 25"

-LI- ST Sta.441+20.68

-LI- CS Sta.438+80.68
-LI- LT GRADE POINT SHIFT 23' LT TO 47' LT

SPECIAL CUT DITCH wHINGE
SEE DETAIL A /SHEET 2-BJ

CLASS 'A' RIP RAP
EST 5 TONS

300' TAPER

PROPOSED MEDIAN CONCRETE BARRIER

REMOVE EXIST. GUARDRAIL

PROP. GUARDRAIL

PREFORMED SCOUR HOLE
OUTLET PROTECTION
CLASS 'B' RIP RAP
EST 8 TONS
EST 16 SY GEO
EST 25 SY PSRM
SEE DETAIL G/SHEET 2-BJ

GRAU 350 TL-3

8d TAPER

FUTURE AUX. LANE AND 12' FDPS

RETAIN

TIE TO EXIST 8' X 8' RCBC

18" RCP-III
15" RCP-III
30" RCP-III
15" RCP-IV
24" RCP

TB2GI
2GI-A

N 80° 00' 00.0" W

S 73° 31' 00.5" E

TRUSTEES OF DELIVERANCE CATHERAL OF LOVE
DB 4708 PG 412

FOUNTAIN DRIVE LLC
DB 12527 PG 589

CITY OF RALEIGH
DB 1988 PG 268

SITE 3001 (MOT 3001)

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

IMPACTS PERMITTED ON MOT BUFFER PERMITS

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15338 / 15311
I40 / US 64 FROM WEST OF SR 1319 (JONES FRANKLIN RD) CONTINUING ALONG I-440 / US 64 TO NORTH OF US 64 / US 264
DATE: 07 / 28 / 2014

FOR -L1- LT PROFILE, SEE SHEET NO. 76
FOR -L1- RT PROFILE, SEE SHEET NO. 76
FOR -RP13A- PROFILE, SEE SHEET NO. 107

$$$$SYSTIMEF$$$$ $$$$DGN$$$$ $$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	30
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83/NSRS 2007

40 440 PORTIES

GRANITE RS&H
DESIGN-BUILD SERVICES

Kimley»Horn

8/17/99

REVISIONS

-LI- CURVE DATA
PIs Sta 439+60.68
Θs = 1° 12' 00.0"
Ls = 240.00'
LT = 160.00'
ST = 80.00'

SITE 3001

SITE 3001 (MOT 3001)

-LI- POT Sta.430+00.00 =
-RP13A- POT Sta.10+00.00 (83.00' LT)
Δ = 3° 31' 25"

-LI- ST Sta.441+20.68

-LI- CS Sta.438+80.68
-LI- LT GRADE POINT SHIFT 23' LT TO 47' LT

-LI- STA. 443+00.00

MATCHLINE SHEET 29 -LI- STA. 429+00.00

MATCHLINE SHEET 31 -LI-

N 80° 00' 00.0" W

S 73° 31' 00.5" E

430+00

435+00

440+00

PROPOSED

SPECIAL CUT DITCH w/HINGE
SEE DETAIL A /SHEET 2-BJ

CLASS 'A' RIP RAP
EST. 5 TONS

300' TAPER

REMOVE EXIST. GUARDRAIL

PROPOSED MEDIAN CONCRETE BARRIER

PROP. GUARDRAIL

RETAIN

TIE TO EXIST 8' X 8' RCBC

8d TAPER

GRAU 350 TL-3

PREFORMED SCOUR HOLE
OUTLET PROTECTION
CLASS 'B' RIP RAP
EST 8 TONS
EST 16 SY GEO
EST 25 SY PSRM
SEE DETAIL G/SHEET 2-BJ

FUTURE AUX. LANE AND 12' FDPS

12' FDPS

14' FDPS

18' RCHW

15' RCP-IV

TB2GI

15" RCP-III

18" RCP-III

30" RCP-III

24" RCP

2GI-A

EXISTING R/W

R/W MON

TRUSTEES OF DELIVERANCE CATHEDRAL OF LOVE
DB 4708 PG 412

CITY OF RALEIGH
DB 1988 PG 268

FOUNTAIN DRIVE LLC
DB 12527 PG 589

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

IMPACTS PERMITTED ON MOT BUFFER PERMITS

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15338 / 15311
140 / US 64 FROM WEST OF SR 1319 (JONES FRANKLIN RD) CONTINUING ALONG I-440 / US 64 TO NORTH OF US 64 / US 264
DATE: 07 / 28 / 2014

FOR -L1- LT PROFILE, SEE SHEET NO. 76
FOR -L1- RT PROFILE, SEE SHEET NO. 76
FOR -RP13A- PROFILE, SEE SHEET NO. 107

$$$$SYSTIMEF$$$$ $$$$DGN$$$$ $$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
I-5339/I-5311	43
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRANITE RS&H
DESIGN-BUILD SERVICES

Kimley»Horn

NAD 83/NSRS 2007

8/17/99

REVISIONS

-RP9A- CURVE DATA
PIs Sta 29+64.64
Θs = 3°19' 17.4"
Ls = 200.00'
LT = 133.36'
ST = 66.69'

MITIGABLE IMPACTS ZONE 2

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 16338 / 16311
140 / US 64 FROM WEST OF
SR 1319 (JONES FRANKLIN RD)
CONTINUING ALONG I-440 / US 64
TO NORTH OF US 64 / US 264
DATE: 07 / 28 / 2014

MCKNITT AND ASSOCIATES LLC
DB 8614 PG 455
BM 1988 PG 1410

STATE OF NORTH CAROLINA
DB 4647 PG 819

EXISTING R/W

-Y9- POT Sta.10+00.00

10+00 -Y9-

-Y9- POT Sta.10+60.80
-RP9BSPUR- POT Sta. 22+69.46 (88.03' RT)

-RP9BSPUR- PT Sta. 21+97.95

-Y9- POT Sta.11+00.00 =
-RP9A- ST Sta. 30+97.95 (57.00' LT)

30' EASEMENT BM 1959 PG 141
S 86°54'00" E

END CONSTRUCTION
-RP9BSPUR- Sta.21+93.75

N 17°06'02" E

S 5°05'17" W

PROPERTY LINE = CL OF CREEK

30+00 -RP9A-

END SBG TIE INTO EXIST C&G
-RP9BSPUR- STA. 21+94

15" WELDBOWS, RODS & LUG CONNECTORS

2GI

CLASS 'B' RIP RAP
EST 2 TONS
EST 7 SY GEO

RETAIN EXIST MULTI-BARREL RCBC W/ GREENWAY BARREL

-RP9A- CS Sta. 28+97.95

CHARLES P SCHMIDT
DB 6669 PG 21
BM 1959 PG 141

20+00

MCKNITT AND ASSOCIATES LLC
DB 8614 PG 455
BM 1988 PG 1410

20' DRAINAGE EASEMENT BM 1988 PG 1410

N 10°00'00" W

N 10°17'20" W
402.82'

S 79°02'36" W
94.10'

N 10°00'00" W
112.58'

SITE 4301

-RP9BSPUR-

-Y9- HAMMOND RD

GORE AREA TO BE FILLED DURING CONSTRUCTION. GRADE SITE TO PROPOSED CONTOURS AS SHOWN ON DETAIL SHEETS 2-8H AND 2-8I

END CONSTRUCTION
-RP9A- POC Sta.26+58.70

15+00 -Y9-

BEGIN SBG
-RP9ASPUR- STA. 16+00

CITY OF RALEIGH
DB 3218 PG 360
BM 1959 PG 141
BM 1988 PG 1410

MATCHLINE SHEET 25 -Y9- STA. 15+50.00

FOR -RP9A- PROFILE, SEE SHEET NO. 103
FOR -RP9BSPUR- PROFILE, SEE SHEET NO. 104,105

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

PROJECT REFERENCE NO.	SHEET NO.
I-5339/I-5311	43
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83/NSRS 2007

INTERSTATE 40 INTERSTATE 440 BELTLINE

GRANITE RS&H DESIGN-BUILD SERVICES

Kimley»Horn

8/17/99

REVISIONS

-RP9A- CURVE DATA
PIs Sta 29+64.64
Θs = 3°19' 17.4"
Ls = 200.00'
LT = 133.36'
ST = 66.69'

MITIGABLE IMPACTS ZONE 2

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 16338 / 16311
140 / US 64 FROM WEST OF
SR 1319 (JONES FRANKLIN RD)
CONTINUING ALONG I-440 / US 64
TO NORTH OF US 64 / US 264
DATE: 07 / 28 / 2014

MCKNITT AND ASSOCIATES LLC
DB 8614 PG 455
BM 1988 PG 1410

STATE OF NORTH CAROLINA
DB 4647 PG 819

-Y9- POT Sta.10+00.00

10+00 -Y9-

-Y9- POT Sta.10+60.80
-RP9BSPUR- POT Sta. 22+69.46 (88.03' RT)

-RP9BSPUR- PT Sta. 21+97.95

-Y9- POT Sta.11+00.00 =
-RP9A- ST Sta. 30+97.95 (57.00' LT)

30+00 -RP9A-

END CONSTRUCTION
-RP9BSPUR- Sta.21+93.75

N 17°06'02.2" E

S 17°11'05.5" W

30' EASEMENT BM 1959 PG 141
S 86°54'00" E

END SBG TIE INTO EXIST C&G
-RP9BSPUR- STA. 21+94

15" W/ELBOWS, RODS, & LUG CONNECTORS

2G1

CLASS 'B' RIP RAP
EST 2 TONS
EST 7 SY GEO

12" PS

16"

4' FDPS

RETAIN EXIST MULTI-BARREL RCBC W/ GREENWAY BARREL

-RP9A- CS Sta. 28+97.95

CHARLES P SCHMIDT
DB 6669 PG 21
BM 1959 PG 141

20+00

MCKNITT AND ASSOCIATES LLC
DB 8614 PG 455
BM 1988 PG 1410

20' DRAINAGE EASEMENT BM 1988 PG 1410

N 40°07'20" W
402.82

N 17°00'00" W
102.58

S 19°02'36" W
94.00

SITE 4301

-RP9BSPUR-

-Y9- HAMMOND RD

GORE AREA TO BE FILLED DURING CONSTRUCTION. GRADE SITE TO PROPOSED CONTOURS AS SHOWN ON DETAIL SHEETS 2-8H AND 2-8I

END CONSTRUCTION
-RP9A- POC Sta.26+58.70

15+00 -Y9-

BEGIN SBG
-RP9ASPUR- STA. 16+00

PROPERTY LINE = CL OF CREEK

CITY OF RALEIGH
DB 3218 PG 560
BM 1959 PG 141
BM 1988 PG 1410

MATCHLINE SHEET 25 -Y9- STA. 15+50.00

FOR -RP9A- PROFILE, SEE SHEET NO. 103
FOR -RP9BSPUR- PROFILE, SEE SHEET NO. 104,105

$$$$SYSTIME$$$$
$$$$SIGDON$$$$
$$$$USERNAME$$$$

8/17/99

REVISIONS

NAD 83/NSRS 2007

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	44
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRANITE RS&H DESIGN-BUILD SERVICES

Kimley»Horn

MATCHLINE SHEET 25 –Y9– STA. 30+00.00

STREAM LOCATED OUTSIDE PROJECT SURVEY AREA. STREAM LOCATION AS SHOWN ON PLAN APPROXIMATED FROM AERIAL PHOTOGRAPHY

CULVERT PRESERVATION SITE #23, SEE DETAIL H / SHEET 2-8J

INV=225.83'
36" CMP
15" CMP
INV=225.44'

RETAIN

UP=262.58'
INV=259.55'

RETAIN & PRESERVE 36"

F

C

SITE 4401

BZ 2 BZ 1 TB TB BZ 1 BZ 2

EXISTING R/W

–Y9– HAMMOND RD

25+00

REMOVE EXIST. GUARDRAIL

R/W MON

EXISTING R/W

36" CMP

INV=238.84'

BELL INVESTMENTS LIMITED PARTNERSHIP
DB 11160 PG 1360

EXISTING RR R/W

END CONSTRUCTION
–RP9D– Sta. 26+54.00

R/W MON

S 18°57'35.2" W

–RP9D– PT Sta. 27+73.00

EXISTING R/W

–Y9– POT Sta. 34+26.01 =
–RP9D– POT Sta. 28+44.23 (71.03 LT)

35+00

–Y9– PT Sta. 35+35.35

S 14°25'50.9" W

–Y9– POT Sta. 36+59.75

EXISTING R/W

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15338 / 15311
140 / US 64 FROM WEST OF
SR 1319 (JONES FRANKLIN RD)
CONTINUING ALONG I-440 / US 64
TO NORTH OF US 64 / US 264
DATE: 07 / 28 / 2014

FOR –RP9D– PROFILE, SEE SHEET NO. 106

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

8/17/99

REVISIONS

NAD 83/NSRS 2007

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	44
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRANITE RS&H DESIGN-BUILD SERVICES

Kimley»Horn

MATCHLINE SHEET 25 –Y9– STA. 30+00.00

STREAM LOCATED OUTSIDE PROJECT SURVEY AREA. STREAM LOCATION AS SHOWN ON PLAN APPROXIMATED FROM AERIAL PHOTOGRAPHY

CULVERT PRESERVATION, SITE #23, SEE DETAIL H SHEET 248

RETAIN

RETAIN & PRESERVE 36"

SITE 4401

–Y9– HAMMOND RD

REMOVE EXIST. GUARDRAIL

BELL INVESTMENTS LIMITED PARTNERSHIP DB 11160 PG 1360

END CONSTRUCTION –RP9D– Sta. 26+54.00

–RP9D– PT Sta. 27+73.00

S 18°57'35.2" W

–Y9– POT Sta. 34+26.01 = –RP9D– POT Sta. 28+44.23 (71.03 LT)

–Y9– PT Sta. 35+35.35

S 14°25'50.9" W

–Y9– POT Sta. 36+59.75

35+00

EXISTING R/W

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15338/15311
140/US 64 FROM WEST OF SR 1319 (JONES FRANKLIN RD) CONTINUING ALONG I-440/US 64 TO NORTH OF US 64/ US 264
DATE: 07/28/2014

FOR –RP9D– PROFILE, SEE SHEET NO. 106

$$$$SYSTIME$$$$
$$$$DESIGN$$$$
$$$$USERNAME$$$$

09/08/99

TIP PROJECT: I–5338 / I–5311

CONTRACT: C203166

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



VICINITY MAP

AREA 1 & 2A
FINAL ROADWAY PLANS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WAKE COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I–5338 / I–5311	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
46265.3.1	IMS–0440(13)	PE
46265.3.1	IMS–0440(13)	R/W, UTIL
46265.3.1	IMS–0440(13)	CONST

LOCATION: *I–40 / US 64 FROM WEST OF SR 1319 (JONES FRANKLIN RD) CONTINUING ALONG I–440 / US 64 TO NORTH OF US 64 / US 264*

TYPE OF WORK: *PAVING, GRADING, DRAINAGE, STRUCTURE REHABILITATION, STRUCTURE WIDENING, GUARDRAIL, SIGNING, LIGHTING, AND ITS*

NOTE: *AREA 1: –L1– STA. 19+02.00 TO –L1– STA. 68+12.63*
AREA 2A: –L1– STA. 68+12.63 TO –L1– STA. 285+50.00
AREA 2B: –L1– STA. 285+50.00 TO –L2LT– AND –L2RT– STA. 444+00.00
AREA 3: –L2LT– AND –L2RT– STA. 444+00.00 TO –L3– STA. 628+60.00

NAD 83/NSRS 2007

END TIP PROJECT I–5311
–L3– STA. 628+60.00

END TIP PROJECT I–5338
BEGIN TIP PROJECT I–5311
–L3– STA. 500+00.00

–L1– STA. 444+00.00 =
–L2LT– STA. 444+00.00 (47.00' LT) =
–L2RT– STA. 444+00.00 (23.00' RT)

–L3– STA. 500+00.00 =
–L2LT– STA. 499+94.85 (10.00' LT.) =
–L2RT– STA. 501+30.89 (22.00' RT.)

BEGIN TIP PROJECT I–5338
–L1– STA. 19+02.00

TO DURHAM
US1 /I440
10+00
50+00
100+00
150+00
200+00
250+00
300+00
350+00
400+00
450+00
500+00
550+00
600+00
AREA 1
AREA 2A
AREA 2B
AREA 3
AVENT FERRY ROAD –Y2–
GORMAN STREET –Y4–
TRAILWOOD DRIVE –Y5–
WILMINGTON STREET –Y8–
HAMMOND ROAD –Y9–
ROCK QUARRY ROAD –Y13–
NORFOLK SOUTHERN RAILROAD
CRABTREE CREEK
POOLE ROAD –Y15–
JONES FRANKLIN ROAD –Y1–
LAKE DAM ROAD –Y3–
LAKE WHEELER ROAD –Y6–
SOUTH SAUNDERS STREET –Y7–
NORFOLK–SOUTHERN RAILROAD
GARNER ROAD –Y10–
HADLEY DRIVE –Y11–
SOUTH STATE STREET –Y12–
SUNNYBROOK ROAD –Y14–
I–40
TO US 1/US 401

THIS IS A CONTROLLED ACCESS PROJECT WITH ACCESS LIMITED TO INTERCHANGES.

AREA 1 & 2A
FINAL ROADWAY PLANS
SUBMITTAL NO: D–158
JUNE 26, 2014

GRANITE / RS&H
DESIGN-BUILD SERVICES

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2013	=	126,025
ADT 2035	=	184,600
DHV	=	9 %
D	=	55 %
T	=	8 % *
V	=	70 MPH

* (TTST = 4% + DUAL = 4%)
FUNC CLASS = INTERSTATE

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT I–5338 / I–5311 = 11.503 MILES
LENGTH STRUCTURE TIP PROJECT I–5338 / I–5311 = 0.042 MILES
TOTAL LENGTH TIP PROJECT I–5338 / I–5311 = 11.545 MILES

*NOTE: EASTBOUND LANES USED TO CALCULATE LENGTH OF PROJECT.

K. ZAK HAMIDI, PE
NCDOT CONTACT

Prepared In the Office of:
RS&H
ARCHITECTS–ENGINEERS–PLANNERS, INC.
8601 SIX FORKS ROAD, SUITE 260
RALEIGH, NC 27615

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
MAY 13, 2013

LETTING DATE:
MAY 13, 2013

JASON TALLEY, PE
PROJECT ENGINEER

JARED BOND, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 026480 ENGINEER JARED D. ROBINSON

P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON N. TALLEY

P.E.
SIGNATURE:

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION

24-JUN-2014 17:01
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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	I-A

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 029473 JASON W. TALLEY

INDEX OF SHEETS

SHEET NUMBER	SHEET
1	TITLE SHEET
1-A	INDEX OF SHEETS, GENERAL NOTES, AND LIST OF STANDARD DRAWINGS
1-B	CONVENTIONAL SYMBOLS
1-C THRU 1-D	SURVEY CONTROL SHEETS
2	PAVEMENT SCHEDULE
2-A	RAMP DETAILS (PAVEMENT AND RUMBLE STRIPS)
2-B THRU 2-E	AREA 1 & 2A TYPICAL SECTIONS
2-AB THRU 2-AF	RAMP GORE DETAILS
2-AP	AREA 1 & 2A DITCH DETAILS
2-AQ	CONCRETE GRATED DROP INLET DETAIL
2-AR	SPECIAL CONCRETE MEDIAN 2-GI DETAIL
2-AS	STREAM REALIGNMENT DETAIL
2-AT	-RP4D- CHANNEL IMPROVEMENTS DETAIL
2-AU THRU 2-AV	MEDIAN BARRIER AT OVERPASS DETAIL
2-AW THRU 2-AZ	SPECIAL MEDIAN BARRIER WALL DETAIL
2-BA THRU 2-BC	MEDIAN BARRIER AT JONES FRANKLIN RD. DETAIL
2-BD THRU 2-BF	MEDIAN BARRIER LIGHTING DETAIL
2-BG	B-77 ANCHOR UNIT DETAIL
2-BK	GORMAM ST. MEDIAN BARRIER DETAIL
3 THRU 3-E	DRAINAGE MAINTENANCE APPROACH
3-P THRU 3-Z	DRAINAGE SUMMARY
3-AA	GUARDRAIL SUMMARY
3-AB	SHOULDER DRAIN SUMMARY
4 THRU 22	PLAN SHEET
45 THRU 65, 92 THRU 98	PROFILE SHEETS
X-1000 THRU X-1292	AREA 1 & 2A CROSS SECTIONS

GENERAL NOTES:

2012 SPECIFICATIONS
EFFECTIVE: 01-17-2012
REVISED: 07-30-2012

GRADING AND SURFACING OR RESURFACING AND WIDENING:

THE GRADE LINES SHOWN DENOTE THE FINISHED ELEVATION OF THE PROPOSED SURFACING AT GRADE POINTS SHOWN ON THE TYPICAL SECTIONS. WHERE NO GRADE LINES ARE SHOWN, THE PROFILES SHOWN DENOTE THE TOP ELEVATION OF THE EXISTING PAVEMENT ALONG THE CENTER LINE OF SURVEY ON WHICH THE PROPOSED RESURFACING WILL BE PLACED. GRADE LINES MAY BE ADJUSTED BY THE ENGINEER IN ORDER TO SECURE A PROPER TIE-IN.

CLEARING:

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

SUPERELEVATION:

ALL CURVES ON THIS PROJECT SHALL BE SUPERELEVATED IN ACCORDANCE WITH STD. NO. 225.05
SUPERELEVATION IS TO BE REVOLVED ABOUT THE GRADE POINTS SHOWN ON THE TYPICAL SECTIONS.

SHOULDER CONSTRUCTION:

ASPHALT, EARTH, AND CONCRETE SHOULDER CONSTRUCTION ON THE HIGH SIDE OF SUPERELEVATED CURVES SHALL BE IN ACCORDANCE WITH STD. NO 560.02

SHOULDER DRAINS:

SHOULDER DRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STD. NO. 816.02 AND DETAILS IN PLANS AT LOCATIONS DIRECTED BY THE ENGINEER.

GUARDRAIL:

THE GUARDRAIL LOCATIONS SHOWN ON THE PLANS MAY BE ADJUSTED DURING CONSTRUCTION AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHOULD CONSULT WITH THE ENGINEER PRIOR TO ORDERING GUARDRAIL MATERIAL.

TEMPORARY SHORING:

SHORING REQUIRED FOR THE MAINTENANCE OF TRAFFIC NOT SHOWN ON THE PLANS WILL BE PAID FOR AT THE CONTRACT PRICE FOR "TEMPORARY SHORING".

END BENTS:

THE ENGINEER SHALL CHECK THE STRUCTURE END BENT PLANS, DETAILS, AND CROSS-SECTION PRIOR TO SETTING OF THE SLOPE STAKES FOR THE EMBANKMENT OR EXCAVATION APPROACHING A BRIDGE.

UTILITIES:

UTILITY OWNERS ON THIS PROJECT ARE:
DUKE ENERGY
AT&T
PSNC ENERGY
CITY OF RALEIGH
TIME WARNER CABLE
PALMETTONET
LEVEL 3

ANY RELOCATION OF EXISTING UTILITIES WILL BE ACCOMPLISHED BY OTHERS.

EFF. 01-17-2012
REV. 10-30-2012

2012 ROADWAY ENGLISH STANDARD DRAWINGS

The following Roadway Standards as appear in "Roadway Standard Drawings" Highway Design Branch - N. C. Department of Transportation - Raleigh, N. C., Dated January, 2012 are applicable to this project and by reference hereby are considered a part of these plans:

STD.NO.	TITLE
DIVISION 2 - EARTHWORK	
200.03	Method of Clearing - Method III
225.01	Guide for Grading Subgrade - Interstate and Freeway
225.03	Deceleration and Acceleration Lanes
225.05	Method of Obtaining Superelevation - Divided Highways
225.06	Method of Grading Sight Distance at Intersections
225.07	Grading for False Cut at Grade Separations
225.09	Guide for Shoulder and Ditch Transition at Grade Separations
DIVISION 3 - PIPE CULVERTS	
300.01	Method of Pipe Installation
DIVISION 4 - MAJOR STRUCTURES	
422.10	Reinforced Bridge Approach Fills
DIVISION 5 - SUBGRADE, BASES AND SHOULDERS	
560.02	Method of Shoulder Construction - High Side of Superelevated Curve - Method II (Sheet 2 of 3 is no longer applicable)
DIVISION 6 - ASPHALT BASES AND PAVEMENTS	
610.03	Guide for Paving Shoulders Under Bridges - Method III
665.01	Asphalt Shoulders - Milled Rumble Strips
DIVISION 8 - INCIDENTALS	
816.01	Concrete Pads - for Shoulder Drain Installation
816.02	Aggregate Shoulder Drain
816.03	Geocomposite Shoulder Drain
816.04	Markers for Drainage Structure and Concrete Pad
840.00	Concrete Base Pad for Drainage Structures
840.17	Concrete Grated Drop Inlet Type 'A' - 12" thru 72" Pipe
840.18	Concrete Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.19	Concrete Grated Drop Inlet Type 'D' - 12" thru 36" Pipe
840.20	Frames and Wide Slot Flat Grates
840.22	Frames and Wide Slot Sag Grates
840.25	Anchorage for Frames - Brick or Concrete or Precast
840.26	Brick Grated Drop Inlet Type 'A' - 12" thru 72" Pipe
840.27	Brick Grated Drop Inlet Type 'B' - 12" thru 36" Pipe
840.28	Brick Grated Drop Inlet Type 'D' - 12" thru 36" Pipe
840.29	Frames and Narrow Slot Flat Grates
840.31	Concrete Junction Box - 12" thru 66" Pipe
840.32	Brick Junction Box - 12" thru 66" Pipe
840.34	Traffic Bearing Junction Box - for Use with Pipes 42" and Under
840.36	Traffic Bearing Grated Drop Inlet - for Steel (840.37) Double Frame and Grates
840.37	Steel Grate and Frame
840.46	Traffic Bearing Precast Drainage Structure
840.54	Manhole Frame and Cover
840.66	Drainage Structure Steps
840.72	Pipe Collar
846.01	Concrete Curb, Gutter and Curb & Gutter
846.04	Drop Inlet Installation in Shoulder Berm Gutter
852.01	Concrete Islands
854.01	Double Faced Concrete Barrier - Types I, II, III and IV
854.05	Concrete Median Transition Barrier - Location of Overhead Assembly
857.01	Precast Reinforced Concrete Barrier - 41" Single Faced
862.01	Guardrail Placement
862.02	Guardrail Installation
862.03	Structure Anchor Units (Details in Lieu of Standard Drawing as March 2013 Letting)
862.04	Anchoring End of Guardrail - B-77 and B-83 Anchor Units
866.02	Woven Wire Fence - with Wood Post
876.01	Rip Rap in Channels
876.02	Guide for Rip Rap at Pipe Outlets

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12/05/11

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	I-B

Note: Not to Scale

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

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

BUILDINGS AND OTHER CULTURE:

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

HYDROLOGY:

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

RAILROADS:

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

RIGHT OF WAY:

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

ROADS AND RELATED FEATURES:

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

VEGETATION:

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

EXISTING STRUCTURES:

MAJOR:

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

MINOR:

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

UTILITIES:

POWER:

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

TELEPHONE:

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

WATER:

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

TV:

- TV Satellite Dish
- TV Pedestal — C
- TV Tower
- U/G TV Cable Hand Hole — HH
- Recorded U/G TV Cable — TV
- Designated U/G TV Cable (S.U.E.*) — TV
- Recorded U/G Fiber Optic Cable — TV FO
- Designated U/G Fiber Optic Cable (S.U.E.*) — TV FO

GAS:

- Gas Valve
- Gas Meter
- Recorded U/G Gas Line — G
- Designated U/G Gas Line (S.U.E.*) — G
- Above Ground Gas Line — A/G Gas

SANITARY SEWER:

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

MISCELLANEOUS:

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

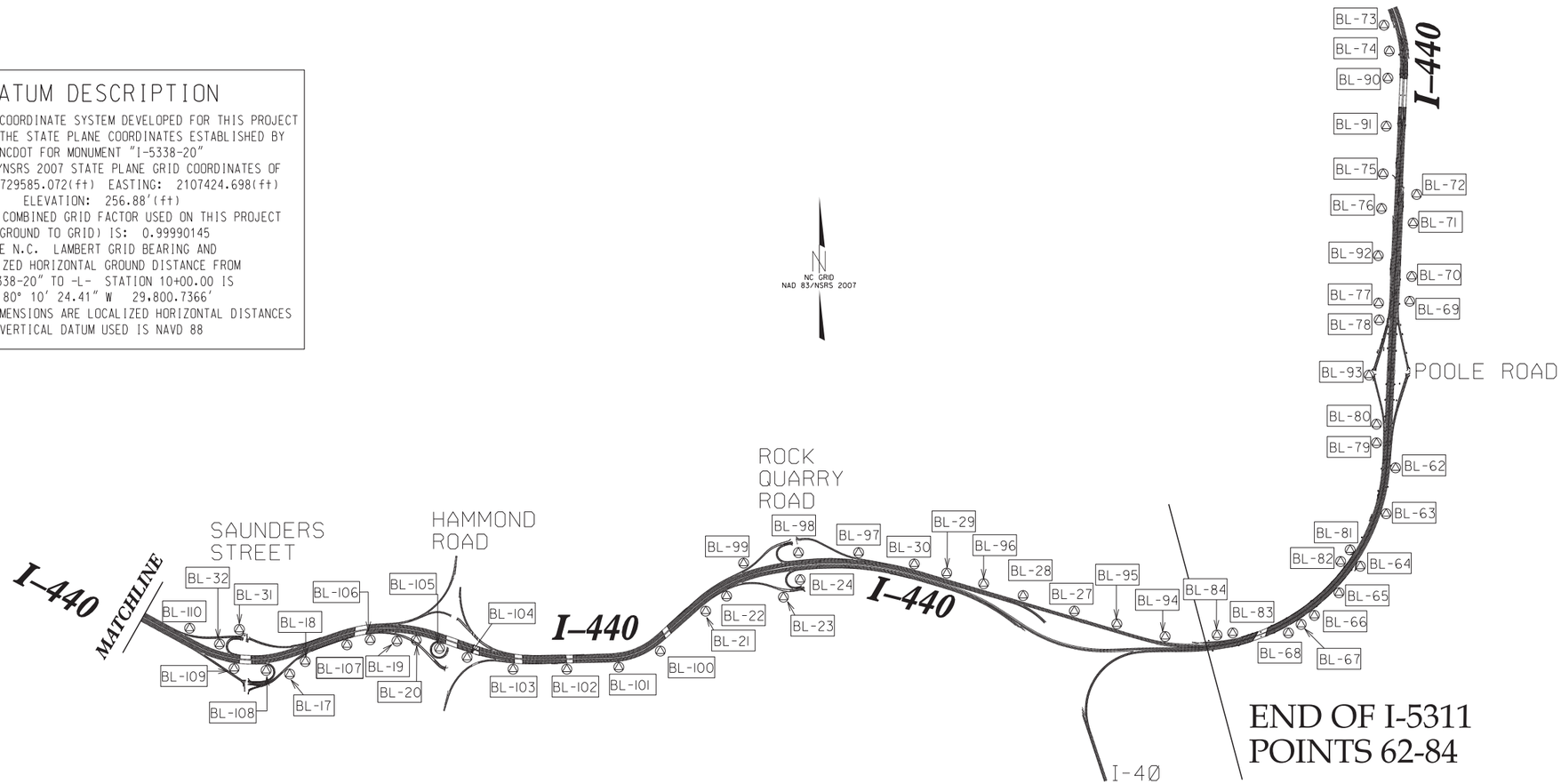
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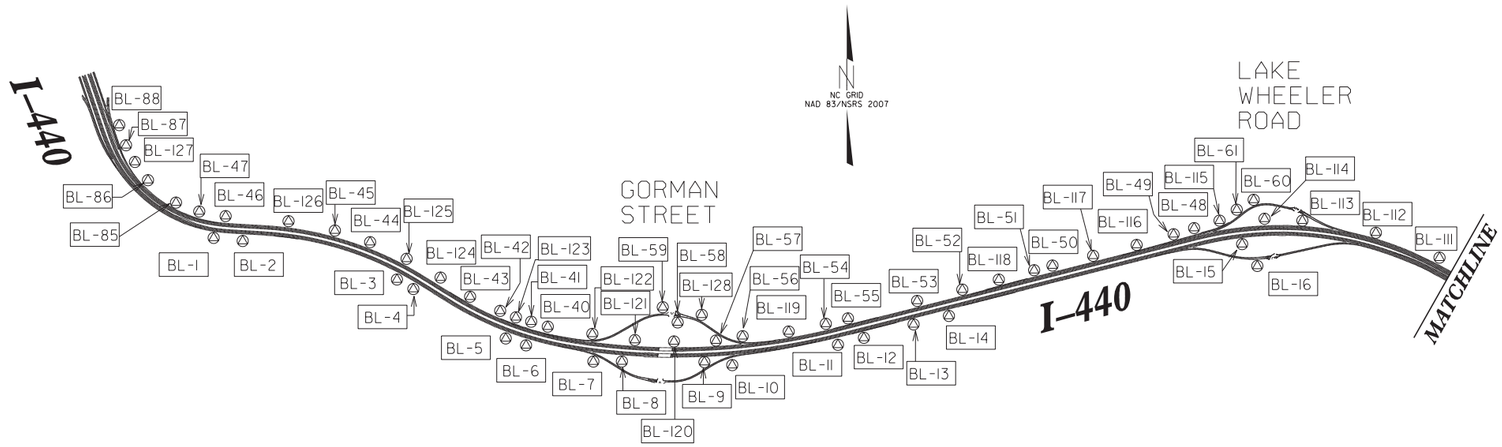
PROJECT REFERENCE NO.	SHEET NO.
46265.1.1	1C
Location and Surveys	

I5311/I5338 SURVEY CONTROL SHEET

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "I-5338-20" WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 729585.072(ft) EASTING: 2107424.698(ft) ELEVATION: 256.88'(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99990145
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "I-5338-20" TO -L- STATION 10+00.00 IS N 80° 10' 24.41" W 29,800.7366'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88





REVISED 6/17/13
NOTE: DRAWING NOT TO SCALE

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12/01/2005

I5311 / I5338 SURVEY CONTROL SHEET

PROJECT REFERENCE NO.	SHEET NO.
46265.1.1	1D
Location and Surveys	

BASELINE DATA

BL POINT	NORTH	EAST	ELEVATION
1	730707.9600	2080889.9900	435.44
2	730661.8400	2081365.1200	427.00
3	729952.9700	2084130.5400	397.19
4	729823.4100	2084351.1800	397.41
5	728962.7800	2085985.2500	425.57
6	728861.9400	2086285.5100	430.80
7	728622.1300	2087457.2200	440.74
8	728571.2100	2087838.7700	438.23
9	728472.8700	2089472.7700	414.27
10	728569.8600	2089762.0000	417.00
11	728871.1900	2091609.1800	387.71
12	728990.2400	2092045.4500	380.28
13	729206.2300	2092900.5400	366.86
14	729366.1900	2093529.5400	356.72
15	730603.5100	2098586.4500	276.00
16	730225.3100	2098843.9200	302.62
17	728962.4800	2104909.0200	260.84
18	729220.6300	2105194.6900	260.74
19	729634.1000	2107079.3500	255.40
20	729585.0720	2107424.6980	256.88
21	730145.1000	2112991.9200	237.79
22	730439.9100	2113407.5000	239.92
23	730431.5500	2114556.7100	248.76
24	730591.5600	2114872.3400	260.14
27	729951.4400	2120160.4300	223.65
28	730243.8000	2119170.3900	215.53
29	730686.8800	2117699.9400	218.47
30	730859.2000	2117088.5500	225.55
31	729588.0000	2104041.4700	243.69
32	729505.4100	2103729.0100	248.82
40	728964.3800	2086587.5600	431.34
41	729037.7500	2086316.3900	427.34
42	729219.6500	2085803.1700	418.54
43	729493.2500	2085247.3900	407.80
44	730424.9100	2083546.1500	406.69
45	730617.0400	2082963.5300	413.06
46	730861.6500	2081100.5000	427.76
47	730941.0700	2080608.7700	432.25
48	730659.9900	2097775.6000	290.15
49	730570.0700	2097454.0700	293.56
50	730013.3000	2095330.9500	327.69
51	729948.0100	2095070.6300	331.74
52	729609.5400	2093783.8600	352.32
53	729421.4600	2093034.2100	363.79
54	729014.7400	2091443.7600	389.41
55	729113.1600	2091834.5700	382.99
56	728776.3100	2089938.9100	412.88
57	728858.1300	2089663.9100	410.76
58	729242.8600	2088868.8700	388.62
60	731137.5600	2098841.2800	276.54
61	730983.1800	2098583.6400	279.26
62	732846.5400	2126300.7100	244.17
63	731956.1800	2126118.5400	222.07
64	730980.5300	2125639.4600	204.08
65	730491.3700	2125237.7600	211.15
66	730068.6600	2124761.7700	228.99
67	729909.2600	2124534.4000	236.57
68	729775.8300	2124313.3800	242.51

BL POINT	NORTH	EAST	ELEVATION
69	736045.1000	2126475.4400	262.90
70	736552.1100	2126494.6200	252.08
71	737582.7700	2126541.4400	232.59
72	738100.3700	2126569.7700	225.01
73	741391.4000	2126386.9500	226.81
74	740870.5600	2126488.0400	223.47
75	738509.3200	2126409.5700	221.50
76	737843.7200	2126371.2400	229.87
77	736013.2500	2126282.8900	263.96
78	735696.3500	2126248.7000	269.69
79	733323.5200	2126166.7200	252.94
80	733685.3000	2126165.7500	261.38
81	731175.7500	2125588.3300	198.43
82	730979.5900	2125470.5000	199.05
83	729525.4900	2123275.2600	246.80
84	729482.3400	2122966.9800	244.62
85	731112.1800	2080189.9700	437.23
86	731500.2300	2079667.8200	443.97
87	732156.1500	2079270.8600	451.25
88	732523.6600	2079150.2000	457.75
90	740383.4900	2126492.6700	221.10
91	739450.8700	2126448.6500	212.05
92	736936.3200	2126320.8700	243.90
93	734628.7500	2126017.3400	300.39
94	729460.5100	2121951.8100	236.61
95	729701.9600	2121011.2000	230.84
96	730471.7800	2118424.3100	213.97
97	731104.2600	2116014.2600	231.18
98	731182.5300	2114875.0200	261.59
99	730867.8600	2113880.2700	247.61
100	729375.3000	2112083.0500	251.43
101	729064.7600	2111357.7100	258.49
102	729048.8000	2110339.9500	262.42
103	729044.9300	2109325.0200	286.15
104	729247.0800	2108500.5400	284.29
105	729430.5600	2107960.3600	273.47
106	729615.1800	2106534.2300	258.80
107	729532.1100	2106127.2900	260.44
108	729061.6200	2104625.7200	272.15
109	729063.2800	2103839.9000	274.57
110	729559.0900	2103025.3200	260.04
111	730135.2400	2101976.8000	253.54
112	730585.0700	2100904.0300	258.05
113	730804.3000	2099792.4700	264.21
114	730827.4300	2099009.1100	271.58
115	730785.0900	2098291.7400	284.94
116	730415.2300	2096807.0900	303.41
117	730207.6100	2096068.1900	314.89
118	729780.6100	2094428.4100	341.64
119	728890.3900	2090833.2900	399.03
120	728712.9600	2088801.6100	430.86
121	728738.0600	2088125.3400	437.54
122	728803.9300	2087412.6100	439.75
123	729127.1300	2086034.4100	422.62
124	729791.3500	2084747.0800	400.85
125	730145.7400	2084175.8300	400.74
126	730776.5700	2082170.0700	420.91
127	731834.8500	2079436.0000	445.52
128	729174.5300	2089270.7200	402.17

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "I-5338-20"
WITH NAD 83/NSRS 2007 STATE PLANE GRID COORDINATES OF NORTHING: 729585.072(ft) EASTING: 2107424.698(ft)
ELEVATION: 256.88'(ft)
THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99990145
THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "I-5338-20" TO -L- STATION 10+00.00 IS N 80° 10' 24.41" W 29,800.7366'
ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES
VERTICAL DATUM USED IS NAVD 88

REVISED 6/17/13

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PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PAVEMENT SCHEDULE			
C1	PROP. APPROX. 1.5″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.	R1	2′-0″ DOUBLE FACED CONCRETE BARRIER.
C2	PROP. APPROX. 3.0″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	R2	2′-6″ DOUBLE FACED CONCRETE BARRIER.
C3	PROP. APPROX. 1.5″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5D, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.	R3	2′-6″ CONCRETE CURB AND GUTTER.
C4	PROP. APPROX. 3.0″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5D, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	R4	CONCRETE SHOULDER BERM GUTTER.
C5	PROP. VAR. ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5D, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1″ DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 1.5″ IN DEPTH OR GREATER THAN 2″ IN DEPTH.	R5	CONCRETE BARRIER WALL
D1	PROP. APPROX. 3.5″ ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 399 LBS. PER SQ. YD.	R6	CONCRETE BARRIER WALL W/ GLARE SCREEN
D2	PROP. APPROX. 3.0″ ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0D, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.	R7	SPECIAL CONCRETE SHOULDER BERM GUTTER (SEE DETAIL ON SHEET 2-A).
D3	PROP. VAR. ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0D, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1″ DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 2.5″ IN DEPTH OR GREATER THAN 4″ IN DEPTH.	R8	CONCRETE EXPRESSWAY GUTTER
E1	PROP. APPROX. 4.0″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	T	EARTH MATERIAL.
E2	PROP. APPROX. 5.5″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.	U	EXISTING PAVEMENT.
E3	PROP. APPROX. 9.0″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 513 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	V	MILL 1.5″ DEPTH. (SEE DETAILS ON SHEET NOS. 2-J & 2-K)
E4	PROP. VAR. ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1″ DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3″ IN DEPTH OR GREATER THAN 5.5″ IN DEPTH.	W	WEDGING. (SEE DETAIL ON SHEET NO. 2-E)
K	PROP. 12.0″ CLASS IV SUBGRADE STABILIZATION WITH GEOTEXTILE FABRIC.		

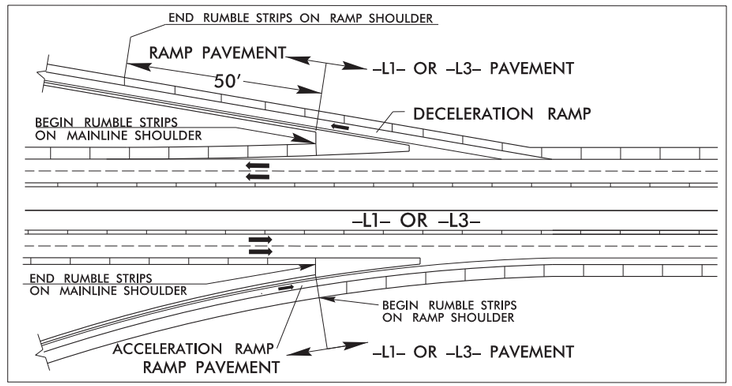
NOTE: ALL EOP SLOPES ARE 1:1 UNLESS OTHERWISE SHOWN
FDPS = FULL DEPTH PAVED SHOULDER
PDPS = PARTIAL DEPTH PAVED SHOULDER

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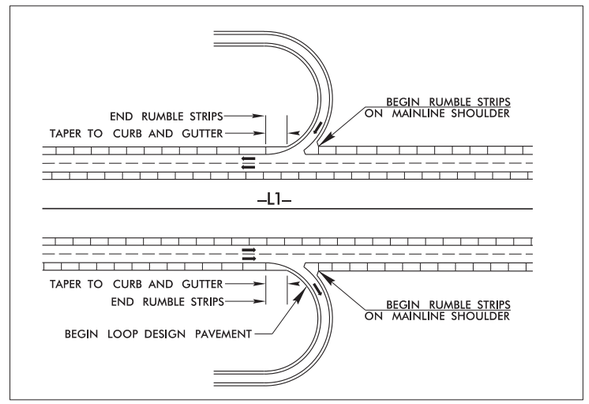
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PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	2-A
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

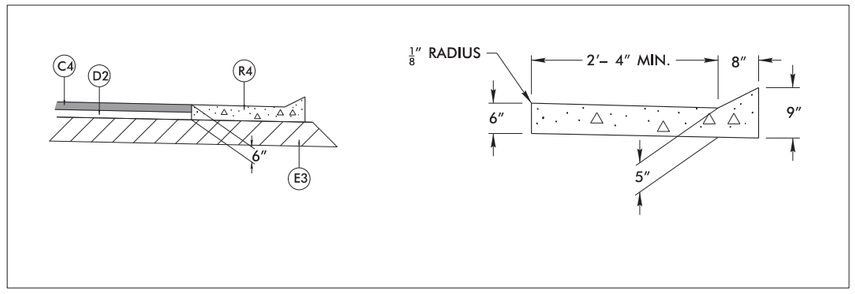
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



DETAIL SHOWING LIMITS OF PAVEMENT DESIGN &
RUMBLE STRIP TREATMENT AT RAMP TERMINAL
REFER TO STD DRAWING NO. 665.01



DETAIL SHOWING LIMITS OF PAVEMENT DESIGN &
RUMBLE STRIP TREATMENT AT LOOP TERMINALS



DETAIL SHOWING MODIFIED SHOULDER
BERM GUTTER FLUSH WITH ASPHALT CONCRETE – MAINLINE

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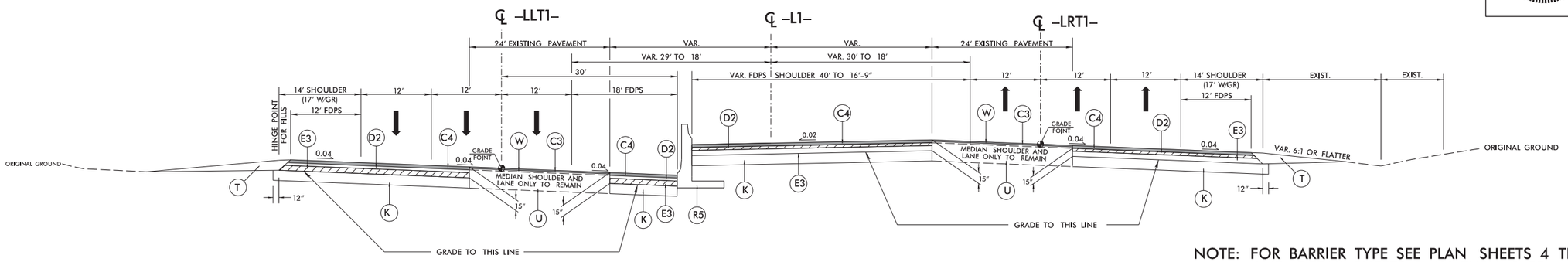
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PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	2-B
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY

INTERSTATE 40 INTERSTATE 440 PORTION

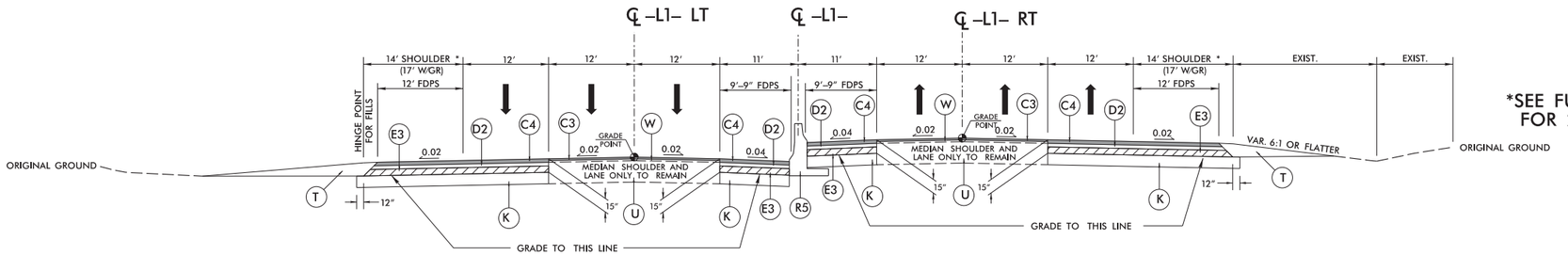
GRANITE RS&H DESIGN-BUILD SERVICES



TYPICAL SECTION – No. 1

–LRT1– STA. 18+74.34 TO –LRT1– STA. 26+80.06
–LLT1– STA. 18+82.55 TO –LLT1– STA. 26+92.59

NOTE: FOR BARRIER TYPE SEE PLAN SHEETS 4 THRU 6 AND DETAIL SHEETS 2–AV THRU 2–BB



*SEE FUTURE AUXILIARY LANE DETAIL FOR 26′ FDPS LOCATIONS

TYPICAL SECTION – No. 2

–LRT1– STA. 26+80.06 TO –L1– STA. 59+49.94 RT.
–LLT1– STA. 26+92.59 TO –L1– STA. 59+49.99 LT.

PAVEMENT SCHEDULE									
C1	1.5″ SURFACE COURSE TYPE S9.5C	D1	3.5″ INTER. COURSE TYPE I19.0C	E3	9.0″ BASE COURSE TYPE B25.0C	R3	2′-6″ CONCRETE CURB AND GUTTER	R8	CONCRETE EXPRESSWAY GUTTER
C2	3.0″ SURFACE COURSE TYPE S9.5C	D2	3.0″ INTER. COURSE TYPE I19.0D	E4	VAR. BASE COURSE TYPE B25.0C	R4	CONCRETE SHOULDER BERM GUTTER	T	EARTH MATERIAL
C3	1.5″ SURFACE COURSE TYPE S9.5D	D3	VAR. INTER. COURSE TYPE I19.0D	K	12.0″ CL IV STAB. W/ GEO. FABRIC	R5	CONCRETE BARRIER WALL	U	EXISTING PAVEMENT
C4	3.0″ SURFACE COURSE TYPE S9.5D	E1	4.0″ BASE COURSE TYPE B25.0C	R1	2′-0″ DOUBLE FACED CONCRETE BARRIER	R6	CONCRETE BARRIER W/ GLARE SCREEN	V	MILL 1.5″ DEPTH
C5	VAR. SURFACE COURSE TYPE S9.5D	E2	5.5″ BASE COURSE TYPE B25.0C	R2	2′-6″ DOUBLE FACED CONCRETE BARRIER	R7	SPECIAL CONCRETE SHOULDER BERM GUTTER	W	WEDGING

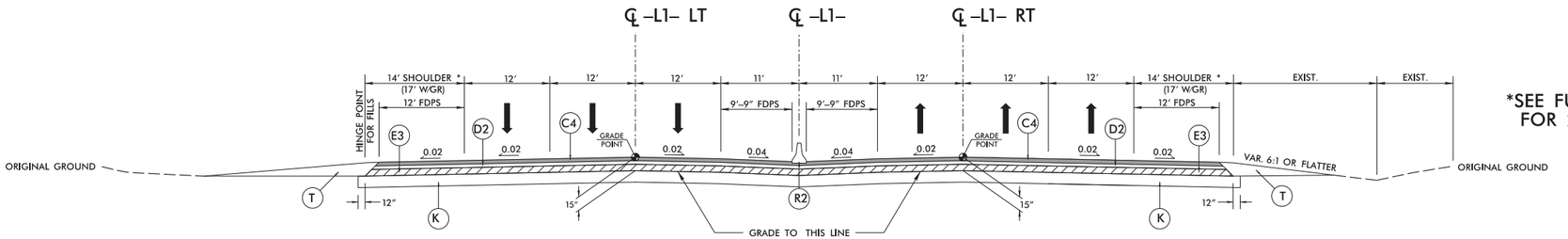
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PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	2-C
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

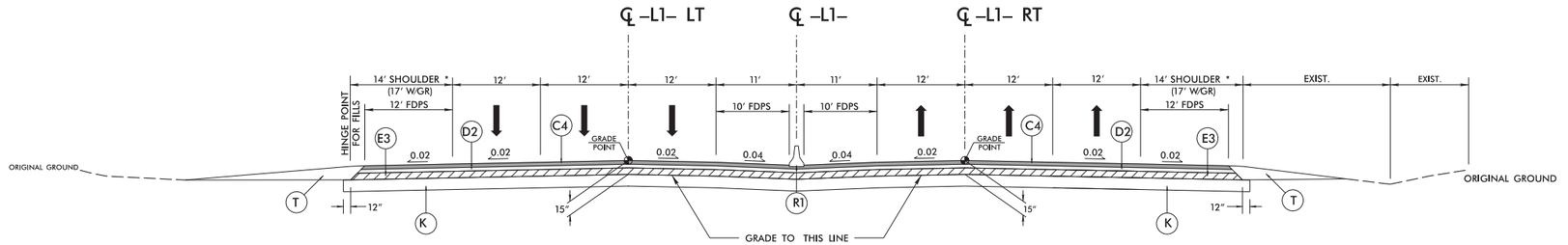
NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY

GRANITE RS&H DESIGN-BUILD SERVICES



TYPICAL SECTION – No. 3

–L1– STA. 59+49.94 RT. TO –L1– STA. 64+00.00 RT.
–L1– STA. 59+49.99 LT. TO –L1– STA. 64+00.00 LT.



TYPICAL SECTION – No. 4

–L1– STA. 64+00.00 RT. TO –L1– STA. 141+30.21 RT. (BEGIN BRIDGE)
–L1– STA. 64+00.00 LT. TO –L1– STA. 141+33.36 LT. (BEGIN BRIDGE)
–L1– STA. 143+53.53 RT. (END BRIDGE) TO –L1– STA. 285+50.00 RT.
–L1– STA. 143+66.81 LT. (END BRIDGE) TO –L1– STA. 285+50.00 LT.

*SEE FUTURE AUXILIARY LANE DETAIL FOR 26′ FDPS LOCATIONS

*SEE FUTURE AUXILIARY LANE DETAIL FOR 26′ FDPS LOCATIONS

NOTE: TRANSITION FROM 22′ MEDIAN TO 24′ MEDIAN FROM –L1– STA. 140+00.00 TO –L1– STA. 141+00.00.

TRANSITION FROM 24′ MEDIAN TO 22′ MEDIAN FROM –L1– STA. 144+00.00 TO –L1– STA. 145+00.00.

PAVEMENT SCHEDULE									
C1	1.5″ SURFACE COURSE TYPE S9.5C	D1	3.5″ INTER. COURSE TYPE I19.0C	E3	9.0″ BASE COURSE TYPE B25.0C	R3	2′-6″ CONCRETE CURB AND GUTTER	R8	CONCRETE EXPRESSWAY GUTTER
C2	3.0″ SURFACE COURSE TYPE S9.5C	D2	3.0″ INTER. COURSE TYPE I19.0D	E4	VAR. BASE COURSE TYPE B25.0C	R4	CONCRETE SHOULDER BERM GUTTER	T	EARTH MATERIAL
C3	1.5″ SURFACE COURSE TYPE S9.5D	D3	VAR. INTER. COURSE TYPE I19.0D	K	12.0″ CL IV STAB. W/ GEO. FABRIC	R5	CONCRETE BARRIER WALL	U	EXISTING PAVEMENT
C4	3.0″ SURFACE COURSE TYPE S9.5D	E1	4.0″ BASE COURSE TYPE B25.0C	R1	2′-0″ DOUBLE FACED CONCRETE BARRIER	R6	CONCRETE BARRIER W/ GLARE SCREEN	V	MILL 1.5″ DEPTH
C5	VAR. SURFACE COURSE TYPE S9.5D	E2	5.5″ BASE COURSE TYPE B25.0C	R2	2′-6″ DOUBLE FACED CONCRETE BARRIER	R7	SPECIAL CONCRETE SHOULDER BERM GUTTER	W	WEDGING

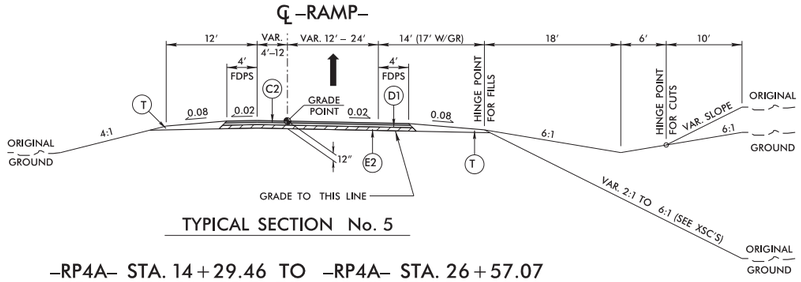
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PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	2-D
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY

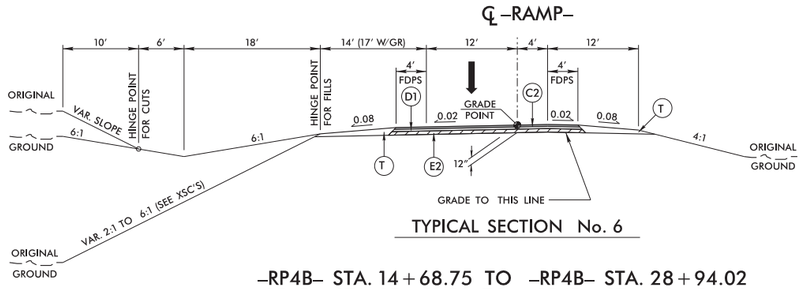
GRANITE RS&H DESIGN-BUILD SERVICES



TYPICAL SECTION No. 5

–RP4A– STA. 14+29.46 TO –RP4A– STA. 26+57.07
–RP4C– STA. 14+33.71 TO –RP4C– STA. 26+45.69
–RP6A– STA. 15+89.35 TO –RP6A– STA. 23+00.80
–RP6C– STA. 13+43.60 TO –RP6C– STA. 26+95.39

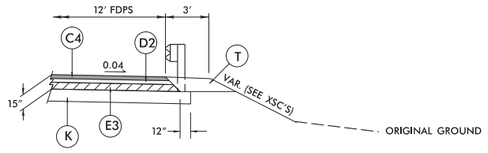
NOTE: PAVED SHOULDER WIDTH FOR ALL RAMPS VARIES WHEN TRANSITIONING FROM MAINLINE.



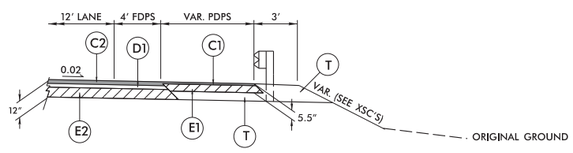
TYPICAL SECTION No. 6

–RP4B– STA. 14+68.75 TO –RP4B– STA. 28+94.02
–RP4D– STA. 15+51.58 TO –RP4D– STA. 28+56.33
–RP6B– STA. 15+19.15 TO –RP6B– STA. 29+59.40
–RP6D– STA. 15+24.86 TO –RP6D– STA. 27+12.75

NOTE: PAVED SHOULDER WIDTH FOR ALL RAMPS VARIES WHEN TRANSITIONING FROM MAINLINE.



Detail Showing Paved Shoulder in Relation to Guardrail – Mainline



Detail Showing Paved Shoulder in Relation to Guardrail – Ramps & Loops

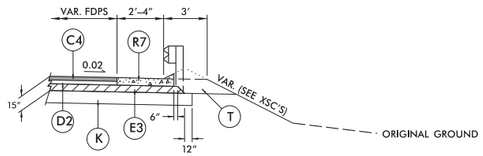
PAVEMENT SCHEDULE									
C1	1.5″ SURFACE COURSE TYPE S9.5C	D1	3.5″ INTER. COURSE TYPE I19.0C	E3	9.0″ BASE COURSE TYPE B25.0C	R3	2′-6″ CONCRETE CURB AND GUTTER	R8	CONCRETE EXPRESSWAY GUTTER
C2	3.0″ SURFACE COURSE TYPE S9.5C	D2	3.0″ INTER. COURSE TYPE I19.0D	E4	VAR. BASE COURSE TYPE B25.0C	R4	CONCRETE SHOULDER BERM GUTTER	T	EARTH MATERIAL
C3	1.5″ SURFACE COURSE TYPE S9.5D	D3	VAR. INTER. COURSE TYPE I19.0D	K	12.0″ CL IV STAB. W/ GEO. FABRIC	R5	CONCRETE BARRIER WALL	U	EXISTING PAVEMENT
C4	3.0″ SURFACE COURSE TYPE S9.5D	E1	4.0″ BASE COURSE TYPE B25.0C	R1	2′-0″ DOUBLE FACED CONCRETE BARRIER	R6	CONCRETE BARRIER W/ GLARE SCREEN	V	MILL 1.5″ DEPTH
C5	VAR. SURFACE COURSE TYPE S9.5D	E2	5.5″ BASE COURSE TYPE B25.0C	R2	2′-6″ DOUBLE FACED CONCRETE BARRIER	R7	SPECIAL CONCRETE SHOULDER BERM GUTTER	W	WEDGING

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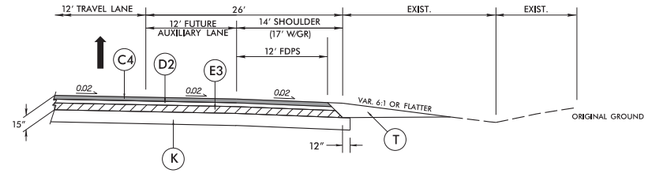
PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	2-E
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY



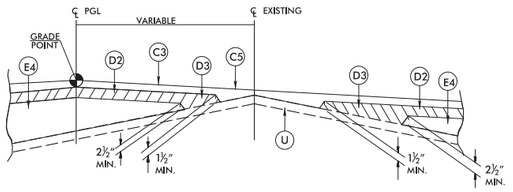
Detail Showing Paved Shoulder in Relation to Shoulder Berm Gutter – Mainline

–L1– STA. 69+69.00 RT. TO –L1– STA. 75+50.00 RT.
–L1– STA. 101+18.00 RT. TO –L1– STA. 102+70.00 RT.
–L1– STA. 102+32.00 LT. TO –L1– STA. 107+31.00 LT.
–L1– STA. 113+31.00 LT. TO –L1– STA. 117+81.00 LT.
–L1– STA. 144+00.00 LT. TO –L1– STA. 146+32.00 LT.
–L1– STA. 170+81.00 LT. TO –L1– STA. 180+81.00 LT.
–L1– STA. 174+75.00 RT. TO –L1– STA. 182+75.00 RT.
–L1– STA. 194+41.00 RT. TO –L1– STA. 207+54.00 RT.
–L1– STA. 198+82.00 LT. TO –L1– STA. 207+56.00 LT.

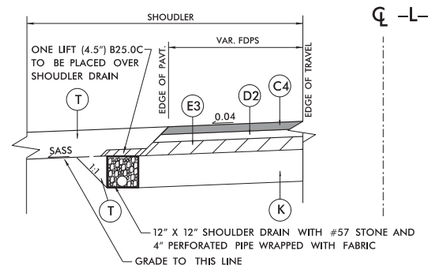


FUTURE AUXILIARY LANE DETAIL

–L1– STA. 52+50.00 RT. TO –L1– STA. 125+96.95 RT.
–L1– STA. 54+20.00 LT. TO –L1– STA. 125+10.70 LT.
–L1– STA. 159+50.00 RT. TO –L1– STA. 232+10.00 RT.
–L1– STA. 159+60.12 LT. TO –L1– STA. 235+22.32 LT.



DETAIL SHOWING METHOD OF WEDGING



Detail For Shoulder Drains for –L– Outside Shoulder

PAVEMENT SCHEDULE									
C1	1.5" SURFACE COURSE TYPE S9.5C	D1	3.5" INTER. COURSE TYPE I19.0C	E3	9.0" BASE COURSE TYPE B25.0C	R3	2'-6" CONCRETE CURB AND GUTTER	R8	CONCRETE EXPRESSWAY GUTTER
C2	3.0" SURFACE COURSE TYPE S9.5C	D2	3.0" INTER. COURSE TYPE I19.0D	E4	VAR. BASE COURSE TYPE B25.0C	R4	CONCRETE SHOULDER BERM GUTTER	T	EARTH MATERIAL
C3	1.5" SURFACE COURSE TYPE S9.5D	D3	VAR. INTER. COURSE TYPE I19.0D	K	12.0" CL IV STAB. W/ GEO. FABRIC	R5	CONCRETE BARRIER WALL	U	EXISTING PAVEMENT
C4	3.0" SURFACE COURSE TYPE S9.5D	E1	4.0" BASE COURSE TYPE B25.0C	R1	2'-0" DOUBLE FACED CONCRETE BARRIER	R6	CONCRETE BARRIER W/ GLARE SCREEN	V	MILL 1.5" DEPTH
C5	VAR. SURFACE COURSE TYPE S9.5D	E2	5.5" BASE COURSE TYPE B25.0C	R2	2'-6" DOUBLE FACED CONCRETE BARRIER	R7	SPECIAL CONCRETE SHOULDER BERM GUTTER	W	WEDGING

24-JUN-2014 14:29
I-5338 RDWY 02.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	2-AB
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY

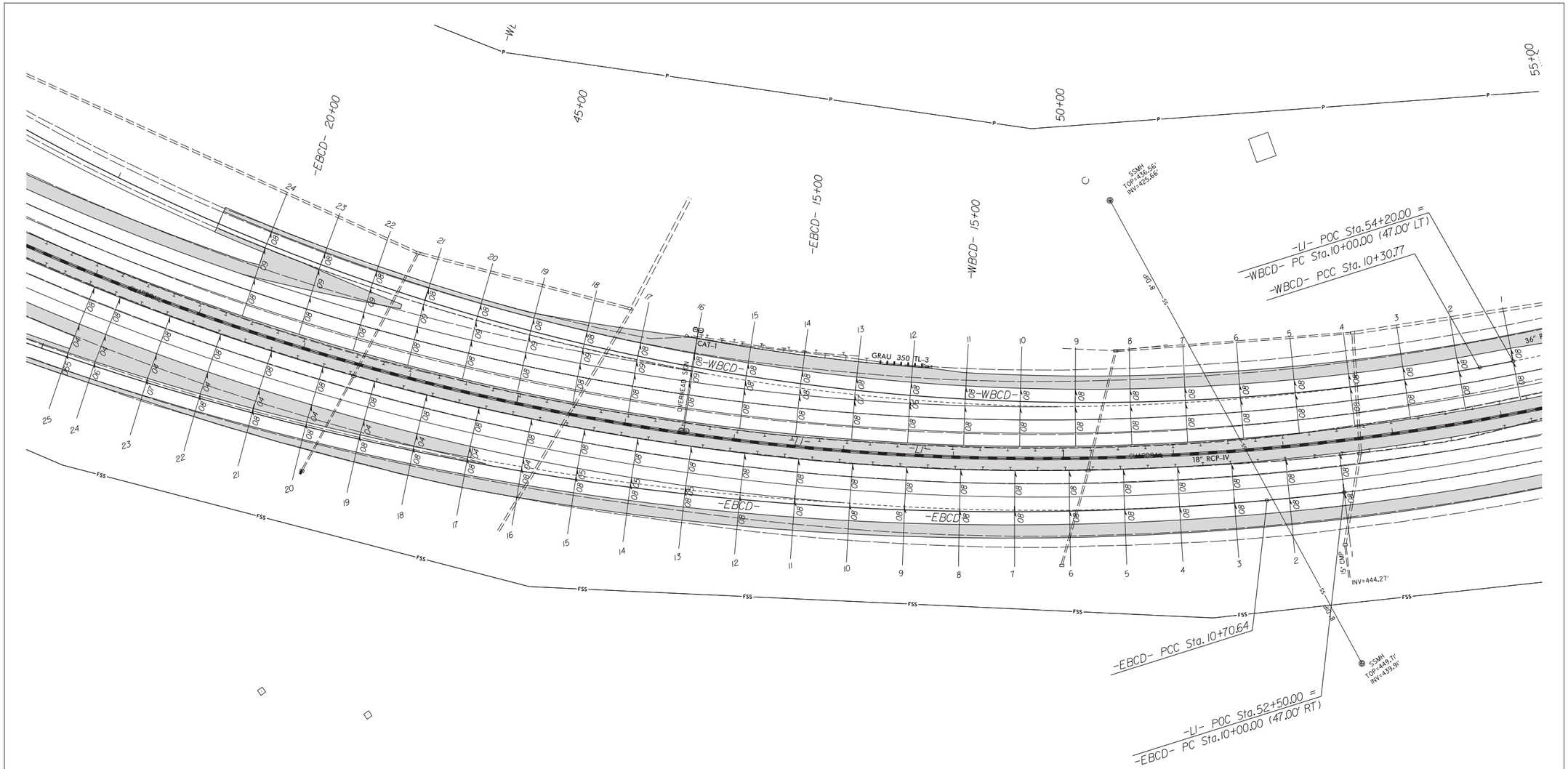
NAD 83/NSRS 2007

INTERSTATE 40 INTERSTATE 440 FORTIFY

GRANITE RS&H DESIGN-BUILD SERVICES

REVISIONS

8/17/99



RAMP GORE DETAIL
FOR -EBCD- AND -WBCD- AT -LI-

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PROJECT REFERENCE NO.	SHEET NO.
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R/W SHEET NO.	

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NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY

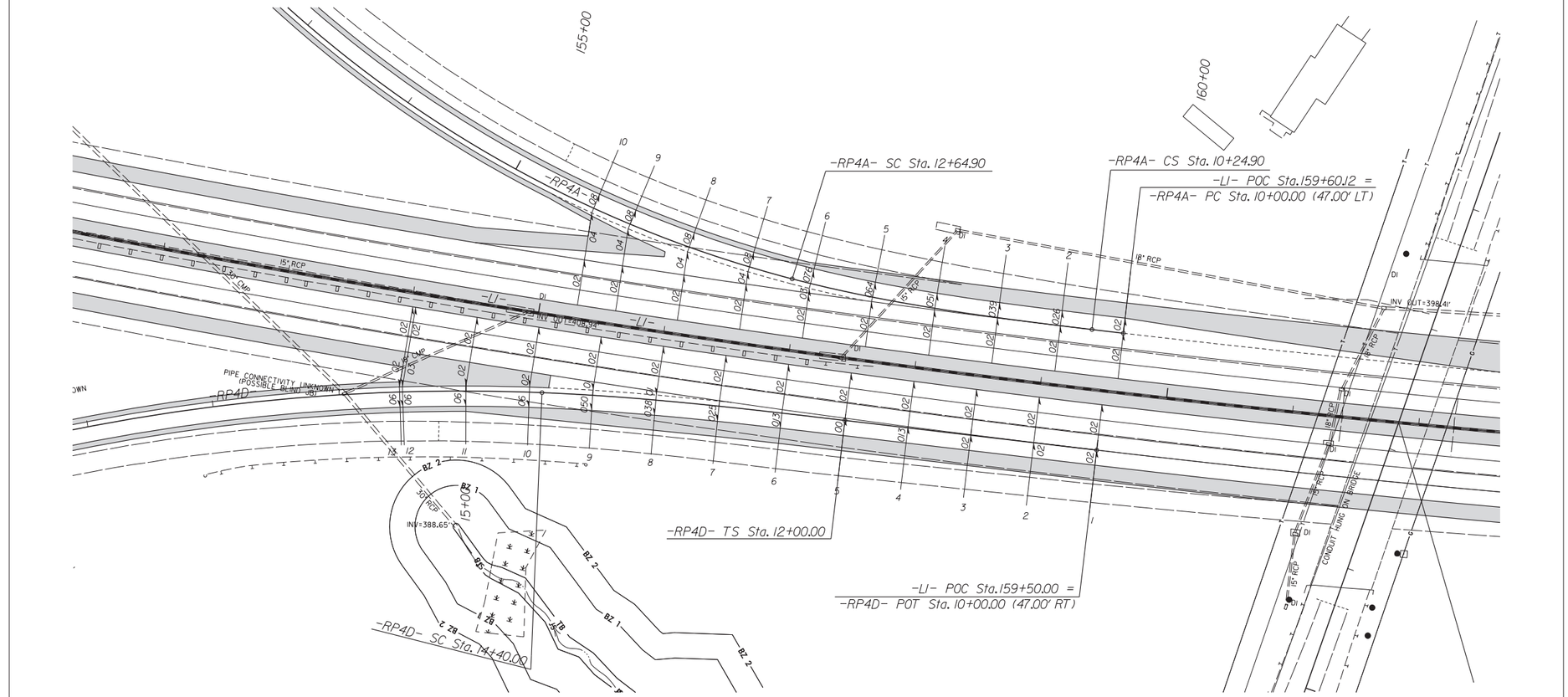
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INTERSTATE 40 INTERSTATE 440 PORTION

GRANITE RS&H DESIGN-BUILD SERVICES

8/17/99

REVISIONS



RAMP GORE DETAIL
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8/17/99

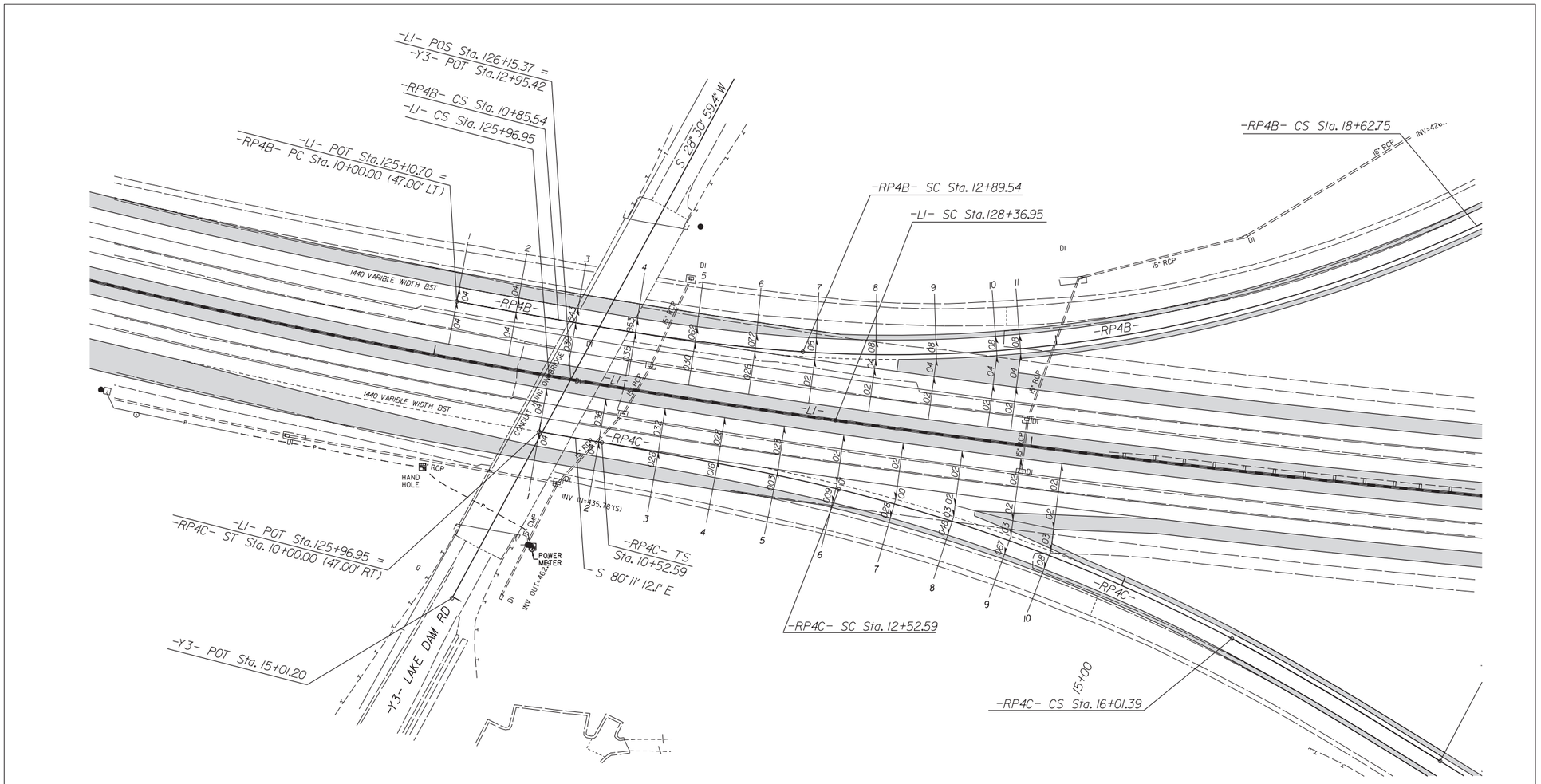
REVISIONS

NAD 83/NSRS 2007

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	2-AD
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY



RAMP GORE DETAIL
FOR -RP4B- AND -RP4C- AT -LI-

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ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY

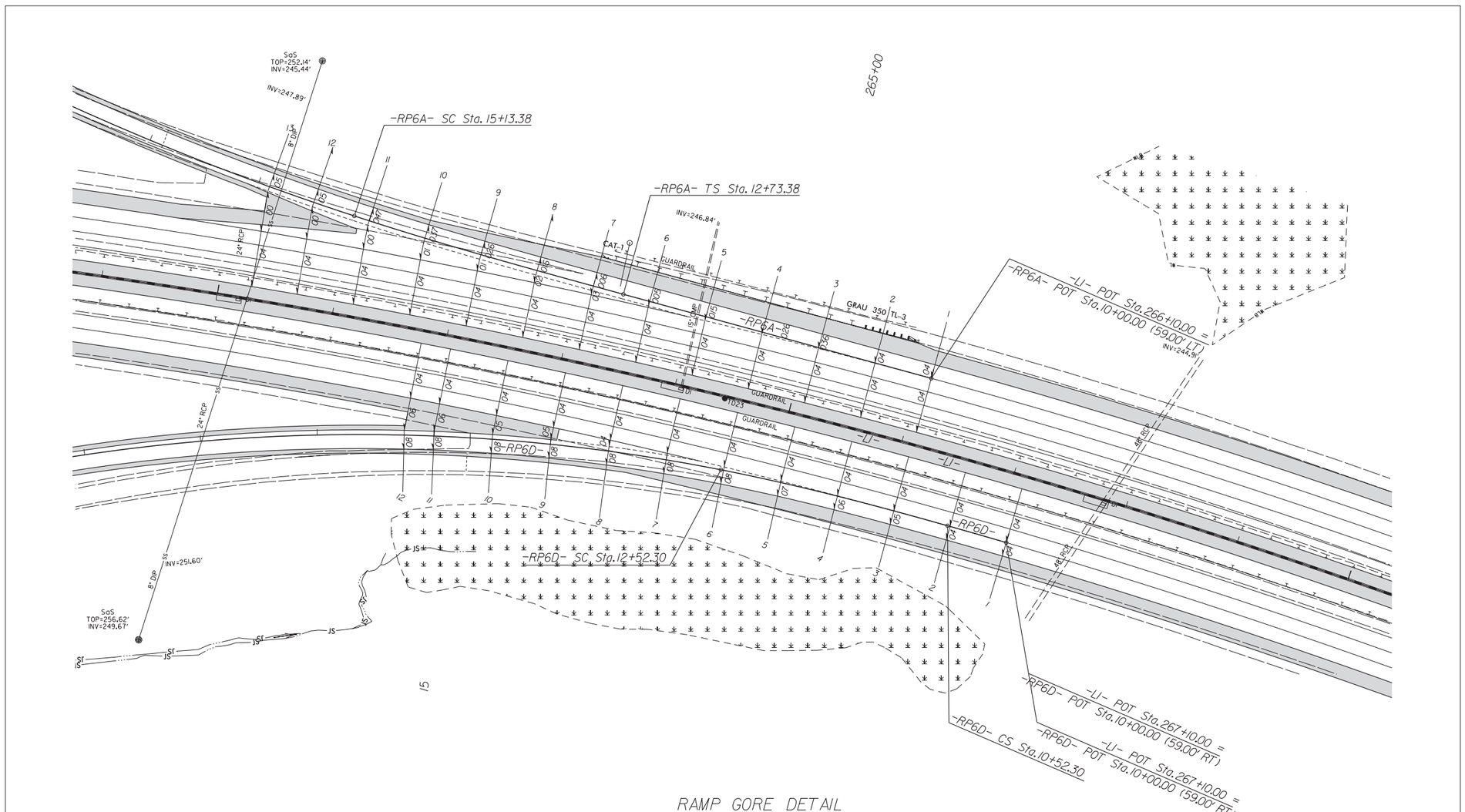
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INTERSTATE 40 INTERSTATE 440 PORTION

GRANITE RS&H DESIGN-BUILD SERVICES

REVISIONS

8/17/99



RAMP GORE DETAIL
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PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	2-AF
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY

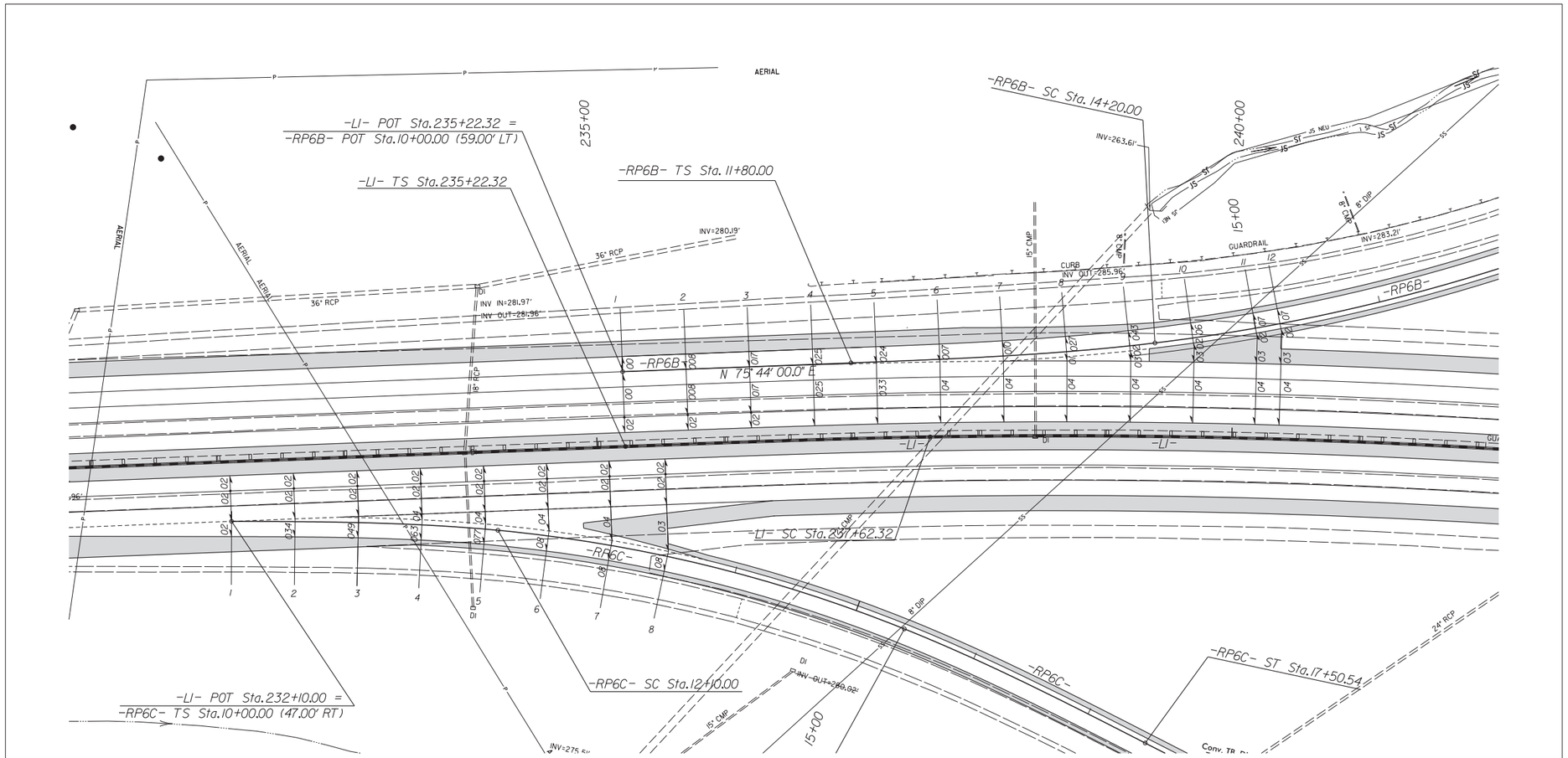
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INTERSTATE 40 INTERSTATE 440 PORTION

GRANITE RS&H DESIGN-BUILD SERVICES

REVISIONS

8/17/99



RAMP GORE DETAIL
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6/2/99

PROJECT REFERENCE NO.	SHEET NO.
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ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY

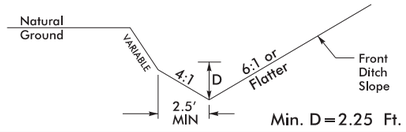
HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 36188 ENGINEER WILLIAM WEATHERSBEE

INTERSTATE 40 INTERSTATE 440 PORTION

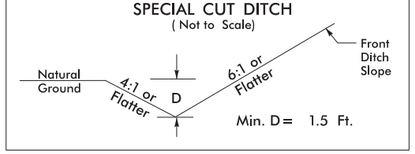
GRANITE RS&H DESIGN-BUILD SERVICES

DETAIL A
SPECIAL CUT DITCH w/HINGE
(Not to Scale)



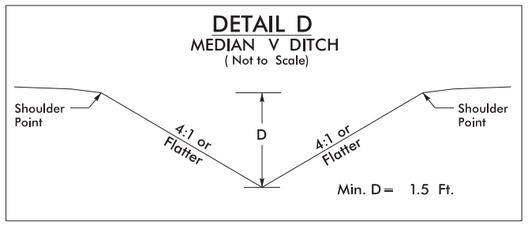
FROM STA. 39+00 TO STA. 44+00 –L1– (LT)
FROM STA. 56+50 TO STA. 57+50 –L1– (RT)
FROM STA. 57+00 TO STA. 57+50 –L1– (LT)
FROM STA. 22+00 TO STA. 24+50 –RP4C– (LT)
FROM STA. 27+80 TO STA. 28+30 –RP4B– (RT)
FROM STA. 17+51 TO STA. 19+48 –RP4D– (RT)
FROM STA. 237+00 TO STA. 242+40 –L1– (RT)

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)



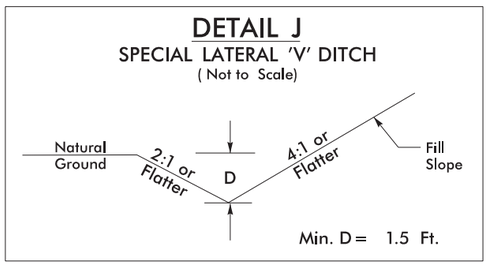
FROM STA. 84+00 TO STA. 89+00 –L1– (LT)
FROM STA. 119+00 TO STA. 119+50 –L1– (LT)
FROM STA. 128+50 TO STA. 130+26 –L1– (LT)
FROM STA. 128+50 TO STA. 131+50 –L1– (RT)
FROM STA. 16+00 TO STA. 17+50 –RP4C– (RT)
FROM STA. 16+30 TO STA. 19+80 –RP4B– (LT)
FROM STA. 20+98 TO STA. 23+50 –RP4D– (LT)
FROM STA. 152+00 TO STA. 153+14 –L1– (RT)
FROM STA. 15+55 TO STA. 17+55 –RP4A– (RT)
FROM STA. 155+50 TO STA. 161+50 –L1– (LT)
FROM STA. 156+00 TO STA. 159+00 –L1– (RT)
FROM STA. 164+00 TO STA. 166+00 –L1– (LT)
FROM STA. 164+00 TO STA. 166+81 –L1– (RT)
FROM STA. 167+02 TO STA. 168+50 –L1– (LT)
FROM STA. 186+50 TO STA. 189+50 –L1– (RT)
FROM STA. 221+68 TO STA. 227+50 –L1– (RT)
FROM STA. 232+00 TO STA. 236+50 –L1– (RT)
FROM STA. 234+50 TO STA. 236+00 –L1– (LT)
FROM STA. 242+40 TO STA. 244+00 –L1– (RT)
FROM STA. 252+00 TO STA. 254+50 –L1– (RT)

DETAIL D
MEDIAN V DITCH
(Not to Scale)



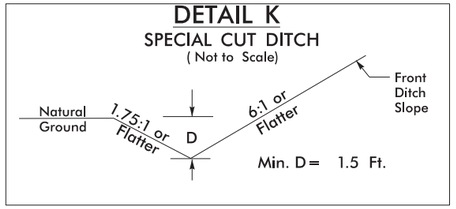
FROM STA. 19+17 TO STA. 39+00 –L1– (RT)
FROM STA. 21+00 TO STA. 31+25 –L1– (LT)
FROM STA. 33+50 TO STA. 39+00 –L1– (LT)

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



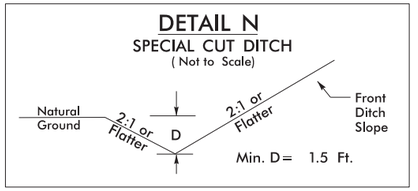
FROM STA. 17+31 TO STA. 18+31 –RP6B– (RT)
FROM STA. 21+40 TO STA. 21+90 –RP6D– (RT)
FROM STA. 15+05 TO STA. 18+55 –RP4A– (LT)
FROM STA. 15+83 TO STA. 16+80 –RP4B– (RT)
FROM STA. 15+52 TO STA. 16+50 –RP4C– (LT)

DETAIL K
SPECIAL CUT DITCH
(Not to Scale)



FROM STA. 39+50 TO STA. 44+15 –L1– (RT)
FROM STA. 44+00 TO STA. 51+50 –L1– (LT)
FROM STA. 46+25 TO STA. 49+00 –L1– (RT)
FROM STA. 49+99 TO STA. 55+25 –L1– (RT)
FROM STA. 52+76 TO STA. 55+08 –L1– (LT)
FROM STA. 56+25 TO STA. 56+50 –L1– (RT)
FROM STA. 56+00 TO STA. 57+00 –L1– (LT)
FROM STA. 57+50 TO STA. 60+00 –L1– (LT)
FROM STA. 57+50 TO STA. 69+00 –L1– (RT)
FROM STA. 61+23 TO STA. 64+41 –L1– (LT)
FROM STA. 77+50 TO STA. 88+50 –L1– (RT)
FROM STA. 93+50 TO STA. 101+50 –L1– (LT)
FROM STA. 182+50 TO STA. 194+94 –L1– (LT)
FROM STA. 208+00 TO STA. 213+50 –L1– (RT)
FROM STA. 208+50 TO STA. 212+00 –L1– (LT)
FROM STA. 216+83 TO STA. 234+09 –L1– (LT)
FROM STA. 230+50 TO STA. 231+50 –L1– (RT)
FROM STA. 254+50 TO STA. 257+89 –L1– (LT)
FROM STA. 271+00 TO STA. 274+84 –L1– (LT)
FROM STA. 268+00 TO STA. 276+00 –L1– (RT)

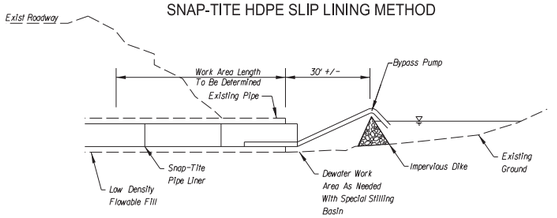
DETAIL N
SPECIAL CUT DITCH
(Not to Scale)



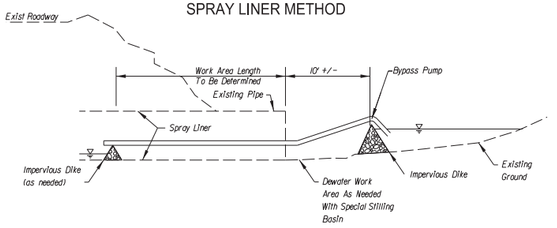
FROM STA. 28+30 TO STA. 29+30 –RP6B– (LT)
FROM STA. 276+00 TO STA. 279+00 –L1– (LT)

DETAIL H
CULVERT PRESERVATION

SNAP-TITE HDPE SLIP LINING METHOD



SPRAY LINER METHOD



CURED IN PLACE PIPE LINER (BALLOON METHOD)

- Same as Spray Liner Method above except for:
  - All curing water must be disposed offsite
  - Pipe Liner must be installed per manufacturers specifications
  - Contractor is to remove all construction waste around pipe before pipe is placed back in service

Snap-Tite HPDE Slip Lining

- Install silt fence, special sediment control fence, and all other erosion control devices in area as shown on Erosion Control Plans.
- Install orange tree protection fence (i.e. safety fence) along the outermost permit footprint (stream, wetland, and/or riparian buffer). The NCDOT Division 5 Environmental Supervisor will provide this information to the contractor. No construction impacts are allowed beyond the fence limits.
- Clear a maximum of 30' wide access path to the pipe end to be slip lined with Snap-Tite as shown on Erosion Control Plans. All clearing must stay within the permitted stream, wetland, and/or riparian buffer footprint.
- Install Special Stilling Basin (silt bag) on the upstream side to dewater work area.
- Install impervious Dike a maximum of 30' upstream of pipe to be lined to create work area. All in-stream activity must stay within the permitted stream footprint.
- Clean out existing pipe as needed to install carrier pipe. Install Special Stilling Basin (silt bag) and impervious Dike downstream during cleaning phase to pump out contaminated water.
- Use bypass pump to bypass water over work area and into Snap-Tite HDPE Pipe.
- After first section of Snap-Tite HDPE Pipe is installed pull hose out of first section, snap second section of pipe together and return bypass pump hose into pipe to bypass water through work area. Repeat until all pipe is lined.
- Fill void with low density flowable fill and seal off ends per manufacturer specifications.
- Remove impervious Dike and Special Stilling Basin (silt bag) and stabilize stream bank per plans and details.
- Permanently seed and mulch access path and work area; Use erosion control matting as required to stabilize existing slope.
- Remove all erosion control measures after site is stabilized and approved by NCDOT.

Spray Lining

- Install silt fence, special sediment control fence, and all other erosion control devices in area as shown on Erosion Control Plans.
- Install orange tree protection fence (i.e. safety fence) along the outermost permit footprint (stream, wetland, and/or riparian buffer). The NCDOT Division 5 Environmental Supervisor will provide this information to the contractor. No construction impacts are allowed beyond the fence limits.
- Clear a maximum of 25' wide access path to the pipe end to be spray lined as shown on Erosion Control Plans. All clearing must stay within the permitted stream, wetland, and/or riparian buffer footprint.
- Install Special Stilling Basin (silt bag) to dewater work area.
- Install impervious Dike a maximum of 10' upstream of pipe to be lined to create work area. All in-stream activity must stay within the permitted stream footprint.
- Clean out existing culvert as necessary. Install Special Stilling Basin (silt bag) and impervious Dike downstream during cleaning phase to pump out contaminated water.
- Install impervious Dike within pipe culvert at either end of work area as needed to prevent backflow.
- Use bypass pump to bypass water over work area from first impervious Dike to the second impervious Dike.
- Remove impervious Dikes and Special Stilling Basin (silt bag) and stabilize stream bank per Roadway Plans.
- Permanently seed and mulch access path and work area; Use erosion control matting as required to stabilize existing slope.
- Remove all erosion control measures after site is stabilized and approved by NCDOT.

General Notes:
- Recommend slip lining pipes during low flow conditions only.
- The slip lining method used at each pipe location will be determined based on field conditions and approved by NCDOT prior to beginning work. See drainage detail sheet for culvert preservation method and site location.
- Any major deviations from this sequence need prior approval by NCDOT.

I-5338 I-5311 SEQUENCE SHEET

PROJECT REFERENCE NO.	SHEET NO.
R-2559,2559B	2.403

GENERAL NOTES:

USE CLASS "B" CONCRETE THROUGHOUT.

PROVIDE ALL GRATED DROP INLETS OVER 3'-6" IN DEPTH WITH STEPS 12" ON CENTER. USE STEPS WHICH COMPLY WITH STD. DRAWING 840.66.

OPTIONAL CONSTRUCTION MONOLITHIC POUR, 2" KEYWAY, OR #4 BAR DOWELS AT 12" CENTERS EMBEDDED 6" INTO EACH LAYER.

USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.

IF REINFORCED CONCRETE PIPE IS SET IN BOTTOM SLAB OF BOX, ADD TO SLAB AS SHOWN ON STD. NO. 840.66.

CONSTRUCT WITH PIPE CROWNS MATCHING.

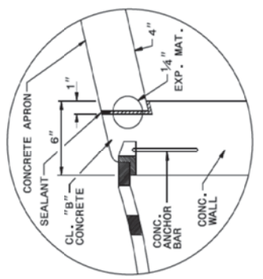
USE STANDARD FRAMES AND GRATES 840.22 (SHOWN), 840.24(SHOWN), 840.20 (NOT SHOWN) OR 840.29 (NOT SHOWN).

SEE STANDARD DRAWING 840.25 FOR ATTACHMENT OF FRAMES AND GRATES.

CHAMFER ALL EXPOSED CORNERS 1".

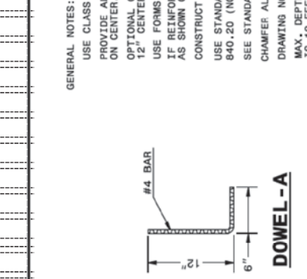
DRAWING NOT TO SCALE.

MAX. DEPTH OF THIS STRUCTURE FROM TOP OF BOTTOM SLAB TO TOP ELEVATION IS 12 FEET.

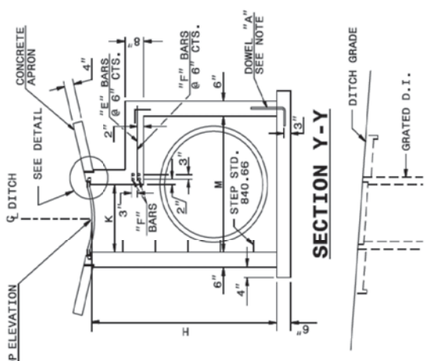


DETAIL

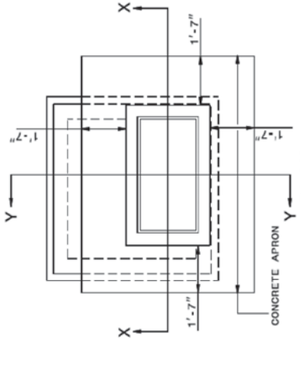
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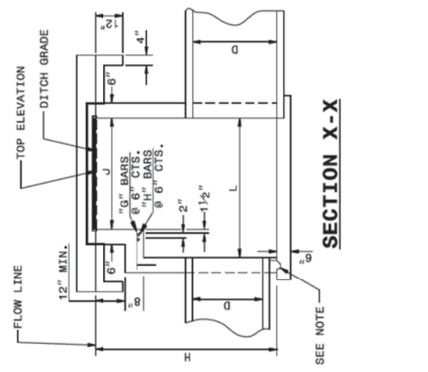
DOWEL-A



SECTION Y-Y



PLAN



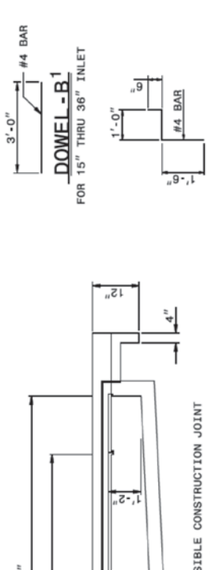
SECTION X-X

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.	ENGLISH DETAIL DRAWING FOR **CONCRETE GRATED DROP INLET TYPE 'A' MINIMUM DEPTH** 12" THRU 72" PIPE	SHEET 1 OF 2 **840d17**

STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.

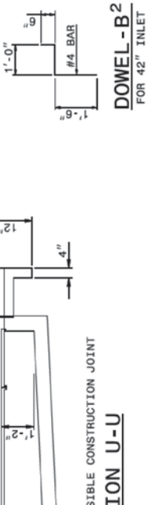
ENGLISH DETAIL DRAWING FOR **CONCRETE GRATED DROP INLET TYPE 'A' MINIMUM DEPTH** 12" THRU 72" PIPE

SHEET 1 OF 2 **840d17**



DOWEL-B¹

FOR 15" THRU 36" INLET



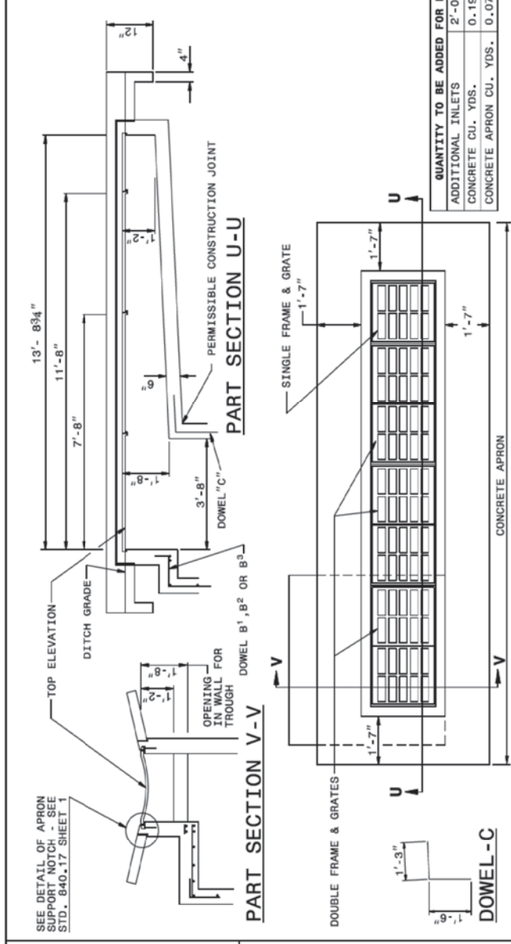
DOWEL-B²

FOR 42" INLET



DOWEL-B³

QUANTITY TO BE ADDED FOR EACH 2' INCREMENT INLET OPENING					
ADDITIONAL INLETS	2'-0"	4'-0"	6'-0"	8'-0"	10'-0"	12'-0"
CONCRETE CU. YDS.	0.191	0.417	0.665	0.897	1.145	1.380
CONCRETE APRON CU. YDS.	0.074	0.148	0.222	0.296	0.370	0.444



MIN. DIMENSIONS AND QUANTITIES FOR CONCRETE GRATED DROP INLET(BASED ON MIN. HEIGHT, H)

DIMENSIONS OF BOX AND PIPE					REINFORCING STEEL - NO. 4 BARS								CU YDS CONC. IN BOX			DEDUCTIONS FOR ONE PIPE	
PIPE	SPAN	WIDTH	WIDTH	HEIGHT	BARS E		BARS F		BARS G		BARS H		H PER FT HT	APRON	TOTAL	C.S.	R.C.
D	J	K	L	M	H	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	NO.	LENGTH	TOTAL SLAB													
12"	3'-8"	2'-0"	3'-8"	2'-0"	3'-0"	—	—	—	—	—	—	—	—	0.362	0.926	0.247	0.395	1.683	0.015	0.024
15"	3'-8"	2'-0"	3'-8"	2'-0"	3'-3"	—	—	—	—	—	—	—	—	0.362	0.988	0.247	0.395	1.745	0.023	0.036
18"				2'-0"	3'-4"	—	—	—	—	—	—	—	—	0.362	1.050	0.247		1.807	0.033	0.049
24"				2'-10"	4'-0"	8	1'-5"	6	4'-9"	—	—	—	—	0.444	1.362	0.278		2.201	0.059	0.085
30"			3'-8"	3'-5"	4'-6"	8	2'-0"	7	4'-9"	—	—	—	—	0.502	1.644	0.288		2.541	0.092	0.127
36"			4'-0"	4'-0"	5'-0"	8	2'-5"	8	4'-11"	4	0'-9"	2	4'-11"	0.560	1.931	0.321		2.920	0.132	0.178
42"			4'-10"	4'-10"	5'-7"	10	3'-1"	9	5'-7"	3	1'-5"	3	5'-7"	0.704	2.500	0.370		3.677	0.180	0.243
48"			5'-4"	5'-4"	6'-2"	11	3'-7"	10	6'-1"	4	1'-11"	4	6'-1"	0.823	3.013	0.407		4.315	0.235	0.317
54"			6'-0"	6'-0"	6'-9"	12	4'-1"	11	6'-7"	5	2'-5"	5	6'-7"	0.951	3.589	0.444		5.072	0.297	0.401
60"			6'-6"	6'-6"	7'-5"	13	4'-9"	12	7'-3"	6	3'-1"	6	7'-3"	1.311	4.539	0.494		6.170	0.367	0.495
66"			7'-2"	7'-2"	7'-10"	14	5'-4"	14	7'-10"	7	3'-7"	7	7'-10"	1.136	5.061	0.537		6.901	0.444	0.599
72"	3'-8"	2'-0"	7'-8"	7'-8"	8'-4"	15	5'-11"	15	8'-5"	4	4'-3"	8	8'-5"	1.500	5.860	0.580	0.395	7.868	0.528	0.713

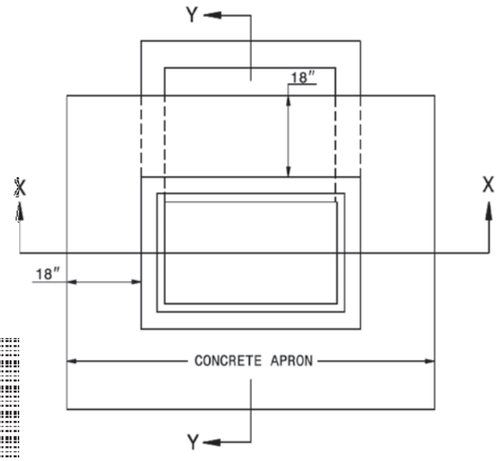
STATE OF NORTH CAROLINA DEPT. OF TRANSPORTATION DIVISION OF HIGHWAYS RALEIGH, N.C.	ENGLISH DETAIL DRAWING FOR **CONCRETE GRATED DROP INLET TYPE 'A' MINIMUM DEPTH** 12" THRU 72" PIPE	SHEET 2 OF 2 **840d17**

CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

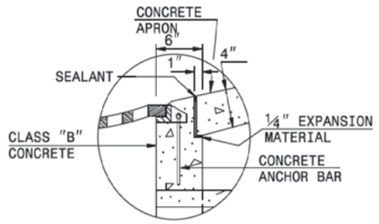
SEE TITLE BLOCK

ORIGINAL BY: J. Howerton DATE: 1/22/14
MODIFIED BY: DATE:
CHECKED BY: DATE:
FILE SPEC.: jhowerton\minimum depth type A.dgn

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	2-AR



PLAN



DETAIL
(APRON SUPPORT NOTCH)

GENERAL NOTES:

USE CLASS "B" CONCRETE THROUGHOUT.

PROVIDE ALL DROP INLETS OVER 3'-6" IN DEPTH WITH STEPS 12" ON CENTER. USE STEPS WHICH COMPLY WITH STD. DRAWING 840.66.

OPTIONAL CONSTRUCTION - MONOLITHIC POUR, 2" KEYWAY, OR #4 BAR DOWELS AT 12" CENTERS AS DIRECTED BY THE ENGINEER.

USE FORMS FOR THE CONSTRUCTION OF THE BOTTOM SLAB.

IF REINFORCED CONCRETE PIPE IS SET IN BOTTOM SLAB OF BOX, ADD TO SLAB AS SHOWN ON STD. NO. 840.00.

WHEN PAYMENT FOR THE DROP INLET IS MADE ON A PER EACH BASIS, THE CONCRETE APRON WILL BE CONSIDERED PART OF THE DROP INLET.

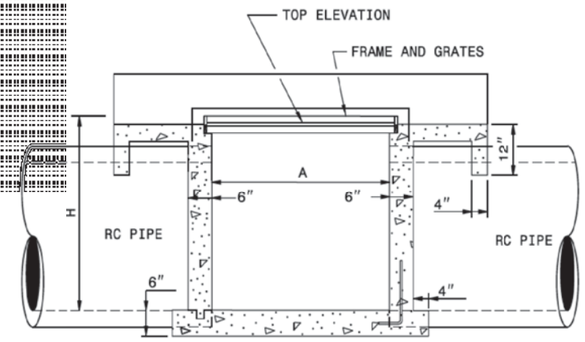
CONSTRUCT WITH PIPE CROWNS MATCHING.

USE STANDARD FRAMES AND GRATES 840.22 (SHOWN), 840.24(SHOWN), 840.20, 840.29, AND 840.33.

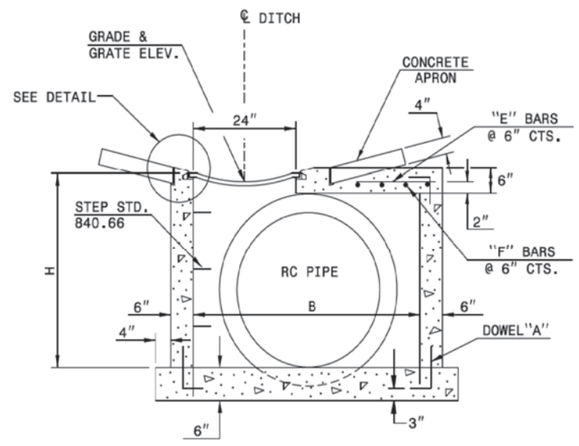
SEE STANDARD DRAWING 840.25 FOR ATTACHMENT OF FRAMES AND GRATES NOT SHOWN.

CHAMFER ALL EXPOSED CORNERS 1".

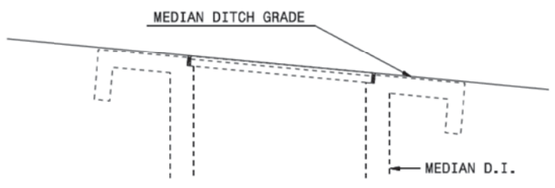
THE DIMENSIONS OF THIS STRUCTURE MAY BE ADJUSTED UP AS DIRECTED BY THE ENGINEER

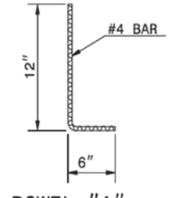


SECTION X-X



SECTION Y-Y





DOWEL "A"

MINIMUM DIMENSIONS AND QUANTITIES FOR CONCRETE DROP INLET									
PIPE	SPAN	WIDTH	HEIGHT	CUBIC YARDS OF CONCRETE IN BOX				DEDUCTIONS FOR ONE PIPE	
D	A	B	H	BOTTOM SLAB	H PER FOOT HT.	H MIN. TOTAL	TOTAL	C.S.	R.C.
18"	3'-8"	2'-6"	2'-4"	0.412	0.247	0.720	1.132	0.033	0.049
24"	3'-8"	3'-0"	2'-10"	0.461	0.247	0.865	1.326	0.059	0.085
30"	3'-8"	3'-4"	3'-4"	0.510	0.247	0.988	1.498	0.092	0.127
36"	3'-8"	3'-8"	3'-10"	0.527	0.247	1.112	1.639	0.132	0.176

CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

SPECIAL CONCRETE MEDIAN 2-GI

ORIGINAL BY: T.Spell DATE: 7-1-04
MODIFIED BY: DATE:
CHECKED BY: DATE:
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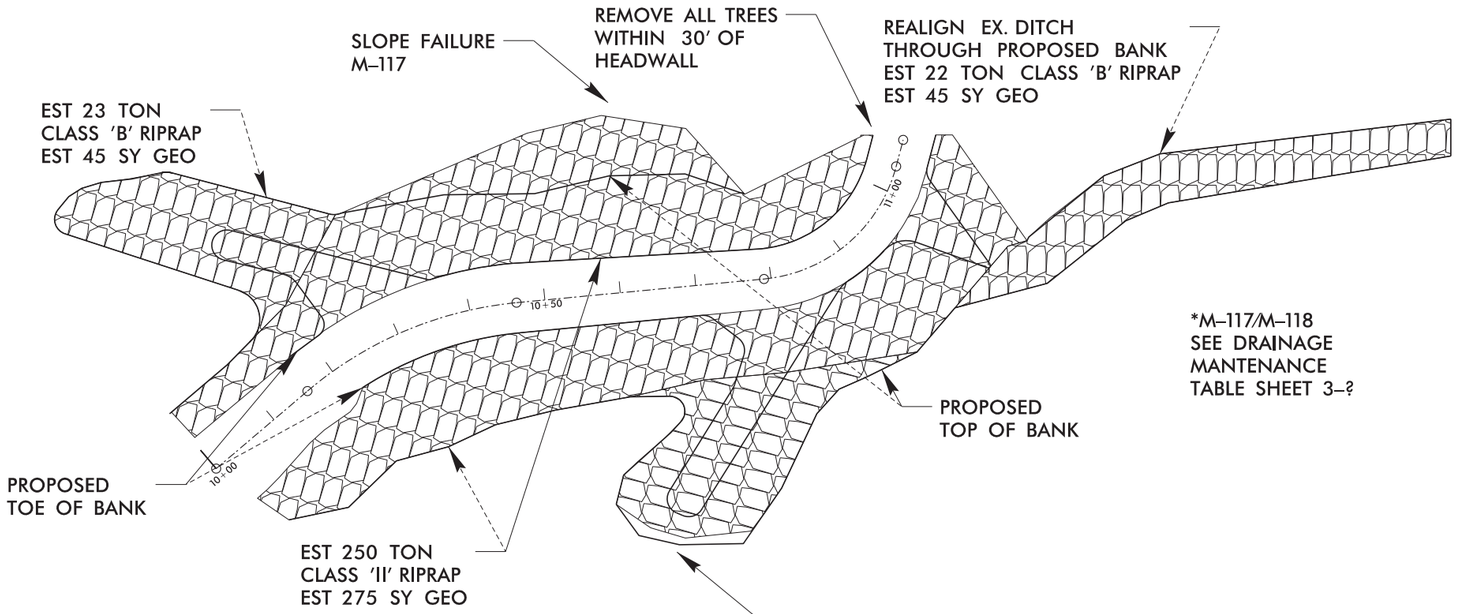
6/2/99

STREAM RE–ALIGNMENT ALONG –L– STATION 200+00 RT

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	2-AS

HYDRAULICS ENGINEER

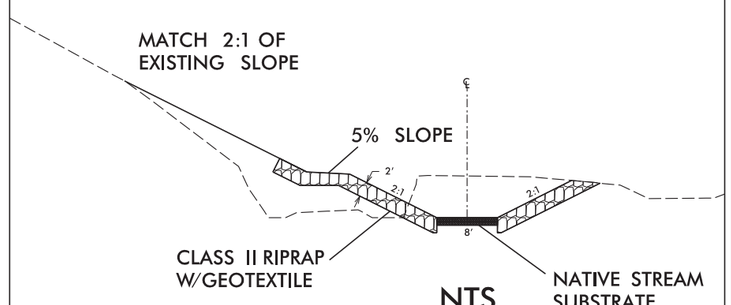
NORTH CAROLINA PROFESSIONAL SEAL 36188 ENGINEER WILL WEATHERSBEE



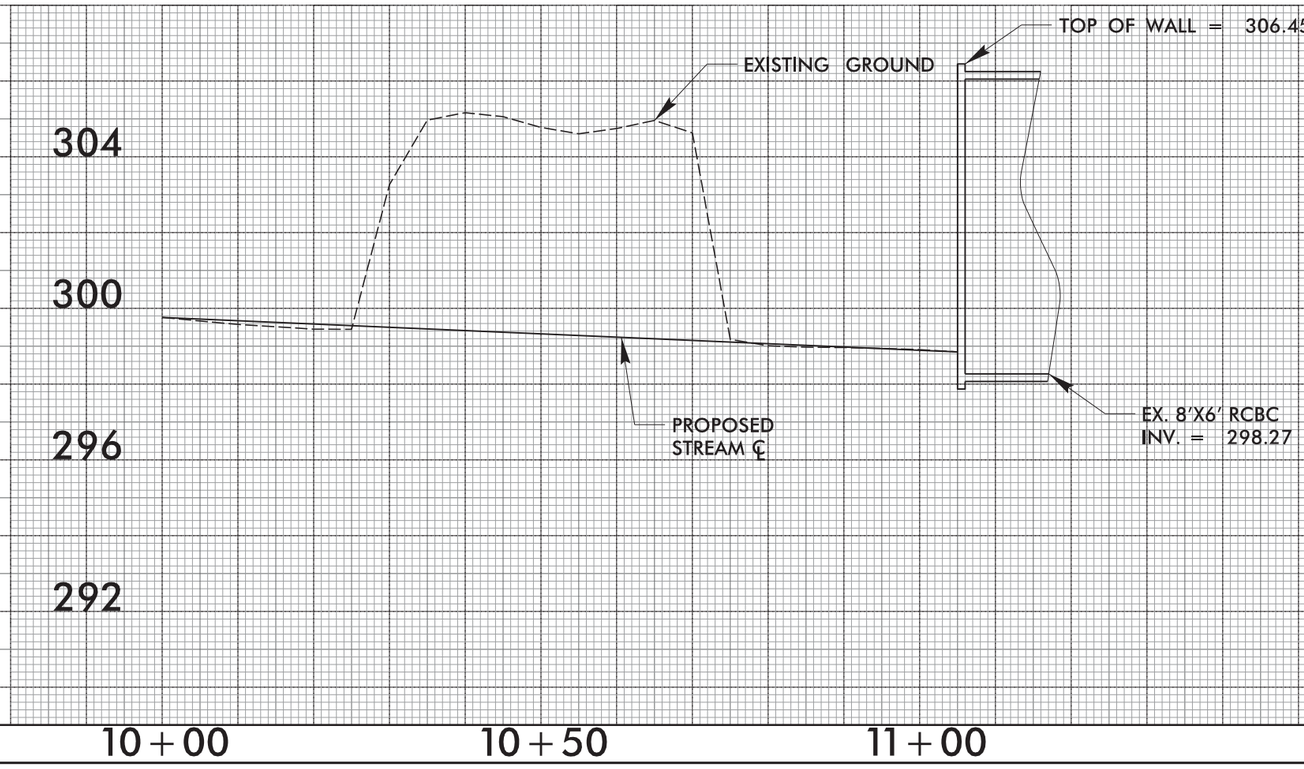
*M–117/M–118
SEE DRAINAGE
MANTENANCE
TABLE SHEET 3–?

HORIZONTAL: 1" = 10'
VERTICAL: 1" = 2'

TYPICAL SECTION



NTS



23-JUN-2014 11:47
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6/2/99

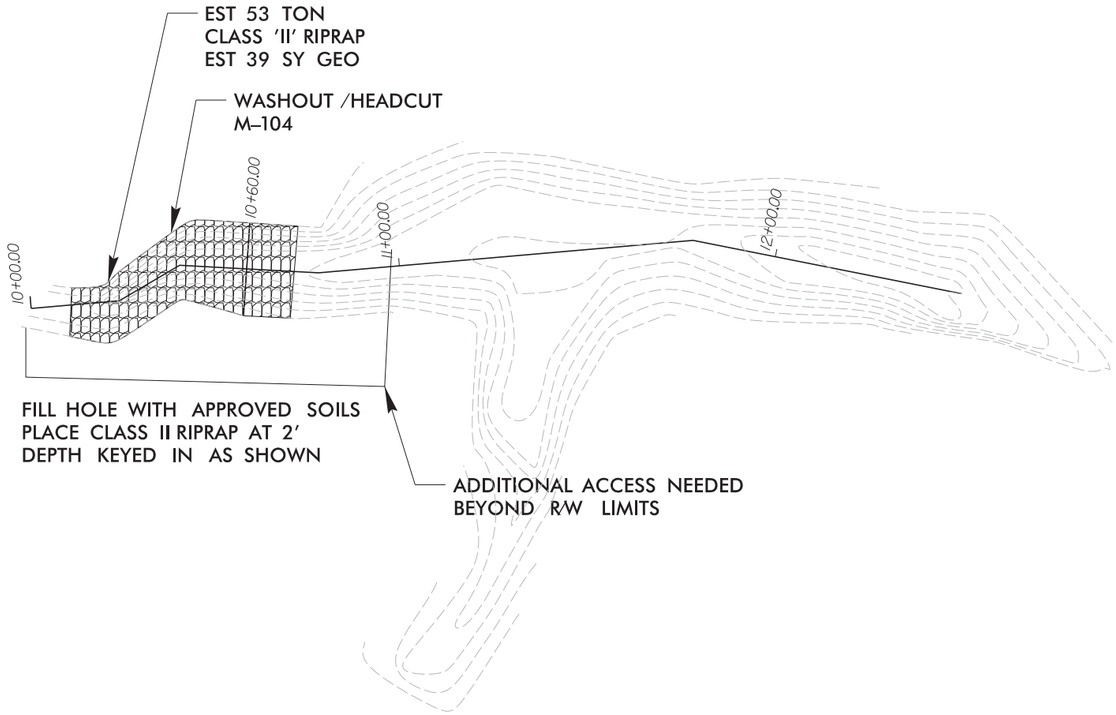
CHANNEL IMPROVEMENTS ALONG –RP4D– AT STA. 27+00 LT

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	2-AT

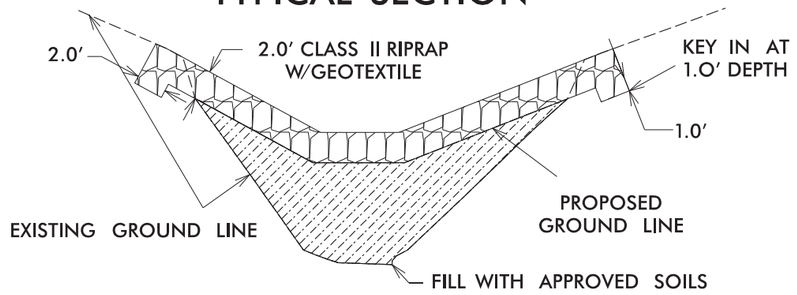
HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL 36188 WILL WEATHERSBEE

GRANITE RS&H DESIGN-BUILD SERVICES



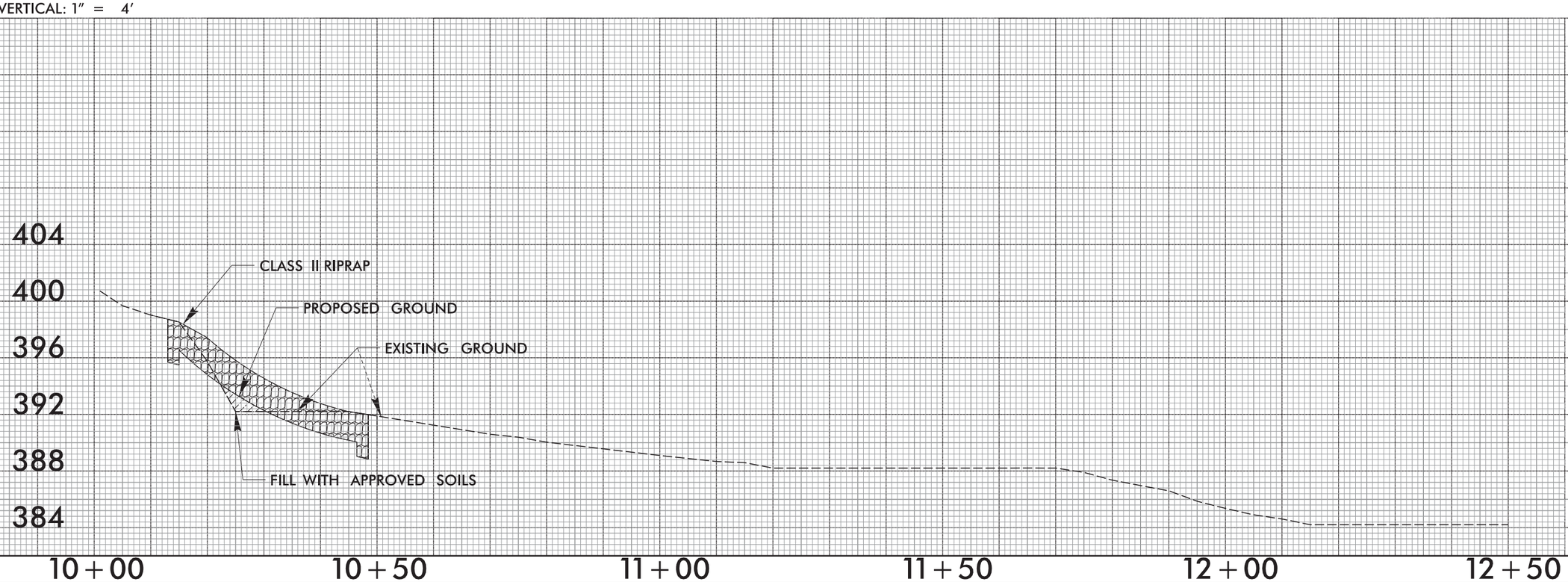
TYPICAL SECTION



NTS

STATION 10+60

HORIZONTAL: 1" = 10'
VERTICAL: 1" = 4'



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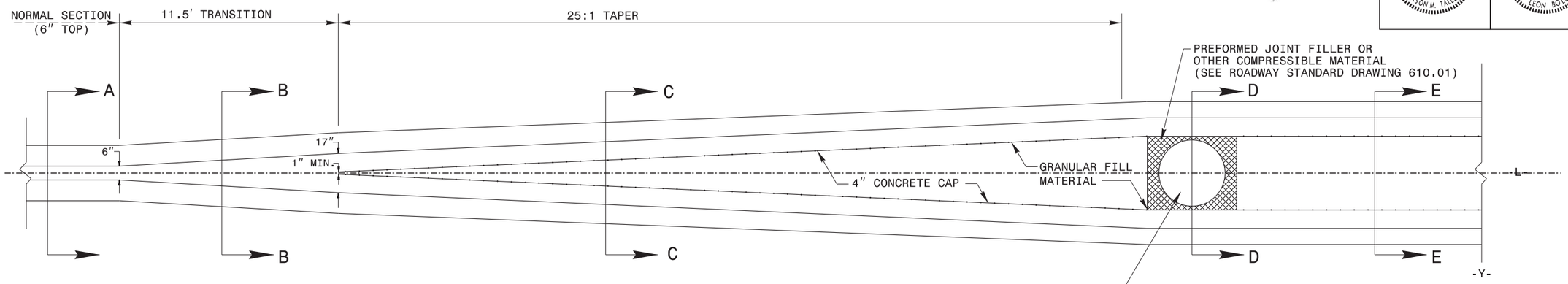
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I-5338/I-5311	2-AU

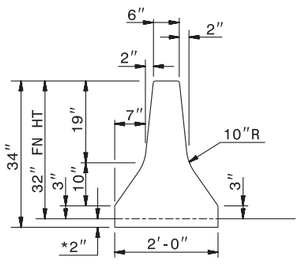
ROADWAY DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY

STRUCTURE DESIGN ENGINEER — NORTH CAROLINA PROFESSIONAL SEAL 18442 ENGINEER RICHARD LEON BOLLINGER III

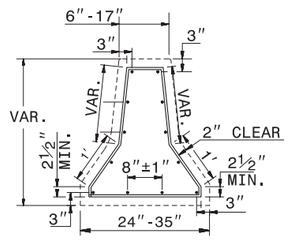
GRANITE RS&H DESIGN-BUILD SERVICES

NOTES:
1. REINFORCING STEEL TO BE ASTM A706

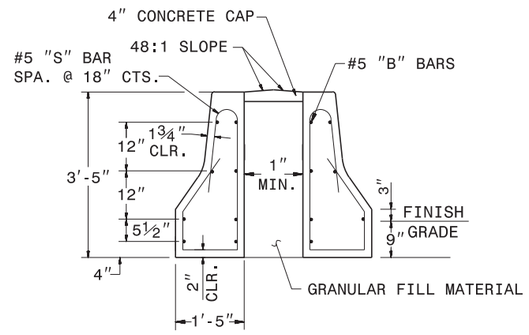




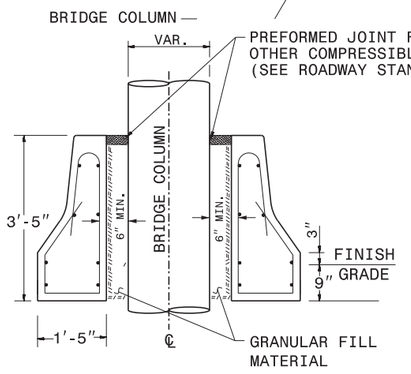
SECTION A-A



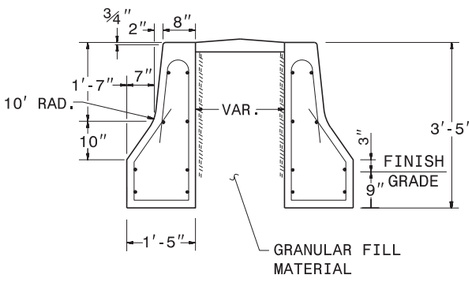
SECTION B-B



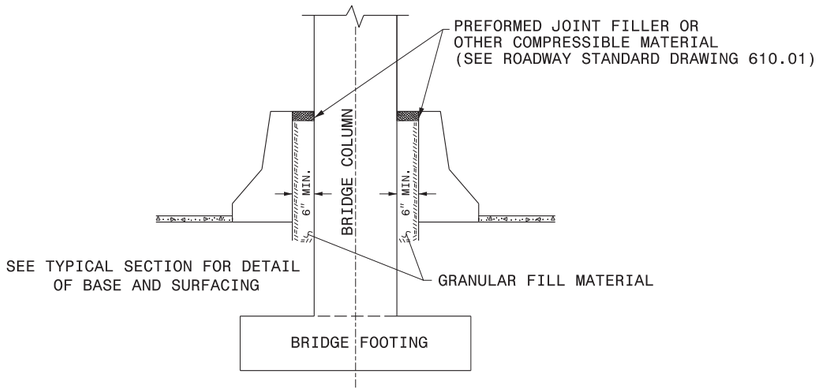
SECTION C-C



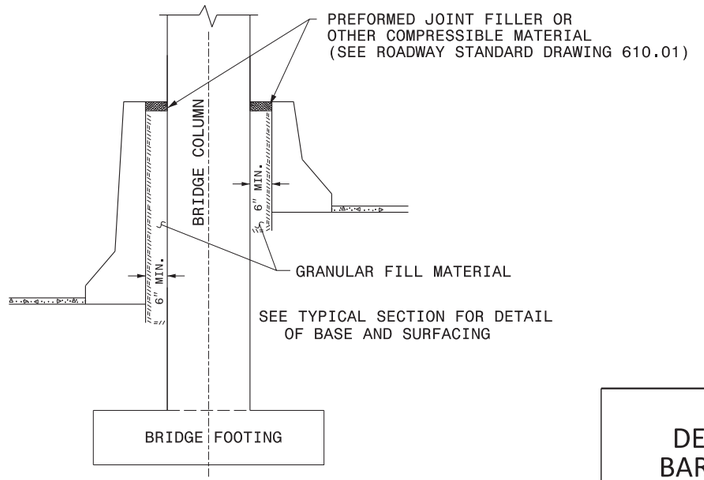
SECTION D-D



SECTION E-E



NORMAL SECTION-BARRIER DETAIL AT BRIDGE COLUMN



SUPERELEVATED SECTION-BARRIER DETAIL AT BRIDGE COLUMN

ALL DRAWINGS ARE NOT TO SCALE

DETAIL OF MEDIAN BARRIER TRANSITION AT OVERPASS

SHEET 1 OF 1

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I-5338 I-5311 Bridge details.dgn
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6/2/99

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	2-AV

STRUCTURE DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18442 ENGINEER RICHARD LEON BOLLINGER JR

GRANITE RS&H DESIGN-BUILD SERVICES

GENERAL NOTES

1. MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE 2012 NCDOT STANDARD SPECIFICATIONS FOR ROADS AND STRUCTURES (SPECIFICATIONS).

2. CONCRETE CONSTRUCTION SHALL BE IN ACCORDANCE WITH SECTION 825 AND 854 OF THE SPECIFICATIONS.

3. AN APPROVED SLIP FORMING MACHINE MAY BE USED TO CONSTRUCT CONCRETE MEDIAN BARRIER PROVIDED SATISFACTORY RESULTS ARE OBTAINED. SEE SECTION 854–3 OF THE SPECIFICATIONS.

4. CONSTRUCT CONCRETE BARRIER OF CLASS *AA* CONCRETE. SEE SECTION 1000 OF THE SPECIFICATIONS.

5. REINFORCING STEEL SHALL CONFROM TO ASTM–A615 GRADE 60 OR ASTM–A706 GRADE 60. SEE SECTION 1070–2 OF THE SPECIFICATIONS.

6. PROVIDE CONTRACTION JOINTS AT 20′ MAXIMUM INTERVALS AND EXPANSION JOINTS AT 100′ MAXIMUM INTERVALS.

7. SEAL EXPANSION JOINTS WITH JOINT FILLER. SEE SECTIONS 825, 854 AND 1028 OF THE SPECIFICATIONS.

8. ALL HORIZONTAL AND VERTICAL CONSTRUCTION JOINTS AND CONTRACTION JOINTS THAT ARE ADJACENT TO SOIL SHALL BE WATERPROOFED IN ACCORDANCE WITH SECTION 854 OF THE SPECIFICATIONS.

9. FILL UNDER THE FOOTING AND FILL PLACED AROUND WALLS SHALL BE THOROUGHLY COMPACTED IN ACCORDANCE WITH SECTIONS 235 AND 500 OF THE SPECIFICATIONS.

10. UNCLASSIFIED EXCAVATION FOR RETAINING WALLS SHALL BE IN ACCORDANCE WITH SECTION 225 OF THE SPECIFICATIONS. AFTER EXCAVATION TO THE REQUIRED FOOTING ELEVATION IS ACHIEVED, THE FOUNDATION SHALL BE PROOF ROLLED OR PROBED AND ANY LOCALIZED POCKETS OF UNSUITABLE MATERIALS SHALL BE REMOVED AND REPLACED WITH COMPACTED FILL. THE FINAL FOUNDATION SHALL BE APPROVED BY THE ENGINEER PRIOR TO ANY COMPONENTS OF THE WALL BEING CONSTRUCTED.

11. GEOCOMPOSITE WALL DRAIN, WEEP HOLE, PERFORATED PIPE UNDERDRAIN, AND DRAINAGE FILTRATION SHALL BE CONSTRUCTED WHERE DETAILED FOR THE BARRIER WALL. GEOCOMPOSITE WALL DRAIN MATERIAL SHALL BE IN ACCORDANCE WITH SECTION 1056 OF THE SPECIFICATIONS. GEOTEXTILE FOR DRAINAGE FILTRATION SPECIFICATIONS SHALL BE TYPE 2 IN ACCORDANCE WITH SECTION 1056 OF THE SPECIFICATIONS. PERFORATED PIPE UNDERDRAIN SHALL EITHER BE CORRUGATED POLYETHYLENE PIPE OR PVC PIPE AND SHALL CONFORM TO SECTION 1044 OF THE SPECIFICATIONS.

12. CONCRETE BARRIER WALLS SHALL BE BUILT TO THE HORIZONTAL ALIGNMENT AND VERTICAL GRADES SHOWN IN THE PLANS. THE BOTTOM OF FOOTING GRADES SHOWN IN THE PLANS ARE MINIMUM EMBEDMENTS. INCREASING THE EMBEDMENT FROM THE ELEVATIONS SHOWN IN THE PLANS MUST BE APPROVED BY THE ENGINEER. INCREASES IN FOOTING EMBEDMENT WILL INCREASE WALL HEIGHT AND MAY CHANGE WALL TYPE REQUIRED.

13. ALL EXPOSED EDGES SHALL BE CHAMFERED 1⁄2″ UNLESS OTHERWISE NOTED.

14. BOTTOM REINFORCING STEEL SHALL BE SUPPORTED BY CONCRETE BLOCK OR SIMILAR MATERIAL, SO AS TO PROVIDE A MINIMUM CONCRETE COVER OF 3″ BELOW BOTTOM REINFORCING STEEL.

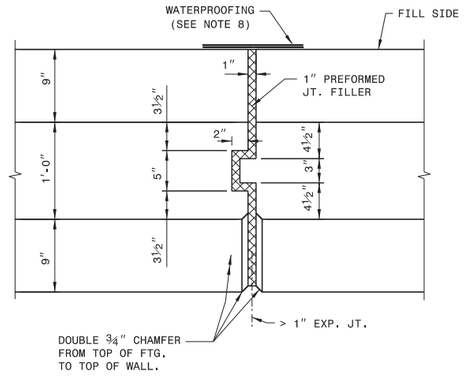
15. THE CONTRACTOR SHALL EXERCISE DUE CAUTION IN PLACING BACKFILL AT RETAINING WALL SO AS TO MAINTAIN PROPER ALIGNMENT AND AVOID DAMAGING THE STRUCTURE. SOIL IN FRONT OF THE WALL MUST BE IN PLACE BEFORE BACKFILLING BEHIND THE WALL.

16. SPECIAL CAST–IN–PLACE (CIP) MEDIAN BARRIERS ARE BASED ON THE FOLLOWING DESIGN PARAMETERS:
MIN. fy = 60 KSI
MIN. f′c = 4 KSI
MIN. SOIL UNIT WEIGHT = 115 PCF
FRICTION ANGLE = 28 DEGREES (GROUNDWATER MORE THAN 7′ BELOW BOTTOM OF FOOTING)
MAX. STATIC BEARING PRESSURE = 1100 PSF
MIN. REQ. ULT. SOIL BEARING PRESSURE = 3300 PSF
MIN. SLIDING FRICTION FACTOR = 0.40
MAX. SURCHARGE LOAD = 250 PSF
COHESION = 0 LB⁄SF

17. ENGINEER WILL BE REQUIRED TO VERIFY DESIGN OF SPECIAL CIP MEDIAN BARRIER WALLS IF DESIGN SOIL PARAMETERS ARE NOT APPLICABLE OR GROUNDWATER IS ABOVE BOTTOM OF FOOTING.

18. DO NOT USE SPECIAL CIP MEDIAN BARRIER WALLS WHEN VERY LOOSE OR SOFT SOIL OR MUCK IS BELOW WALLS.

19. DO NOT PLACE CONCRETE FOR FOOTINGS UNTIL EXCAVATION DIMENSIONS AND FOUNDATION MATERIAL ARE APPROVED.



EXPANSION JOINT DETAIL

DETAIL OF SPECIAL MEDIAN BARRIER WALL

SHEET 1 OF 5

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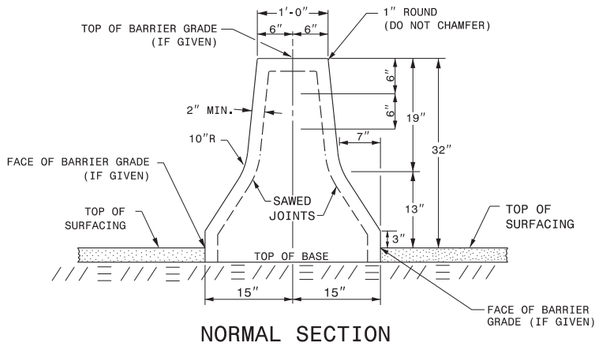
6/2/99

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	2-AW

STRUCTURE DESIGN ENGINEER

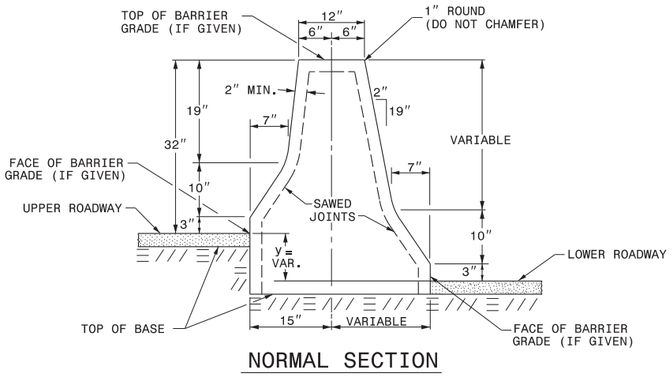
NORTH CAROLINA PROFESSIONAL SEAL 18442 ENGINEER RICHARD LEON BOLLINGER JR

GRANITE RS&H DESIGN-BUILD SERVICES



NORMAL SECTION

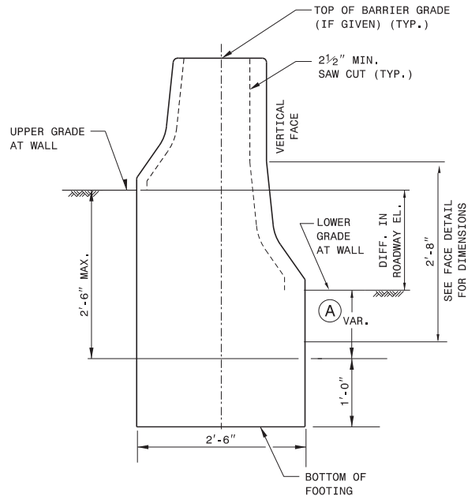
TYPE 2



NORMAL SECTION

TYPE 2 W/ GRADE SEPARATION

y IS LESS THAN 6"



(A) FOOTING EMBEDMENT VARIES BASED ON ADJACENT DRAINAGE DITCHES OR UNSUITABLE FOUNDATION SOILS. RETAINED HEIGHT INCLUDES FOOTING EMBEDMENT.

TYPE 11A

2'-6" MAX. RETAIN HEIGHT

ALL DRAWINGS ARE NOT TO SCALE

DETAIL OF SPECIAL MEDIAN BARRIER WALL

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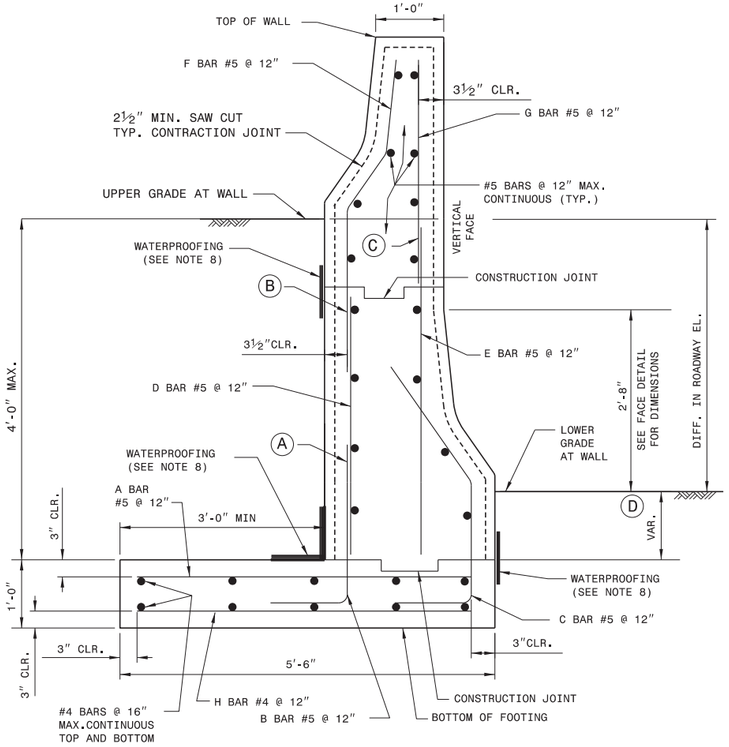
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PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	2-AX

STRUCTURE DESIGN ENGINEER

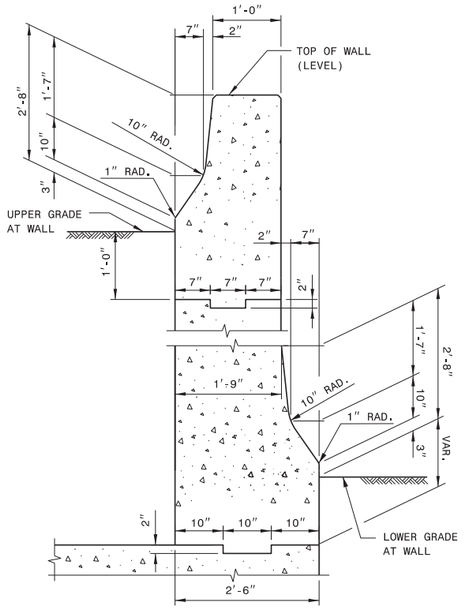
NORTH CAROLINA PROFESSIONAL SEAL 18442 ENGINEER RICHARD LEON BOLLINGER JR

GRANITE RS&H DESIGN-BUILD SERVICES



TYPE 11B

4'-0" MAX. RETAIN HEIGHT



TYPE 11B

BARRIER FACE DETAILS (TYP.)

REBAR NOTES

SEE DRAWING FOR LOCATION

- (A) 28" SPLICE B TO D
- (B) 28" SPLICE F TO D
- (C) 20" SPLICE G TO E
- (D) FOOTING EMBEDMENT VARIES BASED ON ADJACENT DRAINAGE DITCHES OR UNSUITABLE FOUNDATION SOILS. RETAINED HEIGHT INCLUDES FOOTING EMBEDMENT.
- (E) LENGTH BASED ON WALL HEIGHT OF 4'-0" AND EMBEDMENT DEPTH OF 1'-0".

MINIMUM LAP SPLICE (TENSION BARS)

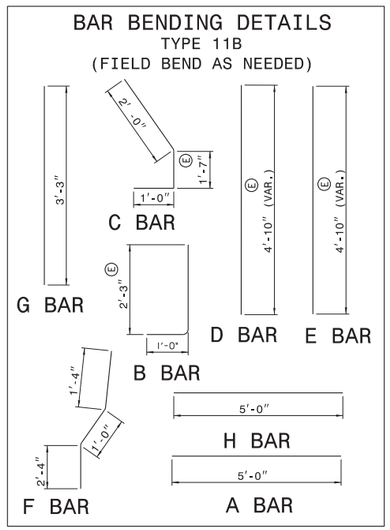
½ OR LESS OF SPLICES IN THE SAME LOCATION	½ OR MORE OF SPLICES IN THE SAME LOCATION
#4 BAR 12"	#4 BAR 16"
#5 BAR 15"	#5 BAR 20"

* MULTIPLY BY 1.4 FOR TOP BARS

BAR BENDING DETAILS

TYPE 11B

(FIELD BEND AS NEEDED)



ALL DRAWINGS ARE NOT TO SCALE

DETAIL OF SPECIAL MEDIAN BARRIER WALL

SHEET 3 OF 5

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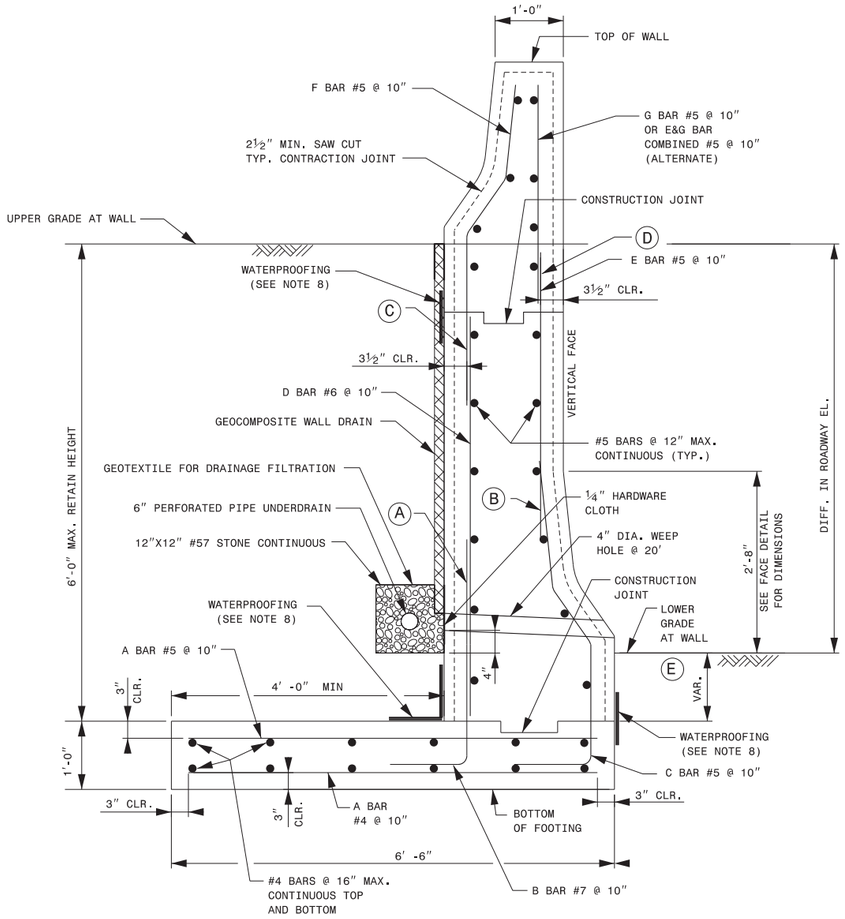
6/2/99

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	2-AY

STRUCTURE DESIGN ENGINEER

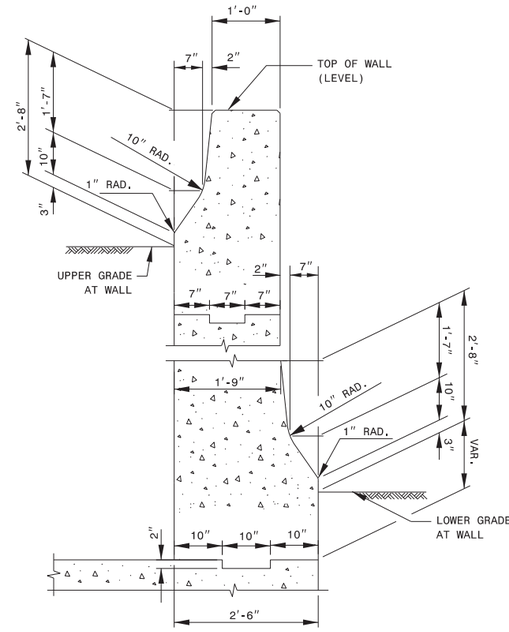
NORTH CAROLINA PROFESSIONAL SEAL 18442 ENGINEER RICHARD LEON BOLLINGER JR

GRANITE RS&H DESIGN-BUILD SERVICES



TYPE 12

6'-0" MAX. REATIN HEIGHT



TYPE 12

BARRIER FACE DETAILS (TYP.)

REBAR NOTES

SEE DRAWING FOR LOCATION

- (A) 24" SPLICE B TO D
- (B) 20" SPLICE C TO E
- (C) 28" SPLICE D TO F
- (D) 20" SPLICE E TO G (OPTIONAL)
- (E) FOOTING EMBEDMENT (1'-0" MIN.) VARIES BASED ON ADJACENT DRAINAGE DITCHES OR UNSUITABLE FOUNDATION SOILS. RETAIN HEIGHT INCLUDES FOOTING EMBEDMENT

MINIMUM LAP SPLICE (TENSION BARS)

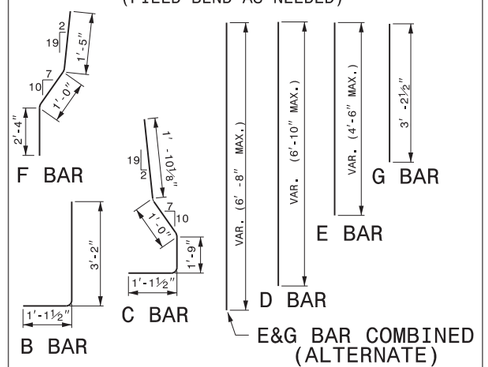
½ OR LESS OF SPLICES IN THE SAME LOCATION	½ OR MORE OF SPLICES IN THE SAME LOCATION
#4 BAR 12"	#4 BAR 16"
#5 BAR 15"	#5 BAR 20"
#6 BAR 19"	#6 BAR 25

* MULTIPLY BY 1.4 FOR TOP BARS

BAR BENDING DETAILS

TYPE 12

(FIELD BEND AS NEEDED)



ALL DRAWINGS ARE NOT TO SCALE

DETAIL OF SPECIAL MEDIAN BARRIER WALL

SHEET 4 OF 5

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6/2/99

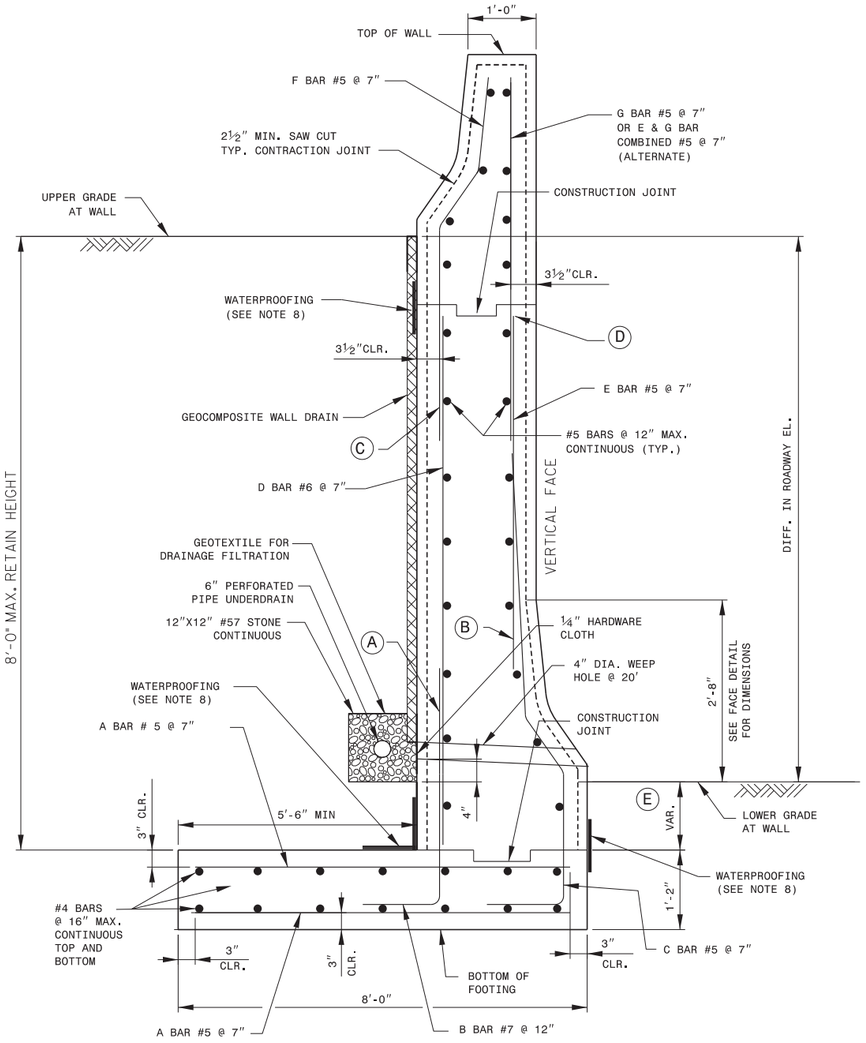
PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	2-AZ

ROADWAY DESIGN
STRUCTURE DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 18442 ENGINEER RICHARD LEON BOLLINGER JR

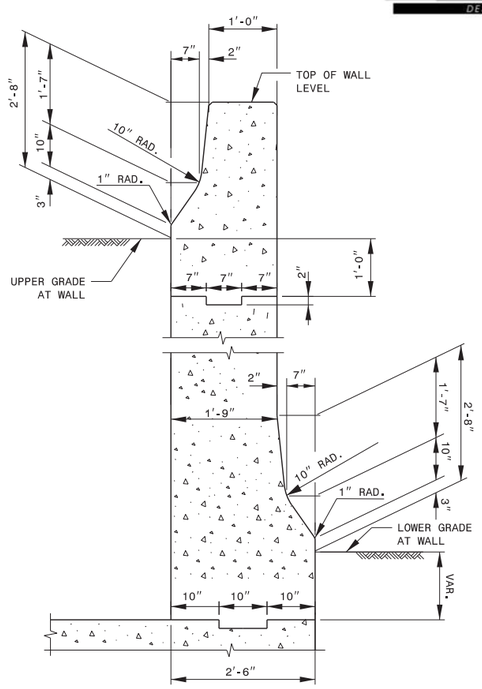
INTERSTATE 40 INTERSTATE 440 PORTION

GRANITE RS&H DESIGN-BUILD SERVICES



TYPE 13

8'-0" MAX. REATIN HEIGHT



TYPE 13

BARRIER FACE DETAILS (TYP.)

REBAR NOTES

SEE DRAWING FOR LOCATION

- (A) 31" SPLICE B TO D
- (B) 20" SPLICE C TO E
- (C) 28" SPLICE D TO F
- (D) 20" SPLICE E TO G (OPTIONAL)
- (E) FOOTING EMBEDMENT VARIES BASED ON ADJACENT DRAINAGE DITCHES OR UNSUITABLE FOUNDATION SOILS. RETAIN HEIGHT INCLUDES FOOTING EMBEDMENT

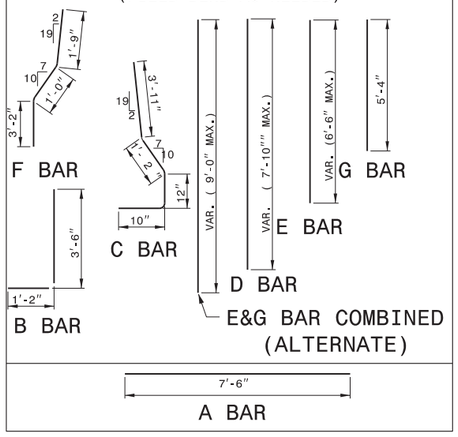
MINIMUM LAP SPLICE (TENSION BARS)

½ OR LESS OF SPLICES IN THE SAME LOCATION	½ OR MORE OF SPLICES IN THE SAME LOCATION
#4 BAR 12"	#4 BAR 16"
#5 BAR 15"	#5 BAR 20"
#6 BAR 19"	#6 BAR 25

* MULTIPLY BY 1.4 FOR TOP BARS

BAR BENDING DETAILS

TYPE 13
(FIELD BEND AS NEEDED)



DETAIL OF SPECIAL MEDIAN BARRIER WALL

SHEET 5 OF 5

ALL DRAWINGS ARE NOT TO SCALE

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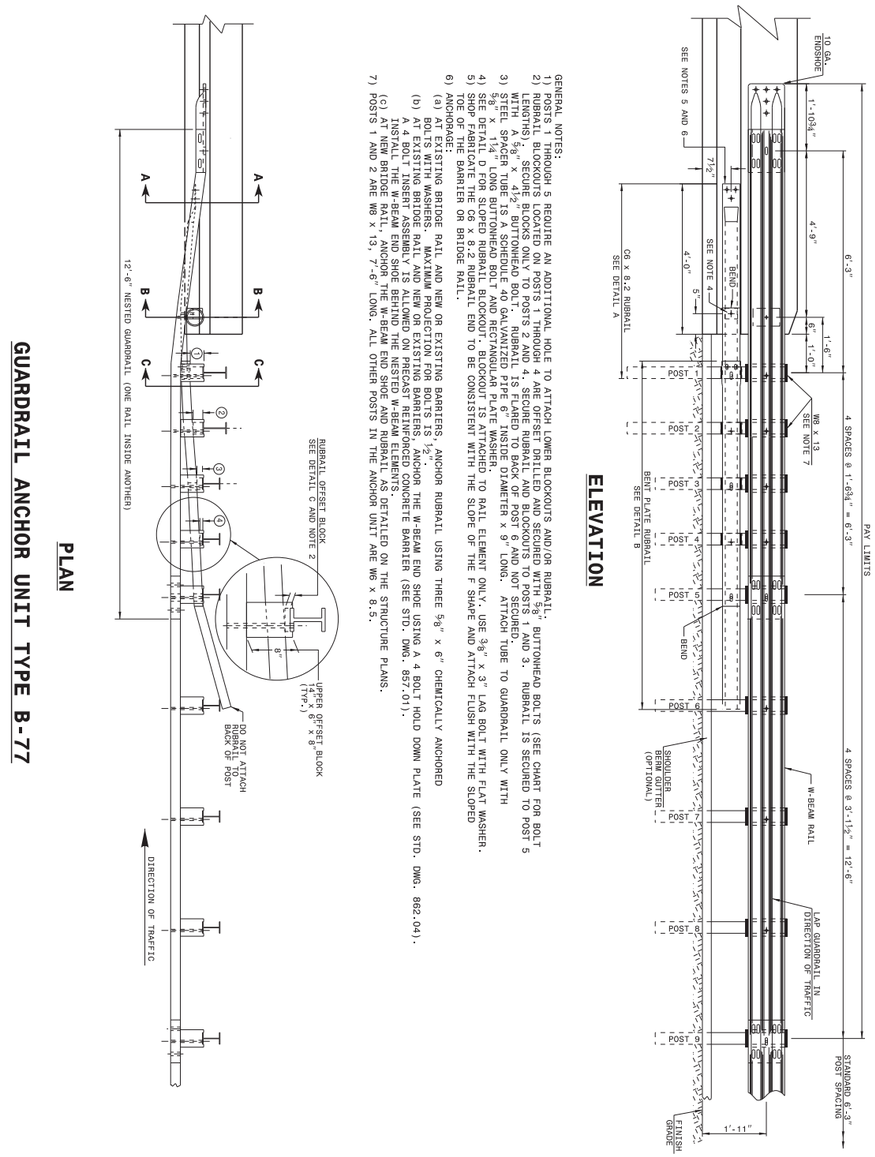
PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	2-BG

STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

ENGLISH DETAIL DRAWING FOR
GUARDRAIL ANCHOR UNIT
GUARDRAIL ANCHOR UNIT TYPE B-77
FOR F-SHAPE BARRIER

SHEET 4 OF 7
862D03

ELEVATION



PLAN

GUARDRAIL ANCHOR UNIT TYPE B-77

GENERAL NOTES:

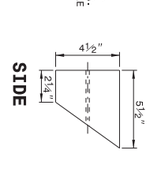
1) POSTS 1 THROUGH 5 REQUIRE AN ADDITIONAL HOLE TO ATTACH LOWER BLOCKOUTS AND/OR RUBRAIL.
2) RUBRAIL BLOCKOUTS LOCATED ON POSTS 1 THROUGH 4 ARE OFFSET TO BACK AND SECURED WITH 5⁄8" BUTTONHEAD BOLTS (SEE CHART FOR BOLT LENGTHS). SECURE BLOCKS ONLY TO POSTS 2 AND 4. SECURE RUBRAIL AND BLOCKOUTS TO POSTS 1 AND 3.
3) STEEL SPACER TUBE IS A SCHEDULE 40 GALVANIZED PIPE 6" INSIDE DIAMETER x 9" LONG. ATTACH TUBE TO GUARDRAIL ONLY WITH 5⁄8" x 4½" BUTTONHEAD BOLT. RUBRAIL IS FLARED TO BACK OF POST 6 AND NOT SECURED.
4) SEE DETAIL D FOR SLOPED RUBRAIL BLOCKOUT. RUBRAIL BLOCKOUT IS ATTACHED TO RAIL ELEMENT ONLY. USE ¾" x 3" LAG BOLT WITH FLAT WASHER.
5) SHOP FABRICATE THE C6 x 8.2 RUBRAIL END TO BE CONSISTENT WITH THE SLOPE OF THE F SHAPE AND ATTACH FLUSH WITH THE SLOPED TOE OF THE BARRIER OR BRIDGE RAIL.
6) ANCHORAGE: EXISTING BRIDGE RAIL AND NEW OR EXISTING BARRIERS. ANCHOR RUBRAIL USING THREE 5⁄8" x 6" CHEMICALLY ANCHORED (a) BOLTS WITH WASHERS. MAXIMUM PROJECTION FOR BOLTS IS ½". (b) AT EXISTING BRIDGE RAIL AND NEW OR EXISTING BARRIERS, ANCHOR THE W-BEAM END SHOE USING A 4 BOLT HOLD DOWN PLATE (SEE STD. DWG. 862.04). A 4 BOLT INSERT ASSEMBLY IS ALLOWED ON PRECAST REINFORCED CONCRETE BARRIER (SEE STD. DWG. 857.01). INSTALL THE RUBRAIL AS DETAILED ON THE STRUCTURE PLANS. (c) AT NEW BRIDGE RAIL, ANCHOR THE W-BEAM END SHOE AND RUBRAIL AS DETAILED ON THE STRUCTURE PLANS.
7) POSTS 1 AND 2 ARE W6 x 13, 7'-6" LONG. ALL OTHER POSTS IN THE ANCHOR UNIT ARE W6 x 8.5.

STATE OF
NORTH CAROLINA
DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
RALEIGH, N.C.

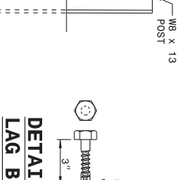
ENGLISH DETAIL DRAWING FOR
STRUCTURE ANCHOR UNIT
GUARDRAIL ANCHOR UNIT TYPE B-77
FOR F-SHAPE BARRIER

SHEET 5 OF 7
862D03

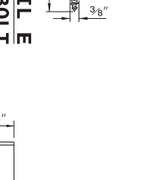
SECTION A-A



SECTION B-B



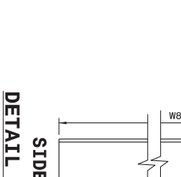
SECTION C-C



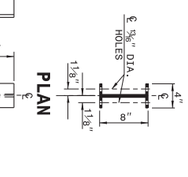
RUBRAIL BLOCKS 7" HIGH x 4" WIDE			
POST	THICKNESS	BOLT	LENGTH
(1)	4¼"	9"	
(2)	3¼"	5"*	
(3)	2"	6"	
(4)	1"	3"*	

* BOLTS FOR POSTS 2 AND 4 ARE USED TO ATTACH BLOCK. RUBRAIL NOT ATTACHED TO BLOCK.

DETAIL C
RUBRAIL BLOCKOUT

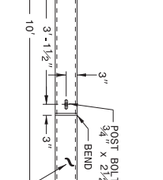


DETAIL D
SLOPED RUBRAIL BLOCKOUT

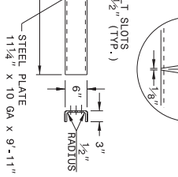


DETAIL E
LAG BOLT

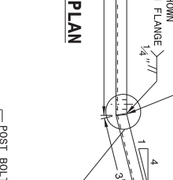
DETAIL A
C6 x 8.2 RUBRAIL



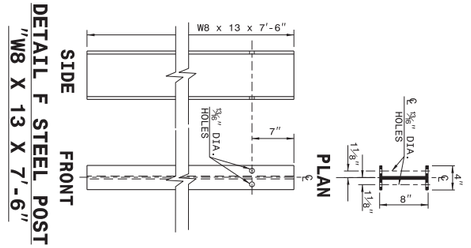
ELEVATION
DETAIL B
BENT PLATE RUBRAIL



PLAN



SIDE FRONT
DETAIL F STEEL POST
"W8 X 13 X 7'-6"



CONTRACT STANDARDS AND DEVELOPMENT UNIT
Office 919-707-6950 FAX 919-250-4119

SEE TITLE BLOCK

ORIGINAL BY: J HOWERTON DATE: 06-22-12
MODIFIED BY: _____ DATE: _____
CHECKED BY: _____ DATE: _____
FILE SPEC.: _____

$$$

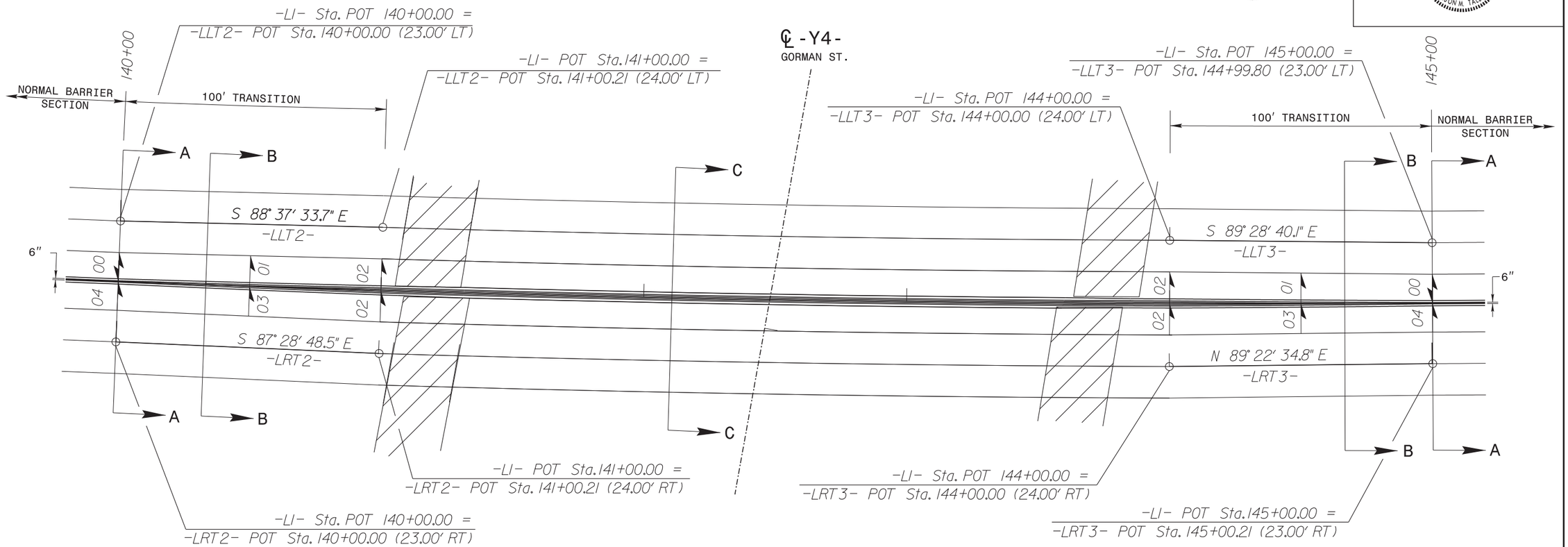
6/2/99

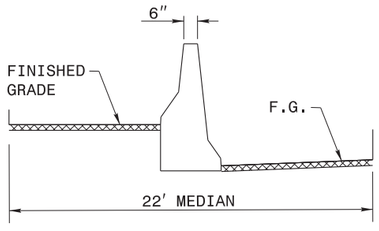
PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	2-BK

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY

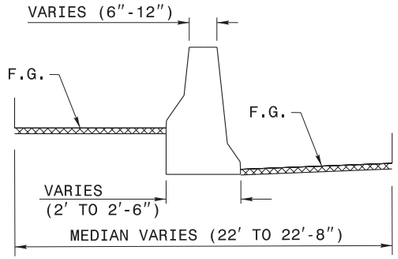
GRANITE RS&H DESIGN-BUILD SERVICES





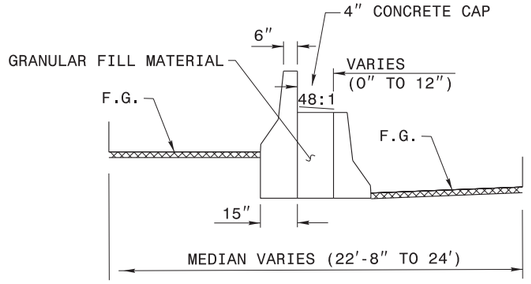
SECTION A-A

UP TO STA 140+00.00 -L1-
BEGIN AT STA 146+00.00 -L1-



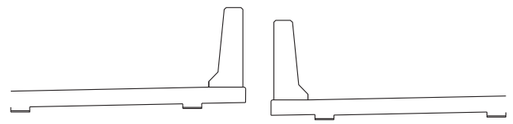
SECTION B-B (SOLID)

AT STA 140+00.00 TO STA 140+33.33 -L1-
AT STA 144+66.66 TO STA 145+00.00 -L1-



SECTION B-B (SPLIT)

AT STA 140+33.33 TO STA 141+30.21 -L1- (RT)
AT STA 140+33.33 TO STA 141+33.36 -L1- (LT)
AT STA 143+53.53 TO STA 144+66.66 -L1- (RT)
AT STA 143+66.81 TO STA 144+66.66 -L1- (LT)



SECTION C-C

AT STA 141+30.21 TO STA 143+53.53 -L1- (RT)
AT STA 141+33.36 TO STA 143+66.81-L1- (LT)

ALL DRAWINGS ARE NOT TO SCALE

DETAIL OF MEDIAN BARRIER TRANSITION AT GORMAN ST.

SHEET 1 OF 1

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	3
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DRAINAGE MAINTENANCE APPROACH

I-40 EAST 1 OF 4

Item Number	NCDOT Box #	NCDOT Station	Proposed Station	RT/LT	RFP Required Repairs	Proposed Repairs
M-44		36+00	52+45	RT	Construct concrete apron	Replace structure
M-45		38+70	54+93	RT	Replace apron, remove grass, and clean out berm ditch inlet	Replace structure
M-46	100	44+42	60+70	RT	Construct concrete apron	Replace structure
M-47	101	49+22	65+52	RT	Construct concrete apron	Replace structure
M-49		56+93	75+52	RT	Replace with masonry drainage structure and restore washed out slope	Remove structure
M-50	102	60+35	73+33	RT	Repair shoulder	Repair Shoulder
M-51		65+10	81+55	RT	Restore washout at the end of curb	Replace structure
M-53	105	70+13	86+44	RT	Construct concrete apron	Replace structure
M-54	106	74+14	90+44	RT	Construct concrete apron and replace concrete ditch	New concrete apron and concrete ditch (20')
M-56	108	78+31	94+62	RT	Construct concrete apron, repair drainage structure and pipe, and backfill	New concrete apron and concrete ditch (20')
M-57	109	79+84	96+14	RT	Construct concrete apron	Replace structure
M-58		82+80	102+92	RT	Restore rusted FES and washed out slopes above cross line, remove tree and slip line pipe	Replace FES, repair slope, remove tree, & preserve pipe.
M-59		88+08	105+35	RT	Restore 60' rusted pipe and slip line pipe	Restore and Preserve
M-60	111	92+84	109+15	RT	Construct concrete apron	Replace structure
M-61		97+70	115+62	RT	Remove trees over pipe and at outlet, replace FES, and slip line pipe	Remove trees, remove FES and replace with standard riprap pad, & preserve pipe.
M-62	112	104+48	120+80	RT	Construct concrete apron, repair drainage structure and pipe, and backfill	Replace structure
M-64		109+20	125+60	RT	Replace last joint of pipe, remove concrete and sediment from drainage system, and slip line pipe	Replace structure & last joint of pipe, and remove concrete and sediment. Video the remainder of the pipe; retain if in good condition, replace or preserve if not.
M-66	114	109+87	126+19	RT	Construct concrete apron and replace grates with correct grates for existing frame	Replace structure
M-68	116	117+75	134+07	RT	Clear trees at and over pipe outlet, grade to drain, and replace FES	Remove trees, remove FES and rip rap banks
M-69	117	117+91	134+22	RT	Two pipe located here. DB Team shall replace FES and slip line crossline and construct Energy Dissipator	New energy dissipator and preserve pipe; smaller pipe from failed funnel drain to be removed.
M-70	118	120+39	136+70	RT	Restore buried grates and remove sediment from drainage ditch and system.	Removed sediment and repair as needed.
M-71	119	124+92	140+54	RT of Ramp C	Construct concrete apron	New concrete apron and concrete ditch (35')
M-72	120	123+94	140+25	LT of Ramp C	Construct concrete apron	New concrete apron and concrete ditch (22')
M-73	120A	123+89	142+27	Along Gorman (LT of mainline)	Construct concrete apron	New concrete apron and concrete ditch (22')
M-75	122	121+37	143+63	Along Gorman (LT of mainline)	Construct concrete apron	New concrete apron and concrete ditch (22') - NOTE: Same as M-96
M-78	125	125+67	146+10	RT	Remove sediment from ditch and pipe inlet and clean drainage system	Remove sediment and clean drainage system
M-79	126	128+17	144+51	LT	Construct concrete apron, repair drainage structure and pipe, and backfill	Repair structure & new concrete apron
M-81	128	125+95	142+28	RT of Ramp B	Construct concrete apron, repair drainage structure and pipe, and backfill	This item has already been repaired. No additional repairs necessary.
M-82	129	134+66		LT	Remove tree at pipe outlet, regrade to ensure positive drainage, replace FES, and slip line pipe	Remove tree, minor regrading at outlet, remove FES, replace standard riprap pad, and preserve pipe.
M-84	132	123+64	140+04	RT	Clean out underdrain and daylight	Clean structure
M-87	133	125+49	141+63	Along Gorman (RT of mainline)	Construct concrete apron	New concrete apron and concrete ditch (20')
M-90	137	121+68	137+44	LT	Replace with masonry drainage structure and repair washout behind curb	Regrade shoulder, No SBG
M-91	136		149+80	LT of Ramp A	Construct energy dissipator	Outlet is stable; place rip rap at end of adjacent concrete swale, preserve pipe.
M-92	138	119+08	150+36?	RT Along Ramp A	Repair shoulder and replace pipe	Regrade shoulder, No SBG; remove pipe
M-93	139	119+38	150+36?	RT Along Ramp A	Replace with masonry drainage structure and repair shoulder washout	No SBG; remove structure

I-40 EAST 2 OF 4

Item Number	NCDOT Box #	NCDOT Station	Proposed Station	RT/LT	RFP Required Repairs	Proposed Repairs
M-95	141	125+14	141+54	RT	Replace curb at bridge and repair asphalt shoulder	Overlay Bridge, repair curb
M-96	142	127+31	143+71	LT	Construct concrete apron	New concrete apron and concrete ditch (22') - NOTE: Same as M-75
M-97	148	126+91	143+31	RT	Repair shoulder	Repair Shoulder; not sure where this is
M-98		126+39	145+33	LT	Repair separated RCP and slip line pipe	Repair pipe separation, & add energy dissipator. Video the remainder of the pipe; retain if in good condition, replace or preserve if not.
M-100		127+86	143+03	RT, outside Ramp D	Slip line pipe, replace FES and remove trees from around outlet	Preserve pipe; remove FES and rip rap banks; remove trees.
M-101	144	124+62	144+52	Along Gorman S off Ramp C	Construct concrete apron, replace concrete ditch and replace grates with correct grates for existing frame	New concrete apron, concrete ditch, and sag grates
M-104	147	127+87	143+03	RT	Repair washout/headcut (Off Gorman Street) and construct energy dissipator.	Repair and riprap channel. (See Sheet 2-AT)
M-105		128+22	144+56	RT	Remove sediment from concrete ditch and pipe system	Remove sediment from concrete ditch and pipe system
M-106	149	132+28	149+25	RT	Construct concrete apron	New concrete apron
M-107	150	138+43	154+92	RT	Replace with masonry drainage structure and repair shoulder	Remove structure
M-107A		150+70	166+81	RT	Clean out drainage structure and crossline and regrade ditch line to remove sediment	Replace structure
M-108		156+72	170+92	RT	Repair separated pipe and slip line pipe	Replace pipe
M-109		156+72	170+92	RT	Restore washed out slopes	Regrade slopes
M-112		164+64	179+66	RT	Grade and stabilize eroding ditch	Add standard riprap pad.
M-113		164+64	179+66	RT	Repair last 2' of separated pipe, slip line pipe, replace FES and remove trees around pipe inlet	Remove FES, and preserve pipe. Remove trees.
M-114		167+28	185+46	RT	Grade pipe outlet to drain and slip line pipe	Grade pipe outlet to drain; video the pipe; retain if in good condition, replace or preserve if not.
M-117		183+12	199+78	RT	Replace exposed flume pipe (approximately 30' down slope) and repair slope.	Flume to be removed; repair slope.
M-118		183+12	199+78	RT	Minor grading required and repair approximately 100' of chainlink fence. Repair lateral ditch and slope to culvert wing wall, remove trees behind wing wall and repair fence.	Repair lateral ditch and slope to culvert wing wall. Remove trees behind wing wall and repair ROW fence. Realign stream leading to headwall, and armor banks. (See Sheet 2-AS)
M-120		188+40	205+06	RT	Replace exposed flume pipe	Flume to be removed
M-121		195+60	211+74	RT	Repair pipe, drainage structure, and apron	Replace structure
M-121A		200+60	216+94	RT	Repair pipe, drainage structure, and apron	Replace structure
M-122A		205+10	221+67	RT	Repair pipe, drainage structure, and apron	Replace structure
M-122B		209+70	225+65	RT	Repair pipe, drainage structure, and apron	Replace structure
M-122C		217+70	233+97	RT	Repair pipe, drainage structure, and replace apron and concrete ditch	Replace structure
M-123	151	220+17	235+11	RT	Repair/replace damaged pipe and slip line	Preserve pipe
M-124	202	220+17	236+48	RT	Construct concrete apron, clean out concrete ditch and replace grates with correct grates	New concrete apron and concrete ditch. New grates.
M-125	201	224+74	241+06	RT	Construct concrete apron	New concrete apron and ditch (20')
M-127	204	224+31	240+63	RT of Ramp C	Clean out pipe and berm ditch	Clean out pipe and ditch
M-128	151	223+42	239+74	RT of Ramp C	Construct concrete apron and replace grates with correct grates	New concrete apron and concrete ditch. New sag grate.
M-131	151	234+09	250+40	RT	Construct concrete apron and clean out ditch	Replace structure
M-134	209	251+16	267+82	RT	Pipe is too shallow. Replace if possible	Replace pipe to new 2GI at barrier
M-136	210A	255+60	272+23	RT	Construct concrete apron and clean out ditch	Replace structure
M-137		257+50	273+89	RT	Replace floorless drainage structure.	Replace structure
M-142	213	259+59	276+02	RT	Construct concrete apron and remove sediment on shoulder	Replace structure
M-143		262+32	277+25	RT	Replace floorless drainage structure.	Replace structure
M-145		262+32	277+96	RT	Replace floorless drainage structure.	Replace structure
M-150	218A	289+80	306+10	RT	Clean out outlet	Replace pipe
M-151	226	292+60	308+90	RT	Repair shoulder	Repair shoulder
M-152	228A	295+43	308+65	RT	Remove trees, replace concrete ditch and restore ditch	Replace concrete ditch with riprap

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6/2/99

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	3-A
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DRAINAGE MAINTENANCE APPROACH

I-40 EAST 3 OF 4

Item Number	NCDOT Box #	NCDOT Station	Proposed Station	RT/LT	NCDOT Request	Proposed Repairs
M-157	230	314+69.6	331+01	RT	Clean out ditch, inlet, pipe system	Previously repaired
M-158	233	316+09+/-	332+53	RT	Repair shoulder	Project improvement includes Shouder Berm Gutter which will include shoulder repair
M-159		316+09+/-	332+53	RT	Repair shoulder and unclog CBS	Project improvement includes Shouder Berm Gutter which will include shoulder repair
M-162	236	317+00+/-	333+11	RT	Repair shoulder	Project improvement includes Shouder Berm Gutter which will include shoulder repair
M-163	237	317+00+/-	333+11	RT	Repair shoulder	Project improvement includes Shouder Berm Gutter which will include shoulder repair
M-165	238	326+05+/-	342+55	RT	In & out. Ax. Inside Loop D in interchange	No repair recommended
M-167	239	326+66+/-	342+79	RT	Clean out outlet and daylight to drain	? Not found
M-169 & M-170		327+74	343+65	RT	Stabilize slopes & add curb & gutter	Install SBG & stabilize slope per standard design criteria
M-171		327+74	343+65	RT	Stabilize slopes and add curb & gutter	Install SBG & stabilize slope per standard design criteria
M-172	242	331+64+/-	347+30	RT	Repair shoulder	Install SBG
M-174	244	332+15+/-	348+70	RT	Clean out outlet and provide positive drainage	Replace pipe
M-178	248	329+57+/-	346+39	RT	Clean out ditch. See general comments	Ditch no longer exist. Gore area filled
M-182	250	331+51+/-	348+33	RT	Clean out pipe inlet & slip-line pipe	Slipline pipe
M-183	251	334+10	350+50	RT	Construct concrete apron	Construct concrete apron
M-184		338+30	353+93	LT	Repair box at the trailing end of Hadley Bridge	Replace structure
M-192	311	364+38.2	380+68	RT	Construct concrete apron	Construct concrete apron
M-194	312	378+50	395+78	RT	Clean out underdrain & daylight & clean out paved ditch	Clean out or replace underdrain
M-195	0312A	379+91+/-	396+21	RT	Clear trees around headwall & slip-line pipe	Slipline pipe and clear trees
M-197	0313A	378+56	396+25	RT	Clean out underdrain & daylight	Clean out or replace underdrain
M-198		380+54	396+60	RT	Repair paved ditches washed out near cross line 100-200' west of Exit 300 sign	Repair paved ditch
		382+00	398+47	RT	Replace damaged sign	Previously repaired
M-199	315	382+55+/-	398+63	RT	Clean out underdrain & daylight	Clean out or replace underdrain
M-200	316	389+09.2	405+39	RT	Construct concrete apron	Replace structure
M-201	317	391+58.9	407+90	RT	Construct concrete apron & replace grates w/ correct grates	Replace structure
M-202	318	392+08.9	408+38	RT	Construct concrete apron, repair masonry drainage structure & pipe, and backfill	Replace structure
M-204	320	394+53+/-	410+53	RT	Construct concrete apron	Construct concrete apron
M-205	321	394+88.4	411+14	RT	Construct concrete apron	Construct concrete apron
M-207	322	396+12.7	412+32	RT	Construct concrete apron, repair paved ditch, masonry drainage structure, pipe, & backfill	Construct concrete apron, repair paved ditch, drainage structure, and pipe
M-208	323	397+10.9	413+40	RT	Construct concrete apron	Replace structure
M-209	324	398+34.5	414+54	RT	Construct concrete apron	Construct concrete apron
M-210	325	399+01.6	415+29	RT	Construct concrete apron & replace concrete ditch	Construct concrete apron and replace ditch
M-211	0327A	398+34.5	415+22		Check grate (on ramp) & replace if needed	Structure removed in final design
M-213	326	404+87.6	421+14	RT	Replace pipe with 24"-RCP & replace grate	Replace structure
M-214	328	407+14.0	423+42	RT	Construct concrete apron, repair masonry drainage structure & pipe, and backfill	Replace structure
M-221	333	432+57.0	448+76	RT	Construct concrete apron	Replace structure
M-222	334	432+55+/-	448+78	RT	Remove trees & replace headwall/BDO	Remove tree and replace headwall
M-223		433+34	450+24		Replace separated pipe. Determine if additional drainage structure & cross line are hydraulically	Replace structures
M-224		433+34	450+24		same as above (223 & 224 photos are combined)	See M-223
		441+70	457+57	RT	Construct concrete apron, repair masonry drainage structure & pipe, and backfill	Replace structure
		443+85	460+66	RT	Replace damaged joint of pipe, clean out drainage system, & repair washout	Replace guardrail and pipe
M-225		443+60	458+81		Replace drainage structures & clean out drainage system	Replace structure

I-40 EAST 4 OF 4

Item Number	NCDOT Box #	NCDOT Station	Proposed Station	RT/LT	NCDOT Request	Proposed Repairs
M-226	33	436+98+/-	453+24.15	RT	Repair pipe or replace w/ drainage inlet, ensure pipe will drain, and slip-line. Determine if additional drainage structure & crossline are hydraulically required at this location. This area floods on I-40 when heavy rains occur.	Replace structures
M-228	0335B	436+98+/-	450+18.31	RT	Regrade and replace paved ditch	Regrade and replace paved ditch
M-229	0335C	436+98+/-	450+18.31	RT	Replace ditch and remove trees	Replace ditch and remove trees
M-231	337	440+97+/-	457+24.46		Replace cracked headwall	Replace Headwall
M-232	0337A	444+04.1	460+33.36	RT	Construct concrete apron, clean out concrete ditch & grade lateral ditch to drain	Replace structure
M-235	340	447+93.4	447+10.		Construct concrete apron, repair pipe & drainage structure, & backfill	Construct concrete apron and repair pipe and drainage structure
M-238	344	455+05+/-	471+48.99	RT	Construct concrete apron	Replace structure
M-241	346	466+88.3	483+13.89	RT	Construct concrete apron, repair pipe & drainage structure, & backfill	Construct concrete apron and repair pipe and drainage structure
M-243	347	469+84.0	486+09.39	RT	Construct concrete apron	Replace structure
M-244	348	469+94+/-	486+12.32	RT	Remove debris from inlet	Remove debris
M-245	0347A	473+43.2	486+19.83		Construct concrete apron	Replace structure
		473+20	489+37.69	RT	Replace apron and slip-line pipe	Replace structure and pipe
M-248	0350A	476+96.5	493+03.68	RT	Clean out pipe inlet	Clean out inlet
M-249	350	483+54+/-	499+18.96		Construct concrete apron & remove sediment from concrete ditch	Replace structure
M-271	371	524+43	542+62.31		Construct concrete apron, clean out box, & replace missing grates	Replace structure
M-545	5	506+00	522+12.08	RT	Repair holes in slope and repair cross line	Repair slope
M-546	5	506+00	522+12.08	RT	Repair holes in slope and repair cross line	Repair slope
M-549	7	514+40	530+64.95	RT	Clean out pipe & outlet to ensure positive drainage	Abandon 18" RCP
M-550	7	514+40	530+64.95	RT	Clean out pipe & outlet to ensure positive drainage	Clean out pipe
M-556	8	519+80	536+10.83	RT	Construct concrete apron, repair pipe & drainage structure, & backfill	Replace structure
M-557	8	519+80	536+10.83	RT	Construct concrete apron, repair pipe & drainage structure, & backfill	Replace structure
		526+10	542+62.31	LT	Replace apron on structure, clean out debris in paved ditch & slip-line pipe	See M-271
M-563	10.5	527+10	543+58.39	RT	Clean out pipe & ditch to ensure positive drainage & slip-line pipe	Not addressed. Item outside of NCDOT right-of-way
M-564	10.5	527+10	541+73.26	RT	Repair R/W fence and remove sediment build up	Repair R/W fence. No sediment to remove
M-568	10	526+90	543+08.25	RT	Remove trees at pipe inlet and clean out pipe	Remove trees and clean out pipe
		535+65	551+92.24	RT	Clean out paved ditch and replace apron	Replace structure
M-572	17	548+20	563+96.11	RT	Water under pipe. Construct dissipater & slip-line pipe	Slipline pipe and repair erosion
M-575	20	548+30	564+62.85	RT	Construct concrete apron, ditch, & replace grates w/ correct grates	Replace structure
M-578	23	561+33	577+61.37	RT	Construct concrete apron, repair pipe & drainage structure, & backfill	Replace structure
M-582	28	567+20	583+50.26	RT	Construct concrete apron, replace broken grate, & slip-line pipe	Replace structure and pipe
M-583	28	567+20		RT	Construct concrete apron, replace broken grate, & slip-line pipe	See M-583
M-586		576+55	592+83.21	RT	Repair erosion at end of guardrail & construct shoulder berm gutter	Install SBG
M-588		576+55	592+83.21	RT	Repair erosion at end of guardrail & construct shoulder berm gutter	Install SBG
M-591	31	577+10	593+69.9	RT	Clean out, provide positive drainage, & construct rodent guard. Clean out silt in rip rap ditch	Clean out underdrain
M-593	31	577+10	593+69.9	RT	Clean out, provide positive drainage, & construct rodent guard. Clean out silt in rip rap ditch	Clean out underdrain and ditch

SEALS/SIGNATURES

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	3-B
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DRAINAGE MAINTENANCE APPROACH

I-40 EAST 4 OF 4 continued

Item Number	NCDOT Box #	NCDOT Station	Proposed Station	RT/LT	NCDOT Request	Proposed Repairs
M-594	32	581+33	597+61.27	RT	Clean out, provide positive drainage, & construct rodent guard	Clean out underdrain
M-272		534+99	552+05.07		Remove trees at outlet & clean out ditch & pipe to provide positive drainage	Remove trees and clean out ditch and pipe
M-273		540+27	556+75.93		Clean out around outlet & clean out ditch to provide positive drainage	Clean out ditch and outlet
M-274		545+55	560+93.09		Clean out pipe, outlet, & ditch to provide positive drainage	? Not found
M-275		550+83	565+23.99		Clean out pipe & ditch to provide positive drainage	? Not found
M-276		566+67	583+46.71		Clean out pipe & ditch to provide positive drainage	? Not found
M-277		571+95	588+48.51		Replace apron & clean out pipe & ditch to provide positive drainage	Replace structure
M-278		571+95	588+48.51		Replace apron & clean out pipe & ditch to provide positive drainage	Replace structure
M-279		577+23	594+00.99		Outlet has been undermined. Construct dissipater & remove trees around outlet	Replace pipe and construct dissapator
M-280		577+23	594+00.99		Replace apron	Replace structure
M-281		581+34	597+89.88		Clean pipe & ditch to provide positive drainage	? Not found
M-282		581+45	598+23.76		Repair/replace FES	? Not found
M-283		585+15	599+69.82		Replace apron	Replace structure
M-284		587+79	605+11.81		Replace apron	Replace structure
M-285		593+07	608+21.28		Replace apron	Replace structure
M-286		603+63	618+31.69		Replace apron	Replace structure
M-287		608+91	625+26.12		Repair separated pipe & clean out pipe & outlet to ensure positive drainage	? Not found

I-40 WEST 1 OF 4

Item Number	NCDOT Box #	NCDOT Station	Proposed Station	RT/LT	RFP Required Repairs	Proposed Repairs
M-597		615+33	631+57	LT	Construct concrete apron, repair box & drainage structure	New concrete apron
M-600		604+00	620+45	LT	Seed behind guardrail	Install SBG and seed
M-603		603+60	619+81	LT	Seed behind guardrail	Install SBG and seed
M-605		592+10	608+30	LT	Clear trees around the outlet and over the pipe	Remove trees
M-607		592+10	608+30	LT	Clean out concrete ditch	Clean out concrete ditch
M-608		583+25	599+48	LT	Clean out pipe & daylight outlet to drain	Slipline Pipe
M-612		583+25	599+48	LT	Remove check dam	Remove check dam and adjust channel grade back to pipe invert. Clean out pipe
M-616		583+25	599+48	LT	Repair washout	Install SBG and repair washout
M-617		583+25	599+48	LT	Repair R/W fence	Repair fence
M-618		581+00	597+26	LT	Repair washout on slope	Install SBG and repair washout
M-622		579+00	595+23	LT	Reshape shoulder & reseed & mat this area	Install SBG and reseed
M-623		582+80	599+17	LT	Construct shoulder berm gutter at the end of guardrail, repair slope & reseed	Install SBG and repair slope, reseed
M-624		577+00	593+06	LT	Repair erosion behind guardrail & reseed & mat	Install SBG and reseed
M-628		572+70-580+00	580+77 - 588+77	LT	Reshape shoulder & reseed & mat this area	Install SBG and reseed
M-634		562+80	578+88	LT	Construct concrete apron & clean out ditch	Replace structure
M-635		561+50	577+61	LT	Construct concrete apron	Replace structure
M-636		556+00 -	570+02		Repair conduit & clean out ditch under bridge & grade to drain	Clean out ditch/Conduit is non-drainage item
M-637		551+33	567+64	LT	Construct concrete apron	Replace structure
M-369		548+20	564+58	LT	Construct concrete apron	Replace structure
M-641		545+20	561+40	LT	Construct concrete apron	Replace structure
M-642		552+10	568+28	LT	Construct concrete apron	Construct concrete apron
M-644		551+85	567+70	LT	Paved ditch sunk at joint. Repair ditch	Repair concrete ditch
M-645		541+20	556+91	LT	Repair R/W fence	Repair fence
M-647		545+85	561+30	LT	Repair cracked brick headwall/outlet & slip-lines pipes	Repair headwall and slip-line pipe
M-651		545+85	561+30	LT	Repair wash out behind headwall & remove trees.	Repair washout and remove trees
M-653		534+90	551+17	LT	Construct concrete apron	Replace structure
M-655		534+80	550+99	LT	Remove trees & construct dissipater	Remove trees, construct dissipator
M-662		530+33	546+58	LT	Extend paved ditch to drainage structure, remove debris, & cleanout pipe	Clean out pipe/ditch to drain. Remove debris. Paved ditch connection not required
M-664		524+35	540+63	LT	Construct concrete apron	Replace structure
M-665		523+50	539+87	LT	2/3 full of slit. Clean out & daylight to drain & remove trees	Clean out pipe/stream and remove trees
M-671		520+80	536+95	LT	Construct concrete apron	Replace structure
M-673		516+75	532+96	LT	Construct concrete apron	Construct concrete apron
M-675		516+33	532+63	LT	Repair pipe and outlet & construct dissipater	Repair outlet, construct dissipator
M-680		515+10	531+40	LT	Clean out clogged curb & gutter & repair washout behind curb	Install SBG and repair washout
M-684		515+10	531+40	LT	Repair washout & replace failed CSP pipe	Replace pipe
M-689		506+10	522+38	LT	Remove concrete & reseed	Install SBG and reseed
M-701		506+10	518+36	LT	Buried outlet outside R/W fence. Reestablish outlet	Replace pipe and establish outlet
M-708		506+10	518+36	LT	Buried outlet outside R/W fence. Clean out pipe & grade outlet to drain	Replace pipe and establish outlet
M-709		501+40 (RSH)	518+36	LT	Clean out clogged outlet & pipe, Remove sediment buildup & regrade outlet to drain	See M-708
M-718		491+92	?	LT	Clean out outlet ditch & remove tree	Clean out ditch and remove tree

SIGNATURE $$$$

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	3-C
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DRAINAGE MAINTENANCE APPROACH

I-40 WEST 2 OF 4

Item Number	NCDOT Box #	NCDOT Station	Proposed Station	RT/LT	RFP Required Repairs	Proposed Repairs
M-250	352	482+35.1	499+80	LT	Construct concrete apron & replace missing grate	Replace structure
M-251	353	477+66	492+69	LT	Construct concrete apron & clean out sediment around structure	? Not found
M-252	354	469+85	485+67	LT	Repair drainage structure & pipe, regrade & replace apron, & remove vegetation	Replace structure
M-253	355	469+85	485+67	LT	Repair drainage structure & pipe, regrade & replace apron, & remove vegetation	Repair structure & pipe, regrade & replace apron, & remove vegetation
M-254	355	469+21+/-	487+61	LT	Remove trees & repair dislodged FES	Remove trees and remove/reset FES or extend pipe as needed
M-255	356	468+68+/-	485+40	LT	Remove trees at outlet & construct dissipater	Remove trees and construct RipRap dissipator in stream and along banks
M-256	357	469+00+/-	485+26		Remove trees at outlet & over pipe	Remove trees
M-257	358	466+09+/-	482+18	LT	Clean out pipe & remove trees over pipe, grade outlet to drain, & remover sediment form concrete ditch	Remove trees and clean out ditch
M-258	360	461+84+/-	479+40	LT	Construct concrete apron	Replace structure
M-259	359	469+13.7	485+27	LT	Remove trees at outlet, reset FES, & construct dissipater	RipRap Present. FES Stable. Remove all trees over pipe and in short ditch section (no grubbing)
M-260	361	476+40.8	492+39	LT	Construct concrete apron & regrade ditch	Replace structure
M-262	363	472+11+/-	487+81	LT	Remove trees at outlet & clean out pipe & drainage outlet	Remove trees and clean out pipe
M-266	367	458+79.1	475+05	LT	Construct concrete apron	Construct concrete apron
M-267	368	458+38.2	474+66	LT	Construct concrete apron & repair asphalt shoulder	Replace structure
M-268	369	457+43.3	456+60	LT	Construct concrete apron, check grates (replace if needed), clean out ditch under bridge to ensure drainage to box	Replace structure
M-269	370	356+20.9	472+50	LT	Remove trees at pipe outlet over pipe	Remove trees
M-270		454+24.6	470+47	LT	Remove tree over pipe & cleanout adjacent pipe & daylight to drain	Remove tree and clean out pipes/stream (adjacent pipe may not exists - needs to be field verified)
M-289	373	444+98+/-	459+74	LT	Clean out underdrain & daylight	Clean out underdrain
M-290	374	444+43+/-	460+89	LT	Remove sediment loading & clean out pipes. This system causes I-40 East flooding on heavy rain events	Clean out pipes/stream
M-291	375	443+67+/-	459+70	RT	Clean out ditch	Clean out ditch
M-292	376	456+20.9	462+80	LT	Remove tree & cleanout pipe & ensure positive drainage	Remove tree and clean out pipe
M-298	382	409+12.0	425+40	LT	Construct concrete apron	Construct concrete apron
M-299	383	407+14.4	423+42	LT	Construct concrete apron	Construct concrete apron
M-306	389	384+65+/-	400+93		Repair shoulder washout & curb & construct additional drainage structure at this location	? Not found
M-307	390	384+65+/-	400+93		Repair shoulder	? Not found
M-308	390	384+65+/-	400+93		Remove tree, clean out outlet & pipe to ensure drainage, & slip-line pipe	Replace with new system
M-309	391	379+65+/-	400+93	LT	Remove trees & clean out outlet	Replace pipe
M-310	392	379+65+/-	400+93	LT	Replaces FES, clean out pipe, & slip-line pipe	Replace pipe
M-311	392	379+92+/-	395+99	LT	Clean out pipe & drainage outlet to provide positive drainage & slip-line pipe	Clean outlet and slip-line
M-315	394	371+01+/-	387+11	LT	Repair shoulder & cable pull at end of bridge	Repair shoulder and cable pull
M-317	396	370+31.6	385+40	LT	Construct concrete apron, remove trees, & clean out debris around structure	Replace structure
M-319	398	364+43.3	380+72	LT	Construct concrete apron & repair pipe & drainage structure	Replace structure
M-320	399	362+45.6	378+74	LT	Construct concrete apron & repair pipe & drainage structure	Replace structure
M-332-Old Garner Bridge		342+00	358+32	LT	Replace curb. Curb has settled at bridge below top of box elevation	Replace structure
M-333		same as 332	358+32		same as 332	Replace structure
M-331	3110	335+98.2	352+26		Clean out pipe, daylight outlet to drain, & slip-line pipe	Replace pipe
M-335	3115	336+30	349+56	LT	Repair washout behind curb & on slope	Install SBG & repair slopes
M-336	3116	Hammond Rd Ramp	349+56		Repair washout behind curb & on slope	Install SBG & repair slopes
M-342	3119	329+23.7	345+52	LT	Clean out curb line & drainage system	Replace structure
M-343	3120	329+23.7	345+52	LT	Clean out curb line & drainage system	Replace structure

I-40 WEST 3 OF 4

Item Number	NCDOT Box #	NCDOT Station	Proposed Station	RT/LT	RFP Required Repairs	Proposed Repairs
M-345	3121	326+25.5	342+53	LT	Clean out curb & remove vegetation	Replace structure
M-350	3121	326+17+/-	342+44	LT	clean out pipe & reestablish outlet drainage	Replace pipe
M-351	3121A	326+00+/-	340+76	LT	Clean out pipe & drainage inlet	Plug, fill and abandon. Gore to be re-graded
M-352	3122	326+00+/-	340+76	LT	Clean out pipe & drainage inlet	Plug, fill and abandon. Gore to be re-graded
M-353	3122	315+42+/-	332+62	LT	Repair shoulder washout	Install SBG & repair washout
M-358	3126	327+56	343+75	LT	Clean out pipe & grade outlet to drain	Clean out pipe and grade outlet
M-360	3128	329+21+/-	345+39	LT	Clean out ditch & drainage system	Clean out ditch and system
M-361	3129	329+25+/-	345+39	LT	Construct concrete apron	Replace structure
M-363	3129	Hammond Rd	343+57	LT	Construct concrete apron	Construct concrete apron
M-366	3132A	Hammond Rd	343+57	LT	Remove trees over outlet	Remove trees/replace sign
M-367	3132B	319+98+/-	336+03	LT	Repair washout on shoulder	Install SBG
M-368	3132C	298+65	314+98	LT	Clean out curb line and drainage system	Install SBG, construct new structure; convert ex. structure to JB.
M-369	3133	298+65	314+98	LT	Clean out curb line	Same structure as M-368
M-370	3133	298+65	312+24	LT	Repair washout on shoulder	Repair as stated
M-371	3133A	294+49	310+76	LT	Repair washout on shoulder	Will be repaired during construction
M-376	3136	285+43	301+68	LT	Clean out pipe and outlet	Will be repaired during construction
M-382	3142	278+94	295+19	LT	Repair shoulder	Will be repaired during construction
M-384	2001	280+62	296+87	LT	Remove debris and trash around structure and seed area	Pond outlet structure will be cleaned and repaired as needed.
M-385	2002	281+67	297+95	LT	Replace FES	Replace structure
M-388	2005	273+90	290+15	LT	Repair shoulder	Will be repaired during construction
M-391		268+36	284+61	LT	Sink Hole EOP. Repair shoulder	Will be repaired during construction
M-392	2006	267+59	283+84	LT	Repair shoulder	Will be repaired during construction
M-393		265+72	281+97	LT	Clean out pipe and daylight outlet to drain.	Clean out pipe and grade to drain. Do not impact adjacent wetlands
M-396	2008	263+03	279+28	LT	Remove tree over FES, clean out pipe, and daylight outlet to drain	Remove tree, clean out pipe, and minor grading to drain. Place standard rip rap apron.
M-402	2013	242+24	260+10	LT	Clean out pipe and daylight outlet to drain.	Clean out pipe and grade to drain.
M-403	2014	238+65	254+90	LT	Uncover structure	Uncover/clean structure. Remove vegetation & debris
M-405	2015	238+65	254+90	LT	Remove vegetation and debris build up around structure	Same structure as M-403
M-406	2015	239+39	255+81	LT	Repair shoulder, replace with pavement and construct shoulder berm gutter	Repair shoulder; place SBG
M-407	2016	238+93	255+22	LT	Remove trees at outlet and over pipe	Remove trees
M-411	2020	238+67	254+92	LT	Uncover buried drainage structure, clean out drainage system, and regrade lateral ditch	Replace structure
M-412	2021	232+78	249+03	LT	Construct concrete apron and regrade around drainage structure	Construction concrete apron and minor regrading.
M-413	2500	232+73	248+49	LT	Replace FES and slip line pipe if left in place	Remove FES & preserve pipe
M-414	2501	226+00	246+00	LT	Remove tree, construct energy dissipater, and slip line pipe	Remove tree, construct rip rap pad and preserve pipe.
M-415	2502	225+95	245+82	LT	Repair shoulder washout and replace funnel drain with drainage structure	Repair shoulder
M-416	2503	225+84	244+17	LT	Repair washout on shoulder	Repair shoulder
M-417	2504	224+64	242+40	LT	Repair shoulder washout and replace funnel drain with drainage structure	Repair shoulder, remove funnel drain
M-418	2505	222+83	239+14	LT	Replace funnel drain with drainage structure	Remove funnel drain
M-419	2506	219+85	236+10	LT	Remove trees around pipe outlet and over pipe	Remove trees
M-420	2507	218+81	234+25	LT	Construct concrete apron, remove trees, and repair hole	Remove trees & construct concrete apron.
M-421	2508	214+65	230+90	LT	Construct concrete apron and repair the pipe and drainage structure	Replace structure and repair pipe as needed
M-423	2510	205+46	221+71	LT	Construct concrete apron and repair the pipe and drainage structure	Replace structure & pipe
M-424	2511	200+52	216+77	LT	Construct concrete apron and repair the pipe and drainage structure	Replace structure & pipe
M-425	2512	195+48	211+73	LT	Construct concrete apron, remove vegetation, and repair the pipe and drainage structure	Replace structure & pipe
M-426	2513	190+04	206+29	LT	Replace with drainage structure	Remove funnel drain
M-427	2514	188+23	204+48	LT	Replace with drainage structure	Remove funnel drain
M-428	2515	186+78	203+03	LT	Replace with drainage structure	Remove funnel drain
M-429	2516	184+60	200+85	LT	Replace with drainage structure	Remove funnel drain

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6/2/99

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	3-D
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DRAINAGE MAINTENANCE APPROACH

I-40 WEST 4 OF 4

Item Number	NCDOT Box #	NCDOT Station	Proposed Station	RT/LT	RFP Required Repairs	Proposed Repairs
M-430	2517	184+83	201+08	LT	Clean out ditch	Clean out as requested
M-432	2519	186+02	202+27	LT	Repair ditch and riprap with fabric	Repair ditch with rip rap/fabric
M-433	2520	179+62	195+87	LT	Remove sediment from ditch to ensure drainage	Remove sediment & ensure positive drainage.
M-434	2521	179+63	195+88	LT	Construct concrete apron	Replace structure
M-437	2524	170+07	186+32	LT	Clean out BDO	Clean BDO
M-438	2525	165+06	181+31	LT	Clean out underdrain and daylight	Clean out as requested
M-439	2526	163+52	179+77	LT	Replace with drainage structure and replace 12" pipe with 15" pipe	Remove funnel drain
M-440	2527	161+52	177+77	LT	Replace with drainage structure and replace 12" pipe with 15" pipe	Remove funnel drain
M-441		160+12	176+37	LT	Repair slope washout	Repair slope
M-442	2528	159+52	175+77	LT	Replace with drainage structure and replace 12" pipe with 15" pipe	Remove funnel drain
M-443	2529	157+52	173+77	LT	Replace with drainage structure and replace 12" pipe with 15" pipe	Remove funnel drain
M-445	2531	153+82	170+07	LT	Remove tree at outlet and clean out pipe and daylight outlet to drain	Remove tree, clean out pipe, and minor grading to drain.
M-448	2534	145+32	161+57	LT	Replace grates with correct grates	Replace structure
M-450		127+00	143+89	LT	Replace curb and gutter from bridge to drainage structure (Gorman St)	Same item as M-95; Overlay Bridge, repair curb
M-451	2536	102+77	119+02	LT	Construct concrete apron and repair pipe and box	Replace structure
M-452	1537	101+85	118+10	LT	Remove trees at FES and over the pipe	Remove trees
M-453	1538	100+35	116+60	LT	Repair dislodged pipe, clean out pipe, remove tree, and grade outlet to drain	Repair during construction
M-454	1539	97+65	113+90	LT	Remove trees at FES and over the pipe	Remove trees
M-455	1540	100+41	116+66	LT	Replace with drainage structure and replace 12" pipe with 15" pipe	Remove funnel drain
M-456	1541	96+99	113+24	LT	Replace with drainage structure and replace 12" pipe with 15" pipe	Remove funnel drain
M-458	1543	90+63	106+88	LT	Remove and replace last section of pipe and paved ditch and repair concrete ditch	Replace concrete ditch with rip rap/filter fabric. Check last section of pipe and reset if needed.
M-459	1544	90+09	106+34	LT	Replace with drainage structure and replace 12" pipe with 15" pipe	Remove funnel drain
M-460	1545	89+11	105+36	LT	Replace with drainage structure and replace 12" pipe with 15" pipe	Remove funnel drain
M-461	1546	88+24	104+49	LT	Repair/replace headwall and slip line pipes. Determine need for cross veins	Repair/replace bricks as needed. Preserve pipes.
M-462	1547	87+26	103+51	LT	Repair washout and replace drainage	Repair washhout; remove pipe.
M-463	1548	87+36	103+61	LT	Repair washout	Repair washout.
M-466	1551	79+84	96+09	LT	Construct concrete apron	Replace Structure
M-469	1554	70+14	85+75	LT	Construct concrete apron	Replace Structure
M-470	1555	66+46	82+23	LT	Construct concrete apron	Replace concrete apron
M-471	1556	66+48	82+25	LT	Remove tree at FES	Remove tree
M-472	1557	68+27	84+05	LT	Remove tree at pipe inlet and slip line pipe	Remove tree and preserve pipe.
M-473		62+44	78+69	LT	Replace with drainage structure and replace 12" pipe with 15" pipe	Remove funnel drain
M-474	1558	60+18	76+43	LT	Slip line pipe	Replace pipe under roadway; retain from new structure to outlet.
M-475		59+80	76+05	LT	Replace guardrail and damaged curb	Repair during construction
M-476	1559	57+35	74+18	RT	Remove fallen trees at pipe inlet, repair cracked headwall, and slip line pipe	Remove debris, repair headwall, preserve pipe
M-477	1560	55+18	71+00	LT	Slip line pipe and move rip rap to open drainage outlet	Remove Pipe (not replaced)
M-478		54+52	70+77	LT	Replace with drainage structure, replace 12" pipe with 15" pipe, repair washout on slope, and replace guardrail	Remove funnel drain; repair slope
M-480		51+88	68+13	LT	Replace funnel drain with drainage structure and repair washout	Remove funnel drain

I-40 MEDIAN

Item Number	NCDOT Box #	NCDOT Station	Proposed Station	RT/LT	RFP Required Repairs	Proposed Repairs
M-483	1563	65+63.2	82+00	Median	Construct concrete apron, repair drainage structure and pipe, and backfill	Replace structure and pipe
M-486	1565	72+13	91+00	Median	Construct concrete apron	Replace structure and pipe
M-488	1567	80+99	97+36	Median	Construct concrete apron, repair drainage structure and pipe, and backfill	Replace structure, repair pipe as needed
M-491	1570	89+63	106+00	Median	Construct concrete apron	Replace structure
M-493	1572	96+00	112+37	Median	Clean out shoulder drain and provide positive drainage	Remove shoulder drains
M-495	1574	103+94	120+31	Median	Construct concrete apron	Replace structure
M-496	1575	110+31	126+68	Median	Construct concrete apron	Replace structure
M-497	1576	110+48	126+85	Median	Construct concrete apron	Replace structure
M-498	1577	113+63	130+00	Median	Construct concrete apron	Replace structure
M-499	1578	120+63	137+00	Median	Construct concrete apron	Replace structure
M-500	1579	124+88	141+25	Median	Construct concrete apron and repair concrete ditch	Replace structure; convert to blind JB
M-502	1581	134+26	150+63	Median	Construct concrete apron	Replace structure
M-503	1582	138+61	154+98	Median	Construct concrete apron	Replace structure
M-504	1583	141+09	157+46	Median	Construct concrete apron	Replace structure
M-505	1584	144+99	161+36	Median	Construct concrete apron	Replace structure
M-508	1587	155+37	171+74	Median	Construct concrete apron	Replace structure
M-509	1588	156+64	173+01	Median	Clean out shoulder drain and provide positive drainage including median ditch	Remove shoulder drains
M-511	1590	164+63	181+00	Median	Construct concrete apron	Replace structure
M-512	1591	169+73	186+10	Median	Construct concrete apron, repair drainage structure and pipe, and backfill	Replace structure and pipe
M-514	1593	178+64	195+01	Median	Construct concrete apron	Replace structure
M-515	1594	183+64	200+01	Median	Construct concrete apron	Replace structure
M-516	2701	188+04	204+41	Median	Construct concrete apron	Replace structure
M-517	2702	195+63	212+00	Median	Construct concrete apron, repair drainage structure and pipe, and backfill	Replace structure and pipes
M-518	2703	200+62	216+99	Median	Construct concrete apron, repair drainage structure and pipe, and backfill	Replace structure and pipes
M-519	2704	205+62	221+99	Median	Construct concrete apron	Replace structure and pipes
M-520	2705	209+63	226+00	Median	Construct concrete apron, repair drainage structure, and reset anchor unit	Replace structure and pipes, remove guiderail and anchor unit and replace
M-521	2706	214+06	230+43	Median	Construct concrete apron, repair drainage structure and pipe, and backfill	Replace structure and pipes
M-525	2710	229+65	246+02	Median	Construct concrete apron, repair drainage structure and pipe, and backfill	Replace structure and pipe
M-527	2712	234+71	251+08	Median	Construct concrete apron	Replace structure
M-529	2714	247+76	264+13	Median	Construct concrete apron, repair drainage structure and pipe, and backfill	Replace structure and pipe
M-533	2718	259+18	275+55	Median	Clean out ditch at drainage structure	Replace structure and pipes
M-535	2720	259+18	275+55	Median	Clean out ditch at drainage structure	Replace structure and pipes
M-536	2720	264+67	281+04	Median	Construct concrete apron	Replace structure
728	105	610+80 CL			Repair ditch mat & reseed	Repair ditch and reseed
729	106	615+10 CL			Clean out sediment to ensure proper drainage	Clean out sediment

THE STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	3-E
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DRAINAGE MAINTENANCE APPROACH

I-40 INTERCHANGES

Item Number	NCDOT Box #	NCDOT Station	Proposed Station	RT/LT	RFP Required Repairs	Proposed Repairs
M-1		SW Quad Gorman Street			Remove trees around pipe outlet, replace FES, slip-line pipe, and grade drainage outlet	Repair as stated (same as M-68)
M-4		SW Quad Gorman Street			Remove trees around pipe outlet and replace or slip-line pipe	Repair as stated (same as M-70)
M-5		SW Quad Gorman Street			Remove trees around pipe outlet, clean out ditch, and remove debris from around box	Repair as stated; same structure as M-4 (same as M-70)
M-7		NE Quad Gorman Street			Replace funnel drain	Remove funnel drain (same as M-93)
M-8		NE Quad Gorman Street			Replace funnel drain	Remove funnel drain (same as M-90)
M-10		SW Quad Lake Wheeler Road			Replace concrete apron	New concrete apron and concrete ditch. New sag grate. (same as M-128)
M-11		NE Quad Lake Wheeler Road			Replace curb with shoulder berm gutter	New shoulder berm gutter with new drainage structures will be installed as needed (same as M-406)
M-12		NE Quad Lake Wheeler Road			Repair washed out slope	Repair washout (same area as M-406)
M-13		NE Quad Lake Wheeler Road			Repair washed out slope	Repair washout (same area as M-406)
M-14		NE Quad Lake Wheeler Road			Repair washed out slope	Repair washout (same area as M-406)
M-15		NW Quad Lake Wheeler Road			Replace funnel drain with masonry drainage structure and replace pipe	Remove funnel drain (same as M-415)
M-16		NW Quad Lake Wheeler Road			Restore washed out area and replace funnel drain with drainage structure	Remove funnel drain; repair washout (same area as M-416)
M-17		NW Quad Lake Wheeler Road			Restore washed out area and replace funnel drain with drainage structure	Remove funnel drain; repair washout (same area as M-416)
M-18		NW Quad Lake Wheeler Road			Restore washed out area and replace funnel drain with drainage structure	Remove funnel drain; repair washout (same area as M-416)
M-19		NW Quad Lake Wheeler Road			Restore washed out area and replace funnel drain with drainage structure	Remove funnel drain; repair washout (same as M-417)
M-20		NW Quad Lake Wheeler Road			Restore washed out area and replace funnel drain with drainage structure	Remove funnel drain; repair washout (same as M-418)
M-21		Poole Rd Interchange			Repair seperated joint of a 30" CMP, slip line pipe (located halfway up the ramp)	Slipline pipe
M-22					Slipline pipe	Slipline pipe
M-23		I-440/I-40 Interchange I-40 on Ramp			Clear tree at outlet & reset the separated joint & FES	Remove tree and reset FES or extend pipe as needed
M-24		same as 23			same as 23	See M-23
M-25					Repair box & pipe & construct a new apron	Construct concrete apron
M-26					Repair box & pipe & construct a new apron	Construct concrete apron
M-27					Construct a new apron	Construct concrete apron
M-28		Rock Quarry Interchange-Off Ramp EB			Repair box & pipe & construct a new apron	Replace structure
M-29					Repair box & pipe & construct a new apron	Replace structure
M-30					Repair box & pipe & construct a new apron	Replace structure
M-31		On Ramp EB			Restore washed out box	Replace structure
M-32					Restore buried/overgrown drainage system from stock pile going east	Restore drainage system
M-33		Off Ramp WB			Repair box & pipe & construct a new apron	Replace structure
M-34					restore box & paved ditch that has been washed out	Restore drainage system
M-35		On Ramp WB			Restore possible sink hole over 54" pipe, draining from the gore I-40 West	Restore sink hole
M-36					Repair the curb & gutter that is settling & causing drainage issues. (Located at the end of merge lane)	Install SBG
M-43		Hammond Rd Interchange - WB Off Ramp			Repair the gutter that has settled & restore the slope that has been washed out	Install SBG
M-44		Hammond Rd Interchange -NW			Relieve ponding water	Relieve ponding water and fill gore area
M-45					Rehabilitate paved ditch	Ditch removed. Gore area filled.

$USERNAME$
$DATE$
$TIME$

6/16/99

COMPUTED BY: JMB DATE: 6/2014
CHECKED BY: JMT DATE: 6/2014

"N" = DISTANCE FROM EDGE OF LANE TO FACE OF GUARDRAIL.
TOTAL SHOULDER WIDTH = DISTANCE FROM EDGE OF TRAVEL LANE TO SHOULDER BREAK POINT.
FLARE LENGTH = DISTANCE FROM LAST SECTION OF PARALLEL GUARDRAIL TO END OF GUARDRAIL.
W = TOTAL WIDTH OF FLARE FROM BEGINNING OF TAPER TO END OF GUARDRAIL.
G = GATING IMPACT ATTENUATOR TYPE 350
NG = NON-GATING IMPACT ATTENUATOR TYPE 350

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	3-AA

GUARDRAIL SUMMARY

SURVEY LINE	BEG. STA.	END STA.	LOCATION	LENGTH			WARRANT POINT		"N" DIST. FROM E.O.L.	TOTAL SHOULDER WIDTH	FLARE LENGTH		W		ANCHORS										IMPACT ATTENUATOR TYPE 350						REMARKS
				STRAIGHT	SHOP CURVED	DOUBLE FACED	APPROACH END	TRAILING END			APPROACH END	TRAILING END	APPROACH END	TRAILING END	CAT-1	TL-3	B-77										PERMITTED						
																											NO.	G	NG				
-L1-	46+50.00	48+81.25	LT	231.25'			46+60.00	46+50.00	14'	17'	50'		1		1	1																SIGN SUPPORT
-L1-	69+18.75	75+75.00	RT	656.25'			70+75.00	75+75.00	14'	17'	50'		1		1	1																FILL WARRANT
-L1-	70+80.00	80+36.25	LT	956.25'			78+75.00	70+80.00	14'	17'	50'		1		1	1																FILL WARRANT
-L1-	100+68.75	107+25.00	RT	656.25'			102+25.00	107+25.00	14'	17'	50'		1		1	1																FILL WARRANT
-L1-	102+25.00	107+81.25	LT	556.25'			106+25.00	102+25.00	14'	17'	50'		1		1	1																FILL WARRANT
-L1-	112+18.75	118+25.00	RT	606.25'			113+75.00	118+25.00	14'	17'	50'		1		1	1																FILL WARRANT
-L1-	113+25.00	118+31.25	LT	506.25'			116+75.00	113+25.00	14'	17'	50'		1		1	1																FILL WARRANT
-L1-	138+13.68	141+19.93 (BR)	RT	306.25'			141+19.93 (BR)		14'	17'	50'		1			1	1															BRIDGE
-L1-	143+75.44 (BR)	146+81.69	LT	306.25'			143+75.44 (BR)		14'	17'	50'		1			1	1															BRIDGE
-L1-	170+75.00	181+31.25	LT	1,056.25'			179+75.00	170+75.00	14'	17'	50'		1		1	1																FILL WARRANT
-L1-	174+25.00	182+81.25	RT	856.25'			175+75.00	182+81.25	14'	17'	50'		1		1	1																FILL WARRANT
-L1-	193+91.25	207+60.00	RT	1,368.75'			195+50.00	207+60.00	14'	17'	50'		1		1	1																FILL WARRANT, ITS SIGN STRUCTURE
-L1-	198+75.00	208+06.25	LT	931.25'			206+50.00	198+75.00	14'	17'	50'		1		1	1																FILL WARRANT
-L1-	276+30.00	279+11.25	LT	281.25'			276+50.00	276+30.00	14'	17'	50'		1		1	1																SIGN SUPPORT
-RP4A-	18+98.75	24+80.00	RT	581.25'			20+30.00	24+80.00	14'	17'	50'		1		1	1																FILL WARRANT
-RP4B-	24+55.00	26+86.25	LT	231.25'			25+55.00	24+55.00	14'	17'	50'		1		1	1																FILL WARRANT
-RP4D-	24+53.75	27+85.00	LT	331.25'			27+50.00	24+50.00	14'	17'	50'		1		1	1																FILL WARRANT
-RP6A-	10+18.75	13+00.00	RT	281.25'			12+77.50	13+00.00	14'	17'	50'		1		1	1																SIGN SUPPORT
-RP6A-	19+80.00	22+17.50	RT	237.50'			21+10.00	22+17.50	14'	17'	50'		1			1																BRIDGE
-RP6C-	23+50.00	25+56.25	RT	206.25'			24+30.00	25+56.25	14'	17'	50'		1		1	1																FILL WARRANT

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6/2/99

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	3-AB

SHOULDER DRAIN SUMMARY - AREAS 1 & 2A

LINE	SIDE	BEGIN STA.	END STA.	OUTLET LOCATIONS
-L1LT-	LT, OUTSIDE SHOULDER	26+27	37+90	26+27*, 31+20(2GI), 33+20(MH), 36+00*, 37+90(2GI)
-L1LT-	LT, OUTSIDE SHOULDER	49+00	52+80	50+40(2GI), 52+80(2GI)
-L1LT-	LT, OUTSIDE SHOULDER	55+90	59+35	57+80(2GI), 59+35*
-L1RT-	RT, OUTSIDE SHOULDER	65+25	70+00	68+00*, 70+00*
-L1RT-	RT, OUTSIDE SHOULDER	90+50	101+70	91+50(2GI), 94+50(2GI), 96+00(2GI), 99+00*
-L1LT-	LT, OUTSIDE SHOULDER	99+08	101+00	99+08*
-L1LT-	LT, OUTSIDE SHOULDER	127+50	130+00	130+00(2GI)
-L1LT-	LT, OUTSIDE SHOULDER	131+00	138+50	131+00*, 138+50*
-L1RT-	RT, OUTSIDE SHOULDER	252+00	261+75	255+00*, 258+00(2GI), 261+75*
-L1RT-	RT, OUTSIDE SHOULDER	262+00	285+70	264+50*,267+00*, 270+00*, 272+20(2GI), 274+00(2GI), 276+00(2GI), 277+25(TBJB), 278+00(2GI), 281+00*, 283+50*
-L1LT-	LT, OUTSIDE SHOULDER	280+54	290+40	280+54*, 281+30(TBJB), 284+30*, 287+00(2GI), 288+50*

*OUTLET LOCATION IS A CONCRETE PAD (NCDOT STD. 816.01)

$$$$$$SYTIME$$$$
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8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON N. TALLEY

NORTH CAROLINA PROFESSIONAL SEAL 36188 ENGINEER WILLIAM WEATHERSBEE

INTERSTATE 40 INTERSTATE 440 PORTION

GRANITE RS&H DESIGN-BUILD SERVICES

NAD 83/NSRS 2007

-LI- CURVE DATA
PI Sta 10+39.93
△ = 26° 11' 02.9" (RT)
D = 0° 59' 54.5"
L = 2,622.42'
T = 1,334.52'
R = 5,738.34'
V = 74 MPH
SE = 04

-LRTI- CURVE DATA
PI Sta 19+44.75
△ = 7° 35' 51.4" (RT)
D = 1° 00' 16.0"
L = 756.40'
T = 378.75'
R = 5,704.20'
V = 73 MPH
SE = 04

-LLTI- CURVE DATA
PI Sta 19+51.43
△ = 7° 37' 10.7" (RT)
D = 0° 59' 23.7"
L = 769.73'
T = 385.43'
R = 5,787.94'
V = 74 MPH
SE = 04

-LI- POC Sta.15+66.00 =
-LLTI- PC Sta. 15+66.00 (46.00' LT)

BEGIN TIP PROJECT I-5338
-LI- STA. 15+66.00

-LI- POC Sta.15+66.00 =
-LRTI- PC Sta. 15+66.00 (46.00' RT)

BEGIN GRADE
BEGIN PAVEMENT RECONSTRUCTION
-LI- Sta.18+82.61 =
-LLTI- Sta.18+85.05

BEGIN SPECIAL MEDIAN BARRIER WALL
BEGIN TYPE 12 MEDIAN BARRIER WALL
-LI- Sta.19+00.00 (11.20' LT) =
-LLTI- Sta.19+03.02 (31.25' RT)

BEGIN MEDIAN RETAINING WALL
-RWMI- Sta.10+00.00
-LI- Sta.19+00.00 (9.95' LT)

BEGIN GRADE
BEGIN PAVEMENT RECONSTRUCTION
-LI- Sta.18+74.34 =
-LRTI- Sta.18+72.02

END MEDIAN RETAINING WALL
-RWMI- Sta.10+20.09
-LI- Sta.19+00.00 (10.14' RT)

MATCHLINE SHEET 5 -LI- STA. 21+00.00

MEDIAN V DITCH SEE DETAIL D

FOR -LI- LT PROFILE, SEE SHEET NO. 45
FOR -LI- RT PROFILE, SEE SHEET NO. 45
FOR MEDIAN RETAINING WALL SEE PLANS W-1 THRU W-5

24-JUN-2014 15:28
I-5338_ROD_SHT_4.dgn
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PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	5
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M TALLEY

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 36188 ENGINEER WILLIAM WEATHERSBEE

INTERSTATE 40 INTERSTATE 440 FORTIFY

GRANITE RS&H DESIGN-BUILD SERVICES

NAD 83/NSRS 2007

REVISIONS 8/17/99

MATCHLINE SHEET 4 -L1- STA. 21+00.00

MATCHLINE SHEET 6 -L1- STA. 34+50.00

-LLT1- CS Sta. 23+35.73

-LI- CS Sta. 23+27.83

-LRT1- CS Sta. 23+22.40

-LLT1- ST Sta. 26+35.73

-LI- ST Sta. 26+27.83

-LRT1- ST Sta. 26+22.40

-LI- TS Sta. 33+10.66

BEGIN 22' MEDIAN
-LI- POT Sta. 31+76.00 =
-LLT1- Sta. 31+82.43 (23.00' LT)

BEGIN 22' MEDIAN
-LI- POT Sta. 31+76.00 =
-LRT1- POT Sta. 31+69.90 (23.00' RT)

END TYPE 12 MEDIAN BARRIER WALL
BEGIN TYPE IIB MEDIAN BARRIER WALL
-LI- Sta. 27+00.00 (0.00')

END TYPE IIB MEDIAN BARRIER WALL
BEGIN TYPE IIA MEDIAN BARRIER WALL
-LI- Sta. 30+50.00 (0.00')

END TYPE IIA MEDIAN BARRIER WALL
BEGIN TYPE 2 MEDIAN BARRIER WALL
-LI- Sta. 32+50.00 (0.00')

END TYPE 2 MEDIAN BARRIER WALL
BEGIN TYPE IIA MEDIAN BARRIER WALL
-LI- Sta. 33+50.00 (0.00')

ERGS II REO OWNER LLC
DB 14618 PG 1066
BM 1985 PG 2068

KSICARY 483 LLC
DB 8598 PG 3178
BM 1990 PG 2068

MEDIAN V DITCH SEE DETAIL D

CULVERT PRESERVATION SEE DETAIL H

RETAIN AND PRESERVE

RETAIN

GUARDRAIL

GRADE TO DRAIN

EXISTING R/W

-LI- CURVE DATA
PIs Sta 24+27.84
Θs = 1° 29' 51.7"
Ls = 300.00'
LT = 200.01'
ST = 100.01'

-LLT1- CURVE DATA
PIs Sta 24+35.73
Θs = 1° 29' 05.5"
Ls = 300.00'
LT = 200.01'
ST = 100.01'

-LRT1- CURVE DATA
PIs Sta 24+22.40
Θs = 1° 30' 24.0"
Ls = 300.00'
LT = 200.01'
ST = 100.01'

FOR -L1- LT PROFILE, SEE SHEET NO. 46
FOR -L1- RT PROFILE, SEE SHEET NO. 46

23-JUN-2014 09:10
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8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	6
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON N TALLEY

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 36188 ENGINEER WILLIAM WEATHERSBEE

INTERSTATE 40 INTERSTATE 440 PORTION

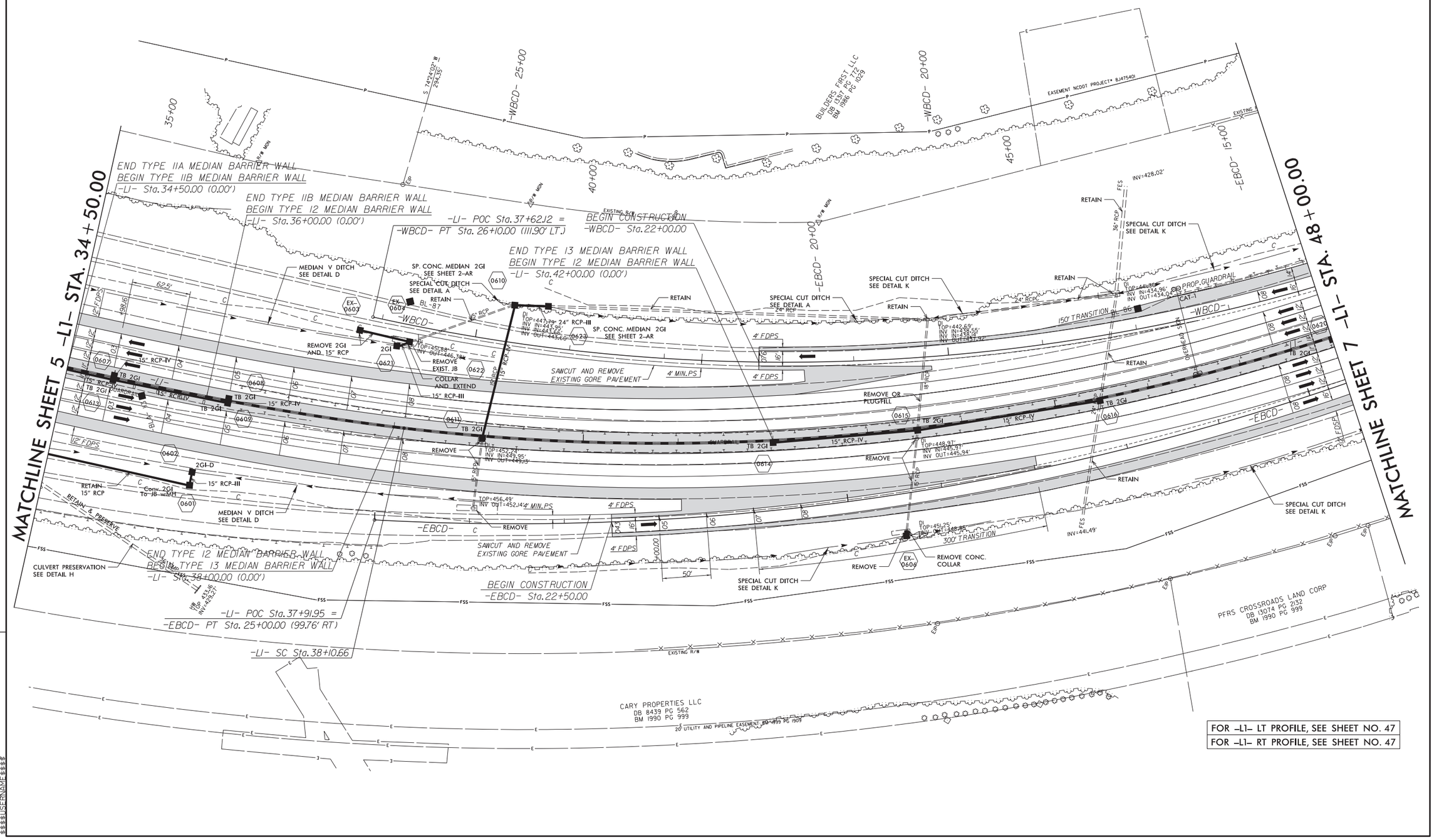
GRANITE RS&H DESIGN-BUILD SERVICES

NAD 83/NSRS 2007

-WBCD- CURVE DATA
PI Sta 18+64.14
Δ = 45° 14' 29.4" (RT)
D = 2° 51' 53.2"
L = 1,579.23'
T = 833.37'
R = 2,000.00'
V = 72 MPH
SE = 08

-EBCD- CURVE DATA
PI Sta 18+02.89
Δ = 30° 40' 22.2" (RT)
D = 2° 08' 45.3"
L = 1,429.36'
T = 732.25'
R = 2,670.00'
V = 80 MPH
SE = 08

-LI- CURVE DATA
PIs Sta 36+44.20
Θs = 6° 15' 25.0"
Ls = 500.00'
LT = 333.54'
ST = 166.86'



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8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON W. TALLEY	NORTH CAROLINA PROFESSIONAL SEAL 36188 ENGINEER WILL WEATHERSBEE

INTERSTATE 40 INTERSTATE 440 BYPASS

GRANITE RS&H DESIGN-BUILD SERVICES

NAD 83 NSRS 2007

-WBCD- CURVE DATA
PI Sta 10+15.39
△ = 0° 47' 10.8" (RT)
D = 2° 33' 18.8"
L = 30.77'
T = 15.39'
R = 2,242.29'
V = 75 MPH
SE = 08

-EBCD- CURVE DATA
PI Sta 10+35.32
△ = 1° 43' 56.3" (RT)
D = 2° 27' 08.7"
L = 70.64'
T = 35.32'
R = 2,336.29'
V = 76 MPH
SE = 08

-LI- CURVE DATA
PI Sta 50+13.37
△ = 55° 25' 52.9" (LT)
D = 2° 30' 10.0"
L = 2,214.80'
T = 1,202.70'
R = 2,289.29'
V = 68 MPH
SE = 08

MATCHLINE SHEET 6 -L1- STA. 48+00.00

MATCHLINE SHEET 8 -L1- STA. 61+00.00

-WBCD- 15+00

50+00

55+00

60+00

-L1- POC Sta.54+20.00 = -WBCD- PC Sta.10+00.00 (47.00' LT)

-WBCD- PCC Sta. 10+30.77

-Y1- POT Sta.10+00.00

-Y1- JONES FRANKLIN RD

-EBCD- PCC Sta. 10+70.64

-L1- POC Sta.55+64.34 = -Y1- POT Sta.11+98.58

-L1- POC Sta.52+50.00 = -EBCD- PC Sta.10+00.00 (47.00' RT)

-L1- CS Sta.60+25.46

-Y1- POT Sta.14+77.52

MILLERBUILT CONSTRUCTION INC DB 1428 PG 1970 BM 1953 PG 78

PINNACLE PARTNERS LLC DB 8356 PG 2430 BM 1999 PG 1130

KEVIN D ATKINSON DB 12982 PG 164 BM 1999 PG 851

SHEHADEH ASHTON DB 12852 PG 1465 BM 1999 PG 851

DB 8022 PG 1198 BM 1999 PG 851

THE APARTMENTS AT CROSSROADS LLC DB 12346 PG 583 BM 2008 PG 1683

JMARK INVESTMENTS LLC DB 11131 PG 2413 BM 2001 PG 1186

RAIA SELF STORAGE MONTVILLE LLC DB 13262 PG 1196 BM 2000 PG 2263

SPECIAL CUT DITCH SEE DETAIL K

SPECIAL CUT DITCH SEE DETAIL A

RETAIN

REMOVE

PROPOSED TYPE 12 MEDIAN CONCRETE BARRIER WALL

REMOVE CONC. COLLAR

REMOVE 2GI

GRADE TO DRAIN

BRIDGE COLUMNS

EXIST. STRUCTURE TO REMAIN

FUTURE AUX. LANE AND 12' FDPS

300' TAPER

GRAU 350 TL-3

1440 VARIBLE WIDTH BST

20' UTILITY AND TRAVELING EASEMENT BM 2001 PG 1285

20' SANITARY EASEMENT BM 2006 PG 748

A PERMANENT SOIL REINFORCEMENT MAT (PSRM) SHALL BE PLACED ON 1.70:1 (H:V) TO 2:1 (H:V) SLOPES FROM:
-L1- STA. 56+75 LT TO -L1- STA. 57+25 LT.
-L1- STA. 54+75 RT TO -L1- STA. 55+25 RT.
-L1- STA. 56+25 RT TO -L1- STA. 56+75 RT.
SEE PERMANENT SOIL REINFORCEMENT MAT SPECIAL PROVISION.

FOR -L1- LT PROFILE, SEE SHEET NO. 48

FOR -L1- RT PROFILE, SEE SHEET NO. 48

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8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5331	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY

NORTH CAROLINA PROFESSIONAL SEAL 36188 ENGINEER WILLIAM WEATHERBEE

NAD 83/NSRS 2007

INTERSTATE 40 INTERSTATE 440 BYPASS

GRANITE RS&H DESIGN-BUILD SERVICES

-LI- CURVE DATA

PIs Sta 61+92.31	PIs Sta 69+78.63
Θs = 6° 15' 25.0"	Θs = 1° 12' 00.0"
Ls = 500.00'	Ls = 240.00'
LT = 333.54'	LT = 160.00'
ST = 166.86'	ST = 80.00'

MATCHLINE SHEET 7 -L1- STA. 61+00.00

MATCHLINE SHEET 9 -L1- STA. 74+50.00

END TYPE I2 MEDIAN BARRIER WALL
BEGIN TYPE IIB MEDIAN BARRIER WALL
-LI- Sta.62+50.00 (0.00')

-LI- SC Sta.70+58.62

-LI- TS Sta.68+18.62

-LI℄ ST Sta.65+25.46

END TYPE IIB MEDIAN BARRIER WALL
END SPECIAL MEDIAN BARRIER WALL
BEGIN TYPE IV STANDARD MEDIAN BARRIER
-LI- Sta.64+00.00 (0.00')

PROPOSED SBG
BEG STA 69+69 RT

PROPOSED MEDIAN CONCRETE BARRIER

RETAIN EXISTING CONCRETE BARRIER DO NOT DISTURB NOISEWALL

SPECIAL CUT DITCH SEE DETAIL K

CLASS 'B' RIP RAP EST 1 TON EST 5 SY GEO

PLACE TRANSISTION STONE AT OUTFALL OF DITCH

CULVERT PRESERVATION SEE DETAIL H

CLASS 'B' RIP RAP EST 2 TON EST 7 SY GEO

REMOVE OR PLUG/FILL

PROBABLE JB

FUTURE AUX. LANE AND 14' FDPS

FUTURE AUX. LANE AND 12' FDPS

1440 VARIABLE WIDTH BST

8:1 TAPER

300' TAPER

GUARDRAIL

PROP. GUARDRAIL C

RETAIN 2GI

RETAIN 15" RCP

RETAIN 42" RCP

36" RCP

18" RCP-III

15" RCP-III

15" RCP-IV

TB 2GI

GRAU 350 TL-3

WAYNERIDGE TOWNES ASSOCIATES DB 3411 PG 921 BM 1984 PG 275

WAYNERIDGE TOWNHOUSES HOMEOWNERS DB 4969 PG 700 BM 1984 PG 1846

JOSE T ASCENCIO-IBANEZ DB 10171 PG 669 BM 1990 PG 851

JEFF A CALLENDER DB 8481 PG 948 BM 1990 PG 851

JUSTIN SMITH U DB 10705 PG 2454 BM 1990 PG 851

CONSERVATION BUFFER BM 1984 PG 276

MARTIN MCINNIS INC DB 3285 PG 232 BM 1984 PG 1938

KARL V GODETTE DB 12953 PG 2622 BM 1983 PG 426

TERRY G HOLTHAUS DB 7643 PG 4444 BM 1983 PG 426

EASEMENT NCDOT PROJECT# 8J475401

20' DRAINAGE EASEMENT BM 1983 PG 426

ASHBOROUGH INVESTORS LLC DB 11215 PG 156 BM 2000 PG 356

FOR -L1- LT PROFILE, SEE SHEET NO. 49

FOR -L1- RT PROFILE, SEE SHEET NO. 49

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PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON N TALLEY

NORTH CAROLINA PROFESSIONAL SEAL 36188 ENGINEER WILL I WEATHERSBEE

INTERSTATE 40 INTERSTATE 440 PORTION

GRANITE RS&H DESIGN-BUILD SERVICES

NAD 83/NSRS 2007

8/17/99

REVISIONS

-LI- CURVE DATA
PI Sta 83+86.57
△ = 26° 05' 53.4" (RT)
D = 1° 00' 00.0"
L = 2,609.82'
T = 1,327.95'
R = 5,729.58'
V = 73 MPH
SE = 04

MATCHLINE SHEET 8 -LI- STA. 74+50.00

MATCHLINE SHEET 10 -LI- STA. 88+00.00

CITY OF RALEIGH DB 2437 PG 479

CITY OF RALEIGH DB 2437 PG 479

CITY OF RALEIGH DB 2880 PG 362

EASEMENT NCDOT PROJECT: BJ47540I

75+00

80+00

85+00

EXISTING R/W

PAVED DITCH

RETAIN

INV=370.53'

INV=380.55'

INV=400.20'

INV=367.85'

INV=395.15'

CULVERT PRESERVATION SEE DETAIL H

54" CMP

SPECIAL CUT DITCH SEE DETAIL B

SPECIAL CUT DITCH SEE DETAIL B

RETAIN & PRESERVE

18" CMP RETAIN

18" RCP RETAIN

LOCATION APPROX.

GRAU 350 TL-3

8:1 TAPER

GUARDRAIL

PROP. GUARDRAIL

FUTURE AUX. LANE AND 14' FDPS

FUTURE AUX. LANE AND 12' FDPS

15" RCP-III

18" RCP-III

TB 2GI

RETAIN BLIND JB

DI TOP=410.43' INV IN=402.89' INV OUT=402.68'

DI TOP=409.43' INV IN=404.02' INV OUT=403.81'

DI TOP=406.75' INV IN=397.10' INV OUT=397.02'

DI TOP=405.03' INV IN=398.19' INV OUT=398.53'

DI TOP=408.22' 2GI INV OUT=404.95'

DI TOP=405.35' 2GI INV OUT=400.03'

JB TOP=405.44' INV OUT=342.24'

JB WITH MH

CAT-1

PROPOSED MEDIAN CONCRETE BARRIER

SPECIAL CUT DITCH SEE DETAIL K

SPECIAL CUT DITCH SEE DETAIL K

SPECIAL CUT DITCH SEE DETAIL K

PROPOSED SBG END STA 75+50 RT

CLASS 'B' RIP RAP EST 2 TON EST 7 SY GEO

RETAIN

36" RCP

GREEN VALLEY DRIVE 60' R/W BM 1967 PG 118

EXISTING R/W

R/W MON

EIP

EIP 0.94' FIB 0.70' R/W

INV=384.17'

N 04°15'47" W 200.00'

S 10°09'22" W 100.00'

S 88°47'42" E 185.91'

S 84°34'48" E 59.58'

N 20°36'12" E 72.80'

S 17°01'44" W 217.67'

S 51°50' W 0.39'

132' EIP 0.70' R/W

WAKE COUNTY BOARD OF EDUCATION DB 13625 PG 1724 BM 1995 PG 1640

WALTER KERRY MCDADE DB 8260 PG 207 BM 1967 PG 118

HERCULANO PATINO DB 10614 PG 494 BM 1986 PG 1419

FRANCES S SMITH BM 1985 PG 762 BM 1986 PG 1420

THOMAS C BRAY DB 2969 PG 26 BM 1959 PG 3

THOMAS C BRAY DB 1475 PG 352 BM 1959 PG 3

FOR -LI- LT PROFILE, SEE SHEET NO. 50

FOR -LI- RT PROFILE, SEE SHEET NO. 50

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PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON N TALLEY

NORTH CAROLINA PROFESSIONAL SEAL 36188 ENGINEER WILLIAM WEATHERSBEE

INTERSTATE 40 INTERSTATE 440 PORTION

GRANITE RS&H DESIGN-BUILD SERVICES

NAD 83/NSRS 2007

REVISIONS

8/17/99

MATCHLINE SHEET 9 –L1– STA. 88+00.00

MATCHLINE SHEET 11 –L1– STA. 101+00.00

-Y2- POT Sta. 10+00.00

-Y2- PC Sta. 10+09.37

S 6°48'31" W

-Y2- AVENT FERRY RD

AVENT FERRY ROAD

90+00

95+00

100+00

CITY OF RALEIGH DB 4283 PG 117 BM 1988 PG 467

EXISTING R/W

R/W MON

EASEMENT NCDOT PROJECT# 8.1475401

INV=372.10'

INV=373.64'

INV=377.62'

INV=377.49'

-L1- POC Sta.91+84.62 =

-Y2- POC Sta.12+84.39

-L1- CS Sta.96+68.44

-L1- ST Sta.99+08.44

SPECIAL CUT DITCH SEE DETAIL B

SPECIAL CUT DITCH SEE DETAIL K

LOCATION APPROX.

RETAIN

RETAIN 15" RCP

RETAIN MH

ADJUST 2GI

ADJUST 2GI-D

RETAIN JB

EX-1002

EX-1007

EX-1006

DI TOP=403.41' INV OUT=401.01'

DI TOP=403.37' INV IN=400.30' INV IN=400.18' INV OUT=400.28'

DI TOP=399.29' INV IN=389.34' INV OUT=389.14'

DI TOP=398.67' INV OUT=395.69'

FUTURE AUX. LANE AND 12' FDPS

1440 VARIBLE WIDTH BST

-L1-

15" RCP-III

18" RCP-III

TB 2GI

1013

1014

1015

1036

1024

1035

1025

1026

1027

1028

1029

1033

1032

1031

1030

DI TOP=401.79' INV IN=398.53'

DI TOP=401.64' INV IN=397.07' INV OUT=396.91'

DI TOP=397.56' INV IN=391.54' INV OUT=391.29'

15" RCP

18" RCP

24" RCP

30" RCP

RETAIN 18" RCP

RETAIN 24" RCP

RETAIN 30" RCP

RETAIN COLLAR

REMOVE OR PLUG PIPE

EXISTING STRUCTURE TO REMAIN

EX-1012

EX-1011

EX-1010

EX-1009

EX-1003

DI TOP=401.72' INV OUT=398.67'

DI TOP=396.46' 24" CMP IN=392.76 24" RCP IN=392.86 30" RCP OUT=392.21

DI TOP=395.82' INV OUT=392.99'

Adj. 2GI

RETAIN 15" RCP

RETAIN 2GI

RETAIN 24" RCP

RETAIN 2GI

18" CMP

24" CMP

CONDUIT HUNG BRIDGE

INV=422.94'

INV=401.77'

PROPOSED MEDIAN CONCRETE BARRIER

BL-4

BUTAPER

GRAU 3

15+00

S 20°39'08.0" W

-Y2- PT Sta. 14+44.28

-Y2- POT Sta. 15+76.49

AVENT FERRY ROAD

EXISTING R/W

EIP

THOMAS C BRAY DB 1475 PG 352 BM 1959 PG 3

S 23°22'54" W 130.56'

ANGELA VICTORIA BRAY BM 1959 PG 3

S 66°37'06" E 150.00'

MATTHEW ST CLAIR DB 7948 PG 2644 BM 2000 PG 543

S 63°46'21" E 92.82'

N 63°46'36" W 93.00'

S 26°28'08" E 42.06'

SANDRA KAY DARDEN DB 9000 PG 1744 BM 2000 PG 543

S 63°50'46" E 93.10'

N 63°46'36" W 93.00'

S 26°22'50" E 37.41'

N 65°25'54" E 93.00'

S 63°51'36" E 22.28'

CURTIS G KIRKHOFF DB 1352 PG 242 BM 2001PG 365

MARIA P RAMIREZ DB 11091PG 2365 BM 2001PG 365

STEPHEN C REECE DB 9043 PG 55 BM 2001PG 365

JOYCE L RAICHEL DB 9417 PG 2023 BM 2001PG 365

LISA J FULLER DB 16534 PG 1655 BM 2001PG 365

S 73°19'14" E 22.00'

S 73°15'52" E 22.00'

S 73°26'09" E 22.00'

S 73°32'31" E 21.39'

S 16°36'46" W 93.00'

S 16°37'41" W 92.99'

S 16°37'26" W 93.00'

S 16°37'35" W 93.00'

S 16°37'35" W 13.81'

BZ 2

-L1- CURVE DATA

PIs Sta 97+48.44
Θs = 1°12' 00.0"
Ls = 240.00'
LT = 160.00'
ST = 80.00'

-Y2- CURVE DATA

PI Sta 12+27.89
Δ = 13° 50' 36.9" (RT)
D = 3° 10' 59.2"
L = 434.91'
T = 218.52'
R = 1,800.00'

FOR –L1– LT PROFILE, SEE SHEET NO. 51

FOR –L1– RT PROFILE, SEE SHEET NO. 51

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PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON N TALLEY	NORTH CAROLINA PROFESSIONAL SEAL 36188 ENGINEER WILLIAM WEATHERSBEE

INTERSTATE 40 INTERSTATE 440 PORTION

GRANITE RS&H DESIGN-BUILD SERVICES

NAD 83/NSRS 2007

8/17/99

REVISIONS

-LI- CURVE DATA
PIs Sta 104+33.29
Θs = 1°12' 00.0"
Ls = 240.00'
LT = 160.00'
ST = 80.00'

MATCHLINE SHEET 10 -LI- STA. 101+00.00

MATCHLINE SHEET 12 -LI- STA. 114+50.00

EASEMENT NCDOT PROJECT# 8.I475401

CITY OF RALEIGH DB 2654 PG 279

L.T. HOBBY & SON IN DB 2007 PG

EASEMENT NCDOT PROJECT# 8.I475401

EXISTING R/W

CLASS 'B' RIP RAP EST 2 TON EST 7 SY GEO

PROPOSED SBG BEG STA 102+32 LT

SPECIAL CUT DITCH SEE DETAIL K

LOCATION APPROX.

CLASS 'B' RIP RAP EST 2 TON EST 7 SY GEO

CULVERT PRESERVATION SEE DETAIL H

-LI- SC Sta.105+13.28

CLASS 'B' RIP RAP EST 3 TON EST 10 SY GEO

PROPOSED SBG END STA 107+31 LT

CULVERT PRESERVATION SEE DETAIL H

300' TAPER

PROPOSED SBG BEG STA 113+31 LT

UNABLE TO LOCATE PIPE

FUTURE AUX. LANE AND 12' FDPS

FUTURE AUX. LANE 2GI AND 14' FDPS

1440 VARIABLE WIDTH BST

PROP. GUARDRAIL

GRAU 350 TL-3

CAT-1

8:1 TAPER

PROPOSED MEDIAN CONCRETE BARRIER

-LI- TS Sta.102+73.28

PROPOSED SBG BEG STA 101+18 RT

PROPOSED SBG END STA 102+70 RT

CLASS 'B' RIP RAP EST 2 TON EST 7 SY GEO

CRESCENT RIDGE PROPERTY HOMEOWNERS DB 12189 PG 1296 BM 2004 PG 94

JENNIFER E NORTON DB 11043 PG 086 BM 2004 PG 94

SUNIL BHARDWAJ DB 14747 PG 800 BM 2004 PG 94

TAMATHA L JOYNER DB 10358 PG 173 BM 2004 PG 94

JENNIFER MUNN DB 14760 PG 2080 BM 2004 PG 95

GRAL NATIONAL MTG ASSN DB 14685 PG 239 BM 2004 PG 95

FOR -LI- LT PROFILE, SEE SHEET NO. 52

FOR -LI- RT PROFILE, SEE SHEET NO. 52

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8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	12
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 36188 ENGINEER WILLIAM WEATHERBEE

INTERSTATE 40 INTERSTATE 440 BEltLINE

GRANITE RS&H DESIGN-BUILD SERVICES

NAD 83/NSRS 2007

-LI- CURVE DATA

PI Sta 115+66.75	PIs Sta 127+03.62
△ = 20° 50' 11.9" (LT)	Θs = 0° 36' 00.0"
D = 1° 00' 00.0"	Θs = 1° 12' 00.0"
L = 2,083.66'	Ls = 240.00'
T = 1,053.47'	LT = 133.34'
R = 5,729.58'	ST = 106.68'
V = 73 MPH	
SE = 04	

-RP4B- CURVE DATA

PI Sta 10+42.77	PIs Sta 12+10.19
△ = 0° 51' 45.0" (LT)	Θs = 1° 01' 39.3"
D = 1° 00' 29.8"	Θs = 5° 04' 57.9"
L = 85.54'	Ls = 204.00'
T = 42.77'	LT = 124.65'
R = 5,682.58'	ST = 79.53'
V = 75 MPH	
SE = 04	

MATCHLINE SHEET 11 -LI- STA. 114+50.00

MATCHLINE SHEET 13 -LI- STA. 127+50.00

-Y3- POT Sta. 10+00.00

-LI- POS Sta. 126+15.37 = -Y3- POT Sta.12+95.42

-RP4B- CS Sta. 10+85.54

-LI- CS Sta. 125+96.95

-LI- POT Sta.125+10.70 = -RP4B- PC Sta. 10+00.00 (47.00' LT)

-LI- POT Sta.125+96.95 = -RP4C- ST Sta. 10+00.00 (47.00' RT)

-Y3- POT Sta. 15+01.20

-RP4C- TS Sta. 10+52.59

S 80° 11' 12.1" E

S 28° 30' 59.4" W

N 06° 35' 03" E 137.37'

N 17° 35' 57" W 142.07'

N 89° 56' 26" E 506.96'

S 85° 52' 42" W 338.53'

CITY OF RALEIGH DB 3405 PG 556 BM 1984 PG 848

MB REMINGTON PLACE LLC DB 11785 PG 2384

CHAD RAY LOTZ DB 12726 PG 542 BM 2004 PG 32

KATIE L MCMAHON DB 11649 PG 2651 BM 2004 PG 32

ROBERT W COOPER DB 11659 PG 450 BM 2004 PG 32

ARON L ARMSTRONG DB 13274 PG 1270 BM 2004 PG 32

UNITED STATES POSTAL SERVICE DB 8163 PG 74

CLASS 'B' RIP RAP EST 2 TON EST 7 SY GEO

CLASS 'B' RIP RAP EST 11 TON EST 28 SY GEO

CULVERT PRESERVATION SEE DETAIL H

PROPOSED SBG END STA 117+81 LT

SP. CONC MEDIAN 2GI SEE SHEET 2-AR

SPECIAL CUT DITCH SEE DETAIL B

GRAU 350 TL-3

PROP. GUARDRAIL

FUTURE AUX. LANE AND 14' FDPS

PROPOSED MEDIAN CONCRETE BARRIER

300' TAPER

900' ACCELERATION LANE

1440 VARIBLE WIDTH BST

EXISTING R/W

RETAIN 18" RCP

RETAIN 2GI

RETAIN JB & 15" RCP-III

EXIST STRUCTURE TO REMAIN

CONDUIT HANG ON BRIDGE

LAKE DAM ROAD

POWER MANHOLE

MIXING HOLE

FOR -LI- LT PROFILE, SEE SHEET NO. 53
FOR -LI- RT PROFILE, SEE SHEET NO. 53
FOR -RP4B- PROFILE, SEE SHEET NO. 93,94
FOR -RP4C- PROFILE, SEE SHEET NO. 94

23-JUN-2014 09:25
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PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
SEAL 029473	SEAL 36188

NAD 83 NSRS 2007

GRANITE RS&H

-RP4B- CURVE DATA

PI Sta 15+82.23	PIs Sta 19+30.80	PIs Sta 25+05.79	PI Sta 26+73.54
Δ = 28° 33' 31.0" (LT)	θs = 5° 04' 54.8"	θs = 11° 27' 33.0"	Δ = 16° 42' 08.8" (RT)
D = 4° 58' 56.1"	Ls = 204.07'	Ls = 240.00'	D = 9° 32' 57.5"
L = 573.21'	LT = 136.06'	LT = 160.54'	L = 174.58'
T = 292.69'	ST = 68.05'	ST = 80.31'	T = 88.06'
R = 1,150.00'			R = 600.00'
V = 59 MPH			V = 45 MPH
SE = 08			SE = 08

-RP4A- CURVE DATA

PI Sta 15+21.54	PIs Sta 18+33.07	PIs Sta 20+99.73	PI Sta 23+84.49
Δ = 37° 05' 02.4" (RT)	θs = 5° 59' 58.4"	θs = 5° 12' 31.5"	Δ = 82° 26' 05.4" (LT)
D = 5° 59' 58.4"	Ls = 200.00'	Ls = 200.00'	D = 5° 12' 31.5"
L = 504.44'	LT = 133.46'	LT = 133.39'	L = 430.12'
T = 256.64'	ST = 66.74'	ST = 66.72'	T = 268.15'
R = 955.00'			R = 1,100.00'
V = 55 MPH			V = 42 MPH
SE = 08			SE = 06

CAMPUS EDGE RALEIGH JV LLC
DB 15534 PG 801
BM 1999 PG 124

MATCHLINE SHEET 12 -L1- STA. 127+50.00

MATCHLINE SHEET 14 -L1- STA. 155+50.00

-RP4B- SC Sta. 12+89.54
-L1- SC Sta. 128+36.95
-RP4B- CS Sta. 1816275
-RP4B- ST Sta. 20+66.75
-RP4B- TS Sta. 23+45.46
-RP4B- SC Sta. 25+85.46
-RP4B- PT Sta. 27+60.36
-Y4- POT Sta. 11+30.00 = -RP4B- POT Sta. 29+43.43 (0.00')
-Y4- POT Sta. 10+00.00
-RP4A- PT Sta. 25+97.05
-RP4A- SC Sta. 21+86.33
-RP4A- SRS Sta. 19+66.33
-RP4A- CS Sta. 17+66.33
-RP4C- SC Sta. 12+52.59
-RP4C- CS Sta. 16+01.39
-RP4C- ST Sta. 18+01.39
-RP4C- TS Sta. 19+45.71
-RP4C- SC Sta. 21+45.71
-RP4C- PT Sta. 25+19.70
-RP4D- CS Sta. 18+74.54
-RP4D- SRS Sta. 21+14.54
-RP4D- SC Sta. 23+54.54
-RP4D- PT Sta. 27+60.15
-RP4D- SC Sta. 14+40.00

A

B

C

D

PAVED SHOULDER SUPERELEVATION ROTATION
-L- Sta.138+00.00 MED LT TO 141+00.00 MED LT
-L- Sta.140+00.00 MED RT TO 141+00.00 MED RT

PAVED SHOULDER SUPERELEVATION ROTATION
-L- Sta.144+00.00 MED LT TO 141+00.00 MED LT
-L- Sta.144+00.00 MED RT TO 141+00.00 MED RT

BEGIN BRIDGE REHAB AND WIDENING RT
-U- Sta.141+30.21

END BRIDGE REHAB AND WIDENING RT
-U- Sta.145+53.53

BEGIN BRIDGE REHAB AND WIDENING LT
-U- Sta.141+33.36

END BRIDGE REHAB AND WIDENING LT
-U- Sta.143+66.81

END CONSTRUCTION
-RP4A- Sta.26+57.07
N 81° 14' 08.0" W

END CONSTRUCTION
-RP4B- Sta.28+94.02

END CONSTRUCTION
-RP4C- Sta.26+45.03

END CONSTRUCTION
-RP4D- Sta.28+56.33

END SHOULDER TRANSITION TO MATCH STRUCTURE
-U- Sta.147+00.00

-Y4- POT Sta.11+34.00 = -RP4A- POT Sta. 27+11.12 (0.00')
-U- POC Sta.142+47.95 = -Y4- POT Sta.19+28.82
-Y4- POT Sta.22+94.50
-Y4- POT Sta.24+94.84
-Y4- POT Sta.26+89.70 (0.00')
-Y4- POT Sta.22+88.00 = -RP4C- POT Sta. 26+89.70 (0.00')

-U- Sta. POT 140+00.00 = -LT2- POT Sta.140+00.00 (23.00' LT)
-U- Sta. POT 140+00.00 = -LT2- POT Sta.141+00.21 (24.00' LT)
-U- Sta. POT 140+00.00 = -LT2- POT Sta.140+00.00 (23.00' RT)
-U- Sta. POT 140+00.00 = -LT2- POT Sta.141+00.21 (24.00' RT)
-U- Sta. POT 144+00.00 = -LT3- POT Sta.144+00.00 (24.00' LT)
-U- Sta. POT 144+00.00 = -LT3- POT Sta.144+99.80 (23.00' LT)
-U- Sta. POT 145+00.00 = -LT3- POT Sta.145+00.21 (23.00' RT)
-U- Sta. POT 145+00.00 = -LT3- POT Sta.144+00.00 (24.00' RT)

PROPOSED SBG BEG STA 144+00 LT
PROPOSED SBG END STA 140+32 LT

PROPOSED MEDIAN CONCRETE BARRIER

PLACE TRANSITION STONE AT OUTFALL OF DITCH

CLASS 'B' RIP RAP EST 1 TON EST 5 SY GEO

CLASS 'B' RIP RAP EST 2 TON EST 10 SY GEO (BANKS ONLY)

SPECIAL CUT DITCH SEE DETAIL B

SPECIAL LATERAL 'V' DITCH SEE DETAIL J

CULVERT PRESERVATION SEE DETAIL H

PIPE CONNECTION UNKNOWN PROBABLE RCP 30"

PIPE CONNECTION UNKNOWN PROBABLE RCP 24"

PIPE CONNECTION UNKNOWN PROBABLE RCP 18"

PIPE CONNECTION UNKNOWN PROBABLE RCP 36"

PIPE CONNECTION UNKNOWN PROBABLE RCP 42"

PIPE CONNECTION UNKNOWN PROBABLE RCP 48"

PIPE CONNECTION UNKNOWN PROBABLE RCP 54"

PIPE CONNECTION UNKNOWN PROBABLE RCP 60"

PIPE CONNECTION UNKNOWN PROBABLE RCP 72"

PIPE CONNECTION UNKNOWN PROBABLE RCP 84"

PIPE CONNECTION UNKNOWN PROBABLE RCP 96"

PIPE CONNECTION UNKNOWN PROBABLE RCP 108"

PIPE CONNECTION UNKNOWN PROBABLE RCP 120"

PIPE CONNECTION UNKNOWN PROBABLE RCP

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M TALLEY

NORTH CAROLINA PROFESSIONAL SEAL 36188 ENGINEER WILLIAM WEATHERSBEE

INTERSTATE 40 INTERSTATE 440 PORTION

GRANITE RS&H DESIGN-BUILD SERVICES

NAD 83/NSRS 2007

8/17/99

REVISIONS

MATCHLINE SHEET 13 –L1– STA. 155+50.00

MATCHLINE SHEET 15 –L1– STA. 169+00.00

MARY LANGSTON (BACK) DB 4084 PG 844 BM 1987 PG 1262

ROBIN E PIPKIN DB 11479 PG 1111

GRADY LANGSTON DB 1857 PG 586

STATE OF NORTH CAROLINA DB 10522 PG 842

UNIVERSITY WOODS AT CENTENNIAL CONDOMINIUMS DB 9507 PG 2330 BM 2001 PG 2107

N 22°28'22" E 344.72'

S 21°34'39" W 54.07'

S 86°15'17" E 163.30'

S 21°39'39" W 188.54'

N 00°10'10" E

S 82°26'53" W

S 4°59'55" W

S 85°01'38" E 41.79'

04°58'22" W 52.00'

-Y5- POT Sta. 10+00.00

-RP4A- SC Sta. 12+64.90

-RP4A- CS Sta. 10+24.90

-LI- POC Sta.159+60.12 =
-RP4A- PC Sta. 10+00.00 (47.00' LT)

-RP4D- TS Sta. 12+00.00

-LI- POC Sta.159+50.00 =
-RP4D- POT Sta. 10+00.00 (47.00' RT)

-LI- POC Sta.161+84.03 =
-Y5- POT Sta.12+78.15

-Y5- POT Sta. 15+38.65

-Y5- TRAILWOODS DR

TRAILWOODS DRIVE

SPECIAL CUT DITCH SEE DETAIL B

4' FDPS

12' HDSP

300' TAPER

RETAIN 2GI

RETAIN 24" RCP

RETAIN 15" RCP-III

REMOVE 18" RCP-III

REMOVE 15" RCP-III

18" RCP

15" RCP-III

30" RCP RETAIN

PROPOSED MEDIAN CONCRETE BARRIER

1440 VARIBLE WIDTH BST

FUTURE AUX.LANE AND 12' FDPS

900' ACCELERATION LANE

WATER MARKER

SPECIAL CUT DITCH SEE DETAIL B

UNABLE TO ACCESS FULL OF DEBRIS

TB 2GI

2GI

SB

SMH

DI

EX-1401

EX-1403

1404 1405 1406 1408 1409 1411 1412 1413 1414 1415 1416

-RP4A- CURVE DATA

PI Sta 10+12.45	PIs Sta 11+78.89
Δ = 0° 07' 30.0" (RT)	Θs = 0° 36' 03.7"
D = 0° 30' 07.4"	Θs = 7° 12' 03.3"
L = 24.90'	Ls = 240.00'
T = 12.45'	LT = 153.99'
R = 11,412.16'	ST = 86.33'
V = 73 MPH	
SE = 02	

-RP4D- CURVE DATA

PIs Sta 13+60.05
Θs = 4° 24' 26.5"
Ls = 240.00'
LT = 160.05'
ST = 80.05'

FOR –L1– LT PROFILE, SEE SHEET NO. 56
FOR –L1– RT PROFILE, SEE SHEET NO. 56
FOR –RP4A– PROFILE, SEE SHEET NO. 93
FOR –RP4D– PROFILE, SEE SHEET NO. 95

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8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	15
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON N TALLEY

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 36188 ENGINEER WILLIAM WEATHERSBEE

GRANITE RS&H DESIGN-BUILD SERVICES

INTERSTATE 40 INTERSTATE 440 PORTION

NAD 83/NSRS 2007

-LI- CURVE DATA
PIs Sta 172+52.95
Θs = 0° 36' 00.0"
Ls = 240.00'
LT = 160.00'
ST = 80.00'

MATCHLINE SHEET 14 -L1- STA. 169+00.00

MATCHLINE SHEET 16 -L1- STA. 183+00.00

170+00 175+00 180+00

-LI- CS Sta.171+72.95

-LI- ST Sta.174+12.95

PROPOSED SBG BEG STA 170+81 LT

PROPOSED SBG END STA 180+81 LT

PROPOSED SBG BEG STA 174+75 RT

PROPOSED SBG END STA 182+75 RT

EXISTING R/W

R/W MON

RETAIN 30" RCP

TOP=389.99' INV IN=385.19' INV OUT=384.81'

INV=371.64'

BL-54

8:1 TAPER

CAT-1

FUTURE AUX.LANE AND 12' FDPS

24'

26'

RCP

PROP.GUARDRAIL

GUARDRAIL

CLASS 'B' RIP RAP EST 1 TON EST 5 SY GEO

1518

REMOVE 8" CMP

UNABLE TO LOCATE PIPE

15" CSP

INV=384.13'

BL-55

IRS

2GI

1517

FUTURE AUX.LANE AND 14' FDPS

1523

INV=381.14'

INV=348.26'

1524

INV=377.84'

RETAIN & PRESERVE

CLASS 'B' RIP RAP EST 1 TON EST 5 SY GEO

REMOVE 8" CMP

1534

INV=374.99'

1525

GRAU-350 TL-3

CLASS 'B' RIP RAP EST 1 TON EST 5 SY GEO

SPECIAL CUT DITCH SEE DETAIL K

1526

1535

TB 2GI

1513

15" RCP-III

TOP=386.96' INV IN=383.53' INV OUT=383.19'

1515

1519

1520

N 75° 44' 00.0" E

TOP=380.24' INV OUT=377.75'

1527

TOP=372.36' INV OUT=369.28'

1528

-LI-

FUTURE AUX.LANE AND 12' FDPS

18" RCP-III

INV=384.91'

1514

300' TAPER

BL-11

+32.95

60'

GRAU 350 TL-3

1521

15" CMP

1530

CULVERT PRESERVATION SEE DETAIL H

1529

FUTURE AUX.LANE AND 14' FDPS

1532

CURB

PROPOSED MEDIAN CONCRETE BARRIER

NOT SUBJECT TO RIPARIAN BUFFER RULES

1531

CLASS 'B' RIP RAP EST 15 TON EST 37 SY GEO

CLASS 'B' RIP RAP EST 1 TON EST 5 SY GEO

INV=344.02'

INV=339.43'

1533

CLASS 'B' RIP RAP EST 1 TON EST 5 SY GEO

BZ 1

BZ 2

TB

JS

20' SANITARY EASEMENT BM 1996 PG 194

20' SANITARY EASEMENT BM 1988 PG 1355

EASEMENT NCDOT PROJECT# 8J475401

UNIVERSITY APARTMENTS RALEIGH LLC DB 14632 PG 1183 BM 1996 PG 194

TIMOTHY L RICHARDSON DB 5620 PG 643 BM 1988 PG 1355

TAD D WALTERS DB 8439 PG 2623 BM 1988 PG 1355

RTP PROPERTY GRP LLC DB 13199 PG 1035 BM 1988 PG 1355

DRB REAL ESTATE HOLDINGS LLC DB 13811 PG 864 BM 1988 PG 1355

BRIENNE S PURTA DB 12241 PG 539 BM 1988 PG 1355

STEPHEN S COLE DB 13774 PG 2034 BM 1988 PG 1355

MITZIE R HILL DB 7056 PG 842 BM 1988 PG 1355

TRAILWOOD HEIGHTS CONDOMINIUM ASSOC, INC DB 12916 PG 998 CF 1999 PG 211-B7-C4

TRAILWOOD HEIGHTS CONDOMINIUMS DB 8928 PG 2149 CF 1999 PG 211-D3-D9

DEEP FOREST TRAIL

N 04°52'43" E 80.00'

S 85°09'57" E 125.21'

S 39°53'23" E 113.27'

S 43°25'08" E 186.86'

S 43°43'39" W 144.33'

S 28°55'59" W 125.35'

S 47°16'16" E 85.50'

S 04°56'45" W 51.08'

S 43°31'58" W 144.05'

S 85°40'58" E 64.48'

S 47°16'16" E 116.96'

S 15°41'08" E 201.00'

0.10 R/W

FOR -L1- LT PROFILE, SEE SHEET NO. 57

FOR -L1- RT PROFILE, SEE SHEET NO. 57

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8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON N TALLEY

NORTH CAROLINA PROFESSIONAL SEAL 36188 ENGINEER WILLIAM WEATHERSBEE

NAD 83/NSRS 2007

INTERSTATE 40 INTERSTATE 440 PORTION

GRANITE RS&H DESIGN-BUILD SERVICES

MATCHLINE SHEET 15 –L1– STA. 183+00.00

MATCHLINE SHEET 17 –L1– STA. 197+00.00

185+00 190+00 195+00

STATE OF NORTH CAROLINA DB 10522 PG 842

EXISTING R/W

SPECIAL CUT DITCH SEE DETAIL K

REMOVE CONC. COLLAR

INV=367.66'

RETAIN 2GI & 15" RCP

RETAIN 30" RCP

EX-1605

EX-1604

1604

TOP=363.78'
INV IN=363.78'
INV OUT=360.68'

BL-53

SPECIAL CUT DITCH SEE DETAIL K

RETAIN 2GI

EX-1606

REMOVE CONC. COLLAR

1606

EX-1607

TOP=367.28'
INV OUT=354.08'

SPECIAL CUT DITCH SEE DETAIL K

850' TAPER

1612 2GI

RETAIN 24" RCP

INV=354.79'

+50.00

TD24

BL-52

TOP=350.56'
INV IN=346.16'
INV OUT=345.74'

24' FUTURE AUX.LANE AND 12' FDPS

1440 VARIBLE WIDTH BST

18" RCP-III

18" RCP

15" RCP-III

24" RCP-III

24" RCP

02.02

1602

1608

1611

18" RCP-III GUARDRAIL

TB 2GI

TOP=364.90'
INV IN=359.30'
INV OUT=360.04'

1603

N 75°44'00.0" E

TOP=357.43'
INV IN=353.36'
INV OUT=352.76'

1609

18" RCP-III

18" RCP

TOP=351.28'
INV IN=348.09'
INV OUT=347.53'

1610

–L1–

11'

12'

24' FUTURE AUX.LANE AND 14' FDPS

26'

PROP.GUARDRAIL

8:1 TAPER

GRAU 350 TL-3

BL-13

BL-14

PROPOSED MEDIAN CONCRETE BARRIER

24" RCP RETAIN

INV=356.00

CLASS 'B' RIP RAP
EST 5 TON
EST 14 SY GEO

SPECIAL CUT DITCH SEE DETAIL B

PROPOSED SBG
BEG STA 194+41 RT

R/W MON

N 88°26'15" W 148.64'

N 88°26'15" W 203.30'

N 88°26'15" W 173.86'

N 01°34'07" E 145.53'

S 01°26'19" W 165.73'

S 02°15'

TRAILWOOD HEIGHTS CONDOMINIUMS DB 8755 PG 1992 CF 1999 PG 211-C5-D2

TRAILWOOD HEIGHTS CONDOMINIUMS DB 9259 PG 2728 CF 1999 PG 211-E1-E7

STATE OF NORTH CAROLINA DB 1795 PG 82 BM 1985 PG 2294

FOR –L1– LT PROFILE, SEE SHEET NO. 58

FOR –L1– RT PROFILE, SEE SHEET NO. 58

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PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	17
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON N TALLEY

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 36188 ENGINEER WILLIAM WEATHERSBEE

INTERSTATE 40 440 PORTION

GRANITE RS&H DESIGN-BUILD SERVICES

NAD 83/NSRS 2007

8/17/99

REVISIONS

MATCHLINE SHEET 16 –L1– STA. 197+00.00

MATCHLINE SHEET 18 –L1– STA. 211+00.00

STATE OF NORTH CAROLINA DB 8131 PG 2714

S 82°38'38" E 352.40'

N 75°39'23" W 746.58'

200+00

205+00

210+00

EXISTING R/W

R/W MON

CLASS 'B' RIP RAP EST 14 TON EST 28 SY GEO

CLASS 'B' RIP RAP EST 2 TON EST 7 SY GEO

850' TAPER

PROPOSED SBG BEG STA 198+82 LT

UNABLE TO LOCATE PIPE

REMOVE OR PLUGFILL

6'X8' BOX CULVERT TOP RW=302.84 INV=294.66'

A/C SLOPE DRAIN

INV=317.55'

INV=319.01'

INV=342.55'

INV=339.17'

INV=336.71'

INV=334.23'

INV=301.80'

INV=303.92'

INV=303.19'

8' CMP

15" CSP

42" CMP RETAIN AND PRESERVE

CLASS 'B' RIP RAP EST 2 TON EST 7 SY GEO

SPECIAL CUT DITCH SEE DETAIL K

PROPOSED SBG END STA 207+56 LT

BL-50

BL-51

12' FDPS

GRAU 350 TL 3

8:1 TAPER

CAT 1

PROP. GUARDRAIL

GUARDRAIL

CURB

RETAIN

1719 2GI

1721 2GI

1728 2GI

1736 2GI

1732 2GI

1716 TB 2GI

1717 TB 2GI TOP=343.26' INV OUT=340.67'

1726 TB 2GI

1725 TB 2GI TOP=336.81' INV OUT=333.85'

N 75° 44' 00.0" E

CULVERT PRESERVATION SEE DETAIL H

1714 2GI

1734 2GI

1723 2GI

1730 2GI

FUTURE AUX. LANE AND 14' FDPS

FUTURE AUX. LANE AND 12' FDPS

PROP. GUARDRAIL

PROPOSED MEDIAN CONCRETE BARRIER

1738

1739

1715

1735

1724

1731

CLASS 'B' RIP RAP EST 22 TON EST 45 SY GEO

SPECIAL CUT DITCH SEE DETAIL K

REMOVE OR PLUGFILL

M-117 / M-118 SEE STREAM REALIGNMENT DETAIL SHEET 2 AS

INV=309.48'

INV=306.45'

INV=298.97'

INV=297.99'

END 60" CMP UNKNOWN (BURIED PIPE)

60" CMP

JS NEL

JS

TRAN 5% TB

BZ 1

BZ 2

EIP

0.36' R/W

SSMH TOP=316.14

SSMH TOP=315.42

S 27°39'37" E 146.21'

N 85°13'04" E 127.28'

20' SANITARY SEWER EASEMENT BM 1985 PG 2294

DARLENE DORTHY BAILEY DB 7655 PG 643 BM 1988 PG 1093

KHALED KHATIB DB 11492 PG 1093

JACK J CARLISLE DB 7592 PG 569 BM 1988 PG 1093

WAYNE R BUEHRER DB 14084 PG 1921 BM 1988 PG 1093

ADEL MOUSSA MOHAMED DB 13867 PG 1034 BM 1988 PG 1093

ORCHARD POINT LIMITED PARTNERSHIP DB 6324 PG 263 BM 1994 PG 1912

GEORGE JEFFREY PINTO DB 8581 PG 1519 BM 1988 PG 1093

EASEMENT MEDOT PROJECT # 6.472420

20' SANITARY SEWER EASEMENT BM 1985 PG 2294

S 30°51'47" W 193.68'

S 73°56'36" E 38.26'

S 16°30'14" E 103.55'

AMIRA SAJDIEH DB 13487 PG 92 BM 1988 PG 1093

LADY SABET AWAD DB 11924 PG 219 BM 1988 PG 1093

GEORGE HALEY CAMPEAU DB 10855 PG 1782 BM 1988 PG 1093

S 01°21'12" W 402.49'

320' S

FOR –L1– LT PROFILE, SEE SHEET NO. 59

FOR –L1– RT PROFILE, SEE SHEET NO. 59

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PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	18
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON W. TALLEY

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON W. TALLEY

GRANITE RS&H DESIGN-BUILD SERVICES

INTERSTATE 40 INTERSTATE 440 PORTION

NAD 83/NSRS 2007

REVISIONS

8/17/99

MATCHLINE SHEET 17 –L1– STA. 211+00.00

MATCHLINE SHEET 19 –L1– STA. 225+00.00

STATE OF NORTH CAROLINA
DB 8131 PG 2714

N 72°41'06" W
426.00'

S 01°30'01" W
316.81'

N 73°09'00" W
136.43'

215+00

220+00

R/W MON

0.82' MONUMENT IN R/W

EXISTING R/W

SPECIAL CUT DITCH SEE DETAIL K

SPECIAL CUT DITCH SEE DETAIL K

SPECIAL CUT DITCH SEE DETAIL K

300' TAPER

1801 2GI TOP=324.20' INV OUT=316.99'

1805 2GI TOP=316.29' INV OUT=312.48'

1810 2GI TOP=308.37' INV OUT=305.33'

PROPOSED MEDIAN CONCRETE BARRIER

1440 VARIABLE WIDTH BST

15" RCP-III

18" RCP-III

1802 TB 2GI

1806 TB 2GI

1811 TB 2GI

GUARDRAIL

1804 TB 2GI-A TOP=325.50' INV IN=318.90' INV IN=318.65' INV OUT=318.81'

1809 TB 2GI-A TOP=317.79' INV IN=311.94' INV IN=311.91' INV OUT=311.46

1813 TB 2GI-A TOP=308.84' INV IN=303.80' INV IN=304.04' INV IN=304.00' INV OUT=303.74'

24" RCP-III 18" RCP

30" RCP-III 30" RCP

36" RCP-III 36" RCP

RETAIN

FUTURE AUX.LANE AND 12' FDPS

1440 VARIABLE WIDTH BST

FUTURE AUX.LANE AND 12' FDPS

1803 Adj. 2GI TOP=324.29' INV OUT=319.57'

UNABLE TO LOCATE PIPE

8" HDPE

REMOVE OR PLUG/FILL

1808 2GI TOP=316.35' INV IN=312.85' INV IN=313.05' INV OUT=312.75'

1812 2GI TOP=310.27' INV OUT=305.54'

SPECIAL CUT DITCH SEE DETAIL B

INV=369.20'

OSAMA SHAIKH DB 13189 PG 2257 BM 1984 PG 1089

JENNIFER COSTINE DB 14534 PG 2680 BM 1983 PG 1147

INDER MOHAN SINGH GARCHA DB 3958 PG 388 BM 1983 PG 1147

TONY GLENN LAMM DB 13192 PG 2647 BM 1983 PG 1147

RICHARD A SILY DB 13911 PG 1375 BM 1983 PG 1147

JOHN D MEDLEY DB 9437 PG 1727 BM 1983 PG 1147

JOHNNY MACK NEWTON DB 4553 PG 718 BM 1983 PG

DAN W KILCUP DB 4106 PG 668 BM 1983

AARON T BURKHART DB 13862 PG 547 BM 1983 PG

WILLIE J YANCEY DB 4045 PG

J DAVID LONG DB 9280

SHERRI W PRITCHARD DB 13487

BRIAN C WALTERS DB 16561 PG 936 BM 1983 PG 1148

KEVIN P NEAL DB 11237 PG 1948 BM 1983 PG 1148

20' DRAINAGE EASEMENT DB 13911 PG 1375

S 39°27'33" E 155.00'

S 81°26'25" E 165.81'

N 45°23'32" E 164.25'

S 08°33'35" W 156.81'

0.02' R/W TO EIP

0.07' R/W TO EIP

0.06' R/W TO EIP

0.09' R/W TO EIP

0.04' R/W TO EIP

0.08' R/W TO EIP

0.23' R/W TO EIP

100' CP&L EASEMENT BM 1983 PG 547

100' CP&L EASEMENT BM 1983 PG 847

POWER EASEMENT BM 1983 PG 847

COURIER COURT

FOR –L1– LT PROFILE, SEE SHEET NO. 60

FOR –L1– RT PROFILE, SEE SHEET NO. 60

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8/17/99

REVISIONS

-RP6C- CURVE DATA	
PIs Sta 11+40.06	PI Sta 13+76.42
Θs = 5°13' 52.9"	△ = 16° 28' 06.7" (RT)
Ls = 210.00'	D = 4° 58' 56.1"
LT = 140.06'	L = 330.54'
ST = 70.06'	T = 166.42'
	R = 1,150.00'
	V = 59 MPH
	SE = 08

-LI- CURVE DATA
PIs Sta 236+82.32
Θs = 1° 11' 39.4"
Ls = 240.00'
LT = 160.00'
ST = 80.00'

NAD 83/NSRS 2007

INTERSTATE 40 INTERSTATE 440 PORTION

GRANITE RS&H DESIGN-BUILD SERVICES

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	19
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON N TALLEY

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 36188 ENGINEER WILLIAM WEATHERSBEE

STATE OF NORTH CAROLINA
DB 10522 PG 842

MATCHLINE SHEET 18 -L1- STA. 225+00.00

MATCHLINE SHEET 20 -L1- STA. 238+00.00

225+00

230+00

235+00

-L1- POT Sta.235+22.32 =
-RP6B- POT Sta.10+00.00 (59.00' LT)

-L1- TS Sta.235+22.32

-RP6B- TS Sta. 11+80.00

EXISTING R/W

SPECIAL CUT DITCH SEE DETAIL B

SPECIAL CUT DITCH SEE DETAIL K

PLACE TRANSISTION STONE AT OUTFALL OF DITCH
CLASS 'B' RIP RAP
EST 1 TON
EST 5 SY GEO

AERIAL

300' TAPER

900' ACCELERATION LANE

RETAIN 36" RCP

BL-49

BL-48

60'

12' FDPS

-RP6B-

N 75° 44' 00.0" E

-L1-

-RP6C-

-L1- SC Sta.237+62.32

SPECIAL CUT DITCH SEE DETAIL A

4' FDPS

6' DIP

FUTURE AUX. LANE AND 12' FDPS

PROPOSED MEDIAN CONCRETE BARRIER

REMOVE OR PLUG FILL

UNABLE TO OBTAIN R/W

-L1- POT Sta.232+10.00 =
-RP6C- TS Sta.10+00.00 (47.00' RT)

CULVERT PRESERVATION SEE DETAIL H

-RP6C- SC Sta.12+10.00

RETAIN AND PRESERVE

15" CMP

-RP6C- CS Sta.15+40.54

EIP

S 72° 51' 47" E 56.96'

S 72° 51' 47" E 93.55'

S 19° 37' 22" E 71.00'

WILLIAM NEWSOME
DB 7536 PG 630
BM 1983 PG 1051

BILLY G TART, JR
DB 8156 PG 378
BM 1983 PG 1051

STATE OF NORTH CAROLINA
DB 4812 PG 7

SSMH
TOP=295.17'
INV=282.87'

FOR -L1- LT PROFILE, SEE SHEET NO. 61
FOR -L1- RT PROFILE, SEE SHEET NO. 61
FOR -RP6B- PROFILE, SEE SHEET NO. 96
FOR -RP6C- PROFILE, SEE SHEET NO. 97

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PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-530	20
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

40 | 440 Spur

GRANITE RS&H DESIGN TEAM REPRESENTS

NAD 83/NSRS 2007

MATCHLINE SHEET 19 -L1- STA. 238+00.00

MATCHLINE SHEET 21 -L1- STA. 266+00.00

STATE OF NORTH CAROLINA DB 10522 PG 842

STATE OF NORTH CAROLINA DB 8762 PG 306

-RP6B- SC Sta. 14+20.00

-RP6B- CS Sta. 17+78.71

-RP6B- SC Sta. 22+28.71

-RP6B- PT Sta. 26+62.24

-RP6B- SR5 Sta. 19+68.80

-RP6A- PT Sta. 20+18.82

-RP6A- SC Sta. 15+13.38

-RP6A- TS Sta. 12+73.38

-RP6C- ST Sta. 17+50.54

-RP6C- TS Sta. 19+63.87

-RP6C- SC Sta. 22+03.87

-RP6C- PT Sta. 24+90.69

-RP6D- ST Sta. 20+73.28

-RP6D- CS Sta. 18+73.28

-RP6D- SC Sta. 16+52.50

-Y6- POT Sta. 10+00.00

-Y6- PC Sta. 10+31.66

-Y6- POT Sta. 11+84.00 =
-RP6A- POT Sta. 23+38.05 (0.001)

-Y6- POT Sta. 19+00.00 =
-RP6B- POT Sta. 29+95.71 (0.001)

-Y6- POT Sta. 20+90.00 =
-RP6D- POT Sta. 27+48.26 (10.001)

-Y6- POT Sta. 21+02.00 =
-RP6C- POT Sta. 27+35.27 (10.001)

-Y6- PCC Sta. 18+37.78

-Y6- POT Sta. 23+04.34

-Y6- PT Sta. 21+66.34

END CONSTRUCTION -RP6A- Sta. 23+60.80

END 2'-6" C&G (TIE TO EXIST.) STA. 29+81.02 (76.24' LT)

END 2'-6" C&G (TIE TO EXIST.) STA. 22+86.98 (75.82' RT)

BEGIN 2'-6" C&G STA. 22+68.94 (12.00' LT)

END PROP. GUARDRAIL (TIE TO EXIST.) STA. 22+17.50 (24.79' RT)

END CONSTRUCTION -RP6B- Sta. 29+55.40

BEGIN 2'-6" C&G STA. 28+26.32 (18.00' LT)

END 2'-6" C&G (TIE TO EXIST.) STA. 29+44.60 (35.76' RT)

END 2'-6" C&G (TIE TO EXIST.) STA. 23+04.71 (58.06' LT)

BEGIN 2'-6" C&G STA. 26+82.36 (140.43' RT)

BEGIN 2'-6" C&G STA. 26+10.29 (10.00' RT)

END 2'-6" C&G STA. 27+09.04 (31.99' LT)

END CONSTRUCTION -RP6C- Sta. 26+95.39

BEGIN 2'-6" C&G STA. 26+05.82 (12.00' LT) N 85° 37' 26.2" E

BEGIN 2'-6" C&G STA. 25+19.27 (10.00' RT)

END 2'-6" C&G (TIE TO EXIST.) STA. 26+59.58 (67.40' RT)

BEGIN 2'-6" C&G STA. 25+47.91 (18.00' LT)

END CONSTRUCTION -RP6D- Sta. 21+11.75

END 2'-6" C&G (TIE TO EXIST.) STA. 21+42.86 (75.24' LT)

-RP6B- CURVE DATA

Pi Sta 13+40.75	Pi Sta 16+10.80	Pi Sta 18+49.18	Pi Sta 21+49.43	Pi Sta 24+54.25
θs = 4° 58' 44.2"	Δ = 13° 52' 56.3" (LT)	θs = 4° 03' 53.7"	θs = 10° 34' 39.7"	Δ = 38° 12' 45.5" (RT)
Ls = 240.00'	D = 3° 52' 16.8"	Ls = 200.00'	Ls = 240.00'	D = 8° 48' 53.1"
LT = 160.06'	L = 358.45'	LT = 140.04'	LT = 160.29'	L = 433.42'
ST = 80.05'	T = 180.11'	ST = 70.03'	ST = 80.26'	T = 225.11'
	R = 1,480.00'			R = 650.00'
	V = 55 MPH			V = 47 MPH
	SE = 01'			SE = 08

-RP6C- CURVE DATA

Pi Sta 16+10.60	Pi Sta 21+23.96	Pi Sta 23+47.97
θs = 5° 13' 52.9"	θs = 5° 43' 46.5"	Δ = 13° 41' 39.2" (LT)
Ls = 210.00'	Ls = 240.00'	D = 4° 46' 28.7"
LT = 140.06'	LT = 160.08'	L = 286.81'
ST = 70.06'	ST = 80.08'	T = 144.09'
		R = 1,200.00'
		V = 38 MPH
		SE = 05

-L1- CURVE DATA

Pi Sta 258+76.38
Δ = 46° 19' 41.2" (RT)
D = 17° 59' 42.9"
L = 4,052.11'
T = 2,149.06'
R = 5,757.00'
V = 74 MPH
SE = 04

-Y6- CURVE DATA

Pi Sta 14+36.71	Pi Sta 20+02.40
Δ = 14° 06' 11.2" (LT)	Δ = 8° 51' 51.4" (LT)
D = 1° 44' 58.2"	D = 2° 45' 42.1"
L = 806.12'	L = 328.56'
T = 405.31'	T = 164.62'
R = 3,275.00'	R = 2,100.00'

-RP6A- CURVE DATA

Pi Sta 14+33.40	Pi Sta 17+67.04
θs = 2° 52' 53.2"	Δ = 12° 03' 59.1" (RT)
Ls = 240.00'	D = 2° 53' 14.4"
LT = 160.02'	L = 505.44'
ST = 80.02'	T = 253.66'
	R = 2,400.00'
	V = 54 MPH
	SE = 05

-RP6D- CURVE DATA

Pi Sta 11+71.07	Pi Sta 15+66.75	Pi Sta 19+39.97
θs = 7° 09' 18.3"	Δ = 22° 14' 14.3" (LT)	θs = 3° 34' 51.6"
θs = 3° 34' 53.2"	D = 3° 34' 51.6"	Ls = 200.00'
Ls = 200.00'	L = 620.98'	LT = 133.36'
LT = 187.71'	T = 314.45'	ST = 66.69'
ST = 81.33'	R = 1,600.00'	
	V = 67 MPH	
	SE = 08	

FOR -L1- LT PROFILE, SEE SHEET NO. 62,63
FOR -L1- RT PROFILE, SEE SHEET NO. 62,63
FOR -RP6A- PROFILE, SEE SHEET NO. 95,96
FOR -RP6B- PROFILE, SEE SHEET NO. 96
FOR -RP6C- PROFILE, SEE SHEET NO. 97
FOR -RP6D- PROFILE, SEE SHEET NO. 97,98

LOCATION:

TIP NO.: COUNTY:

DESIGNED BY:

CHECKED BY: DATE:

GRAPHIC SCALE
50 25 0 50 100
PLANS

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8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	21
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON N TALLEY

NORTH CAROLINA PROFESSIONAL SEAL 36188 ENGINEER WILLIAM WEATHERSBEE

GRANITE RS&H DESIGN-BUILD SERVICES

NAD 83 NSRS 2007

-RP6D- CURVE DATA
PI Sta 10+26.15
Δ = 0° 31' 33.2" (LT)
D = 1° 00' 20.0"
L = 52.30'
T = 26.15'
R = 5,698.00'
V = 75 MPH
SE = 04

-LI- CURVE DATA
PIs Sta 278+94.43
Θs = 1° 11' 39.4"
Ls = 240.00'
LT = 160.00'
ST = 80.00'

MATCHLINE SHEET 20 -L1- STA. 266+00.00

MATCHLINE SHEET 22 -L1- STA. 280+00.00

270+00

275+00

-RR01- POT Sta. 10+00.00

-LI- POT Sta.266+10.00 =
-RP6A- POT Sta.10+00.00 (59.00' LT)

-RP6D- CS Sta.10+52.30

-LI- POT Sta.267+10.00 =
-RP6D- POT Sta.10+00.00 (59.00' RT)

PAVED SHOULDER
SUPERELEVATION ROTATION
-L- Sta.275+45.00 MED LT TO 276+65.00 MED LT
-L- Sta.275+50.00 MED RT TO 276+70.00 MED RT

-LI- CS Sta.278+14.43

-LI- POC Sta.276+12.36 =
-RR01- POT Sta.14+07.62

-RR01- POT Sta. 18+32.30

S 14° 37' 42.2" E

EXISTING R/W

CLASS 'B' RIP RAP
EST 1 TON
EST 5 SY GEO

PLACE TRANSISTION STONE
AT OUTFALL OF DITCH

SPECIAL CUT DITCH
SEE DETAIL K

SPECIAL CUT DITCH
SEE DETAIL N

CLASS 'B' RIP RAP
EST 11 TON
EST 28 SY GEO

REMOVE EXIST.
GUARDRAIL

PROP. GUARDRAIL

GUARDRAIL GRAU 350 TL 3

1440 VARIBLE WIDTH BST

PROPOSED MEDIAN CONCRETE BARRIER

SPECIAL CUT DITCH
SEE DETAIL K

SPECIAL CUT DITCH
SEE DETAIL K

SPECIAL CUT DITCH
SEE DETAIL K

SPECIAL CUT DITCH
SEE DETAIL K

NORFOLK SOUTHERN RAILROAD

DUNN PROPERTIES LLC
DB 7976 PG 841
BM 1998 PG 390
BM 2003 PG 1400

DUNN PROPERTIES LLC
DB 7976 PG 841
BM 1998 PG 390
BM 2003 PG 1400

TURNER INVESTMENTS LLC
DB 8261 PG 990
BM 1988 PG 1231

J & S WILLIAMS LLC
DB 14135 PG 2205
BM 1988 PG 1231

THE LAMPE COMPANY INC
DB 13009 PG 527
BM 1987 PG 615

S 00°08'01" E 293.85' 26' SANITARY EASEMENT BM 2003 PG 1400

N 87°15'39" W 16.26'

FOR -L1- LT PROFILE, SEE SHEET NO. 64
FOR -L1- RT PROFILE, SEE SHEET NO. 64
FOR -RP6A- PROFILE, SEE SHEET NO. 95,96
FOR -RP6D- PROFILE, SEE SHEET NO. 97,98

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REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	22
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83/NSRS 2007

INTERSTATE 40 INTERSTATE 440 PORTION

GRANITE RS&H DESIGN-BUILD SERVICES

-RP7B- CURVE DATA

PIs Sta 11+66.73
Θs = 4° 50' 21.0"
Ls = 250.00'
LT = 166.73'
ST = 83.39'

PI Sta 15+52.91
Δ = 23° 08' 01.6" (LT)
D = 3° 52' 16.8"
L = 597.57'
T = 302.91'
R = 1,480.00'
V = 55 MPH
SE = 07

-RP7C- CURVE DATA

PI Sta 14+02.78
Δ = 5° 25' 33.5" (RT)
D = 0° 40' 26.6"
L = 804.96'
T = 402.78'
R = 8,500.00'
V = 60 MPH
SE = 02

MATCHLINE SHEET 21 -L1- STA. 280+00.00

MATCHLINE SHEET 23 -L1- STA. 294+00.00

NC EQUIPMENT COMPANY
DB 1450 PG 135

DEPTH OF EX. CMP IS NOT KNOWN IN THIS LOCATION. CONTRACTOR TO CONSTRUCT BRICK BOX TO DEPTH AS NECESSARY TO CONNECT PROPOSED & EX. PIPE.

-L1- POT Sta.286+15.00 = -RP7B- ST Sta. 10+00.00 (59.00' RT)

END AREA 2A
BEGIN AREA 2B
-L1- POT Sta. 285+00.00

-RP7B- SC Sta. 12+50.00

-L1- TS Sta.290+46.17

480' TRANSITION

*M-391 SEE DRAINAGE MAINTENANCE TABLE

*M-388 SEE DRAINAGE MAINTENANCE TABLE

MEDIAN V DITCH SEE DETAIL DSHEET 2-BJ

SPECIAL LATERAL V DITCH SEE DETAIL BSHEET 2-BJ

CLASS 'B' RIP RAP
EST 1 TON
EST 5 SY GEO

REMOVE EXIST. GUARDRAIL

REMOVE

B

BEGIN SBG -L1- STA 286+00

PROPOSED MEDIAN CONCRETE BARRIER

-L1- ST Sta.280+54.43

BEGIN SBG -L1- STA 285+54

PREFORMED SCOUR HOLE OUTLET PROTECTION CLASS 'B' RIP RAP
EST 8 TONS
EST 16 SY GEO
EST 25 SY PSRM
SEE DETAIL GSHEET 2-BJ

15" W/ELBOWS, ROD, & LUG CONNECTORS

-L1- POT Sta.287+90.00 = -RP7C- PC Sta. 10+00.00 (59.00' RT)

FOR –L1– LT PROFILE, SEE SHEET NO. 65
FOR –L1– RT PROFILE, SEE SHEET NO. 65
FOR –RP7B– PROFILE, SEE SHEET NO. 99
FOR –RP7C– PROFILE, SEE SHEET NO. 100

NC EQUIPMENT COMPANY
DB 1450 PG 135

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RIGHT DITCH ----------

LEFT DITCH ----------

MEDIAN DITCH ———————

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	45

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 36188 ENGINEER WILL J. WEATHERSBEE

–LLT1–

℄ US-1 / I-440

BEGIN I–5338I–5311
PAVEMENT RECONSTRUCTION
–L1– LT STA. 18+82.61
ELEV = 454.94'

457.72

(+)1.3993%

PROPOSED GRADE

EXISTING GROUND

470 460 450 440 430 420 410 400

10 11 12 13 14 15 16 17 18 19 20 21

–LRT1–

℄ US-1 / I-440

BEGIN I–5338I–5311
PAVEMENT RECONSTRUCTION
–L1– RT STA. 18+74.34
ELEV = 457.56'

461.01

PROPOSED GRADE

(+)1.7501%

(+)1.4000%

(+)1.6265%

PI =20+00.000
EI = 455.70

BEGIN MEDIAN DITCH
LT (RT) AND EBCD
PI = –L1– 19+17.000
EL = 454.35

PI =21+00.000
EI = 457.10

EXISTING GROUND

470 460 450 440 430 420 410 400

10 11 12 13 14 15 16 17 18 19 20 21

SEE SHEET NO. 4 FOR –L1– ALIGNMENT

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RIGHT DITCH ----------	PROJECT REFERENCE NO.	SHEET NO.
LEFT DITCH -----------	I-5338/I-5311	46
MEDIAN DITCH ———————	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY

NORTH CAROLINA PROFESSIONAL SEAL 36188 ENGINEER WILL J. WEATHERSBEE

–LLT1–

PI = 22+50.00
EL = 460.08'
VC = 700'
K = 754
V > 80 MPH

457.72

(+)1.399%

(+)0.4708%

(+) 0.3000%

PROPOSED GRADE

EXISTING GROUND

BEGIN MEDIAN DITCH
LI (LT) AND WBCD
PI = –LI– 21+00.000
EL = 456.840

PI = 29+00.00
EL = 463.14'
VC = 300'
K = 353
V = 78 MPH

(+)0.4708%

(–)0.3800%

(+) 0.3000%

PROPOSED GRADE

(–) 0.5000%

PI =30+00.000
EI = 459.540

PI =31+00.000
EI = 459.040

(–) 0.5200%

EXISTING GROUND

PI = 32+00.00
EL = 462.00'
VC = 300'
K = 1364
V > 80 MPH

(–)0.3800%

(–)0.6000%

460.50

(–)0.6000%

(–) 1.3800%

(–) 1.3000%

END MEDIAN DITCH
LI (LT) AND WBCD
PI = –LI– 31+25.000
EL = 458.910

BEGIN MEDIAN DITCH
LI (LT) AND WBCD
PI = –LI– 33+50.000
EL = 456.730

PI =34+00.000
EI = 456.040

EXIST. 36" CMP
TO BE PRESERVED
STA. 30+77
ELEV. = 412.0' (BELOW GRID)
(SEE SHT. 46 –LI– RT.
PROFILE FOR HYDRO. DATA)

21 22 23 24 25 26 27 28 29 30 31 32 33 34

470 460 450 440 430 420

–LRT1–

PI = 25+60.00
EL = 469.56'
VC = 1,360'
K = 481
V > 80 MPH

461.01

(+)1.7501%

(–)1.0774%

(+) 1.1900%

(+) 0.9900%

(+) 0.9200%

(+) 0.3056%

(+) 0.3125%

(+) 0.3000%

PROPOSED GRADE

EXISTING GROUND

PI =21+00.000
EI = 457.10

PI =22+00.000
EI = 458.29

PI =23+00.000
EI = 459.28

PI =24+00.000
EI = 460.20

PI =24+36.000
EI = 460.31

PI =25+00.000
EI = 460.51

PI =28+00.000
EI = 461.41

(+) 0.2857%

(–) 0.5417%

PI =28+28.000
EI = 461.49

PI =29+00.000
EI = 461.10

(–) 0.5600%

PI = 34+00.00
EL = 460.51'
VC = 320'
K = 1503
V > 80 MPH

459.83

PROPOSED GRADE

(–)1.0774%

(–)1.2903%

(–) 0.5634%

(+) 0.9500%

EXISTING GROUND

PI =33+00.000
EI = 458.86

PI =33+71.000
EI = 458.46

(–) 0.9655%

PI =34+00.000
EI = 458.18

PIPE HYDRAULIC DATA
36" CMP TO BE PRESERVED

DRAINAGE AREA	= 32.1	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 100.0	CFS
DESIGN HW ELEVATION	= 448.6	FT
100 YEAR DISCHARGE	= 120.0	CFS
100 YEAR HW ELEVATION	= 450.0	FT
OVERTOPPING FREQUENCY	= 100+	YRS
OVERTOPPING DISCHARGE	= 130.0	CFS
OVERTOPPING ELEVATION	= 460.0	FT

SEE SHEET NO. 5 FOR –L1– ALIGNMENT

EXIST. 36" CMP
TO BE PRESERVED
STA. 31+95
ELEV. = 415.6' (BELOW GRID)

21 22 23 24 25 26 27 28 29 30 31 32 33 34

470 460 450 440 430 420

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RIGHT DITCH ----------	PROJECT REFERENCE NO.	SHEET NO.
LEFT DITCH -·-·-·-·-	I-5338/I-5311	47
MEDIAN DITCH – – – – –	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY

NORTH CAROLINA PROFESSIONAL SEAL 36188 ENGINEER WILL J. WEATHERSBEE

–L1– LT

PI = 37+00.00
EL = 459.00'
VC = 400'
K = 842
V > 80 MPH

460.50

(–)0.6000%

(–)11.0750%

PROPOSED GRADE

EXISTING GROUND

(–) 1.3000%

(–) 1.2979%

(+) 0.3019%

(–) 3.7777%

(–) 0.8049%

(–) 0.8000%

PI =37+00.000
EI = 452.140

PI =37+94.000
EI = 450.920

END MEDIAN DITCH
LI (LT) AND WBCD
PI = –L1– 39+00.000
EL = 451.240

PI =39+18.000
EI = 446.37

PI =40+00.000
EI = 445.71

BEGIN SPECIAL CUT DITCH
WITH HINGE LT.
PI = 39+00.000
EI = 447.05

PI =43+00.000
EI = 443.31

(–) 0.7949%

(–) 0.6364%

(–) 0.6000%

(–) 0.6782%

(+) 2.3846%

(–) 0.9200%

(–) 0.8800%

447.18

(–)11.0750%

PI =43+78.000
EI = 442.69

PI =45+00.000
EI = 441.95

PI =47+00.000
EI = 440.75

END SPECIAL CUT DITCH
WITH HINGE LT.
BEGIN SPECIAL CUT DITCH
PI = 44+00.000
EI = 442.55

EXIST 24" RCP
STA 45+57
ELEV = 436.8
(SEE SHT 42 –L1– RT
PROFILE FOR HYDRO DATA)

PI =46+00.000
EI = 441.67

PI =45+87.000
EI = 441.36

–L1– RT

PI = 37+10.00
EL = 456.51'
VC = 300'
K = 1099
V > 80 MPH

459.83

PROPOSED GRADE

(–) 0.9500%

(–) 0.9600%

(+)11.2903%

(–)11.0172%

(+) 0.3000%

EXISTING GROUND

PI =35+00.000
EI = 457.23

PI =36+00.000
EI = 456.27

END MEDIAN DITCH
LI (RT) AND EBCD
PI = –L1– 39+00.000
EL = 457.170

BEGIN SPECIAL CUT DITCH RT.
PI = 39+50.000
EL = 455.26

PI =40+50.000
EI = 454.01

PI = 40+00.00
EL = 453.56'
VC = 280'
K = 42198
V > 80 MPH

(–) 1.2500%

(–)11.0172%

(–)11.0106%

(–) 1.2200%

PI =41+50.000
EI = 452.79

PI =42+50.000
EI = 451.91

(–) 0.8800%

(–) 0.8354%

PI =43+29.000
EI = 451.25

(–) 0.3099%

PI =44+00.000
EI = 451.03

(–) 0.2667%

END SPECIAL CUT DITCH RT.
PI = 44+15.000
EL = 450.99

BEGIN SPECIAL CUT DITCH RT.
PI = 46+25.000
EL = 449.40

445.48

(–)11.1600%

(–)11.0106%

PIPE HYDRAULIC DATA
EXISTING 24" RCP

DRAINAGE AREA	= 5.9	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 24.0	CFS
DESIGN HW ELEVATION	= 460.9	FT
100 YEAR DISCHARGE	= 25.0	CFS
100 YEAR HW ELEVATION	= 462.3	FT
OVERTOPPING FREQUENCY	= 100+	YRS
OVERTOPPING DISCHARGE	= 46.0	CFS
OVERTOPPING ELEVATION	= 450.0	FT

EXIST 24" RCP
STA 45+40
ELEV = 438.3'

SEE SHEET NO. 6 FOR –L1– ALIGNMENT

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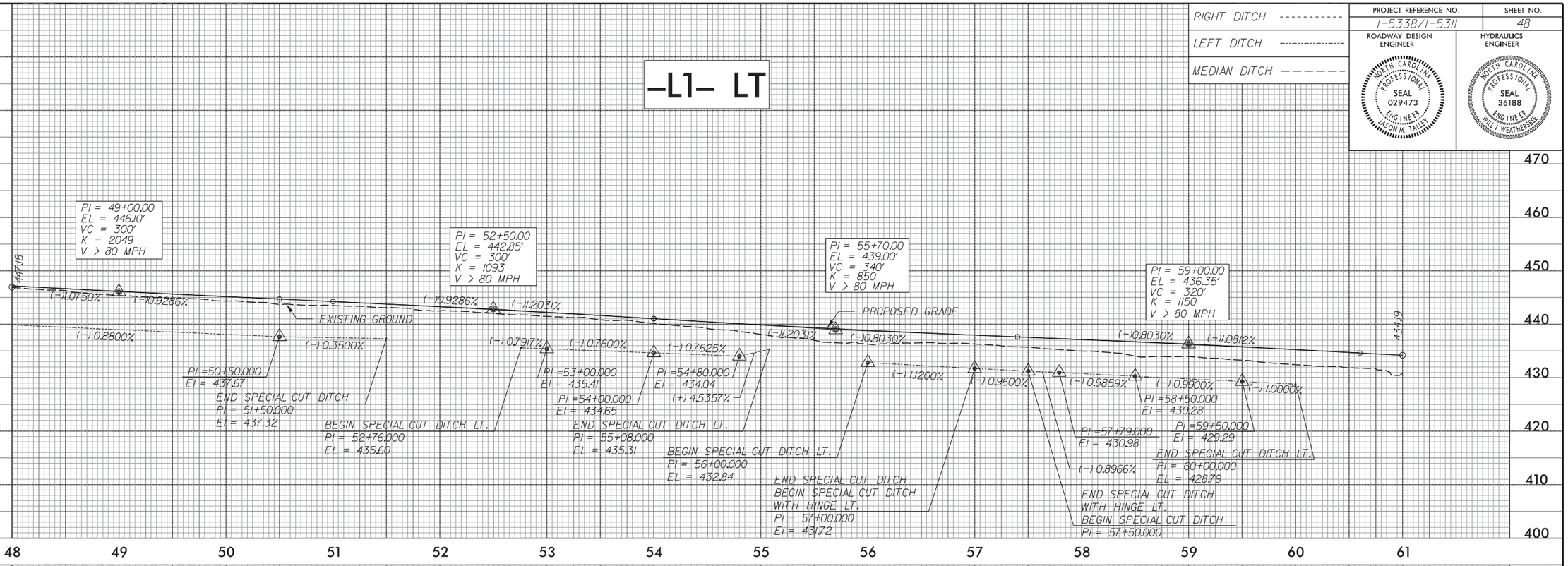
5/28/99

RIGHT DITCH ----------	PROJECT REFERENCE NO.	SHEET NO.
LEFT DITCH -----------	I-5338/I-5311	48
MEDIAN DITCH ———————	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY

NORTH CAROLINA PROFESSIONAL SEAL 36188 ENGINEER WILLIAM WEATHERSBEE

–L1– LT



–L1– RT



SEE SHEET NO. 7 FOR –L1– ALIGNMENT

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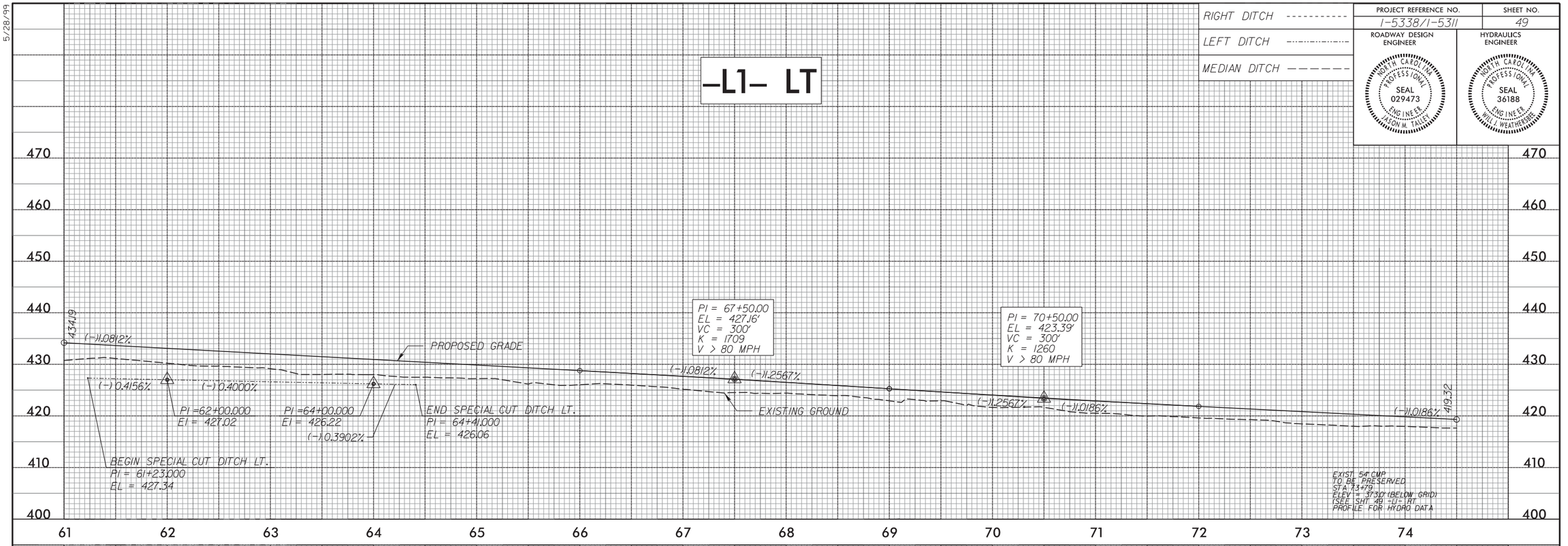
5/28/99

RIGHT DITCH ----------	PROJECT REFERENCE NO.	SHEET NO.
LEFT DITCH -·-·-·-	I-5338/I-5311	49
MEDIAN DITCH ———	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

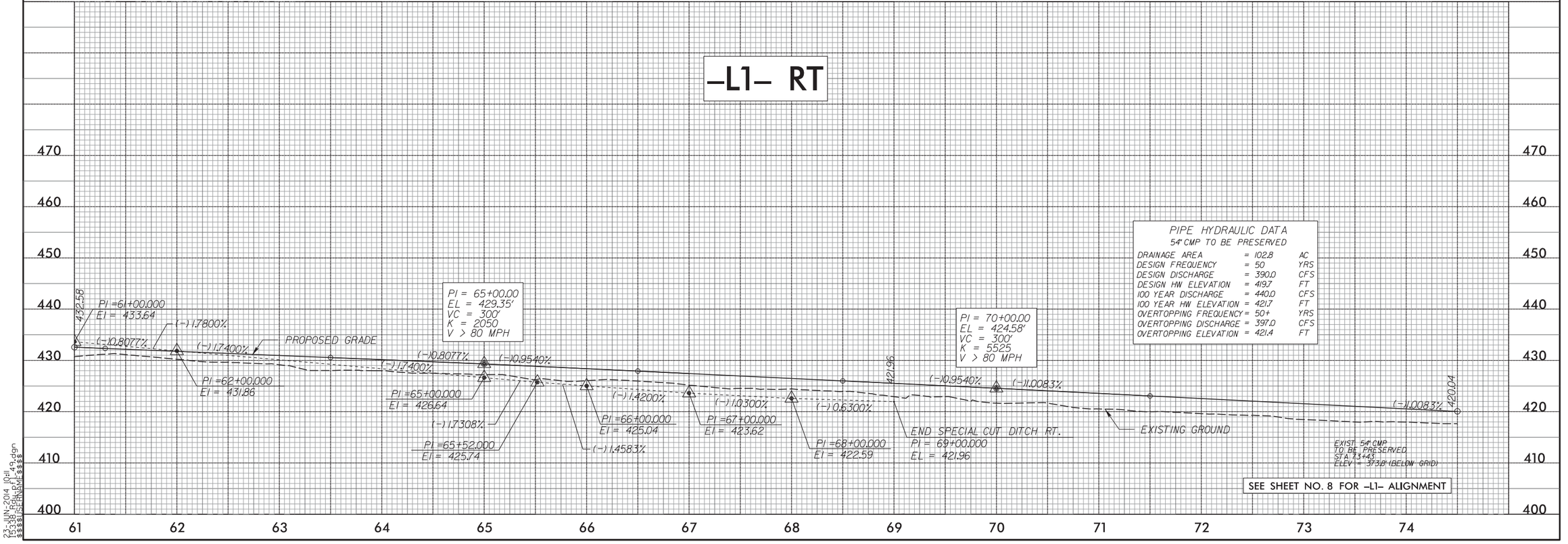
NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY

NORTH CAROLINA PROFESSIONAL SEAL 36188 ENGINEER WILL J. WEATHERSBEE

–L1– LT



–L1– RT



PIPE HYDRAULIC DATA
54" CMP TO BE PRESERVED

DRAINAGE AREA	= 102.8	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 390.0	CFS
DESIGN HW ELEVATION	= 419.7	FT
100 YEAR DISCHARGE	= 440.0	CFS
100 YEAR HW ELEVATION	= 421.7	FT
OVERTOPPING FREQUENCY	= 50+	YRS
OVERTOPPING DISCHARGE	= 397.0	CFS
OVERTOPPING ELEVATION	= 421.4	FT

SEE SHEET NO. 8 FOR –L1– ALIGNMENT

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5/28/99

RIGHT DITCH ----------

LEFT DITCH ----------

MEDIAN DITCH ----------

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	50

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 36188 ENGINEER WILL J. WEATHERSBEE

-L1- LT

PIPE HYDRAULIC DATA
54" CMP TO BE PRESERVED

DRAINAGE AREA	= 58.1	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 130.0	CFS
DESIGN HW ELEVATION	= 376.1	FT
100 YEAR DISCHARGE	= 150.0	CFS
100 YEAR HW ELEVATION	= 377.1	FT
OVERTOPPING FREQUENCY	= 100+	YRS
OVERTOPPING DISCHARGE	= 433.0	CFS
OVERTOPPING ELEVATION	= 410.8	FT

419.32

(-)1.0186%

EXISTING GROUND

PROPOSED GRADE

BEGIN SPECIAL CUT DITCH LT.
PI = 84+00.000
EL = 408.68

(-)1.0052%

PI =85+92.000
EL = 406.75

(-)0.7922%

(-)1.0186%

405.57

EXIST 54" CMP
TO BE PRESERVED
STA 84+10
ELEV = 375.0'

-L1- RT

PIPE HYDRAULIC DATA
EXISTING 36" RCP

DRAINAGE AREA	= 58.1	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 130.0	CFS
DESIGN HW ELEVATION	= 403.3	FT
100 YEAR DISCHARGE	= 150.0	CFS
100 YEAR HW ELEVATION	= 409.2	FT
OVERTOPPING FREQUENCY	= 100+	YRS
OVERTOPPING DISCHARGE	= 155.0	CFS
OVERTOPPING ELEVATION	= 410.8	FT

420.04

(-)1.0083%

EXISTING GROUND

BEGIN SPECIAL CUT DITCH RT.
PI = 77+50.000
EL = 412.85

(-)1.1995%

(-)1.0000%

PI =81+56.000
EL = 407.98

PROPOSED GRADE

(-)1.0000%

(-)0.5000%

PI =86+44.000
EL = 403.10

(-)1.0083%

406.43

EXIST 36" RCP
STA 84+09
ELEV = 376.5'

SEE SHEET NO. 9 FOR -L1- ALIGNMENT

460 450 440 430 420 410 400 390 380 370

75 76 77 78 79 80 81 82 83 84 85 86 87 88

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RIGHT DITCH ----------	PROJECT REFERENCE NO.	SHEET NO.
LEFT DITCH -----------	I-5338/I-5311	5I
MEDIAN DITCH ———————	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

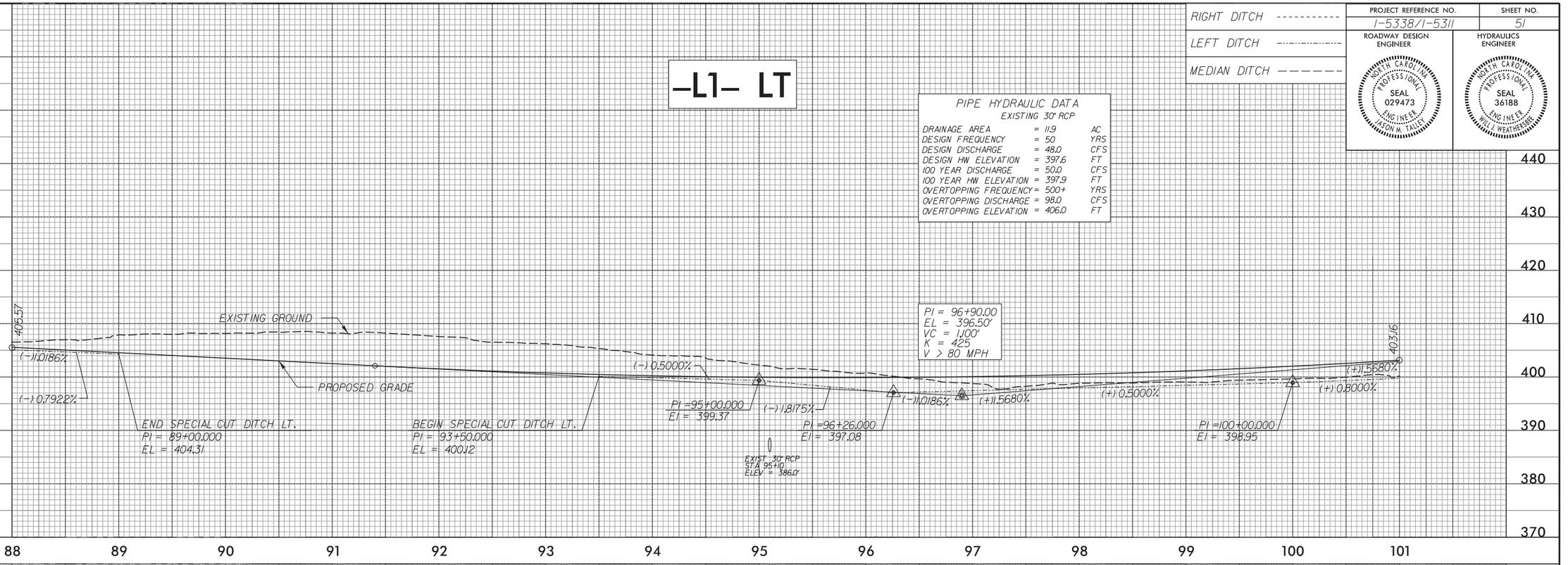
NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY

NORTH CAROLINA PROFESSIONAL SEAL 36188 ENGINEER WILLIAM J. WEATHERSBEE

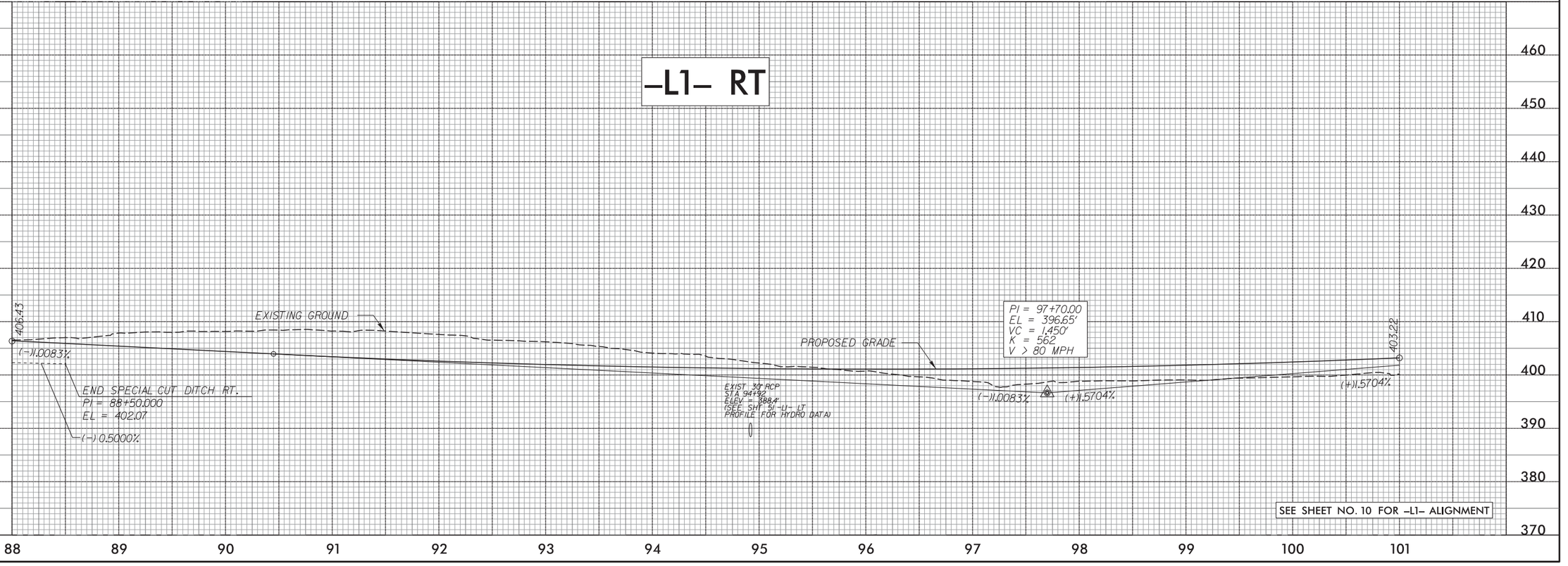
–L1– LT

PIPE HYDRAULIC DATA
EXISTING 30" RCP

DRAINAGE AREA	= 11.9	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 48.0	CFS
DESIGN HW ELEVATION	= 397.6	FT
100 YEAR DISCHARGE	= 50.0	CFS
100 YEAR HW ELEVATION	= 397.9	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 98.0	CFS
OVERTOPPING ELEVATION	= 406.0	FT



–L1– RT



SEE SHEET NO. 10 FOR –L1– ALIGNMENT

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RIGHT DITCH ----------	PROJECT REFERENCE NO.	SHEET NO.
LEFT DITCH -----------	I-5338/I-5311	52
MEDIAN DITCH ———————	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY

NORTH CAROLINA PROFESSIONAL SEAL 36188 ENGINEER WILL J. WEATHERSBEE

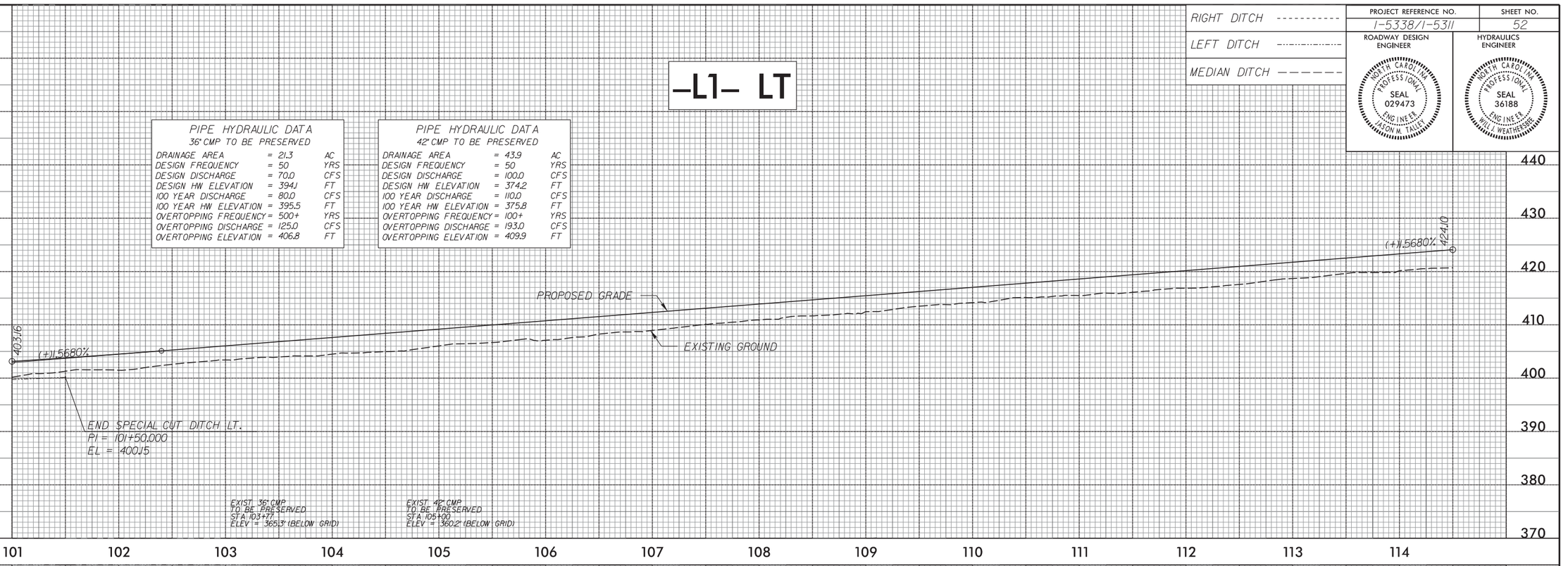
–L1– LT

PIPE HYDRAULIC DATA
36" CMP TO BE PRESERVED

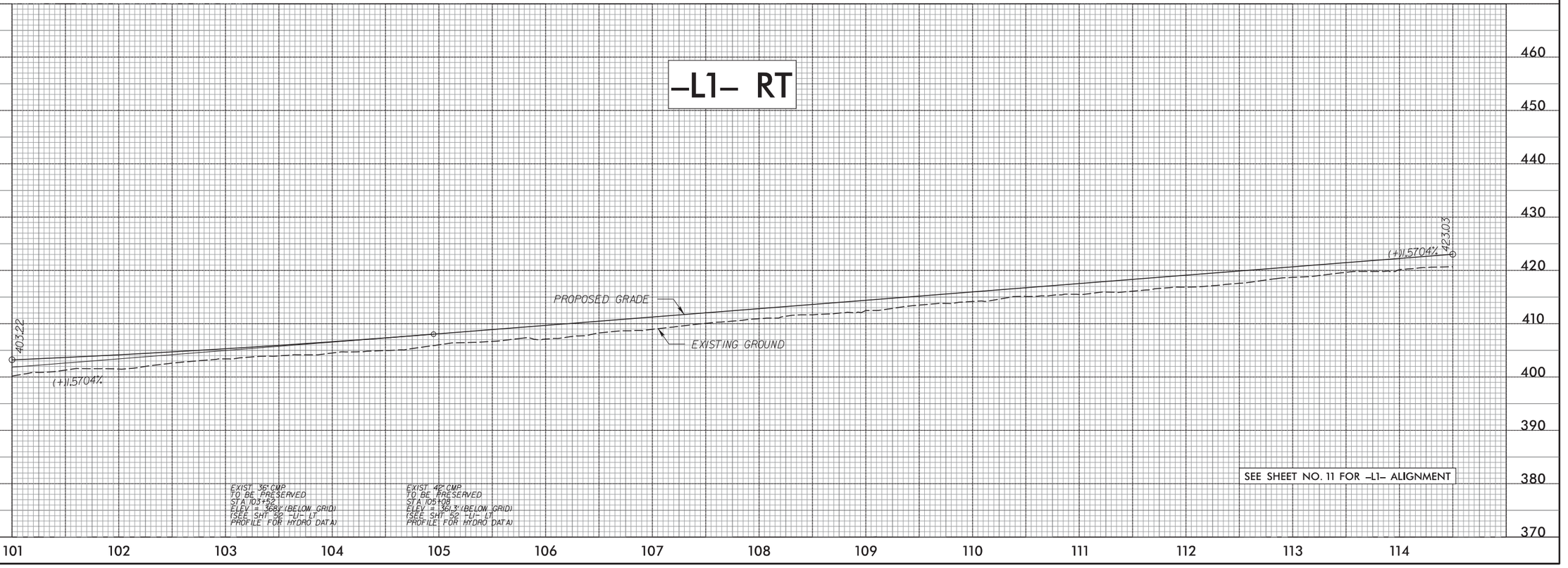
DRAINAGE AREA	= 21.3	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 70.0	CFS
DESIGN HW ELEVATION	= 394.1	FT
100 YEAR DISCHARGE	= 80.0	CFS
100 YEAR HW ELEVATION	= 395.5	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 125.0	CFS
OVERTOPPING ELEVATION	= 406.8	FT

PIPE HYDRAULIC DATA
42" CMP TO BE PRESERVED

DRAINAGE AREA	= 43.9	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 100.0	CFS
DESIGN HW ELEVATION	= 374.2	FT
100 YEAR DISCHARGE	= 110.0	CFS
100 YEAR HW ELEVATION	= 375.8	FT
OVERTOPPING FREQUENCY	= 100+	YRS
OVERTOPPING DISCHARGE	= 193.0	CFS
OVERTOPPING ELEVATION	= 409.9	FT



–L1– RT



SEE SHEET NO. 11 FOR –L1– ALIGNMENT

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RIGHT DITCH ----------	PROJECT REFERENCE NO.	SHEET NO.
LEFT DITCH -·-·-·-	I-5338/I-5311	53
MEDIAN DITCH – – – – –	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

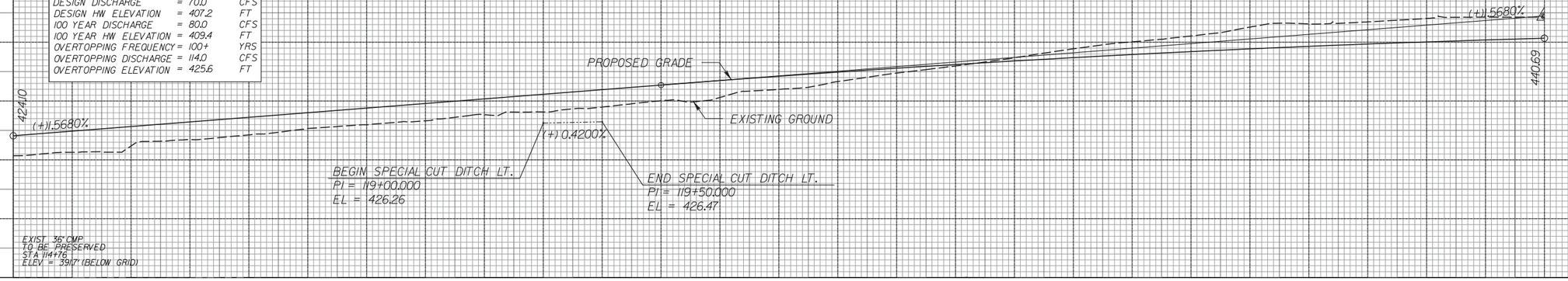
NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY

NORTH CAROLINA PROFESSIONAL SEAL 36188 ENGINEER WILL J. WEATHERSBEE

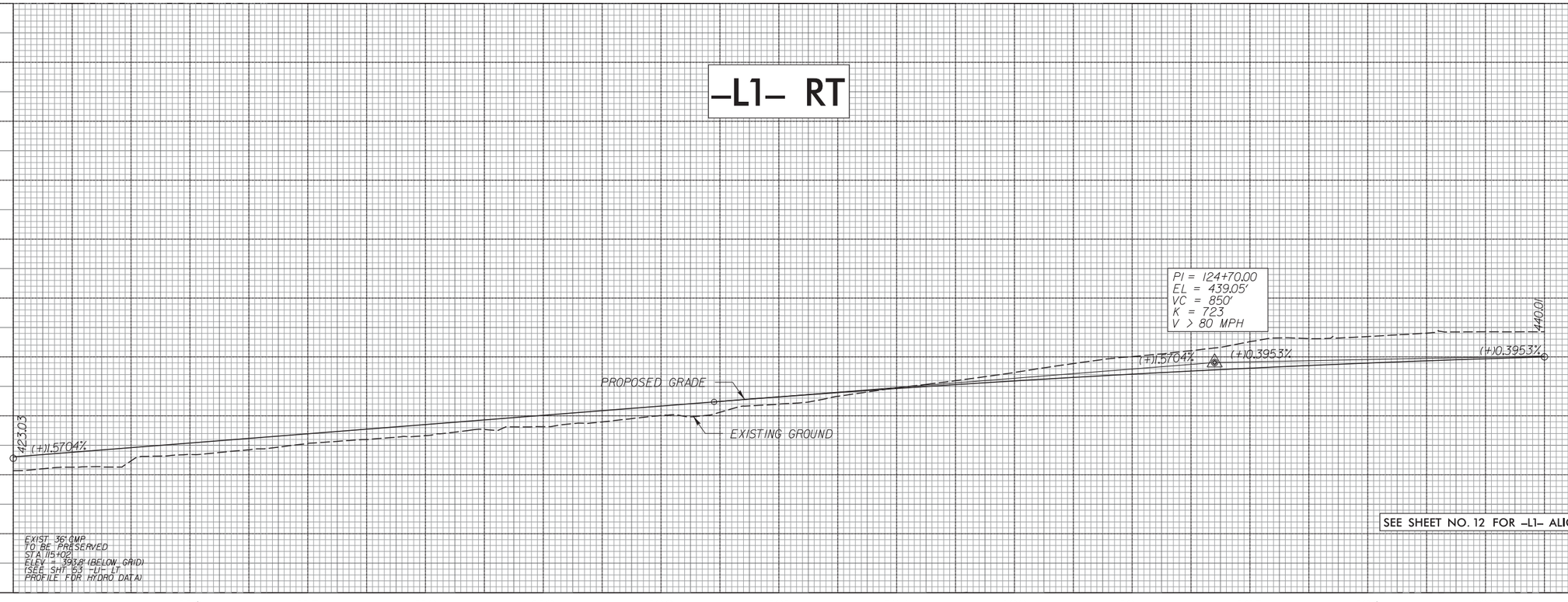
–L1– LT

PIPE HYDRAULIC DATA
36" CMP TO BE PRESERVED

DRAINAGE AREA	= 29.5	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 70.0	CFS
DESIGN HW ELEVATION	= 407.2	FT
100 YEAR DISCHARGE	= 80.0	CFS
100 YEAR HW ELEVATION	= 409.4	FT
OVERTOPPING FREQUENCY	= 100+	YRS
OVERTOPPING DISCHARGE	= 114.0	CFS
OVERTOPPING ELEVATION	= 425.6	FT



–L1– RT



SEE SHEET NO. 12 FOR –L1– ALIGNMENT

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RIGHT DITCH ----------	PROJECT REFERENCE NO.	SHEET NO.
LEFT DITCH -·-·-·-·-	I-5338/I-5311	54
MEDIAN DITCH — — — —	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY

NORTH CAROLINA PROFESSIONAL SEAL 36188 ENGINEER WILL J. WEATHERSBEE

–L1– LT

PIPE HYDRAULIC DATA
36" CMP TO BE PRESERVED

DRAINAGE AREA	= 32.1	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 75.0	CFS
DESIGN HW ELEVATION	= 413.3	FT
100 YEAR DISCHARGE	= 90.0	CFS
100 YEAR HW ELEVATION	= 428.5	FT
OVERTOPPING FREQUENCY	= 100+	YRS
OVERTOPPING DISCHARGE	= 90.0	CFS
OVERTOPPING ELEVATION	= 435.0	FT

BEGIN BRIDGE
–L1– LT STA. 141+33.36
ELEV = 435.92'

PI = 127+50.00
EL = 444.48'
VC = 1,500'
K = 741
V > 80 MPH

PI = 138+65.00
EL = 439.40'
VC = 300'
K = 357
V = 78 MPH

(–)0.4556%
440.69
PROPOSED GRADE
(–)0.8011%
(–)0.4556%
(–)1.2968%
(–)1.2968%
EXISTING GROUND

BEGIN SPECIAL CUT DITCH LT.
PI = 128+50.000
EL = 436.22

END SPECIAL CUT DITCH LT.
PI = 130+26.000
EL = 434.81

EXIST. 36" CMP
TO BE PRESERVED
STA 135+73
ELEV = 390.5' (BELOW GRID)

470 460 450 440 430 420 410 400

128 129 130 131 132 133 134 135 136 137 138 139 140 141

–L1– RT

BEGIN BRIDGE
–L1– RT STA. 141+30.21
ELEV = 435.58'

PI = 135+40.00
EL = 443.28'
VC = 1,170'
K = 688
V > 80 MPH

(+)0.3953%
(+)0.3953%
(–)1.3046%
PROPOSED GRADE
(–)1.3046%
440.01
(–)0.8000%
EXISTING GROUND

BEGIN SPECIAL CUT DITCH RT.
PI = 128+50.000
EL = 437.33

END SPECIAL CUT DITCH RT.
PI = 131+50.000
EL = 434.93

EXIST. 36" CMP
TO BE PRESERVED
STA 135+93
ELEV = 392.2' (BELOW GRID)
(SEE SHT 54 –L1– LT PROFILE FOR HYDRO DATA)

SEE SHEET NO. 13 FOR –L1– ALIGNMENT

470 460 450 440 430 420 410 400

128 129 130 131 132 133 134 135 136 137 138 139 140 141

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RIGHT DITCH ----------	PROJECT REFERENCE NO.	SHEET NO.
LEFT DITCH -----------	I-5338/I-5311	55
MEDIAN DITCH ———————	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY

NORTH CAROLINA PROFESSIONAL SEAL 36188 ENGINEER WILL J. WEATHERSBEE

–L1– LT

℄ GORMAN STREET

END BRIDGE
–L1– LT STA. 143+66.81
ELEV = 432.78'

PI = 146+00.00
EL = 429.10'
VC = 300'
K = 2282
V > 80 MPH

PI = 149+00.00
EL = 424.76'
VC = 300'
K = 3330
V > 80 MPH

(–)1.5781%
(–)1.5781%
(–)1.4467%
(–)1.4467%
(–)1.5367%
(–)1.5367%

PROPOSED GRADE
EXISTING GROUND

414.77

PIPE HYDRAULIC DATA
36" CMP TO BE PRESERVED

DRAINAGE AREA	= 22.4	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 50.0	CFS
DESIGN HW ELEVATION	= 387.3	FT
100 YEAR DISCHARGE	= 60.0	CFS
100 YEAR HW ELEVATION	= 388.8	FT
OVERTOPPING FREQUENCY	= 100+	YRS
OVERTOPPING DISCHARGE	= 97.0	CFS
OVERTOPPING ELEVATION	= 428.6	FT

EXIST. 36" CMP
TO BE PRESERVED
STA 146+20
ELEV = 363.9' (BELOW GRID)

(+)0.5021%

BEGIN SPECIAL CUT DITCH LT.
PI = 154+37.680
EL = 406.98

PI =155+50.000
EL = 407.54

–L1– RT

℄ GORMAN STREET

END BRIDGE
–L1– RT STA. 143+53.53
ELEV = 432.62'

PI = 145+00.00
EL = 430.84'
VC = 280'
K = 67.8
V > 80 MPH

PI = 150+00.00
EL = 422.70'
VC = 400'
K = 3929
V > 80 MPH

(–)1.2153%
(–)1.6280%
(–)1.6280%
(–)1.5262%
(–)1.5262%
(–)1.29882%

EXISTING GROUND
PROPOSED GRADE

414.31

BEGIN SPECIAL CUT DITCH RT.
PI = 152+00.000
EL = 414.03

END SPECIAL CUT DITCH RT.
PI = 153+14.000
EL = 412.55

EXIST. 36" CMP
TO BE PRESERVED
STA 145+90
ELEV = 365.6' (BELOW GRID)
(SEE SHT. 56 –L1– LT. PROFILE FOR HYDRO DATA)

SEE SHEET NO. 13 FOR –L1– ALIGNMENT

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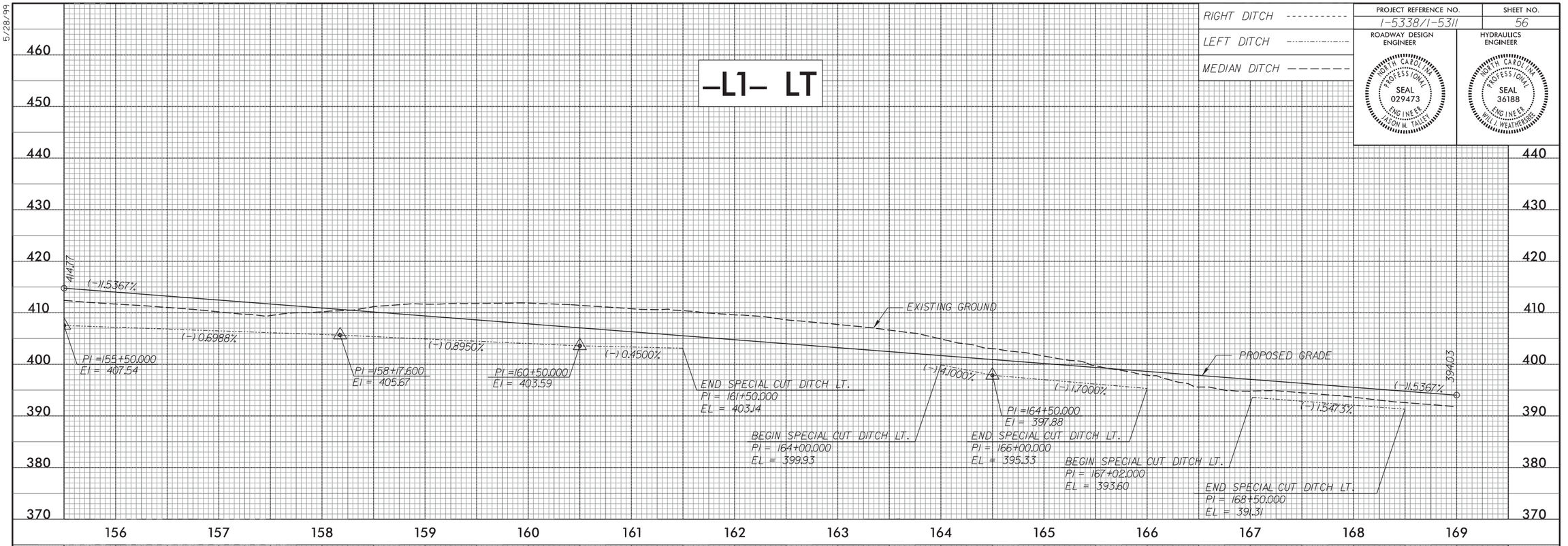
5/28/99

RIGHT DITCH ----------	PROJECT REFERENCE NO.	SHEET NO.
LEFT DITCH -·-·-·-·-	I-5338/I-5311	56
MEDIAN DITCH ———	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

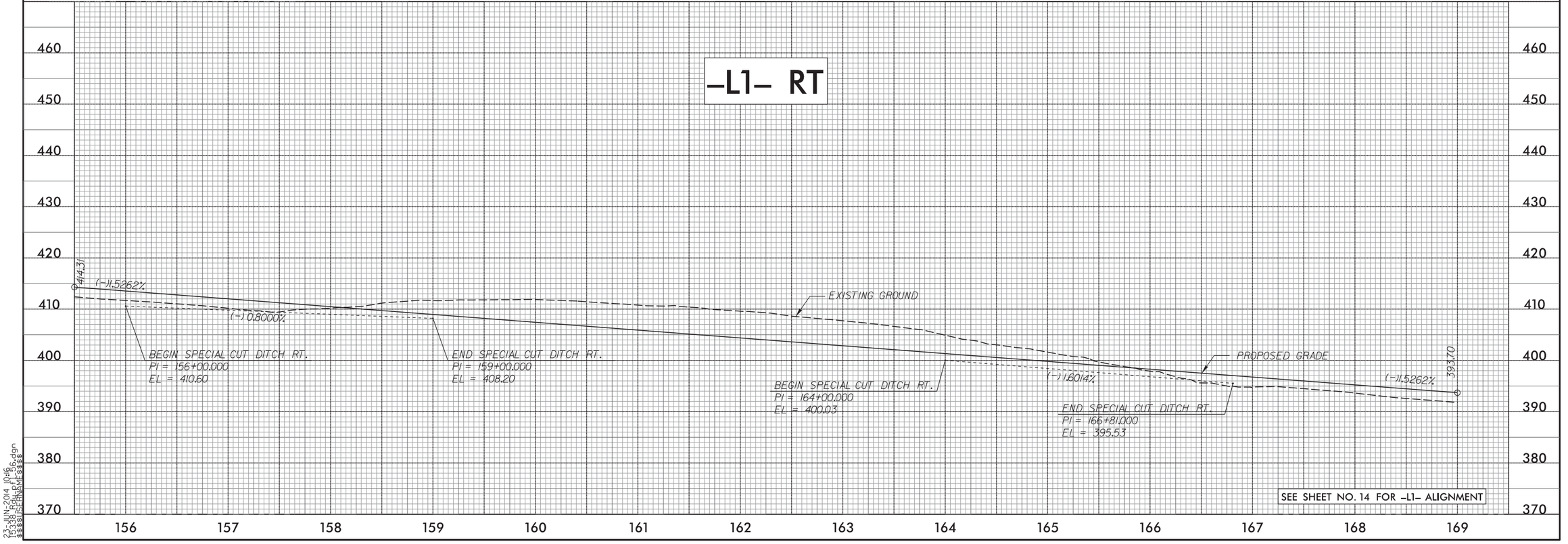
NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY

NORTH CAROLINA PROFESSIONAL SEAL 36188 ENGINEER WILL J. WEATHERSBEE

–L1– LT



–L1– RT



SEE SHEET NO. 14 FOR –L1– ALIGNMENT

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RIGHT DITCH ----------

LEFT DITCH -·-·-·-·-·-

MEDIAN DITCH – – – – –

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	57

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 36188 ENGINEER WILL J. WEATHERSBEE

–L1– LT

PIPE HYDRAULIC DATA
42" CMP TO BE PRESERVED

DRAINAGE AREA	= 50.7	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 110.0	CFS
DESIGN HW ELEVATION	= 359.5	FT
100 YEAR DISCHARGE	= 130.0	CFS
100 YEAR HW ELEVATION	= 361.5	FT
OVERTOPPING FREQUENCY	= 100+	YRS
OVERTOPPING DISCHARGE	= 160.0	CFS
OVERTOPPING ELEVATION	= 379.5	FT

394.03
(–)11.5367%
PROPOSED GRADE
EXISTING GROUND
372.51
(–)11.5367%
(–)1.8000%
BEGIN SPECIAL CUT DITCH LT.
PI = 182+50.000
EL = 370.00
EXIST. 42" CMP TO BE PRESERVED STA 178+24 ELEV = 344.8'

–L1– RT

393.70
(–)11.5262%
PI = 171+00.00
EL = 390.65'
VC = 300'
K = 969
V > 80 MPH
(–)11.5262%
(–)1.2167%
PI = 174+00.00
EL = 387.00'
VC = 300'
K = 542
V > 80 MPH
(–)1.2167%
(–)11.7700%
PROPOSED GRADE
EXISTING GROUND
PI = 177+00.00
EL = 381.69'
VC = 300'
K = 1267
V > 80 MPH
(–)11.7700%
(–)11.5332%
372.49
(–)11.5332%
EXIST. 42" CMP TO BE PRESERVED STA 178+61 ELEV = 343.6' (SEE SHT 57 –LT– LT PROFILE FOR HYDRO DATA)

SEE SHEET NO. 15 FOR –L1– ALIGNMENT

430 420 410 400 390 380 370 360 350 340

169 170 171 172 173 174 175 176 177 178 179 180 181 182 183

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5/28/99

RIGHT DITCH	----------
LEFT DITCH	-----------
MEDIAN DITCH	————

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	58

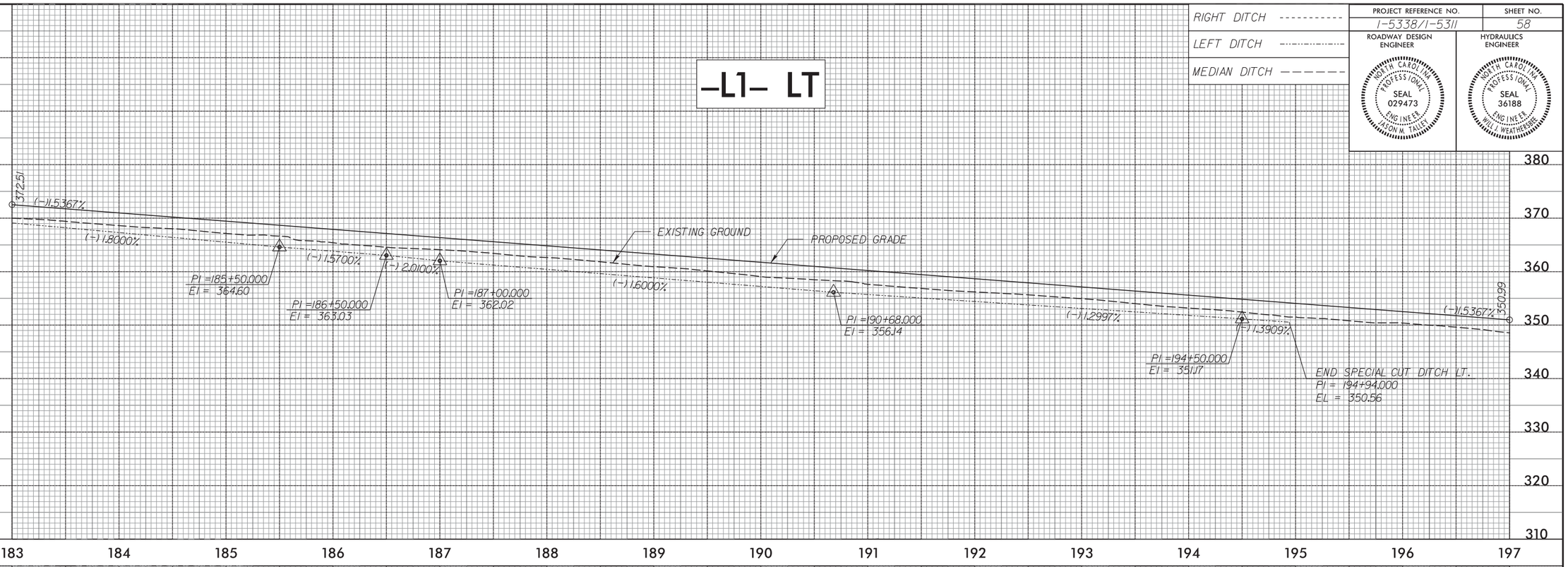
ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY

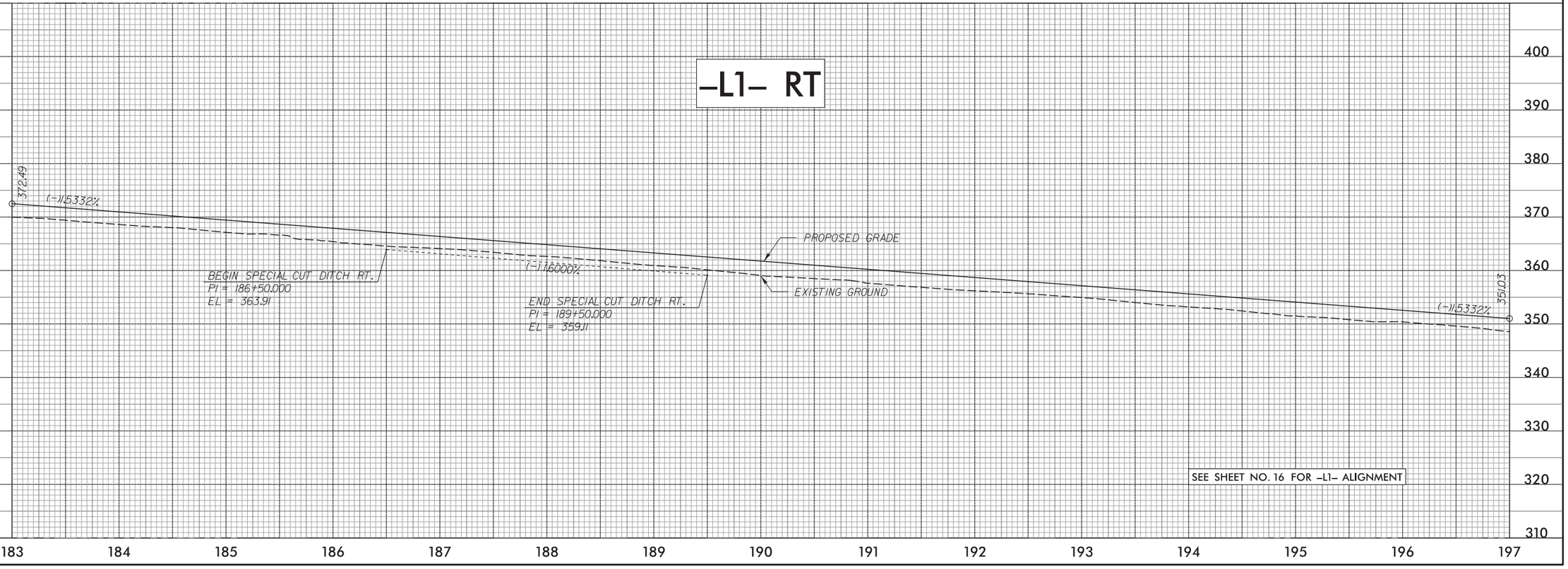
HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 36188 ENGINEER WILL J. WEATHERSBEE

–L1– LT



–L1– RT



SEE SHEET NO. 16 FOR –L1– ALIGNMENT

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5/28/99

RIGHT DITCH ----------

LEFT DITCH ----------

MEDIAN DITCH ————————

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	59

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 36188 ENGINEER WILLIAM J. WEATHERSBEE

–L1– LT

PIPE HYDRAULIC DATA
EXISTING 6'X8' RCBC

DRAINAGE AREA	= 410	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 800	CFS
DESIGN HW ELEVATION	= 313.5	FT
100 YEAR DISCHARGE	= 900	CFS
100 YEAR HW ELEVATION	= 316.3	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 1543	CFS
OVERTOPPING ELEVATION	= 344.0	FT

PIPE HYDRAULIC DATA
42" CMP TO BE PRESERVED

DRAINAGE AREA	= 43.6	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 130.0	CFS
DESIGN HW ELEVATION	= 331.1	FT
100 YEAR DISCHARGE	= 150.0	CFS
100 YEAR HW ELEVATION	= 335.0	FT
OVERTOPPING FREQUENCY	= 100+	YRS
OVERTOPPING DISCHARGE	= 155.0	CFS
OVERTOPPING ELEVATION	= 336.0	FT

350.99

(–)11.5367%

PROPOSED GRADE

EXISTING GROUND

329.48

(–)11.5367%

(–)1.7000%

BEGIN SPECIAL CUT DITCH LT.
PI = 208+50.000
EL = 329.79

EXIST. 6'X8' RCBC
STA. 201+37
ELEV. = 296.2'

EXIST. 42" CMP
TO BE PRESERVED
STA. 205+24
ELEV. = 309.2'

380 370 360 350 340 330 320 310 300 290

197 198 199 200 201 202 203 204 205 206 207 208 209 210 211

–L1– RT

351.03

(–)11.5332%

PROPOSED GRADE

EXISTING GROUND

329.56

(–)11.5332%

(–)1.8000%

BEGIN SPECIAL CUT DITCH RT.
PI = 208+00.000
EL = 330.75

EXIST. 6'X8' RCBC
STA. 200+95
ELEV. = 296.8'
(SEE SHT. 59 –L1– LT PROFILE FOR HYDRO DATA)

EXIST. 42" CMP
TO BE PRESERVED
STA. 205+50
ELEV. = 311.7'
(SEE SHT. 59 –L1– LT PROFILE FOR HYDRO DATA)

SEE SHEET NO. 17 FOR –L1– ALIGNMENT

380 370 360 350 340 330 320 310 300 290

197 198 199 200 201 202 203 204 205 206 207 208 209 210 211

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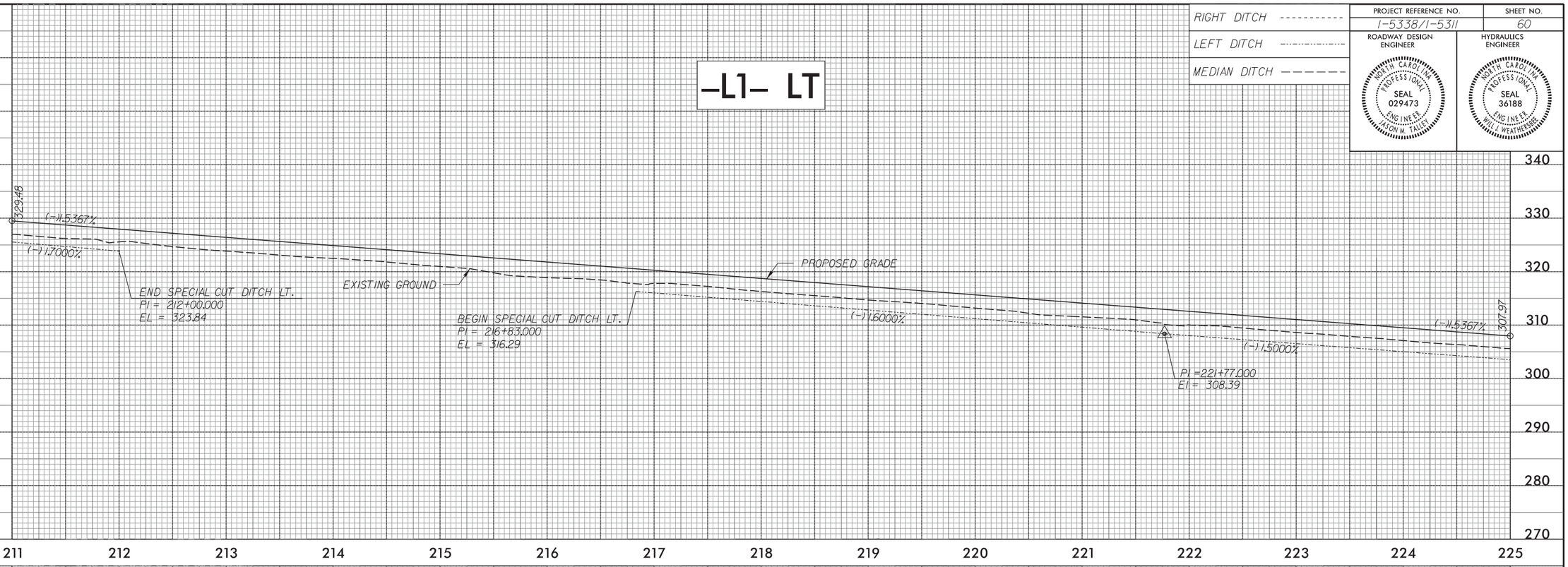
5/28/99

RIGHT DITCH ----------	PROJECT REFERENCE NO.	SHEET NO.
LEFT DITCH -----------	I-5338/I-5311	60
MEDIAN DITCH ———————	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

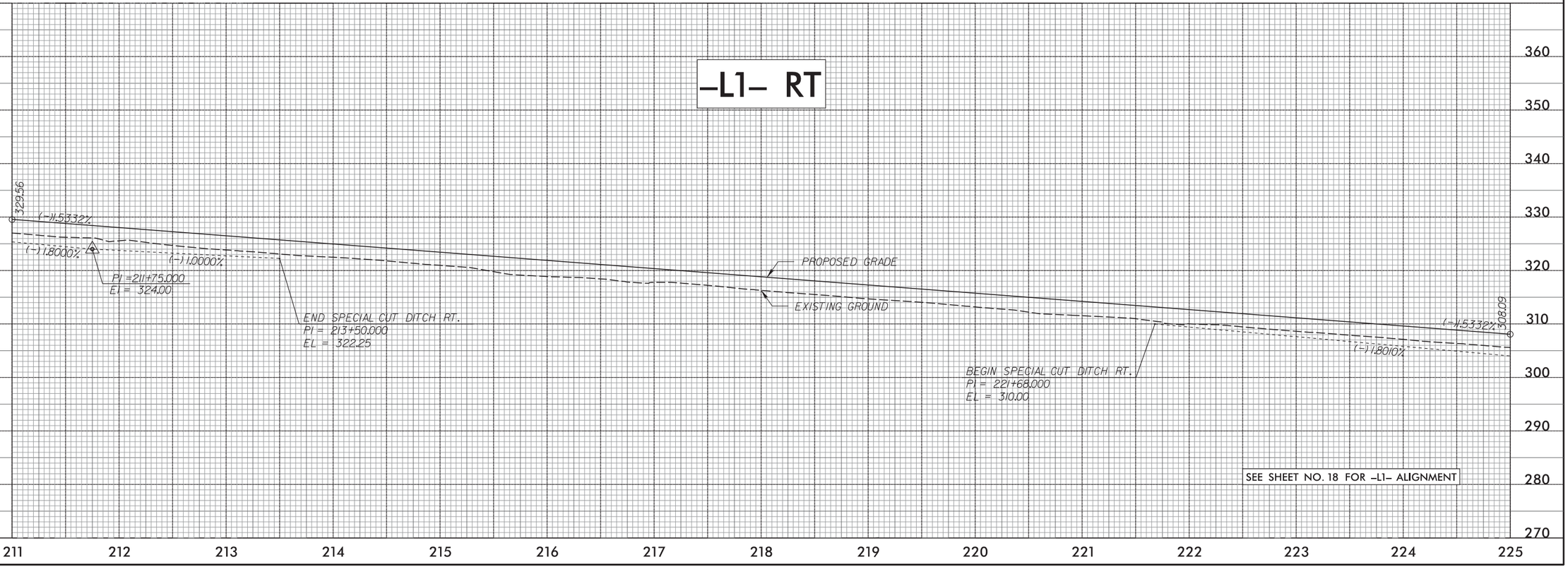
NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY

NORTH CAROLINA PROFESSIONAL SEAL 36188 ENGINEER WILL J. WEATHERSBEE

–L1– LT



–L1– RT



SEE SHEET NO. 18 FOR –L1– ALIGNMENT

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–L1– LT

RIGHT DITCH ----------

LEFT DITCH ----------

MEDIAN DITCH ———————

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	61

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 36188 ENGINEER WILL J. WEATHERSBEE

PIPE HYDRAULIC DATA
72" CMP TO BE PRESERVED

DRAINAGE AREA	= 152	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 360.0	CFS
DESIGN HW ELEVATION	= 286.4	FT
100 YEAR DISCHARGE	= 420.0	CFS
100 YEAR HW ELEVATION	= 288.9	FT
OVERTOPPING FREQUENCY	= 100+	YRS
OVERTOPPING DISCHARGE	= 424.0	CFS
OVERTOPPING ELEVATION	= 289.1	FT

307.97
(–)1.5367%
(–)1.5000%
(–)7.5000%
PI =225+75.000
EL = 302.42
EXISTING GROUND
PROPOSED GRADE
(–)1.6000%
(–)1.5000%
PI =230+94.000
EL = 294.11
END SPECIAL CUT DITCH LT.
PI = 234+09.000
EL = 289.39
BEGIN SPECIAL CUT DITCH LT.
PI = 234+50.000
EL = 288.57
PI = 235+00.00
EL = 292.60'
VC = 300'
K = 1072
V > 80 MPH
(–)1.5367%
(–)1.3400%
PI =235+00.000
EL = 287.90
(–)1.8167%
(–)1.2000%
(–)1.2600%
PI =235+50.000
EL = 287.27
PI = 238+00.00
EL = 287.15'
VC = 300'
K = 1054
V > 80 MPH
END SPECIAL CUT DITCH LT.
PI = 236+00.000
EL = 286.71
EXIST 72" CMP
TO BE PRESERVED
STA 237+29
ELEV = 287.7'
287.25
(–)1.8167%

225 226 227 228 229 230 231 232 233 234 235 236 237 238

360 350 340 330 320 310 300 290 280 270

–L1– RT

SEE SHEET NO. 19 FOR –L1– ALIGNMENT

308.09
(–)1.5332%
(–)1.8010%
(–)1.0000%
PI =225+65.000
EL = 302.85
END SPECIAL CUT DITCH RT.
PI = 227+50.000
EL = 301.00
EXISTING GROUND
PROPOSED GRADE
(–)1.0000%
BEGIN SPECIAL CUT DITCH RT.
PI = 230+50.000
EL = 295.20
END SPECIAL CUT DITCH RT.
PI = 231+50.000
EL = 294.20
BEGIN SPECIAL CUT DITCH RT.
PI = 232+00.000
EL = 293.58
(–) 3.0000%
PI =234+00.000
EL = 287.58
BEGIN SPECIAL CUT DITCH
WITH HINGE RT.
PI = 237+00.000
EL = 283.78
END SPECIAL CUT DITCH RT.
PI = 236+50.000
EL = 282.58
(–) 2.0000%
(–)1.4000%
EXIST 72" CMP
TO BE PRESERVED
STA 237+47
ELEV = 286.9'
(SEE SHT. 61–L1– LT
PROFILE FOR HYDRO DATA)
288.16
(–)1.5332%

225 226 227 228 229 230 231 232 233 234 235 236 237 238

360 350 340 330 320 310 300 290 280 270

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RIGHT DITCH ----------
LEFT DITCH -·-·-·-·-
MEDIAN DITCH – – – – –

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	62

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 36188 ENGINEER WILL J. WEATHERSBEE

–L1– LT

PIPE HYDRAULIC DATA
36" CMP TO BE PRESERVED

DRAINAGE AREA	= 18.5	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 46.0	CFS
DESIGN HW ELEVATION	= 272.2	FT
100 YEAR DISCHARGE	= 55.0	CFS
100 YEAR HW ELEVATION	= 273.4	FT
OVERTOPPING FREQUENCY	= 100+	YRS
OVERTOPPING DISCHARGE	= 65.0	CFS
OVERTOPPING ELEVATION	= 275.0	FT

287.25
(–)1.5320%
PROPOSED GRADE
EXISTING GROUND
EXIST 36" CMP TO BE PRESERVED STA. 245+96 ELEV = 264.3'
PI = 248+00.00
EL = 271.83'
VC = 300'
K = 2178
V > 80 MPH
(–)1.5320%
(–)1.3943%
PI = 251+50.00
EL = 266.95'
VC = 400'
K = 722
V > 80 MPH
(–)1.3943%
(–)10.8400%
266.69

–L1– RT

PIPE HYDRAULIC DATA
EXISTING 30" RCP

DRAINAGE AREA	= 18.5	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 46.0	CFS
DESIGN HW ELEVATION	= 286.7	FT
100 YEAR DISCHARGE	= 55.0	CFS
100 YEAR HW ELEVATION	= 288.2	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 99.0	CFS
OVERTOPPING ELEVATION	= 302.0	FT

288.16
(–)1.5332%
PROPOSED GRADE
(–)1.4000%
PI =242+00.000
EI = 276.78
(–)1.3500%
END SPECIAL CUT DITCH WITH HINGE RT.
BEGIN SPECIAL CUT DITCH
PI = 242+40.000
EI = 276.24
END SPECIAL CUT DITCH RT.
PI = 244+00.000
EI = 274.64
(–)1.0000%
EXISTING GROUND
EXIST 30" RCP STA. 245+99 ELEV = 265.6'
PI = 248+00.00
EL = 272.83'
VC = 300'
K = 7701
V > 80 MPH
(–)1.5332%
(–)1.4943%
PI = 251+50.00
EL = 267.60'
VC = 400'
K = 508
V > 80 MPH
267.47
(–)1.4943%
(–)10.7062%
BEGIN SPECIAL CUT DITCH RT.
PI = 252+00.000
EL = 264.16

SEE SHEET NO. 20 FOR –L1– ALIGNMENT

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5/28/99

RIGHT DITCH ----------

LEFT DITCH ----------

MEDIAN DITCH ----------

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	63

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 36188 ENGINEER WILL J. WEATHERSBEE

-L1- LT

PIPE HYDRAULIC DATA
EXISTING 24" RCP

DRAINAGE AREA	= 4.4	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 19.0	CFS
DESIGN HW ELEVATION	= 254.1	FT
100 YEAR DISCHARGE	= 20.0	CFS
100 YEAR HW ELEVATION	= 254.3	FT
OVERTOPPING FREQUENCY	= 100+	YRS
OVERTOPPING DISCHARGE	= 34.0	CFS
OVERTOPPING ELEVATION	= 260.0	FT

PI = 255+00.00
EL = 264.01'
VC = 300'
K = 11.34
V > 80 MPH

266.69

(-)0.8400%

BEGIN SPECIAL CUT DITCH LT.
PI = 254+50.000
EL = 264.00

(-)0.8400%

(-)1.4000%

PI =255+00.000
EI = 263.30

(-)0.5756%

(-)1.0000%

EXISTING GROUND

PI =257+50.000
EI = 260.55

(-)3.9744%

END SPECIAL CUT DITCH LT.
PI = 257+89.000
EL = 259.00

EXIST 24" RCP
STA 260+17
ELEV = 248.9

PROPOSED GRADE

(-)0.5756%

257.68

-L1- RT

267.47

(-)0.7062%

(-)1.5000%

(-)1.0000%

PI =253+00.000
EI = 262.66

BEGIN SPECIAL CUT DITCH RT.
PI = 252+00.000
EL = 264.16

END SPECIAL CUT DITCH RT.
PI = 254+50.000
EL = 261.16

PI = 258+00.00
EL = 263.01'
VC = 900'
K = 717.2
V > 80 MPH

(-)0.7062%

(-)0.5807%

PROPOSED GRADE

EXISTING GROUND

(-)0.5807%

258.36

EXIST 24" RCP
STA 260+17
ELEV = 249.4'
(SEE SHT 63 -L1- LT PROFILE FOR HYDRO DATA)

SEE SHEET NO. 20 FOR -L1- ALIGNMENT

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5/28/99

RIGHT DITCH ----------

LEFT DITCH ----------

MEDIAN DITCH ———————

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	64

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 36188 ENGINEER WILLIAM J. WEATHERSBEE

–L1– LT

PIPE HYDRAULIC DATA
EXISITING 48" RCP

DRAINAGE AREA	= 75.2	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 170.0	CFS
DESIGN HW ELEVATION	= 255.6	FT
100 YEAR DISCHARGE	= 190.0	CFS
100 YEAR HW ELEVATION	= 256.1	FT
OVERTOPPING FREQUENCY	= 50+	YRS
OVERTOPPING DISCHARGE	= 176.0	CFS
OVERTOPPING ELEVATION	= 256.0	FT

257.68

(–)0.5756%

PROPOSED GRADE

EXISTING GROUND

EXIST. 48" RCP
STA. 267+89
ELEV. = 245.1'

BEGIN SPECIAL CUT DITCH LT.
PI = 271+00.000
EL = 251.45

(+) 0.5000%

PI = 273+00.00
EL = 253.65'
VC = 300'
K = 5094
V > 80 MPH

(–)0.5756%

PI =273+00.000
EI = 252.45

(+) 0.6400%

PI =273+50.000
EI = 252.77

(–)0.5167%

PI =273+82.000
EI = 252.86

(+) 0.2813%

END SPECIAL CUT DITCH LT.
PI = 274+84.000
EL = 254.00

BEGIN SPECIAL CUT DITCH LT.
PI = 276+00.000
EL = 253.42

(+) 1.1176%

PI = 276+00.00
EL = 252.10'
VC = 300'
K = 358
V > 80 MPH

(–)0.5167%

(+)0.3218%

(–) 1.0000%

PI =276+72.000
EI = 252.70

(–) 0.7018%

END SPECIAL CUT DITCH LT.
PI = 279+00.000
EL = 251.10

253.39

–L1– RT

258.36

(–)0.5807%

PROPOSED GRADE

EXISTING GROUND

(+) 1.9467%

EXIST. 48" RCP
STA. 267+75
ELEV. = 246.3'
(SEE SHT. 64 –L1– LT PROFILE FOR HYDRO DATA)

PI =268+75.000
EI = 250.60

BEGIN SPECIAL CUT DITCH RT.
PI = 268+00.000
EL = 249.14

(–) 0.2997%

PI =272+22.000
EI = 249.56

(–)0.5807%

PI = 273+00.00
EL = 254.30'
VC = 300'
K = 6338
V > 80 MPH

(–)0.5333%

(–) 0.3554%

PI =273+88.000
EI = 248.97

(+) 2.5833%

PI =274+00.000
EI = 249.28

(–)0.5333%

(+)0.5250%

PI = 276+00.00
EL = 252.70'
VC = 300'
K = 282
V > 80 MPH

(+)0.5292%

(+)0.5292%

END SPECIAL CUT DITCH RT.
PI = 276+00.000
EL = 250.33

254.89

SEE SHEET NO. 21 FOR –L1– ALIGNMENT

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RIGHT DITCH ----------	PROJECT REFERENCE NO.	SHEET NO.
LEFT DITCH -----------	I-5338/I-5311	65
MEDIAN DITCH -------	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

–L1– LT

PIPE HYDRAULIC DATA
EXISITING 6'X6' RCBC

DRAINAGE AREA	= 110	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 700	CFS
DESIGN HW ELEVATION	= 248.4	FT
100 YEAR DISCHARGE	= 800	CFS
100 YEAR HW ELEVATION	= 249.4	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 1427	CFS
OVERTOPPING ELEVATION	= 258.0	FT

PI = 281+50.00
EL = 253.87'
VC = 300'
K = 479
V > 80 MPH

PI = 291+50.00
EL = 263.35'
VC = 250'
K = 1199
V > 80 MPH

253.39
(+)0.3218%
(+)0.9480%
EXISTING GROUND
PROPOSED GRADE
(+)0.9480%
(+)0.7395%
(–)1.5200%
(–)1.7610%
265.20
(+)0.7395%

BEGIN MEDIAN DITCH
LI (LT) AND RPTB
PI = –LI– 290+50.00
EL = 260.42

PI =291+50.000
EI = 258.90

END MEDIAN DITCH
LI (LT) AND RPTB
PI = –LI– 291+97.70
EL = 258.06

EXIST (2) 6'X6' RCBC
STA 286+60
ELEV = 238.8'

–L1– RT

PI = 282+50.00
EL = 256.14'
VC = 800'
K = 1544
V > 80 MPH

PI = 288+00.00
EL = 261.90'
VC = 300'
K = 2980
V > 80 MPH

254.89
(+)0.5292%
(+)0.5292%
(+)11.0473%
PROPOSED GRADE
(+)11.0473%
(+)0.9466%
EXISTING GROUND
267.58
(+)0.9466%

EXIST (2) 6'X6' RCBC
STA 286+60
ELEV = 238.8'
(SEE SHT 65 –L1– LT
PROFILE FOR HYDRO DATA)

SEE SHEET NO. 22 FOR –L1– ALIGNMENT

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RIGHT DITCH ----------

LEFT DITCH ----------

MEDIAN DITCH ———————

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	92

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 36188 ENGINEER WILL J. WEATHERSBEE

–EBCD–

BEGIN GRADE
–EBCD– STA. 10+00.00
ELEV = 442.85'

PI = 12+40.00
EL = 445.27'
VC = 200'
K = 2012
V > 80 MPH

PI = 20+25.00
EL = 453.99'
VC = 200'
K = 2784
V > 80 MPH

END GRADE
–EBCD– STA. 22+50.00
ELEV = 456.65'

(+)1.0110%
(+)1.1104%
(+)1.1104%
(+)1.1822%
(+)1.1822%

PROPOSED GRADE
EXISTING GROUND

SEE SHEET NO. 6,7 FOR –EBCD– ALIGNMENT

–WBCD–

BEGIN GRADE
–WBCD– STA. 10+00.00
ELEV = 438.89'

PI = 11+50.00
EL = 440.66'
VC = 200'
K = 717
V > 80 MPH

PI = 16+25.00
EL = 444.94'
VC = 650'
K = 2529
V > 80 MPH

END GRADE
–WBCD– STA. 22+00.00
ELEV = 448.64'

(+)1.1800%
(+)0.9011%
(+)0.9011%
(+)0.6440%
(+)0.6440%

PROPOSED GRADE
EXISTING GROUND

SEE SHEET NO. 6,7 FOR –WBCD– ALIGNMENT

460 450 440 430 420

10 11 12 13 14 15 16 17 18 19 20 21 22

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RIGHT DITCH ----------

LEFT DITCH -·-·-·-·-

MEDIAN DITCH — — — — —

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	93

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 36188 ENGINEER WILLIAM WEATHERSBEE

–RP4A–

BEGIN GRADE
–RP4A– STA. 10+00.00
ELEV = 407.99'

PI = 11+00.00
EL = 409.55'
VC = 200'
K = 769
V > 80 MPH

(+)1.5600%

(+)1.3000%

BEGIN SPECIAL LATERAL 'V' DITCH LT.
PI = 15+05.000
EI = 411.31

(–) 1.9412%

PI =15+55.000
EI = 410.34

BEGIN SPECIAL CUT DITCH RT.
PI = 15+55.000
EL = 406.98

(–) 3.0000%

(–) 0.5000%

PI =16+55.000
EI = 407.34

PI =17+05.000
EI = 406.23

END SPECIAL CUT DITCH RT.
PI = 17+55.00
EL = 405.06

(–) 2.3400%

(–) 5.0000%

END SPECIAL LATERAL 'V' DITCH LT.
PI = 18+55.000
EI = 397.34

PI = 18+40.00
EL = 419.17'
VC = 1,280'
K = 232
V = 69 MPH

(+)1.3000%

(–)4.2156%

EXISTING GROUND

PROPOSED GRADE

(–)4.2156%

395.42

PIPE HYDRAULIC DATA
54" CMP TO BE PRESERVED

DRAINAGE AREA	= 49.6	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 160.0	CFS
DESIGN HW ELEVATION	= 370.8	FT
100 YEAR DISCHARGE	= 180.0	CFS
100 YEAR HW ELEVATION	= 372.2	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 510.0	CFS
OVERTOPPING ELEVATION	= 403.5	FT

SEE SHEET NO. 13,14 FOR –RP4A– ALIGNMENT

EXIST. 54" CMP
TO BE PRESERVED
STA. 21+82
ELEV = 348.6' (BELOW GRID)

–RP4A–

END GRADE
–RP4A– STA. 26+57.07
ELEV = 390.05'

PROPOSED GRADE

PI = 25+77.00
EL = 388.10'
VC = 160'
K = 24
V = 24 MPH

395.42

(–)4.2156%

(–)4.2156%

(+)2.4320%

EXISTING GROUND

–RP4B–

BEGIN GRADE
–RP4B– STA. 10+00.00
ELEV = 438.01'

PI = 11+80.00
EL = 439.59'
VC = 180'
K = 475
V > 80 MPH

(+)0.8778%

(+)0.4990%

PROPOSED GRADE

BEGIN SPECIAL LATERAL 'V' DITCH RT.
PI = 15+83.000
EI = 437.09

(–) 2.5723%

PI =16+30.000
EI = 435.89

BEGIN SPECIAL CUT DITCH LT.
PI = 16+30.000
EL = 432.56

PI=16+75.000
EI = 432.24

(–) 6.0000%

(–) 2.4000%

(–)2.8711%

PI = 17+05.00
EL = 442.21'
VC = 870'
K = 160
V = 61 MPH

(+)0.4990%

(–)4.9370%

EXISTING GROUND

END SPECIAL LATERAL 'V' DITCH RT.
PI = 16+80.000
EI = 434.69

PI =16+80.000
EI = 431.94

(–) 3.0000%

(–) 5.5000%

PI=18+30.000
EI = 427.44

END SPECIAL CUT DITCH LT.
PI = 19+80.000
EL = 419.19

(–)4.9370%

426.96

SEE SHEET NO. 12,13 FOR –RP4B– ALIGNMENT

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5/28/99

RIGHT DITCH ----------
LEFT DITCH ----------
MEDIAN DITCH ————————

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	94

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 36188 ENGINEER WILL J. WEATHERSBEE

–RP4B–

PIPE HYDRAULIC DATA
36" CMP TO BE PRESERVED

DRAINAGE AREA	= 40.0	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 90.0	CFS
DESIGN HW ELEVATION	= 383.6	FT
100 YEAR DISCHARGE	= 100.0	CFS
100 YEAR HW ELEVATION	= 386.4	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 148.0	CFS
OVERTOPPING ELEVATION	= 408.0	FT

426.96
(–)14.9370%
PROPOSED GRADE
EXISTING GROUND
END GRADE
–RP4B– STA. 28+94.02
ELEV = 390.25'
END SPECIAL CUT DITCH
WITH HINGE RT.
PI = 28+30.000
EI = 385.80
PI =28+17.920
EI = 385.75
PI = 28+00.00
EL = 388.15'
VC = 180'
K = 25
V = 25 MPH
BEGIN SPECIAL CUT DITCH
WITH HINGE RT.
PI = 27+80.000
EI = 385.92
(–)14.9370%
(+)12.2336%
(–)0.4483%
(+)0.4139%
EXIST. 36" CMP
TO BE PRESERVED
STA 23+17
ELEV = 369.8' (BELOW GRID)
SEE SHEET NO. 12,13 FOR –RP4B– ALIGNMENT

–RP4C–

BEGIN GRADE
–RP4C– STA. 10+00.00
ELEV = 439.90'
PI = 12+75.00
EL = 441.69'
VC = 540'
K = 566
V > 80 MPH
441.08
PROPOSED GRADE
(+)0.6509%
(–)0.3029%
EXISTING GROUND
SEE SHEET NO. 12,13 FOR –RP4C– ALIGNMENT

–RP4C–

441.08
(–)0.3029%
PI = 18+89.00
EL = 439.83'
VC = 410'
K = 152
V = 60 MPH
(–)0.3029%
(–)3.0000%
(–)1.4423%
(–)1.1800%
(–)1.0000%
BEGIN SPECIAL LATERAL
'V' DITCH LT.
PI = 15+62.000
EI = 437.42
BEGIN SPECIAL CUT DITCH RT.
PI = 16+00.000
EL = 436.68
PI =16+00.000
EI = 436.73
END SPECIAL LATERAL
'V' DITCH LT.
PI = 16+50.000
EI = 436.14
END SPECIAL CUT DITCH RT.
PI = 17+50.000
EL = 435.18
PROPOSED GRADE
EXISTING GROUND
(–)2.2500%
BEGIN SPECIAL CUT DITCH
WITH HINGE LT.
PI = 22+00.000
EI = 426.38
PI =24+00.000
EI = 421.88
(–)1.9200%
(–)3.0000%
(+)1.6171%
END SPECIAL CUT DITCH
WITH HINGE LT.
PI = 24+50.000
EI = 420.92
PI = 25+35.00
EL = 420.45'
VC = 200'
K = 43
V = 33 MPH
END GRADE
–RP4C– STA. 26+45.69
ELEV = 422.24'
SEE SHEET NO. 12,13 FOR –RP4C– ALIGNMENT

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5/28/99

RIGHT DITCH ----------

LEFT DITCH ----------

MEDIAN DITCH ————————

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	95

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 36188 ENGINEER WILLIAM J. WEATHERSBEE

–RP4D–

PIPE HYDRAULIC DATA
EXISTING 30" RCP

DRAINAGE AREA	= 20.1	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 60.0	CFS
DESIGN HW ELEVATION	= 400.2	FT
100 YEAR DISCHARGE	= 70.0	CFS
100 YEAR HW ELEVATION	= 404.7	FT
OVERTOPPING FREQUENCY	= 100+	YRS
OVERTOPPING DISCHARGE	= 88.0	CFS
OVERTOPPING ELEVATION	= 416.0	FT

PIPE HYDRAULIC DATA
EXISTING 24" RCP

DRAINAGE AREA	= 5.9	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 24.0	CFS
DESIGN HW ELEVATION	= 403.3	FT
100 YEAR DISCHARGE	= 25.0	CFS
100 YEAR HW ELEVATION	= 403.5	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 56.0	CFS
OVERTOPPING ELEVATION	= 414.0	FT

BEGIN GRADE
–RP4D– STA. 10+00.00
ELEV = 408.68'

PI = 13+55.00
EL = 414.08'
VC = 360'
K = 872
V > 80 MPH

PI = 18+10.00
EL = 419.12'
VC = 250'
K = 177
V = 63 MPH

PI = 21+80.00
EL = 417.98'
VC = 200'
K = 234
V > 80 MPH

(+)1.5200%
(+)1.5211%
(+)1.1077%
(+)1.1077%
(–)0.3081%
(–)1.4477%
(–)1.3945%
(–)0.3081%
(+)0.5456%
(+)0.7509%
(+)0.5465%
419.18

EXISTING GROUND
PROPOSED GRADE

BEGIN SPECIAL CUT DITCH WITH HINGE RT.
PI = 17+50.62
EI = 413.88

PI =17+96.210
EI = 413.22

END SPECIAL CUT DITCH WITH HINGE RT.
PI = 19+47.52
EI = 411.11

BEGIN SPECIAL CUT DITCH LT.
PI = 20+98.00
EI = 414.95

END SPECIAL CUT DITCH LT.
PI = 23+50.00
EI = 416.84

EXIST. 30" RCP
STA. 15+92
ELEV = 383.1'

EXIST. 24" RCP
STA. 18+77
ELEV = 392.0'

SEE SHEET NO. 13, 14 FOR –RP4D– ALIGNMENT

–RP4D–

END GRADE
–RP4D– STA. 28+56.33
ELEV = 422.56'

PI = 27+50.00
EL = 421.09'
VC = 200'
K = 241
V > 80 MPH

419.18
(+)0.5465%
(+)0.5456%
(+)1.3825%

PROPOSED GRADE
EXISTING GROUND

SEE SHEET NO. 13, 14 FOR –RP4D– ALIGNMENT

–RP6A–

BEGIN GRADE
–RP6A– STA. 10+00.00
ELEV = 259.06'

PI = 11+00.00
EL = 259.64'
VC = 200'
K = 4167
V > 80 MPH

PI = 13+50.00
EL = 261.21'
VC = 300'
K = 1316
V > 80 MPH

PI = 17+20.00
EL = 262.69'
VC = 440'
K = 367
V > 80 MPH

264.24
(+)0.5800%
(+)0.6280%
(+)0.6280%
(+)0.4000%
(+)0.4000%
(+)1.6000%

EXISTING GROUND
PROPOSED GRADE

SEE SHEET NO. 20, 21 FOR –RP6A– ALIGNMENT

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5/28/99

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

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	96

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 36188 ENGINEER WILLIAM J. WEATHERSBEE

–RP6A–

END GRADE
–RP6A– STA. 23+00.80
ELEV = 274.93'

PI = 21+40.00
EL = 269.41'
VC = 320'
K = 175
V = 69 MPH

264.24
PROPOSED GRADE
EXISTING GROUND
(+)1.6000%
(+)1.6000%
(+)3.4328%

SEE SHEET NO. 20, 21 FOR –RP6A– ALIGNMENT

–RP6B–

BEGIN GRADE
–RP6B– STA. 10+00.00
ELEV = 292.12'

PI = 12+50.00
EL = 289.27'
VC = 180'
K = 277
V = 72 MPH

PI = 14+40.00
EL = 285.87'
VC = 180'
K = 170
V = 68 MPH

282.53
PROPOSED GRADE
EXISTING GROUND
(–)1.1400%
(–)1.7895%
(–)1.7895%
(–)1.0728%

SEE SHEET NO. 19, 20 FOR –RP6B– ALIGNMENT

–RP6B–

PI = 18+20.00
EL = 283.10'
VC = 400'
K = 359
V = 78 MPH

PI = 22+70.00
EL = 274.79'
VC = 430'
K = 137
V = 60 MPH

PI = 26+30.00
EL = 279.47'
VC = 200'
K = 200
V = 66 MPH

PI = 29+15.00
EL = 280.32'
VC = 80'
K = 21
V = 31 MPH

END GRADE
–RP6B– STA. 29+59.40
ELEV = 278.77'

282.53
(–)0.7289%
(–)1.8467%
(–)1.8467%
(+)1.3000%
PROPOSED GRADE
EXISTING GROUND
(+)1.3000%
(+)0.2982%
(+)0.2982%
(–)3.4910%
(–)3.5034%
(–)3.0000%

END SPECIAL LATERAL
"V" DITCH RT.
PI = 18+31.000
EL = 274.59

BEGIN SPECIAL LATERAL
"V" DITCH RT.
PI = 17+30.53
EL = 278.13

BEGIN SPECIAL CUT DITCH LT.
PI = 28+30.000
EL = 275.83

END SPECIAL CUT DITCH LT.
PI = 29+30.000
EL = 272.83

SEE SHEET NO. 19, 20 FOR –RP6B– ALIGNMENT

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5/28/99

RIGHT DITCH ----------	PROJECT REFERENCE NO.	SHEET NO.
LEFT DITCH -·-·-·-·-	I-5338/I-5311	97
MEDIAN DITCH ———	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY

NORTH CAROLINA PROFESSIONAL SEAL 36188 ENGINEER WILL J. WEATHERSBEE

–RP6C–

BEGIN GRADE
–RP6C– STA. 10+00.00
ELEV = 296.73'

PI = 11+00.00
EL = 295.13'
VC = 200'
K = 333
V = 76 MPH

PI = 13+50.00
EL = 289.63'
VC = 200'
K = 222
V = 78 MPH

PI = 15+40.00
EL = 287.16'
VC = 180'
K = 120
V = 56 MPH

PI = 19+30.00
EL = 276.24'
VC = 600'
K = 77
V = 44 MPH

(–)11.6000% (–)12.2000% (–)12.2000% (–)11.3000% (–)11.3000% (–)12.8000% (–)12.8000% (+)15.0000% (+)15.0000%

299.74

PROPOSED GRADE

EXISTING GROUND

SEE SHEET NO. 19, 20 FOR –RP6C– ALIGNMENT

PIPE HYDRAULIC DATA
EXISTING 36" RCP

DRAINAGE AREA	= 18.5	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 46.0	CFS
DESIGN HW ELEVATION	= 286.7	FT
100 YEAR DISCHARGE	= 55.0	CFS
100 YEAR HW ELEVATION	= 288.2	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 99.0	CFS
OVERTOPPING ELEVATION	= 302.0	FT

–RP6C–

PI = 26+30.00
EL = 311.24'
VC = 120'
K = 21
V = 31 MPH

PROPOSED GRADE

(+)5.0000% (–)10.6117%

299.74

EXISTING GROUND

END GRADE
–RP6C– STA. 26+95.39
ELEV = 310.84'

EXIST. 36" RCP
STA. 24+70
ELEV = 279.1'

SEE SHEET NO. 19, 20 FOR –RP6C– ALIGNMENT

–RP6D–

BEGIN GRADE
–RP6D– STA. 10+00.00
ELEV = 256.29'

PI = 11+60.00
EL = 257.22'
VC = 200'
K = 711
V > 80 MPH

PI = 17+90.00
EL = 259.11'
VC = 550'
K = 101
V = 51 MPH

(+)0.5813% (+)0.3000% (+)0.3000% (+)5.7205%

266.74

PROPOSED GRADE

EXISTING GROUND

SEE SHEET NO. 20, 21 FOR –RP6D– ALIGNMENT

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5/28/99

RIGHT DITCH ----------

LEFT DITCH ----------

MEDIAN DITCH ———————

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	98

ROADWAY DESIGN ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. TALLEY

HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 36188 ENGINEER WILL J. WEATHERSBEE

–RP6D–

PI = 25+20.00
EL = 300.87'
VC = 200'
K = 100
V = 53 MPH

PROPOSED GRADE

EXISTING GROUND

(+)5.7205%

(+)3.7147%

(+)5.7205%

(+)6.9600%

266.74

BEGIN SPECIAL LATERAL 'V' DITCH RT.
PI = 21+40.000
EI = 274.53

END SPECIAL LATERAL 'V' DITCH RT.
PI = 21+90.000
EI = 278.01

END GRADE
–RP6D– STA. 27+12.75
ELEV = 308.03'

SEE SHEET NO. 20, 21 FOR –RP6D– ALIGNMENT

–RP7A–

BEGIN GRADE
–RP7A– STA. 10+00.00
ELEV = 260.96'

260.96

PI = 15+20.00
EL = 258.15'
VC = 280'
K = 154
V = 60 MPH

(–)10.5404%

(–)2.3636%

PROPOSED GRADE

EXISTING GROUND

BEGIN SPECIAL LATERAL 'V' DITCH
PI = 20+60.00
EI = 237.59

(–)0.8538%

PI = 21+80.00
EL = 242.55'
VC = 180'
K = 47
V = 34 MPH

(–)2.3636%

(+)1.4435%

END SPECIAL LATERAL 'V' DITCH
PI = 21+90.00
EI = 238.70

END GRADE
–RP7A– STA. 22+74.91
ELEV = 243.92'

SEE SHEET NO. 23 FOR –RP7A– ALIGNMENT

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09/08/99

TIP PROJECT: I–5338 / I–5311

CONTRACT: C203166

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I–5338 / I–5311	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
46265.3.1	IMS–0440(13)	PE
46265.3.1	IMS–0440(13)	R/W, UTIL
46265.3.1	IMS–0440(13)	CONST

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



VICINITY MAP

AREA 2B
60% ROADWAY PLANS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

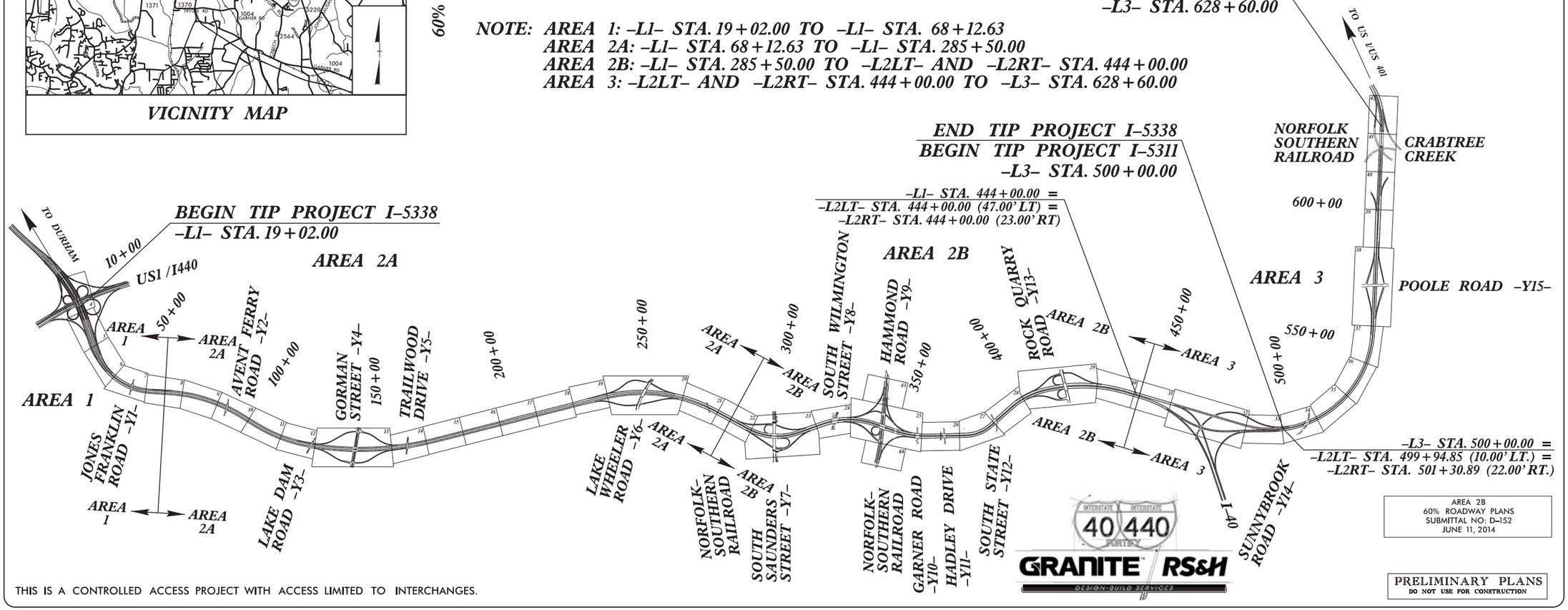
WAKE COUNTY

LOCATION: *I–40 / US 64 FROM WEST OF SR 1319 (JONES FRANKLIN RD) CONTINUING ALONG I–440 / US 64 TO NORTH OF US 64 / US 264*

TYPE OF WORK: *PAVING, GRADING, DRAINAGE, STRUCTURE REHABILITATION, STRUCTURE WIDENING, GUARDRAIL, SIGNING, LIGHTING, AND ITS*

NOTE: *AREA 1: –L1– STA. 19 + 02.00 TO –L1– STA. 68 + 12.63*
AREA 2A: –L1– STA. 68 + 12.63 TO –L1– STA. 285 + 50.00
AREA 2B: –L1– STA. 285 + 50.00 TO –L2LT– AND –L2RT– STA. 444 + 00.00
AREA 3: –L2LT– AND –L2RT– STA. 444 + 00.00 TO –L3– STA. 628 + 60.00

NAD 83/NSRS 2007



THIS IS A CONTROLLED ACCESS PROJECT WITH ACCESS LIMITED TO INTERCHANGES.

AREA 2B
60% ROADWAY PLANS
SUBMITTAL NO: D–152
JUNE 11, 2014

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES

PLANS 50 25 0 50 100
PROFILE (HORIZONTAL) 50 25 0 50 100
PROFILE (VERTICAL) 10 5 0 10 20

DESIGN DATA

ADT 2013 = 126,025
ADT 2035 = 184,600
DHV = 9 %
D = 55 %
T = 8 % *
V = 70 MPH
* (TTST = 4% + DUAL = 4%)
FUNC CLASS = INTERSTATE

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT I–5338 / I–5311 = 11.503 MILES
LENGTH STRUCTURE TIP PROJECT I–5338 / I–5311 = 0.042 MILES
TOTAL LENGTH TIP PROJECT I–5338 / I–5311 = 11.545 MILES

*NOTE: EASTBOUND LANES USED TO CALCULATE LENGTH OF PROJECT.

K. ZAK HAMIDI, PE
NCDOT CONTACT

Prepared In the Office of:
RS&H
ARCHITECTS–ENGINEERS–PLANNERS, INC.
8601 SIX FORKS ROAD, SUITE 260
RALEIGH, NC 27615

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
MAY 13, 2013

LETTING DATE:
MAY 13, 2013

CHAD ROGERS, PE
PROJECT ENGINEER

JASON TALLEY, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

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12/05/11

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	I-B

Note: Not to Scale

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

BOUNDARIES AND PROPERTY:

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

BUILDINGS AND OTHER CULTURE:

- Gas Pump Vent or U/G Tank Cap
- Sign
- 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
- Existing Transportation Facility — ETF
- Top of Bank — TB

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.
I-5338/I-5311	2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRANITE RS&H DESIGN-BUILD SERVICES

PAVEMENT SCHEDULE			
C1	PROP. APPROX. 1.5″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.	R1	2′-0″ DOUBLE FACED CONCRETE BARRIER.
C2	PROP. APPROX. 3.0″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	R2	2′-6″ DOUBLE FACED CONCRETE BARRIER.
C3	PROP. APPROX. 1.5″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5D, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.	R3	2′-6″ CONCRETE CURB AND GUTTER.
C4	PROP. APPROX. 3.0″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5D, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	R4	CONCRETE SHOULDER BERM GUTTER.
C5	PROP. VAR. ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5D, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1″ DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 1.5″ IN DEPTH OR GREATER THAN 2″ IN DEPTH.	R5	CONCRETE BARRIER WALL
D1	PROP. APPROX. 3.5″ ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 399 LBS. PER SQ. YD.	R6	CONCRETE BARRIER W/ GLARE SCREEN
D2	PROP. APPROX. 3.0″ ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0D, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.	R7	SPECIAL CONCRETE SHOULDER BERM GUTTER (SEE DETAIL ON SHEET 2-A).
D3	PROP. VAR. ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0D, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1″ DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 2.5″ IN DEPTH OR GREATER THAN 4″ IN DEPTH.	R8	CONCRETE EXPRESSWAY GUTTER
E1	PROP. APPROX. 4.0″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	T	EARTH MATERIAL.
E2	PROP. APPROX. 5.5″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.	U	EXISTING PAVEMENT.
E3	PROP. APPROX. 9.0″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 513 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	V	MILL 1.5″ DEPTH. (SEE DETAILS ON SHEET NOS. 2-J & 2-K)
E4	PROP. VAR. ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1″ DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3″ IN DEPTH OR GREATER THAN 5.5″ IN DEPTH.	W	WEDGING. (SEE DETAIL ON SHEET NO. 2-E)
K	PROP. 12.0″ CLASS IV SUBGRADE STABILIZATION WITH GEOTEXTILE FABRIC.		

NOTE: ALL EOP SLOPES ARE 1:1 UNLESS OTHERWISE SHOWN
FDPS = FULL DEPTH PAVED SHOULDER
PDPS = PARTIAL DEPTH PAVED SHOULDER

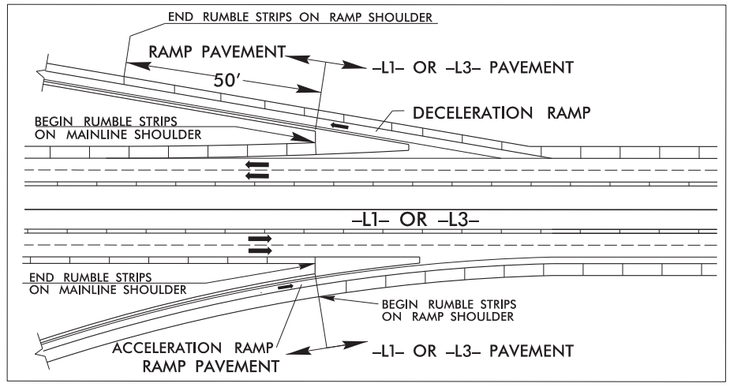
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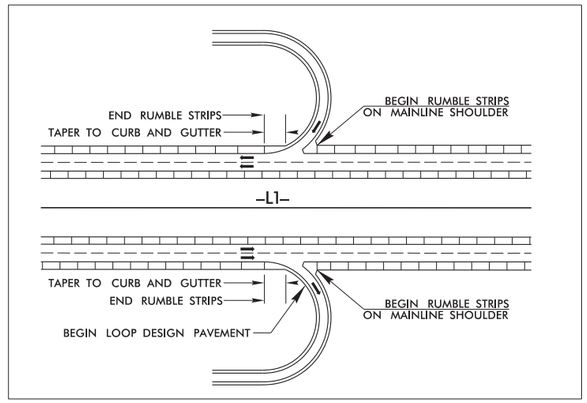
PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	2-A
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

GRANITE RS&H DESIGN-BUILD SERVICES

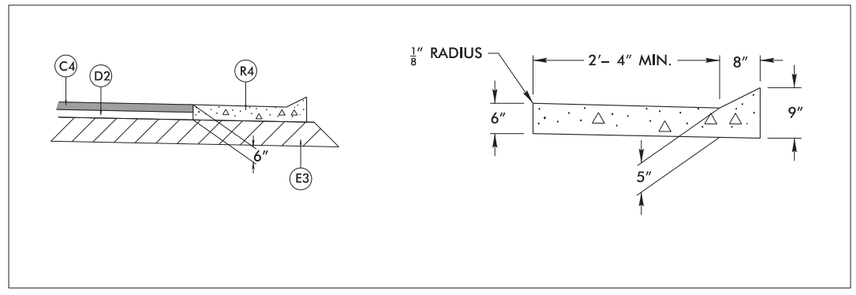
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



DETAIL SHOWING LIMITS OF PAVEMENT DESIGN &
RUMBLE STRIP TREATMENT AT RAMP TERMINAL
REFER TO STD DRAWING NO. 665.01



DETAIL SHOWING LIMITS OF PAVEMENT DESIGN &
RUMBLE STRIP TREATMENT AT LOOP TERMINALS



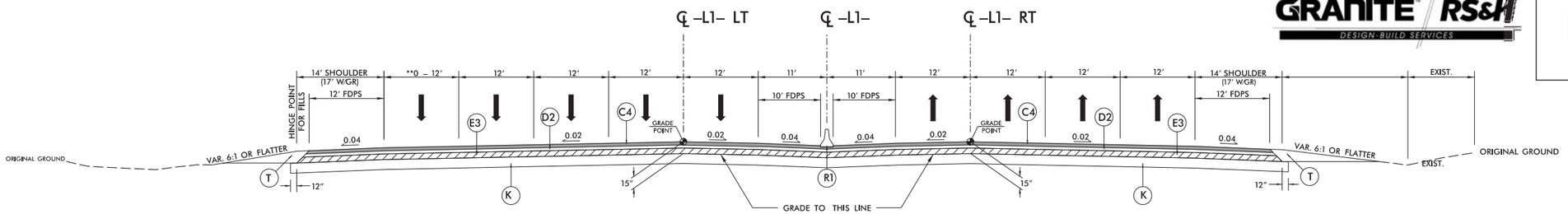
DETAIL SHOWING MODIFIED SHOULDER
BERM GUTTER FLUSH WITH ASPHALT CONCRETE – MAINLINE

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6/2/99

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	2-F
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

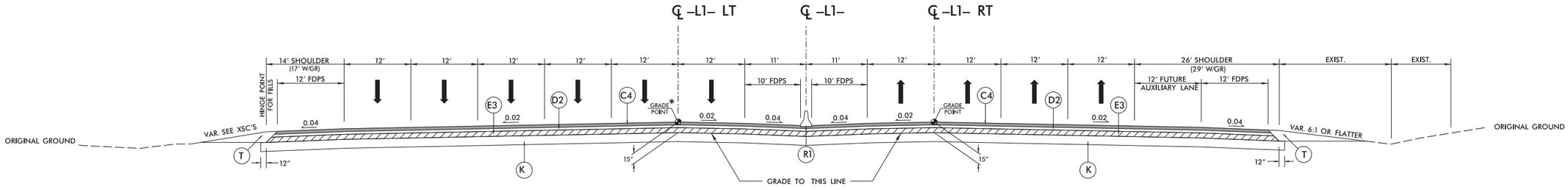
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



TYPICAL SECTION – No. 7

–L– STA. 285+50.00 RT. TO –L– STA. 301+85.68 RT. (BEGIN BRIDGE)
–L– STA. 285+50.00 LT. TO –L– STA. 301+86.98 LT. (BEGIN BRIDGE)
–L– STA. 303+90.11 (END BRIDGE) RT. TO –L– STA. 324+79.73 RT. (BEGIN BRIDGE)
–L– STA. 303+82.46 (END BRIDGE) LT. TO –L– STA. 324+96.37 LT. (BEGIN BRIDGE)
–L– STA. 327+28.79 RT. (END BRIDGE) TO –L– STA. 342+90.47 RT. (BEGIN BRIDGE)
–L– STA. 327+53.12 LT. (END BRIDGE) TO –L– STA. 342+79.32 LT. (BEGIN BRIDGE)
–L– STA. 345+34.97 RT. (END BRIDGE) TO –L– STA. 348+48.74 RT. (BEGIN BRIDGE)
–L– STA. 345+23.82 LT. (END BRIDGE) TO –L– STA. 348+37.48 LT. (BEGIN BRIDGE)
–L– STA. 349+81.23 RT. (END BRIDGE) TO –L– STA. 356+67.85 RT. (BEGIN BRIDGE)
–L– STA. 349+66.95 LT. (END BRIDGE) TO –L– STA. 356+61.48 LT. (BEGIN BRIDGE)
–L– STA. 358+30.72 RT. (END BRIDGE) TO –L– STA. 366+74.26 RT. (BEGIN BRIDGE)
–L– STA. 358+26.35 LT. (END BRIDGE) TO –L– STA. 366+69.10 LT. (BEGIN BRIDGE)
–L– STA. 368+08.66 RT. (END BRIDGE) TO –L– STA. 386+78.50 RT. (BEGIN BRIDGE)
–L– STA. 368+08.19 LT. (END BRIDGE) TO –L– STA. 386+92.59 LT. (BEGIN BRIDGE)
–L– STA. 388+22.25 RT. (END BRIDGE) TO –L– STA. 417+50.00 RT.
–L– STA. 388+32.71 LT. (END BRIDGE) TO –L– STA. 417+50.00 LT.

** ADDITIONAL OUTSIDE LANE ONLY FROM –L1– STA. 357+00.00 LT. TO –L1– STA. 444+00.00 LT.



TYPICAL SECTION – No. 8

–L– STA. 417+50.00 RT. TO –L– STA. 444+00.00 RT.
–L– STA. 417+50.00 LT. TO –L– STA. 444+00.00 LT.

PAVEMENT SCHEDULE									
C1	1.5" SURFACE COURSE TYPE S9.5C	D1	3.5" INTER. COURSE TYPE I19.0C	E3	9.0" BASE COURSE TYPE B25.0C	R3	2'-6" CONCRETE CURB AND GUTTER	R8	CONCRETE EXPRESSWAY GUTTER
C2	3.0" SURFACE COURSE TYPE S9.5C	D2	3.0" INTER. COURSE TYPE I19.0D	E4	VAR. BASE COURSE TYPE B25.0C	R4	CONCRETE SHOULDER BERM GUTTER	T	EARTH MATERIAL
C3	1.5" SURFACE COURSE TYPE S9.5D	D3	VAR. INTER. COURSE TYPE I19.0D	K	12.0" CL IV STAB. W/ GEO. FABRIC	R5	CONCRETE BARRIER WALL	U	EXISTING PAVEMENT
C4	3.0" SURFACE COURSE TYPE S9.5D	E1	4.0" BASE COURSE TYPE B25.0C	R1	2'-0" DOUBLE FACED CONCRETE BARRIER	R6	CONCRETE BARRIER W/ GLARE SCREEN	V	MILL 1.5" DEPTH
C5	VAR. SURFACE COURSE TYPE S9.5D	E2	5.5" BASE COURSE TYPE B25.0C	R2	2'-6" DOUBLE FACED CONCRETE BARRIER	R7	SPECIAL CONCRETE SHOULDER BERM GUTTER	W	WEDGING

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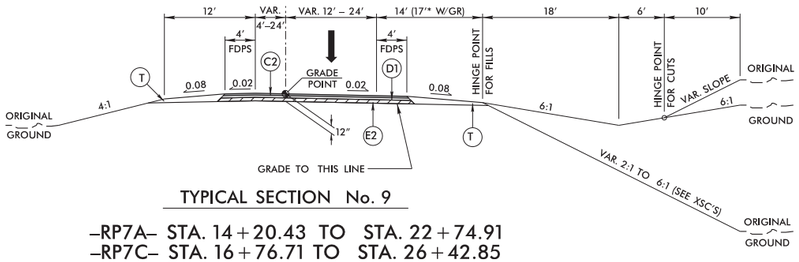
PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	2-G
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INTERSTATE 40 INTERSTATE 440 PORTER

GRANITE RS&H DESIGN-BUILD SERVICES

℄ –RAMP–

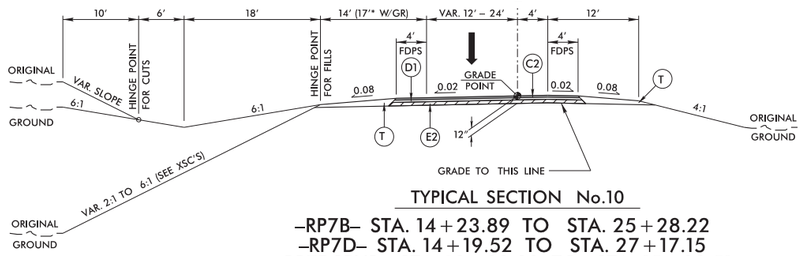


TYPICAL SECTION No. 9

–RP7A– STA. 14+20.43 TO STA. 22+74.91
–RP7C– STA. 16+76.71 TO STA. 26+42.85
–RP9A– STA. 14+99.48 TO STA. 26+58.70
–RP9ASPUR– STA. 11+01.35 TO STA. 15+32.55
–RP9C– STA. 14+65.51 TO STA. 26+88.29
–RP13A– STA. 13+52.23 TO STA. 24+41.06
–RP13C– STA. 13+86.39 TO STA. 25+22.06

NOTE: PAVED SHOULDER WIDTH FOR ALL RAMPS VARIES WHEN TRANSITIONING FROM MAINLINE.

℄ –RAMP–



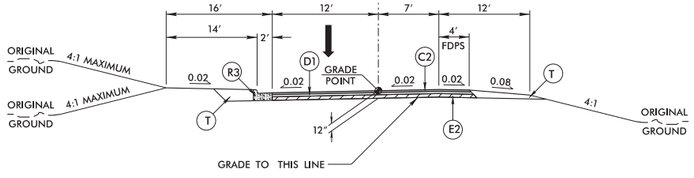
TYPICAL SECTION No.10

–RP7B– STA. 14+23.89 TO STA. 25+28.22
–RP7D– STA. 14+19.52 TO STA. 27+17.15
–RP7DSPUR– STA. 10+00.00 TO STA. 15+09.51
–RP9B– STA. 14+02.91 TO STA. 24+82.97
–RP9BSPUR– STA. 10+00.00 TO STA. 21+93.75
–RP9D– STA. 14+98.72 TO STA. 26+54.00
–RP13B– STA. 14+26.13 TO STA. 24+29.14

NOTE: PAVED SHOULDER WIDTH FOR ALL RAMPS VARIES WHEN TRANSITIONING FROM MAINLINE.

* TOTAL SHOULDER WIDTH REDUCED TO 15′ IN ORDER TO AVOID SLIVER FILLS. SEE PLANS FOR LOCATIONS.

℄ –LOOP–

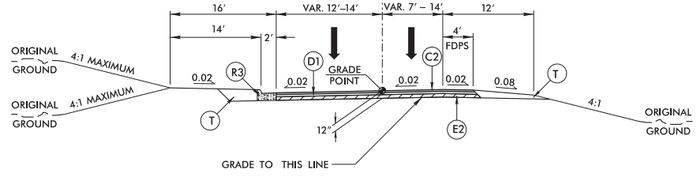


TYPICAL SECTION No. 11

–LP9C– STA. 13+80.78 TO STA. 19+00.00
–LP13B– STA. 13+88.20 TO STA. 20+13.17
–LP13C– STA. 12+72.81 TO STA. 18+99.73

NOTE: PAVED SHOULDER WIDTH FOR ALL RAMPS VARIES WHEN TRANSITIONING FROM MAINLINE.

℄ –LOOP–



TYPICAL SECTION No. 11A

–LP7B– STA. 12+24.25 TO STA. 17+45.18
–LP7D– STA. 13+62.30 TO STA. 21+70.48

NOTE: PAVED SHOULDER WIDTH FOR ALL RAMPS VARIES WHEN TRANSITIONING FROM MAINLINE.

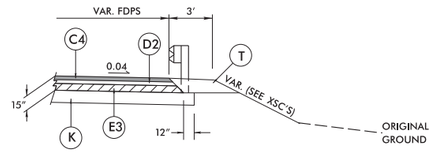
PAVEMENT SCHEDULE									
C1	1.5″ SURFACE COURSE TYPE S9.5C	D1	3.5″ INTER. COURSE TYPE I19.0C	E3	9.0″ BASE COURSE TYPE B25.0C	R3	2′-6″ CONCRETE CURB AND GUTTER	R8	CONCRETE EXPRESSWAY GUTTER
C2	3.0″ SURFACE COURSE TYPE S9.5C	D2	3.0″ INTER. COURSE TYPE I19.0D	E4	VAR. BASE COURSE TYPE B25.0C	R4	CONCRETE SHOULDER BERM GUTTER	T	EARTH MATERIAL
C3	1.5″ SURFACE COURSE TYPE S9.5D	D3	VAR. INTER. COURSE TYPE I19.0D	K	12.0″ CL IV STAB. W/ GEO. FABRIC	R5	CONCRETE BARRIER WALL	U	EXISTING PAVEMENT
C4	3.0″ SURFACE COURSE TYPE S9.5D	E1	4.0″ BASE COURSE TYPE B25.0C	R1	2′-0″ DOUBLE FACED CONCRETE BARRIER	R6	CONCRETE BARRIER W/ GLARE SCREEN	V	MILL 1.5″ DEPTH
C5	VAR. SURFACE COURSE TYPE S9.5D	E2	5.5″ BASE COURSE TYPE B25.0C	R2	2′-6″ DOUBLE FACED CONCRETE BARRIER	R7	SPECIAL CONCRETE SHOULDER BERM GUTTER	W	WEDGING

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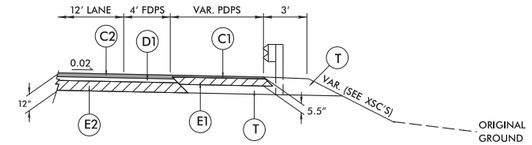
6/2/99

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	2-H
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

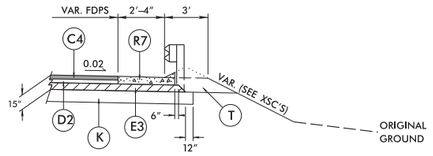
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



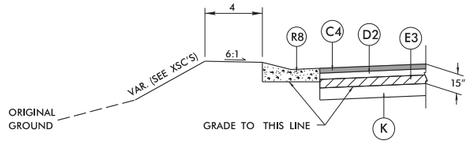
Detail Showing Paved Shoulder in Relation to Guardrail – Mainline



Detail Showing Paved Shoulder in Relation to Guardrail – Ramps & Loops

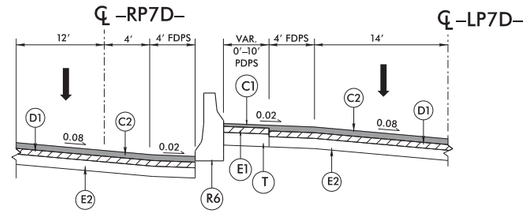


Detail Showing Paved Shoulder in Relation to Shoulder Berm Gutter – Mainline



Detail Showing Expressway Gutter on Top of Subgrade – Mainline

–L1– STA. 372+75 TO STA. 376+00 LT.
–L1– STA. 368+34 TO STA. 385+13 RT.



Detail Showing Median Barrier With Glare Screen Between –RP7D– and –LP7D–

–RP7D– STA. 22+28.39 TO STA. 26+29.81

PAVEMENT SCHEDULE									
C1	1.5" SURFACE COURSE TYPE S9.5C	D1	3.5" INTER. COURSE TYPE I19.0C	E3	9.0" BASE COURSE TYPE B25.0C	R3	2'-6" CONCRETE CURB AND GUTTER	R8	CONCRETE EXPRESSWAY GUTTER
C2	3.0" SURFACE COURSE TYPE S9.5C	D2	3.0" INTER. COURSE TYPE I19.0D	E4	VAR. BASE COURSE TYPE B25.0C	R4	CONCRETE SHOULDER BERM GUTTER	T	EARTH MATERIAL
C3	1.5" SURFACE COURSE TYPE S9.5D	D3	VAR. INTER. COURSE TYPE I19.0D	K	12.0" CL IV STAB. W/ GEO. FABRIC	R5	CONCRETE BARRIER WALL	U	EXISTING PAVEMENT
C4	3.0" SURFACE COURSE TYPE S9.5D	E1	4.0" BASE COURSE TYPE B25.0C	R1	2'-0" DOUBLE FACED CONCRETE BARRIER	R6	CONCRETE BARRIER W/ GLARE SCREEN	V	MILL 1.5" DEPTH
C5	VAR. SURFACE COURSE TYPE S9.5D	E2	5.5" BASE COURSE TYPE B25.0C	R2	2'-6" DOUBLE FACED CONCRETE BARRIER	R7	SPECIAL CONCRETE SHOULDER BERM GUTTER	W	WEDGING

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PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	2-AG
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

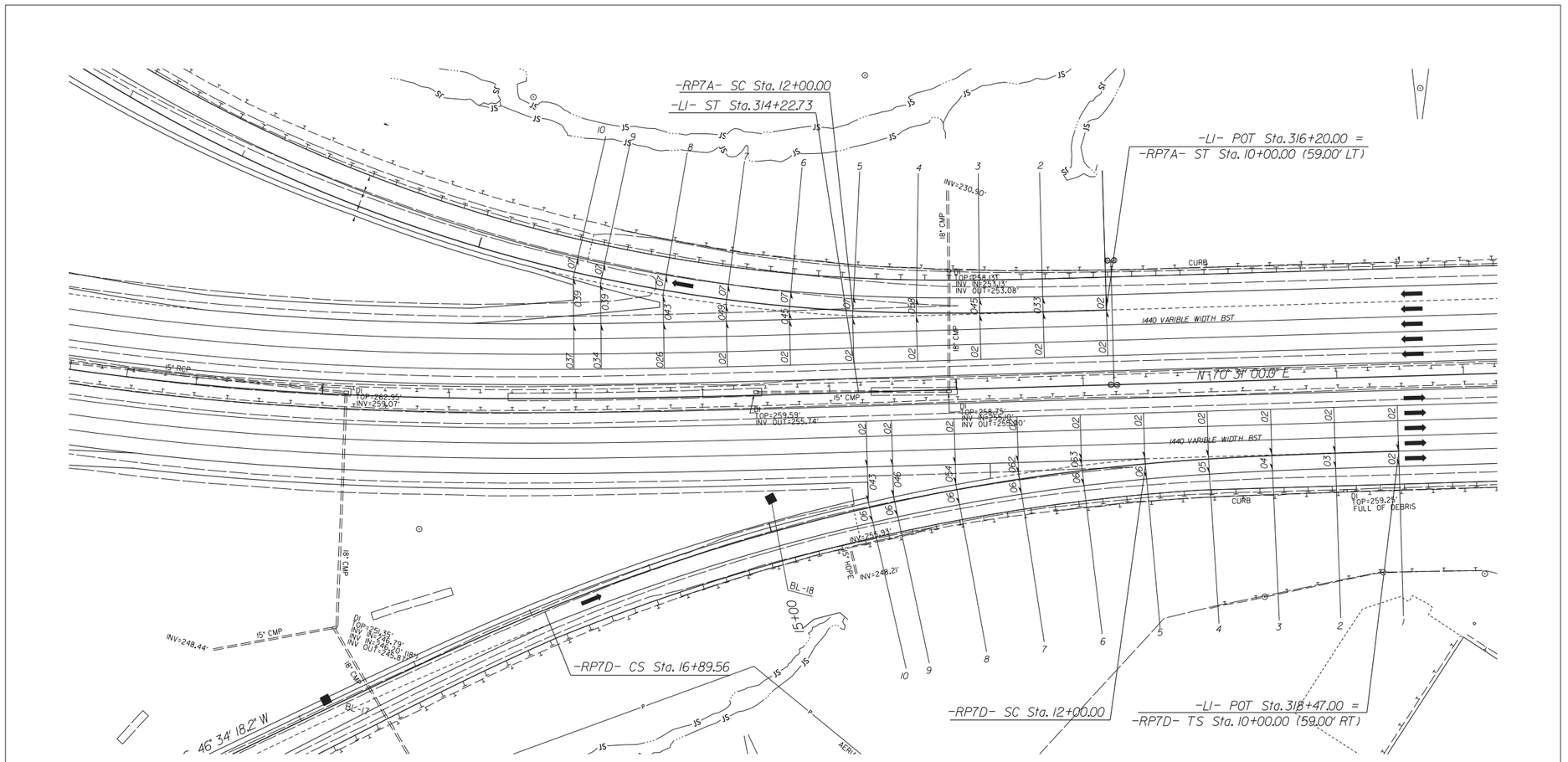
NAD 83 NSRS 2007

INTERSTATE 40 INTERSTATE 440 PORTION

GRANITE RS&H DESIGN-BUILD SERVICES

REVISIONS

8/17/99



RAMP GORE DETAIL
FOR -RP7A- AND -RP7D- AT -LI-

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PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	2-AH
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

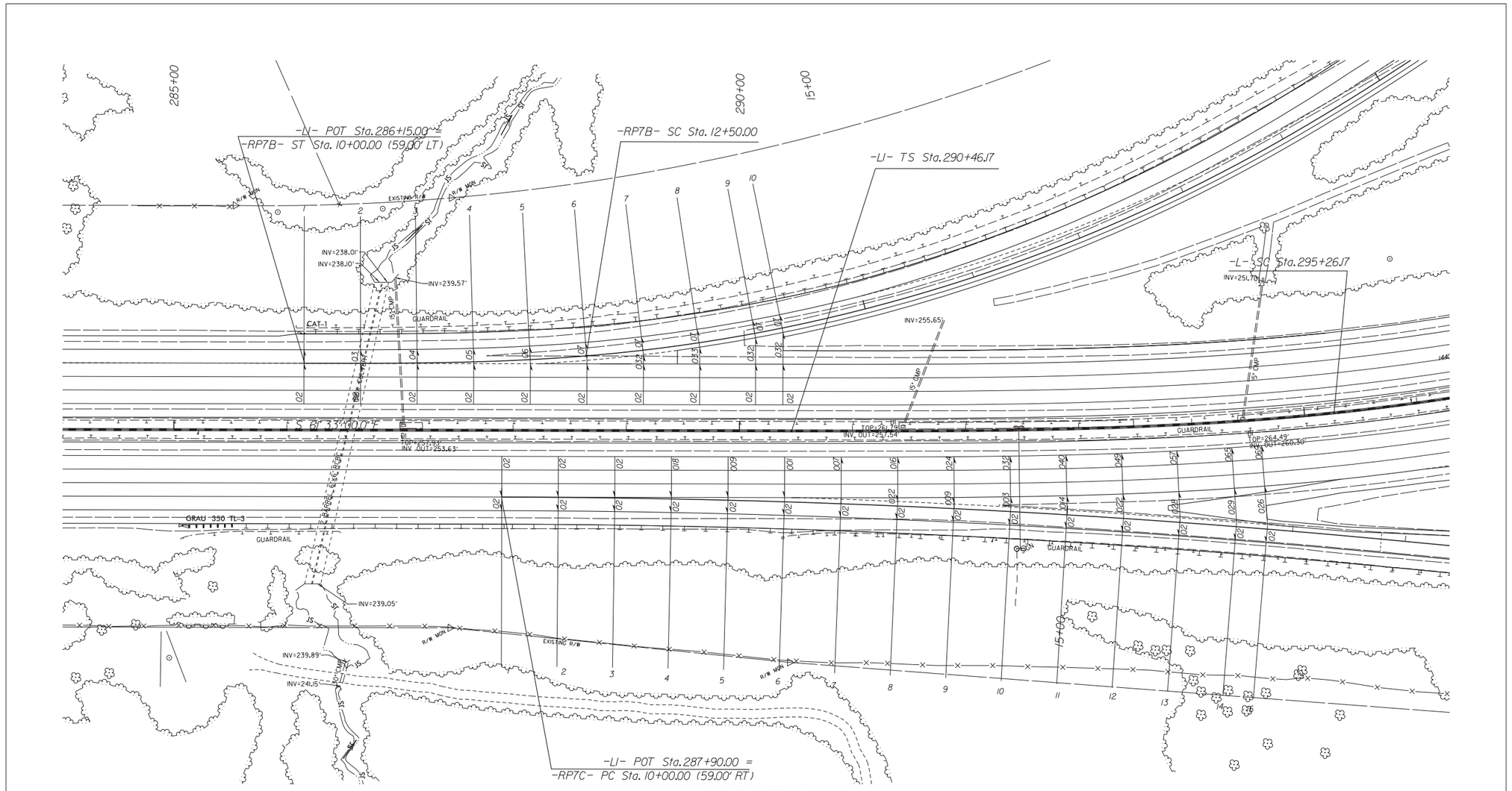
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INTERSTATE 40 INTERSTATE 440 PORTION

GRANITE RS&H DESIGN-BUILD SERVICES

REVISIONS

8/17/99



RAMP GORE DETAIL
FOR -RP7B- AND -RP7C- AT -LI-

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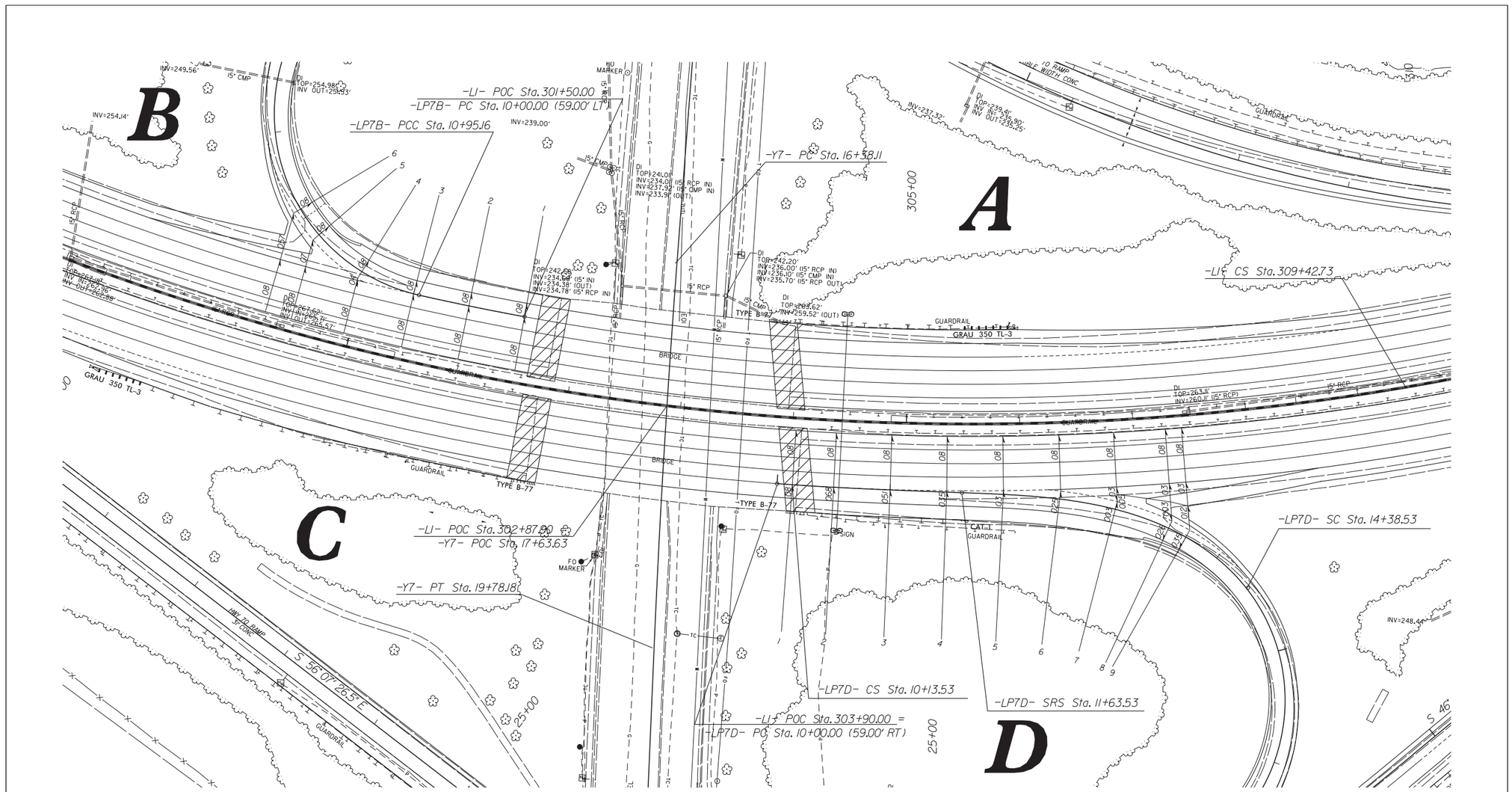
8/17/99

REVISIONS

NAD 83/NSRS 2007

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	2-A1
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



RAMP GORE DETAIL
FOR -LP7B- AND -LP7D- AT -LI-

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PROJECT REFERENCE NO.	SHEET NO.
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R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NAD 83/NSRS 2007

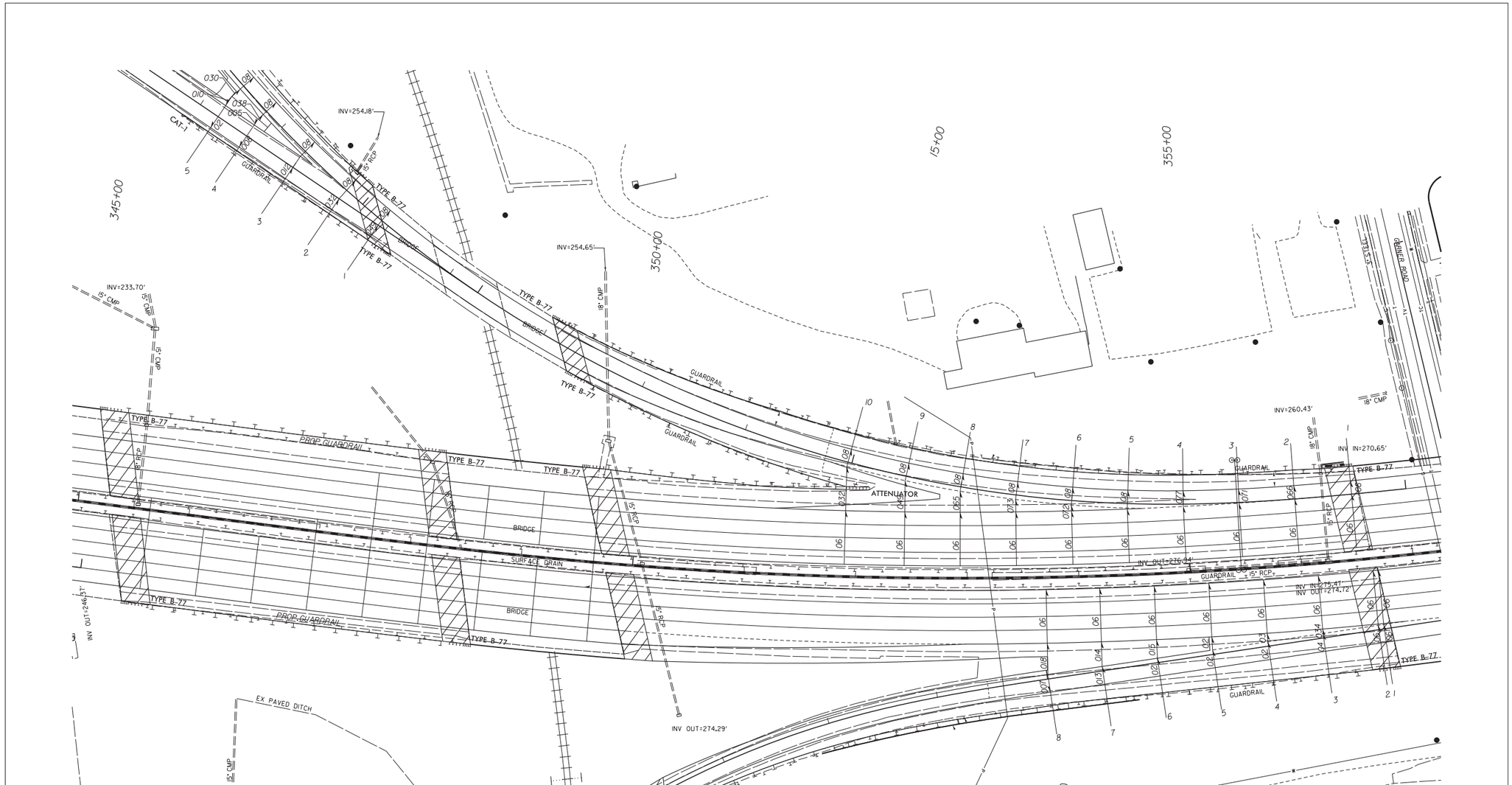
INTERSTATE 40 INTERSTATE 440 PORTION

GRANITE RS&H DESIGN-BUILD SERVICES

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

8/17/99



RAMP GORE DETAIL
FOR -RP9A- AND -RP9D- AT -LI-
AND -RP9A- AT -RP9ASPUR-

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PROJECT REFERENCE NO.	SHEET NO.
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R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

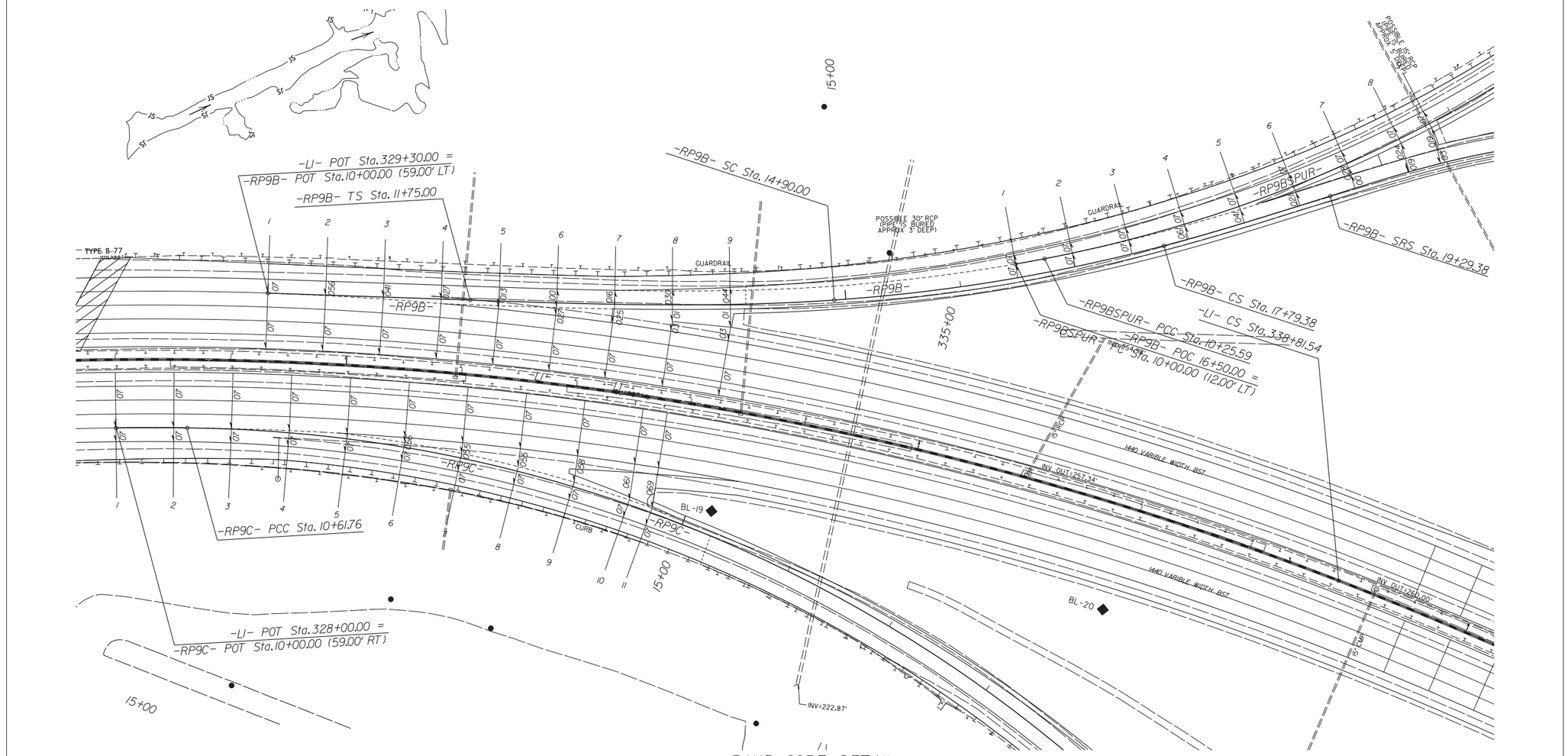
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INTERSTATE 40 INTERSTATE 440 PORTICO

GRANITE RS&H DESIGN-BUILD SERVICES

REVISIONS

8/17/99



RAMP GORE DETAIL
FOR -RP9B- AND -RP9C- AT -LI-
AND -RP9B- AT -RP9BSPUR-

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PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	2-AL
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NAD 83/NSRS 2007

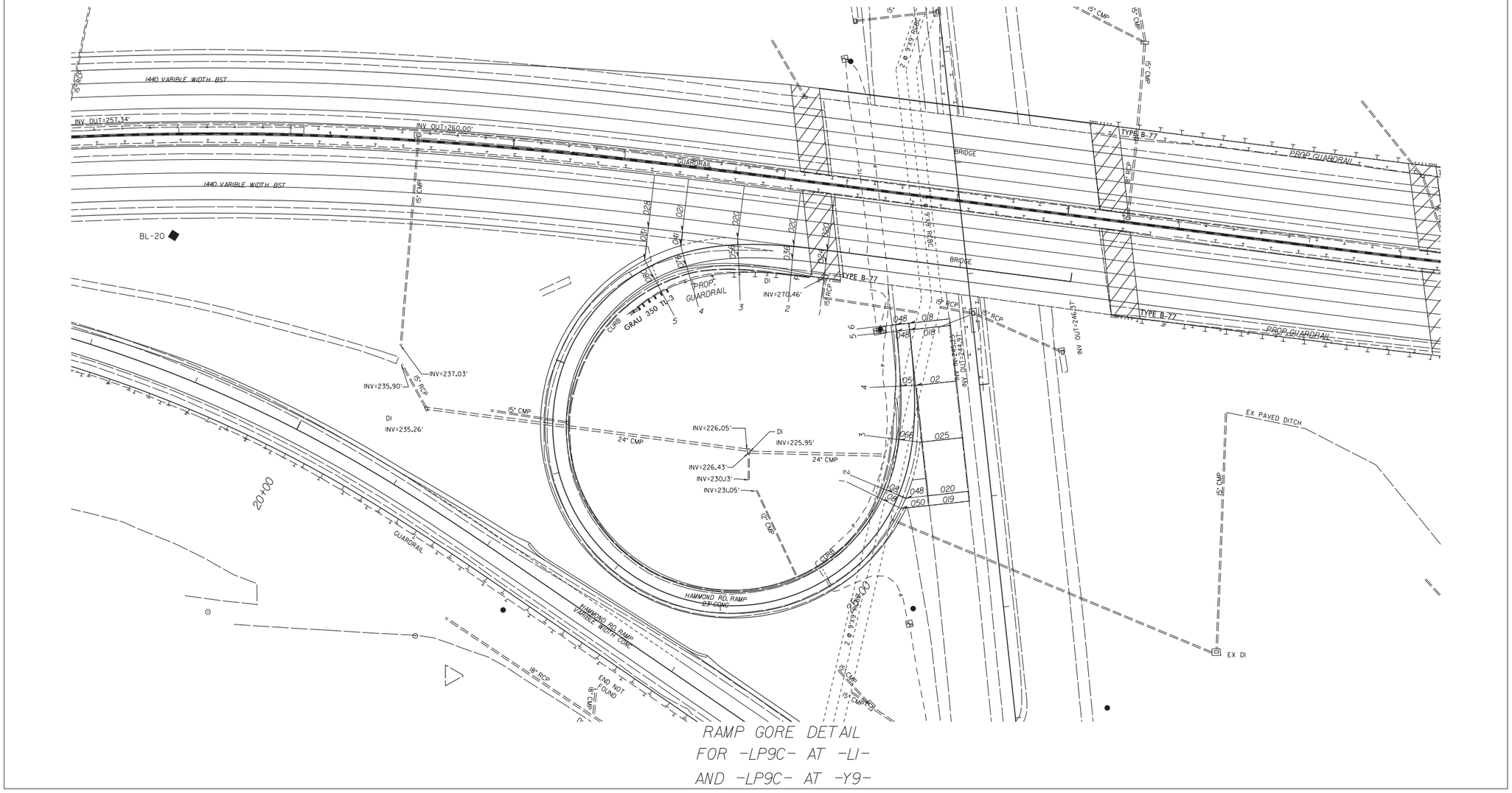
INTERSTATE 40 INTERSTATE 440 PORTION

GRANITE RS&H DESIGN-BUILD SERVICES

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

8/17/99



RAMP GORE DETAIL
FOR -LP9C- AT -LI-
AND -LP9C- AT -Y9-

02-JUN-2014 14:56
P:\338\roadway\dsn\I5338_91pc.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
I-5388/I-5311	2-AM
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

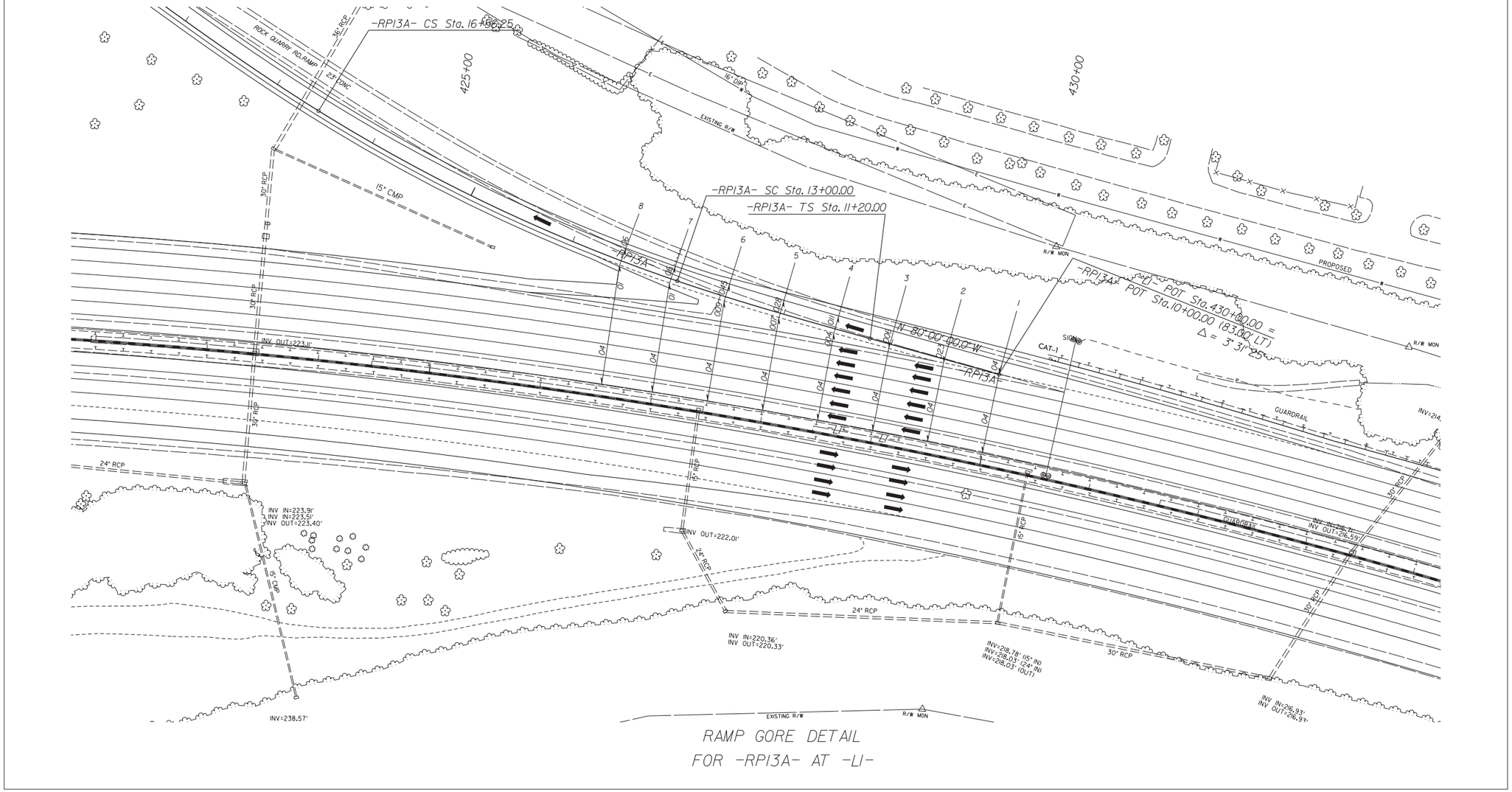
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83/NSRS 2007

INTERSTATE 40 INTERSTATE 440 PORTION

GRANITE RS&H DESIGN-BUILD SERVICES

REVISIONS 8/17/99



RAMP GORE DETAIL
FOR -RPI3A- AT -LI-

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I-5388/I-5311	2-AN
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

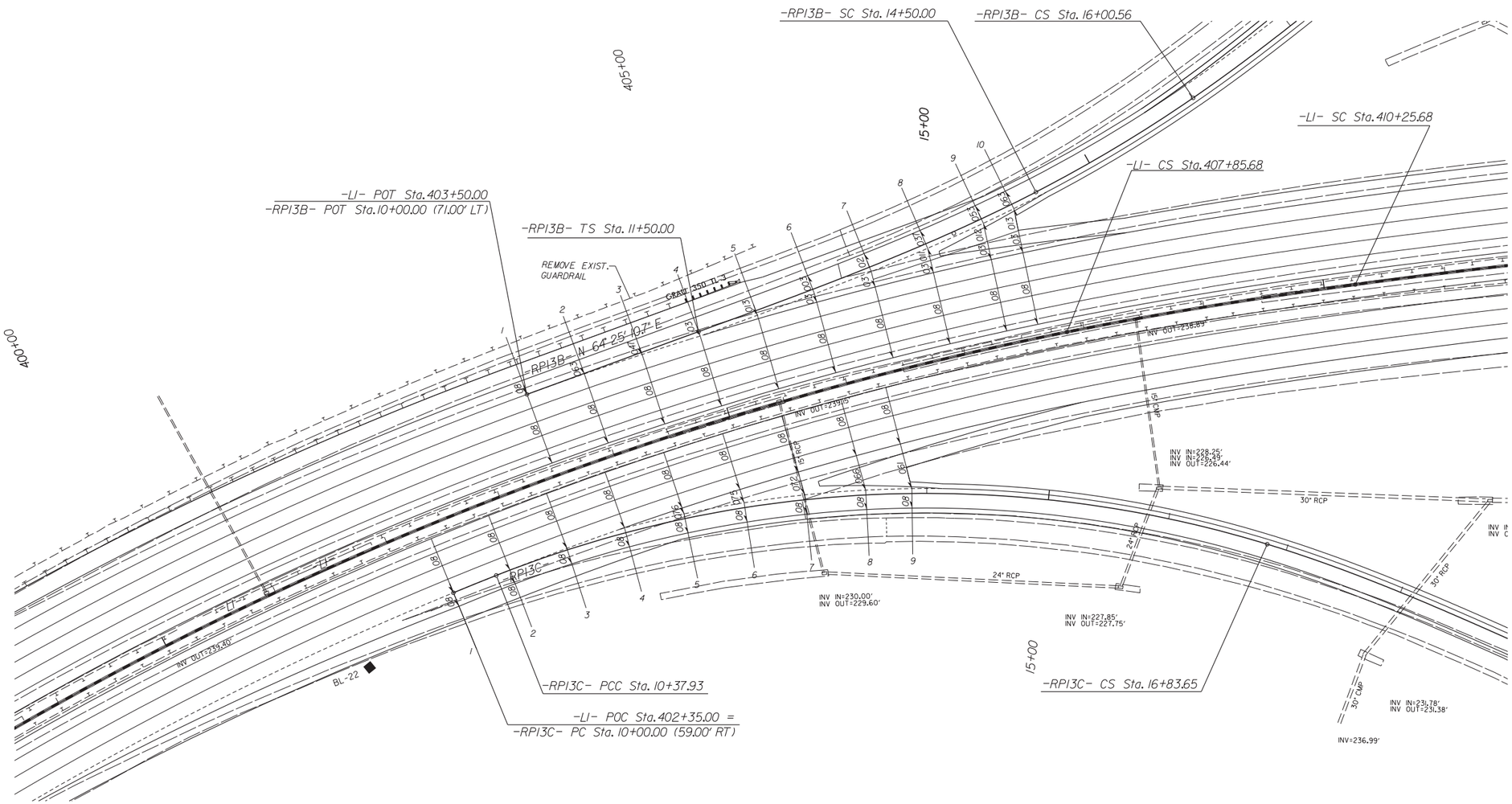
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83/NSRS 2007

40 440 PORTHY

GRANITE RS&H DESIGN-BUILD SERVICES

REVISIONS 8/17/99



RAMP GORE DETAIL
FOR -RPI3B- AND -RPI3C- AT -LI-

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8/17/99

REVISIONS

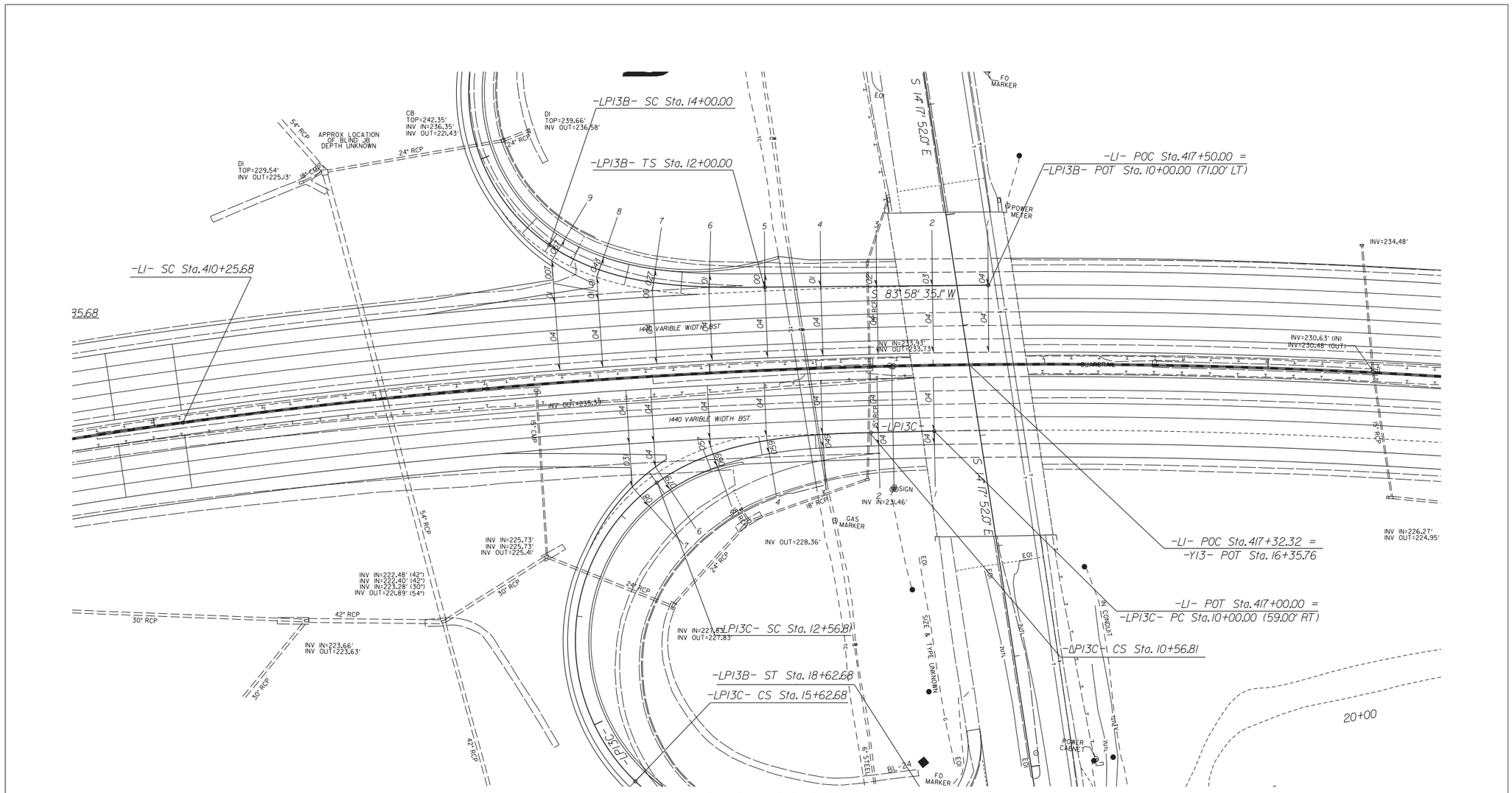
NAD 83/NSRS 2007

PROJECT REFERENCE NO.	SHEET NO.
I-5388/I-5311	2-A0
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INTERSTATE 40 INTERSTATE 440 PORTWAY

GRANITE RS&H DESIGN-BUILD SERVICES

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



RAMP GORE DETAIL
FOR -LPI3B- AND -LPI3C- AT -LI-

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REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-530	2-BH
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

40 | 440 BEYLTWAY

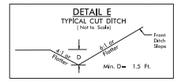
GRANITE | RS&H CONSTRUCTORS

Kimley»Horn

GRADING FOR FILLING OF GORE AREAS IN HAMMOND ROAD

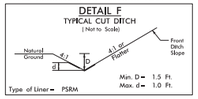
DETAILS FOR REFERENCE ONLY. NO SPECIAL DITCH GRADES ASSOCIATED WITH DITCHES IN GRADING AREA.
DITCHES ARE TYPICAL AND TO BE CONSTRUCTED ACCORDING TO GRADING PLAN

DETAIL E
TYPICAL CUT DITCH
(Not to Scale)



FROM STA. 15+85 TO STA. 23+85 –RP9B– (RT)
FROM STA. 335+25 TO STA. 342+20 –L1– (LT)
FROM STA. 20+85 TO STA. 23+85 –RP9B– (LT)
FROM STA. 11+50 TO STA. 17+60 –Y9– (RT)
FROM STA. 15+40 TO STA. 20+75 –RP9SPUR– (RT)
FROM STA. 19+50 TO STA. 22+07 –Y9– (LT)

DETAIL F
TYPICAL CUT DITCH
(Not to Scale)



FROM STA. 12+90 TO STA. 14+50 –RP9ASPUR– (LT)

MATCHLINE SHEET 2–BI –Y9– STA. 15+50.00

B

A

C

D

GORE AREA TO BE FILLED

GRADE BEGINS ONE SHOULDER CONDITION AS SHOWN ON SHEETS 3-B1 AND 3-B2

PROPOSED MEDIAN CONCRETE BARRIER

HAMMOND ROAD

–RP9B– SC Sta.14+90.00

–RP9B– PC Sta.15+50.00 = –RP9BPUR– PCC Sta.10+25.59

–RP9BSPUR– PT Sta.10+00.00 (10.00 LT)

–RP9B– CS Sta.17+75.28

–U– CS Sta.336+81.54

–RP9B– SRS Sta.19+29.38

–RP9B– SC Sta.21+04.38

–RP9B– PT Sta.24+33.73

END CONSTRUCTION –RP9B– Sta.24+82.00

–Y9– POT Sta.18+40.00 = –RP9B– POT Sta.25+45.22 (10.00 LT)

END CONSTRUCTION –RP9ASPUR– Sta.15+32.55

–RP9A– SC Sta.26+08.59

–RP9A– CS Sta.24+28.59

–RP9ASPUR– PT Sta.14+93.19

–RP9ASPUR– PC Sta.14+53.77

–RP9A– POT Sta.18+70.00 = –RP9ASPUR– POT Sta.10+00.00 (10.00 RT)

–U– SPOT Sta.344+02.19 = –Y9– POT Sta.25+34.34

–U– ST Sta.343+01.54

–U– TS Sta.346+58.00

–U– POT Sta.345+10.80 = –L1– POT Sta.10+00.00 (59.07 RT)

–LPSC– POT Sta.12+09.35

–Y9– POT Sta.24+58.61

–LPSC– ST Sta.21+55.96 (57.00 RT)

END CONSTRUCTION –LPSC– Sta.20+92.52

–U– SC Sta.349+58.00

–Y9– PT Sta.28+01.98

–RP9C– CS Sta.20+45.66

–RP9C– ST Sta.22+52.66

–RP9C– PC Sta.25+39.72

–RP9C– PT Sta.26+68.08

END CONSTRUCTION –RP9C– Sta.26+88.08

–Y9– POT Sta.27+48.08 = –RP9C– POT Sta.10+41.41 (0.00 LT)

–RP9D– PCC Sta.22+86.08

–RP9D– SC Sta.16+85.00

–RP9A– POT Sta.18+70.00 = –RP9D– POT Sta.10+00.00 (10.00 LT)

–Y10– POT Sta.10+00.00

–RP9A– PC Sta.10+00.00 (159.00 LT)

END PERMANENT RETAINING WALL –RW15– STA.356+45.46 (–U– STA. 356+45.94, 88.45 LT)

–RP9A– CS Sta.10+48.92

BEGIN PERMANENT RETAINING WALL –RW15– STA.356+25.00 (–U– STA. 356+25.00, 87.88 LT)

–RP9A– SC Sta.12+28.92

–RP9A– POT Sta.15+70.00 = –RP9D– POT Sta.10+00.00 (159.00 LT)

–RP9D– TS Sta.14+85.00

–U– POT Sta.359+00.00 = –RP9D– POT Sta.10+00.00 (159.00 RT)

–Y10– POT Sta.15+67.87

–RP9D– SC Sta.18+85.00

N 87°13'11"E

BEGIN PERMANENT RETAINING WALL –RW16– STA.354+47.57 (–U– STA. 354+47.57, 85.00 RT) (–RP9D– ST Sta.14+21.21, 50.37 LT)

END PERMANENT RETAINING WALL –RW16– STA.354+63.86 (–U– STA. 354+63.86, 102.07 RT) (–RP9D– ST Sta.14+21.21, 50.37 LT)

–RP9D– TS Sta.14+85.00

–U– POT Sta.359+00.00 = –RP9D– POT Sta.10+00.00 (159.00 RT)

–Y10– POT Sta.15+67.87

–RP9A– SC Sta.12+28.92

–RP9A– PT Sta.10+48.92

–RP9A– POT Sta.15+70.00 = –RP9D– POT Sta.10+00.00 (159.00 RT)

–Y10– POT Sta.10+00.00

–RP9A– PC Sta.10+00.00 (159.00 LT)

–RP9A– CS Sta.12+28.92

–RP9A– ST Sta.11+48.92

PROJECT REFERENCE NO.	SHEET NO.
I-5339/I-5311	2-BI
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83/NSRS 2007

INTERSTATE 40 INTERSTATE 440 BEYOND

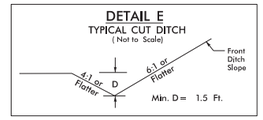
GRANITE RS&H DESIGN-BUILD SERVICES

Kimley»Horn

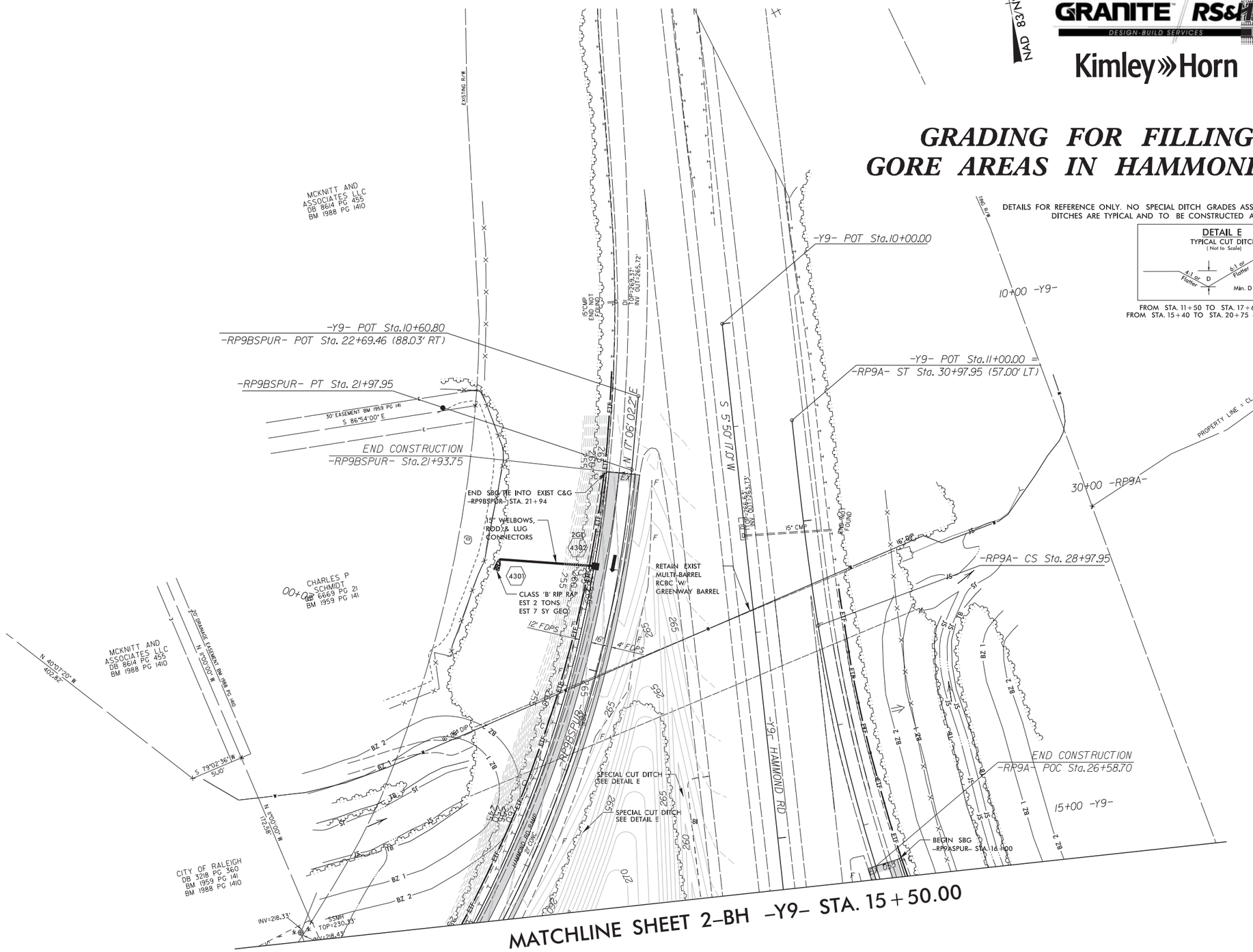
GRADING FOR FILLING OF GORE AREAS IN HAMMOND ROAD

DETAILS FOR REFERENCE ONLY. NO SPECIAL DITCH GRADES ASSOCIATED WITH DITCHES IN GRADING AREA. DITCHES ARE TYPICAL AND TO BE CONSTRUCTED ACCORDING TO GRADING PLAN

DETAIL E
TYPICAL CUT DITCH
(Not to Scale)



FROM STA. 11+50 TO STA. 17+60 –Y9– (RT)
FROM STA. 15+40 TO STA. 20+75 –RP9BSPUR– (RT)



MATCHLINE SHEET 2–BH –Y9– STA. 15+50.00

REVISIONS

8/17/99

11 JUN 2014 07:48
I:\5339_5311_2014_03_28\2BI_hammond_grading.dgn
$$$$USERNAME$$$$

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-531I	2-BJ
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

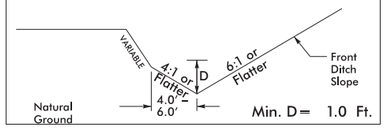
Kimley»Horn

GRANITE RS&I DESIGN-BUILD SERVICES

Temporary Median Deck Drain Summary (to be filled after completion of MOT)

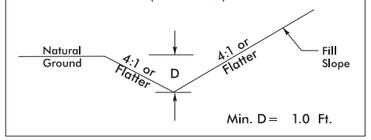
S. State Street (East Bound Median)			
Station	Alignment	Location	Deck Drain size (FT)
386+94	-L1-	CL	0.5
387+00	-L1-	CL	0.5
387+06	-L1-	CL	0.5
387+12	-L1-	CL	0.5
387+18	-L1-	CL	0.5
387+24	-L1-	CL	0.5
387+89	-L1-	CL	0.5
387+95	-L1-	CL	0.5
388+01	-L1-	CL	0.5
388+07	-L1-	CL	0.5
388+13	-L1-	CL	0.5
388+19	-L1-	CL	0.5
Deck Drains Required on Bridge =			12

DETAIL A
SPECIAL CUT DITCH wHINGE
(Not to Scale)



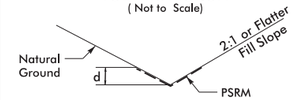
FROM STA. 376+50 TO STA. 378+00 –L1– (LT)
FROM STA. 397+00 TO STA. 401+50 –L1– (RT)
FROM STA. 401+50 TO STA. 404+00 –L1– (RT)
FROM STA. 405+50 –L1– TO STA. 15+70 –RP13C– (RT)
FROM STA. 15+70 TO STA. 20+40 –RP13C– (RT)
FROM STA. 407+50 –L1– TO STA. 17+60 –RP13B– (LT)
FROM STA. 21+10 TO STA. 23+60 –RP13B– (LT)
FROM STA. 420+00 TO STA. 422+50 –L1– (LT)
FROM STA. 423+50 TO STA. 427+00 –L1– (RT)
FROM STA. 428+50 TO STA. 432+00 –L1– (LT)
FROM STA. 441+00 TO STA. 444+00 –L1– (LT)
FROM STA. 441+50 TO STA. 443+00 –L1– (RT)

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



FROM STA. 15+45 TO STA. 17+45 –RP7D– (RT)
FROM STA. 21+90 TO STA. 20+60 –RP7A– (LT)
FROM STA. 15+80 TO STA. 20+20 –RP7B– (RT)
FROM STA. 22+80 TO STA. 21+49 –RP7B– (RT)
FROM STA. 12+41 TO STA. 12+91 –LP7B– (LT)
FROM STA. 414+50 TO STA. 415+00 –L1– (LT)
FROM STA. 15+60 TO STA. 17+10 –RP13B– (RT)
FROM STA. 15+00 TO STA. 16+90 –RP13C– (LT)

DETAIL C
TOE PROTECTION
(Not to Scale)

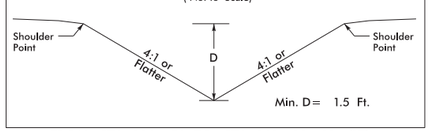


d= 1.0 Ft.

Type of Liner= PSRM

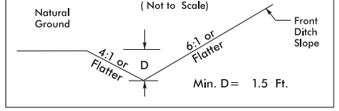
FROM STA. 14+67 TO STA. 15+10 –LP9C– (RT)
FROM STA. 25+15 TO STA. 27+60 –Y9– (LT)
FROM STA. 346+00 TO STA. 347+40 –L1– (LT)
FROM STA. 346+58 TO STA. 348+62 –L1– (RT)

DETAIL D
MEDIAN V DITCH
(Not to Scale)



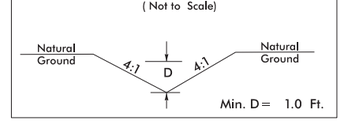
FROM STA. 290+50 TO STA. 291+98 –L1– (LT)

DETAIL E
SPECIAL CUT DITCH
(Not to Scale)



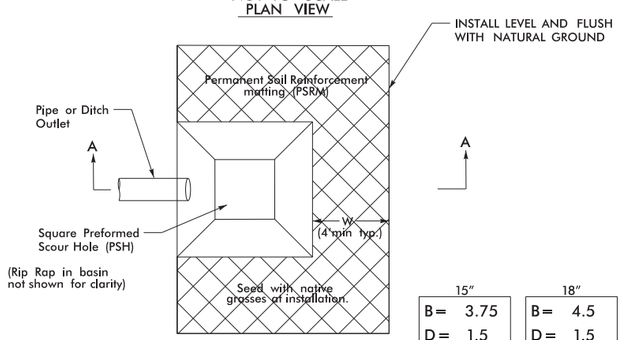
FROM STA. 20+95 TO STA. 20+45 –RP7D– (RT)

DETAIL I
STANDARD 'V' DITCH
(Not to Scale)



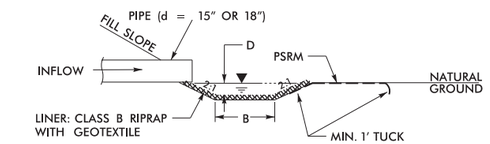
FROM STA. 294+75 TO STA. 294+84 –L1– (LT)

DETAIL G
PREFORMED SCOUR HOLE
*NOT TO SCALE
PLAN VIEW



15"	18"
B= 3.75	B= 4.5
D= 1.5	D= 1.5
W= 4.0	W= 4.0

SECTION A–A

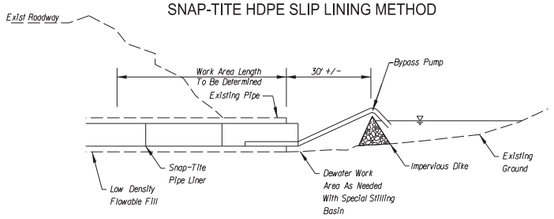


3/08

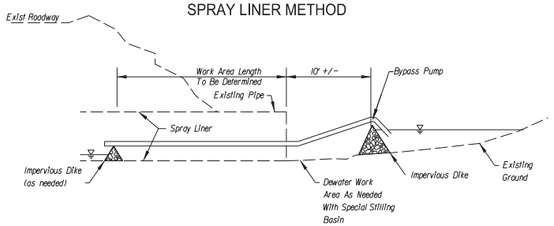
STA. 285+25 –L1– (RT)
STA. 23+88 –RP7C– (RT)
STA. 13+90 –RP7D– (LT)
STA. 24+55 –RP9C– (LT)
STA. 15+25 –RP9B– (LT)
STA. 15+90 –RP9B– (LT)
STA. 14+70 –RP9BSPUR– (LT)
STA. 23+70 –RP9A– (RT)
STA. 391+83 –L1– (LT)
STA. 440+33 –L1– (LT)

DETAIL H
CULVERT PRESERVATION

SNAP-TITE HDPE SLIP LINING METHOD



SPRAY LINER METHOD



CURED IN PLACE PIPE LINER (BALLOON METHOD)

- Same as Spray Liner Method above expect for:
  - All curing water must be disposed of/site
  - Pipe Liner must be installed per manufacturers specifications
  - Contractor is to remove all construction waste around pipe before pipe is placed back in service

Snap-Tite HPDE Slip Lining

- Install silt fence, special sediment control fence, and all other erosion control devices in area as shown on Erosion Control Plans.
- Install orange tree protection fence (i.e. safety fence) along the outermost permit footprint (stream, wetland, and/or riparian buffer). The NCDOT Division 5 Environmental Supervisor will provide this information to the contractor. No construction impacts are allowed beyond the fence limits.
- Clear a maximum of 30' wide access path to the pipe end to be slip lined with Snap-Tite as shown on Erosion Control Plans. All clearing must stay within the permitted stream, wetland, and/or riparian buffer footprint.
- Install Special Silting Basin (silt bag) on the upstream side to dewater work area.
- Install impervious Dike a maximum of 30' upstream of pipe to be lined to create work area. All in-stream activity must stay within the permitted stream footprint.
- Clean out existing pipe as needed to install carrier pipe. Install Special Silting Basin (silt bag) and impervious Dike downstream during cleaning phase to pump out contaminated water.
- Use bypass pump to bypass water over work area and into Snap-Tite HDPE Pipe.
- After first section of Snap-Tite HDPE Pipe is installed pull hose out of first section, snap second section of pipe together and return bypass pump hose into pipe to bypass water through work area. Repeat until all pipe is lined.
- Fill void with low density flowable fill and seal off ends per manufacturer specifications.
- Remove impervious Dike and Special Silting Basin (silt bag) and stabilize stream bank per plans and details.
- Permanently seed and mulch access path and work area; Use erosion control matting as required to stabilize existing slope.
- Remove all erosion control measures after site is stabilized and approved by NCDOT.

Spray Lining

- Install silt fence, special sediment control fence, and all other erosion control devices in area as shown on Erosion Control Plans.
- Install orange tree protection fence (i.e. safety fence) along the outermost permit footprint (stream, wetland, and/or riparian buffer). The NCDOT Division 5 Environmental Supervisor will provide this information to the contractor. No construction impacts are allowed beyond the fence limits.
- Clear a maximum of 25' wide access path to the pipe end to be spray lined as shown on Erosion Control Plans. All clearing must stay within the permitted stream, wetland, and/or riparian buffer footprint.
- Install Special Silting Basin (silt bag) to dewater work area.
- Install impervious Dike a maximum of 10' upstream of pipe to be lined to create work area. All in-stream activity must stay within the permitted stream footprint.
- Clean out existing culvert as necessary. Install Special Silting Basin (silt bag) and impervious Dike downstream during cleaning phase to pump out contaminated water.
- Install impervious Dike within pipe culvert at either end of work area as needed to prevent backflow.
- Use bypass pump to bypass water over work area from first impervious Dike to the second impervious Dike.
- Remove impervious Dikes and Special Silting Basin (silt bag) and stabilize stream bank per Roadway Plans.
- Permanently seed and mulch access path and work area; Use erosion control matting as required to stabilize existing slope.
- Remove all erosion control measures after site is stabilized and approved by NCDOT.

General Notes:
- Recommend slip lining pipes during low flow conditions only.
- The slip lining method used at each pipe location will be determined based on field conditions and approved by NCDOT prior to beginning work. See drainage detail sheet for culvert preservation method and site location.
- Any major deviations from this sequence need prior approval by NCDOT.

SPRAY LINER METHOD

STA. 334+42 –L1–
STA. 32+05 –Y9–
STA. 396+10 –L1–

$$SYSTIME$$
$$SYSNAME$$
$$USERNAME$$
$$DGNFILE$$

8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	22
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INTERSTATE 40 INTERSTATE 440 PORTION

GRANITE RS&H DESIGN-BUILD SERVICES

NAD 83/NSRS 2007

-RP7B- CURVE DATA

PIs Sta 11+66.73
Θs = 4° 50' 21.0"
Ls = 250.00'
LT = 166.73'
ST = 83.39'

PI Sta 15+52.91
△ = 23° 08' 01.6" (LT)
D = 3° 52' 16.8"
L = 597.57'
T = 302.91'
R = 1,480.00'
V = 55 MPH
SE = 07

-RP7C- CURVE DATA

PI Sta 14+02.78
△ = 5° 25' 33.5" (RT)
D = 0° 40' 26.6"
L = 804.96'
T = 402.78'
R = 8,500.00'
V = 60 MPH
SE = 02

MATCHLINE SHEET 21 –L1– STA. 280+00.00

MATCHLINE SHEET 23 –L1– STA. 294+00.00

NC EQUIPMENT COMPANY
DB 1450 PG 135

280+00 285+00 290+00 15+00

-L1- POT Sta.286+15.00 = -RP7B- ST Sta. 10+00.00 (59.00' RT)

-RP7B- SC Sta. 12+50.00

-L1- TS Sta.290+46.17

480' TRANSITION

DEPTH OF EX. CMP IS NOT KNOWN IN THIS LOCATION. CONTRACTOR TO CONSTRUCT BRICK BOX TO DEPTH AS NECESSARY TO CONNECT PROPOSED & EX. PIPE.

END AREA 2A
BEGIN AREA 2B

-L1- POT Sta.285+00.00

*M-391 SEE DRAINAGE MAINTENANCE TABLE

*M-388 SEE DRAINAGE MAINTENANCE TABLE

MEDIAN V DITCH SEE DETAIL DSHEET 2-BJ

SPECIAL LATERAL V DITCH SEE DETAIL BSHEET 2-BJ

CLASS 'B' RIP RAP
EST 1 TON
EST 5 SY GEO

REMOVE EXIST. GUARDRAIL

REMOVE

B

TB JB w/MH (2216)
JB w/MH (2217)
JB w/MH (2222)
TB 2GI (2214, 2213, 2218, 2219, 2220)
2GI (2226, 2224)
3GI-A (2228)
GRAU 350 TL-3 (2229)
BSH
(2230, 2231, 2225)

15" RCP-III
18" RCP-III
15" CMP
12" FDPS
4' FDPS
8:1 TAPER
CAT-1
ETF
GUARDRAIL
PROP. GUARDRAIL
RETAIN
BZ 1
BZ 2
SLOPE
DITCH
EXISTING R/W
R/W MON

BEGIN SBG –L1– STA 286+00

BEGIN SBG –L1– STA 285+54

PROPOSED MEDIAN CONCRETE BARRIER

-L1- ST Sta.280+54.43

-L1- POT Sta.287+90.00 = -RP7C- PC Sta. 10+00.00 (59.00' RT)

15" W/ELBOWS, ROD, & LUG CONNECTORS

PREFORMED SCOUR HOLE OUTLET PROTECTION
CLASS 'B' RIP RAP
EST 8 TONS
EST 16 SY GEO
EST 25 SY FSBM
SEE DETAIL GSHEET 2-BJ

CLASS 'B' RIP RAP
EST 1 TON
EST 5 SY GEO

FOR –L1– LT PROFILE,	SEE SHEET NO. 65
FOR –L1– RT PROFILE,	SEE SHEET NO. 65
FOR –RP7B– PROFILE,	SEE SHEET NO. 99
FOR –RP7C– PROFILE,	SEE SHEET NO. 100

NC EQUIPMENT COMPANY
DB 1450 PG 135

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REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-530	23
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRANITE RS&H

NAD 83 NSRS 2007

MATCHLINE SHEET 22 -LI- STA. 294+00.00

MATCHLINE SHEET 24 -LI- STA. 320+00.00

A

B

C

D

-RPTB- CURVE DATA

PI Sta 19+52.69	PI Sta 22+86.12
Θs = 1° 41' 56.8"	Δ = 5° 01' 32.4" (RT)
Θs = 4° 50' 24.8"	D = 7° 21' 35.5"
Ls = 250.00'	L = 376.85'
LT = 145.3'	T = 188.55'
ST = 105.12'	R = 780.00'
	V = 55 MPH
	SE = 04

-LPTB- CURVE DATA

PI Sta 10+47.59	PI Sta 29+65.26
Δ = 2° 28' 09.4" (RT)	Δ = 169° 58' 35.2" (RT)
D = 2° 51' 41.1"	D = 34° 56' 11.2"
L = 95.81'	L = 486.53'
T = 47.92'	T = 1,870.01'
R = 2,208.00'	R = 164.00'
	V = 27 MPH
	SE = 08

-Y7- CURVE DATA

PI Sta 18+08.16
Δ = 7° 56' 55.1" (LT)
D = 0° 34' 22.9"
L = 340.01'
T = 170.09'
R = 9,999.00'
V = 56 MPH
SE = 02

-RPTA- CURVE DATA

PI Sta 20+79.25	PI Sta 16+20.96
Θs = 4° 32' 50.2"	Δ = 56° 56' 55.8" (RT)
Ls = 200.00'	D = 4° 32' 50.2"
LT = 133.38'	L = 802.35'
ST = 66.71'	T = 429.96'
	R = 1,260.00'
	V = 51 MPH
	SE = 01

PI Sta 11+33.38
Θs = 4° 32' 50.2"
Ls = 200.00'
LT = 133.38'
ST = 66.71'

-RPTD- CURVE DATA

PI Sta 11+33.36	PI Sta 14+46.59	PI Sta 17+56.25	PI Sta 21+55.13	PI Sta 24+25.46
Θs = 3° 28' 20.5"	Δ = 17° 00' 00.0" (LT)	Δ = 3° 28' 20.9"	Θs = 48° 29' 35.9"	Δ = 43° 03' 59.4" (RT)
Ls = 200.00'	D = 3° 28' 20.9"	Ls = 200.00'	Ls = 270.00'	D = 10° 30' 46.8"
LT = 133.36'	L = 489.56'	LT = 133.36'	LT = 187.20'	L = 390.52'
ST = 66.69'	T = 246.59'	ST = 66.69'	ST = 96.58'	T = 203.90'
	R = 1,650.00'			R = 545.00'
	V = 51 MPH			V = 44 MPH
	SE = 06			SE = 08

-LPTD- CURVE DATA

PI Sta 10+06.77	PI Sta 10+63.54	PI Sta 13+50.74	PI Sta 15+90.63	PI Sta 18+08.20	
Δ = 17° 21' 00.0" (LT)	Θs = 1° 50' 50.8"	Θs = 48° 29' 35.9"	Θs = 48° 57' 03.0" (RT)	Δ = 43° 03' 59.4" (RT)	
D = 2° 21' 47.8"	Ls = 150.00'	Ls = 270.00'	D = 35° 48' 35.5"	D = 17° 54' 17.8"	
L = 173.5'	LT = 100.01'	LT = 187.20'	L = 248.40'	L = 240.5'	
T = 87.7'	ST = 50.00'	ST = 96.58'	T = 157.10'	T = 126.27'	
R = 2,436.00'			R = 160.00'	R = 320.00'	
V = 76 MPH			V = 27 MPH	V = 34 MPH	
SE = 08			SE = 08	SE = 08	

-RPTDSPUR- CURVE DATA

PI Sta 14+80.50	PI Sta 11+25.38
Δ = 27° 27' 47.4" (LT)	Δ = 14° 53' 32.5" (RT)
D = 6° 39' 43.1"	D = 5° 58' 21.1"
L = 43.14'	L = 249.55'
T = 21.99'	T = 125.38'
R = 90.00'	R = 959.72'
	V = 23 MPH
	SE = 03

-U- CURVE DATA

PI Sta 293+66.36	PI Sta 302+58.43	PI Sta 311+02.90
Θs = 6° 03' 56.6"	Δ = 35° 48' 06.8" (LT)	Θs = 6° 03' 56.6"
Ls = 480.00'	D = 2° 31' 58.6"	Ls = 480.00'
LT = 320.19'	L = 1,416.56'	LT = 320.19'
ST = 160.17'	T = 732.26'	ST = 160.17'
	R = 2,267.00'	
	V = 67 MPH	
	SE = 08	

FOR -LI- LT PROFILE, SEE SHEET NO. 66,67
FOR -LI- RT PROFILE, SEE SHEET NO. 66,67
FOR -RPTA- PROFILE, SEE SHEET NO. 98
FOR -RPTB- PROFILE, SEE SHEET NO. 99
FOR -LPTB- PROFILE, SEE SHEET NO. 99
FOR -RPTC- PROFILE, SEE SHEET NO. 100
FOR -RPTD- PROFILE, SEE SHEET NO. 100, 101
FOR -LPTD- PROFILE, SEE SHEET NO. 101
FOR -RPTDSPUR- PROFILE, SEE SHEET NO. 102

LOCATION: S. Saunders St. at I-440

TIP NO.: I-5338 / I-5311 COUNTY: Wake

DESIGNED BY: Jared Bond, PE

CHECKED BY: Jason Tolley, PE DATE: 7/7/14

GRAPHIC SCALE
50 25 0 50 100
PLANS

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8/17/99

REVISIONS

-LI- CURVE DATA

PIs Sta 322+34.35
Θs = 4° 13' 39.8"
Ls = 420.00'
LT = 280.08'
ST = 140.07'

PI Sta 331+46.03
△ = 30° 20' 40.4" (RT)
D = 2° 00' 47.5"
L = 1,507.28'
T = 771.76'
R = 2,846.00'
V = 70 MPH
SE = 07

-RP9C- CURVE DATA

PI Sta 10+30.88
△ = 1° 16' 10.5" (RT)
D = 2° 03' 20.96"
L = 61.76'
T = 30.88'
R = 2,787.00'
V = 72 MPH
SE = 07

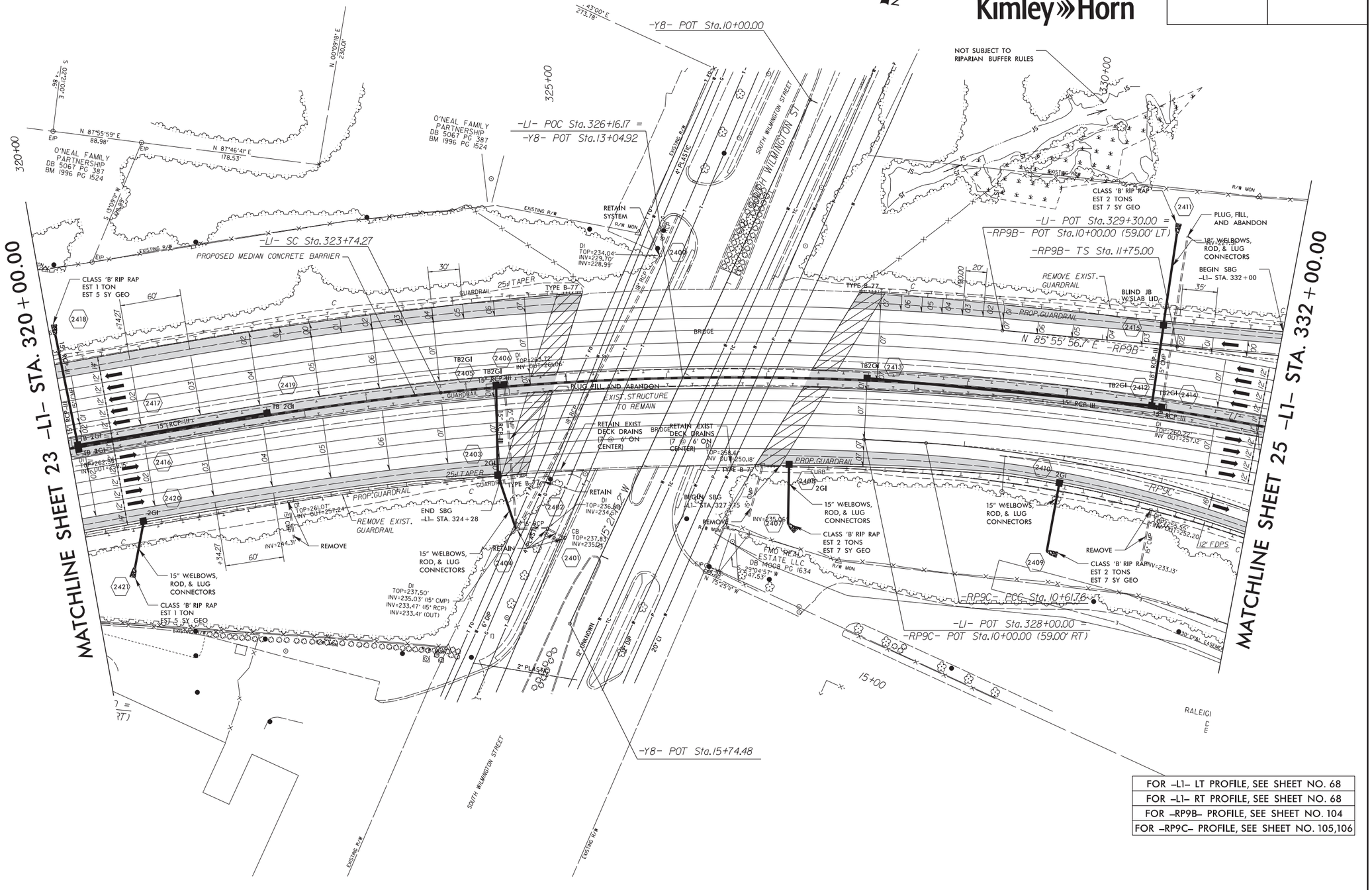
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GRANITE RS&H DESIGN-BUILD SERVICES

Kimley»Horn

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	24
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



FOR –L1– LT PROFILE, SEE SHEET NO. 68
FOR –L1– RT PROFILE, SEE SHEET NO. 68
FOR –RP9B– PROFILE, SEE SHEET NO. 104
FOR –RP9C– PROFILE, SEE SHEET NO. 105,106

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REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5310	25
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

40 | 440 CONNECTOR

GRANITE | RS&H
DESIGN BUILD TEAM

Kimley»Horn

MATCHLINE SHEET 43 –Y9– STA. 15+50.00

MATCHLINE SHEET 24 –L1– STA. 332+00.00

MATCHLINE SHEET 26 –L1– STA. 359+00.00

MATCHLINE SHEET 44 –Y9– STA. 30+00.00

A

B

C

D

–RP9B– CURVE DATA

PI Sta 13+85.12	PI Sta 16+35.12	PI Sta 19+29.39	PI Sta 20+46.25	PI Sta 22+75.98
θs = 5° 53' 53.4"	Δ = 10° 50' 12.3" (LT)	θs = 2° 48' 31.02"	θs = 10° 33' 16.15"	Δ = 39° 43' 36.05" (RT)
Ls = 315.00'	D = 5° 44' 46.4"	Ls = 150.00'	Ls = 175.00'	D = 12° 13' 44.2"
LT = 210.12'	L = 289.38'	LT = 100.01'	LT = 116.87'	L = 329.35'
ST = 105.11'	T = 145.12'	ST = 50.01'	ST = 58.52'	T = 171.62'
	R = 1,530.00'			R = 475.00'
	V = 56 MPH			V = 29 MPH
	SE = 01'			SE = 08'

–RP9BSPUR– CURVE DATA

PI Sta 10+12.80	PI Sta 16+63.33
Δ = 17° 57' 60.5" (LT)	Δ = 55° 58' 33.5" (LT)
D = 3° 46' 27.9"	D = 4° 46' 28.7"
L = 214.59'	L = 472.76'
T = 12.80'	T = 637.73'
R = 1,518.00'	R = 1,200.00'
V = 56 MPH	V = 50 MPH
SE = 01'	SE = 01'

–RP9A– CURVE DATA

PI Sta 10+24.46	PI Sta 11+55.42	PI Sta 18+96.25	PI Sta 25+12.08	PI Sta 27+53.61	PI Sta 29+64.64
Δ = 17° 44' 42.3" (RT)	θs = 6° 03' 32.5"	Δ = 62° 29' 14.4" (RT)	Δ = 7° 40' 37.9"	Δ = 9° 36' 40.3" (RT)	θs = 3° 19' 17.4"
D = 1° 31' 24.7"	Ls = 180.00'	D = 5° 12' 31.4"	Ls = 180.00'	Ls = 200.00'	Ls = 200.00'
L = 48.92'	LT = 66.50'	L = 1,099.67'	LT = 96.78'	LT = 133.36'	LT = 133.36'
T = 24.46'	ST = 73.65'	T = 667.33'	ST = 83.49'	ST = 66.69'	ST = 66.69'
R = 3,760.72'		R = 1,100.00'			
V = 76 MPH		V = 58 MPH			
SE = 06		SE = 08			

–RP9A– CURVE DATA

PI Sta 16+18.44	PI Sta 20+00.52	PI Sta 25+33.28
θs = 7° 09' 43.1"	Δ = 43° 05' 56.7" (LT)	D = 5° 01' 14.4"
Ls = 200.00'	D = 7° 09' 43.1"	L = 486.93'
LT = 133.44'	L = 601.08'	T = 247.20'
ST = 66.71'	T = 316.52'	R = 1,145.00'
	R = 800.00'	V = 59 MPH
	V = 51 MPH	SE = 08
	SE = 08	

–U– CURVE DATA

PI Sta 3+40+21.62	PI Sta 3+48+58.01	PI Sta 3+54+88.40
θs = 4° 13' 39.8"	θs = 2° 19' 00.0"	Δ = 15° 48' 40.1" (LT)
Ls = 420.00'	Ls = 300.00'	D = 1° 30' 00.0"
LT = 280.08'	ST = 200.00'	L = 1,054.01'
ST = 140.07'		T = 530.14'
		R = 3,819.72'
		V = 75 MPH
		SE = 06'

–Y9– CURVE DATA

PI Sta 3+17.16
Δ = 8° 35' 33.8" (RT)
D = 1° 15' 52.9"
L = 761.36'
T = 364.36'
R = 4,850.00'

–RP9ASPUR– CURVE DATA

PI Sta 14+16.455
Δ = 9° 22' 13.7" (LT)
D = 14° 19' 26.2"
L = 654.42'
T = 327.8'
R = 400.00'
V = 15 MPH
SE = 03

–RP9ASPUR– CURVE DATA

PI Sta 10+24.46	PI Sta 11+55.42
Δ = 17° 44' 42.3" (RT)	θs = 6° 03' 32.5"
D = 1° 31' 24.7"	Ls = 180.00'
L = 48.92'	LT = 66.50'
T = 24.46'	ST = 73.65'
R = 3,760.72'	
V = 76 MPH	
SE = 06	

–RP9A– CURVE DATA

PI Sta 18+96.25	PI Sta 25+12.08	PI Sta 27+53.61	PI Sta 29+64.64
Δ = 62° 29' 14.4" (RT)	Δ = 7° 40' 37.9"	Δ = 9° 36' 40.3" (RT)	θs = 3° 19' 17.4"
D = 5° 12' 31.4"	Ls = 180.00'	D = 1° 19' 17.4"	Ls = 200.00'
L = 1,099.67'	LT = 96.78'	L = 289.36'	LT = 133.36'
T = 667.33'	ST = 83.49'	T = 145.02'	ST = 66.69'
R = 1,100.00'		R = 1,725.00'	
V = 58 MPH		V = 53 MPH	
SE = 08		SE = 05	

–RP9A– CURVE DATA

PI Sta 16+18.44	PI Sta 20+00.52	PI Sta 25+33.28
θs = 7° 09' 43.1"	Δ = 43° 05' 56.7" (LT)	D = 5° 01' 14.4"
Ls = 200.00'	D = 7° 09' 43.1"	L = 486.93'
LT = 133.44'	L = 601.08'	T = 247.20'
ST = 66.71'	T = 316.52'	R = 1,145.00'
	R = 800.00'	V = 59 MPH
	V = 51 MPH	SE = 08
	SE = 08	

–U– CURVE DATA

PI Sta 3+40+21.62	PI Sta 3+48+58.01	PI Sta 3+54+88.40
θs = 4° 13' 39.8"	θs = 2° 19' 00.0"	Δ = 15° 48' 40.1" (LT)
Ls = 420.00'	Ls = 300.00'	D = 1° 30' 00.0"
LT = 280.08'	ST = 200.00'	L = 1,054.01'
ST = 140.07'		T = 530.14'
		R = 3,819.72'
		V = 75 MPH
		SE = 06'

–Y9– CURVE DATA

PI Sta 3+17.16
Δ = 8° 35' 33.8" (RT)
D = 1° 15' 52.9"
L = 761.36'
T = 364.36'
R = 4,850.00'

–RP9C– CURVE DATA

PI Sta 15+87.16	PI Sta 21+93.57	PI Sta 26+05.79
Δ = 41° 06' 53.8" (RT)	θs = 4° 45' 17.4"	Δ = 33° 25' 49.6" (LT)
D = 4° 45' 17.4"	Ls = 200.00'	D = 28° 52' 36.7"
L = 590.91'	LT = 133.39'	L = 128.56'
T = 525.40'	ST = 66.71'	T = 66.07'
R = 1,205.00'		R = 220.00'
V = 50 MPH		V = 15 MPH
SE = 01'		SE = 03

–LPSC– CURVE DATA

PI Sta 13+10.51	PI Sta 17+03.85	PI Sta 20+56.98
θs = 26° 41' 26.1"	Δ = 130° 05' 50.7" (LT)	θs = 26° 41' 26.0"
Ls = 150.00'	D = 35° 35' 14.79"	Ls = 150.00'
LT = 101.16'	L = 646.59'	LT = 101.16'
ST = 51.06'	T = 344.50'	ST = 51.06'
	R = 161.00'	
	V = 27 MPH	
	SE = 08'	

–RP9– CURVE DATA

PI Sta 14+65.42
θs = 6° 03' 32.5"
Ls = 180.00'
LT = 66.50'
ST = 73.65'

–RP9– CURVE DATA

PI Sta 16+18.44	PI Sta 20+00.52	PI Sta 25+33.28
θs = 7° 09' 43.1"	Δ = 43° 05' 56.7" (LT)	D = 5° 01' 14.4"
Ls = 200.00'	D = 7° 09' 43.1"	L = 486.93'
LT = 133.44'	L = 601.08'	T = 247.20'
ST = 66.71'	T = 316.52'	R = 1,145.00'
	R = 800.00'	V = 59 MPH
	V = 51 MPH	SE = 08
	SE = 08	

–U– CURVE DATA

PI Sta 3+40+21.62	PI Sta 3+48+58.01	PI Sta 3+54+88.40
θs = 4° 13' 39.8"	θs = 2° 19' 00.0"	Δ = 15° 48' 40.1" (LT)
Ls = 420.00'	Ls = 300.00'	D = 1° 30' 00.0"
LT = 280.08'	ST = 200.00'	L = 1,054.01'
ST = 140.07'		T = 530.14'
		R = 3,819.72'
		V = 75 MPH
		SE = 06'

–Y9– CURVE DATA

PI Sta 3+17.16
Δ = 8° 35' 33.8" (RT)
D = 1° 15' 52.9"
L = 761.36'
T = 364.36'
R = 4,850.00'

P/N/ED SHOULDER
SUPERELEVATION ROTATION
–L– Sta. 341+18.98 MED LT TO Sta.342+68.99 MED LT
–L– Sta. 347+14.80 MED LT TO Sta.348+14.80 MED LT
–L– Sta. 347+14.80 MED RT TO Sta.349+64.80 MED RT
–L– Sta. 358+50.00 MED RT TO Sta.359+00.00 MED RT

FOR –L1– LT PROFILE, SEE SHEET NO. 69,70
FOR –L1– RT PROFILE, SEE SHEET NO. 69,70
FOR –RP9A– PROFILE, SEE SHEET NO. 103
FOR –RP9ASPUR– PROFILE, SEE SHEET NO. 103
FOR –RP9B– PROFILE, SEE SHEET NO. 104
FOR –RP9BSPUR– PROFILE, SEE SHEET NO. 104,105
FOR –LPSC– PROFILE, SEE SHEET NO. 105
FOR –RP9C– PROFILE, SEE SHEET NO. 105,106
FOR –RP9D– PROFILE, SEE SHEET NO. 106

LOCATION:

TIP NO.: COUNTY:

DESIGNED BY:

CHECKED BY: DATE:

GRAPHIC SCALE
50 25 0 50 100
PLANS

NAD 83-NSRS 2007

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REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	26
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83/NSRS 2007

GRANITE RS&H DESIGN-BUILD SERVICES

Kimley»Horn

-LI- CURVE DATA
PIs Sta 361+12.08
Θs = 2°15' 00.0"
Ls = 300.00'
LT = 200.02'
ST = 100.01'

PAVED SHOULDER SUPERELEVATION ROTATION
-L- Sta. 363+12.07 MED LT TO Sta. 366+12.07 MED LT
-L- Sta. 365+12.07 MED RT TO Sta. 366+12.07 MED RT
-L- Sta. 368+42.13 MED LT TO Sta. 371+57.13 MED LT
-L- Sta. 368+42.13 MED RT TO Sta. 369+32.13 MED RT

ROCHESTER HEIGHTS HISTORIC DISTRICT

MATCHLINE SHEET 25 -L1- STA. 359+00.00

MATCHLINE SHEET 27 -L1- STA. 373+00.00

-L1- CS Sta. 360+12.07

-L1- ST Sta. 363+12.07

-Y11- POT Sta.10+00.00

-L1- POT Sta. 367+44.09 =
-Y11- POT Sta.12+77.41

-Y11- POT Sta.14+60.48

BEGIN PERMANENT RETAINING WALL -RWL6- -RWL6- 366+55.00 (-L1- STA. 366+55.00, 88.62' LT)

END PERMANENT RETAINING WALL -RWL6- -RWL6- STA. 369+49.28 (-L1- STA. 369+50.00, 88.78' LT)

BEGIN PERMANENT RETAINING WALL -RWL6- -RWL6- STA. 365+25.00 (-L1- STA. 365+25.00, 88.62' LT)

BEGIN PERMANENT RETAINING WALL -RWL7- -RWL7- STA. 368+13.00 (-L1- STA. 368+13.00, 88.78' LT)

BEGIN PERMANENT RETAINING WALL -RWR7- -RWR7- STA. 365+25.00 (-L1- STA. 365+25.00, 90.55' RT)

END PERMANENT RETAINING WALL -RWR7- -RWR7- STA. 366+74.98 (-L1- STA. 366+75.00, (88.63' RT)

FILL DECK DRAINS INSTALLED DURING MOT

CLEANOUT EXIST DITCH TO ENSURE POSITIVE DRAINAGE

CLEANOUT EXIST DITCH & PIPE TO ENSURE POSITIVE DRAINAGE

SBG INSTALLED IN MOT PHASE TO BE RETAINED STA 358+45 TO 366+25 -L1-

CLASS 'B' RIP RAP EST 2 TONS EST 7 SY GEO

18" WELBOWS, ROD, & LUG CONNECTORS

RETAIN SLOT DRAIN ALONG FACE OF PERMANENT TRAFFIC BARRIER

PROPOSED MEDIAN CONCRETE BARRIER

REMOVE EXIST. GUARDRAIL

TYPE B-77

BEGIN SBG -L1- STA. 363+12

END SBG/BEGIN BARRIER WALL STA. 365+00

PROP. RETAINING WALL

TIE 2GI TO EXIST 18" RCP

END BARRIER WALL/BEGIN SBG STA. 369+50

END TRANSITION/ BEGIN EXPRESSWAY GUTTER STA. 372+75

END SBG/ BEGIN TRANSITION STA. 371+75

BEGIN EXPRESSWAY GUTTER STA. 368+34

TIE JB W/MH COVER TO EXIST 18" CMP

FOR -L1- LT PROFILE, SEE SHEET NO. 71

FOR -L1- RT PROFILE, SEE SHEET NO. 71

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8/17/99

REVISIONS

-L1- CURVE DATA		
PIs Sta 375+82.24	PI Sta 380+48.87	PIs Sta 385+00.29
Θs = 6° 00' 00.0"	△ = 28° 43' 20.0" (LT)	Θs = 6° 00' 00.0"
Ls = 300.00'	D = 4° 00' 00.0"	Ls = 300.00'
LT = 200.12'	L = 718.06'	LT = 200.12'
ST = 100.10'	T = 366.74'	ST = 100.10'
	R = 1,432.39'	
	V = 67 MPH	
	SE = 10	

NAD 83/NSRS 2007

INTERSTATE 40 INTERSTATE 440 BEATTIES FORD

GRANITE RS&H DESIGN-BUILD SERVICES

Kimley»Horn

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	27
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

MATCHLINE SHEET 26 -L1- STA. 373+00.00

MATCHLINE SHEET 28 -L1- STA. 387+00.00

ROCHESTER HEIGHTS HISTORIC DISTRICT

SIDNEY WALTER COOLEY DB 6272 PG 342 BM 1957 PG 74

WAKE COUNTY BOARD OF EDUCATION DB 13625 PG 1724 BM 1960 PG 162

SLIE WRIGHT DB 1316 PG 202 BM 1957 PG 74

C & E PROPERTIES DB 6539 PG 665 BM 1957 PG 74

PAVED SHOULDER SUPERELEVATION ROTATION
-L- Sta. 374+72.13 RT TO Sta. 377+42.13 RT
-L- Sta. 383+40.18 RT TO Sta. 385+20.18 RT

-L- Sta. 375+00

-L- Sta. 380+00

-L- Sta. 385+00

REMOVE EXIST. GUARDRAIL

RETAIN/ADJUST EXIST 2GI

END EXPRESSWAY GUTTER -L2- STA. 376+00

-L1- SC Sta. 376+82.13

SPECIAL CUT DITCH w/HINGE SEE DETAIL A /SHEET 29-BJ

APPROX. LOCATION OF BLIND JB DEPTH UNKNOWN

PROPOSED MEDIAN CONCRETE BARRIER

GRAU 350 TL-3

24" RCP-III

30" RCP

15" RCP-IV

18" RCP-III

15" RCP-III

TB2GI

2GI

2GI-A

15" WELBOWS, RODS, & LUG CONNECTORS TIE JB W/ MH COVER TO EXIST 15" CMP

TIE JB W/MH COVER TO EXIST 15" RCP

JB W/ MH COVER

-L1- TS Sta. 373+82.13

-L1- CS Sta. 384+00.18

END PERMANENT RETAINING WALL -RWR8- -RWR8- STA. 386+54.73 -L1- STA. 386+51.00 (88.67' RT)

BEGIN PERMANENT RETAINING WALL -RWR8- -RWR8- STA. 385+12.50 (-L1- STA. 385+12.50, 88.67' RT)

15" W/ELBOWS, ROD, & LUG CONNECTORS

PLUG, FILL AND ABANDON

RETAIN

PROP. RETAINING WALL

TYPE B-77

GRAU 350 TL-3

END EXPRESSWAY GUTTER BEGIN BARRIER WALL STA. 385+13

-Y12- RT Sta. 16+12.69

-Y12- POT Sta. 16+31.01

*M-192 SEE DRAINAGE MAINTENANCE TABLE

BUNCHE DRIVE BM 1960 PG 59

LEVELYN G HITCHCOCK DB 1440 PG 171 BM 1960 PG 59

ROSCOE DEARMAN RICHARDSON DB 1414 PG 409 BM 1960 PG 59

DESSIE CARLIN STEWART DB 1417 PG 369 BM 1960 PG 59

FRED D SANDERS DB 1517 PG 196 BM 1960 PG 59

GEORGE R GREENE DB 1419 PG 151 BM 1960 PG 59

LINDA SCOTT DB 8532 PG 1903 BM 1960 PG 59

CATHERINE BROWN DB 9264 PG 1423 BM 1960 PG 59

WELLS FARGO BANK NA DB 1470 PG 1084 BM 1960 PG 59

DL RESTORATION LLC DB 15601 PG 731 BM 1960 PG 59

CASEY MILLER DB 10812 PG 950 BM 1960 PG 59

ROAD RUNNER INVESTMENT PROP LLC DB 14426 PG 677 BM 1960

MARK V NOWELL DB 1475 PG 124 BM 1960

HUBERT BARBOUR DB 4958 PG 124 BM 1960

FEDERAL LOAN MTG CORP DB 4543 PG 63 BM 1960

VAN D DURHAM (BACK) DB 1454 PG 550 BM 1960

RAMSES ISABEL DB 12437 PG 1960

HOWARD ISABELLE DB 12192 PG 1960

ARCHIE W HICKS DB 12192 PG 1960

GREEN PATH ROAD ASSOC DB 14203 PG 542 BM 1960 PG 124

MARCIA M HINTON DB 2656 PG 68 BM 1960 PG 274

FOR -L1- LT PROFILE, SEE SHEET NO. 72
FOR -L1- RT PROFILE, SEE SHEET NO. 72

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PROJECT REFERENCE NO.	SHEET NO.
I-5338I/I-53II	28
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRANITE RS&H DESIGN-BUILD SERVICES

Kimley»Horn

NAD 83/NSRS 2007

ETHEL C YOUNG HEIRS
BM 1983 PG 232
BM 1983 PG 703
BM 2003 PG 870

-Y12- CURVE DATA
PI Sta 14+55.70
Δ = 37° 21' 50.3" (RT)
D = 11° 27' 33.0"
L = 326.06'
T = 169.07'
R = 500.00'

-L1- CURVE DATA
PIs Sta 396+23.30
Θs = 4° 48' 00.0"
Ls = 480.00'
LT = 320.12'
ST = 160.11'

PI Sta 402+89.61
Δ = 20° 02' 59.4" (RT)
D = 2° 00' 00.0"
L = 1,002.49'
T = 506.42'
R = 2,864.79'
V = 76 MPH
SE = 08

-Y12- POT Sta.10+00.00
-L1- ST Sta.387+00.18
-L1- TS Sta.393+03.18
-L1- SC Sta.397+83.18
-L1- CS Sta.401+86.18
-L1- ST Sta.401+00.00
-Y12- PC Sta.12+86.63
-L1- POT Sta.387+61.16
-Y12- POC Sta.13+01.12

MATCHLINE SHEET 27 -L1- STA. 387+00.00
MATCHLINE SHEET 29 -L1- STA. 401+00.00

S 30°19'08.5" E
N 48°17'00.0" E
390+00
395+00
400+00

PREFORMED SCOUR HOLE OUTLET PROTECTION CLASS 'B' RIP RAP EST 8 TONS EST 16 SY GEO EST 25 SY PSRM SEE DETAIL G-SHEET 2-BJ

CLASS 'B' RIP RAP EST 3 TONS EST 1.5 SY GEO

18" W/ELBOWS, ROD, & LUG CONNECTORS

PLUG, FILL, AND ABANDON

CLASS 'B' RIP RAP EST 2 TONS EST 7 SY GEO

15" W/ELBOWS, ROD, & LUG CONNECTORS

24" W/ELBOWS, ROD, & LUG CONNECTORS

300' TAPER

500' ACCELERATION LANE

CULVERT PRESERVATION SITE #24 SEE DETAIL H /SHEET 2-BJ

RETAIN "M-515 SEE DRAINAGE MAINTENANCE TABLE SHEET 2-BJ

REMOVE EXIST. GUARDRAIL

REMOVE 15" RCP END NOT FOUND

END SBG -L1- STA. 393+00

RETAIN EXIST DECK DRAINS

PLUG, FILL, AND ABANDON BRIDGE AFTER COMPLETION OF MOT

PROP. GUARDRAIL

PROPOSED MEDIAN CONCRETE BARRIER

12 - 6" MEDIAN DECK DRAINS REQUIRED SEE SHEET 2-BJ FOR LOCATIONS (FILL AFTER COMPLETION OF MOT)

RETAIN & PRESERVE

CLASS 'A' RIP RAP EST 5 TONS

SPECIAL CUT DITCH w/HINGE SEE DETAIL A /SHEET 2-BJ

*M-197 SEE DRAINAGE MAINTENANCE TABLE

*M-198 SEE DRAINAGE MAINTENANCE TABLE

*M-199 SEE DRAINAGE MAINTENANCE TABLE

*M-194 SEE DRAINAGE MAINTENANCE TABLE

*M-195 SEE DRAINAGE MAINTENANCE TABLE

*M-311 SEE DRAINAGE MAINTENANCE TABLE

RUSSELL KATHERINE BM 1982 PG 2002 PG 172

TUNISIA COOPER DB 10012 PG 329 2002 PG 172

ASONDRA JOHNSON DB 10818 PG 1295 2002 PG 172

CRYSTAL M DB 10818 PG 1973 BM 2002 PG 172

SHANIA MARSHALL DB 10213 PG 1295 2002 PG 172

ANGELA WATSON DB 10327 PG 557 2002 PG 173

TRIANGLE GREENWAYS COUNCIL DB 10004 PG 347 BM 2003 PG 119

30' SEWER EASEMENT BM 2002 PG 172
20' SANITARY EASEMENT BM 2002 PG 172
20' STORM EASEMENT BM 2002 PG 172
20' SANITARY SEWER EASEMENT BM 1983 PG 703
30' INGRESS/EGRESS EASEMENT BM 2002 PG 173
20' SANITARY EASEMENT BM 2002 PG 173

N 64°50'10" E 205.42'
N 89°46'44" E 133.00'
N 41°27'10" E 144.08'
N 89°46'48" E 73.00'
N 89°46'48" E 46.62'
S 65°17'59" W 213.90'
N 65°17'59" E 223.45'
S 23°00'58" E 50.79'
S 17°28'57" W 209.81'
S 51°04'30" E 100.42'
S 36°25'43" E 56.33'
N 80°43'14" E 31.42'

FOR -L1- LT PROFILE, SEE SHEET NO. 73
FOR -L1- RT PROFILE, SEE SHEET NO. 73

REVISIONS

8/17/99

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REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-530	29
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

40 | 440 Beltline

GRANITE RS&H JOINT VENTURE

Kimley»Horn

NAD 83/NSRS 2007

-RPI3B- CURVE DATA

PIs Sta 13+50.17 Bs = 7° 13' 19.8" Ls = 300.00' LT = 200.17' ST = 100.15'	PIs Sta 15+25.38 Δ = 7° 14' 56.4" (LT) D = 4° 48' 53.2" L = 150.56' T = 75.36' R = 1,190.00' V = 50 MPH SE = 0%	PIs Sta 16+70.61 Bs = 5° 03' 19.8" Ls = 210.00' LT = 140.06' ST = 70.05'	PIs Sta 19+50.72 Bs = 8° 24' 50.6" Ls = 210.00' LT = 140.06' ST = 70.14'	PI Sta 21+61.61 Δ = 22° 19' 09.6" (RT) D = 8° 07' 48.2" L = 278.53' T = 141.25' R = 715.00' V = 35 MPH SE = 0%

-LPI3B- CURVE DATA

PIs Sta 13+35.99 Bs = 34° 43' 29.0" Ls = 200.00' LT = 135.99' ST = 69.09'	PI Sta 16+10.27 Δ = 103° 45' 24.8" (RT) D = 34° 43' 29.0" L = 298.80' T = 210.21' R = 165.00' V = 27 MPH SE = 0%	PIs Sta 17+67.89 Bs = 34° 43' 29.0" Ls = 200.00' LT = 135.99' ST = 69.09'		

-RPI3A- CURVE DATA

PIs Sta 12+40.02 Bs = 3° 18' 19.9" Ls = 180.00' LT = 120.02' ST = 60.02'	PI Sta 14+78.90 Δ = 13° 05' 03.1" (RT) D = 5° 43' 22.2" L = 356.25' T = 178.80' R = 1,560.00' V = 50 MPH SE = 0%	PIs Sta 17+36.29 Bs = 4° 24' 26.5" Ls = 240.00' LT = 160.05' ST = 80.05'	PIs Sta 20+56.75 Bs = 14° 01' 53.8" Ls = 240.00' LT = 160.5' ST = 80.46'	PI Sta 22+33.07 Δ = 22° 21' 17.7" (LT) D = 11° 41' 14.9" L = 191.18' T = 96.82' R = 490.00' V = 30 MPH SE = 0%

PI Sta 24+37.61
Δ = 81° 17' 30.0" (RT)
D = 76° 23' 39.7"
L = 106.41'
T = 64.39'
R = 75.00'
V = 15 MPH

-U- CURVE DATA

PIs Sta 402+92.38 Bs = 1° 11' 59.7" Ls = 2° 24' 00.3" Ls = 240.00' LT = 133.37' ST = 106.70'	PI Sta 404+83.47 Δ = 58° 33' 00.1" (RT) D = 1° 00' 00.0" L = 2,855.00' T = 1,457.79' R = 5,729.58' V = 73 MPH SE = 0%	

-Y13- CURVE DATA

PI Sta 21+41.43 Δ = 9° 03' 43.2" (RT) D = 6° 44' 26.4" L = 134.44' T = 67.36' R = 850.00'		

-Y13- POT Sta.10+26.02 =
-RPI3A- POT Sta. 25+34.63 (44.99 LT)

-Y13- POT Sta.11+53.00 =
-I3B- POT Sta. 24+71.03 (0.00')

-Y13- POT Sta.11+83.12 =
LPI3B- POT Sta. 20+38.35 (0.00')

END CONSTRUCTION
-RPI3B- Sta.24+29.14

END CONSTRUCTION
-LPI3B- Sta.19+96.27'

-RPI3B- PT Sta. 22+99.08

-RPI3A- PT Sta. 24+79.63

-RPI3A- SC Sta. 21+36.25

END CONSTRUCTION
-RPI3A- Sta.24+41.06

-RPI3A- PC Sta. 23+73.22

-RPI3A- SRS Sta. 18+96.25

-LPI3B- CS Sta. 16+98.80

-RPI3B- SC Sta. 20+20.56

-RPI3B- SRS Sta. 18+10.56

-LPI3B- ST Sta. 18+98.80

N 71° 42' 57.8" E

-LPI3B- PC Sta. 19+18.76

END 2°-6' C&G
STA.19+15.39 (18.00' RT)

-RPI3A- PT Sta. 23+27.43

S 84° 24' 38.1" W

-RPI3A- CS Sta. 16+56.26

-RPI3B- CS Sta. 16+00.56

-LPI3B- SC Sta. 14+00.00

BEGIN 2'-6" C&G
STA.11+88.21 (27.47' RT)

-LPI3B- TS Sta. 12+00.00

-RPI3B- SC Sta. 14+50.00

-U- CS Sta. 407+85.68

-U- POC Sta. 417+50.00 =
-LPI3B- POT Sta. 10+00.00 (71.00' LT)

-RPI3A- SC Sta. 13+00.00

-RPI3A- TS Sta. 11+20.00

-U- POT Sta. 403+50.00
-RPI3B- POT Sta. 10+00.00 (71.00' LT)

-RPI3B- TS Sta. 11+50.00

REMOVE EXIST. GUARDRAIL

S 83° 58' 35.7" W

-U- SC Sta. 410+25.68

-U- POC Sta. 417+32.32 =
-Y13- POT Sta. 16+35.76

-U- POT Sta. 417+00.00 =
-LPI3C- PC Sta. 10+00.00 (59.00' RT)

-LPI3C- CS Sta. 10+56.81

-RPI3C- PCC Sta. 10+37.93

-U- POC Sta. 402+35.00 =
-RPI3C- PC Sta. 10+00.00 (59.00' RT)

-RPI3C- CS Sta. 16+83.65

-RPI3C- SC Sta. 12+56.81

END CONSTRUCTION
-LPI3C- Sta. 18+99.43

-LPI3B- ST Sta. 18+62.68

-LPI3C- CS Sta. 15+62.68

END 2°-6' C&G
STA.19+14.07 (18.00' RT)

-RPI3C- SRS Sta. 19+23.65

-RPI3C- PT Sta. 24+14.81

-RPI3C- SC Sta. 21+63.65

END CONSTRUCTION
-RPI3C- Sta.25+22.26

-Y13- POT Sta.20+85.00 =
-RPI3C- POT Sta. 25+64.81 (0.00')

-Y13- POT Sta.22+26.40

-Y13- POT Sta.19+14.73 =
-LPI3C- POT Sta.19+14.73 (0.00')

-Y13- PC Sta.20+84.07

-Y13- PT Sta.22+18.57

S 5° 14' 08.8" E

N 78° 50' 07" E

S 78° 50' 07" W

MATCHLINE SHEET 28 -L1- STA. 401+00.00

MATCHLINE SHEET 30 -L1- STA. 429+00.00

A

B

C

D

-RPI3C- CURVE DATA

PI Sta 10+18.97 Δ = 17° 46' 28.7" (RT) D = 2° 00' 31.4" L = 57.23' T = 18.97' R = 2,805.79' V > 80 MPH SE = 0%	PI Sta 13+73.54 Δ = 58° 32' 17.6" (RT) D = 5° 58' 05.9" L = 645.71' T = 355.6' R = 960.00' V = 55 MPH SE = 0%	PIs Sta 17+63.77 Bs = 7° 09' 43.1" Ls = 240.00' LT = 160.13' ST = 80.12'	PIs Sta 20+83.88 Bs = 9° 36' 57.9" Ls = 240.00' LT = 160.24' ST = 80.22'	PI Sta 22+90.54 Δ = 20° 07' 35.2" (LT) D = 8° 00' 48.2" L = 251.91' T = 126.89' R = 715.00' V = 35 MPH SE = 0%

-LPI3C- CURVE DATA

PI Sta 10+28.41 Δ = 17° 34' 26.4" (LT) D = 1° 00' 37.5" L = 56.81' T = 28.64' R = 5,670.58' V = 75 MPH SE = 0%	PIs Sta 11+90.77 Bs = 17° 57' 27.4" Bs = 32° 58' 51.5' Ls = 200.00' LT = 133.96' ST = 71.03'	PI Sta 14+66.84 Δ = 100° 43' 06.7" (LT) D = 32° 55' 43.0" L = 305.87' T = 210.03' R = 174.00' V = 28 MPH SE = 0%	PIs Sta 16+70.34 Bs = 49° 23' 34.5' Ls = 300.00' LT = 208.59' ST = 107.66'

FOR -L1- LT PROFILE, SEE SHEET NO. 74,75
FOR -L1- RT PROFILE, SEE SHEET NO. 74,75
FOR -RPI3A- PROFILE, SEE SHEET NO. 107
FOR -LPI3B- PROFILE, SEE SHEET NO. 107
FOR -RPI3B- PROFILE, SEE SHEET NO. 108
FOR -LPI3C- PROFILE, SEE SHEET NO. 108
FOR -RPI3C- PROFILE, SEE SHEET NO. 109

LOCATION:

TIP NO.: COUNTY:

DESIGNED BY:

CHECKED BY: DATE:

GRAPHIC SCALE
50 25 0 50 100
PLANS

I-530_I-5338_SH29.dgn 29.dgn

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	30
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INTERSTATE 40 INTERSTATE 440 BEYOND

GRANITE RS&H DESIGN-BUILD SERVICES

Kimley»Horn

NAD 83/NSRS 2007

8/17/99

REVISIONS

-L1- CURVE DATA
PIs Sta 439+60.68
θs = 1° 12' 00.0"
Ls = 240.00'
LT = 160.00'
ST = 80.00'

-L1- POT Sta.430+00.00 =
-RP13A- POT Sta.10+00.00 (83.00' LT)
Δ = 3° 31' 25"

-L1- ST Sta.441+20.68

-L1- CS Sta.438+80.68
-L1- LT GRADE POINT SHIFT 23' LT TO 47' LT

-L1- STA. 443+00.00

MATCHLINE SHEET 29 -L1- STA. 429+00.00

MATCHLINE SHEET 31 -L1- STA. 443+00.00

N 80°00'00.0" W

S 73°31'00.5" E -L1-

PROPOSED

EXISTING R/W

R/W MON

SPECIAL CUT DITCH wHINGE
SEE DETAIL A /SHEET 2-BJ

CLASS 'A' RIP RAP
EST 5 TONS

PREFORMED SCOUR HOLE
OUTLET PROTECTION
CLASS 'B' RIP RAP
EST 8 TONS
EST 16 SY GEO
EST 25 SY PSRM
SEE DETAIL GSHEET 2-BJ

DRAINAGE EASEMENT
BM 1986 PG 2264

REMOVE EXIST. GUARDRAIL

PROPOSED MEDIAN CONCRETE BARRIER

PROP. GUARDRAIL

EXIST. GUARDRAIL

300' TAPER

30'

CAT-1

SIGNS

RETAIN

TIE TO EXIST
8' X 8' RCBC

SSMH
TOP=217.14'
INV=207.22'

INV=212.60'

INV=214.53'

INV=208.18'

INV=208.18'

INV=210.56'

INV=210.00'

INV=213.58'

INV=209.52'

INV=209.66'

GRAU 350 TL-3

8d TAPER

ETF

BL 30

DI
TOP=226.90'
INV IN=216.59'
INV OUT=216.59'

DI
TOP=228.56'
INV OUT=224.64'

DI
TOP=222.83'
INV IN=216.93'
INV OUT=216.93'

DI
TOP=223.26'
INV=218.78' (15" IN)
INV=218.03' (24" IN)
INV=218.03' (OUT)

SSMH
TOP=216.84'
INV=208.59'

DI
TOP=222.32'
INV OUT=219.59'

DI
TOP=223.14'
INV OUT=219.74'

DI
TOP=222.32'
INV OUT=219.59'

10'x4' RCBC
APRON
SEE DETAIL

18" RCP-III
15" RCP-III
30" RCP-III
15" RCP-IV
10' RCP
24" RCP
8'x8' RCBC WITH WEAR GRATES
15" RCP
18" RCP

TB2GI
TB2GI-A

FUTURE AUX. LANE AND 12' FDPS

TRUSTEES OF DELIVERANCE CATHERAL OF LOVE
DB 4708 PG 412

FOUNTAIN DRIVE LLC
DB 12527 PG 589

CITY OF RALEIGH
DB 1988 PG 268

S 88°55'25" E
612.99'

S 36°48'32" W
100.02'

S 60°01'35" W
55.00'

S 45°29'36" W
91.19'

N 50°08'05" W
191.27'

N 81°39'03" E
56.49'

S 88°42'48" E
64.82'

S 80°56'58" E
64.77'

S 77°03'53" E
100.00'

FOR -L1- LT PROFILE, SEE SHEET NO. 76
FOR -L1- RT PROFILE, SEE SHEET NO. 76
FOR -RP13A- PROFILE, SEE SHEET NO. 107

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PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	31
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NORTH CAROLINA PROFESSIONAL SEAL 029485 ENGINEER JASON M. TALLEY
2-4-2014

NORTH CAROLINA PROFESSIONAL SEAL 026480 ENGINEER TIMOTHY ROBINSON
2-5-14

INTERSTATE 40 INTERSTATE 440 PORTION

GRANITE RS&H DESIGN-BUILD SERVICES

Kimley»Horn

NAD 83/NSRS 2007

REVISIONS 8/17/99

MATCHLINE SHEET 30 –LI– STA. 443+00.00

MATCHLINE SHEET 32 –L2– LT STA. 457+00.00

MATCHLINE SHEET 32 –L2– RT STA. 457+00.00

END AREA 2B
BEGIN AREA 3
–LI– POT Sta. 444+00.00 =
L2LT – TS Sta. 444+00.00 (47.00' LT)

–LI– POT Sta. 444+00.00

END AREA 2B
BEGIN AREA 3
–LI– POT Sta. 444+00.00 =
–L2RT– TS Sta. 444+00.00 (23.00' RT)

END DOUBLE FACED MEDIAN CONCRETE BARRIER
–L2RT– Sta. 448+71.06

–LI– S 73° 31' 00.5" E

S 73° 31' 00.5" E

–L2RT– SC Sta. 447+60.00

–L2RT– POC Sta. 455+60.00 =
–LI40E– PC Sta. 10+00.00 (12.00' RT)

–L2RT– CS Sta. 455+80.30

–L2LT–

–L2RT–

445+00

450+00

455+00 –L2LT–

455+00 –L2RT–

JUDY T HARRIS DB 10685 PG 1345 BM 2003 PG 1862

CAROL M LEWIS DB 18712 PG 7663 BM 2003 PG 1862

SHARON DOCKERY DB 10708 PG 383 BM 2003 PG 1862

TAMMY SIMMONS DB 12906 PG 1414 BM 2003 PG 1862

ANGELA V FARLEY DB 10685 PG 1329 BM 2003 PG 1862

ZAINAB DARAMY DB 10922 PG 2502 BM 2003 PG 1862

ROGER MISSIE CANDZALI DB 11480 PG 2566 BM 2003 PG 1862

EMMA N PETER DB 10811 PG 1323 BM 2003 PG 1862

HABITAT FOR HUMANITY OF WAKE DB 14606 PG 2366 BM 2003 PG 1862

KENNETH KOUNG'U DB 10916 PG 210 BM 2003 PG 1862

GLORIA MEJIA DB 10822 PG 2486 BM 2003 PG 1862

DEBRA JOHNSON DB 9507 PG 1192 BM 1957 PG 101

ROSE LANE 82' R/W BM 1957 PG 101

CHARLIE GORE WADE, III BM 1957 PG

ROBERT E WOOD DB 14242 PG 2398 BM 1957 PG 101

EDDIE DB BM

GRANITE RIDGE HOMEOWNERS ASSOCIATION INC DB 9686 PG 2173 BM 2002 PG 1237

GRANITE RIDGE HOMEOWNERS ASSOCIATION INC DB 8629 PG 2320 BM 2000 PG 855

FRANDREKA COOPER DB 10230 PG 533 BM 2002 PG 1237

DEBRA P WATSON DB 11021 PG 1213 BM 2002 PG 1237

2GI-D

2GI

2GI-A

3GI-A

TB2GI

TB2GI-A

TB2GI-B

TIE TB2GI-A INTO (3120) EXIST SYSTEM

TIE TO EXIST DITCH

REMOVE EXIST. GUARDRAIL

REMOVE EXIST.GUARDRAIL

PROP.GUARDRAIL

GRAU 350 TL-3

TYPE B-77

35:1 TAPER

MEDIAN V DITCH SEE DETAIL DSHEET 2-G

SPECIAL LATERAL 'V' DITCH SEE DETAIL CSHEET 2-G

JB W/MH COVER

RETAIN

CONC CHANNEL INV=223.50'

CONC H/W TOP 227.65

WR 40-300.5 LOCATED ON OH STRUCTURE

CAMERA POLE

SIGN

EXIST 36" CMP OUTLETS INTO SCOUR HOLE PRIOR TO EXIST 2GI. PROPOSED JB W/MH COVER TO TIE TO EXIST 36" CMP OUTLET AND WILL CONNECT TO PROPOSED SYSTEM AND RELOCATED CUT DITCH.

*M-222 SEE DRAINAGE MAINTENANCE TABLE

*M-228 SEE DRAINAGE MAINTENANCE TABLE

*M-229 SEE DRAINAGE MAINTENANCE TABLE

NOT SUBJECT TO RIPARIAN BUFFER RULES

SPECIAL CUT DITCH wHINGE SEE DETAIL A /SHEET 2-G

FUTURE AUX. LANE AND 12' FDPS

12' FDPS

44' FDPS

–L2RT– CURVE DATA

PIs Sta 446+40.03	PI Sta 451+71.60	PIs Sta 457+00.33
Θs = 2° 34' 41.9"	Δ = 11° 45' 00.0" (RT)	Θs = 2° 34' 41.9"
Ls = 360.00'	D = 1° 25' 56.6"	Ls = 360.00'
LT = 240.03'	L = 820.30'	LT = 240.03'
ST = 120.02'	T = 411.60'	ST = 120.02'
	R = 4,000.00'	
	V = 76 MPH	
	SE = 06	

A PERMANENT SOIL REINFORCEMENT MAT (PSRM) SHALL BE PLACED ON 1.75:1 (H:V) TO 2:1 (H:V) SLOPES FROM:
-L2RT- STA. 452+97 RT TO -L2RT- STA. 453+97 RT.
-L2RT- STA. 454+97 RT TO -L2RT- STA. 455+97 RT.
SEE PERMANENT SOIL REINFORCEMENT MAT SPECIAL PROVISION.

FOR –L2– LT PROFILE, SEE SHEET NO. 77
FOR –L2– RT PROFILE, SEE SHEET NO. 77
FOR –LI40E– PROFILE, SEE SHEET NO. 110

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RIGHT DITCH ----------	PROJECT REFERENCE NO.	SHEET NO.
LEFT DITCH -----------	I-5338/I-5311	65
MEDIAN DITCH -------	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

–L1– LT

PIPE HYDRAULIC DATA
EXISITING 6'X6' RCBC

DRAINAGE AREA	= 110	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 700	CFS
DESIGN HW ELEVATION	= 248.4	FT
100 YEAR DISCHARGE	= 800	CFS
100 YEAR HW ELEVATION	= 249.4	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 1427	CFS
OVERTOPPING ELEVATION	= 258.0	FT

PI = 281+50.00
EL = 253.87'
VC = 300'
K = 479
V > 80 MPH

253.39

(+)0.3218%

(+)0.9480%

EXISTING GROUND

PROPOSED GRADE

EXIST (2) 6'X6' RCBC
STA 286+60
ELEV = 238.8'

BEGIN MEDIAN DITCH
LI (LT) AND RP7B
PI = –L1– 290+50.00
EL = 260.42

PI =291+50.000
EI = 258.90

(+)0.9480%

(-) 1.5200%

PI = 291+50.00
EL = 263.35'
VC = 250'
K = 1199
V > 80 MPH

(+)0.7395%

(-) 1.7610%

END MEDIAN DITCH
LI (LT) AND RP7B
PI = –L1– 291+97.70
EL = 258.06

265.20

(+)0.7395%

–L1– RT

PI = 282+50.00
EL = 256.14'
VC = 800'
K = 1544
V > 80 MPH

254.89

(+)0.5292%

(+)0.5292%

(+)11.0473%

PROPOSED GRADE

EXISTING GROUND

PI = 288+00.00
EL = 261.90'
VC = 300'
K = 2980
V > 80 MPH

(+)11.0473%

(+)0.9466%

(+)0.9466%

267.58

EXIST (2) 6'X6' RCBC
STA 286+60
ELEV = 238.1'
(SEE SHT 65 –L1– LT
PROFILE FOR HYDRO DATA)

SEE SHEET NO. 22 FOR –L1– ALIGNMENT

280 281 282 283 284 285 286 287 288 289 290 291 292 293 294

310 300 290 280 270 260 250 240 230 220

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RIGHT DITCH	----------
LEFT DITCH	-----------
MEDIAN DITCH	———————

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	66
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

–L1– LT

℄ PROPOSED SOUTH SAUNDERS STREET

BEGIN BRIDGE
–L1– LT STA. 301+86.98
ELEV = 269.17'

END BRIDGE
–L1– LT STA. 303+82.46
ELEV = 268.56'

PI = 300+10.00
EL = 269.71'
VC = 350'
K = 335
V = 77 MPH

PI = 307+00.00
EL = 267.06'
VC = 300'
K = 487
V > 80 MPH

265.20
(+)0.7395%
EXISTING GROUND
PROPOSED GRADE
(+)0.7395%
(–)0.3051%
(–)0.3051%
(–)0.4724%
(–)0.4724%
(–)1.0883%
265.95

–L1– RT

℄ PROPOSED SOUTH SAUNDERS STREET

BEGIN BRIDGE
–L1– RT STA. 301+85.68
ELEV = 271.51'

END BRIDGE
–L1– RT STA. 303+90.11
ELEV = 270.85'

PI = 299+05.00
EL = 272.36'
VC = 560'
K = 448
V > 80 MPH

PI = 306+50.00
EL = 269.84'
VC = 300'
K = 714
V > 80 MPH

267.58
(+)0.9466%
(+)0.9466%
(–)0.3028%
PROPOSED GRADE
EXISTING GROUND
(–)0.3028%
(–)0.3886%
(–)0.3886%
(–)0.8086%
268.63

SEE SHEET NO. 23 FOR –L1– ALIGNMENT

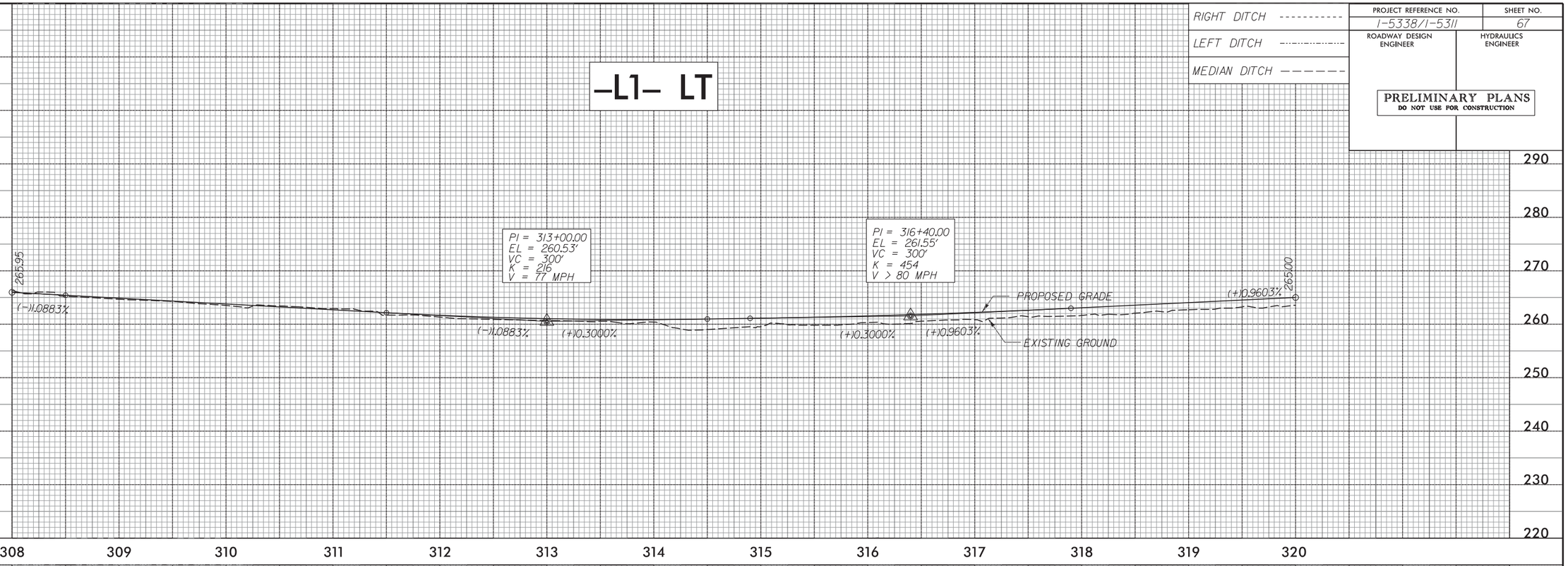
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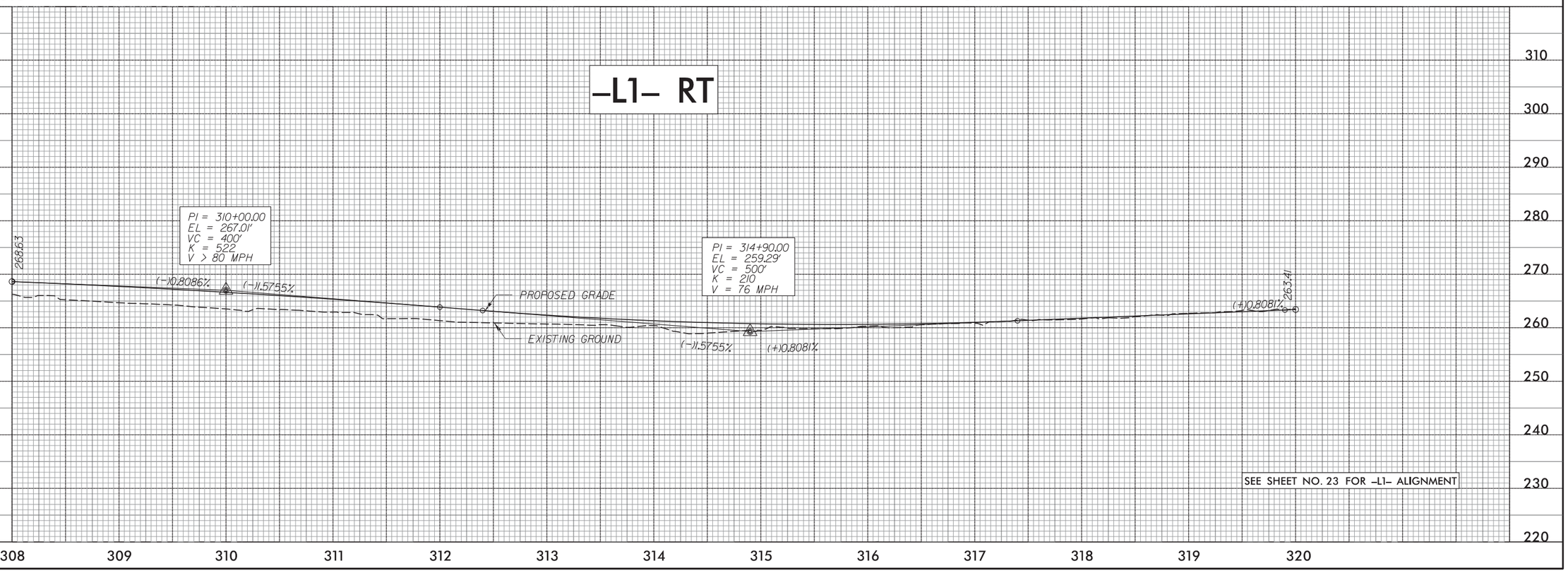
RIGHT DITCH ----------	PROJECT REFERENCE NO.	SHEET NO.
LEFT DITCH -----------	I-5338/I-5311	67
MEDIAN DITCH -------	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

–L1– LT



–L1– RT



SEE SHEET NO. 23 FOR –L1– ALIGNMENT

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RIGHT DITCH ----------	PROJECT REFERENCE NO.	SHEET NO.
LEFT DITCH -----------	I-5338/I-5311	68
MEDIAN DITCH ———————	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

–L1– LT

℄ SOUTH WILMINGTON STREET

BEGIN BRIDGE
–L1– LT STA. 324+96.37
ELEV = 266.59'

END BRIDGE
–L1– LT STA. 327+53.12
ELEV = 265.38'

PI = 322+45.00
EL = 267.36'
VC = 450'
K = 355
V = 78 MPH

265.00

(+)0.9603%

(+)0.9603%

(–)0.3063%

(–)0.3063%

(–)0.5329%

PROPOSED GRADE

EXISTING GROUND

(–)0.5329%

263.00

310 300 290 280 270 260 250 240 230 220

320 321 322 323 324 325 326 327 328 329 330 331 332

–L1– RT

℄ SOUTH WILMINGTON STREET

BEGIN BRIDGE
–L1– RT STA. 324+79.73
ELEV = 264.51'

END BRIDGE
–L1– RT STA. 327+28.79
ELEV = 263.31'

PI = 322+30.00
EL = 265.27'
VC = 480'
K = 431
V > 80 MPH

263.41

(+)0.8081%

(+)0.8081%

(–)0.3043%

(–)0.3043%

(–)0.5646%

EXISTING GROUND

PROPOSED GRADE

(–)0.5646%

260.76

310 300 290 280 270 260 250 240 230 220

320 321 322 323 324 325 326 327 328 329 330 331 332

SEE SHEET NO. 24 FOR –L1– ALIGNMENT

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RIGHT DITCH ----------
LEFT DITCH -·-·-·-·-·-
MEDIAN DITCH – – – – –

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	69
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

–L1– LT

℄ HAMMOND ROAD

BEGIN BRIDGE
–L1– LT STA. 342+79.32
ELEV = 273.49'

END BRIDGE
–L1– LT STA. 345+23.82
ELEV = 277.38'

PI = 335+90.00
EL = 260.92'
VC = 600'
K = 255
V > 80 MPH

263.00
(–)0.5329%
(–)0.5329%
(+)1.8235%
(+)1.8235%
278.43
(+)1.4791%

PROPOSED GRADE
EXISTING GROUND

EXIST 30" CMP
TO BE PRESERVED
STA 334+42
ELEV = 221.63' (BELOW GRID)
(SEE SHT 105 –RP9C–
PROFILE FOR HYDRO DATA)

RETAIN
EXISTING 2@ 9'x9' RCBC
(WILDCAT BRANCH–FEMA STREAM)
ELEVATION 219.73'
(BELOW GRID)

–L1– RT

℄ HAMMOND ROAD

BEGIN BRIDGE
–L1– RT STA. 342+90.47
ELEV = 274.86'

END BRIDGE
–L1– LT STA. 345+34.97
ELEV = 278.77'

PI = 335+40.00
EL = 258.73'
VC = 850'
K = 313
V > 80 MPH

260.76
(–)0.5646%
(–)0.5646%
(+)2.1493%
(+)2.1493%
279.67
(+)1.4513%

PROPOSED GRADE
EXISTING GROUND

EXIST 30" CMP
TO BE PRESERVED
STA 334+42
ELEV = 221.86' (BELOW GRID)
(SEE SHT 105 –RP9C–
PROFILE FOR HYDRO DATA)

RETAIN
EXISTING 2@ 9'x9' RCBC
(WILDCAT BRANCH–FEMA STREAM)
ELEVATION = 219.83'
(BELOW GRID)

SEE SHEET NO. 25 FOR –L1– ALIGNMENT

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RIGHT DITCH ----------	PROJECT REFERENCE NO.	SHEET NO.
LEFT DITCH -----------	I-5338/I-5311	70
MEDIAN DITCH ———————	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

–L1– LT

℄ RAILROAD BRIDGE AT HAMMOND ROAD

BEGIN BRIDGE
–L1– LT STA. 348+37.48
EL = 280.56'

BEGIN BRIDGE
–L1– LT STA. 349+66.95
EL = 281.20'

BEGIN BRIDGE
–L1– LT STA. 356+61.48
EL = 279.92'

℄ GARNER ROAD

BEGIN BRIDGE
–L1– LT STA. 358+26.35
EL = 278.37'

PI = 346+80.00
EL = 279.69'
VC = 300'
K = 324
V = 76 MPH

PI = 352+70.00
EL = 282.52'
VC = 450'
K = 409
V > 80 MPH

278.43

(+)1.479%

(+)0.5525%

(+)0.5525%

(+)0.4356%

(+)0.4356%

(–)0.6641%

PROPOSED GRADE

EXISTING GROUND

(–)0.6641%

(–)1.1706%

277.50

330 320 310 300 290 280 270 260 250 240

346 347 348 349 350 351 352 353 354 355 356 357 358 359

–L1– RT

℄ RAILROAD BRIDGE AT HAMMOND ROAD

BEGIN BRIDGE
–L1– RT STA. 348+48.74
EL = 282.28'

BEGIN BRIDGE
–L1– RT STA. 349+81.23
EL = 283.15'

BEGIN BRIDGE
–L1– RT STA. 356+67.85
EL = 281.72'

℄ GARNER ROAD

BEGIN BRIDGE
–L1– RT STA. 358+30.72
EL = 280.20'

PI = 346+90.00
EL = 281.02'
VC = 300'
K = 456
V > 80 MPH

PI = 353+15.00
EL = 284.20'
VC = 300'
K = 295
V = 71 MPH

279.67

(+)1.4513%

(+)0.7938%

(+)0.7938%

(+)0.3146%

(+)0.3146%

(–)0.7028%

PROPOSED GRADE

EXISTING GROUND

(–)0.7028%

(–)0.9318%

279.49

SEE SHEET NO. 25 FOR –L1– ALIGNMENT

330 320 310 300 290 280 270 260 250 240

346 347 348 349 350 351 352 353 354 355 356 357 358 359

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PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	71

RIGHT DITCH ----------

LEFT DITCH ----------

MEDIAN DITCH ——————

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

–L1– LT

℄ HADLEY ROAD

PI = 361+80.00
EL = 274.23'
VC = 600'
K = 488
V > 80 MPH

277.50

(–)1.1706%

(–)1.1706%

(–)2.4003%

PROPOSED GRADE

EXISTING GROUND

BEGIN BRIDGE
–L1– LT STA. 366+69.10
EL = 262.49'

(–)2.4003%

END BRIDGE
–L1– LT STA. 368+08.19
EL = 259.38'

(–)1.8779%

PI = 371+00.00
EL = 253.90'
VC = 500'
K = 368
V > 80 MPH

(–)1.8779%

(–)0.5200%

252.89

RETAIN EXISTING 7'x6' RCBC
(SEE SHT. 71-LIRT- PROFILE FOR HYDRO DATA)

–L1– RT

℄ HADLEY ROAD

PI = 360+40.00
EL = 278.25'
VC = 400'
K = 283
V = 73 MPH

279.49

(–)0.9318%

(–)2.3429%

PROPOSED GRADE

EXISTING GROUND

BEGIN BRIDGE
–L1– RT STA. 366+74.26
EL = 263.39'

(–)2.3429%

END BRIDGE
–L1– RT STA. 368+08.66
EL = 260.19'

(–)2.2251%

PI = 370+90.00
EL = 253.93'
VC = 550'
K = 298
V > 80 MPH

(–)2.2251%

(–)0.3788%

253.21

RETAIN EXISTING 7'x6' RCBC

CULVERT HYDRAULIC DATA
EXISTING 7' X 6' RCBC

DESIGN DISCHARGE	= 650	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 240.6	FT
BASE DISCHARGE	= 750	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 241.1	FT
OVERTOPPING DISCHARGE	= N/A	CFS
OVERTOPPING FREQUENCY	= N/A	YRS
OVERTOPPING ELEVATION	= N/A	FT

SEE SHEET NO. 26 FOR –L1– ALIGNMENT

300 290 280 270 260 250 240 230 220 210

359 360 361 362 363 364 365 366 367 368 369 370 371 372 373

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RIGHT DITCH ----------	PROJECT REFERENCE NO.	SHEET NO.
LEFT DITCH -·-·-·-·-	I-5338/I-5311	72
MEDIAN DITCH – – – – –	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

–L1– LT

252.99

(–)0.5200%

PORPOSED GRADE

EXISTING GROUND

(–)0.3000%

(–)1.5200%

BEGIN SPECIAL CUT DITCH WITH HINGE LT.
PI = 376+50.000
EL = 243.50

PI = 377+50.000
EL = 241.98

END SPECIAL CUT DITCH WITH HINGE LT.
PI = 378+00.000
EL = 241.83

PI = 383+00.00
EL = 247.66'
VC = 300'
K = 2499
V > 80 MPH

(–)0.5200%

(–)0.3999%

(–)0.3999%

BEGIN BRIDGE
–L1– LT STA. 386+92.56
EL = 246.09'

290 280 270 260 250 240 230 220 210 200

373 374 375 376 377 378 379 380 381 382 383 384 385 386 387

–L1– RT

253.21

(–)0.3788%

PI = 381+30.00
EL = 249.99'
VC = 500'
K = 1790
V > 80 MPH

(–)0.3788%

(–)0.6582%

PROPOSED GRADE

EXISTING GROUND

(–)0.6582%

BEGIN BRIDGE
–L1– RT STA. 386+78.50
EL = 246.38'

SEE SHEET NO. 27 FOR –L1– ALIGNMENT

290 280 270 260 250 240 230 220 210 200

373 374 375 376 377 378 379 380 381 382 383 384 385 386 387

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RIGHT DITCH ----------
LEFT DITCH -·-·-·-·-·-
MEDIAN DITCH – – – – –

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	73
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

–L1– LT

℄ SOUTH STATE STREET

END BRIDGE
–L1– LT STA. 388+32.71
EL = 245.42'

(–)0.4814%

PI = 394+60.00
EL = 242.40'
VC = 600'
K = 646
V > 80 MPH

(–)0.4814% (+)0.4468%

PROPOSED GRADE

EXISTING GROUND

245.26

(+)0.4468%

EXIST. 66" RCP
STA. 388+19
ELEV. = 218.42'
(SEE SHT. 73 –LIRT– PROFILE FOR HYDRO DATA)

EXIST. 42" CMP
STA. 396+08
ELEV. = 218.23'
(SEE SHT. 73 –LIRT– PROFILE FOR HYDRO DATA)

290 280 270 260 250 240 230 220 210 200

387 388 389 390 391 392 393 394 395 396 397 398 399 400 401

–L1– RT

℄ SOUTH STATE STREET

END BRIDGE
–L1– RT STA. 388+22.25
EL = 245.54'

(–)0.6050%

PI = 394+90.00
EL = 241.50'
VC = 900'
K = 783
V > 80 MPH

(–)0.6050% (+)0.5444%

PROPOSED GRADE

EXISTING GROUND

(+)0.3644%

244.66

(+)0.5444%

PIPE HYDRAULIC DATA
EXISTING 66" RCP

DRAINAGE AREA	=	110 AC
DESIGN FREQUENCY	=	50 YRS
DESIGN DISCHARGE	=	370 CFS
DESIGN HW ELEVATION	=	226.4 FT
100 YEAR DISCHARGE	=	420 CFS
100 YEAR HW ELEVATION	=	226.6 FT
OVERTOPPING FREQUENCY	=	N/A
OVERTOPPING DISCHARGE	=	N/A
OVERTOPPING ELEVATION	=	N/A

EXIST. 66" RCP
STA 388+08
ELEV. = 218.60'

PIPE HYDRAULIC DATA
EXISTING 42" CMP
ANALYZED AS 42" SMOOTH WALL PIPE

DRAINAGE AREA	=	22 AC
DESIGN FREQUENCY	=	50 YRS
DESIGN DISCHARGE	=	54 CFS
DESIGN HW ELEVATION	=	229.4 FT
100 YEAR DISCHARGE	=	63 CFS
100 YEAR HW ELEVATION	=	229.8 FT
OVERTOPPING FREQUENCY	=	N/A
OVERTOPPING DISCHARGE	=	N/A
OVERTOPPING ELEVATION	=	N/A

EXIST. 42" CMP
STA. 396+11
ELEV. = 220.2'

BEGIN SPECIAL CUT DITCH WITH HINGE RT.
PI = 397+00.000
EL = 236.26

SEE SHEET NO. 28 FOR –L1– ALIGNMENT

290 280 270 260 250 240 230 220 210 200

387 388 389 390 391 392 393 394 395 396 397 398 399 400 401

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RIGHT DITCH ----------	PROJECT REFERENCE NO.	SHEET NO.
LEFT DITCH -·-·-·-·-	I-5338/I-5311	74
MEDIAN DITCH – – – – –	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

–L1– LT

PI = 404+00.00
EL = 246.60'
VC = 600'
K = 570
V > 80 MPH

245.26
(+)0.4468%
(+)0.4468%
(–)0.6050%
PROPOSED GRADE
EXISTING GROUND
239.95
(–)0.6050%
(+) 0.9000%

BEGIN SPECIAL CUT DITCH WITH HINGE LT.
PI = 407+50.000
EL = 243.50

STA = 408+50
EI = 242.25
SEE SHEET 108
–RPI3B– FOR
REMAINDER OF
PROFILE

BEGIN SPECIAL LATERAL 'V' DITCH LT.
PI = 414+50.000
EL = 240.55

END SPECIAL LATERAL 'V' DITCH LT.
PI = 415+00.000
EL = 241.00

–L1– RT

PI = 403+90.00
EL = 246.40'
VC = 900'
K = 783
V > 80 MPH

244.66
(+)0.5444%
(+)0.5444%
(–)0.6055%
PROPOSED GRADE
EXISTING GROUND
239.68
(–)0.6055%

(+) 0.3644%
(–) 0.6040%
PI =401+50.000
EI = 237.90

END SPECIAL CUT DITCH WITH HINGE RT.
PI = 404+00.000
EL = 236.39

(–) 1.1750%

BEGIN SPECIAL CUT DITCH WITH HINGE RT.
PI = 405+50.000
EL = 234.95

STA = 407+50
EI = 232.60
SEE SHEET 109
–RPI3C– FOR
REMAINDER OF
PROFILE

SEE SHEET NO. 29 FOR –L1– ALIGNMENT

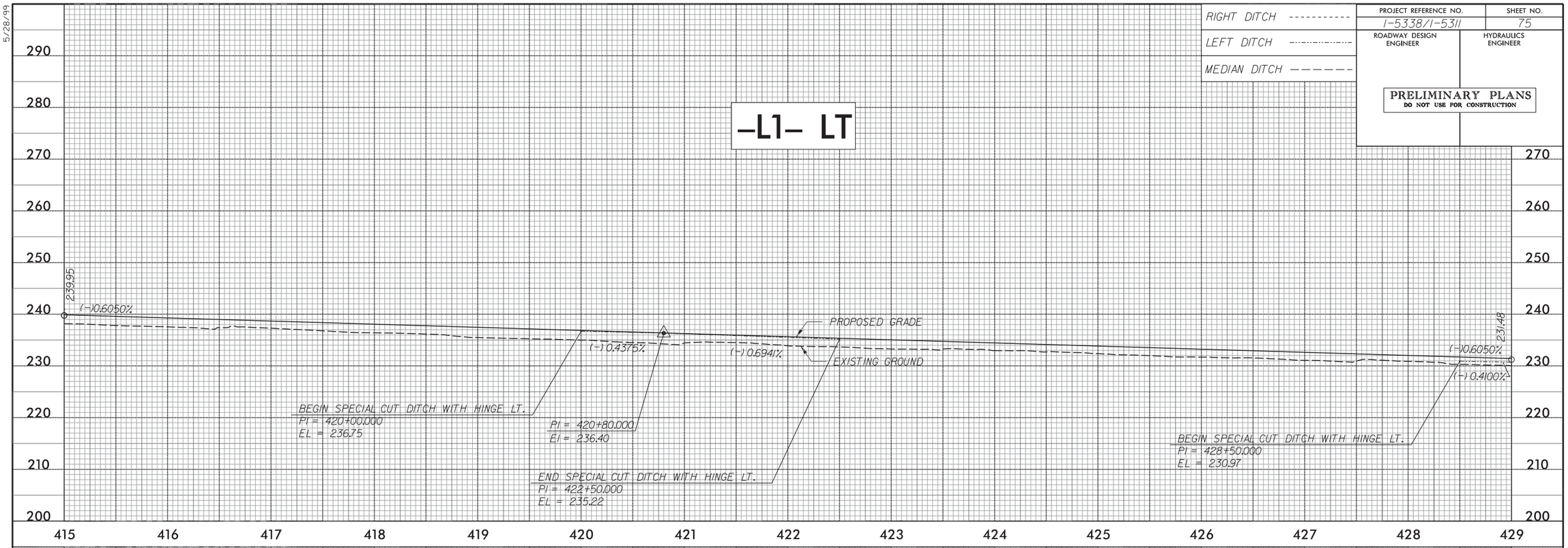
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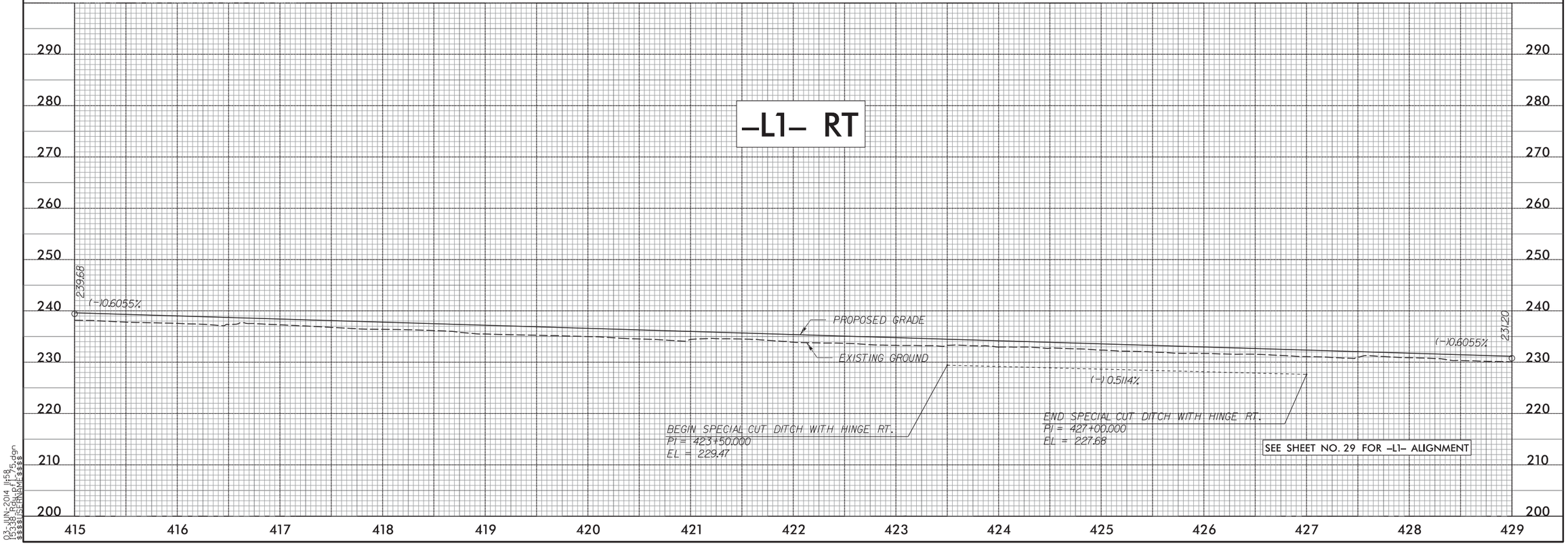
RIGHT DITCH ----------	PROJECT REFERENCE NO.	SHEET NO.
LEFT DITCH -·-·-·-·-	I-5338/I-5311	75
MEDIAN DITCH – – – – –	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

–L1– LT



–L1– RT



SEE SHEET NO. 29 FOR –L1– ALIGNMENT

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RIGHT DITCH ----------
LEFT DITCH ----·---·----
MEDIAN DITCH ———————

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	76
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

–L1– LT

GRADE POINT SHIFT
–L1– LT STA. 438+80.68 (23' LT)
ELEV = 225.25' TO
–L1– LT STA. 438+80.68 (47' LT)
ELEV = 226.21'

231.48
(–)0.6050%
(–)0.4100%
END SPECIAL CUT DITCH WITH HINGE LT.
PI = 432+00.000
EL = 229.53

PI = 434+00.00
EL = 228.45'
VC = 300'
K = 3158
V > 80 MPH
(–)0.6050%
(–)0.7000%
PROPOSED GRADE
EXISTING GROUND

PI = 437+00.00
EL = 226.35'
VC = 300'
K = 3332
V > 80 MPH
(–)0.7000%
(–)0.6100%
RETAIN
EXISTING 8'x8' RCBC

(–)0.6100%
PI = 440+10.00
EL = 225.42'
VC = 240'
K = 482
V > 80 MPH
(–)1.1079%
RETAIN
EXISTING 2@ 10'x6' RCBC
BEGIN SPECIAL CUT DITCH WITH HINGE LT.
PI = 441+00.000
EL = 221.73

(–)1.5700%
PI = 442+00.000
EI = 220.16

PI = 442+50.00
EL = 222.76'
VC = 240'
K = 473
V > 80 MPH
(–)1.1079%
(–)0.6000%
(–)1.1800%
222.51
PI = 443+00.000
EI = 218.98

–L1– RT

CULVERT HYDRAULIC DATA
EXIST 2 @ 10' X 6' RCBC W/ SIDE TAPERED INLET AND 1@ 8' X 8' RCBC

DESIGN DISCHARGE	= 1500	CFS
DESIGN FREQUENCY	= 50	YRS
DESIGN HW ELEVATION	= 218.7	FT
BASE DISCHARGE	= 1600	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 219.2	FT
OVERTOPPING DISCHARGE	= N/A	CFS
OVERTOPPING FREQUENCY	= N/A	YRS
OVERTOPPING ELEVATION	= N/A	FT

231.20
(–)0.6055%
PROPOSED GRADE
EXISTING GROUND
RETAIN
EXISTING 8'x8' RCBC

PI = 442+00.00
EL = 223.33'
VC = 300'
K = 3175
V > 80 MPH
(–)0.6055%
(–)0.7000%
222.62
(–)0.5067%
RETAIN
EXISTING 2@ 10'x6' RCBC
BEGIN SPECIAL CUT DITCH WITH HINGE RT.
PI = 441+50.000
EL = 219.78

END SPECIAL CUT DITCH WITH HINGE RT.
PI = 443+00.000
EL = 219.02

SEE SHEET NO. 30 FOR –L1– ALIGNMENT

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5/28/99

RIGHT DITCH ----------	PROJECT REFERENCE NO.	SHEET NO.
LEFT DITCH -·-·-·-·-	I-5338/I-5311	77
MEDIAN DITCH – – – – –	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

–L2– LT

END AREA 2B
–L1– LT STA. 444+00.00
ELEV = 221.86
BEGIN AREA 3
–L2LT– STA. 444+00.00
ELEV = 221.86'

222.51

(–)0.6000%
(–) 0.6500%
(–) 0.6900%
(–) 0.5960%
(–) 1.4200%
(–) 0.5200%
(–) 0.6800%
(–) 1.2850%
(–) 0.3193%
(–) 0.2992%
(–)0.6000%

PROPOSED GRADE
EXISTING GROUND

PI = 443+00.000
EI = 218.98

PI = 444+00.000
EI = 218.33

END SPECIAL CUT DITCH WITH HINGE LT.
BEGIN CUT DITCH LT.
PI =445+00.000
EI = 217.64

BEGIN MEDIAN V DITCH RT.
PI = 449+00.000
EL = 217.31

END MEDIAN V DITCH RT.
BEGIN SPECIAL LATERAL V DITCH RT.
PI = 450+50.000
EL = 215.58

PI = 450+00.000
EL = 215.84

PI = 450+00.000
EI = 214.66

PI = 451+00.000
EL = 215.32

PI = 452+50.000
EI = 212.96

END SPECIAL LATERAL V DITCH RT.
PI = 453+00.000
EL = 212.75

BEGIN SPECIAL LATERAL V DITCH RT.
PI = 453+05.000
EL = 213.15

END CUT DITCH LT.
BEGIN SPECIAL CUT DITCH WITH HINGE LT.
PI = 454+50.000
EI = 212.36

215.79

SEE SHEET NO. 31 FOR –L2– LT ALIGNMENT

–L2– RT

END AREA 2B
–L1– RT STA. 444+00.00
ELEV = 221.93'
BEGIN AREA 3
–L2RT– STA. 444+00.00
ELEV = 221.93'

222.62

(–)0.7000%
(–) 1.0000%
(–) 0.8100%
(–) 1.7400%
(–) 0.6467%
(–) 0.8400%
(–) 0.7665%
(–) 0.3000%
(–) 2.4400%
(–)0.7000%
(–)0.4213%
(–) 0.7240%
(–) 0.3000%

PROPOSED GRADE
EXISTING GROUND

BEGIN SPECIAL CUT DITCH WITH HINGE RT.
PI = 443+50.000
EL = 218.42

PI =445+00.000
EI = 216.92

PI =446+00.000
EI = 216.11

PI =447+50.000
EI = 213.50

PI =449+00.000
EI = 212.53

PI =449+50.000
EI = 212.11

PI =451+47.000
EI = 210.60

BEGIN CUT DITCH LT.
PI = 455+47.000
EL = 212.55

PI = 454+50.00
EL = 214.58'
VC = 250'
K = 897
V > 80 MPH

PI = 453+97.00
EL = 208.78

PI = 453+47.000
EL = 210.00

213.53

SEE SHEET NO. 31 FOR –L2– RT ALIGNMENT

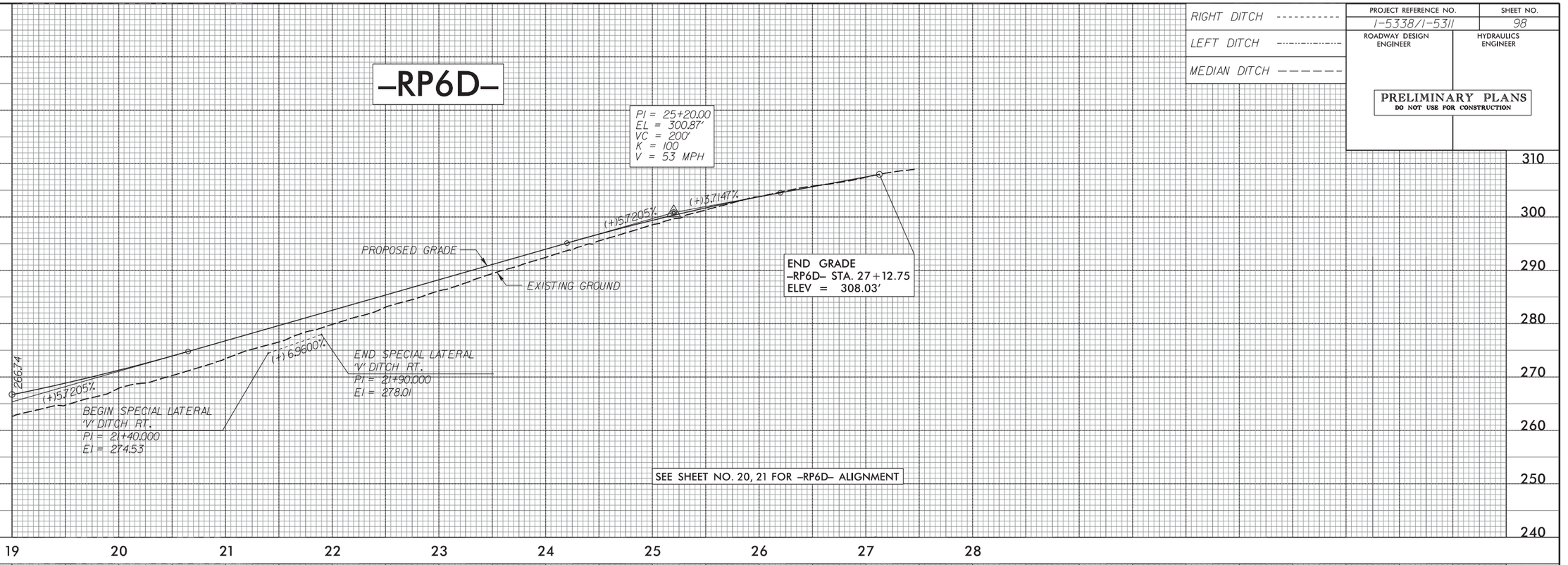
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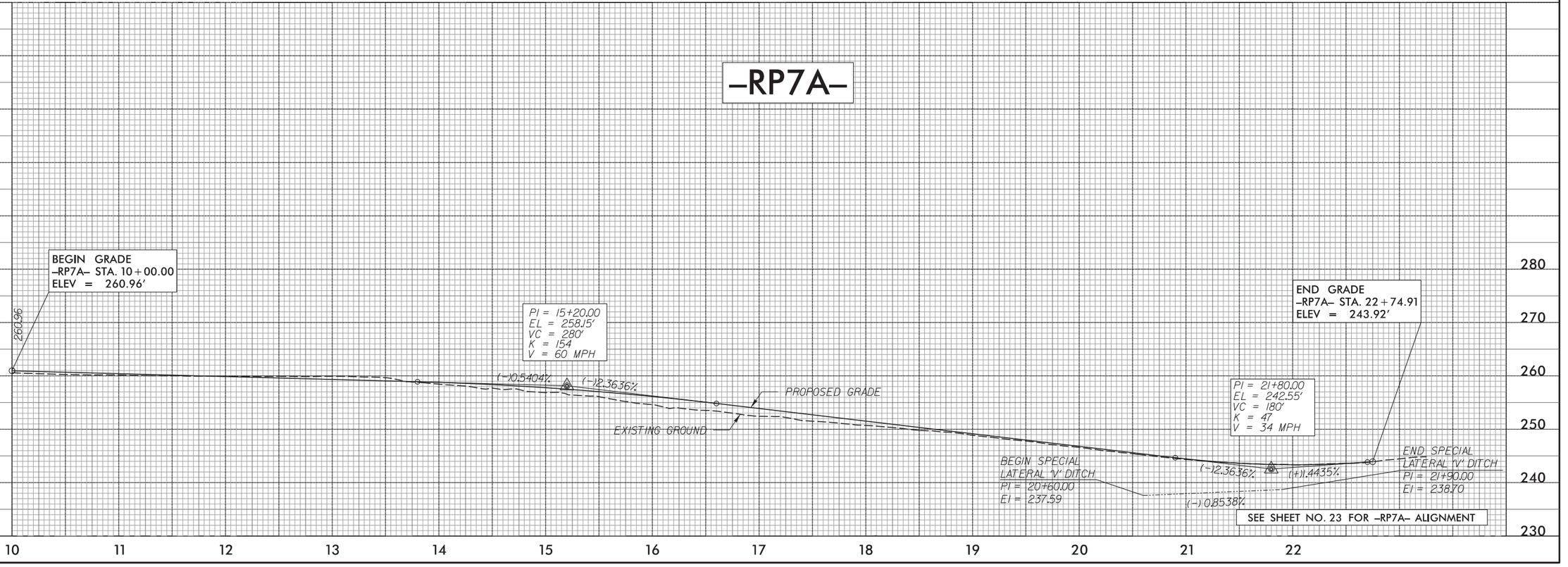
RIGHT DITCH ----------	PROJECT REFERENCE NO.	SHEET NO.
LEFT DITCH -----------	I-5338/I-5311	98
MEDIAN DITCH ———————	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

–RP6D–



–RP7A–



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RIGHT DITCH ----------	PROJECT REFERENCE NO.	SHEET NO.
LEFT DITCH -----------	I-5338/I-5311	99
MEDIAN DITCH -------	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

–RP7B–

BEGIN GRADE
–RP7B– STA. 10+00.00
ELEV = 257.56'

257.56

PI = 12+40.00
EL = 259.84'
VC = 400'
K = 615
V > 80 MPH

(+)0.9500%

(+)0.3000%

EXISTING GROUND

BEGIN SPECIAL
LATERAL 'V' DITCH RT.
PI = 15+80.000
EI = 258.06

PI = 16+50.00
EL = 261.07'
VC = 330'
K = 253
V = 70 MPH

(+)0.3000%

(–)1.0030%

(–)1.6800%

(–)0.4400%

PI =16+30.000
EI = 257.22

PI =16+80.000
EI = 252.50

(–) 3.2700%

(–) 2.6300%

PI =17+80.000
EI = 249.23

PI =18+80.000
EI = 246.60

(–) 3.7200%

PI = 19+80.00
EL = 257.76'
VC = 330'
K = 153
V = 60 MPH

(–)1.0030%

(–)2.5570%

PI =19+80.000
EI = 242.88

(–)13.1560%

BEGIN SPECIAL
LATERAL 'V' DITCH RT.
PI = 21+48.590
EI = 246.00

END SPECIAL LATERAL
'V' DITCH RT.
PI = 20+19.89
EI = 241.86

(+) 3.2155%

END SPECIAL
LATERAL 'V' DITCH RT.
PI = 22+80.000
EI = 248.11

PROPOSED GRADE

(+) 1.1000%

PI =21+80.000
EI = 247.01

(–)13.1560%

244.79

SEE SHEET NO. 22, 23 FOR –RP7B– ALIGNMENT

–RP7B–

PI = 24+35.00
EL = 243.40'
VC = 170'
K = 43
V = 33 MPH

PROPOSED GRADE

244.79

(+)0.7831%

(–)13.1560%

END GRADE
–RP7B– STA. 25+28.22
ELEV = 244.13'

244.13

EXISTING GROUND

SEE SHEET NO. 23 FOR –RP7B– ALIGNMENT

–LP7B–

BEGIN GRADE
–LP7B– STA. 10+00.00
ELEV = 266.39'

266.39

PI = 11+70.00
EL = 266.59'
VC = 190'
K = 33
V = 36 MPH

(+)0.1176%

(–)5.6929%

EXISTING GROUND

PROPOSED GRADE

BEGIN SPECIAL
LATERAL 'V' DITCH LT.
PI = 12+41.476
EI = 261.23

(–)14.4774%

END SPECIAL
LATERAL 'V' DITCH LT.
PI = 12+91.416
EI = 254.00

PI = 15+90.00
EL = 242.68'
VC = 280'
K = 43
V = 33 MPH

(–)5.6929%

(+)0.7791%

END GRADE
–LP7B– STA. 17+45.18
ELEV = 243.89'

SEE SHEET NO. 23 FOR –LP7B– ALIGNMENT

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RIGHT DITCH ----------	PROJECT REFERENCE NO.	SHEET NO.
LEFT DITCH -·-·-·-·-	I-5338/I-5311	100
MEDIAN DITCH – – – – –	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

–RP7C–

BEGIN GRADE
–RP7C– STA. 10+00.00
ELEV = 261.04'

PI = 11+20.00
EL = 262.12'
VC = 200'
K = 345
V > 80 MPH

PI = 14+60.00
EL = 267.15'
VC = 250'
K = 416
V > 80 MPH

PI = 19+60.00
EL = 277.55'
VC = 690'
K = 84
V = 50 MPH

PROPOSED GRADE

EXISTING GROUND

(+)0.9000%

(+)1.4794%

(+)1.4794%

(+)2.0800%

(+)2.0800%

(–)6.0998%

(–)6.0998%

261.04

270 260 250 240 230

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

SEE SHEET NO. 22, 23 FOR –RP7C– ALIGNMENT

–RP7C–

END GRADE
–RP7C– STA. 26+42.85
ELEV = 240.15'

PI = 25+81.00
EL = 239.67'
VC = 120'
K = 17
V = 20 MPH

261.04

PROPOSED GRADE

(–)6.0998%

(+)0.7761%

EXISTING GROUND

280 270 260 250 240

24 25 26

SEE SHEET NO. 23 FOR –RP7C– ALIGNMENT

–RP7D–

BEGIN GRADE
–RP7D– STA. 10+00.00
ELEV = 261.46'

PI = 14+00.00
EL = 258.23'
VC = 300'
K = 164
V = 66 MPH

(–)0.8075%

(+)1.0175%

BEGIN SPECIAL LATERAL 'V' DITCH RT.
PI = 15+45.00
EI = 259.03

PROPOSED GRADE

(–)1.3000%

PI =16+45.000
EI = 257.73

(–)1.5200%

END SPECIAL LATERAL 'V' DITCH RT.
PI = 17+45.00
EI = 256.21

(+)1.0175%

260.70

EXISTING GROUND

280 270 260 250 240 230

10 11 12 13 14 15 16 17 18 19

SEE SHEET NO. 23 FOR –RP7D– ALIGNMENT

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RIGHT DITCH ----------	PROJECT REFERENCE NO.	SHEET NO.
LEFT DITCH -----------	I-5338/I-5311	101
MEDIAN DITCH ———————	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

–RP7D–

PI = 19+70.00
EL = 264.03'
VC = 520'
K = 92
V = 51 MPH

260.70

(–)4.6377%

(+) 0.5000%

BEGIN SPECIAL CUT DITCH RT.
PI = 20+45.00
EI = 254.72

END SPECIAL CUT DITCH RT.
PI = 20+95.00
EI = 254.97

PROPOSED GRADE

EXISTING GROUND

END GRADE
–RP7D– STA. 27+17.18
ELEV = 240.10'

PI = 25+00.00
EL = 239.45'
VC = 360'
K = 73
V = 43 MPH

(–)4.6377%

(+)0.2993%

SEE SHEET NO. 23 FOR –RP7D– ALIGNMENT

–LP7D–

BEGIN GRADE
–LP7D– STA. 10+13.55
ELEV = 273.68'

PI = 14+30.00
EL = 272.12'
VC = 200'
K = 30
V = 36 MPH

(–)0.3746%

(–)7.0729%

PROPOSED GRADE

EXISTING GRADE

PI = 19+10.00
EL = 238.17'
VC = 320'
K = 41
V = 32 MPH

(–)7.0729%

(+)0.7832%

END GRADE
–LP7D– STA. 21+70.48
ELEV = 240.21'

SEE SHEET NO. 23 FOR –RP7DSPUR– ALIGNMENT

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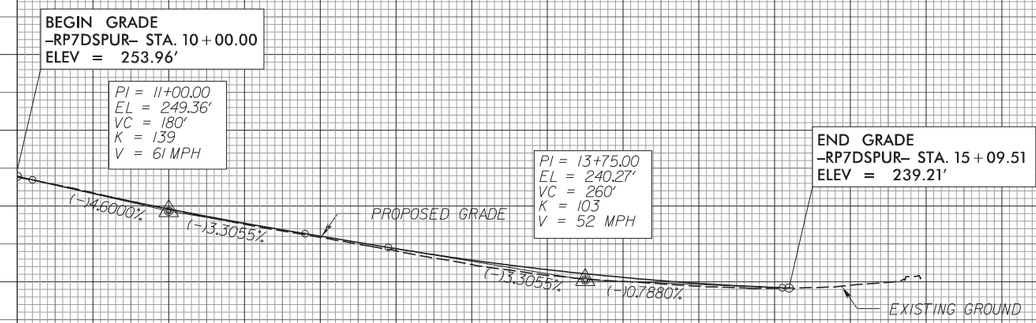
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RIGHT DITCH	----------
LEFT DITCH	-.-.-.-.-.-
MEDIAN DITCH	– – – – – –

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	102
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

–RP7DSPUR–



SEE SHEET NO. 23 FOR –RP7DSPUR– ALIGNMENT

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RIGHT DITCH ----------
LEFT DITCH ----------
MEDIAN DITCH ——————

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	103
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

–RP9A–

℄ RAILROAD BRIDGE AT HAMMOND ROAD

BEGIN GRADE
–RP9A– STA. 10+48.92
ELEV = 277.83'

PI = 12+50.00
EL = 279.14'
VC = 200'
K = 149
V = 60 MPH

PI = 14+60.00
EL = 277.69'
VC = 200'
K = 130
V = 59 MPH

PI = 16+90.00
EL = 279.64'
VC = 150'
K = 130
V = 57 MPH

BEGIN BRIDGE
–RP9A– STA. 17+83.87
ELEV = 279.35'

END BRIDGE
–RP9A– STA. 19+77.56
ELEV = 275.77'

PI = 20+90.00
EL = 271.99'
VC = 100'
K = 81
V = 49 MPH

PI = 23+90.00
EL = 258.19'
VC = 500'
K = 91
V = 49 MPH

(+)0.6515% (−)0.6905% (−)0.6905% (+)0.8478% (+)0.8478% (−)0.3089% (−)3.3618% (−)14.6000% (−)14.6000%

PROPOSED GRADE
EXISITING GROUND

26146

SEE SHEET NO. 25, 43 FOR –RP9A– ALIGNMENT

–RP9A–

END GRADE
–RP9A– STA. 26+58.70
ELEV = 260.65'

26146

(+)0.9155%

PROPOSED GRADE
EXISTING GROUND

SEE SHEET NO. 25, 43 FOR –RP9A– ALIGNMENT

–RP9ASPUR–

BEGIN GRADE
–RP9ASPUR– STA. 11+01.35
ELEV = 276.25'

PI = 12+50.00
EL = 272.53'
VC = 270'
K = 60
V = 45 MPH

END GRADE
–RP9ASPUR– STA. 15+32.55
ELEV = 256.08'

PI = 15+00.00
EL = 255.10'
VC = 60'
K = 6
V = 13 MPH

(−)12.5025% (−)16.9720% (−)16.9720% (+)5.0108%

EXISTING GROUND
PROPOSED GRADE

SEE SHEET NO. 25 FOR –RP9ASPUR– ALIGNMENT

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RIGHT DITCH ----------
LEFT DITCH -·-·-·-·-·-
MEDIAN DITCH – – – – – –

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	104
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

–RP9B–

BEGIN GRADE
–RP9B– STA. 10+00.00
ELEV = 266.96'

PI = 11+90.00
EL = 266.01'
VC = 380'
K = 2533
V > 80 MPH

PI = 14+90.00
EL = 264.96'
VC = 220'
K = 314
V = 75 MPH

PI = 23+90.00
EL = 255.51'
VC = 180'
K = 84
V = 46 MPH

(–)0.5000% (–)0.3500% (–)0.3500% (–)1.0500% (–)1.0500%

PROPOSED GRADE
EXISTING GROUND

256.00

EXIST 30" CMP
TO BE PRESERVED
STA 15+32
ELEV = 221.12' (BELOW GRID)
(SEE SHT 105 –RP9C– PROFILE FOR HYDRO DATA)

SEE SHEET NO. 25, 24 FOR –RP9B– ALIGNMENT

270 260 250 240 230

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

–RP9B–

END GRADE
–RP9B– STA. 24+82.97
ELEV = 256.52'

256.00

PROPOSED GRADE
EXISTING GROUND

(+)1.0864%

SEE SHEET NO. 25, 24 FOR –RP9B– ALIGNMENT

–RP9BSPUR–

BEGIN GRADE
–RP9BSPUR– STA. 10+00.00
ELEV = 262.44'

PI = 10+50.00
EL = 261.91'
VC = 100'
K = 2000
V > 80 MPH

PI = 11+50.00
EL = 260.80'
VC = 100'
K = 263
V > 80 MPH

PI = 12+50.00
EL = 260.07'
VC = 100'
K = 764
V > 80 MPH

PI = 14+80.00
EL = 258.09'
VC = 245'
K = 104
V = 52 MPH

PI = 19+80.00
EL = 265.59'
VC = 400'
K = 1458
V > 80 MPH

(–)1.0600% (–)1.1100% (–)0.7300% (–)0.8609% (–)0.8609% (+)1.5000% (+)1.5000%

PROPOSED GRADE
EXISTING GROUND

265.72

SEE SHEET NO. 25, 43 FOR –RP9BSPUR– ALIGNMENT

280 270 260 250 240 230

10 11 12 13 14 15 16 17 18 19 20

24 25 26

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RIGHT DITCH ----------	PROJECT REFERENCE NO.	SHEET NO.
LEFT DITCH -----------	I-5338/I-5311	105
MEDIAN DITCH ———————	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

–RP9BSPUR–

END GRADE
–RP9BSPUR– STA. 21+93.75
ELEV = 268.21'

265.72
(+)1.2257%
PROPOSED GRADE
EXISITING GROUND

SEE SHEET NO. 25, 43 FOR –RP9BSPUR– ALIGNMENT

–LP9C–

BEGIN GRADE
–LP9C– STA. 12+19.63
ELEV = 274.14'

PI = 13+30.00
EL = 271.77'
VC = 110'
K = 51
V = 42 MPH

PI = 14+40.00
EL = 267.04'
VC = 80'
K = 229
V = 68 MPH

(–)2.1473%
(–)4.3000%
(–)4.6493%
PROPOSED GRADE
EXISITING GROUND

PI = 18+05.00
EL = 250.07'
VC = 310'
K = 57
V = 37 MPH

251.61
(+)0.8213%
(–)4.6493%
(+)0.8213%

SEE SHEET NO. 25 FOR –LP9C– ALIGNMENT

–LP9C–

END GRADE
–LP9C– STA. 21+55.92
ELEV = 251.32'

PI = 20+40.00
EL = 252.00'
VC = 150'
K = 107
V = 54 MPH

251.61
EXISTING GROUND
(–)0.5866%
(+)0.8213%

SEE SHEET NO. 25 FOR –LP9C– ALIGNMENT

–RP9C–

BEGIN GRADE
–RP9C– STA. 10+00.00
ELEV = 260.39'

PI = 11+15.00
EL = 259.74'
VC = 150'
K = 388
V > 80 MPH

PI = 13+00.00
EL = 257.98'
VC = 220'
K = 518
V > 80 MPH

PI = 15+50.00
EL = 254.54'
VC = 200'
K = 258
V > 80 MPH

(–)0.5652%
(–)0.9514%
(–)0.9514%
(–)1.3760%
(–)1.3760%
(–)0.6000%
PROPOSED GRADE
EXISITING GROUND
251.84

PIPE HYDRAULIC DATA
30" CMP TO BE PRESERVED
(ANALYZED AS 30" SMOOTH WALL)

DRAINAGE AREA	=	5.8 AC
DESIGN FREQUENCY	=	50 YRS
DESIGN DISCHARGE	=	20 CFS
DESIGN HW ELEVATION	=	225.5 FT
100 YEAR DISCHARGE	=	21 CFS
100 YEAR HW ELEVATION	=	226.0 FT
OVERTOPPING FREQUENCY	=	N/A
OVERTOPPING DISCHARGE	=	N/A
OVERTOPPING ELEVATION	=	N/A

EXIST. 30" CMP
TO BE PRESERVED
STA 16+30
ELEV = 222.43' (BELOW GRID)

SEE SHEET NO. 24, 25 FOR –RP9C– ALIGNMENT

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RIGHT DITCH ----------	PROJECT REFERENCE NO.	SHEET NO.
LEFT DITCH -----------	I-5338/I-5311	106
MEDIAN DITCH ———————	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

–RP9C–

END GRADE
–RP9C– STA. 26+88.91
ELEV = 256.90'

PI = 25+12.00
EL = 248.77'
VC = 350'
K = 67
V = 41 MPH

251.84

PROPOSED GRADE

EXISTING GROUND

(–)0.6000%

(+)4.5960%

SEE SHEET NO. 24, 25 FOR –RP9C– ALIGNMENT

–RP9D–

BEGIN GRADE
–RP9D– STA. 11+95.08
ELEV = 284.17'

EXISITING GROUND

286.31

PROPOSED GRADE

SEE SHEET NO. 25, 44 FOR –RP9D– ALIGNMENT

–RP9D–

℄ RAILROAD BRIDGE AT HAMMOND ROAD

BEGIN BRIDGE
–RP9D– STA. 18+84.70
ELEV = 284.42'

PI = 16+96.46
EL = 287.70'
VC = 370'
K = 151
V = 60 MPH

286.31

(+)0.7041%

(–)1.7425%

(–)1.7425%

END GRADE
–RP9D– STA. 20+30.11
ELEV = 280.91'

PI = 21+41.00
EL = 277.94'
VC = 220'
K = 119
V = 55 MPH

(–)2.6783%

(–)4.5226%

PROPOSED GRADE

EXISITING GROUND

PI = 24+51.00
EL = 263.92'
VC = 400'
K = 76
V = 44 MPH

(–)4.5226%

(+)0.7192%

END GRADE
–RP9D– STA. 26+54.00
ELEV = 265.38'

PIPE HYDRAULIC DATA

36" CMP TO BE PRESERVED
(ANALYZED AS 36" SMOOTH WALL)

DRAINAGE AREA	=	20.0 AC
DESIGN FREQUENCY	=	50 YRS
DESIGN DISCHARGE	=	65 CFS
DESIGN HW ELEVATION	=	244.1 FT
100 YEAR DISCHARGE	=	75 CFS
100 YEAR HW ELEVATION	=	245.1 FT
OVERTOPPING FREQUENCY	=	N/A
OVERTOPPING DISCHARGE	=	N/A
OVERTOPPING ELEVATION	=	N/A

EXIST. 36" CMP
TO BE PRESERVED
STA 26+16
ELEV = 235.82'

SEE SHEET NO. 25, 44 FOR –RP9D– ALIGNMENT

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RIGHT DITCH ----------	PROJECT REFERENCE NO.	SHEET NO.
LEFT DITCH -----------	I-5338/I-5311	107
MEDIAN DITCH -------	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

–RP13A–

BEGIN GRADE
–RP13A– STA. 10+00.00
ELEV = 233.27'

PI = 11+00.00
EL = 233.97'
VC = 200'
K = 500
V > 80 MPH

(+)0.7000% (+)0.3000%

PI = 15+00.00
EL = 235.17'
VC = 350'
K = 170
V = 68 MPH

(+)0.3000% (+)2.3553%

PROPOSED GRADE

EXISTING GROUND

PI = 23+65.00
EL = 255.54'
VC = 100'
K = 27
V = 35 MPH

255.05

(+)2.3553% (–)1.2926%

SEE SHEET NO. 30, 29 FOR –RP13A– ALIGNMENT

–RP13A–

END GRADE
–RP13A– STA. 24+41.06
ELEV = 254.56'

255.05

PROPOSED GRADE

EXISTING GROUND

SEE SHEET NO. 30,29 FOR –RP13A– ALIGNMENT

–LP13B–

BEGIN GRADE
–LP13B– STA. 10+00.00
ELEV = 240.35'

PI = 12+40.00
EL = 241.80'
VC = 200'
K = 656
V > 80 MPH

(+)0.6050% (+)0.3000%

EXISTING GROUND

PI = 15+70.00
EL = 242.79'
VC = 450'
K = 144
V = 62 MPH

(+)0.3000% (+)3.4312%

PROPOSED GRADE

END GRADE
–LP13B– STA. 19+96.71
ELEV = 256.78'

PI = 19+55.00
EL = 256.00'
VC = 80'
K = 51
V = 42 MPH

(+)3.4312% (+)1.8701%

SEE SHEET NO. 29 FOR –LP13B– ALIGNMENT

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RIGHT DITCH ----------	PROJECT REFERENCE NO.	SHEET NO.
LEFT DITCH -·-·-·-	I-5338/I-5311	108
MEDIAN DITCH – – – –	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

–RP13B–

BEGIN GRADE
–RP13B– STA. 10+00.00
ELEV = 249.67'

PI = 11+00.00
EL = 249.82'
VC = 200'
K = 444
V > 80 MPH

PI = 14+10.00
EL = 248.89'
VC = 240'
K = 240
V = 69 MPH

PI = 18+00.00
EL = 243.82'
VC = 480'
K = 168
V = 67 MPH

PI = 21+20.00
EL = 248.83'
VC = 160'
K = 229
V = 80 MPH

252.93

(+)0.1500% (–)0.3000% (–)0.3000% (–)1.3000% (–)1.3000% (+)1.5656% (+)1.5656% (+)2.2643% (+)1.7880%

PROPOSED GRADE

EXISTING GROUND

SPECIAL CUT DITCH W/HINGE LT. (CONT.) SEE SHEET 74 –LI– LT FOR REMAINDER OF PROFILE
STA = 15+54
EI = 242.25

(–)1.2516%
(–)4.2267%

BEGIN SPECIAL LATERAL 'V' DITCH RT.
PI = 15+60.000
EI = 240.62

END SPECIAL LATERAL 'V' DITCH RT.
PI = 17+10.000
EI = 234.28

END SPECIAL CUT DITCH W/HINGE LT.
PI = 17+60.000
EL = 239.67

BEGIN SPECIAL CUT DITCH W/HINGE LT.
PI = 21+10.000
EL = 247.01

SEE SHEET NO. 29 FOR –RP13B– ALIGNMENT

270 260 250 240 230 220 210

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

–RP13B–

END GRADE
–RP13B– STA. 24+29.14
ELEV = 255.83'

PROPOSED GRADE

252.93

(+)2.2643%

EXISTING GROUND

(+)1.7880%

END SPECIAL CUT DITCH W/HINGE LT.
PI = 23+60.000
EL = 251.48

SEE SHEET NO. 29 FOR –RP13B– ALIGNMENT

–LP13C–

BEGIN GRADE
–LP13C– STA. 10+00.00
ELEV = 237.03'

PI = 11+50.00
EL = 237.94'
VC = 250'
K = 179
V = 63 MPH

PI = 13+80.00
EL = 236.12'
VC = 210'
K = 32
V = 28 MPH

PI = 18+20.00
EL = 261.90'
VC = 150'
K = 42
V = 40 MPH

END GRADE
–LP13C– STA. 18+99.73
ELEV = 263.73'

(+)0.6067% (–)0.7913% (–)0.7913% (+)5.8591% (+)5.8591% (+)2.2952%

PROPOSED GRADE

EXISTING GROUND

SEE SHEET NO. 29 FOR –LP13C– ALIGNMENT

270 260 250 240 230 220 210

23 24 10 11 12 13 14 15 16 17 18 19

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5/28/99

RIGHT DITCH ----------	PROJECT REFERENCE NO.	SHEET NO.
LEFT DITCH -·-·-·-·-	I-5338/I-5311	109
MEDIAN DITCH – – – – –	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

–RP13C–

BEGIN GRADE
–RP13C– STA. 10+00.00
ELEV = 242.12'

PI = 11+30.00
EL = 242.51'
VC = 256'
K = 160
V = 61 MPH

(+)0.3000% (–)1.3000%

EXISTING GROUND

BEGIN SPECIAL LATERAL
'V' DITCH LT.
PI = 15+00.000
EL = 236.00

(–)1.0474%

PROPOSED GRADE

SPECIAL CUT DITCH
W/HINGE RT.
SEE SHEET 74
–LT– RT FOR
REMAINDER OF
PROFILE
STA = 15+30
EL = 232.60

(+)0.8250%

(–)1.1750%

PI =15+70.000
EL = 232.13

END SPECIAL LATERAL
'V' DITCH LT.
PI = 16+90.000
EL = 234.01

PI = 18+20.00
EL = 233.54'
VC = 800'
K = 137
V = 60 MPH

(+) 2.8500%

(–)1.3000%

(+)4.5367%

PI =17+90.000
EL = 233.95

PI =18+90.000
EL = 236.80

(+) 3.7200%

(+)4.5367%

250.79

END SPECIAL CUT DITCH
W/HINGE RT.
PI = 20+40.000
EL = 242.38

SEE SHEET NO. 29 FOR –RP13C– ALIGNMENT

–RP13C–

END GRADE
–RP13C– STA. 25+22.06
ELEV = 263.55'

PI = 24+20.00
EL = 260.76'
VC = 200'
K = 111
V = 54 MPH

250.79

EXISTING GROUND

(+)4.5367%

(+)4.5367%

PROPOSED GRADE

(+)2.7337%

SEE SHEET NO. 29 FOR –RP13C– ALIGNMENT

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