



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAT L. MCCRORY
GOVERNOR

ANTHONY J. TATA
SECRETARY

December 2, 2013

North Carolina Division of Water Quality
1650 Mail Service Center
Raleigh, NC 27699-1650

ATTN: Mr. Rob Ridings
NCDOT Division 5 Project Coordinator

SUBJECT: **Application for Neuse River Riparian Buffer Authorization and North Carolina State General Permit for Impacts to Isolated and Other Non-404 Jurisdictional Wetlands and Waters** for the I-40/440 Pavement Reconstruction – 3-Lane Maintenance of Traffic (MOT) Project, Wake County, North Carolina. Federal Aid Project Nos. IMS-040-4(147)298 and IMS-0440(13), TIP Nos. I-5338 and I-5311.

Debit \$240.00 from WBS Element No. 46157.1.1

Dear Sir:

The North Carolina Department of Transportation (NCDOT) proposes pavement reconstruction of I-40/440 from the I-40/US 64 Interchange west of SR 1319 (Jones Franklin Road), continuing along I-440/US 64 to north of US 64/US 264. During the duration of pavement reconstruction along the I-40 portion of the project, NCDOT will be required to maintain 3 lanes of traffic in both directions during peak travel times. In order to accommodate this 3-lane maintenance of traffic (MOT) requirement, initial construction will consist of temporary road widening and permanent bridge widening along the project corridor. Construction of the road widening, drainage, retaining walls, and bridge widening will be performed as part of the MOT project. A Neuse River Riparian Buffer Authorization and North Carolina State General Permit for Impacts to Isolated and Other Non-404 Jurisdictional Wetlands and Waters are being requested at this time for impacts associated with this work. Subsequent applications/modifications for Section 404 Nationwide Permits and 401 Water Quality Certifications and requests to modify the Neuse River Riparian Buffer Authorization will be submitted for the remaining work associated with the pavement reconstruction as project design progresses.

Please find enclosed the Pre-construction Notification (PCN), U.S. Army Corps of Engineers (USACE) Jurisdictional Determinations, North Carolina Ecosystem Enhancement Program (EEP) Mitigation Acceptance Letters, pre-application meeting minutes, permit drawings, buffer drawings, and roadway design plans for the initial MOT project. A Categorical Exclusion (CE) was completed for I-5338 in December 2012 and for I-5311 in February 2012.

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

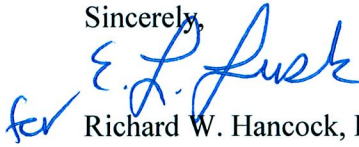
WEBSITE: WWW.NCDOT.ORG

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

These TIP projects had a Design Build let date of May 13, 2013. MOT construction is projected to commence in December of 2013 or sooner, contingent on issuance of permits.

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

Sincerely,



Richard W. Hancock, P.E., Manager

Project Development and Environmental Analysis Unit

cc: NCDOT Permit Application Standard Distribution List
Eric Alsmeyer, USACE Division 5 Project Coordinator



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:	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 - Maintenance of Traffic (MOT) Project
2b. County:	Wake
2c. Nearest municipality / town:	Raleigh
2d. Subdivision name:	<i>not applicable</i>
2e. NCDOT only, T.I.P. or state project no:	TIP# I-5338 and TIP# I-5311

3. Owner Information

3a. Name(s) on Recorded Deed:	North Carolina Department of Transportation
3b. Deed Book and Page No.	<i>not applicable</i>
3c. Responsible Party (for LLC if applicable):	<i>not applicable</i>
3d. Street address:	1598 Mail Service Center
3e. City, state, zip:	Raleigh, NC 27699-1598
3f. Telephone no.:	(919) 707-6136
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:	<i>not applicable</i>
4c. Business name (if applicable):	
4d. Street address:	
4e. City, state, zip:	
4f. Telephone no.:	
4g. Fax no.:	
4h. Email address:	
5. Agent/Consultant Information (if applicable)	
5a. Name:	<i>not applicable</i>
5b. Business name (if applicable):	
5c. Street address:	
5d. City, state, zip:	
5e. Telephone no.:	
5f. Fax no.:	
5g. Email address:	

B. Project Information and Prior Project History	
1. Property Identification	
1a. Property identification no. (tax PIN or parcel ID):	<i>not applicable</i>
1b. Site coordinates (in decimal degrees):	Latitude: 35.753786 (DD.DDDDDD) Longitude: - 78.644015 (-DD.DDDDDD)
1c. Property size:	680 acres
2. Surface Waters	
2a. Name of nearest body of water (stream, river, etc.) to proposed project:	Crabtree Creek and Walnut Creek
2b. Water Quality Classification of nearest receiving water:	C;NSW (Crabtree Lake [Crabtree Creek], Lake Johnson, & Lake Raleigh [both Walnut Creek] are B;NSW)
2c. River basin:	Neuse
3. Project Description	
3a. Describe the existing conditions on the site and the general land use in the vicinity of the project at the time of this application: Both I-40 and I-440 are 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: 4.9 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: 12,248 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 initial maintenance of traffic (MOT) project is to complete temporary road widening, drainage, retaining walls, and bridge widening required to maintain 3 lanes of traffic in both directions along I-40 during peak travel times for the duration of the pavement reconstruction.	
3e. Describe the overall project in detail, including the type of equipment to be used: The North Carolina Department of Transportation (NCDOT) proposes pavement reconstruction of I-40/440 from the I-40/US 64 Interchange west of SR 1319 (Jones Franklin Road), continuing along I-440/US 64 to north of US 64/US 264. For the MOT project, the roadway will be temporarily widened approximately 4 feet through grading and paving. Temporary funnel drains and rip rap pads will be installed during the MOT project. These drains will act as temporary access devices and will be removed in a few years when the entire pavement reconstruction is completed. All practical alternatives will be utilized to minimize the project footprint associated with the temporary MOT widening. Standard road building equipment such as trucks, dozers, and cranes will be used.	
4. Jurisdictional Determinations	
4a. Have jurisdictional wetland or stream determinations by the Corps or State been requested or obtained for this property / project (including all prior phases) in the past? Comments: See attachments	☒ 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): Jim Mason (I-5311); Elizabeth Workman-Maurer (I-5338)	Agency/Consultant Company: NCDOT (I-5311); RK&K (I-5338) Other:
4d. If yes, list the dates of the Corps jurisdictional determinations or State determinations and attach documentation. I-5311 Preliminary JD issued April 19, 2013 and updated on October 2, 2013; I-5338 Approved JD issued on April 1, 2013	

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. n/a		
6. Future Project Plans		
6a. Is this a phased project?	☒ Yes	☐ No
6b. If yes, explain. This larger pavement reconstruction project will be completed as three smaller projects. This buffer authorization and isolated wetland permit request is part of the initial MOT temporary widening project, which will allow NCDOT to maintain 3 lanes of traffic on I-40 during peak travel times throughout the duration of pavement reconstruction. Subsequent Section 404/401 permit applications/modifications and requests to modify the riparian buffer authorization will be submitted for the remaining two smaller projects when final design on those road sections is complete. The remaining smaller projects will be: 1) Area 3 (from Station 440+00 near the beginning of the I-40/440 interchange east to station 628+60 north of the I-440/US 264 interchange and 2) Areas 1, 2A, 2B beginning at station 19+02 near the I-40/US 1 interchange west to station 444+00 just west of the I-40/440 interchange.		

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	Perm. Fill	Basin Wetland	☒ Yes ☐ No	☐ Corps ☒ DWQ	0.27	
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.: 0.27 Temp.: 0	
2h. Comments: No 404 jurisdictional wetland impacts will result from the proposed MOT temporary widening project.						
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.: 0 Temp.: 0	
3i. Comments: No stream impacts will result from the proposed MOT temporary widening project.						

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 proposed MOT temporary widening 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.

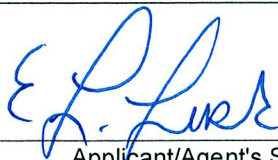
6a. Project is in which protected basin?			☒ Neuse ☐ Catawba			☐ Tar-Pamlico ☐ Randleman	☐ Other:
6b. Buffer impact number – Permanent (P) or Temporary (T)	6c. Reason for impact	6d. Stream name	6e. Buffer mitigation required?	6f. Zone 1 impact (square feet)	6g. Zone 2 impact (square feet)		
B1 ☐ P ☐ T			☐ Yes ☐ No				
B2 ☐ P ☐ T			☐ Yes ☐ No				
B3 ☐ P ☐ T			☐ Yes ☐ No				
6h. Total buffer impacts				19,995	29,948		
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 MOT project, impacts to jurisdictional wetlands and streams have been avoided. The locations of impacts and the specific side of roadway selected to be widened were carefully chosen to minimize impacts to riparian buffers. Widening into the median was utilized wherever feasible. All culverts and outlet protection have been redirected outside of existing buffers and impacts have been limited to areas associated with the widening. Due to the proximity of the man-made, isolated wetland feature (Wetland WO) within the Hammond Road interchange, avoidance of this feature is not feasible due to the construction of a temporary ramp associated with the MOT plan and the required drainage improvements required for final project construction.		
1b. Specifically describe measures taken to avoid or minimize the proposed impacts through construction techniques. Use of Best Management Practices (BMP) and measures will be used to reduce stormwater impacts to receiving waters and minimize erosion and runoff from the temporary construction sites. All equipment and material staging areas will be located outside of protected riparian buffers and 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):	26,064 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: n/a		
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. n/a		

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	5,601	3 (2 for Catawba)	16,803
Zone 2	Parallel Impacts	6,174	1.5	9,261
	6f. Total buffer mitigation required:			26,064
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). Mitigation will come from EEP. EEP Mitigation Acceptance Letters attached.				
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: A stormwater management plan is not required in conjunction with the temporary widening associated with the MOT construction. However, a stormwater management plan will be prepared as part of future permit submittals for the two remaining construction projects associated with the pavement reconstruction.	
2d. If this project DOES require a Stormwater Management Plan, then provide a brief, narrative description of the plan: n/a	
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 ☐ HWQ ☐ ORW ☐ Session Law 2006-246 ☐ Other:
4b. Has the approved Stormwater Management Plan with proof of approval been attached?	☐ Yes ☐ No n/a
5. DWQ 401 Unit Stormwater Review	
5a. Does the Stormwater Management Plan meet the appropriate requirements?	☒ Yes ☐ No N/A
5b. Have all of the 401 Unit submittal requirements been met?	☒ Yes ☐ No N/A

F. Supplementary Information	
1. Environmental Documentation (DWQ Requirement)	
1a. Does the project involve an expenditure of public (federal/state/local) funds or the use of public (federal/state) land?	☒ Yes ☐ No
1b. If you answered "yes" to the above, does the project require preparation of an environmental document pursuant to the requirements of the National or State (North Carolina) Environmental Policy Act (NEPA/SEPA)?	☒ Yes ☐ No
1c. If you answered "yes" to the above, has the document review been finalized by the State Clearing House? (If so, attach a copy of the NEPA or SEPA final approval letter.) Comments:	☒ 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 resurfacing project will modernize and improve existing transportation facilities but will not increase traffic volumes or result in additional development. Specifically, the MOT temporary widening project is being proposed only to maintain current traffic volumes during the resurfacing project. 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; for the entire pavement reconstruction, 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		
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.)	12-2-13 Date

U.S. ARMY CORPS OF ENGINEERS
WILMINGTON DISTRICT

Action Id. SAW-2013-00068

County: Wake U.S.G.S. Quad: NC-RALEIGH EAST & RALEIGH WEST

NOTIFICATION OF JURISDICTIONAL DETERMINATION

Property Owner: North Carolina Dept. of Transportation

Michael Penney

Address: 1548 Mail Service Center

Raleigh, NC, 27699

Telephone: 919.878.9560

Agent: RK&K

Elizabeth Workman-Maurer

Address: 900 Ridgefield Drive, Suite 350

Raleigh, NC, 27609

Telephone: 919.878.9560

Project Study Area description:

Nearest Town Raleigh

Nearest Waterway Walnut Creek and UT's

River Basin Neuse

USGS HUC 03020201

Coordinates: Latitude: 35.758052; Longitude: -78.668403.

Location description: I-40, from US 1 to I-440.

Indicate Which of the Following Apply:

A. Preliminary Determination

- ☐ Based on preliminary information, there may be waters of the U.S. including wetlands on the above described project area. We strongly suggest you have this property inspected to determine the extent of Department of the Army (DA) jurisdiction. To be considered final, a jurisdictional determination must be verified by the Corps. This preliminary determination is not an appealable action under the Regulatory Program Administrative Appeal Process (Reference 33 CFR Part 331). If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also, you may provide new information for further consideration by the Corps to reevaluate the JD.

B. Approved Determination

- ☐ There are Navigable Waters of the United States within the above described project area subject to the permit requirements of Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act. Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.
- ☒ There are waters of the U.S. including wetlands on the above described project area subject to the permit requirements of Section 404 of the Clean Water Act (CWA)(33 USC § 1344). Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.
 - ☐ We strongly suggest you have the waters of the U.S. including wetlands on your project area delineated. Due to the size of your property and/or our present workload, the Corps may not be able to accomplish this wetland delineation in a timely manner. For a more timely delineation, you may wish to obtain a consultant. To be considered final, any delineation must be verified by the Corps.
 - ☒ The waters of the U.S. including wetlands on your project area have been delineated and the delineation has been verified by the Corps. We strongly suggest you have this delineation surveyed. Upon completion, this survey should be reviewed and verified by the Corps. Once verified, this survey will provide an accurate depiction of all areas subject to CWA jurisdiction on your property which, provided there is no change in the law or our published regulations, may be relied upon for a period not to exceed five years.
 - ☐ The waters of the U.S. including wetlands have been delineated and surveyed and are accurately depicted on the plat signed by the Corps Regulatory Official identified below on _____. Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.
- ☐ There are no waters of the U.S., to include wetlands, present on the above described project area which are subject to the permit requirements of Section 404 of the Clean Water Act (33 USC 1344). Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.

Placement of dredged or fill material within waters of the US and/or wetlands without a Department of the Army permit may constitute a violation of Section 301 of the Clean Water Act (33 USC § 1311). If you have any questions regarding this determination and/or the Corps regulatory program, please contact **Eric Alsmeyer** at **919-554-4884 x23/**
Eric.C.Alsmeier@usace.army.mil.

C. Basis For Determination: The impact area contains relatively permanent waters, with indicators of ordinary high water marks, stream channels of Walnut Creek and unnamed tributaries, and abutting wetlands. Walnut Creek is a tributary of the Neuse River, a Traditional Navigable Water.

D. Remarks: This JD was confirmed by field inspection on 10/5/2011. The drawing on the attached Figures 3a through 3i, submitted by e-mail and FTS on 6/12/2012, generally depicts the jurisdictional waters of the US within the subject study area. Wetland WO, as shown on Figure 3f, is an isolated wetland, not subject to Section 404 of the Clean Water Act.

E. Attention USDA Program Participants

This delineation/determination has been conducted to identify the limits of Corps' Clean Water Act jurisdiction for the particular site identified in this request. The delineation/determination may not be valid for the wetland conservation provisions of the Food Security Act of 1985. If you or your tenant are USDA Program participants, or anticipate participation in USDA programs, you should request a certified wetland determination from the local office of the Natural Resources Conservation Service, prior to starting work.

F. Appeals Information (This information applies only to approved jurisdictional determinations as indicated in B. above)

This correspondence constitutes an approved jurisdictional determination for the above described site. If you object to this determination, you may request an administrative appeal under Corps regulations at 33 CFR Part 331. Enclosed you will find a Notification of Appeal Process (NAP) fact sheet and request for appeal (RFA) form. If you request to appeal this determination you must submit a completed RFA form to the following address:

US Army Corps of Engineers
South Atlantic Division
Attn: Jason Steele, Review Officer
60 Forsyth Street SW, Room 10M15
Atlanta, Georgia 30303-8801

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 CFR part 331.5, and that it has been received by the Division Office within 60 days of the date of the NAP. Should you decide to submit an RFA form, it must be received at the above address by **5/30/2013**.

****It is not necessary to submit an RFA form to the Division Office if you do not object to the determination in this correspondence.****

Corps Regulatory Official: _____



Date: **4/1/2013**

Expiration Date: **4/1/2018**

The Wilmington District is committed to providing the highest level of support to the public. To help us ensure we continue to do so, please complete the attached customer Satisfaction Survey or visit <http://per2.nwp.usace.army.mil/survey.html> to complete the survey online.

Copy furnished: RK&K/E. Workman-Maurer

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

Applicant: **North Carolina Dept. of Transportation** File Number: **SAW-2013-00068** Date: **4/1/2013**

Attached is: _____ See Section below

☐	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A
☐	PROFFERED PERMIT (Standard Permit or Letter of permission)	B
☐	PERMIT DENIAL	C
☒	APPROVED JURISDICTIONAL DETERMINATION	D
☐	PRELIMINARY JURISDICTIONAL DETERMINATION	E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at <http://www.usace.army.mil/inet/functions/cw/cecwo/reg> or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- **ACCEPT:** If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- **OBJECT:** If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- **ACCEPT:** If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- **APPEAL:** If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- **ACCEPT:** You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- **APPEAL:** If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the district engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact:

**District Engineer, Wilmington Regulatory Division,
Attn: Eric Alsmeyer
US Army Corps of Engineers, Wilmington District
Raleigh Regulatory Field Office
3331 Heritage Trade Drive, Suite 105
Wake Forest, NC 27587**

If you only have questions regarding the appeal process you may also contact:

**Mr. Jason Steele, Administrative Appeal Review Officer
CESAD-PDO
U.S. Army Corps of Engineers, South Atlantic Division
60 Forsyth Street, Room 10M15
Atlanta, Georgia 30303-8801
Phone: (404) 562-5137**

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

Signature of appellant or agent.

Date:

Telephone number:

For Permit denials, Proffered Permits and approved Jurisdictional Determinations send this form to:

**Division Engineer, Commander, U.S. Army Engineer Division, South Atlantic, Attn: Mr. Jason Steele,
Administrative Appeal Officer, CESAD-PDO, 60 Forsyth Street, Room 10M15, Atlanta, Georgia 30303-8801
Phone: (404) 562-5137**

1.0 INTRODUCTION

On March 29, 2012, North Carolina Department of Transportation (NCDOT) expanded the study area limits for the I-5338 natural systems investigations. This expansion included an area approximately 900 feet west of the original study limits and increased the overall corridor width from 500 feet to 600 feet. A Jurisdictional Areas Report, dated January 25, 2012, was submitted based upon the 500-foot study corridor. This addendum includes the revisions for Tables 1, 2, 4 and 5. These revisions are shown in **BOLD** font. All additional field work was performed on April 24, 2012 and May 7-8 and 10, 2012. No new staff members participated in this additional work. An updated Microstation file of new streams and wetlands for the entire project was submitted to NCDOT via FTS on May 16, 2012. Figures 1, 2 and 3 have been updated to include additional jurisdictional areas. Only two new streams and one new wetland were identified and have accompanying USACE and NCDWQ data forms in the appendix. Previously identified wetlands and streams may have expanded boundaries with the additional study limits; their linear footage and acreage has been updated in Table 3. In a conversation on May 14, 2012 with Mr. Rob Ridings, NCDWQ, and Mr. Eric Alsmeyer, USACE, no additional field reviews are needed by either agency. Streams not on the USGS or Soils map will not be subject to Neuse River buffers rules. In addition to this addendum, RK&K will update and resubmit the Jurisdictional Determinations Packet to the USACE for their review and approval.

2.0 UPDATES TO TABLES

Table 1. Water resources in the study area.

Stream Name*	Map ID	NCDWQ Index Number	Best Usage Classification
UT to Walnut Creek (Lake Johnson)	SA	27-34-(1.5)	B-NSW
UT to Walnut Creek (Lake Johnson)	SB	27-34-(1.5)	B-NSW
UT to Walnut Creek (Lake Johnson)	SD	27-34-(1.5)	B-NSW
UT to Walnut Creek (Lake Johnson)	SE	27-34-(1.5)	B-NSW
UT to Walnut Creek (Lake Johnson)	SF	27-34-(1.5)	B-NSW
UT to Walnut Creek	SG	27-34-(1.7)	C-NSW
UT to Walnut Creek	SH	27-34-(1.7)	C-NSW
UT to Walnut Creek	SI	27-34-(1.7)	C-NSW
UT to Walnut Creek	SJ	27-34-(4)	C-NSW
UT to Walnut Creek	SK	27-34-(4)	C-NSW
UT to Walnut Creek	SL	27-34-(4)	C-NSW
UT to Walnut Creek	SM	27-34-(4)	C-NSW
UT to Walnut Creek	SN	27-34-(4)	C-NSW
UT to Walnut Creek	SO	27-34-(4)	C-NSW
UT to Walnut Creek	SP	27-34-(4)	C-NSW
UT to Walnut Creek	SQ	27-34-(4)	C-NSW
UT to Walnut Creek	SR	27-34-(4)	C-NSW
Wildcat Branch	SS	27-34-7	C-NSW
UT to Walnut Creek	ST	27-34-(4)	C-NSW
UT to Walnut Creek	SU	27-34-(4)	C-NSW

Stream Name*	Map ID	NCDWQ Index Number	Best Usage Classification
UT to Walnut Creek	SV	27-34-(4)	C-NSW
UT to Walnut Creek	SW	27-34-(4)	C-NSW
UT to Walnut Creek	SX	27-34-(4)	C-NSW
UT to Walnut Creek	SY	27-34-(4)	C-NSW
UT to Walnut Creek	SZ	27-34-(4)	C-NSW
UT to Walnut Creek	SAA	27-34-(4)	C-NSW
UT to Walnut Creek	SBB	27-34-(4)	C-NSW
UT to Walnut Creek	SCC	27-34-(4)	C-NSW
Walnut Creek	SDD	27-34-(4)	C-NSW
Wildcat Branch	SGG	27-34-7	C-NSW
UT to Walnut Creek (Lake Johnson)	SHH	27-34-(1.5)	B-NSW
UT to Walnut Creek	SMM	27-34-(4)	C-NSW
UT to Walnut Creek	SNN	27-34-(4)	C-NSW

**Note: SMM and SNN were added since the original JAR due to the expansion of the study limits from a 500' to 600' corridor.*

Table 2. Water resources in the study area.

Map ID*	Bank Height (ft)	Bankful Width (ft)	Water Depth (in)	Channel Substrate**	Velocity	Clarity
SA	2.5	10	0.5	Sa,G,C	None	Clear
SB	1.5	6	3	Sa,Si,C	None	Clear
SD	1	5	0.5	Sa,G	None	Clear
SE	2	7	8	Sa,G,C	Slow	Clear
SF	1.3	7	3	Sa,G	Slow	Slightly turbid
SG	1	8	1	G	None	Slightly turbid (orange)
SH	16	5	0	Sa,G	None	n/a
SI	1.5	4	0.5	Sa,G	None	Clear
SJ	7	8	0.5	Si,Sa	None	Slightly turbid
SK	1.5	9	10	Sa,Si,C	Medium	Clear
SL	4	12	18	Sa,Si,G	Medium	Clear
SM	1.5	4	1	Si,Sa,G	None	Slightly turbid
SN	2	8	3	Sa,G,C,B	None	Clear
SO	1	7.5	1	Sa,Si,G	None	Clear
SP	0.5	6	1	Sa,G	None	Clear
SQ	3	15	7	Sa	Slow	Clear
SR	2	14	7	Si,Sa,G	Medium	Clear
SS	4	20	8	Si,Sa	Medium	Turbid
ST	3	10	6	Sa,C	Medium	Clear
SU	2	12	4	Sa,G,C	Slow	Stained
SV	1.5	8	1	Sa,G,C	None	Clear
SW	3.5	8	6	Si	Medium	Stained
SX	2.5	15	7	Sa,G	Medium	Slight Stain

Map ID*	Bank Height (ft)	Bankful Width (ft)	Water Depth (in)	Channel Substrate**	Velocity	Clarity
SY	5	10	1	Sa,Con	Slow	Clear
SZ	1	13	1	Sa	None	Slightly turbid
SAA	2.5	6	2	Sa,Si,C	Medium	Clear
SBB	1.5	7	2	Sa,G	None	Clear
SCC	6	1.5	12	Sa,Si,C	Medium	Clear
SDD	5	20	30	Sa,Si	Strong	Clear
SGG	2	12	12	Sa,G,Si	Medium	Clear
SHH	7	10	1	Sa,C	Slow	Slightly turbid
SMM	1.5	1	1	Sa, Si	Slow	Clear
SNN	1	9	2	Sa, Si	Medium	Clear

*Note: SMM and SNN were added since the original JAR due to the expansion of the study limits from a 500' to 600' corridor.

**Sa-Sand, Si-Silt, C-Cobble, G-Gravel, B-Bedrock, Con-concrete-lined

Table 4: Jurisdictional characteristics of water resources in the study area

Map ID*	Length (ft.)	Classification	Compensatory Mitigation Required	River Basin Buffer
SA	286	Perennial	Yes	Subject
SB	148	Perennial	Yes	Subject
SD	272	Perennial	Yes	Subject
SE	316	Perennial	Yes	Subject
SF	352	Intermittent	Yes	Subject
SG	271	Perennial	Yes	Subject
SH	320	Intermittent	Yes	Subject
SI	230	Intermittent	Yes	Subject
SJ	227	Intermittent	Yes	Not Subject
SK	665	Perennial	Yes	Subject
SL	454	Perennial	Yes	Subject
SM	358	Intermittent	Yes	Subject
SN	1,710	Perennial	Yes	Subject
SO	282	Intermittent	Yes	Subject
SP	749	Intermittent	Yes	Subject
SQ	469	Perennial	Yes	Subject
SR	1,906	Perennial	Yes	Subject
SS	727	Perennial	Yes	Subject
ST	303	Perennial	Yes	Subject
SU	264	Perennial	Yes	Subject
SV	160	Intermittent	Yes	Subject
SW	459	Perennial	Yes	Subject
SX	413	Perennial	Yes	Subject
SY	214	Intermittent	Yes	Not Subject
SZ	479	Intermittent	Yes	Subject

Map ID*	Length (ft.)	Classification	Compensatory Mitigation Required	River Basin Buffer
SAA	200	Perennial	Yes	Subject
SBB	438	Intermittent	Yes	Subject
SCC	366	Perennial	Yes	Not Subject
SDD	3,197	Perennial	Yes	Subject
SGG	381	Perennial	Yes	Subject
SHH	1,044	Intermittent	Yes	Subject
SMM	20	Intermittent	Yes	Subject
SNN	400	Intermittent	Yes	Subject
TOTAL	18,080			

*Note: SMM and SNN were added since the original JAR due to the expansion of the study limits from a 500' to 600' corridor.

Table 5. Jurisdictional characteristics of wetlands in the study area.

Map ID*	NCWAM Classification	Hydrologic Classification	NCDWQ Wetland Rating	Area (ac.)
WA	Headwater Forest	Riparian	20	0.06
WB	Non-tidal Freshwater Marsh	Riparian	19	<0.01
WC	Headwater Forest/ Non-tidal Freshwater Marsh	Riparian	50	0.31
WD	Non-tidal Freshwater Marsh	Riparian	69	3.49
WE	Floodplain Pool	Riparian	37	0.09
WF	Headwater Forest	Riparian	49	0.84
WG	Floodplain Pool	Riparian	20	0.17
WGH	Non-tidal Freshwater Marsh/ Headwater Forest	Riparian	43	0.44
WH	Headwater Forest	Riparian	20	0.23
WI	Floodplain Pool	Riparian	25	0.01
WJ	Bottomland Hardwood Forest	Riparian	44	0.31
WK	Floodplain Pool	Riparian	44	0.03
WL & WL(b)	Floodplain Pool	Riparian	48	0.44
WM	Non-tidal Freshwater Marsh	Riparian	63	2.37
WN	Bottomland Hardwood Forest	Riparian	80	2.57
WO	Basin Wetland	Non-Riparian	71	0.27
WP	Floodplain Pool	Riparian	35	0.19
WQ	Floodplain Pool/ Non-tidal Freshwater Marsh	Riparian	80	2.14
WR	Headwater Forest	Riparian	51	0.41
WS	Riverine Swamp Forest	Riparian	67	1.02
			Total	15.40

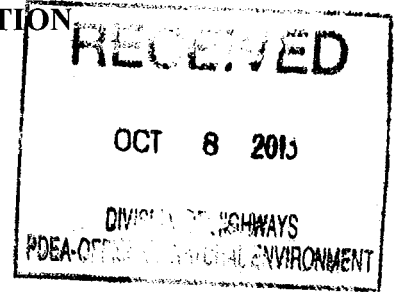
*Note: WS was added since the original JAR due to the expansion of the study limits from a 500' to 600' corridor.

U.S. ARMY CORPS OF ENGINEERS
WILMINGTON DISTRICT

Action Id. SAW-2013-00550

County: Wake U.S.G.S. Quad: NC-RALEIGH EAST

NOTIFICATION OF JURISDICTIONAL DETERMINATION



Property Owner: NC Department of Transportation

Richard Hancock

Address: 1598 Mail Service Center

Raleigh, NC, 27699-1598

Telephone Number: 919.707.6136 (Jim Mason)

Size (acres) N/A

Nearest Waterway Crabtree Creek

USGS HUC 3020201

Nearest Town Raleigh

River Basin Upper Neuse, North Carolina.

Coordinates Latitude: 35.772

Longitude: -78.574

Location description: TIP I-5311 Study Area; I-440/US 64 from Exit 301 (I-40) to north of the US 64 (Knightdale) Bypass, southwest of Raleigh, NC

Indicate Which of the Following Apply:

A. Preliminary Determination

- ☒ Based on preliminary information, there may be waters of the U.S. including wetlands on the above described project area. We strongly suggest you have this property inspected to determine the extent of Department of the Army (DA) jurisdiction. To be considered final, a jurisdictional determination must be verified by the Corps. This preliminary determination is not an appealable action under the Regulatory Program Administrative Appeal Process (Reference 33 CFR Part 331). If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also, you may provide new information for further consideration by the Corps to reevaluate the JD.

B. Approved Determination

- ☐ There are Navigable Waters of the United States within the above described property subject to the permit requirements of Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act. Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.
- ☐ There are waters of the U.S. including wetlands on the above described property subject to the permit requirements of Section 404 of the Clean Water Act (CWA)(33 USC § 1344). Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.
- ☐ We strongly suggest you have the wetlands on your property delineated. Due to the size of your property and/or our present workload, the Corps may not be able to accomplish this wetland delineation in a timely manner. For a more timely delineation, you wish to obtain a consultant. To be considered final, any delineation must be verified by the Corps.
- ☐ The waters of the U.S. including wetlands on your project area have been delineated and the delineation has been verified by the Corps. We strongly suggest you have this delineation surveyed. Upon completion, this survey should be reviewed and verified by the Corps. Once verified, this survey will provide an accurate depiction of all areas subject to CWA jurisdiction on your property which, provided there is no change in the law or our published regulations, may be relied upon for a period not to exceed five years.
- ☐ The waters of the U.S. including wetlands have been delineated and surveyed and are accurately depicted on the plat signed by the Corps Regulatory Official identified below on _____. Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.
- ☐ There are no waters of the U.S., to include wetlands, present on the above described project area which are subject to the permit requirements of Section 404 of the Clean Water Act (33 USC 1344). Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.

Placement of dredged or fill material within waters of the US and/or wetlands without a Department of the Army permit may constitute a violation of Section 301 of the Clean Water Act (33 USC § 1311). If you have any questions regarding this determination and/or the Corps regulatory program, please contact Eric Alsmeyer at 919-554-4884 x23 or Eric.C.Alsmeier@usace.army.mil.

Basis For Determination: The impact area contains stream channels of Crabtree and Walnut Creeks, and unnamed tributaries, with indicators of ordinary high water marks, and adjacent wetlands. Crabtree and Walnut Creeks are tributaries of the Neuse River), a Traditional Navigable Water.

C. Remarks: This JD is a revision of an original JD dated 4/19/2013. The original JD was confirmed by field inspection on 12/21/2012, for all waters except SM. SM was confirmed by desktop review. The drawing on the attached Figure 3E, "Jurisdictional Features, REVISED AUGUST 2013", submitted on 8/13/2013, generally depicts the added Stream SM and other jurisdictional waters of the US within that portion of the subject study area.

D. Attention USDA Program Participants

This delineation/determination has been conducted to identify the limits of Corps' Clean Water Act jurisdiction for the particular site identified in this request. The delineation/determination may not be valid for the wetland conservation provisions of the Food Security Act of 1985. If you or your tenant are USDA Program participants, or anticipate participation in USDA programs, you should request a certified wetland determination from the local office of the Natural Resources Conservation Service, prior to starting work.

****It is not necessary to submit an RFA form to the Division Office if you do not object to the determination in this correspondence.****

Corps Regulatory Official: _____



Date: October 2, 2013

Expiration Date: October 2, 2018

The Wilmington District is committed to providing the highest level of support to the public. To help us ensure we continue to do so, please complete the attached customer Satisfaction Survey or visit <http://per2.nwp.usace.army.mil/survey.html> to complete the survey online.

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

**Applicant: NC Department of Transportation
Richard Hancock**

File Number: SAW-2013-00550

Date: October 2, 2013

Attached is:

See Section below

☐ INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)

A

☐ PROFFERED PERMIT (Standard Permit or Letter of permission)

B

☐ PERMIT DENIAL

C

☐ APPROVED JURISDICTIONAL DETERMINATION

D

☒ PRELIMINARY JURISDICTIONAL DETERMINATION

E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision.
Additional information may be found at <http://www.usace.army.mil/inet/functions/cw/cecwo/reg> or
Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- **ACCEPT:** If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- **OBJECT:** If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- **ACCEPT:** If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- **APPEAL:** If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- **ACCEPT:** You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- **APPEAL:** If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the district engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact:

**District Engineer, Wilmington Regulatory Division,
Attn: Eric Alsmeyer
US Army Corps of Engineers, Wilmington District
Raleigh Regulatory Field Office
3331 Heritage Trade Drive, Suite 105
Wake Forest, NC 27587**

If you only have questions regarding the appeal process you may also contact:

**Mr. Jason Steele, Administrative Appeal Review Officer
CESAD-PDO
U.S. Army Corps of Engineers, South Atlantic Division
60 Forsyth Street, Room 10M15
Atlanta, Georgia 30303-8801
Phone: (404) 562-5137**

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

Signature of appellant or agent.	Date:	Telephone number:
----------------------------------	-------	-------------------

For appeals on Initial Proffered Permits send this form to:

District Engineer, Wilmington Regulatory Division, Attn: Eric Alsmeyer, 69 Darlington Avenue, Wilmington, North Carolina 28403

**ATTACHMENT
PRELIMINARY JURISDICTIONAL DETERMINATION FORM**

BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR PRELIMINARY JURISDICTIONAL

DETERMINATION (JD): 10/2/2013 (Revised JD)

B. NAME AND ADDRESS OF PERSON REQUESTING PRELIMINARY JD: Mr. James Mason, N.C. Department of Transportation, 1598 Mail Service Center, Raleigh, NC 27699-1598

C. DISTRICT OFFICE, FILE NAME, AND NUMBER: (NCDOT/I-5311/ Pavement Rehabilitation of I-440/US 64 from Exit 301 to north of the Knightdale Bypass/Wake County)
Wilmington District
SAW-2013-00550

**D. PROJECT LOCATION(S) AND BACKGROUND INFORMATION:
(USE THE ATTACHED TABLE TO DOCUMENT MULTIPLE WATERBODIES AT DIFFERENT SITES)**

State: NC County/parish/borough: Wake City: Raleigh

Center coordinates of site (lat/long in degree decimal format):

Lat. 35.7721°N, Long. -78.5741°W.

Universal Transverse Mercator:

Name of nearest waterbody: Crabtree Creek and Walnut Creek

Identify (estimate) amount of waters in the review area:

Non-wetland waters: Crabtree Creek, 9 UTs of Crabtree Creek (SA, SB, SC, SD, SE, SF, SG, SK, SL), Walnut Creek, 4 UTs of Walnut Creek (SH, SI, SJ, SM [NEW]), and 2 ponds (PA [connected to SF] and PB [connected to SI]).

Linear feet: 3,553 total; width (ft.) and/or acres: 70 (Crabtree Creek); 30-45 (Walnut Creek); 4-12 (SA), 10-12 (SB), 3-12 (SC), 2-5 (SD), 1-4 (SE), 3-5 (SF), 3 (SG), 1-5 (SH), 1.5-5 (SI), 1-3 (SJ), 8-10 (SK), 3-5 (SL), 2-4 (SM), 0.10 ac. (PA), 0.03 ac. (PB).

Cowardin Class: Riverine (all streams)

Stream Flow: 10 Perennial (Crabtree Creek, Walnut Creek, SA, SB, SC, SE, SF, SK, SL, SM), 5 Intermittent (SD, SG, SH, SI, SJ)

Note: SM is added in revised JD.
Orig. JD approved 4/19/2013. EAT

Wetlands: Acres: 1.26 total; 0.02 (WA), 0.13 (WB), 0.01 (WC), 0.01 (WD), 0.50 (WE), 0.29 (WF), 0.29 (WG), <0.01 (WH), 0.01 (WI), <0.01 (WJ)

Cowardin Class: Emergent (WA, WC, WD, WI) and Forested (WB, WE, WF, WG, WH, WJ)

Name of any water bodies on the site that have been identified as Section 10 waters:

Tidal:

Non-Tidal:

E. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

- ☒ Office (Desk) Determination. Date: *10/2/2013; SM only.*
- ☒ Field Determination. Date(s): *12/21/2013 - for all waters except SM.*

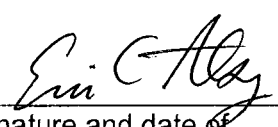
1. The Corps of Engineers believes that there may be jurisdictional waters of the United States on the subject site, and the permit applicant or other affected party who requested this preliminary JD is hereby advised of his or her option to request and obtain an approved jurisdictional determination (JD) for that site. Nevertheless, the permit applicant or other person who requested this preliminary JD has declined to exercise the option to obtain an approved JD in this instance and at this time.

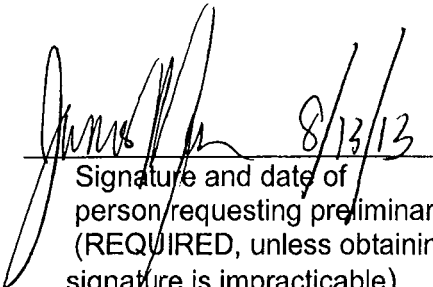
2. In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "pre-construction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an approved JD for the activity, the permit applicant is hereby made aware of the following: (1) the permit applicant has elected to seek a permit authorization based on a preliminary JD, which does not make an official determination of jurisdictional waters; (2) that the applicant has the option to request an approved JD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an approved JD could possibly result in less compensatory mitigation being required or different special conditions; (3) that the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) that the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) that undertaking any activity in reliance upon the subject permit authorization without requesting an approved JD constitutes the applicant's acceptance of the use of the preliminary JD, but that either form of JD will be processed as soon as is practicable; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a preliminary JD constitutes agreement that all wetlands and other water bodies on the site affected in any way by that activity are jurisdictional waters of the United States, and precludes any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an approved JD or a preliminary JD, that JD will be processed as soon as is practicable. Further, an approved JD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331, and that in any administrative appeal, jurisdictional issues can be raised (see 33 C.F.R. 331.5(a)(2)). If, during that administrative appeal, it becomes necessary to make an official determination whether CWA jurisdiction exists over a site, or to provide an official delineation of jurisdictional waters on the site, the Corps will provide an approved JD to accomplish that result, as soon as is practicable. This preliminary JD finds that there "may be" waters of the United States on the subject project site, and identifies all aquatic features on the site that could be affected by the proposed activity, based on the following information:

SUPPORTING DATA. Data reviewed for preliminary JD (check all that apply - checked items should be included in case file and, where checked and requested, appropriately reference sources below):

- ☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: Project Vicinity Map, Project Study Area Map, and Jurisdictional Resources Maps.
- ☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
 - ☒ Office concurs with data sheets/delineation report.
 - ☐ Office does not concur with data sheets/delineation report.
- ☐ Data sheets prepared by the Corps: .
- ☐ Corps navigable waters' study: .
- ☐ U.S. Geological Survey Hydrologic Atlas: .
 - ☐ USGS NHD data.
 - ☐ USGS 8 and 12 digit HUC maps.
- ☒ U.S. Geological Survey map(s). Cite scale & quad name: Raleigh East, 1:24,000.
- ☒ USDA Natural Resources Conservation Service Soil Survey. Citation: Web Soil Survey website, <http://websoilsurvey.nrcs.usda.gov/app/>. *(Sim Suite)*
- ☒ National wetlands inventory map(s). Cite name: *GIS (Sim Suite)*
- ☐ State/Local wetland inventory map(s): .
- ☐ FEMA/FIRM maps: .
- ☐ 100-year Floodplain Elevation is: (National Geodetic Vertical Datum of 1929)
- ☐ Photographs: ☐ Aerial (Name & Date): .
or ☐ Other (Name & Date): .
- ☐ Previous determination(s). File no. and date of response letter: .
- ☐ Other information (please specify):.

IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.

 10/2/2013
Signature and date of
Regulatory Project Manager
(REQUIRED)

 8/13/13
Signature and date of
person requesting preliminary JD
(REQUIRED, unless obtaining the
signature is impracticable)

Site number	Latitude	Longitude	Cowardin Class	Estimated amount of aquatic resource in review area	Class of aquatic resource
Crabtree Creek	35.7825	-78.5728	Riverine	990 linear ft.	Non-section 10 – perennial
Walnut Creek	35.7566	-78.5778	Riverine	238 linear ft.	Non-section 10 – perennial
SA	35.7906	-78.5771	Riverine	212 linear ft.	Non-section 10 – perennial
SB	35.7906	-78.5780	Riverine	22 linear ft.	Non-section 10 – perennial
SC	35.7805	-78.5698	Riverine	176 linear ft.	Non-section 10 – perennial
SD	35.7782	-78.5748	Riverine	81 linear ft.	Non-section 10 – intermittent
SE	35.7759	-78.5747	Riverine	393 linear ft.	Non-section 10 – perennial
SF	35.7739	-78.5746	Riverine	555 linear ft.	Non-section 10 – perennial
SG	35.7699	-78.5748	Riverine	27 linear ft.	Non-section 10 – intermittent
SH	35.7629	-78.5740	Riverine	169 linear ft.	Non-section 10 – intermittent
SI	35.7604	-78.5746	Riverine	169 linear ft.	Non-section 10 – intermittent
SJ	35.7570	-78.5769	Riverine	228 linear ft.	Non-section 10 – intermittent
SK	35.7801	-78.5660	Riverine	55 linear ft.	Non-section 10 – perennial
SL	35.7737	-78.5745	Riverine	25 linear ft.	Non-section 10 – perennial

SM (NEW)	35.7655	-78.5749	Riverine	213 linear ft.	Non-section 10 - perennial
WA	35.7816	-78.5701	Emergent	0.02 ac.	Non-section 10 – wetland
WB	35.7806	-78.5700	Forested	0.13 ac.	Non-section 10 – wetland
WC	35.7779	-78.5756	Emergent	0.01 ac.	Non-section 10 – wetland
WD	35.7703	-78.5749	Emergent	0.01 ac.	Non-section 10 – wetland
WE	35.7575	-78.5776	Forested	0.50 ac.	Non-section 10 – wetland
WF	35.7570	-78.5769	Forested	0.29 ac.	Non-section 10 – wetland
WG	35.7553	-78.5808	Forested	0.29 ac.	Non-section 10 – wetland
WH	35.7630	-78.5738	Forested	<0.01 ac.	Non-section 10 – wetland
WI	35.7800	-78.5660	Emergent	0.01 ac.	Non-section 10 – wetland
WJ	35.7819	-78.5703	Forested	<0.01 ac.	Non-section 10 – wetland
PA	35.7703	-78.5750	Lacustrine	0.10 ac.	Non-section 10 – non- tidal
PB	35.7608	-78.5742	Lacustrine	0.03 ac.	Non-section 10 – non- tidal



February 26, 2013

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

Dear Dr. Thorpe:

Subject: EEP Mitigation Acceptance Letter:

I-5338, I-40/US 64 from SR 1375 (Lake Wheeler Road) to East of I-440/US 64 (Exit 301), Wake County

The purpose of this letter is to notify you that the Ecosystem Enhancement Program (EEP) will provide the stream and riparian wetland mitigation and buffer mitigation for the subject project. Based on the information supplied by you on February 20, 2013, the impacts are located in CU 03020201 of the Neuse River Basin in the Central Piedmont (CP) Eco-Region, and are as follows:

Stream and Wetlands	River Basin	CU Location	Eco-Region	Stream			Wetlands		
				Cold	Cool	Warm	Riparian	Non-Riparian	Coastal Marsh
Impacts	Neuse	03020201	CP	0	0	610.0	0.35	0	0

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

All buffer mitigation requests and approvals are administrated through the Riparian Restoration Buffer Fund. The NCDOT will be responsible to ensure that appropriate compensation for the additional buffer mitigation will be provided in the agreed upon method of fund transfer. Upon receipt of the NCDWQ's Buffer Authorization Certification, EEP will transfer funds from NCDOT ILF Fund into the Riparian Buffer ILF Fund. Upon completion of transfer payment, NCDOT will have completed its riparian buffer mitigation responsibility for I-5338. Subsequently, EEP will conduct a review of current NCDOT ILF mitigation projects in the river basin to determine if available buffer mitigation credits exist. If there are buffer mitigation credits available, then the Riparian Buffer ILF Fund will purchase the appropriate amount of buffer mitigation credits from NCDOT ILF Fund. The buffer impacts and anticipated buffer mitigation credits needed are as follows:

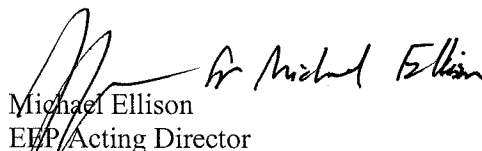
Dr. Thorpe
February 26, 2013
TIP Number I-5338
Page Two

Buffer	River Basin	CU Location	Eco-Region	Buffer		
				Zone 1	Zone 2	TOTAL
Impacts	Neuse	03020201	CP	33,300.0	22,200.0	55,500.0

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

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

Sincerely,


Michael Ellison
EEP Acting Director

Cc: Mr. Eric Alsmeyer, USACE – Raleigh Regulatory Field Office
Ms. Amy Chapman, NC Division of Water Quality
File: I-5338

Restoring... Enhancing... Protecting Our State





October 14, 2013

Mr. Richard W. Hancock, P.E.
Manager, Project Development and Environmental Analysis Unit
North Carolina Department of Transportation
1548 Mail Service Center
Raleigh, North Carolina 27699-1548

Dear Mr. Hancock:

Subject: EEP Mitigation Acceptance Letter:

I-5311, Pavement Rehabilitation on I-440 / US 64 from I-40 (Exit 301) to North of US 64 / US 264, Wake County

The purpose of this letter is to notify you that the Ecosystem Enhancement Program (EEP) will provide the stream and wetland mitigation and buffer mitigation for the subject project. **This mitigation acceptance letter replaces the mitigation acceptance letter issued on February 26, 2013.** Based on the information supplied by you on October 14, 2013, the impacts are located in CU 03020201 of the Neuse River Basin in the Central Piedmont (CP) Eco-Region, and are as follows:

Stream and Wetlands	River Basin	CU Location	Eco-Region	Stream			Wetlands		
				Cold	Cool	Warm	Riparian	Non-Riparian	Coastal Marsh
Impacts	Neuse	03020201	CP	0	0	600.0	0.50	0.01	0

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

All buffer mitigation requests and approvals are administrated through the Riparian Restoration Buffer Fund. The NCDOT will be responsible to ensure that appropriate compensation for the additional buffer mitigation will be provided in the agreed upon method of fund transfer. Upon receipt of the NCDWQ's Buffer Authorization Certification, EEP will transfer funds from NCDOT ILF Fund into the Riparian Buffer ILF Fund. Upon completion of transfer payment, NCDOT will have completed its riparian buffer mitigation responsibility for I-5311. Subsequently, EEP will conduct a review of current NCDOT ILF mitigation projects in the river basin to determine if available buffer mitigation credits exist. If there are buffer mitigation credits available, then the Riparian Buffer ILF Fund will purchase the appropriate amount of buffer mitigation credits from NCDOT ILF Fund. The buffer impacts and anticipated buffer mitigation credits needed are as follows:

Mr. Hancock
October 14, 2013
TIP Number I-5311
Page Two

Buffer	River Basin	CU Location	Eco-Region	Buffer		
				Zone 1	Zone 2	TOTAL
Impacts	Neuse	03020201	CP	24,000.0	18,000.0	42,000.0

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

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

Sincerely,



James B. Stanfill
EEP Asset Management Supervisor

Cc: Mr. Eric Alsmeyer, USACE – Raleigh Regulatory Field Office
Mr. Rob Ridings, NC Division of Water Quality
File: I-5311 Revised

Restoring... Enhancing... Protecting Our State



MEETING MINUTES

Meeting/Project Name:	I40/440 Initial Permit Meeting			
Date of Meeting: (MM/DD/YYYY)	06/28/2013	Time:	10:00 AM US (EST)	
Prepared By:	Chad Rogers	Location:	District Drive RE Office - 4005 District Drive, Raleigh	
1. Meeting Objective				
Kick-off meeting with Permitting Agencies to discuss schedule and permitting strategies				
2. Attendance at Meeting				
Name		Organization	Email	
Alan Shapiro	NCDOT – Division 5	awshapiro@ncdot.gov		
Lonnie Brooks	NCDOT – DB	lbrooks@ncdot.gov		
Ryan Holloway	Granite Construction	ryan.holloway@gcinc.com		
Beth Reed	Kimley-Horn	beth.reed@kimley-horn.com		
Dan Robinson	Kimley-Horn	dan.robinson@kimley-horn.com		
Chad Rogers	RS&H	chad.rogers@rsandh.com		
Rob Ridings	NCDWQ	Rob.ridings@ncdenr.gov		
Eric Alsmeyer	USACE	Eric.c.alsmeyer@usace.army.mil		
Dennis Jernigan	NCDOT – Division 5	dwiernigan@ncdot.gov		
Mike Tuszynski	Granite Construction	Mike.tuszynski@gcinc.com		
Chris Murray	NCDOT – Division 5	cmurray@ncdot.gov		
Jim Mason	NCDOT PDEA-NES	jmason@ncdot.gov		
Deanna Riffey	NCDOT PDEA-NES	driffey@ncdot.gov		
Jason Talley	RS&H	Jason.talley@rsandh.com		
Mark Schwandt	Granite Construction	Mark.schwandt@gcinc.com		
Teresa Bruton	NCDOT – DB	tbruton@ncdot.gov		
Clinton Pruett	NCDOT – DB	cbpruett@ncdot.gov		
Chad Hinnant	NCDOT – Division 5	cdhinnant@ncdot.gov		
3. Administration				
Topic			Owner	
Introductions			All	
4. Old Business				
Previous Action Items	Update /STATUS		Owner	Due Date
N/A	First Meeting with Agencies			
5. New Business				
Topic				
• Importance of Partnering – Mike Tuszynski – Mike Tuszynski summarized the Team’s desire to partner throughout the project. Everyone agreed that partnering to solve and overcome obstacles is an important step in a successful project. • Project Overview – Dennis Jernigan summarized the recent developments in changing the scope of the project from the original two-lane MOT requirement to a three-lane MOT plan. NCDOT desires to maintain the Granite-RS&H Design Build Team’s original end construction date of August 2016. This meeting has been scheduled so that ideas can be				

developed to help assist the Design-Build Team in mitigating schedule delays due to the recent scope change. The goal of the meeting is to determine the appropriate approach to beginning work as soon as possible.

- **Permit Split** – In regards to splitting the permit in order to facilitate schedule (west of the I-40/440 split), the jurisdictional impacts associated with each permit should be the same as the impact areas documented in the CE/PCE for each project. However, the project areas don't have to coincide for each section as long as there are no jurisdictional impacts (i.e. if split is extended to the west to account for asphalt plant, etc. and there are no wetland/stream impacts in that extended area).
- **Discussions followed:**
- Agencies have jurisdiction of environmentally sensitive areas. Areas outside these ESAs, upland areas, are not monitored by the agencies. Any work inside an ESA will need the proper permits in place prior to beginning work. Any work outside the ESAs, which continues through the ESAs, is done so at the risk of NCDOT and the Design-Build Team if the ESA area has not been issued the proper Environmental Permit.
- Neuse River riparian buffer limits need to end at the existing transportation facility (ETF) - (NCDOT maintenance limits -i.e. maintained grass shoulder, where mowing maintenance is likely to occur; approximately at the shoulder hinge point of fill slopes; and approximately 6' offset from back of cut ditch slopes). Utilize aerials and field verification (where needed) to approximate this limit. The extent of the buffers need to be revised on the plans to reflect the ETF and impact quantities calculated based off of this limit.
- Impacts in Preliminary buffer application should be based upon the plan view of the slope stake limits of traffic control plans.
- For Final permit application, include utility impact areas on permit drawings and show all impacts in one complete permit application; show any impacts associated with temporary access; utilities (including gas line); E/C.
- Final Application will have 2 sets of permit drawings: 1) Stream and Wetland impacts and 2) Neuse buffer impacts
- Wetland (WO) located within the Hammond Rd. interchange has been determined to be "isolated" by the USACE; therefore is not subject to Section 404 permitting but will require an Isolated Permit from NCDWQ. NCDWQ does not require mitigation for isolated wetland impacts less than one-acre. Preliminary permit submittal can also include the Isolated Wetland impact for WO.
- Project will likely be authorized under a Nationwide #23 permit – there are no specific wetland/stream impact thresholds for this nationwide; impacts are considered minor by the approval of the CE document and if impacts do not exceed those presented in the CE the project should qualify for authorization under NWP #23.
- Evaluate 1.5:1 slopes in impact riparian buffer areas to reduce impacts where feasible, particularly in areas with parallel buffer impacts. In areas where grading is proposed in Zone 2; if reforestation plan is proposed (woody shrubs or trees; not grass); NCDWQ would likely not require buffer mitigation for these impact areas. NCDWQ wants to see a reforestation detail in permit application for new buffer impacts.
- Label non-buffered streams on the plans
- Where pipe slip lining is proposed; include temporary stream/buffer impacts for staging areas up and downstream of the pipes.

- For latex modified overlays – do not allow discharge or runoff into streams; only appears to be an issue for bridge over Crabtree Creek.
- For impact calculations, include an additional 10-foot outside of proposed slope stakes to account for E/C and clearing measures.
- For pre-permit activities, submit Preliminary Buffer Authorization permit to NCDWQ. The Preliminary Buffer Authorization permit will be submitted based on impacts to Buffer Zones associated with temporary roadway widening and permanent bridge widening to facilitate a 3-lane MOT scheme. This permit will be acquired which will only show impacts to Buffer Zones. The DB Team does not anticipate any additional impacts to Environmentally Sensitive Areas beyond those anticipated for the original scope of work based on the I-5311 and I-5338 CE Documents. The DB Team and NCDOT will meet separately to determine the best course of action to assure the impacts stated in the Preliminary Buffer Authorization permit are an accurate representation of the temporary work to be performed.
- Once final roadway design and drainage plans are completed for entire project, submit a Final/Modified permit submittal for all temporary and permanent wetland/stream impacts, as well as any additional riparian buffer impacts that were not accounted for in Preliminary permit submittal. The final permit application should include a stormwater plan as well as any impacts associated with utilities (including gas line).
- Preliminary and final permit application package should be reviewed by Chris Murray (Div. 5 Environmental Supervisor) and Jim Mason (NES-Permit PM) prior to submittal to agencies. Prior to submittal of the Preliminary Buffer Authorization permit, a pre-application meeting with NCDWQ (Rob Ridings) is recommended to streamline the permit review time and resolve any questions.
- Permitting agencies prefers to reduce the number of preformed scour holes proposed by the Design-Build Team. Only use these type of pipe outlet treatments when outfalling near an ESA and other outfall treatments are not practical.

6. Action Items

Action	Owner	Due Date
NCDOT to verify the current wet file is the latest file	NCDOT	7/5/13
Design-Build Team to verify and adjust Buffer Zone limits per discussions	DB Team	Prior to Permit Submittal

8. Next Meeting (if applicable)

Date: (MM/DD/YYYY)	No immediate Agency meeting scheduled	Time:		Location:	
Objective:					

MEETING MINUTES

Meeting/Project Name:	I40/440 Preliminary Buffer Authorization Permit Meeting		
Date of Meeting: (MM/DD/YYYY)	08/23/2013	Time:	9:00 AM US (EST)
Prepared By:	Beth Reed	Location:	Granite Project Office - Raleigh
1. Meeting Objective			
Review Preliminary Buffer Authorization permit drawings and discuss temporary/permanent impact approach to reach concurrence and streamline NCDOT and NCDWQ permit review.			
2. Attendance at Meeting			
Name	Organization	Email	
Rob Ridings	NCDWQ	Rob.ridings@ncdenr.gov	
Chris Murray	NCDOT – Division 5	cmurray@ncdot.gov	
Rachelle Beauregard	NCDOT- NES	rbeauregard@ncdot.gov	
Beth Reed	Kimley-Horn	beth.reed@kimley-horn.com	
Dan Robinson	Kimley-Horn	dan.robinson@kimley-horn.com	
Joel Madden	RS&H	joel.madden@rsandh.com	
Bryan Vickery	Kimley-Horn	bryan.vickery@kimley-horn.com	
Mike Tuszynski	Granite Construction	Mike.tuszynski@gcinc.com	
Chad Hinnant	NCDOT – Division 5	cdhinnant@ncdot.gov	
3. Administration			
Topic			Owner
N/A			
4. Old Business			
Previous Action Items	Update /STATUS	Owner	Due Date
N/A	First meeting with NCDOT, NCDWQ and USACE on 6/13/13 – discussion of expedited preliminary buffer permit for temporary widening to facilitate MOT		
5. New Business			
Topic			
• Hydro/Roadway Design Sections – Dan Robinson explained that the hydrologic design for the project was being done by KHA and RS&H and that the design split occurs on Sheet 24 at station 320+00 (RS&H design from the beginning of the project at I-40/US 1 interchange to station 320+00 and KHA from the bridge to the end of the project beyond Crabtree Creek – station 645+00). Dan assured NCDOT and NCDWQ that the permit drawings and impact quantities would be consistently presented in the permit submittal. • Proposed Widening – D. Robinson discussed that the widening and drainage proposed in the Preliminary Buffer Authorization permit submittal were temporary and associated with the 3 land Maintenance of Traffic (MOT) plan. It was explained that the proposed funnel drains (NCDOT standard 820.01) would be utilized in conjunction with temporary 12" corrugated slope drain pipe for erosion control and MOT drainage but the pipes would ultimately be removed (although they could be in place for +/- 1 year).			

- **Discussions followed:**
- Beth Reed questioned NCDOT/NCDWQ regarding how they wanted to see the buffer impacts associated with the funnel drains and their riprap outlet pads presented in the buffer authorization application (temporary or permanent impact). Chris Murray indicated that buffer impacts should not be separated by temporary or permanent impact; rather just quantified as an impact. Questions were raised by NCDOT and NCDWQ regarding how the pipes could be installed without clearing within the buffers. Joel Madden explained that the pipes are flexible 12" HDPE that would be placed on top of the ground surface only requiring minimal hand clearing for installation. Brian Vickery confirmed that the each pipe would drain < 1/10th acre with an average flow of 0.5 cfs with an estimated velocity of 13 ft/sec which would require the riprap pads to prevent erosion. The pipes would need to outlet at the toe of the slopes. J. Madden explained that the amount of riprap for each pipe would be minimal and would be installed using a Gator or similar equipment. These outfall locations will be designated with ID numbers with the following format, "T-sheet #-1", for example, on sheet 1, the outfalls will be labeled as T-1-1, T-1-2, etc. and on sheet 2 the outfalls will be labeled as T-2-1, T-2-2, etc.
- Rob Ridings confirmed that NCDWQ would not consider the funnel drains as an impact to the buffer but that square footage of riprap for each pipe should be quantified and considered as a buffer impact.
- Chris Murray suggested that KHA/RS&H use hatching in the final permit submittal to indicate "previously permitted impact areas" so it would be clear to the reviewer which areas were authorized under the Preliminary permit versus the final permit. This will prevent double counting impacts.
- Rob Ridings confirmed that no stormwater management plan would be required for the Preliminary Buffer Authorization application but that it would be required as part of the final permit submittal. He also confirmed that the funnel drains, because of their temporary nature, would not be considered new stormwater conveyances in the buffers.
- Rob Riding also indicated that impact ID #s should be per stream and that the same ID # should be used for impacts at drainage structure inlets and outlets. If impact areas extend onto two sheets, the ID label should be for the sheet that the area was first shown.
- Rachelle Beauregard question KHA/RS&H's use of sheet numbers as buffer impact ID's since it is not NCDOT's standard numbering protocol (typically use Site 1, Site 2, etc.). While R. Beauregard was concerned that the numbering system being used for this application is not standard NCDOT protocol, she agreed to the modified system noting that it would benefit others overseeing/reviewing the project by helping differentiate preliminary impacts and final impacts. R. Ridings and C. Murray agreed that the sheet number identification was the best approach considering we would have separate permit packages for the Preliminary Buffer impacts and the final permit.
- Include Work Breakdown Structure (WBS) #'s in the permit application
- It was confirmed that NCDOT would be the applicant and that they would transmit the permit application to NCDWQ and the USACE (electronically)
- D. Robinson indicated the critical schedule for the Preliminary Buffer review and that the draft permit application submittal was scheduled to be submitted to NCDOT on 09/20/13

with the goal of the submittal going to NCDWQ on 9/30/13. NCDOT and NCDWQ agreed to expedite their reviews as much as possible. It was agreed that Granite should submit a hard copy of the Preliminary Buffer application including pink slip transmittal, to Lonnie Brooks. L. Brooks will route the application to C. Murray and R. Beauregard (NES) for review. NES will ultimately transmit the application to NCDWQ. However, in order to help expedite the NCDOT review, it was suggested that concurrent with Granite's submittal of the hard copy application, an electronic copy should be sent to C. Murray and R. Beauregard with L. Brooks copied on the transmittal.

- The permit drawings should show all areas with pipes/outlet pads within 50' of an ESA, even if the areas are not impacted (including funnel drains in buffers) to help NCDOT with compliance reviews. Add a general note to the plans to indicate that all the sheets included do not have impact sites but are included for compliance field reviews.
- Due to there being a Preliminary and final permit submittal; NCDOT suggested that their typical permit drawing sheet numbering (i.e. 1 of 6) be left off of the permit drawings.
- NCDOT will submit a courtesy copy of the Preliminary Buffer Authorization permit package to Eric Alsmeyer (USACE).
- C. Murray requested another project team meeting (no agency representatives) prior to the final interagency permit meeting (planned for 10/17/13) to discuss the presentation of impacts in the final permit.
- D. Robinson noted that construction was scheduled to begin in Area 3 in Jan. 2014 and in Area 2 in March 2014 and that each section would have its own final permit submittal. It is anticipated that two separate interagency meetings will be held prior to each permit submittal. C. Murray noted that L. Brooks should get on the interagency meeting schedule by mid-September in order to get on the 10/17/13 agenda.

Specific Comments on Permit Drawings:

- **Permit cover sheet:** Spell out Maintenance of Traffic (MOT) in title for permit reviewers; confirm Sites 0801 and 0802 are either missing from permit sheets or impacts have been avoided; either way, if ESA is located on sheet, it should be included in permit drawings.
- **For all Permit Sheets:** Funnel drains and associated riprap pads should be located at least 10' from buffers/ESAs to ensure no impacts; Division 5 Environmental Supervisors will need to field verify locations of pipes and riprap pads; contractors should GPS end of pipe outlets or set stake at outlets. No orange fencing is required if pipes/pads are located outside the buffers; if within buffers orange fencing will be required.
- **Sheet 11** - number downstream impact site 1102 (near station 105+13.28); renumber downstream site (at station 114+50.00) from 1104 to 1103; upstream – angle pipe at Site 1103 (downstream) so that pipe and riprap pad is located 10' outside of buffer.
- **Sheet 12** – renumber site from 1104 to 1103; angle funnel drain pipe and riprap so that it outlets straight into the ditch.
- **Sheet 15** – Site 1501 (upstream); eliminate pipe junction, consider dual parallel pipes with outlets outside of buffers; make sure pipes are 10' offset from buffers; (downstream); renumber site from 1502 to 1501; rotate pipes to be 10' outside of buffers; for all pipes that outlet near jurisdictional streams a note needs to be added to the permit plans stating "Do not extend riprap pad below top of bank/ordinary high water mark (OHWM) of stream. C. Murray emphasized that the USACE would have to get involved if there are any

temp/permanent stream or wetland impacts proposed. The USACE cannot approve a Preliminary permit and that would impact the proposed construction schedule.

- **Sheet 17** – Site 1701; remove pipe junction, consider dual parallel pipes with outlets outside buffers; if joints are required within a buffer consider wrapping joints to prevent indirect discharge into buffer; pipe at approximate station 206+00 needs to be moved 10' outside of buffer or extend pipe so that riprap is 10' outside of buffer.
- **Sheet 22** – all pipes/riprap pads need to be rotated or shortened to stay outside of wetlands; wetland boundaries need to be staked in the field. Note needs to be added to plans indicated impacts cannot occur in wetlands and contractor may need to install additional energy dissipater device (as directed by engineer) to ensure no indirect scour impacts to wetlands. Add note to plans that displays the average cfs for the drainage pipes for USACE information. Remove pipe junction and move all pipes outlets outside of buffers. Renumber downstream site from 2202 to 2201.
- **Sheet 26** – Stream TOB is approximated; update TOB survey asap; eliminate pipe impact area hatching since pipes will not be considered impact; relocate pipes and outlets 10' outside of buffers; surveyor should include staking/labeling #s for all outlets located within 50' of ESAs, suggested labeling i.e. T26-1, T26-2, etc. These labels should be included on the permit drawings.
- **Sheet 28** – Site 2801 would be “bridge” impact; need updated survey and impact area for construction; realign pipe outside of buffer to get 10' offset.
- **Sheet 30** – no comments
- **Buffer Impact Summary** - For the Buffer Impact Summary table, there is one bridge impact (sheet 28) and the remaining impacts would be considered road crossings. All impacts would be considered “allowable” (less than 150' and 1/3 acre).

6. Action Items

Action	Owner	Due Date
Meet with Hydro group to review permit drawings prior to submittal to NCDOT on 9/20/13.	DB Team	Prior to 9/20/13
Coordinate with L. Brooks to get on 10/17/13 interagency meeting schedule by mid- Sept.	DB Team	

8. Next Meeting (if applicable)

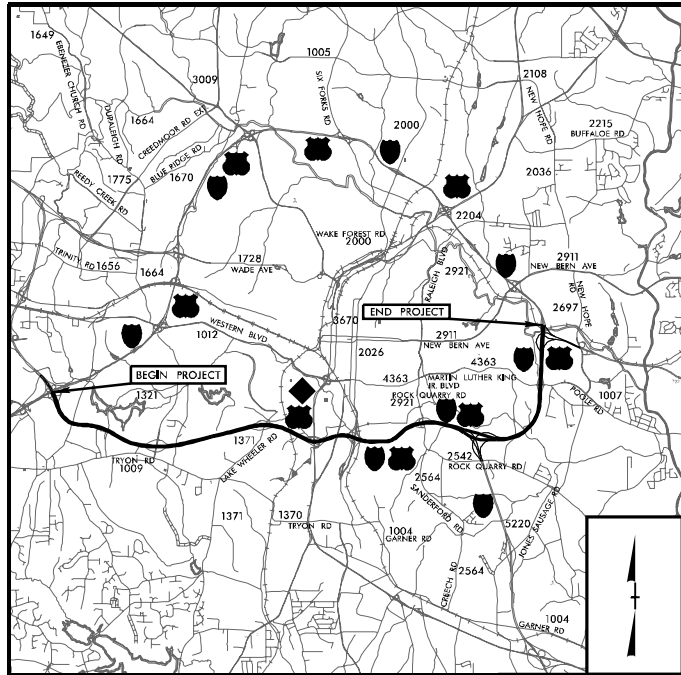
Date: 09/09/2013	Meet with NCDOT-Hydro group to review permit drawings	Time:	1:00pm	Location:	NCDOT- TPMU Pamlico Conference Room
Objective:					

09/28/2013

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

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

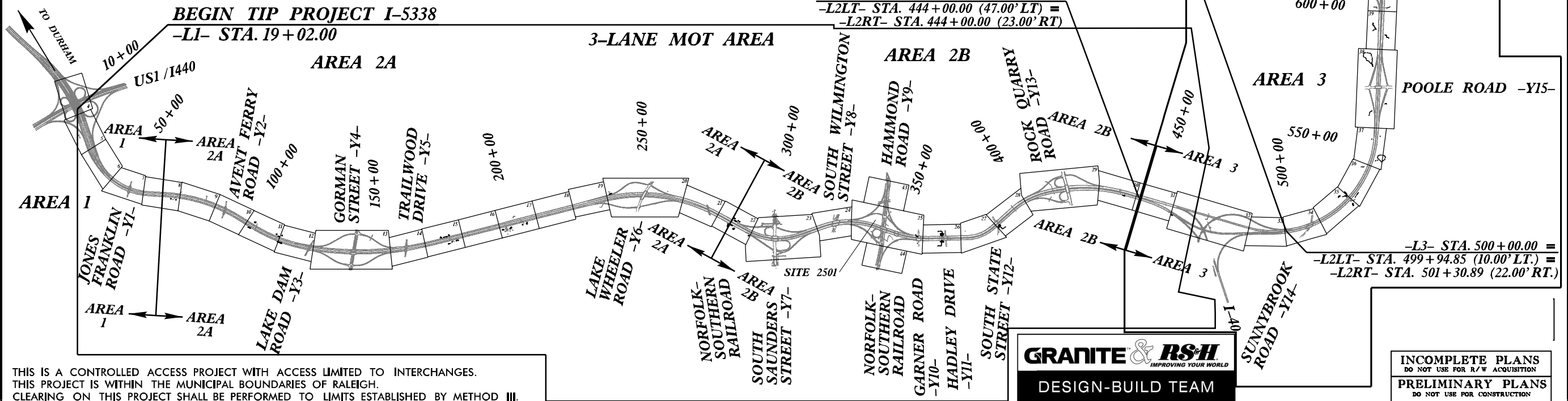
TYPE OF WORK: PAVING, GRADING, DRAINAGE, STRUCTURE REHABILITATION,
STRUCTURE WIDENING, GUARDRAIL, CABLE GUIDERAIL,
SIGNING, LIGHTING, AND ITS

3-LANE MOT (MAINTENANCE OF TRAFFIC)
STREAM AND WETLAND 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

END TIP PROJECT I-5311
-L3- STA. 628+60.00

END TIP PROJECT I-5338
BEGIN TIP PROJECT I-5311
-L3- STA. 500+00.00

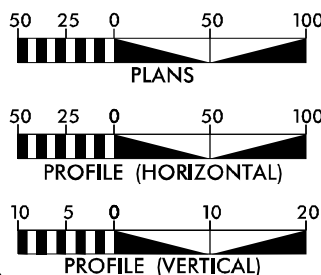


THIS IS A CONTROLLED ACCESS PROJECT WITH ACCESS LIMITED TO INTERCHANGES.
THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF RALEIGH.
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO LIMITS ESTABLISHED BY METHOD III.

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DESIGN-BUILD TEAM

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

GRAPHIC SCALES



DESIGN DATA

ADT 2013 = 126,025
ADT 2035 = 184,600
DHV = 9 %
D = 55 %
T = 8 % *
V = 70 MPH
* (TTST = 4% + DUAL = 4%)
FUNC CLASS = INTERSTATE

PROJECT LENGTH

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

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

K. ZAK HAMIDI, PE
NCDOT CONTACT

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

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
MAY 13, 2013

LETTING DATE:
MAY 13, 2013

CHAD ROGERS, PE
PROJECT ENGINEER

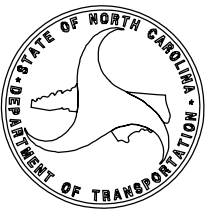
JASON TALLEY, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

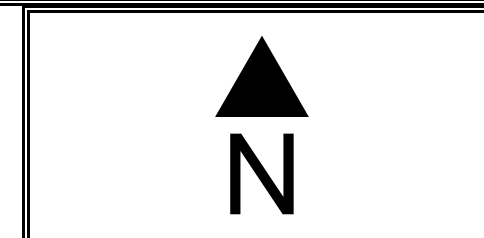
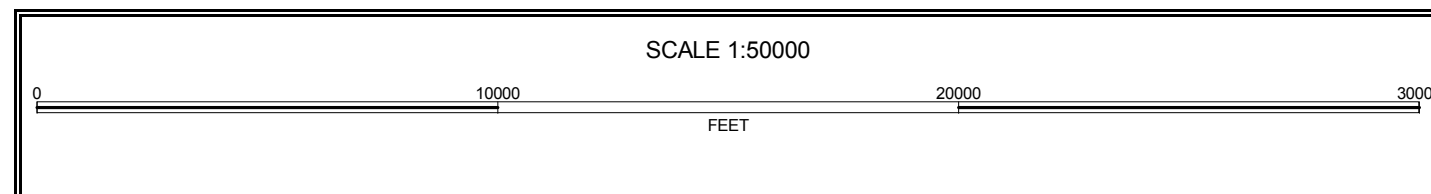
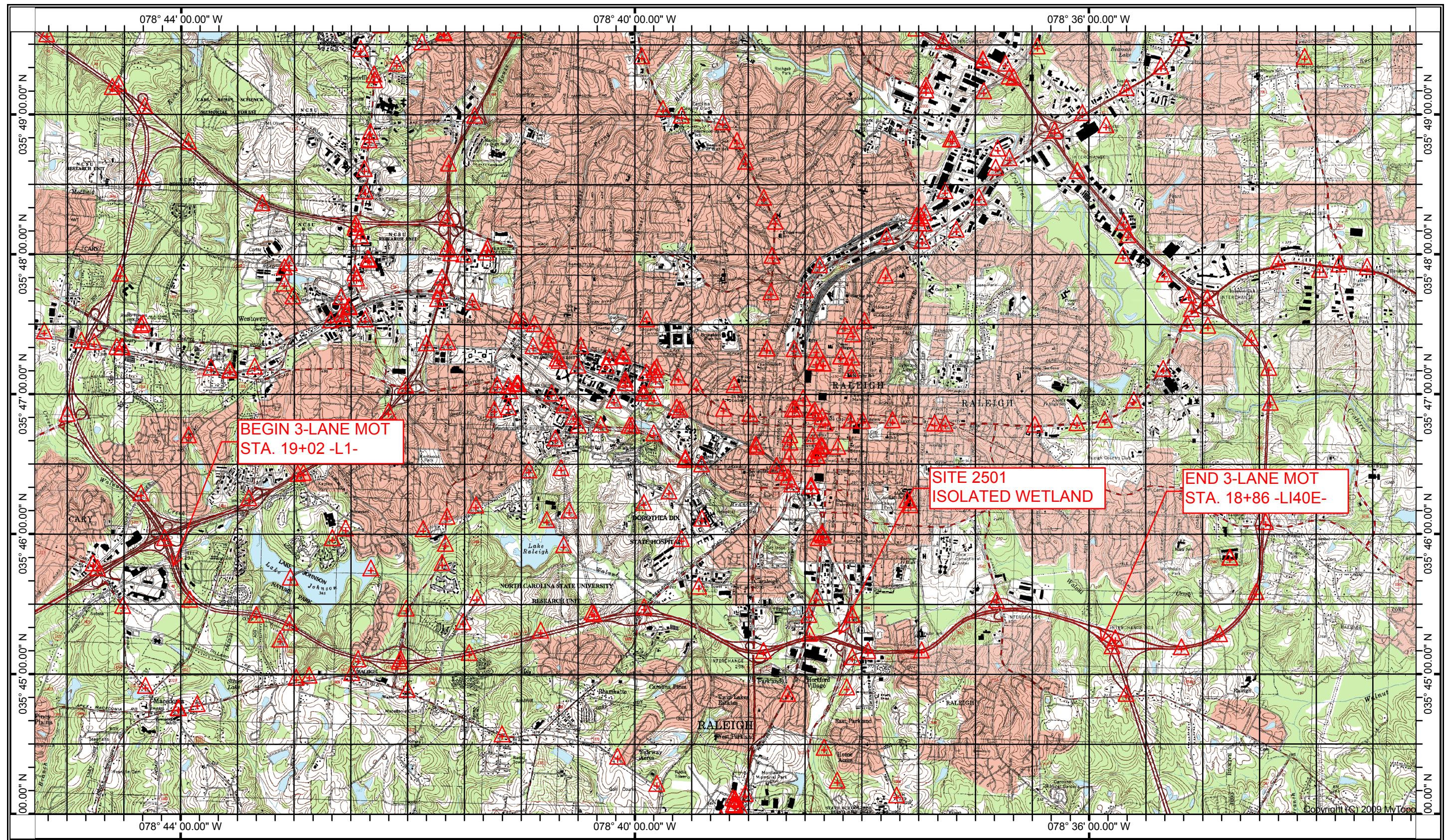
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ROADWAY DESIGN
ENGINEER

SIGNATURE: _____ P.E.



NAD 83/NSRS 2007



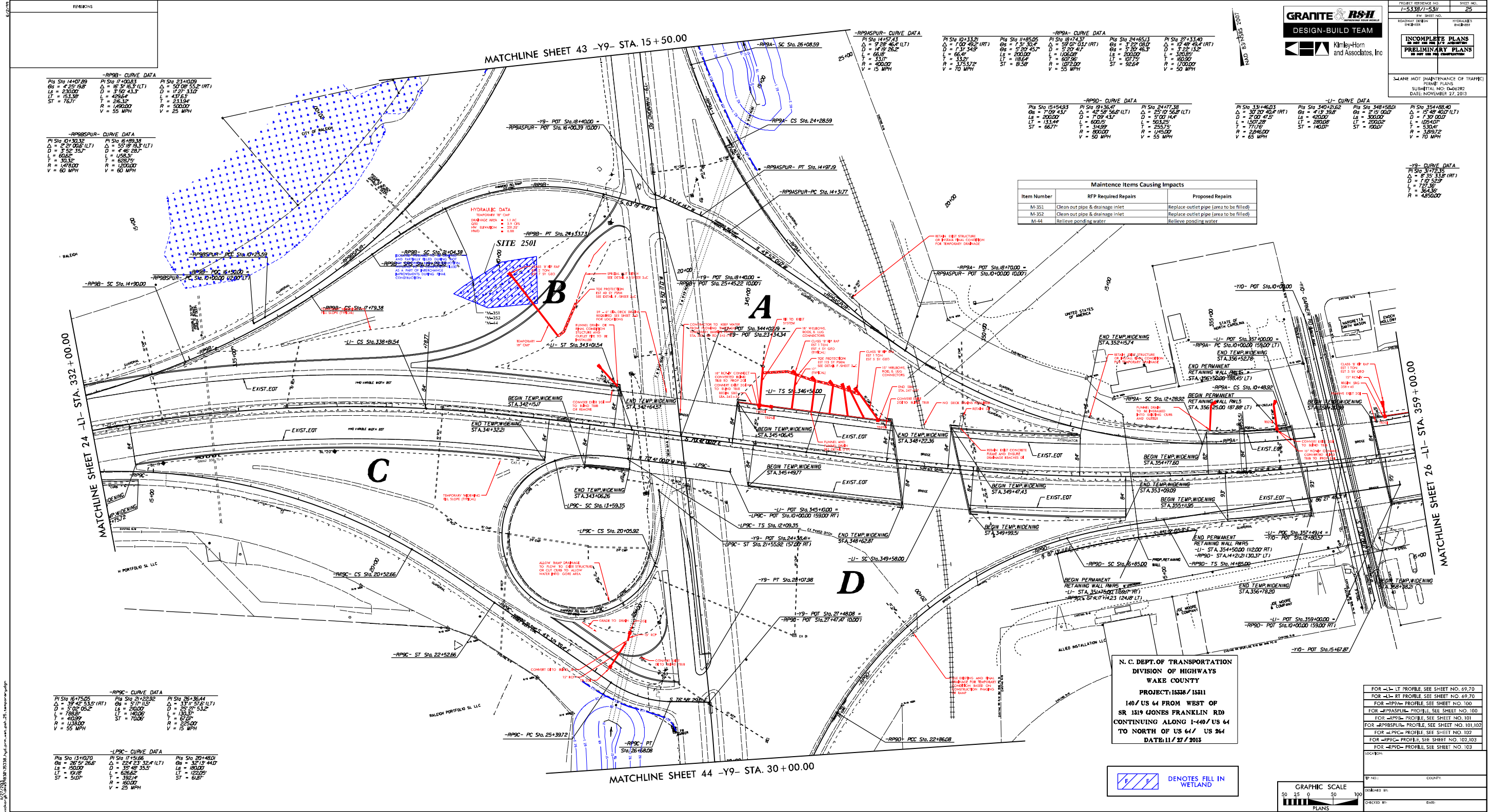
WETLAND PERMIT IMPACT SUMMARY

			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	339+21/340+83 -L1-	FILL	0.27*									
TOTALS:			0.27									

*Wetland (WO) is an isolated wetland

NC DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS

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



-RP9B- CURVE DATA

Sta 14+00.00	Sta 14+00.00
Δ = 18° 31' 03.3" (RT)	Δ = 50° 08' 55.2" (RT)
D = 520.00'	D = 520.00'
L = 153.30'	L = 153.30'
T = 26.33'	T = 26.33'
R = 1490.00'	R = 1490.00'
V = 55 MPH	V = 55 MPH

-RP9BSPUR- CURVE DATA

Sta 14+00.00	Sta 14+00.00
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D = 520.00'	D = 520.00'
L = 153.30'	L = 153.30'
T = 26.33'	T = 26.33'
R = 1490.00'	R = 1490.00'
V = 55 MPH	V = 55 MPH

-RP9A- CURVE DATA

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T = 26.33'	T = 26.33'
R = 1490.00'	R = 1490.00'
V = 55 MPH	V = 55 MPH

-RP9D- CURVE DATA

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L = 153.30'	L = 153.30'
T = 26.33'	T = 26.33'
R = 1490.00'	R = 1490.00'
V = 55 MPH	V = 55 MPH

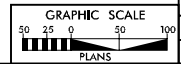
-LI- CURVE DATA

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L = 153.30'	L = 153.30'
T = 26.33'	T = 26.33'
R = 1490.00'	R = 1490.00'
V = 55 MPH	V = 55 MPH

Item Number	RFP Required Repairs	Proposed Repairs
M-351	Clean out pipe & drainage inlet	Replace outlet pipe (area to be filled)
M-352	Clean out pipe & drainage inlet	Replace outlet pipe (area to be filled)
M-44	Relieve ponding water	Relieve ponding water

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT 15358 / 15311
140 / US 64 FROM WEST OF
SR 1319 JONES FRANKLIN RD
CONTINUING ALONG I-440 / US 64
TO NORTH OF US 64 / US 264
DATE: 11 / 27 / 2013

FOR -LI- LT PROFILE SEE SHEET NO. 69.70
FOR -LI- RT PROFILE SEE SHEET NO. 69.70
FOR -RP9A- PROFILE SEE SHEET NO. 100
FOR -RP9BSPUR- PROFILE SEE SHEET NO. 100
FOR -RP9B- PROFILE SEE SHEET NO. 101
FOR -RP9C- PROFILE SEE SHEET NO. 101, 102
FOR -RP9D- PROFILE SEE SHEET NO. 102, 103
FOR -RP9E- PROFILE SEE SHEET NO. 103



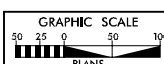
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 $L = 727.36'$
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 $R = 4850.00'$

FOR $\rightarrow$ LT PROFILE, SEE SHEET NO. 69,70
FOR $\rightarrow$ RT PROFILE, SEE SHEET NO. 69,70
FOR $\rightarrow$ RP2A PROFILE, SEE SHEET NO. 100
FOR $\rightarrow$ RP9ASPU PROFILE, SEE SHEET NO. 100
FOR $\rightarrow$ RP9B PROFILE, SEE SHEET NO. 101
FOR $\rightarrow$ RP9BSPUR PROFILE, SEE SHEET NO. 101,102
FOR $\rightarrow$ PPC PROFILE, SEE SHEET NO. 102
FOR $\rightarrow$ RP9C PROFILE, SEE SHEET NO. 102,103
FOR $\rightarrow$ RP9D PROFILE, SEE SHEET NO. 103

GRAPHIC SCALE

50 25 0 50 100

FEET

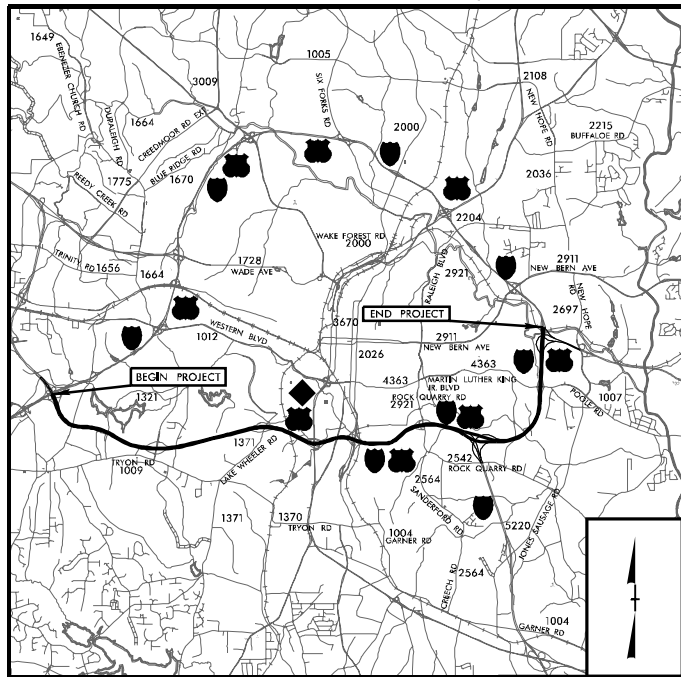


09/28/99

TIP PROJECT: I-5338, I-5311

CONTRACT: C203166

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



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WAKE COUNTY

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

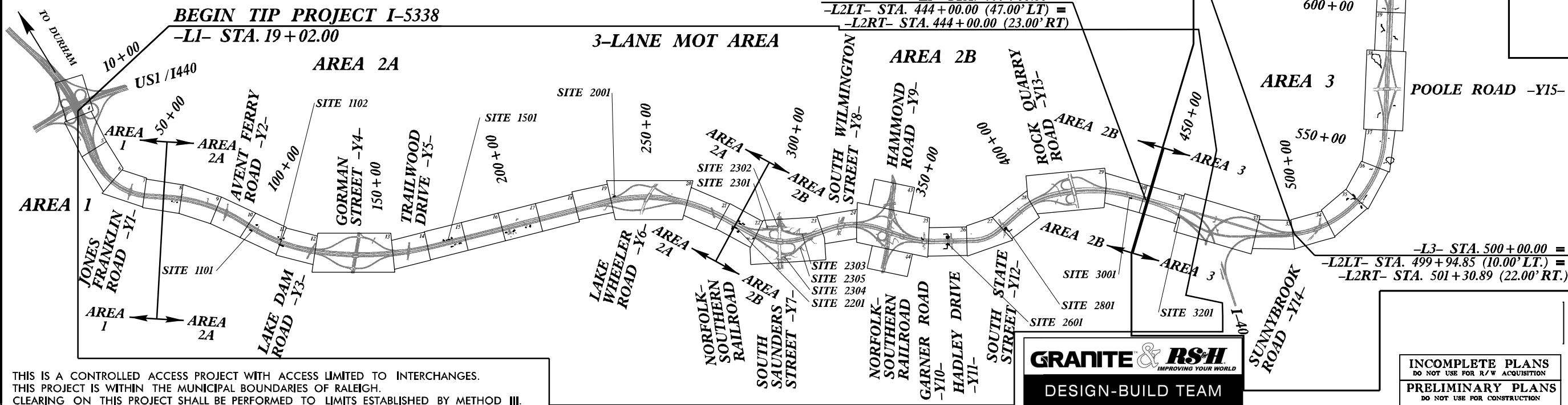
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STRUCTURE WIDENING, GUARDRAIL, CABLE GUIDERAIL,
SIGNING, LIGHTING, AND ITS

3-LANE MOT (MAINTENANCE OF TRAFFIC)
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

END TIP PROJECT I-5311
-L3- STA. 628+60.00

END TIP PROJECT I-5338
BEGIN TIP PROJECT I-5311
-L3- STA. 500+00.00

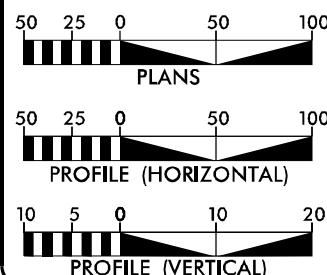


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DESIGN-BUILD TEAM

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DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES



DESIGN DATA

ADT 2013 = 126,025
ADT 2035 = 184,600
DHV = 9 %
D = 55 %
T = 8 % *
V = 70 MPH
* (TTST = 4% + DUAL = 4%)
FUNC CLASS = INTERSTATE

PROJECT LENGTH

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

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

K. ZAK HAMIDI, PE
NCDOT CONTACT

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

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
MAY 13, 2013

LETTING DATE:
MAY 13, 2013

CHAD ROGERS, PE
PROJECT ENGINEER

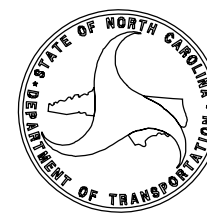
JASON TALLEY, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

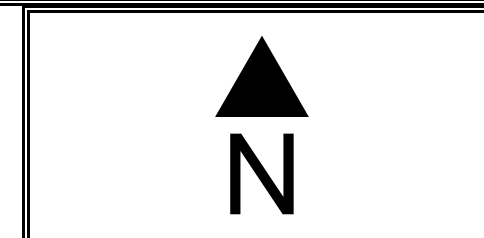
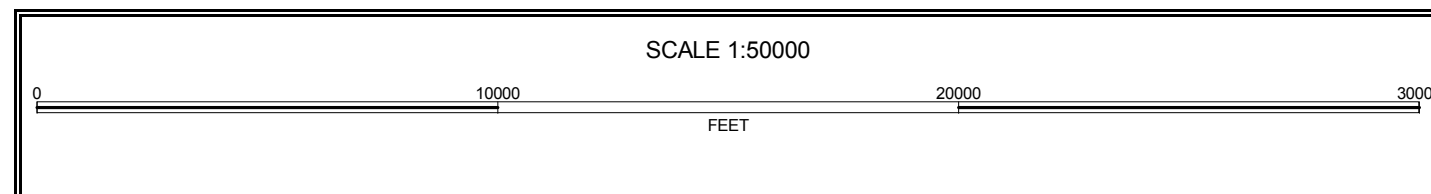
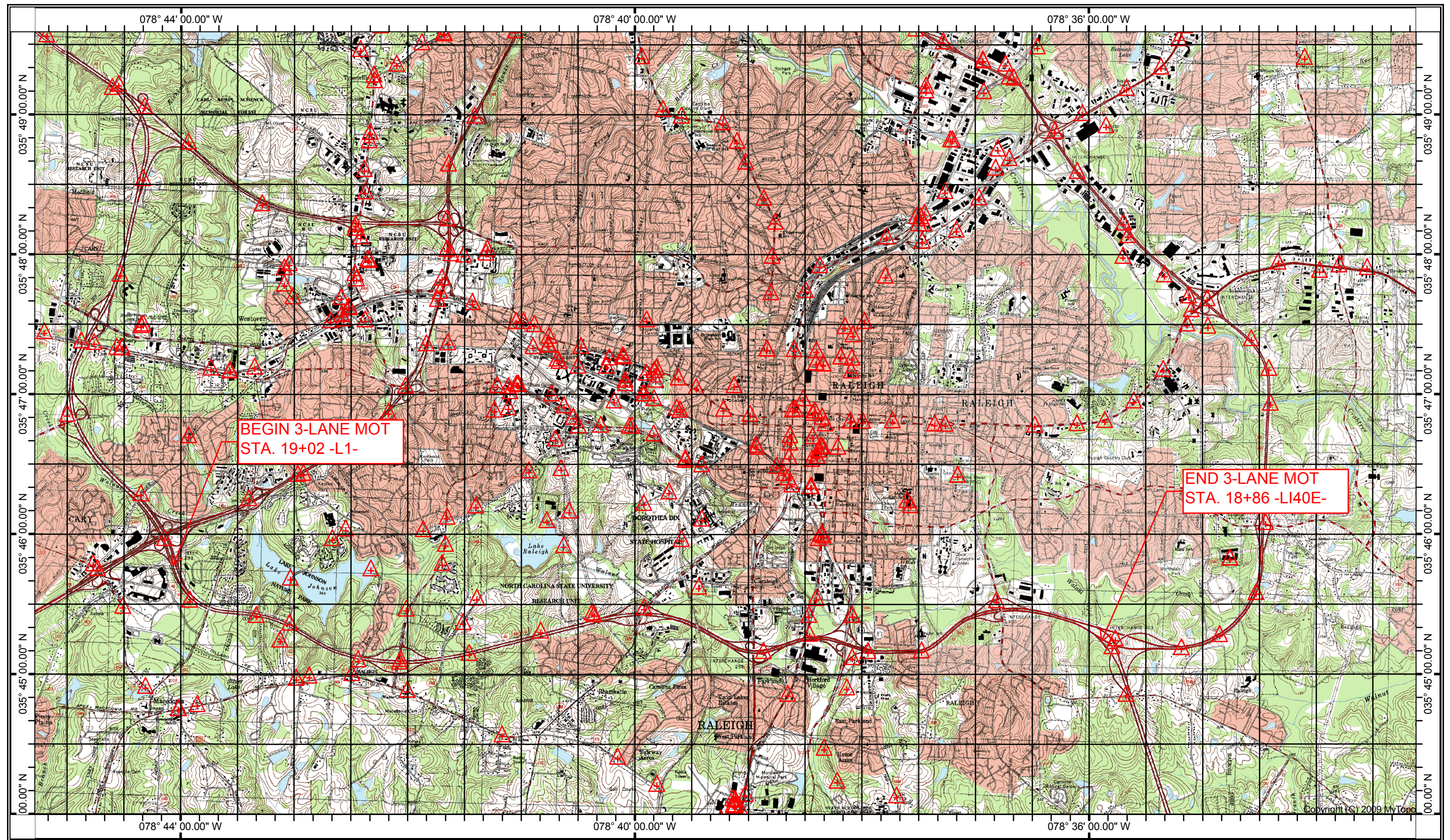
SIGNATURE: _____ P.E.

ROADWAY DESIGN
ENGINEER

SIGNATURE: _____ P.E.



NAD 83/NSRS 2007



BUFFER IMPACTS SUMMARY													
			IMPACT									BUFFER REPLACEMENT	
SITE NO.	STRUCTURE SIZE / TYPE	STATION (FROM/TO)	TYPE			ALLOWABLE			MITIGABLE				
			ROAD CROSSING	BRIDGE	PARALLEL IMPACT	ZONE 1 (ft²)	ZONE 2 (ft²)	TOTAL (ft²)	ZONE 1 (ft²)	ZONE 2 (ft²)	TOTAL (ft²)	ZONE 1 (ft²)	ZONE 2 (ft²)
1101	ROADWAY	102+25 to 103+45 -L1-	X			649	1936	2585					
1102	ROADWAY	113+60 to 116+10 -L1-	X			302	4266	4568					
1501	ROADWAY	176+05 to 177+70 -L1-	X			0	1503	1503					
2001	ROADWAY	238+90 to 240+10 -L1-	X			172	1127	1299					
2201	ROADWAY	285+65 to 287+40 -L1-	X			900	2914	3814					
2301	ROADWAY	295+95 to 299+25 -L1-			X				1564	51	1615		
2302	ROADWAY	301+20 to 304+30 -L1-	X			3140	1036	4176					
2303	ROADWAY	305+10 to 316+30 -L1-			X				3889	4474	8363		
2304	ROADWAY	302+10 to 305+10 -L1-	X			1191	927	2118					
2305	ROADWAY	306+05 to 314+35 -L1-			X				148	1649	1797		
2601	ROADWAY	365+48 to 366+70 -L1-	X			5506	6895	12401					
2801	ROADWAY	387+63 to 388+41 -L1-	X			2528	1363	3891					
3001	ROADWAY	438+03 to 439+00 -L1-	X			6	788	794					
3201	ROADWAY	457+50 to 458+29 -L2RT-	X			0	1019	1019					
TOTAL:						14394	23774	38168	5601	6174	11775		

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

WAKE COUNTY
PROJECT: 46265.3.1 (I5338/I5311)

11/14/2013
SHEET 1 OF 1

8/17/99

REVISIONS

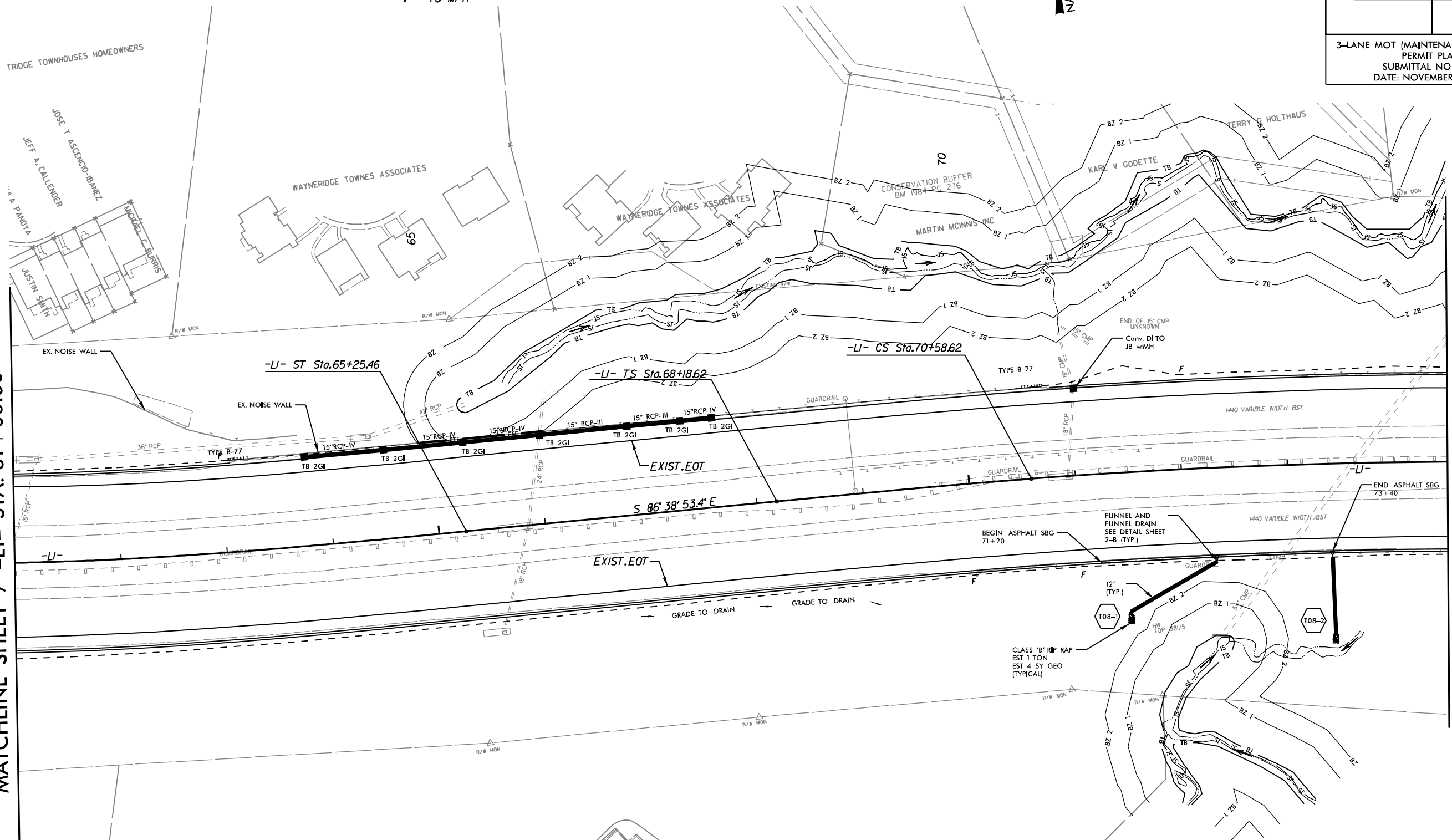
MATCHLINE SHEET 7 -LI- STA. 61+00.00

-LI- CURVE DATA		
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$L_s = 500.00'$	$L_s = 240.00'$	$D = 1'00''00.0''$
$LT = 333.54'$	$LT = 160.00'$	$L = 2609.82'$
$ST = 166.86'$	$ST = 80.00'$	$T = 1,327.95'$
		$R = 5,729.58'$
		$V = 70$ MPH

GRANITE & RSH
IMPROVING YOUR WORLD
DESIGN-BUILD TEAM

NAD 83 NRS 2007

PROJECT REFERENCE NO. 1-5338/1-5331	SHEET NO. 8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR E/V ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
3-LANE MOT (MAINTENANCE OF TRAFFIC) PERMIT PLANS SUBMITTAL NO: D-062 DATE: NOVEMBER 14, 2013	



MATCHLINE SHEET 9 -LI- STA. 74+50.00

	ALLOWABLE IMPACTS ZONE 1
	ALLOWABLE IMPACTS ZONE 2

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15338 / 15311
140' US 64 FROM WEST OF
SR 1219 JONES FRANKLIN RD
CONTINUING ALONG I-440/US 64
TO NORTH OF US 64/ US 264
DATE: 11/14/2013

NOTE:
NO IMPACT SITES ON SHEET. SHEET SHOWN
FOR COMPLIANCE FIELD VERIFICATION.

FUNNEL DRAIN OUTLETS THAT REQUIRE STAKING		
OUTLET	NORTHING	EASTING
T08-1	730582.2992	2081950.4937
T08-2	730534.5945	2082137.9337

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

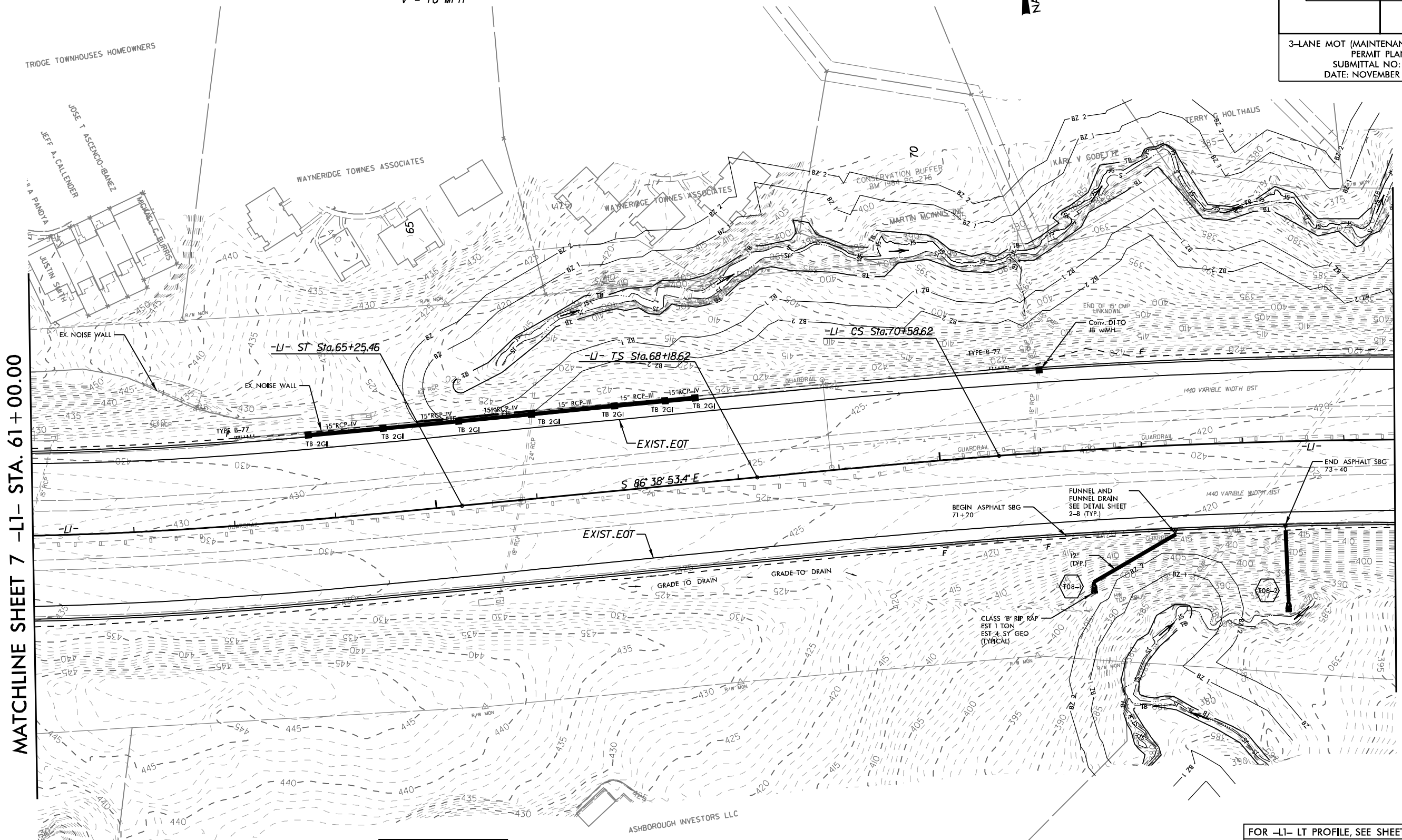


GRANITE  **RS&H**
IMPROVING YOUR WORLD

DESIGN-BUILD TEAM

NAD 83/NRS 2007

-LI- CURVE DATA					
<i>Pls Sta</i> 61+92.31	<i>Pls Sta</i> 69+78.63	<i>Pl Sta</i> 83+86.57			
<i>Θs</i> = 6°15' 25.0"	<i>Θs</i> = 1°12' 00.0"	<i>Δ</i> = 26°05' 53.4" (RT)			
<i>Ls</i> = 500.00'	<i>Ls</i> = 240.00'	<i>D</i> = 1°00' 00.0"			
<i>LT</i> = 333.54'	<i>LT</i> = 160.00'	<i>L</i> = 2,609.82'			
<i>ST</i> = 166.86'	<i>ST</i> = 80.00'	<i>T</i> = 1,327.95'			
		<i>R</i> = 5,729.58'			
		<i>V</i> = 70 MPH			



MATCHLINE SHEET 7 -L7- STA. 61+00.00

MATCHLINE SHEET 9 -L1- STA. 74 + 50.00

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



FUNNEL DRAIN OUTLETS THAT REQUIRE STAKING		
OUTLET	NORTHING	EASTING
T08-1	730582.2992	2081950.4937
T08-2	730534.5945	2082137.9337

**N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15358 / 15311
140' / US 64 FROM WEST OF
SR 1519 JONES FRANKLIN RD)
CONTINUING ALONG I-440 / US 64
TO NORTH OF US 64 / US 264
DATE: 11 / 14 / 2013**

NOTE:
NO IMPACT SITES ON SHEET. SHEET SHOWN
FOR COMPLIANCE FIELD VERIFICATION.

-  ALLOWABLE IMPACTS ZONE 1
-  ALLOWABLE IMPACTS ZONE 2

8/17/99

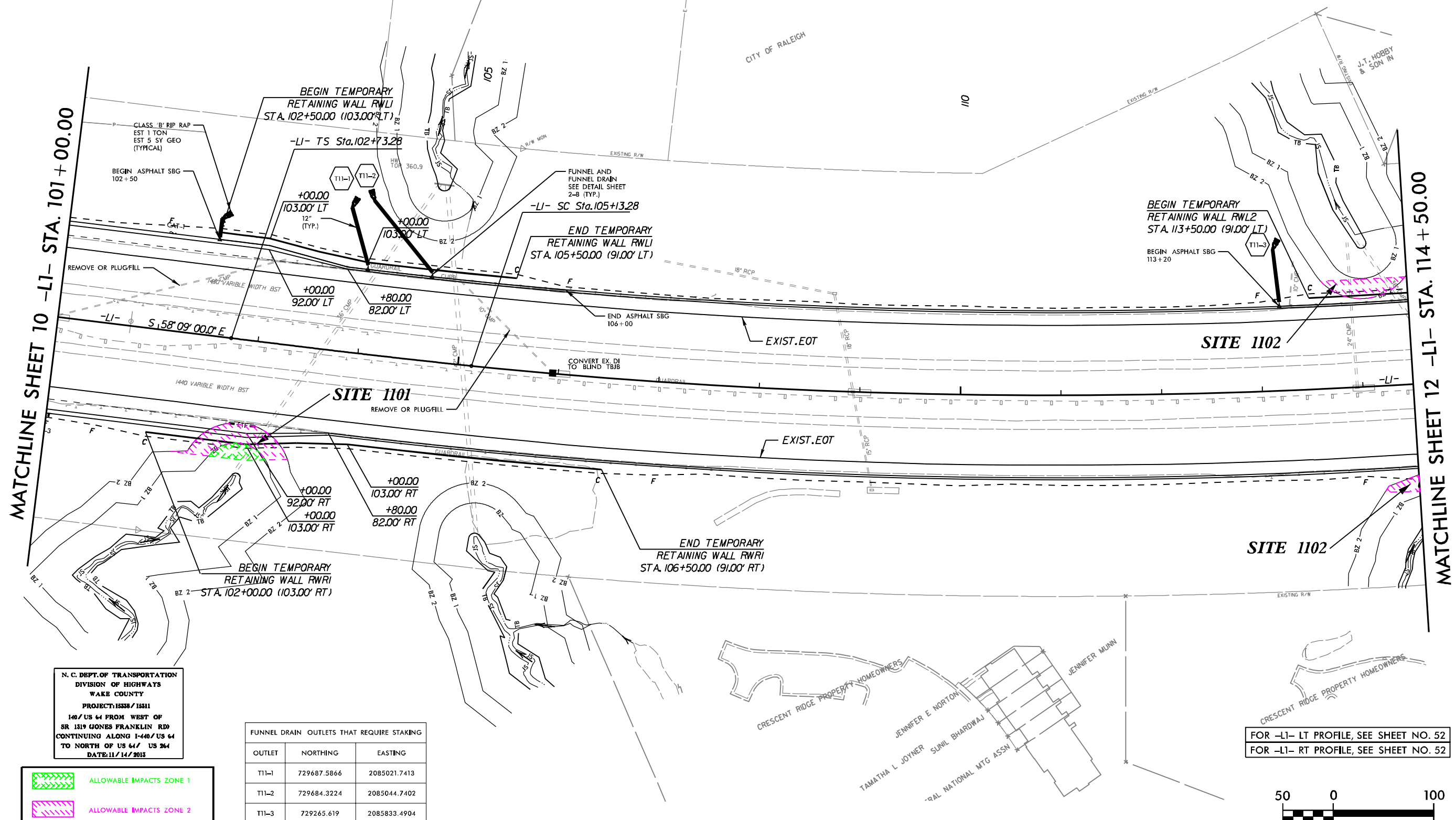
-LI- CURVE DATA

PIs Sta 104+33.29	PI Sta 115+66.75
$\Delta s = 1'12'' 00.0''$	$\Delta = 20' 50'' 11.9''$ (LT)
$L_s = 240.00'$	$D = 1'00'' 00.0''$
$LT = 160.00'$	$L = 2,083.66'$
$ST = 80.00'$	$T = 1,053.47'$
	$R = 5,729.58'$
	$V = 70$ MPH

GRANITE & RS&H
IMPROVING YOUR WORLD
DESIGN-BUILD TEAM

PROJECT REFERENCE NO. 1-5338/1-5311	SHEET NO. 11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR E/W ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
3-LANE MOT (MAINTENANCE OF TRAFFIC) PERMIT PLANS SUBMITTAL NO: D-062 DATE: NOVEMBER 14, 2013	

NAD 83/NSRS 2007



N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT 15338 / 15311
140' / US 64 FROM WEST OF
SR 1519 JONES FRANKLIN RD
CONTINUING ALONG I-440 / US 64
TO NORTH OF US 64 / US 264
DATE: 11/14/2013

OUTLET	NORTHING	EASTING
T11-1	729687.5866	2085021.7413
T11-2	729684.3224	2085044.7402
T11-3	729265.619	2085833.4904

ALLOWABLE IMPACTS ZONE 1
 ALLOWABLE IMPACTS ZONE 2

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

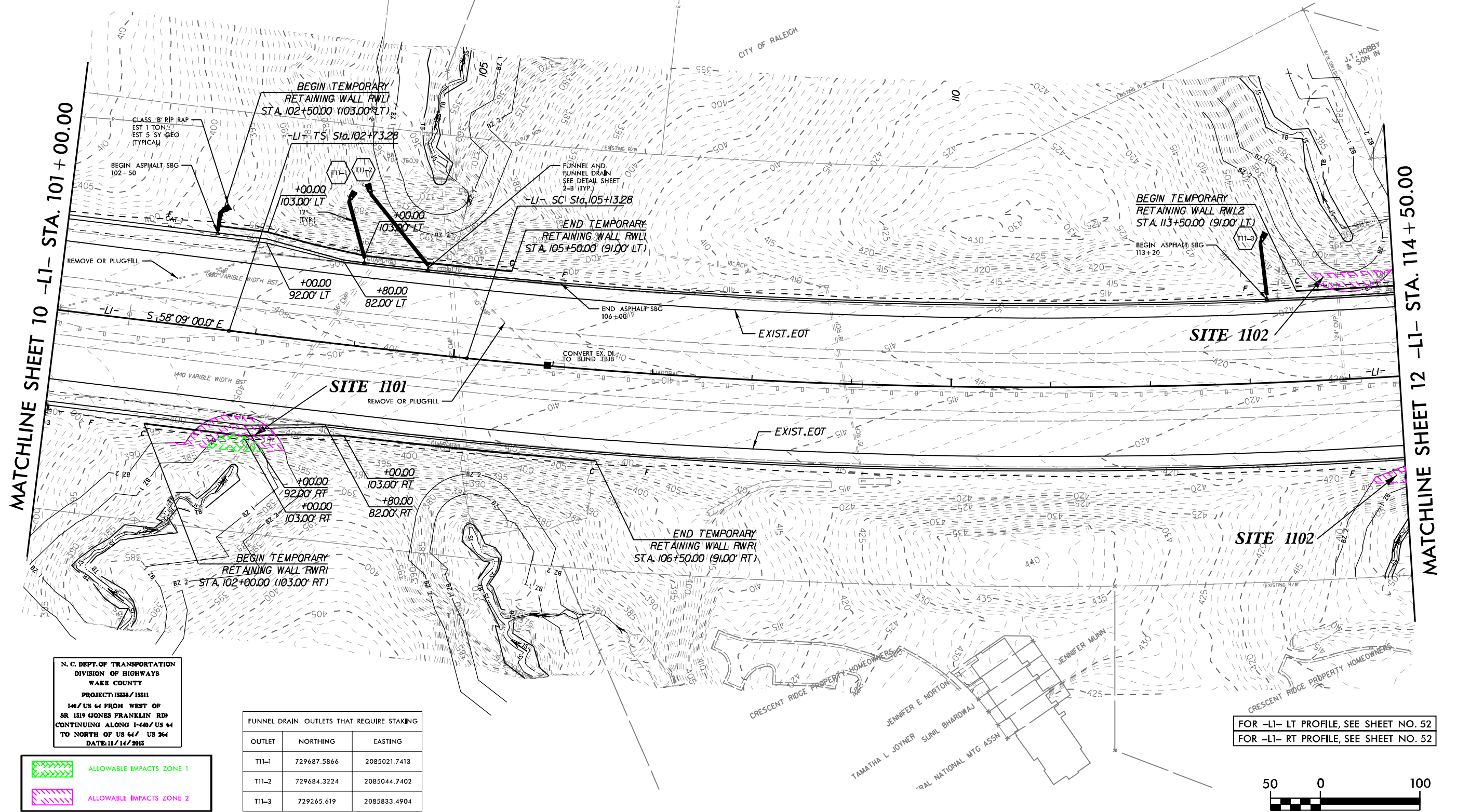


8/17/13

-LI- CURVE DATA
PIs Sta 104+33.29 PI Sta 115+66.75
Es = 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

GRANITE & RSH
IMPROVING YOUR WORLD
DESIGN-BUILD TEAM

PROJECT REFERENCE NO.	SHEET NO.
1-5338/1-5311	11
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR E/V ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
3-LANE MOT (MAINTENANCE OF TRAFFIC) PERMIT PLANS SUBMITTAL NO: D-062 DATE: NOVEMBER 14, 2013	



N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT 15338 / 15311
140 / US 64 FROM WEST OF
SR 1519 JONES FRANKLIN RD
CONTINUING ALONG I-440 / US 64
TO NORTH OF US 64 / US 264
DATE: 11/14/2013

FUNNEL DRAIN OUTLETS THAT REQUIRE STAKING		
OUTLET	NORTHING	EASTING
T11-1	729687.5866	2085021.7413
T11-2	729684.3224	2085044.7402
T11-3	729265.619	2085833.4904

ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2

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



8/17/99

REVISIONS

-LI- CURVE DATA

PI Sta 115+66.75	Pls Sta 127+03.62
$\Delta = 20^\circ 50' 11.9"$ (LT)	$\Theta_s = 0^\circ 36' 00.0"$
$D = 1^\circ 00' 00.0"$	$\Theta_s = 1^\circ 12' 00.0"$
$L = 2,083.66'$	$L_s = 240.00'$
$T = 1,053.47'$	$LT = 133.34'$
$R = 5,729.58'$	$ST = 106.68'$
$V = 70$ MPH	

-RP4B- CURVE DATA

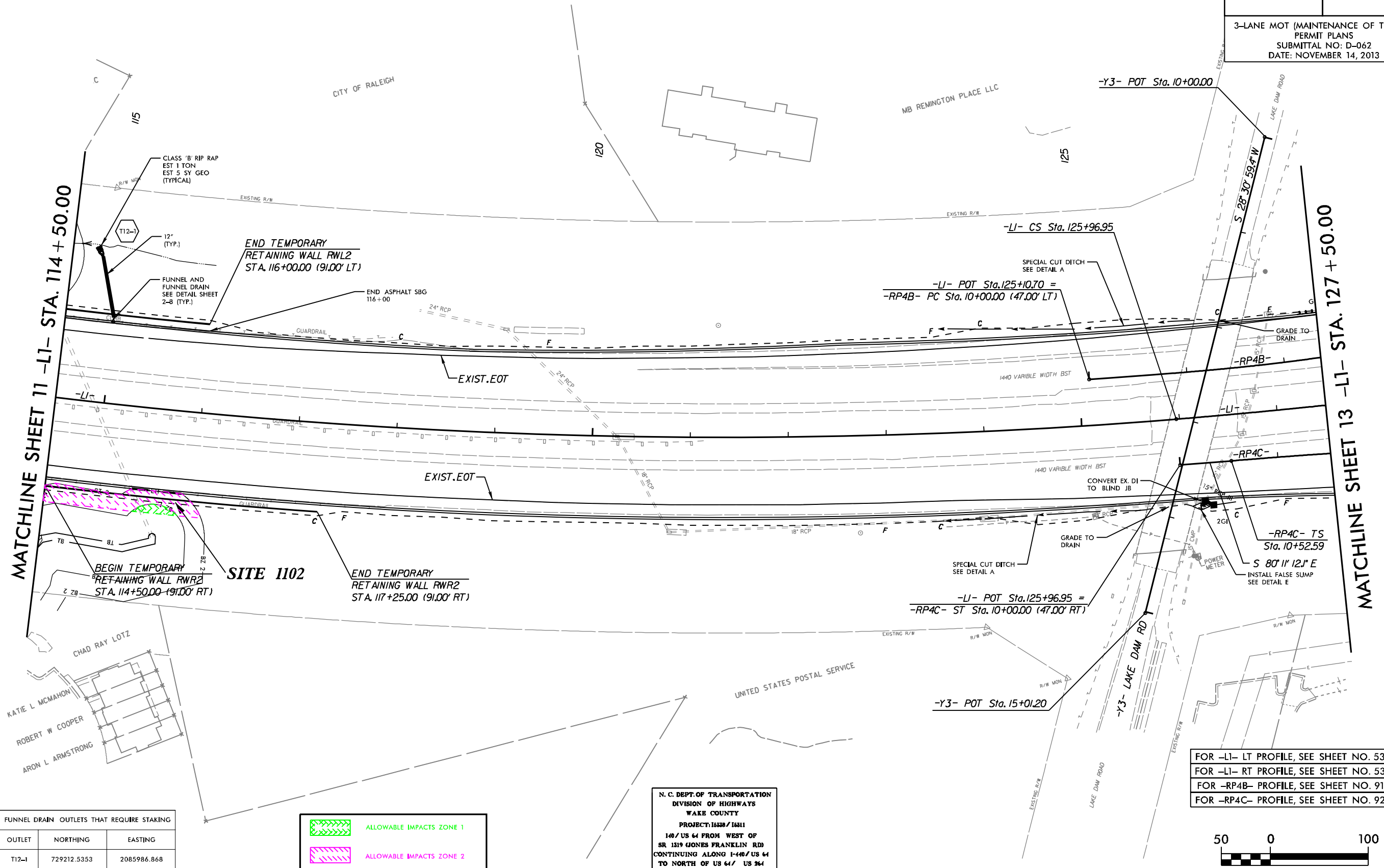
PI Sta 10+42.77	Pls Sta 12+10.19
$\Delta = 0^\circ 51' 45.0"$ (LT)	$\Theta_s = 1^\circ 01' 39.3"$
$D = 1^\circ 00' 29.8"$	$\Theta_s = 5^\circ 04' 57.9"$
$L = 85.54'$	$L_s = 204.00'$
$T = 42.77'$	$LT = 124.65'$
$R = 5,682.58'$	$ST = 79.53'$
$V = 70$ MPH	

-RP4C- CURVE DATA

Pls Sta 11+85.96
$\Theta_s = 4^\circ 00' 24.1"$
$L_s = 200.00'$
$LT = 133.37'$
$ST = 66.70'$



PROJECT REFERENCE NO. 1-5338/1-5311	SHEET NO. 12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR E/W ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
3-LANE MOT (MAINTENANCE OF TRAFFIC) PERMIT PLANS SUBMITTAL NO: D-062 DATE: NOVEMBER 14, 2013	



FUNNEL DRAIN OUTLETS THAT REQUIRE STAKING

OUTLET	NORTHING	EASTING
T12-1	729212.5353	2085986.868

	ALLOWABLE IMPACTS ZONE 1
	ALLOWABLE IMPACTS ZONE 2

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT 16338/16311
140/US 64 FROM WEST OF
SR 1519 JONES FRANKLIN RD
CONTINUING ALONG I-40/US 64
TO NORTH OF US 64/US 264
DATE: 11/14/2013

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



8/17/19

REVISIONS

-LI- CURVE DATA

PI Sta 115+66.75	Pls Sta 127+03.62
$\Delta = 20^\circ 50' 11.9"$ (LT)	$\Theta s = 0^\circ 36' 00.0"$
$D = 1'00'00.0"$	$\Theta s = 1'12'00.0"$
$L = 2,083.66'$	$Ls = 240.00'$
$T = 1,053.47'$	$LT = 133.34'$
$R = 5,729.58'$	$ST = 106.68'$
$V = 70$ MPH	

-RP4B- CURVE DATA

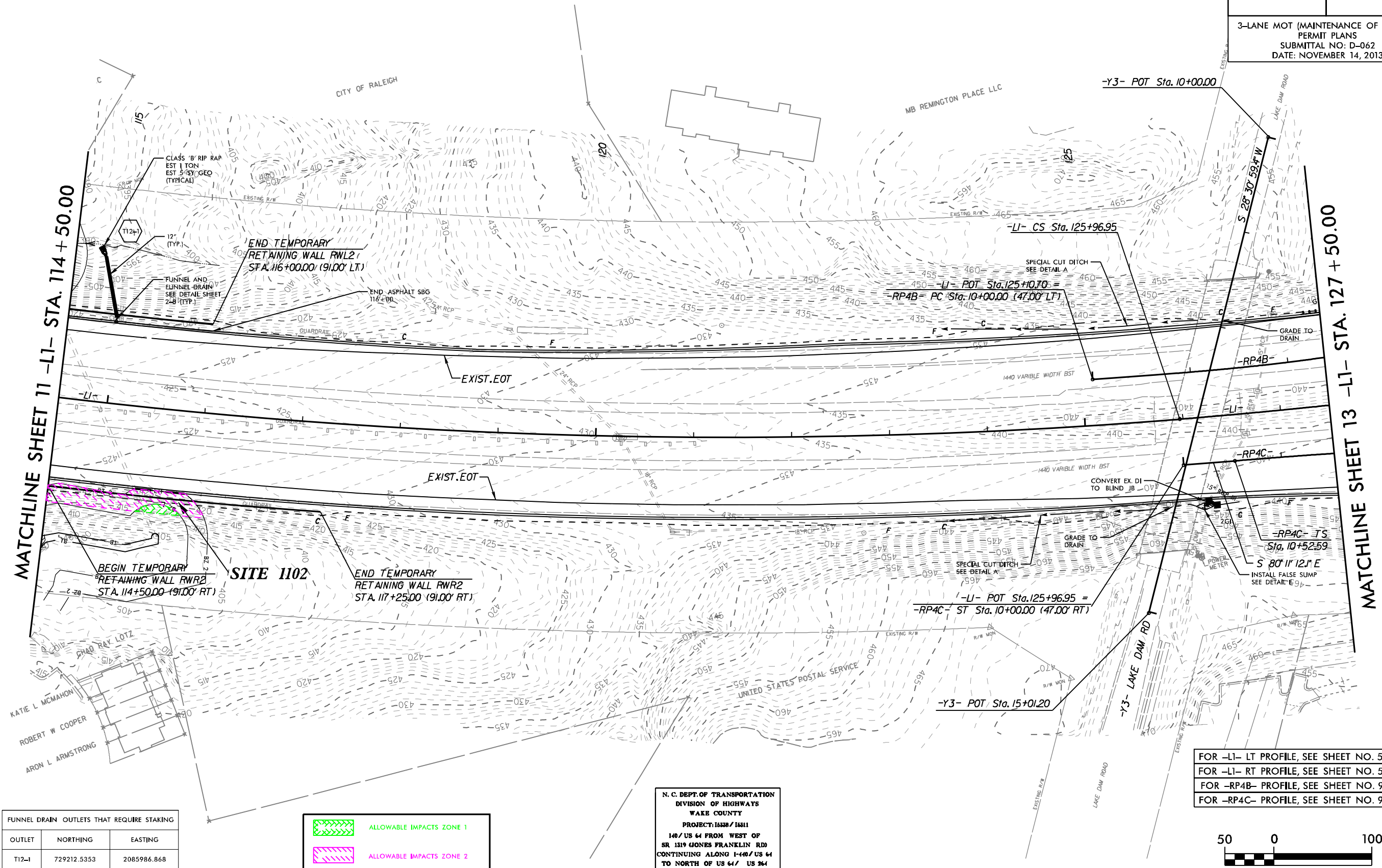
PI Sta 10+42.77	Pls Sta 12+10.19
$\Delta = 0^\circ 51' 45.0"$ (LT)	$\Theta s = 1^\circ 01' 39.3"$
$D = 1'00'29.8"$	$\Theta s = 5^\circ 04' 57.9"$
$L = 85.54'$	$Ls = 204.00'$
$T = 42.77'$	$LT = 124.65'$
$R = 5,682.58'$	$ST = 79.53'$
$V = 70$ MPH	

-RP4C- CURVE DATA

PIs Sta 11+85.96	
$\Theta s = 4^\circ 00' 24.1"$	
$Ls = 200.00'$	
$LT = 133.37'$	
$ST = 66.70'$	

GRANITE & RS&H
IMPROVING YOUR WORLD
DESIGN-BUILD TEAM

PROJECT REFERENCE NO. 1-5338/1-5311	SHEET NO. 12
R/W SHEET NO. ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR E/V ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
3-LANE MOT (MAINTENANCE OF TRAFFIC) PERMIT PLANS SUBMITTAL NO: D-062 DATE: NOVEMBER 14, 2013	



FUNNEL DRAIN OUTLETS THAT REQUIRE STAKING

OUTLET	NORTHING	EASTING
T12-1	729212.5353	2085986.868

	ALLOWABLE IMPACTS ZONE 1
	ALLOWABLE IMPACTS ZONE 2

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT 16338/16311
140/US 64 FROM WEST OF
SR 1519 JONES FRANKLIN RD
CONTINUING ALONG I-440/US 64
TO NORTH OF US 64/ US 264
DATE: 11/14/2013

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



8/17/99

REVISIONS

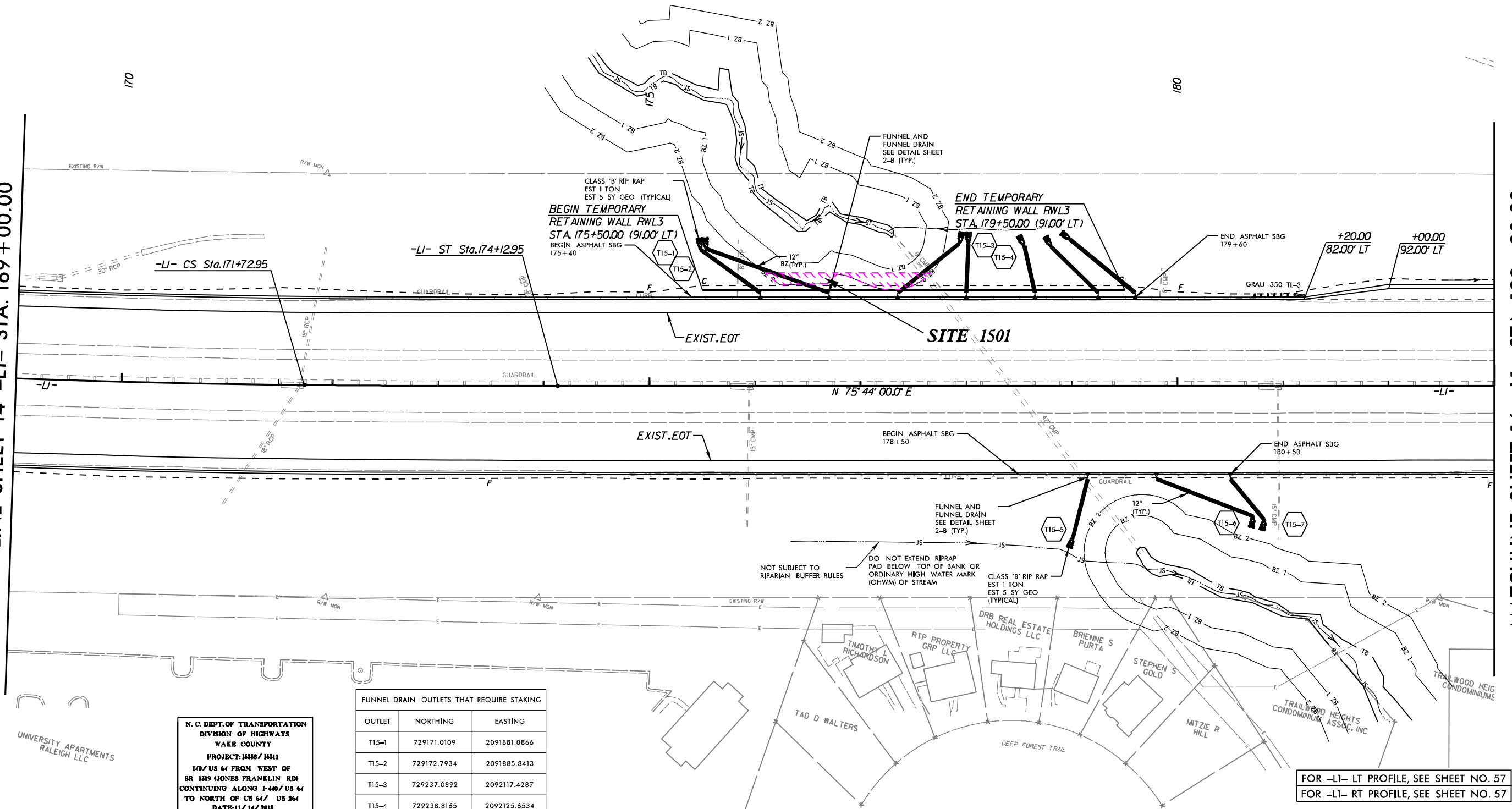
-LI- CURVE DATA	
PI Sta 150+31.19	PIs Sta 172+52.95
$\Delta = 21^{\circ} 40' 48.1''$ (LT)	$\Theta s = 0^{\circ} 36' 00.0''$
$D = 0^{\circ} 30' 00.0''$	$Ls = 240.00'$
$L = 4,336.00'$	$LT = 160.00'$
$T = 2,194.25'$	$ST = 80.00'$
$R = 11,459.16'$	
$V = 70$ MPH	



PROJECT REFERENCE NO.	SHEET NO.
1-5338/1-5311	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR E/W ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
3-LANE MOT (MAINTENANCE OF TRAFFIC) PERMIT PLANS SUBMITTAL NO: D-062 DATE: NOVEMBER 14, 2013	

MATCHLINE SHEET 14 -LI- STA. 169+00.00

MATCHLINE SHEET 16 -LI- STA. 183+00.00



UNIVERSITY APARTMENTS
RALEIGH LLC

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 14338 / 15311
140/US 64 FROM WEST OF
SR 1319 JONES FRANKLIN RD
CONTINUING ALONG I-440/US 64
TO NORTH OF US 64 / US 264
DATE: 11/14/2013

ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2

FUNNEL DRAIN OUTLETS THAT REQUIRE STAKING		
OUTLET	NORTHING	EASTING
T15-1	729171.0109	2091881.0866
T15-2	729172.7934	2091885.8413
T15-3	729237.0892	2092117.4287
T15-4	729238.8165	2092125.6534
T15-5	728994.1353	2092290.2633
T15-6	729055.2347	2092450.7272
T15-7	729055.0946	2092461.0115

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



8/17/99

-LI- CURVE DATA
PI Sta 150+31.19 PIs Sta 172+52.95
 $\Delta = 21^\circ 40' 48.1''$ (LT) $\Theta_s = 0^\circ 36' 00.0''$
 $D = 0^\circ 30' 00.0''$ $L_s = 240.00'$
 $L = 4,336.00'$ $LT = 160.00'$
 $T = 2,194.25'$ $ST = 80.00'$
 $R = 11,459.16'$
 $V = 70$ MPH

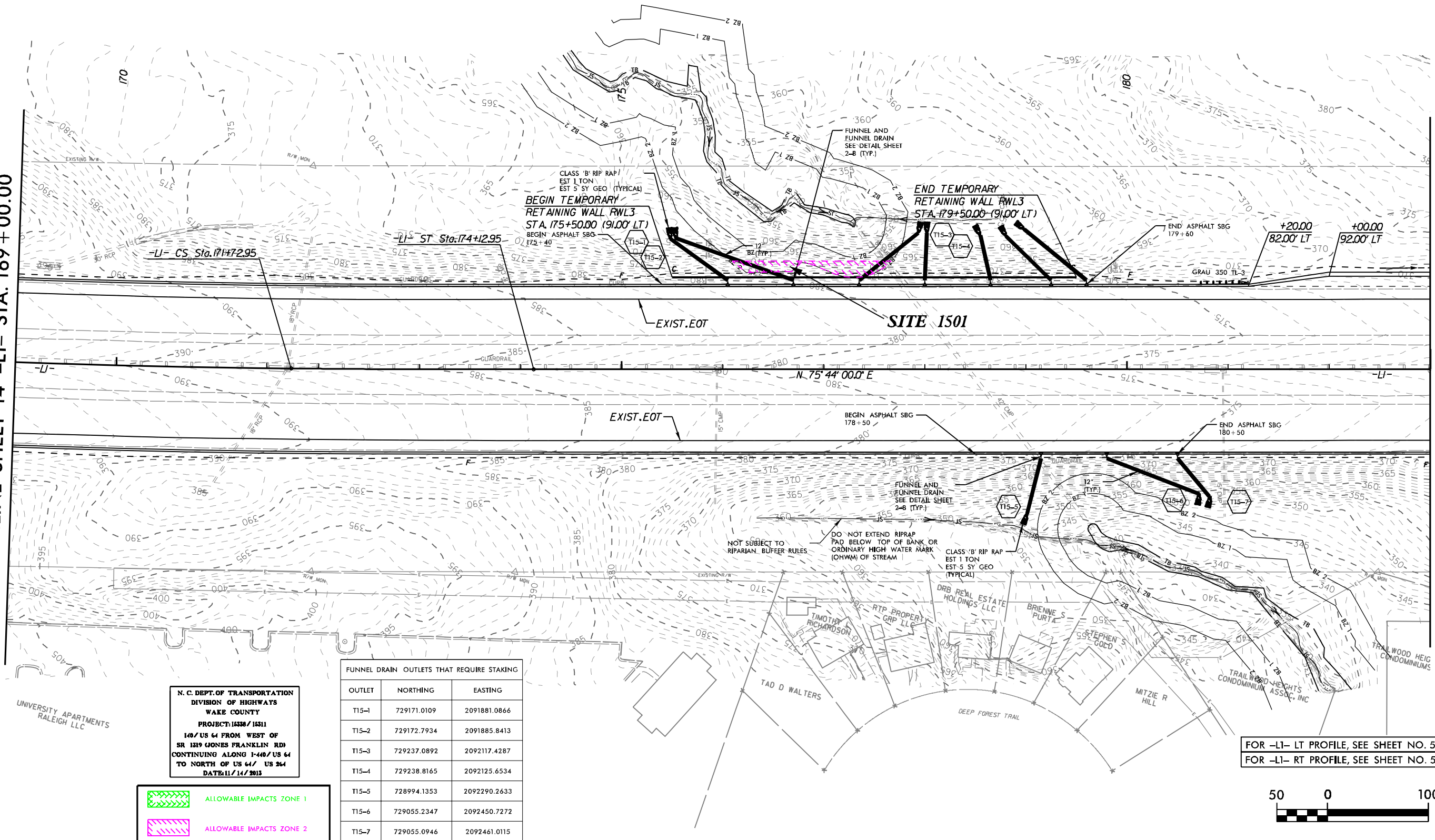
GRANITE & RSH
IMPROVING YOUR WORLD
DESIGN-BUILD TEAM

PROJECT REFERENCE NO.	SHEET NO.
1-5338/1-5311	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR E/W ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
3-LANE MOT (MAINTENANCE OF TRAFFIC) PERMIT PLANS SUBMITTAL NO: D-062 DATE: NOVEMBER 14, 2013	

NAD 83 NRS 2007

MATCHLINE SHEET 14 -LI- STA. 169+00.00

MATCHLINE SHEET 16 -LI- STA. 183+00.00



FUNNEL DRAIN OUTLETS THAT REQUIRE STAKING		
OUTLET	NORTHING	EASTING
T15-1	729171.0109	2091881.0866
T15-2	729172.7934	2091885.8413
T15-3	729237.0892	2092117.4287
T15-4	729238.8165	2092125.6534
T15-5	728994.1353	2092290.2633
T15-6	729055.2347	2092450.7272
T15-7	729055.0946	2092461.0115

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 14338 / 15311
140/US 64 FROM WEST OF
SR 1319 JONES FRANKLIN RD
CONTINUING ALONG I-440/US 64
TO NORTH OF US 64/US 264
DATE: 11/14/2013

ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2

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



8/17/99

FUNNEL DRAIN OUTLETS THAT REQUIRE STAKING		
OUTLET	NORTHING	EASTING
T17-1	729442.5232	2094136.0700
T17-2	729445.6780	2094141.5888
T17-3	729511.1993	2094394.0128
T17-4	729513.0414	2094400.0945
T17-5	729515.8031	2094408.3888
T17-6	729656.9583	2094852.8329
T17-7	729703.0329	2094984.2408
T17-8	729703.8509	2094991.7282
T17-9	729704.5616	2094998.1998

NOTE:
NO IMPACT SITES ON SHEET. SHEET SHOWN
FOR COMPLIANCE FIELD VERIFICATION.

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15338 / 15311
140 / US 64 FROM WEST OF
SR 1319 JONES FRANKLIN RD
CONTINUING ALONG I-40 / US 64
TO NORTH OF US 64 / US 364
DATE: 11 / 14 / 2013

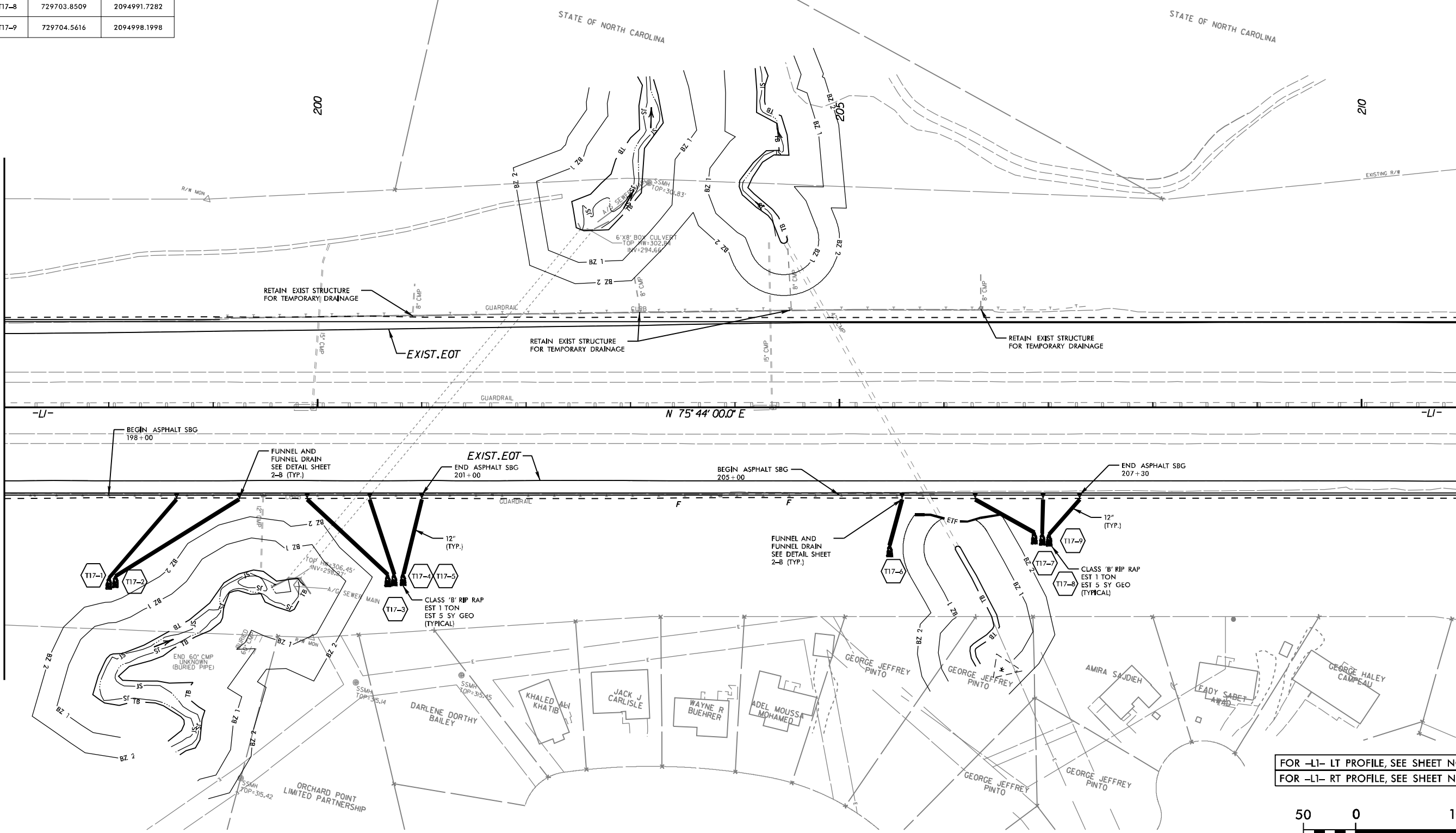


PROJECT REFERENCE NO.		SHEET NO.			
1-5338/1-5311		17			
RW SHEET NO.					
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER			
<table border="1"><tr><td>INCOMPLETE PLANS DO NOT USE FOR A/E ACQUISITION</td></tr><tr><td>PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION</td></tr></table>				INCOMPLETE PLANS DO NOT USE FOR A/E ACQUISITION	PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION
INCOMPLETE PLANS DO NOT USE FOR A/E ACQUISITION					
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION					
3-LANE MOT (MAINTENANCE OF TRAFFIC) PERMIT PLANS SUBMITTAL NO: D-062 DATE: NOVEMBER 14, 2013					

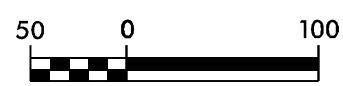
REVISIONS

MATCHLINE SHEET 16 -L1- STA. 197 + 00.00

MATCHLINE SHEET 18 -L1- STA. 211 + 00.00



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

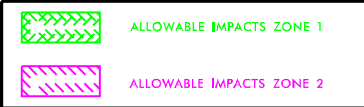


8/17/99

FUNNEL DRAIN OUTLETS THAT REQUIRE STAKING		
OUTLET	NORTHING	EASTING
T17-1	729442.5232	2094136.0700
T17-2	729445.6780	2094141.5888
T17-3	729511.1993	2094394.0128
T17-4	729513.0414	2094400.0945
T17-5	729515.8031	2094408.3888
T17-6	729656.9583	2094852.8329
T17-7	729703.0329	2094984.2408
T17-8	729703.8509	2094991.7282
T17-9	729704.5616	2094998.1998

NOTE:
NO IMPACT SITES ON SHEET. SHEET SHOWN
FOR COMPLIANCE FIELD VERIFICATION.

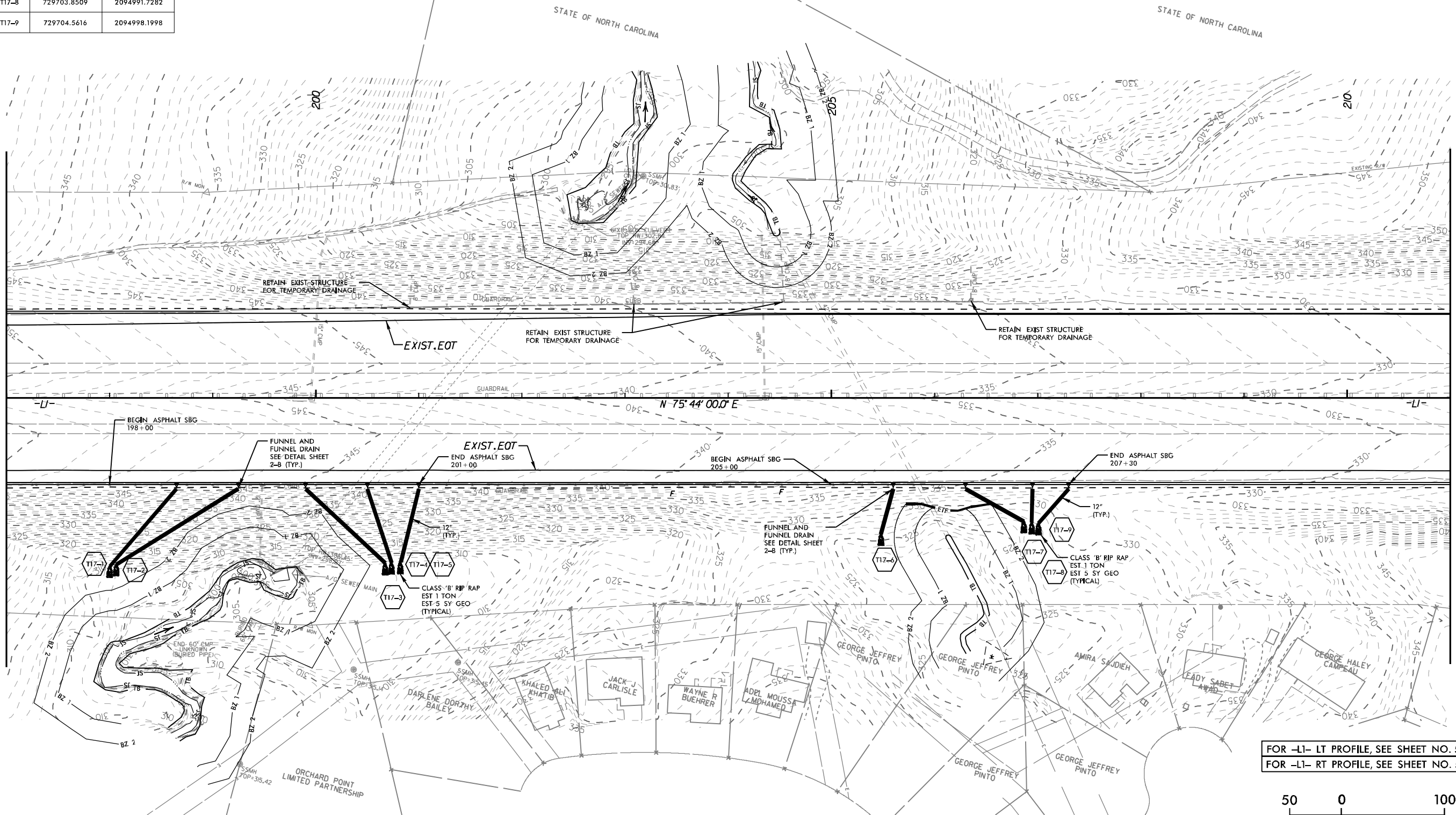
N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15338 / 15311
140' US 64 FROM WEST OF
SR 1319 JONES FRANKLIN RD
CONTINUING ALONG I-40 / US 64
TO NORTH OF US 64 / US 364
DATE: 11 / 14 / 2013



PROJECT REFERENCE NO.		SHEET NO.
1-5338/1-5311		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		
3-LANE MOT (MAINTENANCE OF TRAFFIC) PERMIT PLANS SUBMITTAL NO: D-062 DATE: NOVEMBER 14, 2013		

REVISIONS

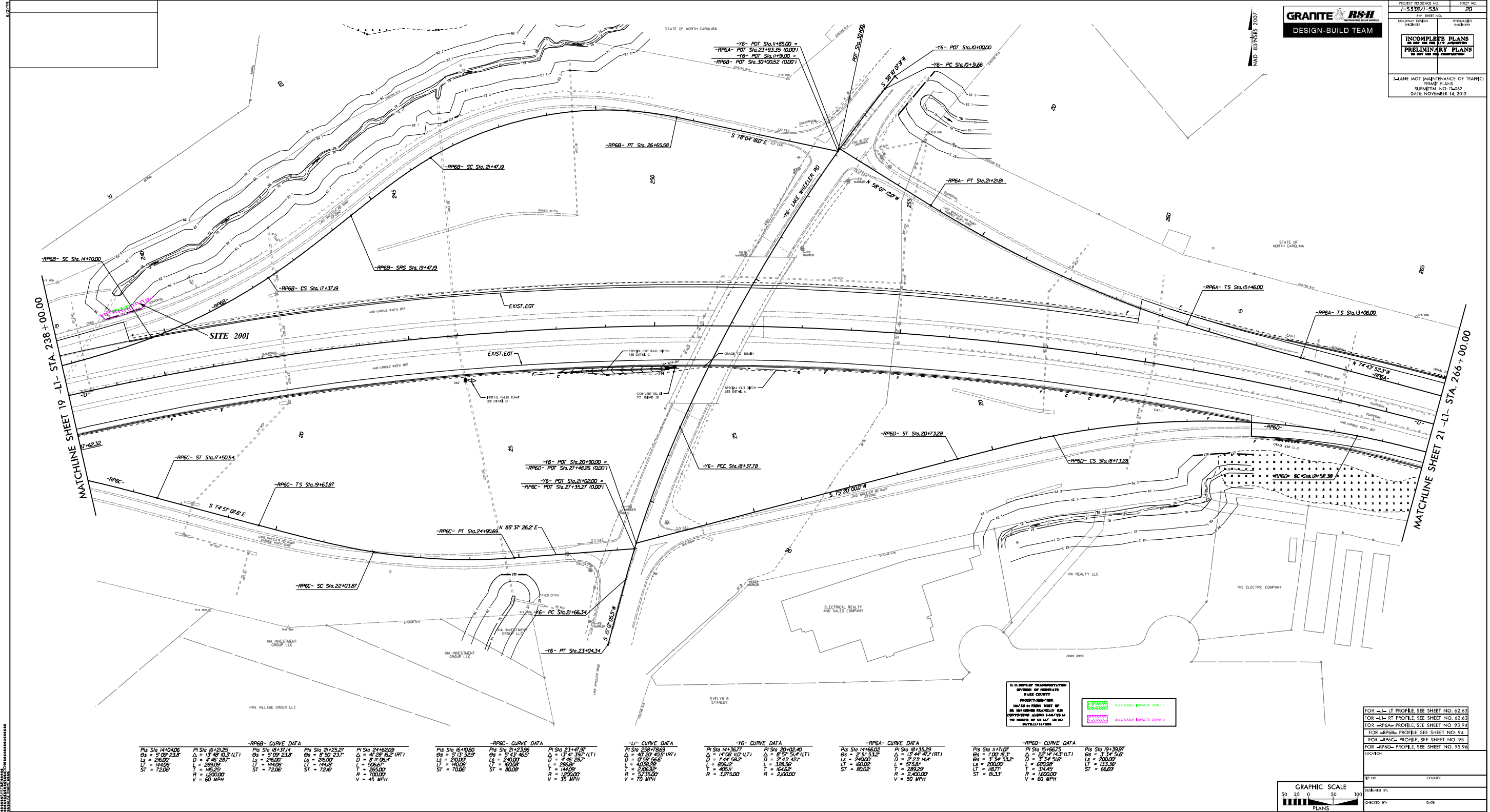
MATCHLINE SHEET 16 -L1- STA. 197 + 00.00



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



MATCHLINE SHEET 18 -L1- STA. 211 + 00.00

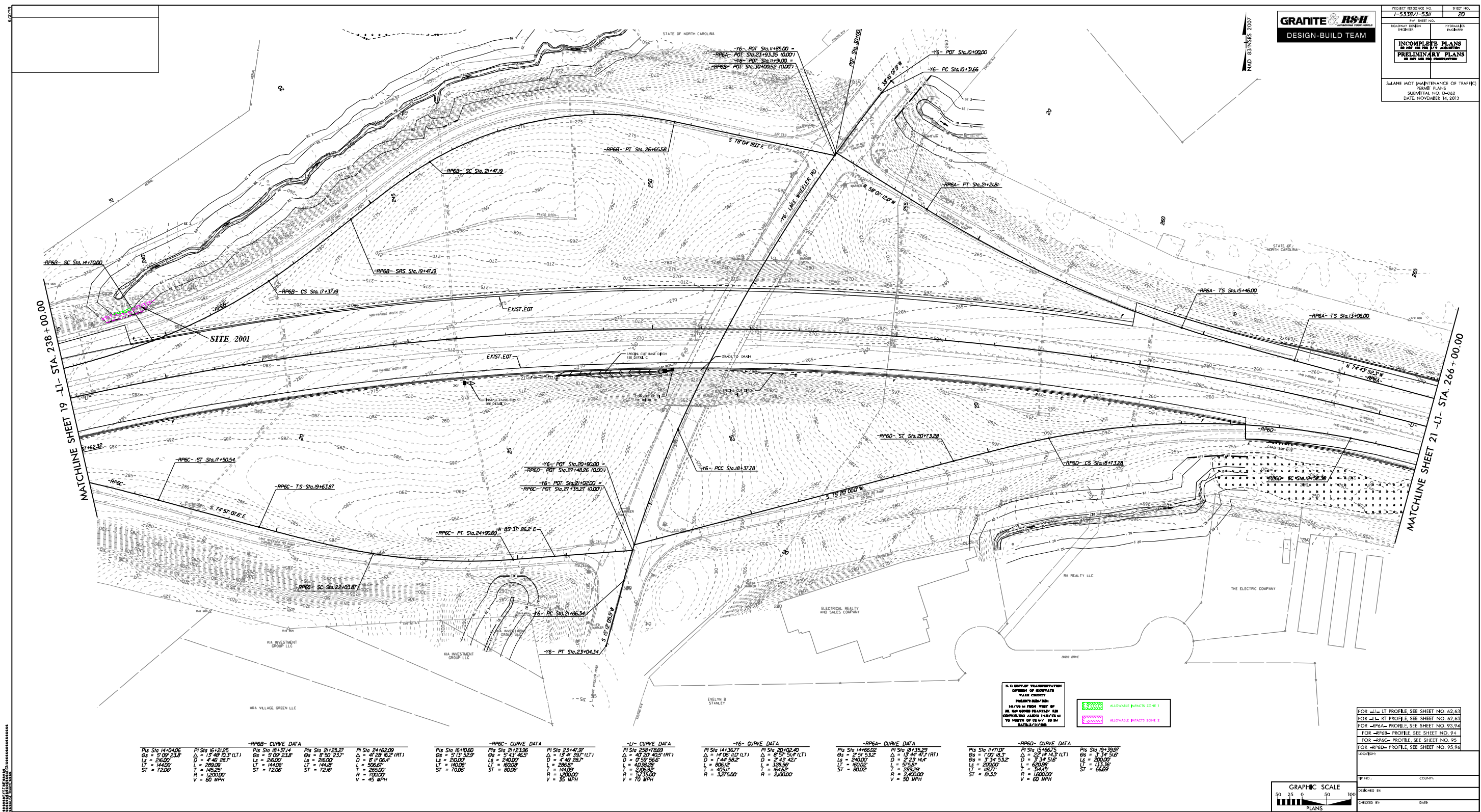


-RP6B- CURVE DATA										-RP6C- CURVE DATA										-U- CURVE DATA										-Y6- CURVE DATA										-RP6A- CURVE DATA										-RP6D- CURVE DATA																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
PI Sta 14+04.06					PI Sta 16+29.26					PI Sta 18+37.14					PI Sta 21+25.27					PI Sta 24+62.09					PI Sta 26+10.60					PI Sta 29+23.96					PI Sta 31+47.37					PI Sta 35+07.85					PI Sta 38+02.40					PI Sta 41+36.77					PI Sta 44+36.77					PI Sta 47+17.07					PI Sta 51+66.75					PI Sta 54+39.97																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
Δ = 5°09'23.8"					Δ = 1°48'10.3" (LT)					Δ = 5°09'23.8"					Δ = 8°50'23.7"					Δ = 4°28'16.2" (RT)					Δ = 5°13'52.9"					Δ = 5°41'46.5"					Δ = 1°41'33.7" (LT)					Δ = 40°20'40.5" (RT)					Δ = 14°06'11.0" (LT)					Δ = 8°50'51.4" (LT)					Δ = 14°06'58.2"					Δ = 7°43'42.7"					Δ = 2°51'53.2"					Δ = 1°00'18.3"					Δ = 2°24'14.3" (LT)					Δ = 3°34'51.6"																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
LS = 240.00					D = 7'46'28.7"					L = 285.00					LS = 240.00					D = 8'08'08.4"					LS = 240.00					L = 326.57					D = 7'46'28.7"					L = 403.00					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 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7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"					L = 326.57					D = 7'46'28.7"				

FOR -L- LT PROFILE SEE SHEET NO. 62.63
FOR -L- 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. 95.94

GRAPHIC SCALE
0 25 50 100
PLANS

DESIGNED BY: _____
CHECKED BY: _____
DATE: _____



8/17/99

REVISIONS

MATCHLINE SHEET 21 -L1- STA. 280+00.00

MATCHLINE SHEET 23 -L1- STA. 294+00.00

-L1- CURVE DATA
Pls Sta 278+94.43
θs = 11° 39.4'
Ls = 240.00'
LT = 160.00'
ST = 80.00'

Pls Sta 293+66.36
θs = 6° 03' 56.6"
Ls = 480.00'
LT = 320.19'
ST = 160.17'

-RP7B- CURVE DATA
Pls Sta 11+40.06
θs = 5° 00' 48.2"
Ls = 210.00'
LT = 140.06'
ST = 70.05'

Pls Sta 14+19.34
Δ = 19° 47' 27.5' (LT)
D = 4° 46' 28.7"
L = 414.50'
T = 209.34'
R = 1,200.00'
V = 70 MPH

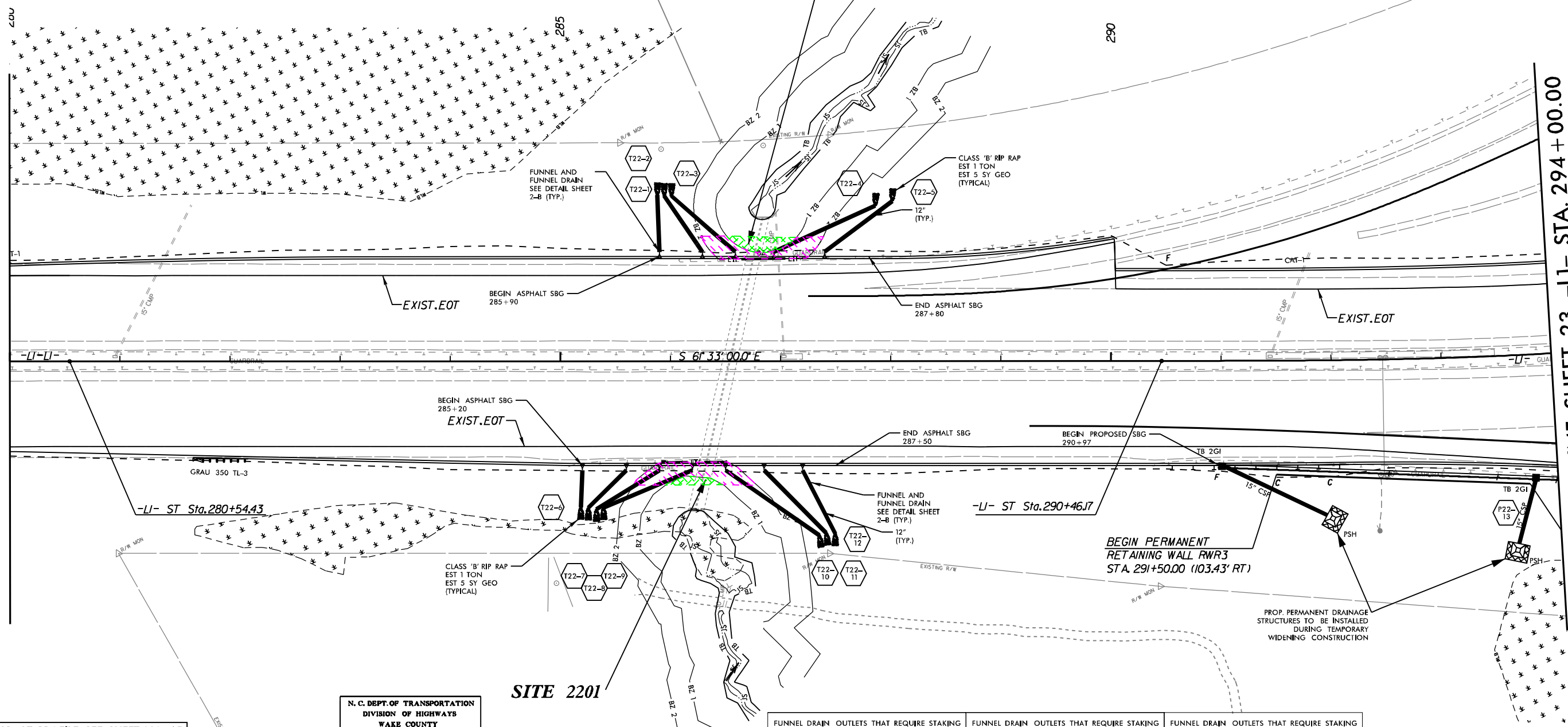
Pls Sta 17+39.37
θs = 1° 13' 30.4"
Ls = 7° 09' 52.6"
L = 300.00'
LT = 185.62'
ST = 114.87'

-RP7C- CURVE DATA
Pls 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'

GRANITE & RSH
IMPROVING YOUR WORLD
DESIGN-BUILD TEAM

PROJECT REFERENCE NO. 1-5338/1-5311	SHEET NO. 22
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR E/W ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
3-LANE MOT (MAINTENANCE OF TRAFFIC) PERMIT PLANS SUBMITTAL NO: D-062 DATE: NOVEMBER 14, 2013	

NC EQUIPMENT COMPANY



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

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 1538/1511
140/US 64 FROM WEST OF
SR 1319 GONES FRANKLIN RD
CONTINUING ALONG I-440/US 64
TO NORTH OF US 64/ US 964
DATE: 11/14/2013

ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2

FUNNEL DRAIN OUTLETS THAT REQUIRE STAKING			FUNNEL DRAIN OUTLETS THAT REQUIRE STAKING			FUNNEL DRAIN OUTLETS THAT REQUIRE STAKING		
OUTLET	NORTHING	EASTING	OUTLET	NORTHING	EASTING	OUTLET	NORTHING	EASTING
T22-1	729851.1188	2102627.5253	T22-7	729631.1554	2102436.9516	P22-13	729199.2826	2103164.7335
T22-2	729847.6518	2102632.6315	T22-8	729626.4239	2102442.7727			
T22-3	729844.2346	2102638.3378	T22-9	729624.6159	2102449.3024			
T22-4	729748.2492	2102796.9570	T22-10	729509.1747	2102609.3565			
T22-5	729744.5158	2102812.4179	T22-11	729508.0671	2102615.8410			
T22-6	729634.8612	2102431.1497	T22-12	729503.5667	2102622.9526			



8/17/99

NC EQUIPMENT COMPANY

-LI- CURVE DATA
Pls Sta 278+94.43
Θs = 11° 39.4'
Ls = 240.00'
LT = 160.00'
ST = 80.00'

Pls Sta 293+66.36
Θs = 6° 03' 56.6"
Ls = 480.00'
LT = 320.19'
ST = 160.17'

-RP7B- CURVE DATA
Pls Sta 11+40.06
Θs = 5° 00' 48.2"
Ls = 210.00'
LT = 140.06'
ST = 70.05'

Pls Sta 14+19.34
Δ = 19° 47' 27.5' (LT)
D = 4° 46' 28.7"
L = 414.50'
LT = 209.34'
R = 1,200.00'
V = 70 MPH

Pls Sta 17+39.37
Θs = 1° 13' 30.4"
Ls = 7° 09' 52.6"
L = 300.00'
LT = 185.62'
ST = 114.87'

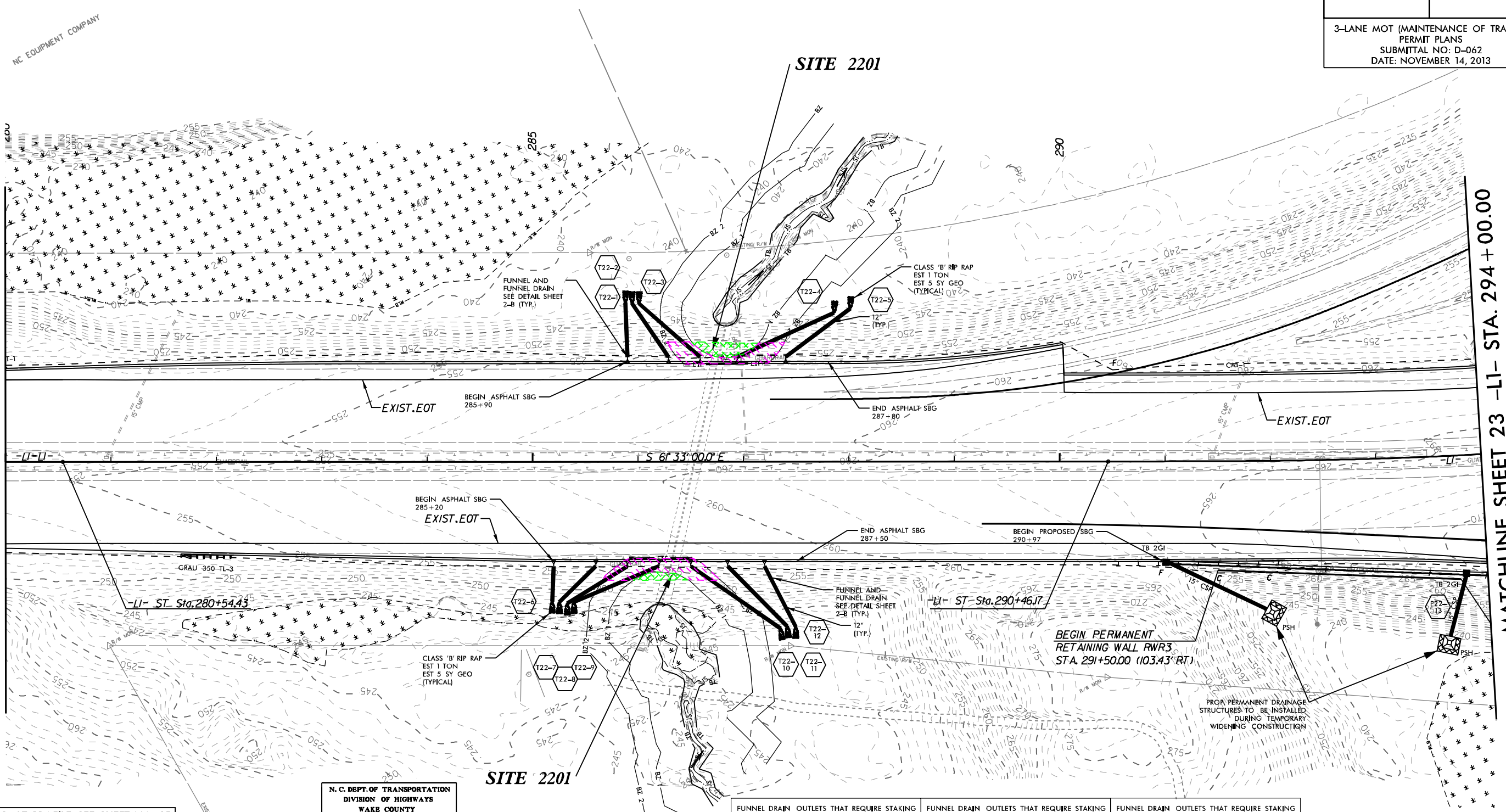
-RP7C- CURVE DATA
Pls Sta 12+58.17
Δ = 3° 41' 48.0' (RT)
D = 0° 42' 58.3"
L = 516.15'
T = 258.17'
R = 8,000.00'

GRANITE & RS&H
IMPROVING YOUR WORLD
DESIGN-BUILD TEAM

PROJECT REFERENCE NO. 1-5338/1-5311	SHEET NO. 22
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR E/V ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
3-LANE MOT (MAINTENANCE OF TRAFFIC) PERMIT PLANS SUBMITTAL NO: D-062 DATE: NOVEMBER 14, 2013	

MATCHLINE SHEET 21 -LI- STA. 280 + 00.00

MATCHLINE SHEET 23 -LI- STA. 294 + 00.00



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

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 1538/1511
140/US 64 FROM WEST OF
SR 1319 GONES FRANKLIN RD
CONTINUING ALONG I-40/US 64
TO NORTH OF US 64/ US 964
DATE: 11/14/2013

ALLOWABLE IMPACTS ZONE 1
 ALLOWABLE IMPACTS ZONE 2

FUNNEL DRAIN OUTLETS THAT REQUIRE STAKING			FUNNEL DRAIN OUTLETS THAT REQUIRE STAKING			FUNNEL DRAIN OUTLETS THAT REQUIRE STAKING		
OUTLET	NORTHING	EASTING	OUTLET	NORTHING	EASTING	OUTLET	NORTHING	EASTING
T22-1	729851.1188	2102627.5253	T22-7	729631.1554	2102436.9516	P22-13	729199.2826	2103164.7335
T22-2	729847.6518	2102632.6315	T22-8	729626.4239	2102442.7727			
T22-3	729844.2346	2102638.3378	T22-9	729624.6159	2102449.3024			
T22-4	729748.2492	2102796.9570	T22-10	729509.1747	2102609.3565			
T22-5	729744.5158	2102812.4179	T22-11	729508.0671	2102615.8410			
T22-6	729634.8612	2102431.1497	T22-12	729503.5667	2102622.9526			

NOTES:
1. WETLANDS TO BE FLAGGED IN FIELD
2. IMPACTS SHALL NOT OCCUR IN WETLANDS
3. CONTRACTOR TO INSTALL ADDITIONAL ENERGY DISSIPATER DEVICES AS DIRECTED BY ENGINEER TO ENSURE NO INDIRECT SCOUR IMPACTS TO WETLANDS
4. THE AVERAGE CFS FOR DRAINS T22-6, T22-7, T22-8, AND T22-9 IS 0.2 CFS.



REVISIONS

NOTE: THIS SHEET DEPICTS BUFFER IMPACTS DURING TEMPORARY WIDENING PHASE ONLY.
FOR BUFFER IMPACTS FROM PROPOSED SOUTH SAUNDERS DDI DESIGN SEE SHEET 23A.

-RP7B- CURVE DATA	
PI Sta 17+39.37	PI Sta 21+36.33
Δ = 7°09'52.6"	Δ = 3°28'14.5" (RT)
Δs = 7°09'52.6"	Δs = 0°49'04.6"
Ls = 300.00'	Ls = 40.17'
Lt = 157.00'	Lt = 22.42'
St = 114.80'	St = 7.00000'
R = 1000.00'	R = 1000.00'

-LP7B- CURVE DATA	
PI Sta 10+78.59	PI Sta 38+56.37
Δ = 4°26'07.1" (RT)	Δ = 1°37'51.0" (RT)
Δs = 4°26'07.1"	Δs = 1°37'51.0" (RT)
Ls = 157.00'	Ls = 40.17'
Lt = 157.00'	Lt = 22.42'
St = 78.59'	St = 2.69526'
R = 2294.00'	R = 62.00'

-RPTC- CURVE DATA	
PI Sta 23+56.48	PI Sta 16+39.89
Δ = 1°19'58.9" (RT)	Δ = 2°13'30.9" (LT)
Δs = 1°19'58.9"	Δs = 0°34'52.2"
Ls = 308.29'	Ls = 194.21'
Lt = 154.15'	Lt = 100.000'
St = 100.000'	St = 100.000'
R = 1000.00'	R = 1000.00'

-L- CURVE DATA		
PIs Sta 293+66.36	PI Sta 302+58.43	PIs Sta 311+02.90
Δs = 6°03' 56.6"	Δ = 35°48' 06.8" (LT)	Δs = 6°03' 56.6"
Ls = 480.00'	L = 2°37' 38.6"	Ls = 480.00'
LT = 320.09'	D = 1416.56'	LT = 320.09'
ST = 160.17'	R = 732.26'	ST = 160.17'
	T = 2267.00'	

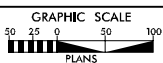
NO IMPACT SITES ON SHEET. SHEET SHOWN FOR COMPLIANCE FIELD VERIFICATION.

ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2

-RPTA- CURVE DATA	
PI Sta 11+40.06	PI Sta 16+44.77
Δs = 5°00'48.2"	Δs = 3°54'41.8" (RT)
Ls = 240.00'	Ls = 4°46'28.7"
Lt = 140.00'	Lt = 828.88'
St = 70.00'	Lt = 43.77'
	R = 1200.00'

-LP7D- CURVE DATA			
PI Sta 10+12.52	PIs Sta 14+30.03	PI Sta 16+85.21	PI Sta 18+87.06
$\Delta = 0^{\circ}37'00.2"$ (LT)	$\Theta s = 42^{\circ}58'18.6"$	$\Delta = 96^{\circ}47'13.0"$ (RT)	$\Delta = 40^{\circ}54'19.2"$ (RT)
D = 2^{\circ}27'47.8"	Ls = 240.00'	D = 35^{\circ}48'35.5"	D = 19^{\circ}05'54.9"
L = 250.4'	Lt = 164.98'	L = 270.28'	L = 213.29'
T = 12.52'	ST = 84.55'	T = 180.71'	T = 117.3'
R = 2336.00'		R = 1600.00'	R = 3000.00'

-RPTD- CURVE DATA					
PI Sta 11+44.04	PI Sta 14+30.23	PI Sta 16+55.22	PI Sta 18+85.21	PI Sta 21+81.34	PI Sta 23+81.34
Δs = 4°19'16.3"	Δs = 4°37'00.2" (LT)	Δs = 4°19'16.3"	Δs = 12°19'18.0"	Δs = 37°58'57.0" (RT)	Δs = 37°58'57.0" (RT)
Ls = 240.00'	Ls = 240.00'	Ls = 240.00'	Ls = 200.00'	Ls = 120.00'	Ls = 120.00'
Lt = 140.00'	Lt = 140.00'	Lt = 140.00'	Lt = 133.66'	Lt = 37.58'	Lt = 37.58'
ST = 72.04'	ST = 84.55'	ST = 72.04'	ST = 66.96'	ST = 160.00'	ST = 160.00'
R = 1432.00'	R = 4600.00'	R = 4600.00'	R = 4600.00'	R = 4600.00'	R = 4600.00'



FOR -L- LT PROFILE, SEE SHEET NO. 66.67
FOR -L- RT PROFILE, SEE SHEET NO. 66.67
FOR -RPTA- PROFILE, SEE SHEET NO. 96
FOR -LP7B- PROFILE, SEE SHEET NO. 97
FOR -RPTB- PROFILE, SEE SHEET NO. 97
FOR -RPTC- PROFILE, SEE SHEET NO. 98
FOR -RPTD- PROFILE, SEE SHEET NO. 98
FOR -RPTD- PROFILE, SEE SHEET NO. 99

DESIGNED BY: _____
CHECKED BY: _____

PROJECT REFERENCE NO. 7-5339/1-53/

SHEET NO. 23

ROADWAY DESIGN PROJECT

HYDRAULICS PROJECT

INCOMPLETE PLANS
DO NOT USE FOR CONSTRUCTION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PLANE MOT (MAINTENANCE OF TRAFFIC) PERMITS PLANS
SUBMITAL NO. D-262
DATE: NOVEMBER 14, 2013

GRANITE & RSH
DESIGN-BUILD TEAM

NAD 83 NGS 2007

REVISIONS

NOTE: THIS SHEET DEPICTS BUFFER IMPACTS FROM PROPOSED SOUTH SAUNDERS DDI DESIGN.
FOR BUFFER IMPACTS FROM TEMPORARY WIDENING PHASE SEE SHEET 23.

-RP7B- CURVE DATA	
PI Sta 17+39.37	PI Sta 21+363.37
Δ = 7°13'31.4"	Δ = 3°28'14.5" (RT)
Δs = 7°09'52.6"	Δ = 0°49'06.6"
LS = 300.00'	L = 404.12'
LT = 157.00'	L = 404.12'
ST = 114.80'	R = 7000.00'

-LP7B- CURVE DATA	
PI Sta 10+78.59	PI Sta 38+56.37
Δ = 4°36'07.1" (RT)	Δ = 1°37'51.0" (RT)
Δs = 2°36'4.3"	Δ = 35°22'04.0"
L = 157.00'	L = 404.12'
T = 78.59'	T = 269.26'
R = 224.00'	R = 621.00'

K.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
TALLAHASSEE, FLORIDA
PROJECT NO. 1000000000
SHEET NO. 1000000000
DATE: 11/14/2013

ALLOWABLE IMPACTS ZONE 1	REMOVABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2	REMOVABLE IMPACTS ZONE 2

OUTLET	NORTHING	EASTING
P134	728894.829	210942.5842
P135	721994.873	210553.2944

-RPTC- CURVE DATA	
PI Sta 23+56.48	PI Sta 16+40.77
Δ = 1°19'58.9" (LT)	Δ = 3°54'48.8" (RT)
Δs = 0°34'52.6"	Δ = 4°45'28.7"
L = 308.29'	L = 828.83'
LT = 154.15'	LT = 413.77'
R = 10000.00'	R = 1200.00'

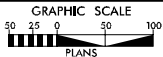
-U- CURVE DATA					
PI Sta 293+66.36	PI Sta 302+58.43	PI Sta 311+02.90			
Δs = 6°03'56.6"	Δ = 35°48'06.8" (LT)	Δs = 6°03'56.6"			
Ls = 480.00'	D = 2°33'38.6"	Ls = 480.00'			
LT = 320.9'	L = 141.56'	LT = 320.9'			
ST = 160.07'	T = 732.26'	ST = 160.07'			
	R = 2267.00'				

-Y7- CURVE DATA	
PI Sta 16+40.77	PI Sta 16+40.77
Δ = 1°19'58.9" (LT)	Δ = 3°54'48.8" (RT)
Δs = 0°34'52.6"	Δ = 4°45'28.7"
L = 308.29'	L = 828.83'
LT = 154.15'	LT = 413.77'
R = 10000.00'	R = 1200.00'

-RPTA- CURVE DATA	
PI Sta 11+40.06	PI Sta 16+40.77
Δs = 5°00'48.2"	Δ = 3°54'48.8" (RT)
LS = 200.00'	Δ = 4°45'28.7"
LT = 100.00'	L = 828.83'
ST = 70.00'	LT = 413.77'
	R = 1200.00'

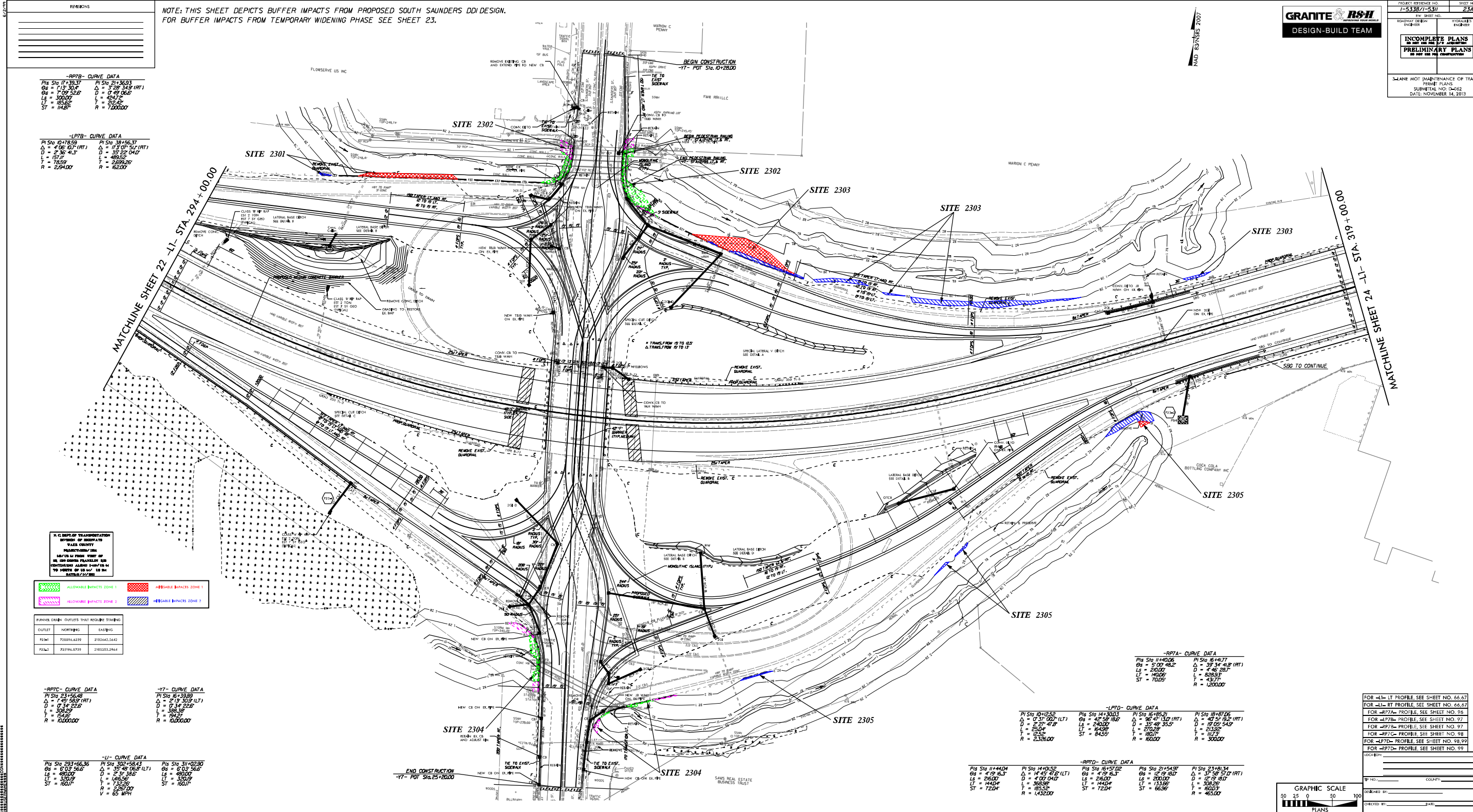
-LP7D- CURVE DATA			
PI Sta 10+12.52	PI Sta 14+30.03	PI Sta 16+40.77	PI Sta 18+87.06
Δs = 0°37'00.2" (LT)	Δs = 42°58'16.6"	Δs = 96°47'13.0" (RT)	Δs = 40°54'52.8" (RT)
L = 2°37'47.3"	LS = 240.00'	L = 357.49' 35.5"	L = 1705.549'
LT = 250.00'	LT = 164.98'	L = 270.28'	L = 213.92'
ST = 125.00'	ST = 84.55'	ST = 180.00'	ST = 110.00'
R = 2336.00'	R = 460.00'	R = 460.00'	R = 300.00'

-RPTD- CURVE DATA				
PI Sta 11+40.04	PI Sta 14+01.52	PI Sta 16+57.02	PI Sta 21+54.97	PI Sta 23+81.34
Δs = 4°19'16.3"	Δs = 14°45'47.6" (LT)	Δs = 4°19'16.3"	Δs = 12°19'18.0"	Δs = 37°58'21.0" (RT)
L = 266.00'	L = 240.00'	L = 266.00'	L = 357.49'	L = 1705.549'
LT = 144.04'	LT = 164.98'	LT = 144.04'	LT = 123.16'	L = 308.26'
ST = 72.04'	ST = 185.52'	ST = 72.04'	ST = 66.96'	ST = 160.03'
	R = 1432.00'			R = 460.00'



FOR -L- LT PROFILE, SEE SHEET NO. 66.67
FOR -L- RT PROFILE, SEE SHEET NO. 66.67
FOR -RPTA- PROFILE, SEE SHEET NO. 98
FOR -LP7B- PROFILE, SEE SHEET NO. 97
FOR -RPTB- PROFILE, SEE SHEET NO. 97
FOR -RPTC- PROFILE, SEE SHEET NO. 98
FOR -RPTD- PROFILE, SEE SHEET NO. 98
FOR -RPTD- PROFILE, SEE SHEET NO. 99

DESIGNED BY: _____
CHECKED BY: _____
DATE: _____



GRANITE & RSH
DESIGN-BUILD TEAM

PROJECT REFERENCE NO. 7-5338/1-53/1
SHEET NO. 23A
INCOMPLETE PLANS
DO NOT USE FOR CONSTRUCTION

PLANE NOT (MAINTENANCE OF TRAFFIC)
PERMIT PLANS
SUBMITAL NO. D-662
DATE: NOVEMBER 14, 2013

REVISIONS

NOTE: THIS SHEET DEPICTS BUFFER IMPACTS FROM PROPOSED SOUTH SAUNDERS DDI DESIGN.
FOR BUFFER IMPACTS FROM TEMPORARY WIDENING PHASE SEE SHEET 23.

-RP7B- CURVE DATA	
PI Sta 17+39.37	PI Sta 21+36.33
Δ = 7°09'52.6"	Δ = 3°08'14.5" (RT)
Δ = 7°09'52.6"	Δ = 0°49'06.6"
LS = 300.00'	L = 404.72'
LT = 157.00'	L = 222.42'
ST = 114.80'	R = 7000.00'

-LP7B- CURVE DATA	
PI Sta 10+78.59	PI Sta 38+56.37
Δ = 2°36'4.3"	Δ = 1°07'50.1" (RT)
Δ = 2°36'4.3"	Δ = 1°07'50.1" (RT)
LS = 157.00'	L = 404.72'
LT = 78.59'	L = 222.42'
R = 2294.00'	R = 6210.00'

K.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
TALLAHASSEE, FLORIDA
PROJECT NO. 10-0000-0000
SOUTH SAUNDERS DDI DESIGN
CONSTRUCTION ALIGNED 10-0000-0000
SOUTH SAUNDERS DDI DESIGN

ALLOWABLE IMPACTS ZONE 1	REMOVABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2	REMOVABLE IMPACTS ZONE 2

OUTLET	NORTHING	EASTING
P334	728896.829	210842.5842
P335	721996.873	210553.2943

-RPTC- CURVE DATA	
PI Sta 23+56.48	PI Sta 16+47.71
Δ = 1°09'58.9" (LT)	Δ = 3°08'14.5" (RT)
Δ = 1°09'58.9" (LT)	Δ = 0°49'06.6"
LS = 300.00'	L = 404.72'
LT = 157.00'	L = 222.42'
ST = 114.80'	R = 7000.00'

-U- CURVE DATA	
PI Sta 23+56.48	PI Sta 302+58.43
Δ = 1°09'58.9" (LT)	Δ = 1°09'58.9" (LT)
Δ = 1°09'58.9" (LT)	Δ = 1°09'58.9" (LT)
LS = 300.00'	L = 404.72'
LT = 157.00'	L = 222.42'
ST = 114.80'	R = 7000.00'

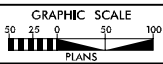
-Y7- CURVE DATA	
PI Sta 16+47.71	PI Sta 16+47.71
Δ = 1°09'58.9" (LT)	Δ = 1°09'58.9" (LT)
Δ = 1°09'58.9" (LT)	Δ = 1°09'58.9" (LT)
LS = 300.00'	L = 404.72'
LT = 157.00'	L = 222.42'
ST = 114.80'	R = 7000.00'

-RPTA- CURVE DATA	
PI Sta 16+47.71	PI Sta 16+47.71
Δ = 1°09'58.9" (LT)	Δ = 1°09'58.9" (LT)
Δ = 1°09'58.9" (LT)	Δ = 1°09'58.9" (LT)
LS = 300.00'	L = 404.72'
LT = 157.00'	L = 222.42'
ST = 114.80'	R = 7000.00'

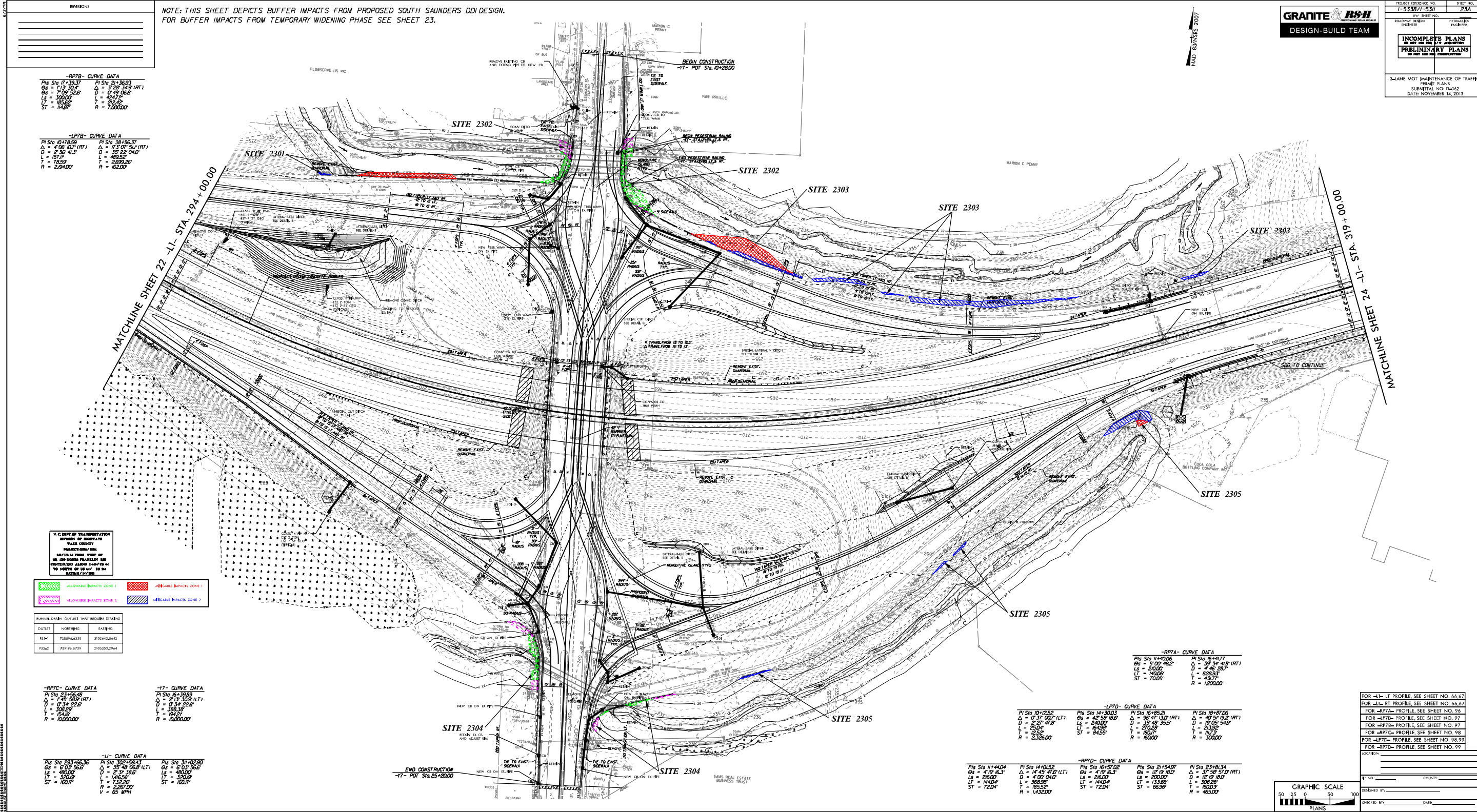
-LP7D- CURVE DATA	
PI Sta 10+78.59	PI Sta 14+30.03
Δ = 2°36'4.3"	Δ = 4°58'18.6"
Δ = 2°36'4.3"	Δ = 4°58'18.6"
LS = 157.00'	L = 222.42'
LT = 78.59'	L = 222.42'
R = 2336.00'	R = 4600.00'

-RPTD- CURVE DATA	
PI Sta 11+44.04	PI Sta 14+30.03
Δ = 1°09'58.9" (LT)	Δ = 4°58'18.6"
Δ = 1°09'58.9" (LT)	Δ = 4°58'18.6"
LS = 300.00'	L = 222.42'
LT = 157.00'	L = 222.42'
ST = 114.80'	R = 4600.00'

FOR -L1- LT PROFILE, SEE SHEET NO. 66.67
FOR -L1- RT PROFILE, SEE SHEET NO. 66.67
FOR -RPTA- PROFILE, SEE SHEET NO. 98
FOR -LP7B- PROFILE, SEE SHEET NO. 97
FOR -RPTB- PROFILE, SEE SHEET NO. 97
FOR -RPTC- PROFILE, SEE SHEET NO. 98
FOR -RPTD- PROFILE, SEE SHEET NO. 98
FOR -RPTD- PROFILE, SEE SHEET NO. 98
FOR -RPTD- PROFILE, SEE SHEET NO. 98



DESIGNED BY: _____
CHECKED BY: _____
DATE: _____



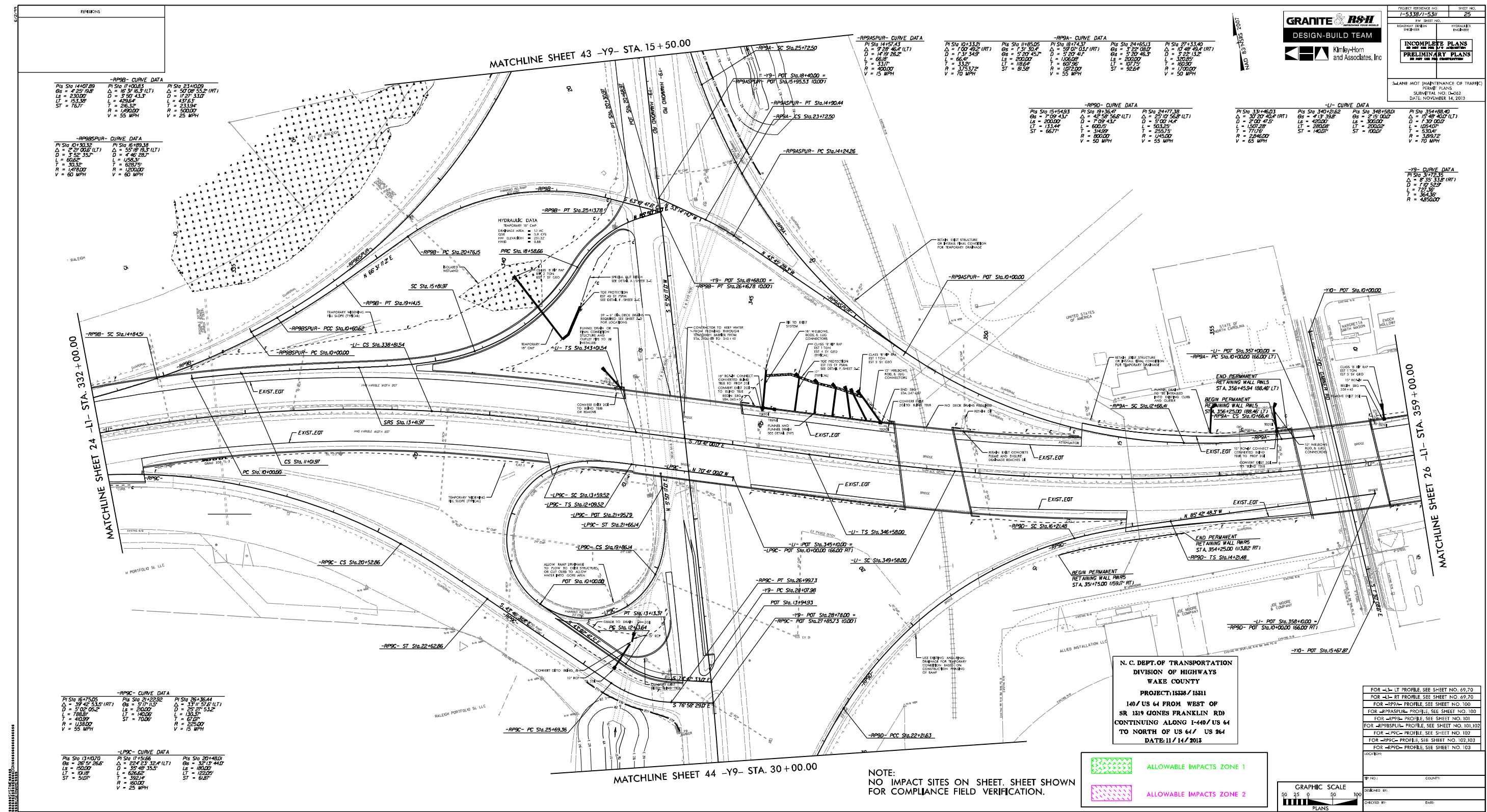
PROJECT REFERENCE NO. 1-5338/1-537
SHEET NO. 23A

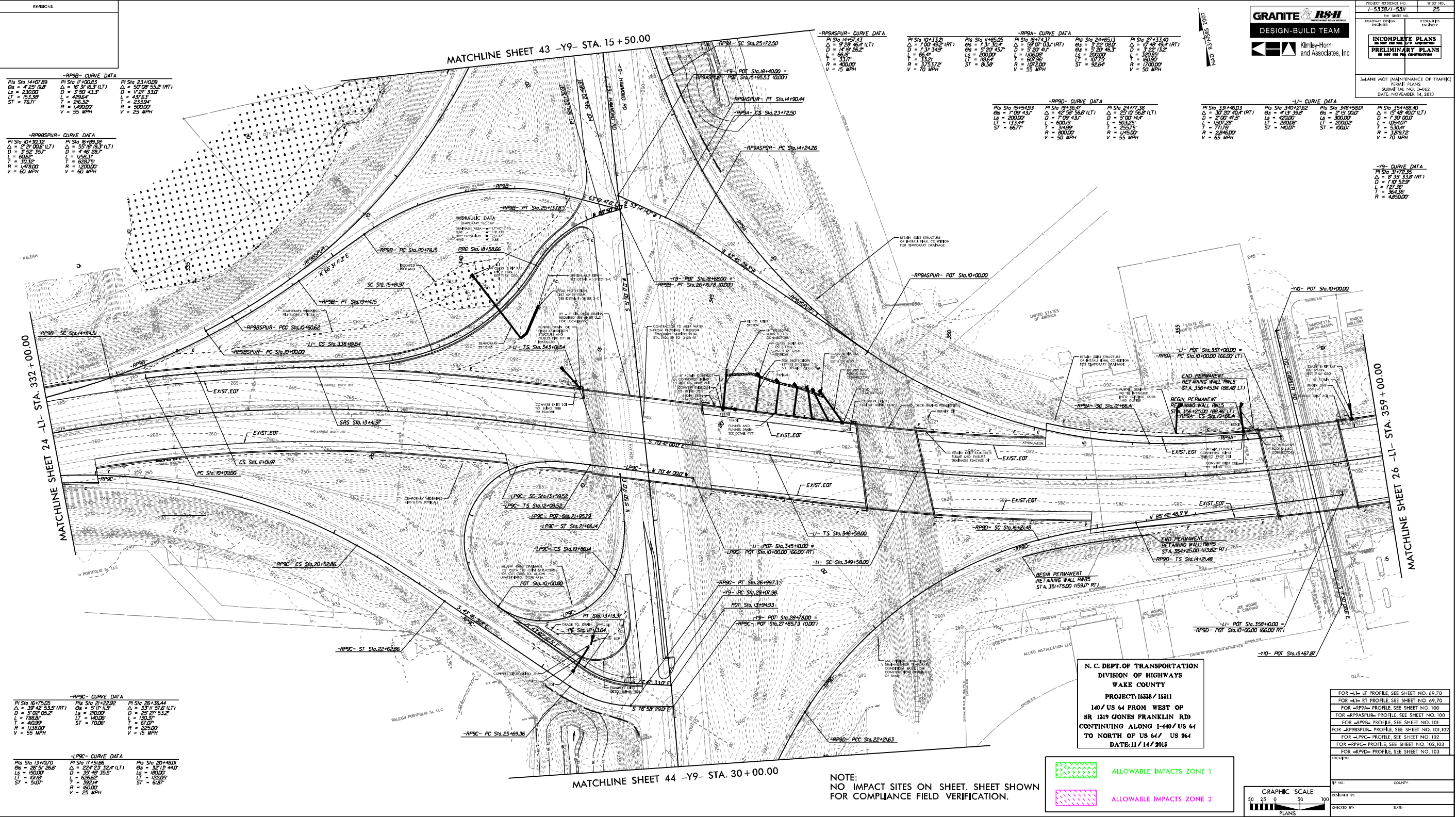
ROADWAY DESIGN INCHES

INCOMPLETE PLANS
DO NOT USE FOR CONSTRUCTION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

LANE MOT (MAINTENANCE OF TRAFFIC)
PERMIT PLANS
SUBMITAL NO. 0-662
DATE: NOVEMBER 14, 2013





8/17/99

REVISIONS

-LI- CURVE DATA		
PI Sta 354+88.40 $\Delta = 15^{\circ}48'40.0"$ (LT) $D = 1^{\circ}30'00.0"$ $L = 1054.07'$ $T = 530.41'$ $R = 381972'$ $V = 70$ MPH	PIs Sta 361+12.08 $\Theta_s = 2^{\circ}15'00.0"$ $L_s = 300.00'$ $LT = 200.02'$ $ST = 100.01'$	PIs Sta 375+82.24 $\Theta_s = 6^{\circ}00'00.0"$ $L_s = 300.00'$ $LT = 200.02'$ $ST = 100.01'$

GRANITE & RS&H
IMPROVING YOUR WORLD

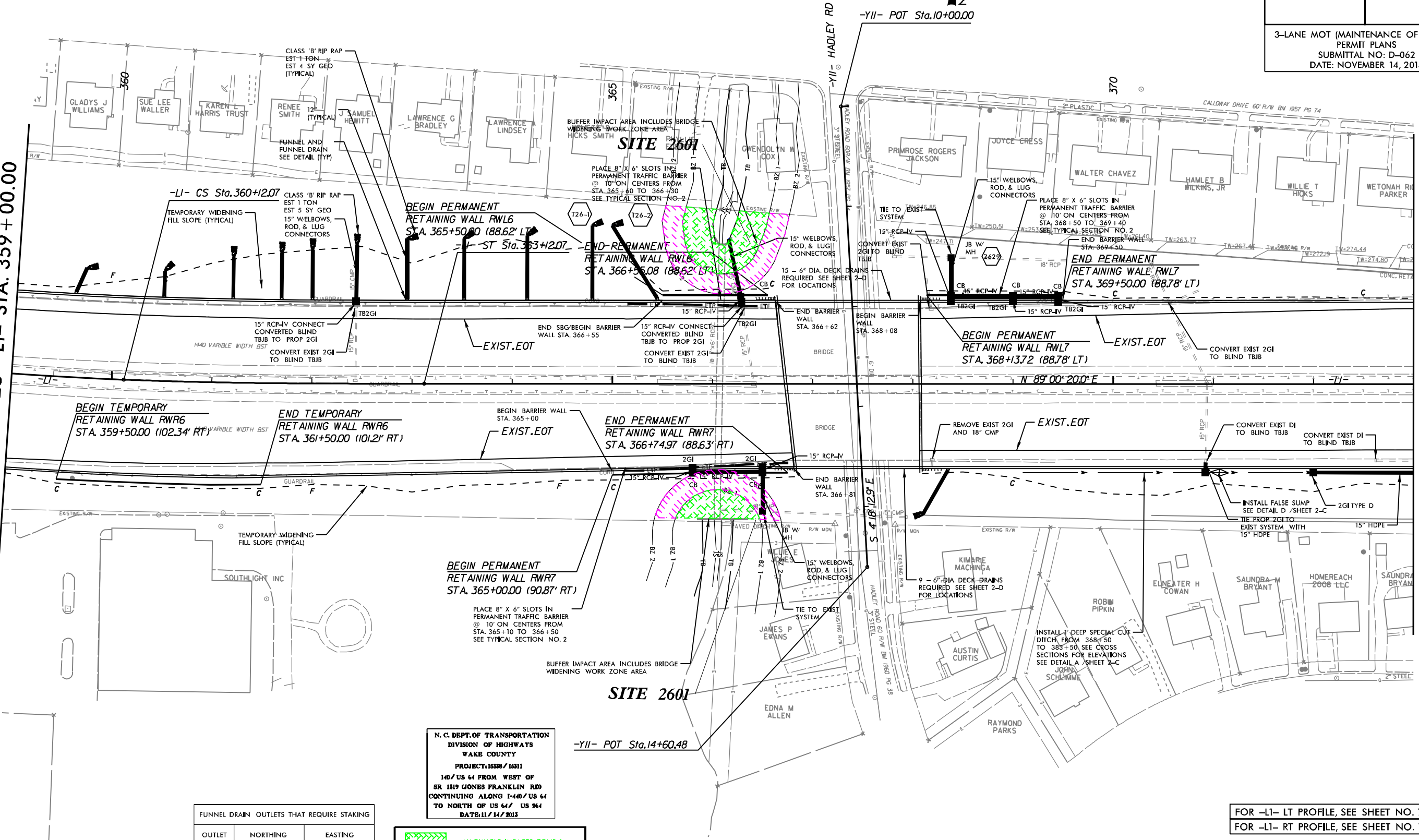
DESIGN-BUILD TEAM

Kimley-Horn
and Associates, Inc.

PROJECT REFERENCE NO. 1-5338/1-5311	SHEET NO. 26
R/W SHEET NO. ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR E/V ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
3-LANE MOT (MAINTENANCE OF TRAFFIC) PERMIT PLANS SUBMITTAL NO: D-062 DATE: NOVEMBER 14, 2013	

MATCHLINE SHEET 25 -LI- STA. 359+00.00

MATCHLINE SHEET 27 -LI- STA. 373+00.00



FUNNEL DRAIN OUTLETS THAT REQUIRE STAKING		
OUTLET	NORTHING	EASTING
T26-1	729284.0602	2110167.6882
T26-2	729287.5804	2110197.6316

ALLOWABLE IMPACTS ZONE 1

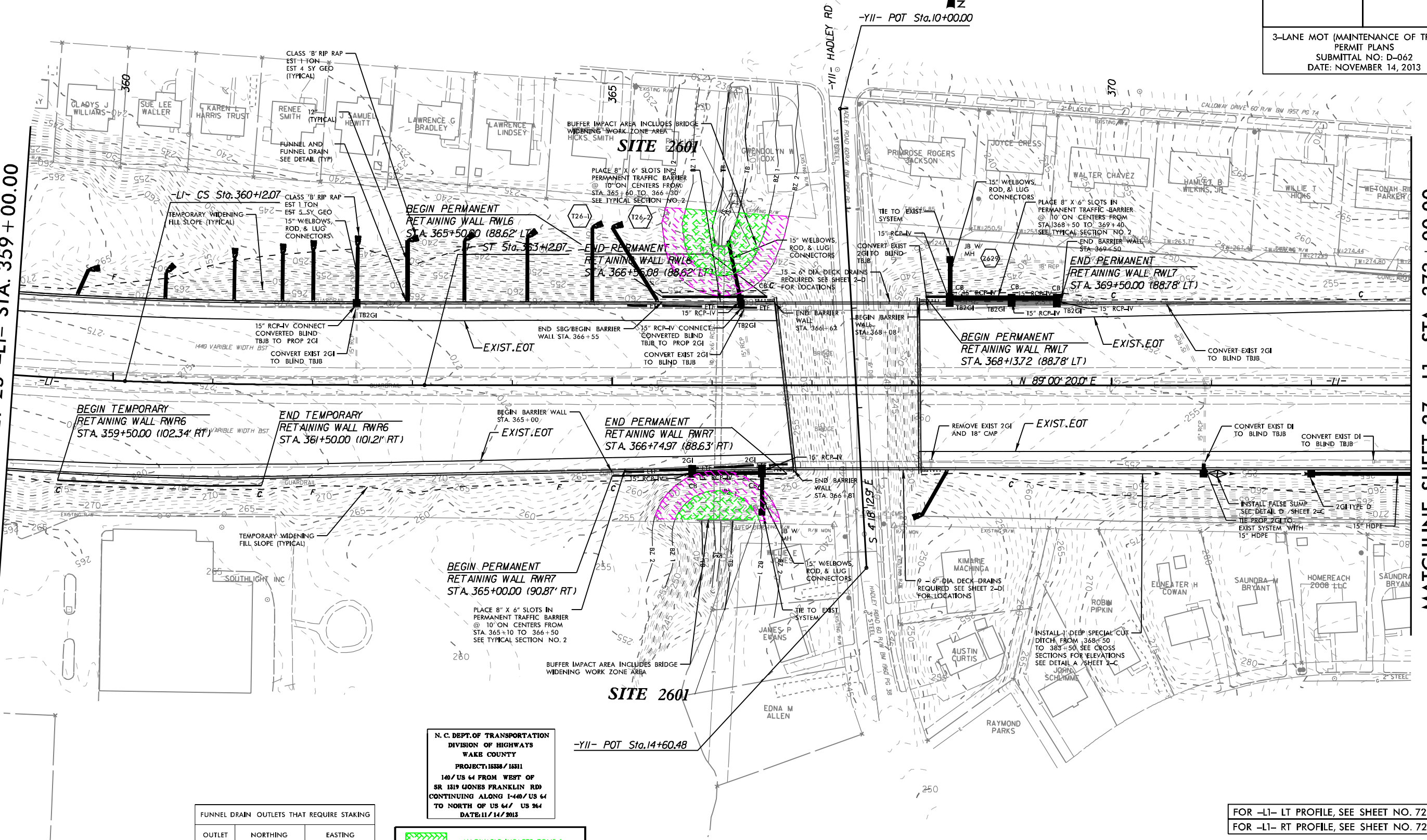
ALLOWABLE IMPACTS ZONE 2

FOR -LI- LT PROFILE, SEE SHEET NO. 72
FOR -LI- RT PROFILE, SEE SHEET NO. 72



MATCHLINE SHEET 25 -L1- STA. 359+00.00

MATCHLINE SHEET 27 -L1- STA. 373+00.00



FUNNEL DRAIN OUTLETS THAT REQUIRE STAKING		
OUTLET	NORTHING	EASTING
T26-1	729284.0602	2110167.6882
T26-2	729287.5804	2110197.6316

-  ALLOWABLE IMPACTS ZONE 1
-  ALLOWABLE IMPACTS ZONE 2

FOR -L1- LT PROFILE, SEE SHEET NO. 72
FOR -L1- RT PROFILE, SEE SHEET NO. 72

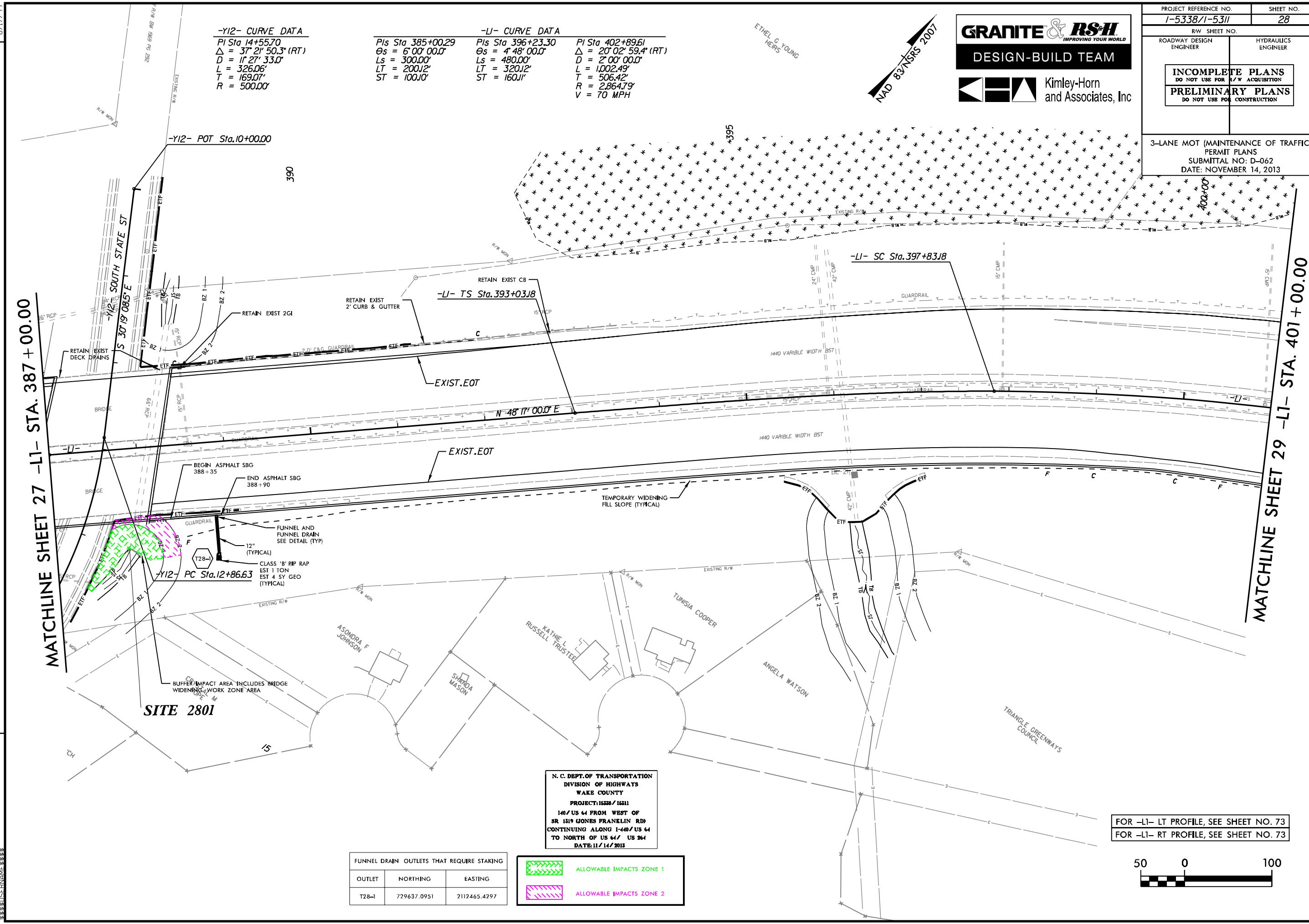


Pls Sta 385+00.29
 $\theta_s = 6^\circ 00' 00.0''$
 $L_s = 300.00'$
 $LT = 200.12'$
 $ST = 100.10'$

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

PI Sta 402+89.61
 $\Delta = 20^\circ 02' 59.4''$ (RT)
 $D = 2^\circ 00' 00.0''$
 $L = 1,002.49'$
 $T = 506.42'$
 $R = 2,864.79'$
 $V = 70$ MPH

MATCHLINE SHEET 29 -L1- STA. 407 + 00.00



FUNNEL DRAIN OUTLETS THAT REQUIRE STAKING		
OUTLET	NORTHING	EASTING
T28-1	729637.0951	2112465.4297

**N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15338 / 15311
140 / US 64 FROM WEST OF
SR 1519 GONES FRANKLIN RD
CONTINUING ALONG I-40 / US 64
TO NORTH OF US 64 / US 264
DATE: 11 / 14 / 2013**

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



GRANITE *& RSH*
IMPROVING YOUR WORLD

DESIGN-BUILD TEAM

 Kimley-Horn
and Associates, Inc.

**Kimley-Horn
and Associates, Inc**

-Y12- CURVE DATA
 PI Sta 14+55.70
 $\Delta = 37^{\circ} 21' 50.3''$ (RT)
 $D = 11^{\circ} 27' 33.0''$
 $L = 326.06'$
 $T = 169.07'$
 $R = 500.00'$

-L- CURVE DATA		
PIs Sta 385+00.29	PIs Sta 396+23.30	PI Sta 402+89.61
Os = 6' 00" 00.0"	Os = 4' 48" 00.0"	Δ = 20' 02" 59.4" (RT)
Ls = 300.00'	Ls = 480.00'	D = 2' 00" 00.0"
LT = 200.12'	LT = 320.12'	L = 1,002.49'
ST = 100.10'	ST = 160.11'	T = 506.42'
		R = 2,864.79'
		V = 70 MPH

-LI- CURVE DATA
 PIs Sta 396+23.30
 $\theta_s = 4^\circ 48' 00.0''$
 $L_s = 480.00'$
 $LT = 320.12'$
 $ST = 160.11'$

PI Sta 402+89.61
 $\Delta = 20^\circ 02' 59.4''$ (RT)
 $D = 2^\circ 00' 00.0''$
 $L = 1,002.49'$
 $T = 506.42'$
 $R = 2,864.79'$
 $V = 70$ MPH

NAD 83/NSRS 2007

----- 27 11- STA. 387 + 00.00

MATCHLINE SHEET 29 -L1- STA. 401 + 00.00

REVISIONS

-Y12- POT Sta.10+00.00

-LI- TS Sta. 393+03.18

SC Sta. 397+83.18

Y124 PC Sta. 12+86.6

SITE 2801

**N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 16338 / 16311
140 / US 64 FROM WEST OF
SR 1319 JONES FRANKLIN RD)
CONTINUING ALONG I-440 / US 64
TO NORTH OF US 64 / US 264
DATE: 11 / 14 / 2013**

FUNNEL DRAIN OUTLETS THAT REQUIRE STAKING		
OUTLET	NORTHING	EASTING
T28-1	729637.0951	2112465.4297

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

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

5/21/14

REVISIONS

-RP13B- CURVE DATA			
Sta 13+50.7 Δ = 7°13'19.8" L = 300.00 LT = 200.00 ST = 100.00 V = 50 MPH	Sta 15+25.38 Δ = 7°14'56.4" (LT) L = 300.00 LT = 150.00 ST = 150.00 V = 50 MPH	Sta 16+70.61 Δ = 5°03'19.8" L = 200.00 LT = 140.00 ST = 70.00	Sta 19+50.72 Δ = 8°24'50.6" L = 200.00 LT = 140.00 ST = 70.4

-RP13A- CURVE DATA			
Sta 13+06.75 Δ = 5°00'30.8" L = 280.00 LT = 180.00 ST = 93.40 V = 50 MPH	Sta 15+56.50 Δ = 1°37'36.2" (RT) L = 300.00 LT = 150.00 ST = 150.00 V = 50 MPH	Sta 18+10.4 Δ = 5°30'33.2" L = 300.00 LT = 100.00 ST = 100.00	Sta 22+29.4 Δ = 1°37'22.3" L = 300.00 LT = 100.00 ST = 100.00

-LI- CURVE DATA	
Sta 422+89.61 Δ = 20°02'59.4" (RT) L = 1000.00 LT = 500.00 ST = 500.00 V = 70 MPH	Sta 424+83.47 Δ = 28°33'00.1" (RT) L = 1000.00 LT = 500.00 ST = 500.00 V = 70 MPH

-Y13- CURVE DATA	
Sta 21+51.45 Δ = 7°01'43.2" (RT) L = 300.00 LT = 150.00 ST = 150.00 V = 25 MPH	Sta 25+62.73 Δ = 8°17'30.0" (RT) L = 300.00 LT = 150.00 ST = 150.00 V = 25 MPH

-LP13B- CURVE DATA			
Sta 13+35.99 Δ = 3°43'29.0" L = 200.00 LT = 135.99 ST = 69.99 V = 25 MPH	Sta 16+02.7 Δ = 10°43'24.8" (RT) L = 200.00 LT = 135.99 ST = 69.99 V = 25 MPH	Sta 17+67.89 Δ = 3°43'29.0" L = 200.00 LT = 135.99 ST = 69.99 V = 25 MPH	Sta 20+11.34 Δ = 8°31'02.2" (RT) L = 200.00 LT = 135.99 ST = 69.99 V = 25 MPH

-RP13B- PT	
Sta 22+99.08	

-LP13B- CS	
Sta 16+99.80	

-RP13B- SC	
Sta 20+20.56	

-RP13B- SRS	
Sta 18+05.56	

-LP13B- ST	
Sta 18+98.80	

-LP13B- PC	
Sta 18+87.6	

-LP13B- SC	
Sta 14+00.00	

-LP13B- TS	
Sta 12+00.00	

-LI- CS	
Sta 404+25.68	

-LI- CS	
Sta 401+85.68	

-LP13C- SC	
Sta 12+56.81	

-LP13C- SC	
Sta 10+56.81	

-LP13C- ST	
Sta 18+62.68	

-LP13C- CS	
Sta 15+62.68	

-RP13C- SRS	
Sta 19+23.65	

-RP13C- SC	
Sta 16+83.65	

-LP13C- PT	
Sta 24+14.81	

-Y13- POT	
Sta 20+85.00	

-RP13C- POT	
Sta 25+64.81 (1000)	

-Y13- POT	
Sta 19+47.3	

-LP13C- POT	
Sta 19+47.3 (1000)	

-Y13- PT	
Sta 22+18.51	

-Y13- POT	
Sta 22+25.40	

-Y13- PT	
Sta 22+18.51	

-Y13- POT	
Sta 22+25.40	

-Y13- PT	
Sta 22+18.51	

-Y13- POT	
Sta 22+25.40	

-Y13- PT	
Sta 22+18.51	

-Y13- POT	
Sta 22+25.40	

-Y13- PT	
Sta 22+18.51	

-Y13- POT	
Sta 22+25.40	

-Y13- PT	
Sta 22+18.51	

-Y13- POT	
Sta 22+25.40	

-Y13- PT	
Sta 22+18.51	

-Y13- POT	
Sta 22+25.40	

-Y13- PT	
Sta 22+18.51	

-Y13- POT	
Sta 22+25.40	

-Y13- PT	
Sta 22+18.51	

-Y13- POT	
Sta 22+25.40	

-Y13- PT	
Sta 22+18.51	

-Y13- POT	
Sta 22+25.40	

-Y13- PT	
Sta 22+18.51	

-Y13- POT	
Sta 22+25.40	

-Y13- PT	
Sta 22+18.51	

-Y13- POT	
Sta 22+25.40	

-Y13- PT	
Sta 22+18.51	

-Y13- POT	
Sta 22+25.40	

-Y13- PT	
Sta 22+18.51	

-Y13- POT	
Sta 22+25.40	

-Y13- PT	
Sta 22+18.51	

-Y13- POT	
Sta 22+25.40	

-Y13- PT	
Sta 22+18.51	

-Y13- POT	
Sta 22+25.40	

-Y13- PT	
Sta 22+18.51	

-Y13- POT	
Sta 22+25.40	

-Y13- PT	
Sta 22+18.51	

-Y13- POT	
Sta 22+25.40	

-Y13- PT	
Sta 22+18.51	

-Y13- POT	
Sta 22+25.40	

-Y13- PT	
Sta 22+18.51	

-Y13- POT	
Sta 22+25.40	

-Y13- PT	
Sta 22+18.51	

-Y13- POT	
Sta 22+25.40	

-Y13- PT	
Sta 22+18.51	

-Y13- POT	
Sta 22+25.40	

-Y13- PT	
Sta 22+18.51	

-Y13- POT	
Sta 22+25.40	

-Y13- PT	
Sta 22+18.51	

-Y13- POT	
Sta 22+25.40	

-Y13- PT	
Sta 22+18.51	

-Y13- POT	
Sta 22+25.40	

-Y13- PT	
Sta 22+18.51	

-Y13- POT	
Sta 22+25.40	

-Y13- PT	
Sta 22+18.51	

-Y13- POT	
Sta 22+25.40	

-Y13- PT	
Sta 22+18.51	

-Y13- POT	
Sta 22+25.40	

-Y13- PT	
Sta 22+18.51	

-Y13- POT	
Sta 22+25.40	

-Y13- PT	
Sta 22+18.51	

-Y13- POT	
Sta 22+25.40	

-Y13- PT	
Sta 22+18.51	

-Y13- POT	
Sta 22+25.40	

-Y13- PT	
Sta 22+18.51	

-Y13- POT	
Sta 22+25.40	

-Y13- PT	
Sta 22+18.51	

-Y13- POT	
Sta 22+25.40	

-Y13- PT	
Sta 22+18.51	

-Y13- POT	
Sta 22+25.40	

-Y13- PT	
Sta 22+18.51	

-Y13- POT	
Sta 22+25.40	

-Y13- PT	
Sta 22+18.51	

-Y13- POT	
Sta 22+25.40	

-Y13- PT	
Sta 22+18.51	

-Y13- POT	
Sta 22+25.40	

-Y13- PT	
Sta 22+18.51	

-Y13- POT	
Sta 22+25.40	

-Y13- PT	
Sta 22+18.51	

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Sta 22+25.40	

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Sta 22+18.51	

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-Y13- PT	
Sta 22+18.51	

-Y13- POT	
Sta 22+25.40	

-Y13- PT	
Sta 22+18.51	

-Y13- POT	
Sta 22+25.40	

-Y13- PT	
Sta 22+18.51	

-Y13- POT	
Sta 22+25.40	

-Y13- PT	
Sta 22+18.51	

-Y13- POT	
Sta 22+25.40	

-Y13- PT	
Sta 22+18.51	

-Y13- POT	
Sta 22+25.40	

5/27/14

REVISIONS

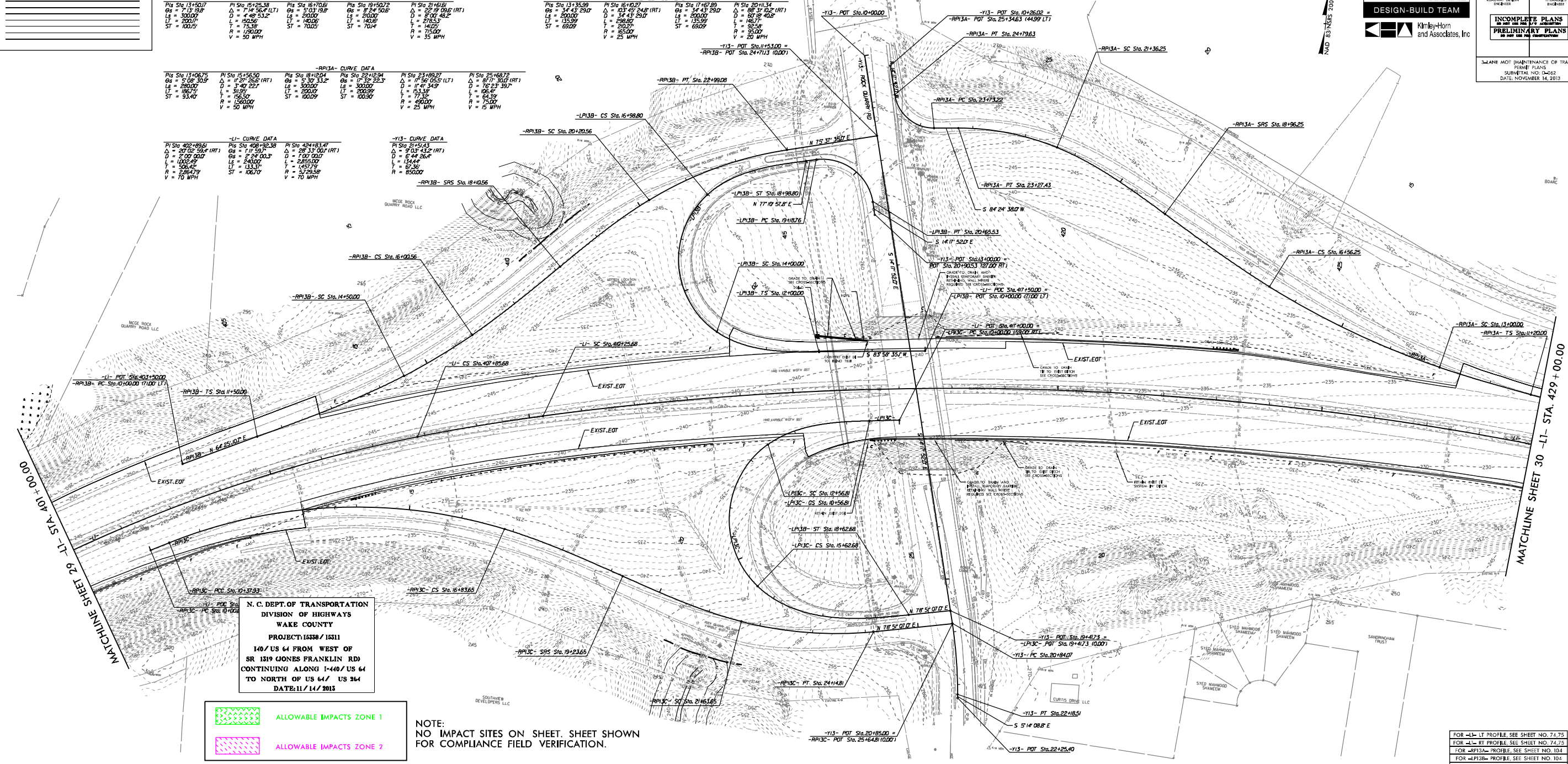
-RP13B- CURVE DATA			
Sta 13+50.7 Δ = 7°13'19.8" L = 300.00 LT = 200.00 ST = 100.00 R = 150.00 V = 50 MPH	Sta 15+25.38 Δ = 7°14'56.4" (LT) L = 300.00 LT = 150.00 ST = 150.00 R = 150.00 V = 50 MPH	Sta 16+70.61 Δ = 5°03'19.8" L = 200.00 LT = 100.00 ST = 100.00 R = 100.00 V = 50 MPH	Sta 19+50.72 Δ = 8°24'50.6" L = 200.00 LT = 100.00 ST = 100.00 R = 100.00 V = 50 MPH

-RP13A- CURVE DATA			
Sta 13+06.75 Δ = 5°00'30.8" L = 200.00 LT = 100.00 ST = 100.00 R = 100.00 V = 50 MPH	Sta 15+56.50 Δ = 7°14'56.4" (LT) L = 300.00 LT = 150.00 ST = 150.00 R = 150.00 V = 50 MPH	Sta 16+70.61 Δ = 5°03'19.8" L = 200.00 LT = 100.00 ST = 100.00 R = 100.00 V = 50 MPH	Sta 22+29.94 Δ = 8°24'50.6" L = 200.00 LT = 100.00 ST = 100.00 R = 100.00 V = 50 MPH

-LI- CURVE DATA		-Y13- CURVE DATA	
Sta 422+89.61 Δ = 20°02'59.4" (RT) L = 1000.00 LT = 500.00 ST = 500.00 R = 500.00 V = 70 MPH	Sta 424+89.61 Δ = 20°02'59.4" (RT) L = 1000.00 LT = 500.00 ST = 500.00 R = 500.00 V = 70 MPH	Sta 21+51.45 Δ = 7°01'43.2" (RT) L = 154.44 LT = 77.22 ST = 77.22 R = 77.22 V = 25 MPH	Sta 25+62.72 Δ = 8°17'10.0" (RT) L = 167.33 LT = 83.67 ST = 83.67 R = 83.67 V = 25 MPH

-LP13B- CURVE DATA			
Sta 13+35.99 Δ = 3°43'29.0" L = 200.00 LT = 100.00 ST = 100.00 R = 100.00 V = 25 MPH	Sta 16+02.27 Δ = 10°34'24.8" (RT) L = 200.00 LT = 100.00 ST = 100.00 R = 100.00 V = 25 MPH	Sta 17+67.89 Δ = 3°43'29.0" L = 200.00 LT = 100.00 ST = 100.00 R = 100.00 V = 25 MPH	Sta 20+11.34 Δ = 8°17'10.0" (RT) L = 167.33 LT = 83.67 ST = 83.67 R = 83.67 V = 25 MPH

-LP13B- CURVE DATA			
Sta 13+35.99 Δ = 3°43'29.0" L = 200.00 LT = 100.00 ST = 100.00 R = 100.00 V = 25 MPH	Sta 16+02.27 Δ = 10°34'24.8" (RT) L = 200.00 LT = 100.00 ST = 100.00 R = 100.00 V = 25 MPH	Sta 17+67.89 Δ = 3°43'29.0" L = 200.00 LT = 100.00 ST = 100.00 R = 100.00 V = 25 MPH	Sta 20+11.34 Δ = 8°17'10.0" (RT) L = 167.33 LT = 83.67 ST = 83.67 R = 83.67 V = 25 MPH



N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15330 / 15311
140 / US 64 FROM WEST OF
SR 1319 JONES FRANKLIN RD
CONTINUING ALONG I-440 / US 64
TO NORTH OF US 64 / US 364
DATE: 11/14/2013

ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2

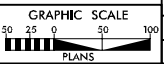
NOTE:
NO IMPACT SITES ON SHEET. SHEET SHOWN
FOR COMPLIANCE FIELD VERIFICATION.

-RP13C- CURVE DATA			
Sta 10+88.57 Δ = 0°46'28.7" (RT) L = 50.00 LT = 25.00 ST = 25.00 R = 25.00 V = 60 MPH	Sta 13+73.54 Δ = 38°32'11.6" (RT) L = 240.00 LT = 120.00 ST = 120.00 R = 120.00 V = 55 MPH	Sta 20+83.88 Δ = 7°22'43.7" L = 240.00 LT = 120.00 ST = 120.00 R = 120.00 V = 55 MPH	Sta 22+90.54 Δ = 20°07'35.2" (LT) L = 240.00 LT = 120.00 ST = 120.00 R = 120.00 V = 55 MPH

-LP13C- CURVE DATA			
Sta 10+28.41 Δ = 0°46'28.7" (RT) L = 50.00 LT = 25.00 ST = 25.00 R = 25.00 V = 70 MPH	Sta 11+90.77 Δ = 0°57'27.4" L = 50.00 LT = 25.00 ST = 25.00 R = 25.00 V = 70 MPH	Sta 14+66.84 Δ = 10°43'06.7" (LT) L = 32'58'51.5" L = 300.00 LT = 150.00 ST = 150.00 R = 150.00 V = 25 MPH	Sta 16+70.34 Δ = 8°17'10.0" (RT) L = 167.33 LT = 83.67 ST = 83.67 R = 83.67 V = 25 MPH



PROJECT REFERENCE NO. 1-5330/1-5311
SHEET NO. 29
INCOMPLETE PLANS
PRELIMINARY PLANS
DATE: NOVEMBER 14, 2013



FOR -LI- LT PROFILE, SEE SHEET NO. 74.75
FOR -LI- RT PROFILE, SEE SHEET NO. 74.75
FOR -RP13A- PROFILE, SEE SHEET NO. 104
FOR -LP13B- PROFILE, SEE SHEET NO. 104
FOR -RP13B- PROFILE, SEE SHEET NO. 105
FOR -LP13C- PROFILE, SEE SHEET NO. 105
FOR -RP13C- PROFILE, SEE SHEET NO. 106

8/17/99

-RP13A- CURVE DATA

PIs Sta 13+06.75
Θs = 5° 08' 30.9"
Ls = 280.00'
LT = 186.75'
ST = 93.40'

-LI- CURVE DATA

PIs Sta 424+83.47
Δ = 28° 33' 00.1" (RT)
D = 1° 00' 00.0"
Ls = 2,855.00'
LT = 1,457.79'
R = 5,729.58'
V = 70 MPH

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

GRANITE & RS&H
IMPROVING YOUR WORLD

DESIGN-BUILD TEAM

**Kimley-Horn
and Associates, Inc.**

PROJECT REFERENCE NO. SHEET NO.

1-5338/1-5311 30

R/W SHEET NO.

ROADWAY DESIGN ENGINEER HYDRAULICS ENGINEER

INCOMPLETE PLANS

DO NOT USE FOR E/V ACQUISITION

PRELIMINARY PLANS

DO NOT USE FOR CONSTRUCTION

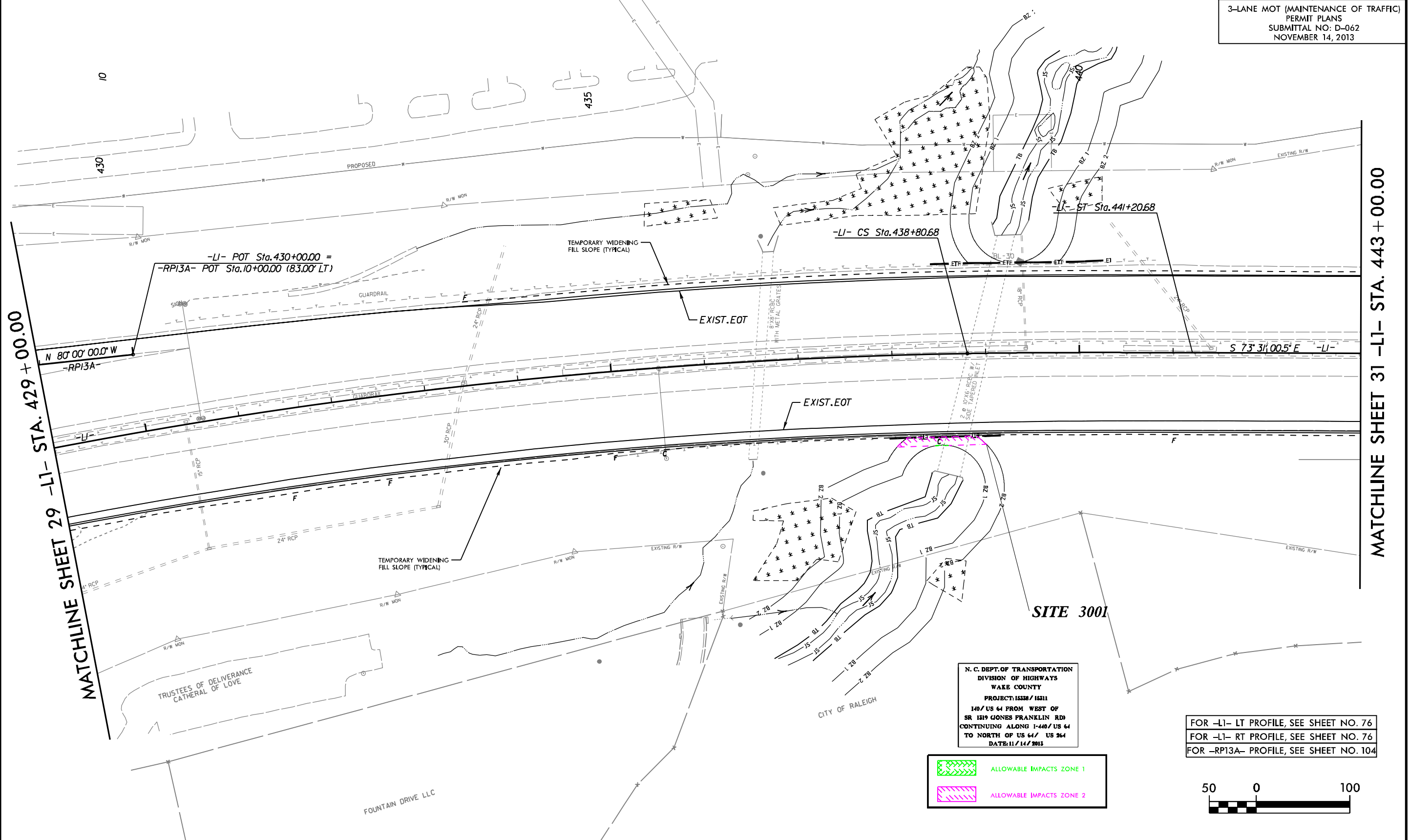
3-LANE MOT (MAINTENANCE OF TRAFFIC)

PERMIT PLANS

SUBMITTAL NO: D-062

NOVEMBER 14, 2013

2007
NAD 83
NSRS



REVISIONS

MATCHLINE SHEET 29 -LI- STA. 429+00.00

MATCHLINE SHEET 31 -LI- STA. 443+00.00

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15338 / 15311
140' US 64 FROM WEST OF
SR 1519 GONES FRANKLIN RD
CONTINUING ALONG I-440/US 64
TO NORTH OF US 64/ US 264
DATE: 11/14/2013

ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2

FOR -LI- LT PROFILE, SEE SHEET NO. 76
FOR -LI- RT PROFILE, SEE SHEET NO. 76
FOR -RP13A- PROFILE, SEE SHEET NO. 104

50 0 100

8/17/99

-RP13A- CURVE DATA

PIs Sta 13+06.75
θs = 5° 08' 30.9"
Ls = 280.00'
LT = 186.75'
ST = 93.40'

-LI- CURVE DATA

PIs Sta 424+83.47
Δ = 28° 33' 00.1" (RT)
D = 1° 00' 00.0"
Ls = 2,855.00'
T = 1,457.79'
R = 5,729.58'
V = 70 MPH

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

GRANITE & RSH
IMPROVING YOUR WORLD

DESIGN-BUILD TEAM



**Kimley-Horn
and Associates, Inc.**

PROJECT REFERENCE NO. SHEET NO.

1-5338/1-5311 30

R/W SHEET NO.

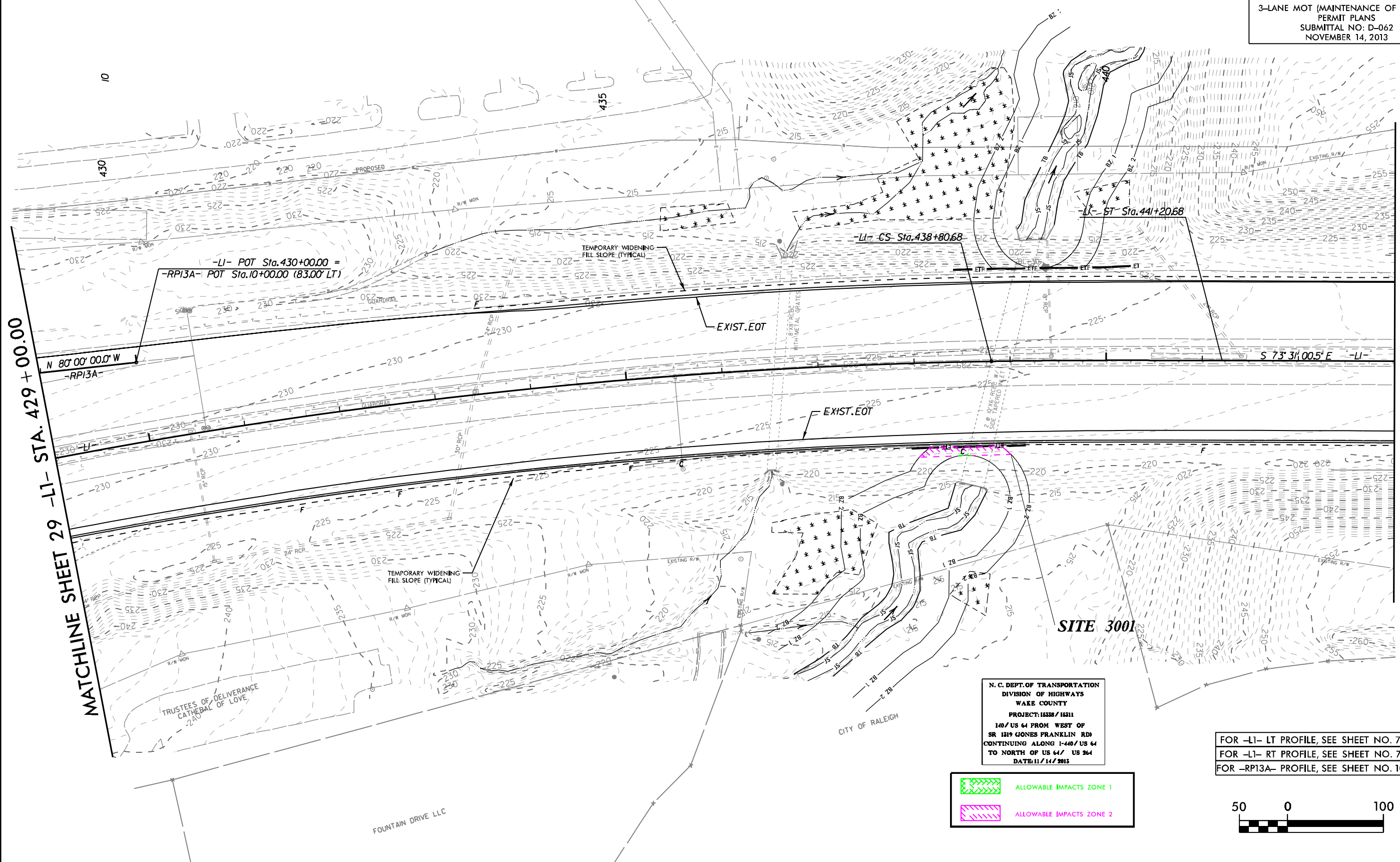
ROADWAY DESIGN ENGINEER HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR E/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

3-LANE MOT (MAINTENANCE OF TRAFFIC)
PERMIT PLANS
SUBMITTAL NO: D-062
NOVEMBER 14, 2013

83° NS 85° 2007
NAD



MATCHLINE SHEET 29 -LI- STA. 429+00.00

MATCHLINE SHEET 31 -LI- STA. 443+00.00

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15338 / 15311
140/ US 64 FROM WEST OF
SR 1519 GONES FRANKLIN RD
CONTINUING ALONG I-440/ US 64
TO NORTH OF US 64/ US 264
DATE: 11/14/2013



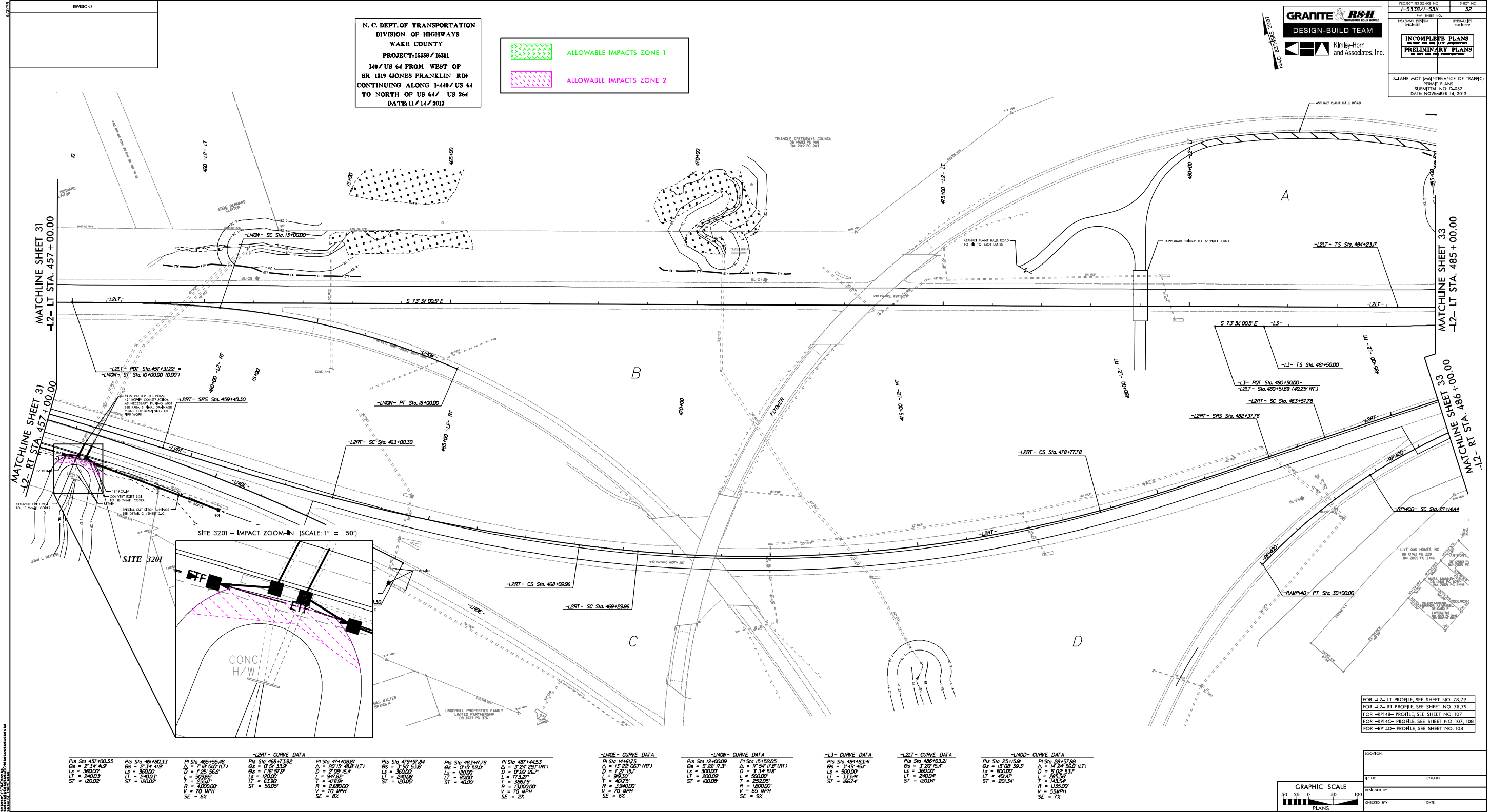
ALLOWABLE IMPACTS ZONE 1



ALLOWABLE IMPACTS ZONE 2

FOR -LI- LT PROFILE, SEE SHEET NO. 76
FOR -LI- RT PROFILE, SEE SHEET NO. 76
FOR -RP13A- PROFILE, SEE SHEET NO. 104





N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 18338 / 18311
140 / US 64 FROM WEST OF
SR 1519 GONES FRANKLIN RD
CONTINUING ALONG I-440 / US 64
TO NORTH OF US 64 / US 364
DATE: 11/14/2013

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

GRANITE & RSH

DESIGN-BUILD TEAM

Kimley-Horn

and Associates, Inc.

PROJECT REFERENCE NO.
1-5338/1-531

SHEET NO.
32

ROADWAY DESIGN
PROJECT

STATIONING
PROJECT

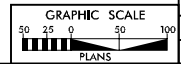
INCOMPLETE PLANS
DO NOT USE FOR CONSTRUCTION

PLANET
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

LANE MOT (MAINTENANCE OF TRAFFIC)
PERMITS
SUBMITTAL NO. D-662
DATE: NOVEMBER 14, 2013

-L2RT - CURVE DATA									
Sta 457+00.33	Sta 461+80.33	Sta 465+55.48	Sta 468+73.92	Sta 474+08.87	Sta 479+59.84	Sta 483+77.78	Sta 487+44.53	Sta 490+00.00	Sta 492+00.00
GS = 2' 34" 41.9'	GS = 2' 34" 41.9'	GS = 7' 18" 00.0' (LT)	GS = 7' 18" 00.0' (LT)	GS = 7' 18" 00.0' (LT)	GS = 7' 18" 00.0' (LT)	GS = 7' 18" 00.0' (LT)	GS = 7' 18" 00.0' (LT)	GS = 7' 18" 00.0' (LT)	GS = 7' 18" 00.0' (LT)
LS = 360.00'	LS = 360.00'	LS = 125' 56.6'	LS = 125' 56.6'	LS = 125' 56.6'	LS = 125' 56.6'	LS = 125' 56.6'	LS = 125' 56.6'	LS = 125' 56.6'	LS = 125' 56.6'
LT = 240.00'	LT = 240.00'	LT = 250.00'	LT = 250.00'	LT = 250.00'	LT = 250.00'	LT = 250.00'	LT = 250.00'	LT = 250.00'	LT = 250.00'
ST = 120.00'	ST = 120.00'	ST = 120.00'	ST = 120.00'	ST = 120.00'	ST = 120.00'	ST = 120.00'	ST = 120.00'	ST = 120.00'	ST = 120.00'
-L2LT - CURVE DATA									
Sta 457+00.33	Sta 461+80.33	Sta 465+55.48	Sta 468+73.92	Sta 474+08.87	Sta 479+59.84	Sta 483+77.78	Sta 487+44.53	Sta 490+00.00	Sta 492+00.00
GS = 2' 34" 41.9'	GS = 2' 34" 41.9'	GS = 7' 18" 00.0' (LT)	GS = 7' 18" 00.0' (LT)	GS = 7' 18" 00.0' (LT)	GS = 7' 18" 00.0' (LT)	GS = 7' 18" 00.0' (LT)	GS = 7' 18" 00.0' (LT)	GS = 7' 18" 00.0' (LT)	GS = 7' 18" 00.0' (LT)
LS = 360.00'	LS = 360.00'	LS = 125' 56.6'	LS = 125' 56.6'	LS = 125' 56.6'	LS = 125' 56.6'	LS = 125' 56.6'	LS = 125' 56.6'	LS = 125' 56.6'	LS = 125' 56.6'
LT = 240.00'	LT = 240.00'	LT = 250.00'	LT = 250.00'	LT = 250.00'	LT = 250.00'	LT = 250.00'	LT = 250.00'	LT = 250.00'	LT = 250.00'
ST = 120.00'	ST = 120.00'	ST = 120.00'	ST = 120.00'	ST = 120.00'	ST = 120.00'	ST = 120.00'	ST = 120.00'	ST = 120.00'	ST = 120.00'
-L3 - CURVE DATA									
Sta 484+83.41	Sta 486+63.21	Sta 488+33.01	Sta 490+00.00	Sta 492+00.00	Sta 494+00.00	Sta 496+00.00	Sta 498+00.00	Sta 500+00.00	Sta 502+00.00
GS = 3' 45" 45.7'	GS = 3' 45" 45.7'	GS = 3' 45" 45.7'	GS = 3' 45" 45.7'	GS = 3' 45" 45.7'	GS = 3' 45" 45.7'	GS = 3' 45" 45.7'	GS = 3' 45" 45.7'	GS = 3' 45" 45.7'	GS = 3' 45" 45.7'
LS = 360.00'	LS = 360.00'	LS = 360.00'	LS = 360.00'	LS = 360.00'	LS = 360.00'	LS = 360.00'	LS = 360.00'	LS = 360.00'	LS = 360.00'
LT = 240.00'	LT = 240.00'	LT = 240.00'	LT = 240.00'	LT = 240.00'	LT = 240.00'	LT = 240.00'	LT = 240.00'	LT = 240.00'	LT = 240.00'
ST = 120.00'	ST = 120.00'	ST = 120.00'	ST = 120.00'	ST = 120.00'	ST = 120.00'	ST = 120.00'	ST = 120.00'	ST = 120.00'	ST = 120.00'
-L4 - CURVE DATA									
Sta 494+00.00	Sta 496+00.00	Sta 498+00.00	Sta 500+00.00	Sta 502+00.00	Sta 504+00.00	Sta 506+00.00	Sta 508+00.00	Sta 510+00.00	Sta 512+00.00
GS = 3' 45" 45.7'	GS = 3' 45" 45.7'	GS = 3' 45" 45.7'	GS = 3' 45" 45.7'	GS = 3' 45" 45.7'	GS = 3' 45" 45.7'	GS = 3' 45" 45.7'	GS = 3' 45" 45.7'	GS = 3' 45" 45.7'	GS = 3' 45" 45.7'
LS = 360.00'	LS = 360.00'	LS = 360.00'	LS = 360.00'	LS = 360.00'	LS = 360.00'	LS = 360.00'	LS = 360.00'	LS = 360.00'	LS = 360.00'
LT = 240.00'	LT = 240.00'	LT = 240.00'	LT = 240.00'	LT = 240.00'	LT = 240.00'	LT = 240.00'	LT = 240.00'	LT = 240.00'	LT = 240.00'
ST = 120.00'	ST = 120.00'	ST = 120.00'	ST = 120.00'	ST = 120.00'	ST = 120.00'	ST = 120.00'	ST = 120.00'	ST = 120.00'	ST = 120.00'
-L5 - CURVE DATA									
Sta 512+00.00	Sta 514+00.00	Sta 516+00.00	Sta 518+00.00	Sta 520+00.00	Sta 522+00.00	Sta 524+00.00	Sta 526+00.00	Sta 528+00.00	Sta 530+00.00
GS = 3' 45" 45.7'	GS = 3' 45" 45.7'	GS = 3' 45" 45.7'	GS = 3' 45" 45.7'	GS = 3' 45" 45.7'	GS = 3' 45" 45.7'	GS = 3' 45" 45.7'	GS = 3' 45" 45.7'	GS = 3' 45" 45.7'	GS = 3' 45" 45.7'
LS = 360.00'	LS = 360.00'	LS = 360.00'	LS = 360.00'	LS = 360.00'	LS = 360.00'	LS = 360.00'	LS = 360.00'	LS = 360.00'	LS = 360.00'
LT = 240.00'	LT = 240.00'	LT = 240.00'	LT = 240.00'	LT = 240.00'	LT = 240.00'	LT = 240.00'	LT = 240.00'	LT = 240.00'	LT = 240.00'
ST = 120.00'	ST = 120.00'	ST = 120.00'	ST = 120.00'	ST = 120.00'	ST = 120.00'	ST = 120.00'	ST = 120.00'	ST = 120.00'	ST = 120.00'

FOR -L2- LT PROFILE SEE SHEET NO. 78.79
FOR -L2- RT PROFILE SEE SHEET NO. 78.79
FOR -L3- PROFILE SEE SHEET NO. 107
FOR -L4- PROFILE SEE SHEET NO. 107.108
FOR -L5- PROFILE SEE SHEET NO. 108

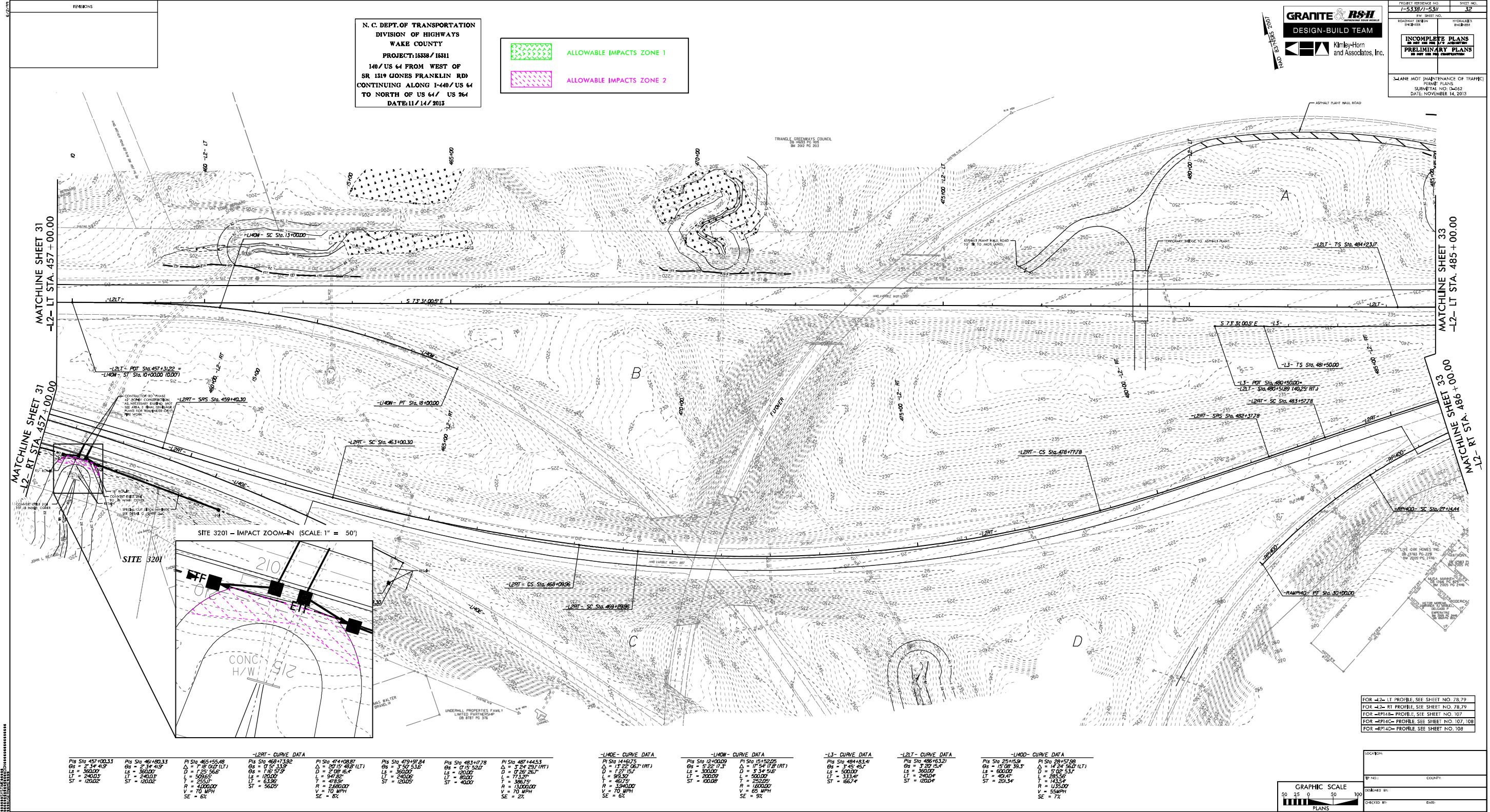


LOCATION:

PROJECT NO.: COUNTY:

DESIGNED BY: DATE:

CHECKED BY: DATE:



N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15338 / 15311
140 / US 64 FROM WEST OF
SR 1519 GONES FRANKLIN RD
CONTINUING ALONG I-440 / US 64
TO NORTH OF US 64 / US 364
DATE: 11/14/2013

ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2

GRANITE & RSH
DESIGN-BUILD TEAM
Kinley-Horn
and Associates, Inc.

PROJECT REFERENCE NO.
1-5338/1-5311

SHEET NO.
32

INCOMPLETE PLANS
DO NOT USE FOR CONSTRUCTION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PLANES NOT (MAINTENANCE OF TRAFFIC)
PERMIT PLANS
SUBMITAL NO. 14-062
DATE: NOVEMBER 14, 2013

-L2LT- CURVE DATA		-L2RT- CURVE DATA		-L3- CURVE DATA		-L2LT- CURVE DATA		-L2RT- CURVE DATA	
PI Sta 457+00.33	PI Sta 457+00.33	PI Sta 457+00.33	PI Sta 457+00.33	PI Sta 457+00.33	PI Sta 457+00.33	PI Sta 457+00.33	PI Sta 457+00.33	PI Sta 457+00.33	PI Sta 457+00.33
LS = 250.00	LS = 250.00	LS = 250.00	LS = 250.00	LS = 250.00	LS = 250.00	LS = 250.00	LS = 250.00	LS = 250.00	LS = 250.00
ST = 120.00	ST = 120.00	ST = 120.00	ST = 120.00	ST = 120.00	ST = 120.00	ST = 120.00	ST = 120.00	ST = 120.00	ST = 120.00

GRAPHIC SCALE
0 25 50 100
PLANS

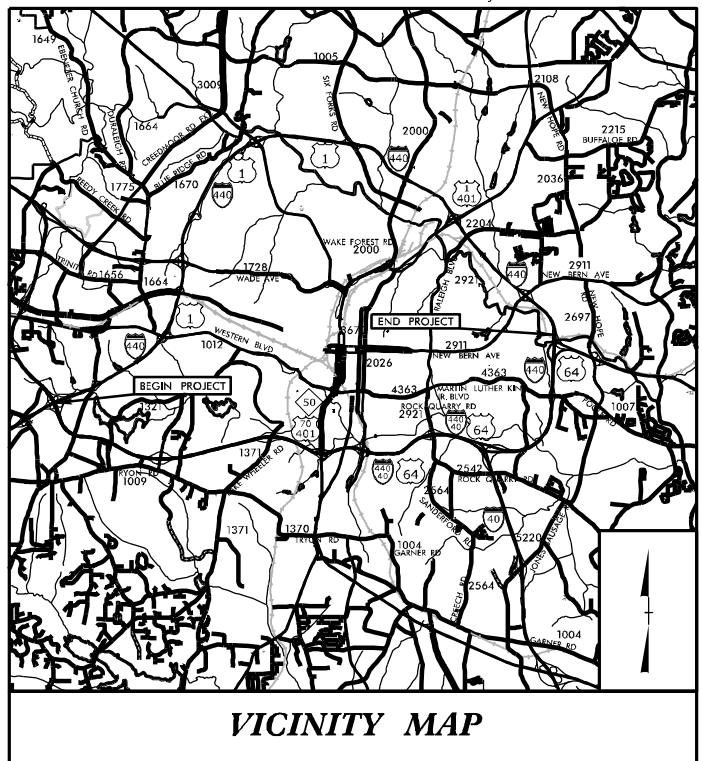
DESIGNED BY: _____
CHECKED BY: _____
DATE: _____

09/20/09

11/26/2013
C:\p\w\work\k\sh\pw\talley\dm\64276\I5338_Rdy_tsh.MOT.dgn
5:12:50 PM

CONTRACT: C203166 **TIP PROJECT: I-5338, I-5311**

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

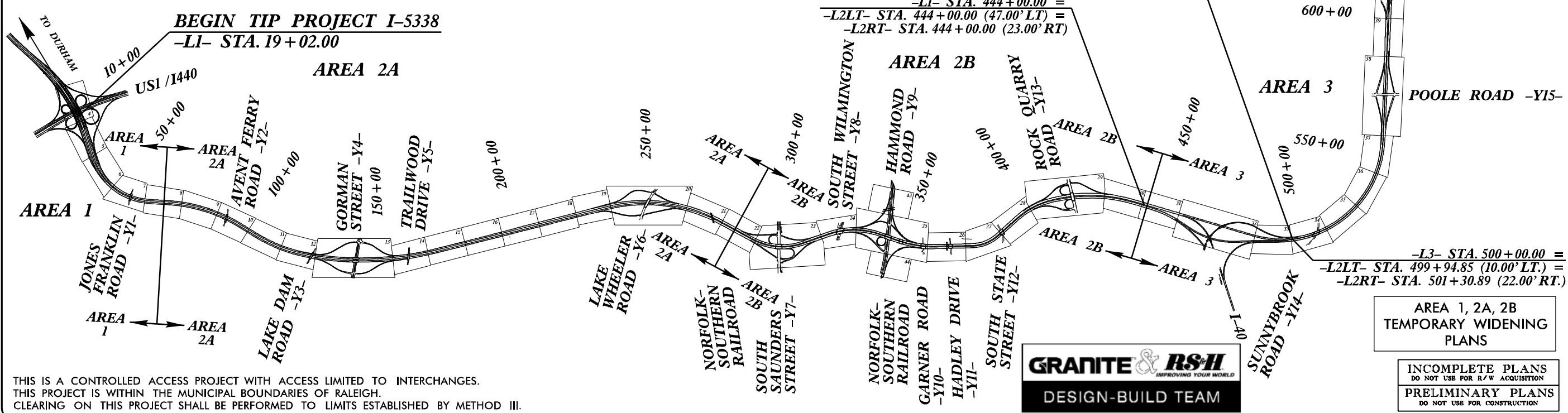
LOCATION: I-40 / US 64 FROM WEST OF SR 1319 (JONES FRANKLIN RD)
CONTINUING ALONG I-440 / US 64 TO NORTH OF US 64 / US 264

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

**TEMPORARY WIDENING
PLANS**

END TIP PROJECT I-5311
-L3- STA. 628+60.00

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

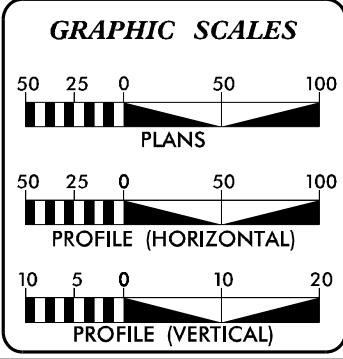


THIS IS A CONTROLLED ACCESS PROJECT WITH ACCESS LIMITED TO INTERCHANGES.
THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF RALEIGH.
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO LIMITS ESTABLISHED BY METHOD III.



AREA 1, 2A, 2B
TEMPORARY WIDENING
PLANS

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

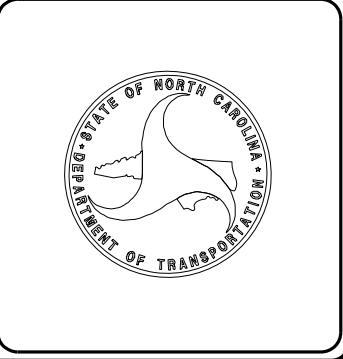


DESIGN DATA	
ADT 2013	= 126,025
ADT 2035	= 184,600
DHV	= 9 %
D	= 55 %
T	= 8 % *
V	= 70 MPH
* (TTST = 4% + DUAL = 4%)	
FUNC CLASS = INTERSTATE	

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.	
CHAD HINNANT, 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	CHAD ROGERS, PE PROJECT ENGINEER
LETTING DATE: MAY 13, 2013	JASON TALLEY, PE PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER	
SIGNATURE: _____	P.E.
ROADWAY DESIGN ENGINEER	
SIGNATURE: _____	P.E.





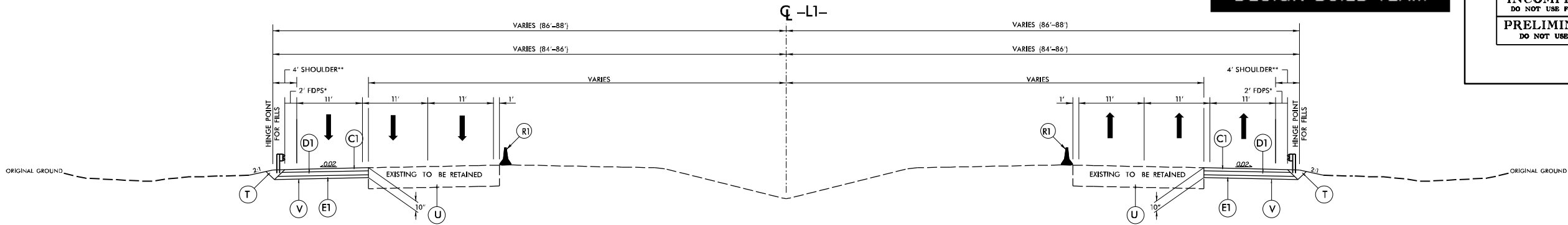
PROJECT REFERENCE NO. 1-5338/1-5311		SHEET NO. 2	
ROADWAY DESIGN ENGINEER		PAVEMENT DESIGN ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION		PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

PAVEMENT SCHEDULE			
C1	PROP. APPROX. 1.5" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.		
D1	PROP. APPROX. 5.5" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.		
E1	PROP. APPROX. 3.0" ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.		
R1	DOUBLE FACED TEMPORARY CONCRETE BARRIER		
T	EARTH MATERIAL.		
U	EXISTING PAVEMENT.		
V	MILL 10" DEPTH.		

NOTE: ALL EOP SLOPES ARE 1:1 UNLESS OTHERWISE SHOWN
FDPS = FULL DEPTH PAVED SHOULDER
PDPS = PARTIAL DEPTH PAVED SHOULDER

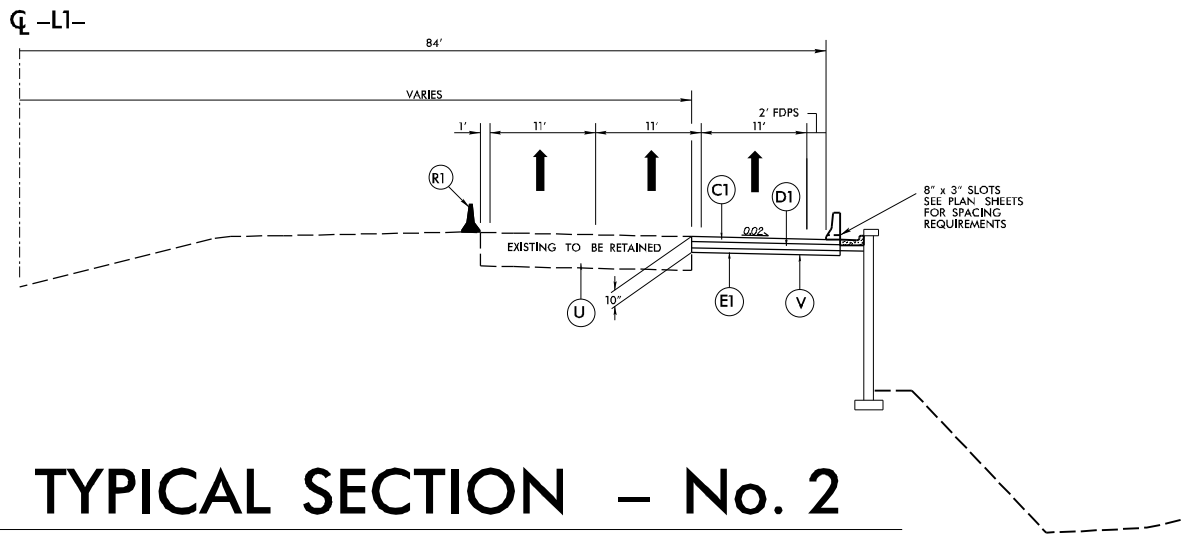


PROJECT REFERENCE NO. 1-5338/1-5311	SHEET NO. 2-A
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
INCOMPLETE PLANS DO NOT USE FOR ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



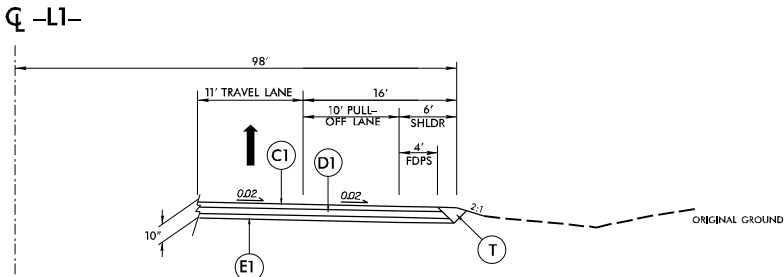
TYPICAL SECTION – No. 1

- * 4' FDPS WHEN GUARDRAIL IS NOT PRESENT
- ** 6' SHOULDER WHEN GUARDRAIL IS NOT PRESENT



TYPICAL SECTION – No. 2

PERMANENT RETAINING WALL AT BRIDGE ENDS



PULL-OFF LANE DETAIL 1A

-L1- STA. 93+00.00 LT TO -L1- STA. 103+00.00 LT
-L1- STA. 93+00.00 RT TO -L1- STA. 103+00.00 RT
-L1- STA. 182+00.00 LT TO -L1- STA. 192+00.00 LT
-L1- STA. 184+00.00 RT TO -L1- STA. 194+00.00 RT

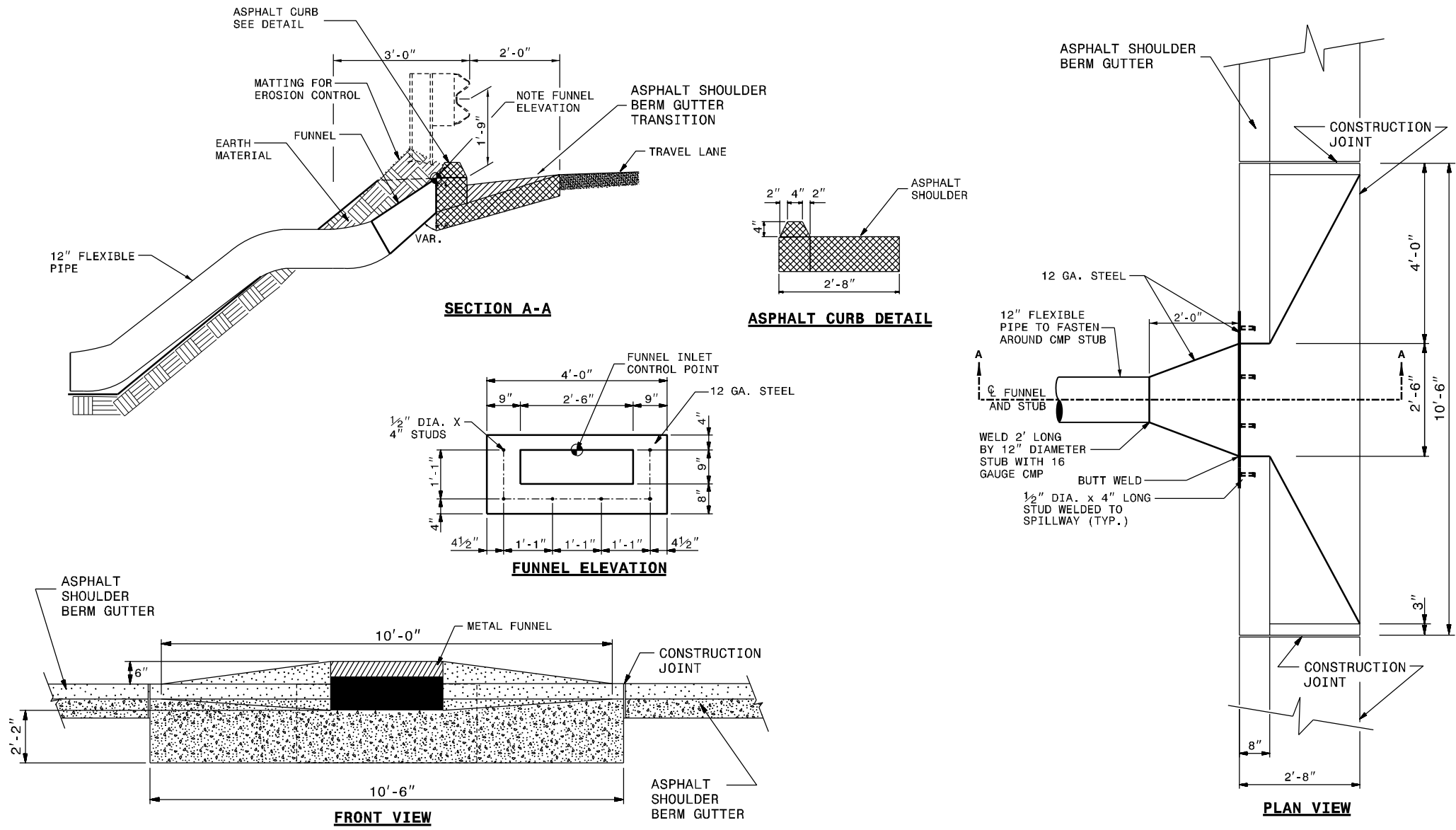
PAVEMENT SCHEDULE			
C1	1.5" SURFACE COURSE TYPE S9.5B	V	MILL 10" DEPTH.
D1	5.5" INTER. COURSE TYPE I19.0C		
E1	3.0" BASE COURSE TYPE B25.0C		
R1	DOUBLE FACED TEMP. CONCRETE BARRIER		
T	EARTH MATERIAL		
U	EXISTING PAVEMENT		

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PROJECT REFERENCE NO.	SHEET NO.
1-5338/1-5311	2-B
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

FUNNEL AND FUNNEL DRAIN

12" METAL FUNNEL

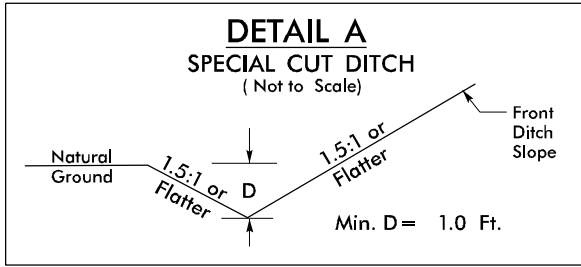


NOTE

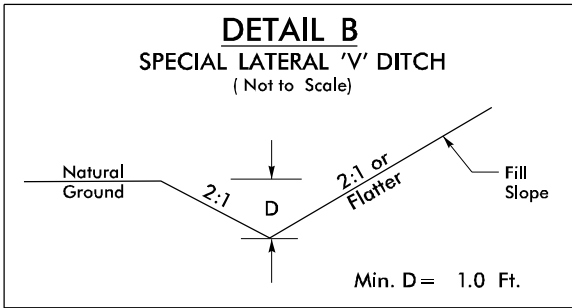
CONTRACTOR TO DEPRESS THE SHOULDER 0.25' AT EACH PROPOSED FUNNEL DRAIN LOCATION. FUNNEL OPENING INVERT ELEVATION TO BE FIELD SET BY CONTRACTOR ACCORDINGLY.

NOT TO SCALE

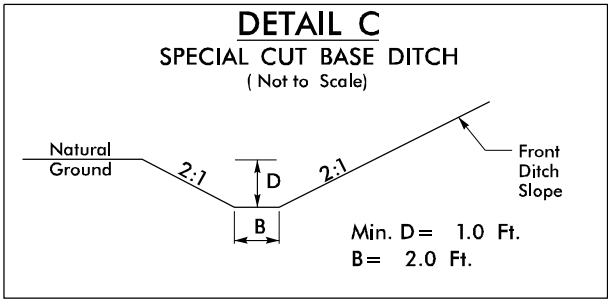
PROJECT REFERENCE NO. 1-5338/1-5311	SHEET NO. 2-C
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



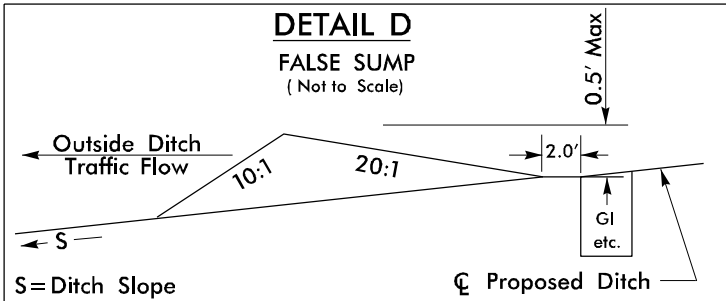
FROM STA. 28+00 TO STA. 31+25 -L1- (LT)
FROM STA. 31+50 TO STA. 36+00 -L1- (RT)
FROM STA. 53+00 TO STA. 54+80 -L1- (LT)
FROM STA. 55+80 TO STA. 57+77 -L1- (LT)
FROM STA. 54+00 TO STA. 55+50 -L1- (RT)
FROM STA. 55+96 TO STA. 57+50 -L1- (RT)
FROM STA. 88+50 TO STA. 96+07 -L1- (RT)
FROM STA. 100+50 TO STA. 96+07 -L1- (RT)
FROM STA. 90+22 TO STA. 95+00 -L1- (LT)
FROM STA. 100+00 TO STA. 96+26 -L1- (LT)
FROM STA. 126+50 TO STA. 126+09 -L1- (RT)
FROM STA. 125+60 TO STA. 124+00 -L1- (RT)
FROM STA. 126+24 TO STA. 123+50 -L1- (LT)
FROM STA. 158+00 TO STA. 161+00 -L1- (RT)
FROM STA. 161+84 TO STA. 164+00 -L1- (RT)
FROM STA. 186+00 TO STA. 187+00 -L1- (LT)
FROM STA. 189+50 TO STA. 191+50 -L1- (LT)
FROM STA. 191+00 TO STA. 193+00 -L1- (RT)
FROM STA. 250+25 TO STA. 250+50 -L1- (RT)
FROM STA. 251+60 TO STA. 253+00 -L1- (RT)
FROM STA. 276+00 TO STA. 273+90 -L1- (RT)
FROM STA. 277+02 TO STA. 277+93 -L1- (RT)
FROM STA. 275+25 TO STA. 273+81 -L1- (LT)
FROM STA. 369+00 TO STA. 372+00 -L1- (RT)
FROM STA. 372+00 TO STA. 377+50 -L1- (RT)
FROM STA. 377+50 TO STA. 383+50 -L1- (RT)
FROM STA. 18+00 TO STA. 20+00 -RP9BT2- (RT)



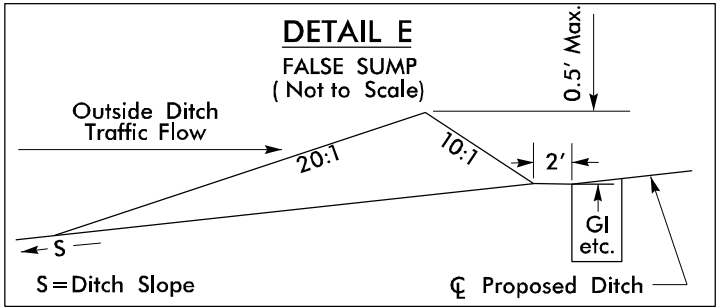
FROM STA. 49+50 TO STA. 50+50 -L1- (RT)
FROM STA. 160+50 TO STA. 161+62 -L1- (LT)
FROM STA. 182+50 TO STA. 186+00 -L1- (LT)
FROM STA. 187+00 TO STA. 189+50 -L1- (LT)
FROM STA. 191+50 TO STA. 192+50 -L1- (LT)
FROM STA. 187+00 TO STA. 190+50 -L1- (RT)



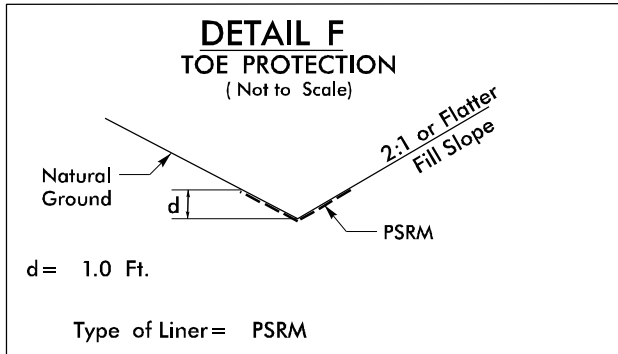
FROM STA. 247+50 TO STA. 250+25 -L1- (RT)
FROM STA. 276+72 TO STA. 276+00 -L1- (RT)
FROM STA. 277+25 TO STA. 276+74 -L1- (LT)



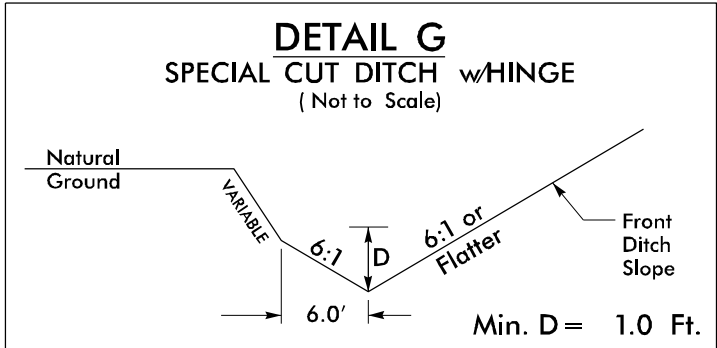
FROM STA. 43+33 TO STA. 43+51 -L1- (RT)
FROM STA. 50+01 TO STA. 50+19 -L1- (RT)
FROM STA. 94+54 TO STA. 94+72 -L1- (RT)
FROM STA. 246+12 TO STA. 246+30 -L1- (RT)
FROM STA. 370+95 TO STA. 371+10 -L1- (RT)
FROM STA. 380+33 TO STA. 380+48 -L1- (RT)



FROM STA. 186+53 TO STA. 186+72 -L1- (LT)
FROM STA. 190+71 TO STA. 190+89 -L1- (LT)
FROM STA. 374+27 TO STA. 374+42 -L1- (RT)
FROM STA. 376+25 TO STA. 376+40 -L1- (RT)



FROM STA. 17+35 TO STA. 18+00 -RP9BT2- (RT)
FROM STA. 345+50 TO STA. 347+50 -L1- (LT)



FROM STA. 452+47 TO STA. 457+50 -L2RT- (RT)
FROM STA. 457+50 TO STA. 457+97 -L2RT- (RT)
FROM STA. 457+97 TO STA. 458+25 -L2RT- (RT)
FROM STA. 458+25 TO STA. 458+97 -L2RT- (RT)
FROM STA. 458+97 TO STA. 460+85 -L2RT- (RT)
FROM STA. 460+85 TO STA. 463+47 -L2RT- (RT)

DITCH PROFILE SUMMARY TABLES

Detail A - Special Cut Ditch			
Ditch Range	Station	Elevation	Offset
28+00-31+25	L1 28+00.00 LT	460.34	-92.32
	L1 29+00.00 LT	460.04	-95.00
	L1 31+25.00 LT	458.91	-99.33
31+50-36+00	L1 31+50.00 RT	460.52	94.86
	L1 33+50.00 RT	459.52	94.51
	L1 34+00.00 RT	459.26	95.99
	L1 36+00.00 RT	458.26	94.71
53+00-54+80	L1 53+00.00 LT	435.89	-95.19
	L1 54+00.00 LT	434.83	-93.88
	L1 54+80.00 LT	434.04	-91.16
55+80-57+77	L1 55+80.00 LT	433.20	-92.13
	L1 56+50.00 LT	432.49	-89.51
	L1 57+75.00 LT	430.98	-91.28
54+00-55+50	L1 54+00.00 RT	442.90	92.61
	L1 54+90.00 RT	441.75	94.78
	L1 55+50.00 RT	441.35	92.61
55+96-57+50	L1 55+96.00 RT	441.10	92.01
	L1 57+00.00 RT	439.70	90.45
	L1 57+50.00 RT	439.18	90.46
88+50-96+07	L1 88+50.00 RT	402.43	94.23
	L1 89+50.00 RT	401.16	90.43
	L1 90+50.00 RT	400.18	91.01
	L1 91+50.00 RT	399.14	89.55
	L1 92+50.00 RT	398.02	95.00
	L1 93+50.00 RT	397.10	102.07
	L1 94+50.00 RT	396.43	101.57
	L1 96+07.00 RT	395.68	102.47
100+50-96+07	L1 100+50.00 RT	399.66	100.00
	L1 99+50.00 RT	398.35	101.00
	L1 98+50.00 RT	397.80	101.00
	L1 97+50.00 RT	397.05	101.00
	L1 96+50.00 RT	396.03	101.00
	L1 96+07.00 RT	395.68	102.47
90+22-95+00	L1 90+22.00 LT	403.41	-88.91
	L1 91+25.00 LT	403.32	-89.20
	L1 92+00.00 LT	402.70	-89.49
	L1 93+00.00 LT	402.27	-100.20
	L1 94+00.00 LT	401.67	-100.40
	L1 95+00.00 LT	400.58	-101.60
100+00-96+26	L1 100+00.00 LT	399.51	-100.70
	L1 99+00.00 LT	399.01	-102.05
	L1 98+50.00 LT	398.76	-102.93
	L1 97+75.00 LT	400.26	-101.83
	L1 96+25.00 LT	399.50	-101.33
126+50-126+09	L1 126+50.00 RT	439.76	89.41
	L1 126+09.00 RT	439.56	90.14
125+60-124+00	L1 125+60.00 RT	439.50	89.96
	L1 125+00.00 RT	439.14	88.00
	L1 124+00.00 RT	436.99	89.38
126+24-123+50	L1 126+24.00 LT	435.88	-99.05
	L1 126+00.00 LT	435.52	-100.01
	L1 125+00.00 LT	434.60	-99.00
	L1 124+00.00 LT	433.64	-104.58
	L1 123+50.00 LT	432.78	-106.86
158+00-161+00	L1 158+00.00 RT	410.56	113.12
	L1 159+00.00 RT	409.27	105.12
	L1 160+00.00 RT	407.71	99.91
	L1 161+00.00 RT	406.10	98.00

Detail A - Special Cut Ditch			
Ditch Range	Station	Elevation	Offset
161+84-164+00	L1 161+84.00 RT	404.84	97.01
	L1 162+00.00 RT	404.63	100.00
	L1 163+00.00 RT	403.00	97.21
	L1 164+00.00 RT	401.03	103.61
186+00-187+00	L1 186+00.00 LT	365.15	-100.00
	L1 187+00.00 LT	363.54	-100.22
189+50-191+50	L1 189+50.00 LT	359.78	-100.00
	L1 190+50.00 LT	357.62	-101.24
	L1 191+00.00 LT	356.62	-101.82
	L1 191+50.00 LT	356.35	-100.73
191+00-193+00	L1 191+00.00 RT	355.95	103.31
	L1 192+00.00 RT	354.95	102.25
	L1 193+00.00 RT	353.91	101.09
250+25-250+50	L1 250+25.00 RT	266.17	86.21
	L1 250+50.00 RT	265.85	86.22
251+60-253+00	L1 251+60.00 RT	264.77	84.77
	L1 252+00.00 RT	264.16	86.13
	L1 253+00.00 RT	263.27	90.69
275+25-273+90	L1 275+25.00 RT	251.00	88.64
	L1 275+00.00 RT	249.90	90.00
	L1 273+90.00 RT	249.31	98.09
275+25-276+00	L1 275+25.00 RT	251.00	88.64
	L1 276+00.00 RT	249.61	87.98
277+02-277+93	L1 277+02.00 RT	250.93	85.85
	L1 277+93.00 RT	248.70	96.02
275+24-273+81	L1 275+25.00 RT	254.22	-88.44
	L1 274+82.00 RT	254.00	-91.28
	L1 274+50.00 RT	254.22	-90.66
	L1 273+81.00 RT	253.62	-100.25
369+00-372+00	L1 369+00.00 RT	255.89	88.41
	L1 369+50.00 RT	254.94	88.38
	L1 370+00.00 RT	254.01	88.36
	L1 370+50.00 RT	253.12	88.33
	L1 371+00.00 RT	252.41	88.31
	L1 371+50.00 RT	251.86	88.28
372+00-377+50	L1 372+00.00 RT	251.43	88.26
	L1 372+50.00 RT	251.60	88.23
	L1 373+00.00 RT	252.08	88.22
	L1 373+50.00 RT	252.60	88.22
	L1 374+00.00 RT	253.03	88.21
	L1 374+50.00 RT	253.45	88.20
	L1 375+00.00 RT	254.00	88.19
	L1 375+50.00 RT	254.56	88.16
	L1 376+00.00 RT	255.06	88.18
	L1 376+50.00 RT	255.46	88.17
	L1 377+00.00 RT	255.98	88.22
377+50-383+50	L1 377+50.00 RT	256.41	88.22
	L1 378+00.00 RT	256.29	88.22
	L1 378+50.00 RT	256.06	88.22
	L1 379+00.00 RT	255.79	88.22
	L1 379+50.00 RT	255.46	88.22
	L1 380+00.00 RT	255.27	88.22
	L1 380+50.00 RT	255.01	88.22
	L1 381+00.00 RT	254.76	88.22
	L1 381+50.00 RT	254.51	88.22
	L1 382+00.00 RT	254.29	88.22
	L1 382+50.00 RT	253.99	88.22
	L1 383+00.00 RT	253.85	88.22
	L1 383+50.00 RT	253.38	88.38

Detail B - Special Lateral V Ditch			
Ditch Range	Station	Elevation	Offset
49+50-50+50	L1 49+50.00 RT	445.35	97.43
	L1 50+00.00 RT	444.33	101.10
	L1 50+50.00 RT	444.21	99.81
160+50-161+62	L1 160+50.00 LT	404.62	-94.92
	L1 161+00.00 LT	403.94	-90.08
	L1 161+62.00 LT	403.02	-88.97
182+50-186+00	L1 182+50.00 LT	370.52	-100.12
	L1 183+50.00 LT	368.70	-100.67
	L1 184+50.00 LT	367.16	-100.68
	L1 185+50.00 LT	365.93	-100.04
	L1 186+00.00 LT	365.15	-100.00
187+00-189+50	L1 187+00.00 LT	363.54	-100.22
	L1 187+50.00 LT	362.61	-100.58
	L1 188+50.00 LT	361.31	-100.06
	L1 189+50.00 LT	359.78	-100.00
191+50-192+50	L1 191+50.00 LT	356.35	-100.73
	L1 192+50.00 LT	354.59	-96.93
187+00-190+50	L1 187+00.00 RT	363.48	100.64
	L1 188+00.00 RT	361.74	101.00
	L1 189+00.00 RT	360.35	100.68
	L1 190+00.00 RT	358.01	102.31
	L1 190+50.00 RT	356.45	103.83

Detail C - Special Cut Base Ditch			
Ditch Range	Station	Elevation	Offset
247+50-250+21	L1 247+50.00 RT	269.62	91.06
	L1 248+50.00 RT	268.51	87.37
	L1 249+50.00 RT	267.10	87.29
	L1 250+25.00 RT	266.17	86.21
276+72-276+00	L1 276+72.00 RT	249.97	88.04
	L1 276+00.00 RT	249.61	87.98
277+25-276+74	L1 277+25.00 LT	253.94	-90.90
	L1 276+74.00 LT	253.61	-94.75

PROJECT REFERENCE NO.
1-5338/1-5311

SHEET NO.
2-D

ROADWAY DESIGN ENGINEER

PAVEMENT DESIGN ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

6/2/99

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PROJECT REFERENCE NO.	SHEET NO.
1-5338/1-5311	2-E
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

FUNNEL DRAIN SUMMARY TABLES

I5338/I-5311 FUNNEL DRAIN SUMMARY				
STR #	STA	RT/LT	SIZE	LENGTH
0806	72+30	RT	12 in	97
0807	73+40	RT	12 in	74
1101	102+50	LT	12 in	21
1102	104+00	LT	12 in	64
1103	104+65	LT	12 in	95
1104	113+20	LT	12 in	58
1201	115+00	LT	12 in	67
1501	176+05	LT	12 in	73
1502	176+70	LT	12 in	126
1503	177+35	LT	12 in	78
1504	178+00	LT	12 in	51
1505	178+65	LT	12 in	50
1506	179+25	LT	12 in	66
1507	179+60	LT	12 in	83
1508	179+15	RT	12 in	61
1509	179+80	RT	12 in	101
1510	180+50	RT	12 in	54
1701	198+65	RT	12 in	103
1702	199+25	RT	12 in	142
1703	199+90	RT	12 in	109
1704	200+50	RT	12 in	80
1705	201+00	RT	12 in	78
1706	205+60	RT	12 in	50
1707	206+30	RT	12 in	68
1708	206+95	RT	12 in	37
1709	207+30	RT	12 in	48
1710	200+90	LT	12 in	50
1711	203+08	LT	12 in	50
1712	204+53	LT	12 in	75
1713	206+35	LT	12 in	47
2201	285+90	LT	12 in	57
2202	286+29	LT	12 in	66
2203	286+59	LT	12 in	80
2204	286+94	LT	12 in	104
2205	287+40	LT	12 in	80
2206	285+20	RT	12 in	38
2207	285+60	RT	12 in	52
2208	285+90	RT	12 in	70
2209	286+20	RT	12 in	90
2210	286+50	RT	12 in	107
2211	286+85	RT	12 in	84
2212	287+20	RT	12 in	69
2302	315+50	RT	12 in	52
2303	316+75	RT	12 in	57
2304	317+25	RT	12 in	54
2305	317+65	RT	12 in	50
2306	318+00	RT	12 in	53
2307	318+31	RT	12 in	49
2308	318+65	RT	12 in	50
*NOTE: ALL PIPES HDPE				

I5338/I-5311 FUNNEL DRAIN SUMMARY				
STR #	STA	RT/LT	SIZE	LENGTH
2401	319+00	RT	12 in	49
2402	319+35	RT	12 in	38
2403	319+65	RT	12 in	37
2404	319+95	RT	12 in	34
2405	320+25	RT	12 in	34
2406	320+50	RT	12 in	39
2407	321+35	RT	12 in	31
2408	323+70	RT	12 in	60
2411	322+35	RT	12 in	40
2501	342+60	LT	12 in	46
2504	346+18	LT	12 in	50
2505	346+58	LT	12 in	50
2506	349+95	LT	12 in	53
2507	347+32	LT	12 in	47
2508	347+65	LT	12 in	54
2509	354+85	LT	12 in	50
2601	359+60	LT	12 in	27
2602	360+50	LT	12 in	25
2603	361+20	LT	12 in	40
2604	361+69	LT	12 in	45
2605	362+00	LT	12 in	45
2607	362+95	LT	12 in	60
2608	363+52	LT	12 in	60
2609	364+15	LT	12 in	63
2610	364+80	LT	12 in	73
2611	365+45	LT	12 in	86
2620	368+35	RT	12 in	44
2802	388+85	RT	12 in	40
*NOTE: ALL PIPES HDPE				

TEMPORARY DECK DRAIN SUMMARY TABLES
(TO BE INSTALLED DURING MAINTENANCE OF TRAFFIC)

Gorman Street Bridge (West Bound)			
Station	Alignment	Location	Deck Drain size (FT)
141+47	-L1-	Lt	0.5
141+51	-L1-	Lt	0.5
141+55	-L1-	Lt	0.5
141+59	-L1-	Lt	0.5
141+63	-L1-	Lt	0.5
141+67	-L1-	Lt	0.5
141+71	-L1-	Lt	0.5
141+75	-L1-	Lt	0.5
141+79	-L1-	Lt	0.5
141+83	-L1-	Lt	0.5
141+87	-L1-	Lt	0.5
141+91	-L1-	Lt	0.5
141+95	-L1-	Lt	0.5
141+99	-L1-	Lt	0.5
142+03	-L1-	Lt	0.5
142+60	-L1-	Lt	0.5
142+64	-L1-	Lt	0.5
142+68	-L1-	Lt	0.5
142+72	-L1-	Lt	0.5
143+19	-L1-	Lt	0.5
143+27	-L1-	Lt	0.5
143+35	-L1-	Lt	0.5
143+43	-L1-	Lt	0.5
143+51	-L1-	Lt	0.5
143+59	-L1-	Lt	0.5
143+67	-L1-	Lt	0.5
Deck Drains Required on Bridge =			26

Hadley Road Bridge (East Bound)			
Station	Alignment	Location	Deck Drain size (FT)
366+90	-L1-	Rt	0.5
366+99	-L1-	Rt	0.5
367+08	-L1-	Rt	0.5
367+17	-L1-	Rt	0.5
367+26	-L1-	Rt	0.5
367+81	-L1-	Rt	0.5
367+90	-L1-	Rt	0.5
367+99	-L1-	Rt	0.5
368+34	-L1-	Rt	0.5
Deck Drains Required on Bridge =			9

Hadley Road Bridge (West Bound)			
Station	Alignment	Location	Deck Drain size (FT)
366+69	-L1-	Lt	0.5
366+75	-L1-	Lt	0.5
366+81	-L1-	Lt	0.5
366+87	-L1-	Lt	0.5
366+93	-L1-	Lt	0.5
366+99	-L1-	Lt	0.5
367+05	-L1-	Lt	0.5
367+11	-L1-	Lt	0.5
367+17	-L1-	Lt	0.5
367+71	-L1-	Lt	0.5
367+77	-L1-	Lt	0.5
367+83	-L1-	Lt	0.5
367+89	-L1-	Lt	0.5
367+95	-L1-	Lt	0.5
368+01	-L1-	Lt	0.5
Deck Drains Required on Bridge =			15

Hammond Road Bridge (West Bound)			
Station	Alignment	Location	Deck Drain size (FT)
345+04	-L1-	Lt	0.5
345+01	-L1-	Lt	0.5
344+98	-L1-	Lt	0.5
344+95	-L1-	Lt	0.5
344+92	-L1-	Lt	0.5
344+89	-L1-	Lt	0.5
344+86	-L1-	Lt	0.5
344+83	-L1-	Lt	0.5
344+80	-L1-	Lt	0.5
344+77	-L1-	Lt	0.5
344+74	-L1-	Lt	0.5
344+71	-L1-	Lt	0.5
344+68	-L1-	Lt	0.5
344+65	-L1-	Lt	0.5
344+62	-L1-	Lt	0.5
344+59	-L1-	Lt	0.5
344+56	-L1-	Lt	0.5
344+53	-L1-	Lt	0.5
343+90	-L1-	Lt	0.5
343+87	-L1-	Lt	0.5
343+84	-L1-	Lt	0.5
343+80	-L1-	Lt	0.5
343+77	-L1-	Lt	0.5
343+74	-L1-	Lt	0.5
343+71	-L1-	Lt	0.5
343+08	-L1-	Lt	0.5
343+05	-L1-	Lt	0.5
343+02	-L1-	Lt	0.5
342+99	-L1-	Lt	0.5
342+96	-L1-	Lt	0.5
342+93	-L1-	Lt	0.5
342+90	-L1-	Lt	0.5
342+87	-L1-	Lt	0.5
342+84	-L1-	Lt	0.5
342+81	-L1-	Lt	0.5
342+78	-L1-	Lt	0.5
342+75	-L1-	Lt	0.5
342+72	-L1-	Lt	0.5
342+69	-L1-	Lt	0.5
Deck Drains Required on Bridge =			39

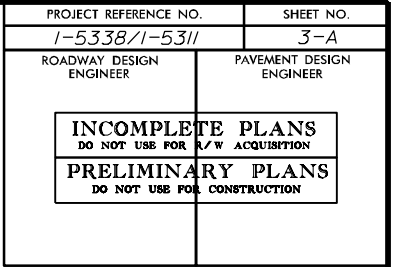


PROJECT REFERENCE NO.	SHEET NO.
1-5338/1-5311	3
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

**NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS**

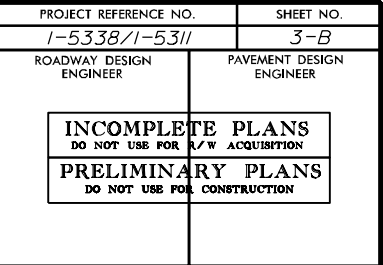
LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

[illegible]



LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".



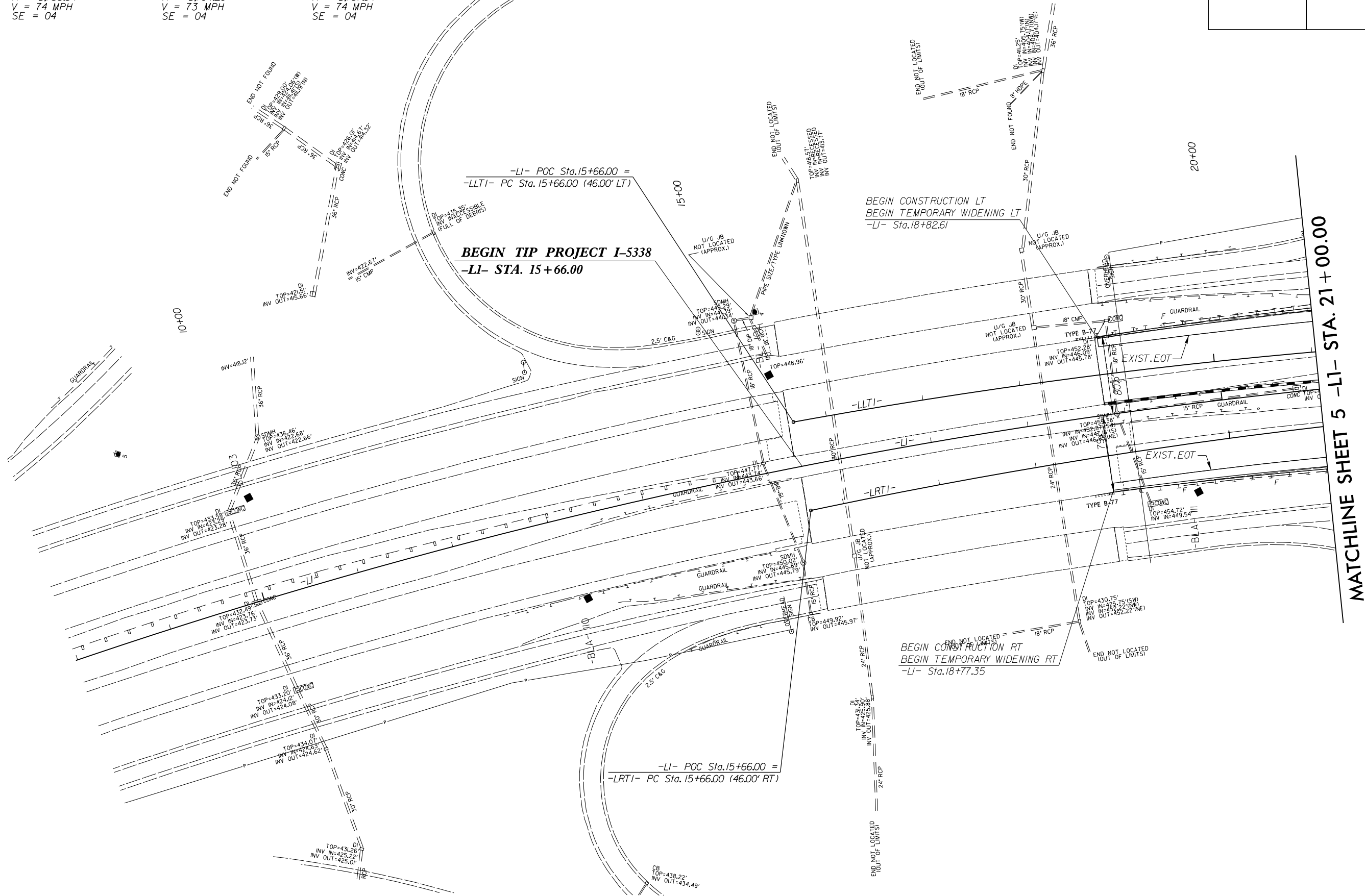
LIST OF PIPES, ENDWALLS, ETC. (FOR PIPES 48 INCHES & UNDER)

Note: Invert Elevations indicated are for Bid Purposes only and shall not be used for project construction stakeout.
See "Standard Specifications For Roads and Structures, Section 300-5".

-LI- CURVE DATA
PI Sta 10+39.93
 $\Delta = 26^\circ 11' 02.9" (RT)$
 $D = 0^\circ 59' 54.5"$
 $L = 2622.42'$
 $T = 1334.52'$
 $R = 5738.34'$
 $V = 74 \text{ MPH}$
 $SE = 04$

-LRTI- CURVE DATA
PI Sta 19+44.75
 $\Delta = 7^\circ 35' 51.4" (RT)$
 $D = 1^\circ 00' 16.0"$
 $L = 756.40'$
 $T = 378.75'$
 $R = 5704.20'$
 $V = 73 \text{ MPH}$
 $SE = 04$

-LLTI- CURVE DATA
PI Sta 19+51.43
 $\Delta = 7^\circ 37' 10.7" (RT)$
 $D = 0^\circ 59' 23.7"$
 $L = 769.73'$
 $T = 385.43'$
 $R = 5787.94'$
 $V = 74 \text{ MPH}$
 $SE = 04$

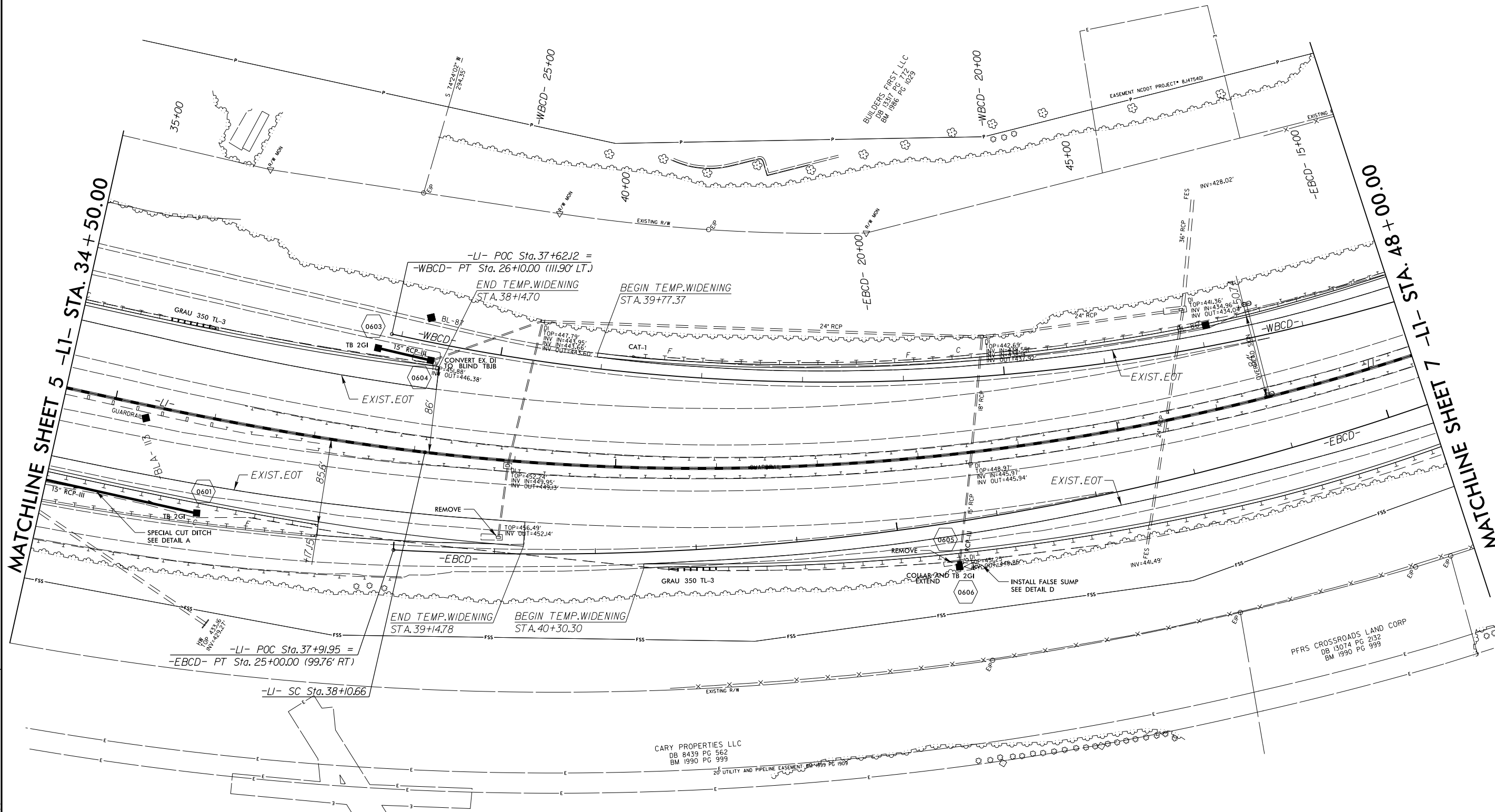


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PROJECT REFERENCE NO. 1-5338/1-5311	SHEET NO. 4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



<u>-LI- CURVE DATA</u>	<u>-LTI- CURVE DATA</u>	<u>-LRTI- CURVE DATA</u>
Pls Sta 24+27.84	Pls Sta 24+35.73	Pls Sta 24+22.40
Θs = 1° 29' 51.7"	Θs = 1° 29' 05.5"	Θs = 1° 30' 24.0"
Ls = 300.00'	Ls = 300.00'	Ls = 300.00'
LT = 200.01'	LT = 200.01'	LT = 200.01'
ST = 100.01'	ST = 100.01'	ST = 100.01'



-WBCD- CURVE DATA
PI Sta 18+64.14
 $\Delta = 45^{\circ}14'29.4"$ (RT)
 $D = 2^{\circ}51'53.2"$
 $L = 1,579.23'$
 $T = 833.37'$
 $R = 2,000.00'$
 $V = 72$ MPH
 $SE = 08$

-EBCD- CURVE DATA
PI Sta 18+02.89
 $\Delta = 30^{\circ}40'22.2"$ (RT)
 $D = 2^{\circ}08'45.3"$
 $L = 1,429.36'$
 $T = 732.25'$
 $R = 2,670.00'$
 $V = 80$ MPH
 $SE = 08$

-LI- CURVE DATA
PIs Sta 36+44.20
 $\Theta_s = 6^{\circ}15'25.0"$
 $L_s = 500.00'$
 $LT = 333.54'$
 $ST = 166.86'$



NAD 83/NSRS 2007

PROJECT REFERENCE NO.	SHEET NO.
1-5338/1-5311	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

MATCHLINE SHEET 6 -LI- STA. 48+00.00

MATCHLINE SHEET 8 -LI- STA. 61+00.00

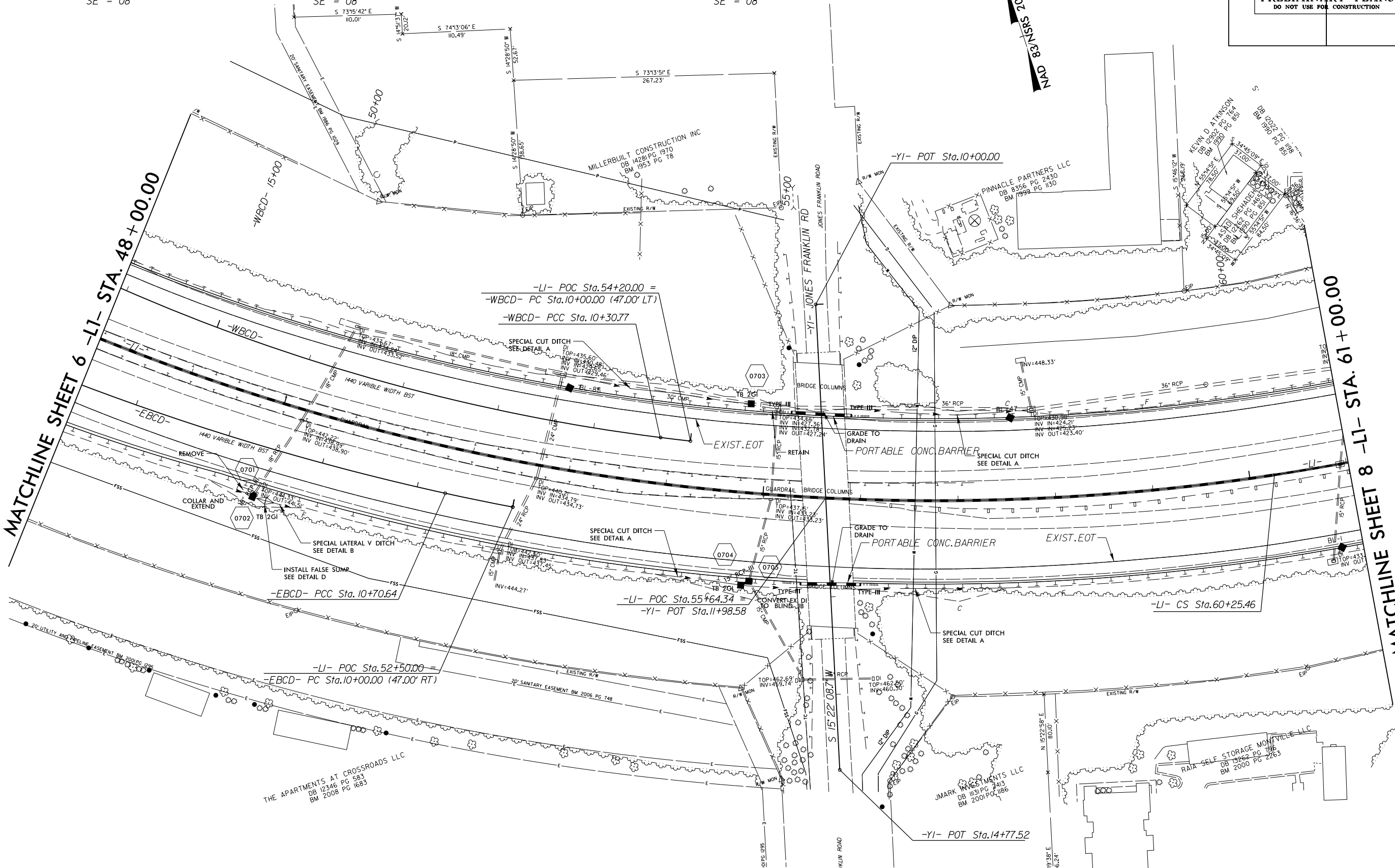
-WBCD- CURVE DATA
PI Sta 10+15.39
 $\Delta = 0^\circ 47' 10.8''$ (RT)
D = 2' 33' 18.8"
L = 30.77'
T = 15.39'
R = 2,242.29'
V = 75 MPH
SE = 08

-EBCD- CURVE DATA
PI Sta 10+35.32
 $\Delta = 1^\circ 43' 56.3''$ (RT)
D = 2' 27' 08.7"
L = 70.64'
T = 35.32'
R = 2,336.29'
V = 76 MPH
SE = 08

-LI- CURVE DATA
PI Sta 50+13.37
 $\Delta = 55^\circ 25' 52.9''$ (LT)
D = 2' 30' 10.0"
L = 2,214.80'
T = 1,202.70'
R = 2,289.29'
V = 68 MPH
SE = 08

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PROJECT REFERENCE NO.	SHEET NO.
1-5338/1-5311	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



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-LI- CURVE DATA

<i>Pls Sta 61+92.31</i>	<i>Pls Sta 69+78.63</i>
<i>Θ_s = 6°15' 25.0"</i>	<i>Θ_s = 1°12' 00.0"</i>
<i>L_s = 500.00'</i>	<i>L_s = 240.00'</i>
<i>LT = 333.54'</i>	<i>LT = 160.00'</i>
<i>ST = 166.86'</i>	<i>ST = 80.00'</i>

STRIDGE TOWNHOUSES HOMEOWNERS
DB 4969 PG 700
BM 1984 PG 1846

JOSE T AS
BDB

ENCICIO-IBAN
071 PG 669
1990 PG 851
F. A. CALLEN
DB 8497 PG
BM 1990

11. A PANDYA
"98
851
1148
UNDER
N 73°26'40" E
21.60

[illegible]

STIN S MITH
14705 P.D.
1990 P.D.
32'03"
78'32"
5'90"
3'20"
EIP
21.6

Year	Percent
1980	6
1990	7
2000	6

P=427.34'
V IN=420.39'
V IN=RECESSED (S)
V OUT=420.01'

-LI-
DI
TOP=430.30'
INV IN=427.20'
INV OUT=426.61'

IN 001-42637

LINE

CHIEF

3

WAYNERIDGE TOWNES ASSOCIATES
DB 3411 PG 921
BM 1984 PG 275

ASHBOROUGH INVESTORS LLC
DB 11215 PG 156
BM 2000 PG 356

MATCHLINE SHEET 9 -L1- STA. 74 + 50.00

MATCHLINE SHEET 7 -L1- STA. 61+00.00

REVISIONS

8/17/99

26-NOV-2013 16:20
I5338_Rdy_psh-8.dgn
\$\$\$\$\$USERNAME\$\$\$\$\$

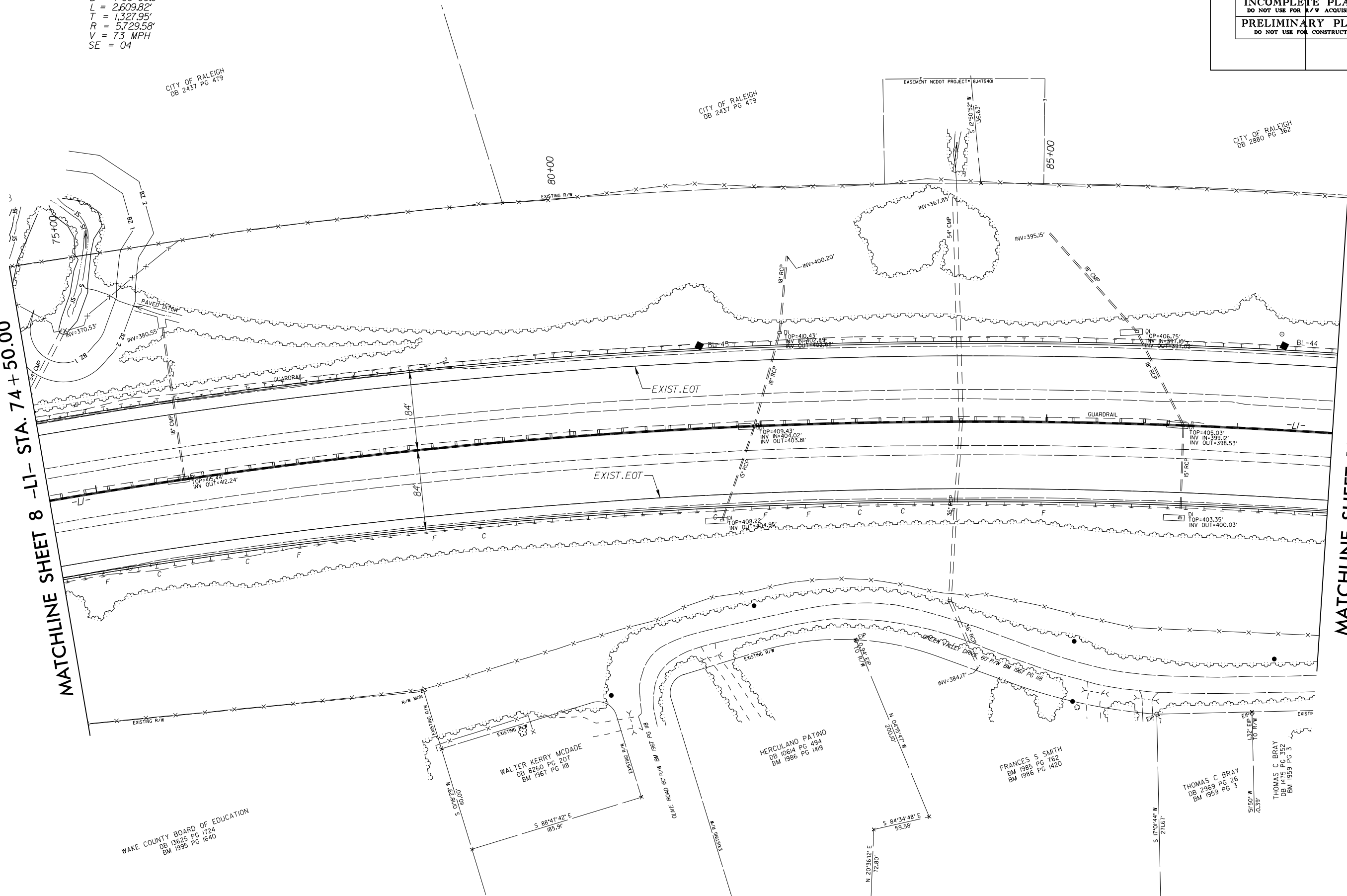
-LI- CURVE DATA
PI Sta 83+86.57
 $\Delta = 26^{\circ}05'53.4" (RT)$
 $D = 1^{\circ}00'00.0"$
 $L = 2,609.82'$
 $T = 1,327.95'$
 $R = 5,729.58'$
 $V = 73 \text{ MPH}$
 $SE = 04$

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DESIGN-BUILD TEAM

PROJECT REFERENCE NO. 1-5338/1-5311		SHEET NO. 9
R/W SHEET NO.		
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION		
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		

MATCHLINE SHEET 8 -L1- STA. 74 + 50.00

MATCHLINE SHEET 10 -L1- STA. 88 + 00.00



REVISIONS

NAD 83/NSRS 2007



MATCHLINE SHEET 11 -L1- STA. 101 + 00.00

-Y2- CURVE DATA
PI Sta 12+27.89
 $\Delta = 13^{\circ} 50' 36.9''$ (RT)
 $D = 3^{\circ} 10' 59.2''$
 $L = 434.91'$
 $T = 218.52'$
 $R = 1,800.00'$

REVISIONS

26-NOV-2013 16:20 63381 EPHWFL d9n 63381 USPHWFL 6649n	8/17/99
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-LI- CURVE DATA
Pls Sta 104+33.29
Θs = 1°12'00.0"
Ls = 240.00'
LT = 160.00'
ST = 80.00'

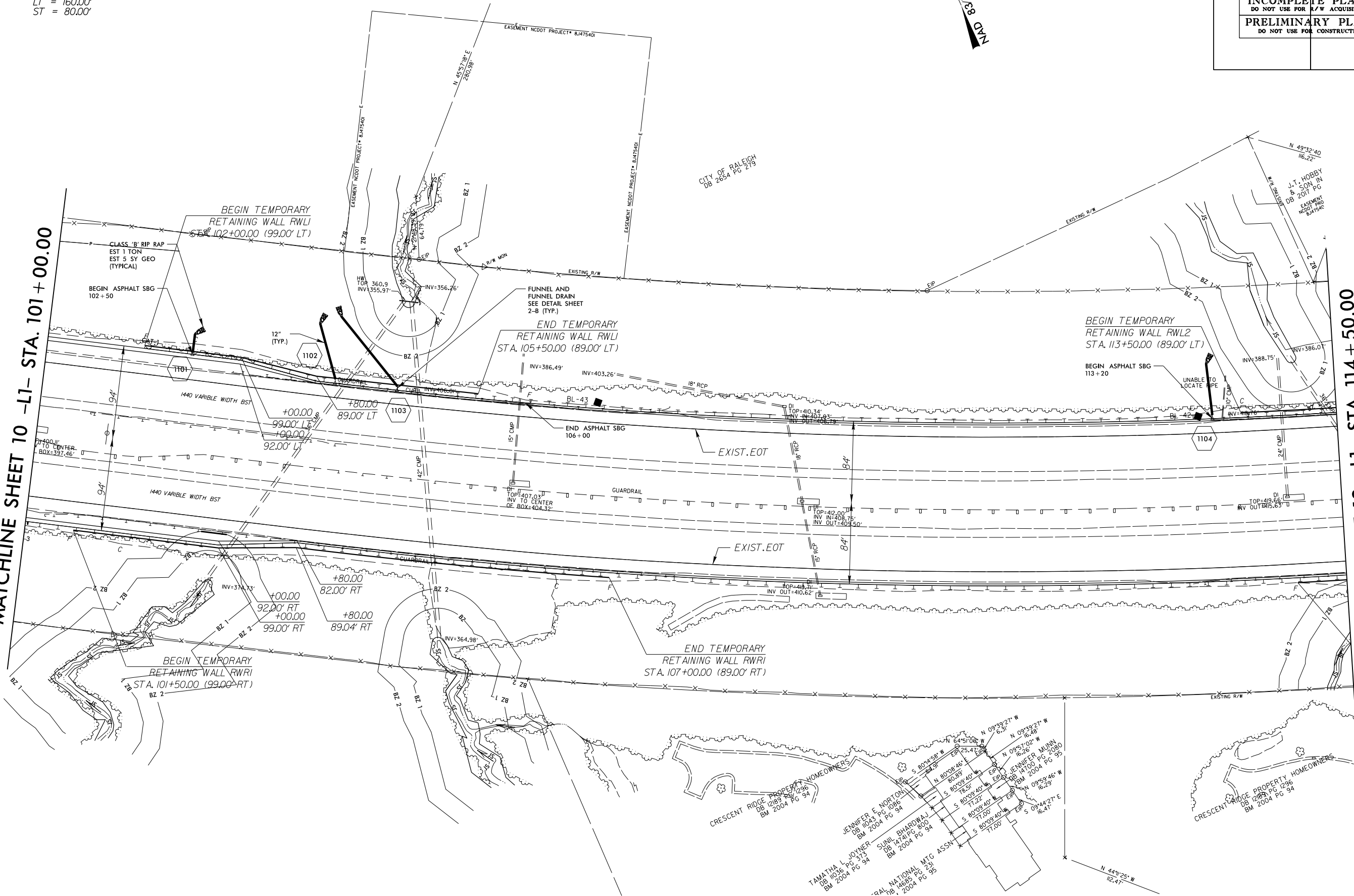
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DESIGN-BUILD TEAM

PROJECT REFERENCE NO.	SHEET NO.
1-5338/1-5311	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

NAD 83 NGS 2007

MATCHLINE SHEET 10 -LI- STA. 101+00.00

MATCHLINE SHEET 12 -LI- STA. 114+50.00



REVISIONS

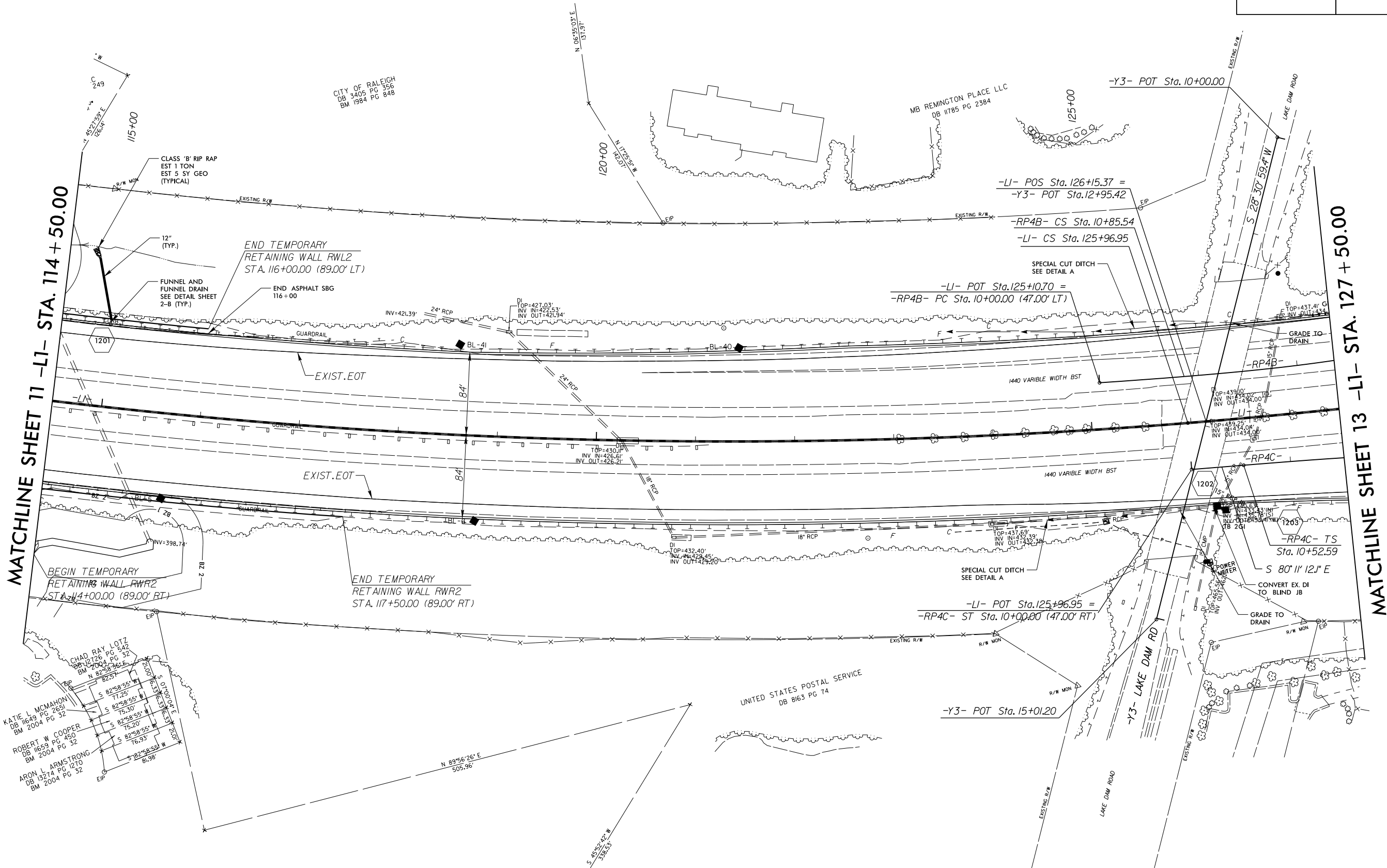
REVISIONS

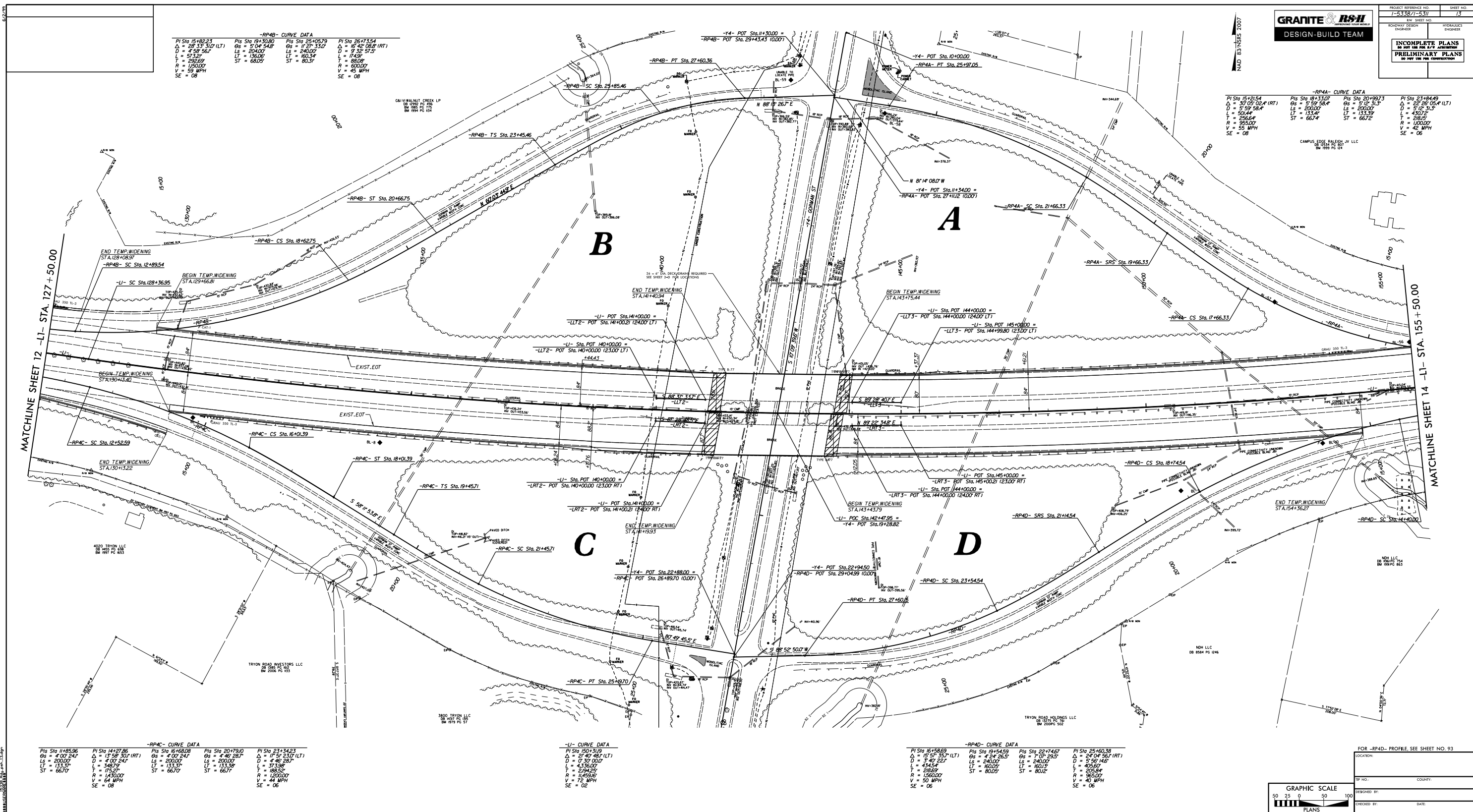
-LI- CURVE DATA	
PI Sta 115+66.75	PIs Sta 127+03.62
$\Delta = 20^\circ 50' 11.9" (LT)$	$\Theta s = 0^\circ 36' 00.0"$
$D = 1'00' 00.0"$	$\Theta s = 1^\circ 12' 00.0"$
$L = 2,083.66'$	$Ls = 240.00'$
$T = 1,053.47'$	$LT = 133.34'$
$R = 5,729.58'$	$ST = 106.68'$
$V = 73 \text{ MPH}$	
$SE = 04$	

-RP4B- CURVE DATA	
PI Sta 10+42.77	PIs Sta 12+10.19
$\Delta = 0^\circ 51' 45.0" (LT)$	$\Theta s = 1^\circ 01' 39.3"$
$D = 1'00' 29.8"$	$\Theta s = 5^\circ 04' 57.9"$
$L = 85.54'$	$Ls = 204.00'$
$T = 42.77'$	$LT = 124.65'$
$R = 5,682.58'$	$ST = 79.53'$
$V = 75 \text{ MPH}$	
$SE = 04$	

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PROJECT REFERENCE NO. 1-5338/1-5311	SHEET NO. 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	





-RP4B- CURVE DATA

PI Sta 15+82.23 Δ = 28° 33' 31" (LT) D = 458.56' L = 573.27' T = 292.69' R = 1200.00' V = 55 MPH SE = 08	PI Sta 19+30.80 Δ = 5° 04' 54.8" D = 200.00' L = 136.06' T = 68.05' ST = 68.05'	PI Sta 25+05.79 Δ = 17° 27' 33.0" D = 240.00' L = 160.34' T = 80.31' ST = 80.31'	PI Sta 26+73.54 Δ = 16° 42' 08.8" (RT) D = 932.57' L = 174.51' T = 88.08' R = 600.00' V = 45 MPH SE = 08
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-RP4A- CURVE DATA

PI Sta 15+21.54 Δ = 30° 05' 02.4" (RT) D = 504.44' L = 294.64' R = 995.00' V = 55 MPH SE = 08	PI Sta 18+33.07 Δ = 5° 59' 58.4" D = 200.00' L = 133.39' ST = 66.74'	PI Sta 20+99.73 Δ = 5° 12' 31.3" D = 200.00' L = 133.39' ST = 66.72'	PI Sta 23+84.49 Δ = 22° 26' 05.4" (LT) D = 571.23' L = 430.72' T = 218.45' R = 1000.00' V = 45 MPH SE = 08
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-RP4C- CURVE DATA

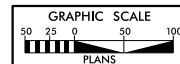
PI Sta 11+85.06 Δ = 4° 00' 24.7" D = 200.00' L = 133.39' ST = 66.70'	PI Sta 14+27.86 Δ = 13° 58' 50.7" (RT) D = 400.24' L = 148.79' T = 175.27' R = 1430.00' V = 54 MPH SE = 08	PI Sta 16+88.08 Δ = 4° 00' 24.7" D = 200.00' L = 133.39' ST = 66.70'	PI Sta 20+79.00 Δ = 4° 46' 28.7" D = 200.00' L = 133.39' ST = 66.71'	PI Sta 23+54.23 Δ = 17° 31' 23.0" (LT) D = 400.24' L = 148.79' T = 175.27' R = 1430.00' V = 54 MPH SE = 06
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-U- CURVE DATA

PI Sta 150+31.93 Δ = 27° 47' 48.7" (LT) D = 0.30' 00.0" L = 435.00' T = 219.425' R = 1450.00' V = 12 MPH SE = 02

-RP4D- CURVE DATA

PI Sta 16+58.69 Δ = 15° 57' 55.7" (LT) D = 549.22' L = 434.54' T = 218.69' R = 1350.00' V = 50 MPH SE = 06	PI Sta 19+54.59 Δ = 4° 24' 26.5" D = 240.00' L = 160.05' ST = 80.05'	PI Sta 22+74.67 Δ = 24° 04' 55.7" (RT) D = 571.23' L = 430.72' T = 218.45' R = 955.00' V = 40 MPH SE = 06	PI Sta 25+60.38 Δ = 24° 04' 55.7" (RT) D = 571.23' L = 430.72' T = 218.45' R = 955.00' V = 40 MPH SE = 06
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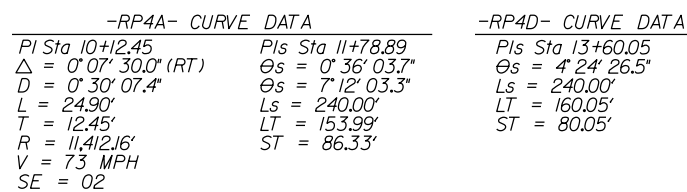
FOR -RP4D- PROFILE, SEE SHEET NO. 93

LOCATION: _____

TIP NO.: _____ COUNTY: _____

DRAWN BY: _____

CHECKED BY: _____ DATE: _____



8/17/99

REVISIONS

26-NOV-2013 16:21
15338-Rdy-psh-14.dgn
\$\$\$\$\$USERNAME\$\$\$\$\$

I5338_Rdy_psh_14.

-LI- CURVE DATA
Pls Sta 172+52.95
Os = 0° 36' 00.0"
Ls = 240.00'
LT = 160.00'
ST = 80.00'

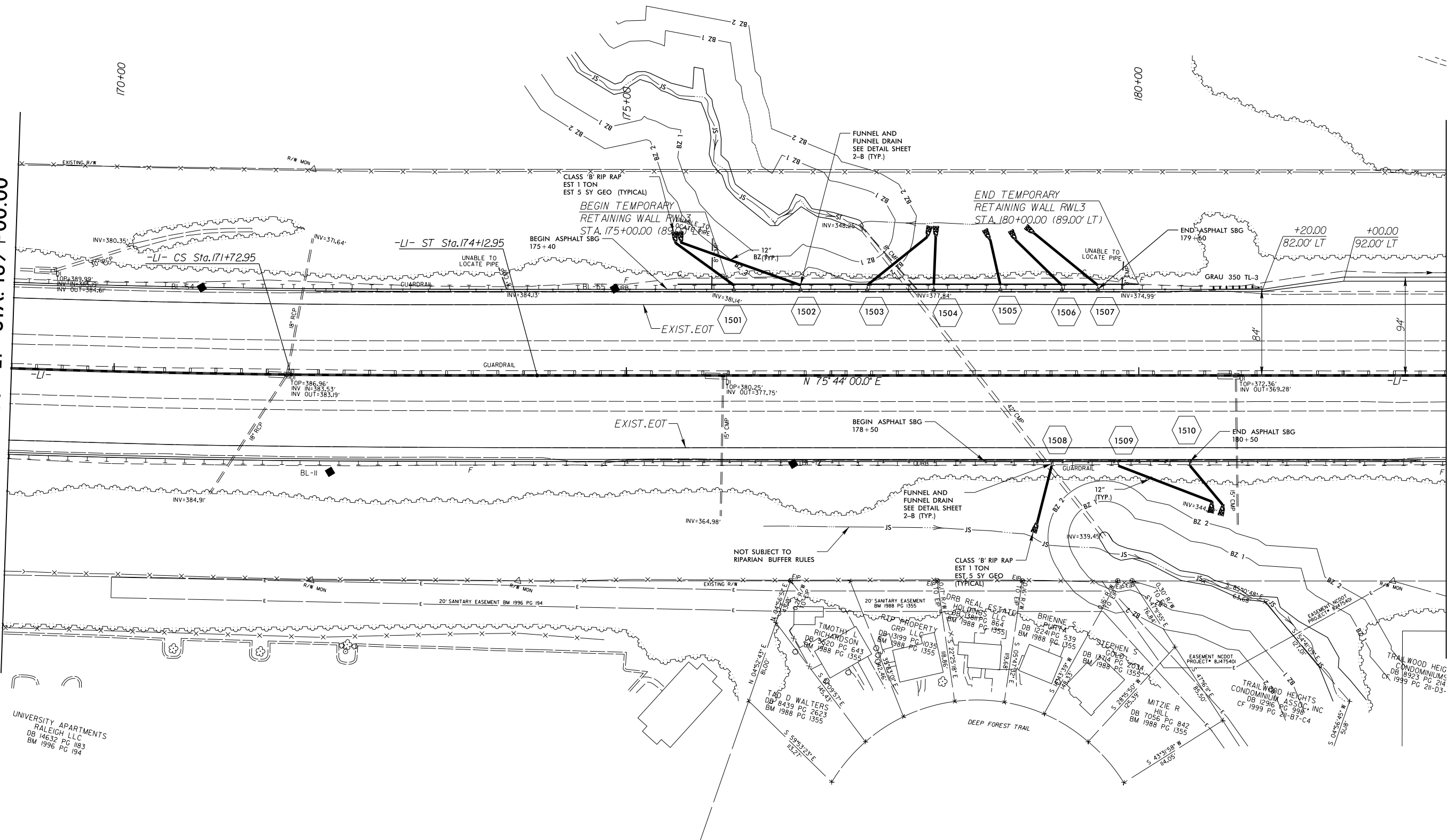
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PROJECT REFERENCE NO.	SHEET NO.
1-5338/1-5311	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

NAD 83/NSRS 2007

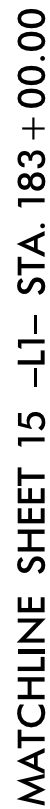
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MATCHLINE SHEET 16 -LI- STA. 183 + 00.00



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NAD 83/NSRS 2007

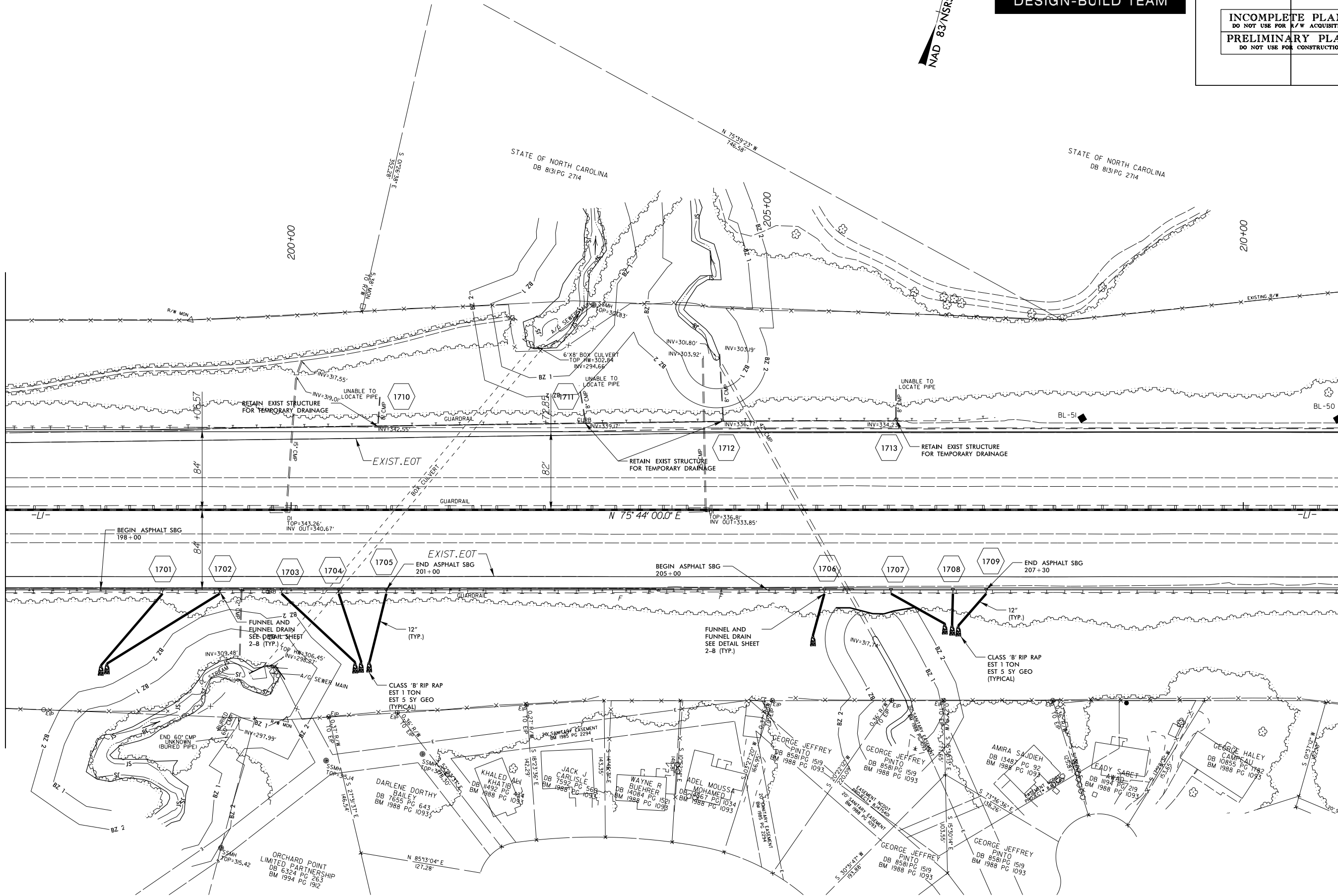


MATCHLINE SHEET 17 -L1- STA. 197 + 00.00

REVISIONS

26-NOV-2013 16:21
15338 Rd. psf 16.dgn
\$\$\$US\$NAME\$\$\$
8/17/99

MATCHLINE SHEET 16 -L1- STA. 197 + 00.00



MATCHLINE SHEET 18 -L1- STA. 211 + 00.00

NAD 83/NSRS 2007

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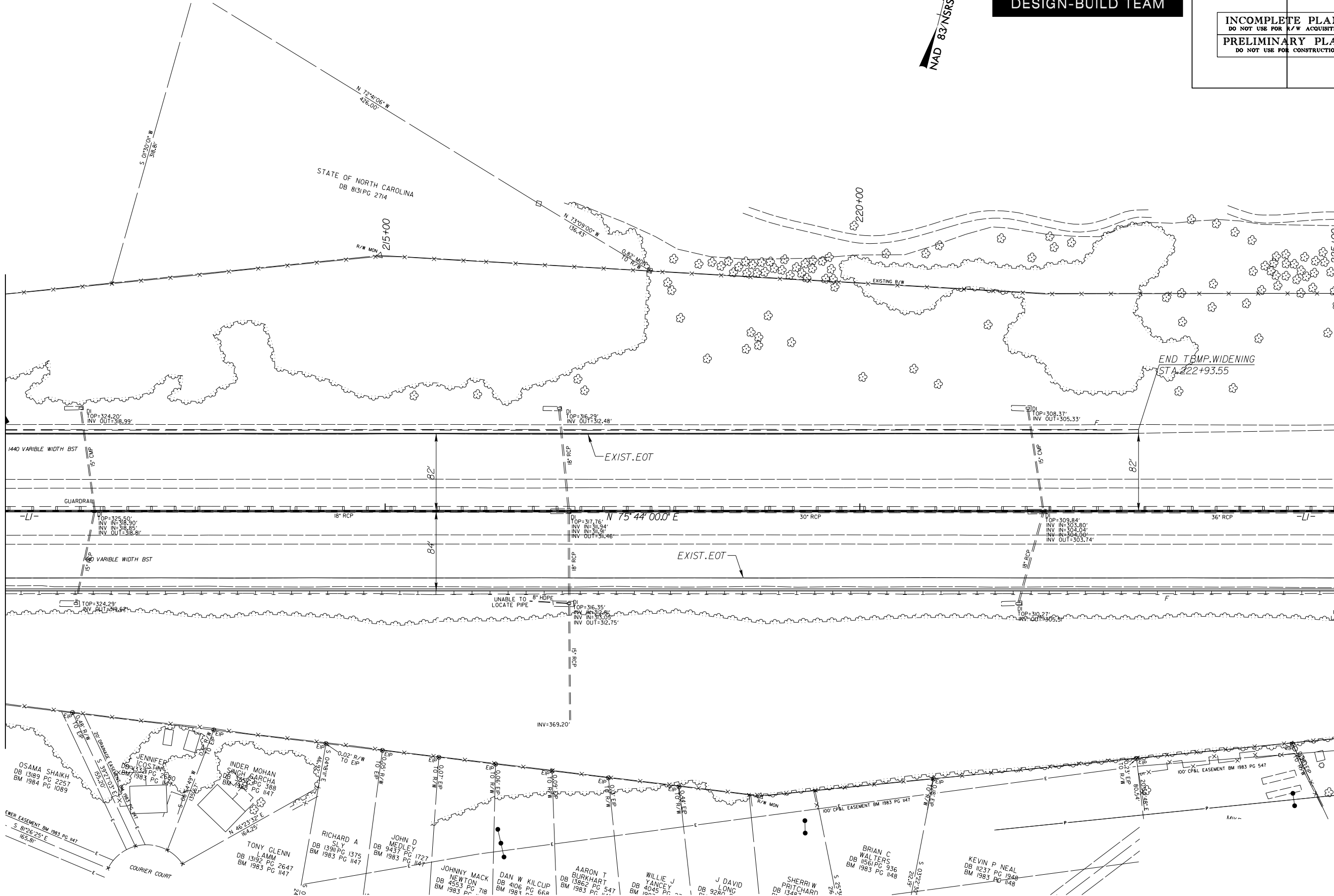
PROJECT REFERENCE NO. 1-5338/1-5311		SHEET NO. 17
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION		
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		

8/17/99

REVISIONS

26-NOV-2013 16:21
15338_Rd.dgn
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MATCHLINE SHEET 17 -L1- STA. 211+00.00



MATCHLINE SHEET 19 -L1- STA. 225+00.00

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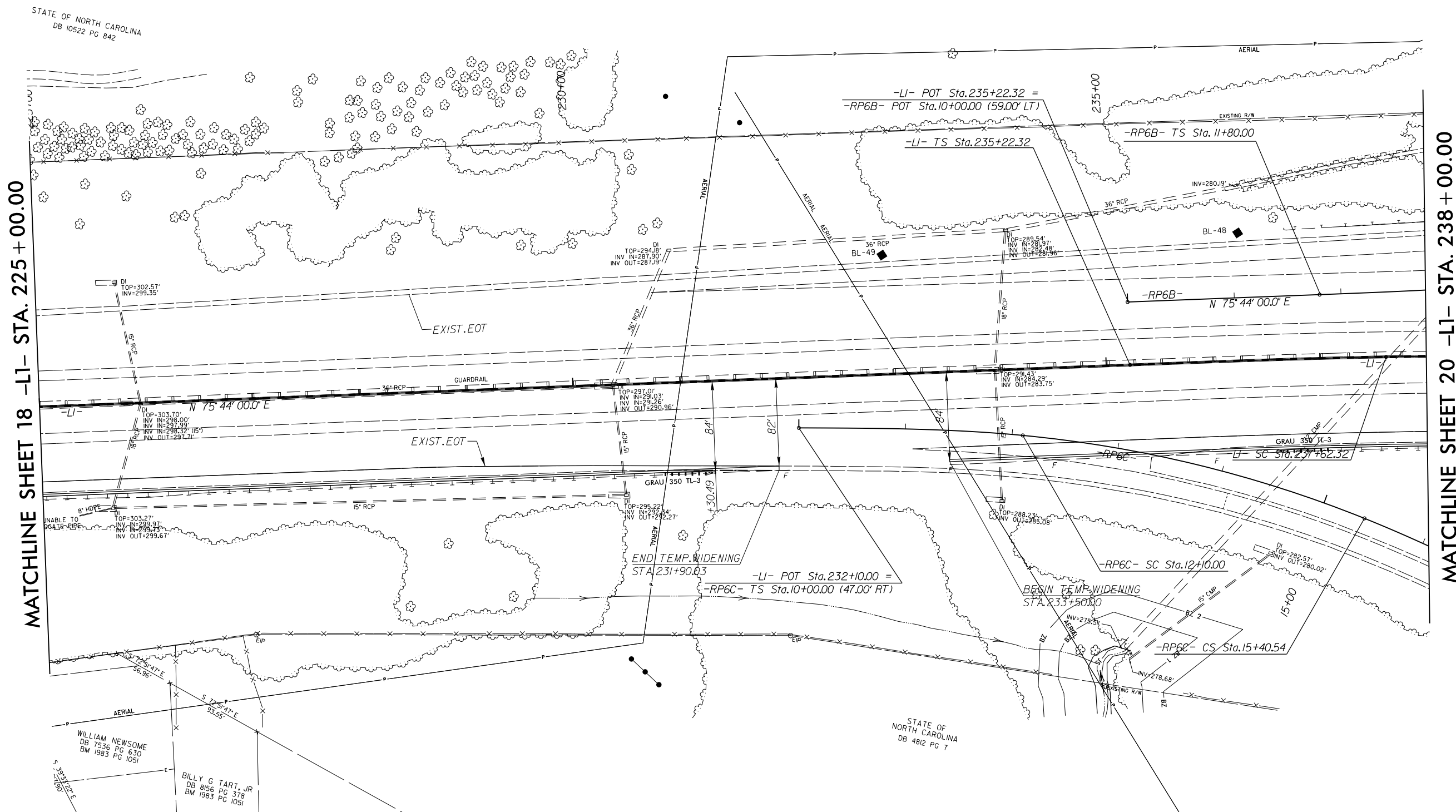
PROJECT REFERENCE NO. 1-5338/1-5311		SHEET NO. 18
R/W SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION		
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION		

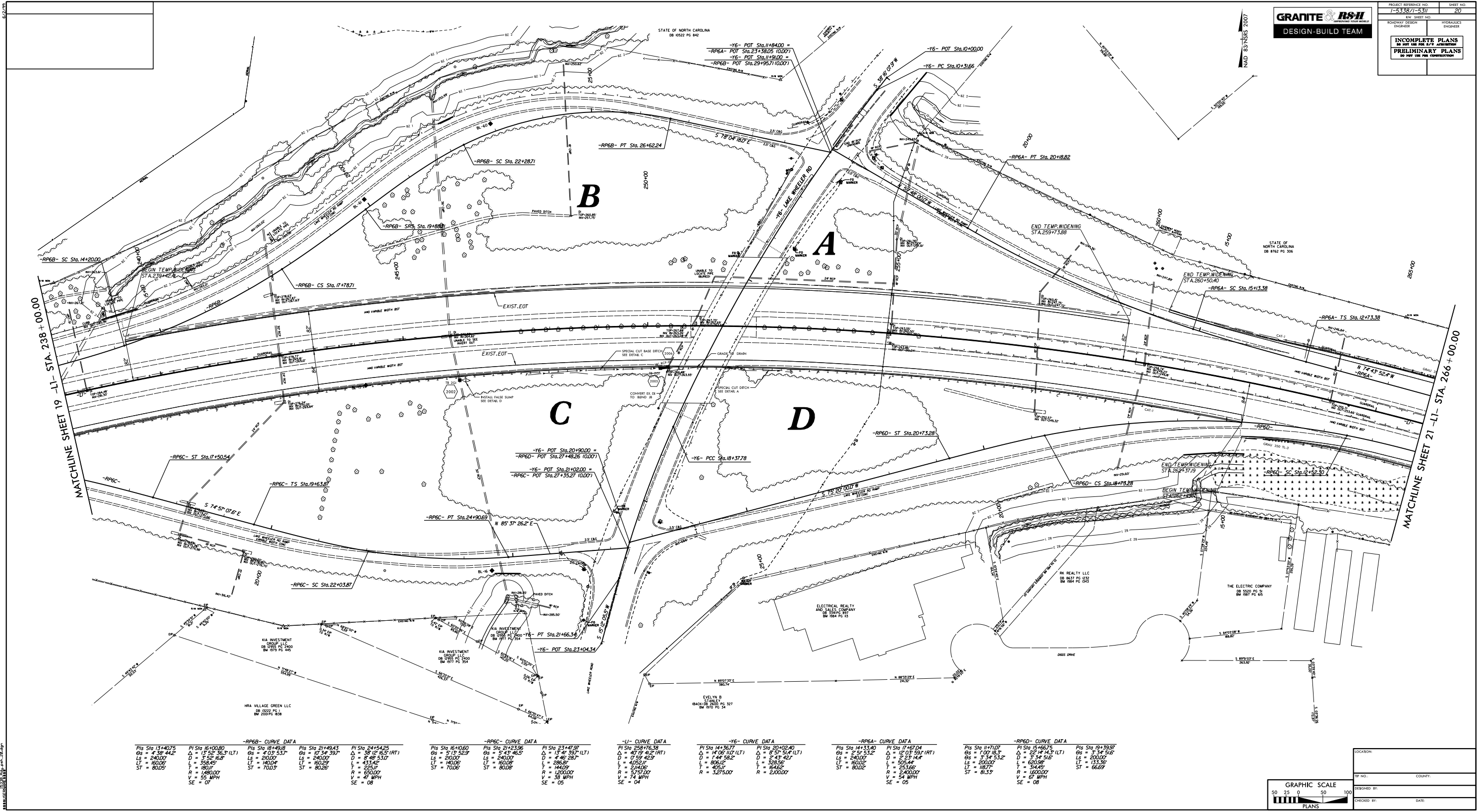
REVISIONS

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Pls Sta 236+82.32
 $\theta_s = 1^\circ 11' 39.4''$
 $L_s = 240.00'$
 $LT = 160.00'$
 $ST = 80.00'$

PROJECT REFERENCE NO.	SHEET NO.
1-5338/1-5311	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	





-RP6B- CURVE DATA

PI Sta 13+407.5	PI Sta 16+002.0	PI Sta 18+498.8	PI Sta 21+494.3	PI Sta 24+542.5
BS = 438' 44.2"	BS = 175' 52.3" (LT)	BS = 410' 51.7"	BS = 107' 34' 30.7"	BS = 381' 6.5" (RT)
LS = 240.00'	D = 3' 52' 16.8"	LS = 240.00'	LS = 240.00'	D = 8' 48' 53.0"
LT = 180.00'	L = 358.45'	LT = 140.00'	LT = 160.29'	L = 433.42'
ST = 80.05'	T = 180.00'	ST = 70.03'	ST = 80.26'	T = 225.17'
	R = 1480.00'		R = 650.00'	R = 650.00'
	V = 55 MPH		V = 47 MPH	V = 47 MPH
	SE = 07		SE = 08	SE = 08

-RP6C- CURVE DATA

PI Sta 16+060.0	PI Sta 21+235.6	PI Sta 24+47.9
BS = 511' 52.0"	BS = 5' 43' 46.2"	BS = 5' 43' 33.0" (LT)
LS = 240.00'	LS = 240.00'	D = 4' 46' 28.7"
LT = 180.00'	LT = 180.00'	L = 286.56'
ST = 70.06'	ST = 80.08'	T = 144.09'
		R = 1200.00'
		V = 38 MPH
		SE = 05

-LI- CURVE DATA

PI Sta 258+76.38
BS = 407' 29' 42.3" (RT)
D = 4' 46' 28.7"
L = 286.56'
T = 144.09'
R = 1200.00'
V = 38 MPH
SE = 04

-Y6- CURVE DATA

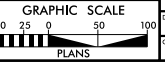
PI Sta 14+33.40	PI Sta 20+02.40
BS = 239' 53.2"	BS = 239' 53.2" (LT)
LS = 240.00'	D = 4' 46' 28.7"
LT = 180.00'	L = 286.56'
ST = 80.02'	T = 144.09'
	R = 1200.00'
	V = 38 MPH
	SE = 05

-RP6A- CURVE DATA

PI Sta 14+33.40	PI Sta 17+67.04
BS = 239' 53.2"	BS = 120' 03' 59.1" (RT)
LS = 240.00'	D = 2' 23' 14.4"
LT = 180.00'	L = 505.44'
ST = 80.02'	T = 253.66'
	R = 1200.00'
	V = 34 MPH
	SE = 05

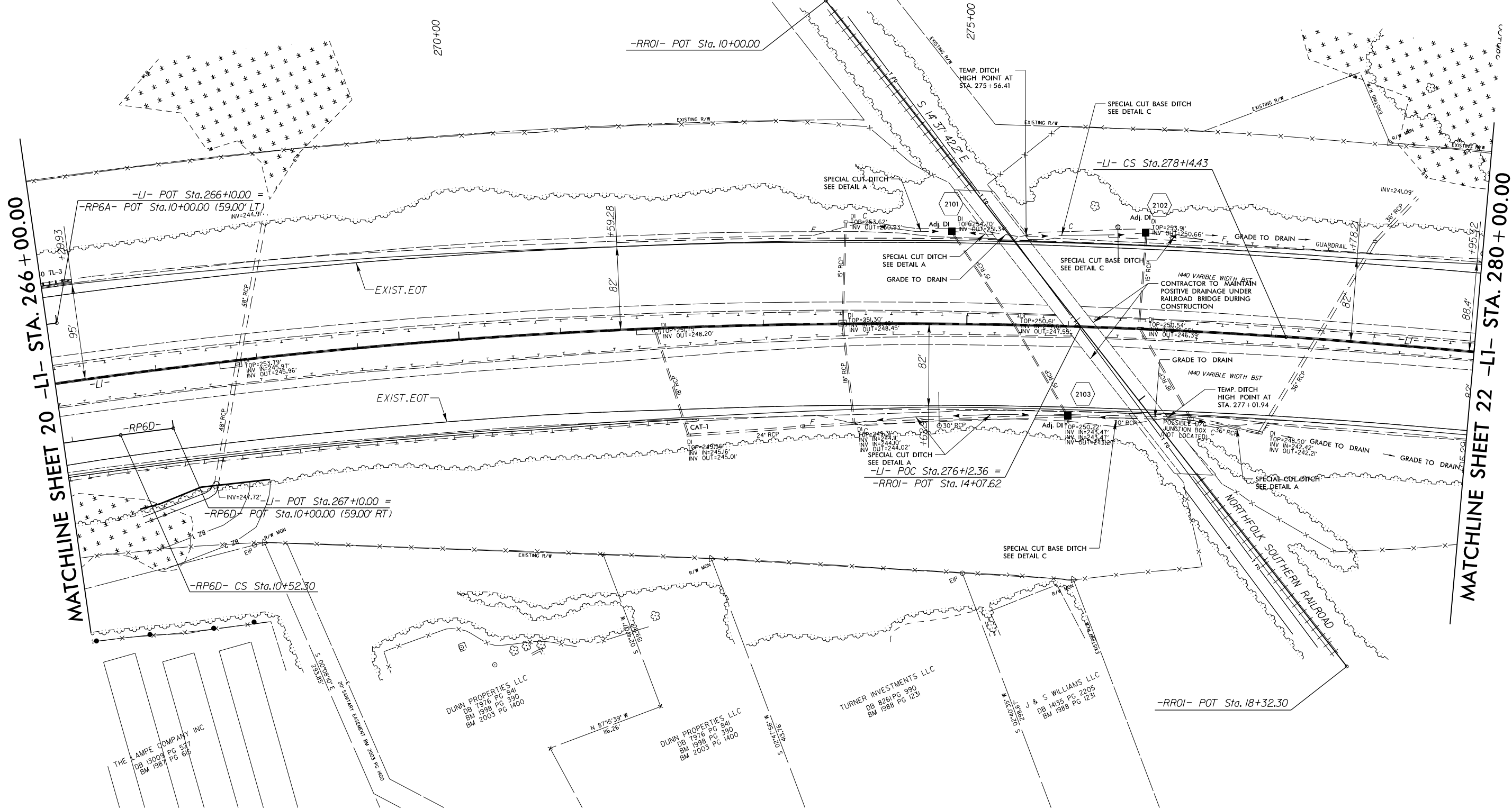
-RP6D- CURVE DATA

PI Sta 14+71.07	PI Sta 15+62.75	PI Sta 19+39.97
BS = 100' 18.3"	BS = 22' 14' 14.3" (LT)	BS = 3' 34' 51.6"
D = 3' 34' 53.2"	D = 3' 34' 51.6"	LS = 200.00'
LS = 200.00'	L = 620.98'	LT = 133.30'
ST = 81.33'	T = 34.45'	ST = 66.69'
	R = 1600.00'	
	V = 67 MPH	
	SE = 08	



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

PROJECT REFERENCE NO.	SHEET NO.
1-5338/1-5311	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 22 -LI- STA. 280+00.00

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DESIGN-BUILD TEAM

AD 83/NSRS 2007

-RP7B- CURVE DATA

Pls Sta 11+20.03
 $\theta_s = 4^\circ 09' 06.7''$
 $L_s = 180.00'$
 $LT = 120.03'$
 $ST = 60.03'$

PI Sta 13+62.24
 $\Delta = 16^\circ 41' 43.4''$ (LT)
 $D = 4^\circ 36' 47.5''$
 $L = 361.91'$
 $T = 182.24'$
 $R = 1,242.00'$
 $V = 51 \text{ MPH}$
 $SE = 07$

Pls Sta 16+01.94
 $\theta_s = 4^{\circ} 09' 06.7''$
 $L_s = 180.00'$
 $LT = 120.03'$
 $ST = 60.03'$

-RP7C- CURVE DATA

PI Sta 11+56.88
 $\Delta = 2^{\circ} 06' 53.0''$ (RT)
 $D = 0^{\circ} 40' 26.6''$
 $L = 313.73'$
 $T = 156.88'$
 $R = 8,500.00'$
 $V = 60$ MPH
 $SE = 02$

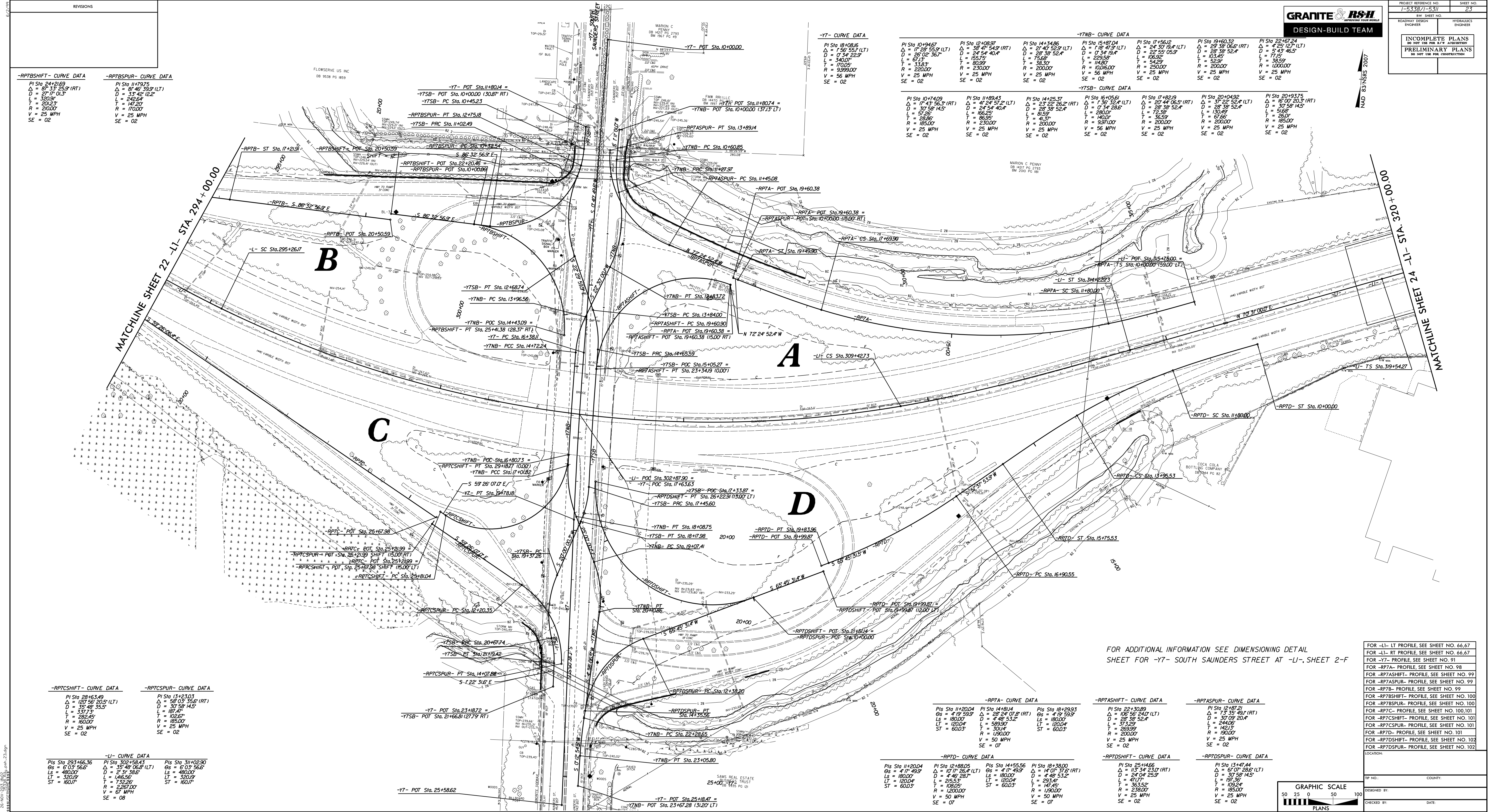
MATCHLINE SHEET 21 -L1- STA. 280+00.00

215
GUAT
MATCHLINE SHEET 23 -L1- STA. 294 + 00.00

REVISIONS

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NC EQUIPMENT COMPANY
DB 1450 PG 135



REVISIONS	

-RPTBSHIFT- CURVE DATA	-RPTBSPUR- CURVE DATA
PI Sta 24+21.69 Δ = 87° 53' 25.9" (RT) D = 27' 17" 0.3" L = 320.9' T = 200.23' R = 200.00' V = 25 MPH SE = 02	PI Sta 11+79.75 Δ = 87° 46' 35.9" (LT) D = 33' 42' 12.2" L = 242.64' T = 145.20' R = 170.00' V = 25 MPH SE = 02

-RPTCSHIFT- CURVE DATA	-RPTCSPUR- CURVE DATA
PI Sta 28+63.49 Δ = 120° 56' 20.5" (LT) D = 33' 46' 55.5" L = 337.73' T = 282.45' R = 160.00' V = 25 MPH SE = 02	PI Sta 13+23.03 Δ = 58° 03' 35.6" (RT) D = 30' 58' 14.5" L = 187.47' T = 102.87' R = 185.00' V = 25 MPH SE = 02

-LI- CURVE DATA	-RPTD- CURVE DATA
PI Sta 29+166.36 Δ = 6° 03' 56.6" D = 480.00' L = 320.9' T = 160.7' V = 67 MPH SE = 08	PI Sta 30+258.43 Δ = 35° 40' 16.0" (LT) D = 2' 31' 38.2" L = 146.56' T = 132.28' R = 2267.00' V = 67 MPH SE = 08

-YT- CURVE DATA
PI Sta 18+08.6 Δ = 17° 28' 55.9" (LT) D = 0' 34' 22.5" L = 14.07' T = 170.05' R = 9399.00' V = 56 MPH SE = 02

-YTNB- CURVE DATA	-YTSB- CURVE DATA
PI Sta 10+94.67 Δ = 17° 28' 55.9" (LT) D = 0' 34' 22.5" L = 14.07' T = 170.05' R = 9399.00' V = 56 MPH SE = 02	PI Sta 15+87.04 Δ = 21° 40' 52.9" (LT) D = 28' 38' 52.4" L = 225.58' T = 114.89' R = 200.00' V = 56 MPH SE = 02

-YTNB- CURVE DATA	-YTSB- CURVE DATA
PI Sta 10+94.67 Δ = 17° 28' 55.9" (LT) D = 0' 34' 22.5" L = 14.07' T = 170.05' R = 9399.00' V = 56 MPH SE = 02	PI Sta 16+05.51 Δ = 17° 38' 32.4" (LT) D = 0' 34' 28.6" L = 14.07' T = 170.05' R = 9399.00' V = 56 MPH SE = 02

-YTNB- CURVE DATA	-YTSB- CURVE DATA
PI Sta 10+94.67 Δ = 17° 28' 55.9" (LT) D = 0' 34' 22.5" L = 14.07' T = 170.05' R = 9399.00' V = 56 MPH SE = 02	PI Sta 17+48.91 Δ = 20° 44' 08.5" (RT) D = 28' 38' 52.4" L = 225.58' T = 114.89' R = 200.00' V = 56 MPH SE = 02

-YTNB- CURVE DATA	-YTSB- CURVE DATA
PI Sta 10+94.67 Δ = 17° 28' 55.9" (LT) D = 0' 34' 22.5" L = 14.07' T = 170.05' R = 9399.00' V = 56 MPH SE = 02	PI Sta 20+04.92 Δ = 37° 22' 52.4" (LT) D = 28' 38' 52.4" L = 225.58' T = 114.89' R = 200.00' V = 56 MPH SE = 02

-YTNB- CURVE DATA	-YTSB- CURVE DATA
PI Sta 10+94.67 Δ = 17° 28' 55.9" (LT) D = 0' 34' 22.5" L = 14.07' T = 170.05' R = 9399.00' V = 56 MPH SE = 02	PI Sta 20+93.75 Δ = 16° 00' 20.3" (RT) D = 30' 58' 14.5" L = 516.87' T = 260.07' R = 185.00' V = 25 MPH SE = 02

-YTNB- CURVE DATA	-YTSB- CURVE DATA
PI Sta 10+94.67 Δ = 17° 28' 55.9" (LT) D = 0' 34' 22.5" L = 14.07' T = 170.05' R = 9399.00' V = 56 MPH SE = 02	PI Sta 16+05.51 Δ = 17° 38' 32.4" (LT) D = 0' 34' 28.6" L = 14.07' T = 170.05' R = 9399.00' V = 56 MPH SE = 02

-YTNB- CURVE DATA	-YTSB- CURVE DATA
PI Sta 10+94.67 Δ = 17° 28' 55.9" (LT) D = 0' 34' 22.5" L = 14.07' T = 170.05' R = 9399.00' V = 56 MPH SE = 02	PI Sta 17+48.91 Δ = 20° 44' 08.5" (RT) D = 28' 38' 52.4" L = 225.58' T = 114.89' R = 200.00' V = 56 MPH SE = 02

-YTNB- CURVE DATA	-YTSB- CURVE DATA
PI Sta 10+94.67 Δ = 17° 28' 55.9" (LT) D = 0' 34' 22.5" L = 14.07' T = 170.05' R = 9399.00' V = 56 MPH SE = 02	PI Sta 20+04.92 Δ = 37° 22' 52.4" (LT) D = 28' 38' 52.4" L = 225.58' T = 114.89' R = 200.00' V = 56 MPH SE = 02

-YTNB- CURVE DATA	-YTSB- CURVE DATA
PI Sta 10+94.67 Δ = 17° 28' 55.9" (LT) D = 0' 34' 22.5" L = 14.07' T = 170.05' R = 9399.00' V = 56 MPH SE = 02	PI Sta 20+93.75 Δ = 16° 00' 20.3" (RT) D = 30' 58' 14.5" L = 516.87' T = 260.07' R = 185.00' V = 25 MPH SE = 02

-YTNB- CURVE DATA	-YTSB- CURVE DATA
PI Sta 10+94.67 Δ = 17° 28' 55.9" (LT) D = 0' 34' 22.5" L = 14.07' T = 170.05' R = 9399.00' V = 56 MPH SE = 02	PI Sta 16+05.51 Δ = 17° 38' 32.4" (LT) D = 0' 34' 28.6" L = 14.07' T = 170.05' R = 9399.00' V = 56 MPH SE = 02

-YTNB- CURVE DATA	-YTSB- CURVE DATA
PI Sta 10+94.67 Δ = 17° 28' 55.9" (LT) D = 0' 34' 22.5" L = 14.07' T = 170.05' R = 9399.00' V = 56 MPH SE = 02	PI Sta 17+48.91 Δ = 20° 44' 08.5" (RT) D = 28' 38' 52.4" L = 225.58' T = 114.89' R = 200.00' V = 56 MPH SE = 02

-YTNB- CURVE DATA	-YTSB- CURVE DATA
PI Sta 10+94.67 Δ = 17° 28' 55.9" (LT) D = 0' 34' 22.5" L = 14.07' T = 170.05' R = 9399.00' V = 56 MPH SE = 02	PI Sta 20+04.92 Δ = 37° 22' 52.4" (LT) D = 28' 38' 52.4" L = 225.58' T = 114.89' R = 200.00' V = 56 MPH SE = 02

-YTNB- CURVE DATA	-YTSB- CURVE DATA
PI Sta 10+94.67 Δ = 17° 28' 55.9" (LT) D = 0' 34' 22.5" L = 14.07' T = 170.05' R = 9399.00' V = 56 MPH SE = 02	PI Sta 20+93.75 Δ = 16° 00' 20.3" (RT) D = 30' 58' 14.5" L = 516.87' T = 260.07' R = 185.00' V = 25 MPH SE = 02

-YTNB- CURVE DATA	-YTSB- CURVE DATA
PI Sta 10+94.67 Δ = 17° 28' 55.9" (LT) D = 0' 34' 22.5" L = 14.07' T = 170.05' R = 9399.00' V = 56 MPH SE = 02	PI Sta 16+05.51 Δ = 17° 38' 32.4" (LT) D = 0' 34' 28.6" L = 14.07' T = 170.05' R = 9399.00' V = 56 MPH SE = 02

-YTNB- CURVE DATA	-YTSB- CURVE DATA
PI Sta 10+94.67 Δ = 17° 28' 55.9" (LT) D = 0' 34' 22.5" L = 14.07' T = 170.05' R = 9399.00' V = 56 MPH SE = 02	PI Sta 17+48.91 Δ = 20° 44' 08.5" (RT) D = 28' 38' 52.4" L = 225.58' T = 114.89' R = 200.00' V = 56 MPH SE = 02

-YTNB- CURVE DATA	-YTSB- CURVE DATA
PI Sta 10+94.67 Δ = 17° 28' 55.9" (LT) D = 0' 34' 22.5" L = 14.07' T = 170.05' R = 9399.00' V = 56 MPH SE = 02	PI Sta 20+04.92 Δ = 37° 22' 52.4" (LT) D = 28' 38' 52.4" L = 225.58' T = 114.89' R = 200.00' V = 56 MPH SE = 02

-YTNB- CURVE DATA	-YTSB- CURVE DATA
PI Sta 10+94.67 Δ = 17° 28' 55.9" (LT) D = 0' 34' 22.5" L = 14.07' T = 170.05' R = 9399.00' V = 56 MPH SE = 02	PI Sta 20+93.75 Δ = 16° 00' 20.3" (RT) D = 30' 58' 14.5" L = 516.87' T = 260.07' R = 185.00' V = 25 MPH SE = 02

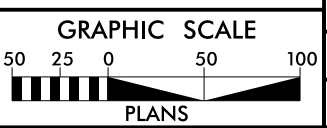
GRANITE & RSH
DESIGN-BUILD TEAM

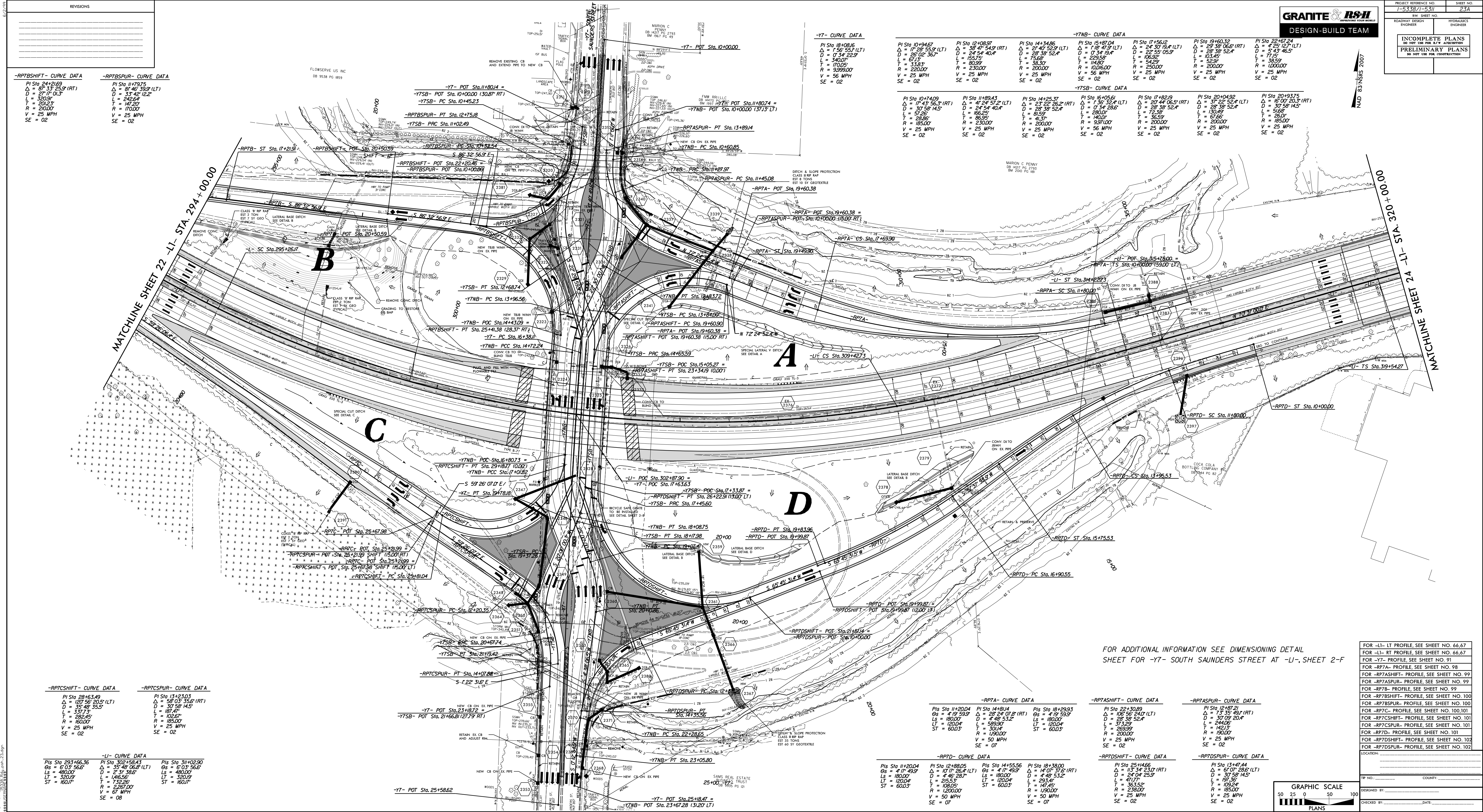
PROJECT REFERENCE NO. 7-1337/1-530	SHEET NO. 23
REV. SHEET NO. 	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR P.A. SUBMITTAL PRELIMINARY PLANS DO NOT USE FOR P.A. CONSTRUCTION	

NAD 83 N 85° 58' 20.07"

FOR ADDITIONAL INFORMATION SEE DIMENSIONING DETAIL SHEET FOR -YT- SOUTH SAUNDERS STREET AT -LI-, SHEET 2-F

FOR -LI- LT PROFILE, SEE SHEET NO. 66.67
FOR -LI- RT PROFILE, SEE SHEET NO. 66.67
FOR -YT- PROFILE, SEE SHEET NO. 91
FOR -RPTA- PROFILE, SEE SHEET NO. 98
FOR -RPTASHIFT- PROFILE, SEE SHEET NO. 99
FOR -RPTBSPUR- PROFILE, SEE SHEET NO. 99
FOR -RPTB- PROFILE, SEE SHEET NO. 99
FOR -RPTBSHIFT- PROFILE, SEE SHEET NO. 100
FOR -RPTBSPUR- PROFILE, SEE SHEET NO. 100
FOR -RPTC- PROFILE, SEE SHEET NO. 100.101
FOR -RPTCSHIFT- PROFILE, SEE SHEET NO. 101
FOR -RPTD- PROFILE, SEE SHEET NO. 101
FOR -RPTDSHIFT- PROFILE, SEE SHEET NO. 102
FOR -RPTDSPUR- PROFILE, SEE SHEET NO. 102





REVISIONS	

-RPTBSHIFT- CURVE DATA	
PI Sta 24+26.69	Δ = 87° 33' 25.3" (RT)
D = 2717.013	L = 320.9
T = 200.23	R = 200.00
V = 25 MPH	SE = 02

-RPTBSPUR- CURVE DATA	
PI Sta 11+79.75	Δ = 81° 46' 38.2" (LT)
D = 3342.122	L = 249.64
T = 147.20	R = 170.00
V = 25 MPH	SE = 02

FLOWSERVE US, INC.
DB 9538 PG 059

-YT- CURVE DATA	
PI Sta 18+08.16	Δ = 17° 28' 55.9" (LT)
D = 1734.225	L = 157.75
T = 170.00	R = 230.00
V = 56 MPH	SE = 02

-YTNB- CURVE DATA	
PI Sta 12+08.97	Δ = 38° 47' 54.9" (RT)
D = 2454.404	L = 157.75
T = 170.00	R = 230.00
V = 56 MPH	SE = 02

-YTSB- CURVE DATA	
PI Sta 17+56.12	Δ = 24° 30' 15.4" (LT)
D = 2255.58	L = 106.92
T = 144.89	R = 200.00
V = 25 MPH	SE = 02



PROJECT REFERENCE NO. 7-1338/1-530	SHEET NO. 23A
REV. SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	INCOMPLETE PLANS DO NOT USE FOR CONSTRUCTION
	PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION

-RPTCSHIFT- CURVE DATA	
PI Sta 28+63.49	Δ = 120° 56' 20.5" (LT)
D = 7546.355	L = 337.73
T = 282.45	R = 160.00
V = 25 MPH	SE = 02

-RPTCSPUR- CURVE DATA	
PI Sta 13+21.03	Δ = 58° 03' 35.6" (RT)
D = 3058.145	L = 187.47
T = 102.87	R = 185.00
V = 25 MPH	SE = 02

-LI- CURVE DATA	
PI Sta 293+66.36	Δ = 107° 56' 20.5" (LT)
D = 6103.566	L = 373.38
T = 320.9	R = 160.00
V = 25 MPH	SE = 08

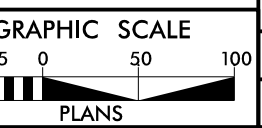
-YT- CURVE DATA	
PI Sta 21+66.81	Δ = 127° 19' 17.9" (RT)
D = 1271.9	L = 102.87
T = 102.87	R = 185.00
V = 25 MPH	SE = 02

-YTNB- CURVE DATA	
PI Sta 18+08.16	Δ = 17° 28' 55.9" (LT)
D = 1734.225	L = 157.75
T = 170.00	R = 230.00
V = 56 MPH	SE = 02

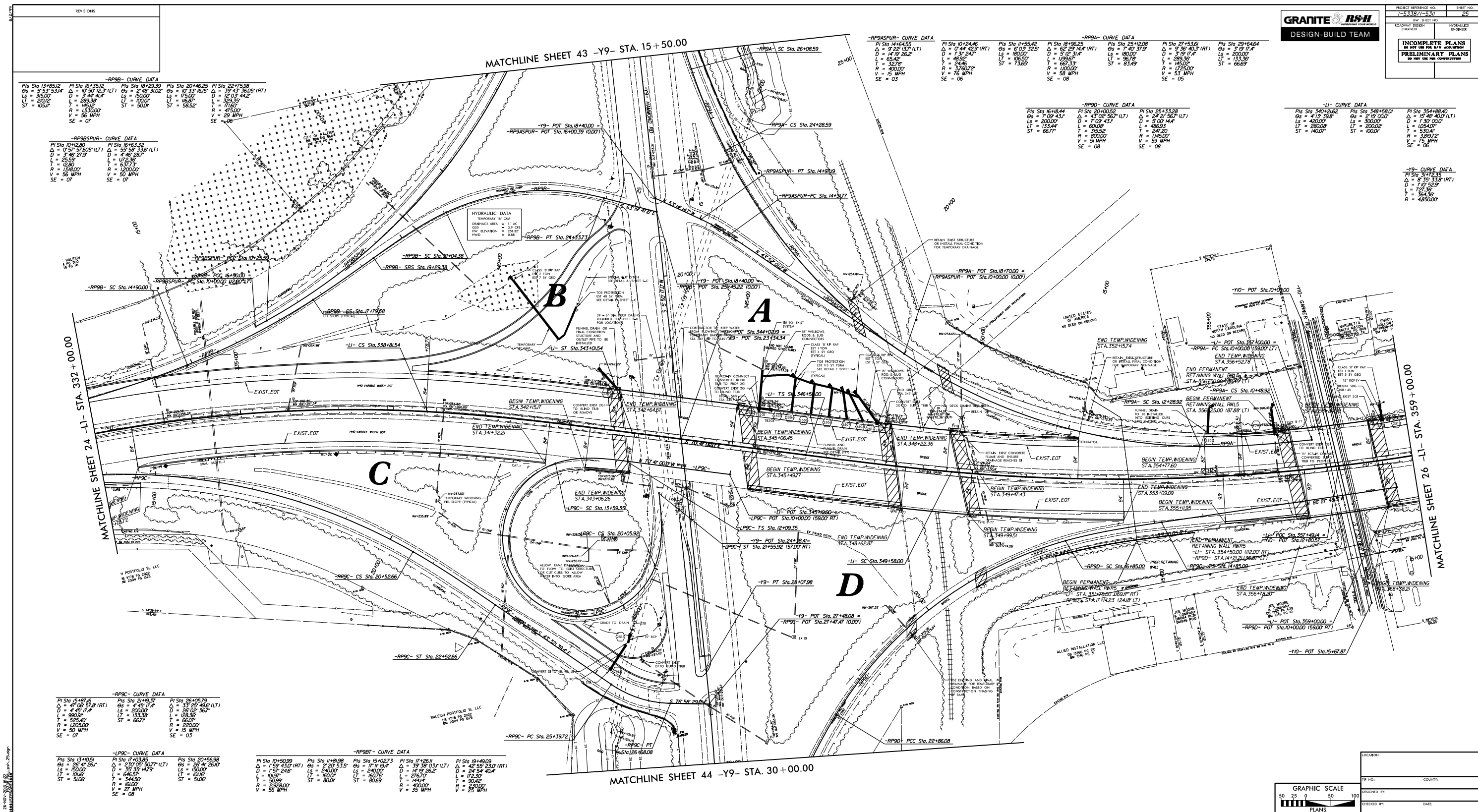
-RPTA- CURVE DATA	
PI Sta 11+20.04	Δ = 4° 18' 59.7" (RT)
D = 448.532	L = 59.90
T = 30.14	R = 120.00
V = 50 MPH	SE = 07

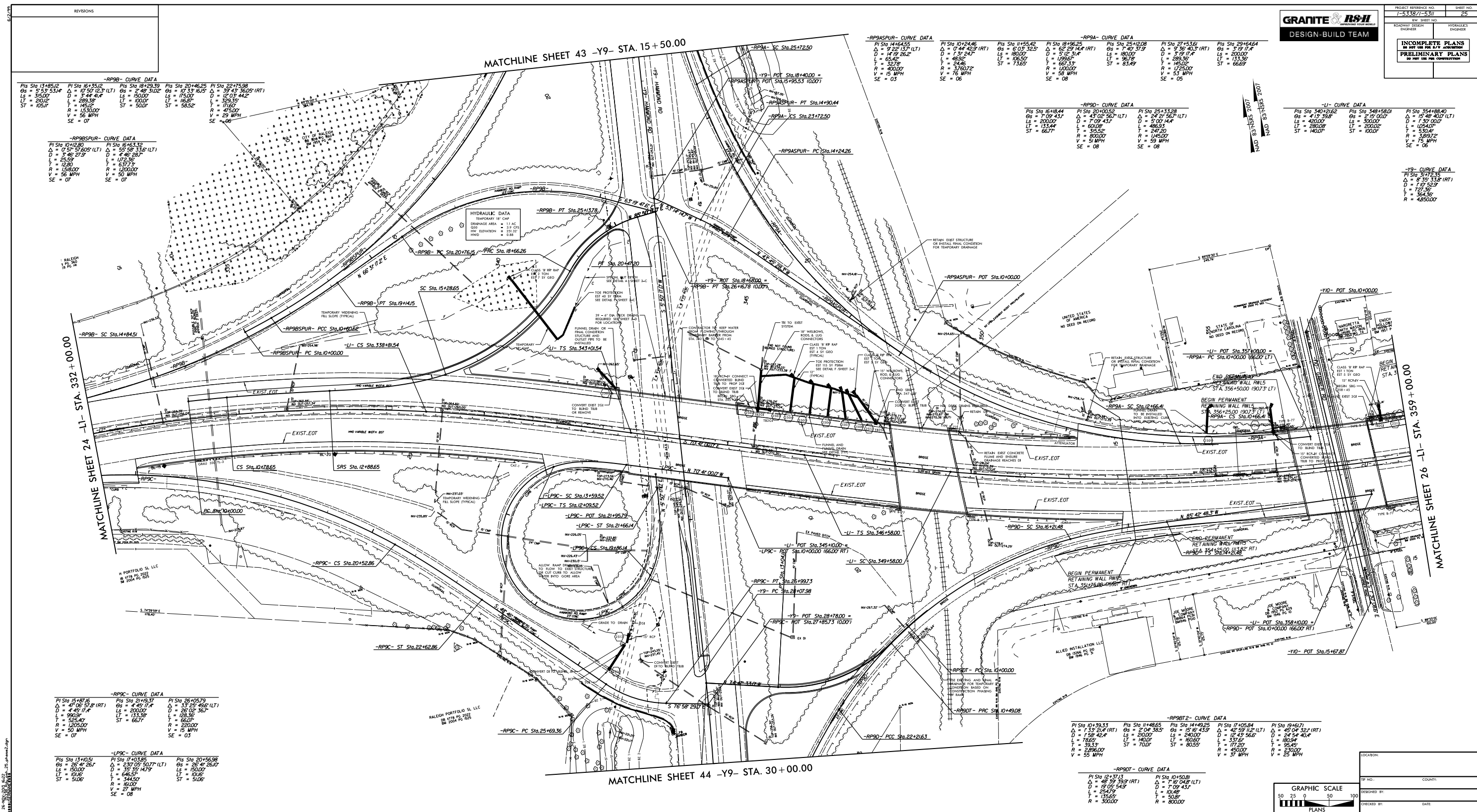
-RPTASHIFT- CURVE DATA	
PI Sta 22+30.89	Δ = 13° 54' 23.0" (RT)
D = 2838.524	L = 244.89
T = 263.99	R = 200.00
V = 25 MPH	SE = 02

-RPTASPUR- CURVE DATA	
PI Sta 12+08.97	Δ = 38° 47' 54.9" (RT)
D = 2454.404	L = 157.75
T = 170.00	R = 230.00
V = 56 MPH	SE = 02



FOR -LI- LT PROFILE, SEE SHEET NO. 66.67	FOR -LI- RT PROFILE, SEE SHEET NO. 66.67
FOR -YT- PROFILE, SEE SHEET NO. 91	FOR -RPTA- PROFILE, SEE SHEET NO. 98
FOR -RPTASHIFT- PROFILE, SEE SHEET NO. 99	FOR -RPTASPUR- PROFILE, SEE SHEET NO. 99
FOR -RPTB- PROFILE, SEE SHEET NO. 99	FOR -RPTBSHIFT- PROFILE, SEE SHEET NO. 100
FOR -RPTBSPUR- PROFILE, SEE SHEET NO. 100	FOR -RPTC- PROFILE, SEE SHEET NO. 100.101
FOR -RPTCSHIFT- PROFILE, SEE SHEET NO. 101	FOR -RPTCSPUR- PROFILE, SEE SHEET NO. 101
FOR -RPTD- PROFILE, SEE SHEET NO. 101	FOR -RPTDSHIFT- PROFILE, SEE SHEET NO. 102
FOR -RPTDSPUR- PROFILE, SEE SHEET NO. 102	
LOCATION:	
TP NO.:	COUNTY:
DESIGNED BY:	CHECKED BY:
DATE:	DATE:





END TEMP. WIDENING
STA. 366+62.40

END PERMANENT
RETAINING WALL RWL6
STA. 366+55.08 (88.62' LT)

-YII- POT Sta.10+00.00

$$\frac{-LI - POT \text{ Sta. } 367+44.09 =}{-YII - POT \text{ Sta. } 12+77.41} \quad \begin{array}{l} \text{BEGIN TEMP. WIDENING} \\ \text{STA. } 368+07.77 \end{array}$$

BEGIN PERMANENT

MATCHLINE SHEET 25 -L1- STA. 359 + 00.00

MATCHLINE SHEET 27 -L1- STA. 373+00.00

REVISIONS

-YII- POT Sta.14+60.48

S 01°17'24"
150.00'

8/17/99

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\$\$\$\$\$USERNAME\$\$\$\$\$

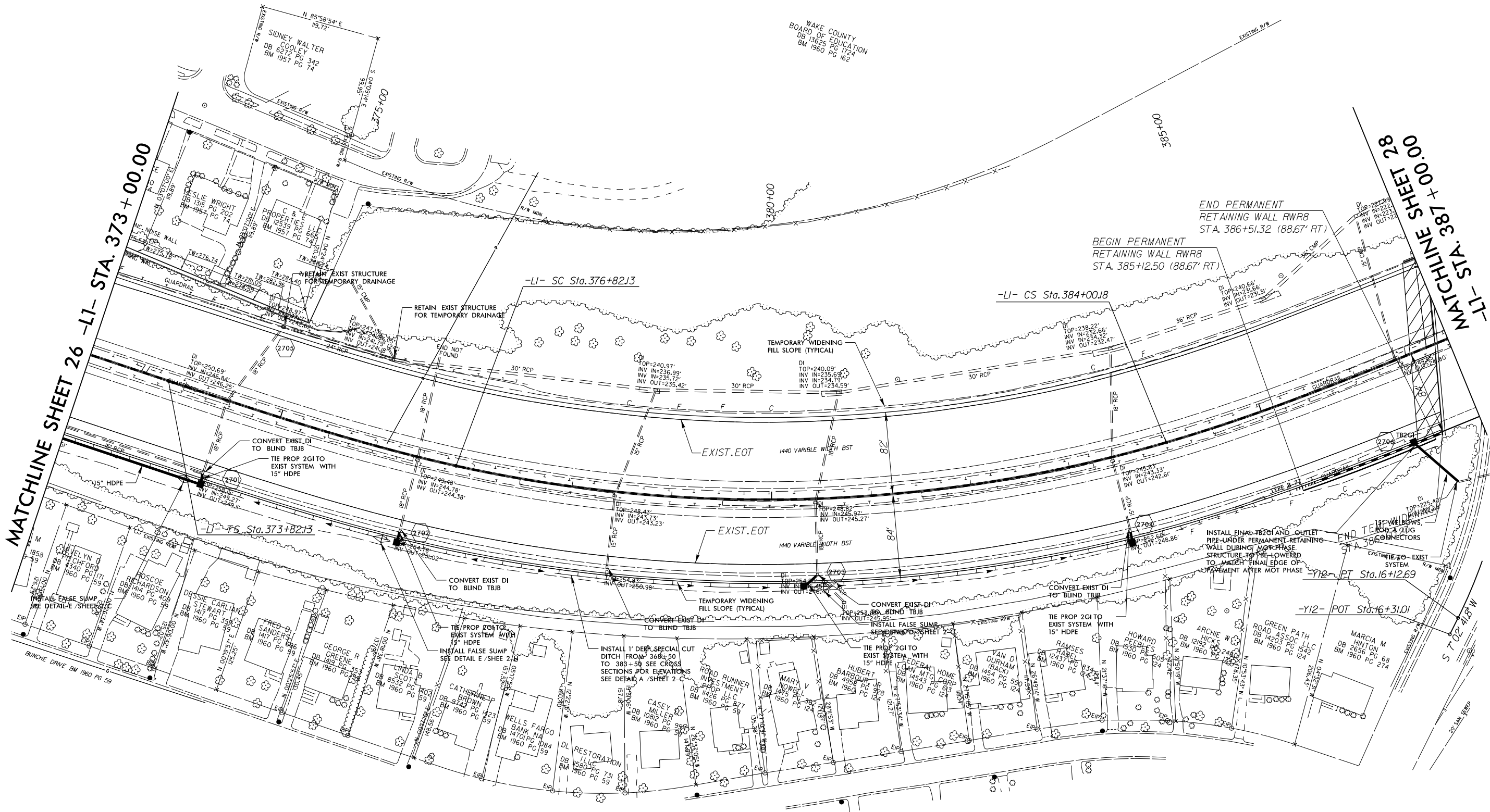
-LI- CURVE DATA
Pls Sta 375+82.24
Os = 6' 00' 00.0"
Ls = 300.00'
LT = 200.12'
ST = 100.10'
PI Sta 380+48.87
Δ = 28° 43' 20.0" (LT)
D = 4' 00' 00.0"
L = 718.06'
R = 366.74'
V = 65 MPH
Pls Sta 385+00.29
Os = 6' 00' 00.0"
Ls = 300.00'
LT = 200.12'
ST = 100.10'

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

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DESIGN-BUILD TEAM

PROJECT REFERENCE NO. 1-5338/1-5311	SHEET NO. 27
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	

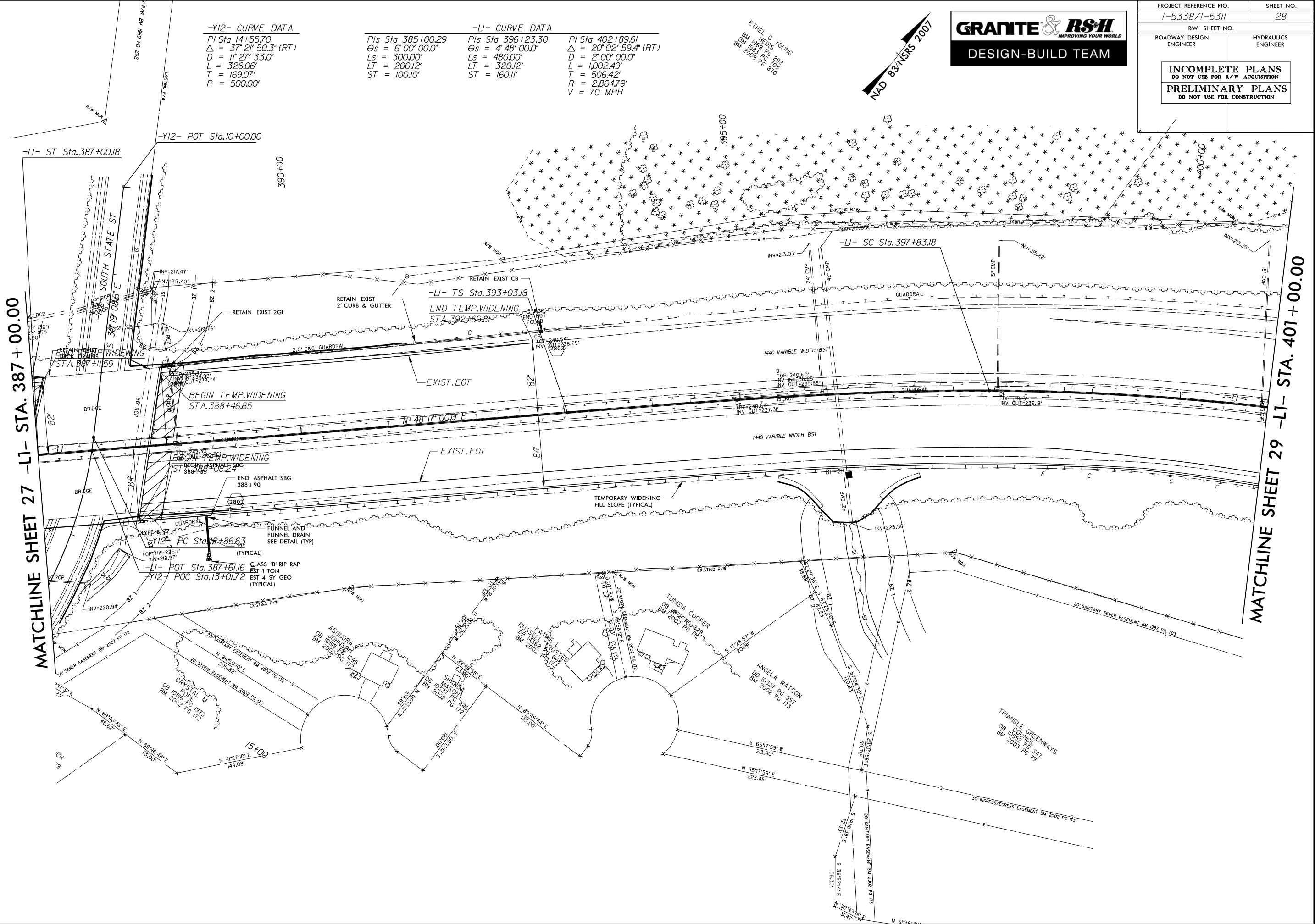
NAD 83/NSRS 2007



8/17/99

REVISIONS

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-Y12- CURVE DATA
PI Sta 14+55.70
 $\Delta = 37^{\circ} 21' 50.3''$ (RT)
D = 11' 27' 33.0"
L = 326.06'
T = 169.07'
R = 500.00'

-LI- CURVE DATA
PIs Sta 385+00.29
 $\Theta_s = 6^{\circ} 00' 00.0''$
Ls = 300.00'
LT = 200.12'
ST = 100.10'

PIs Sta 396+23.30
 $\Theta_s = 4^{\circ} 48' 00.0''$
Ls = 480.00'
LT = 320.12'
ST = 160.11'

PI Sta 402+89.61
 $\Delta = 20^{\circ} 02' 59.4''$ (RT)
D = 2' 00' 00.0"
L = 1,002.49'
T = 506.42'
R = 2,864.79'
V = 70 MPH

ETHEL G. YOUNG
HEIRS
BM 1963 PG 283
BM 1963 PG 303
BM 2009 PG 570

NAD 83 NRS 2007

GRANITE & RSH
IMPROVING YOUR WORLD
DESIGN-BUILD TEAM

PROJECT REFERENCE NO. 1-5338/1-5311	SHEET NO. 28
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR A/W ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

MATCHLINE SHEET 29 -LI- STA. 401+00.00

-RP13B- CURVE DATA					
Pi Sta 13+50.7	Pi Sta 15+25.38	Pi Sta 16+70.61	Pi Sta 19+50.72	Pi Sta 21+56.1	
Os = 7° 13' 19"	Δ = 7° 14' 56.4" (LT)	Os = 5° 03' 19"	Os = 8° 24' 50.6"	Δ = 22° 19' 09.6" (RT)	
Ls = 300.0'	D = 47° 53.2'	Lt = 210.0'	Ls = 200.0'	D = 20° 07' 46.2'	
Lt = 200.0'	L = 150.56'	Lt = 140.06'	Lt = 140.16'	L = 278.53'	
ST = 100.05'	L = 75.38'	ST = 70.05'	ST = 70.05'	L = 140.05'	
R = 1,090.00'	R = 1,090.00'			R = 715.00'	
V = 50 MPH	V = 50 MPH			V = 35 MPH	

-RP/3A - CURVE DATA					
Pi Sta 13+06.75	Pi Sta 15+56.50	Pi Sta 18+22.04	Pi Sta 22+22.94	Pi Sta 23+89.27	Pi Sta 25+68.72
Os = 5° 09' 30.9"	Δ = 17° 26' 05" (RT)	Os = 5° 30' 33.2"	Os = 17° 32' 22.3"	Δ = 17° 56' 05" (LT)	Δ = 86° 17' 30.0" (RT)
Ls = 280.00'	Lt = 34.0'	Ls = 300.00'	Ls = 300.00'	D = 11' 41' 34.5"	D = 78° 23' 39.9"
ST = 93.75'	T = 106.75'	LT = 100.09'	LT = 200.69'	R = 65.18'	R = 65.18'
	Y = 156.50'		ST = 100.90'	T = 77.32'	T = 64.39'
	R = 1560.00'			R = 450.00'	R = 75.00'
	50 MPH			25 MPH	50 MPH

-LI- CURVE DATA		
PI Sta 402+89.61	Pls Sta 408+92.38	PI Sta 424+83.47
Δ = 20° 02' 59.4" (RT)	Δs = 11° 59.7"	Δ = 28° 33' 00.1" (RT)
L = 2' 00' 00.0"	Δs = 2' 24' 00.3"	L = 1' 00' 00.0"
D = 1202.49'	Δs = 240.00'	D = 1,855.00'
R = 506.42'	LT = 133.37'	T = 1,457.79'
R = 2,864.79'	ST = 106.70'	R = 5729.58'
V = 70 MPH		V = 70 MPH

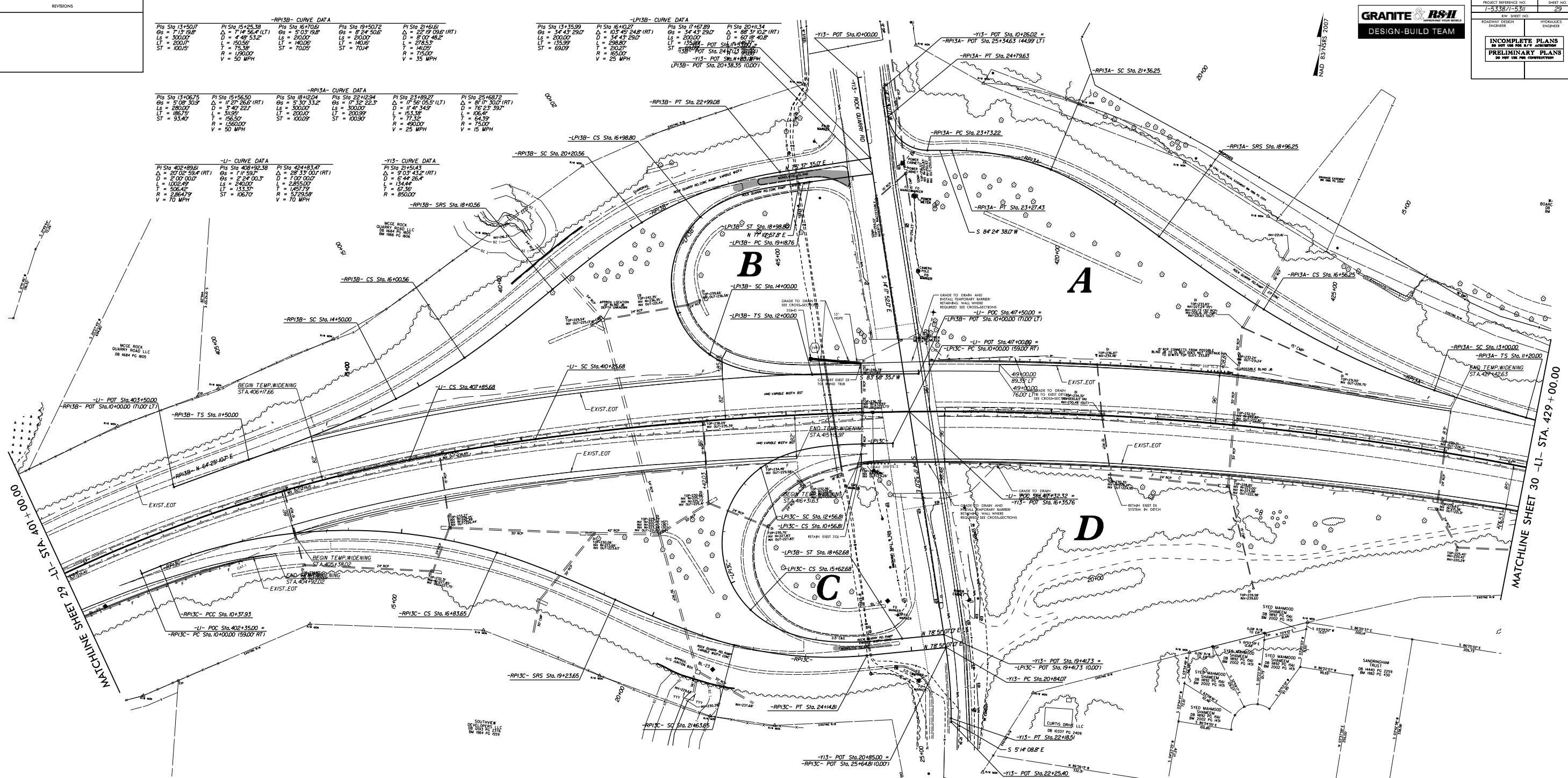
-Y13- CURVE DATA
PI Sta 21+51.43
 $\Delta = 9^{\circ} 03' 43.2''$ (RT)
 $D = 6^{\circ} 44' 26.4''$
 $L = 134.44'$
 $T = 67.36'$
 $R = 850.00'$

-LP13B- CURVE DATA

Pi Sta 13+35.99	Pi Sta 16+02.01	Pi Sta 17+67.89	Pi Sta 20+11.34
6s = 34.3' 29.0"	$\Delta = 107.45^\circ 24.8'$ (RT)	6s = 34.3' 29.0"	$\Delta = 86.37^\circ 10.2'$ (RT)
Ps = 200.00	L = 34.43' 29.0"	Ps = 200.00	L = 200.00' 40.8"
LT = 135.99	T = 298.80'	LT = 135.99	ST = 146.67'
ST = 69.09	T = 210.27'	13B- POT Sta 24.711341	
	R = 165.00'	Y13- POT Sta. 11+85.11341	
	V = 25 MPH		

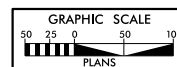
00-02

-RPI.3B - PT Sta. 22+99.08

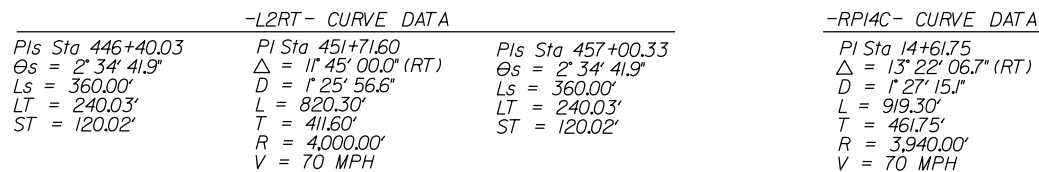


-RP13C- CURVE DATA					
PI Sta 10+83.97	PI Sta 13+73.54	PIs Sta 17+63.77	PIs Sta 20+83.88	PI Sta 22+90.54	
$\Delta = 0^{\circ} 46' 28.71''$	$\Delta = 38^{\circ} 32' 17.61''$	$9s = 7^{\circ} 09' 43.1''$	$9s = 9^{\circ} 36' 57.9''$	$\Delta = 20^{\circ} 07' 35.21''$	(LT)
$D = 2^{\circ} 02' 31.4''$	$D = 59^{\circ} 08' 05.9''$	$LS = 240.001'$	$LS = 240.001'$	$D = 8^{\circ} 00' 48.2''$	
$L = 37.93'$	$L = 645.71'$	$LT = 160.13'$	$LT = 160.24'$	$L = 29.06'$	
$T = 18.97'$	$T = 135.64'$	$ST = 80.12'$	$ST = 80.22'$	$T = 126.69'$	
$R = 2,805.79'$	$R = 960.00'$			$R = 755.00'$	
$V = 60 \text{ MPH}$	$V = 65 \text{ MPH}$			$V = 35 \text{ MPH}$	

-LP13C- CURVE DATA			
Pis Sta 10+28.41	Pis Sta 11+90.77	Pis Sta 14+66.84	Pis Sta 16+70.34
D = 0°34' 26.4" (LT)	gs = 0°57' 27.4"	D = 00°43' 06.7" (LT)	gs = 49°23' 34.5"
D = 10°07' 37.5"	gs = 32°58' 51.5"	D = 35°25' 43.0"	LT = 3000.0"
L = 56.81"	LS = 200.00"	L = 305.87"	LT = 208.38"
ST = 28.41"	ST = 13.98"	ST = 100.19"	ST = 107.66"
S = 567.058'	ST = 710.3'	R = 74.00'	
V = 70.1 MPH		V = 25.1 MPH	



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



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

