STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAT L. MCCRORY
GOVERNOR

ANTHONY J. TATA
SECRETARY

October 21, 2013

MEMORANDUM TO: Mr. Joseph Hopkins, PE
Division 5 Engineer

FROM: for Philip S. Harris, III, P.E.
Natural Environment Section
Project Development and Environmental Analysis Unit

SUBJECT: Wake County, I-40/US 64 from west of SR 1319 (Jones Franklin Road) continuing along I-440/US 64 to north of US 64/264 Areas1, 2A, and 2B; Federal Aid Project No. IMS-040-4(147)298; WBS Element 46157.1.1; **TIP I-5338**

Attached are the U.S. Army Corps of Engineers Section 404 Nationwide Permit, the N.C. Division of Water Resources (NCDWR) Section 401 Water Quality Certification, and the NCDWR Riparian Buffer Authorization. All environmental permits have been received for the construction of this project.

A copy of this permit package will be posted on the NCDOT website at: https://connect.ncdot.gov/resources/Environmental, under *Quick Links > Issued Permits*

cc: w/o attachment (see website for attachments):

Mr. Randy Garris, P.E. State Contract Officer
Mr. Chris Murray, Division Environmental Officer
Dr. Majed Al-Ghandour, P. E., Programming and TIP
Mr. Glenn Mumford, P.E., Roadway Design Unit
Mr. Robert Memory, Utilities Unit
Mr. Matt Lauffer, P.E., Hydraulics Unit
Mr. Tom Koch, P.E., Structure Design Unit
Mr. Mark Staley, Roadside Environmental Unit
Mr. Ron Hancock, P.E., State Roadway Construction Engineer
Mr. Mike Robinson, P.E., State Bridge Construction Engineer
Mr. Eric Midkiff, P.E., PDEA
Ms. LeiLani Paugh, Natural Environment Section
Mr. Michael Shumsky, P.E., Transportation Program Management

MAILING ADDRESS:
NC DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT & ENVIRONMENTAL ANALYSIS UNIT
1598 MAIL SERVICE CENTER
RALEIGH NC 27699-1548

TELEPHONE: 919-707-6000
FAX: 919-212-5785

WEBSITE:NCDOT.GOV

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

PROJECT COMMITMENTS

T.I.P. Project No. I-5338
I-40/US 64 from west of SR 1319 (Jones Franklin Road) continuing along
I-440/US 64 to north of US 64/US 264
Areas 1, 2A, and 2B
Wake County
Federal Aid Project No. IMS-040-4(147)298
WBS Element 46157.1.1

COMMITMENTS FROM PROJECT DEVELOPMENT AND DESIGN

Communications Office

Public outreach prior to and throughout the construction phase of this project is critical to minimize secondary impacts on communities in Raleigh, Cary, and Garner. This should include the development and implementation of an outreach program to provide timely information to local governments, media outlets, businesses, visitor bureaus, transit operators, the traveling public, and others on travel conditions and construction activities. Develop and implement a public outreach program for the proposed project prior to and during construction.

Transportation Program Management/ Work Zone Traffic Control/ Communications Office/ ITS and Signals/ Division 5 Construction/ Division 4 Construction

Develop and implement a Final Transportation Management Plan (TMP) for the proposed project prior to and during construction.

Transportation Program Management/ Division 5 Construction

Utility conflicts, including any/all relocations, within the project limits will be identified during the design phase and resolved prior to or concurrent to construction.

Transportation Program Management/ Work Zone Traffic Control/ Division 5 Construction

Final Work Zone, Traffic Control, and Construction Phasing will be developed during final design and implemented prior to and during construction.

Project Development & Environmental Analysis (PDEA)/ Hydraulics/ Transportation Program Management/ Division 5 Construction

Based on input from the NC Department of Natural Resources - Division of Water ~~Quality~~ Resources, no net increase in discharge of stormwater is the desired goal of the project. It ~~is~~ preferred that this be accomplished by on-site detention. This will be addressed during the design phase prior to permitting.

Project Development & Environmental Analysis (PDEA)/ Hydraulics/ Transportation Program Management/ Division 5 Construction

Anticipated impacts to streams and wetlands were developed utilizing preliminary hydraulic review of the existing facility and the proposed improvements on aerial mapping (functional design). A more exacting quantity of streams and wetlands impacts will be compiled during final design of the project. Avoidance and minimization measures will be employed in the development of the construction plans with regards to impacts to streams and wetlands.

Transportation Program Management/ Communications O f f i c e / Division 5 Construction

Prior to and during construction, a minimum of four (4) week advanced notice of construction activities, including anticipated construction phasing, in each direction of l-40/US 64 will be provided to the following entities:

- Wake County Public School System's Transportation Department in order to re-route buses;
- City of Raleigh Police, Fire, and EMS Departments;
- Town of Gamer Police, Fire, and EMS Departments;
- Wake County Sheriff's Department;
- Wake County EMS;
- NCDOT-IMAP, and;
- State Highway Patrol.

COMMITMENTS FROM PERMITTING

No special commitments have been added during project permitting.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

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SECRETARY

October 20, 2014

TO: File

FROM: Jim Mason, Environmental Specialist
Natural Environment Section – Environmental Coordination and Permitting

SUBJECT: I-5338, Areas 1, 2A, and 2B, Wake County, Section 404 Permit by Default

The Section 404 permit for this project has been issued by default, as the U.S. Army Corps of Engineers review time period has exceeded 45 days (per Nationwide Permit General Condition number 31). Therefore, NCDOT must comply with all conditions, descriptions, and mitigation allowance in the August 18, 2014 permit application (includes the Pre-Construction Notification Form and Permit Drawings), as well as the Section 404 General Conditions. A permit modification will be required if any of the above conditions, descriptions, and mitigation allowances cannot be met.

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

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).

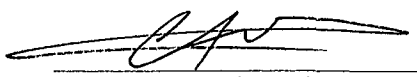
Permittee responsible mitigation will be used to offset mitigation buffer impacts for this project. Please see the attached Marks Creek Mitigation Site debit ledger.

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							

NATIONWIDE PERMIT 13
DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS
FINAL NOTICE OF ISSUANCE AND MODIFICATION OF NATIONWIDE PERMITS
FEDERAL REGISTER
AUTHORIZED MARCH 19, 2012

Bank Stabilization. Bank stabilization activities necessary for erosion prevention, provided the activity meets all of the following criteria:

(a) No material is placed in excess of the minimum needed for erosion protection;

(b) The activity is no more than 500 feet in length along the bank, unless the district engineer waives this criterion by making a written determination concluding that the discharge will result in minimal adverse effects;

(c) The activity will not exceed an average of one cubic yard per running foot placed along the bank below the plane of the ordinary high water mark or the high tide line, unless the district engineer waives this criterion by making a written determination concluding that the discharge will result in minimal adverse effects;

(d) The activity does not involve discharges of dredged or fill material into special aquatic sites, unless the district engineer waives this criterion by making a written determination concluding that the discharge will result in minimal adverse effects;

(e) No material is of a type, or is placed in any location, or in any manner, that will impair surface water flow into or out of any waters of the United States;

(f) No material is placed in a manner that will be eroded by normal or expected high flows (properly anchored trees and treetops may be used in low energy areas); and,

(g) The activity is not a stream channelization activity.

This NWP also authorizes temporary structures, fills, and work necessary to construct the bank stabilization activity. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Temporary fills must consist of materials, and be placed in a manner, that will not be eroded by expected high flows. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The areas affected by temporary fills must be revegetated, as appropriate.

Invasive plant species shall not be used for bioengineering or vegetative bank stabilization.

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity if the bank stabilization activity: (1) involves discharges into special aquatic sites; or (2) is in excess of 500 feet in length; or (3) will involve the discharge of greater than an average of one cubic yard per running foot along the bank below the plane of the ordinary high water mark or the high tide line. (See general condition 31.) (Sections 10 and 404)

NATIONWIDE PERMIT CONDITIONS

The following General Conditions must be followed in order for any authorization by a NWP to be valid:

1. Navigation. (a) No activity may cause more than a minimal adverse effect on navigation.

(b) Any safety lights and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, must be installed and maintained at the permittee's expense on authorized facilities in navigable waters of the United States.

(c) The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

2. Aquatic Life Movements. No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. All permanent and temporary crossings of waterbodies shall be suitably culverted, bridged, or otherwise designed and constructed to maintain low flows to sustain the movement of those aquatic species.

3. Spawning Areas. Activities in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., through excavation, fill, or downstream smothering by substantial turbidity) of an important spawning area are not authorized.

4. Migratory Bird Breeding Areas. Activities in waters of the United States that serve as breeding areas for migratory birds must be avoided to the maximum extent practicable.

5. Shellfish Beds. No activity may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWPs 4 and 48, or is a shellfish seeding or habitat restoration activity authorized by NWP 27.

6. Suitable Material. No activity may use unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.). Material used for construction or discharged must be free from toxic pollutants in toxic amounts (see Section 307 of the Clean Water Act).

7. Water Supply Intakes. No activity may occur in the proximity of a public water supply intake, except where the activity is for the repair or improvement of public water supply intake structures or adjacent bank stabilization.

8. Adverse Effects From Impoundments. If the activity creates an impoundment of water, adverse effects to the aquatic system due to accelerating the passage of water, and/or restricting its flow must be minimized to the maximum extent practicable.

9. Management of Water Flows. To the maximum extent practicable, the pre-construction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization and storm water management activities, except as provided below. The activity must be constructed to withstand expected high flows. The activity must not restrict or impede the passage of normal or high flows, unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the pre-construction course, condition, capacity, and location of open waters if it benefits the aquatic environment (e.g., stream restoration or relocation activities).

10. Fills Within 100-Year Floodplains. The activity must comply with applicable FEMA-approved state or local floodplain management requirements.

11. Equipment. Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures must be taken to minimize soil disturbance.

12. Soil Erosion and Sediment Controls. Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow.

13. Removal of Temporary Fills. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The affected areas must be revegetated, as appropriate.

14. Proper Maintenance. Any authorized structure or fill shall be properly maintained, including maintenance to ensure public safety and compliance with applicable NWP general conditions, as well as any activity-specific conditions added by the district engineer to an NWP authorization.

15. Single and Complete Project. The activity must be a single and complete project. The same NWP cannot be used more than once for the same single and complete project.

16. Wild and Scenic Rivers. No activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, unless the appropriate Federal agency with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation or study status. Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency responsible for the designated Wild and Scenic River or study river (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service).

17. Tribal Rights. No activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.

18. Endangered Species. (a) No activity is authorized under any NWP which is likely to directly or indirectly jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will directly or indirectly destroy or adversely modify the critical habitat of such species. No activity is authorized under any NWP which "may affect" a listed species or critical habitat, unless Section 7 consultation addressing the effects of the proposed activity has been completed.

(b) Federal agencies should follow their own procedures for complying with the requirements of the ESA. Federal permittees must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will review the documentation and determine whether it is sufficient to address ESA compliance for the NWP activity, or whether additional ESA consultation is necessary.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if any listed species or designated critical habitat might be affected or is in the vicinity of the project, or if the project is located in designated critical habitat, and shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that might affect Federally-listed endangered or threatened species or designated critical habitat, the pre-construction notification must include the name(s) of the endangered or threatened species that might be affected by the proposed work or that utilize the designated critical habitat that might be affected by the proposed work. The district engineer will determine whether the proposed activity "may affect" or will have "no effect" to listed species and designated critical habitat and will notify the non-Federal applicant of the Corps' determination within 45 days of receipt of a complete pre-construction notification. In cases where the non-Federal applicant has identified listed species or critical habitat that might be affected or is in the vicinity of the project, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification the proposed activities will have "no effect" on listed species or critical habitat, or until Section 7 consultation has been completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(d) As a result of formal or informal consultation with the FWS or NMFS the district engineer may add species-specific regional endangered species conditions to the NWPs.

(e) Authorization of an activity by a NWP does not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the U.S. FWS or the NMFS, The Endangered Species Act prohibits any person subject to the jurisdiction of the United States to take a listed species, where "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The word "harm" in the definition of "take" means an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.

(f) Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the U.S. FWS and NMFS or their world wide web pages at http://www.fws.gov/ or http://www.fws.gov/ipac and http://www.noaa.gov/fisheries.html respectively.

19. Migratory Birds and Bald and Golden Eagles. The permittee is responsible for obtaining any "take" permits required under the U.S. Fish and Wildlife Service's regulations governing compliance with the Migratory Bird Treaty Act or the Bald and Golden Eagle Protection Act. The permittee should contact the appropriate local office of the U.S. Fish and Wildlife Service to determine if such "take" permits are required for a particular activity.

20. Historic Properties. (a) In cases where the district engineer determines that the activity may affect properties listed, or eligible for listing, in the National Register of Historic Places, the activity is not authorized, until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied.

(b) Federal permittees should follow their own procedures for complying with the requirements of Section 106 of the National Historic Preservation Act. Federal permittees must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will review the documentation and determine whether it is sufficient to address section 106 compliance for the NWP activity, or whether additional section 106 consultation is necessary.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if the authorized activity may have the potential to cause effects to any historic properties listed on, determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places, including previously unidentified properties. For such activities, the pre-construction notification must state which historic properties may be affected by the proposed work or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic properties. Assistance regarding information on the location of or potential for the presence of historic resources can be sought from the State Historic Preservation Officer or Tribal Historic Preservation Officer, as appropriate, and the National Register of Historic Places (see 33 CFR 330.4(g)). When reviewing pre-construction notifications, district engineers will comply with the current procedures for addressing the requirements of Section 106 of the National Historic Preservation Act. The district engineer shall make a reasonable and good faith effort to carry out appropriate identification efforts, which may include background research, consultation, oral history interviews, sample field investigation, and field survey. Based on the information submitted and these efforts, the district engineer shall determine whether the proposed activity has the potential to cause an effect on the historic properties. Where the non-Federal applicant has identified historic properties on which the activity may have the potential to cause effects and so notified the Corps, the non-Federal applicant shall not begin the activity until notified by the district engineer either that the activity has no potential to cause effects or that consultation under Section 106 of the NHPA has been completed.

(d) The district engineer will notify the prospective permittee within 45 days of receipt of a complete pre-construction notification whether NHPA Section 106 consultation is required. Section 106 consultation is not required when the Corps determines that the activity does not have the potential to cause effects on historic properties (see 36 CFR §800.3(a)). If NHPA

section 106 consultation is required and will occur, the district engineer will notify the non-Federal applicant that he or she cannot begin work until Section 106 consultation is completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(e) Prospective permittees should be aware that section 110k of the NHPA (16 U.S.C. 470h-2(k)) prevents the Corps from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of Section 106 of the NHPA, has intentionally significantly adversely affected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the Corps, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances justify granting the assistance, the Corps is required to notify the ACHP and provide documentation specifying the circumstances, the degree of damage to the integrity of any historic properties affected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/THPO, appropriate Indian tribes if the undertaking occurs on or affects historic properties on tribal lands or affects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.

21. Discovery of Previously Unknown Remains and Artifacts. If you discover any previously unknown historic, cultural or archeological remains and artifacts while accomplishing the activity authorized by this permit, you must immediately notify the district engineer of what you have found, and to the maximum extent practicable, avoid construction activities that may affect the remains and artifacts until the required coordination has been completed. The district engineer will initiate the Federal, Tribal and state coordination required to determine if the items or remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

22. Designated Critical Resource Waters. Critical resource waters include, NOAA-managed marine sanctuaries and marine monuments, and National Estuarine Research Reserves. The district engineer may designate, after notice and opportunity for public comment, additional waters officially designated by a state as having particular environmental or ecological significance, such as outstanding national resource waters or state natural heritage sites. The district engineer may also designate additional critical resource waters after notice and opportunity for public comment.

(a) Discharges of dredged or fill material into waters of the United States are not authorized by NWPs 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, 44, 49, 50, 51, and 52 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters.

(b) For NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, and 38, notification is required in accordance with general condition 31, for any activity proposed in the designated critical resource waters including wetlands adjacent to those waters. The district engineer may authorize activities under these NWPs only after it is determined that the impacts to the critical resource waters will be no more than minimal.

23. Mitigation. The district engineer will consider the following factors when determining appropriate and practicable mitigation necessary to ensure that adverse effects on the aquatic environment are minimal:

(a) The activity must be designed and constructed to avoid and minimize adverse effects, both temporary and permanent, to waters of the United States to the maximum extent practicable at the project site (i.e., on site).

(b) Mitigation in all its forms (avoiding, minimizing, rectifying, reducing, or compensating for resource losses) will be required to the extent necessary to ensure that the adverse effects to the aquatic environment are minimal.

(c) Compensatory mitigation at a minimum one-for-one ratio will be required for all wetland losses that exceed 1/10-acre and require pre-construction notification, unless the district engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse effects of the proposed activity are minimal, and provides a project-specific waiver of this requirement. For wetland losses of 1/10-acre or less that require pre-construction notification, the district engineer may determine on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in minimal adverse effects on the aquatic environment. Compensatory mitigation projects provided to offset losses of aquatic resources must comply with the applicable provisions of 33 CFR part 332.

(1) The prospective permittee is responsible for proposing an appropriate compensatory mitigation option if compensatory mitigation is necessary to ensure that the activity results in minimal adverse effects on the aquatic environment.

(2) Since the likelihood of success is greater and the impacts to potentially valuable uplands are reduced, wetland restoration should be the first compensatory mitigation option considered.

(3) If permittee-responsible mitigation is the proposed option, the prospective permittee is responsible for submitting a mitigation plan. A conceptual or detailed mitigation plan may be used by the district engineer to make the decision on the NWP verification request, but a final mitigation plan that addresses the applicable requirements of 33 CFR 332.4(c)(2) – (14) must be approved by the district engineer before the permittee begins work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation (see 33 CFR 332.3(k)(3)).

(4) If mitigation bank or in-lieu fee program credits are the proposed option, the mitigation plan only needs to address the baseline conditions at the impact site and the number of credits to be provided.

(5) Compensatory mitigation requirements (e.g., resource type and amount to be provided as compensatory mitigation, site protection, ecological performance standards, monitoring requirements) may be addressed through conditions added to the NWP authorization, instead of components of a compensatory mitigation plan.

(d) For losses of streams or other open waters that require pre-construction notification, the district engineer may require compensatory mitigation, such as stream rehabilitation, enhancement, or preservation, to ensure that the activity results in minimal adverse effects on the aquatic environment.

(e) Compensatory mitigation will not be used to increase the acreage losses allowed by the acreage limits of the NWPs. For example, if an NWP has an acreage limit of 1/2-acre, it cannot be used to authorize any project resulting in the loss of greater than 1/2-acre of waters of

the United States, even if compensatory mitigation is provided that replaces or restores some of the lost waters. However, compensatory mitigation can and should be used, as necessary, to ensure that a project already meeting the established acreage limits also satisfies the minimal impact requirement associated with the NWPs.

(f) Compensatory mitigation plans for projects in or near streams or other open waters will normally include a requirement for the restoration or establishment, maintenance, and legal protection (e.g., conservation easements) of riparian areas next to open waters. In some cases, riparian areas may be the only compensatory mitigation required. Riparian areas should consist of native species. The width of the required riparian area will address documented water quality or aquatic habitat loss concerns. Normally, the riparian area will be 25 to 50 feet wide on each side of the stream, but the district engineer may require slightly wider riparian areas to address documented water quality or habitat loss concerns. If it is not possible to establish a riparian area on both sides of a stream, or if the waterbody is a lake or coastal waters, then restoring or establishing a riparian area along a single bank or shoreline may be sufficient. Where both wetlands and open waters exist on the project site, the district engineer will determine the appropriate compensatory mitigation (e.g., riparian areas and/or wetlands compensation) based on what is best for the aquatic environment on a watershed basis. In cases where riparian areas are determined to be the most appropriate form of compensatory mitigation, the district engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland losses.

(g) Permittees may propose the use of mitigation banks, in-lieu fee programs, or separate permittee-responsible mitigation. For activities resulting in the loss of marine or estuarine resources, permittee-responsible compensatory mitigation may be environmentally preferable if there are no mitigation banks or in-lieu fee programs in the area that have marine or estuarine credits available for sale or transfer to the permittee. For permittee-responsible mitigation, the special conditions of the NWP verification must clearly indicate the party or parties responsible for the implementation and performance of the compensatory mitigation project, and, if required, its long-term management.

(h) Where certain functions and services of waters of the United States are permanently adversely affected, such as the conversion of a forested or scrub-shrub wetland to a herbaceous wetland in a permanently maintained utility line right-of-way, mitigation may be required to reduce the adverse effects of the project to the minimal level.

24. Safety of Impoundment Structures. To ensure that all impoundment structures are safely designed, the district engineer may require non-Federal applicants to demonstrate that the structures comply with established state dam safety criteria or have been designed by qualified persons. The district engineer may also require documentation that the design has been independently reviewed by similarly qualified persons, and appropriate modifications made to ensure safety.

25. Water Quality. Where States and authorized Tribes, or EPA where applicable, have not previously certified compliance of an NWP with CWA Section 401, individual 401 Water Quality Certification must be obtained or waived (see 33 CFR 330.4(c)). The district engineer or State or Tribe may require additional water quality management measures to ensure that the authorized activity does not result in more than minimal degradation of water quality.

26. Coastal Zone Management. In coastal states where an NWP has not previously received a state coastal zone management consistency concurrence, an individual state coastal zone management consistency concurrence must be obtained, or a presumption of concurrence must occur (see 33 CFR 330.4(d)). The district engineer or a State may require additional measures to ensure that the authorized activity is consistent with state coastal zone management requirements.

27. Regional and Case-By-Case Conditions. The activity must comply with any regional conditions that may have been added by the Division Engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the state, Indian Tribe, or U.S. EPA in its section 401 Water Quality Certification, or by the state in its Coastal Zone Management Act consistency determination.

28. Use of Multiple Nationwide Permits. The use of more than one NWP for a single and complete project is prohibited, except when the acreage loss of waters of the United States authorized by the NWPs does not exceed the acreage limit of the NWP with the highest specified acreage limit. For example, if a road crossing over tidal waters is constructed under NWP 14, with associated bank stabilization authorized by NWP 13, the maximum acreage loss of waters of the United States for the total project cannot exceed 1/3-acre.

29. Transfer of Nationwide Permit Verifications. If the permittee sells the property associated with a nationwide permit verification, the permittee may transfer the nationwide permit verification to the new owner by submitting a letter to the appropriate Corps district office to validate the transfer. A copy of the nationwide permit verification must be attached to the letter, and the letter must contain the following statement and signature:

"When the structures or work authorized by this nationwide permit are still in existence at the time the property is transferred, the terms and conditions of this nationwide permit, including any special conditions, will continue to be binding on the new owner(s) of the property. To validate the transfer of this nationwide permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below."

_____

(Transferee)

_____

(Date)

30. Compliance Certification. Each permittee who receives an NWP verification letter from the Corps must provide a signed certification documenting completion of the authorized activity and any required compensatory mitigation. The success of any required permittee-responsible mitigation, including the achievement of ecological performance standards, will be addressed separately by the district engineer. The Corps will provide the permittee the certification document with the NWP verification letter. The certification document will include:

(a) A statement that the authorized work was done in accordance with the NWP authorization, including any general, regional, or activity-specific conditions;

(b) A statement that the implementation of any required compensatory mitigation was completed in accordance with the permit conditions. If credits from a mitigation bank or in-lieu fee program are used to satisfy the compensatory mitigation requirements, the certification must include the documentation required by 33 CFR 332.3(l)(3) to confirm that the permittee secured the appropriate number and resource type of credits; and

(c) The signature of the permittee certifying the completion of the work and mitigation.

31. Pre-Construction Notification. (a) Timing. Where required by the terms of the NWP, the prospective permittee must notify the district engineer by submitting a pre-construction notification (PCN) as early as possible. The district engineer must determine if the PCN is complete within 30 calendar days of the date of receipt and, if the PCN is determined to be incomplete, notify the prospective permittee within that 30 day period to request the additional information necessary to make the PCN complete. The request must specify the information needed to make the PCN complete. As a general rule, district engineers will request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the district engineer will notify the prospective permittee that the PCN is still incomplete and the PCN review process will not commence until all of the requested information has been received by the district engineer. The prospective permittee shall not begin the activity until either:

(1) He or she is notified in writing by the district engineer that the activity may proceed under the NWP with any special conditions imposed by the district or division engineer; or

(2) 45 calendar days have passed from the district engineer's receipt of the complete PCN and the prospective permittee has not received written notice from the district or division engineer. However, if the permittee was required to notify the Corps pursuant to general condition 18 that listed species or critical habitat might be affected or in the vicinity of the project, or to notify the Corps pursuant to general condition 20 that the activity may have the potential to cause effects to historic properties, the permittee cannot begin the activity until receiving written notification from the Corps that there is "no effect" on listed species or "no potential to cause effects" on historic properties, or that any consultation required under Section 7 of the Endangered Species Act (see 33 CFR 330.4(f)) and/or Section 106 of the National Historic Preservation (see 33 CFR 330.4(g)) has been completed. Also, work cannot begin under NWPs 21, 49, or 50 until the permittee has received written approval from the Corps. If the proposed activity requires a written waiver to exceed specified limits of an NWP, the permittee may not begin the activity until the district engineer issues the waiver. If the district or division engineer notifies the permittee in writing that an individual permit is required within 45 calendar days of receipt of a complete PCN, the permittee cannot begin the activity until an individual permit has been obtained. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

(b) Contents of Pre-Construction Notification: The PCN must be in writing and include the following information:

(1) Name, address and telephone numbers of the prospective permittee;

(2) Location of the proposed project;

(3) A description of the proposed project; the project's purpose; direct and indirect adverse environmental effects the project would cause, including the anticipated amount of loss of water of the United States expected to result from the NWP activity, in acres, linear feet, or other appropriate unit of measure; any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity. The description should be sufficiently detailed to allow the district engineer to determine that the adverse effects of the project will be minimal and to determine the need for compensatory mitigation. Sketches should be provided when necessary to show that the activity complies with the terms of the NWP. (Sketches usually clarify the project and when provided results in a quicker decision. Sketches should contain sufficient detail to provide an illustrative description of the proposed activity (e.g., a conceptual plan), but do not need to be detailed engineering plans);

(4) The PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial, intermittent, and ephemeral streams, on the project site. Wetland delineations must be prepared in accordance with the current method required by the Corps. The permittee may ask the Corps to delineate the special aquatic sites and other waters on the project site, but there may be a delay if the Corps does the delineation, especially if the project site is large or contains many waters of the United States. Furthermore, the 45 day period will not start until the delineation has been submitted to or completed by the Corps, as appropriate;

(5) If the proposed activity will result in the loss of greater than 1/10-acre of wetlands and a PCN is required, the prospective permittee must submit a statement describing how the mitigation requirement will be satisfied, or explaining why the adverse effects are minimal and why compensatory mitigation should not be required. As an alternative, the prospective permittee may submit a conceptual or detailed mitigation plan.

(6) If any listed species or designated critical habitat might be affected or is in the vicinity of the project, or if the project is located in designated critical habitat, for non-Federal applicants the PCN must include the name(s) of those endangered or threatened species that might be affected by the proposed work or utilize the designated critical habitat that may be affected by the proposed work. Federal applicants must provide documentation demonstrating compliance with the Endangered Species Act; and

(7) For an activity that may affect a historic property listed on, determined to be eligible for listing on, or potentially eligible for listing on, the National Register of Historic Places, for non-Federal applicants the PCN must state which historic property may be affected by the proposed work or include a vicinity map indicating the location of the historic property. Federal applicants must provide documentation demonstrating compliance with Section 106 of the National Historic Preservation Act.

(c) Form of Pre-Construction Notification: The standard individual permit application form (Form ENG 4345) may be used, but the completed application form must clearly indicate that it is a PCN and must include all of the information required in paragraphs (b)(1) through (7) of this general condition. A letter containing the required information may also be used.

(d) Agency Coordination: (1) The district engineer will consider any comments from Federal and state agencies concerning the proposed activity's compliance with the terms and conditions of the NWPs and the need for mitigation to reduce the project's adverse environmental effects to a minimal level.

(2) For all NWP activities that require pre-construction notification and result in the loss of greater than 1/2-acre of waters of the United States, for NWP 21, 29, 39, 40, 42, 43, 44, 50, 51, and 52 activities that require pre-construction notification and will result in the loss of greater than 300 linear feet of intermittent and ephemeral stream bed, and for all NWP 48 activities that require pre-construction notification, the district engineer will immediately provide (e.g., via e-mail, facsimile transmission, overnight mail, or other expeditious manner) a copy of the complete PCN to the appropriate Federal or state offices (U.S. FWS, state natural resource or water quality agency, EPA, State Historic Preservation Officer (SHPO) or Tribal Historic Preservation Office (THPO), and, if appropriate, the NMFS). With the exception of NWP 37, these agencies will have 10 calendar days from the date the material is transmitted to telephone or fax the district engineer notice that they intend to provide substantive, site-specific comments. The comments must explain why the agency believes the adverse effects will be more than minimal. If so contacted by an agency, the district engineer will wait an additional 15 calendar days before making a decision on the pre-construction notification. The district engineer will fully consider agency comments received within the specified time frame concerning the proposed activity's compliance with the terms and conditions of the NWPs, including the need for mitigation to ensure the net adverse environmental effects to the aquatic environment of the proposed activity are minimal. The district engineer will provide no response to the resource agency, except as provided below. The district engineer will indicate in the administrative record associated with each pre-construction notification that the resource agencies' concerns were considered. For NWP 37, the emergency watershed protection and rehabilitation activity may proceed immediately in cases where there is an unacceptable hazard to life or a significant loss of property or economic hardship will occur. The district engineer will consider any comments received to decide whether the NWP 37 authorization should be modified, suspended, or revoked in accordance with the procedures at 33 CFR 330.5.

(3) In cases of where the prospective permittee is not a Federal agency, the district engineer will provide a response to NMFS within 30 calendar days of receipt of any Essential Fish Habitat conservation recommendations, as required by Section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act.

(4) Applicants are encouraged to provide the Corps with either electronic files or multiple copies of pre-construction notifications to expedite agency coordination.

D. District Engineer's Decision

1. In reviewing the PCN for the proposed activity, the district engineer will determine whether the activity authorized by the NWP will result in more than minimal individual or cumulative adverse environmental effects or may be contrary to the public interest. For a linear project, this determination will include an evaluation of the individual crossings to determine whether they individually satisfy the terms and conditions of the NWP(s), as well as the cumulative effects caused by all of the crossings authorized by NWP. If an applicant requests a waiver of the 300 linear foot limit on impacts to intermittent or ephemeral streams or of an otherwise applicable limit, as provided for in NWPs 13, 21, 29, 36, 39, 40, 42, 43, 44, 50, 51 or 52, the district engineer will only grant the waiver upon a written determination that the NWP activity will result in minimal adverse effects. When making minimal effects determinations the district engineer will consider the direct and indirect effects caused by the NWP activity. The district engineer will also consider site specific factors, such as the environmental setting in the

vicinity of the NWP activity, the type of resource that will be affected by the NWP activity, the functions provided by the aquatic resources that will be affected by the NWP activity, the degree or magnitude to which the aquatic resources perform those functions, the extent that aquatic resource functions will be lost as a result of the NWP activity (e.g., partial or complete loss), the duration of the adverse effects (temporary or permanent), the importance of the aquatic resource functions to the region (e.g., watershed or ecoregion), and mitigation required by the district engineer. If an appropriate functional assessment method is available and practicable to use, that assessment method may be used by the district engineer to assist in the minimal adverse effects determination. The district engineer may add case-specific special conditions to the NWP authorization to address site-specific environmental concerns.

2. If the proposed activity requires a PCN and will result in a loss of greater than 1/10-acre of wetlands, the prospective permittee should submit a mitigation proposal with the PCN. Applicants may also propose compensatory mitigation for projects with smaller impacts. The district engineer will consider any proposed compensatory mitigation the applicant has included in the proposal in determining whether the net adverse environmental effects to the aquatic environment of the proposed activity are minimal. The compensatory mitigation proposal may be either conceptual or detailed. If the district engineer determines that the activity complies with the terms and conditions of the NWP and that the adverse effects on the aquatic environment are minimal, after considering mitigation, the district engineer will notify the permittee and include any activity-specific conditions in the NWP verification the district engineer deems necessary. Conditions for compensatory mitigation requirements must comply with the appropriate provisions at 33 CFR 332.3(k). The district engineer must approve the final mitigation plan before the permittee commences work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation. If the prospective permittee elects to submit a compensatory mitigation plan with the PCN, the district engineer will expeditiously review the proposed compensatory mitigation plan. The district engineer must review the proposed compensatory mitigation plan within 45 calendar days of receiving a complete PCN and determine whether the proposed mitigation would ensure no more than minimal adverse effects on the aquatic environment. If the net adverse effects of the project on the aquatic environment (after consideration of the compensatory mitigation proposal) are determined by the district engineer to be minimal, the district engineer will provide a timely written response to the applicant. The response will state that the project can proceed under the terms and conditions of the NWP, including any activity-specific conditions added to the NWP authorization by the district engineer.

3. If the district engineer determines that the adverse effects of the proposed work are more than minimal, then the district engineer will notify the applicant either: (a) That the project does not qualify for authorization under the NWP and instruct the applicant on the procedures to seek authorization under an individual permit; (b) that the project is authorized under the NWP subject to the applicant's submission of a mitigation plan that would reduce the adverse effects on the aquatic environment to the minimal level; or (c) that the project is authorized under the NWP with specific modifications or conditions. Where the district engineer determines that mitigation is required to ensure no more than minimal adverse effects occur to the aquatic environment, the activity will be authorized within the 45-day PCN period, with activity-specific

conditions that state the mitigation requirements. The authorization will include the necessary conceptual or detailed mitigation or a requirement that the applicant submit a mitigation plan that would reduce the adverse effects on the aquatic environment to the minimal level. When mitigation is required, no work in waters of the United States may occur until the district engineer has approved a specific mitigation plan or has determined that prior approval of a final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation.

FURTHER INFORMATION

1. District Engineers have authority to determine if an activity complies with the terms and conditions of an NWP.

2. NWPs do not obviate the need to obtain other federal, state, or local permits, approvals, or authorizations required by law.

3. NWPs do not grant any property rights or exclusive privileges.

4. NWPs do not authorize any injury to the property or rights of others.

5. NWPs do not authorize interference with any existing or proposed Federal project.

DEFINITIONS

Best management practices (BMPs): Policies, practices, procedures, or structures implemented to mitigate the adverse environmental effects on surface water quality resulting from development. BMPs are categorized as structural or non-structural.

Compensatory mitigation: The restoration (re-establishment or rehabilitation), establishment (creation), enhancement, and/or in certain circumstances preservation of aquatic resources for the purposes of offsetting unavoidable adverse impacts which remain after all appropriate and practicable avoidance and minimization has been achieved.

Currently serviceable: Useable as is or with some maintenance, but not so degraded as to essentially require reconstruction.

Direct effects: Effects that are caused by the activity and occur at the same time and place.

Discharge: The term "discharge" means any discharge of dredged or fill material.

Enhancement: The manipulation of the physical, chemical, or biological characteristics of an aquatic resource to heighten, intensify, or improve a specific aquatic resource function(s). Enhancement results in the gain of selected aquatic resource function(s), but may also lead to a decline in other aquatic resource function(s). Enhancement does not result in a gain in aquatic resource area.

Ephemeral stream: An ephemeral stream has flowing water only during, and for a short duration after, precipitation events in a typical year. Ephemeral stream beds are located above the water table year-round. Groundwater is not a source of water for the stream. Runoff from rainfall is the primary source of water for stream flow.

Establishment (creation): The manipulation of the physical, chemical, or biological characteristics present to develop an aquatic resource that did not previously exist at an upland site. Establishment results in a gain in aquatic resource area.

High Tide Line: The line of intersection of the land with the water's surface at the maximum height reached by a rising tide. The high tide line may be determined, in the absence

of actual data, by a line of oil or scum along shore objects, a more or less continuous deposit of fine shell or debris on the foreshore or berm, other physical markings or characteristics, vegetation lines, tidal gages, or other suitable means that delineate the general height reached by a rising tide. The line encompasses spring high tides and other high tides that occur with periodic frequency but does not include storm surges in which there is a departure from the normal or predicted reach of the tide due to the piling up of water against a coast by strong winds such as those accompanying a hurricane or other intense storm.

Historic Property: Any prehistoric or historic district, site (including archaeological site), building, structure, or other object included in, or eligible for inclusion in, the National Register of Historic Places maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria (36 CFR part 60).

Independent utility: A test to determine what constitutes a single and complete non-linear project in the Corps regulatory program. A project is considered to have independent utility if it would be constructed absent the construction of other projects in the project area. Portions of a multi-phase project that depend upon other phases of the project do not have independent utility. Phases of a project that would be constructed even if the other phases were not built can be considered as separate single and complete projects with independent utility.

Indirect effects: Effects that are caused by the activity and are later in time or farther removed in distance, but are still reasonably foreseeable.

Intermittent stream: An intermittent stream has flowing water during certain times of the year, when groundwater provides water for stream flow. During dry periods, intermittent streams may not have flowing water. Runoff from rainfall is a supplemental source of water for stream flow.

Loss of waters of the United States: Waters of the United States that are permanently adversely affected by filling, flooding, excavation, or drainage because of the regulated activity. Permanent adverse effects include permanent discharges of dredged or fill material that change an aquatic area to dry land, increase the bottom elevation of a waterbody, or change the use of a waterbody. The acreage of loss of waters of the United States is a threshold measurement of the impact to jurisdictional waters for determining whether a project may qualify for an NWP; it is not a net threshold that is calculated after considering compensatory mitigation that may be used to offset losses of aquatic functions and services. The loss of stream bed includes the linear feet of stream bed that is filled or excavated. Waters of the United States temporarily filled, flooded, excavated, or drained, but restored to pre-construction contours and elevations after construction, are not included in the measurement of loss of waters of the United States. Impacts resulting from activities eligible for exemptions under Section 404(f) of the Clean Water Act are not considered when calculating the loss of waters of the United States.

Non-tidal wetland: A non-tidal wetland is a wetland that is not subject to the ebb and flow of tidal waters. The definition of a wetland can be found at 33 CFR 328.3(b). Non-tidal wetlands contiguous to tidal waters are located landward of the high tide line (i.e., spring high tide line).

Open water: For purposes of the NWPs, an open water is any area that in a year with normal patterns of precipitation has water flowing or standing above ground to the extent that an ordinary high water mark can be determined. Aquatic vegetation within the area of standing or

flowing water is either non-emergent, sparse, or absent. Vegetated shallows are considered to be open waters. Examples of "open waters" include rivers, streams, lakes, and ponds.

Ordinary High Water Mark: An ordinary high water mark is a line on the shore established by the fluctuations of water and indicated by physical characteristics, or by other appropriate means that consider the characteristics of the surrounding areas (see 33 CFR 328.3(e)).

Perennial stream: A perennial stream has flowing water year-round during a typical year. The water table is located above the stream bed for most of the year. Groundwater is the primary source of water for stream flow. Runoff from rainfall is a supplemental source of water for stream flow.

Practicable: Available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes.

Pre-construction notification: A request submitted by the project proponent to the Corps for confirmation that a particular activity is authorized by nationwide permit. The request may be a permit application, letter, or similar document that includes information about the proposed work and its anticipated environmental effects. Pre-construction notification may be required by the terms and conditions of a nationwide permit, or by regional conditions. A pre-construction notification may be voluntarily submitted in cases where pre-construction notification is not required and the project proponent wants confirmation that the activity is authorized by nationwide permit.

Preservation: The removal of a threat to, or preventing the decline of, aquatic resources by an action in or near those aquatic resources. This term includes activities commonly associated with the protection and maintenance of aquatic resources through the implementation of appropriate legal and physical mechanisms. Preservation does not result in a gain of aquatic resource area or functions.

Re-establishment: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former aquatic resource. Re-establishment results in rebuilding a former aquatic resource and results in a gain in aquatic resource area and functions.

Rehabilitation: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of repairing natural/historic functions to a degraded aquatic resource. Rehabilitation results in a gain in aquatic resource function, but does not result in a gain in aquatic resource area.

Restoration: The manipulation of the physical, chemical, or biological characteristics of a site with the goal of returning natural/historic functions to a former or degraded aquatic resource. For the purpose of tracking net gains in aquatic resource area, restoration is divided into two categories: re-establishment and rehabilitation.

Riffle and pool complex: Riffle and pool complexes are special aquatic sites under the 404(b)(1) Guidelines. Riffle and pool complexes sometimes characterize steep gradient sections of streams. Such stream sections are recognizable by their hydraulic characteristics. The rapid movement of water over a course substrate in riffles results in a rough flow, a turbulent surface, and high dissolved oxygen levels in the water. Pools are deeper areas associated with riffles. A slower stream velocity, a streaming flow, a smooth surface, and a finer substrate characterize pools.

Riparian areas: Riparian areas are lands adjacent to streams, lakes, and estuarine-marine shorelines. Riparian areas are transitional between terrestrial and aquatic ecosystems, through

which surface and subsurface hydrology connects riverine, lacustrine, estuarine, and marine waters with their adjacent wetlands, non-wetland waters, or uplands. Riparian areas provide a variety of ecological functions and services and help improve or maintain local water quality. (See general condition 23.)

Shellfish seeding: The placement of shellfish seed and/or suitable substrate to increase shellfish production. Shellfish seed consists of immature individual shellfish or individual shellfish attached to shells or shell fragments (i.e., spat on shell). Suitable substrate may consist of shellfish shells, shell fragments, or other appropriate materials placed into waters for shellfish habitat.

Single and complete linear project: A linear project is a project constructed for the purpose of getting people, goods, or services from a point of origin to a terminal point, which often involves multiple crossings of one or more waterbodies at separate and distant locations. The term "single and complete project" is defined as that portion of the total linear project proposed or accomplished by one owner/developer or partnership or other association of owners/developers that includes all crossings of a single water of the United States (i.e., a single waterbody) at a specific location. For linear projects crossing a single or multiple waterbodies several times at separate and distant locations, each crossing is considered a single and complete project for purposes of NWP authorization. However, individual channels in a braided stream or river, or individual arms of a large, irregularly shaped wetland or lake, etc., are not separate waterbodies, and crossings of such features cannot be considered separately.

Single and complete non-linear project: For non-linear projects, the term "single and complete project" is defined at 33 CFR 330.2(i) as the total project proposed or accomplished by one owner/developer or partnership or other association of owners/developers. A single and complete non-linear project must have independent utility (see definition of "independent utility"). Single and complete non-linear projects may not be "piecemealed" to avoid the limits in an NWP authorization.

Stormwater management: Stormwater management is the mechanism for controlling stormwater runoff for the purposes of reducing downstream erosion, water quality degradation, and flooding and mitigating the adverse effects of changes in land use on the aquatic environment.

Stormwater management facilities: Stormwater management facilities are those facilities, including but not limited to, stormwater retention and detention ponds and best management practices, which retain water for a period of time to control runoff and/or improve the quality (i.e., by reducing the concentration of nutrients, sediments, hazardous substances and other pollutants) of stormwater runoff.

Stream bed: The substrate of the stream channel between the ordinary high water marks. The substrate may be bedrock or inorganic particles that range in size from clay to boulders. Wetlands contiguous to the stream bed, but outside of the ordinary high water marks, are not considered part of the stream bed.

Stream channelization: The manipulation of a stream's course, condition, capacity, or location that causes more than minimal interruption of normal stream processes. A channelized stream remains a water of the United States.

Structure: An object that is arranged in a definite pattern of organization. Examples of structures include, without limitation, any pier, boat dock, boat ramp, wharf, dolphin, weir, boom, breakwater, bulkhead, revetment, riprap, jetty, artificial island, artificial reef, permanent

mooring structure, power transmission line, permanently moored floating vessel, piling, aid to navigation, or any other manmade obstacle or obstruction.

Tidal wetland: A tidal wetland is a wetland (i.e., water of the United States) that is inundated by tidal waters. The definitions of a wetland and tidal waters can be found at 33 CFR 328.3(b) and 33 CFR 328.3(f), respectively. Tidal waters rise and fall in a predictable and measurable rhythm or cycle due to the gravitational pulls of the moon and sun. Tidal waters end where the rise and fall of the water surface can no longer be practically measured in a predictable rhythm due to masking by other waters, wind, or other effects. Tidal wetlands are located channelward of the high tide line, which is defined at 33 CFR 328.3(d).

Vegetated shallows: Vegetated shallows are special aquatic sites under the 404(b)(1) Guidelines. They are areas that are permanently inundated and under normal circumstances have rooted aquatic vegetation, such as seagrasses in marine and estuarine systems and a variety of vascular rooted plants in freshwater systems.

Waterbody: For purposes of the NWPs, a waterbody is a jurisdictional water of the United States. If a jurisdictional wetland is adjacent – meaning bordering, contiguous, or neighboring – to a waterbody determined to be a water of the United States under 33 CFR 328.3(a)(1)-(6), that waterbody and its adjacent wetlands are considered together as a single aquatic unit (see 33 CFR 328.4(c)(2)). Examples of "waterbodies" include streams, rivers, lakes, ponds, and wetlands.

NOTICE ABOUT WEB LINKS IN THIS DOCUMENT:
The web links (both internal to our District and any external links to collaborating agencies) in this document are valid at the time of publication. However, the Wilmington District Regulatory Program web page addresses, as with other agency web sites, may change over the timeframe of the five-year Nationwide Permit renewal cycle, in response to policy mandates or technology advances. While we will make every effort to check on the integrity of our web links and provide re-direct pages whenever possible, we ask that you report any broken links to us so we can keep the page information current and usable. We apologize in advanced for any broken links that you may encounter, and we ask that you navigate from the regulatory home page (wetlands and stream permits) of the Wilmington District Corps of Engineers, to the "Permits" section of our web site to find links for pages that cannot be found by clicking directly on the listed web link in this document.

Final 2012 Regional Conditions for Nationwide Permits (NWP) in the Wilmington District

1.0 Excluded Waters

The Corps has identified waters that will be excluded from the use of all NWP's during certain timeframes. These waters are:

1.1 Anadromous Fish Spawning Areas

Waters of the United States identified by either the North Carolina Division of Marine Fisheries (NCDMF) or the North Carolina Wildlife Resources Commission (NCWRC) as anadromous fish spawning areas are excluded during the period between February 15 and June 30, without prior written approval from NCDMF or NCWRC and the Corps.

1.2 Trout Waters Moratorium

Waters of the United States in the twenty-five designated trout counties of North Carolina are excluded during the period between October 15 and April 15 without prior written approval from the NCWRC. (See Section 2.7 for a list of the twenty-five trout counties).

1.3 Sturgeon Spawning Areas as Designated by the National Marine Fisheries Service (NMFS)

Waters of the United States designated as sturgeon spawning areas are excluded during the period between February 1 and June 30, without prior written approval from the NMFS.

2.0 Waters Requiring Additional Notification

The Corps has identified waters that will be subject to additional notification requirements for activities authorized by all NWP's. These waters are:

2.1 Western NC Counties that Drain to Designated Critical Habitat

For proposed activities within Waters of the U.S. that require a Pre-Construction Notification pursuant to General Condition 31 (PCN) and are located in the sixteen counties listed below, applicants must provide a copy of the PCN to the US Fish and Wildlife Service, 160 Zillicoa Street, Asheville, North Carolina 28801. This PCN must be sent concurrently to the US Fish and Wildlife Service and the Corps Asheville Regulatory Field Office. Please see General Condition 18 for specific notification requirements related to Federally Endangered Species and the following website for information on the location of designated critical habitat.

Counties with tributaries that drain to designated critical habitat that require notification to the Asheville US Fish and Wildlife Service: Avery, Cherokee, Forsyth, Graham, Haywood, Henderson, Jackson, Macon Mecklenburg, Mitchell, Stokes, Surry, Swain, Transylvania, Union and Yancey.

Website and office addresses for Endangered Species Act Information:

The Wilmington District has developed the following website for applicants which provides guidelines on how to review linked websites and maps in order to fulfill NWP general condition 18 requirements: http://www.saw.usace.army.mil/wetlands/ESA

Applicants who do not have internet access may contact the appropriate US Fish and Wildlife Service offices listed below or the US Army Corps of Engineers at (910) 251- 4633:

US Fish and Wildlife Service
Asheville Field Office
160 Zillicoa Street
Asheville, NC 28801
Telephone: (828) 258-3939

Asheville US Fish and Wildlife Service Office counties: All counties west of and including Anson, Stanly, Davidson, Forsyth and Stokes Counties

US Fish and Wildlife Service
Raleigh Field Office
Post Office Box 33726
Raleigh, NC 27636-3726
Telephone: (919) 856-4520

Raleigh US Fish and Wildlife Service Office counties: all counties east of and including Richmond, Montgomery, Randolph, Guilford, and Rockingham Counties.

2.2 Special Designation Waters

Prior to the use of any NWP in any of the following identified waters and contiguous wetlands in North Carolina, applicants must comply with Nationwide Permit General Condition 31 (PCN). The North Carolina waters and contiguous wetlands that require additional notification requirements are:

"Outstanding Resource Waters" (ORW) or "High Quality Waters" (HQW) as designated by the North Carolina Environmental Management Commission; "Inland Primary Nursery Areas" (IPNA) as designated by the NCWRC; "Contiguous Wetlands" as defined by the North Carolina Environmental Management Commission; or "Primary Nursery Areas" (PNA) as designated by the North Carolina Marine Fisheries Commission.

2.3 Coastal Area Management Act (CAMA) Areas of Environmental Concern

Non-federal applicants for any NWP in a designated "Area of Environmental Concern" (AEC) in the twenty (20) counties of Eastern North Carolina covered by the North Carolina Coastal Area Management Act (CAMA) must also obtain the required CAMA permit. Development activities for non-federal projects may not commence until a copy of the approved CAMA permit is furnished to the appropriate Wilmington District Regulatory Field Office (Wilmington Field Office – 69 Darlington Avenue, Wilmington, NC 28403 or Washington Field Office – 2407 West 5th Street, Washington, NC 27889).

2.4 Barrier Islands

Prior to the use of any NWP on a barrier island of North Carolina, applicants must comply with Nationwide Permit General Condition 31 (PCN).

2.5 Mountain or Piedmont Bogs

Prior to the use of any NWP in a Bog classified by the North Carolina Wetland Assessment Methodology (NCWAM), applicants shall comply with Nationwide Permit General Condition 31 (PCN). The latest version of NCWAM is located on the NC DWQ web site at: http://portal.ncdenr.org/web/wq/swp/ws/pdu/ncwam .

2.6 Animal Waste Facilities

Prior to use of any NWP for construction of animal waste facilities in waters of the US, including wetlands, applicants shall comply with Nationwide Permit General Condition 31 (PCN).

2.7 Trout Waters

Prior to any discharge of dredge or fill material into streams or waterbodies within the twenty-five (25) designated trout counties of North Carolina, the applicant shall comply with Nationwide Permit General Condition 31 (PCN). The applicant shall also provide a copy of the notification to the appropriate NCWRC office to facilitate the determination of any potential

impacts to designated Trout Waters. Notification to the Corps of Engineers will include a statement with the name of the NCWRC biologist contacted, the date of the notification, the location of work, a delineation of wetlands, a discussion of alternatives to working in the mountain trout waters, why alternatives were not selected, and a plan to provide compensatory mitigation for all unavoidable adverse impacts to mountain trout waters.

NCWRC and NC Trout Counties

Western Piedmont Region Coordinator	Alleghany	Caldwell	Watauga
20830 Great Smoky Mtn. Expressway	Ashe	Mitchell	Wilkes
Waynesville, NC 28786	Avery	Stokes	
Telephone: (828) 452-2546	Burke	Surry	

Mountain Region Coordinator	Buncombe	Henderson	Polk
20830 Great Smoky Mtn. Expressway	Cherokee	Jackson	Rutherford
Waynesville, NC 28786	Clay	Macon	Swain
Telephone: (828) 452-2546	Graham	Madison	Transylvania
Fax: (828) 452-7772	Haywood	McDowell	Yancey

3.0 List of Corps Regional Conditions for All Nationwide Permits

The following conditions apply to all Nationwide Permits in the Wilmington District:

3.1 Limitation of Loss of Perennial Stream Bed

NWPs may not be used for activities that may result in the loss or degradation of greater than 300 total linear feet of perennial, intermittent or ephemeral stream, unless the District Commander has waived the 300 linear foot limit for ephemeral and intermittent streams on a case-by-case basis and he determines that the proposed activity will result in minimal individual and cumulative adverse impacts to the aquatic environment. Loss of stream includes the linear feet of stream bed that is filled, excavated, or flooded by the proposed activity. Waivers for the loss of ephemeral and intermittent streams must be in writing and documented by appropriate/accepted stream quality assessments*. This waiver only applies to the 300 linear feet threshold for NWPs.

*NOTE: Applicants should utilize the most current methodology prescribed by Wilmington District to assess stream function and quality. Information can be found at:

http://www.saw.usace.army.mil/wetlands/permits/nwp/nwp2012 (see “Quick Links”)

3.2 Mitigation for Loss of Stream Bed

For any NWP that results in a loss of more than 150 linear feet of perennial and/or ephemeral/intermittent stream, the applicant shall provide a mitigation proposal to compensate for more than minimal individual and cumulative adverse impacts to the aquatic environment. For stream losses less than 150 linear feet, that require a PCN, the District Commander may determine, on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in minimal adverse effect on the aquatic environment.

3.3 Pre-construction Notification for Loss of Streambed Exceeding 150 Feet.

Prior to use of any NWP for any activity which impacts more than 150 total linear feet of perennial stream or ephemeral/ intermittent stream, the applicant must comply with Nationwide Permit General Condition 31 (PCN). This applies to NWPs that do not have specific notification requirements. If a NWP has specific notification requirements, the requirements of the NWP should be followed.

3.4 Restriction on Use of Live Concrete

For all NWPs which allow the use of concrete as a building material, live or fresh concrete, including bags of uncured concrete, may not come into contact with the water in or entering into waters of the US. Water inside coffer dams or casings that has been in contact with wet concrete shall only be returned to waters of the US when it is no longer poses a threat to aquatic organisms.

3.5 Requirements for Using Riprap for Bank Stabilization

For all NWPs that allow for the use of riprap material for bank stabilization, the following measures shall be applied:

3.5.1. Filter cloth must be placed underneath the riprap as an additional requirement of its use in North Carolina waters.

3.5.2. The placement of riprap shall be limited to the areas depicted on submitted work plan drawings.

3.5.3. The riprap material shall be clean and free from loose dirt or any pollutant except in trace quantities that would not have an adverse environmental effect.

3.5.4. It shall be of a size sufficient to prevent its movement from the authorized alignment by natural forces under normal conditions.

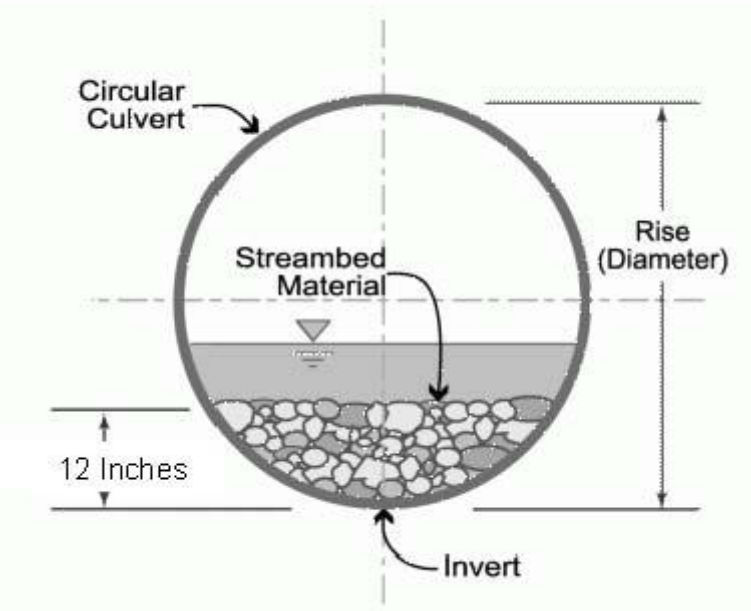
3.5.5. The riprap material shall consist of clean rock or masonry material such as, but not limited to, granite, marl, or broken concrete.

3.5.6. A waiver from the specifications in this Regional Condition may be requested in writing. The waiver will only be issued if it can be demonstrated that the impacts of complying with this Regional condition would result in greater adverse impacts to the aquatic environment.

3.6 Safe Passage Requirements for Culvert Placement

For all NWPs that involve the construction/installation of culverts, measures will be included in the construction/installation that will promote the safe passage of fish and other aquatic organisms. The dimension, pattern, and profile of the stream above and below a pipe or culvert should not be modified by widening the stream channel or by reducing the depth of the stream in connection with the construction activity. The width, height, and gradient of a proposed culvert should be such as to pass the average historical low flow and spring flow without adversely altering flow velocity. Spring flow should be determined from gage data, if available. In the absence of such data, bankfull flow can be used as a comparable level.

In the twenty (20) counties of North Carolina designated as coastal counties by the Coastal Area Management Act (CAMA): All pipes/culverts must be sufficiently sized to allow for the burial of the bottom of the pipe/culvert at least one foot below normal bed elevation when they are placed within the Public Trust Area of Environmental Concern (AEC) and/or the Estuarine Waters AEC as designated by CAMA, and/or all streams appearing as blue lines on United States Geological Survey (USGS) 7.5-minute quadrangle maps.



In all other counties: Culverts greater than 48 inches in diameter will be buried at least one foot below the bed of the stream. Culverts 48 inches in diameter or less shall be buried or placed on the stream bed as practicable and appropriate to maintain aquatic passage, and every effort shall be made to maintain the existing channel slope. The bottom of the culvert must be placed at a

depth below the natural stream bottom to provide for passage during drought or low flow conditions.

Culverts are to be designed and constructed in a manner that minimizes destabilization and head cutting. Destabilizing the channel and head cutting upstream should be considered and appropriate actions incorporated in the design and placement of the culvert.

A waiver from the depth specifications in this condition may be requested in writing. The waiver will be issued if it can be demonstrated that the proposal would result in the least impacts to the aquatic environment.

All counties: Culverts placed within riparian and/or riverine wetlands must be installed in a manner that does not restrict the flow and circulation patterns of waters of the United States. Culverts placed across wetland fills purely for the purposes of equalizing surface water do not have to be buried.

3.7 Notification to NCDENR Shellfish Sanitation Section

Applicants shall notify the NCDENR Shellfish Sanitation Section prior to dredging in or removing sediment from an area closed to shell fishing where the effluent may be released to an area open for shell fishing or swimming in order to avoid contamination from the disposal area and cause a temporary shellfish closure to be made. Such notification shall also be provided to the appropriate Corps of Engineers Regulatory Field Office. Any disposal of sand to the ocean beach should occur between November 1 and April 30 when recreational usage is low. Only clean sand should be used and no dredged sand from closed shell fishing areas may be used. If beach disposal were to occur at times other than stated above or if sand from a closed shell fishing area is to be used, a swimming advisory shall be posted, and a press release shall be issued by the permittee.

3.8 Preservation of Submerged Aquatic Vegetation

Adverse impacts to Submerged Aquatic Vegetation (SAV) are not authorized by any NWP within any of the twenty coastal counties defined by North Carolina's Coastal Area Management Act of 1974 (CAMA).

3.9 Sedimentation and Erosion Control Structures and Measures

3.9.1. All PCNs will identify and describe sedimentation and erosion control structures and measures proposed for placement in waters of the US. The structures and measures should be depicted on maps, surveys or drawings showing location and impacts to jurisdictional wetlands and streams.

4.0 Additional Regional Conditions for Specific Nationwide Permits

4.1 NWP # 13 – Bank Stabilization

4.1.1. Unanchored trees, treetops, or debris may not be used as stream bank stabilization material.

4.1.2. Properly anchored and cabled structural stabilization techniques, such as timber crib structures, revetments, and root wads, are acceptable materials to stabilize stream banks.

4.1.3. If riprap stabilization is needed, it should be placed only on the stream banks, or, if it is necessary to be placed in the stream bed, the finished top elevation of the riprap should not exceed that of the original stream bed.

NATIONWIDE PERMIT 23
DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS
FINAL NOTICE OF ISSUANCE AND MODIFICATION OF NATIONWIDE PERMITS
FEDERAL REGISTER
AUTHORIZED MARCH 19, 2012

Approved Categorical Exclusions. Activities undertaken, assisted, authorized, regulated, funded, or financed, in whole or in part, by another Federal agency or department where:

(a) That agency or department has determined, pursuant to the Council on Environmental Quality's implementing regulations for the National Environmental Policy Act (40 CFR part 1500 et seq.), that the activity is categorically excluded from environmental documentation, because it is included within a category of actions which neither individually nor cumulatively have a significant effect on the human environment; and

(b) The Office of the Chief of Engineers (Attn: CECW-CO) has concurred with that agency's or department's determination that the activity is categorically excluded and approved the activity for authorization under NWP 23.

The Office of the Chief of Engineers may require additional conditions, including pre-construction notification, for authorization of an agency's categorical exclusions under this NWP.

Notification: Certain categorical exclusions approved for authorization under this NWP require the permittee to submit a pre-construction notification to the district engineer prior to commencing the activity (see general condition 31). The activities that require pre-construction notification are listed in the appropriate Regulatory Guidance Letters. (Sections 10 and 404)

Note: The agency or department may submit an application for an activity believed to be categorically excluded to the Office of the Chief of Engineers (Attn: CECW-CO). Prior to approval for authorization under this NWP of any agency's activity, the Office of the Chief of Engineers will solicit public comment. As of the date of issuance of this NWP, agencies with approved categorical exclusions are the: Bureau of Reclamation, Federal Highway Administration, and U.S. Coast Guard. Activities approved for authorization under this NWP as of the date of this notice are found in Corps Regulatory Guidance Letter 05-07, which is available at:
http://www.usace.army.mil/Missions/CivilWorks/RegulatoryProgramandPermits/GuidanceLetters.aspx . Any future approved categorical exclusions will be announced in Regulatory Guidance Letters and posted on this same web site.

4.0 Additional Regional Conditions for Specific Nationwide Permits

4.1 NWP #23 – Approved Categorical Exclusions

4.1.1. No development activities authorized by this NWP may begin until the permittee obtains a consistency concurrence or a CAMA permit from the North Carolina Division of Coastal Management, if either is required.

NATIONWIDE PERMIT 33
DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS
FINAL NOTICE OF ISSUANCE AND MODIFICATION OF NATIONWIDE PERMITS
FEDERAL REGISTER
AUTHORIZED MARCH 19, 2012

Temporary Construction, Access, and Dewatering. Temporary structures, work, and discharges, including cofferdams, necessary for construction activities or access fills or dewatering of construction sites, provided that the associated primary activity is authorized by the Corps of Engineers or the U.S. Coast Guard. This NWP also authorizes temporary structures, work, and discharges, including cofferdams, necessary for construction activities not otherwise subject to the Corps or U.S. Coast Guard permit requirements. Appropriate measures must be taken to maintain near normal downstream flows and to minimize flooding. Fill must consist of materials, and be placed in a manner, that will not be eroded by expected high flows. The use of dredged material may be allowed if the district engineer determines that it will not cause more than minimal adverse effects on aquatic resources. Following completion of construction, temporary fill must be entirely removed to an area that has no waters of the United States, dredged material must be returned to its original location, and the affected areas must be restored to pre-construction elevations. The affected areas must also be revegetated, as appropriate. This permit does not authorize the use of cofferdams to dewater wetlands or other aquatic areas to change their use. Structures left in place after construction is completed require a separate section 10 permit if located in navigable waters of the United States. (See 33 CFR part 322.)

Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity (see general condition 31). The pre-construction notification must include a restoration plan showing how all temporary fills and structures will be removed and the area restored to pre-project conditions. (Sections 10 and 404)

4.0 Additional Regional Conditions for Specific Nationwide Permits

4.1 NWP #33 – Temporary Construction, Access and Dewatering

4.1.1. The required restoration plan must include a timetable for restoration activities.

North Carolina Department of Environment and Natural Resources

Pat McCrory
Governor

John E. Skvarla, III
Secretary

September 12, 2014
Wake County
DWR Project No. 20131248ver.3
I-40 Pavement Reconstruction
TIP No. I-5338

CORRECTION to APPROVAL of 401 WATER QUALITY CERTIFICATION and NEUSE BUFFER AUTHORIZATION, with ADDITIONAL CONDITIONS

Richard W. Hancock, PE, Manager
NCDOT Project Development & Environmental Analysis
1598 Mail Service Center
Raleigh, NC 27699-1598

Dear Mr. Hancock:

You have our approval, in accordance with the conditions listed below, for the following impacts for the purpose of the I-40 Pavement Reconstruction Project in Wake County:

Stream Impacts in the Neuse River Basin

Site	Permanent Fill in Intermittent Stream (linear ft)	Temporary Dewatering to Intermittent Stream (linear ft)	Stream Stabilization to Intermittent Stream (linear ft)	Permanent Fill in Perennial Stream (linear ft)	Temporary Dewatering to Perennial Stream (linear ft)	Stream Stabilization to Perennial Stream (linear ft)	Total Stream Impact (linear ft)
801	0	0	0	0	61	41	102
1101	0	0	0	10	46	30	86
1102	10	32	33	0	0	0	75
1103	0	0	0	0	27	20	47
1301	0	0	0	10	39	35	84
1302	86	148	20	0	0	0	254
1303	0	13	21	0	0	0	34
1304	0	0	0	0	0	23	23
1501	0	0	0	10	46	32	88
1701	0	0	0	15 (*stream relocation*)	56	0	71
1702	0	32	40	0	0	0	72
1901	0	0	0	10	46	57	113
2101	0	15	20	0	0	0	35
2301	0	0	0	0	110	20	130
2302	0	0	0	0	45	17	62
2802	0	10	20	0	0	0	30
2901	0	0	0	10	17	20	47
3101	0	0	58	0	0	0	58
Total	**96**	**250**	**212**	**65**	**493**	**295**	**1411**

Total Stream Impact for Project: 1411 linear feet.

Transportation and Permitting Unit
1617 Mail Service Center, Raleigh, North Carolina 27699-1617
Location: 512 N. Salisbury St. Raleigh, North Carolina 27604
Phone: 919-807-6300 \ FAX: 919-733-1290
Internet: www.ncwaterquality.org

Wetland Impacts in the Neuse River Basin

Site	Excavation (ac)	Mechanized Clearing (ac)
2002	0	0.02
2201	0	0.01
2501	0	<0.01
2502	0	<0.01
2801	0.03	0
3001	0	<0.01
Total	**0.03**	**0.04**

Total Wetland Impact for Project: 0.07 acres.

Neuse Riparian Buffer Impacts

Site	Zone 1 Impact (sq ft)	Zone 1 Buffer Mitigation Required (using 3:1 ratio)		Zone 2 Impact (sq ft)	Zone 2 Buffer Mitigation Required (using 1.5:1 ratio)
801	0	0		801	1201
802	8567	N/A		3434	N/A
1101	7756	N/A		3566	N/A
1102	7703	N/A		2925	N/A
1103	3514	N/A		1220	N/A
1301	7629	N/A		6527	N/A
1302	19071	N/A		6464	N/A
1303	3136	N/A		2950	N/A
1501	8514	N/A		5535	N/A
1701	12556	N/A		9149	N/A
1702	6557	N/A		3680	N/A
1901	8870	N/A		2959	N/A
2001	0	N/A		903	N/A
2002	96	288		195	293
2003	0	0		504	756
2005	3274	N/A		838	N/A
2006	60	180		2256	3384
2007	1805	N/A		2289	N/A
2008	0	N/A		1161	N/A
2101	1511	N/A		995	N/A
2201	0	N/A		46	N/A
2301	126	N/A		162	N/A
2302	5458	16374		1194	1791
2303	309	N/A		0	N/A
2304	183	N/A		508	N/A
2305	1301	3903		3748	5622
2306	1988	N/A		595	N/A
2307	2068	N/A		1417	N/A
2308	278	N/A		1162	N/A
2501	0	N/A		899	N/A
2601	112	N/A		121	N/A
2801	896	N/A		844	N/A
2802	2377	N/A		2332	N/A
2901	4898	N/A		4826	N/A
3001	1903	N/A		1766	N/A
4301	0	0		594	891
4401	0	N/A		89	N/A
Totals	**122543**	**20745**		**78654**	**13938**

* n/a = Impact Type "allowable", no mitigation required

Total Buffer Impact for Project: 201197 square feet.

The project shall be constructed in accordance with your application received August 18, 2014. After reviewing your application, we have decided that these impacts are covered by General Water Quality Certification Numbers 3885, 3891, and 3893. This certification corresponds to the Nationwide Permits 13, 23 and 33 issued by the Corps of Engineers. This approval is also valid for the Neuse Riparian Buffer Rules (15A NCAC 2B.0233). In addition, you should acquire any other federal, state or local permits before you proceed with your project including (but not limited to) Sediment and Erosion Control, Non-Discharge and Water Supply Watershed regulations. This approval will expire with the accompanying 404 permit. **This corrected approval replaces the one issued on September 8, 2014.**

This approval is valid solely for the purpose and design described in your application (unless modified below). Should your project change, you must notify the NCDWR and submit a new application. If the property is sold, the new owner must be given a copy of this Certification and approval letter, and is thereby responsible for complying with all the conditions. If total wetland fills for this project (now or in the future) exceed one acre, or of total impacts to streams (now or in the future) exceed 150 linear feet, compensatory mitigation may be required as described in 15A NCAC 2H .0506 (h) (6) and (7). Additional buffer impacts may require compensatory mitigation as described in 15A NCAC 2B.0242(9). For this approval to remain valid, you must adhere to the conditions listed in the attached certifications and any additional conditions listed below.

Conditions of Certification:

1. Compensatory mitigation for impacts to 6915 square feet of protected riparian buffers in Zone 1 and 9292 square feet of protected riparian buffers in Zone 2 shall be required. We understand that you have chosen to perform compensatory mitigation for impacts to protected buffers by use of NCDOT's Marks Creek Mitigation Site. This certification approves deduction of 34,683 square feet of buffer restoration to satisfy the buffer mitigation requirements of this project.

2. All riparian buffers impacted by the placement of temporary fill or clearing activities shall be restored to the preconstruction contours and revegetated. Maintained buffers shall be permanently revegetated with non-woody species by the end of the growing season following completion of construction. For the purpose of this condition, maintained buffer areas are defined as areas within the transportation corridor that will be subject to regular NCDOT maintenance activities including mowing. The area with non-maintained buffers shall be permanently revegetated with native woody species before the next growing season following completion of construction.

3. Pursuant to 15A NCAC 2B.0233(6), sediment and erosion control devices shall not be placed in Zone 1 of any Neuse Buffer without prior approval by the NCDWR. At this time, the NCDWR has approved no sediment and erosion control devices in Zone 1, outside of the approved project impacts, anywhere on this project. Moreover, sediment and erosion control devices shall be allowed in Zone 2 of the buffers provided that Zone 1 is not compromised and that discharge is released as diffuse flow.

4. All stormwater runoff shall be directed as sheetflow through stream buffers at non-erosive velocities, unless otherwise approved by this certification.

5. Riprap shall not be placed in the active thalweg channel or placed in the streambed in a manner that precludes aquatic life passage. Bioengineering boulders or structures should be properly designed, sized and installed.

6. For all streams being impacted due to site dewatering activities, the site shall be graded to its preconstruction contours and revegetated with appropriate native species.

7. Stream channels shall be excavated no deeper than the natural bed material of the stream, to the maximum extent practicable. Efforts must be made to minimize impacts to the stream banks, as well as to vegetation responsible for maintaining the stream bank stability. Any applicable riparian buffer impact for access to stream channel shall be temporary and be revegetated with native riparian species.

8. All portions of the proposed project draining to 303(d) listed watersheds that are impaired due to biological criteria exceedances shall not discharge stormwater directly to surface waters. Stormwater shall be treated using appropriate best management practices (e.g., vegetated conveyances, constructed wetlands, detention ponds, etc.) prior to discharging to surface waters.

9. If concrete is used during construction, a dry work area shall be maintained to prevent direct contact between curing concrete and stream water. Water that inadvertently contacts uncured concrete shall not be discharged to surface waters due to the potential for elevated pH and possible aquatic life and fish kills.

10. During the construction of the project, no staging of equipment of any kind is permitted in waters of the U.S., or protected riparian buffers.

11. The dimension, pattern and profile of the stream above and below the crossing shall not be modified. Disturbed floodplains and streams shall be restored to natural geomorphic conditions.

12. The use of rip-rap above the Normal High Water Mark shall be minimized. Any rip-rap placed for stream stabilization shall be placed in stream channels in such a manner that it does not impede aquatic life passage.

13. The Permittee shall ensure that the final design drawings adhere to the permit and to the permit drawings submitted for approval.

14. All work in or adjacent to stream waters shall be conducted in a dry work area. Approved BMP measures from the most current version of NCDOT Construction and Maintenance Activities manual such as sandbags, rock berms, cofferdams and other diversion structures shall be used to prevent excavation in flowing water.

15. Heavy equipment shall be operated from the banks rather than in the stream channel in order to minimize sedimentation and reduce the introduction of other pollutants into the stream.

16. All mechanized equipment operated near surface waters must be regularly inspected and maintained to prevent contamination of stream waters from fuels, lubricants, hydraulic fluids, or other toxic materials.

17. No rock, sand or other materials shall be dredged from the stream channel except where authorized by this certification.

18. Discharging hydroseed mixtures and washing out hydroseeders and other equipment in or adjacent to surface waters is prohibited.

19. The permittee and its authorized agents shall conduct its activities in a manner consistent with State water quality standards (including any requirements resulting from compliance with §303(d) of the Clean Water Act) and any other appropriate requirements of State and Federal law. If the NCDWR determines that such standards or laws are not being met (including the failure to sustain a designated or achieved use) or that State or federal law is being violated, or that further conditions are necessary to assure compliance, the NCDWR may reevaluate and modify this certification.

20. A copy of this Water Quality Certification shall be maintained on the construction site at all times. In addition, the Water Quality Certification and all subsequent modifications, if any, shall be maintained with the Division Engineer and the on-site project manager.

21. The outside buffer, wetland or water boundary located within the construction corridor approved by this authorization shall be clearly marked by highly visible fencing prior to any land disturbing activities. Impacts to areas within the fencing are prohibited unless otherwise authorized by this certification.

22. The issuance of this certification does not exempt the Permittee from complying with any and all statutes, rules, regulations, or ordinances that may be imposed by other government agencies (i.e. local, state, and federal) having jurisdiction, including but not limited to applicable buffer rules, stormwater management rules, soil erosion and sedimentation control requirements, etc.

23. The Permittee shall report any violations of this certification to the Division of Water Resources within 24 hours of discovery.

24. Upon completion of the project (including any impacts at associated borrow or waste sites), the NCDOT Division Engineer (or whomever is the authorized agent if a non-NCDOT project) shall complete and return the enclosed "Certification of Completion Form" to notify NCDWR when all work included in the 401 Certification has been completed.

25. Native riparian vegetation (i.e., trees and shrubs native to your geographic region) must be reestablished in the riparian areas within the construction limits of the project by the end of the growing season following completion of construction.

26. There shall be no excavation from, or waste disposal into, jurisdictional wetlands or waters associated with this permit without appropriate modification. Should waste or borrow sites, or access roads to waste or borrow sites, be located in wetlands or streams, compensatory mitigation will be required since that is a direct impact from road construction activities.

27. Erosion and sediment control practices must be in full compliance with all specifications governing the proper design, installation and operation and maintenance of such Best Management Practices in order to protect surface waters standards:

a. The erosion and sediment control measures for the project must be designed, installed, operated, and maintained in accordance with the most recent version of the *North Carolina Sediment and Erosion Control Planning and Design Manual.*
b. The design, installation, operation, and maintenance of the sediment and erosion control measures must be such that they equal, or exceed, the requirements specified in the most recent version of the *North Carolina Sediment and Erosion Control Manual.* The devices shall be maintained on all construction sites, borrow sites, and waste pile (spoil) projects, including contractor-owned or leased borrow pits associated with the project.
c. For borrow pit sites, the erosion and sediment control measures must be designed, installed, operated, and maintained in accordance with the most recent version of the *North Carolina Surface Mining Manual.*
d. The reclamation measures and implementation must comply with the reclamation in accordance with the requirements of the Sedimentation Pollution Control Act.

28. Sediment and erosion control measures shall not be placed in wetlands or waters unless otherwise approved by this Certification.

29. Channel relocations shall be completed and stabilized, prior to diverting water into the new channel. Stream banks shall be matted with coir-fiber matting. Vegetation used for bank stabilization shall be limited to native riparian vegetation, and should include establishment of a vegetated buffer on both sides of the relocated channel to the maximum extent practical. Also, rip-rap may be allowed if it is necessary to maintain the physical integrity of the stream, but the applicant must provide written justification and any calculations used to determine the extent of rip-rap coverage if requested by DWR.

If you wish to contest any statement in the attached Certification you must file a petition for an administrative hearing. You may obtain the petition form from the office of Administrative hearings. You must file the petition with the office of Administrative Hearings within sixty (60) days of receipt of this notice. A petition is considered filed when it is received in the office of Administrative Hearings during normal office hours. The Office of Administrative Hearings accepts filings Monday through Friday between the hours of 8:00am and 5:00pm, except for official state holidays. The original and one (1) copy of the petition must be filed with the Office of Administrative Hearings.

The petition may be faxed-provided the original and one copy of the document is received by the Office of Administrative Hearings within five (5) business days following the faxed transmission.
The mailing address for the Office of Administrative Hearings is:

Office of Administrative Hearings
6714 Mail Service Center
Raleigh, NC 27699-6714
Telephone: (919)-431-3000, Facsimile: (919)-431-3100

A copy of the petition must also be served on DENR as follows:

Mr. John Evans, General Counsel
Department of Environment and Natural Resources
1601 Mail Service Center

This letter completes the review of the Division of Water Resources under Section 401 of the Clean Water Act. If you have any questions, please contact Rob Ridings at 919-707-8786.

Sincerely,

Thomas A Reeder, Director
Division of Water Resources

cc: Chris Murray, Division 5 Environmental Officer
Eric Alsmeyer, US Army Corps of Engineers, Raleigh Field Office
Jim Mason, NCDOT PDEA
File Copy

Water Quality Certification No. 3885

GENERAL CERTIFICATION FOR STREAM RESTORATION, ENHANCEMENT AND STABILIZATION PROJECTS AND WETLAND AND RIPARIAN RESTORATION AND CREATION ACTIVITIES INCLUDING THOSE ELIGIBLE FOR U.S. ARMY CORPS OF ENGINEERS NATIONWIDE PERMIT NUMBERS 13 (BANK STABILIZATION) AND 27 (WETLAND AND RIPARIAN RESTORATION AND CREATION), AND REGIONAL PERMIT 197800080 (BULKHEADS AND RIPRAP) AND RIPARIAN AREA PROTECTION RULES (BUFFER RULES)

Water Quality Certification Number 3885 is issued in conformity with the requirements of Section 401, Public Laws 92-500 and 95-217 of the United States and subject to the North Carolina Division of Water Quality Regulations in 15A NCAC 02H .0500 and 15A NCAC 02B .0200 for the discharge of fill material to waters as described in 33 CFR 330 Appendix A (B) (13 and 27) and Regional Permit 197800080 and for the Riparian Area Protection Rules (Buffer Rules) in 15A NCAC 02B .0200.

The State of North Carolina certifies that the specified category of activity will not violate applicable portions of Sections 301, 302, 303, 306 and 307 of the Public Laws 92-500 and 95-217 if conducted in accordance with the conditions hereinafter set forth.

Activities meeting any one (1) of the following thresholds or circumstances require *written approval* for a 401 Water Quality Certification from the Division of Water Quality (the "Division"):

a) All proposed fill or modification of wetlands and/or waters, including streams and streambanks, regardless of the purpose of the restoration, enhancement, stabilization, or creation activity, except for single and independent projects involving in-stream structures for the sole purpose of streambank stabilization, which are designed based on current natural channel techniques, and do not exceed a total of three structures within 100 feet or less of streambank; or
b) Any stream relocation; or
c) Bank Stabilization projects qualifying for Nationwide Permit 13 for erosion protection which utilize non-natural armoring such as riprap, gabion baskets, deflection walls etc of greater than 150 feet in streambank length; or
d) Bank Stabilization projects qualifying for Nationwide Permit 13 for erosion protection which utilize natural streambank sloping, vegetation, and other natural channel protection techniques of greater than 500 feet of streambank length; or
e) Any impact associated with a Notice of Violation or an enforcement action for violation(s) of DWQ Wetland Rules (15A NCAC 02H .0500), Isolated Wetland Rules (15A NCAC 02H .1300), DWQ Surface Water or Wetland Standards, or Riparian Buffer Rules (15A NCAC 02B .0200); or
f) Any impacts to streams and/or buffers in the Neuse, Tar-Pamlico, or Catawba River Basins or in the Randleman, Jordan or Goose Creek Watersheds (or any other basin or watershed with Riparian Area Protection Rules [Buffer Rules] in effect at the time of application) *unless* the activities are listed as "EXEMPT" from these rules or a Buffer Authorization Certificate is issued through N.C. Division of Coastal Management (DCM) delegation for "ALLOWABLE" activities.

In accordance with North Carolina General Statute 143-215.3D(e), written approval for a 401 Water Quality General Certification must include the appropriate fee. If a project also requires a CAMA Permit, then one payment to both agencies shall be submitted and will be the higher of the two fees.

Activities included in this General Certification that do not meet one of the thresholds listed above do not require written approval from the Division as long as they comply with the Conditions of Certification listed below. If any of these Conditions cannot be met, then written approval from the Division is required.

Conditions of Certification:

1. Activities shall meet the definitions, design, and monitoring protocols specified within the US Army Corps of Engineers Wilmington District *Regulatory Guidance Letter* (RGL02-02) and the *Stream Mitigation Guidelines* (April 2003) or any subsequent updates to these documents.

2. No Impacts Beyond those Authorized in the Written Approval or Beyond the Threshold of Use of this Certification

   No waste, spoil, solids, or fill of any kind shall occur in wetlands, waters, or riparian areas beyond the footprint of the impacts depicted in the Pre-Construction Notification, as authorized in the written approval from the Division or beyond the thresholds established for use of this Certification without written authorization, including incidental impacts. All construction activities, including the design, installation, operation, and maintenance of sediment and erosion control Best Management Practices shall be performed so that no violations of state water quality standards, statutes, or rules occur. Approved plans and specifications for this project are incorporated by reference and are enforceable parts of this permit.

3. Standard Erosion and Sediment Control Practices

   Erosion and sediment control practices must be in full compliance with all specifications governing the proper design, installation and operation and maintenance of such Best Management Practices and if applicable, comply with the specific conditions and requirements of the NPDES Construction Stormwater Permit issued to the site:

   a. Design, installation, operation, and maintenance of the sediment and erosion control measures must be such that they equal or exceed the requirements specified in the most recent version of the *North Carolina Sediment and Erosion Control Manual.* The devices shall be maintained on all construction sites, borrow sites, and waste pile (spoil) projects, including contractor-owned or leased borrow pits associated with the project.

   b. For borrow pit sites, the erosion and sediment control measures must be designed, installed, operated, and maintained in accordance with the most recent version of the *North Carolina Surface Mining Manual.*

   c. Reclamation measures and implementation must comply with the reclamation in accordance with the requirements of the Sedimentation Pollution Control Act and the Mining Act of 1971.

   d. Sufficient materials required for stabilization and/or repair of erosion control measures and stormwater routing and treatment shall be on site at all times.

   e. If the project occurs in waters or watersheds classified as Primary Nursery Areas (PNAs), SA, WS-I, WS-II, High Quality (HQW), or Outstanding Resource (ORW) waters, then the sedimentation and erosion control designs must comply with the requirements set forth in 15A NCAC 04B .0124, *Design Standards in Sensitive Watersheds.*

4. No Sediment and Erosion Control Measures in Wetlands or Waters

Sediment and erosion control measures shall not be placed in wetlands or waters. Exceptions to this condition require application submittal to and written approval by the Division. If placement of sediment and erosion control devices in wetlands and waters is unavoidable, then design and placement of temporary erosion control measures shall not be conducted in a manner that may result in dis-equilibrium of wetlands, stream beds, or banks, adjacent to or upstream and downstream of the above structures. All sediment and erosion control devices shall be removed and the natural grade restored within two (2) months of the date that the Division of Land Resources (DLR) or locally delegated program has released the specific area within the project.

5. Construction Stormwater Permit NCG010000

An NPDES Construction Stormwater Permit is required for construction projects that disturb one (1) or more acres of land. This Permit allows stormwater to be discharged during land disturbing construction activities as stipulated in the conditions of the permit. If your project is covered by this permit, full compliance with permit conditions including the erosion & sedimentation control plan, inspections and maintenance, self-monitoring, record keeping and reporting requirements is required. A copy of the general permit (NCG010000), inspection log sheets, and other information may be found at http://portal.ncdenr.org/web/wq/ws/su/npdessw#tab-w .

The North Carolina Department of Transportation (NCDOT) shall be required to be in full compliance with the conditions related to construction activities within the most recent version of their individual NPDES (NCS000250) stormwater permit.

6. Construction Moratoriums and Coordination

If activities must occur during periods of high biological activity (i.e. sea turtle nesting, fish spawning, or bird nesting), then biological monitoring may be required at the request of other state or federal agencies and coordinated with these activities.

All moratoriums on construction activities established by the NC Wildlife Resources Commission (WRC), US Fish and Wildlife Service (USFWS), NC Division of Marine Fisheries (DMF), or National Marine Fisheries Service (NMFS) to lessen impacts on trout, anadromous fish, larval/post-larval fishes and crustaceans, or other aquatic species of concern shall be implemented. Exceptions to this condition require written approval by the resource agency responsible for the given moratorium.

Work within the twenty-five (25) designated trout counties or identified state or federal endangered or threatened species habitat shall be coordinated with the appropriate WRC, USFWS, NMFS, and/or DMF personnel.

7. Work in the Dry

All work in or adjacent to stream waters shall be conducted so that the flowing stream does not come in contact with the disturbed area. Approved best management practices from the most current version of the NC Sediment and Erosion Control Manual, or the NC DOT Construction and Maintenance Activities Manual, such as sandbags, rock berms, cofferdams, and other diversion structures shall be used to minimize excavation in flowing water. Exceptions to this condition require application submittal to and written approval by the Division.

8. Riparian Area Protection (Buffer) Rules

   Activities located in the protected riparian areas (whether jurisdictional wetlands or not), within the Neuse, Tar-Pamlico, or Catawba River Basins or in the Randleman, Jordan, or Goose Creek Watersheds (or any other basin or watershed with buffer rules) shall be limited to "uses" identified within and constructed in accordance with 15A NCAC 02B .0233, .0259, .0243, .0250, .0267 and .0605, and shall be located, designed, constructed, and maintained to have minimal disturbance to protect water quality to the maximum extent practicable through the use of best management practices. All buffer rule requirements, including diffuse flow requirements, must be met.

9. If concrete is used during the construction, then all necessary measures shall be taken to prevent direct contact between uncured or curing concrete and waters of the state. Water that inadvertently contacts uncured concrete shall not be discharged to waters of the state due to the potential for elevated pH and possible aquatic life/ fish kills.

10. All temporary fill and culverts shall be removed and the impacted area returned to natural conditions within 60 days of the determination that the temporary impact is no longer necessary. The impacted areas shall be restored to original grade, including each stream's original cross sectional dimensions, plan form pattern, and longitudinal bed and bed profile, and the various sites shall be stabilized with natural woody vegetation (except for the approved maintenance areas) and restored to prevent erosion.

11. All temporary pipes/ culverts/ riprap pads etc, shall be installed in all streams as outlined in the most recent edition of the *North Carolina Sediment and Erosion Control Planning and Design Manual* or the *North Carolina Surface Mining Manual* so as not to restrict stream flow or cause dis-equilibrium during use of this General Certification.

12. Any riprap required for proper culvert placement, stream stabilization, or restoration of temporarily disturbed areas shall be restricted to the area directly impacted by the approved construction activity. All rip-rap shall buried and/or "keyed in" such that the original stream elevation and streambank contours are restored and maintained. Placement of rip-rap or other approved materials shall not result in de-stabilization of the stream bed or banks upstream or downstream of the area.

13. Any rip-rap used for stream stabilization shall be of a size and density so as not to be able to be carried off by wave, current action, or stream flows and consist of clean rock or masonry material free of debris or toxic pollutants. Rip-rap shall not be installed in the streambed except in specific areas required for velocity control and to ensure structural integrity of bank stabilization measures.

14. A one-time application of fertilizer to re-establish vegetation is allowed in disturbed areas including riparian buffers, but is restricted to no closer than 10 feet from top of bank of streams. Any fertilizer application must comply with all other Federal, State and Local regulations.

15. Applications for riprap groins proposed in accordance with 15A NCAC 07H .1401 (NC Division of Coastal Management General Permit for construction of Wooden and Riprap Groins in Estuarine and Public Trust Waters) must meet all the specific conditions for design and construction specified in 15A NCAC 07H .1405.

16. Compensatory Mitigation

    In accordance with 15A NCAC 02H .0506 (h), compensatory mitigation may be required for losses of equal to or greater than 150 linear feet of streams (intermittent and perennial) and/or equal to or greater than one (1) acre of wetlands. For linear public transportation projects, impacts equal to or exceeding 150 linear feet per stream shall require mitigation.

    Buffer mitigation may be required for any project with Buffer Rules in effect at the time of application for activities classified as "Allowable with Mitigation" or "Prohibited" within the Table of Uses.

    A determination of buffer, wetland, and stream mitigation requirements shall be made for any General Water Quality Certification for this Nationwide and/or Regional General Permit. Design and monitoring protocols shall follow the US Army Corps of Engineers Wilmington District *Stream Mitigation Guidelines* (April 2003) or its subsequent updates. Compensatory mitigation plans shall be submitted to the Division for written approval as required in those protocols. The mitigation plan must be implemented and/or constructed before any impacts occur on site. Alternatively, the Division will accept payment into an in-lieu fee program or a mitigation bank. In these cases, proof of payment shall be provided to the Division before any impacts occur on site.

17. If an environmental document is required under the National or State Environmental Policy Act (NEPA or SEPA), then this General Certification is not valid until a Finding of No Significant Impact (FONSI) or Record of Decision (ROD) is issued by the State Clearinghouse.

18. In the twenty (20) coastal counties, the appropriate DWQ Regional Office must be contacted to determine if Coastal Stormwater Regulations will be required.

19. This General Certification does not relieve the applicant of the responsibility to obtain all other required Federal, State, or Local approvals.

20. The applicant/permittee and their authorized agents shall conduct all activities in a manner consistent with State water quality standards (including any requirements resulting from compliance with §303(d) of the Clean Water Act), and any other appropriate requirements of State and Federal Law. If the Division determines that such standards or laws are not being met, including failure to sustain a designated or achieved use, or that State or Federal law is being violated, or that further conditions are necessary to assure compliance, then the Division may reevaluate and modify this General Water Quality Certification.

21. When written authorization is required for use of this certification, upon completion of all permitted impacts included within the approval and any subsequent modifications, the applicant shall be required to return the certificate of completion attached to the approval. One copy of the certificate shall be sent to the DWQ Central Office in Raleigh at 1650 Mail Service Center, Raleigh, NC, 27699-1650.

22. Additional site-specific conditions, including monitoring and/or modeling requirements, may be added to the written approval letter for projects proposed under this Water Quality Certification in order to ensure compliance with all applicable water quality and effluent standards.

23. This certification grants permission to the director, an authorized representative of the Director, or DENR staff, upon the presentation of proper credentials, to enter the property during normal business hours.

This General Certification shall expire on the same day as the expiration date of the corresponding Nationwide and/or Regional General Permit. The conditions in effect on the date of issuance of Certification for a specific project shall remain in effect for the life of the project, regardless of the expiration date of this Certification.

Non-compliance with or violation of the conditions herein set forth by a specific project may result in revocation of this General Certification for the project and may also result in criminal and/or civil penalties.

The Director of the North Carolina Division of Water Quality may require submission of a formal application for Individual Certification for any project in this category of activity if it is determined that the project is likely to have a significant adverse effect upon water quality, including state or federally listed endangered or threatened aquatic species, or degrade the waters so that existing uses of the wetland or downstream waters are precluded.

Public hearings may be held for specific applications or group of applications prior to a Certification decision if deemed in the public's best interest by the Director of the North Carolina Division of Water Quality.

Effective date: March 19, 2012

DIVISION OF WATER QUALITY

By

Charles Wakild, P.E.

Director

History Note: Water Quality Certification (WQC) Number 3885 issued March 19, 2012 replaces WQC Number 3689 issued November 1, 2007; WQC Number 3626 issued March, 2007; WQC Number 3495 issued December 31, 2004; and WQC Number 3399 issued March 2003. This General Certification is rescinded when the Corps of Engineers reauthorizes any of the corresponding Nationwide and/or Regional General Permits and/or when deemed appropriate by the Director of the Division of Water Quality.

Water Quality Certification No. 3891

GENERAL CERTIFICATION FOR PROJECTS ELIGIBLE FOR U.S. ARMY CORPS OF ENGINEERS NATIONWIDE PERMIT NUMBER 23 (APPROVED CATEGORICAL EXCLUSIONS) AND RIPARIAN AREA PROTECTION RULES (BUFFER RULES)

Water Quality Certification Number 3891 is issued in conformity with the requirements of Section 401, Public Laws 92-500 and 95-217 of the United States and subject to the North Carolina Division of Water Quality Regulations in 15A NCAC 02H .0500 and 15A NCAC 02B .0200 for the discharge of fill material to waters and wetland areas as described in 33 CFR 330 Appendix A (B) (23) and for the Riparian Area Protection Rules (Buffer Rules) in 15A NCAC 02B .0200.

The category of activities shall include only Federally-approved Categorical Exclusion projects.

The State of North Carolina certifies that the specified category of activity will not violate applicable portions of Sections 301, 302, 303, 306 and 307 of the Public Laws 92-500 and 95-217 if conducted in accordance with the conditions hereinafter set forth.

Activities meeting any one (1) of the following thresholds or circumstances require *written approval* for a 401 Water Quality Certification from the Division of Water Quality (the "Division"):

a) Stream impacts (temporary or permanent) equal or greater than 40 linear feet; or
b) Any stream relocation; or
c) Impacts equal to or greater than one-tenth (1/10) acre of wetlands or open waters; or
d) Any impacts to wetlands adjacent to waters designated as: ORW, SA, WS-I, WS-II, or Trout, or wetlands contiguous to waters designated as a North Carolina or National Wild and Scenic River.
e) Any impacts to coastal wetlands [15A NCAC 7H .0205)], or Unique Wetlands (UWL) [15A NCAC 2H .0506].
f) Any impact associated with a Notice of Violation or an enforcement action for violation(s) of DWQ Wetland Rules (15A NCAC 02H .0500), Isolated Wetland Rules (15A NCAC 02H .1300), DWQ Surface Water or Wetland Standards, or Riparian Buffer Rules (15A NCAC 02B .0200); or
g) Any impacts to streams and/or buffers in the Neuse, Tar-Pamlico, or Catawba River Basins or in the Randleman, Jordan or Goose Creek Watersheds (or any other basin or watershed with Riparian Area Protection Rules [Buffer Rules] in effect at the time of application) *unless* the activities are listed as "EXEMPT" from these rules or a Buffer Authorization Certificate is issued through N.C. Division of Coastal Management (DCM) delegation for "ALLOWABLE" activities.

In accordance with North Carolina General Statute 143-215.3D(e), written approval for a 401 Water Quality General Certification must include the appropriate fee. If a project also requires a CAMA Permit, then one payment to both agencies shall be submitted and will be the higher of the two fees.

Activities included in this General Certification that do not meet one of the thresholds listed above do not require written approval from the Division as long as they comply with the Conditions of Certification listed below. If any of these Conditions cannot be met, then written approval from the Division is required.

Conditions of Certification:

1. No Impacts Beyond those Authorized in the Written Approval or Beyond the Threshold of Use of this Certification

   No waste, spoil, solids, or fill of any kind shall occur in wetlands, waters, or riparian areas beyond the footprint of the impacts depicted in the Pre-Construction Notification, as

authorized in the written approval from the Division or beyond the thresholds established for use of this Certification without written authorization, including incidental impacts. All construction activities, including the design, installation, operation, and maintenance of sediment and erosion control Best Management Practices shall be performed so that no violations of state water quality standards, statutes, or rules occur. Approved plans and specifications for this project are incorporated by reference and are enforceable parts of this permit.

2. Standard Erosion and Sediment Control Practices

Erosion and sediment control practices must be in full compliance with all specifications governing the proper design, installation and operation and maintenance of such Best Management Practices and if applicable, comply with the specific conditions and requirements of the NPDES Construction Stormwater Permit issued to the site:

a. Design, installation, operation, and maintenance of the sediment and erosion control measures must be such that they equal or exceed the requirements specified in the most recent version of the *North Carolina Sediment and Erosion Control Manual*. The devices shall be maintained on all construction sites, borrow sites, and waste pile (spoil) projects, including contractor-owned or leased borrow pits associated with the project.

b. For borrow pit sites, the erosion and sediment control measures must be designed, installed, operated, and maintained in accordance with the most recent version of the *North Carolina Surface Mining Manual*.

c. Reclamation measures and implementation must comply with the reclamation in accordance with the requirements of the Sedimentation Pollution Control Act and the Mining Act of 1971.

d. Sufficient materials required for stabilization and/or repair of erosion control measures and stormwater routing and treatment shall be on site at all times.

e. If the project occurs in waters or watersheds classified as Primary Nursery Areas (PNAs), SA, WS-I, WS-II, High Quality (HQW), or Outstanding Resource (ORW) waters, then the sedimentation and erosion control designs must comply with the requirements set forth in 15A NCAC 04B .0124, *Design Standards in Sensitive Watersheds*.

3. No Sediment and Erosion Control Measures in Wetlands or Waters

Sediment and erosion control measures shall not be placed in wetlands or waters. Exceptions to this condition require application submittal to and written approval by the Division. If placement of sediment and erosion control devices in wetlands and waters is unavoidable, then design and placement of temporary erosion control measures shall not be conducted in a manner that may result in dis-equilibrium of wetlands, stream beds, or banks, adjacent to or upstream and downstream of the above structures. All sediment and erosion control devices shall be removed and the natural grade restored within two (2) months of the date that the Division of Land Resources (DLR) or locally delegated program has released the specific area within the project.

4. Construction Stormwater Permit NCG010000

An NPDES Construction Stormwater Permit is required for construction projects that disturb one (1) or more acres of land. This Permit allows stormwater to be discharged during land disturbing construction activities as stipulated in the conditions of the permit. If your project is covered by this permit, full compliance with permit conditions including the erosion & sedimentation control plan, inspections and maintenance, self-monitoring, record keeping and reporting requirements is required. A copy of the general permit (NCG010000), inspection log sheets, and other information may be found at http://portal.ncdenr.org/web/wq/ws/su/npdessw#tab-w .

The North Carolina Department of Transportation (NCDOT) shall be required to be in full compliance with the conditions related to construction activities within the most recent version of their individual NPDES (NCS000250) stormwater permit.

5. Construction Moratoriums and Coordination

If activities must occur during periods of high biological activity (i.e. sea turtle nesting, fish spawning, or bird nesting), then biological monitoring may be required at the request of other state or federal agencies and coordinated with these activities.

All moratoriums on construction activities established by the NC Wildlife Resources Commission (WRC), US Fish and Wildlife Service (USFWS), NC Division of Marine Fisheries (DMF), or National Marine Fisheries Service (NMFS) to lessen impacts on trout, anadromous fish, larval/post-larval fishes and crustaceans, or other aquatic species of concern shall be implemented. Exceptions to this condition require written approval by the resource agency responsible for the given moratorium.

Work within the twenty-five (25) designated trout counties or identified state or federal endangered or threatened species habitat shall be coordinated with the appropriate WRC, USFWS, NMFS, and/or DMF personnel.

6. Work in the Dry

All work in or adjacent to stream waters shall be conducted so that the flowing stream does not come in contact with the disturbed area. Approved best management practices from the most current version of the NC Sediment and Erosion Control Manual, or the NC DOT Construction and Maintenance Activities Manual, such as sandbags, rock berms, cofferdams, and other diversion structures shall be used to minimize excavation in flowing water. Exceptions to this condition require application submittal to and written approval by the Division.

7. Riparian Area Protection (Buffer) Rules

Activities located in the protected riparian areas (whether jurisdictional wetlands or not), within the Neuse, Tar-Pamlico, or Catawba River Basins or in the Randleman, Jordan, or Goose Creek Watersheds (or any other basin or watershed with buffer rules) shall be limited to "uses" identified within and constructed in accordance with 15A NCAC 02B .0233, .0259, .0243, .0250, .0267 and .0605, and shall be located, designed, constructed, and maintained to have minimal disturbance to protect water quality to the maximum extent practicable through the use of best management practices. All buffer rule requirements, including diffuse flow requirements, must be met.

8. If concrete is used during the construction, then all necessary measures shall be taken to prevent direct contact between uncured or curing concrete and waters of the state. Water that inadvertently contacts uncured concrete shall not be discharged to waters of the state due to the potential for elevated pH and possible aquatic life/ fish kills.

9. Bridge deck drains shall not discharge directly into the stream. Stormwater shall be directed across the bridge and pre-treated through site-appropriate means (grassed swales, pre-formed scour holes, vegetated buffers, etc.) before entering the stream. Please refer to the most current version of *Stormwater Best Management Practices*. Exceptions to this condition require written approval by the Division.

10. Relocated stream designs should include the same dimensions, patterns, and profiles as the existing channel (or a stable reference reach if the existing channel is unstable), to the maximum extent practical. The new channel should be constructed in the dry and water shall not be turned into the new channel until the banks are stabilized. Vegetation used for bank stabilization shall be limited to native woody species, and should include establishment of a 30-foot wide wooded and an adjacent 20-foot wide vegetated buffer on both sides of the relocated channel to the maximum extent practical. A transitional phase incorporating appropriate erosion control matting materials and seedling establishment is allowable, however matting that incorporates plastic mesh and/or plastic twine shall not be used in wetlands, riparian buffers or floodplains as recommended by the North Carolina Sediment and Erosion Control Manual. Rip-rap, A-Jacks, concrete, gabions or other hard structures may be allowed if it is necessary to maintain the physical integrity of the stream; however, the applicant must provide written justification and any calculations used to determine the extent of rip-rap coverage. Please note that if the stream relocation is conducted as a stream restoration as defined in the US Army Corps of Engineers Wilmington District, April 2003 *Stream Mitigation Guidelines* (or its subsequent updates), the restored length may be used as compensatory mitigation for the impacts resulting from the relocation.

11. Placement of Culverts and Other Structures in Waters and Wetlands

    Culverts required for this project shall be designed and installed in such a manner that the original stream profiles are not altered and allow for aquatic life movement during low flows. Existing stream dimensions (including the cross section dimensions, pattern, and longitudinal profile) must be maintained above and below locations of each culvert.

    Placement of culverts and other structures in waters and streams must be below the elevation of the streambed by one foot for all culverts with a diameter greater than 48 inches, and 20 percent of the culvert diameter for culverts having a diameter less than or equal to 48 inches, to allow low flow passage of water and aquatic life.

    When topographic constraints indicate culvert slopes of greater than 5%, culvert burial is not required, provided that all alternative options for flattening the slope have been investigated and aquatic life movement/ connectivity has been provided when possible (rock ladders, crossvanes, etc). Notification to the Division including supporting documentation to include a location map of the culvert, culvert profile drawings, and slope calculations shall be provided to the Division 60 days prior to the installation of the culvert.

    When bedrock is present in culvert locations, culvert burial is not required provided that there is sufficient documentation of the presence of bedrock. Notification to the Division including supporting documentation such as, but not limited to, a location map of the culvert, geotechnical reports, photographs, etc shall be provided to the Division a minimum of 60 days prior to the installation of the culvert. If bedrock is discovered during construction, then the Division shall be notified by phone or email within 24 hours of discovery.

    If other site-specific topographic constraints preclude the ability to bury the culverts as described above and/or it can be demonstrated that burying the culvert would result in destabilization of the channel, then exceptions to this condition require application submittal to, and written approval by, the Division of Water Quality, regardless of the total impacts to streams or wetlands from the project.

Installation of culverts in wetlands must ensure continuity of water movement and be designed to adequately accommodate high water or flood conditions. Additionally, when roadways, causeways, or other fill projects are constructed across FEMA-designated floodways or wetlands, openings such as culverts or bridges must be provided to maintain the natural hydrology of the system as well as prevent constriction of the floodway that may result in destabilization of streams or wetlands.

The establishment of native, woody vegetation and other soft stream bank stabilization techniques must be used where practicable instead of riprap or other bank hardening methods.

12. Compensatory Mitigation

    In accordance with 15A NCAC 02H .0506 (h), compensatory mitigation may be required for losses of equal to or greater than 150 linear feet of streams (intermittent and perennial) and/or equal to or greater than one (1) acre of wetlands. For linear public transportation projects, impacts equal to or exceeding 150 linear feet per stream shall require mitigation.

    Buffer mitigation may be required for any project with Buffer Rules in effect at the time of application for activities classified as "Allowable with Mitigation" or "Prohibited" within the Table of Uses.

    A determination of buffer, wetland, and stream mitigation requirements shall be made for any General Water Quality Certification for this Nationwide and/or Regional General Permit. Design and monitoring protocols shall follow the US Army Corps of Engineers Wilmington District *Stream Mitigation Guidelines* (April 2003) or its subsequent updates. Compensatory mitigation plans shall be submitted to the Division for written approval as required in those protocols. The mitigation plan must be implemented and/or constructed before any impacts occur on site. Alternatively, the Division will accept payment into an in-lieu fee program or a mitigation bank. In these cases, proof of payment shall be provided to the Division before any impacts occur on site.

13. If an environmental document is required under the National or State Environmental Policy Act (NEPA or SEPA), then this General Certification is not valid until a Finding of No Significant Impact (FONSI) or Record of Decision (ROD) is issued by the State Clearinghouse.

14. In the twenty (20) coastal counties, the appropriate DWQ Regional Office must be contacted to determine if Coastal Stormwater Regulations will be required.

15. This General Certification does not relieve the applicant of the responsibility to obtain all other required Federal, State, or Local approvals.

16. The applicant/permittee and their authorized agents shall conduct all activities in a manner consistent with State water quality standards (including any requirements resulting from compliance with §303(d) of the Clean Water Act), and any other appropriate requirements of State and Federal Law. If the Division determines that such standards or laws are not being met, including failure to sustain a designated or achieved use, or that State or Federal law is being violated, or that further conditions are necessary to assure compliance, then the Division may reevaluate and modify this General Water Quality Certification.

17. When written authorization is required for use of this certification, upon completion of all permitted impacts included within the approval and any subsequent modifications, the applicant shall be required to return the certificate of completion attached to the approval. One copy of the certificate shall be sent to the DWQ Central Office in Raleigh at 1650 Mail Service Center, Raleigh, NC, 27699-1650.

18. Additional site-specific conditions, including monitoring and/or modeling requirements, may be added to the written approval letter for projects proposed under this Water Quality Certification in order to ensure compliance with all applicable water quality and effluent standards.

19. This certification grants permission to the director, an authorized representative of the Director, or DENR staff, upon the presentation of proper credentials, to enter the property during normal business hours.

This General Certification shall expire on the same day as the expiration date of the corresponding Nationwide and/or Regional General Permit. The conditions in effect on the date of issuance of Certification for a specific project shall remain in effect for the life of the project, regardless of the expiration date of this Certification.

Non-compliance with or violation of the conditions herein set forth by a specific project may result in revocation of this General Certification for the project and may also result in criminal and/or civil penalties.

The Director of the North Carolina Division of Water Quality may require submission of a formal application for Individual Certification for any project in this category of activity if it is determined that the project is likely to have a significant adverse effect upon water quality, including state or federally listed endangered or threatened aquatic species, or degrade the waters so that existing uses of the wetland or downstream waters are precluded.

Public hearings may be held for specific applications or group of applications prior to a Certification decision if deemed in the public's best interest by the Director of the North Carolina Division of Water Quality.

Effective date: March 19, 2012

DIVISION OF WATER QUALITY

By

for

Charles Wakild, P.E.

Director

History Note: Water Quality Certification (WQC) Number 3891 issued March 19, 2012 replaces WQC 3701 issued November 1, 2007; WQC Number 3632 issued March 2007; WQC Number 3403 issued March 2003; WQC Number 3361 issued March 18, 2002; WQC Number 3107 issued February 11, 1997; WQC Number 2734 issued May 1 1993; and WQC Number 2670 issued on January 21, 1992. This General Certification is rescinded when the Corps of Engineers reauthorizes any of the corresponding Nationwide and/or Regional General Permits or when deemed appropriate by the Director of the Division of Water Quality.

Water Quality Certification No. 3893

GENERAL CERTIFICATION FOR PROJECTS ELIGIBLE FOR U.S. ARMY CORPS OF ENGINEERS NATIONWIDE PERMIT NUMBER 33 (TEMPORARY CONSTRUCTION, ACCESS AND DEWATERING) AND RIPARIAN AREA PROTECTION RULES (BUFFER RULES)

Water Quality Certification Number 3893 is issued in conformity with the requirements of Section 401, Public Laws 92-500 and 95-217 of the United States and subject to the North Carolina Division of Water Quality Regulations in 15A NCAC 02H .0500 and 15A NCAC 02B .0200 for the discharge of fill material to waters and wetland areas as described in 33 CFR 330 Appendix A (B) (33) and for the Riparian Area Protection Rules (Buffer Rules) in 15A NCAC 02B .0200.

The State of North Carolina certifies that the specified category of activity will not violate applicable portions of Sections 301, 302, 303, 306 and 307 of the Public Laws 92-500 and 95-217 if conducted in accordance with the conditions hereinafter set forth.

Activities meeting any one (1) of the following thresholds or circumstances require *written approval* for a 401 Water Quality Certification from the Division of Water Quality (the "Division"):

a. Any stream relocation; or
b. Any impact associated with a Notice of Violation or an enforcement action for violation(s) of DWQ Wetland Rules (15A NCAC 02H .0500), Isolated Wetland Rules (15A NCAC 02H .1300), DWQ Surface Water or Wetland Standards, or Riparian Buffer Rules (15A NCAC 02B .0200); or
c. Any impacts to streams and/or buffers in the Neuse, Tar-Pamlico, or Catawba River Basins or in the Randleman, Jordan or Goose Creek Watersheds (or any other basin or watershed with Riparian Area Protection Rules [Buffer Rules] in effect at the time of application) *unless* the activities are listed as "EXEMPT" from these rules or a Buffer Authorization Certificate is issued through N.C. Division of Coastal Management (DCM) delegation for "ALLOWABLE" activities.

In accordance with North Carolina General Statute 143-215.3D(e), written approval for a 401 Water Quality General Certification must include the appropriate fee. If a project also requires a CAMA Permit, then one payment to both agencies shall be submitted and will be the higher of the two fees.

Activities included in this General Certification that do not meet one of the thresholds listed above do not require written approval from the Division as long as they comply with the Conditions of Certification listed below. If any of these Conditions cannot be met, then written approval from the Division is required.

Conditions of Certification:

1. No Impacts Beyond those Authorized in the Written Approval or Beyond the Threshold of Use of this Certification

   No waste, spoil, solids, or fill of any kind shall occur in wetlands, waters, or riparian areas beyond the footprint of the impacts depicted in the Pre-Construction Notification, as authorized in the written approval from the Division or beyond the thresholds established for use of this Certification without written authorization, including incidental impacts. All construction activities, including the design, installation, operation, and maintenance of sediment and erosion control Best Management Practices shall be performed so that no violations of state water quality standards, statutes, or rules occur. Approved plans and specifications for this project are incorporated by reference and are enforceable parts of this permit.

2. Standard Erosion and Sediment Control Practices

Erosion and sediment control practices must be in full compliance with all specifications governing the proper design, installation and operation and maintenance of such Best Management Practices and if applicable, comply with the specific conditions and requirements of the NPDES Construction Stormwater Permit issued to the site:

a. Design, installation, operation, and maintenance of the sediment and erosion control measures must be such that they equal or exceed the requirements specified in the most recent version of the *North Carolina Sediment and Erosion Control Manual*. The devices shall be maintained on all construction sites, borrow sites, and waste pile (spoil) projects, including contractor-owned or leased borrow pits associated with the project.

b. For borrow pit sites, the erosion and sediment control measures must be designed, installed, operated, and maintained in accordance with the most recent version of the *North Carolina Surface Mining Manual.*

c. Reclamation measures and implementation must comply with the reclamation in accordance with the requirements of the Sedimentation Pollution Control Act and the Mining Act of 1971.

d. Sufficient materials required for stabilization and/or repair of erosion control measures and stormwater routing and treatment shall be on site at all times.

e. If the project occurs in waters or watersheds classified as Primary Nursery Areas (PNAs), SA, WS-I, WS-II, High Quality (HQW), or Outstanding Resource (ORW) waters, then the sedimentation and erosion control designs must comply with the requirements set forth in 15A NCAC 04B .0124, *Design Standards in Sensitive Watersheds.*

3. No Sediment and Erosion Control Measures in Wetlands or Waters

Sediment and erosion control measures shall not be placed in wetlands or waters. Exceptions to this condition require application submittal to and written approval by the Division. If placement of sediment and erosion control devices in wetlands and waters is unavoidable, then design and placement of temporary erosion control measures shall not be conducted in a manner that may result in dis-equilibrium of wetlands, stream beds, or banks, adjacent to or upstream and downstream of the above structures. All sediment and erosion control devices shall be removed and the natural grade restored within two (2) months of the date that the Division of Land Resources (DLR) or locally delegated program has released the specific area within the project.

4. Construction Stormwater Permit NCG010000

An NPDES Construction Stormwater Permit is required for construction projects that disturb one (1) or more acres of land. This Permit allows stormwater to be discharged during land disturbing construction activities as stipulated in the conditions of the permit. If your project is covered by this permit, full compliance with permit conditions including the erosion & sedimentation control plan, inspections and maintenance, self-monitoring, record keeping and reporting requirements is required. A copy of the general permit (NCG010000), inspection log sheets, and other information may be found at http://portal.ncdenr.org/web/wq/ws/su/npdessw#tab-w .

The North Carolina Department of Transportation (NCDOT) shall be required to be in full compliance with the conditions related to construction activities within the most recent version of their individual NPDES (NCS000250) stormwater permit.

5. Construction Moratoriums and Coordination

   If activities must occur during periods of high biological activity (i.e. sea turtle nesting, fish spawning, or bird nesting), then biological monitoring may be required at the request of other state or federal agencies and coordinated with these activities.

   All moratoriums on construction activities established by the NC Wildlife Resources Commission (WRC), US Fish and Wildlife Service (USFWS), NC Division of Marine Fisheries (DMF), or National Marine Fisheries Service (NMFS) to lessen impacts on trout, anadromous fish, larval/post-larval fishes and crustaceans, or other aquatic species of concern shall be implemented. Exceptions to this condition require written approval by the resource agency responsible for the given moratorium.

   Work within the twenty-five (25) designated trout counties or identified state or federal endangered or threatened species habitat shall be coordinated with the appropriate WRC, USFWS, NMFS, and/or DMF personnel.

6. Work in the Dry

   All work in or adjacent to stream waters shall be conducted so that the flowing stream does not come in contact with the disturbed area. Approved best management practices from the most current version of the NC Sediment and Erosion Control Manual, or the NC DOT Construction and Maintenance Activities Manual, such as sandbags, rock berms, cofferdams, and other diversion structures shall be used to minimize excavation in flowing water. Exceptions to this condition require application submittal to and written approval by the Division.

7. Riparian Area Protection (Buffer) Rules

   Activities located in the protected riparian areas (whether jurisdictional wetlands or not), within the Neuse, Tar-Pamlico, or Catawba River Basins or in the Randleman, Jordan, or Goose Creek Watersheds (or any other basin or watershed with buffer rules) shall be limited to "uses" identified within and constructed in accordance with 15A NCAC 02B .0233, .0259, .0243, .0250, .0267 and .0605, and shall be located, designed, constructed, and maintained to have minimal disturbance to protect water quality to the maximum extent practicable through the use of best management practices. All buffer rule requirements, including diffuse flow requirements, must be met.

8. If concrete is used during the construction, then all necessary measures shall be taken to prevent direct contact between uncured or curing concrete and waters of the state. Water that inadvertently contacts uncured concrete shall not be discharged to waters of the state due to the potential for elevated pH and possible aquatic life/ fish kills.

9. Bridge deck drains shall not discharge directly into the stream. Stormwater shall be directed across the bridge and pre-treated through site-appropriate means (grassed swales, pre-formed scour holes, vegetated buffers, etc.) before entering the stream. Please refer to the most current version of *Stormwater Best Management Practices*. Exceptions to this condition require written approval by the Division.

10. Placement of culverts and other structures in Waters and Wetlands

    Culverts required for this project shall be designed and installed in such a manner that the original stream profiles are not altered and allow for aquatic life movement during low flows. Existing stream dimensions (including the cross section dimensions, pattern, and longitudinal profile) must be maintained above and below locations of each culvert.

Placement of culverts and other structures in waters and streams must be below the elevation of the streambed by one foot for all culverts with a diameter greater than 48 inches, and 20 percent of the culvert diameter for culverts having a diameter less than or equal to 48 inches, to allow low flow passage of water and aquatic life.

When topographic constraints indicate culvert slopes of greater than 5%, culvert burial is not required, provided that all alternative options for flattening the slope have been investigated and aquatic life movement/ connectivity has been provided when possible (rock ladders, crossvanes, etc). Notification to the Division including supporting documentation to include a location map of the culvert, culvert profile drawings, and slope calculations shall be provided to the Division 60 days prior to the installation of the culvert.

When bedrock is present in culvert locations, culvert burial is not required provided that there is sufficient documentation of the presence of bedrock. Notification to the Division including supporting documentation such as, but not limited to, a location map of the culvert, geotechnical reports, photographs, etc shall be provided to the Division a minimum of 60 days prior to the installation of the culvert. If bedrock is discovered during construction, then the Division shall be notified by phone or email within 24 hours of discovery.

If other site-specific topographic constraints preclude the ability to bury the culverts as described above and/or it can be demonstrated that burying the culvert would result in destabilization of the channel, then exceptions to this condition require application submittal to, and written approval by, the Division of Water Quality, regardless of the total impacts to streams or wetlands from the project.

Installation of culverts in wetlands must ensure continuity of water movement and be designed to adequately accommodate high water or flood conditions. Additionally, when roadways, causeways, or other fill projects are constructed across FEMA-designated floodways or wetlands, openings such as culverts or bridges must be provided to maintain the natural hydrology of the system as well as prevent constriction of the floodway that may result in destabilization of streams or wetlands.

The establishment of native, woody vegetation and other soft stream bank stabilization techniques must be used where practicable instead of riprap or other bank hardening methods.

11. Compensatory Mitigation

In accordance with 15A NCAC 02H .0506 (h), compensatory mitigation may be required for losses of equal to or greater than 150 linear feet of streams (intermittent and perennial) and/or equal to or greater than one (1) acre of wetlands. For linear public transportation projects, impacts equal to or exceeding 150 linear feet per stream shall require mitigation.

Buffer mitigation may be required for any project with Buffer Rules in effect at the time of application for activities classified as "Allowable with Mitigation" or "Prohibited" within the Table of Uses.

A determination of buffer, wetland, and stream mitigation requirements shall be made for any General Water Quality Certification for this Nationwide and/or Regional General Permit. Design and monitoring protocols shall follow the US Army Corps of Engineers Wilmington District *Stream Mitigation Guidelines* (April 2003) or its subsequent updates. Compensatory mitigation plans shall be submitted to the Division for written approval as required in those protocols. The mitigation plan must be implemented and/or constructed before any impacts occur on site. Alternatively, the Division will accept payment into an in-lieu fee program or a mitigation bank. In these cases, proof of payment shall be provided to the Division before any impacts occur on site.

12. Relocated stream designs should include the same dimensions, patterns, and profiles as the existing channel (or a stable reference reach if the existing channel is unstable), to the maximum extent practical. The new channel should be constructed in the dry and water shall not be turned into the new channel until the banks are stabilized. Vegetation used for bank stabilization shall be limited to native woody species, and should include establishment of a 30-foot wide wooded and an adjacent 20-foot wide vegetated buffer on both sides of the relocated channel to the maximum extent practical. A transitional phase incorporating appropriate erosion control matting materials and seedling establishment is allowable, however matting that incorporates plastic mesh and/or plastic twine shall not be used in wetlands, riparian buffers or floodplains as recommended by the North Carolina Sediment and Erosion Control Manual. Rip-rap, A-Jacks, concrete, gabions or other hard structures may be allowed if it is necessary to maintain the physical integrity of the stream; however, the applicant must provide written justification and any calculations used to determine the extent of rip-rap coverage. Please note that if the stream relocation is conducted as a stream restoration as defined in the US Army Corps of Engineers Wilmington District, April 2003 *Stream Mitigation Guidelines* (or its subsequent updates), the restored length may be used as compensatory mitigation for the impacts resulting from the relocation.

13. All temporary fill and culverts shall be removed and the impacted area returned to natural conditions within 60 days of the determination that the temporary impact is no longer necessary. The impacted areas shall be restored to original grade, including each stream's original cross sectional dimensions, plan form pattern, and longitudinal bed and bed profile, and the various sites shall be stabilized with natural woody vegetation (except for the approved maintenance areas) and restored to prevent erosion.

14. Pipes shall be installed under the road or causeway in all streams to carry at least the 25-year storm event as outlined in the most recent edition of the *North Carolina Sediment and Erosion Control Planning and Design Manual* or the *North Carolina Surface Mining Manual* so as not to restrict stream flow during use of this General Certification.

15. If an environmental document is required under the National or State Environmental Policy Act (NEPA or SEPA), then this General Certification is not valid until a Finding of No Significant Impact (FONSI) or Record of Decision (ROD) is issued by the State Clearinghouse.

16. In the twenty (20) coastal counties, the appropriate DWQ Regional Office must be contacted to determine if Coastal Stormwater Regulations will be required.

17. This General Certification does not relieve the applicant of the responsibility to obtain all other required Federal, State, or Local approvals.

18. The applicant/permittee and their authorized agents shall conduct all activities in a manner consistent with State water quality standards (including any requirements resulting from compliance with §303(d) of the Clean Water Act), and any other appropriate requirements of State and Federal Law. If the Division determines that such standards or laws are not being met, including failure to sustain a designated or achieved use, or that State or Federal law is being violated, or that further conditions are necessary to assure compliance, then the Division may reevaluate and modify this General Water Quality Certification.

19. When written authorization is required for use of this certification, upon completion of all permitted impacts included within the approval and any subsequent modifications, the applicant shall be required to return the certificate of completion attached to the approval. One copy of the certificate shall be sent to the DWQ Central Office in Raleigh at 1650 Mail Service Center, Raleigh, NC, 27699-1650.

20. Additional site-specific conditions, including monitoring and/or modeling requirements, may be added to the written approval letter for projects proposed under this Water Quality Certification in order to ensure compliance with all applicable water quality and effluent standards.

21. This certification grants permission to the director, an authorized representative of the Director, or DENR staff, upon the presentation of proper credentials, to enter the property during normal business hours.

This General Certification shall expire on the same day as the expiration date of the corresponding Nationwide and/or Regional General Permit. The conditions in effect on the date of issuance of Certification for a specific project shall remain in effect for the life of the project, regardless of the expiration date of this Certification.

Non-compliance with or violation of the conditions herein set forth by a specific project may result in revocation of this General Certification for the project and may also result in criminal and/or civil penalties.

The Director of the North Carolina Division of Water Quality may require submission of a formal application for Individual Certification for any project in this category of activity if it is determined that the project is likely to have a significant adverse effect upon water quality, including state or federally listed endangered or threatened aquatic species, or degrade the waters so that existing uses of the wetland or downstream waters are precluded.

Public hearings may be held for specific applications or group of applications prior to a Certification decision if deemed in the public's best interest by the Director of the North Carolina Division of Water Quality.

Effective date: March 19, 2012

DIVISION OF WATER QUALITY

By

Matt Matter for

Charles Wakild, P.E.

Director

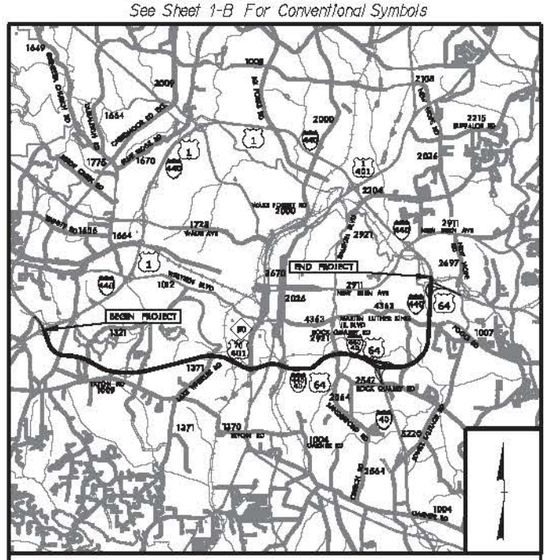
History Note: Water Quality Certification (WQC) Number 3893 issued March 19, 2012 replaces WQC Number 3688 issued November 1, 2007; WQC Number 3634 issued March 19, 2007; WQC Number 3366 issued March 18, 2002; WQC Number 3114 issued February 11, 1997; and WQC Number 2727 issued May 1, 1992. This General Certification is rescinded when the Corps of Engineers reauthorizes any of the corresponding Nationwide and/or Regional General Permits or when deemed appropriate by the Director of the Division of Water Quality.

05/08/14

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

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

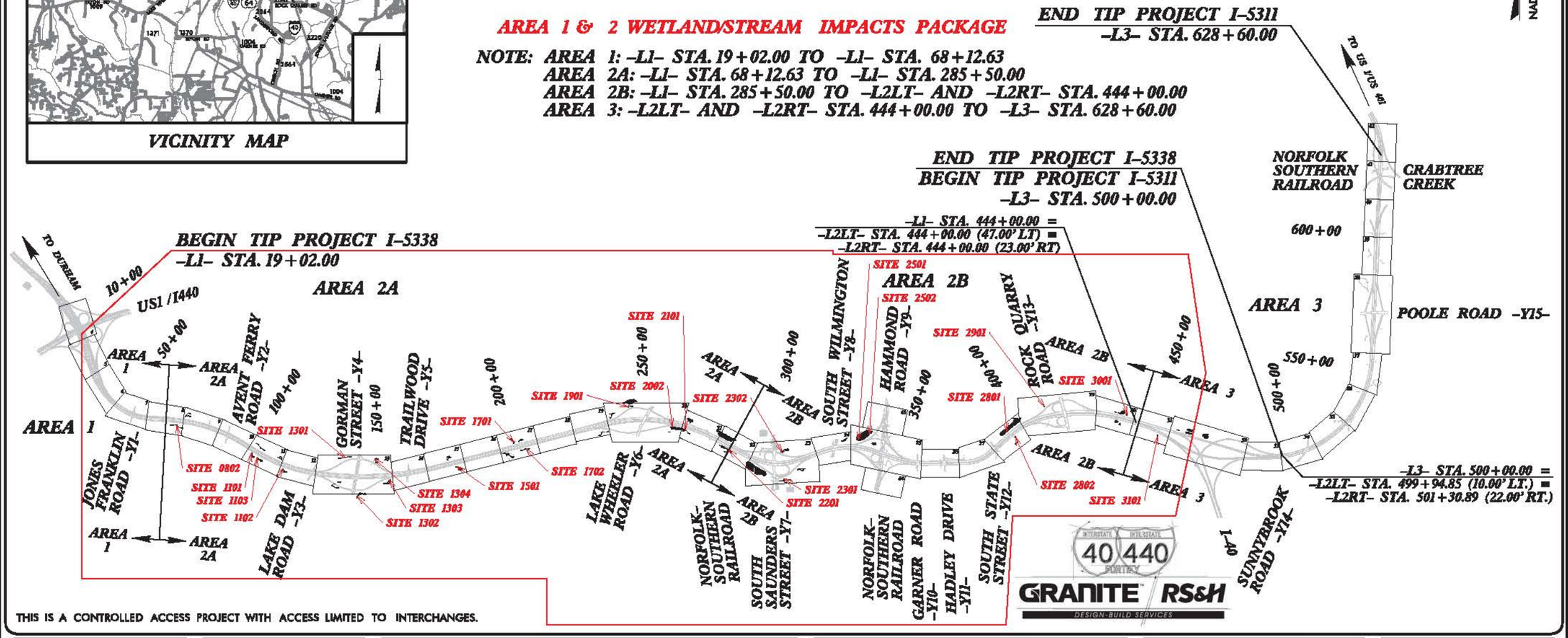
NAD 83/NSRS 2007

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

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

JASON TALLEY, PE
PROJECT ENGINEER

JARED BOND, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 34188 ENGINEER WILL A. WEATHERS
NORTH CAROLINA PROFESSIONAL SEAL 026480 ENGINEER JARED T. ROBINSON
P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER
NORTH CAROLINA PROFESSIONAL SEAL 029473 ENGINEER JASON M. 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)

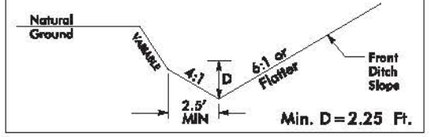
WETLAND PERMIT IMPACT SUMMARY

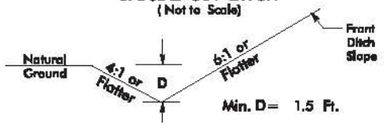
			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing 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	

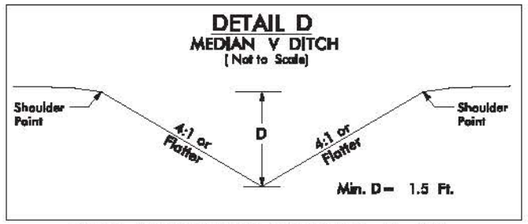
*Site in Area 3

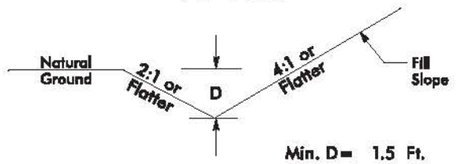
NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

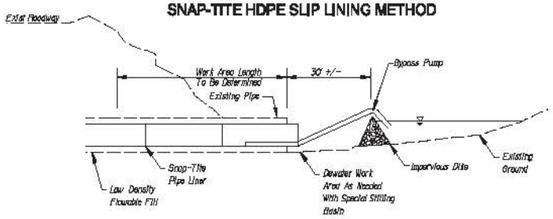
WAKE COUNTY
WBS - 46265.3.1 (I-5338/I-5311)

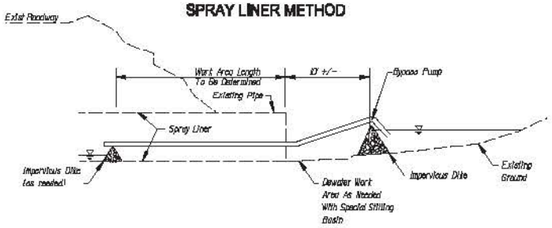


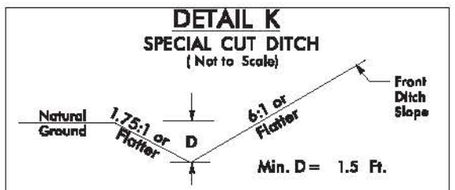


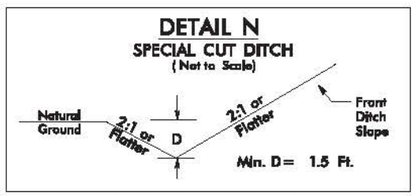


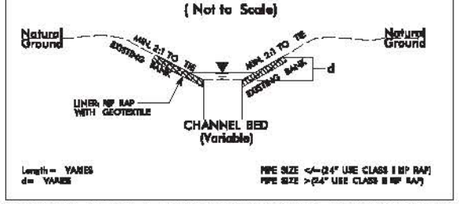












6/2/99

AREAS 1 & 2A

40 440 FORTIFY
GRANITE | RS&H
DESIGN-BUILD SERVICES

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

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
SEAL 029473 JASON M. TALLEY	SEAL 36188 WILL J. WEATHERS

DETAIL A
SPECIAL CUT DITCH wHINGE
(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 L
RIPRAP ON STREAMBANKS ONLY
(Not to Scale)

SEE PLANS FOR LOCATIONS OF RIPRAP ON STREAMBANKS ONLY

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.

$$$$SYSTIME$$$$
$$$$USERNAME$$$$

AREA 2B

Kimley»Horn

40 440 GRANITE RS&H DESIGN-BUILD SERVICES

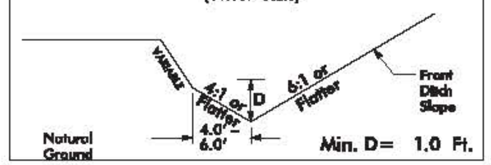
PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	2-B
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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

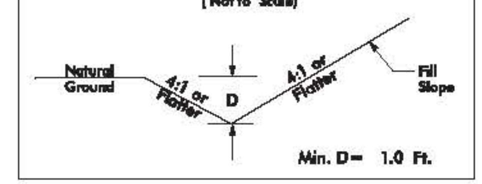
S. State Street (East Bound Median)			
Station	Alignment	Location	Deck Drain size (FT)
386+94	-L1-	CL	0.5
387+00	-L1-	CL	0.5
387+06	-L1-	CL	0.5
387+12	-L1-	CL	0.5
387+18	-L1-	CL	0.5
387+24	-L1-	CL	0.5
387+89	-L1-	CL	0.5
387+95	-L1-	CL	0.5
388+01	-L1-	CL	0.5
388+07	-L1-	CL	0.5
388+13	-L1-	CL	0.5
388+19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

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



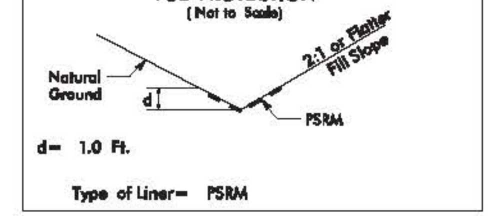
FROM STA. 376+50 TO STA. 378+00 -L1- (LT)
FROM STA. 397+00 TO STA. 401+50 -L1- (RT)
FROM STA. 401+50 TO STA. 404+00 -L1- (RT)
FROM STA. 405+50 -L1- TO STA. 15+70 -RP13C- (RT)
FROM STA. 15+70 TO STA. 20+40 -RP13C- (RT)
FROM STA. 407+50 -L1- TO STA. 17+60 -RP13B- (LT)
FROM STA. 21+10 TO STA. 23+60 -RP13B- (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)



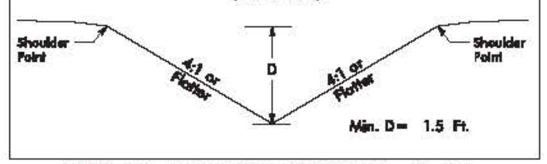
FROM STA. 15+45 TO STA. 17+45 -RP7D- (RT)
FROM STA. 21+90 TO STA. 20+60 -RP7A- (LT)
FROM STA. 15+80 TO STA. 20+20 -RP7B- (RT)
FROM STA. 22+80 TO STA. 21+49 -RP7B- (RT)
FROM STA. 12+41 TO STA. 12+91 -LP7B- (LT)
FROM STA. 414+50 TO STA. 415+00 -L1- (LT)
FROM STA. 15+60 TO STA. 17+10 -RP13B- (RT)
FROM STA.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

DETAIL C
TOE PROTECTION
(Not to Scale)



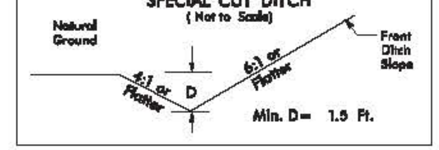
FROM STA. 14+67 TO STA. 15+10 -LP9C- (RT)
FROM STA. 25+15 TO STA. 27+60 -Y9- (LT)
FROM STA. 346+00 TO STA. 347+40 -L1- (LT)
FROM STA. 346+58 TO STA. 348+62 -L1- (RT)

DETAIL D
MEDIAN V DITCH
(Not to Scale)



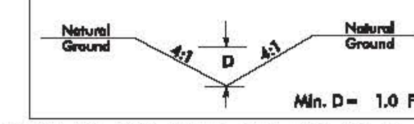
FROM STA. 290+50 TO STA. 291+98 -L1- (LT)

DETAIL E
SPECIAL CUT DITCH
(Not to Scale)



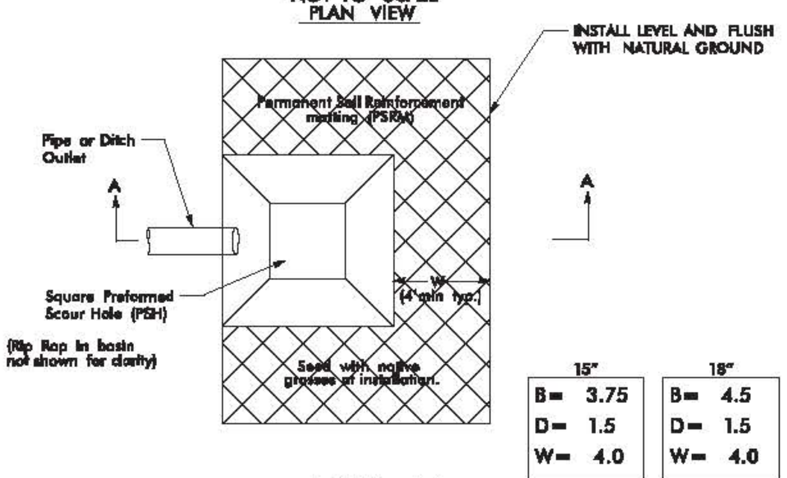
FROM STA. 20+95 TO STA. 20+45 -RP7D- (RT)

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

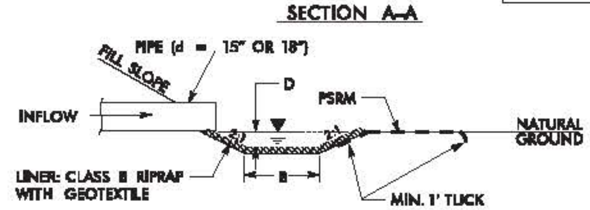


FROM STA. 294+75 TO STA. 294+84 -L1- (LT)

DETAIL G
PREFORMED SCOUR HOLE
*NOT TO SCALE
PLAN VIEW



SECTION A-A

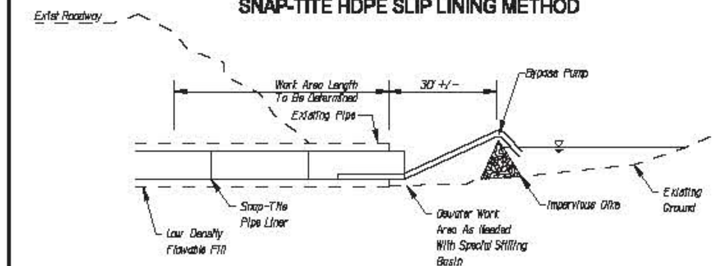


3/08

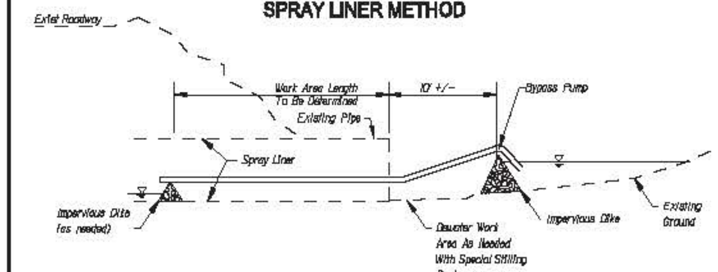
STA. 285+25 -L1- (RT)
STA. 23+88 -RP7C- (RT)
STA. 13+90 -RP7D- (LT)
STA. 24+55 -RP9C- (LT)
STA. 15+25 -RP9B- (LT)
STA. 15+90 -RP9B- (LT)
STA. 14+70 -RP9BSPUR- (LT)
STA. 391+83 -L1- (LT)
STA. 440+33 -L1- (LT)

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 expect for:
  - All curing water must be disposed offsite
  - Pipe Liner must be installed per manufacturer's 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 clearing 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-

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

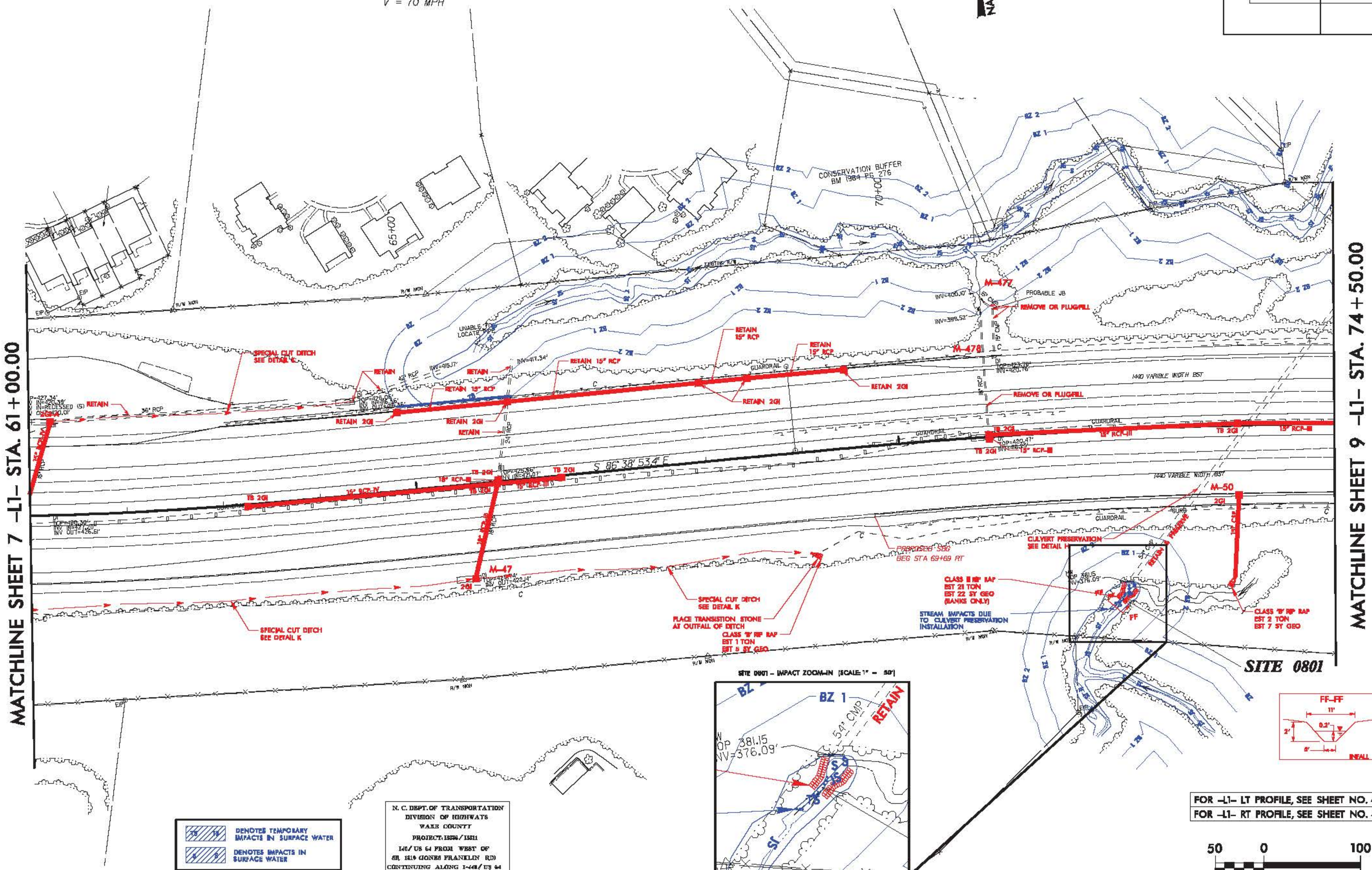
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRANITE RS&H DESIGN-BUILD SERVICES

NAD 83/NSRS 2007

-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



N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: I5338/I5311
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

REVISIONS

8/17/99

7/28/2014
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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 PORTION

GRANITE RS&H
DESIGN-BUILD SERVICES

6/17/99

REVISIONS

-L- CURVE DATA

Pls Sta 61+92.31	Pls 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

CONSERVATION BUFFER BM 1984 PG 276

S 86° 38' 53.4" E

SITE 0801

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

FF-FF

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES IMPACTS IN SURFACE WATER

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15336/15311
I-40/ US 64 FROM WEST OF SR 1819 (JONES FRANKLIN RD) CONTINUING ALONG I-40/ US 64 TO NORTH OF US 64/ US 264
DATE: 07/30/2014

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

50 0 100

7/29/2014
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8/17/99

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

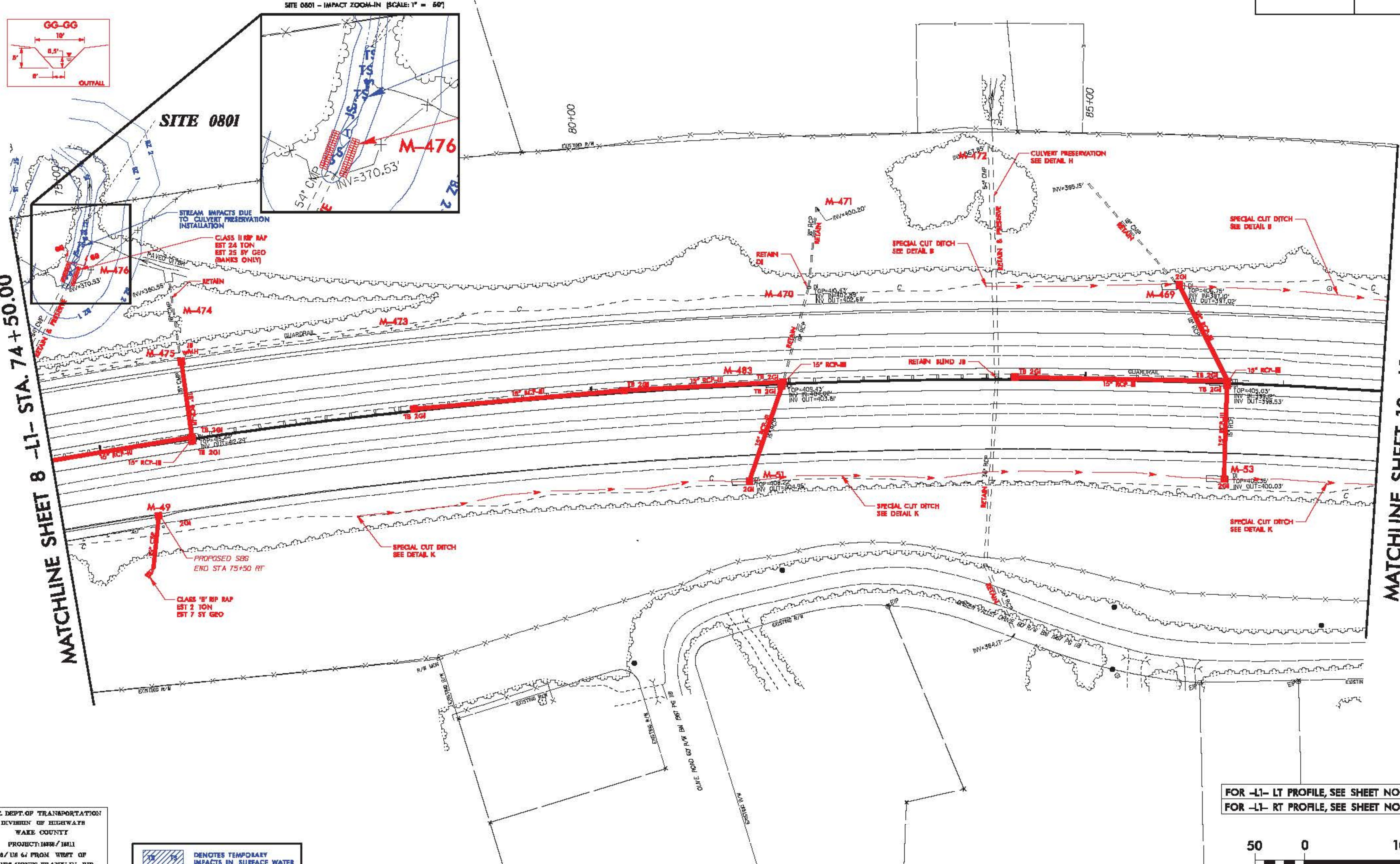
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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

REVISIONS



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: I5338 / I5311
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

TS	DENOTES TEMPORARY IMPACTS IN SURFACE WATER
	DENOTES IMPACTS IN SURFACE WATER

7/25/2014
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PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	9

R/W SHEET NO.

ROADWAY DESIGN ENGINEER — HYDRAULICS ENGINEER

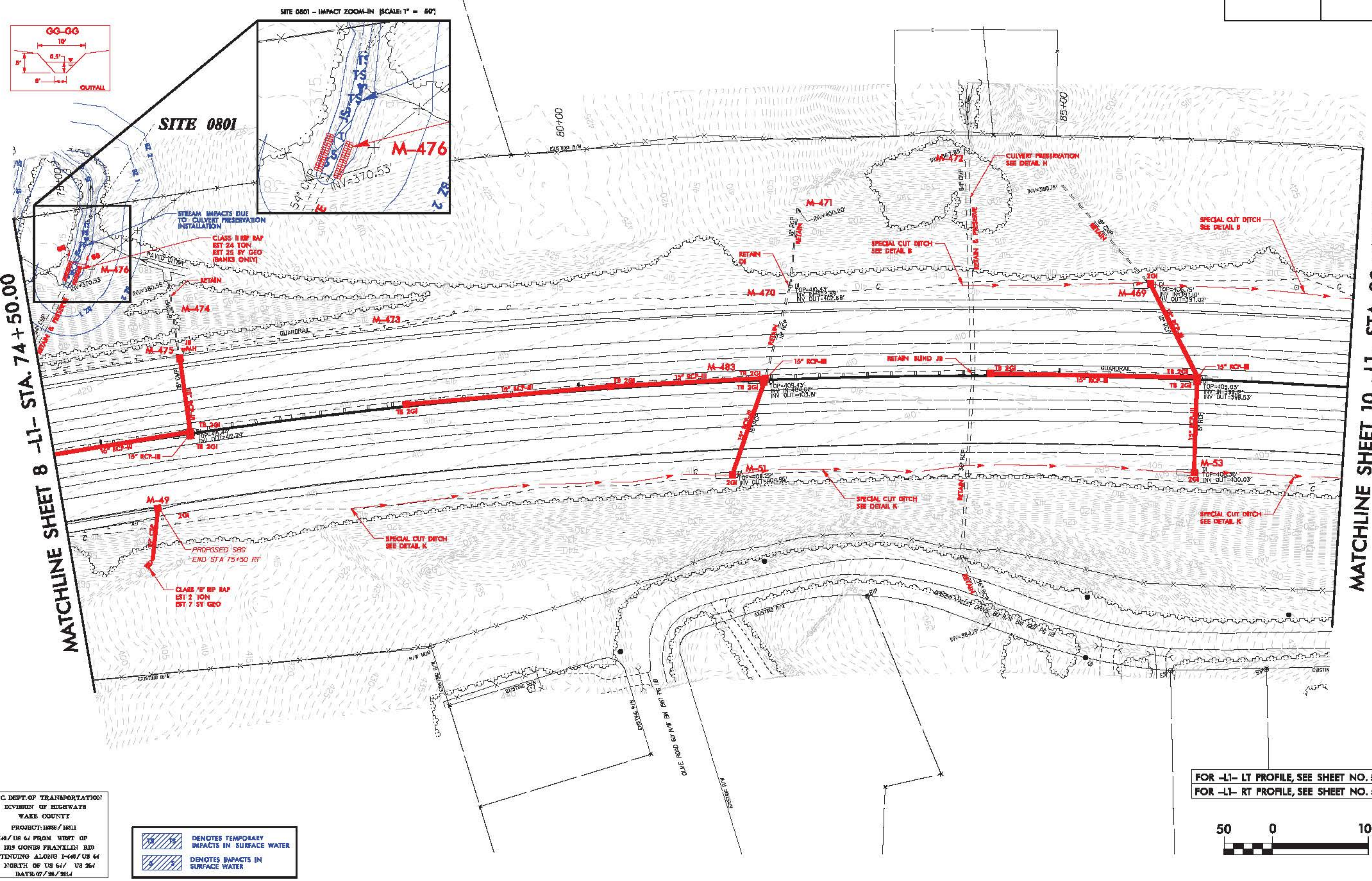
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

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



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

50 0 100

DENOTES TEMPORARY IMPACTS IN SURFACE WATER
DENOTES IMPACTS IN SURFACE WATER

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: I5338 / I5311
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: 07/26/2014

REVISIONS

8/17/99

7/25/2014
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PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	11

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

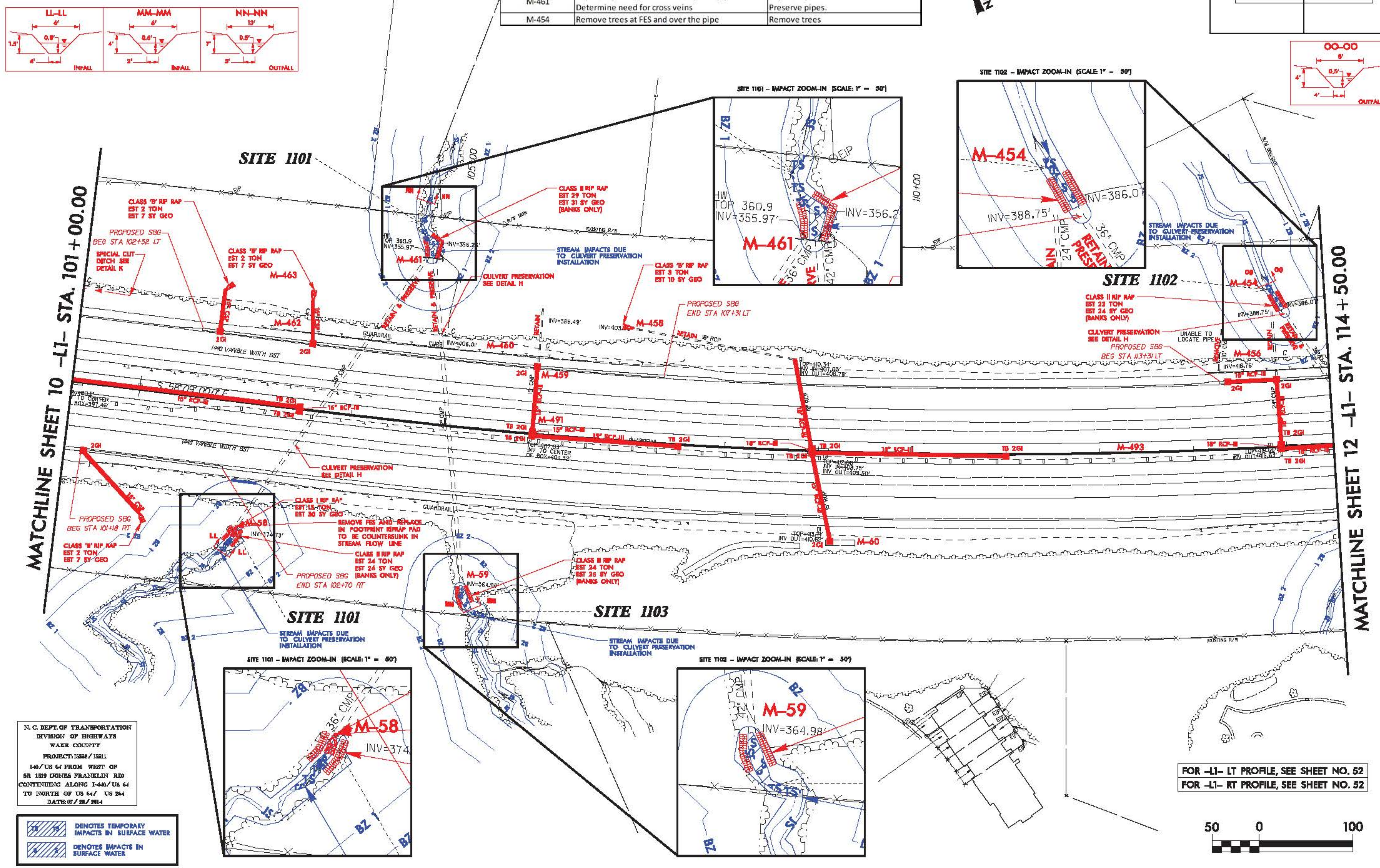
NAD 83/NSRS 2007

-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



N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: I5338 / I5311
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. 52
FOR -L1- RT PROFILE, SEE SHEET NO. 52

REVISIONS

8/17/99

7/25/2014
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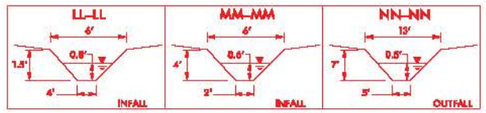
6/17/99

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

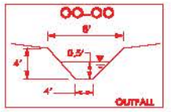
NAD 83/NSRS 2007

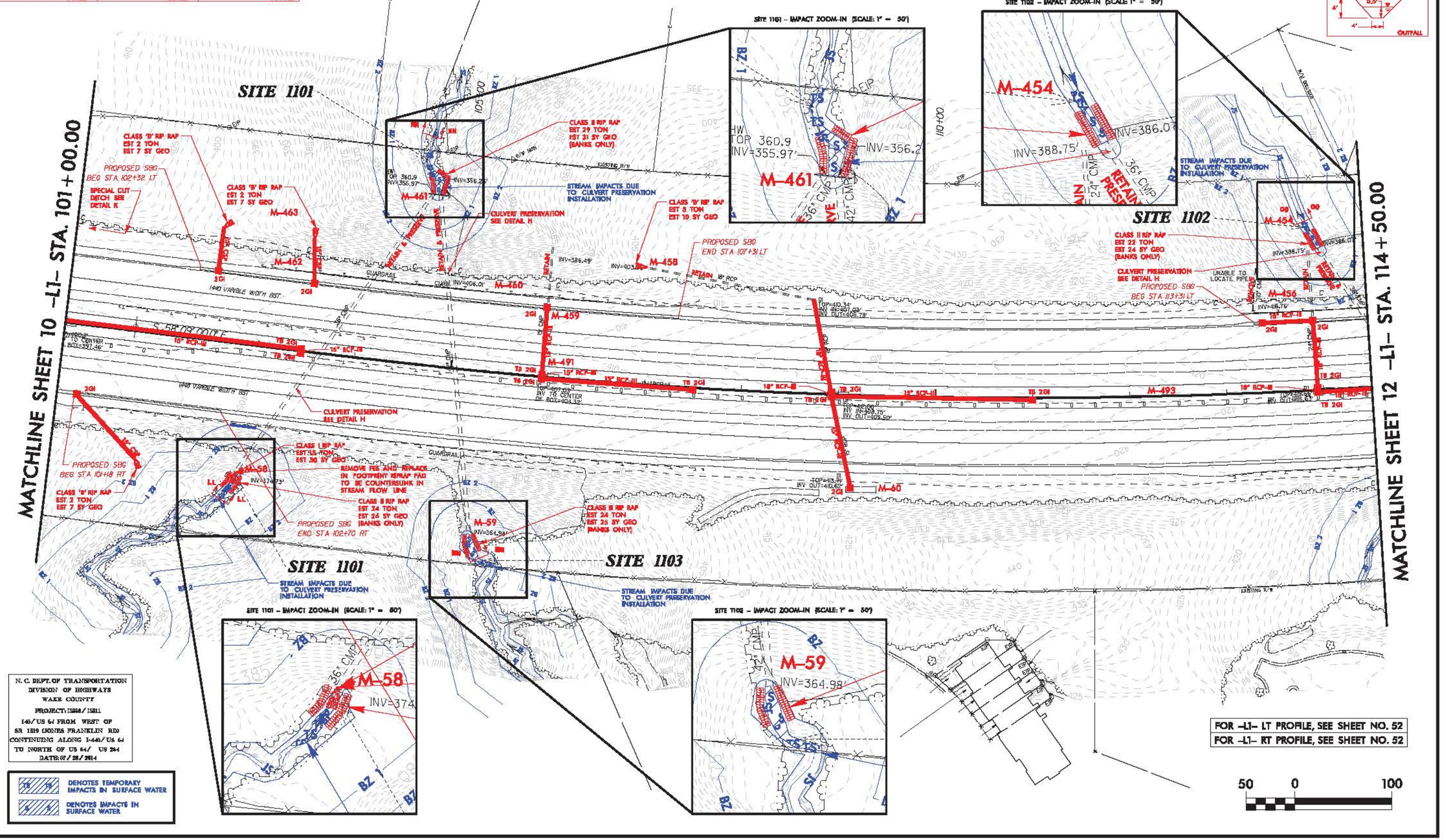
GRANITE RS&H DESIGN-BUILD SERVICES

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	11
RW 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 1819 (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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INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

40 440 FORTIFY
GRANITE RS&H
DESIGN-BUILD SERVICES

NAD 83/NSRS 2007

8/17/99

REVISIONS

-L1- 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′

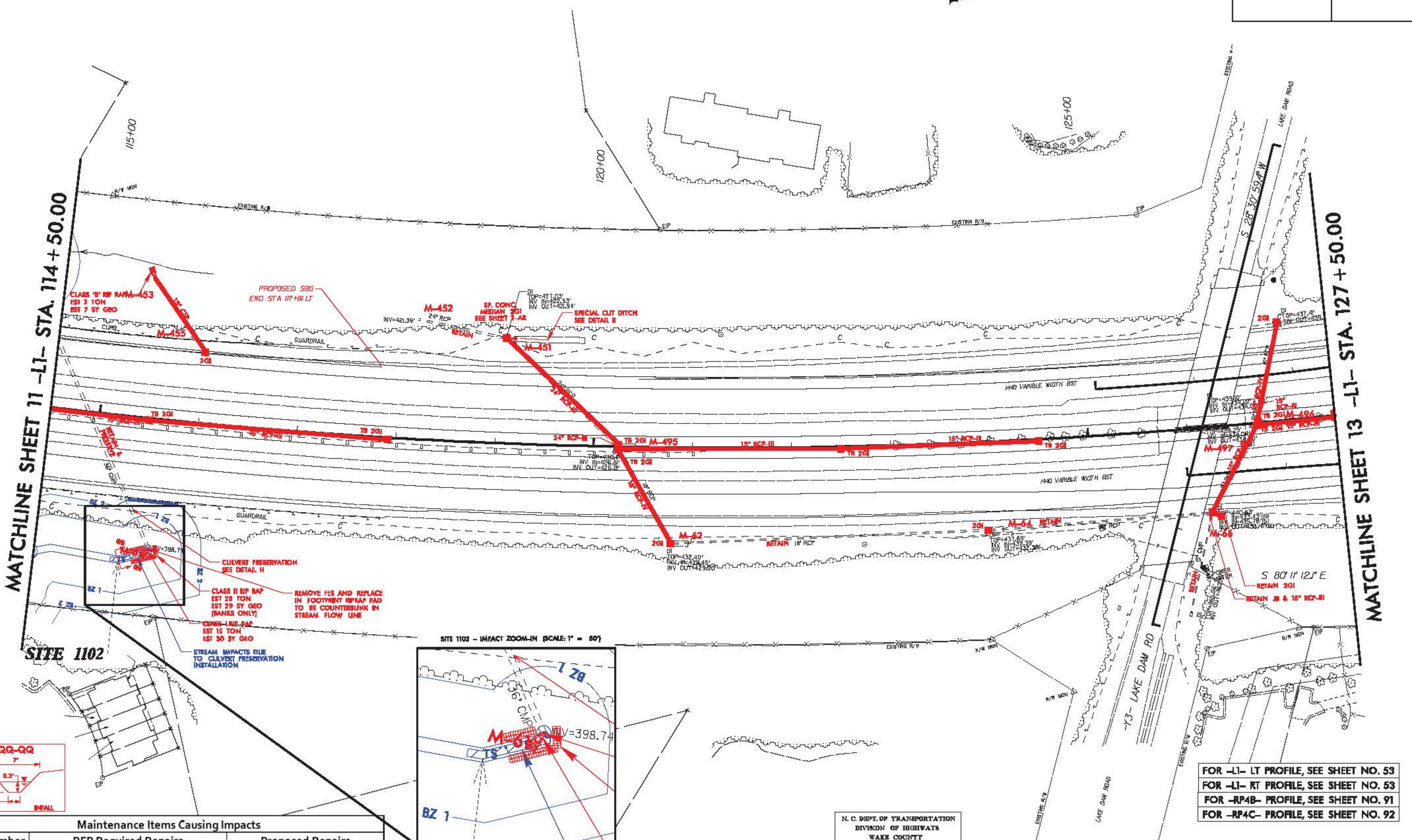
-RP4B- CURVE DATA

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.

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 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. 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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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

GRANITE / RS&H DESIGN-BUILD SERVICES

NAD 83/NSRS 2007

-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'

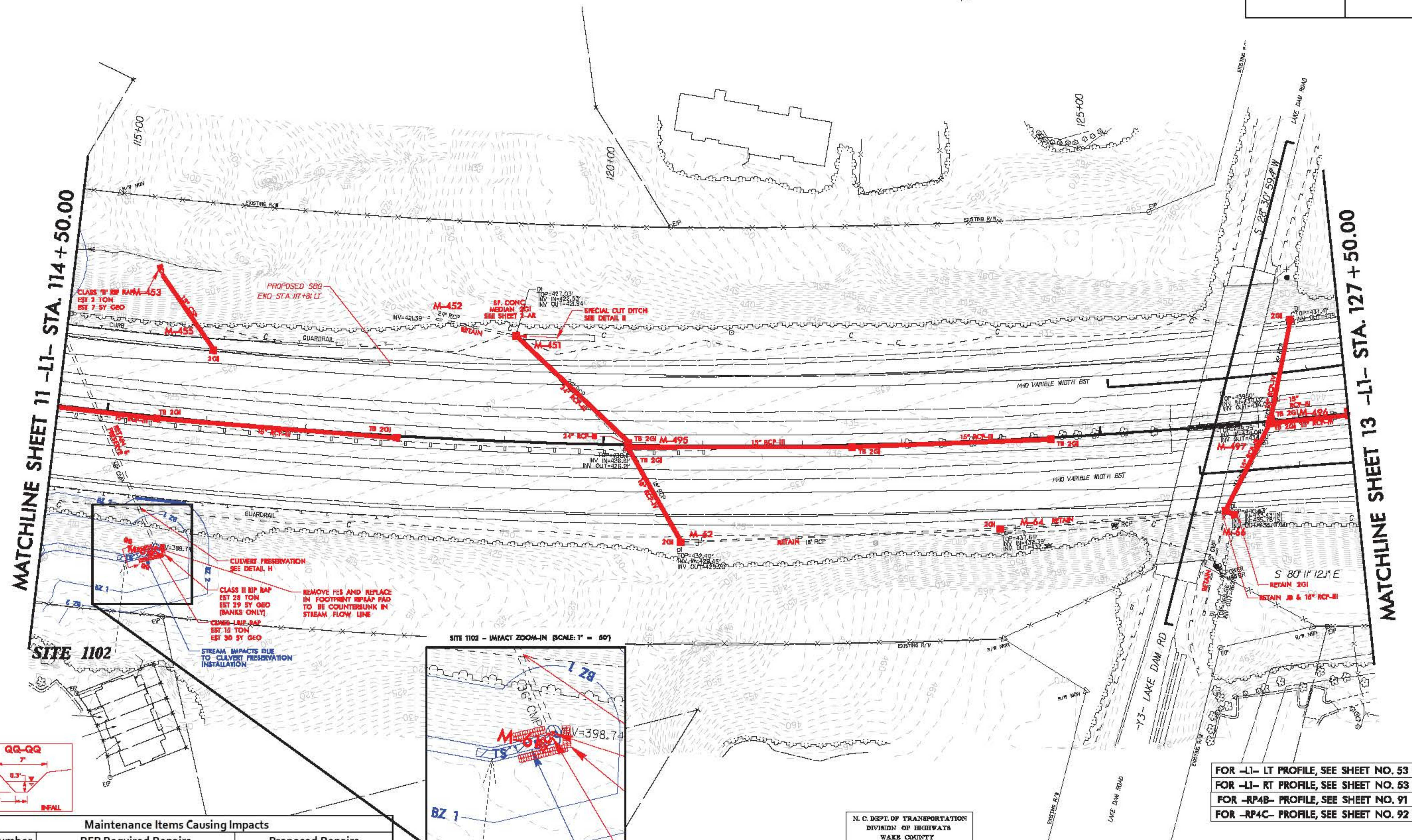
-RP4B- CURVE DATA

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'



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

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES IMPACTS IN SURFACE WATER

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: I5338/ I5311
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

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.

REVISIONS

8/17/99

7/28/2014
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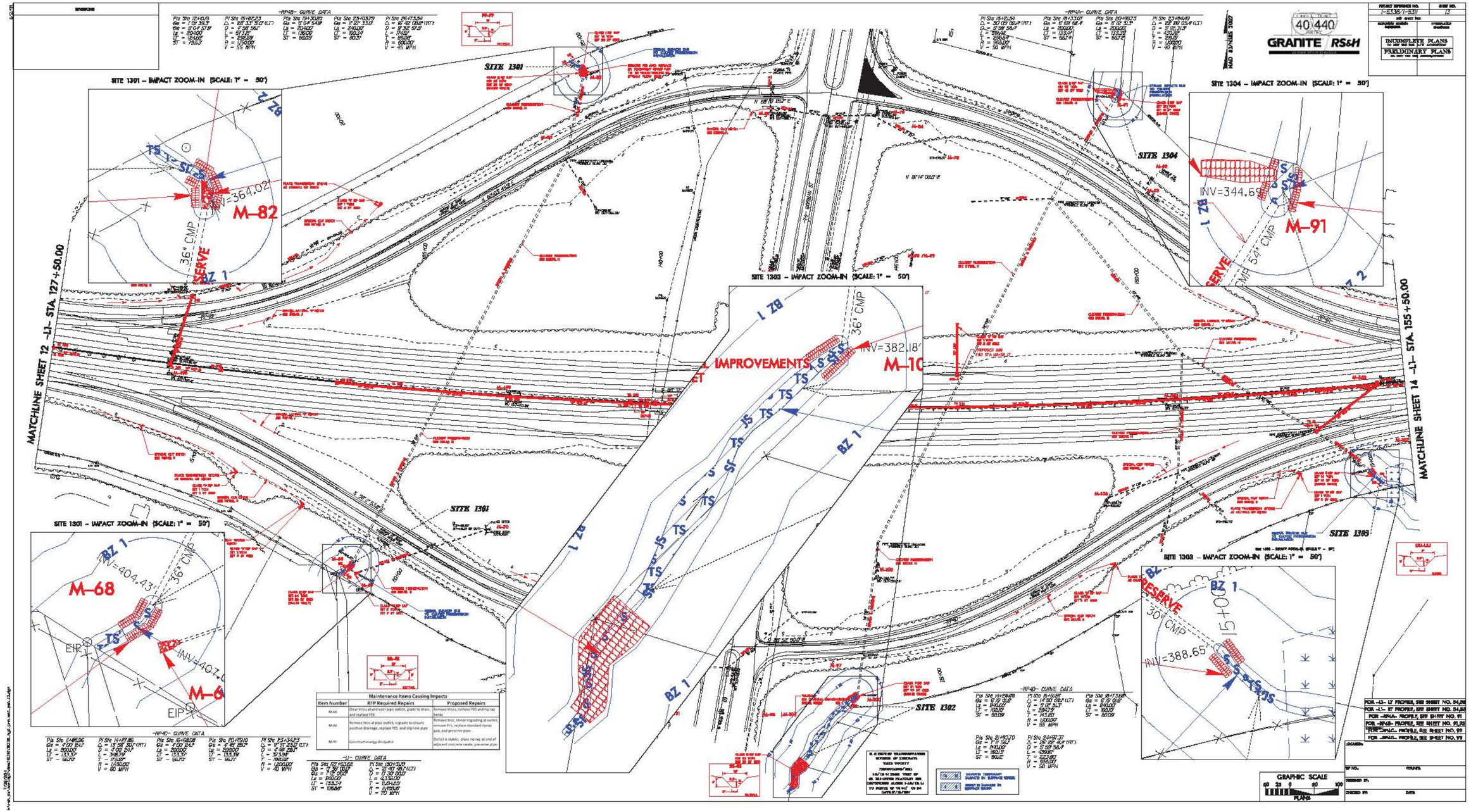


Maintenance Items Causing Impacts		
Item Number	RFP Required Repairs	Proposed Repairs
M-68	Clear trees at and over pipe outlet, grade to drain, and replace FES	Remove trees, remove FES and rip rap banks
M-82	Remove trees at pipe outlet, regrade to ensure positive drainage, replace FES, and slip line pipe	Remove trees, minor 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

GRANITE / RS&H

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

INCOMPLETE PLANS

PRELIMINARY PLANS

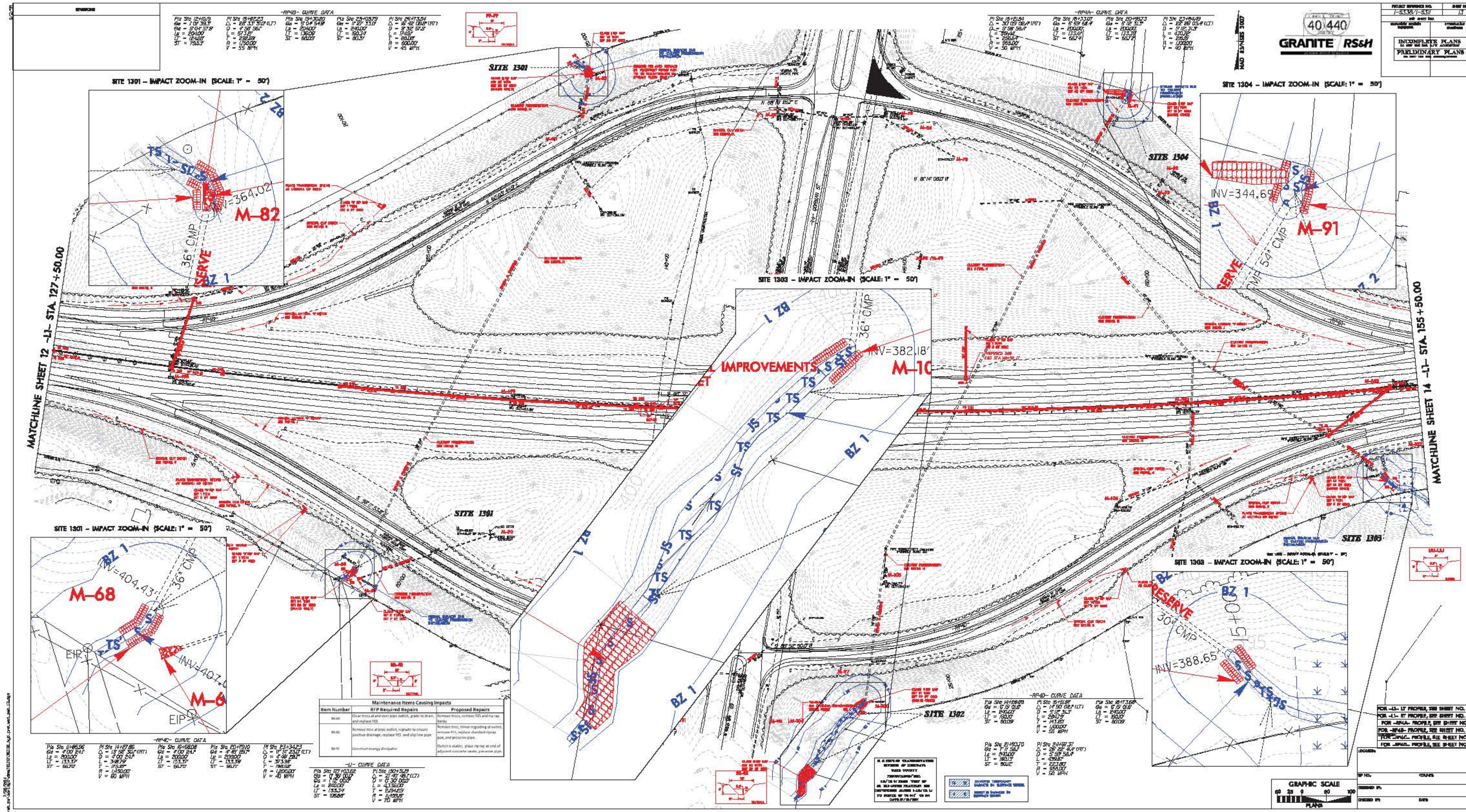
FOR -L- LT PROFILE, SEE SHEET NO. 54,56
FOR -L- RT PROFILE, SEE SHEET NO. 54,55
FOR -RP4A- PROFILE, SEE SHEET NO. 91
FOR -RP4B- PROFILE, SEE SHEET NO. 91,93
FOR -RP4C- PROFILE, SEE SHEET NO. 92
FOR -RP4D- PROFILE, SEE SHEET NO. 93

LOCATION:

TIP NO.: COUNTY:

DESIGNED BY:

CHECKED BY: DATE:



GRANITE RS&H
40 440
PROJECT REFERENCE NO. I-5338/I-5311
SHEET NO. 13
INCOMPLETE PLANS
PRELIMINARY PLANS
NAD 83/NSRS 2007
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
SITE 1302
SITE 1303
SITE 1304
M-82
INV=364.02
36" CMP
BZ 1
BZ 2
M-91
INV=344.69
54" CMP
M-68
INV=404.43
INV=407.0
EIP
36" CMP
INV=382.18
IMPROVEMENTS
INV=388.65
30" CMP
MATCHLINE SHEET 12 -L1- STA. 127+50.00
MATCHLINE SHEET 14 -L1- STA. 155+50.00
-RP4B- CURVE DATA
-RP4A- CURVE DATA
-RP4C- CURVE DATA
-RP4D- CURVE DATA
-L1- CURVE DATA
PIs Sta 127+03.62
PI Sta 150+31.19
GRAPHIC SCALE

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-82	Remove trees at pipe outlet, regrade to ensure positive drainage, replace FES, and slip line pipe	Remove trees, minor 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

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

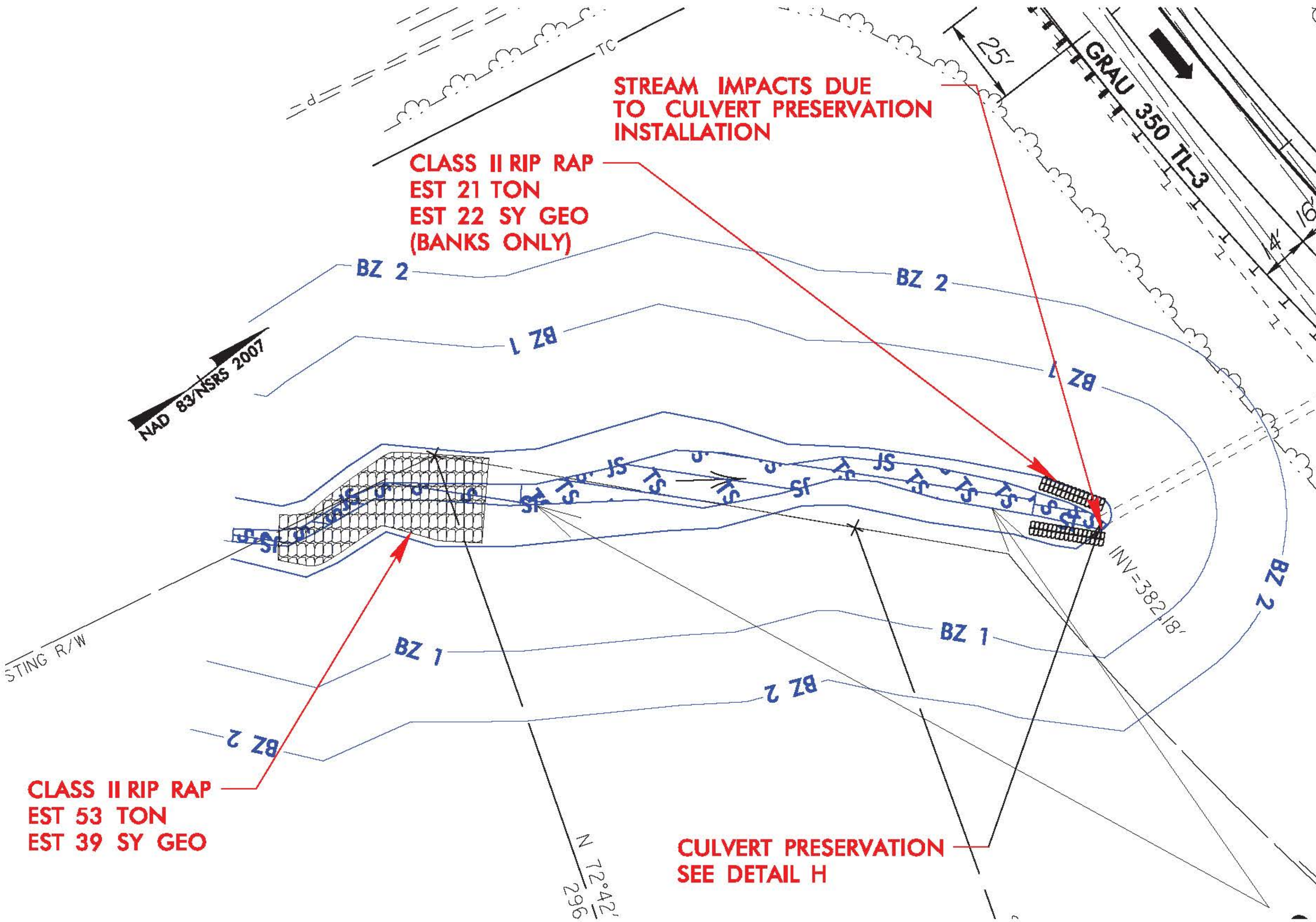
N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: I5338 / I5311
I-40 / US 64 FROM WEST OF SR 1319 (JONES FRANKLIN RD) CONTINUING ALONG I-440 / US 64 TO NORTH OF US 64 / US 264
DATE: 07 / 28 / 2014

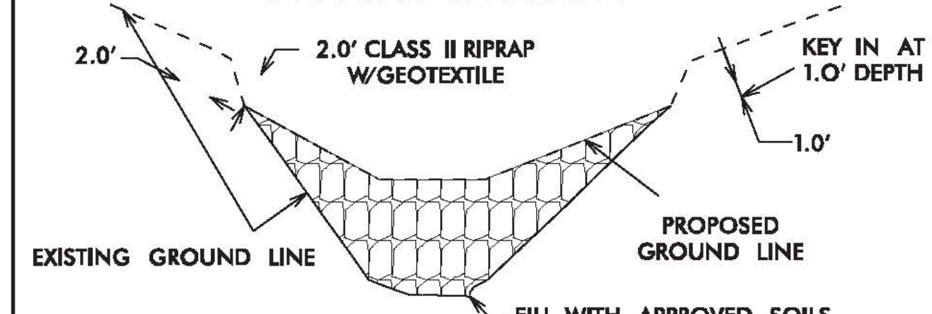
SITE 1302

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'

6/2/99

7/28/2014
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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

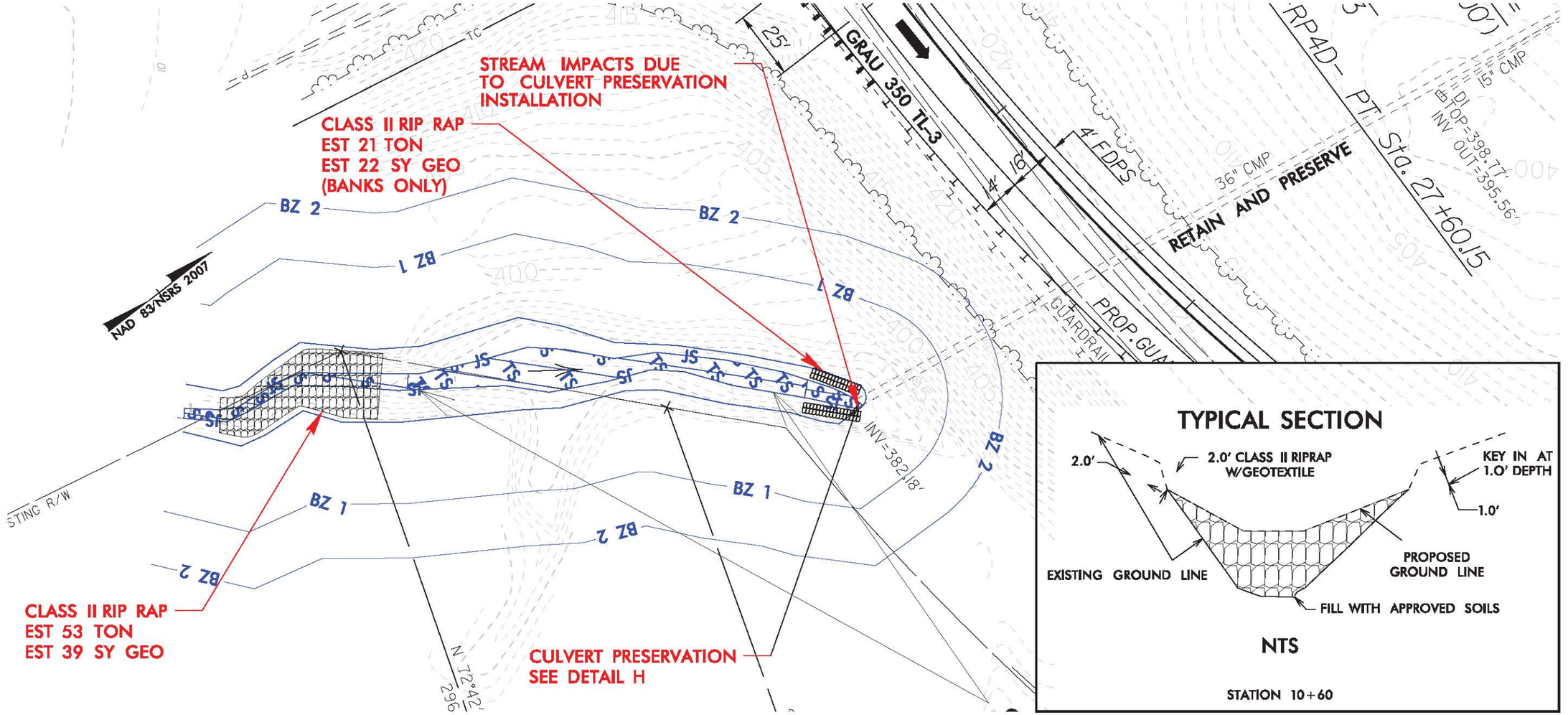
N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15338 / 16511
I-40 / US 64 FROM WEST OF
SR 1519 (JONES FRANKLIN RD)
CONTINUING ALONG I-440 / US 64
TO NORTH OF US 64 / US 264
DATE: 07 / 28 / 2014

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

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

40 440 FORTIFY

GRANITE RS&H DESIGN-BUILD SERVICES

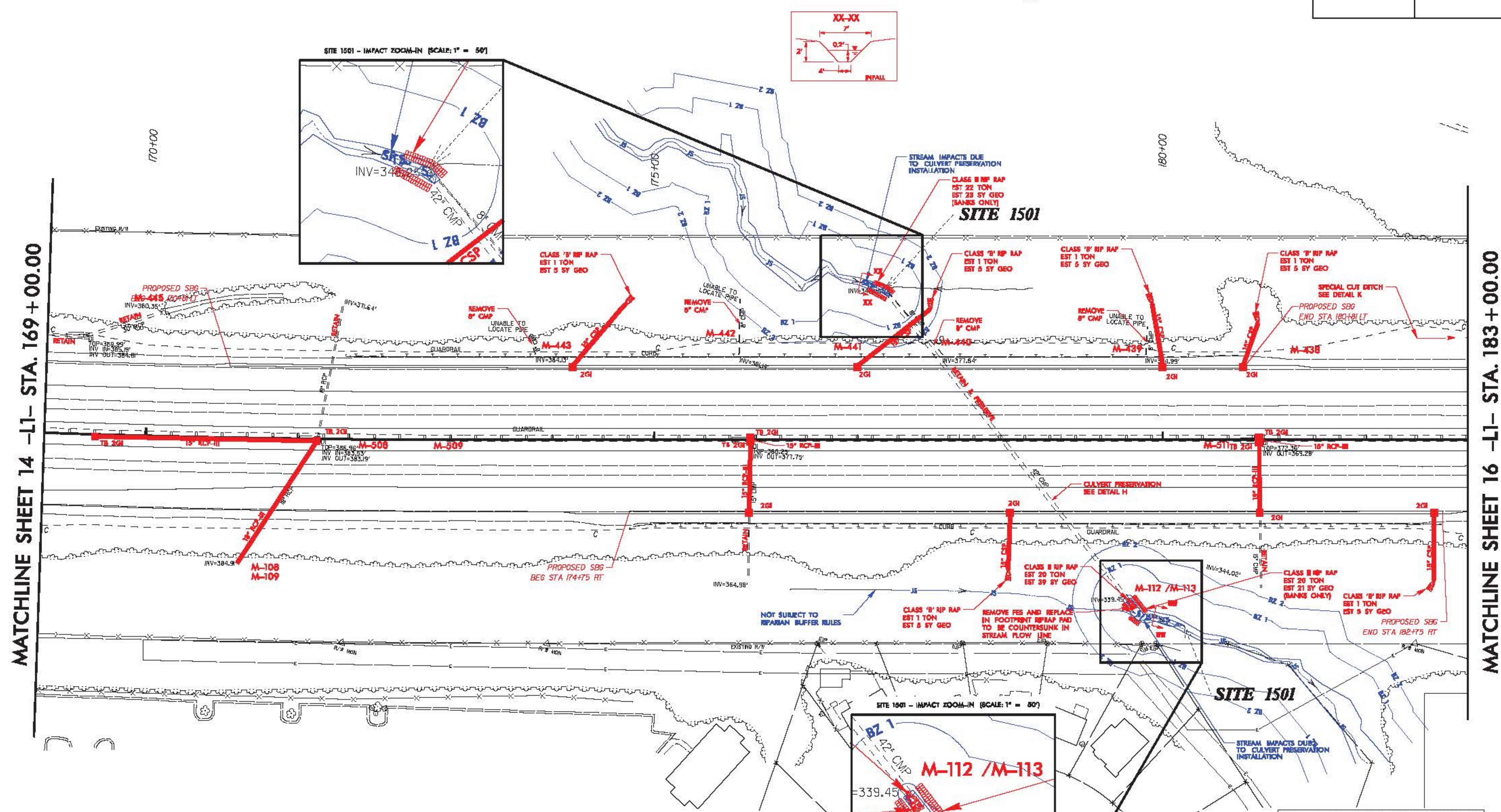
-L1- CURVE DATA

PI Sta 150+31.19
Δ = 21° 40' 48.1" (LT)
D = 0° 30' 00.0"
L = 4,336.00'
T = 2,194.25'
R = 11,459.16'
V = 70 MPH

PIs Sta 172+52.95
θs = 0° 36' 00.0"
Ls = 240.00'
LT = 160.00'
ST = 80.00'

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



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: I5338/ I5311
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

8/17/99
7/28/2014
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8/17/99

-L1- CURVE DATA

PI Sta 150+31.19	PIs Sta 172+52.95
Δ = 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

40 440 FORTIFY

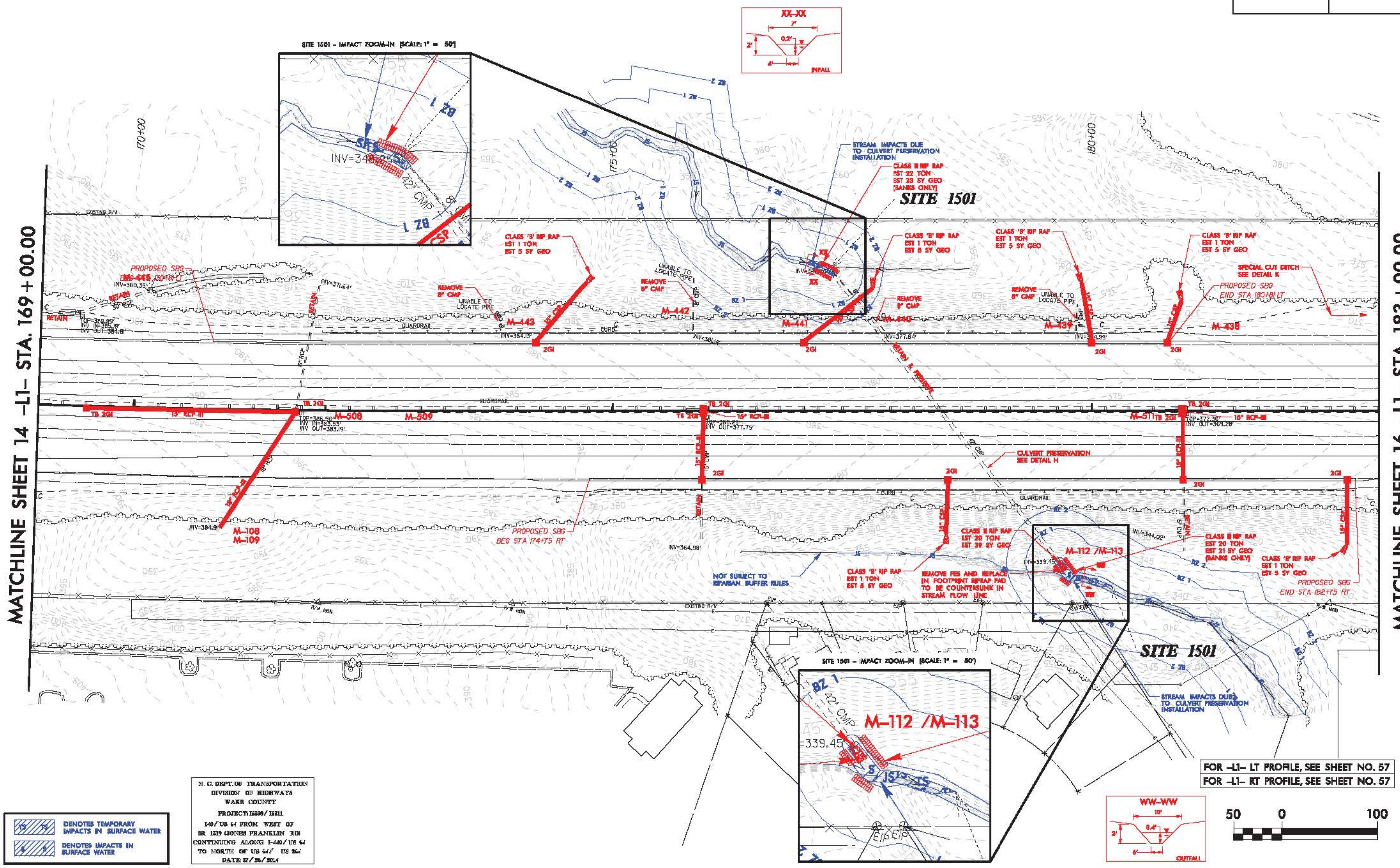
GRANITE RS&H DESIGN-BUILD SERVICES

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

REVISIONS



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

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: I5338/ I5311
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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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

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S S DENOTES IMPACTS IN SURFACE WATER

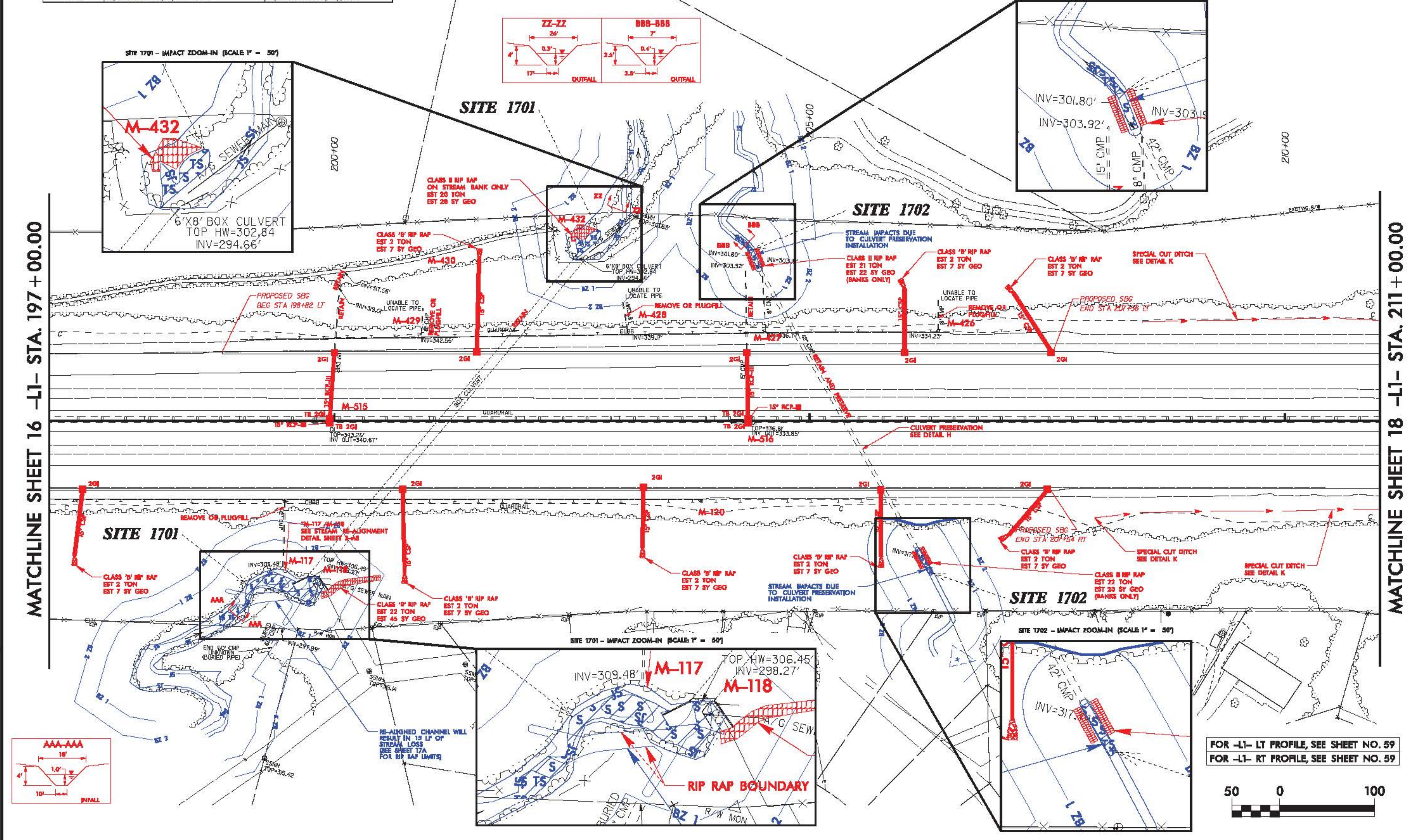
N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: I5338/ I5311
I-40/ US 64 FROM WEST OF SR 1319 (JONES FRANKLIN RD) CONTINUING ALONG I-440/ US 64 TO NORTH OF US 64/ US 264
DATE: 07/ 25/ 2014

NAD 83/NSRS 2007

INTERSTATE 40 INTERSTATE 440 FORTIFY
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



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

50 0 100

REVISIONS

8/17/99

7/25/2014
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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

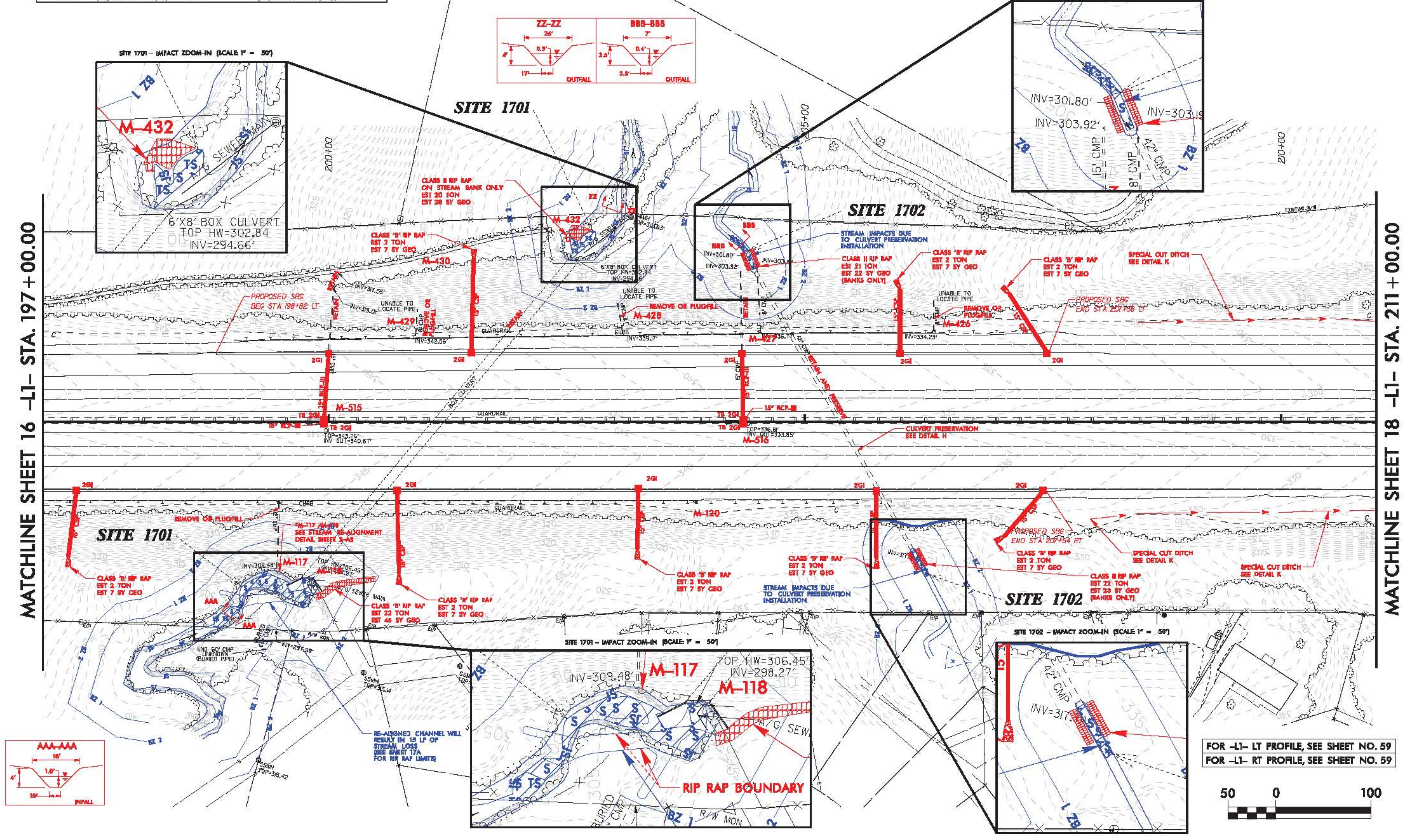
N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: I5338/ I5311
I40/ US 64 FROM WEST OF SR 1319 (JONES FRANKLIN RD)
CONTINUING ALONG I-440/ US 64 TO NORTH OF US 64/ US 264
DATE: 07/ 28/ 2014

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



REVISIONS

8/17/99

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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

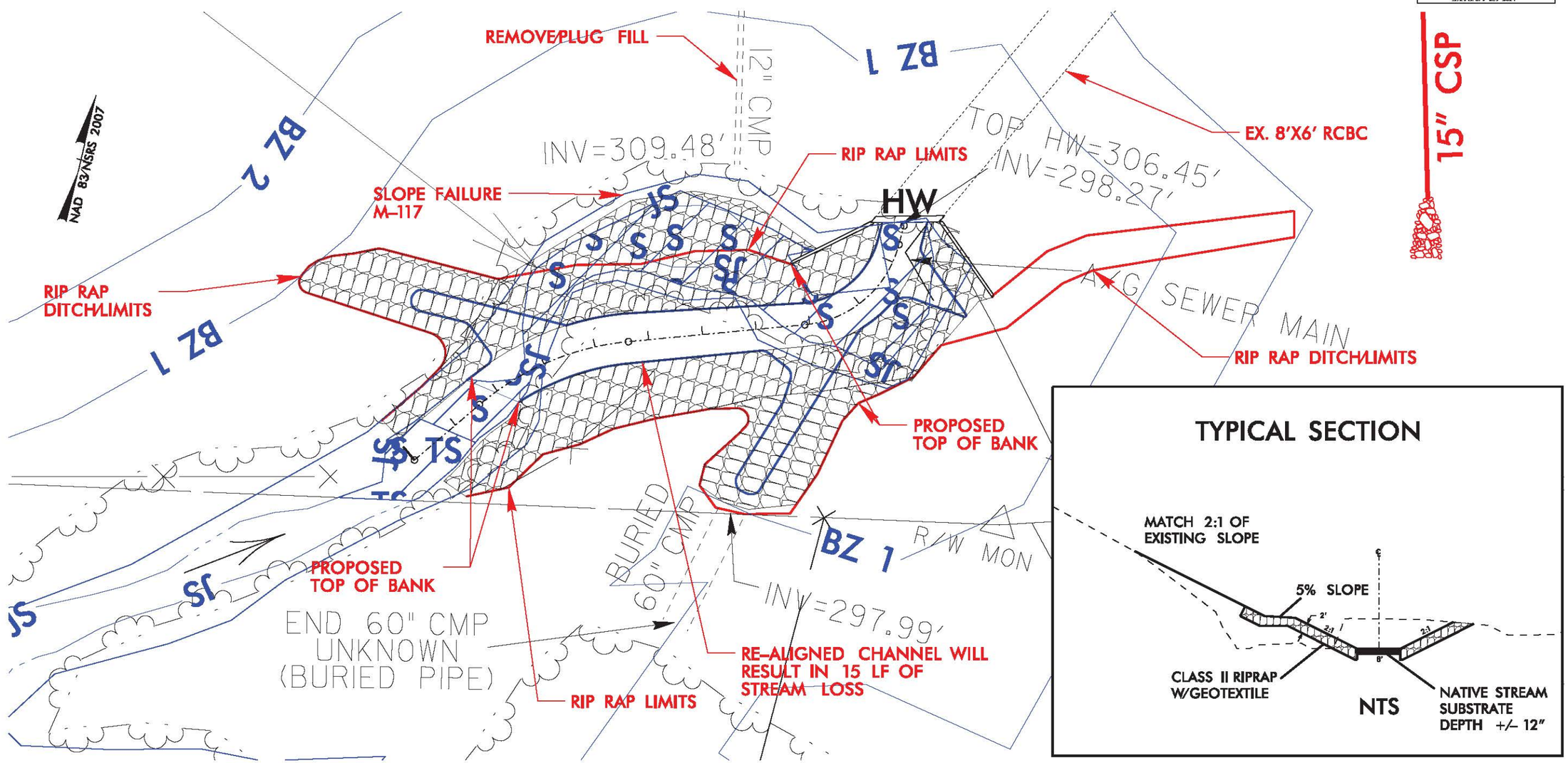
SITE 1701

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

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15338 / 16511
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

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

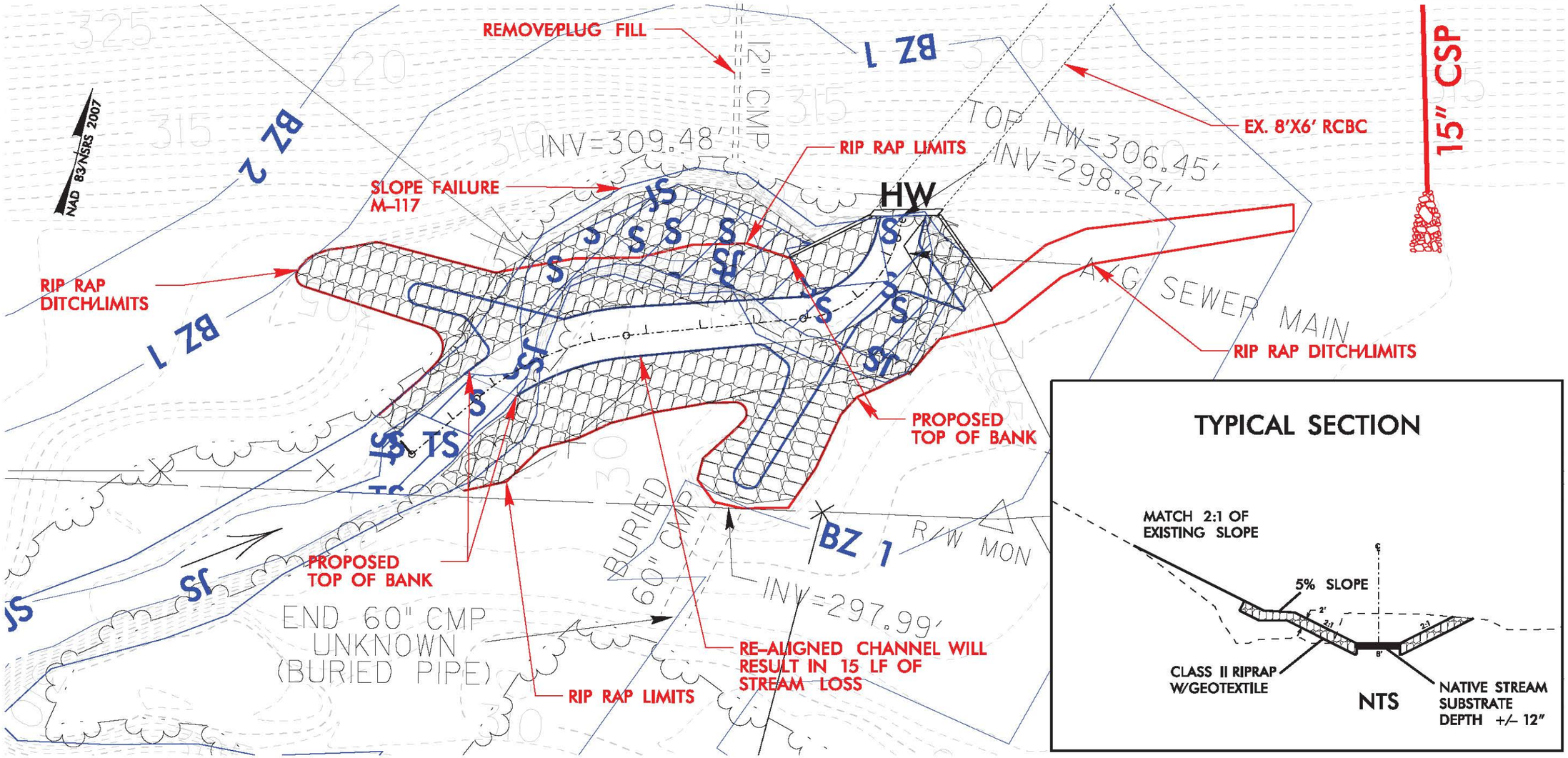
SITE 1701

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

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES IMPACTS IN SURFACE WATER

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15338 / 16511
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



TYPICAL SECTION

SCALE 1" = 10'

7/28/2014
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8/17/99

-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 FORTIFY

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

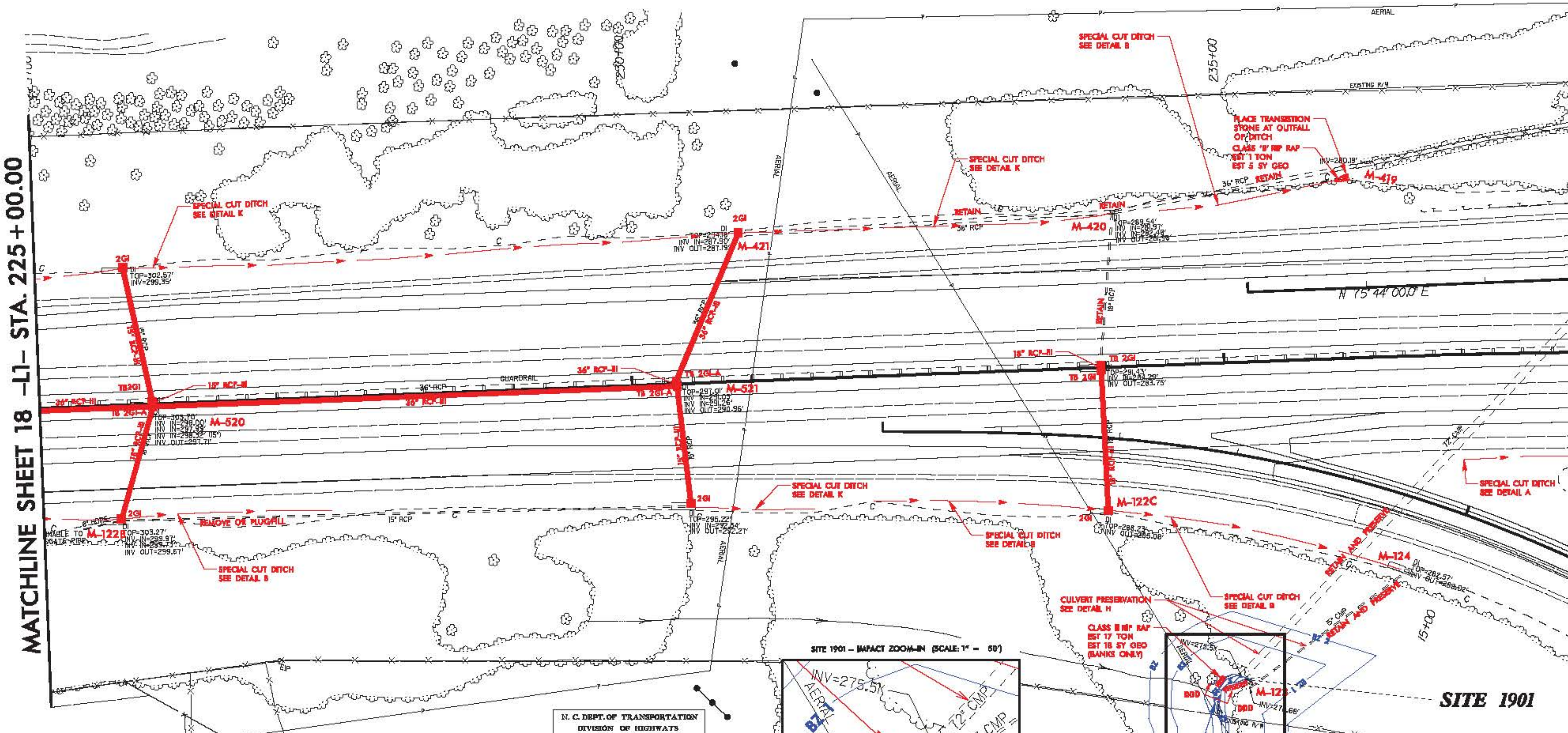
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

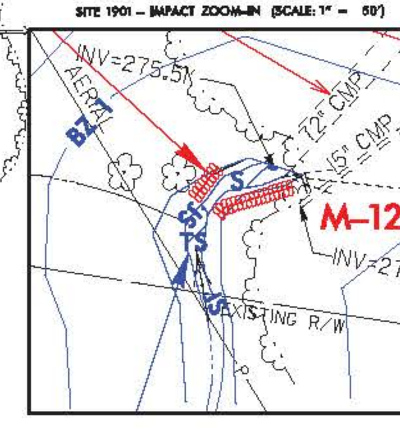
MATCHLINE SHEET 18 -L1- STA. 225+00.00

MATCHLINE SHEET 20 -L1- STA. 238+00.00



SITE 1901

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



N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: I5338/I5311
I40/US 64 FROM WEST OF SR 1515 (JONES FRANKLIN RD) CONTINUING ALONG I-440/US 64 TO NORTH OF US 64/US 264
DATE: 07/25/2014

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

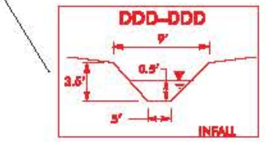
DENOTES IMPACTS IN SURFACE WATER

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



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7/25/2014
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6/17/99

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 PORTION

GRANITE RS&H DESIGN-BUILD SERVICES

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	19
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 18 -L1- STA. 225+00.00

MATCHLINE SHEET 20 -L1- STA. 238+00.00

SPECIAL CUT DITCH SEE DETAIL K

SPECIAL CUT DITCH SEE DETAIL B

PLACE TRANSITION STONE AT OUTFALL OF DITCH CLASS "B" RIP RAP EST 1 TON EST 5 SY GEO

M-419

M-420

M-421

M-520

M-521

M-122B

M-122C

M-123

M-124

M-125

REMOVE OF PLUGFILL

CULVERT PRESERVATION SEE DETAIL H

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

STREAM IMPACTS DUE TO CULVERT PRESERVATION INSTALLATION

SITE 1901

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

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15338 / 15311
I-40 / US 64 FROM WEST OF SR 1215 (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

INFALL

50 0 100

7/25/2014
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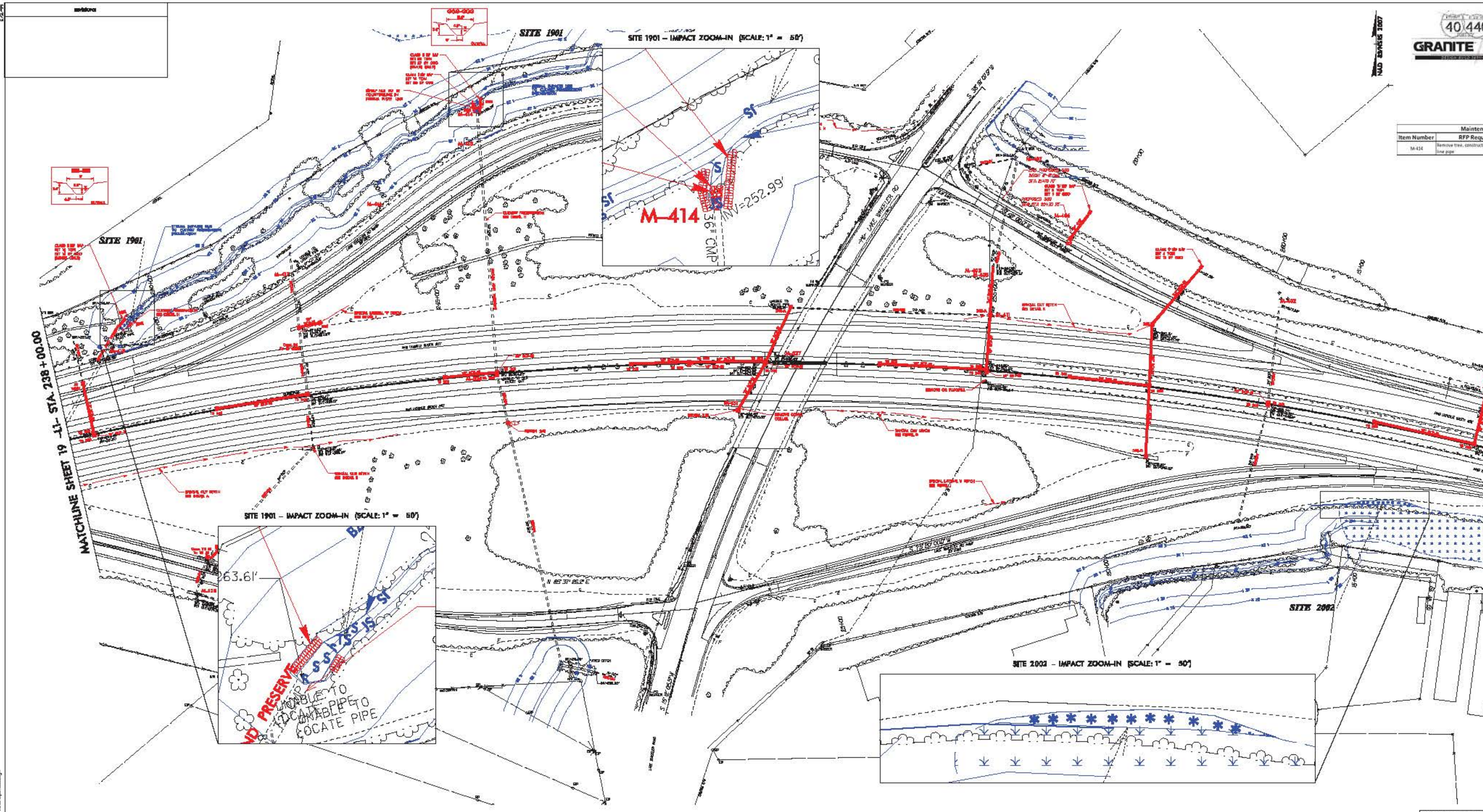
PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	20

INCOMPLETE PLANS

PRELIMINARY PLANS

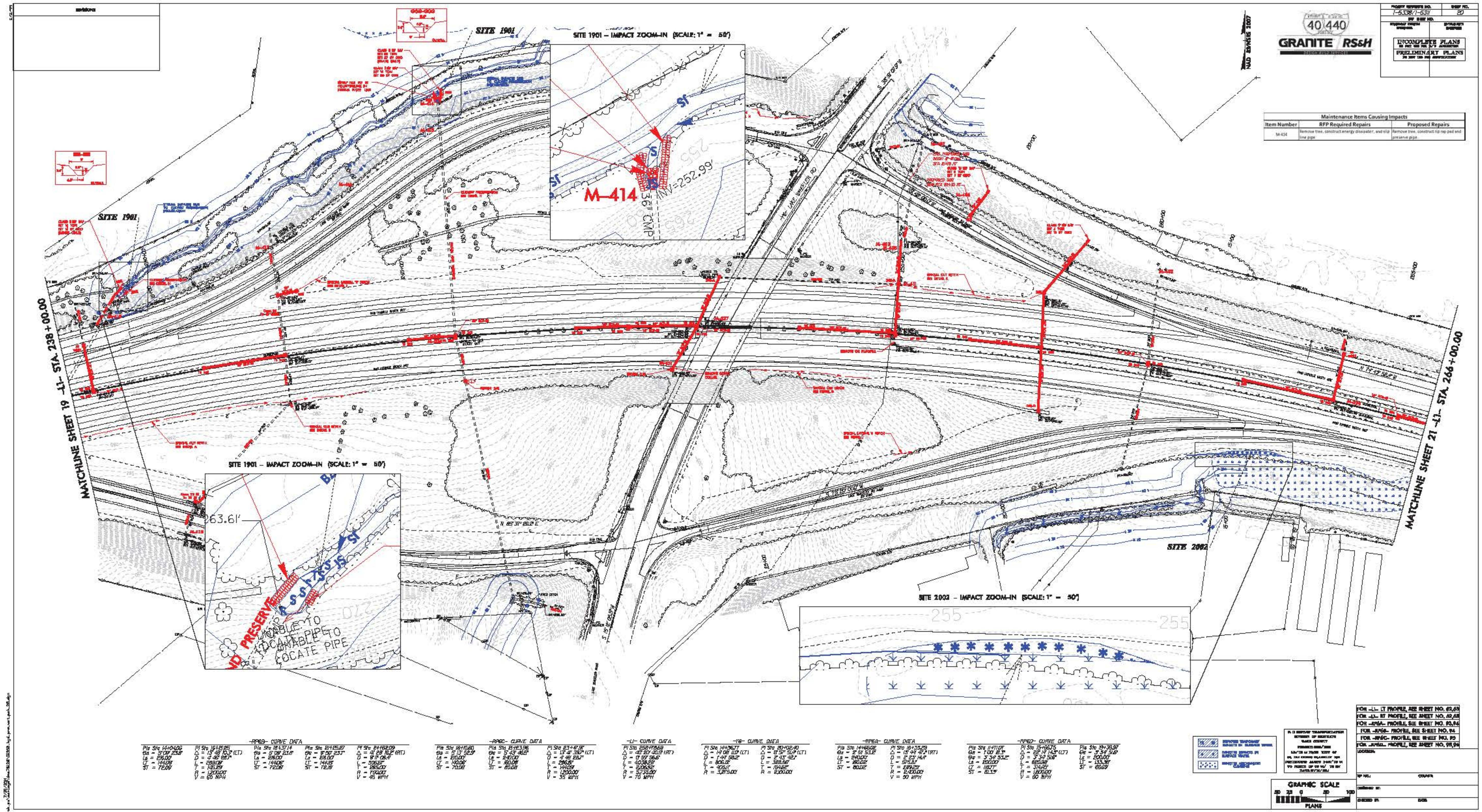
Maintenance Items Causing Impacts		
Item Number	RFP Required Repairs	Proposed Repairs
M-414	Remove tree, construct energy dissipater, and slip line pipe	Remove tree, construct rip rap pad and preserve pipe.



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

GRAPHIC SCALE

PLANS



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.

6/17/99

REVISIONS

-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 = 70 MPH

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

-L1- CURVE DATA

PI Sta 258+76.38
Δ = 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

Pls 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 PORTION

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

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

PLACE TRANSITION STONE AT OUTFALL OF DITCH

SPECIAL CUT DITCH SEE DETAIL K

-L1- STA. 277+45.38

-L1- STA. 278+69.73

CLASS I RIP RAP EST 15 TON EST 30 SY GEO

M-396

1440 VARBLE WIDTH BST

M-533 M-535

M-142

M-143

M-145

M-136

M-137

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)

-L1- STA. 275+48.12

-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'
1.3'
3.8'
INFALL

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/ 30/ 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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6/17/99

REVISIONS

-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 = 70 MPH

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

-L1- CURVE DATA

PI Sta 258+76.38
Δ = 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

Pls 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 BEYOND

GRANITE RS&H
DESIGN-BUILD SERVICES

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	21
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 20 -L1- STA. 266+00.00

MATCHLINE SHEET 22 -L1- STA. 280+00.00

270+00

275+00

S 14° 57' 42" E

EXISTING R/W

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 N

CLASS I RIP RAP
EST 15 TON
EST 30 SY GEO

M-396

M-533/M-535

M-134

M-136

M-137

M-142

M-143

M-145

DO NOT BURY 48" RCP

SPECIAL CUT DITCH
SEE DETAIL K

CLASS B RIP RAP
EST 32 TON
EST 23 SY GEO
(BANKS ONLY)

SITE 2101

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

48" RCP-III

KKK–KKK

6'
0.3'
1.5'
3.8'
INFALL

NORFOLK SOUTHERN RAILROAD

1440 VARBLE WIDTH BST

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/ 30/ 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

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

40 440 FORTIFY
GRANITE RS&H
DESIGN-BUILD SERVICES

NAD 83/NSRS 2007

-L1- CURVE DATA

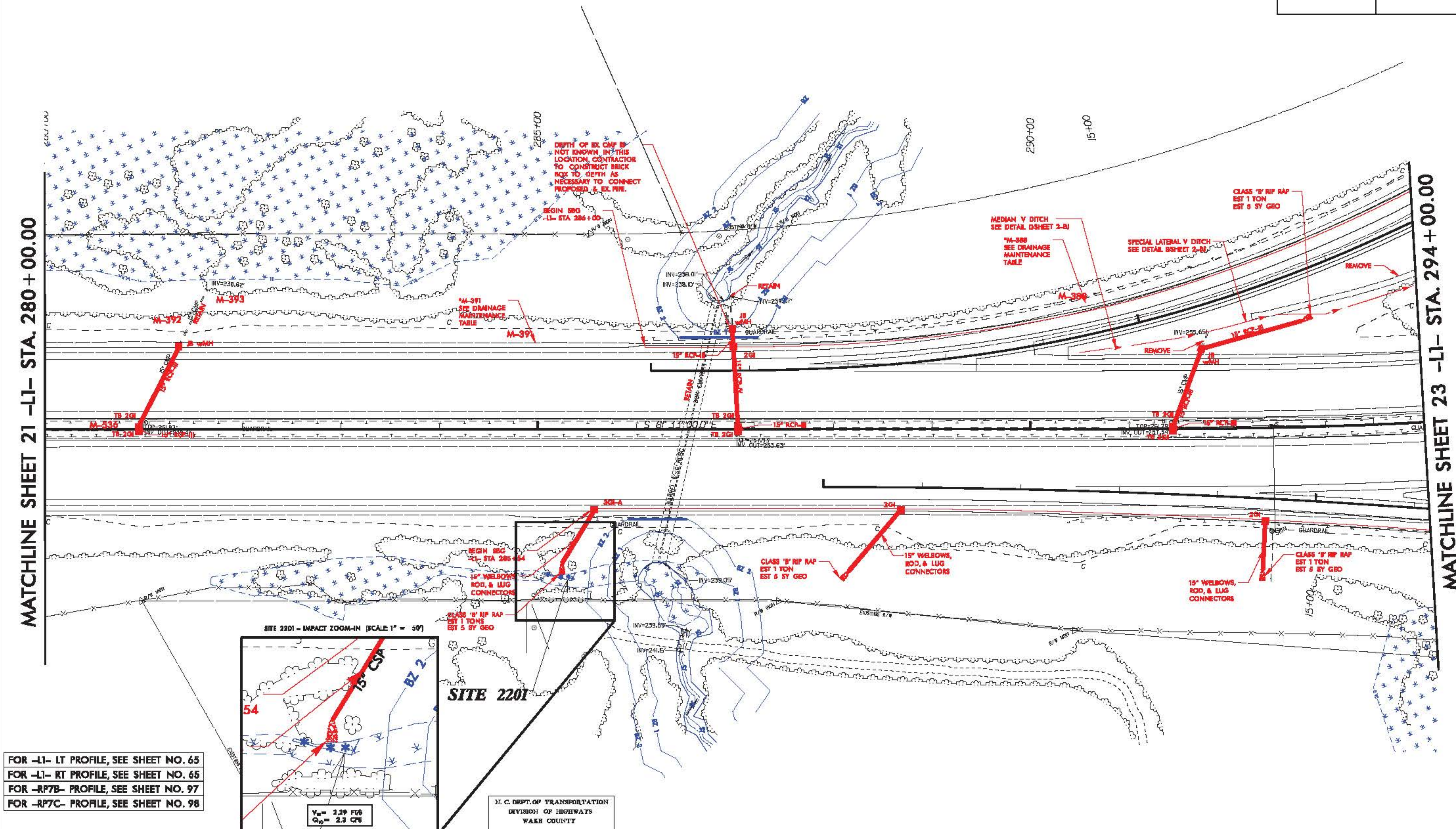
PIs Sta 278+94.43	PIs Sta 293+66.36
Θs = 1° 11' 39.4"	Θs = 6° 03' 56.6"
Ls = 240.00'	Ls = 480.00'
LT = 160.00'	LT = 320.19'
ST = 80.00'	ST = 160.17'

-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'



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: I5338/I5311
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

50 0 100

REVISIONS

8/17/99

7/28/2014
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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

GRANITE / RS&H
DESIGN-BUILD SERVICES

NAD 83/NSRS 2007

REVISIONS

8/17/99

-L1- CURVE DATA

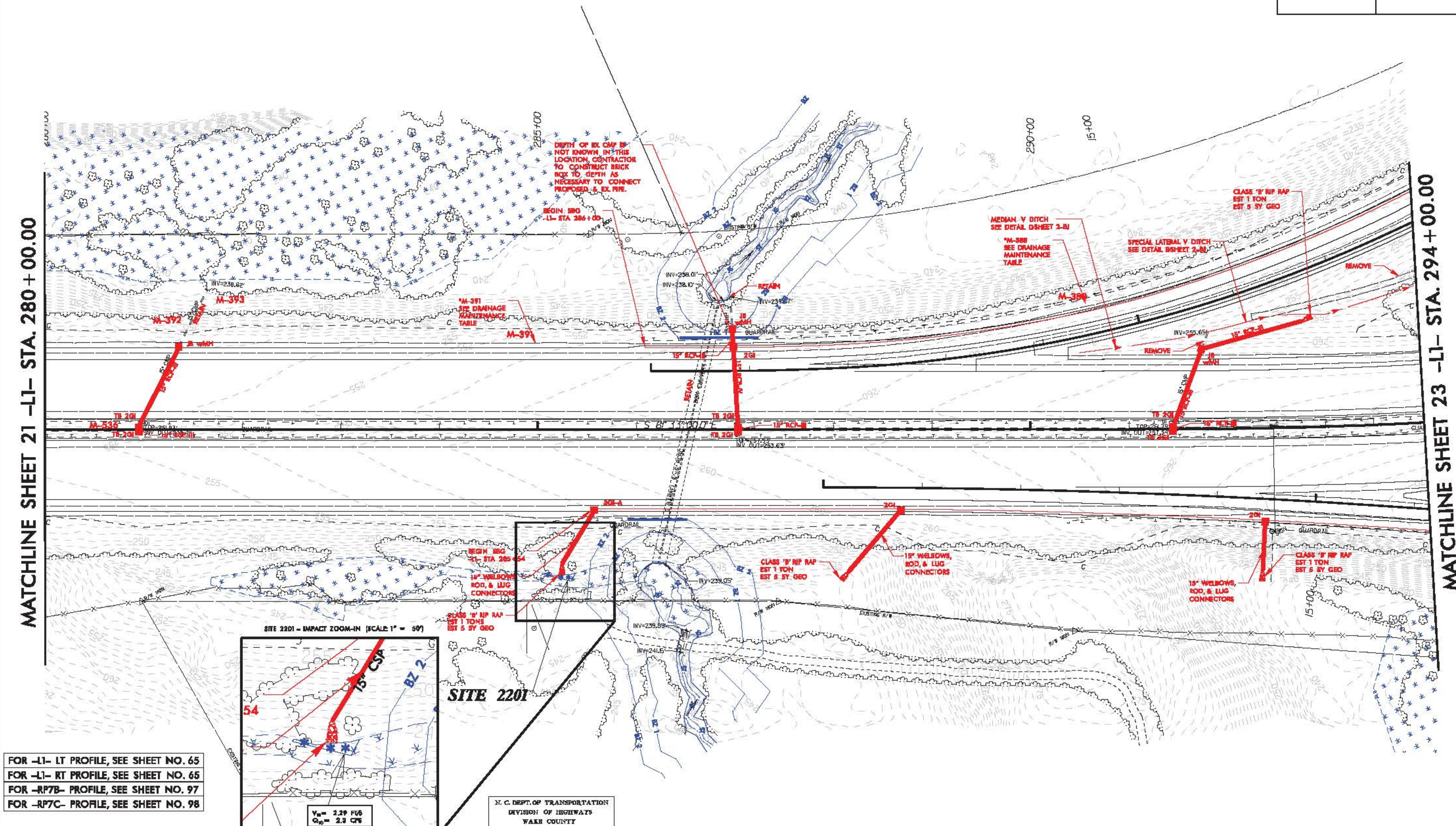
PIs Sta 278+94.43	PIs Sta 293+66.36
Θs = 1° 11' 39.4"	Θs = 6° 03' 56.6"
Ls = 240.00'	Ls = 480.00'
LT = 160.00'	LT = 320.19'
ST = 80.00'	ST = 160.17'

-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'



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: I5338/I5311
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

50 0 100

7/28/2014
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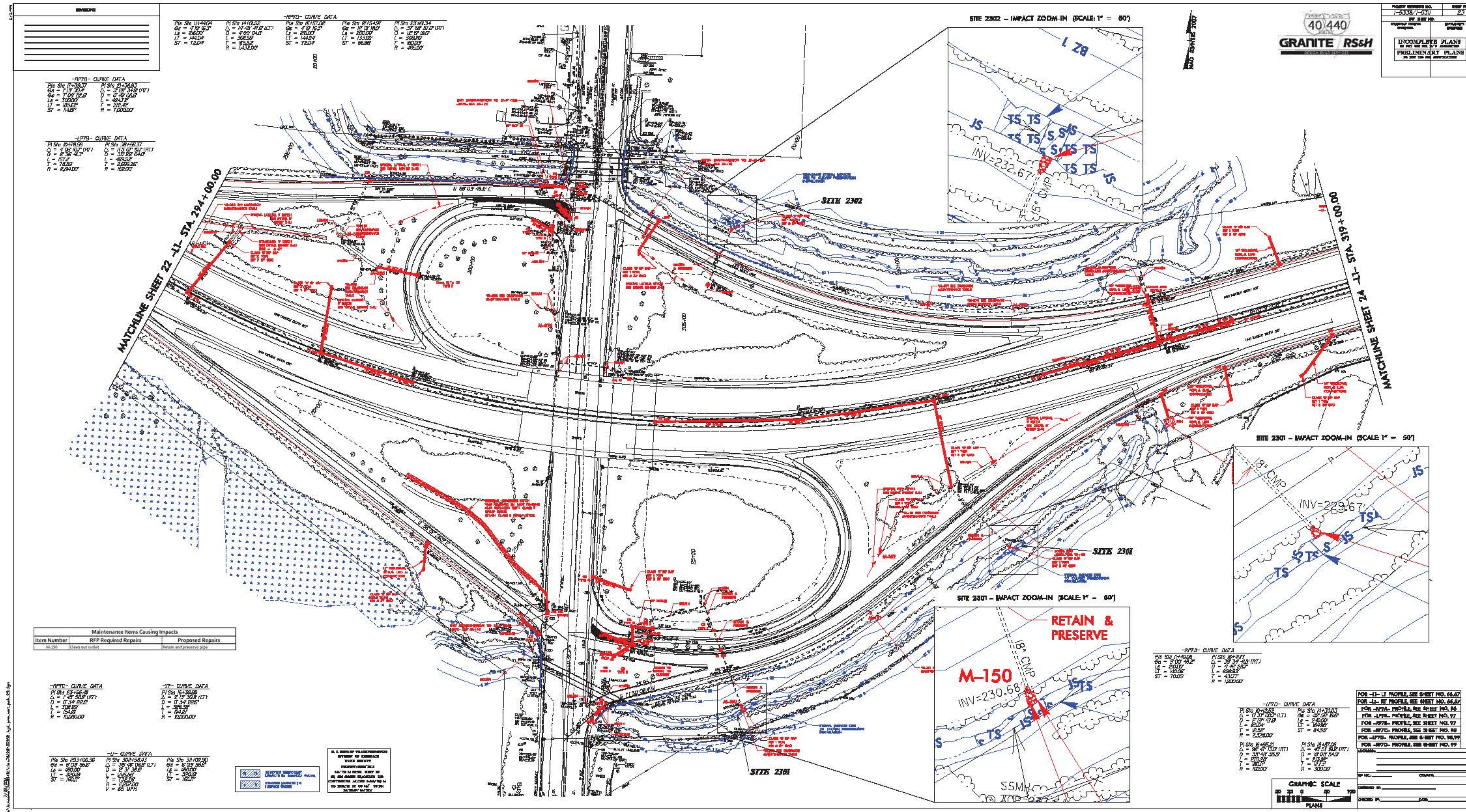
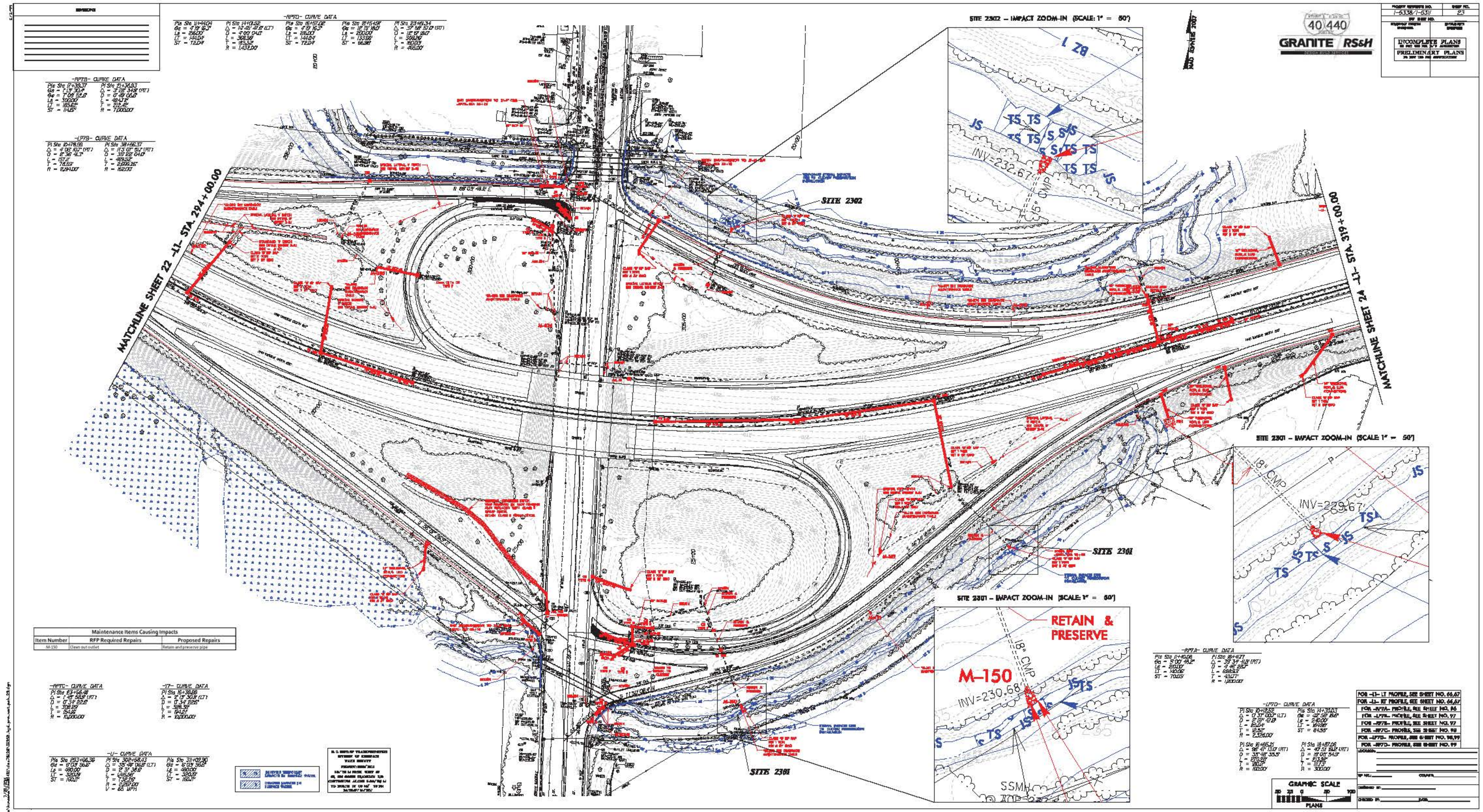


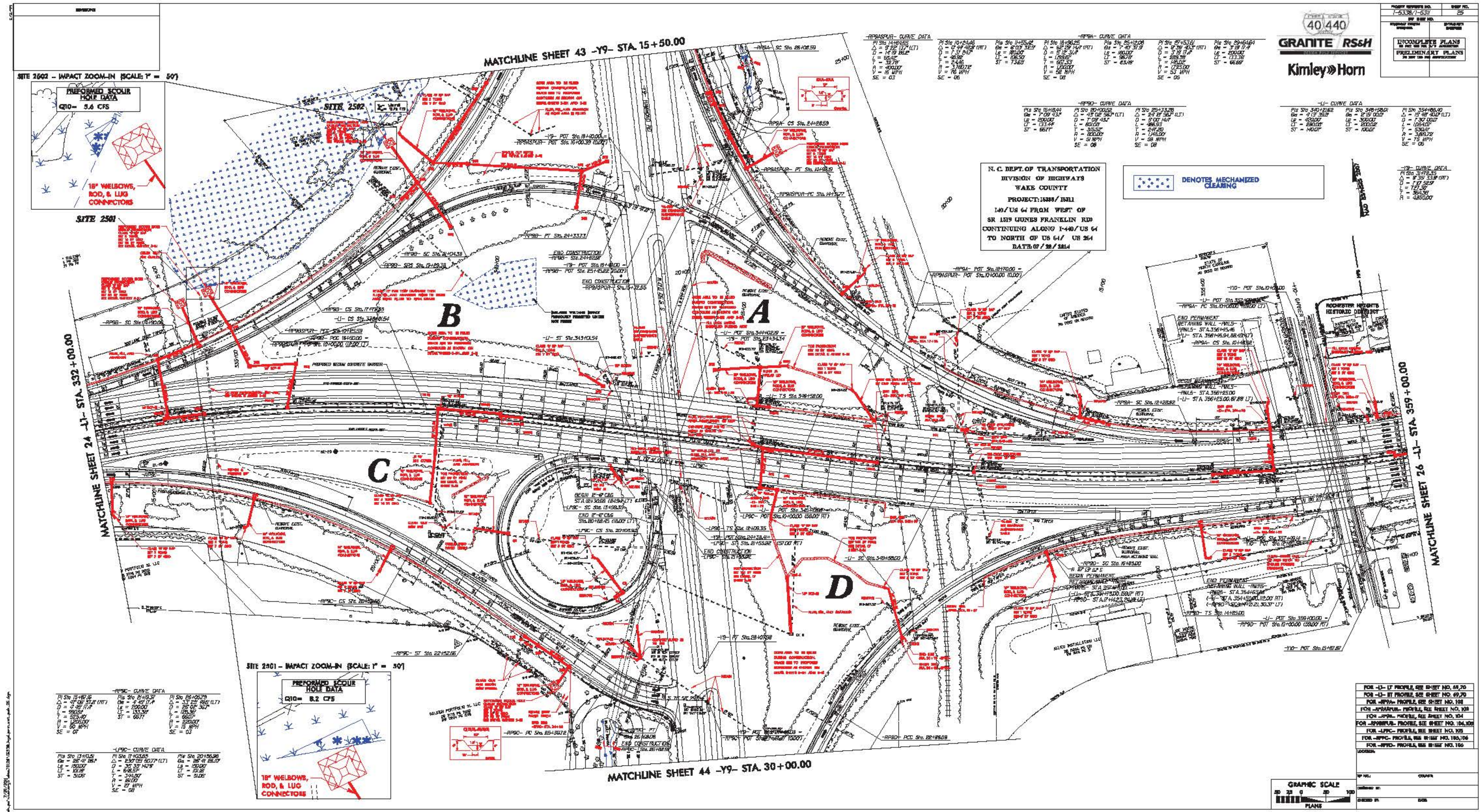
GRANITE RS&H
40 440
SITE 2302 – IMPACT ZOOM-IN (SCALE: 1" = 50')
SITE 2301 – IMPACT ZOOM-IN (SCALE: 1" = 50')
SITE 2301 – IMPACT ZOOM-IN (SCALE: 1" = 50')
INV=232.67
15" CMP
18" CMP
INV=229.67
RETAIN & PRESERVE
M-150
INV=230.68
SSMH
SITE 2302
SITE 2301
MATCHLINE SHEET 22 -L- STA. 294+00.00
MATCHLINE SHEET 24 -L- STA. 319+00.00
-RP7A- CURVE DATA
-LP7D- CURVE DATA
FOR -L- LT PROFILE, SEE SHEET NO. 66,67
FOR -L- RT PROFILE, SEE SHEET NO. 66,67
FOR -RP7A- PROFILE, SEE SHEET NO. 96
FOR -LP7B- PROFILE, SEE SHEET NO. 97
FOR -RP7B- PROFILE, SEE SHEET NO. 97
FOR -RP7C- PROFILE, SEE SHEET NO. 98
FOR -LP7D- PROFILE, SEE SHEET NO. 98,99
FOR -RP7D- PROFILE, SEE SHEET NO. 99
GRAPHIC SCALE
PLANS

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

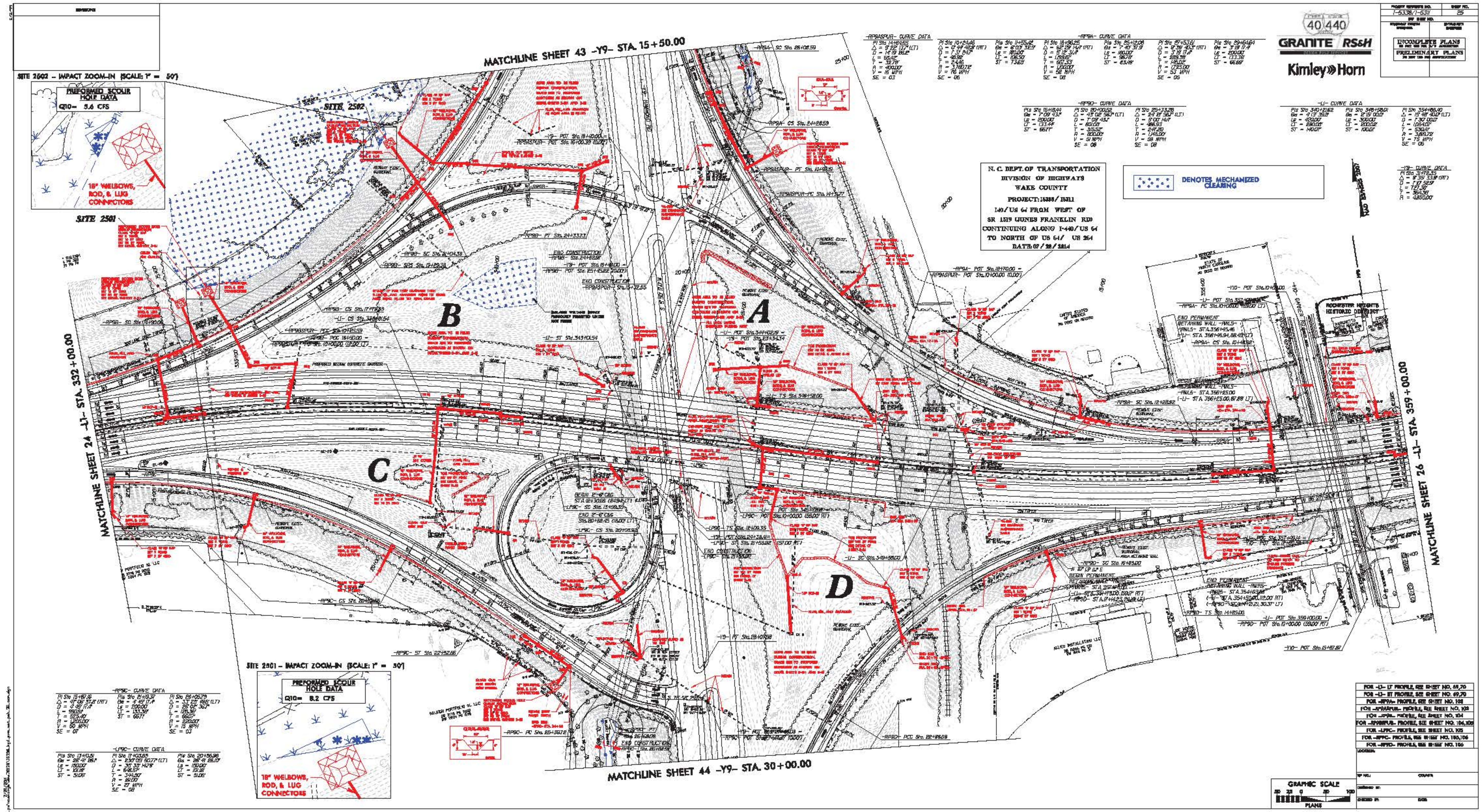


Maintenance Items Causing Impacts		
Item Number	RFP Required Repairs	Proposed Repairs
M-150	Clean out outlet	Retain and preserve pipe

FOR -L1- LT PROFILE, SEE SHEET NO. 66,67
FOR -L1- RT PROFILE, SEE SHEET NO. 66,67
FOR -RP7A- PROFILE, SEE SHEET NO. 96
FOR -LP7B- PROFILE, SEE SHEET NO. 97
FOR -RP7B- PROFILE, SEE SHEET NO. 97
FOR -RP7C- PROFILE, SEE SHEET NO. 98
FOR -LP7D- PROFILE, SEE SHEET NO. 98,99
FOR -RP7D- PROFILE, SEE SHEET NO. 99



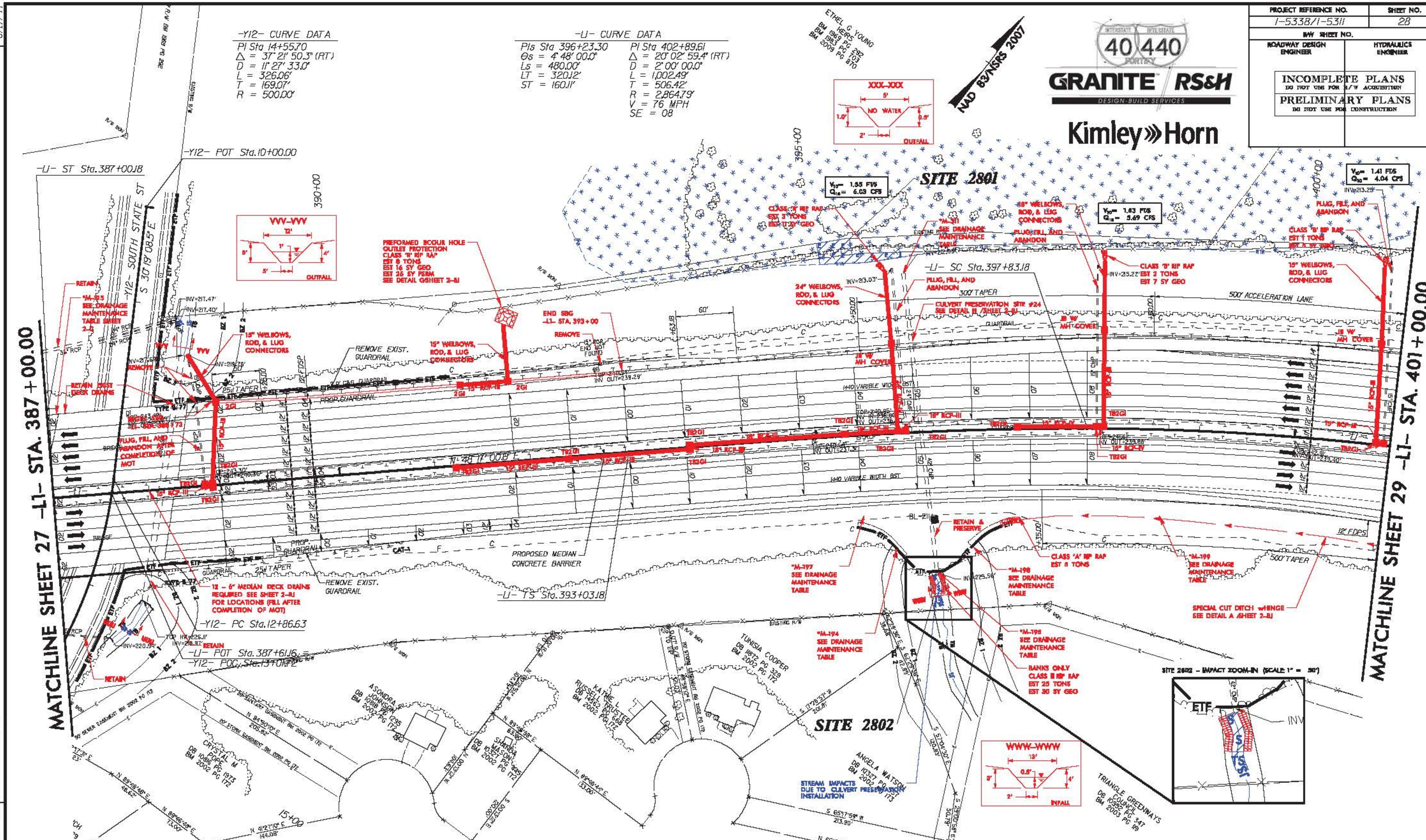
MATCHLINE SHEET 43 -Y9- STA. 15+50.00
MATCHLINE SHEET 44 -Y9- STA. 30+00.00
MATCHLINE SHEET 24 -L- STA. 332+00.00
MATCHLINE SHEET 26 -L- STA. 359+00.00
SITE 2502 - IMPACT ZOOM-IN (SCALE: 1" = 50')
PREFORMED SCOUR HOLE DATA
Q10= 5.6 CFS
18" WELBOWS, ROD, & LUG CONNECTORS
SITE 2502
SITE 2501
SITE 2501 - IMPACT ZOOM-IN (SCALE: 1" = 50')
PREFORMED SCOUR HOLE DATA
Q10= 8.2 CFS
18" WELBOWS, ROD, & LUG CONNECTORS
A
B
C
D
N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
DENOTES MECHANIZED CLEARING
GRANITE RS&H
Kimley»Horn
ROCHESTER HEIGHTS HISTORIC DISTRICT
END CONSTRUCTION
GRAPHIC SCALE
PLANS



MATCHLINE SHEET 43 -Y9- STA. 15+50.00
MATCHLINE SHEET 44 -Y9- STA. 30+00.00
MATCHLINE SHEET 24 -L- STA. 332+00.00
MATCHLINE SHEET 26 -L- STA. 359+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
A
B
C
D
GRANITE RS&H
Kimley»Horn
INCOMPLETE PLANS
PRELIMINARY PLANS
N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: I5338/I5311
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
-RP9D- CURVE DATA
-L- CURVE DATA
-Y9- CURVE DATA
-RP9A- CURVE DATA
-RP9ASPUR- CURVE DATA
-RP9C- CURVE DATA
-LP9C- CURVE DATA
ROCHESTER HEIGHTS HISTORIC DISTRICT
ALLIED INSTALLATION LLC
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
GRAPHIC SCALE
50 25 0 50 100
PLANS

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



[hatch]	DENOTES TEMPORARY IMPACTS IN SURFACE WATER
[hatch]	DENOTES EXCAVATION IN WETLAND

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: I5338/I5311
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: 07/18/2014

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

REVISIONS

8/17/99

7/28/2014
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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

-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

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

▨ DENOTES TEMPORARY IMPACTS IN SURFACE WATER
▨ DENOTES EXCAVATION IN WETLAND

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: I5338/ I5311
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/ 18/ 2014

REVISIONS

8/17/99

7/28/2014
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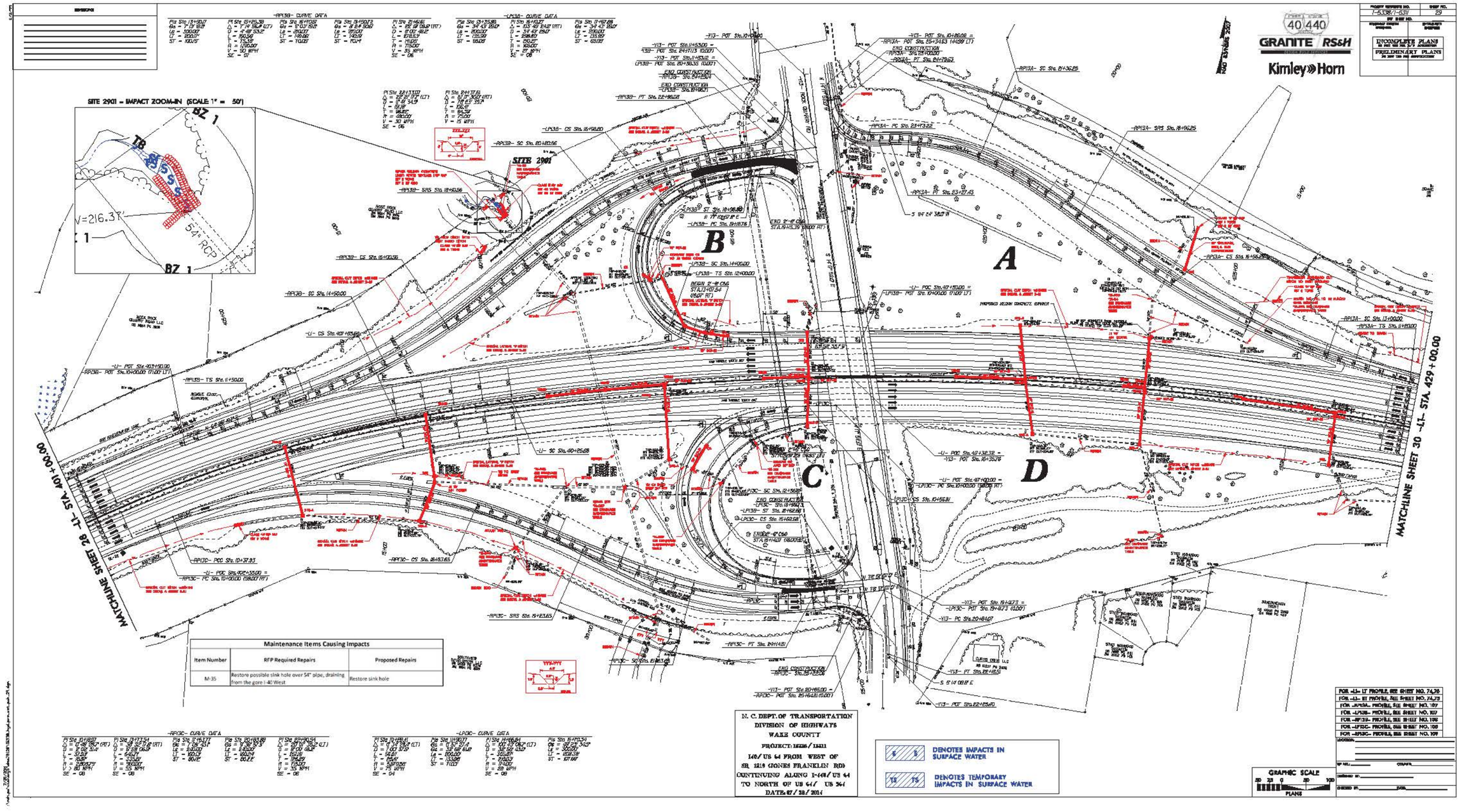


40 440
GRANITE RS&H
Kimley»Horn

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	29

INCOMPLETE PLANS

PRELIMINARY PLANS

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: 15236 / 15311
I40/ 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

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

FOR -L1- LT PROFILE, SEE SHEET NO. 74,76
FOR -L1- RT PROFILE, SEE SHEET NO. 74,75
FOR -RP13A- PROFILE, SEE SHEET NO. 107
FOR -LP13B- PROFILE, SEE SHEET NO. 107
FOR -RP13B- PROFILE, SEE SHEET NO. 108
FOR -LP13C- PROFILE, SEE SHEET NO. 108
FOR -RP13C- PROFILE, SEE SHEET NO. 109

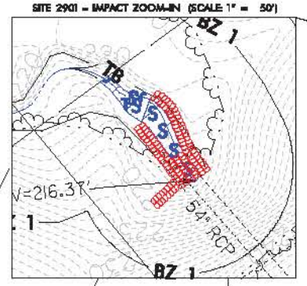
LOCATION: ____

TIP NO.: ____ COUNTY: ____

DESIGNED BY: ____

CHECKED BY: ____ DATE: ____

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



SITE 2901

A

B

C

D

-RP39- CURVE DATA

PI Sta 13+29.07	PI Sta 15+29.39	PI Sta 16+97.05	PI Sta 18+50.73	PI Sta 21+16.61
Δ = 1° 19' 58.5"	Δ = 1° 19' 58.8" (LT)	Δ = 5° 03' 19.5"	Δ = 9° 24' 30.6"	Δ = 65° 19' 09.8" (RT)
D = 1° 00' 00"	D = 1° 00' 00"	D = 5° 00' 00"	D = 9° 00' 00"	D = 6° 00' 48.2"
Lc = 100.00'	Lc = 100.00'	Lc = 200.00'	Lc = 199.87'	L = 674.53'
T = 50.04'	T = 50.04'	T = 100.04'	T = 140.85'	T = 414.85'
R = 1,720.00'	R = 1,720.00'	R = 1,145.92'	R = 636.62'	R = 955.00'
V = 50 MPH	V = 50 MPH	V = 50 MPH	V = 45 MPH	V = 35 MPH
SE = 0%	SE = 0%	SE = 0%	SE = 0%	SE = 0%

PI Sta 24+35.80	PI Sta 25+40.27	PI Sta 27+16.85	PI Sta 28+67.68	
Δ = 34° 43' 39.0"	Δ = 03° 49' 29.8" (RT)	Δ = 3° 49' 29.8"	Δ = 34° 43' 39.0"	
D = 2°00'00"	D = 3° 49' 29.8"	D = 3° 49' 29.8"	D = 2°00'00"	
Lc = 200.00'	Lc = 382.00'	L = 382.00'	Lc = 200.00'	
LT = 126.99'	L = 382.00'	T = 191.25'	LT = 126.99'	
T = 66.08'	T = 191.25'	R = 1,500.00'	T = 66.08'	
	R = 1,500.00'	V = 60 MPH		
	V = 60 MPH	SE = 0%		
	SE = 0%			

-LP36- CURVE DATA

PI Sta 15+40.27	PI Sta 17+68.68			
Δ = 65° 19' 09.8" (RT)	Δ = 34° 43' 39.0"			
D = 6° 00' 48.2"	D = 2°00'00"			
L = 674.53'	Lc = 200.00'			
T = 414.85'	LT = 126.99'			
R = 955.00'	T = 66.08'			
V = 35 MPH	V = 60 MPH			
SE = 0%	SE = 0%			

-LP39C- CURVE DATA

PI Sta 10+98.61	PI Sta 11+83.77	PI Sta 14+17.77	PI Sta 15+80.68	PI Sta 18+77.54
Δ = 0° 33' 58.2" (LT)	Δ = 38° 56' 51.4"	Δ = 38° 56' 51.4"	Δ = 0° 57' 08.2" (LT)	Δ = 38° 56' 51.4"
D = 1°00' 57.3"	D = 1°00' 00"	D = 1°00' 00"	D = 3° 56' 43.0"	D = 1°00' 00"
L = 56.61'	Lc = 100.00'	Lc = 100.00'	L = 265.67'	Lc = 100.00'
T = 28.31'	T = 53.96'	T = 53.96'	T = 132.84'	T = 53.96'
R = 5,631.50'	R = 5,730.00'	R = 5,730.00'	R = 1,430.00'	R = 5,730.00'
V = 75 MPH	V = 75 MPH	V = 75 MPH	V = 60 MPH	V = 75 MPH
SE = 0.04	SE = 0.04	SE = 0.04	SE = 0.04	SE = 0.04

-RP39C- CURVE DATA

PI Sta 10+37.93	PI Sta 11+74.77	PI Sta 15+02.68	PI Sta 16+77.54	PI Sta 19+73.61
Δ = 1° 19' 58.5" (RT)	Δ = 38° 56' 51.4"	Δ = 1° 19' 58.8"	Δ = 38° 56' 51.4"	Δ = 1° 19' 58.8" (LT)
D = 1°00' 00"	D = 1°00' 00"	D = 1°00' 00"	D = 1°00' 00"	D = 1°00' 00"
Lc = 100.00'	Lc = 100.00'	Lc = 100.00'	Lc = 100.00'	Lc = 100.00'
T = 50.04'	T = 53.96'	T = 50.04'	T = 53.96'	T = 50.04'
R = 5,730.00'	R = 5,730.00'	R = 5,730.00'	R = 5,730.00'	R = 5,730.00'
V = 75 MPH	V = 75 MPH	V = 75 MPH	V = 75 MPH	V = 75 MPH
SE = 0.04	SE = 0.04	SE = 0.04	SE = 0.04	SE = 0.04

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: 16236 / 15831
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

5 5 DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

GRAPHIC SCALE
20 20 0 20 100
PLANS

FOR -L1- LT PROFILE, SEE SHEET NO. 74,76
FOR -L1- RT PROFILE, SEE SHEET NO. 74,75
FOR -RP39- PROFILE, SEE SHEET NO. 107
FOR -LP36- PROFILE, SEE SHEET NO. 107
FOR -RP39- PROFILE, SEE SHEET NO. 108
FOR -LP39C- PROFILE, SEE SHEET NO. 108
FOR -RP39C- PROFILE, SEE SHEET NO. 109

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

GRANITE RS&H
Kimley»Horn

UNCOMPLETED PLANS
PRELIMINARY PLANS

MATCHLINE SHEET 28 -L1- STA 401+00.00

MATCHLINE SHEET 30 -L1- STA 429+00.00

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 INTERSTATE 440 PORTION

GRANITE RS&H
DESIGN-BUILD SERVICES

Kimley»Horn

NAD 83/NSRS 2007

REVISIONS

6/17/99

-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
18'
1.0'
4'
2'
11'
OUTFALL

BBBB-BBBB
18'
1.0'
4'
3'
11'
INFALL

SITE 3001

MATCHLINE SHEET 29 -L1- STA. 429+00.00

MATCHLINE SHEET 31 -L1- STA. 443+00.00

-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

N 80°00'00"W -RP13A-

S 73°31'00.5" E -L1-

PROPOSED

EXISTING

PROPOSED MEDIAN CONCRETE BARRIER

REMOVE EXIST. GUARDRAIL

PROP. GUARDRAIL

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 2.5 SY FSRM
SEE DETAIL G/SHEET 2-BJ

300' TAPER

8' TAPER GRAD 350 TL-3

CAT-1

RETAIN

TIE TO EXIST 8'X 8' RCBC

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

DENOTES MECHANIZED CLEARING

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

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

7/28/2014
d:\pw\work\rsh_pw\vickeryb\dms781261\I5338_hyd_prm_west_psh_30.dgn

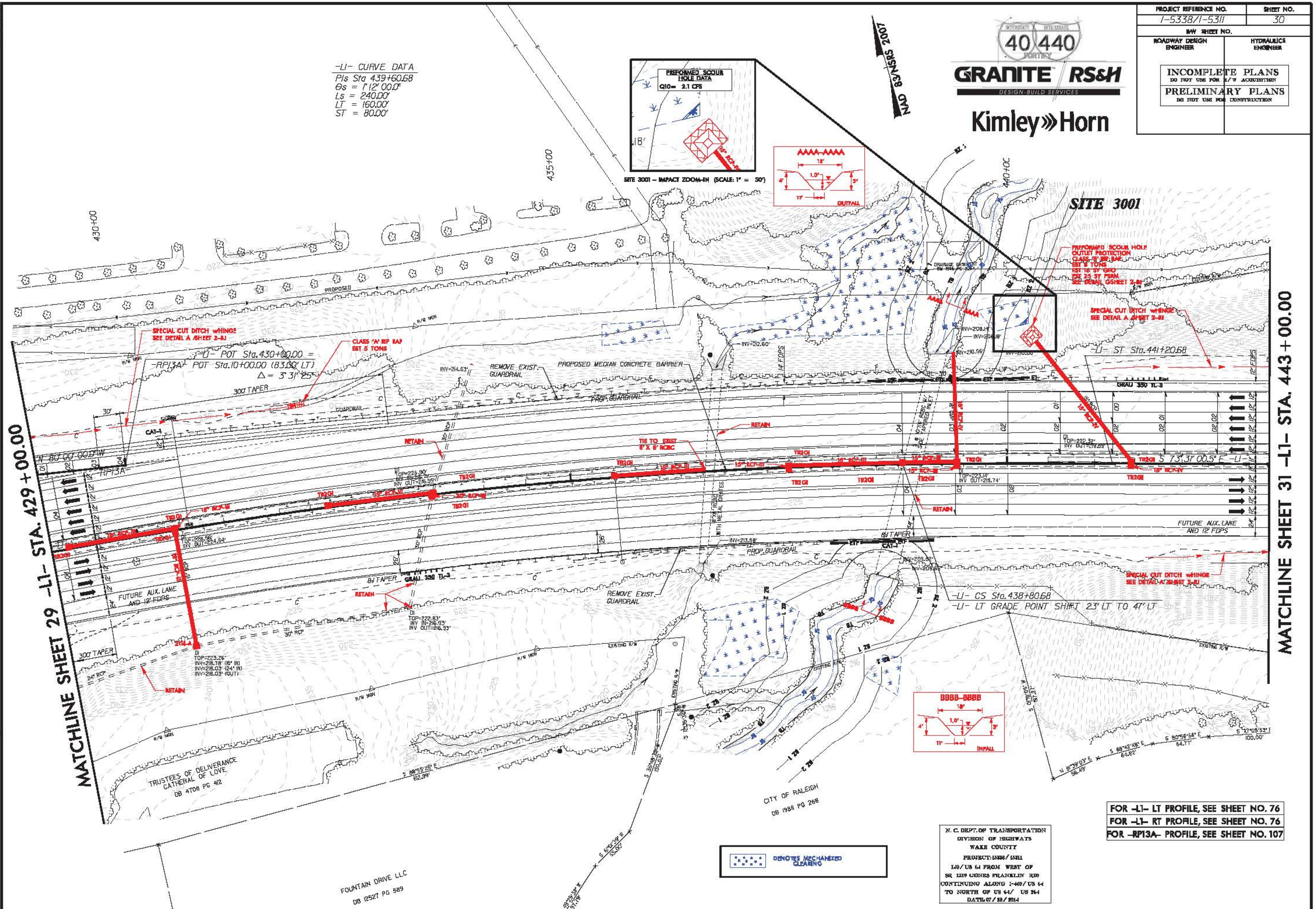
PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	30
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRANITE RS&H DESIGN-BUILD SERVICES

Kimley»Horn



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

DENOTES MECHANIZED CLEARING

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: I5338/ I5311
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

REVISIONS

7/28/2014
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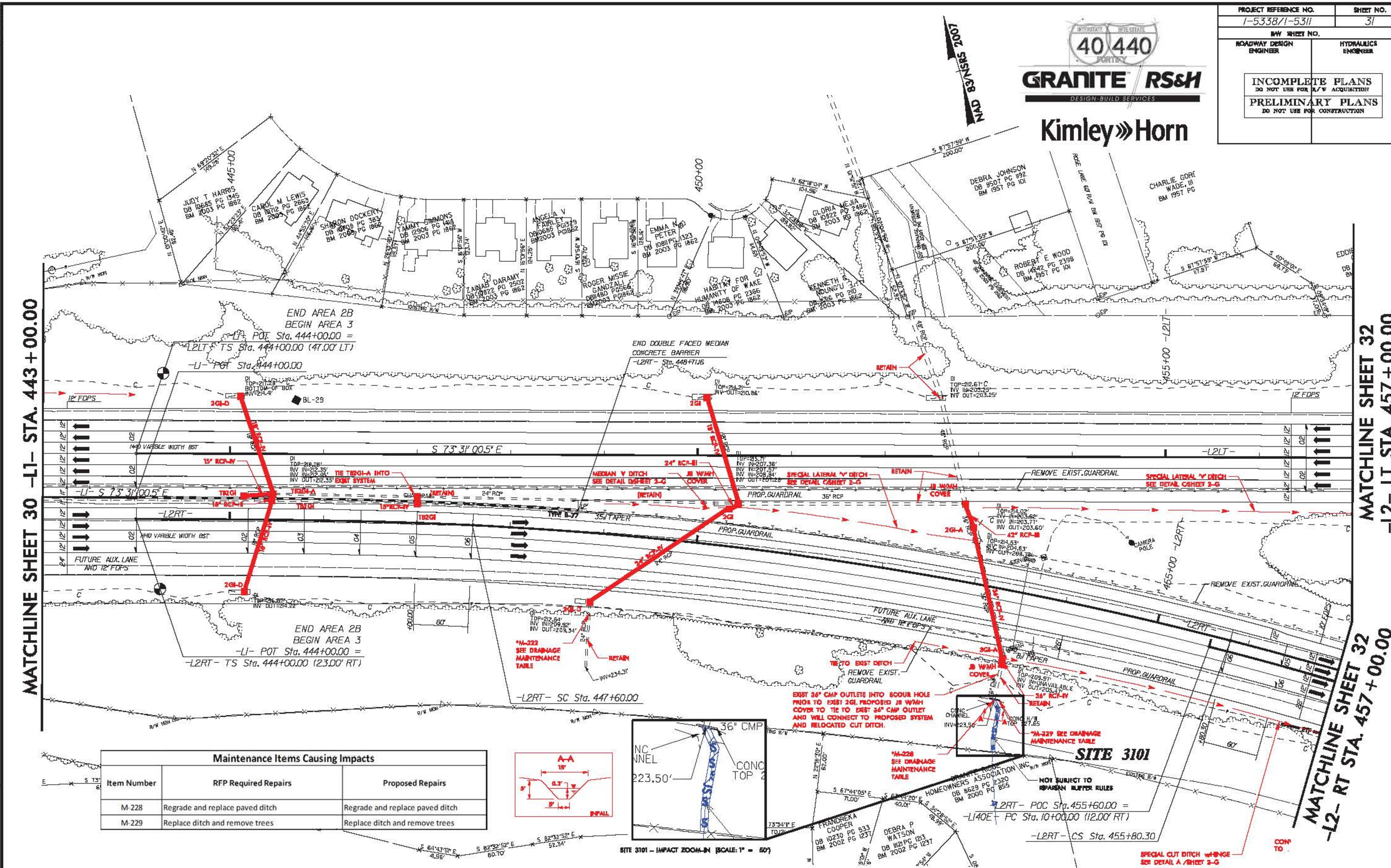
PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	31

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-228	Regrade and replace paved ditch	Regrade and replace paved ditch
M-229	Replace ditch and remove trees	Replace ditch and remove trees

-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	

DENOTES IMPACTS IN SURFACE WATER

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: I5338 / I5311
I-40 / US 64 FROM WEST OF SR 1319 CONES 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

REVISIONS

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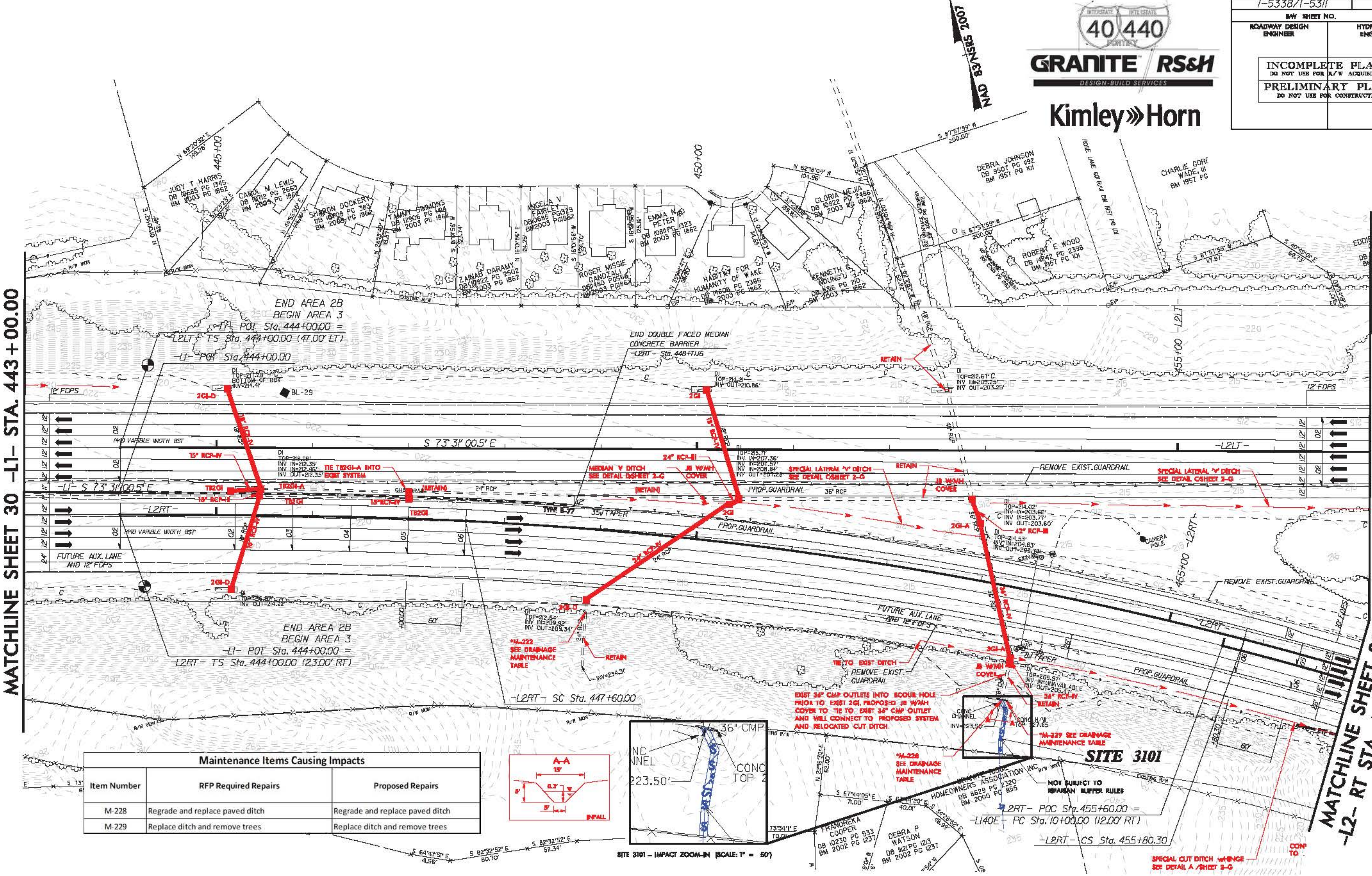
PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	31
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRANITE / RS&H DESIGN-BUILD SERVICES

Kimley»Horn



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

-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	

DENOTES IMPACTS IN SURFACE WATER

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: I5338/ I5311
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

REVISIONS

8/17/99

7/28/2014
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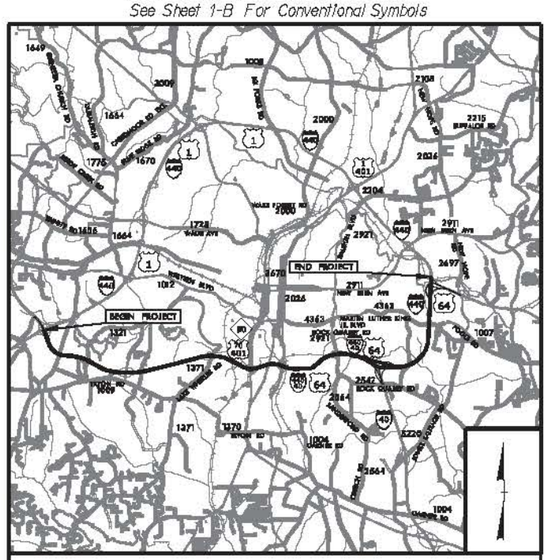
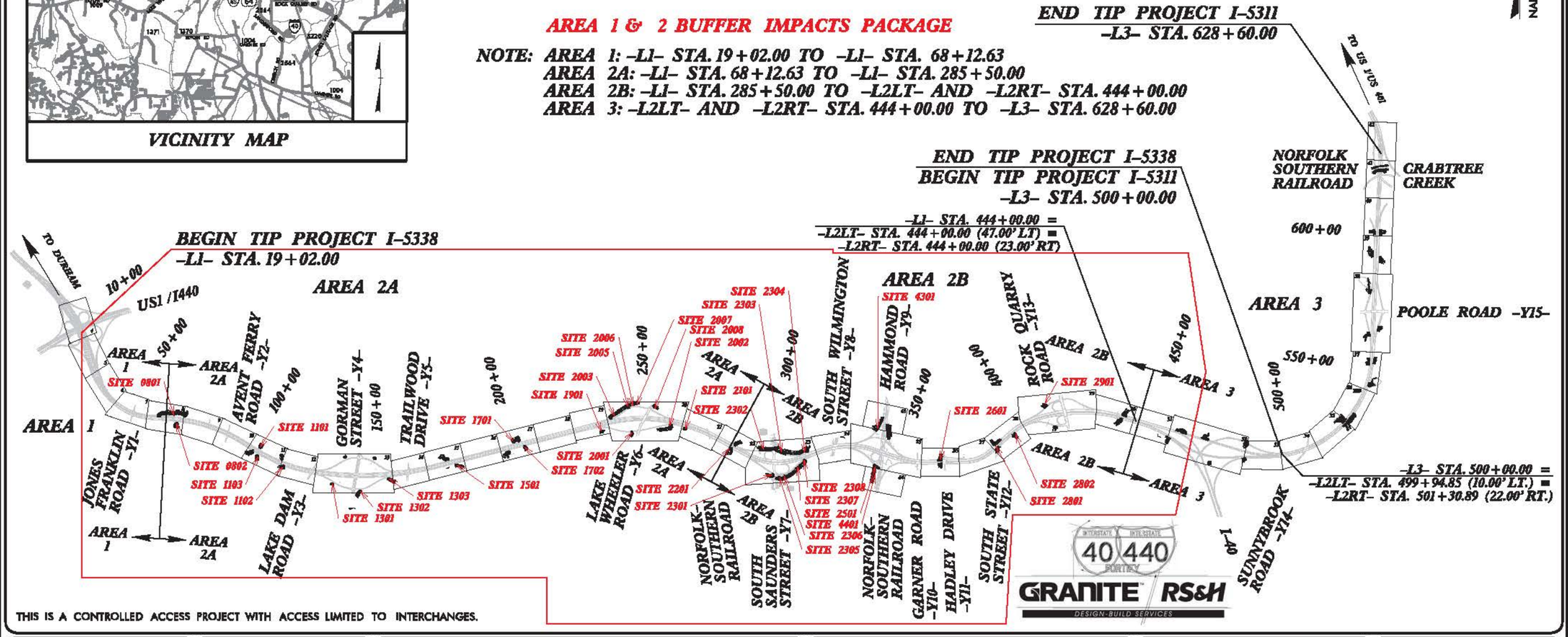




09/08/99

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

GRANITE™ RS&H
DESIGN-BUILD SERVICES

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

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

SEAL 36188

SEAL 026480
LARRY D. ROBINSON, JR.

P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

SEAL 029473
JASON M. TALLEY

P.E.
SIGNATURE:

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		

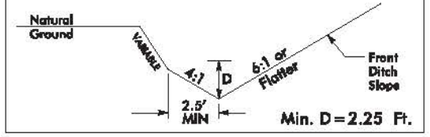
N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

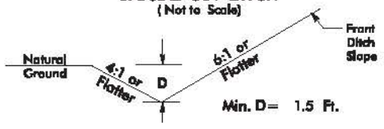
WAKE COUNTY
PROJECT: 46265.3.1 (I5338/I5311)

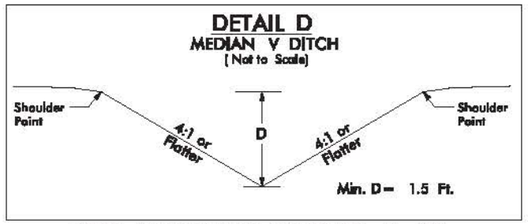
7/28/2014

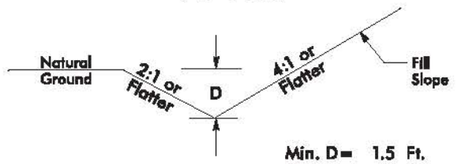
SHEET 4 OF 4

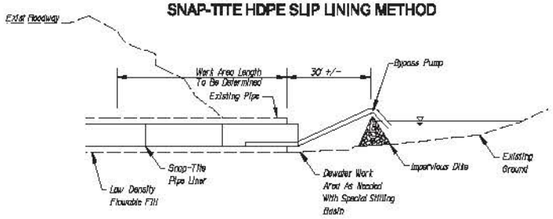
Rev. May 2006

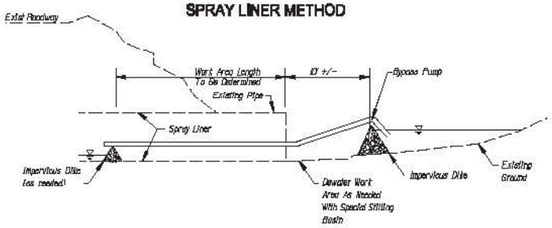


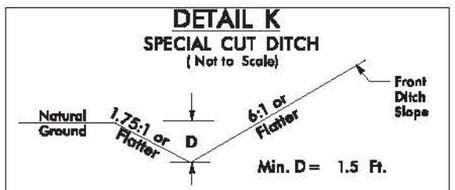


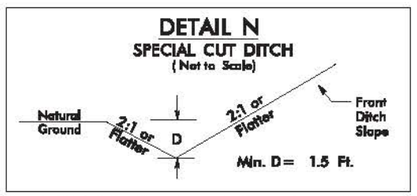


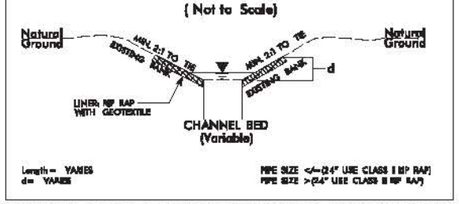












6/2/99

AREAS 1 & 2A

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	2-A
ROADWAY DESIGN ENGINEER SEAL 029473 JASON M. TALLEY	HYDRAULICS ENGINEER SEAL 36188

GRANITE / RS&H
DESIGN-BUILD SERVICES

DETAIL A
SPECIAL CUT DITCH wHINGE
(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 L
RIPRAP ON STREAMBANKS ONLY
(Not to Scale)

SEE PLANS FOR LOCATIONS OF RIPRAP ON STREAMBANKS ONLY

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.**

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

AREA 2B

Kimley»Horn

GRANITE | RS&H — DESIGN-BUILD SERVICES — 40 440

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

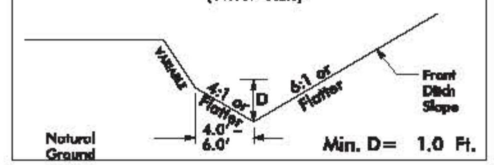
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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

S. State Street (East Bound Median)

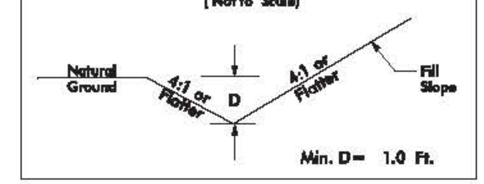
Station	Alignment	Location	Deck Drain size (FT)
386+94	-L1-	CL	0.5
387+00	-L1-	CL	0.5
387+06	-L1-	CL	0.5
387+12	-L1-	CL	0.5
387+18	-L1-	CL	0.5
387+24	-L1-	CL	0.5
387+89	-L1-	CL	0.5
387+95	-L1-	CL	0.5
388+01	-L1-	CL	0.5
388+07	-L1-	CL	0.5
388+13	-L1-	CL	0.5
388+19	-L1-	CL	0.5
Deck Drains Required on Bridge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

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



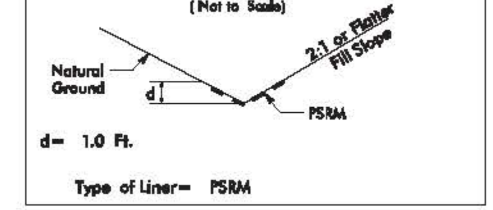
FROM STA. 376+50 TO STA. 378+00 -L1- (LT)
FROM STA. 397+00 TO STA. 401+50 -L1- (RT)
FROM STA. 401+50 TO STA. 404+00 -L1- (RT)
FROM STA. 405+50 -L1- TO STA. 15+70 -RP13C- (RT)
FROM STA. 15+70 TO STA. 20+40 -RP13C- (RT)
FROM STA. 407+50 -L1- TO STA. 17+60 -RP13B- (LT)
FROM STA. 21+10 TO STA. 23+60 -RP13B- (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)



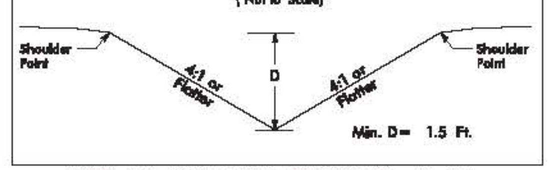
FROM STA. 15+45 TO STA. 17+45 -RP7D- (RT)
FROM STA. 21+90 TO STA. 20+60 -RP7A- (LT)
FROM STA. 15+80 TO STA. 20+20 -RP7B- (RT)
FROM STA. 22+80 TO STA. 21+49 -RP7B- (RT)
FROM STA. 12+41 TO STA. 12+91 -LP7B- (LT)
FROM STA. 414+50 TO STA. 415+00 -L1- (LT)
FROM STA. 15+60 TO STA. 17+10 -RP13B- (RT)
FROM STA.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

DETAIL C
TOE PROTECTION
(Not to Scale)



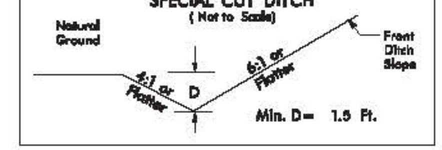
FROM STA. 14+67 TO STA. 15+10 -LP9C- (RT)
FROM STA. 25+15 TO STA. 27+60 -Y9- (LT)
FROM STA. 346+00 TO STA. 347+40 -L1- (LT)
FROM STA. 346+58 TO STA. 348+62 -L1- (RT)

DETAIL D
MEDIAN V DITCH
(Not to Scale)



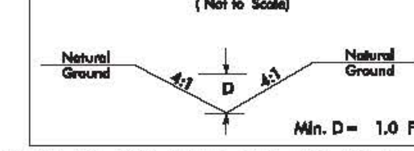
FROM STA. 290+50 TO STA. 291+98 -L1- (LT)

DETAIL E
SPECIAL CUT DITCH
(Not to Scale)



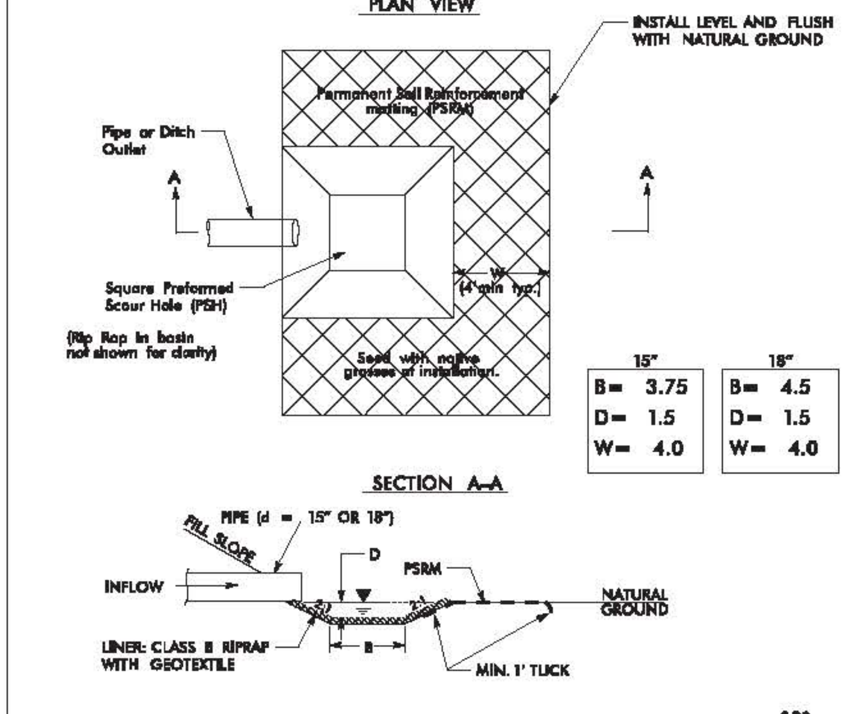
FROM STA. 20+95 TO STA. 20+45 -RP7D- (RT)

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



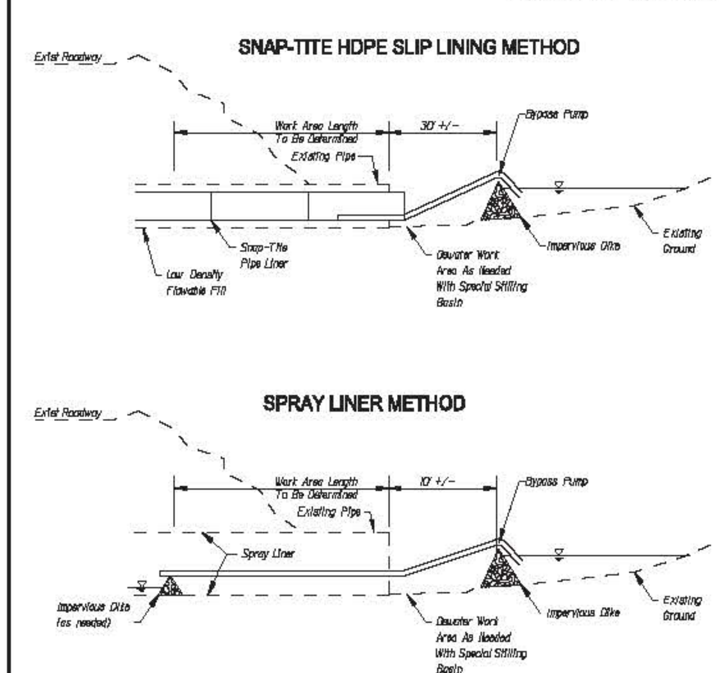
FROM STA. 294+75 TO STA. 294+84 -L1- (LT)

DETAIL G
PREFORMED SCOUR HOLE
*NOT TO SCALE
PLAN VIEW



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



CURED IN PLACE PIPE LINER (BALLOON METHOD)

- Same as Spray Liner Method above expect for:
  - All curing water must be disposed offsite
  - Pipe Liner must be installed per manufacturer's 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.

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

8/17/99

REVISIONS

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

GRANITE RS&H DESIGN-BUILD SERVICES

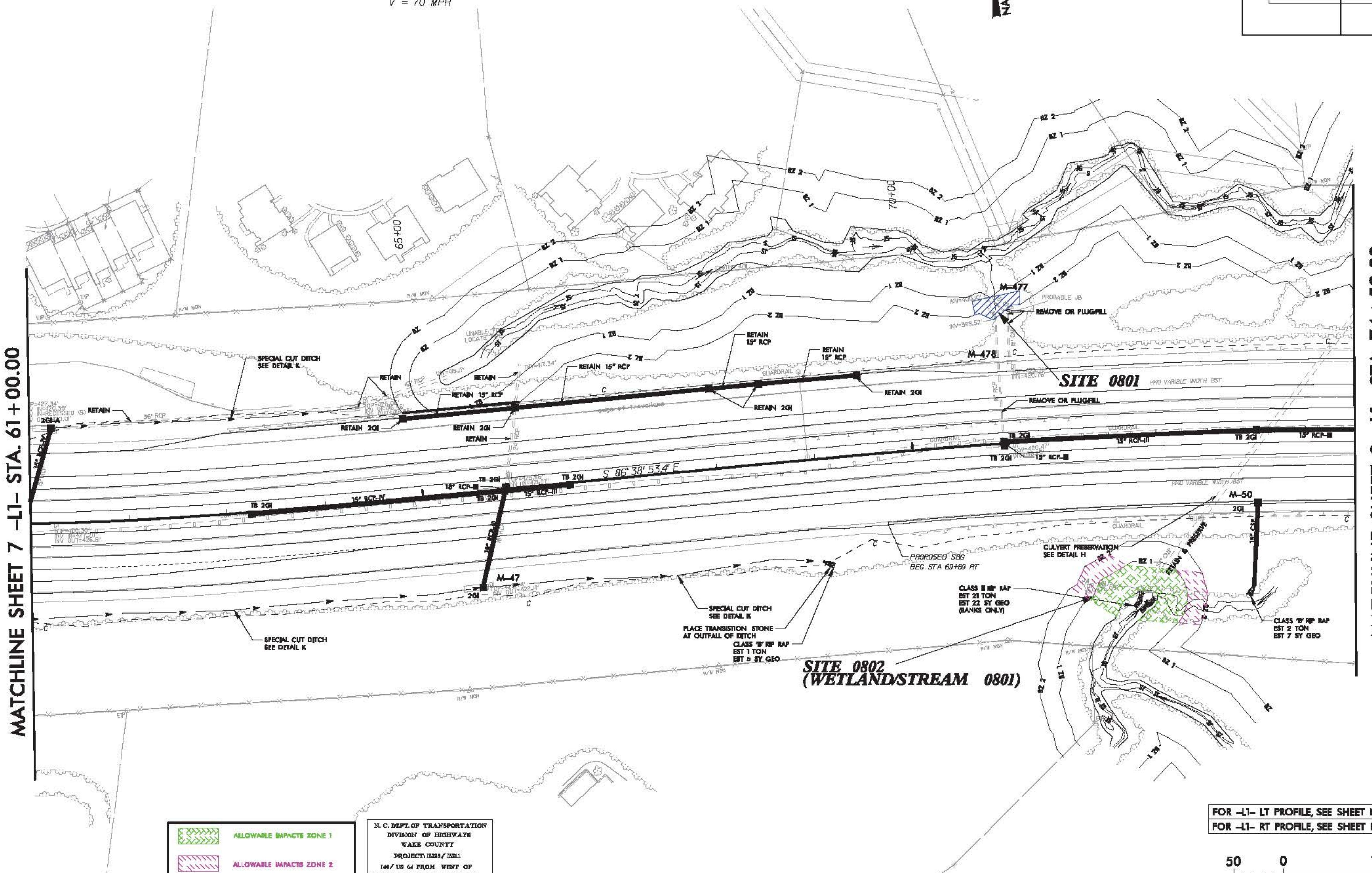
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83/NSRS 2007

-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



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

50 0 100

(green hatch)	ALLOWABLE IMPACTS ZONE 1
(magenta hatch)	ALLOWABLE IMPACTS ZONE 2
(blue hatch)	MITIGABLE IMPACTS ZONE 2

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

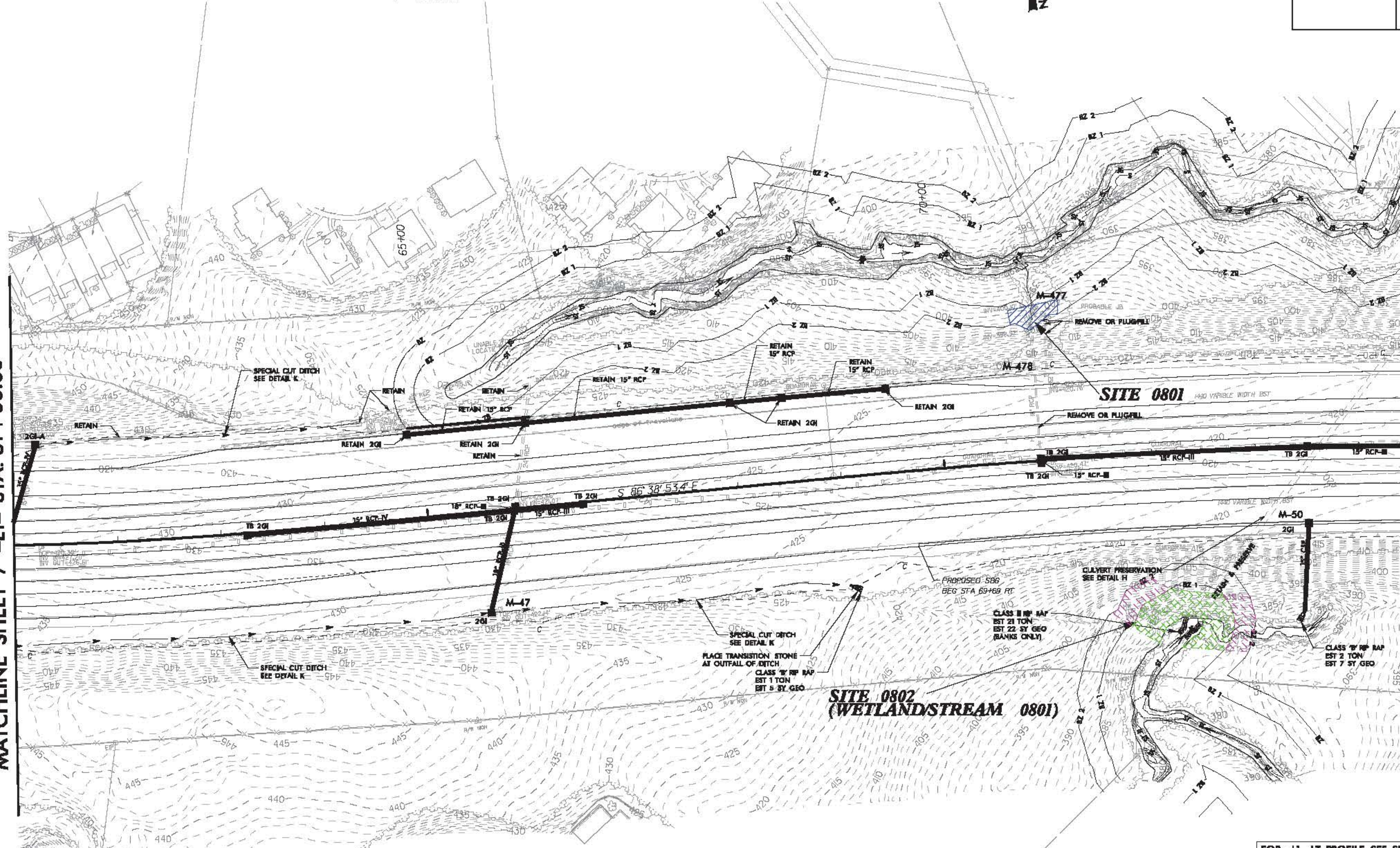
PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-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



	ALLOWABLE IMPACTS ZONE 1
	ALLOWABLE IMPACTS ZONE 2
	MITIGABLE IMPACTS ZONE 2

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: I5338 / I5311
I40/ 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

REVISIONS

8/17/99

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

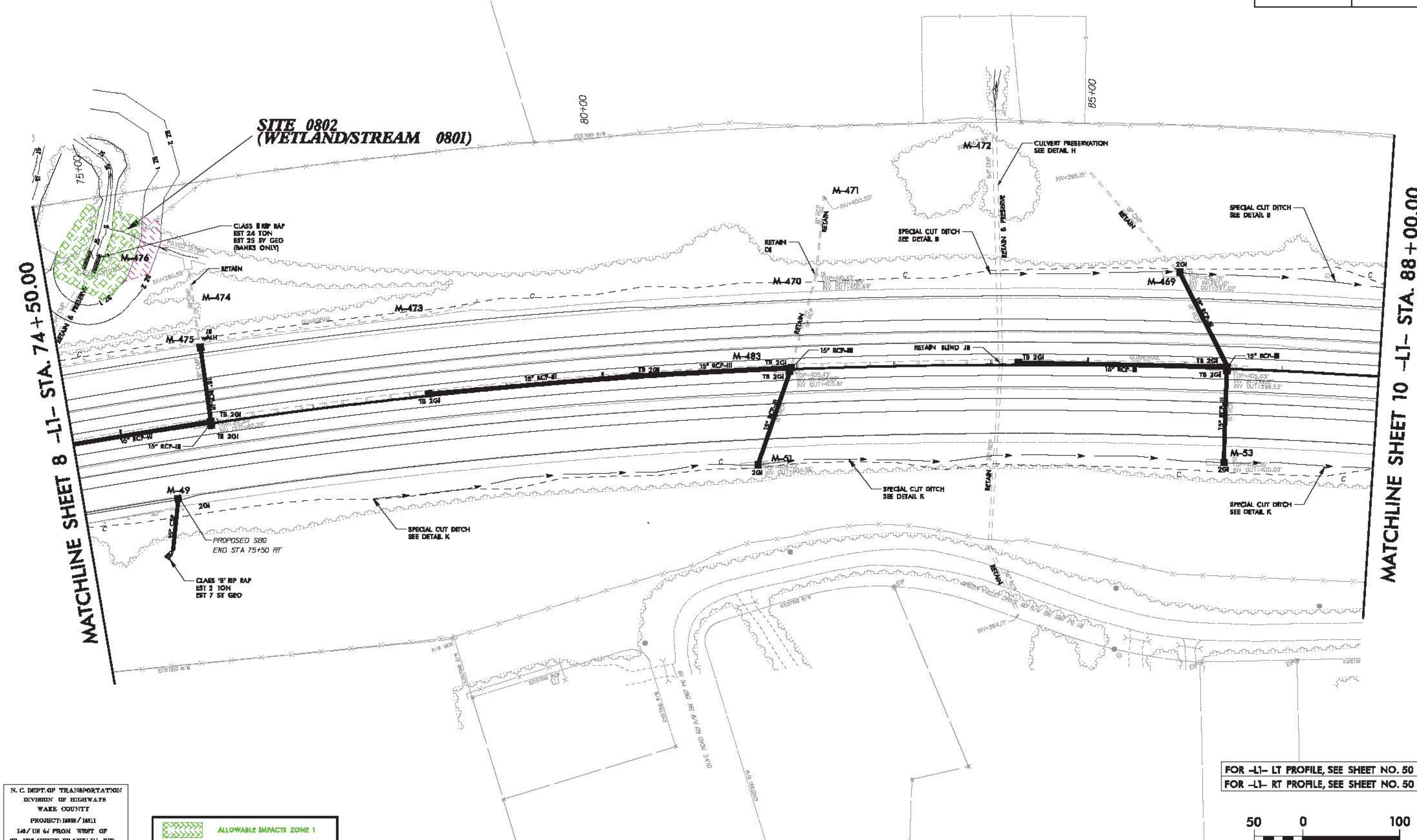
8/17/99

-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

REVISIONS



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

50 0 100

ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: I5338 / I5311
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

6/17/99

REVISIONS

-L- 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
RW 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

MATCHLINE SHEET 8 -L1- STA. 74+50.00

MATCHLINE SHEET 10 -L1- STA. 88+00.00

SITE 0802 (WETLAND/STREAM 0801)

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

PROPOSED SBG END STA 75+50 RT

CLASS B RIP RAP EST 2 TON EST 7 ST GEO

SPECIAL CUT DITCH SEE DETAIL K

SPECIAL CUT DITCH SEE DETAIL B

CULVERT PRESERVATION SEE DETAIL H

RETAIN

RETAIN & PRESERVE

RETAIN BLIND JB

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

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: 16338 / 16811
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

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

$$$$USERNAME$$$$

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

GRANITE RS&H
DESIGN-BUILD SERVICES

NAD 83/NSRS 2007

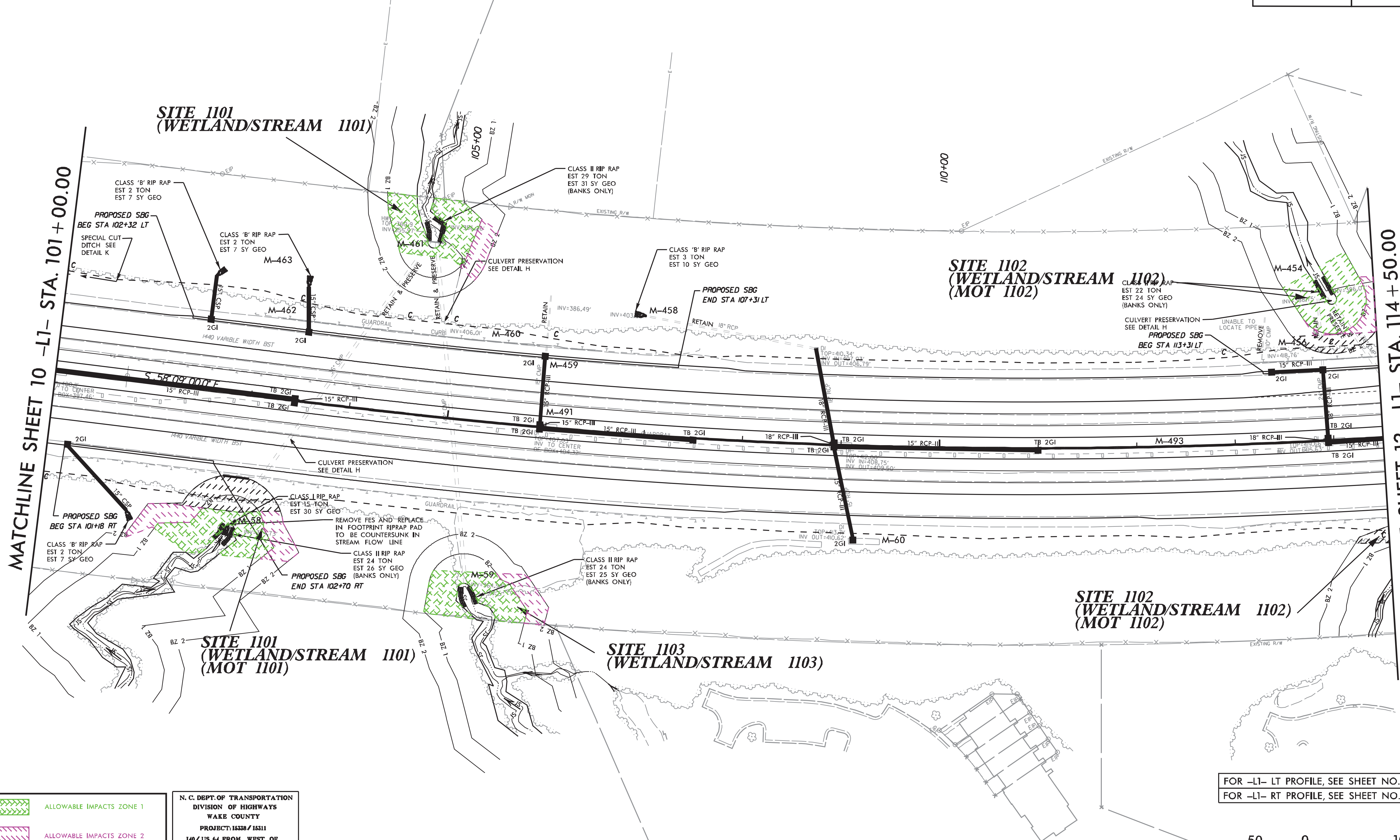
-L1- CURVE DATA

PIs Sta 104+33.29
Θs = 1° 12' 00.0"
Ls = 240.00'
LT = 160.00'
ST = 80.00'

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

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



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

50 0 100

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: 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

REVISIONS

8/17/99

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

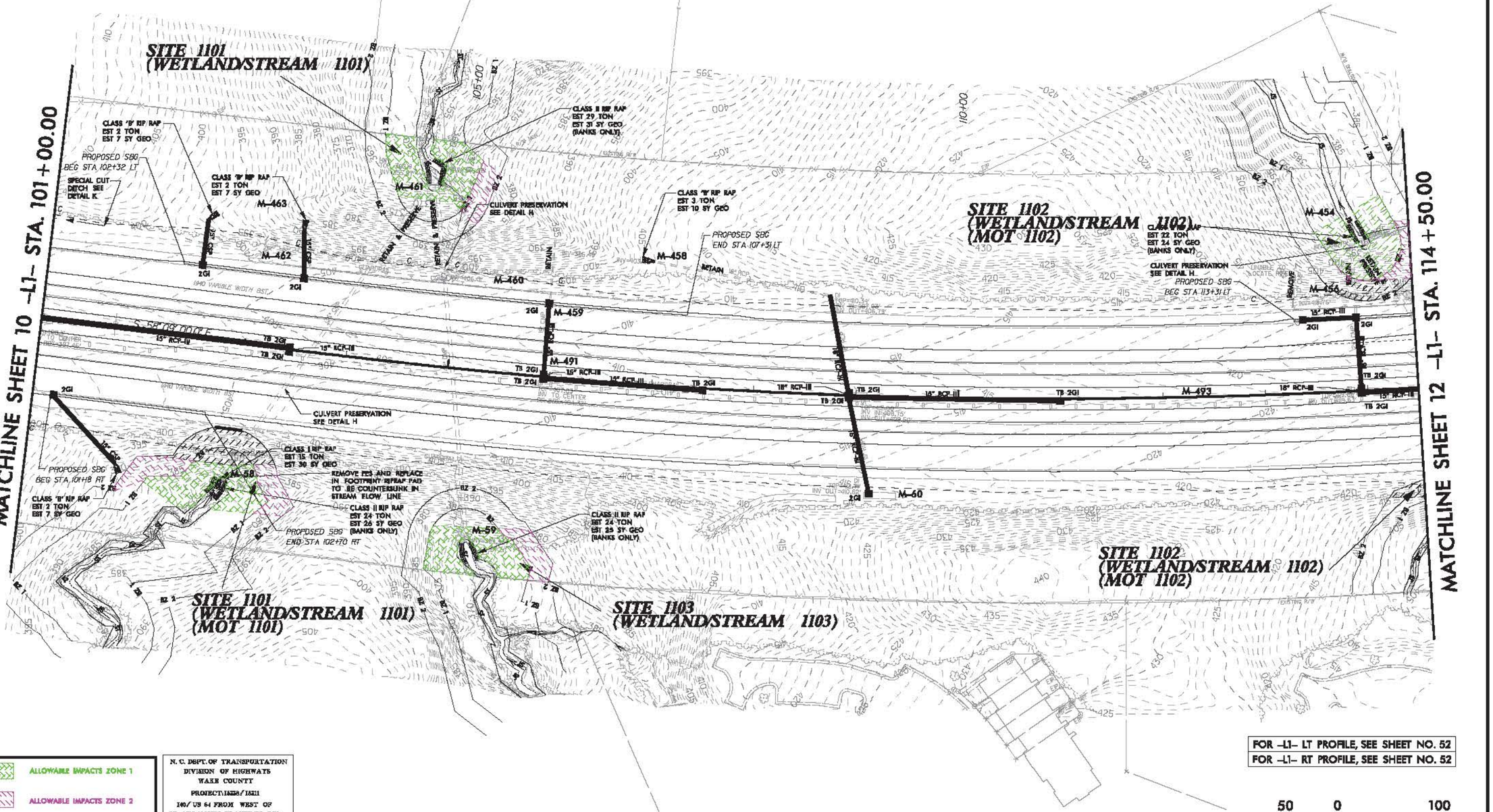
NAD 83/NSRS 2007

GRANITE RS&H DESIGN-BUILD SERVICES

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

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



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

50 0 100

$$$$$$$$SYSTIME$$$$$$$$
$$$$$$$$USERNAME$$$$$$$$

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

GRANITE RS&H
DESIGN-BUILD SERVICES

INTERSTATE 40 INTERSTATE 440 PORTION

NAD 83/SRS 2007

6/17/99

REVISIONS

-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'

-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

-LI- STA. 114+50.00

MATCHLINE SHEET 11 -LI-

-LI- STA. 127+50.00

MATCHLINE SHEET 13 -LI-

SITE 1102
(WETLAND/STREAM 1102)

SITE 1102
(WETLAND/STREAM 1102)

300' TAPER

900' ACCELERATION LANE

CLASS 'B' RIP RAP M-453
EST 2 TON
EST 7 SY GEO

PROPOSED SBG
END ST'A 117+81 LT

M-452
24" RCP

SF. CONC. MEDIAN 2GI
SEE SHEET 2-AR

SPECIAL CUT DITCH
SEE DETAIL II

M-455

M-451

PROP. GUARDRAIL

84' TAPER

FUTURE AUX. LANE AND HF FDPS

PROPOSED MEDIAN CONCRETE BARRIER

M-62

M-64 RETAIN

M-65

M-66

M-495

M-496

M-497

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

-RP4C- TS
Sta. 10+52.59

S 80° 11' 12.1" E

RETAIN 2GI

RETAIN JB & 15" RCP-III

S 28° 30' 59.4" W

EXIST. STRUCTURE TO REMAIN

LAKE DAM ROAD

-Y3- LAKE DAM RD

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: 15BB.8 / 15B11
I-40 / US 64 FROM WEST OF
SR 1819 (JONES FRANKLIN RD)
CONTINUING ALONG I-40 / 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

8/17/99

REVISIONS

-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'

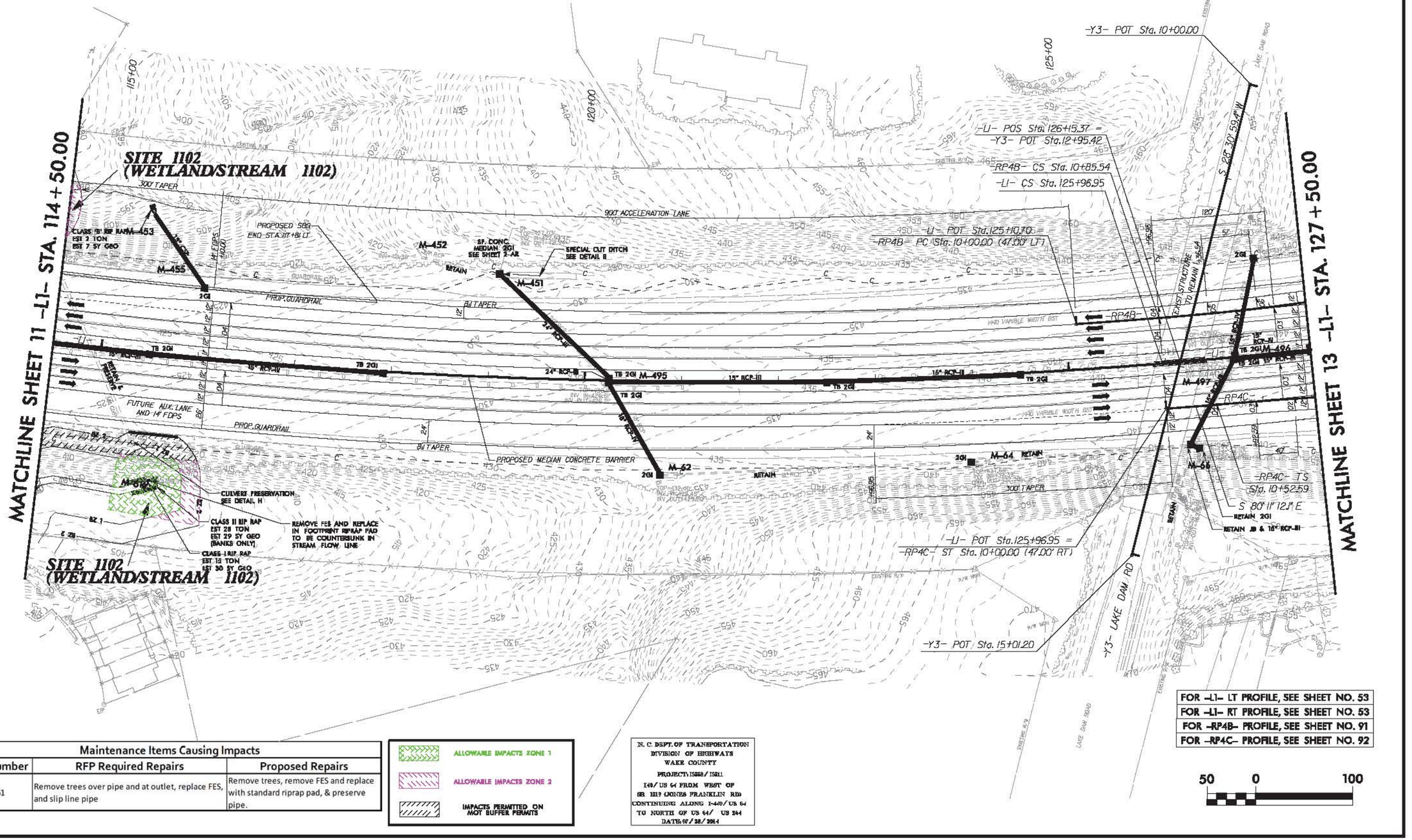
NAD 83/NSRS 2007

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



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

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

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: I5338 / I5311
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

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

INCOMPLETE PLANS

PRELIMINARY PLANS

-RP4B- CURVE DATA

PIs Sta 12+10.19
θs = 1°01' 39.3"
θs = 5°04' 57.9"
Ls = 204.00'
LT = 124.85'
ST = 79.53'

PI Sta 15+82.23
Δ = 28°33' 31.7" (LT)
D = 4°58' 58.1"
L = 573.21'
T = 292.89'
R = 1,150.00'
V = 55 MPH

PIs Sta 19+30.80
θs = 5°04' 54.8"
Ls = 204.00'
LT = 136.06'
ST = 68.05'

PIs Sta 25+05.79
θs = 11°27' 33.0"
Ls = 240.00'
LT = 160.34'
ST = 80.31'

PI Sta 28+73.54
Δ = 16°42' 08.8" (RT)
D = 9°32' 57.9"
L = 174.91'
T = 88.08'
R = 600.00'
V = 45 MPH

-RP4A- CURVE DATA

PI Sta 15+81.54
Δ = 30°03' 02.4" (RT)
D = 5°59' 58.4"
L = 501.44'
T = 256.64'
R = 955.00'
V = 50 MPH

PIs Sta 18+33.07
θs = 5°59' 58.4"
Ls = 200.00'
LT = 133.41'
ST = 66.74'

PIs Sta 20+99.73
θs = 5°12' 31.3"
Ls = 200.00'
LT = 133.38'
ST = 66.72'

PI Sta 23+84.49
Δ = 22°26' 05.4" (LT)
D = 5°12' 31.3"
L = 450.72'
T = 218.15'
R = 1,100.00'
V = 40 MPH

-RP4C- CURVE DATA

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

PI Sta 14+27.86
Δ = 13°58' 30.1" (RT)
D = 4°00' 24.1"
L = 349.79'
T = 175.27'
R = 1,430.00'
V = 60 MPH

PIs Sta 16+68.08
θs = 4°00' 24.1"
Ls = 200.00'
LT = 133.37'
ST = 66.70'

PIs Sta 20+79.10
θs = 4°46' 28.7"
Ls = 200.00'
LT = 133.38'
ST = 66.71'

PI Sta 23+34.23
Δ = 17°51' 23.0" (LT)
D = 4°46' 28.7"
L = 373.96'
T = 188.52'
R = 1,200.00'
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 preserve 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 preserve pipe.
M-100	Slip line pipe, replace FES and remove trees from around outlet	Preserve pipe; remove FES and rip rap banks; remove trees.

-L1- CURVE DATA

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

PI Sta 150+31.19
Δ = 21°40' 48.0" (LT)
D = 0°30' 00.0"
L = 4,336.00'
T = 2,194.25'
R = 11,459.16'
V = 70 MPH

-RP4D- CURVE DATA

PIs Sta 14+28.88
θs = 6°19' 01.6"
Ls = 240.00'
LT = 160.17'
ST = 80.09'

PI Sta 16+51.97
Δ = 14°50' 02.5" (LT)
D = 5°12' 31.3"
L = 284.79'
T = 143.20'
R = 1,100.00'
V = 55 MPH

PIs Sta 18+73.86
θs = 6°19' 01.6"
Ls = 240.00'
LT = 160.10'
ST = 80.09'

PIs Sta 21+93.70
θs = 7°11' 58.1"
Ls = 240.00'
LT = 160.17'
ST = 80.12'

PI Sta 24+97.37
Δ = 26°22' 41.4" (RT)
D = 5°59' 58.4"
L = 439.67'
T = 223.80'
R = 955.00'
V = 50 MPH

FOR -L1- LT PROFILE, SEE SHEET NO. 34,35
FOR -L1- RT PROFILE, SEE SHEET NO. 84,85
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

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

INCOMPLETE PLANS

PRELIMINARY PLANS

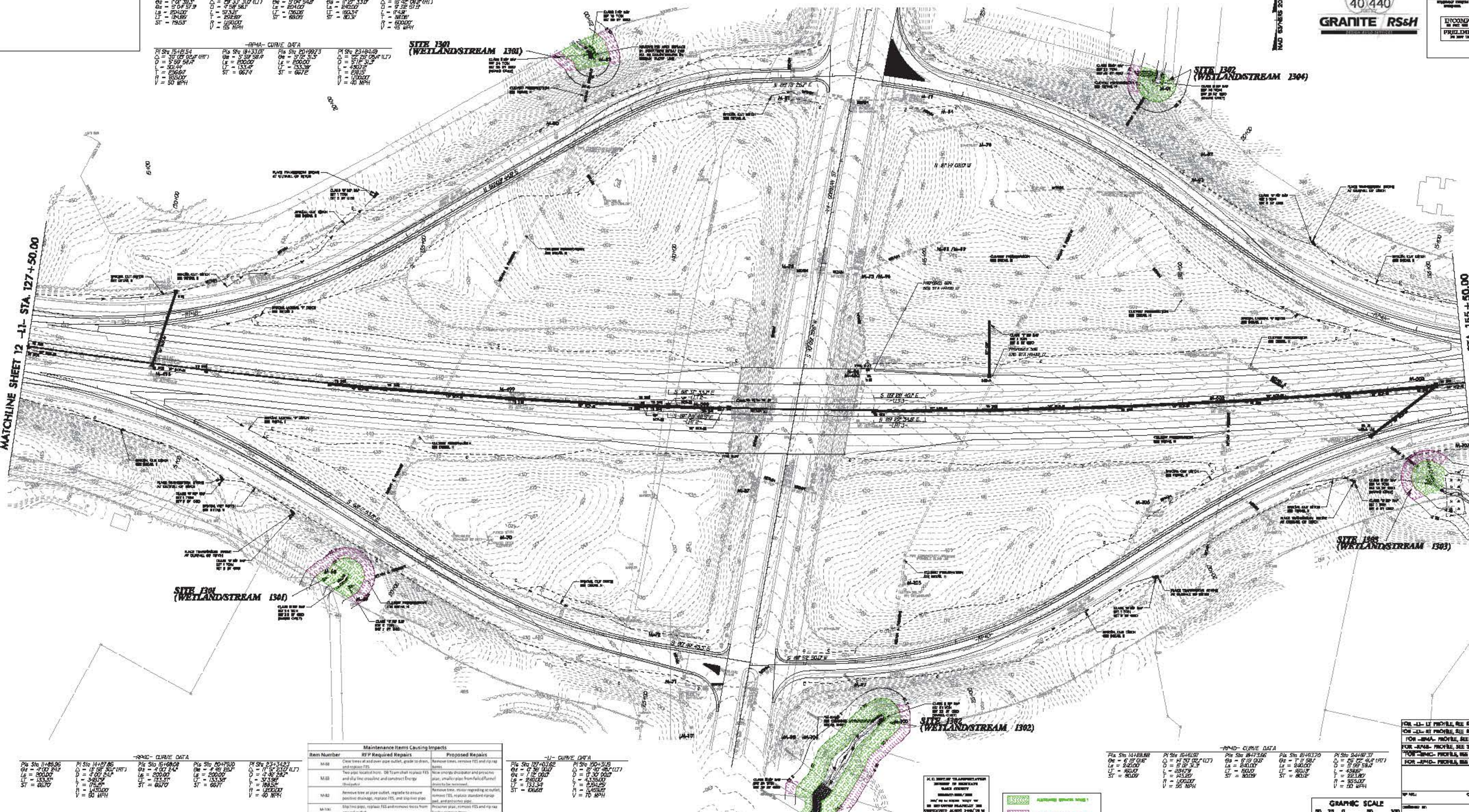
GRANITE / RS&H

-RP4B- CURVE DATA

PIs Sta 12+10.19	PI Sta 15+82.23	PIs Sta 19+30.80	PIs Sta 25+05.79	PI Sta 28+73.54
θs = 1°01' 39.3"	Δ = 29° 33' 31.0" (LT)	θs = 5° 04' 54.8"	θs = 11° 27' 33.0"	Δ = 16° 42' 08.8" (RT)
θs = 5° 04' 57.9"	D = 4° 58' 58.1"	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 = 124.85'	T = 292.89'	ST = 68.05'	ST = 80.31'	T = 88.08'
ST = 79.53'	R = 1,150.00'			R = 600.00'
	V = 55 MPH			V = 45 MPH

-RP4A- CURVE DATA

PI Sta 15+81.54	PIs Sta 18+33.07	PIs Sta 20+99.73	PI Sta 23+84.49
Δ = 30° 03' 02.4" (RT)	θs = 5° 59' 58.4"	θs = 5° 12' 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 = 501.44'	LT = 133.47'	LT = 133.38'	L = 430.72'
T = 256.64'	ST = 66.74'	ST = 66.72'	T = 218.15'
R = 955.00'			R = 1,100.00'
V = 50 MPH			V = 40 MPH



-RP4C- CURVE DATA

PIs Sta 11+85.96	PI Sta 14+27.86	PIs Sta 16+68.08	PIs Sta 20+79.10	PI Sta 23+34.23
θs = 4° 00' 24.1"	Δ = 13° 58' 30.5" (RT)	θs = 4° 00' 24.1"	θs = 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 = 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 proactive 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 proactive pipe.
M-100	Slip line pipe, replace FES and remove trees from around outlet	Proactive pipe, remove FES and rip rap banks; remove trees.

-L1- CURVE DATA

PIs Sta 127+03.62	PI Sta 150+31.19
θs = 0° 36' 00.0"	Δ = 21° 40' 48.5" (LT)
θs = 1° 12' 00.0"	D = 0° 30' 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

PIs Sta 14+28.88	PI Sta 16+51.97	PIs Sta 18+73.66	PIs Sta 21+93.70	PI Sta 24+97.37
θs = 6° 15' 01.6"	Δ = 14° 50' 02.1" (LT)	θs = 6° 15' 01.6"	θs = 7° 11' 58.1"	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 = 160.17'	L = 284.79'	LT = 160.10'	LT = 160.13'	L = 438.67'
ST = 80.09'	T = 145.20'	ST = 80.09'	ST = 80.12'	T = 223.80'
	R = 1,100.00'			R = 955.00'
	V = 55 MPH			V = 50 MPH

6/17/99

REVISIONS

-L- CURVE DATA

PI Sta 150+31.19
Δ = 21° 40' 48.1" (LT)
D = 0° 30' 00.0"
L = 4,336.00'
T = 2,194.25'
R = 11,459.16'
V = 70 MPH

PIs Sta 17+52.95
θs = 0° 36' 00.0"
Ls = 240.00'
LT = 160.00'
ST = 80.00'

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
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 14 -L1- STA. 169+00.00

MATCHLINE SHEET 16 -L1- STA. 183+00.00

170+00

175+00

180+00

SITE 1501

SITE 1501
(WETLAND/STREAM 1501)
(MOT 1501)

CLASS II RIP RAP
EST 22 TON
EST 28 SY GEO
(BANKS ONLY)

V_{15yr} = 8.79 FPS
Q_{15} = 1.80 CFS

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

REMOVE 8" CMP

UNABLE TO LOCATE PIPE

PROPOSED SBG
EXIST STA 170+81 LT

SPECIAL CUT DITCH
SEE DETAIL K

PROPOSED SBG
END STA 180+81 LT

M-443 M-442 M-441 M-440 M-439 M-438

M-508 M-509 M-510 M-511

M-108 M-109

M-112 /M-113

PROPOSED SBG
BEG STA 174+75 RT

PROPOSED SBG
END STA 182+75 RT

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 21 SY GEO
(BANKS ONLY)

DEER FOREST TRAIL

SITE 1501
(WETLAND/STREAM 1501)

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

50 0 100

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: I5338 / I5311
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

$$$$USERNAME$$$$
$$$$DESIGN$$$$
$$$$TIME$$$$

6/17/99

REVISIONS

-L- CURVE DATA

PI Sta 150+31.19
Δ = 21° 40' 48.1" (LT)
D = 0° 30' 00.0"
L = 4,336.00'
T = 2,194.25'
R = 11,459.16'
V = 70 MPH

PIs Sta 172+52.95
θs = 0° 36' 00.0"
Ls = 240.00'
LT = 160.00'
ST = 80.00'

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
(WETLANDS/STREAM 1501)
(MOT 1501)

SITE 1501

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

CLASS II RIP RAP
EST 22 TON
EST 28 SY GEO
(BANKS ONLY)

V_{ave}= 8.79 FPS
Q_{10}= 1.80 CFS

PROPOSED SBG
BEG STA 170+81 LT

RETAIN

REMOVE 8" CMP

M-443
M-442
M-441
M-440
M-439
M-438

2GI

SPECIAL CUT DITCH
SEE DETAIL K

PROPOSED SBG
END STA 180+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

CULVERT PRESERVATION
SEE DETAIL H

CLASS II RIP RAP
EST 20 TON
EST 39 SY GEO

M-112 /M-113

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

CLASS 'B' RIP RAP
EST 1 TON
EST 8 SY GEO

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

DEER FOREST TRAIL

SITE 1501
(WETLANDS/STREAM 1501)

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

50 0 100

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: I5338 / I5311
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

$$$$USERNAME$$$$
$$$$SYSTIME$$$$
$$$$DESIGN$$$$

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

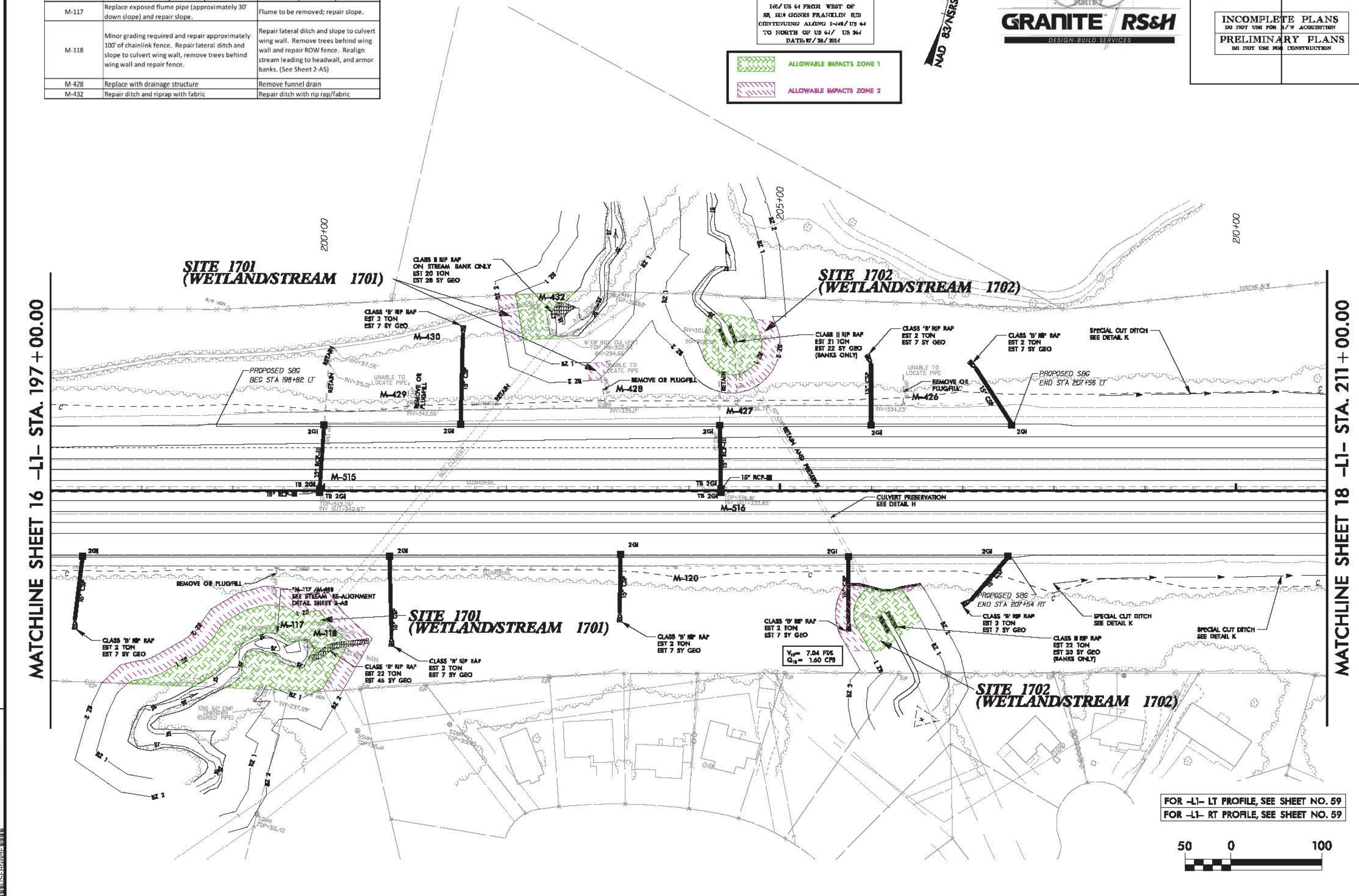
N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: I5338/I5311
I40/US 64 FROM WEST OF
SR 1319 (JONES FRANKLIN RD)
CONTINUING ALONG I-440/US 64
TO NORTH OF US 64/ US 264
DATE: 07/28/2014

GRANITE RS&H DESIGN-BUILD SERVICES

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

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2



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

50 0 100

REVISIONS

8/17/99

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: 15238/15211
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

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
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

6/17/99

REVISIONS

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)

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

REMOVE OR PLUG/FILL

M-430 M-429 M-432 M-428 M-427 M-426

M-515 M-516 M-120 M-117 M-118

15" RCP-III

CULVERT PRESERVATION SEE DETAIL H

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)

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

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

GRANITE RS&H DESIGN-BUILD SERVICES

-RP6C- CURVE DATA

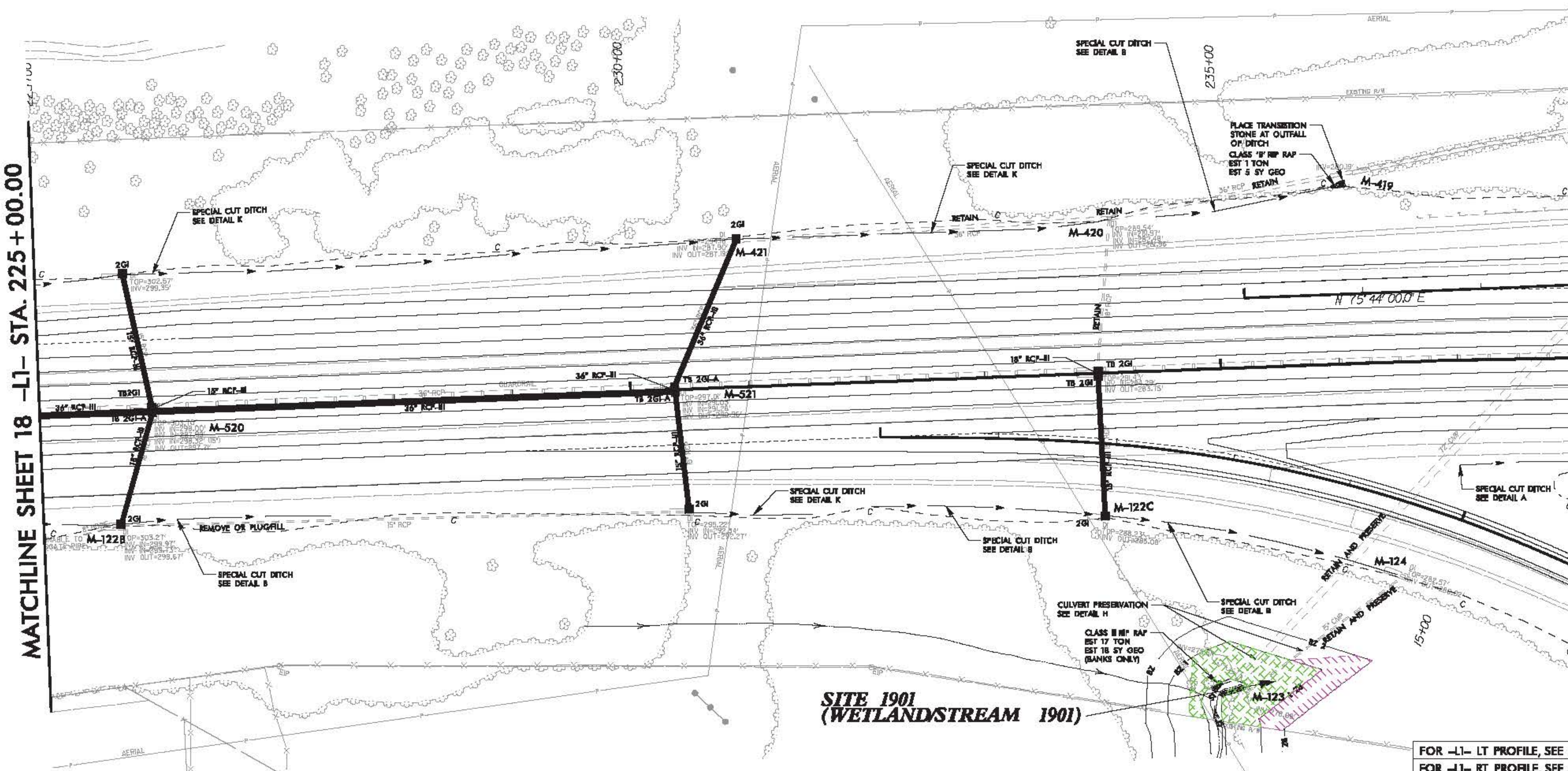
PIs Sta 11+40.06	PI Sta 13+76.42	PIs Sta 16+10.60
Θs = 5°13′ 52.9″	Δ = 16°28′ 06.7″ (RT)	Θs = 5°13′ 52.9″
Ls = 210.00′	D = 4°58′ 56.1″	Ls = 210.00′
LT = 140.06′	L = 330.54′	LT = 140.06′
ST = 70.06′	T = 166.42′	ST = 70.06′
	R = 1,150.00′	
	V = 55 MPH	

-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



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

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: I5338 / I5311
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 / 26 / 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

REVISIONS

8/17/99

8/17/99

REVISIONS

-RP6C- CURVE DATA

PIs Sta 11+40.06
Θs = 5° 13′ 52.9″
Ls = 210.00′
LT = 140.06′
ST = 70.06′

PI Sta 13+76.42
Δ = 16° 28′ 06.7″ (RT)
D = 4° 58′ 56.1″
L = 330.54′
T = 166.42′
R = 1,150.00′
V = 55 MPH

PIs Sta 16+10.60
Θs = 5° 13′ 52.9″
Ls = 210.00′
LT = 140.06′
ST = 70.06′

-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
Θs = 1° 11′ 39.4″
Ls = 240.00′
LT = 160.00′
ST = 80.00′

PI Sta 258+76.38
Δ = 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

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

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

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: I5338 / I5311
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

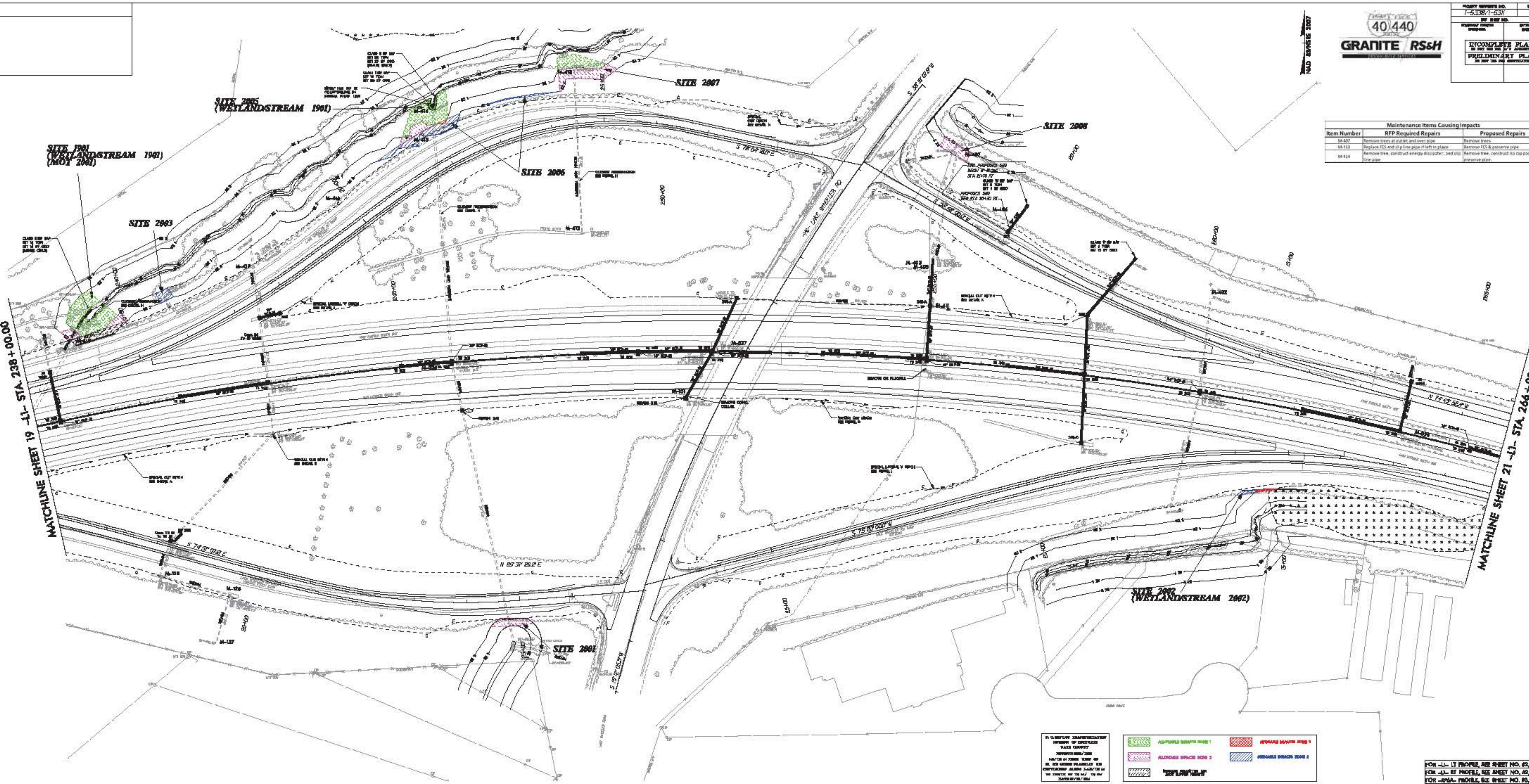
▨	ALLOWABLE IMPACTS ZONE 1
▨	ALLOWABLE IMPACTS ZONE 2

Maintenance Items Causing Impacts

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

50 0 100

$$$$SYSTIME$$$$
$$$$USERNAME$$$$



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 FCS and slip line pipe if left in place	Remove FCS & preserve pipe
M-414	Remove tree, construct energy dissipater, and slip line pipe	Remove tree, construct rip rap pad and preserve pipe.

-RP6B- CURVE DATA

PIs Sta 14+04.06	PI Sta 16+81.25	PIs Sta 18+37.14	PIs Sta 21+85.87	PI Sta 24+62.09
θs = 5° 09' 23.8"	Δ = 13° 48' 10.3" (LT)	θs = 5° 09' 23.8"	θs = 8° 50' 23.1"	Δ = 41° 28' 16.2" (RT)
Ls = 216.00'	D = 4° 46' 28.7"	Ls = 216.00'	Ls = 216.00'	D = 8° 11' 08.4"
LT = 144.08'	L = 289.08'	LT = 144.06'	LT = 144.16'	L = 506.67'
ST = 72.09'	T = 145.29'	ST = 72.08'	ST = 72.16'	T = 265.00'
	R = 1,200.00'			R = 700.00'
	V = 60 MPH			V = 45 MPH

-RP6C- CURVE DATA

PIs Sta 18+10.80	PIs Sta 21+23.96	PI Sta 23+47.57
θs = 5° 13' 52.9"	θs = 5° 43' 46.5"	Δ = 13° 41' 39.7" (LT)
Ls = 210.00'	Ls = 240.00'	D = 4° 46' 28.7"
LT = 140.06'	LT = 160.08'	L = 286.81'
ST = 70.08'	ST = 80.08'	T = 144.09'
		R = 1,200.00'
		V = 35 MPH

-L1- CURVE DATA

PI Sta 258+78.68
Δ = 40° 20' 40.5" (RT)
D = 0° 59' 56.6"
L = 4,038.28'
T = 2,106.92'
R = 5,735.00'
V = 70 MPH

-Y6- CURVE DATA

PI Sta 14+36.77	PI Sta 20+02.40
Δ = 14° 08' 11.0" (LT)	Δ = 8° 57' 51.4" (LT)
D = 1° 44' 58.2"	D = 2° 43' 42.1"
L = 806.12'	L = 328.56'
T = 405.11'	T = 164.62'
R = 3,275.00'	R = 2,100.00'

-RP6A- CURVE DATA

PIs Sta 14+66.02	PI Sta 18+35.29
θs = 2° 51' 53.2"	Δ = 13° 44' 47.2" (RT)
Ls = 240.00'	D = 2° 23' 14.4"
LT = 180.02'	L = 575.81'
ST = 80.02'	T = 289.29'
	R = 2,400.00'
	V = 50 MPH

-RP6D- CURVE DATA

PIs Sta 11+71.07	PI Sta 15+66.75	PIs Sta 19+39.97
θs = 1° 00' 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 = 133.38'
LT = 118.77'	T = 314.45'	ST = 66.69'
ST = 81.35'	R = 1,600.00'	
	V = 60 MPH	

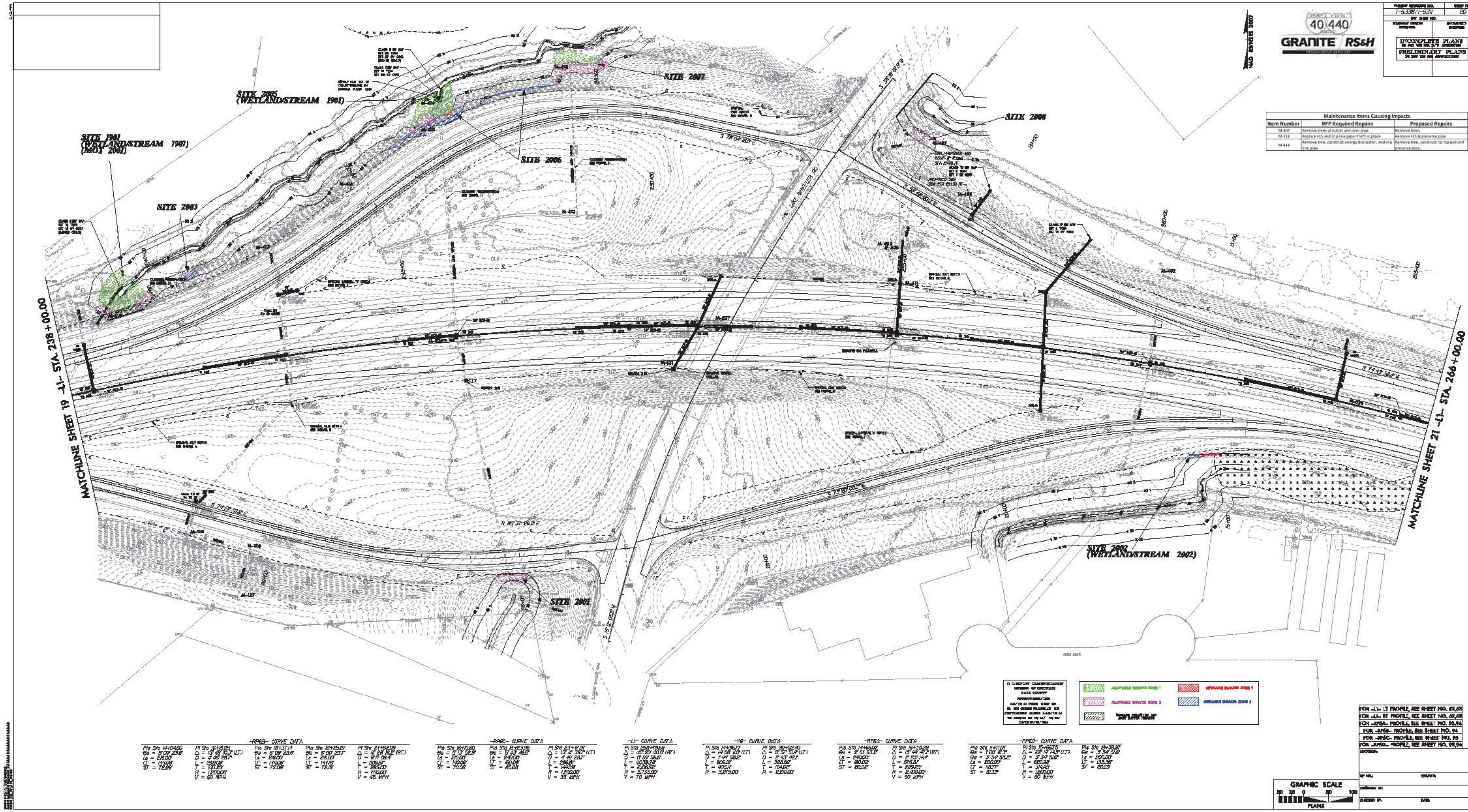
FOR -L1- LT PROFILE, SEE SHEET NO. 62,63
FOR -L1- RT PROFILE, SEE SHEET NO. 62,63
FOR -RP6A- PROFILE, SEE SHEET NO. 93,94
FOR -RP6B- PROFILE, SEE SHEET NO. 94
FOR -RP6C- PROFILE, SEE SHEET NO. 95
FOR -RP6D- PROFILE, SEE SHEET NO. 95,96

LOCATION:

TIP NO.: COUNTY:

DESIGNED BY:

CHECKED BY: DATE:



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.

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

GRANITE RS&H — DESIGN-BUILD SERVICES

8/17/99

REVISIONS

-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 = 70 MPH

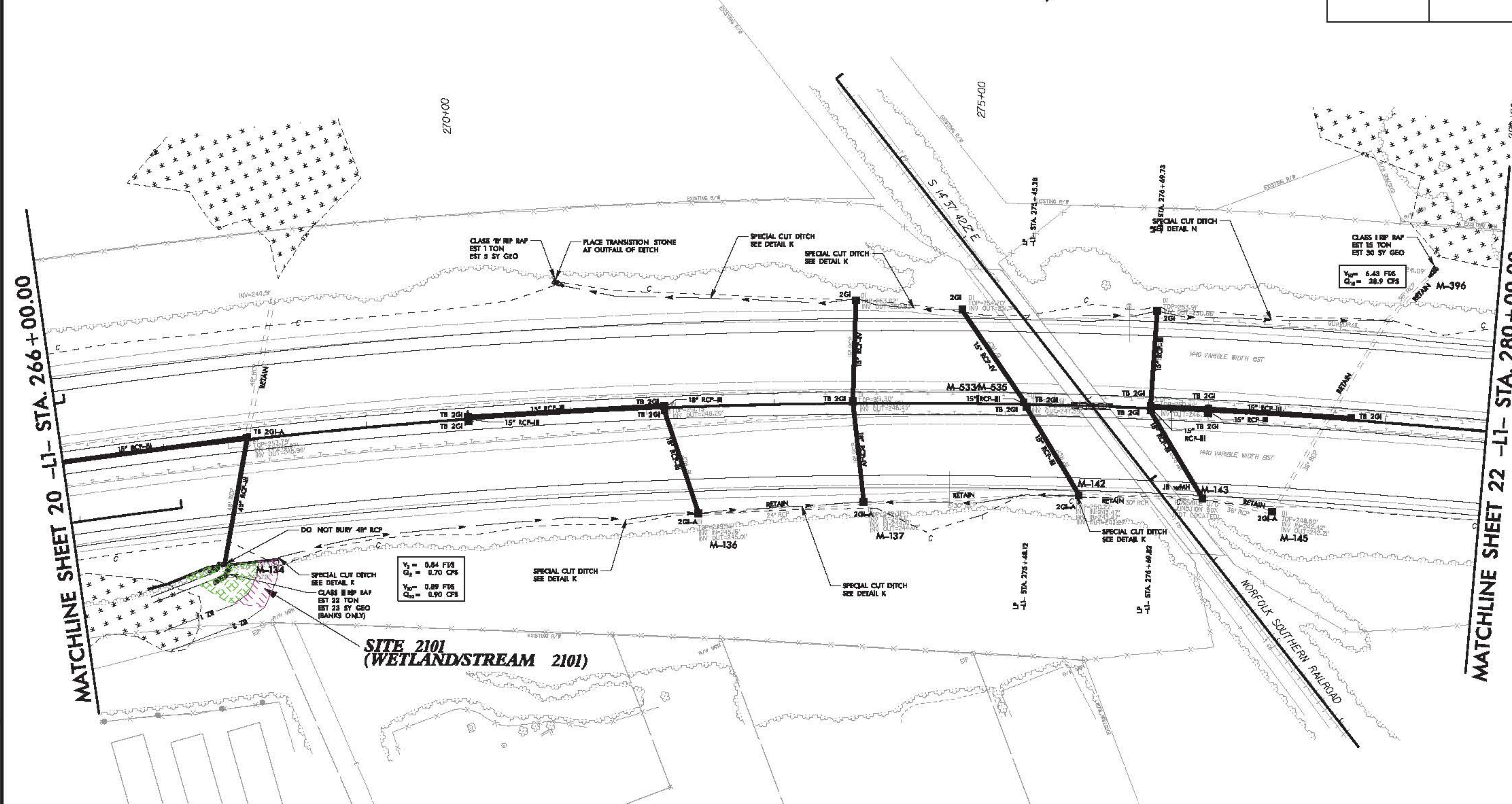
PIs Sta 11+71.07
θs = 1° 00' 18.3"
θs = 3° 34' 53.2"
Ls = 200.00'
LT = 118.77'
ST = 81.33'

-L1- CURVE DATA

PI Sta 258+76.38
Δ = 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



N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: I5338/I5311
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/ 30/ 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

6/17/99

REVISIONS

-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 = 70 MPH

Pls 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
Δ = 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

Pls 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 PORTION

GRANITE RS&H DESIGN-BUILD SERVICES

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	21
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 20 -L1- STA. 266+00.00

MATCHLINE SHEET 22 -L1- STA. 280+00.00

270+00 275+00

S 14° 57' 42" E

SITE 2101
(WETLAND/STREAM 2101)

CLASS B RIP RAP
EST 1 TON
EST 5 SY GEO

PLACE TRANSITION STONE AT OUTFALL OF DITCH

SPECIAL CUT DITCH SEE DETAIL K

CLASS I RIP RAP
EST 15 TON
EST 30 SY GEO

V_{ch}= 6.43 FT/S
Q_{10}= 28.9 CFS

M-396

M-533/M-535

M-134

M-136

M-137

M-142

M-143

M-145

DO NOT BURY 48" RCP

CLASS B 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

NORFOLK SOUTHERN RAILROAD

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/ 30/ 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

$$$$USERNAME$$$$
$$$$LOGIN$$$$
$$$$SYSTIME$$$$
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	22
RW 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 PORTION

GRANITE RS&H DESIGN-BUILD SERVICES

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

-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

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

*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

RETAIN

BEGIN SBG -L1- STA. 285+54

15" WELBOWS, ROD, & LUG CONNECTORS

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 1219 (JONES FRANKLIN RD) CONTINUING ALONG I-440 / US 64 TO NORTH OF US 64 / US 264
DATE: 07 / 28 / 2014

50 0 100

REVISIONS

6/17/99

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	22
RW 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 PORTION

GRANITE RS&H DESIGN-BUILD SERVICES

-L1- CURVE DATA

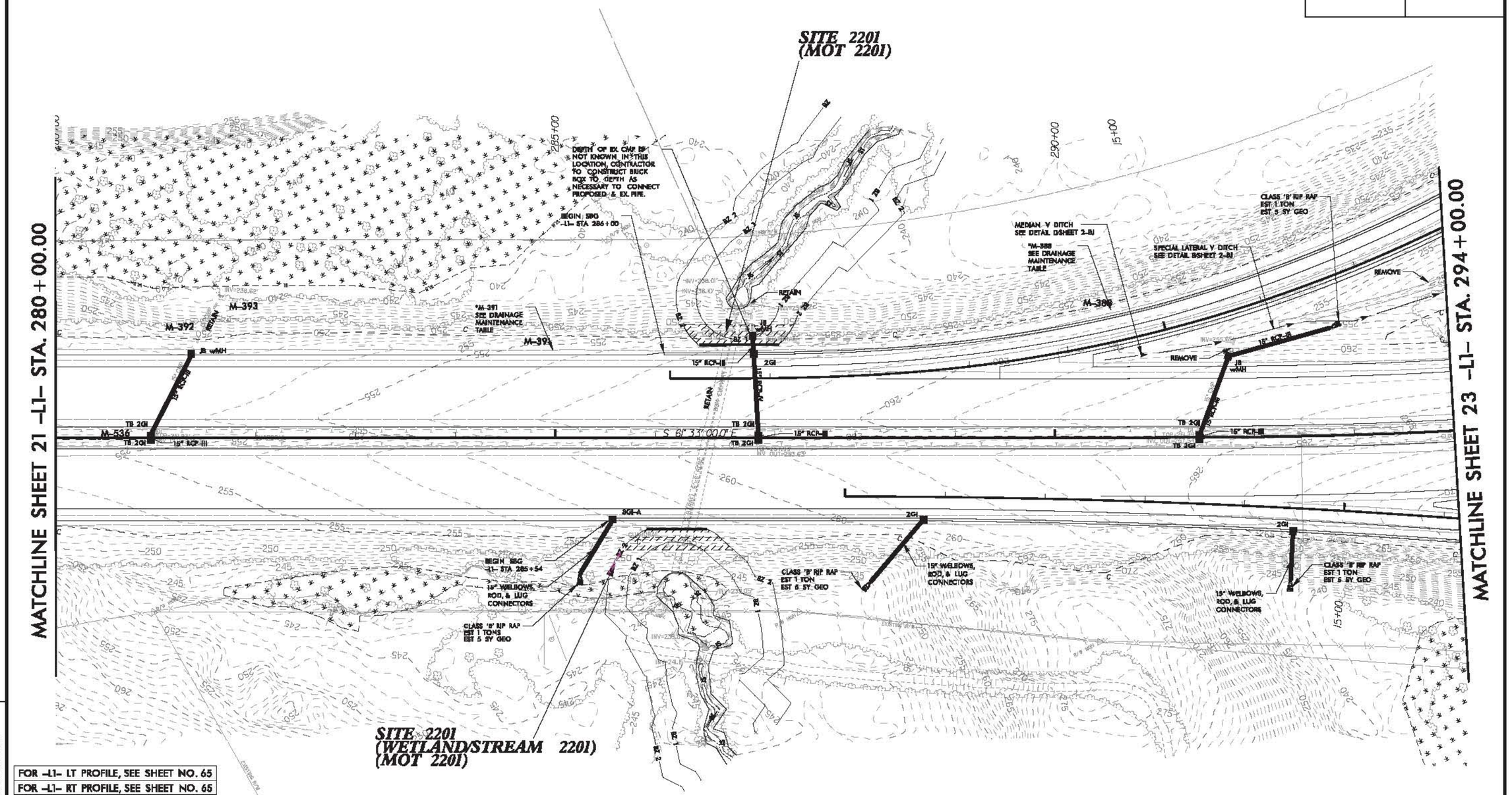
PIs Sta 278+94.43	PIs Sta 293+66.36
Θs = 1° 11' 39.4"	Θs = 6° 03' 56.6"
Ls = 240.00'	Ls = 480.00'
LT = 160.00'	LT = 320.19'
ST = 80.00'	ST = 160.17'

-RP7B- CURVE DATA

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'	Ls = 300.00'
L = 414.50'	LT = 140.06'	LT = 185.62'
T = 209.34'	ST = 70.05'	ST = 114.87'
R = 1,200.00'		
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'



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
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

50 0 100

REVISIONS

6/17/99

PROJECT REFERENCE NO.	SHEET NO.
I-5338(7-53)1	23
INV. D-5107 NO.	
ROADWAY DESIGN SUPERVISOR	STRUCTURES SUPERVISOR

UNCOMPLETE PLANS
DO NOT USE FOR CONSTRUCTION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

40 440

GRANITE RS&H

NAD 83/NAVD 2007

REVISIONS

-RPTB- CURVE DATA
PI Sta 274+36.37
Δ = 1°29'30.4"
D = 1°09'58.2"
Lc = 100.00'
LL = 180.62'
ST = 1145"
PI Sta 314+36.83
Δ = 3°28'34.5" (RT)
D = 0°49'06.8"
Lc = 464.12'
L = 812.45'
T = 406.52'
R = 7,000.00'

-LPTB- CURVE DATA
PI Sta 249+76.08
Δ = 4°09'40.7" (RT)
D = 2°36'45.3"
Lc = 417.41'
L = 778.59'
T = 389.52'
R = 2,194.00'
PI Sta 381+46.37
Δ = 1°53'07.3" (RT)
D = 1°57'29.0"
Lc = 489.52'
L = 2,899.26'
R = 152.00'

SITE 2302 (MOT 2301)
SITE 2302 (MOT 2302)
SITE 2303 (WETLAND/STREAM 2302)
SITE 2302 (MOT 2303)
SITE 2302 (MOT 2304)
SITE 2302 (MOT 2305)
SITE 2304
(MOT 2305)
SITE 2305 (MOT 2304)
SITE 2305 (WETLAND/STREAM (MOT 2305)
SITE 2306 (MOT 2305)
SITE 2307 (WETLAND/STREAM 2302)
(MOT 2305)
SITE 2305
SITE 2301 (MOT 2304)

MATCHLINE SHEET 22 -11- STA. 294+00.00

MATCHLINE SHEET 24 -11- STA. 319+00.00

N 68°03'48.2" E

S 36°06'39.5" E

S 11°50'08.4" W

S 64°49'18.6" W

Maintenance Items Causing Impacts		
Item Number	RFP Required Repairs	Proposed Repairs
M-150	Clean out outlet	Return and protective pipe
M-368	Clean out curb line and drainage system	Install MH, construct new structure; convert ex. structure to 2B

-RPTC- CURVE DATA
PI Sta 83+56.48
Δ = 1°49'58.8" (RT)
D = 0°34'22.6"
Lc = 219.96'
L = 219.98'
T = 109.99'
R = 10,000.00'

-LT- CURVE DATA
PI Sta 16+36.66
Δ = 2°07'30.8" (LT)
D = 0°34'22.6"
Lc = 106.98'
L = 106.99'
T = 53.51'
R = 10,000.00'

-U- CURVE DATA
Pls Sta 253+66.36
Gd = 9.03' 56.8"
Lc = 180.00'
L = 320.19'
ST = 760.17'
PI Sta 302+66.63
Δ = 55°48' 09.8" (LT)
D = 12°31' 36.8"
Lc = 446.96'
L = 1,218.79'
R = 457.00'
V = 65 MPH
Pls Sta 311+09.50
Gd = 9.03' 56.8"
Lc = 180.00'
L = 320.19'
ST = 760.17'

-RPTA- CURVE DATA
Pls Sta 114+00.06
Gd = 2.00' 48.2"
Lc = 240.00'
L = 240.00'
ST = 700.03'
PI Sta 164+42.71
Δ = 39°34' 41.8" (RT)
D = 7°46' 29.2"
Lc = 281.58'
L = 289.52'
T = 431.17'
R = 1,200.00'

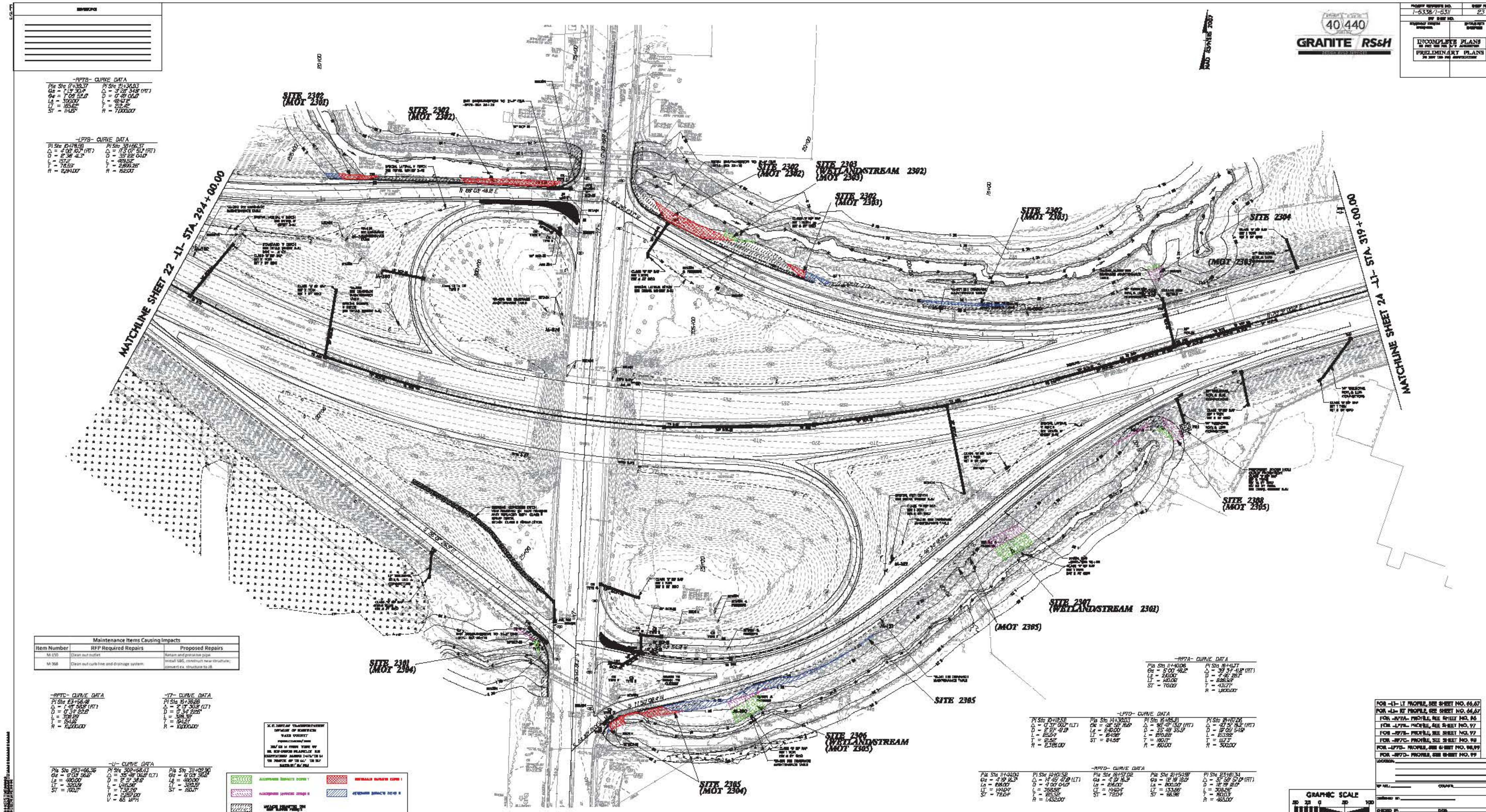
-LPTD- CURVE DATA
PI Sta 102+19.56
Δ = 9°57' 17.9" (LT)
D = 6°57' 41.9"
Lc = 69.04'
L = 69.42'
R = 1,196.00'
PI Sta 141+30.01
Gd = 04° 00' 15.6"
Lc = 240.00'
LT = 240.00'
ST = 614.56'
PI Sta 165+85.21
Δ = 90°-17' 15.0" (RT)
D = 35°-49' 35.5"
Lc = 200.00'
T = 160.17'
R = 160.00'
PI Sta 184+87.06
Δ = 42°-54' 34.8" (RT)
D = 19°-05' 54.6"
Lc = 81.06'
L = 82.37'
R = 300.00'

-RPTD- CURVE DATA
Pls Sta 111+20.92
Gd = 2.00' 16.3"
Lc = 240.00'
LT = 240.00'
ST = 722.04'
PI Sta 139+57.58
Δ = 17°-02' 37.9" (LT)
D = 4°-00' 04.0"
L = 358.58'
T = 180.52'
R = 1,432.00'
PI Sta 161+07.08
Gd = 4° 00' 16.3"
Lc = 240.00'
LT = 240.00'
ST = 722.04'
PI Sta 211+10.58
Gd = 12° 14' 18.0"
Lc = 200.00'
LT = 153.00'
ST = 98.96'
PI Sta 231+01.24
Δ = 31° 59' 31.0" (RT)
D = 12° 19' 26.0"
L = 208.06'
T = 160.13'
R = 465.00'

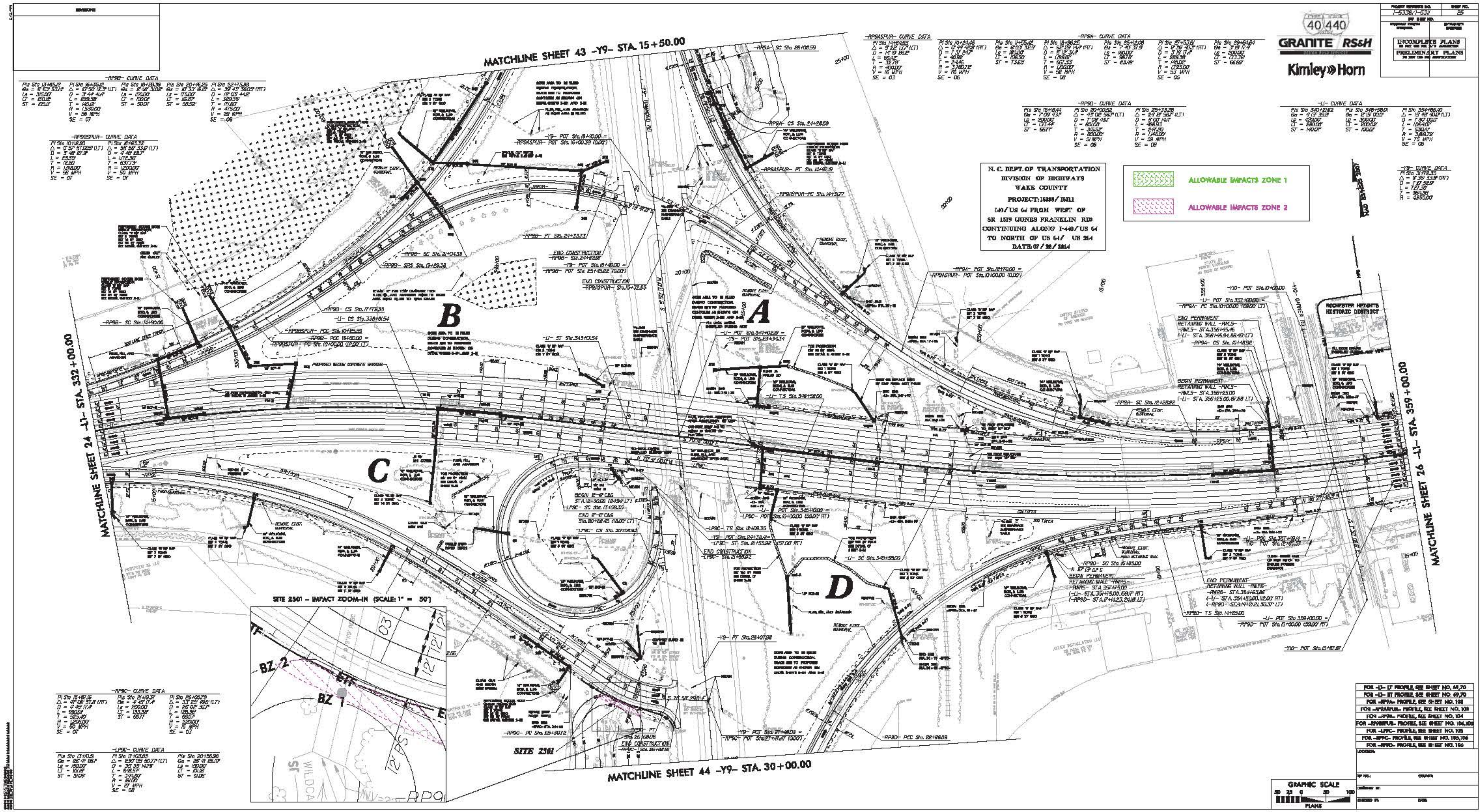
FOR -L1- LT PROFILE, SEE SHEET NO. 66,67	
FOR -L2- RT PROFILE, SEE SHEET NO. 66,67	
FOR -RPTA- PROFILE, SEE SHEET NO. 96	
FOR -LPTB- PROFILE, SEE SHEET NO. 97	
FOR -RPTB- PROFILE, SEE SHEET NO. 97	
FOR -RPTC- PROFILE, SEE SHEET NO. 98	
FOR -LPTD- PROFILE, SEE SHEET NO. 98,99	
FOR -RPTD- PROFILE, SEE SHEET NO. 99	

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

GRAPHIC SCALE
20 0 20 100
PLANS


GRANITE RS&H
40 440
INCOMPLETE PLANS
PRELIMINARY PLANS
MATCHLINE SHEET 22 -L1- STA. 294+00.00
MATCHLINE SHEET 24 -L1- STA. 319+00.00
SITE 2302 (MOT 2301)
SITE 2302 (MOT 2302)
SITE 2302 (MOT 2302)
SITE 2303 (WETLAND/STREAM 2302) (MOT 2303)
SITE 2302 (MOT 2303)
SITE 2302 (MOT 2303)
SITE 2304
(MOT 2305)
SITE 2308 (MOT 2305)
SITE 2307 (WETLAND/STREAM 2301)
(MOT 2305)
SITE 2301 (MOT 2304)
SITE 2305
SITE 2306 (WETLAND/STREAM (MOT 2305)
SITE 2305 (MOT 2304)
-RP7A- CURVE DATA
-LP7D- CURVE DATA
-RP7D- CURVE DATA
-RP7C- CURVE DATA
-Y7- CURVE DATA
-U- CURVE DATA
FOR -L1- LT PROFILE, SEE SHEET NO. 66,67
FOR -L1- RT PROFILE, SEE SHEET NO. 66,67
GRAPHIC SCALE
PLANS

Maintenance Items Causing Impacts		
Item Number	RFP Required Repairs	Proposed Repairs
M-150	Clean out outlet	Retain and preserve pipe
M-368	Clean out curb line and drainage system	Install SBG, construct new structure; convert ex. structure to JB


MATCHLINE SHEET 43 -Y9- STA. 15+50.00
MATCHLINE SHEET 44 -Y9- STA. 30+00.00
MATCHLINE SHEET 24 -L- STA. 332+00.00
MATCHLINE SHEET 26 -L- STA. 359+00.00
GRANITE RS&H
Kimley»Horn
INCOMPLETE PLANS
PRELIMINARY PLANS
N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: I5308 / I5311
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
A
B
C
D
SITE 2501
SITE 2501 - IMPACT ZOOM-IN (SCALE: 1" = 50')
BZ 2
BZ 1
ROCHESTER HEIGHTS HISTORIC DISTRICT
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
GRAPHIC SCALE
50 25 0 50 100
PLANS

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: 16388 / 15U1
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 / 22 / 2014

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

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

SITE 2301

A

B

C

D

ROCHESTER HEIGHTS HISTORIC DISTRICT

I-40 / 440

GRANITE RS&H

Kimley»Horn

UNCOMPLETE PLANS
DO NOT USE FOR CONSTRUCTION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PROJECT REFERENCE NO. 16388 / I-5331
SHEET NO. 25

RW SHEET NO.

FOR -L1- LT PROFILE, SEE SHEET NO. 69,70
FOR -L1- RT PROFILE, SEE SHEET NO. 69,70
FOR -RPA- PROFILE, SEE SHEET NO. 103
FOR -RPB- PROFILE, SEE SHEET NO. 104
FOR -RPBPUR- PROFILE, SEE SHEET NO. 104,105
FOR -LPC- PROFILE, SEE SHEET NO. 105
FOR -RPC- PROFILE, SEE SHEET NO. 180,106
FOR -RPD- PROFILE, SEE SHEET NO. 180

GRAPHIC SCALE
20 10 0 20 100
PLANS

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	

-L1- 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: 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 / 25 / 2014

NAD 83/NSRS 2007

INTERSTATE 40 INTERSTATE 440 BELTLINE

GRANITE RS&H DESIGN-BUILD SERVICES

Kimley»Horn

ROCHESTER HEIGHTS HISTORIC DISTRICT

SITE 2601 (MOT 2601)

-Y11- POT Sta.10+00.00

-L1- POT Sta.367+44.09 =
-Y11- POT Sta.12+77.41

END PERMANENT RETAINING WALL -RWL6-
-RWL6- 366+55.00
(-L1- STA. 366+55.00, 88.62' 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)

END PERMANENT RETAINING WALL -RWL7-
-RWL7- STA. 369+49.28
(-L1- STA. 369+50.00, 88.78' LT)

-L1- CS Sta.360+12.07

-L1- ST Sta.363+12.07

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)

SITE 2601 (MOT 2601)

-Y11- POT Sta.14+60.48

FILL DECK DRAINS INSTALLED DURING MOT

CLEANOUT EXIST DITCH TO ENSURE POSITIVE DRAINAGE

CLEANOUT EXIST DITCH & PIPE TO ENSURE POSITIVE DRAINAGE

RETAIN SLOT DRAIN ALONG FACE OF PERMANENT TRAFFIC BARRIER

PROPOSED MEDIAN CONCRETE BARRIER

REMOVE EXIST. GUARDRAIL

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

SBG INSTALLED IN MOT PHASE TO BE RETAINED STA 358+45 TO 366+23 -L1-

BEGIN SBG -L1- STA. 363+12

END SBG/BEGIN BARRIER WALL STA. 365+00

END BARRIER WALL/BEGIN SBG STA. 369+80

END SBG/ BEGIN TRANSITION STA. 371+75

END TRANSITION/ BEGIN EXPRESSWAY GUTTER STA. 372+75

BEGIN EXPRESSWAY GUTTER STA. 368+34

TIE JB W/MH COVER TO EXIST 18" CMP

TIE 2GI TO EXIST 18" RCP

18" WELBOWS, ROD, & LUG CONNECTORS

15" WELBOWS, ROD, & LUG CONNECTORS

MATCHLINE SHEET 25 -L1- STA. 359+00.00

MATCHLINE SHEET 27 -L1- STA. 373+00.00

FOR -L1- LT PROFILE, SEE SHEET NO. 71
FOR -L1- RT PROFILE, SEE SHEET NO. 71

REVISIONS

6/17/99

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

GRANITE RS&H
DESIGN-BUILD SERVICES

Kimley»Horn

NAD 83/NSRS 2007

REVISIONS 6/17/99

-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: I-5338 / I-5311
I-40/US 64 FROM WEST OF SR 1319 (JONES FRANKLIN RD) CONTINUING ALONG I-40/US 64 TO NORTH OF US 64/ US 264
DATE: 07/28/2014

ROCHESTER HEIGHTS HISTORIC DISTRICT

MATCHLINE SHEET 25 -LI- STA. 359+00.00

MATCHLINE SHEET 27 -LI- STA. 373+00.00

-Y11- POT Sta.10+00.00

-LI- POT Sta.367+44.09 =
-Y11- POT Sta.12+77.41

-Y11- HADLEY RD

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)

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)

SEQ INSTALLED IN MOT PHASE TO BE RETAINED STA. 358+45 TO 366+23 -LI-

-U- CS Sta.360+12.07

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

18" W/ELBOWS, 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)
-U- ST Sta.363+12.07

PROPOSED MEDIAN CONCRETE BARRIER

REMOVE EXIST. GUARDRAIL

TYPE B-77

TIE 2GI TO EXIST 18" RCP

18" W/ELBOWS, ROD, & LUG CONNECTORS

RETAIN SLOT DRAIN ALONG FACE OF PERMANENT TRAFFIC BARRIER

END BARRIER WALL/BEGIN SBG STA. 369+50

END TRANSITION/ BEGIN EXPRESSWAY GUTTER STA. 372+75

END SBG/ BEGIN TRANSITION STA. 371+75

50' TAPER

25:1 TAPER

30:1 TAPER

PROP. GUARDRAIL

REMOVE EXIST. GUARDRAIL

BEGIN SBG -LI- STA. 363+12

END SBG/BEGIN BARRIER WALL STA. 365+00

PROP. RETAINING WALL

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)

-Y11- POT Sta.14+60.48

BEGIN EXPRESSWAY GUTTER STA. 368+34

FILL DECK DRAINS INSTALLED DURING MOT REMOVE

REMOVE

RETAIN

N 89°00'20.0" E

S 4°18'12.9" E

S 01°17'24" W 80.00'

S 69°16'16" W 154.39'

FOR -LI- LT PROFILE, SEE SHEET NO. 71
FOR -LI- RT PROFILE, SEE SHEET NO. 71

$$$$USERNAME$$$$

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

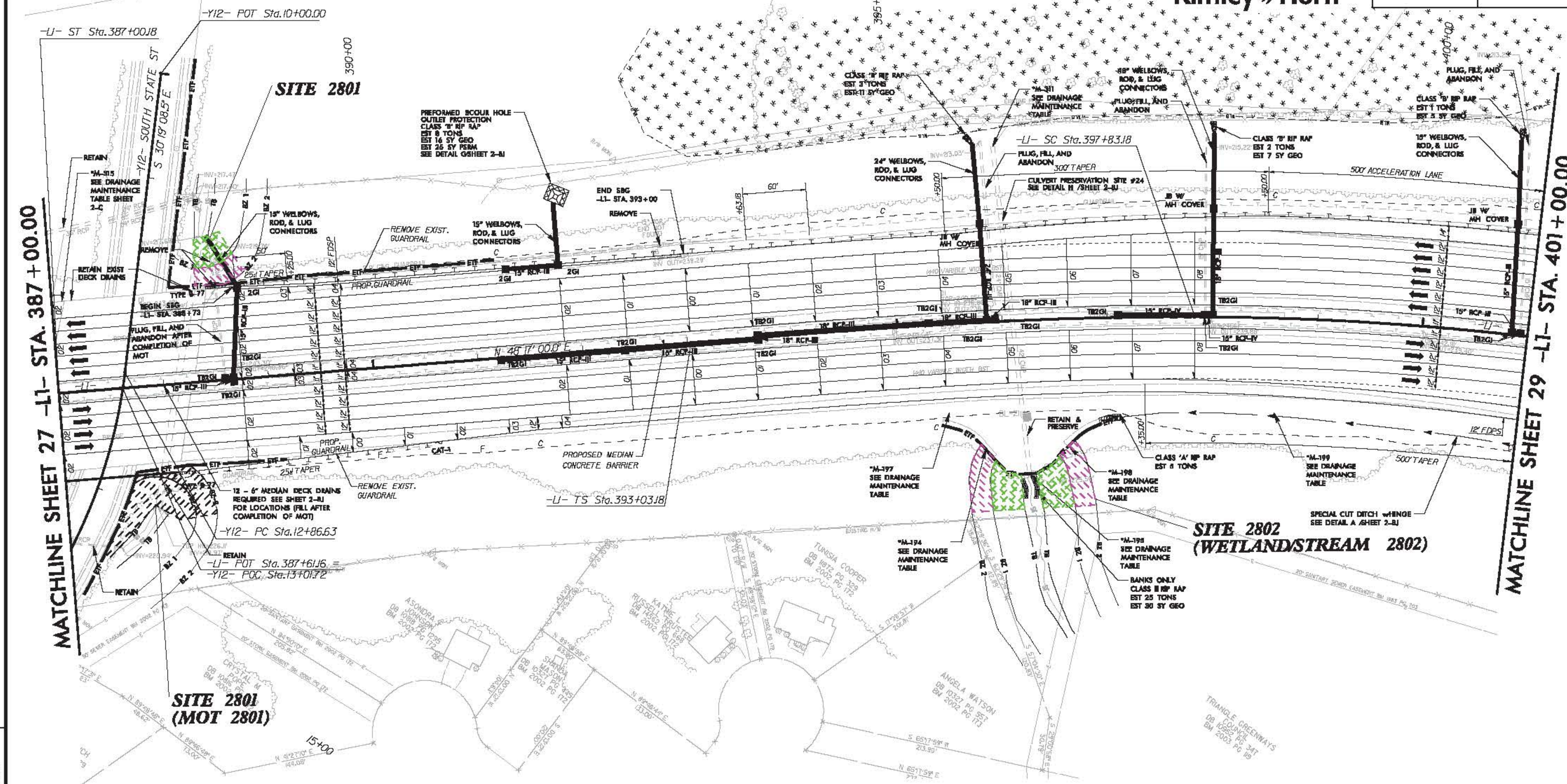
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-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



▨	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: I5338/I5311
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: 07/18/2014

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

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	28
RW 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 PARTIAL

GRANITE RS&H DESIGN-BUILD SERVICES

Kimley»Horn

NAD 83/NSRS 2007

6/17/99

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'

-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

-Y12- SOUTH STATE ST S 30°19'08.5" E

SITE 2801

-L1- STA. 387+00.00

MATCHLINE SHEET 27 -L1-

-L1- SC Sta.397+83.18

-L1- STA. 401+00.00

MATCHLINE SHEET 29 -L1-

SITE 2802 (WETLAND/STREAM 2802)

SITE 2801 (MOT 2801)

-L1- TS Sta.393+03.18

-Y12- PC Sta.12+86.63

-L1- POT Sta.387+61.16 =
-Y12- POC Sta.13+01.72

PREFORMED SCOUR HOLE OUTLET PROTECTION CLASS 'B' RIP RAP EST 8 TONS EST 16 SY GEO EST 26 SY PERM SEE DETAIL G/SHEET 2-AI

END SBG -L1- STA. 393+00

REMOVE

REMOVE EXIST. GUARDRAIL

PROP. GUARDRAIL

PROPOSED MEDIAN CONCRETE BARRIER

RETAIN

"M-315 SEE DRAINAGE MAINTENANCE TABLE SHEET 2-C

RETAIN EXIST DECK DRAINS

BEGIN SBG -L1- STA. 386+73

PLUG, FILL, AND ABANDON AFTER COMPLETION OF MOT

18" WELDBOWS, ROD, & LUG CONNECTORS

15" WELDBOWS, ROD, & LUG CONNECTORS

24" WELDBOWS, ROD, & LUG CONNECTORS

18" WELDBOWS, ROD, & LUG CONNECTORS

PLUG, FILL, AND ABANDON

300' TAPER

500' ACCELERATION LANE

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

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

CLASS 'B' RIP RAP EST 1 TONS EST 3 SY GEO

JB W MH COVER

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

RETAIN & PRESERVE

CLASS 'A' RIP RAP EST 6 TONS

"M-197 SEE DRAINAGE MAINTENANCE TABLE

"M-198 SEE DRAINAGE MAINTENANCE TABLE

"M-199 SEE DRAINAGE MAINTENANCE TABLE

"M-194 SEE DRAINAGE MAINTENANCE TABLE

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

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

12' FDPS

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

IMPACTS PERMITTED ON MOT BUFFER PERMITS

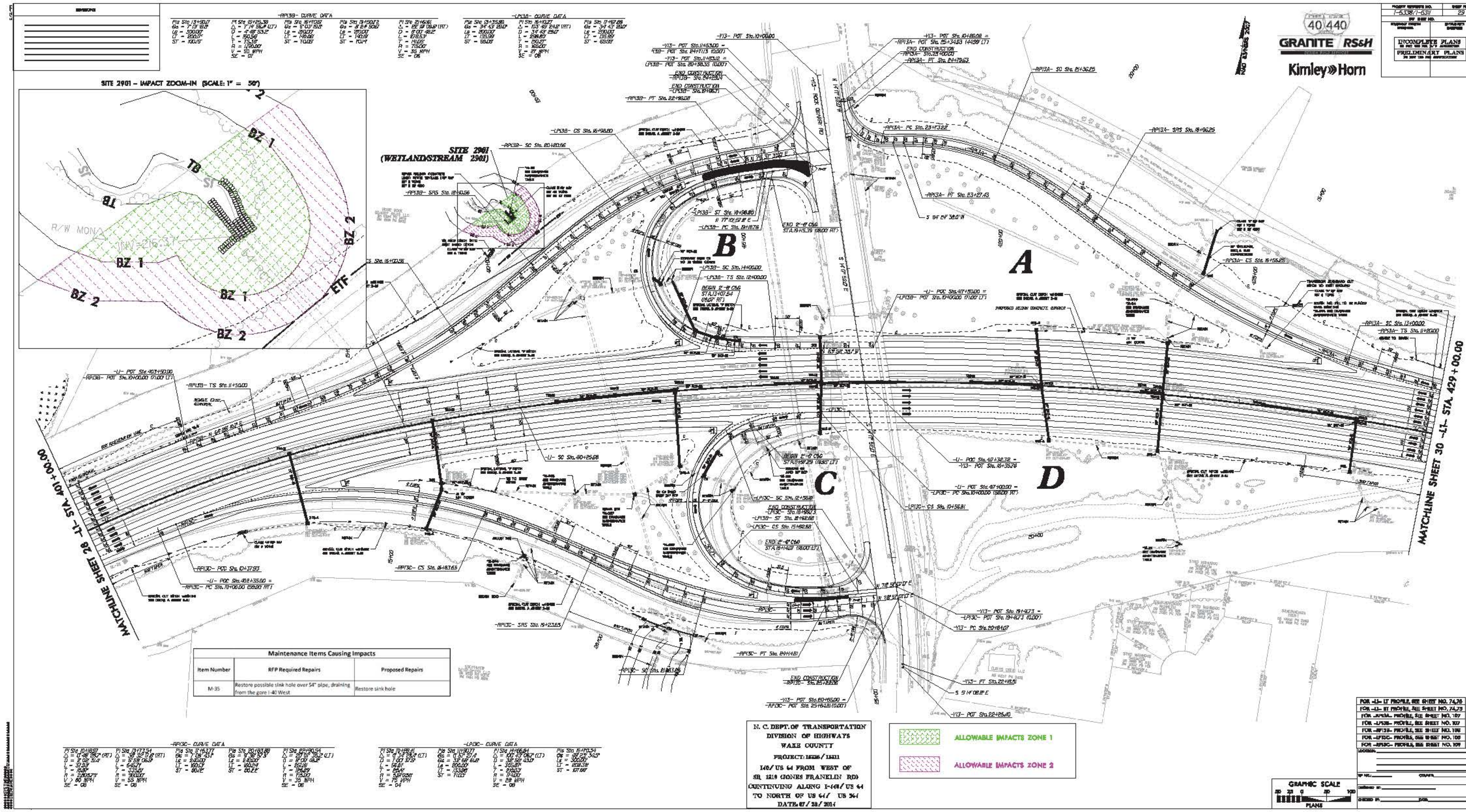
N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: I-5338/I-5311
I-40/US 64 FROM WEST OF SR 1319 (JONES FRANKLIN RD) CONTINUING ALONG I-440/US 64 TO NORTH OF US 64/ US 264
DATE: 07/12/2011

Maintenance Items Causing Impacts

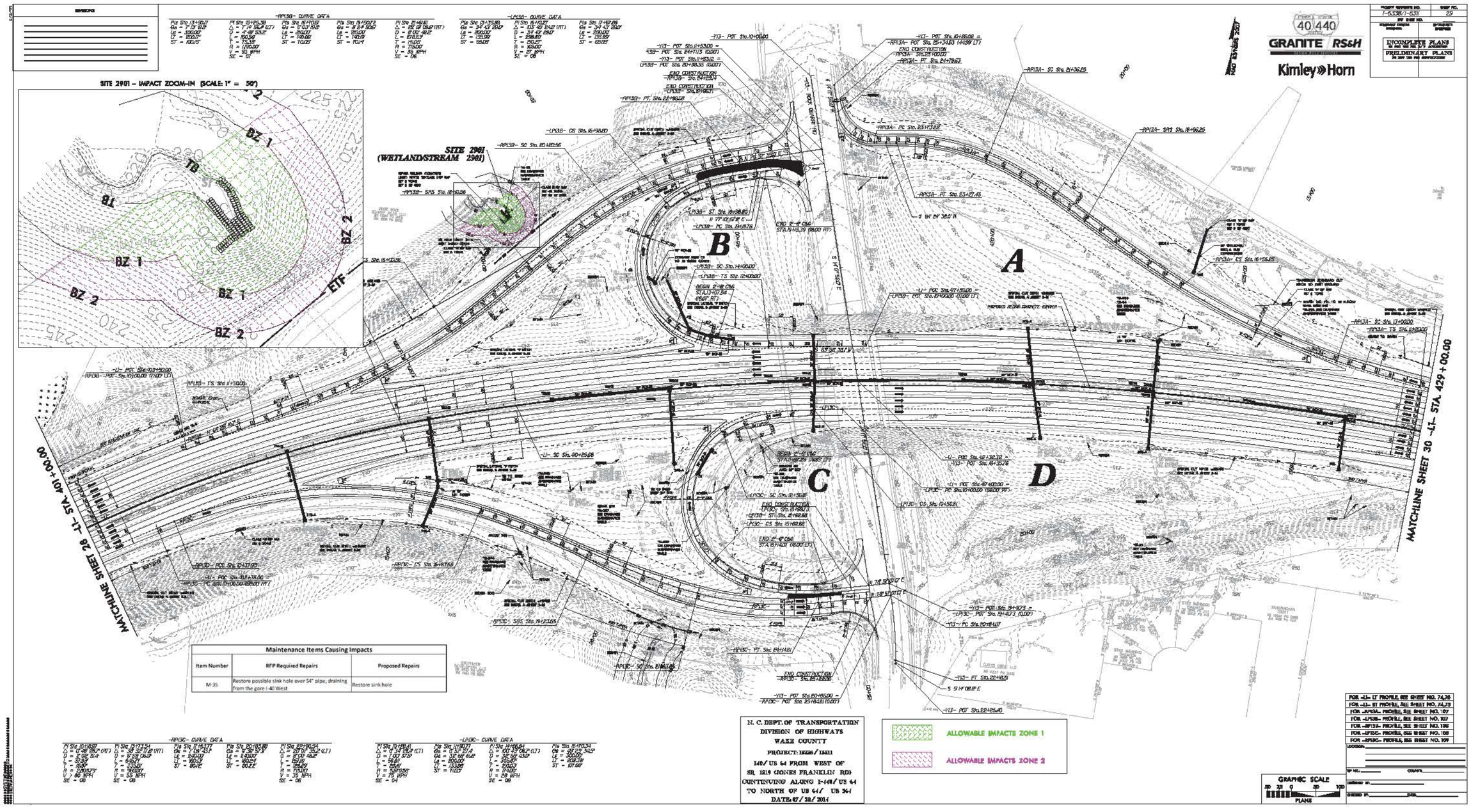
Item Number	RFP Required Repairs	Proposed Repairs
M-195	Clear trees around headwall & slip-line pipe	Slipline pipe and clear trees
M-198	Repair paved ditches washed out near cross line 100-200' west of Exit 300 sign	Repair paved ditch

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

$$$$USERNAME$$$$
$$$$SYSTIME$$$$
$$$$LOGIN$$$$


SITE 2901 - IMPACT ZOOM-IN (SCALE: 1" = 50')
SITE 2901 (WETLAND/STREAM 2901)
BZ 1
BZ 2
TB
ETF
A
B
C
D
MATCHLINE SHEET 28 -L1- STA. 401+00.00
MATCHLINE SHEET 30 -L1- STA. 429+00.00
GRANITE RS&H
Kimley»Horn
PRELIMINARY PLANS
N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: [illegible] / [illegible]
I40/ 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
ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2
GRAPHIC SCALE

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



PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	29

INCOMPLETE PLANS

PRELIMINARY PLANS

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: I5338/I5311
I40/ 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

🟩	ALLOWABLE IMPACTS ZONE 1
▨	ALLOWABLE IMPACTS ZONE 2

FOR -L1- LT PROFILE, SEE SHEET NO. 74,76
FOR -L1- RT PROFILE, SEE SHEET NO. 74,75
FOR -RP13A- PROFILE, SEE SHEET NO. 107
FOR -LP13B- PROFILE, SEE SHEET NO. 107
FOR -RP13B- PROFILE, SEE SHEET NO. 108
FOR -LP13C- PROFILE, SEE SHEET NO. 108
FOR -RP13C- PROFILE, SEE SHEET NO. 109

LOCATION: ____________

TIP NO.: ________ COUNTY: ________

DESIGNED BY: ____________

CHECKED BY: ________ DATE: ________

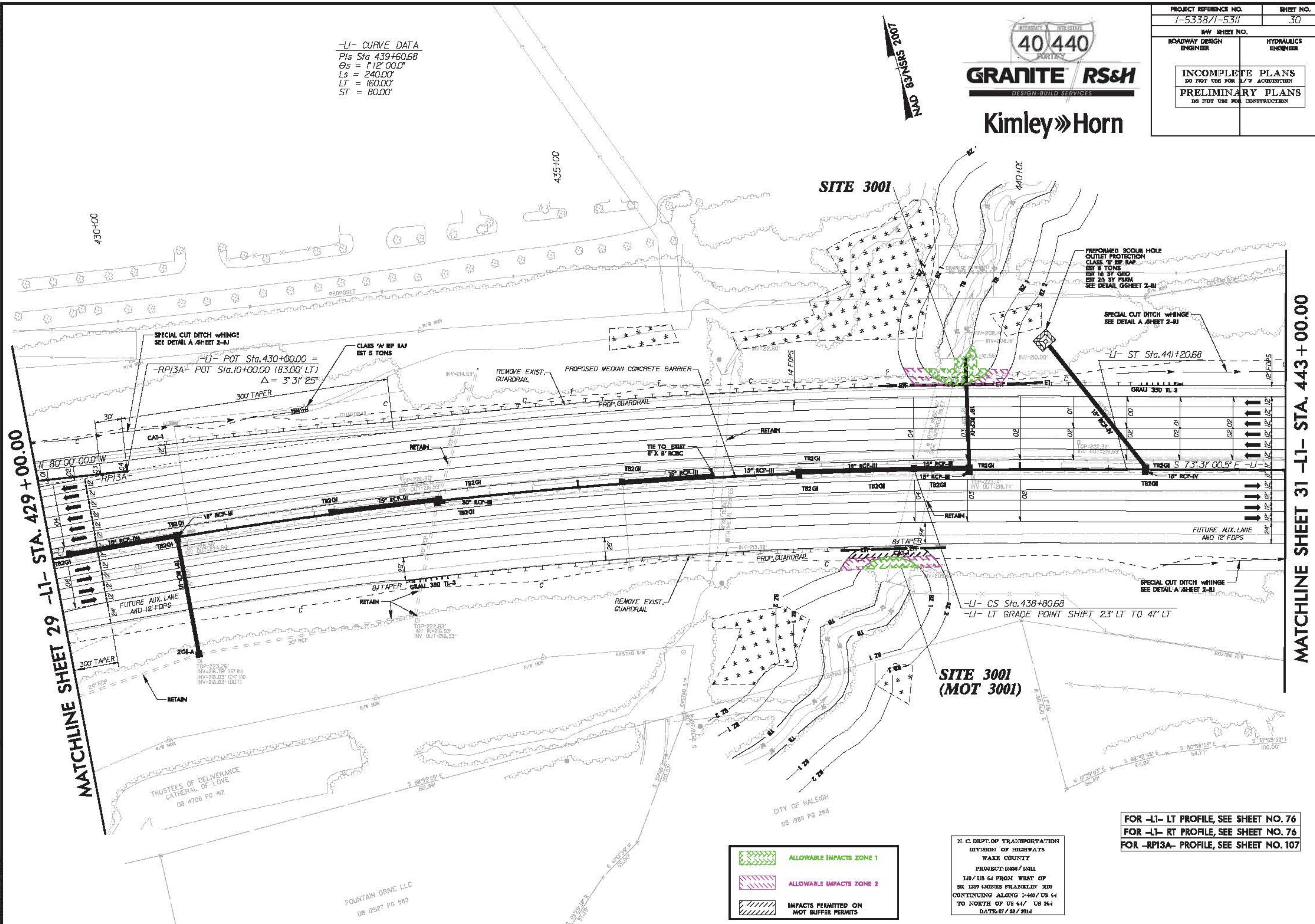
PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	30
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRANITE / RS&H DESIGN-BUILD SERVICES

Kimley»Horn



-L1- CURVE DATA
PIs Sta 439+60.68
Θs = 1°12' 00.0"
Ls = 240.00'
LT = 160.00'
ST = 80.00'
NAD 83/NSRS 2007
SITE 3001
SITE 3001 (MOT 3001)
MATCHLINE SHEET 29 -L1- STA. 429+00.00
MATCHLINE SHEET 31 -L1- STA. 443+00.00
-L1- POT Sta.430+00.00 = -RP13A- POT Sta.10+00.00 (83.00' LT)
Δ = 3°31' 25"
SPECIAL CUT DITCH w/HINGE SEE DETAIL A SHEET 2-B
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
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-B
-L1- ST Sta.441+20.68
GRAU 350 TL-3
N 80°00' 00.0" W
S 73°31' 00.5" E -L1-
FUTURE AUX. LANE AND 12' FDPS
-L1- CS Sta.438+80.68
-L1- LT GRADE POINT SHIFT 23' LT TO 47' LT
8:1 TAPER
TRUSTEES OF DELIVERANCE CATHERAL OF LOVE DB 4708 PG 412
CITY OF RALEIGH DB 1988 PG 268
FOUNTAIN DRIVE LLC DB 12527 PG 589
430+00
435+00
440+00
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: I5338/ I5311
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. 76
FOR -L1- RT PROFILE, SEE SHEET NO. 76
FOR -RP13A- PROFILE, SEE SHEET NO. 107

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 INTERSTATE 440 PORTION

GRANITE RS&H
DESIGN-BUILD SERVICES

Kimley»Horn

NAD 83/NSRS 2007

REVISIONS
6/17/99

-L1- 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

-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 41' LT

SPECIAL CUT DITCH wHINGE
SEE DETAIL A /SHEET 2-BJ

CLASS 'A' RIP RAP
EST. 6 TONS

TRIFORMED SCOUR HOLE
OUTLET PROTECTION
CLASS 'B' RIP RAP
EST. 8 TONS
EST. 16 SY GEO
EST. 25 SY FSRM
SEE DETAIL /SHEET 2-BJ

300' TAPER

REMOVE EXIST. GUARDRAIL

PROPOSED MEDIAN CONCRETE BARRIER

PROP. GUARDRAIL

RETAIN

TIE TO EXIST 8'X 8' RCBC

FUTURE AUX. LANE AND 12' FDPS

8J TAPER

GRAU 350 TL-3

SITE 3001
(MOT 3001)

TRUSTEES OF DELIVERANCE CATHEDRAL OF LOVE
DB 4708 PG 402

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: I-5338 / U-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 -L1- LT PROFILE, SEE SHEET NO. 76
FOR -L1- RT PROFILE, SEE SHEET NO. 76
FOR -RP13A- PROFILE, SEE SHEET NO. 107

$$$$USERNAME$$$$
$$$$SYSTIME$$$$
$$$$USERNAME$$$$

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

REVISIONS 6/17/99

-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: I-5339/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

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)

END CONSTRUCTION
-RP9BSPUR- Sta.21+93.75

END SBG/TIE INTO EXIST C&G
-RP9BSPUR- STA. 21+94

15" WELDOWS, ROD, & LUG CONNECTORS 2GI

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

RETAIN EXIST MULTI-BARREL RCBC W/ GREENWAY BARREL

12 PS

4 FDPS

CHARLES P SCHMIDT
6669 PG 21
BM 1959 PG 141

20+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-BH AND 2-BI

CITY OF RALEIGH
DB 3218 PG 560
BM 1959 PG 141
BM 1988 PG 1410

30+00 -RP9A-

-RP9A- CS Sta. 28+97.95

END CONSTRUCTION
-RP9A- POC Sta.26+58.70

15+00 -Y9-

BEGIN SBG
-RP9ASPUR- STA. 16+90

PROPERTY LINE = CL OF CREEK

MATCHLINE SHEET 25 -Y9- STA. 15+50.00

FOR -RP9A- PROFILE, SEE SHEET NO. 103
FOR -RP9BSPUR- PROFILE, SEE SHEET NO. 104,105

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

40 440 FORTIFY

GRANITE RS&H DESIGN-BUILD SERVICES

Kimley»Horn

NAD 83/NSRS 2007

8/17/99

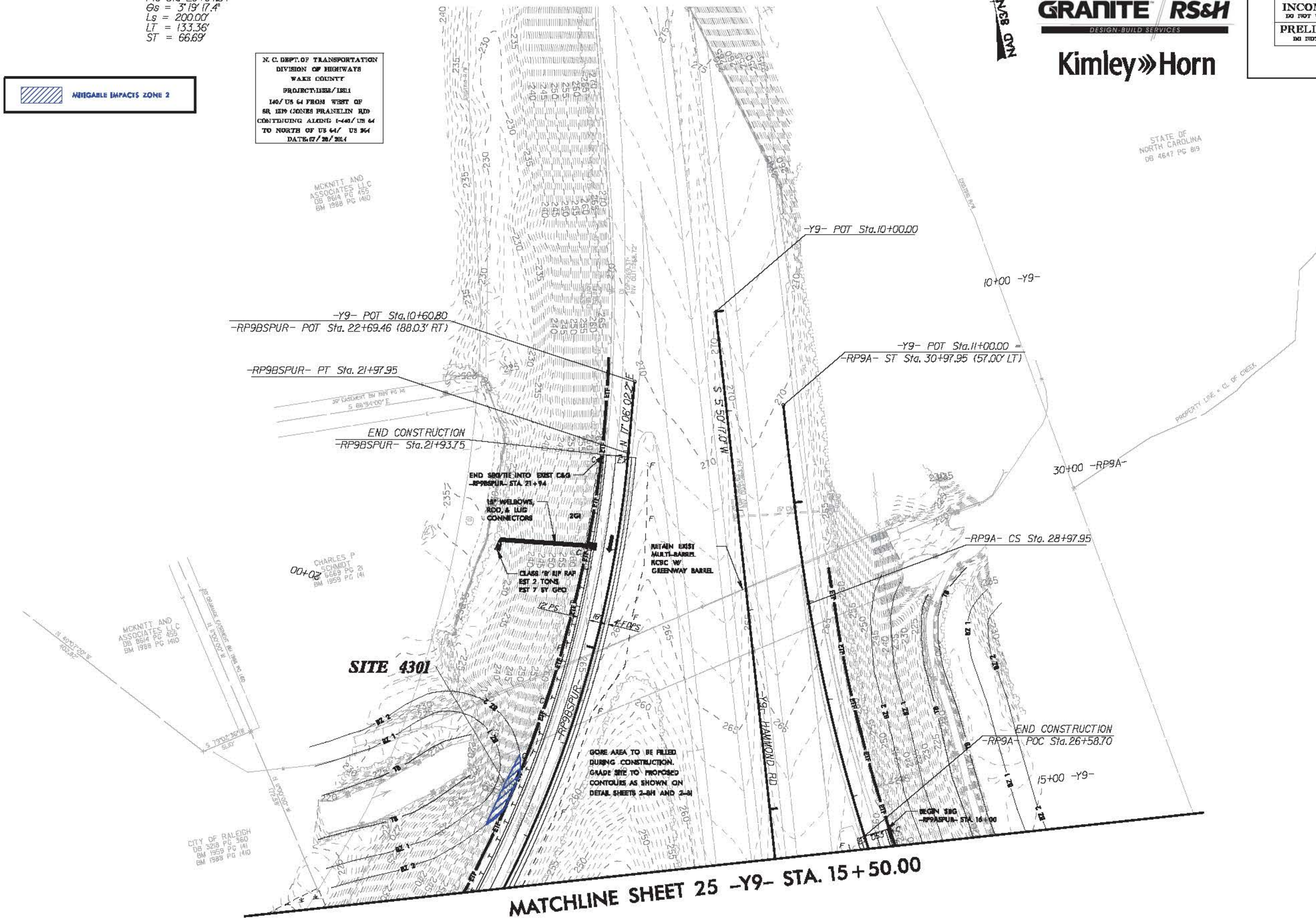
REVISIONS

-RP9A- CURVE DATA

PIs Sta 29+64.64
Θs = 3°19′17.4″
Ls = 200.00′
LT = 133.36′
ST = 66.69′

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: I5332/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

MITIGABLE IMPACTS ZONE 2



SITE 4301
STATE OF NORTH CAROLINA DB 4647 PG 819
MCKNITT AND ASSOCIATES LLC DB 8614 PG 455 BM 1988 PG 1410
CHARLES P SCHMIDT DB 6669 PG 21 BM 1959 PG 141
CITY OF RALEIGH DB 3218 PG 360 BM 1959 PG 141 BM 1988 PG 1410
-Y9- POT Sta.10+00.00
10+00 -Y9-
-Y9- POT Sta.10+60.80
-RP9BSPUR- POT Sta. 22+69.46 (88.03′ RT)
-Y9- POT Sta.11+00.00 =
-RP9A- ST Sta. 30+97.95 (57.00′ LT)
-RP9BSPUR- PT Sta. 21+97.95
END CONSTRUCTION
-RP9BSPUR- Sta. 21+93.75
END SBG/TIE INTO EXIST C&G -RP9BSPUR- STA. 21+94
18″ WELBOWS, ROD, & LUG CONNECTORS
CLASS 'B' RIP RAP EST 2 TONS EST 7 SY GEO
RETAIN EXIST MULTI-BARREL RCBC W/ GREENWAY BARREL
30+00 -RP9A-
-RP9A- CS Sta. 28+97.95
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 -RP9BSPUR- STA. 16+00
HAMMOND RD
-RP9BSPUR-
N 1°06′02.2″ E
S 5°50′11.0″ W
PROPERTY LINE = CL OF CREEK
MATCHLINE SHEET 25 -Y9- STA. 15+50.00

FOR -RP9A- PROFILE, SEE SHEET NO. 103
FOR -RP9BSPUR- PROFILE, SEE SHEET NO. 104,105

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

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	44
RW 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

Kimley»Horn

REVISIONS 6/17/99

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-EJ

SITE 4401

RETAIN

RETAIN & PRESERVE 36"

–Y9– HAMMOND RD

25+00

REMOVE EXIST. GUARDRAIL

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)

35+00

–Y9– PT Sta. 35+35.35

S 14° 25' 50.9" W

–Y9– POT Sta. 36+59.75

BELL INVESTMENTS LIMITED PARTNERSHIP DB 1160 PG 1360

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: I-5338/ I-5311
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: 07/25/2014

FOR –RP9D– PROFILE, SEE SHEET NO. 106

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

NAD 83/NSRS 2007

GRANITE RS&H DESIGN-BUILD SERVICES

Kimley»Horn

REVISIONS 6/17/99

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 2-4U

RETAIN

RETAIN & PRESERVE 36"

SITE 4401

–Y9– HAMMOND RD

–Y9– PT Sta. 35+35.35

–Y9– POT Sta. 36+59.75

S 14° 25' 50.9" W

REMOVE EXIST. GUARDRAIL

BEAL 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)

35+00

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: I-5338/ I-5311
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/ 25/ 2014

FOR –RP9D– PROFILE, SEE SHEET NO. 106

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