STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAT L. MCCRORY
GOVERNOR

ANTHONY J. TATA
SECRETARY

December 10, 2013

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

ATTN: Mr. Eric Alsmeyer
NCDOT Division 5 Project Coordinator

SUBJECT: **Application for Section 404 Nationwide Permits 13, 23, and 33; Section 401 Water Quality Certification; and Neuse River Riparian Buffer Authorization** for the I-40/440 Pavement Reconstruction – Area 3 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 $570.00 from WBS Element No. 46265.3.1

Dear Sir:

The North Carolina Department of Transportation (NCDOT) proposes pavement reconstruction of I-40/440, beginning at the I-40/US 64/US 1 interchange west of SR 1319 (Jones Franklin Road), continuing east along I-40/440 and onto I-440/US 64, and terminating north of the I-440 interchange with US 64/US 264. This construction project is comprised of three smaller projects, each of which will be permitted separately. The three smaller projects include: 1) the initial 3-lane maintenance of traffic (MOT) temporary widening project, 2) the Area 3 project, which begins near the I-40/440 interchange (Station 444+00) and continues northeast to the end of the project, just north of the I-440 interchange with US 64/US 264 (Station 628+60), and 3) the final project consisting of Areas 1, 2A, and 2B, beginning at Station 19+02 near the I-40/US 64/US 1 interchange and continuing east to Station 444+00, just west of the I-40/440 interchange.

A Neuse River Riparian Buffer Authorization and North Carolina State General Permit for Impacts to Isolated and Other Non-404 Jurisdictional Wetlands and Waters were previously requested for the initial MOT project in an application dated December 2, 2013. This Section 404/401 permit application and Neuse River Riparian Buffer Authorization request are for the Area 3 project. Subsequent applications/modifications will be submitted for Areas 1, 2A, and 2B as project design progresses.

Please find enclosed the Pre-construction Notification (PCN), Jeffrey's Warehouse Mitigation Site Debit Ledger, Stormwater Management Plan, permit drawings, buffer drawings, and roadway design plans for

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

the subject projects. Copies of the U.S. Army Corps of Engineers (USACE) Jurisdictional Determinations were provided with the previously-submitted MOT project permit application. A Categorical Exclusion (CE) was completed for I-5338 in December 2012 and for I-5311 in February 2012.

These TIP projects had a Design Build let date of May 13, 2013. Construction of the Area 3 project 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,

for E. L. Lusk

Richard W. Hancock, P.E., Manager
Project Development and Environmental Analysis Unit

cc: NCDOT Permit Application Standard Distribution List

Office Use Only:
Corps action ID no. _____
DWQ project no. _____
Form Version 1.3 Dec 10 2008

Pre-Construction Notification (PCN) Form

A. Applicant Information

1. Processing

1a. Type(s) of approval sought from the Corps:	☒ Section 404 Permit	☐ Section 10 Permit
1b. Specify Nationwide Permit (NWP) number: 13 23 33 or General Permit (GP) number:		
1c. Has the NWP or GP number been verified by the Corps?	☐ Yes	☒ No

1d. Type(s) of approval sought from the DWQ (check all that apply):

☒ 401 Water Quality Certification – Regular ☐ Non-404 Jurisdictional General Permit

☐ 401 Water Quality Certification – Express ☒ Riparian Buffer Authorization

1e. Is this notification solely for the record because written approval is not required?	For the record only for DWQ 401 Certification: ☐ Yes ☒ No	For the record only for Corps Permit: ☐ Yes ☒ No
1f. Is payment into a mitigation bank or in-lieu fee program proposed for mitigation of impacts? If so, attach the acceptance letter from mitigation bank or in-lieu fee program.		☐ Yes ☒ No
1g. Is the project located in any of NC's twenty coastal counties. If yes, answer 1h below.		☐ Yes ☒ No
1h. Is the project located within a NC DCM Area of Environmental Concern (AEC)?		☐ Yes ☒ No

2. Project Information

2a. Name of project:	I-40/440 Pavement Reconstruction - Area 3 Project
2b. County:	Wake
2c. Nearest municipality / town:	Raleigh
2d. Subdivision name:	*not applicable*
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.	*not applicable*
3c. Responsible Party (for LLC if applicable):	*not applicable*
3d. Street address:	1598 Mail Service Center
3e. City, state, zip:	Raleigh, NC 27699-1598
3f. Telephone no.:	(919) 707-6136
3g. Fax no.:	(919) 212-5785
3h. Email address:	jsmason@ncdot.gov

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

B. Project Information and Prior Project History	
1. Property Identification	
1a. Property identification no. (tax PIN or parcel ID):	*not applicable*
1b. Site coordinates (in decimal degrees):	Latitude: 35.767816 (DD.DDDDDD) Longitude: - 78.574221 (-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
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 Area 3 project is to reconstruct pavement within the Area 3 footprint, while also improving the stormwater drainage and overall hydraulic drainage system.	
3e. Describe the overall project in detail, including the type of equipment to be used: The North Carolina Department of Transportation (NCDOT) proposes pavement reconstruction of I-40/440, beginning at the I-40/US 64/US 1 interchange west of SR 1319 (Jones Franklin Road), continuing east along I-40/440 and onto I-440/US 64, and terminating north of the I-440 interchange with US 64/US 264. The Area 3 project begins near the I-40/440 interchange (Station 444+00) and continues northeast to the end of the project, just north of the I-440 interchange with US 64/US 264 (Station 628+60). Construction activities associated with the Area 3 project include pavement reconstruction, minor modifications to existing fill slopes associated with the pavement reconstruction, storm drain system pipe replacement, maintenance and protection of existing drainage structures, culvert preservation/slip lining, sediment removal from culverts and streams, temporary stream dewatering, and stream bank stabilization. All practical alternatives will be utilized to minimize the project footprint associated with the pavement reconstruction project. Standard road building equipment such as trucks, dozers, backhoes, and cranes will be used.	
4. Jurisdictional Determinations	
4a. Have jurisdictional wetland or stream determinations by the Corps or State been requested or obtained for this property / project (including all prior phases) in the past? Comments:	☒ Yes ☐ No ☐ Unknown
4b. If the Corps made the jurisdictional determination, what type of determination was made?	☒ Preliminary ☒ Final
4c. If yes, who delineated the jurisdictional areas? Name (if known): 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. JDs were provided with the previously-submitted MOT permit application.	

5. Project History			
5a. Have permits or certifications been requested or obtained for this project (including all prior phases) in the past?	☒ Yes	☐ No	☐ Unknown
5b. If yes, explain in detail according to "help file" instructions. A Neuse River Riparian Buffer Authorization and North Carolina State General Permit for Impacts to Isolated and Other Non-404 Jurisdictional Wetlands and Waters have been requested for the initial Maintenance of Traffic (MOT) project.			
6. Future Project Plans			
6a. Is this a phased project?	☒ Yes	☐ No	
6b. If yes, explain. This reconstruction project is comprised of three smaller projects, each of which will be permitted separately. The three smaller projects include: 1) the initial 3-lane maintenance of traffic (MOT) temporary widening project, 2) the Area 3 project, which begins near the I-40/440 interchange (Station 444+00) and continues northeast to the end of the project, just north of the I-440 interchange with US 64/US 264 (Station 628+60), and 3) the final project consisting of Areas 1, 2A, and 2B, beginning at Station 19+02 near the I-40/US 64/US 1 interchange and continuing east to Station 444+00, just west of the I-40/440 interchange. A Neuse River Riparian Buffer Authorization and North Carolina State General Permit for Impacts to Isolated and Other Non-404 Jurisdictional Wetlands and Waters were previously requested for the initial MOT project. The current Section 404/401 permit application and Neuse River Riparian Buffer Authorization request are for the Area 3 project. Subsequent applications/modifications will be submitted for Areas 1, 2A, and 2B as project design progresses.			

C. Proposed Impacts Inventory

1. Impacts Summary

1a. Which sections were completed below for your project (check all that apply):

☒ Wetlands ☒ Streams - tributaries ☒ Buffers

☐ Open Waters ☐ Pond Construction

2. Wetland Impacts

If there are wetland impacts proposed on the site, then complete this question for each wetland area impacted.

2a. Wetland impact number – Permanent (P) or Temporary (T)	2b. Type of impact	2c. Type of wetland (if known)	2d. Forested	2e. Type of jurisdiction (Corps - 404, 10 DWQ – non-404, other)	2f. Area of impact (acres)
Site 1 ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ	
Site 2 ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ	
Site 3 ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ	
Site 4 ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ	
Site 5 ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ	
Site 6 ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ	
				2g. **Total wetland impacts**	Perm.: 0 ac. Temp.: 0 ac.

2h. Comments: A total of 0.05 acres of hand clearing will occur at Site 3202 within riparian wetland WGH. Work in this area will occur on mats.

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:45 LF Temp:831 LF

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

4. Open Water Impacts

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

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

4g. Comments: No open water impacts will result from the Area 3 project.

5. Pond or Lake Construction

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

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

5g. Comments:

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

6. Buffer Impacts (for DWQ)

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

6a. Project is in which protected basin?			☒ Neuse ☐ Tar-Pamlico ☐ Other: ☐ Catawba ☐ Randleman		
6b. Buffer impact number – Permanent (P) or Temporary (T)	6c. Reason for impact	6d. Stream name	6e. Buffer mitigation required?	6f. Zone 1 impact (square feet)	6g. Zone 2 impact (square feet)
B1 ☐ P ☐ T			☐ Yes ☐ No		
B2 ☐ P ☐ T			☐ Yes ☐ No		
B3 ☐ P ☐ T			☐ Yes ☐ No		
		6h. **Total buffer impacts**		45,826	23,905
6i. Comments: See the attached buffer impact table for site-by-site impacts.					

D. Impact Justification and Mitigation

1. Avoidance and Minimization

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

For the Area 3 project, jurisdictional impacts to wetlands have been avoided. Jurisdictional stream impacts have been minimized to only those impacts associated with the maintenance and protection of existing drainage structures and to areas requiring bank stabilization. Sediment removal within the culverts and streams has been limited only to the areas required to achieve positive drainage. A majority of buffer impacts have also been minimized to affect only those areas where maintenance and protection of existing structures will occur.

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

Best Management Practices (BMP) and measures will be used to reduce stormwater impacts to receiving waters and minimize erosion and runoff from the construction sites. Where feasible, all equipment and material staging areas will be located outside of protected riparian buffers, wetlands, and streams and will be located within uplands.

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

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

3. Complete if Using a Mitigation Bank

3a. Name of Mitigation Bank: not applicable

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

3c. Comments:

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

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

4h. Comments: The Jeffrey's Warehouse Mitigation Site will be used to offset mitigable stream impacts (10 lin. ft. @ 2:1 = 20 lin. ft. of mitigation) and buffer impacts (see impacts below) associated with these projects.

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.

Please see the attached Jeffrey's Warehouse Mitigation Site Debit Ledger

6. Buffer Mitigation (State Regulated Riparian Buffer Rules) – required by DWQ

6a. Will the project result in an impact within a protected riparian buffer that requires buffer mitigation?	☒ Yes ☐ No

6b. If yes, then identify the square feet of impact to each zone of the riparian buffer that requires mitigation. Calculate the amount of mitigation required.

Zone	6c. Reason for impact	6d. Total impact (square feet)	Multiplier	6e. Required mitigation (square feet)
Zone 1	N/A	0	3 (2 for Catawba)	0
Zone 2	Parallel Impacts	2,574	1.5	3,861
		6f. **Total buffer mitigation required:**		3,861

6g. If buffer mitigation is required, discuss what type of mitigation is proposed (e.g., payment to private mitigation bank, permittee responsible riparian buffer restoration, payment into an approved in-lieu fee fund).

Permittee responsible mitigation will be used to offset mitigable buffer impacts for this project. Please see the Jeffrey's Warehouse Mitigation Site Debit Ledger.

6h. Comments:

E. Stormwater Management and Diffuse Flow Plan (required by DWQ)	
1. Diffuse Flow Plan	
1a. Does the project include or is it adjacent to protected riparian buffers identified within one of the NC Riparian Buffer Protection Rules?	☒ Yes ☐ No
1b. If yes, then is a diffuse flow plan included? If not, explain why. Comments: See attached permit drawings.	☒ Yes ☐ No
2. Stormwater Management Plan	
2a. What is the overall percent imperviousness of this project?	N/A
2b. Does this project require a Stormwater Management Plan?	☒ Yes ☐ No
2c. If this project DOES NOT require a Stormwater Management Plan, explain why:	
2d. If this project DOES require a Stormwater Management Plan, then provide a brief, narrative description of the plan: See attached Stormwater Management Plan.	
2e. Who will be responsible for the review of the Stormwater Management Plan?	☐ Certified Local Government ☐ DWQ Stormwater Program ☒ DWQ 401 Unit
3. Certified Local Government Stormwater Review	
3a. In which local government's jurisdiction is this project?	not applicable
3b. Which of the following locally-implemented stormwater management programs apply (check all that apply):	☐ Phase II ☐ NSW ☐ USMP ☐ Water Supply Watershed ☐ Other:
3c. Has the approved Stormwater Management Plan with proof of approval been attached?	☐ Yes ☐ No
4. DWQ Stormwater Program Review	
4a. Which of the following state-implemented stormwater management programs apply (check all that apply):	☐ Coastal counties ☐ HQW ☐ ORW ☐ Session Law 2006-246 ☐ Other:
4b. Has the approved Stormwater Management Plan with proof of approval been attached?	☐ Yes ☐ No n/a
5. DWQ 401 Unit Stormwater Review	
5a. Does the Stormwater Management Plan meet the appropriate requirements?	☒ Yes ☐ No 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 pavement reconstruction project will modernize and improve existing transportation facilities but will not increase traffic volumes or result in additional development. Therefore, a detailed indirect or cumulative effects study will not be necessary.		
4. Sewage Disposal (DWQ Requirement)		
4a. Clearly detail the ultimate treatment methods and disposition (non-discharge or discharge) of wastewater generated from the proposed project, or available capacity of the subject facility. n/a		

5. Endangered Species and Designated Critical Habitat (Corps Requirement)		
5a. Will this project occur in or near an area with federally protected species or habitat?	☒ Yes	☐ No
5b. Have you checked with the USFWS concerning Endangered Species Act impacts?	☒ Yes	☐ No
5c. If yes, ind icate the USFWS Field Office you have contacted.	☒ Raleigh ☐ Asheville	
5d. What data sources did you use to determine whether your site would impact Endangered Species or Designated Critical Habitat? NHP, USFWS website, NCDOT habitat assessments and field surveys. Surveys/habitat assessments were conducted most recently on July 13, 2011 (I-5311) and September 16, 2011 (I-5338) for the red-cockaded woodpecker, September 19, 2013 (both I-5311 and I-5338) for Michaux's sumac, and April 7, 2011 (I-5311) and March 14, 2012 for dwarf wedgemussel. All species have a biological conclusion of No Effect.		
6. Essential Fish Habitat (Corps Requirement)		
6a. Will this project occur in or near an area designated as essential fish habitat?	☐ Yes	☒ No
6b. What data sources did you use to determine whether your site would impact Essential Fish Habitat? NMFS County Index		
7. Historic or Prehistoric Cultural Resources (Corps Requirement)		
7a. Will this project occur in or near an area that the state, federal or tribal governments have designated as having historic or cultural preservation status (e.g., National Historic Trust designation or properties significant in North Carolina history and archaeology)?	☒ Yes	☐ No
7b. What data sources did you use to determine whether your site would impact historic or archeological resources? NEPA Documentation; no construction activities, including storage of materials and equipment, will occur outside the existing right-of-way near the National Register-listed Oak View property and Samaria Baptist Church located in the vicinity of the Poole Road interchange.		
8. Flood Zone Designation (Corps Requirement)		
8a. Will this project occur in a FEMA-designated 100-year floodplain?	☒ Yes	☐ No
8b. If yes, explain how project meets FEMA requirements: NCDOT Hydraulics Unit coordination with FEMA		
8c. What source(s) did you use to make the floodplain determination? FEMA Maps		

Richard W. Hancock, P.E. Applicant/Agent's Printed Name	E. L. Lueck Applicant/Agent's Signature (Agent's signature is valid only if an authorization letter from the applicant is provided.)	12-10-13 Date

Stream Impact Table

Site Number	TIP #	3a. Stream Impact Permanent (P) or Temporary (T)	3b. Type of Impact	3c. Stream Name	3d. Perennial (PER) or Intermittent (INT)?	3e. Type of jurisdiction (Corps-404, 10 DWQ-non-404, other	3f. Average Stream Width (feet)	3g. Impact Length (linear feet)
3201	I-5338	T	Dewatering	UT Walnut Creek (SZ)	INT	Corps - 404	7	224
3202	I-5338	T	Dewatering	UT Walnut Creek (SBB)	INT	Corps - 404	3	73
3301	I-5338	T	Dewatering	UT Walnut Creek (SAA)	PER	Corps - 404	4	28
3301	I-5338	P	Permanent Fill	UT Walnut Creek (SAA)	PER	Corps - 404	4	10
3701	I-5311	T	Dewatering	UT Walnut Creek (SI)	INT	Corps - 404	5	240
3701	I-5311	P	Bank Stabilization	UT Walnut Creek (SI)	INT	Corps - 404	5	10
3702	I-5311	T	Dewatering	UT Walnut Creek (SH)	INT	Corps - 404	5	60
3702	I-5311	P	Bank Stabilization	UT Walnut Creek (SH)	INT	Corps - 404	5	10
3801	I-5311	T	Dewatering	UT Walnut Creek (SM)	PER	Corps - 404	5	70
3801	I-5311	P	Bank Stabilization	UT Walnut Creek (SM)	PER	Corps - 404	5	5
3802	I-5311	T	Dewatering	UT Crabtree Creek (SG)	INT	Corps - 404	4	22
3901	I-5311	T	Dewatering	UT Crabtree Creek (SF)	PER	Corps - 404	2	40
4001	I-5311	T	Dewatering	UT Crabtree Creek (SE)	PER	Corps - 404	4	56
4001	I-5311	P	Bank Stabilization	UT Crabtree Creek (SE)	PER	Corps - 404	4	10
						3h. Total Stream and Tributary Impacts	Temp:	813
							Perm:	45

3i. Comments: Temporary dewatering is required for the maintenance and protection of existing drainage structures and sediment removal within the culverts and streams to achieve positive drainage.

Buffer Impacts Table

Site Number	TIP #	6b. Buffer Impact Permanent (P) or Temporary (T)	6c. Reason for Impact	6d. Stream name	6e. Buffer mitigation required?	6f. Zone 1 impact (square feet)	6g. Zone 2 impact (square feet
3201	I-5338	P	Protection of Existing Structure	Unnamed Trib to Walnut Creek (SZ)	No	7490	2324
3202	I-5338	P	Protection of Existing Structure	Unnamed Trib to Walnut Creek (SBB)	No	3321	2566
3301	I-5338	P	Protection of Existing Structure	Unnamed Trib to Walnut Creek (SAA)	No	4232	3991
3601	I-5311	P	Road Crossing	Walnut Creek	No	2848	2014
3602	I-5311	P	Parallel	Unnamed Trib to Walnut Creek (SJ)	Yes	0	2574
3701	I-5311	P	Protection of Existing Structure	Unnamed Trib to Walnut Creek (SI)	No	8599	1188
3702	I-5311	P	Protection of Existing Structure	Unnamed Trib to Walnut Creek (SH)	No	3001	429
3801	I-5311	P	Protection of Existing Structure	Unnamed Trib to Walnut Creek (SM)	No	6066	3186
3802	I-5311	P	Protection of Existing Structure	Unnamed Trib to Crabtree Creek (SG)	No	3356	2078
3901	I-5311	P	Protection of Existing Structure	Unnamed Trib to Crabtree Creek (SF)	No	782	560
4001	I-5311	P	Protection of Existing Structure	Unnamed Trib to Crabtree Creek (SE)	No	5525	2897
4101	I-5311	P	Bridge	Crabtree Creek	No	606	98
					6h. Total Buffer Impacts	45826	23905

6i. Comments

COMPENSATORY MITIGATION

The Jeffrey's Warehouse Mitigation Site is located in HUC 03020201 and was originally constructed as on-site mitigation for R-1030 (US 117 from south of NC 581 in Goldsboro to the US 264 Bypass in Wilson). There are two parcels associated with this mitigation site. The west parcel (approximately 50.2 acres) is bounded on the northwest by the Little River and on the southeast by the US 117 right-of-way. The east parcel (approximately 37.5 acres) is bounded on the northwest by the US 117 right-of-way, on the northeast by a Wayne County Board of Education school bus maintenance shop, and on the east and southeast by private property. The site was constructed in 2006 and has undergone five years of hydrologic and vegetative monitoring.

Mitigation for this project is proposed to be provided by the North Carolina Department of Transportation, which is an allowable option per the Federal Mitigation Rule, 33 CFR chapter II 332.3 (b) (1)-(6). The NCDOT has been providing mitigation for road projects for almost 20 years and has established a record of acquiring, designing, and constructing successful mitigation sites with over 225 closed out sites protected in perpetuity either through fee-simple ownership or conservation easements throughout the state. Remaining, available credits on these and other post-construction mitigation sites are tracked on the NCDOT's On-site Debit Ledger (ODL). Therefore, ODL mitigation proposals involve sites that are constructed and functioning prior to the impacts resulting in a reduced temporal lag and reduced uncertainty about project success. In addition to location and availability, the cost of the compensatory mitigation project is another general consideration when determining the most appropriate mitigation option. Acquiring advance mitigation from EEP would not be fiscally responsible when the Department has available assets on the ODL.

NCDOT proposes the use of Jeffrey's Warehouse Mitigation Site as environmentally preferable to other options, which is consistent with the criteria set forth in 332.3(a) (1) of the Rule. Jeffrey's Warehouse Mitigation site will be debited 20 linear stream feet and 3,861 sq. ft. of buffer mitigation for I-5311/I-5338 Area 3.

JEFFREYS WAREHOUSE ONSITE DEBIT LEDGER

HUC	Mitigation Type	Starting Amount	Additional Notes
3020201	Stream Restoration	3731 Linear Feet	
3020201	Riverine Wetland Restoration	3.66 Acres	
3020201	Riverine Wetland Preservation	12.36 Acres	
3020201	Buffer Restoration	316507 Square Feet	
3020201	Non Riverine Wetland Restoration	16.23 Acres	

Mitigation Type	Debit Amount (Linear Feet)	Site TIP	Action ID#
Stream Restoration	452	B-3528 262ft@2:1	2008-00153
Stream Restoration	61	U-4011	2005-20914
Stream Restoration	25	U-3344A	2003-20445
Stream Restoration	279	EB-4993	2011-00602
Stream Restoration	174	R-3825a	2011-01695
Stream Restoration	63	B-4785	2013-01010
Stream Restoration	20	I-5311/I-5338 Area 3 (2:1 ratio)	

Mitigation Type	Debit Amount (Acres)	Site TIP	Action ID#
Riverine Wetland Restoration	2.49	R-2814A&B	2008-01316
Riverine Wetland Restoration	0.21	R-2554A	

Mitigation Type	Debit Amount (Acres)	Site TIP	Action ID#
Riverine Wetland Preservation	3.05	R-2814A&B	2008-01316
Riverine Wetland Preservation	8.61	R-2554A	2008-00252

Mitigation Type	Debit Amount (Acres)	Site TIP	Action ID#
Non Riverine Wetland Restoration	2.76	R-2719A	2008-02460
Non Riverine Wetland Restoration	0.92	B-4304	2004-20510
Non Riverine Wetland Restoration	1.96	R-2814A&B	2008-01316

Mitigation Type	Debit Amount (Square Feet)	Site TIP	Action ID#
Buffer Restoration	38648	B-4300	2004-20705
Buffer Restoration	161453	R-2719A	2008-02460
Buffer Restoration	3653	B-4304	2004-20510
Buffer Restoration	16398	B-4592	2008-02056
Buffer Restoration	24458	U-4703	2005-20126
Buffer Restoration	45558	U-3344A	2003-20445
Buffer Restoration	11393	Div Proj. SR 1340 2C.054015	2010-00420
Buffer Restoration	2199	DIV Proj SR1204 WBS # 4C.096071	
Buffer Restoration	3,861	I-5311/I5338 Area 3 (1.5:1 ratio)	

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR LINEAR ROADWAY PROJECTS

(Version 1.2; Released September 2011)

Project/TIP No.: I-5338/I/5311 **County(ies):** Wake

General Project Information

Project No.:	I-5338/I/5311	**Project Type:**	Roadway Widening	**Date:**	11/22/2013
NCDOT Contact:	Lonnie Brooks	**Contractor / Designer:**	Kimley-Horn and Associates		
Address:	NCDOT - Transportation Program Management Unit 1020 Birch Ridge Road Raleigh, NC 27610	**Address:**	3001 Weston Parkway Cary, NC 27513		
Phone:	919-707-6619	**Phone:**	919-677-2000		
Email:	lbrooks@ncdot.gov	**Email:**	dan.robinson@kimley-horn.com		
City/Town:	Raleigh	**County(ies):**	Wake		
River Basin(s):	Neuse	**CAMA County?**	No		
Primary Receiving Water:	See Environmental Summary	**NCDWQ Stream Index No.:**	See Environmental Summary		
NCDWQ Surface Water Classification for Primary Receiving Water	**Primary:**	See Environmental Summary			
	Supplemental:	See Environmental Summary			
Other Stream Classification:	See Environmental Summary				
303(d) Impairments:	See Environmental Summary				
Buffer Rules in Effect	Neuse				

Project Description

Project Length (lin. Miles or feet):	3.496 mi. (Area 3 only)	**Surrounding Land Use:**	Urban

	Proposed Project	**Existing Site**
Project Built-Upon Area (ac.)	64.40 ac.	62.60 ac.
Typical Cross Section Description:	-L3- (after I40/440 interchange): 4 @ 12' lanes divided by a retained existing median barrier and 10' to 11' interior shoulders and 14' outside shoulders with lateral and cut ditches where necessary	-L3- (after I40/440 interchange): 4 @ 12' lanes divided by median barrier and 10' to 11' interior shoulder and 11' outside shoulders with lateral and cut ditches
Average Daily Traffic (veh/hr/day):	Design/Future: 184,600	Existing: 126,025

General Project Narrative:

The Design-Build project combining I5338 and I5311 consists of pavement reconstruction of I-40/440 from the I-40/US 64 Interchange west of SR 1319 (Jones Franklin Road) continuing along I-440/US 64 to north of US 64/US 264. This Storm Water Management Plan pertains to Area 3 of the project and is located in Wake County. Area 3 begins from Sta. 444+00 -L1- (immediately before the I40/440 interchange) and continues northeast to the end of the project just north of US 64/US 264 interchange. The majority of Area 3 is the replacement of the road surface with very little increase in total impervious area and storm drain systems to be replaced at the same location with the same size pipes as the existing storm drain system. BMPs were used where ever possible to minimize the effects of stormwater runoff from the project. Although the majority of the project consists of replacing existing storm drain system in place, any new pipe system outfalls were stategically located to not outlet into wetlands/buffers and incorporated BMPs for treatment where practical.

References

Project/TIP No.: I-5338/I/5311 **County(ies):** Wake

Project Environmental Summary

Surface Water Impacts

Sheet No.	Station (From / To)	Feature Impacted	Water / Wetland / Buffer Type	Receiving Surface Water Name	NRTR Map ID	NCDWQ Stream Index	NCDWQ Surface Water Classification	303(d) Impairments	Type of Impact	Existing SCM	Proposed SCM
3201	460+68 -L2LT- 462+81 -L2LT-	Stream	Intermittent	Unnamed Trib to Walnut Creek		27-34-(4)	C, NSW	Aquatic life, Fish consumption	Dewatering	N/A	
3201	460+26 -L2LT- 462+96 -L2LT-	Buffer	Neuse	Unnamed Trib to Walnut Creek		27-34-(4)	C, NSW	Aquatic life, Fish consumption	Clearing	N/A	
3202	469+75 -L2LT- 470+58 -L2LT-	Stream	Intermittent	Unnamed Trib to Walnut Creek		27-34-(4)	C, NSW	Aquatic life, Fish consumption	Dewatering	N/A	
3202	469+75 -L2LT- 470+57 -L2LT-	Wetland	Non-Tidal Freshwater Marsh	Unnamed Trib to Walnut Creek		27-34-(4)	C, NSW	Aquatic life, Fish consumption	Clearing	N/A	
3202	469+42 -L2LT- 470+88 -L2LT-	Buffer	Neuse	Unnamed Trib to Walnut Creek		27-34-(4)	C, NSW	Aquatic life, Fish consumption	Clearing	N/A	
3301	485+60 -L2LT- 485+70 -L2LT-	Stream	Perennial	Unnamed Trib to Walnut Creek		27-34-(4)	C, NSW	Aquatic life, Fish consumption	Dewatering/ Bank stabilization	N/A	
3301	484+80 -L2LT- 485+76 -L2LT-	Buffer	Neuse	Unnamed Trib to Walnut Creek		27-34-(4)	C, NSW	Aquatic life, Fish consumption	Clearing	N/A	
3601	525+87 -L3- 527+45 -L3-	Buffer	Neuse	Walnut Creek		27-34-(4)	C, NSW	Aquatic life, Fish consumption	Clearing	N/A	
3602	527+99 -L3- 530+91 -L3-	Buffer	Neuse	Unnamed Trib to Walnut Creek		27-34-(4)	C, NSW	Aquatic life, Fish consumption	Fill	N/A	
3701	539+49 -L3- 539+90 -L3-	Stream	Intermittent	Unnamed Trib to Walnut Creek		27-34-(4)	C, NSW	Aquatic life, Fish consumption	Dewatering/ Bank stabilization	N/A	
3701	539+66 -L3- 540+43 -L3-	Buffer	Neuse	Unnamed Trib to Walnut Creek		27-34-(4)	C, NSW	Aquatic life, Fish consumption	Clearing	N/A	
3702	550+87 -L3- 552+24 -L3-	Stream	Intermittent	Unnamed Trib to Walnut Creek		27-34-(4)	C, NSW	Aquatic life, Fish consumption	Dewatering/ Bank stabilization	N/A	
3702	550+77 -L3- 552+40 -L3-	Buffer	Neuse	Unnamed Trib to Walnut Creek		27-34-(4)	C, NSW	Aquatic life, Fish consumption	Clearing	N/A	
3801	561+10 -L3- 564+09 -L3-	Stream	Perennial	Unnamed Trib to Walnut Creek		27-34-(4)	C, NSW	Aquatic life, Fish consumption	Dewatering/ Bank stabilization	N/A	
3801	13+82 -RP15B- 19+50 -RP15C-	Buffer	Neuse	Unnamed Trib to Walnut Creek		27-34-(4)	C, NSW	Aquatic life, Fish consumption	Clearing	N/A	
3802	577+44 -L3- 577+81 -L3-	Stream	Intermittent	Unnamed Trib to Crabtree Creek		27-33-(10)	C, NSW	Aquatic life, Fish consumption	Dewatering	N/A	
3802	18+80 -RP15A- 17+81 -RP15A-	Buffer	Neuse	Unnamed Trib to Crabtree Creek		27-33-(10)	C, NSW	Aquatic life, Fish consumption	Clearing	N/A	

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

Description of Minimization of Impacts or Mitigation

References

Project Environmental Summary

Surface Water Impacts

Sheet No.	Station (From / To)	Feature Impacted	Water / Wetland / Buffer Type	Receiving Surface Water Name	NRTR Map ID	NCDWQ Stream Index	NCDWQ Surface Water Classification	303(d) Impairments	Type of Impact	Existing SCM	Proposed SCM
3901	589+25 -L3- 589+50 -L3-	Stream	Perennial	Unnamed Trib to Crabtree Creek		27-33-(10)	C, NSW	Aquatic life, Fish consumption	Dewatering	N/A	
3901	589+31 -L3- 590+10 -L3-	Buffer	Neuse	Unnamed Trib to Crabtree Creek		27-33-(10)	C, NSW	Aquatic life, Fish consumption	Clearing	N/A	
4001	599+36 -L3- 599+47 -L3-	Stream	Perennial	Unnamed Trib to Crabtree Creek		27-33-(10)	C, NSW	Aquatic life, Fish consumption	Dewatering/ Bank stabilization	N/A	
4001	599+03 -L3- 14+60 -RP16B-	Buffer	Neuse	Unnamed Trib to Crabtree Creek		27-33-(10)	C, NSW	Aquatic life, Fish consumption	Clearing	N/A	
4101	622+18 -L3- 622+69 -L3-	Buffer	Neuse	Crabtree Creek		27-33-(10)	C, NSW	Aquatic life, Fish consumption	Clearing	N/A	

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

Description of Minimization of Impacts or Mitigation

References

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR LINEAR ROADWAY PROJECTS

(Version 1.2; Released September 2011)

Project/TIP No.: I-5338/I/5311 **County(ies):** Wake

Preformed Scour Holes and Energy Dissipators

Sheet No.	Station	Energy Dissipator Type	Riprap Type	Drainage Area (ac)	Conveyance Structure	Pipe/Structure Dimensions (in)	Q10 (cfs)	V10 (fps)
35	518+38 -L3-	PFSH	Class 'B'	1.28	Pipe	18	7.2	1.8
39	593+00 -L3-	PFSH	Class 'B'	0.59	Pipe	15	3.3	1.4

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

Additional Comments

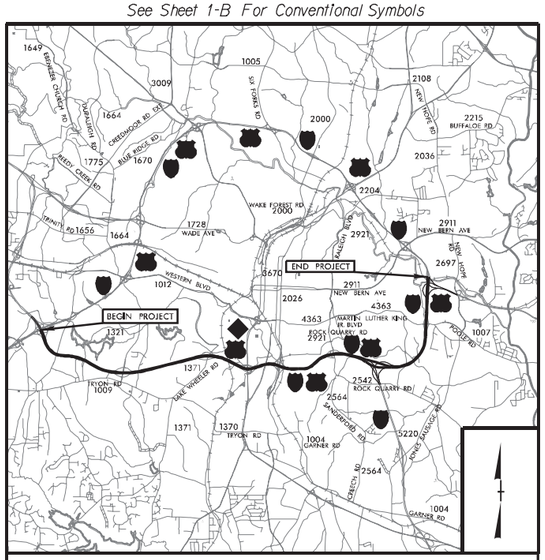
* Refer to the NCDOT Best Management Practices Toolbox, Version 1 (March 2008), NCDOT Standard Details, the Federal Highway Administration (FHWA) Hydraulic Engineering Circular No. 14 (HEC-14), Third Edition, Hydraulic Design of Energy Dissipators for Culverts and Channels (July 2006), as applicable,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

09/08/99

TIP PROJECT: I-5338, I-5311

CONTRACT: C203166

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



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WAKE COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-5338, I-5311	1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
46265.3.1	IMS-0440(13)	PE	

AREA 3
PERMIT PLANS
SUBMITTAL NO: D-061R2
DATE: DECEMBER 6, 2013

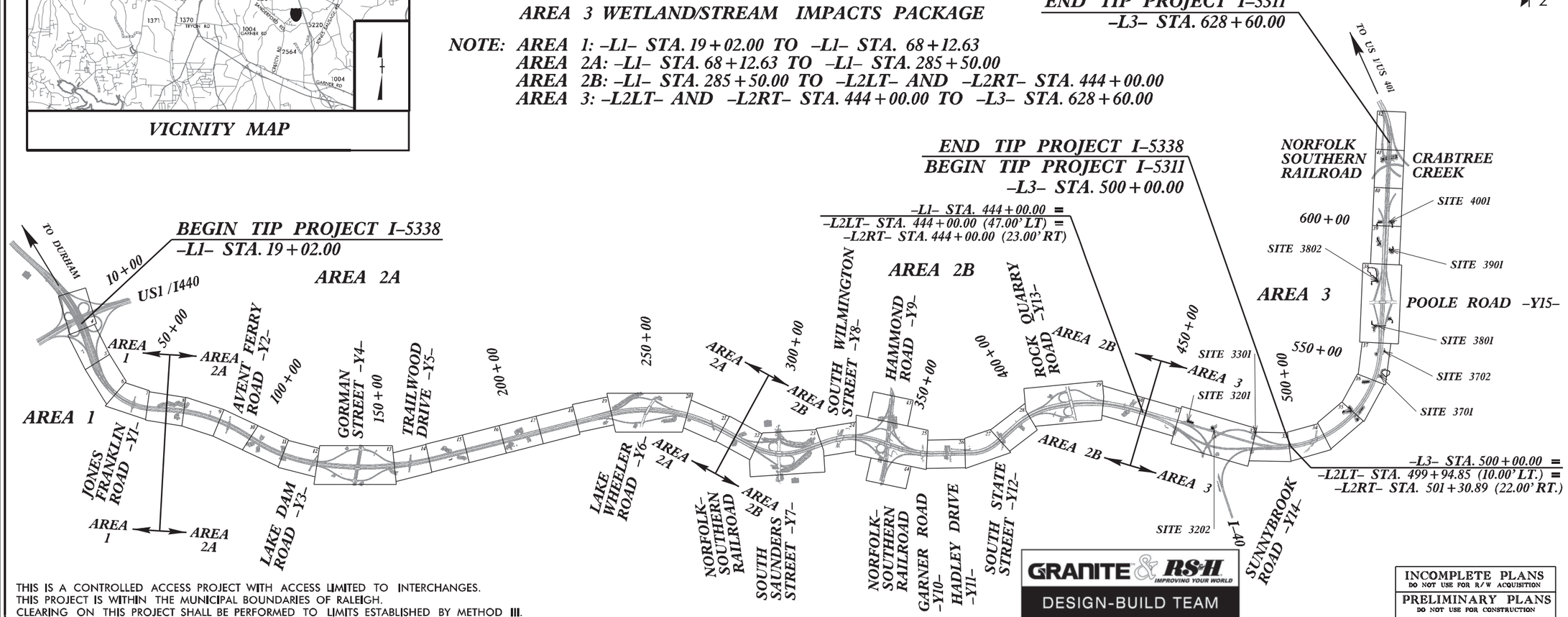
NAD 83/NSRS 2007

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

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

AREA 3 WETLAND/STREAM IMPACTS PACKAGE

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



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

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

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

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

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

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

PROJECT LENGTH

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

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

K. ZAK HAMIDI, PE
NCDOT CONTACT

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

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: MAY 13, 2013

LETTING DATE: MAY 13, 2013

CHAD ROGERS, PE
PROJECT ENGINEER

JASON TALLEY, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

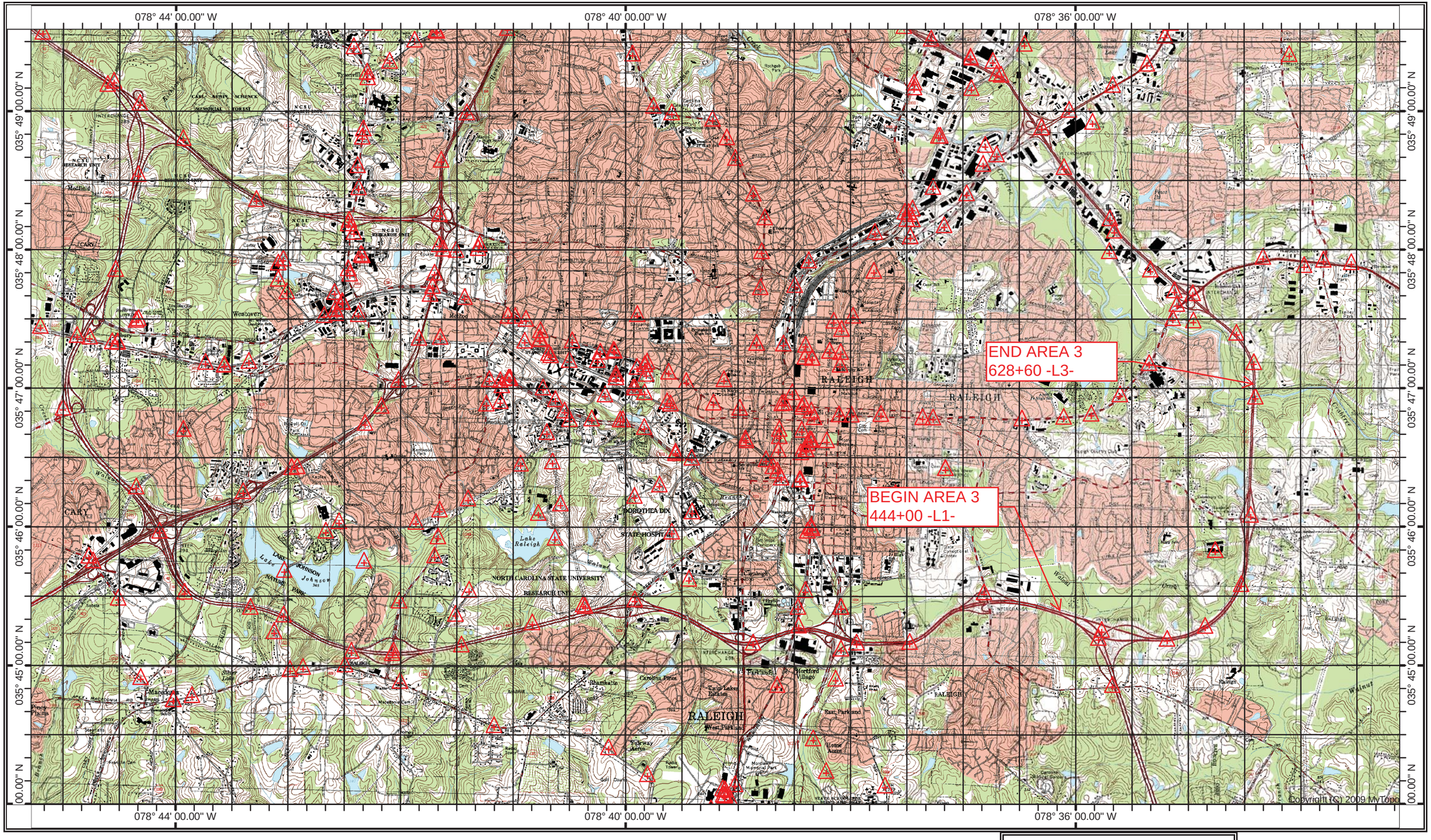
SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

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



SCALE 1:50000

0 10000 20000 30000

FEET

N

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)
3201	460+68/461+67 -L2LT- 462+52/462+81 -L2LT-	30" RCP/ 2 @ 42" RCP							0.04		224	
3202	469+75/470+58 -L2LT-	54" RCP					0.05		<0.01		73	
3301	485+60/485+70 -L2LT-	48" RCP						<0.01	<0.01	10	28	
3701	539+49/539+90 -L3-	48" RCP							0.03		240	
3701	539+49/539+90 -L3-	BANK STABILIZATION						<0.01		10		
3702	550+87/551+01 -L3- 552+03/552+24 -L3-	24" RCP/CMP							<0.01		60	
3702	550+87/551+01 -L3-	BANK STABILIZATION						<0.01		10		
3801	561+10/561+30 -L3- 563+94/564+09-L3-	48"/42" CMP							<0.01		70	
3801	561+10/561+30 -L3-	BANK STABILIZATION						<0.01		5		
3802	577+44/577+81 -L3-	TWO 30" CMP							<0.01		22	
3901	589+25 /589+50 -L3-	48" CMP							<0.01		40	
4001	599+41/599+47 -L3- 599+36/599+46 -L3-	54" CMP							<0.01		56	
4001	599+41/599+47 -L3-	BANK STABILIZATION						<0.01		10		
TOTALS:							0.05	<0.01	0.09	45	813	

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

ATN Revised 3/31/05

SHEET 1 of 1 12/6/2013

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	32

RW SHEET NO.

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

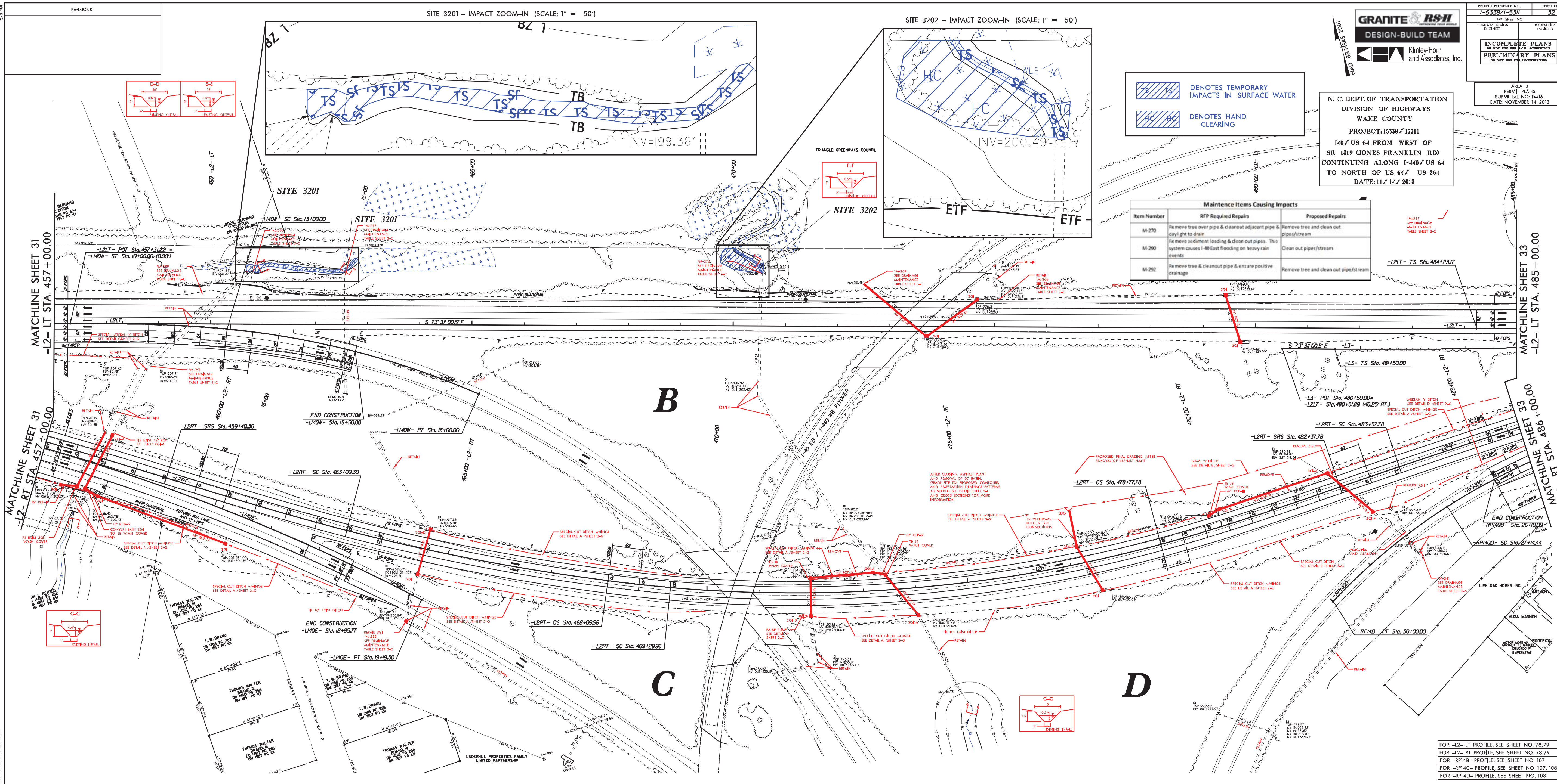
AREA 3
PERMIT PLANS
SUBMITTAL NO: D-061
DATE: NOVEMBER 14, 2013

GRANITE & RS&H
DESIGN-BUILD TEAM
Kimley-Horn and Associates, Inc.

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: I5338 / I5311
I40 / US 64 FROM WEST OF SR 1319 (JONES FRANKLIN RD) CONTINUING ALONG I-440 / US 64 TO NORTH OF US 64 / US 264
DATE: 11 / 14 / 2013

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES HAND CLEARING



Maintence Items Causing Impacts

Item Number	RFP Required Repairs	Proposed Repairs
M-270	Remove tree over pipe & cleanout adjacent pipe & daylight to drain	Remove tree and clean out pipes/stream
M-290	Remove sediment loading & clean out pipes. This system causes I-40 East flooding on heavy rain events	Clean out pipes/stream
M-292	Remove tree & cleanout pipe & ensure positive drainage	Remove tree and clean out pipe/stream

FOR -L2- LT PROFILE, SEE SHEET NO. 78,79
FOR -L2- RT PROFILE, SEE SHEET NO. 78,79
FOR -RP14B- PROFILE, SEE SHEET NO. 107
FOR -RP14C- PROFILE, SEE SHEET NO. 107,108
FOR -RP14D- PROFILE, SEE SHEET NO. 108

-L2RT- CURVE DATA

PIs Sta 457+00.33	PIs Sta 461+80.33	PI Sta 465+55.48	PIs Sta 468+73.92	PI Sta 474+08.87	PIs Sta 479+97.84	PIs Sta 483+17.78	PI Sta 487+44.53
θs = 2° 34' 41.9"	θs = 2° 34' 41.9"	Δ = 7° 18' 01.0" (LT)	θs = 0° 51' 33.9"	Δ = 20° 15' 48.8" (LT)	θs = 3° 50' 53.6"	θs = 0° 15' 52.0"	Δ = 3° 24' 29.1" (RT)
Ls = 360.00'	Ls = 360.00'	D = 1° 25' 56.6"	θs = 1° 16' 57.9"	D = 2° 08' 16.4"	Ls = 360.00'	Ls = 120.00'	D = 0° 26' 26.7"
LT = 240.03'	LT = 240.03'	L = 509.65'	Ls = 120.00'	L = 947.82'	LT = 240.06'	LT = 80.00'	L = 773.27'
ST = 120.02'	ST = 120.02'	T = 255.17'	LT = 63.96'	T = 478.91'	ST = 120.05'	ST = 40.00'	T = 386.75'
		R = 4,000.00'	ST = 56.05'	R = 2,680.00'			R = 13,000.00'
		V = 70 MPH		V = 70 MPH			V = 70 MPH
		SE = 6%		SE = 8%			SE = 2%

-L140E- CURVE DATA

PI Sta 14+61.75
Δ = 13° 22' 06.7" (RT)
D = 1° 27' 15.1"
L = 919.30'
T = 461.75'
R = 3,940.00'
V = 70 MPH
SE = 6%

-L140W- CURVE DATA

PIs Sta 12+00.09	PI Sta 15+52.05
θs = 5° 22' 17.3"	Δ = 17° 54' 17.8" (RT)
Ls = 300.00'	D = 3° 34' 51.6"
LT = 200.09'	L = 500.00'
ST = 100.08'	T = 252.05'
	R = 1,600.00'
	V = 65 MPH
	SE = 9%

-L3- CURVE DATA

PIs Sta 484+83.41
θs = 3° 45' 45.1"
Ls = 500.00'
LT = 333.41'
ST = 166.74'

-L2LT- CURVE DATA

PIs Sta 486+63.21
θs = 3° 20' 15.4"
Ls = 360.00'
LT = 240.04'
ST = 120.04'

-L140D- CURVE DATA

PIs Sta 25+15.91	PI Sta 28+57.98
θs = 15° 08' 39.3"	Δ = 14° 24' 56.0" (LT)
Ls = 600.00'	D = 5° 02' 53.1"
LT = 401.47'	L = 285.56'
ST = 201.34'	T = 143.54'
	R = 1,135.00'
	V = 55MPH
	SE = 7%

GRAPHIC SCALE
50 25 0 50 100
PLANS

REVISIONS

SITE 3201 – IMPACT ZOOM-IN (SCALE: 1" = 50')

SITE 3202 – IMPACT ZOOM-IN (SCALE: 1" = 50')

GRANITE & R&H DESIGN-BUILD TEAM

Kimley-Horn and Associates, Inc.

NAD 83/NSRS 2007

PROJECT REFERENCE NO.	SHEET NO.
I-5538/I-5311	32
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

AREA 3
PERMIT PLANS
SUBMITTAL NO. D-061
DATE: NOVEMBER 14, 2013

TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

HC DENOTES HAND CLEARING

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15538 / 15311
I-40 / US 64 FROM WEST OF SR 1319 (JONES FRANKLIN RD) CONTINUING ALONG I-440 / US 64 TO NORTH OF US 64 / US 264
DATE: 11 / 14 / 2013

Maintence Items Causing Impacts

Item Number	RFP Required Repairs	Proposed Repairs
M-270	Remove tree over pipe & cleanout adjacent pipe & daylight to drain	Remove tree and clean out pipes/stream
M-290	Remove sediment loading & clean out pipes. This system causes I-40 East flooding on heavy rain events	Clean out pipes/stream
M-292	Remove tree & cleanout pipe & ensure positive drainage	Remove tree and clean out pipe/stream

MATCHLINE SHEET 31 –L2– LT STA. 457+00.00

MATCHLINE SHEET 31 –L2– RT STA. 457+00.00

MATCHLINE SHEET 33 –L2– LT STA. 485+00.00

MATCHLINE SHEET 33 –L2– RT STA. 486+00.00

B

C

D

FOR –L2– LT PROFILE, SEE SHEET NO. 78,79
FOR –L2– RT PROFILE, SEE SHEET NO. 78,79
FOR –RP148– PROFILE, SEE SHEET NO. 107
FOR –RP140– PROFILE SEE SHEET NO. 107,108
FOR –RP140– PROFILE SEE SHEET NO. 108

–L2RT– CURVE DATA

Pis Sta 457+00.33	Pis Sta 461+80.33	Pi Sta 465+55.48	Pis Sta 468+73.92	Pi Sta 474+09.87	Pis Sta 479+97.84	Pis Sta 483+17.78	Pi Sta 487+44.53
θs = 2° 39' 41.5"	θs = 2° 39' 41.5"	Δ = 7° 18' 09.0" (LT)	θs = 0° 5' 33.9"	θs = 7° 6' 57.9"	θs = 3° 50' 53.6"	θs = 0° 15' 52.0"	Δ = 5° 24' 29.7" (RT)
Ls = 360.00'	Ls = 360.00'	D = 1° 25' 56.6"	Ls = 116.06'	Ls = 120.00'	Ls = 360.00'	Ls = 120.00'	D = 0° 26' 26.7"
LT = 240.03'	LT = 240.03'	L = 509.65'	LT = 63.36'	LT = 63.36'	LT = 240.06'	LT = 80.00'	L = 773.27'
ST = 120.02'	ST = 120.02'	T = 255.17'	ST = 56.65'	ST = 56.65'	ST = 120.05'	ST = 40.00'	T = 386.75'
		R = 4,000.00'					R = 13,000.00'
		V = 70 MPH					V = 70 MPH
		SE = 6%					SE = 2%

–L40E– CURVE DATA

Pi Sta 141+0.75
Δ = 13° 22' 06.7" (RT)
D = 1° 27' 15.1"
L = 993.30'
T = 467.75'
R = 3,940.00'
V = 70 MPH
SE = 6%

–L40W– CURVE DATA

Pis Sta 12+00.09	Pi Sta 15+52.05
θs = 5° 22' 17.3"	Δ = 17° 54' 17.8" (RT)
Ls = 300.00'	D = 3° 34' 9.6"
LT = 200.09'	L = 500.00'
ST = 100.06'	T = 252.25'
	R = 1,600.00'
	V = 65 MPH
	SE = 9%

–L3– CURVE DATA

Pis Sta 484+83.41
θs = 3° 45' 45.2"
Ls = 500.00'
LT = 333.44'
ST = 166.74'

–L2LT– CURVE DATA

Pis Sta 486+63.21
θs = 3° 39' 15.4"
Ls = 360.00'
LT = 240.04'
ST = 120.04'

–L400– CURVE DATA

Pis Sta 275+15.91	Pi Sta 286+57.98
θs = 15° 09' 39.5"	Δ = 14° 24' 56.0" (LT)
Ls = 600.00'	D = 5° 05' 53.7"
LT = 401.47'	L = 285.56'
ST = 200.34'	T = 143.5.4'
	R = 1,135.00'
	V = 55MPH
	SE = 7%

GRAPHIC SCALE
50 25 0 50 100
PLANS

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

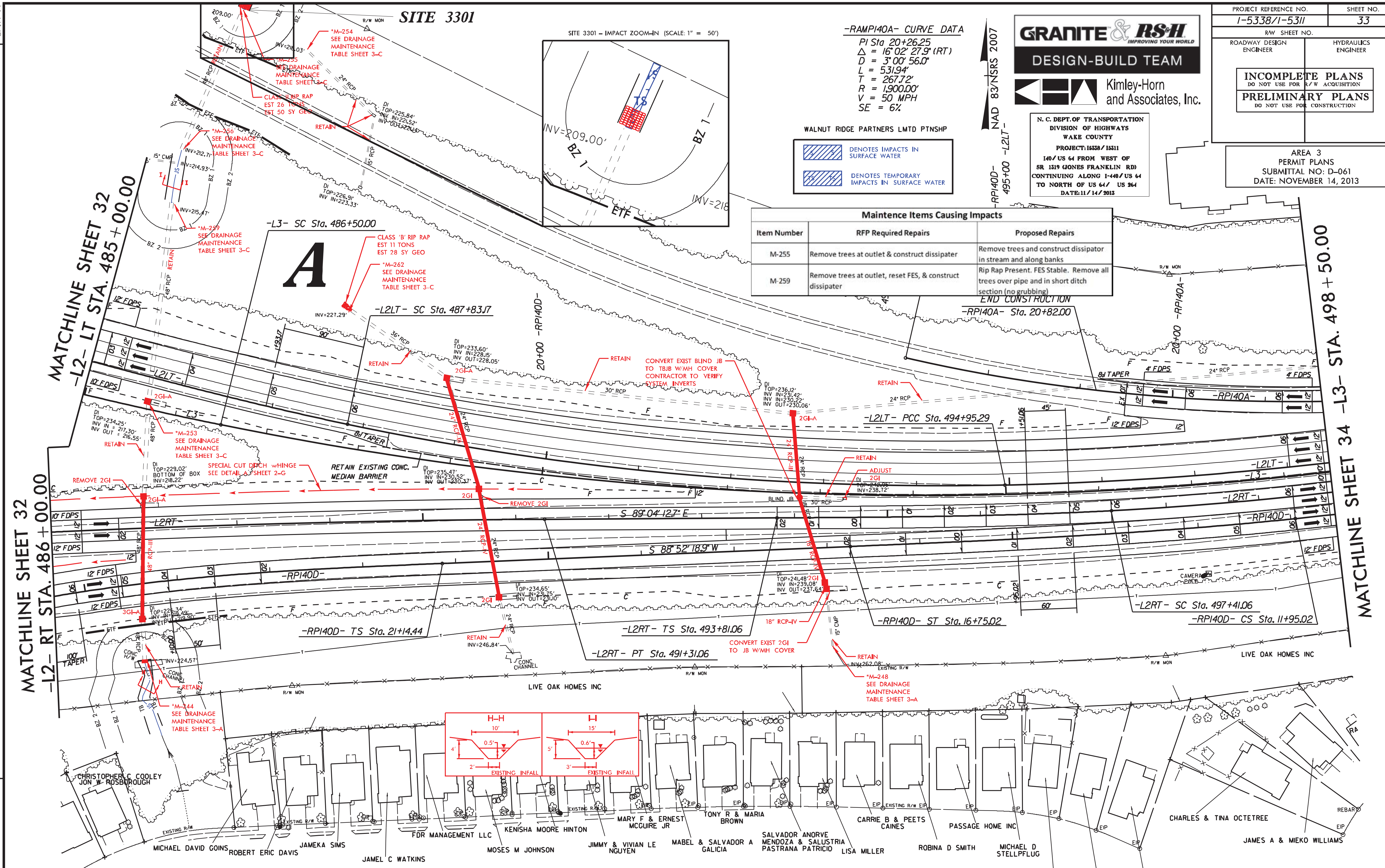
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

AREA 3
PERMIT PLANS
SUBMITTAL NO: D-061
DATE: NOVEMBER 14, 2013

GRANITE & RS&H
DESIGN-BUILD TEAM
Kimley-Horn and Associates, Inc.

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15538/15511
I40/US 64 FROM WEST OF SR 1319 (JONES FRANKLIN RD) CONTINUING ALONG I-440/US 64 TO NORTH OF US 64/US 264
DATE: 11/14/2013



SITE 3301
SITE 3301 – IMPACT ZOOM-IN (SCALE: 1" = 50')
WALNUT RIDGE PARTNERS LMTD PTNSHP
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
NAD 83/NSRS 2007
MATCHLINE SHEET 32 -L2- LT STA. 485+00.00
MATCHLINE SHEET 32 -L2- RT STA. 486+00.00
MATCHLINE SHEET 34 -L3- STA. 498+50.00
-L3- SC Sta. 486+50.00
-L2LT- SC Sta. 487+83.17
-L2LT- PCC Sta. 494+95.29
END CONSTRUCTION -RP140A- Sta. 20+82.00
-RP140D- TS Sta. 21+14.44
-L2RT- TS Sta. 493+81.06
-L2RT- PT Sta. 491+31.06
-RP140D- ST Sta. 16+75.02
-L2RT- SC Sta. 497+41.06
-RP140D- CS Sta. 11+95.02
S 89°04' 12.7" E
S 88°52' 18.9" W
RETAIN EXISTING CONC. MEDIAN BARRIER
CONVERT EXIST BLIND JB TO TBJB W/MH COVER CONTRACTOR TO VERIFY SYSTEM INVERTS
CONVERT EXIST 2GI TO JB W/MH COVER
SPECIAL CUT DITCH W/HINGE SEE DETAIL A SHEET 2-G
*M-254 SEE DRAINAGE MAINTENANCE TABLE SHEET 3-C
*M-255 SEE DRAINAGE MAINTENANCE TABLE SHEET 3-C
*M-256 SEE DRAINAGE MAINTENANCE TABLE SHEET 3-C
*M-259 SEE DRAINAGE MAINTENANCE TABLE SHEET 3-C
*M-262 SEE DRAINAGE MAINTENANCE TABLE SHEET 3-C
*M-253 SEE DRAINAGE MAINTENANCE TABLE SHEET 3-C
*M-244 SEE DRAINAGE MAINTENANCE TABLE SHEET 3-A
*M-248 SEE DRAINAGE MAINTENANCE TABLE SHEET 3-A
CLASS 'B' RIP RAP EST 11 TONS EST 28 SY GEO
CLASS 'B' RIP RAP EST 26 TONS EST 50 SY GEO
LIVE OAK HOMES INC
CHRISTOPHER C COOLEY
JON W ROSBOROUGH
MICHAEL DAVID GOINS
ROBERT ERIC DAVIS
JAMEKA SIMS
JAMEL C WATKINS
FDR MANAGEMENT LLC
MOSES M JOHNSON
KENISHA MOORE HINTON
MARY F & ERNEST MCGUIRE JR
JIMMY & VIVIAN LE NGUYEN
TONY R & MARIA BROWN
MABEL & SALVADOR A GALICIA
SALVADOR ANORVE MENDOZA & SALUSTRIA PASTRANA PATRICIO
LISA MILLER
CARRIE B & PEETS CAINES
PASSAGE HOME INC
ROBINA D SMITH
MICHAEL D STELLPFLUG
PAUL MARITH & LALUNE C SENG
HENRY L & TASHA S WOODARD
CATHERINE H & RICKY HANKINS
CHARLES & TINA OCTETREE
JAMES A & MIEKO WILLIAMS
H-H
H
EXISTING INFALL

-RAMP140A- CURVE DATA

PI Sta 20+26.25
Δ = 16°02' 27.9" (RT)
D = 3°00' 56.0"
L = 531.94'
T = 267.72'
R = 1,900.00'
V = 50 MPH
SE = 6%

Maintence Items Causing Impacts

Item Number	RFP Required Repairs	Proposed Repairs
M-255	Remove trees at outlet & construct dissipater	Remove trees and construct dissipator in stream and along banks
M-259	Remove trees at outlet, reset FES, & construct dissipater	Rip Rap Present. FES Stable. Remove all trees over pipe and in short ditch section (no grubbing)

-L2RT- CURVE DATA

PI Sta 487+44.53	PIs Sta 496+21.08	PI Sta 499+36.14
Δ = 3°24' 29.1" (RT)	Θs = 2°41' 36.4"	Δ = 5°50' 00.0" (LT)
D = 0°26' 26.7"	Ls = 360.00'	D = 1°29' 46.9"
L = 773.27'	LT = 240.03'	L = 389.83'
T = 386.75'	ST = 120.03'	T = 195.09'
R = 13,000.00'		R = 3,829.00'
V = 70 MPH		V = 70 MPH
SE = 2%		SE = 6%

-RAMP140D- CURVE DATA

PI Sta 10+97.53	PIs Sta 13+55.08	PIs Sta 25+15.91
Δ = 2°54' 00.0" (RT)	Θs = 3°34' 08.1"	Θs = 15°08' 39.3"
D = 1°29' 13.4"	Ls = 480.00'	Ls = 600.00'
L = 195.02'	LT = 320.07'	LT = 401.47'
T = 97.53'	ST = 160.06'	ST = 201.34'
R = 3,853.00'		
V = 70 MPH		
SE = 6%		

-L3- CURVE DATA

PIs Sta 484+83.41	PI Sta 498+02.52
Θs = 3°45' 45.1"	Δ = 33°41' 10.1" (LT)
Ls = 500.00'	D = 1°30' 18.0"
LT = 333.41'	L = 2,238.26'
ST = 166.74'	T = 1,152.52'
	R = 3,807.00'
	V = 70 MPH
	SE = 6%

FOR -L2- LT PROFILE, SEE SHEET NO. 80
FOR -L2- RT PROFILE, SEE SHEET NO. 80
FOR -RP14A- PROFILE, SEE SHEET NO. 107
FOR -RP14D- PROFILE, SEE SHEET NO. 108

REVISIONS

8/17/99

11/21/2013
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PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	33
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

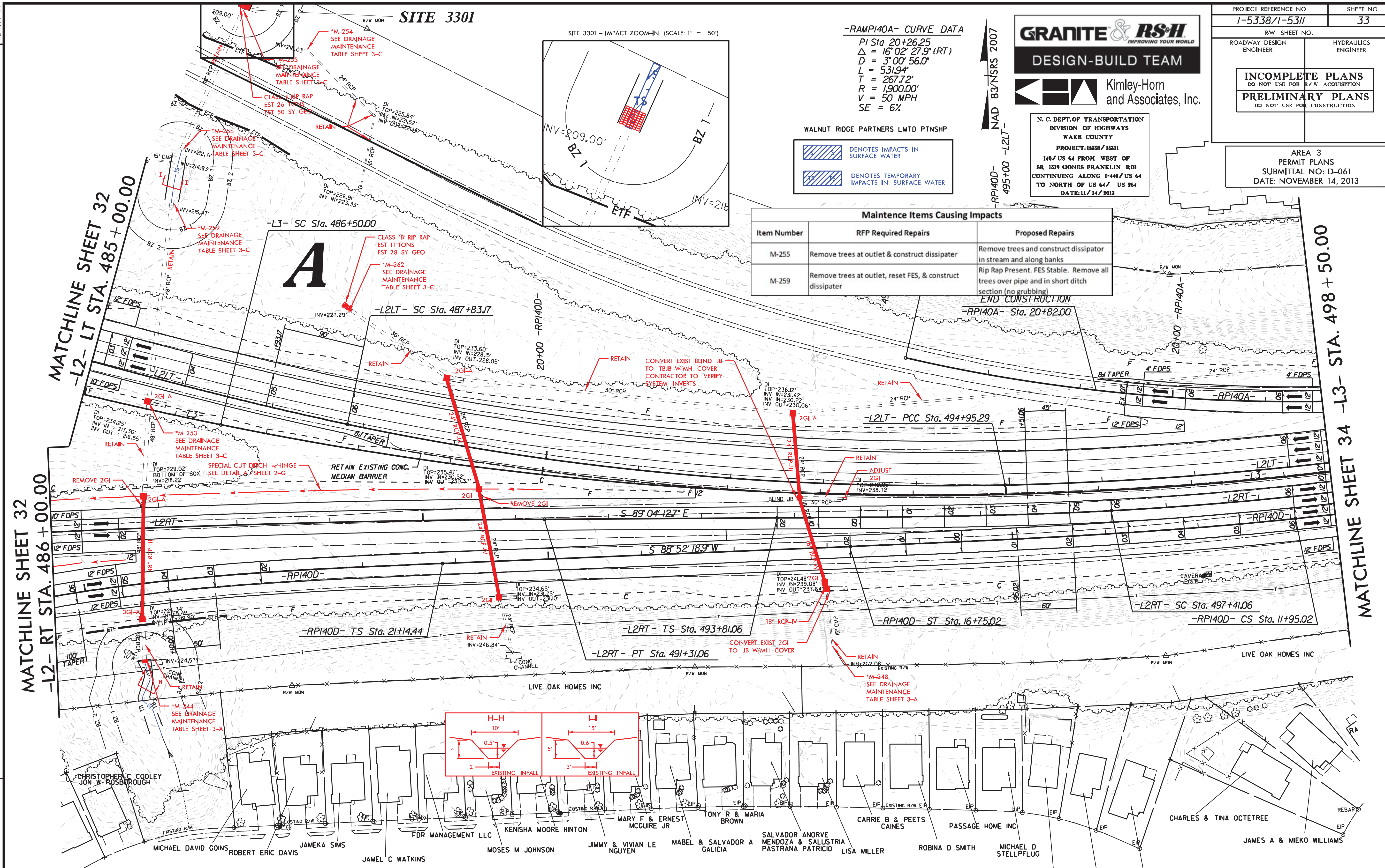
AREA 3
PERMIT PLANS
SUBMITTAL NO: D-061
DATE: NOVEMBER 14, 2013

GRANITE & RS&H — IMPROVING YOUR WORLD
DESIGN-BUILD TEAM
Kimley-Horn and Associates, Inc.

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: I5338 / I5311
I40 / US 64 FROM WEST OF SR 1319 (JONES FRANKLIN RD) CONTINUING ALONG I-440 / US 64 TO NORTH OF US 64 / US 264
DATE: 11/14/2013

NAD 83/NSRS 2007

SITE 3301



SITE 3301 - IMPACT ZOOM-IN (SCALE: 1" = 50')
WALNUT RIDGE PARTNERS LMTD PTNSHP
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
A
MATCHLINE SHEET 32 -L2- LT STA. 485+00.00
MATCHLINE SHEET 32 -L2- RT STA. 486+00.00
MATCHLINE SHEET 34 -L3- STA. 498+50.00
-L3- SC Sta. 486+50.00
-L2LT- SC Sta. 487+83.17
-L2LT- PCC Sta. 494+95.29
-RPI40A- Sta. 20+82.00
END CONSTRUCTION
-RPI40D- TS Sta. 21+14.44
-L2RT- TS Sta. 493+81.06
-L2RT- PT Sta. 491+31.06
-RPI40D- ST Sta. 16+75.02
-L2RT- SC Sta. 497+41.06
-RPI40D- CS Sta. 11+95.02
S 89°04'12.7" E
S 88°52'18.9" W
*M-254 SEE DRAINAGE MAINTENANCE TABLE SHEET 3-C
*M-255 SEE DRAINAGE MAINTENANCE TABLE SHEET 3-C
*M-256 SEE DRAINAGE MAINTENANCE TABLE SHEET 3-C
*M-259 SEE DRAINAGE MAINTENANCE TABLE SHEET 3-C
*M-262 SEE DRAINAGE MAINTENANCE TABLE SHEET 3-C
*M-253 SEE DRAINAGE MAINTENANCE TABLE SHEET 3-C
*M-244 SEE DRAINAGE MAINTENANCE TABLE SHEET 3-A
*M-248 SEE DRAINAGE MAINTENANCE TABLE SHEET 3-A
CLASS 'B' RIP RAP EST 26 TONS EST 50 SY GEO
CLASS 'B' RIP RAP EST 11 TONS EST 28 SY GEO
CONVERT EXIST BLIND JB TO TBJB W/MH COVER CONTRACTOR TO VERIFY SYSTEM INVERTS
CONVERT EXIST 2GI TO JB W/MH COVER
SPECIAL CUT DITCH W/HINGE SEE DETAIL 6 SHEET 2-G
RETAIN EXISTING CONC. MEDIAN BARRIER
REMOVE 2GI
ADJUST 2GI
RETAIN
LIVE OAK HOMES INC
CHRISTOPHER C COOLEY
JON W ROSBOROUGH
MICHAEL DAVID GOINS
ROBERT ERIC DAVIS
JAMEKA SIMS
JAMEL C WATKINS
FDR MANAGEMENT LLC
MOSES M JOHNSON
KENISHA MOORE HINTON
JIMMY & VIVIAN LE NGUYEN
MARY F & ERNEST MCGUIRE JR
MABEL & SALVADOR A GALICIA
TONY R & MARIA BROWN
SALVADOR ANORVE MENDOZA & SALUSTRIA PASTRANA PATRICIO
LISA MILLER
CARRIE B & PEETS CAINES
ROBINA D SMITH
PASSAGE HOME INC
MICHAEL D STELLPFLUG
PAUL MARITH & LALUNE C SENG
HENRY L & TASHA S WOODARD
CATHERINE H & RICKY HANKINS
CHARLES & TINA OCTETREE
JAMES A & MIEKO WILLIAMS
H-H
I-I
EXISTING INFALL

Maintence Items Causing Impacts

Item Number	RFP Required Repairs	Proposed Repairs
M-255	Remove trees at outlet & construct dissipater	Remove trees and construct dissipator in stream and along banks
M-259	Remove trees at outlet, reset FES, & construct dissipater	Rip Rap Present. FES Stable. Remove all trees over pipe and in short ditch section (no grubbing)

-RAMPI40A- CURVE DATA

PI Sta 20+26.25
Δ = 16°02' 27.9" (RT)
D = 3°00' 56.0"
L = 531.94'
T = 267.72'
R = 1,900.00'
V = 50 MPH
SE = 6%

-L2RT- CURVE DATA

PI Sta 487+44.53	PIs Sta 496+21.08	PI Sta 499+36.14
Δ = 3°24' 29.1" (RT)	Θs = 2°41' 36.4"	Δ = 5°50' 00.0" (LT)
D = 0°26' 26.7"	Ls = 360.00'	D = 1°29' 46.9"
L = 773.27'	LT = 240.03'	L = 389.83'
T = 386.75'	ST = 120.03'	T = 195.09'
R = 13,000.00'		R = 3,829.00'
V = 70 MPH		V = 70 MPH
SE = 2%		SE = 6%

-RAMPI40D- CURVE DATA

PI Sta 10+97.53	PIs Sta 13+55.08	PIs Sta 25+15.91
Δ = 2°54' 00.0" (RT)	Θs = 3°34' 08.1"	Θs = 15°08' 39.3"
D = 1°29' 13.4"	Ls = 480.00'	Ls = 600.00'
L = 195.02'	LT = 320.07'	LT = 401.47'
T = 97.53'	ST = 160.06'	ST = 201.34'
R = 3,853.00'		
V = 70 MPH		
SE = 6%		

-L3- CURVE DATA

PIs Sta 484+83.41	PI Sta 498+02.52
Θs = 3°45' 45.1"	Δ = 33°41' 10.1" (LT)
Ls = 500.00'	D = 1°30' 18.0"
LT = 333.41'	L = 2,238.26'
ST = 166.74'	T = 1,152.52'
	R = 3,807.00'
	V = 70 MPH
	SE = 6%

FOR -L2- LT PROFILE, SEE SHEET NO. 80
FOR -L2- RT PROFILE, SEE SHEET NO. 80
FOR -RP14A- PROFILE, SEE SHEET NO. 107
FOR -RP14D- PROFILE, SEE SHEET NO. 108

REVISIONS

8/17/99

11/21/2013
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PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	37
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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

Kimley-Horn and Associates, Inc.

NAD 83/NSRS 2007

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15338 / 15311
I40 / US 64 FROM WEST OF SR 1319 (JONES FRANKLIN RD) CONTINUING ALONG I-440 / US 64 TO NORTH OF US 64 / US 264
DATE: 11 / 14 / 2013

AREA 3
PERMIT PLANS
SUBMITTAL NO: D-061
DATE: NOVEMBER 14, 2013

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

-L3- CURVE DATA

PI Sta 532+19.21
Δ = 62° 47' 10.8" (LT)
D = 1° 30' 00.0"
L = 4,185.76'
T = 2,330.94'
R = 3,819.72'
V = 70 MPH
SE = 6%

PIs Sta 552+40.75
θs = 3° 45' 00.0"
Ls = 500.00'
LT = 333.41'
ST = 166.73'

Maintence Items Causing Impacts		
Item Number	RFP Required Repairs	Proposed Repairs
M-272	Remove trees at outlet & clean out ditch & pipe to provide positive drainage	Remove trees and clean out ditch and pipe
M-564	Repair R/W fence and remove sediment build up	Repair R/W fence/no sediment to remove
M-655	Remove trees & construct dissipater	Remove trees, construct dissipator
M-665	2/3 full of slit. Clean out & daylight to drain & remove trees	Clean out pipe/stream and remove trees

SITE 3701 – IMPACT ZOOM-IN (SCALE: 1" = 50')

SITE 3702 – IMPACT ZOOM-IN (SCALE: 1" = 50')

MATCHLINE SHEET 36 -L3- STA. 539+00

MATCHLINE SHEET 38 -L3- STA. 553+00.00

-L3- CS Sta. 550+74.02

FOR -L3- LT PROFILE, SEE SHEET NO. 84

FOR -L3- RT PROFILE, SEE SHEET NO. 84

REVISIONS

8/17/99

11/21/2013
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8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	37
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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

Kimley-Horn and Associates, Inc.

NAD 83/NSRS 2007

AREA 3
PERMIT PLANS
SUBMITTAL NO: D-061
DATE: NOVEMBER 14, 2013

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15338 / 15311
I40 / US 64 FROM WEST OF SR 1319 (JONES FRANKLIN RD) CONTINUING ALONG I-440 / US 64 TO NORTH OF US 64 / US 264
DATE: 11 / 14 / 2013

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

-L3- CURVE DATA

PI Sta 532+19.21
Δ = 62° 47' 10.8" (LT)
D = 1° 30' 00.0"
L = 4,185.76'
T = 2,330.94'
R = 3,819.72'
V = 70 MPH
SE = 6%

PIs Sta 552+40.75
θs = 3° 45' 00.0"
Ls = 500.00'
LT = 333.41'
ST = 166.73'

Maintence Items Causing Impacts		
Item Number	RFP Required Repairs	Proposed Repairs
M-272	Remove trees at outlet & clean out ditch & pipe to provide positive drainage	Remove trees and clean out ditch and pipe
M-564	Repair R/W fence and remove sediment build up	Repair R/W fence/no sediment to remove
M-655	Remove trees & construct dissipater	Remove trees, construct dissipator
M-665	2/3 full of slit. Clean out & daylight to drain & remove trees	Clean out pipe/stream and remove trees

SITE 3701 – IMPACT ZOOM-IN (SCALE: 1" = 50')

SITE 3702 – IMPACT ZOOM-IN (SCALE: 1" = 50')

SITE 3702 – IMPACT ZOOM-IN (SCALE: 1" = 50')

MATCHLINE SHEET 36 -L3- STA. 539+00

MATCHLINE SHEET 38 -L3- STA. 553+00.00

-L3- CS Sta. 550+74.02

FOR -L3- LT PROFILE, SEE SHEET NO. 84

FOR -L3- RT PROFILE, SEE SHEET NO. 84

11/21/2013
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REVISIONS

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15538 / 15311
I40 / US 64 FROM WEST OF
SR 1819 (JONES FRANKLIN RD)
CONTINUING ALONG I-440 / US 64
TO NORTH OF US 64 / US 264
DATE: 11 / 14 / 2013

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

GRANITE & R&H CONSTRUCTORS, INC.
DESIGN-BUILD TEAM
Kimley-Horn and Associates, Inc.
NAD 83/NSRS 2007

PROJECT REFERENCE NO.	SHEET NO.
I-5538/I-5311	38
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

AREA 3
PERMIT PLANS
SUBMITTAL NO. D-06182
DATE: DECEMBER 6, 2013

SITE 3801 – IMPACT ZOOM-IN (SCALE: 1" = 50')

SITE 3802 – IMPACT ZOOM-IN (SCALE: 1" = 50')

MATCHLINE SHEET 37 –L3– STA. 553+00.00

MATCHLINE SHEET 39 –L3– STA. 581+00.00

FOR –L3– LT PROFILE, SEE SHEET NO. 85,86	
FOR –L3– RT PROFILE, SEE SHEET NO. 85,86	
FOR –RP15A– PROFILE, SEE SHEET NO. 109	
FOR –RP15B– PROFILE, SEE SHEET NO. 109,110	
FOR –RP15C– PROFILE, SEE SHEET NO. 110	
FOR –RP15D– PROFILE, SEE SHEET NO. 110,111	

GRAPHIC SCALE
50 25 0 50 100
PLANS

DESIGNED BY:
CHECKED BY: DATE:

REVISIONS

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15538 / 15511
140 / US 64 FROM WEST OF SR 1319 (JONES FRANKLIN RD) CONTINUING ALONG I-440 / US 64 TO NORTH OF US 64 / US 264
DATE: 11 / 14 / 2013

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

GRANITE & R&H CONSTRUCTORS
DESIGN-BUILD TEAM
Kimley-Horn and Associates, Inc.
NAD 83/NSRS 2007

PROJECT REFERENCE NO.	SHEET NO.
I-5538/I-5511	38
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

AREA 3
PERMIT PLANS
SUBMITTAL NO. D-06182
DATE: DECEMBER 6, 2013

SITE 3801 – IMPACT ZOOM-IN (SCALE: 1" = 50')

SITE 3802 – IMPACT ZOOM-IN (SCALE: 1" = 50')

MATCHLINE SHEET 37 –L3– STA. 553+00.00

MATCHLINE SHEET 39 –L3– STA. 581+00.00

FOR –L3– LT PROFILE, SEE SHEET NO. 85,86
FOR –L3– RT PROFILE, SEE SHEET NO. 85,86
FOR –RP15A– PROFILE, SEE SHEET NO. 109
FOR –RP15B– PROFILE, SEE SHEET NO. 109,110
FOR –RP15C– PROFILE, SEE SHEET NO. 110
FOR –RP15D– PROFILE, SEE SHEET NO. 110,111

GRAPHIC SCALE
50 25 0 50 100
PLANS

DESIGNED BY:
CHECKED BY: DATE:

-RP15B- CURVE DATA

PI Sta 11+50.02	PI Sta 14+38.49	PI Sta 17+26.39
Δ = 3°13'22.4"	Δ = 12°11'08.7" (LT)	Δ = 3°13'22.4"
D = 2°25.00	D = 2°6'53.2"	D = 2°25.00
Lt = 150.02'	L = 425.36'	Lt = 150.02'
LT = 150.02'	T = 213.49'	LT = 150.02'
ST = 75.02'	R = 2,370.00'	ST = 75.02'
	V = 55 MPH	
	SE = 6%	

-RP15C- CURVE DATA

PI Sta 12+81.21	PI Sta 15+48.60	PI Sta 18+15.46
Δ = 2°37'19.9"	Δ = 7°39'29.7" (RT)	Δ = 2°37'19.9"
D = 2°40.00	D = 2°00.46'	D = 2°40.00
Lt = 160.02'	L = 374.25'	Lt = 160.02'
LT = 160.02'	T = 187.46'	LT = 160.02'
ST = 80.01'	R = 2,800.00'	ST = 80.01'
	V = 55 MPH	
	SE = 5%	

-L3- CURVE DATA

PI Sta 552+40.75	
Δ = 3°45'00.0"	
Lt = 500.00'	
LT = 333.64'	
ST = 166.73'	

-Y15- CURVE DATA

PI Sta 18+07.58
Δ = 7°11'41.5" (RT)
D = 1°54'35.5"
L = 376.72'
T = 188.62'
R = 3,000.00'

-RP15A- CURVE DATA

PI Sta 15+46.83	PI Sta 18+91.71	
Δ = 11°12'55.5" (RT)	Δ = 7°55'30.5"	
D = 1°50'00.5"	Ls = 240.00'	
L = 640.21'	LT = 160.04'	
T = 306.83'	ST = 70.01'	
R = 3,125.00'		
V = 60 MPH		
SE = 5%		

-RP15D- CURVE DATA

PI Sta 15+47.15	PI Sta 15+81.83
Δ = 8°49'23.2" (LT)	Δ = 8°49'23.2" (LT)
D = 3°22'13.2"	D = 3°22'13.2"
L = 261.79'	Ls = 240.00'
T = 131.15'	LT = 160.04'
R = 1,700.00'	ST = 80.04'
V = 50 MPH	
SE = 6%	

8/17/99

REVISIONS

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15338 / 15311
140 / US 64 FROM WEST OF SR 1319 (JONES FRANKLIN RD) CONTINUING ALONG I-440 / US 64 TO NORTH OF US 64 / US 264
DATE: 11 / 14 / 2013

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

GRANITE & RS&H IMPROVING YOUR WORLD
DESIGN-BUILD TEAM
Kimley-Horn and Associates, Inc.
NAD 83/NSRS 2007

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	39
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

AREA 3
PERMIT PLANS
SUBMITTAL NO: D-061
DATE: NOVEMBER 14, 2013

MATCHLINE SHEET 38 -L3- STA. 581+00.00

MATCHLINE SHEET 40 -L3- STA. 595+00.00

585+00

590+00

-RPI5A- SC Sta. 12+10.00

-L3- POT Sta 585+46.09 =
-RPI5A- ST Sta. 10+00.00 (59.00' LT)

-RPI5D- SC Sta. 12+40.00

-L3- POT Sta. 583+43.00 =
-RPI5D- ST Sta. 10+00.00 (59.00' RT)

T-T: 10', 0.4', 3', 2' EXISTING INFALL

U-U: 5', 0.5', 2', 2' EXISTING OUTFALL

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

INV=252.85'

CLASS 'B' RIP RAP
EST 2 TONS
EST 7 SY GEO
INV=240.49'

BEGIN SBG
STA. 589+00 -L-

PREFORMED SCOUR HOLE
OUTLET PROTECTION
CLASS 'B' RIP-RAP
EST 8 TONS
EST 26 SY GEO
EST 25 SY PSRM
SEE DETAIL GSHEET 2-G

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

INV=214.92'

INV=203.06'

15" W/ELBOWS, ROD & LUG CONNECTORS

EXIST RIP RAP SLOPE PROTECTION

RETAIN

GUARDRAIL

8u TAPER

I-440 VARIBLE WIDTH BST

RETAIN & PRESERVE

CULVERT PRESERVATION SITE #29, SEE DETAIL H / SHEET 2-G

15" RCP-IV

18" RCP-IV

N 2°29'53.5" E

RETAIN EXISTING CONC. MEDIAN BARRIER

BEGIN DOUBLE FACE MEDIAN CONCRETE BARRIER
-L3- Sta. 588+55.00

BEGIN SBG
STA. 587+50 -L-

END SBG
STA. 592+00 -L-

EXIST RIP RAP SLOPE PROTECTION

PROP GUARDRAIL

15" W/ELBOWS, ROD, & LUG CONNECTORS

OUTLET PROP PIPE INTO EXISTING RIPRAP DITCH

UNABLE TO FIND END OF PIPE

CONTRACTOR TO FIELD VERIFY AND TIE TO EXISTING

*M-591 & 593
SEE DRAINAGE MAINTENANCE TABLE SHEET 3-A

20' CITY OF RALEIGH SEWER EASEMENT

INV=269.70'

INV=208.30'

SITE 3901

TEMPORARY STREAM IMPACTS DUE TO CULVERT PRESERVATION INSTALLATION

SITE 3901 - IMPACT ZOOM-IN (SCALE: 1" = 50')

-RPI5A- CURVE DATA

PIs Sta 11+40.01
Θs = 1° 55' 30.5"
Ls = 210.00'
LT = 140.01'
ST = 70.01'

PI Sta 15+16.83
△ = 11° 12' 55.5" (RT)
D = 1° 50' 00.5"
L = 611.71'
T = 306.83'
R = 3,125.00'
V = 60 MPH

-RPI5D- CURVE DATA

PIs Sta 11+60.04
Θs = 4° 02' 39.9"
Ls = 240.00'
LT = 160.04'
ST = 80.04'

PI Sta 13+71.15
△ = 8° 49' 23.2" (LT)
D = 3° 22' 13.2"
L = 261.79'
T = 131.15'
R = 1,700.00'
V = 50 MPH
SE = 6%

FOR -L3- LT PROFILE, SEE SHEET NO. 87
FOR -L3- RT PROFILE, SEE SHEET NO. 87
FOR -RP15A- PROFILE, SEE SHEET NO. 109
FOR -RP15D- PROFILE, SEE SHEET NO. 110,111

11/21/2013
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R/W SHEET NO.

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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

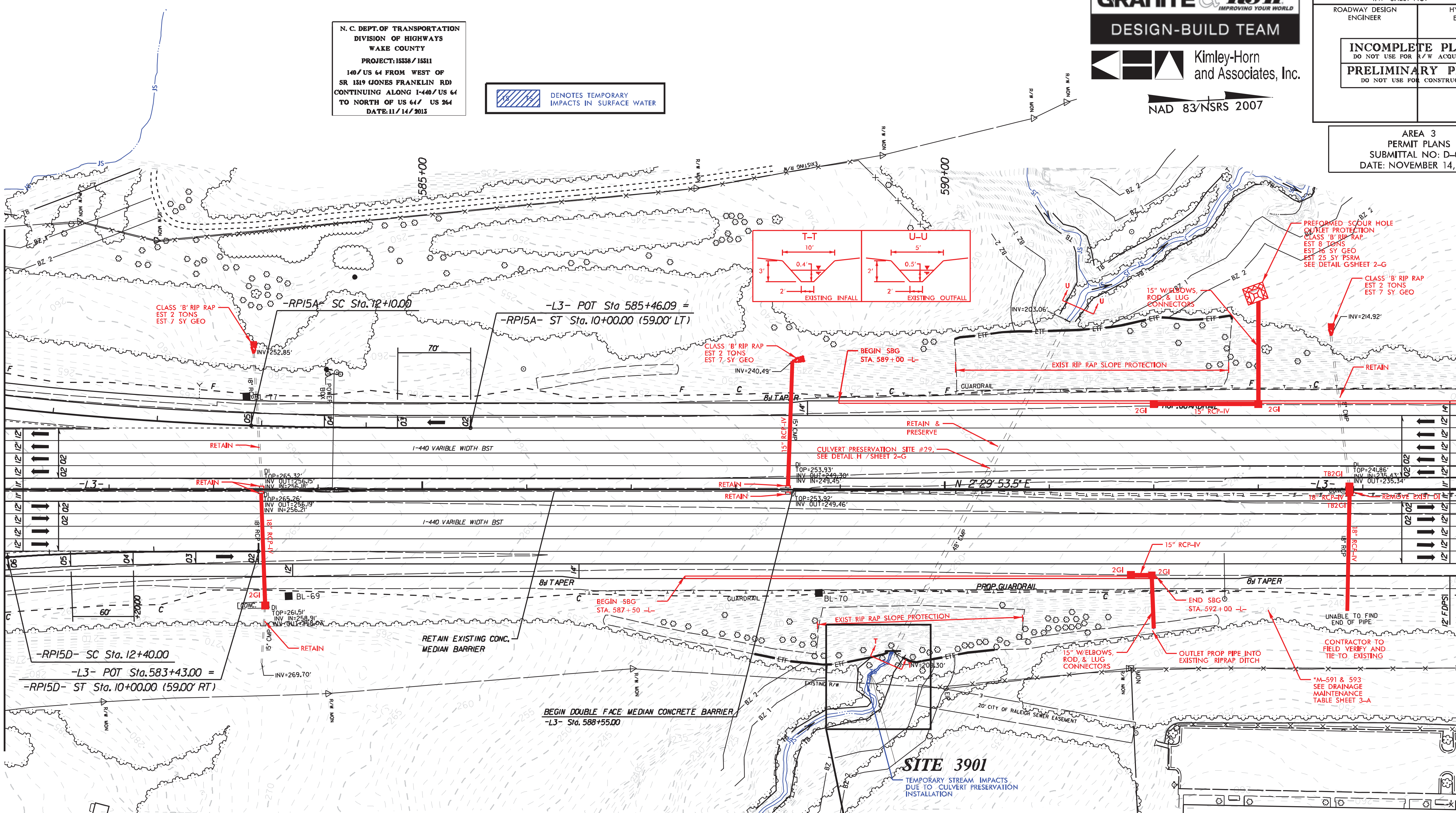
Kimley-Horn and Associates, Inc.

AREA 3
PERMIT PLANS
SUBMITTAL NO: D-061
DATE: NOVEMBER 14, 2013

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: I5338/I5311
I40/US 64 FROM WEST OF SR 1519 (JONES FRANKLIN RD) CONTINUING ALONG I-440/US 64 TO NORTH OF US 64/ US 264
DATE: 11/14/2013

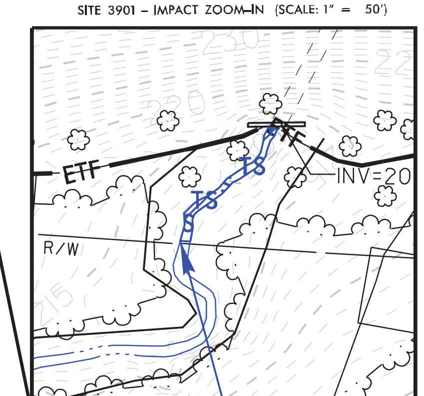
DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NAD 83/NSRS 2007



MATCHLINE SHEET 38 -L3- STA. 581+00.00
MATCHLINE SHEET 40 -L3- STA. 595+00.00
585+00
590+00
-RP15A- SC Sta. 12+10.00
-L3- POT Sta 585+46.09 =
-RP15A- ST Sta. 10+00.00 (59.00' LT)
-RP15D- SC Sta. 12+40.00
-L3- POT Sta. 583+43.00 =
-RP15D- ST Sta. 10+00.00 (59.00' RT)
CLASS 'B' RIP RAP
EST 2 TONS
EST 7 SY GEO
INV=252.85'
INV=240.49'
INV=203.06'
INV=214.92'
INV=269.70'
BEGIN SBG
STA. 589+00 -L-
EXIST RIP RAP SLOPE PROTECTION
PREFORMED SCOUR HOLE OUTLET PROTECTION
CLASS 'B' RIP RAP
EST 8 TONS
EST 16 SY GEO
EST 25 SY PSRM
SEE DETAIL GSHEET 2-G
15" W/ELBOWS, ROD & LUG CONNECTORS
RETAIN
RETAIN & PRESERVE
CULVERT PRESERVATION SITE #29, SEE DETAIL H / SHEET 2-G
I-440 VARIBLE WIDTH BST
N 2° 29' 53.5" E
REMOVE EXIST DI
BEGIN SBG
STA. 587+50 -L-
END SBG
STA. 592+00 -L-
RETAIN EXISTING CONC. MEDIAN BARRIER
BEGIN DOUBLE FACE MEDIAN CONCRETE BARRIER
-L3- Sta. 588+55.00
OUTLET PROP PIPE INTO EXISTING RIPRAP DITCH
UNABLE TO FIND END OF PIPE
CONTRACTOR TO FIELD VERIFY AND TIE-TO EXISTING
"M-591 & 593 SEE DRAINAGE MAINTENANCE TABLE SHEET 3-A
20' CITY OF RALEIGH SEWER EASEMENT
SITE 3901
TEMPORARY STREAM IMPACTS DUE TO CULVERT PRESERVATION INSTALLATION
T-T
U-U
EXISTING INFALL
EXISTING OUTFALL
8:1 TAPER
PROP. GUARDRAIL
BL-69
BL-70

SITE 3901 - IMPACT ZOOM-IN (SCALE: 1" = 50')



-RP15A- CURVE DATA

PIs Sta 11+40.01	PI Sta 15+16.83
Θs = 1° 55' 30.5"	Δ = 11° 12' 55.5" (RT)
Ls = 210.00'	D = 1° 50' 00.5"
LT = 140.01'	L = 611.71'
ST = 70.01'	T = 306.83'
	R = 3,125.00'
	V = 60 MPH

-RP15D- CURVE DATA

PIs Sta 11+60.04	PI Sta 13+71.15
Θs = 4° 02' 39.9"	Δ = 8° 49' 23.2" (LT)
Ls = 240.00'	D = 3° 22' 13.2"
LT = 160.04'	L = 261.79'
ST = 80.04'	T = 131.15'
	R = 1,700.00'
	V = 50 MPH
	SE = 6%

FOR -L3- LT PROFILE, SEE SHEET NO. 87
FOR -L3- RT PROFILE, SEE SHEET NO. 87
FOR -RP15A- PROFILE, SEE SHEET NO. 109
FOR -RP15D- PROFILE, SEE SHEET NO. 110,111

REVISIONS

8/17/99

11/21/2013
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8/17/99

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	40
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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

Kimley-Horn and Associates, Inc.

NAD 83/NSRS 2007

AREA 3
PERMIT PLANS
SUBMITTAL NO: D-061
DATE: NOVEMBER 14, 2013

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15338 / 15311
140 / US 64 FROM WEST OF
SR 1319 (JONES FRANKLIN RD
CONTINUING ALONG I-440 / US 64
TO NORTH OF US 64 / US 264
DATE: 11 / 14 / 2013

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

V–V: 7' / 0.4' / 4' / 3' EXISTING INFALL

W–W: 10' / 0.5' / 4' / 3' EXISTING OUTFALL

SITE 4001 – IMPACT ZOOM-IN (SCALE: 1" = 50')

INV=98.32'

INV=200.83

BZ 1

BZ 2

SITE 4001

TEMPORARY STREAM IMPACTS DUE TO CULVERT PRESERVATION INSTALLATION

595+00

600+00

605+00

615+00

-RP16B- PT Sta. 16+32.34

-L- POT Sta.595+67.66 =
-RP16B- ST Sta. 10+00.00 (59.00' RT)

-RP16B- SC Sta. 13+00.00

END CONSTRUCTION
-RP16B- Sta. 14+27.34

US 64 WB / I-440 EB FLYOVER

*M-617
SEE DRAINAGE MAINTENANCE TABLE SHEET 3-8

BANKS ONLY
CLASS II RIP RAP
EST 22 TONS
EST 41 SY GEO

*M-612
SEE DRAINAGE MAINTENANCE TABLE SHEET 3-8

18" W/ELBOWS, RSD & LUG CONNECTORS

15" RCP-IV

END SBG STA. 599+86 -L3-

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

15" W/ELBOWS, RSD & LUG CONNECTORS

CLASS 'B' RIP RAP
EST 5 TONS
EST 14 SY GEO

*M-605
*M-607
SEE DRAINAGE MAINTENANCE TABLE SHEET 3-8

INV=219.17'

INV=211.83'

B

PROP. GUARDRAIL

-RP16B-

-L3-

N 2° 29' 53.5" E

PLUG, FILL, AND ABANDON

5' CMP

15" RCP-IV

TB2GI

REMOVE

CULVERT PRESERVATION SITE #30, SEE DETAIL H / SHEET 2-G

DI
TOP=232.98'
INV OUT=229.49'

18" RCP-IV

REMOVE EXIST DI

DI
TOP=225.59'
INV IN=219.63'
INV OUT=219.54'

DI
TOP=221.88'
INV IN=216.30'
INV OUT=216.04'

REMOVE DI

REMOVE EXIST. GUARDRAIL

PROPOSED MEDIAN CONCRETE BARRIER

RETAIN & PRESERVE

*M-594
SEE DRAINAGE MAINTENANCE TABLE SHEET 3-8

-RP16C-

-RP16C- SC Sta. 13+00.00

8' TAPER

4' FDPS

RETAIN

15" RCP

DI
TOP=220.12'
INV OUT=217.92'

POSSIBLE U/G JUNCTION BOX

CONVERT BLIND JB TO JB W/MH COVER

DI
TOP=219.24'
INV OUT=217.19'

END CONSTRUCTION
-RP16C- Sta. 15+03.66

-RP16C- PT Sta. 16+18.66

I-440 WB / US 64 EB RAMP

-L3- POT Sta 600+81.34 =
-RP16C- ST Sta. 10+00.00 (59.00' RT)

BRICK H/W
INV=208.32'

EXISTING R/W

NON R/W

SITE 4001 – IMPACT ZOOM-IN (SCALE: 1" = 50')

C

MATCHLINE SHEET 39 -L3- STA. 595+00.00

MATCHLINE SHEET 41 -L3- STA. 609+00.00

DUKE REALTY LTD

-RP16B- CURVE DATA

PIs Sta 12+00.18	PI Sta 14+67.36
θs = 7° 32' 20J"	Δ = 16° 42' 12.5" (LT)
Ls = 300.00'	D = 5° 01' 33.4"
LT = 200.18'	L = 332.34'
ST = 100.17'	T = 167.36'
	R = 1,140.00'
	V = 55 MPH
	SE = 8%

-RP16C- CURVE DATA

PIs Sta 12+00.12	PI Sta 14+60.02
θs = 6° 08' 19.8"	Δ = 13° 02' 28.7" (RT)
Ls = 300.00'	D = 4° 05' 33.2"
LT = 200.12'	L = 318.86'
ST = 100.11'	T = 160.02'
	R = 1,400.00'
	V = 50 MPH
	SE = 7%

FOR -L3- LT PROFILE, SEE SHEET NO. 88
FOR -L3- RT PROFILE, SEE SHEET NO. 88
FOR -RP16B- PROFILE, SEE SHEET NO. 112
FOR -RP16C- PROFILE, SEE SHEET NO. 112

11/21/2013
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8/17/99

REVISIONS

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15338 / 15311
140 / US 64 FROM WEST OF SR 1319 (JONES FRANKLIN RD) CONTINUING ALONG I-440 / US 64 TO NORTH OF US 64 / US 264
DATE: 11 / 14 / 2013

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

GRANITE & RS+H — IMPROVING YOUR WORLD
DESIGN-BUILD TEAM
Kimley-Horn and Associates, Inc.

NAD 83/NSRS 2007

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	40
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

AREA 3
PERMIT PLANS
SUBMITTAL NO: D-061
DATE: NOVEMBER 14, 2013

SITE 4001 – IMPACT ZOOM-IN (SCALE: 1" = 50')

V–V: 7', 0.4', 4', 3' — EXISTING INFALL
W–W: 10', 0.5', 4', 3' — EXISTING OUTFALL

SITE 4001

TEMPORARY STREAM IMPACTS DUE TO CULVERT PRESERVATION INSTALLATION

MATCHLINE SHEET 39 –L3– STA. 595+00.00

MATCHLINE SHEET 41 –L3– STA. 609+00.00

595+00 600+00 605+00 615+00

-L- POT Sta.595+67.66 = -RP16B- ST Sta. 10+00.00 (59.00' RT)

-RP16B- SC Sta. 13+00.00

-RP16B- PT Sta. 16+32.34

END CONSTRUCTION -RP16B- Sta. 16+27.34

-L3- POT Sta 600+81.34 = -RP16C- ST Sta. 10+00.00 (59.00' RT)

-RP16C- SC Sta. 13+00.00

END CONSTRUCTION -RP16C- Sta. 15+03.66

-RP16C- PT Sta. 16+18.66

US 64 WB / I-440 EB FLYOVER

I-440 WB / US 64 EB RAMP

PROP. GUARDRAIL

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

15" W/ELBOWS, RSD & LUG CONNECTORS

BANKS ONLY CLASS II RIP RAP EST 22 TONS EST 41 SY GEO

*M-617 SEE DRAINAGE MAINTENANCE TABLE SHEET 3-B

*M-612 SEE DRAINAGE MAINTENANCE TABLE SHEET 3-B

18" W/ELBOWS, RSD & LUG CONNECTORS

15" RCP-IV

END SBG STA. 599+86 -L3-

INV=98.32'

INV=200.83

PLUG, FILL, AND ABANDON

5'x5' CMP

15" RCP-IV

TB2GI

REMOVE

CULVERT PRESERVATION SITE #30, SEE DETAIL H / SHEET 2-G

DI TOP=232.98' INV OUT=229.49'

REMOVE EXIST. GUARDRAIL

PROPOSED MEDIAN CONCRETE BARRIER

RETAIN & PRESERVE

*M-594 SEE DRAINAGE MAINTENANCE TABLE SHEET 3-B

BRICK H/W INV=208.32'

INV=208.32

SITE 4001

TEMPORARY STREAM IMPACTS DUE TO CULVERT PRESERVATION INSTALLATION

CLASS 'B' RIP RAP EST 5 TONS EST 14 SY GEO

*M-605 *M-607 SEE DRAINAGE MAINTENANCE TABLE SHEET 3-B

INV=219.17'

INV=211.83'

18" RCP-IV

REMOVE EXIST DI

DI TOP=221.88' INV IN=216.30' INV OUT=216.04'

DI TOP=225.59' INV IN=219.63' INV OUT=219.54'

REMOVE DI

18" RCP-IV

24" RCP-IV

RETAIN

15" RCP

DI TOP=220.12' INV OUT=217.92'

POSSIBLE U/G JUNCTION BOX

CONVERT BLIND JB TO JB W/MH COVER

DI TOP=219.24' INV OUT=217.19'

INV=221.09'

SITE 4001 – IMPACT ZOOM-IN (SCALE: 1" = 50')

BRICK H/W INV=208.32'

DUKE REALTY LTD

-RP16B- CURVE DATA

PIs Sta 12+00.18	PI Sta 14+67.36
θs = 7° 32' 20.1"	Δ = 16° 42' 12.5" (LT)
Ls = 300.00'	D = 5° 01' 33.4"
LT = 200.18'	L = 332.34'
ST = 100.17'	T = 167.36'
	R = 1,140.00'
	V = 55 MPH
	SE = 8%

-RP16C- CURVE DATA

PIs Sta 12+00.12	PI Sta 14+60.02
θs = 6° 08' 19.8"	Δ = 13° 02' 28.7" (RT)
Ls = 300.00'	D = 4° 05' 33.2"
LT = 200.12'	L = 318.86'
ST = 100.11'	T = 160.02'
	R = 1,400.00'
	V = 50 MPH
	SE = 7%

FOR –L3– LT PROFILE, SEE SHEET NO. 88
FOR –L3– RT PROFILE, SEE SHEET NO. 88
FOR –RP16B– PROFILE, SEE SHEET NO. 112
FOR –RP16C– PROFILE, SEE SHEET NO. 112

11/21/2013
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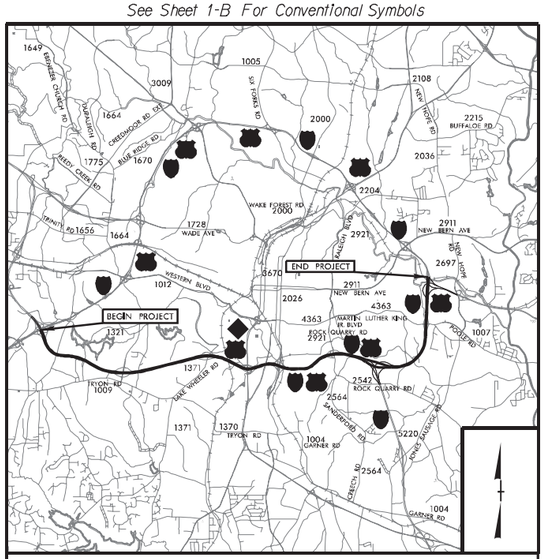
09/08/99

TIP PROJECT: I-5338, I-5311

CONTRACT: C203166

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



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WAKE COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-5338, I-5311	1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
46265.3.1	IMS-0440(13)	PE	

AREA 3
PERMIT PLANS
SUBMITTAL NO: D-061R2
DATE: DECEMBER 6, 2013

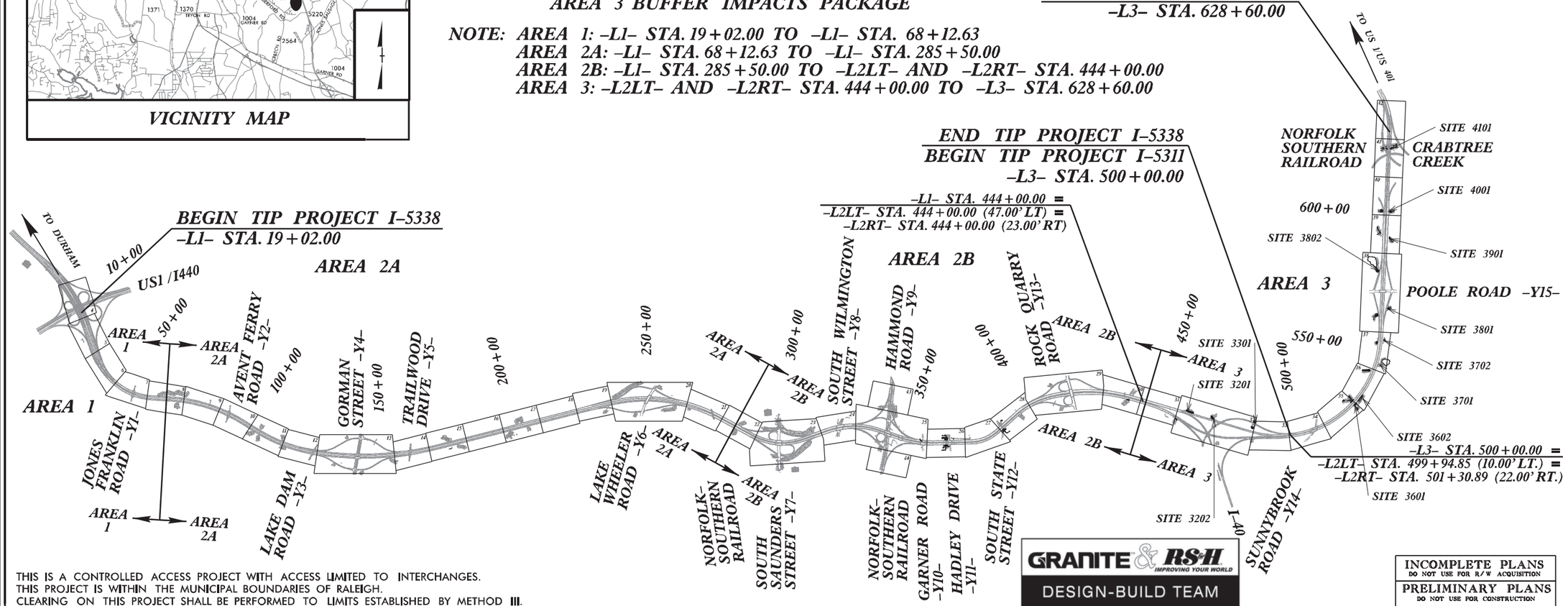
NAD 83/NSRS 2007

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

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

AREA 3 BUFFER IMPACTS PACKAGE

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



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

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

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

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

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

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

PROJECT LENGTH

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

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

K. ZAK HAMIDI, PE
NCDOT CONTACT

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

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: MAY 13, 2013

LETTING DATE: MAY 13, 2013

CHAD ROGERS, PE
PROJECT ENGINEER

JASON TALLEY, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

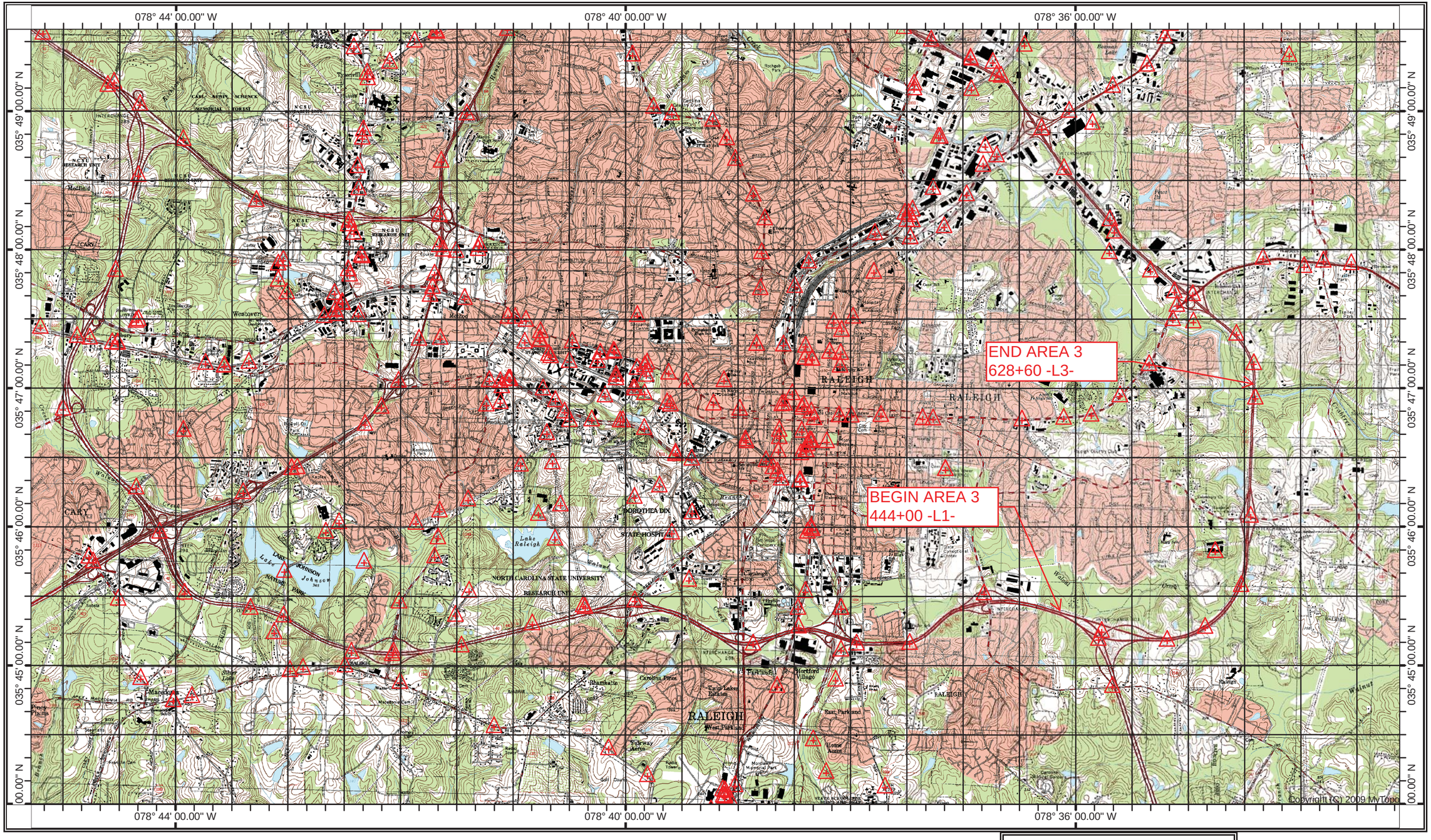
SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

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



SCALE 1:50000

0 10000 20000 30000

FEET

N

BUFFER IMPACTS SUMMARY

SITE NO.	STRUCTURE SIZE / TYPE	STATION (FROM/TO)	IMPACT									BUFFER REPLACEMENT	
			TYPE			ALLOWABLE			MITIGABLE				
			ROAD CROSSING	BRIDGE	PARALLEL IMPACT	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)
3201	ROADWAY	460+26 to 462+96 -L2LT-	PROTECTION OF EXISTING STRUCTURE			7490	2324	9814					
3201	ROADWAY	457+50 to 458+29 -L2RT-	X			0	1019*	1019*					
3202	ROADWAY	469+42 to 470+88 -L2LT-	PROTECTION OF EXISTING STRUCTURE			3321	2566	5887					
3301	ROADWAY	484+80 to 485+94 -L2LT-	PROTECTION OF EXISTING STRUCTURE			4232	3991	8223					
3601	ROADWAY	525+87 to 527+45 -L3-	X			2848	2014	4862					
3602	ROADWAY	527+99 to 530+91 -L3-			X				0	2574	2574		
3701	ROADWAY	539+66 to 540+43 -L3-	PROTECTION OF EXISTING STRUCTURE			8599	1188	9787					
3702	ROADWAY	550+77 to 552+40 -L3-	PROTECTION OF EXISTING STRUCTURE			3001	429	3430					
3801	ROADWAY	13+82 to 14+93 -RP15B- 18+92 to 19+50 -RP15C-	PROTECTION OF EXISTING STRUCTURE			6066	3186	9252					
3802	ROADWAY	18+80 to 17+81 -RP15A-	PROTECTION OF EXISTING STRUCTURE			3356	2078	5434					
3901	ROADWAY	589+31 to 590+10 -L3-	PROTECTION OF EXISTING STRUCTURE			782	560	1342					
4001	ROADWAY	599+03 to 599+58 -L3- 13+61 to 14+60 -RP16B-	PROTECTION OF EXISTING STRUCTURE			5525	2897	8422					
4101	ROADWAY	622+18 to 622+69 -L3-		X		606	98	704					
TOTAL:						45826	21331	67157	0	2574	2574		

*Impacts shown were previously permitted on MOT (Maintenance of Traffic) Buffer Permit and are not included in the total impacts for Area 3

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

WAKE COUNTY
PROJECT: 46265.3.1 (I5338/I5311)

12/6/2013

SHEET 1 OF 1

Rev. May 2006

WETLANDS IN BUFFER IMPACTS SUMMARY

SITE NO.	STATION (FROM/TO)		WETLANDS IN BUFFERS ZONE 1 (ft^2)	WETLANDS IN BUFFERS ZONE 2 (ft^2)
3202	469+75/470+57 -L2LT-		1780	28
TOTAL:			1780	28

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

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

11/14/2013
SHEET 1 OF 1

Rev. Jan 2009

REVISIONS

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15538 / 15311
I40 / US 64 FROM WEST OF
SR 1519 (JONES FRANKLIN RD)
CONTINUING ALONG I-440 / US 64
TO NORTH OF US 64 / US 264
DATE: 11 / 14 / 2013

ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2
IMPACTS PERMITTED ON MOT BUFFER PERMITS

GRANITE & R&H CONSTRUCTORS, INC.
DESIGN-BUILD TEAM
Kimley-Horn and Associates, Inc.

NAD 83/NSRS 2007

PROJECT REFERENCE NO.	SHEET NO.
I-5538 / I-5311	32
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

AREA 3
PERMIT PLANS
SUBMITTAL NO. D-061
DATE: NOVEMBER 14, 2013

MATCHLINE SHEET 31
-L2- LT STA. 457+00.00

MATCHLINE SHEET 31
-L2- RT STA. 457+00.00

MATCHLINE SHEET 33
-L2- LT STA. 485+00.00

MATCHLINE SHEET 33
-L2- RT STA. 486+00.00

SITE 3201

SITE 3202

SITE 3301

B

C

D

Maintence Items Causing Impacts		
Item Number	RFP Required Repairs	Proposed Repairs
M-270	Remove tree over pipe & cleanout adjacent pipe & daylight to drain	Remove tree and clean out pipes/stream
M-290	Remove sediment loading & clean out pipes. This system causes I-40 East flooding on heavy rain events	Clean out pipes/stream
M-292	Remove tree & cleanout pipe & ensure positive drainage	Remove tree and clean out pipe/stream

SITE 3201 – IMPACT ZOOM-IN (SCALE: 1" = 50')

FOR -L2- LT PROFILE, SEE SHEET NO. 78,79
FOR -L2- RT PROFILE, SEE SHEET NO. 78,79
FOR -RP14B- PROFILE, SEE SHEET NO. 107
FOR -RP14C- PROFILE SEE SHEET NO. 107,108
FOR -RP14D- PROFILE, SEE SHEET NO. 108

-L2RT- CURVE DATA

Pis Sta 457+00.33	Pis Sta 461+80.33	PI Sta 465+55.48	Pis Sta 468+73.92	PI Sta 474+08.87	Pis Sta 479+97.84	Pis Sta 483+17.78	PI Sta 487+44.53
θs = 2° 39' 41.5"	θs = 2° 39' 41.5"	Δ = 7° 18' 09.17" (LT)	θs = 0° 5' 33.9"	Δ = 80° 15' 48.8" (LT)	θs = 3° 50' 53.6"	θs = 0° 15' 50.0"	Δ = 5° 24' 29.7" (RT)
Ls = 350.00'	Ls = 350.00'	D = 1° 25' 56.6"	θs = 1° 16' 57.9"	D = 2° 08' 15.4"	Ls = 350.00'	Ls = 120.00'	D = 0° 26' 26.2"
LT = 240.03'	LT = 240.03'	L = 509.65'	Ls = 120.00'	L = 947.82'	LT = 240.06'	LT = 80.00'	L = 773.27'
ST = 120.02'	ST = 120.02'	T = 255.17'	LT = 63.36'	T = 473.9'	ST = 120.05'	ST = 40.00'	T = 386.73'
		R = 4,000.00'	ST = 56.05'	R = 2,680.00'			R = 13,000.00'
		V = 70 MPH		V = 70 MPH			V = 70 MPH
		SE = 6%		SE = 8%			SE = 2%

-L4OE- CURVE DATA

PI Sta 141+0.75
Δ = 13° 22' 06.7" (RT)
D = 1° 27' 15.1"
L = 993.30'
T = 497.75'
R = 3,940.00'
V = 70 MPH
SE = 6%

-L4OW- CURVE DATA

Pis Sta 124+00.09	PI Sta 151+52.05
θs = 5° 22' 17.3"	Δ = 17° 54' 17.8" (RT)
Ls = 300.00'	D = 3° 34' 9.6"
LT = 200.09'	L = 500.00'
ST = 100.06'	T = 252.05'
	R = 1,600.00'
	V = 65 MPH
	SE = 5%

-L3- CURVE DATA

Pis Sta 484+83.41
θs = 3° 45' 45.2"
Ls = 500.00'
LT = 333.4'
ST = 166.74'

-L2LT- CURVE DATA

Pis Sta 486+63.21
θs = 3° 39' 15.4"
Ls = 360.00'
LT = 240.04'
ST = 120.04'

-L400- CURVE DATA

Pis Sta 275+15.91	PI Sta 296+57.98
θs = 15° 09' 39.5"	Δ = 14° 24' 56.0" (LT)
Ls = 600.00'	D = 5° 05' 53.7"
LT = 404.47'	L = 285.56'
ST = 201.34'	T = 143.5'
	R = 1,135.00'
	V = 55MPH
	SE = 7%

GRAPHIC SCALE
50 25 0 50 100
PLANS

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

REVISIONS

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

PROJECT: I5338 / I5311

I40 / US 64 FROM WEST OF SR 1319 (JONES FRANKLIN RD) CONTINUING ALONG I-440 / US 64 TO NORTH OF US 64 / US 264

DATE: 11 / 14 / 2013

(green hatch)	ALLOWABLE IMPACTS ZONE 1
(magenta hatch)	ALLOWABLE IMPACTS ZONE 2
(black hatch)	IMPACTS PERMITTED ON MOT BUFFER PERMITS

GRANITE & RS&H — DESIGN-BUILD TEAM

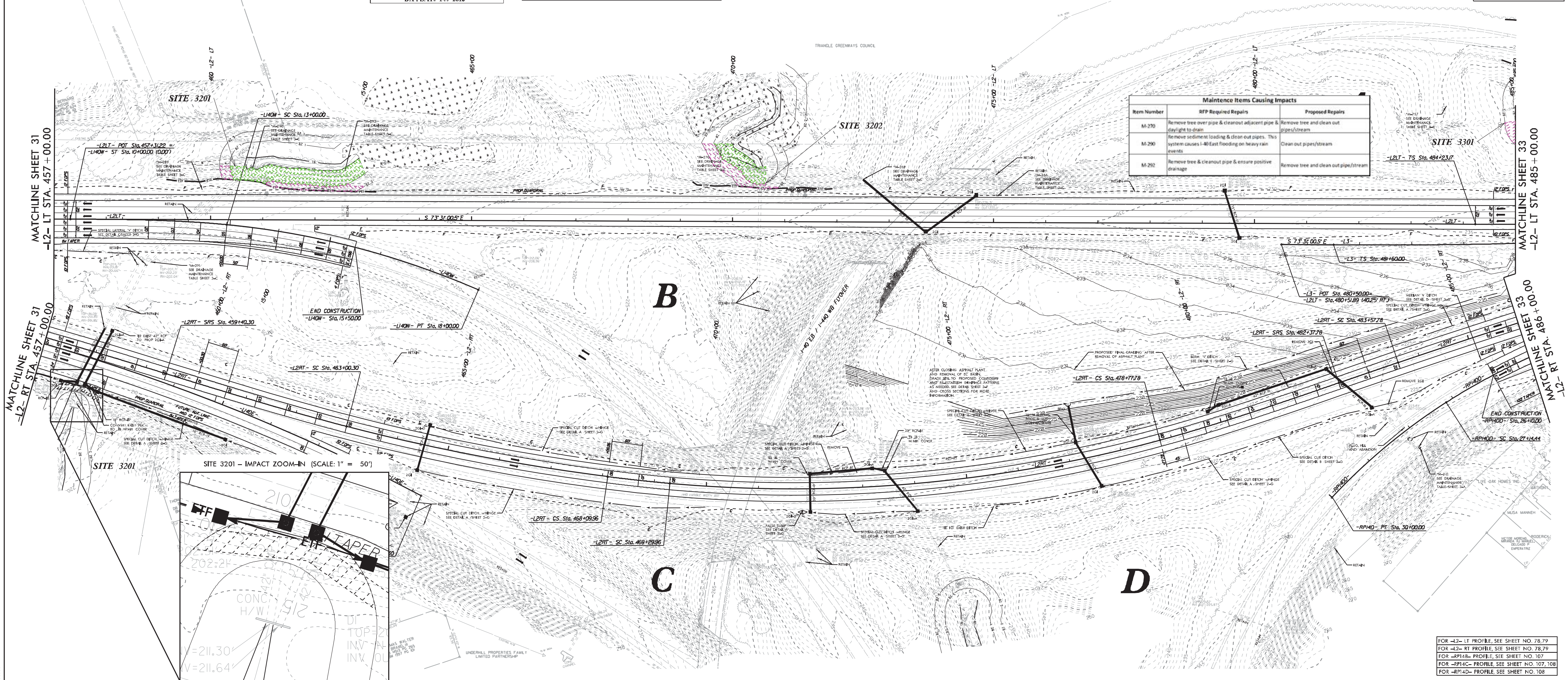
Kimley-Horn and Associates, Inc.

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	32
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

AREA 3
PERMIT PLANS
SUBMITTAL NO: D-061
DATE: NOVEMBER 14, 2013



Maintence Items Causing Impacts		
Item Number	RFP Required Repairs	Proposed Repairs
M-270	Remove tree over pipe & cleanout adjacent pipe & daylight to drain	Remove tree and clean out pipes/stream
M-290	Remove sediment loading & clean out pipes. This system causes I-40 East flooding on heavy rain events	Clean out pipes/stream
M-292	Remove tree & cleanout pipe & ensure positive drainage	Remove tree and clean out pipe/stream

FOR -L2- LT PROFILE, SEE SHEET NO. 78,79
FOR -L2- RT PROFILE, SEE SHEET NO. 78,79
FOR -RP14B- PROFILE, SEE SHEET NO. 107
FOR -RP14C- PROFILE, SEE SHEET NO. 107,108
FOR -RP14D- PROFILE, SEE SHEET NO. 108

-L2RT- CURVE DATA

PIs Sta 457+00.33	PIs Sta 461+80.33	PI Sta 465+55.48	PIs Sta 468+73.92	PI Sta 474+08.87	PIs Sta 479+97.84	PIs Sta 483+17.78	PI Sta 487+44.53
θs = 2° 34' 41.9"	θs = 2° 34' 41.9"	Δ = 7° 18' 01.0" (LT)	θs = 0° 51' 33.9"	Δ = 20° 15' 48.8" (LT)	θs = 3° 50' 53.6"	θs = 0° 15' 52.0"	Δ = 3° 24' 29.1" (RT)
Ls = 360.00'	Ls = 360.00'	D = 1° 25' 56.6"	θs = 1° 16' 57.9"	D = 2° 08' 16.4"	Ls = 360.00'	Ls = 120.00'	D = 0° 26' 26.7"
LT = 240.03'	LT = 240.03'	L = 509.65'	Ls = 120.00'	L = 947.82'	LT = 240.06'	LT = 80.00'	L = 773.27'
ST = 120.02'	ST = 120.02'	T = 255.17'	LT = 63.96'	T = 478.91'	ST = 120.05'	ST = 40.00'	T = 386.75'
		R = 4,000.00'	ST = 56.05'	R = 2,680.00'			R = 13,000.00'
		V = 70 MPH		V = 70 MPH			V = 70 MPH
		SE = 6%		SE = 8%			SE = 2%

-L140E- CURVE DATA

PI Sta 14+61.75
Δ = 13° 22' 06.7" (RT)
D = 1° 27' 15.1"
L = 919.30'
T = 461.75'
R = 3,940.00'
V = 70 MPH
SE = 6%

-L140W- CURVE DATA

PIs Sta 12+00.09	PI Sta 15+52.05
θs = 5° 22' 17.3"	Δ = 17° 54' 17.8" (RT)
Ls = 300.00'	D = 3° 34' 51.6"
LT = 200.09'	L = 500.00'
ST = 100.08'	T = 252.05'
	R = 1,600.00'
	V = 65 MPH
	SE = 9%

-L3- CURVE DATA

PIs Sta 484+83.41
θs = 3° 45' 45.1"
Ls = 500.00'
LT = 333.41'
ST = 166.74'

-L2LT- CURVE DATA

PIs Sta 486+63.21
θs = 3° 20' 15.4"
Ls = 360.00'
LT = 240.04'
ST = 120.04'

-L140D- CURVE DATA

PIs Sta 25+15.91	PI Sta 28+57.98
θs = 15° 08' 39.3"	Δ = 14° 24' 56.0" (LT)
Ls = 600.00'	D = 5° 02' 53.1"
LT = 401.47'	L = 285.56'
ST = 201.34'	T = 143.54'
	R = 1,135.00'
	V = 55MPH
	SE = 7%

GRAPHIC SCALE
50 25 0 50 100
PLANS

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

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	33
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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

Kimley-Horn
and Associates, Inc.

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: I5338/ I5311
I40/ US 64 FROM WEST OF
SR 1319 (JONES FRANKLIN RD)
CONTINUING ALONG I-440/ US 64
TO NORTH OF US 64/ US 264
DATE: 08/ 13/ 2013

AREA 3
PERMIT PLANS
SUBMITTAL NO: D–061
DATE: NOVEMBER 14, 2013

REVISIONS

-RAMPI40A- CURVE DATA
PI Sta 20+26.25
△ = 16° 02' 27.9" (RT)
D = 3° 00' 56.0"
L = 531.94'
T = 267.72'
R = 1,900.00'
V = 50 MPH
SE = 6%

🟩 ALLOWABLE IMPACTS ZONE 1

▨ ALLOWABLE IMPACTS ZONE 2

Maintence Items Causing Impacts		
Item Number	RFP Required Repairs	Proposed Repairs
M-255	Remove trees at outlet & construct dissipater	Remove trees and construct dissipator in stream and along banks
M-259	Remove trees at outlet, reset FES, & construct dissipater	Rip Rap Present. FES Stable. Remove all trees over pipe and in short ditch section (no grubbing)

-L2RT- CURVE DATA

PI Sta 487+44.53
△ = 3° 24' 29.1" (RT)
D = 0° 26' 26.7"
L = 773.27'
T = 386.75'
R = 13,000.00'
V = 70 MPH
SE = 2%

PIs Sta 496+21.08
θs = 2° 41' 36.4"
Ls = 360.00'
LT = 240.03'
ST = 120.03'

PI Sta 499+36.14
△ = 5° 50' 00.0" (LT)
D = 1° 29' 46.9"
L = 389.83'
T = 195.09'
R = 3,829.00'
V = 70 MPH
SE = 6%

-RAMPI40D- CURVE DATA

PI Sta 10+97.53
△ = 2° 54' 00.0" (RT)
D = 1° 29' 13.4"
L = 195.02'
T = 97.53'
R = 3,853.00'
V = 70 MPH
SE = 6%

PIs Sta 13+55.08
θs = 3° 34' 08.1"
Ls = 480.00'
LT = 320.07'
ST = 160.06'

PIs Sta 25+15.91
θs = 15° 08' 39.3"
Ls = 600.00'
LT = 401.47'
ST = 201.34'

-L3- CURVE DATA

PIs Sta 484+83.41
θs = 3° 45' 45.1"
Ls = 500.00'
LT = 333.41'
ST = 166.74'

PI Sta 498+02.52
△ = 33° 41' 10.1" (LT)
D = 1° 30' 18.0"
L = 2,238.26'
T = 1,152.52'
R = 3,807.00'
V = 70 MPH
SE = 6%

FOR -L2- LT PROFILE, SEE SHEET NO. 80
FOR -L2- RT PROFILE, SEE SHEET NO. 80
FOR -RP14A- PROFILE, SEE SHEET NO. 107
FOR -RP14D- PROFILE, SEE SHEET NO. 108

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	33
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

AREA 3
PERMIT PLANS
SUBMITTAL NO: D-061
DATE: NOVEMBER 14, 2013

GRANITE & RS&H IMPROVING YOUR WORLD
DESIGN-BUILD TEAM
Kimley-Horn and Associates, Inc.

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: I5338/ I5311
I40/ US 64 FROM WEST OF
SR 1319 (JONES FRANKLIN RD)
CONTINUING ALONG I-440/ US 64
TO NORTH OF US 64/ US 264
DATE: 08/ 13/ 2013

REVISIONS

8/17/99

-RAMPI40A- CURVE DATA

PI Sta 20+26.25
Δ = 16° 02′ 27.9″ (RT)
D = 3° 00′ 56.0″
L = 531.94′
T = 267.72′
R = 1,900.00′
V = 50 MPH
SE = 6%

WALNUT RIDGE PARTNERS LMTD PTNSHP

🟩	ALLOWABLE IMPACTS ZONE 1
▨	ALLOWABLE IMPACTS ZONE 2

Maintence Items Causing Impacts

Item Number	RFP Required Repairs	Proposed Repairs
M-255	Remove trees at outlet & construct dissipater	Remove trees and construct dissipator in stream and along banks
M-259	Remove trees at outlet, reset FES, & construct dissipater	Rip Rap Present. FES Stable. Remove all trees over pipe and in short ditch section (no grubbing)

-L2RT- CURVE DATA

PI Sta 487+44.53
Δ = 3° 24′ 29.1″ (RT)
D = 0° 26′ 26.7″
L = 773.27′
T = 386.75′
R = 13,000.00′
V = 70 MPH
SE = 2%

PIs Sta 496+21.08
θs = 2° 41′ 36.4″
Ls = 360.00′
LT = 240.03′
ST = 120.03′

PI Sta 499+36.14
Δ = 5° 50′ 00.0″ (LT)
D = 1° 29′ 46.9″
L = 389.83′
T = 195.09′
R = 3,829.00′
V = 70 MPH
SE = 6%

-RAMPI40D- CURVE DATA

PI Sta 10+97.53
Δ = 2° 54′ 00.0″ (RT)
D = 1° 29′ 13.4″
L = 195.02′
T = 97.53′
R = 3,853.00′
V = 70 MPH
SE = 6%

PIs Sta 13+55.08
θs = 3° 34′ 08.1″
Ls = 480.00′
LT = 320.07′
ST = 160.06′

PIs Sta 25+15.91
θs = 15° 08′ 39.3″
Ls = 600.00′
LT = 401.47′
ST = 201.34′

-L3- CURVE DATA

PIs Sta 484+83.41
θs = 3° 45′ 45.1″
Ls = 500.00′
LT = 333.41′
ST = 166.74′

PI Sta 498+02.52
Δ = 33° 41′ 10.1″ (LT)
D = 1° 30′ 18.0″
L = 2,238.26′
T = 1,152.52′
R = 3,807.00′
V = 70 MPH
SE = 6%

FOR -L2- LT PROFILE, SEE SHEET NO. 80
FOR -L2- RT PROFILE, SEE SHEET NO. 80
FOR -RP14A- PROFILE, SEE SHEET NO. 107
FOR -RP14D- PROFILE, SEE SHEET NO. 108

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	36
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

AREA 3
PERMIT PLANS
SUBMITTAL NO: D-061
DATE: NOVEMBER 14, 2013

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: I5338 / I5311
I40 / US 64 FROM WEST OF
SR 1319 (JONES FRANKLIN RD)
CONTINUING ALONG I-440 / US 64
TO NORTH OF US 64 / US 264
DATE: 11 / 14 / 2013

GRANITE & RS&H IMPROVING YOUR WORLD
DESIGN-BUILD TEAM
Kimley-Horn and Associates, Inc.

-L3- CURVE DATA
PI Sta 532+19.21
Δ = 62° 47′ 10.8″ (LT)
D = 1° 30′ 00.0″
L = 4,185.76′
T = 2,330.94′
R = 3,819.72′
V = 70 MPH
SE = 6%

- 🟩 ALLOWABLE IMPACTS ZONE 1
- ▨ ALLOWABLE IMPACTS ZONE 2
- ▨ MITIGABLE IMPACTS ZONE 2

FOR -L3- LT PROFILE, SEE SHEET NO. 83
FOR -L3- RT PROFILE, SEE SHEET NO. 83

REVISIONS

8/17/99

8/17/99

REVISIONS

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

-L3- CURVE DATA
PI Sta 532+19.21
Δ = 62° 47' 10.8" (LT)
D = 1° 30' 00.0"
L = 4,185.76'
T = 2,330.94'
R = 3,819.72'
V = 70 MPH
SE = 6%

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15338 / 15311
I40 / US 64 FROM WEST OF
SR 1319 (JONES FRANKLIN RD)
CONTINUING ALONG I-440 / US 64
TO NORTH OF US 64 / US 264
DATE: 11 / 14 / 2013

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

GRANITE & RS+H IMPROVING YOUR WORLD
DESIGN-BUILD TEAM
Kimley-Horn and Associates, Inc.

NAD 83/NSRS 2007

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	36
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

AREA 3
PERMIT PLANS
SUBMITTAL NO: D-061
DATE: NOVEMBER 14, 2013

MATCHLINE SHEET 35 -L3- STA. 525+50.00

MATCHLINE SHEET 37 -L3- STA. 539+00

SITE 3601

SITE 3602

CITY OF RALEIGH

100' CITY OF RALEIGH SEWER EASEMENT BM 1971 PG 470

STATE OF NORTH CAROLINA

REMOVE EXIST. GUARDRAIL

PROP. GUARDRAIL

18" W/ELBOWS, ROD, & LUG CONNECTORS

15" RCP-IV

18" RCP-IV

END SBC STA. 532+50 -L3-

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

"M-475 SEE DRAINAGE MAINTENANCE TABLE SHEET 3-B

"M-673 SEE DRAINAGE MAINTENANCE TABLE SHEET 3-B

RETAIN

RETAIN 4 @ 13'x14' RCBC & 1 @ 13'x8' PEDESTRIAN RCBC

PLUG, FILL AND ABANDON

RETAIN EXISTING CONC. MEDIAN BARRIER

CLEAN OUT PIPE ENTRANCE

12' FDPS

EVERGREEN CONSTRUCTION CO.

BEATRICE W. NDIANGUI KIAMA

JONATHAN & NANCY BOTCHWAY

ROBERT ANTHONY GIVENS

HABITAT FOR HUMANITY

20' CITY OF RALEIGH SEWER EASEMENT BM 1994 PG 1391

RALPHETTE L MURPHY

COURTNEY S. UTLEY

FLORIAN T. LEGBAGAH

JOSEPH KAGERA CHEGE

YASMIN RATLIFF

EXISTING R/W

FOR -L3- LT PROFILE, SEE SHEET NO. 83
FOR -L3- RT PROFILE, SEE SHEET NO. 83

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	37
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

GRANITE & RS&H IMPROVING YOUR WORLD
DESIGN-BUILD TEAM
Kimley-Horn and Associates, Inc.

AREA 3
PERMIT PLANS
SUBMITTAL NO: D-061
DATE: NOVEMBER 14, 2013

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: I5338 / I5311
I40 / US 64 FROM WEST OF
SR 1319 (JONES FRANKLIN RD)
CONTINUING ALONG I-440 / US 64
TO NORTH OF US 64 / US 264
DATE: 11 / 14 / 2013

-L3- CURVE DATA

PI Sta 532+19.21
Δ = 62° 47′ 10.8″ (LT)
D = 1° 30′ 00.0″
L = 4,185.76′
T = 2,330.94′
R = 3,819.72′
V = 70 MPH
SE = 6%

PIs Sta 552+40.75
θs = 3° 45′ 00.0″
Ls = 500.00′
LT = 333.41′
ST = 166.73′

🟩	ALLOWABLE IMPACTS ZONE 1
🟪	ALLOWABLE IMPACTS ZONE 2

Maintence Items Causing Impacts

Item Number	RFP Required Repairs	Proposed Repairs
M-272	Remove trees at outlet & clean out ditch & pipe to provide positive drainage	Remove trees and clean out ditch and pipe
M-564	Repair R/W fence and remove sediment build up	Repair R/W fence/no sediment to remove
M-655	Remove trees & construct dissipater	Remove trees, construct dissipator
M-665	2/3 full of slit. Clean out & daylight to drain & remove trees	Clean out pipe/stream and remove trees

FOR -L3- LT PROFILE, SEE SHEET NO. 84
FOR -L3- RT PROFILE, SEE SHEET NO. 84

REVISIONS

8/17/99

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

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	37
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

AREA 3
PERMIT PLANS
SUBMITTAL NO: D-061
DATE: NOVEMBER 14, 2013

GRANITE & RS&H
IMPROVING YOUR WORLD
DESIGN-BUILD TEAM
Kimley-Horn and Associates, Inc.

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15338 / 15311
I40 / US 64 FROM WEST OF
SR 1319 (JONES FRANKLIN RD)
CONTINUING ALONG I-440 / US 64
TO NORTH OF US 64 / US 264
DATE: 11 / 14 / 2013

-L3- CURVE DATA

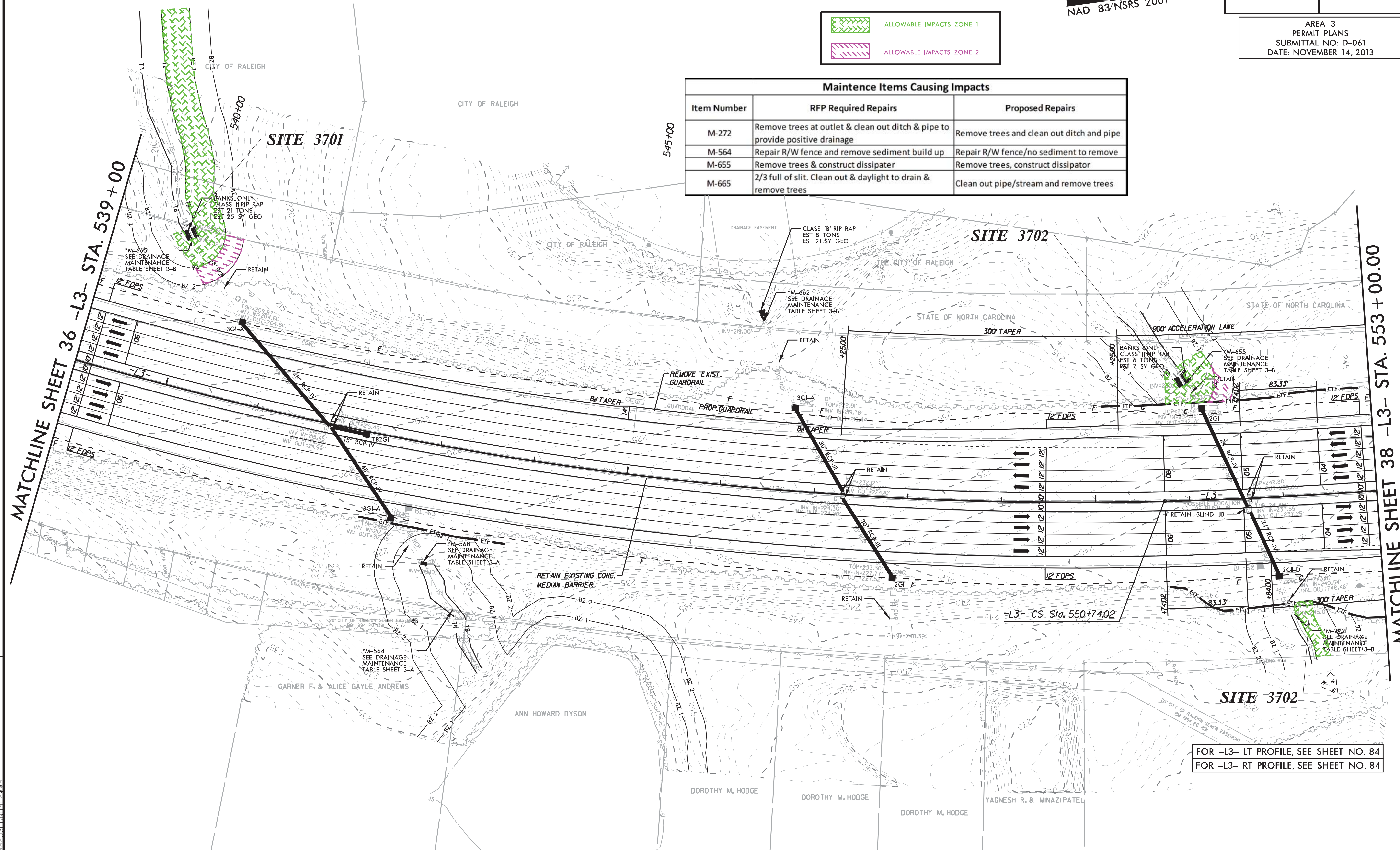
PI Sta 532+19.21	PIs Sta 552+40.75
Δ = 62° 47' 10.8" (LT)	Θs = 3° 45' 00.0"
D = 1° 30' 00.0"	Ls = 500.00'
L = 4,185.76'	LT = 333.41'
T = 2,330.94'	ST = 166.73'
R = 3,819.72'	
V = 70 MPH	
SE = 6%	

ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2

NAD 83/NSRS 2007

Maintence Items Causing Impacts

Item Number	RFP Required Repairs	Proposed Repairs
M-272	Remove trees at outlet & clean out ditch & pipe to provide positive drainage	Remove trees and clean out ditch and pipe
M-564	Repair R/W fence and remove sediment build up	Repair R/W fence/no sediment to remove
M-655	Remove trees & construct dissipater	Remove trees, construct dissipator
M-665	2/3 full of slit. Clean out & daylight to drain & remove trees	Clean out pipe/stream and remove trees



FOR -L3- LT PROFILE, SEE SHEET NO. 84
FOR -L3- RT PROFILE, SEE SHEET NO. 84

REVISIONS

8/17/99

REVISIONS

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: I5338 / I5311
I40 / US 64 FROM WEST OF SR 1319 (JONES FRANKLIN RD) CONTINUING ALONG I-440 / US 64 TO NORTH OF US 64 / US 264
DATE: 11 / 14 / 2013

ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2

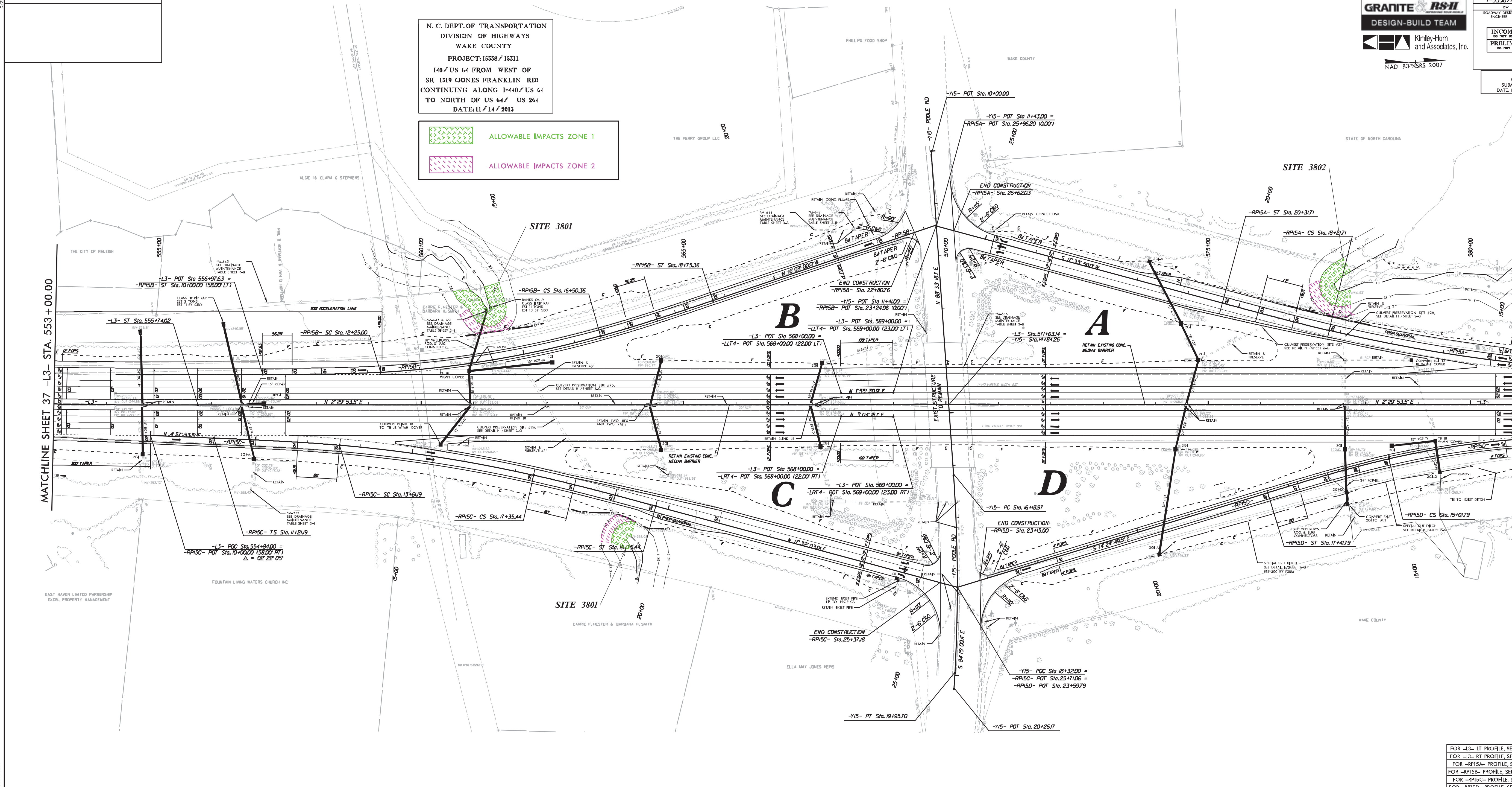
PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	38
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

GRANITE & RS&H DESIGN-BUILD TEAM
Kimley-Horn and Associates, Inc.

NAD 83/NSRS 2007

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

AREA 3
PERMIT PLANS
SUBMITTAL NO: D-061
DATE: NOVEMBER 14, 2013



-RP15B- CURVE DATA

PIs Sta 11+50.02	PI Sta 14+38.49	PIs Sta 17+25.39
θs = 3° 13' 22.4"	Δ = 12° 11' 08.7" (LT)	θs = 3° 13' 22.4"
Ls = 225.00'	D = 2° 51' 53.2"	Ls = 225.00'
LT = 150.02'	L = 425.36'	LT = 150.02'
ST = 75.02'	T = 213.49'	ST = 75.02'
	R = 2,000.00'	
	V = 55 MPH	
	SE = 6%	

-RP15C- CURVE DATA

PIs Sta 12+81.21	PI Sta 15+48.60	PIs Sta 18+15.46
θs = 2° 27' 19.9"	Δ = 7° 39' 29.7" (RT)	θs = 2° 27' 19.9"
Ls = 240.00'	D = 2° 02' 46.6"	Ls = 240.00'
LT = 160.02'	L = 374.25'	LT = 160.02'
ST = 80.01'	T = 187.41'	ST = 80.01'
	R = 2,800.00'	
	V = 55 MPH	
	SE = 5%	

-L3- CURVE DATA

PIs Sta 552+40.75
θs = 3° 45' 00.0"
Ls = 500.00'
LT = 333.41'
ST = 166.73'

-Y15- CURVE DATA

PI Sta 18+07.58
Δ = 7° 11' 41.5" (RT)
D = 1° 54' 35.5"
L = 376.72'
T = 188.61'
R = 3,000.00'

-RP15A- CURVE DATA

PI Sta 15+16.83	PIs Sta 18+91.71
Δ = 11° 12' 55.5" (RT)	θs = 1° 55' 30.5"
D = 1° 50' 00.5"	Ls = 210.00'
L = 611.71'	LT = 140.01'
T = 306.83'	ST = 70.01'
R = 3,125.00'	
V = 60 MPH	
SE = 5%	

-RP15D- CURVE DATA

PI Sta 13+71.15	PIs Sta 15+81.83
Δ = 8° 49' 23.2" (LT)	θs = 4° 02' 39.9"
D = 3° 22' 13.2"	Ls = 240.00'
L = 261.79'	LT = 160.04'
T = 131.15'	ST = 80.04'
R = 1,700.00'	
V = 50 MPH	
SE = 6%	

FOR -L3- LT PROFILE, SEE SHEET NO. 85,86
FOR -L3- RT PROFILE, SEE SHEET NO. 85,86
FOR -RP15A- PROFILE, SEE SHEET NO. 109
FOR -RP15B- PROFILE, SEE SHEET NO. 109,110
FOR -RP15C- PROFILE, SEE SHEET NO. 110
FOR -RP15D- PROFILE, SEE SHEET NO. 110,111

GRAPHIC SCALE
50 25 0 50 100
PLANS

LOCATION:

TIP NO.: COUNTY:

DESIGNED BY:

CHECKED BY: DATE:

REVISIONS

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: I5338 / I5311
I40 / US 64 FROM WEST OF
SR 1319 (JONES FRANKLIN RD)
CONTINUING ALONG I-440 / US 64
TO NORTH OF US 64 / US 264
DATE: 11 / 14 / 2013

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

GRANITE & RS&H DESIGN-BUILD TEAM

Kimley-Horn and Associates, Inc.

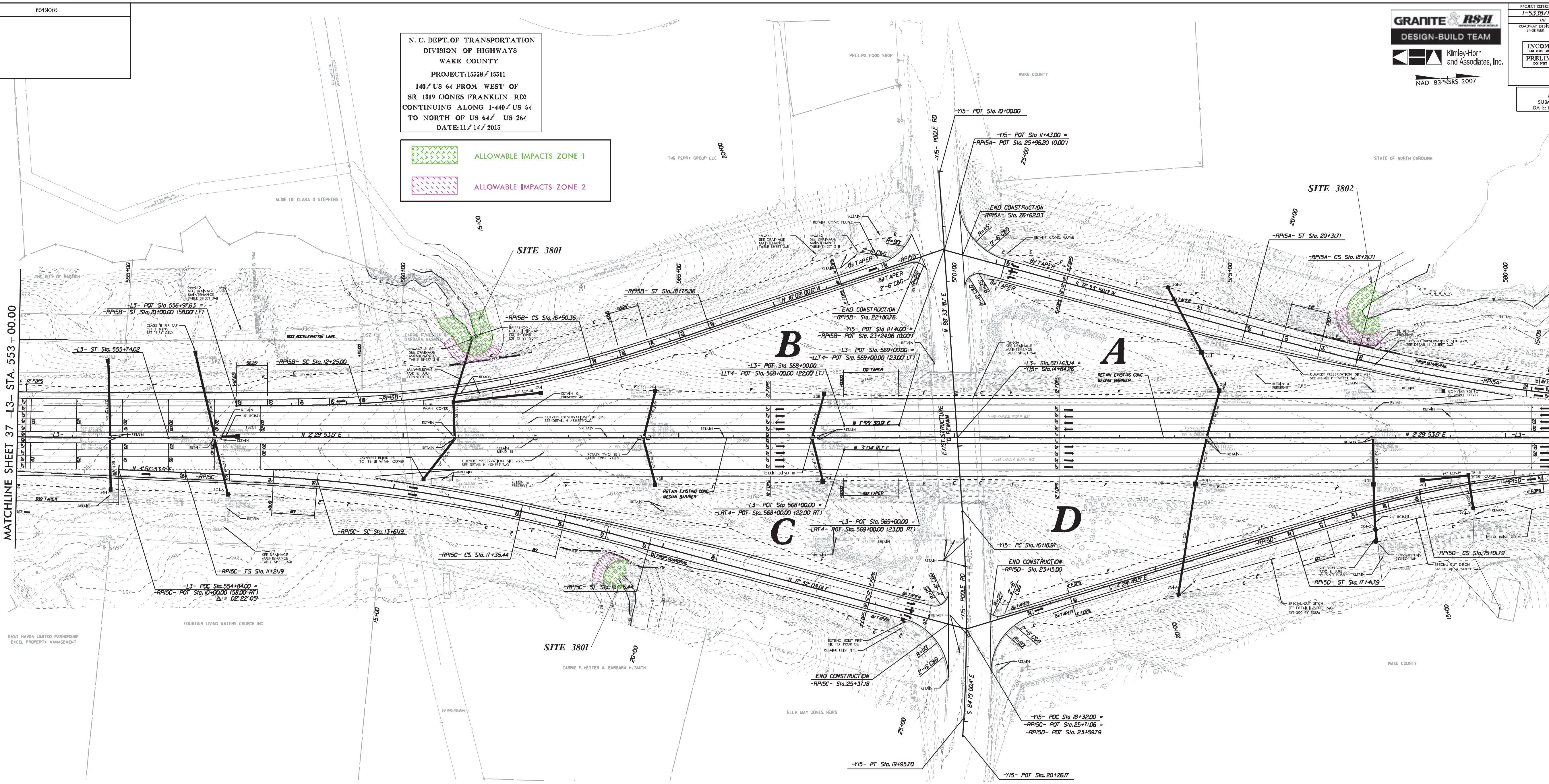
NAD 83/NSRS 2007

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	38
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

AREA 3
PERMIT PLANS
SUBMITTAL NO: D-061
DATE: NOVEMBER 14, 2013



-RP15B- CURVE DATA		
PIs Sta 11+50.02	PI Sta 14+38.49	PIs Sta 17+25.39
θs = 3° 13' 22.4"	Δ = 12° 11' 08.7" (LT)	θs = 3° 13' 22.4"
Ls = 225.00'	D = 2° 51' 53.2"	Ls = 225.00'
LT = 150.02'	L = 425.36'	LT = 150.02'
ST = 75.02'	T = 213.49'	ST = 75.02'
	R = 2,000.00'	
	V = 55 MPH	
	SE = 6%	

-RP15C- CURVE DATA		
PIs Sta 12+81.21	PI Sta 15+48.60	PIs Sta 18+15.46
θs = 2° 27' 19.9"	Δ = 7° 39' 29.7" (RT)	θs = 2° 27' 19.9"
Ls = 240.00'	D = 2° 02' 46.6"	Ls = 240.00'
LT = 160.02'	L = 374.25'	LT = 160.02'
ST = 80.01'	T = 187.41'	ST = 80.01'
	R = 2,800.00'	
	V = 55 MPH	
	SE = 5%	

-L3- CURVE DATA
PIs Sta 552+40.75
θs = 3° 45' 00.0"
Ls = 500.00'
LT = 333.41'
ST = 166.73'

-Y15- CURVE DATA
PI Sta 18+07.58
Δ = 7° 11' 41.5" (RT)
D = 1° 54' 35.5"
L = 376.72'
T = 188.61'
R = 3,000.00'

-RP15A- CURVE DATA	
PI Sta 15+16.83	PIs Sta 18+91.71
Δ = 11° 12' 55.5" (RT)	θs = 1° 55' 30.5"
D = 1° 50' 00.5"	Ls = 210.00'
L = 611.71'	LT = 140.01'
T = 306.83'	ST = 70.01'
R = 3,125.00'	
V = 60 MPH	
SE = 5%	

-RP15D- CURVE DATA	
PI Sta 13+71.15	PIs Sta 15+81.83
Δ = 8° 49' 23.2" (LT)	θs = 4° 02' 39.9"
D = 3° 22' 13.2"	Ls = 240.00'
L = 261.79'	LT = 160.04'
T = 131.15'	ST = 80.04'
R = 1,700.00'	
V = 50 MPH	
SE = 6%	

FOR -L3- LT PROFILE, SEE SHEET NO. 85,86
FOR -L3- RT PROFILE, SEE SHEET NO. 85,86
FOR -RP15A- PROFILE, SEE SHEET NO. 109
FOR -RP15B- PROFILE, SEE SHEET NO. 109,110
FOR -RP15C- PROFILE, SEE SHEET NO. 110
FOR -RP15D- PROFILE, SEE SHEET NO. 110,111

GRAPHIC SCALE
50 25 0 50 100
PLANS

LOCATION:

TIP NO.: COUNTY:

DESIGNED BY:

CHECKED BY: DATE:

8/17/99

REVISIONS

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15538 / 15511
140 / US 64 FROM WEST OF SR 1319 (JONES FRANKLIN RD) CONTINUING ALONG I-440 / US 64 TO NORTH OF US 64 / US 264
DATE: 11 / 14 / 2013

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

GRANITE & RS&H — IMPROVING YOUR WORLD

DESIGN-BUILD TEAM

Kimley-Horn and Associates, Inc.

NAD 83/NSRS 2007

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	39
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

AREA 3
PERMIT PLANS
SUBMITTAL NO: D-061
DATE: NOVEMBER 14, 2013

MATCHLINE SHEET 38 –L3– STA. 581+00.00

MATCHLINE SHEET 40 –L3– STA. 595+00.00

585+00

590+00

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

–RP15A– SC Sta. 12+10.00

–L3– POT Sta 585+46.09 =
–RP15A– ST Sta. 10+00.00 (59.00' LT)

70'

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

BEGIN SBG
STA. 589+00 –L–

EXIST RIP RAP SLOPE PROTECTION

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

15" W/ELBOWS, ROD & LUG CONNECTORS

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

RETAIN

RETAIN & PRESERVE

CULVERT PRESERVATION SITE #29,
SEE DETAIL H / SHEET 2–G

I-440 VARIBLE WIDTH BST

N 2° 29' 53.5" E

REMOVE EXIST DI

–L3–

–RP15D– SC Sta. 12+40.00

–L3– POT Sta.583+43.00 =
–RP15D– ST Sta. 10+00.00 (59.00' RT)

60'

RETAIN

RETAIN EXISTING CONC. MEDIAN BARRIER

BEGIN SBG
STA. 587+50 –L–

EXIST RIP RAP SLOPE PROTECTION

END SBG
STA. 592+00 –L–

15" W/ELBOWS, ROD, & LUG CONNECTORS

OUTLET PROP PIPE INTO EXISTING RIPRAP DITCH

UNABLE TO FIND END OF PIPE

CONTRACTOR TO FIELD VERIFY AND TIE TO EXISTING

*M–591 & 593
SEE DRAINAGE MAINTENANCE TABLE SHEET 3–A

BEGIN DOUBLE FACE MEDIAN CONCRETE BARRIER
–L3– Sta. 588+55.00

SITE 3901

–RP15A– CURVE DATA

PIs Sta 11+40.01	PI Sta 15+16.83
θs = 1° 55' 30.5"	Δ = 11° 12' 55.5" (RT)
Ls = 210.00'	D = 1° 50' 00.5"
LT = 140.01'	L = 611.71'
ST = 70.01'	T = 306.83'
	R = 3,125.00'
	V = 60 MPH

–RP15D– CURVE DATA

PIs Sta 11+60.04	PI Sta 13+71.15
θs = 4° 02' 39.9"	Δ = 8° 49' 23.2" (LT)
Ls = 240.00'	D = 3° 22' 13.2"
LT = 160.04'	L = 261.79'
ST = 80.04'	T = 131.15'
	R = 1,700.00'
	V = 50 MPH
	SE = 6%

FOR –L3– LT PROFILE, SEE SHEET NO. 87
FOR –L3– RT PROFILE, SEE SHEET NO. 87
FOR –RP15A– PROFILE, SEE SHEET NO. 109
FOR –RP15D– PROFILE, SEE SHEET NO. 110,111

$$$$$SYSTIME$$$$
$$$$$DGN$$$$
$$$$$FILENAME$$$$

8/17/99

REVISIONS

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: I5338 / I5311
I40 / US 64 FROM WEST OF
SR 1319 (JONES FRANKLIN RD)
CONTINUING ALONG I-440 / US 64
TO NORTH OF US 64 / US 264
DATE: 11 / 14 / 2013

🟩	ALLOWABLE IMPACTS ZONE 1
🟪	ALLOWABLE IMPACTS ZONE 2

GRANITE & RS&H IMPROVING YOUR WORLD
DESIGN-BUILD TEAM
Kimley-Horn and Associates, Inc.

NAD 83/NSRS 2007

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	39
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

AREA 3
PERMIT PLANS
SUBMITTAL NO: D-061
DATE: NOVEMBER 14, 2013

-RP15A- CURVE DATA

PIs Sta 11+40.01
Θs = 1° 55' 30.5"
Ls = 210.00'
LT = 140.01'
ST = 70.01'

PI Sta 15+16.83
Δ = 11° 12' 55.5" (RT)
D = 1° 50' 00.5"
L = 611.71'
T = 306.83'
R = 3,125.00'
V = 60 MPH

-RP15D- CURVE DATA

PIs Sta 11+60.04
Θs = 4° 02' 39.9"
Ls = 240.00'
LT = 160.04'
ST = 80.04'

PI Sta 13+71.15
Δ = 8° 49' 23.2" (LT)
D = 3° 22' 13.2"
L = 261.79'
T = 131.15'
R = 1,700.00'
V = 50 MPH
SE = 6%

FOR -L3- LT PROFILE, SEE SHEET NO. 87
FOR -L3- RT PROFILE, SEE SHEET NO. 87
FOR -RP15A- PROFILE, SEE SHEET NO. 109
FOR -RP15D- PROFILE, SEE SHEET NO. 110,111

8/17/99

REVISIONS

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: I5338 / I5311
I40 / US 64 FROM WEST OF
SR 1319 (JONES FRANKLIN RD)
CONTINUING ALONG I-440 / US 64
TO NORTH OF US 64 / US 264
DATE: 11 / 14 / 2013

🟩	ALLOWABLE IMPACTS ZONE 1
🟪	ALLOWABLE IMPACTS ZONE 2

GRANITE & RS&H IMPROVING YOUR WORLD
DESIGN-BUILD TEAM
Kimley-Horn and Associates, Inc.

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	40
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

AREA 3
PERMIT PLANS
SUBMITTAL NO: D–061
DATE: NOVEMBER 14, 2013

NAD 83/NSRS 2007

-RPI6B- CURVE DATA

PIs Sta 12+00.18	PI Sta 14+67.36
Θs = 7° 32' 20.1"	△ = 16° 42' 12.5" (LT)
Ls = 300.00'	D = 5° 01' 33.4"
LT = 200.18'	L = 332.34'
ST = 100.17'	T = 167.36'
	R = 1,140.00'
	V = 55 MPH
	SE = 8%

-RPI6C- CURVE DATA

PIs Sta 12+00.12	PI Sta 14+60.02
Θs = 6° 08' 19.8"	△ = 13° 02' 28.7" (RT)
Ls = 300.00'	D = 4° 05' 33.2"
LT = 200.12'	L = 318.66'
ST = 100.11'	T = 160.02'
	R = 1,400.00'
	V = 50 MPH
	SE = 7%

FOR -L3- LT PROFILE, SEE SHEET NO. 88
FOR -L3- RT PROFILE, SEE SHEET NO. 88
FOR -RPI6B- PROFILE, SEE SHEET NO. 112
FOR -RPI6C- PROFILE, SEE SHEET NO. 112

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

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: I5338/I5311
I40/US 64 FROM WEST OF
SR 1319 (JONES FRANKLIN RD)
CONTINUING ALONG I-440/US 64
TO NORTH OF US 64/ US 264
DATE: 11/14/2013

🟩	ALLOWABLE IMPACTS ZONE 1
▨	ALLOWABLE IMPACTS ZONE 2

GRANITE & RS&H IMPROVING YOUR WORLD
DESIGN-BUILD TEAM
Kimley-Horn and Associates, Inc.

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	40

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

AREA 3
PERMIT PLANS
SUBMITTAL NO: D–061
DATE: NOVEMBER 14, 2013

-RP16B- CURVE DATA
PIs Sta 12+00.18
Θs = 7° 32' 20.1"
Ls = 300.00'
LT = 200.18'
ST = 100.17'
PI Sta 14+67.36
Δ = 16° 42' 12.5" (LT)
D = 5° 01' 33.4"
L = 332.34'
T = 167.36'
R = 1,140.00'
V = 55 MPH
SE = 8%

-RP16C- CURVE DATA
PIs Sta 12+00.12
Θs = 6° 08' 19.8"
Ls = 300.00'
LT = 200.12'
ST = 100.11'
PI Sta 14+60.02
Δ = 13° 02' 28.7" (RT)
D = 4° 05' 33.2"
L = 318.66'
T = 160.02'
R = 1,400.00'
V = 50 MPH
SE = 7%

FOR -L3- LT PROFILE, SEE SHEET NO. 88
FOR -L3- RT PROFILE, SEE SHEET NO. 88
FOR -RP16B- PROFILE, SEE SHEET NO. 112
FOR -RP16C- PROFILE, SEE SHEET NO. 112

REVISIONS

8/17/99

8/17/99

REVISIONS

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: 15538 / 15311
140 / US 64 FROM WEST OF
SR 1319 (JONES FRANKLIN RD)
CONTINUING ALONG I-440 / US 64
TO NORTH OF US 64 / US 264
DATE: 11 / 14 / 2013

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

NAD 83/NSRS 2007

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

Kimley-Horn and Associates, Inc.

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	41
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

AREA 3
PERMIT PLANS
SUBMITTAL NO: D-061
DATE: NOVEMBER 14, 2013

MATCHLINE SHEET 40 -L3- STA. 609+00.00

610+00

615+00

I-440 EB / US 64 WB RAMP

SITE UNDER CONSTRUCTION

CRABTREE CREEK

715' MEDIAN TAPER

END DOUBLE FACE MEDIAN CONCRETE BARRIER
-L3- Sta. 615+90.00

50'

12' FDPS

+0.00

8:1 TAPER

PROP. GUARDRAIL

GUARDRAIL

N 1° 37' 00.4" E -LLT5-

N 2° 29' 53.5" E

N 3° 22' 46.6" E -LRT5-

REMOVE EXIST. GUARDRAIL

-L3- POT Sta. 612+00.00 =
-LLT5- POT Sta. 612+00.00 (23.00' LT)

-L3- POT Sta. 612+00.00 =
-LRT5- POT Sta. 612+00.00 (23.00' RT)

RETAIN 2GI AND REPLACE CONC. APRON

BEGIN SBG
STA. 617+90 -L-

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

15" W ELBOWS, ROD, & LUG CONNECTORS

2GI

15" RCP-IV

TB2GI

TYPE B-77

25' MAINTENANCE OPENING

RETAIN

I-440 VARIBLE WIDTH BST

35:1 TAPER

BEGIN SBG
STA. 617+35 -L-

15" W ELBOWS, ROD, & LUG CONNECTORS

OUTLET PROP PIPE INTO EXISTING RIPRAP DITCH

-L3- POT Sta. 619+15.00 =
-LRT5- POT Sta. 619+15.08 (34.00' RT)

64 EB FLYOVER

23 - 6" DIA. TEMPORARY DECK DRAINS REQUIRED SEE SHEET 2-H FOR LOCATIONS

-L3- POT Sta. 619+15.00 =
-LLT5- POT Sta. 619+15.08 (34.00' LT)

SITE 4101

4' WIDE RIP RAP PAD FOR TEMPORARY DECK DRAINS STA. 621+80 TO 622+50 LT

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

CLASS 'B' RIP RAP
EST 15 TONS
EST 35 SY GEO

15" W ELBOWS, ROD, & LUG CONNECTORS

REMOVE RIP RAP PAD WITHIN EXISTING SOIL ROAD LIMITS UNDER BRIDGE AFTER TEMPORARY DECK DRAINS HAVE BEEN PLUGGED AND FILLED

END SBG
STA. 621+40 -L-

EXIST. STRUCTURE TO REMAIN

-L3-

END PAVEMENT RECONSTRUCTION
-L3- Sta. 621+63.01 LT.

END SBG
STA. 621+36 -L-

END PAVEMENT RECONSTRUCTION
-L3- Sta. 621+61.26 RT.

20 - 6" DIA. TEMPORARY DECK DRAINS REQUIRED SEE SHEET 2-H FOR LOCATIONS

4' WIDE RIP RAP PAD FOR TEMPORARY DECK DRAINS STA. 621+90 TO 622+69 RT
CLASS 'B' RIP RAP
EST 17 TONS
EST 40 SY GEO

SITE 4101

FOR -L3- LT PROFILE, SEE SHEET NO. 89

FOR -L3- RT PROFILE, SEE SHEET NO. 89

MATCHLINE SHEET 42 -L3- STA. 623+00.00

$$$$$$SYSTIME$$$$$$

$$$$$$USERNAME$$$$$$DGN$$$$$$$$$$$$$$$$$$$$

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	41

R/W SHEET NO.

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

INCOMPLETE PLANS — DO NOT USE FOR R/W ACQUISITION

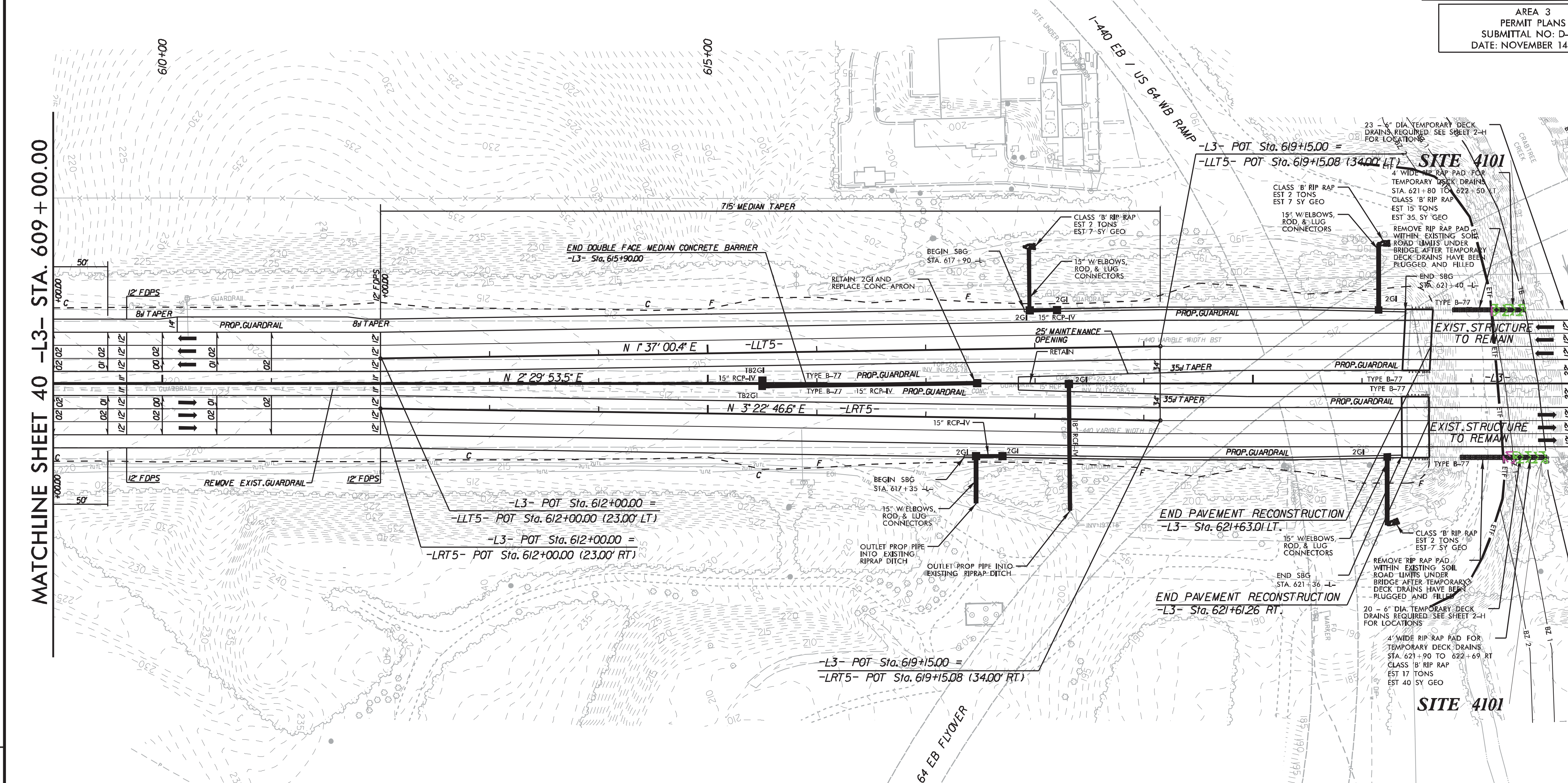
PRELIMINARY PLANS — DO NOT USE FOR CONSTRUCTION

GRANITE & RS&H — DESIGN-BUILD TEAM

Kimley-Horn and Associates, Inc.

AREA 3
PERMIT PLANS
SUBMITTAL NO: D-061
DATE: NOVEMBER 14, 2013

N. C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS
WAKE COUNTY
PROJECT: I5338 / I5311
I40 / US 64 FROM WEST OF SR 1519 (JONES FRANKLIN RD) CONTINUING ALONG I-440 / US 64 TO NORTH OF US 64 / US 264
DATE: 11 / 14 / 2013



FOR -L3- LT PROFILE, SEE SHEET NO. 89
FOR -L3- RT PROFILE, SEE SHEET NO. 89

09/08/99

TIP PROJECT: I-5338, I-5311

CONTRACT: C203166

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

VICINITY MAP

60% ROADWAY PLANS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WAKE COUNTY

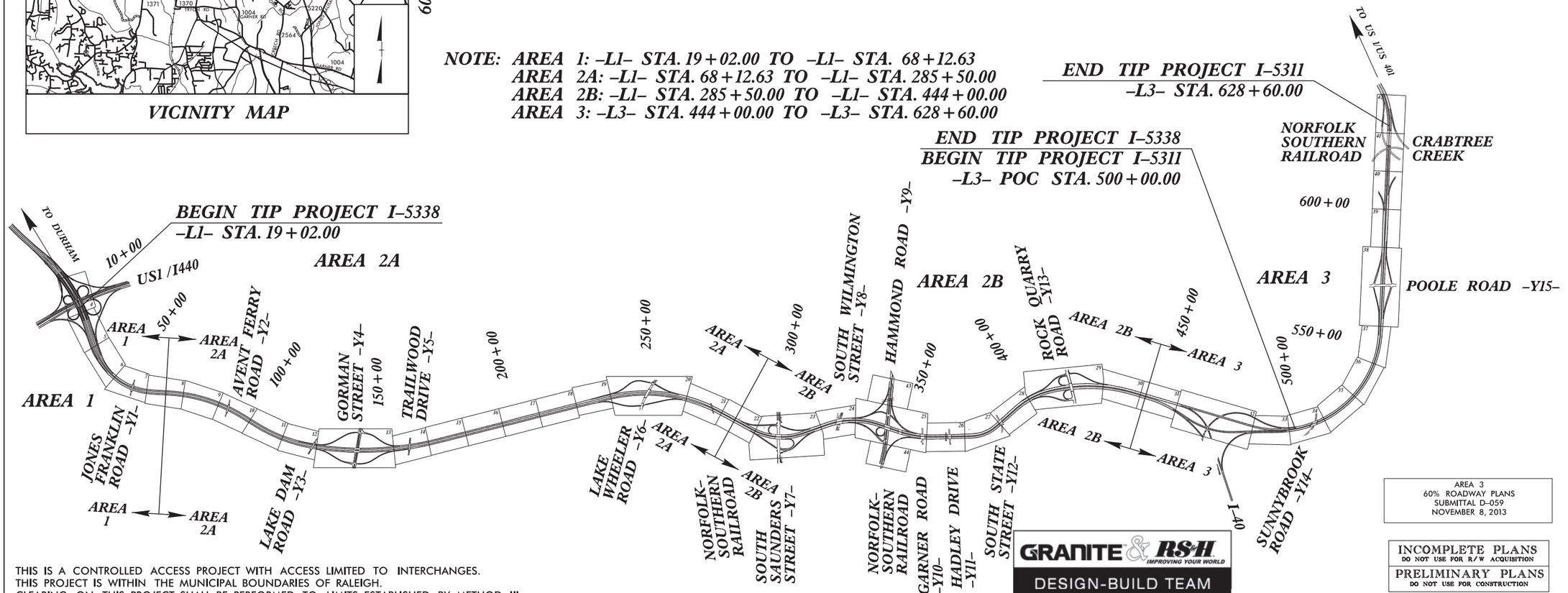
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-5338, I-5311	1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
46265.3.1	IMS-0440(13)	PE	

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*

NAD 83/NSRS 2007

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 -L1- STA. 444+00.00
AREA 3: -L3- STA. 444+00.00 TO -L3- STA. 628+60.00



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 3
60% ROADWAY PLANS
SUBMITTAL D-059
NOVEMBER 8, 2013

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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

GRAPHIC SCALES

PLANS: 50 25 0 50 100
PROFILE (HORIZONTAL): 50 25 0 50 100
PROFILE (VERTICAL): 10 5 0 10 20

DESIGN DATA

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

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

PROJECT LENGTH

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

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

K. ZAK HAMIDI, PE
NCDOT CONTACT

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

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: MAY 13, 2013

LETTING DATE: MAY 13, 2013

CHAD ROGERS, PE
PROJECT ENGINEER

JASON TALLEY, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

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I5338_Rdy_tsh.dgn
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6/2/99

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

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

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PAVEMENT SCHEDULE

C1	PROP. APPROX. 1.5″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.	K	PROP. 12.0″ CLASS IV SUBGRADE STABILIZATION WITH GEOTEXTILE FABRIC.
C2	PROP. APPROX. 3.0″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	P	PRIME COAT
C3	PROP. APPROX. 1.5″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5D, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.	R1	DOUBLE FACED CONCRETE BARRIER.
C4	PROP. APPROX. 3.0″ ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5D, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	R2	SINGLE FACED CONCRETE BARRIER
C5	PROP. VAR. ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5C, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	R3	2′-6″ CONCRETE CURB AND GUTTER.
D1	PROP. APPROX. 3.5″ ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0C, AT AN AVERAGE RATE OF 399 LBS. PER SQ. YD.	R4	CONCRETE SHOULDER BERM GUTTER.
D2	PROP. VAR. ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0D, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1″ DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 2½″ IN DEPTH OR GREATER THAN 4″ IN DEPTH.	R5	CONCRETE EXPRESSWAY GUTTER.
D3	PROP. APPROX. 3.0″ ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0D, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YD.	R6	4″ CONCRETE CAP.
D4	PROP. VAR. ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2½″ IN DEPTH OR GREATER THAN 4″ IN DEPTH.	S1	SIDEWALK
E1	PROP. APPROX. 4.0″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.	T	EARTH MATERIAL.
E2	PROP. APPROX. 5.0″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 570 LBS. PER SQ. YD.	U	EXISTING PAVEMENT.
E3	PROP. APPROX. 5.5″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 627 LBS. PER SQ. YD.	V	MILL 1.5″ DEPTH.
E4	PROP. APPROX. 9.0″ ASPHALT CONCRETE BASE COURSE, TYPE B25.0C, AT AN AVERAGE RATE OF 513 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.	W	WEDGING
E5	PROP. VAR. ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1″ DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3″ IN DEPTH OR GREATER THAN 5½″ IN DEPTH.	NOTE: ALL EOP SLOPES ARE 1:1 UNLESS OTHERWISE SHOWN FDPS = FULL DEPTH PAVED SHOULDER PDPS = PARTIAL DEPTH PAVED SHOULDER	

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I5338_Pavement_Schedule.dgn
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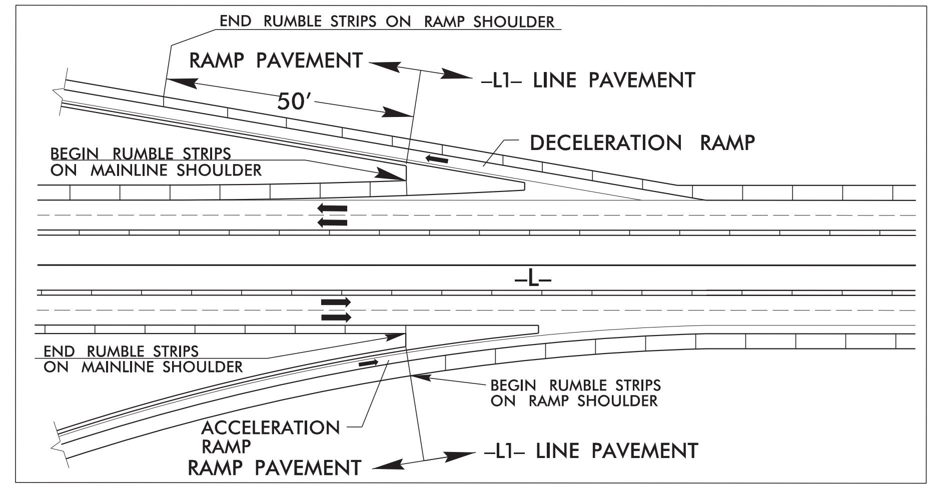
PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	2-A
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

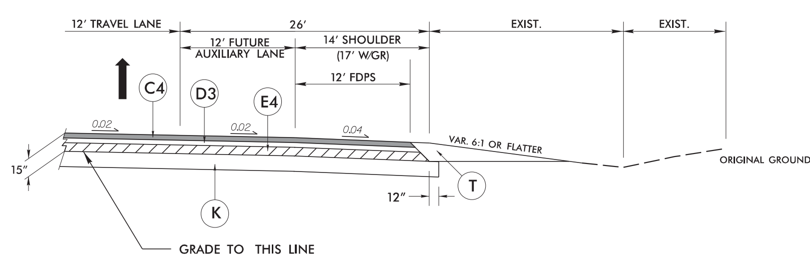
GRANITE & RS&H IMPROVING YOUR WORLD
DESIGN-BUILD TEAM

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

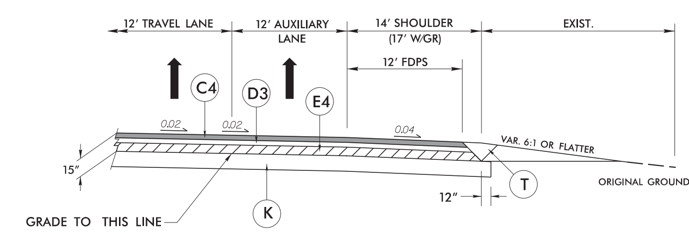


DETAIL SHOWING LIMITS OF PAVEMENT DESIGN &
RUMBLE STRIP TREATMENT AT RAMP TERMINAL
REFER TO STD DRAWING NO. 665.01



FUTURE AUXILIARY LANE DETAIL

-L2RT- STA. 444+00.00 TO -L2RT- STA. 455+60.00



AUXILIARY LANE DETAIL

-L3- STA. 583+43.00 TO -L3- STA. 600+81.34 RT.
-L3- STA. 585+46.09 TO -L3- STA. 595+67.66 LT.

6/2/99

07-NOV-2013 15:26
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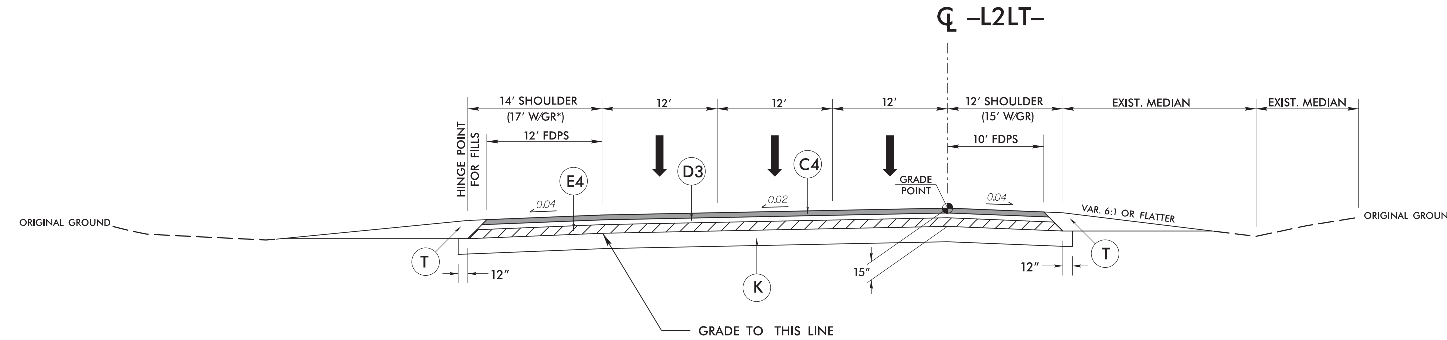
PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	2-B
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

GRANITE & RS&H IMPROVING YOUR WORLD

DESIGN-BUILD TEAM

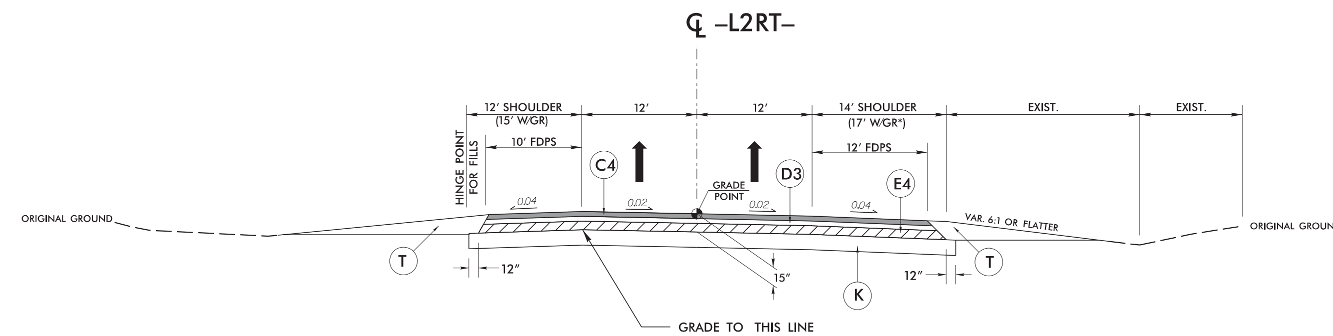
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



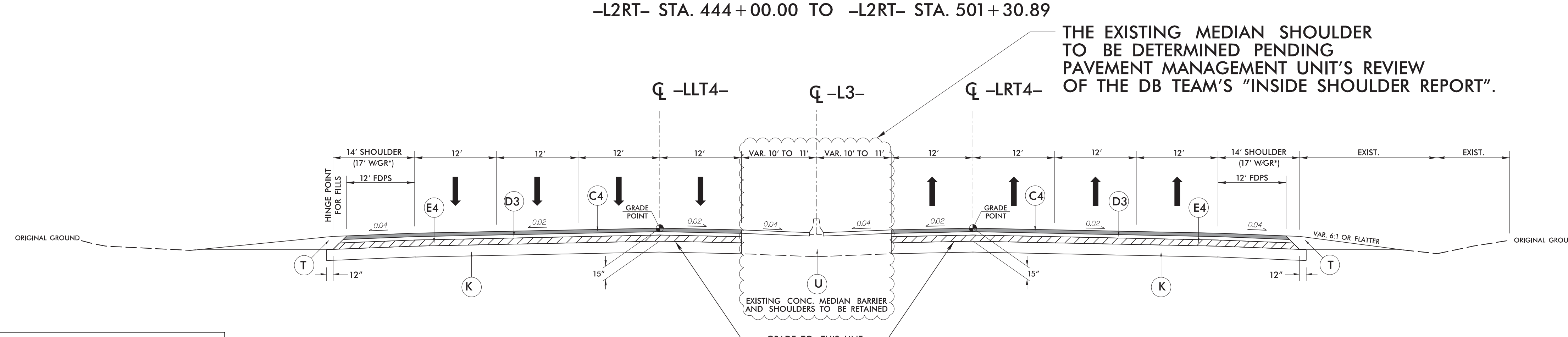
TYPICAL SECTION – No. 1

-L2LT- STA. 444+00.00 TO -L2LT- STA. 499+94.85



TYPICAL SECTION – No. 2

-L2RT- STA. 444+00.00 TO -L2RT- STA. 501+30.89



TYPICAL SECTION – No. 3

-L3- STA. 500+00.00 LT. TO -L3- STA. 508+09.47 LT. (BEGIN BRIDGE)
-L3- STA. 500+00.00 RT. TO -L3- STA. 507+56.42 RT. (BEGIN BRIDGE)
-L3- STA. 510+35.88 LT. (END BRIDGE) TO -L3- STA. 568+00.00 LT.
-L3- STA. 510+00.42 RT. (END BRIDGE) TO -L3- STA. 568+00.00 RT.
-LLT4- STA. 568+00.00 TO -LLT4- STA. 569+00.00
-LRT4- STA. 568+00.00 TO -LRT4- STA. 569+00.00
-L3- STA. 569+00.00 LT. TO -L3- STA. 588+55.00 LT.
-L3- STA. 569+00.00 RT. TO -L3- STA. 588+55.00 RT.

PAVEMENT SCHEDULE	
C3	1.5" SURFACE COURSE TYPE S9.5D
C4	3.0" SURFACE COURSE TYPE S9.5D
D3	3.0" INTER. COURSE TYPE I19.0D
E4	9.0" BASE COURSE TYPE B25.0C
K	12.0" CL IV STAB. W/ GEO. FABRIC
T	EARTH MATERIAL
V	MILL 1.5"

NOTE: MEDIAN TRANSITION FROM 20' TO 22' FROM -L3- STA. 568+00.00 TO -L3- STA. 569+00.00

* TOTAL SHOULDER WIDTH REDUCED TO 15' IN ORDER TO AVOID SLIVER FILLS. SEE PLANS FOR LOCATIONS.

6/2/99

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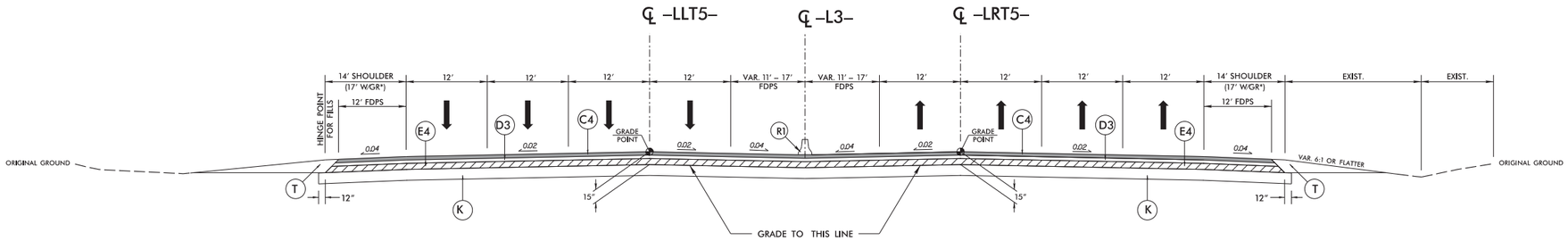
6/2/99

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

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	2-C
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

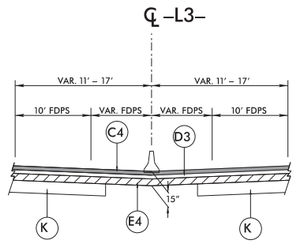
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



TYPICAL SECTION – No. 4

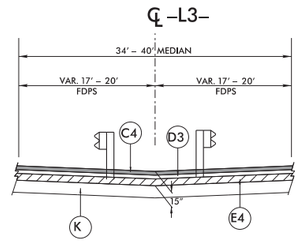
–L3– STA. 588+55.00 LT. TO –L3– STA. 612+00.00 LT.
–L3– STA. 588+55.00 RT. TO –L3– STA. 612+00.00 RT.
–LLT5– STA. 612+00.00 TO –LLT5– STA. 615+90.00
–LRT5– STA. 612+00.00 TO –LRT5– STA. 615+90.00

NOTE: MEDIAN TRANSITION FROM 22' TO 44' FROM –L3– STA. 612+00.00 TO –L3– STA. 619+15.00 (SEE INSET NO. 4A, INSET NO. 4B AND INSET NO.5A)



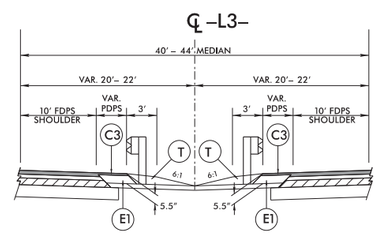
INSET – No. 4A

–L3– STA. 612+00.00 TO –L3– STA. 615+90.00



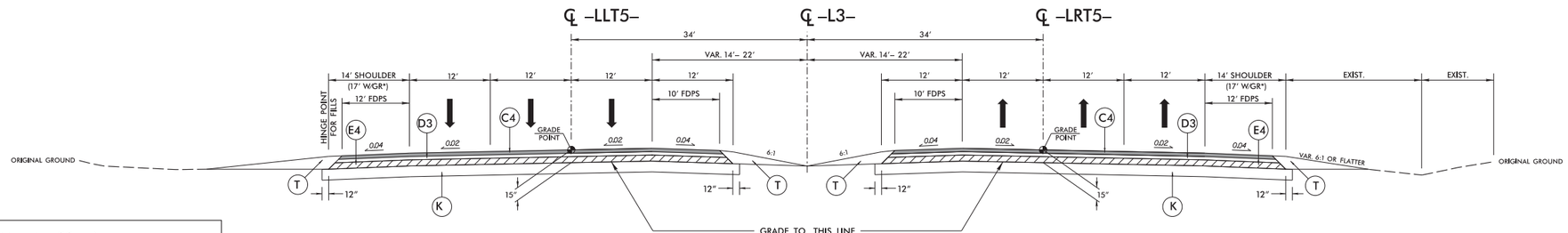
INSET – No. 4B

–L3– STA. 615+90.00 TO –L3– STA. 617+84.90



INSET – No. 5A

–L3– STA. 615+90.00 TO –L3– STA. 621+61.86 (MED., LT.)
–L3– STA. 615+90.00 TO –L3– STA. 621+61.12 (MED., RT.)



TYPICAL SECTION – No. 5

–LLT5– STA. 612+00.00 LT. TO –LLT5– STA. 619+15.08
–LRT5– STA. 612+00.00 RT. TO –LRT5– STA. 619+15.08
–L3– STA. 619+15.00 LT. TO –L3– STA. 621+63.01 LT. (BEGIN BRIDGE)
–L3– STA. 619+15.00 RT. TO –L3– STA. 621+61.26 RT. (BEGIN BRIDGE)

NOTE: FROM THE MOST WESTERN APPROACH SLAB LIMITS OF BRIDGE NOS. 62 AND 66 EXTENDING A MINIMUM OF 150 FEET WESTWARD, THE DESIGN–BUILD TEAM SHALL MILL THE EXISTING L– LINE PAVEMENT, INCLUDING EXISTING SHOULDERS, TO A DEPTH OF 1.5" AND FILL THE MILLED AREA WITH 1.5" S9.5D.

* TOTAL SHOULDER WIDTH REDUCED TO 15' IN ORDER TO AVOID SLIVER FILLS. SEE PLANS FOR LOCATIONS.

PAVEMENT SCHEDULE	
C3	1.5" SURFACE COURSE TYPE S9.5D
C4	3.0" SURFACE COURSE TYPE S9.5D
D3	3.0" INTER. COURSE TYPE I19.0D
E1	4.0" BASE COURSE TYPE B25.0C
E4	9.0" BASE COURSE TYPE B25.0C
K	12.0" CL IV STAB. W/ GEO. FABRIC
R1	DOUBLE FACED CONCRETE BARRIER
T	EARTH MATERIAL

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I-5338/I-5311
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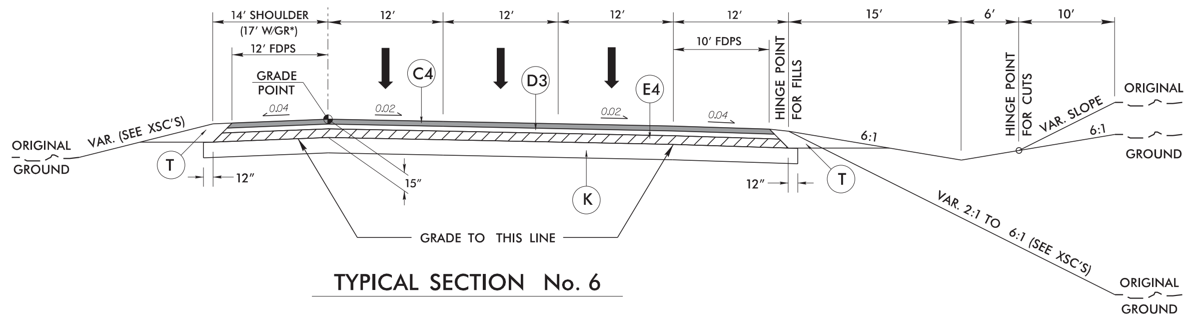
PROJECT REFERENCE NO. I-5338/I-5311 | SHEET NO. 2-D
ROADWAY DESIGN ENGINEER | PAVEMENT DESIGN ENGINEER

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

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

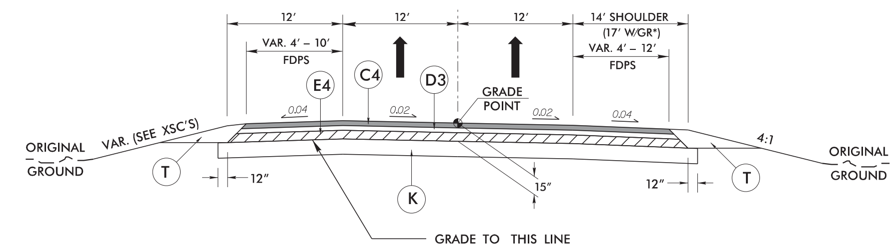
℄ -LI40W-



TYPICAL SECTION No. 6

-LI40W- STA. 10+00.00 TO -LI40W- STA. 15+00.00

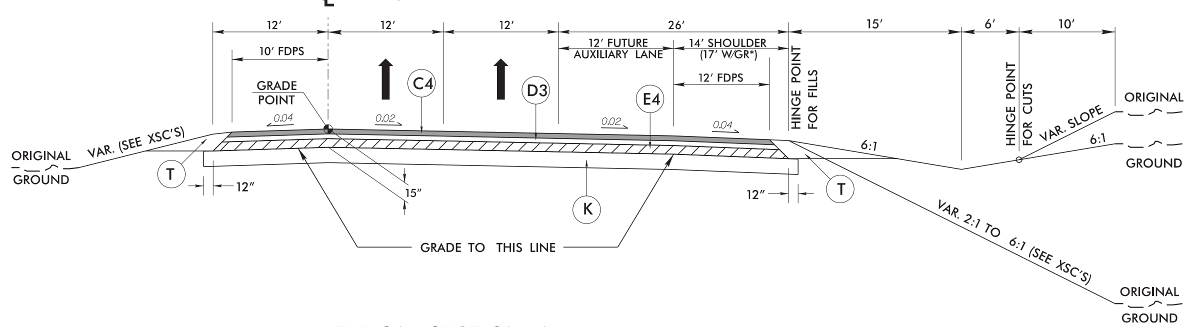
℄ -RPI40A-, -RP16C-



TYPICAL SECTION No. 8

-RPI40A- STA. 10+00.00 TO -RPI40A- STA. 20+50.00
-RP16C- STA. 10+00.00 TO -RP16C- STA. 15+03.66

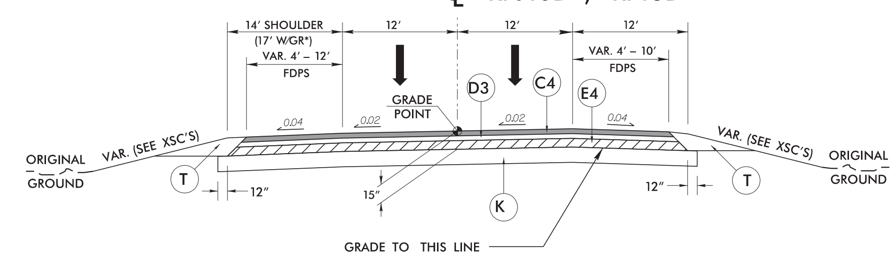
℄ -LI40E-



TYPICAL SECTION No. 7

-LI40E- STA. 10+00.00 TO -LI40E- STA. 17+70.00

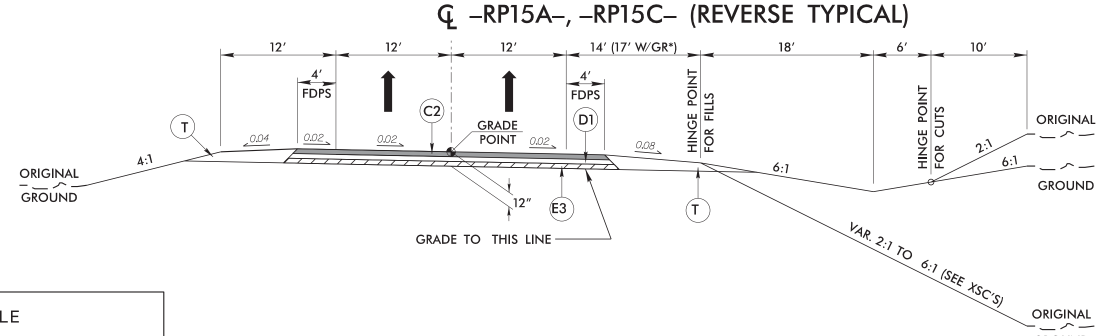
℄ -RPI40D-, -RP16B-



TYPICAL SECTION No. 9

-RPI40D- STA. 10+00.00 TO -RPI40D- STA. 26+10.00
-RP16B- STA. 10+00.00 TO -RP16B- STA. 14+27.34

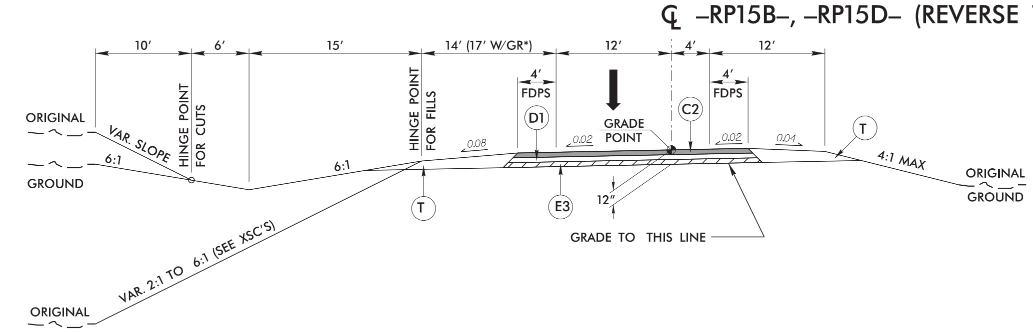
℄ -RP15A-, -RP15C- (REVERSE TYPICAL)



TYPICAL SECTION No. 10

-RP15A- STA. 16+28.16 TO -RP15A- STA. 25+35.00
-RP15C- STA. 15+65.99 TO -RP15C- STA. 25+37.18

℄ -RP15B-, -RP15D- (REVERSE TYPICAL)



TYPICAL SECTION No. 11

-RP15B- STA. 14+36.23 TO -RP15B- STA. 22+52.30
-RP15D- STA. 14+31.48 TO -RP15D- STA. 23+15.00

PAVEMENT SCHEDULE	
C2	3.0" SURFACE COURSE TYPE S9.5C
C4	3.0" SURFACE COURSE TYPE S9.5D
D1	3.5" INTER. COURSE TYPE I19.0C
D3	3.0" INTER. COURSE TYPE I19.0D
E1	4.0" BASE COURSE TYPE B25.0C
E3	5.5" BASE COURSE TYPE B25.0C
E4	9.0" BASE COURSE TYPE B25.0C
K	12.0" CL IV STAB. W/ GEO. FABRIC
T	EARTH MATERIAL

NOTE: PAVED SHOULDER WIDTH FOR ALL RAMPS VARIES WHEN TRANSITIONING FROM MAINLINE.

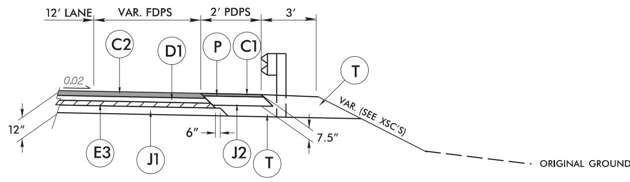
* TOTAL SHOULDER WIDTH REDUCED TO 15' IN ORDER TO AVOID SLIVER FILLS. SEE PLANS FOR LOCATIONS.

6/2/99
06-NOV-2013 21:20
I5338_Rdy_typ.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	2-E
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

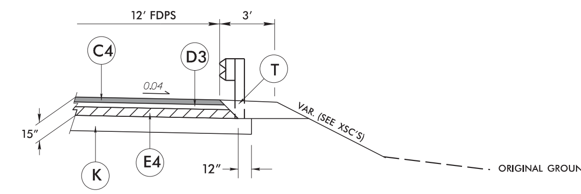
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



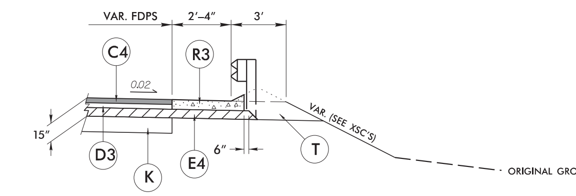
Detail Showing Paved Shoulder in
Relation to Guardrail – -L2- Mainline Median

-L2LT- STA. 447+53.75 TO -L2LT- STA. 457+10.00 MED., LT.
-L2RT- STA. 448+42.40 TO -L2RT- STA. 453+92.40 MED., RT.
-L2RT- STA. 451+50.00 TO -L2RT- STA. 453+68.75 RT.
-LI40E- STA. 12+75.00 TO -LI40E- STA. 14+06.25 RT.
-L3- STA. 544+93.75 TO -L3- STA. 547+00.00 LT.
-L3- STA. 586+50.00 TO -L3- STA. 592+81.25 RT.
-L3- STA. 588+68.75 TO -RP16B- STA. 15+44.84 RT.
-L3- STA. 600+31.84 TO -RP16C- STA. 12+06.25 RT.
-L3- STA. 610+13.75 TO -L3- STA. 611+70.00 LT.



Detail Showing Paved Shoulder in
Relation to Guardrail – Mainline

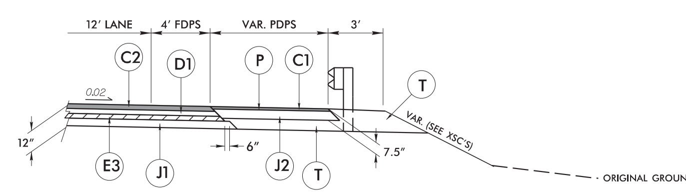
-L2LT- STA. 462+18.75 TO -L2LT- STA. 473+00.00 LT.
-L3- STA. 502+08.42 TO -L3- STA. 507+02.17 (BEGIN BRIDGE) RT.
-L3- STA. 505+41.64 TO -L3- STA. 508+66.64 (BEGIN BRIDGE) LT.
-L3- STA. 509+66.08 (END BRIDGE) TO -L3- STA. 531+41.08 RT.
-L3- STA. 510+72.29 (END BRIDGE) TO -L3- STA. 533+28.54 LT.
-L3- STA. 617+77.28 TO -L3- STA. 621+64.78 (BEGIN BRIDGE) LT.
-L3- STA. 617+17.73 TO -L3- STA. 621+61.48 (BEGIN BRIDGE) RT.



Detail Showing Paved Shoulder in
Relation to Shoulder Berm Gutter – Mainline

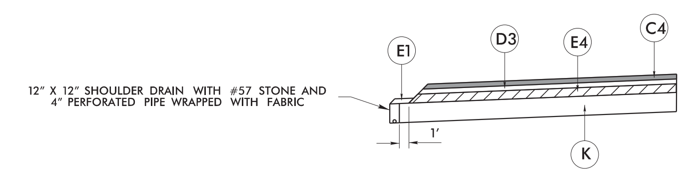
-L3- STA. 505+50.00 TO -L3- STA. 508+68.00 LT.
-L3- STA. 510+74.00 TO -L3- STA. 532+50.00 LT.
-L3- STA. 587+50.00 TO -L3- STA. 592+00.00 RT.
-L3- STA. 589+00.00 TO -L3- STA. 599+86.00 LT.
-L3- STA. 617+35.00 TO -L3- STA. 621+36.00 LT.
-L3- STA. 617+90.00 TO -L3- STA. 621+40.00 LT.
-L3- STA. 627+15.00 TO -L3- STA. 628+60.00 RT.

PAVEMENT SCHEDULE	
C1	1.5" SURFACE COURSE TYPE S9.5C
C2	3.0" SURFACE COURSE TYPE S9.5C
C3	1.5" SURFACE COURSE TYPE S9.5D
C4	3.0" SURFACE COURSE TYPE S9.5D
D1	3.5" INTER. COURSE TYPE I19.0C
D3	3.0" INTER. COURSE TYPE I19.0D
E1	4.0" BASE COURSE TYPE B25.0C
E3	5.5" BASE COURSE TYPE B25.0C
E4	9.0" BASE COURSE TYPE B25.0C
J1	8.0" AGGREGATE BASE COURSE
J2	6.0" AGGREGATE BASE COURSE
K	12.0" CLASS IV STABILIZATION
P	PRIME COAT
R3	CONCRETE SHOULDER BERM GUTTER
T	EARTH MATERIAL



Detail Showing Paved Shoulder in
Relation to Guardrail – Ramps & Loops

-RP15A- STA. 14+87.50 TO -RP15A- STA. 21+18.75 RT.
-RP15C- STA. 19+90.00 TO -RP15C- STA. 20+71.25 RT.



Detail For Shoulder Drains

Construct median and outside shoulder drains on the low side of pavement at the following locations:

1. Throughout crest vertical curves located in cut sections
2. Throughout all sag vertical curves
3. Where grade is less than 1%

6/2/99

07-NOV-2013 15:30

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

R/W SHEET NO.

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

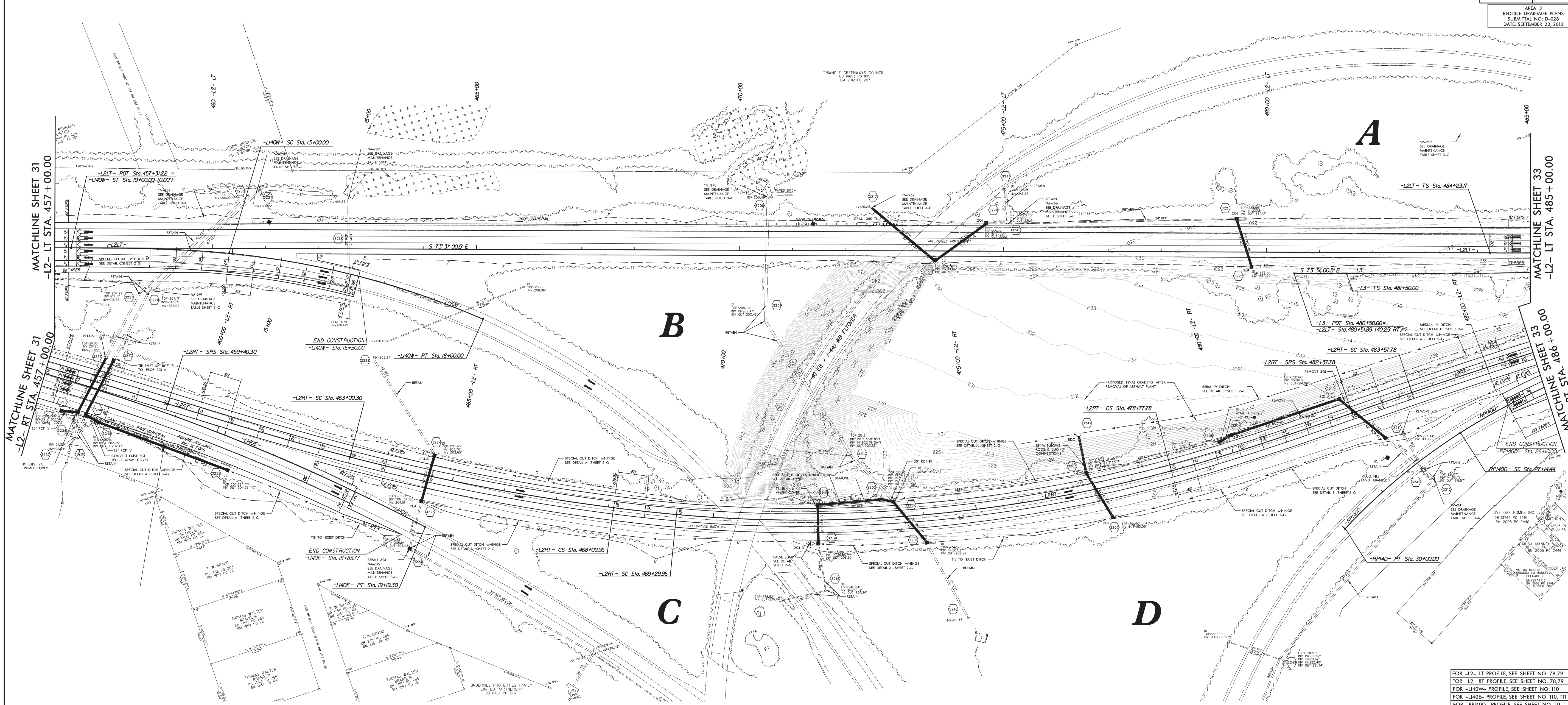
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRANITE & RS&H DESIGN-BUILD TEAM
Kimley-Horn and Associates, Inc.

AREA 3
REDLINE DRAINAGE PLANS
SUBMITTAL NO: D-028
DATE: SEPTEMBER 20, 2013

REVISIONS



FOR -L2- LT PROFILE, SEE SHEET NO. 78,79
FOR -L2- RT PROFILE, SEE SHEET NO. 78,79
FOR -LI40W- PROFILE, SEE SHEET NO. 110
FOR -LI40E- PROFILE, SEE SHEET NO. 110, 111
FOR -RPI40D- PROFILE, SEE SHEET NO. 111

-L2RT- CURVE DATA

PIs Sta 457+00.33	PIs Sta 461+80.33	PI Sta 465+55.48	PIs Sta 468+73.92	PI Sta 474+08.87	PIs Sta 479+97.84	PIs Sta 483+17.78	PI Sta 487+44.53
Θs = 2° 34' 41.9"	Θs = 2° 34' 41.9"	Δ = 7° 18' 01.0" (LT)	Θs = 0° 51' 33.9"	Δ = 20° 15' 48.8" (LT)	Θs = 3° 50' 53.6"	Θs = 0° 15' 52.0"	Δ = 3° 24' 29.1" (RT)
Ls = 360.00'	Ls = 360.00'	D = 1° 25' 56.6"	Θs = 1° 16' 57.9"	D = 2° 08' 16.4"	Ls = 360.00'	Ls = 120.00'	D = 0° 26' 26.7"
LT = 240.03'	LT = 240.03'	L = 509.65'	Ls = 120.00'	L = 947.82'	LT = 240.06'	LT = 80.00'	L = 773.27'
ST = 120.02'	ST = 120.02'	T = 255.17'	LT = 63.96'	T = 478.91'	ST = 120.05'	ST = 40.00'	T = 386.75'
		R = 4,000.00'	ST = 56.05'	R = 2,680.00'			R = 13,000.00'
		V = 70 MPH		V = 70 MPH			V = 70 MPH
		SE = 6%		SE = 8%			SE = 2%

-LI40E- CURVE DATA

PI Sta 14+61.75
Δ = 13° 22' 06.7" (RT)
D = 1° 27' 15.1"
L = 919.30'
T = 461.75'
R = 3,940.00'
V = 70 MPH
SE = 6%

-LI40W- CURVE DATA

PIs Sta 12+00.09	PI Sta 15+52.05
Θs = 5° 22' 17.3"	Δ = 17° 54' 17.8" (RT)
Ls = 300.00'	D = 3° 34' 51.6"
LT = 200.09'	L = 500.00'
ST = 100.08'	T = 252.05'
	R = 1,600.00'
	V = 65 MPH
	SE = 9%

-L3- CURVE DATA

PIs Sta 484+83.41
Θs = 3° 45' 45.1"
Ls = 500.00'
LT = 333.41'
ST = 166.74'

-L2LT- CURVE DATA

PIs Sta 486+63.21
Θs = 3° 20' 15.4"
Ls = 360.00'
LT = 240.04'
ST = 120.04'

-LI40D- CURVE DATA

PIs Sta 25+15.91	PI Sta 28+57.98
Θs = 15° 08' 39.3"	Δ = 14° 24' 56.0" (LT)
Ls = 600.00'	D = 5° 02' 53.1"
LT = 401.47'	L = 285.56'
ST = 201.34'	T = 143.54'
	R = 1,135.00'
	V = 55MPH
	SE = 7%

GRAPHIC SCALE
50 25 0 50 100
PLANS

LOCATION:

TIP NO.: COUNTY:

DESIGNED BY:

CHECKED BY: DATE:

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	2-G
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

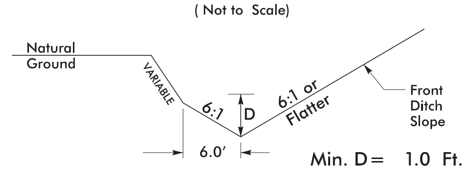
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Kimley-Horn and Associates, Inc.

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

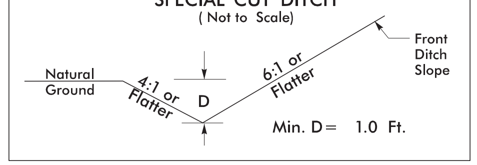
AREA 3
REDLINE DRAINAGE PLANS
SUBMITTAL NO: D-028
DATE: SEPTEMBER 20, 2013

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



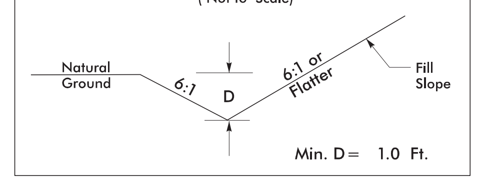
FROM STA. 452+47 TO STA. 457+50 -L2RT- (RT)
FROM STA. 457+50 TO STA. 457+97 -L2RT- (RT)
FROM STA. 457+97 TO STA. 458+25 -L2RT- (RT)
FROM STA. 458+25 TO STA. 458+97 -L2RT- (RT)
FROM STA. 458+97 TO STA. 460+85 -L2RT- (RT)
FROM STA. 460+85 TO STA. 463+47 -L2RT- (RT)
FROM STA. 464+50 TO STA. 470+00 -L2RT- (RT)
FROM STA. 464+55 TO STA. 469+50 -L2RT- (LT)
FROM STA. 472+00 TO STA. 473+20 -L2RT- (LT)
FROM STA. 473+20 TO STA. 491+29 -L2RT- (LT)
FROM STA. 472+00 TO STA. 474+00 -L2RT- (RT)
FROM STA. 475+50 TO STA. 479+50 -L2RT- (RT)

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)



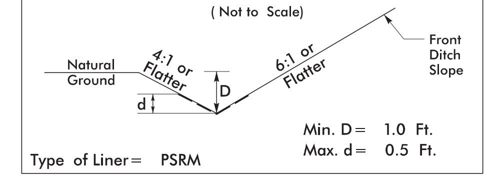
FROM STA. 479+50 TO STA. 484+79 -L2RT- (RT)
FROM STA. 577+50 TO STA. 580+50 -L3- (RT)

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



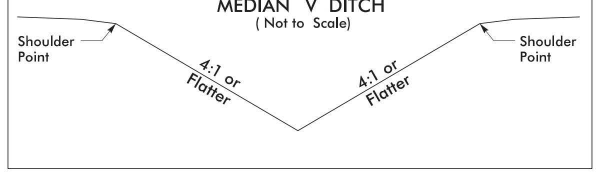
FROM STA. 450+50 TO STA. 453+00 -L2LT- (RT)
FROM STA. 453+05 TO STA. 458+50 -L2LT- (RT)

DETAIL I
SPECIAL CUT DITCH
(Not to Scale)



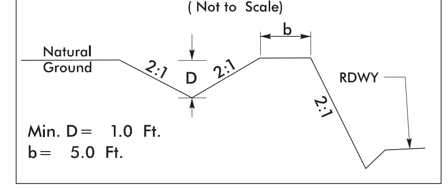
FROM STA. 19+75 TO STA. 16+00 -RP15D- (LT)

DETAIL D
MEDIAN V DITCH
(Not to Scale)



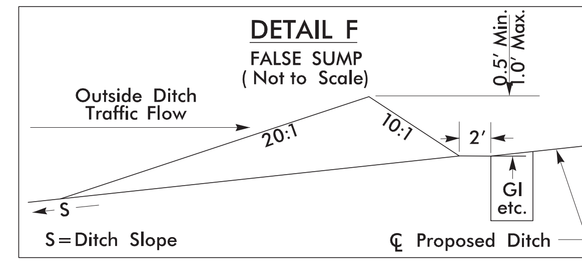
FROM STA. 449+00 TO STA. 450+50 -L2LT- (RT)
FROM STA. 484+79 TO STA. 486+79 -L2RT- (RT)

DETAIL E
BERM 'V' DITCH
(Not to Scale)



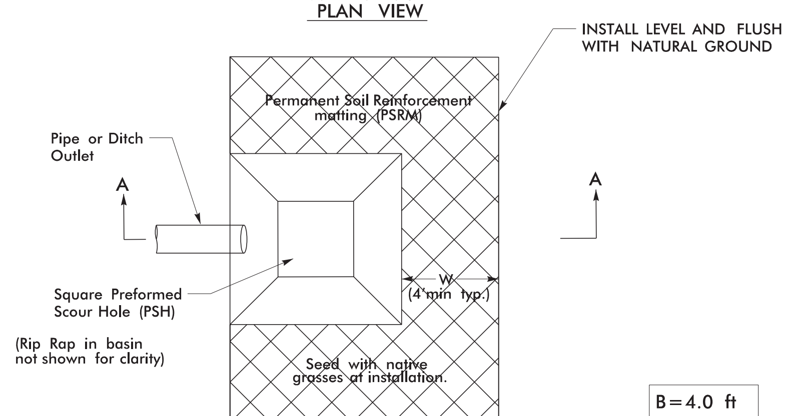
FROM STA. 476+00 TO STA. 477+19 -L2RT- (LT)
FROM STA. 477+19 TO STA. 485+79 -L2RT- (LT)

DETAIL F
FALSE SUMP
(Not to Scale)



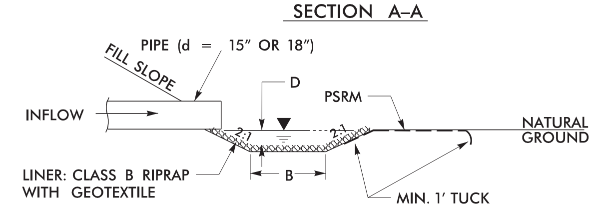
STA. 471+68 TO 471+98

DETAIL G
PREFORMED SCOUR HOLE
*NOT TO SCALE
PLAN VIEW



B=4.0 ft
D=1.5 ft
W=4.0 ft

SECTION A-A

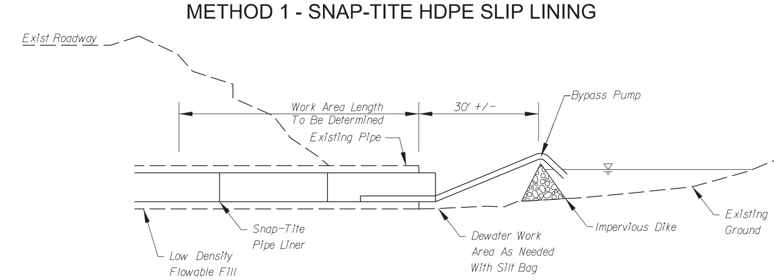


3/08

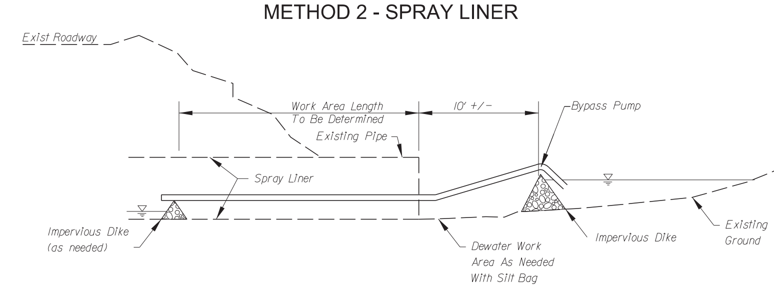
STA. 518+38 -L3- (LT)
STA. 531+41 -L3- (LT)
STA. 593+00 -L3- (LT)

DETAIL H
CULVERT PRESERVATION

METHOD 1 - SNAP-TITE HDPE SLIP LINING



METHOD 2 - SPRAY LINER



METHOD 3 - CURED IN PLACE PIPE LINER (BALLOON METHOD)

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

Snap-Tite HPDE Slip Lining

- Install silt fence, special silt fence, and all other erosion control devices in area as shown on Erosion Control Plans.
- Clear a maximum of 30' wide access path to the pipe end to be slip lined with Snap-Tite as shown on Erosion Control Plans.
- Install Special Stilling Basin (silt bag) on the upstream side to dewater work area.
- Install Impervious Dike a maximum of 30' upstream of pipe to be lined to create work area.
- Clean out existing pipe as needed to install carrier pipe. Install Special Stilling Basin (silt bag) and Impervious Dike downstream during cleaning phase to pump out contaminated water. After pipe cleaning phase is complete, the downstream Impervious Dike and Special Stilling Basin (silt bag) can be removed.
- Use bypass pump to bypass water over work area and into Snap-Tite HDPE Pipe.
- After first section of Snap-Tite HDPE Pipe is installed pull hose out of first section, snap second section of pipe together and return bypass pump hose into pipe to bypass water through work area. Repeat until all pipe is lined.
- Fill void with low density flowable fill and seal off ends per manufacturer specifications.
- Remove Impervious Dike and stabilize stream bank per plans and details.
- Permanently seed and mulch access path and work area; Use erosion control matting as required to stabilize existing slope.
- Remove all erosion control measures after site is stabilized and approved by NCDOT.

Spray Lining

- Install silt fence, special silt fence, and all other erosion control devices in area as shown on Erosion Control Plans.
- Clear a maximum of 20' wide access path to the pipe end to be spray lined as shown on Erosion Control Plans.
- Install Special Stilling Basin (silt bag) to dewater work area.
- Install Impervious Dike a maximum of 10' upstream of pipe to be lined to create work area.
- Clean out existing culvert as necessary. Install Special Stilling Basin (silt bag) and Impervious Dike downstream during cleaning phase to pump out contaminated water. After culvert cleaning phase is complete, the downstream Impervious Dike and Special Stilling Basin (silt bag) can be removed.
- Install Impervious Dike within pipe culvert at either end of work area as needed to prevent backflow.
- Use bypass pump to bypass water over work area from first Impervious Dike to the second Impervious Dike.
- Remove Impervious Dikes and stabilize stream bank per Roadway Plans.
- Permanently seed and mulch access path and work area; Use erosion control matting as requred to stabilize existing slope.
- Remove all erosion control measures after site is stabilized and approved by NCDOT.

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

METHOD 1
STATION AND LOCATIONS TO BE DETERMINED

METHOD 2
STATION AND LOCATIONS TO BE DETERMINED

METHOD 3
STATION AND LOCATIONS TO BE DETERMINED

6/2/99

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I5338_Rdy_typ_ditch_details.dgn
$$$$USERNAME$$$$

Temporary Deck Drain Summary Table
(To Be Installed During Maintenance of Traffic Outside Bridge Widening)

Crabtree Creek (West Bound)

Station	Alignment	Location	Deck Drain size (FT)
626+78	-L3-	Lt	0.333
626+72	-L3-	Lt	0.333
626+66	-L3-	Lt	0.333
626+60	-L3-	Lt	0.333
626+54	-L3-	Lt	0.333
626+48	-L3-	Lt	0.333
626+42	-L3-	Lt	0.333
626+36	-L3-	Lt	0.333
626+30	-L3-	Lt	0.333
626+24	-L3-	Lt	0.333
626+18	-L3-	Lt	0.333
626+12	-L3-	Lt	0.333
626+06	-L3-	Lt	0.333
626+00	-L3-	Lt	0.333
625+94	-L3-	Lt	0.333
625+81	-L3-	Lt	0.333
625+75	-L3-	Lt	0.333
625+37	-L3-	Lt	0.333
625+31	-L3-	Lt	0.333
625+19	-L3-	Lt	0.333
625+07	-L3-	Lt	0.333
624+95	-L3-	Lt	0.333
624+83	-L3-	Lt	0.333
622+39	-L3-	Lt	0.333
622+33	-L3-	Lt	0.333
622+27	-L3-	Lt	0.333
622+21	-L3-	Lt	0.333
622+15	-L3-	Lt	0.333
622+09	-L3-	Lt	0.333
622+03	-L3-	Lt	0.333
621+97	-L3-	Lt	0.333
621+91	-L3-	Lt	0.333
621+85	-L3-	Lt	0.333
621+79	-L3-	Lt	0.333
621+73	-L3-	Lt	0.333
621+67	-L3-	Lt	0.333
621+61	-L3-	Lt	0.333
621+49	-L3-	Lt	0.333
Deck Drains Required on Bridge =			38

Crabtree Creek (East Bound)

Station	Alignment	Location	Deck Drain size (FT)
626+72	-L3-	Lt	0.333
626+66	-L3-	Lt	0.333
626+60	-L3-	Lt	0.333
626+54	-L3-	Lt	0.333
626+48	-L3-	Lt	0.333
626+42	-L3-	Lt	0.333
626+36	-L3-	Lt	0.333
626+30	-L3-	Lt	0.333
626+24	-L3-	Lt	0.333
626+18	-L3-	Lt	0.333
626+12	-L3-	Lt	0.333
626+06	-L3-	Lt	0.333
626+00	-L3-	Lt	0.333
625+94	-L3-	Lt	0.333
625+78	-L3-	Lt	0.333
625+72	-L3-	Lt	0.333
625+66	-L3-	Lt	0.333
625+60	-L3-	Lt	0.333
625+22	-L3-	Lt	0.333
625+16	-L3-	Lt	0.333
625+08	-L3-	Lt	0.333
625+00	-L3-	Lt	0.333
624+92	-L3-	Lt	0.333
624+84	-L3-	Lt	0.333
622+39	-L3-	Lt	0.333
622+33	-L3-	Lt	0.333
622+27	-L3-	Lt	0.333
622+21	-L3-	Lt	0.333
622+15	-L3-	Lt	0.333
622+09	-L3-	Lt	0.333
622+03	-L3-	Lt	0.333
621+97	-L3-	Lt	0.333
621+91	-L3-	Lt	0.333
621+85	-L3-	Lt	0.333
621+79	-L3-	Lt	0.333
621+73	-L3-	Lt	0.333
621+67	-L3-	Lt	0.333
Deck Drains Required on Bridge =			37

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	3
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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

DRAINAGE MAINTENANCE APPROACH

I-40 EAST 1 OF 4

Item Number	NCDOT Box #	NCDOT Station	Proposed Station	RT/LT	RFP Required Repairs	Proposed Repairs
M-44		36+00	52+45	RT	Construct concrete apron	Replace structure
M-45		38+70	54+93	RT	Replace apron, remove grass, and clean out berm ditch inlet	Replace structure
M-46	100	44+42	60+70	RT	Construct concrete apron	Replace structure
M-47	101	49+22	65+53	RT	Construct concrete apron	Replace structure
M-49		56+93	73+98	RT	Replace with masonry drainage structure and restore washed out slope	Replace structure
M-50	102	60+35	77+35	RT	Repair shoulder	Replace structure
M-51		65+10	82+10	RT	Restore washout at the end of curb	Replace structure
M-53	105	70+13	87+13	RT	Construct concrete apron	Replace structure
M-54	106	74+14	91+56	RT	Construct concrete apron and replace concrete ditch	New concrete apron and concrete ditch
M-56	108	78+31	94+71	RT	Construct concrete apron, repair drainage structure and pipe, and backfill	New concrete apron and concrete ditch
M-57	109	79+84	96+14	RT	Construct concrete apron	Replace structure
M-58		82+80	103+00	RT	Restore rusted FES and washed out slopes above cross line, remove tree and slip line pipe	Repair as stated - Remove FES and replace with standard riprap pad
M-59		88+08	105+33	RT	Restore 60' rusted pipe and slip line pipe	New slip line pipe
M-60	111	92+84	109+15	RT	Construct concrete apron	Replace structure
M-61		97+70	114+10	RT	Remove trees over pipe and at outlet, replace FES, and slip line pipe	Repair as stated - Remove FES and replace with standard riprap pad
M-62	112	104+48	120+80	RT	Construct concrete apron, repair drainage structure and pipe, and backfill	Replace structure
M-64		109+20	125+60	RT	Replace last joint of pipe, remove concrete and sediment from drainage system, and slip line pipe	Replace last joint of pipe, remove concrete and sediment, and slip line pipe
M-66	114	109+87	126+27	RT	Construct concrete apron and replace grates with correct grates for existing frame	Replace structure
M-68	116	117+75	134+15	RT	Clear trees at ard over pipe outlet, grade to drain, and replace FES	Repair as stated - Remove FES and replace with standard riprap pad
M-69	117	117+91	134+31	RT	Two pipe located here. DB Team shall replace FES and slip line crossline and construct Energy Dissipator	New energy dissipator and slip line pipe
M-70	118	120+39	136+70	RT	Restore buried grates and remove sediment from drainage ditch and system.	Will be repaired during construction
M-71	119	124+92	140+53	RT of Ramp C	Construct concrete apron	New concrete apron and concrete ditch
M-72	120	123+94	140+24	LT of Ramp C	Construct concrete apron	New concrete apron and concrete ditch
M-73	120A	123+89	140+29	Along Gorman (LT of mainline)	Construct concrete apron	New concrete apron and concrete ditch
M-75	122	121+37	137+77	Along Gorman (LT of mainline)	Construct concrete apron	New concrete apron and concrete ditch
M-78	125	125+67	142+07	RT	Remove sediment from ditch and pipe inlet and clean drainage system	Remove sediment and clean drainage system
M-79	126	128+17	144+57	LT	Construct concrete apron, repair drainage structure and pipe, and backfill	Replace structure
M-81	128	125+95	142+35	RT of Ramp B	Construct concrete apron, repair drainage structure and pipe, and backfill	New concrete apron and concrete ditch. Repair drainage structure and pipe.
M-82	129	134+66	154+61	LT	Remove tree at pipe outlet, regrade to ensure positive drainage, replace FES, and slip line pipe	Remove tree, regrade outlet, replace FES, and slip line pipe
M-84	132	123+64	140+04	RT	Clean out underdrain and daylight	Replace structure
M-87	133	125+49	141+89	Along Gorman (RT of mainline)	Construct concrete apron	New concrete apron and concrete ditch
M-90	137	121+68	138+08	LT	Replace with masonry drainage structure and repair washout behind curb	Replace structure
M-91	136			LT of Ramp A	Construct energy dissipator	Construct energy dissipator
M-92	138	119+08	135+48	RT	Repair shoulder and replace pipe	Regrade shoulder, remove pipe
M-93	139	119+38	135+78	RT	Replace with masonry drainage structure and repair shoulder washout	Replace structure
M-94		120+18	136+58	RT	Clean out underdrain and daylight	Replace structure
M-95	141	125+14	141+54	RT	Replace curb at bridge and repair asphalt shoulder	Replace structure
M-96	142	127+31	143+71	LT	Construct concrete apron	Replace structure
M-97	148	126+91	143+31	RT	Repair shoulder	Replace structure
M-98		126+39	145+00	LT	Repair separated RCP and slip line pipe	Repair pipe and slip line pipe

I-40 EAST 2 OF 4

Item Number	NCDOT Box #	NCDOT Station	Proposed Station	RT/LT	RFP Required Repairs	Proposed Repairs
M-100		127+86	143+03	RT	Slip line pipe, replace FES and remove trees from around outlet	New slip line pipe and FES. Remove trees.
M-101	144	124+62	144+52	At Ramp A (LT of mainline)	Construct concrete apron, replace concrete ditch and replace grates with correct grates for existing frame	New concrete apron, concrete ditch, and sag grates
M-104	147	127+87	143+03	RT	Repair washout/headcut (Off Gorman Street) and construct energy dissipator.	Construct energy dissipater and add riprap
M-106	149	132+28	149+25	RT	Construct concrete apron	New concrete apron and ditch
M-107	150	138+43	154+92	RT	Replace with masonry drainage structure and repair shoulder	Replace structure
M-107A		150+70	166+81	RT	Clean out drainage structure and crossline and regrade ditch line to remove sediment	Replace structure
M-108		156+72	170+92	RT	Repair separated pipe and slip line pipe	Replace structure
M-109		156+72	170+92	RT	Restore washed out slopes	Regrade slopes
M-112		164+64	180+94	RT	Grade and stabilize eroding ditch	Add riprap
M-113		164+64	180+94	RT	Repair last 2' of separated pipe, slip line pipe, replace FES and remove trees around pipe inlet	New slip line pipe and FES. Remove trees.
M-114		167+28	185+57	RT	Grade pipe outlet to drain and slip line pipe	Replace structure
M-117		183+12	199+78	RT	Replace exposed flume pipe (approximately 30' down slope) and repair slope.	Cut off pipe and place riprap
M-118		183+12	199+78	RT	Minor grading required and repair approximately 100' of chainlink fence. Repair lateral ditch and slope to culvert wing wall, remove trees behind wing wall and repair fence.	Repair lateral ditch and slope to culvert wing wall. Remove trees behind wing wall and repair ROW fence.
M-120		188+40		RT	Replace exposed flume pipe	N/A
M-121		195+60	211+74	RT	Repair pipe, drainage structure, and apron	Replace structure
M-121A		200+60	216+94	RT	Repair pipe, drainage structure, and apron	Replace structure
M-122A		205+10	221+67	RT	Repair pipe, drainage structure, and apron	Replace structure
M-122B		209+70	225+65	RT	Repair pipe, drainage structure, and apron	Replace structure
M-122C		217+70	233+97	RT	Repair pipe, drainage structure, and replace apron and concrete ditch	Replace structure
M-123	151	220+17	235+05	RT	Repair/replace damaged pipe and slip line	Repair/replace pipe and slip line
M-124	202	220+17	236+48	RT	Construct concrete apron, clean out concrete ditch and replace grates with correct grates	New concrete apron and concrete ditch. New grates.
M-125	201	224+74	241+06	RT	Construct concrete apron	New concrete apron and ditch
M-127	204	224+31	240+63	RT of Ramp C	Clean out pipe and berm ditch	Clean out pipe and ditch
M-128	151	223+42	239+74	RT of Ramp C	Construct concrete apron and replace grates with correct grates	New concrete apron and concrete ditch. New sag grate.
M-131	151	234+09	250+40	RT	Construct concrete apron and clean out ditch	Replace structure
M-134	209	251+16	267+82	RT	Pipe is too shallow. Replace if possible	Replace right side of pipe
M-136	210A	255+60	272+23	RT	Construct concrete apron and clean out ditch	Replace structure
M-137		257+50	273+89	RT	Replace floorless drainage structure.	Replace structure
M-142	213	259+59	276+02	RT	Construct concrete apron and remove sediment on shoulder	Replace structure
M-143		262+32	277+25	RT	Replace floorless drainage structure.	Replace structure
M-145		262+32	277+96	RT	Replace floorless drainage structure.	Replace structure
M-146	214	310+54	326+94	RT	Install grates	Replace structure
M-147	216	310+68	327+08	RT	Construct concrete apron	Replace structure
M-149	218	270+27	286+54	RT	Repair pipe outlet and construct dissipator.	No repair needed
M-150	218A	289+80	306+10	RT	Clean out outlet	Clean outlet
M-151	226	292+60	308+90	RT	Repair shoulder	Repair shoulder
M-152	228A	295+43	308+65	RT	Remove trees, replace concrete ditch and restore ditch	Replace concrete ditch with riprap

$$$$USERNAME$$$$ $$$$DGN$$$$ $$$$DATE$$$$ $$$$TIME$$$$

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	3-A
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DRAINAGE MAINTENANCE APPROACH

I-40 EAST 3 OF 4

Item Number	NCDOT Box #	NCDOT Station	RS&H Station	RT/LT	NCDOT Request	Proposed Repairs
M-157	230	314+69.6	331+01	RT	Clean out ditch, inlet, pipe system	Previously repaired
M-158	233	316+09+/-	332+53	RT	Repair shoulder	Project improvement include Shouder Berm Gutter which will include shoulder repair
M-159		316+09+/-	332+53	RT	Repair shoulder and unclog CBS	Project improvement include Shouder Berm Gutter which will include shoulder
M-162	236	317+00+/-	333+11	RT	Repair shoulder	Project improvement include Shouder Berm Gutter which will include shoulder
M-163	237	317+00+/-	333+11	RT	Repair shoulder	Project improvement include Shouder Berm Gutter which will include shoulder
M-165	238	326+05+/-	342+55	RT	In & out. Ax. Inside Loop D in interchange	No action needed
M-167	239	326+66+/-	342+79	RT	Clean out outlet and daylight to drain	? Not found
M-169 & M-170		327+74	343+65	RT	Stabilize slopes & add curb & gutter	Install SBG
M-171		327+74	343+65	RT	Stabilize slopes and add curb & gutter	Install SBG
M-172	242	331+64+/-	347+30	RT	Repair shoulder	Install SBG
M-174	244	332+15+/-	348+70	RT	Clean out outlet and provide positive drainage	Replace pipe
M-178	248	329+57+/-	346+39	RT	Clean out ditch. See general comments	Clean out ditch
M-182	250	331+51+/-	348+33	RT	Clean out pipe inlet & slip-line pipe	Slipline pipe
M-183	251	334+10	350+50	RT	Construct concrete apron	Construct concrete apron
M-184		338+30	353+93	LT	Repair box at the trailing end of Hadley Bridge	Replace structure
M-192	311	364+38.2	380+68	RT	Construct concrete apron	Construct concrete apron
M-194	312	378+50	379+06	RT	Clean out underdrain & daylight & clean out paved ditch	Clean out underdrain
M-195	0312A	379+91+/-	379+06	RT	Clear trees around headwall & slip-line pipe	Slipline pipe
M-197	0313A	372+48	395+39	RT	Clean out underdrain & daylight	Clean out underdrain
M-198		380+54	379+69		Repair paved ditches washed out near cross line 100-200' west of Exit 300 sign	Repair paved ditch
		382+00	398+47	RT	Replace damaged sign	Previously repaired
M-199	315	382+55+/-	398+63	RT	Clean out underdrain & daylight	Clean out underdrain
M-200	316	389+09.2	405+39	RT	Construct concrete apron	Replace structure
M-201	317	391+58.9	407+90	RT	Construct concrete apron & replace grates w/ correct grates	Replace structure
M-202	318	392+08.9	408+38	RT	Construct concrete apron, repair masonry drainage structure & pipe, and backfill	Replace structure
M-204	320	394+53+/-	410+53	RT	Construct concrete apron	Construct concrete apron
M-205	321	394+88.4	411+14	RT	Construct concrete apron	Construct concrete apron
M-207	322	396+12.7	412+32	RT	Construct concrete apron, repair paved ditch, masonry drainage structure, pipe, & backfill	Construct concrete apron, repair paved ditch, drainage structure, and pipe
M-208	323	397+10.9	413+40	RT	Construct concrete apron	Replace structure
M-209	324	398+34.5	415+21	RT	Construct concrete apron	Replace structure
M-210	325	399+01.6	416+37	RT	Construct concrete apron & replace concrete ditch	Replace structure and clean out ditch
M-211	0327A	398+34.5	415+27		Check grate (onramp) & replace if needed	Replace structure
M-213	326	404+87.6	421+14	RT	Replace pipe with 24"-RCP & replace grate	Replace structure
M-214	328	407+14.0	423+42	RT	Construct concrete apron, repair masonry drainage structure & pipe, and backfill	Replace structure
M-221	333	432+57.0	448+76	RT	Construct concrete apron	Replace structure
M-222	334	432+55+/-	448+78	RT	Remove trees & replace headwall/BDO	Remove tree and replace headwall
M-223		433+34	450+24		Replace separated pipe. Determine if additional drainage structure & cross line are hydraulically	Replace structures
M-224		433+34	450+24		same as above (223 & 224 photos are combined)	See M-223
		441+70	457+57	RT	Construct concrete apron, repair masonry drainage structure & pipe, and backfill	Replace structure
		443+85	460+66	RT	Replace damaged joint of pipe, clean out drainage system, & repair washout	Replace guardrail and pipe
M-225		443+60	458+81		Replace drainage structures & clean out drainage system	Replace structure

I-40 EAST 4 OF 4

Item Number	NCDOT Box #	NCDOT Station	RS & H Station	RT/LT	NCDOT Request	Proposed Repairs
M-226	33	436+98+/-	453+24.15	RT	Repair pipe or replace w/ drainage inlet, ensure pipe will drain, and slip-line. Determine if additional drainage structure & crossline are hydraulically required at this location. This area floods on I-40 when heavy rains occur.	Replace structures
M-228	0335B	436+98+/-	450+18.31	RT	Regrade and replace paved ditch	Regrade and replace paved ditch
M-229	0335C	436+98+/-	450+18.31	RT	Replace ditch and remove trees	Replace ditch and remove trees
M-231	337	440+97+/-	457+24.46		Replace cracked headwall	Replace Headwall
M-232	0337A	444+04.1	460+33.36	RT	Construct concrete apron, clean out concrete ditch & grade lateral ditch to drain	Replace structure
M-235	340	447+93.4	447+10.		Construct concrete apron, repair pipe & drainage structure, & backfill	Construct concrete apron and repair pipe and drainage structure
M-238	344	455+05+/-	471+48.99	RT	Construct concrete apron	Replace structure
M-241	346	466+88.3	483+13.89	RT	Construct concrete apron, repair pipe & drainage structure, & backfill	Construct concrete apron and repair pipe and drainage structure
M-243	347	469+84.0	486+09.39	RT	Construct concrete apron	Replace structure
M-244	348	469+94+/-	486+12.32	RT	Remove debris from inlet	Remove debris
M-245	0347A	473+43.2	486+19.83		Construct concrete apron	Replace structure
		473+20	489+37.69	RT	Replace apron and slip-line pipe	Replace structure and pipe
M-248	0350A	476+96.5	493+03.68	RT	Clean out pipe inlet	Clean out inlet
M-249	350	483+54+/-	499+18.96		Construct concrete apron & remove sediment from concrete ditch	Replace structure
M-271	371	524+43	542+62.31		Construct concrete apron, clean out box, & replace missing grates	Replace structure
M-545	5	506+00	522+12.08	RT	Repair holes in slope and repair cross line	Repair slope
M-546	5	506+00	522+12.08	RT	Repair holes in slope and repair cross line	Repair slope
M-549	7	514+40	530+64.95	RT	Clean out pipe & outlet to ensure positive drainage	Abandon 18" RCP
M-550	7	514+40	530+64.95	RT	Clean out pipe & outlet to ensure positive drainage	Clean out pipe
M-556	8	519+80	536+10.83	RT	Construct concrete apron, repair pipe & drainage structure, & backfill	Replace structure
M-557	8	519+80	536+10.83	RT	Construct concrete apron, repair pipe & drainage structure, & backfill	Replace structure
		526+10	542+62.31	LT	Replace apron on structure, clean out debris in paved ditch & slip-line pipe	See M-271
M-563	10.5	527+10	543+58.39	RT	Clean out pipe & ditch to ensure positive drainage & slip-line pipe	Not addressed. Item outside of NCDOT right-of-way
M-564	10.5	527+10	541+73.26	RT	Repair R/W fence and remove sediment build up	Repair fence and remove sediment
M-568	10	526+90	543+08.25	RT	Remove trees at pipe inlet and clean out pipe	Remove trees and clean out pipe
		535+65	551+92.24	RT	Clean out paved ditch and replace apron	Replace structure
M-572	17	548+20	563+96.11	RT	Water under pipe. Construct dissipater & slip-line pipe	Slipline pipe and repair erosion
M-575	20	548+30	564+62.85	RT	Construct concrete apron, ditch, & replace grates w/ correct grates	Replace structure
M-578	23	561+33	577+61.37	RT	Construct concrete apron, repair pipe & drainage structure, & backfill	Replace structure
M-582	28	567+20	583+50.26	RT	Construct concrete apron, replace broken grate, & slip-line pipe	Replace structure and pipe
M-583	28	567+20		RT	Construct concrete apron, replace broken grate, & slip-line pipe	See M-583
M-586		576+55	592+83.21	RT	Repair erosion at end of guardrail & construct shoulder berm gutter	Install SBG
M-588		576+55	592+83.21	RT	Repair erosion at end of guardrail & construct shoulder berm gutter	Install SBG
M-591	31	577+10	593+69.9	RT	Clean out, provide positive drainage, & construct rodent guard. Clean out silt in rip rap ditch	Clean out underdrain
M-593	31	577+10	593+69.9	RT	Clean out, provide positive drainage, & construct rodent guard. Clean out silt in rip rap ditch	Clean out underdrain and ditch

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6/2/99

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	3-B
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DRAINAGE MAINTENANCE APPROACH

I-40 EAST 4 OF 4 continued

Item Number	NCDOT Box #	NCDOT Station	RS & H Station	RT/LT	NCDOT Request	Proposed Repairs
M-594	32	581+33	597+61.27	RT	Clean out, provide positive drainage, & construct rodent guard	Clean out underdrain
M-272		534+99	552+05.07		Remove trees a: outlet & clean out ditch & pipe to provide positive drainage	Remove trees and clean out ditch and pipe
M-273		540+27	556+75.93		Clean out around outlet & clean out ditch to provide positive drainage	Clean out ditch and outlet
M-274		545+55	560+93.09		Clean out pipe, outlet, & ditch to provide positive drainage	? Not found
M-275		550+83	565+23.99		Clean out pipe & ditch to provide positive drainage	? Not found
M-276		566+67	583+46.71		Clean out pipe & ditch to provide positive drainage	? Not found
M-277		571+95	588+48.51		Replace apron & clean out pipe & ditch to provide positive drainage	Replace structure
M-278		571+95	588+48.51		Replace apron & clean out pipe & ditch to provide positive drainage	Replace structure
M-279		577+23	594+00.99		Outlet has been undermined. Construct dissipater & remove treesaround outlet	Replace pipe and construct dissapator
M-280		577+23	594+00.99		Replace apron	Replace structure
M-281		581+34	597+89.88		Clean pipe & ditch to provide positive drainage	? Not found
M-282		581+45	598+23.76		Repair/replace FES	? Not found
M-283		585+15	599+69.82		Replace apron	Replace structure
M-284		587+79	605+11.81		Replace apron	Replace structure
M-285		593+07	608+21.28		Replace apron	Replace structure
M-286		603+63	618+31.69		Replace apron	Replace structure
M-287		608+91	625+26.12		Repair separated pipe & clean out pipe & outlet to ensure positive drainage	? Not found

I-40 WEST 1 OF 4

Item Number	NCDOT Box #	NCDOT Station	Proposed Station	RT/LT	RFP Required Repairs	Proposed Repairs
M-597		615+33	631+57	LT	Construct concrete apron, repair box & drainage structure	New concrete apron
M-600		604+00	620+45	LT	Seed behind guardrail	Install SBG and seed
M-603		603+60	619+81	LT	Seed behind guardrail	Install SBG and seed
M-605		592+10	608+30	LT	Clear trees around the outlet and over the pipe	Remove trees
M-607		592+10	608+30	LT	Clean out concrete ditch	Clean out concrete ditch
M-608		583+25	599+48	LT	Clean out pipe & daylight outlet to drain	Slipline Pipe
M-612		583+25	599+48	LT	Remove check dam	Remove check dam and lay back stream banks
M-616		583+25	599+48	LT	Repair washout	Install SBG and repair washout
M-617		583+25	599+48	LT	Repair R/W fence	Repair fence
M-618		581+00	597+26	LT	Repair washout on slope	Install SBG and repair washout
M-622		579+00	595+23	LT	Reshape shoulder & reseed & mat this area	Install SBG and reseed
M-623		582+80	599+17	LT	Construct shoulder berm gutter at the end of guardrail, repair slope & reseed	Install SBG and repair slope, reseed
M-624		577+00	593+06	LT	Repair erosion behind guardrail & reseed & mat	Install SBG and reseed
M-628		572+70-580+00	580+77 - 588+77	LT	Reshape shoulder & reseed & mat this area	Install SBG and reseed
M-634		562+80	578+88	LT	Construct concrete apron & clean out ditch	Replace structure
M-635		561+50	577+61	LT	Construct concrete apron	Replace structure
M-636		556+00 -	570+02		Repair conduit & clean out ditch under bridge & grade to drain	Clean out ditch/Conduit is non-drainage item
M-637		551+33	567+64	LT	Construct concrete apron	Replace structure
M-369		548+20	564+58	LT	Construct concrete apron	Replace structure
M-641		545+20	561+40	LT	Construct concrete apron	Replace structure
M-642		552+10	568+28	LT	Construct concrete apron	Construct concrete apron
M-644		551+85	567+70	LT	Paved ditch sunk at joint. Repair ditch	Repair concrete ditch
M-645		541+20	556+91	LT	Repair R/W fence	Repair fence
M-647		545+85	561+30	LT	Repair cracked brick headwall/outlet & slip-lines pipes	Repair headwall and slip-line pipe
M-651		545+85	561+30	LT	Repair wash out behind headwall & remove trees.	Repair washout and remove trees
M-653		534+90	551+17	LT	Construct concrete apron	Replace structure
M-655		534+80	550+99	LT	Remove trees & construct dissipater	Remove trees, construct dissipator
M-662		530+33	546+58	LT	Extend paved ditch to drainage structure, remove debris, & cleanout pipe	Install paved ditch, clean out pipe
M-664		524+35	540+63	LT	Construct concrete apron	Replace structure
M-665		523+50	539+87	LT	2/3 full of slit. Clean out & daylight to drain & remove trees	Clean out pipe and remove trees
M-671		520+80	536+95	LT	Construct concrete apron	Replace structure
M-673		516+75	532+96	LT	Construct concrete apron	Construct concrete apron
M-675		516+33	532+63	LT	Repair pipe and outlet & construct dissipater	Repair outlet, construct dissipator
M-680		515+10	531+40	LT	Clean out clogged curb & gutter & repair washout behind curb	Install SBG and repair washout
M-684		515+10	531+40	LT	Repair washout & replace failed CSP pipe	Replace pipe
M-689		506+10	522+38	LT	Remove concrete & reseed	Install SBG and reseed
M-701		506+10	518+36	LT	Buried outlet outside R/W fence. Reestablish outlet	Replace pipe and establish outlet
M-708		506+10	518+36	LT	Buried outlet outside R/W fence. Clean out pipe & grade outlet to drain	Replace pipe and establish outlet
M-709		501+40 (RSH)	518+36	LT	Clean out clogged outlet & pipe, Remove sediment buildup & regrade outlet to drain	See M-708
M-718		491+92	?	LT	Clean out outlet ditch & remove tree	Clean out ditch and remove tree

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6/2/99

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	3-C
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DRAINAGE MAINTENANCE APPROACH

I-40 WEST 2 OF 4

Item Number	NCDOT Box #	NCDOT Station	Proposed Station	RT/LT	RFP Required Repairs	Proposed Repairs
M-250	352	482+35.1	499+80	LT	Construct concrete apron & replace missing grate	Replace structure
M-251	353	477+66	492+69	LT	Construct concrete apron & clean out sediment around structure	? Not found
M-252	354	469+85	485+67	LT	Repair drainage structure & pipe, regrade & replace apron, & remove vegetation	Replace structure
M-253	355	469+85	485+67	LT	Repair drainage structure & pipe, regrade & replace apron, & remove vegetation	Repair structure & pipe, regrade & replace apron, & remove vegetation
M-254	355	469+21+/-	487+61	LT	Remove trees & repair dislodged FES	Remove trees and remove FES, extend pipe as needed
M-255	356	468+68+/-	485+40	LT	Remove trees a: outlet & construct dissipater	Remove trees and construct dissipator
M-256	357	469+00+/-	485+26		Remove trees a: outlet & over pipe	Remove trees
M-257	358	466+09+/-	482+18	LT	Clean out pipe & remove trees over pipe, grade outlet to drain, & remover sediment form concrete ditch	Remove trees and clean out ditch
M-258	360	461+84+/-	479+40	LT	Construct concrete apron	Replace structure
M-259	359	469+13.7	485+27	LT	Remove trees a: outlet, reset FES, & construct dissipater	Remove trees, construct dissipator, and reset FES or extend pipe
M-260	361	476+40.8	492+39	LT	Construct concrete apron & regrade ditch	Replace structure
M-262	363	472+11+/-	487+81	LT	Remove trees a: outlet & clean out pipe & drainage outlet	Remove trees and clean out pipe
M-266	367	458+79.1	475+05	LT	Construct concrete apron	Construct concrete apron
M-267	368	458+38.2	474+66	LT	Construct concrete apron & repair asphalt shoulder	Replace structure
M-268	369	457+43.3	456+60	LT	Construct concrete apron, check grates (replace if needed), clean out ditch under bridge to ensure drainage to box	Replace structure
M-269	370	356+20.9	472+50	LT	Remove trees a: pipe outlet over pipe	Remove trees
M-270		454+24.6	472+47	LT	Remove tree over pipe & cleanout adjacent pipe & daylight to drain	Remove tree and clean out pipe
M-289	373	444+98+/-	459+74	LT	Clean out underdrain & daylight	Clean out underdrain
M-290	374	444+43+/-	460+89	LT	Remove sediment loading & clean out pipes. This system causes I-40 East flooding on heavy rain events	Clean out pipes
M-291	375	443+67+/-	459+70	RT	Clean out ditch	Clean out ditch
M-292	376	456+20.9	462+80	LT	Remove tree & cleanout pipe & ensure positive drainage	Remove tree and clean out pipe
M-298	382	409+12.0	425+40	LT	Construct concrete apron	Construct concrete apron
M-299	383	407+14.4	423+42	LT	Construct concrete apron	Replace structure
M-306	389	384+65+/-	400+93		Repair shoulder washout & curb & construct additional drainage structure at this location	? Not found
M-307	390	384+65+/-	400+93		Repair shoulder	? Not found
M-308	390	384+65+/-	400+93		Remove tree, clean out outlet & pipe to ensure drainage, & slip-line pipe	? Not found
M-309	391	379+65+/-	400+93	LT	Remove trees & clean out outlet	Replace pipe
M-310	392	379+65+/-	400+93	LT	Replaces FES, clean out pipe, & slip-line pipe	Replace pipe
M-311	392	379+92+/-	396+22	LT	Clean out pipe & drainage outlet to provide positive drainage & slip-line pipe	Replace pipe
M-315	394	371+01+/-	387+11	LT	Repair should & cable pull at end of bridge	Repair shoulder and cable pull
M-317	396	370+31.6	385+40	LT	Construct concrete apron, remove trees, & clean out debris around structure	Replace structure
M-319	398	364+43.3	380+72	LT	Construct concrete apron & repair pipe & drainage structure	Replace structure
M-320	399	362+45.6	378+74	LT	Construct concrete apron & repair pipe & drainage structure	Replace structure
M-332-Old Garner Bridge		342+00	358+32	LT	Replace curb. Curb has settled at bridge below top of box elevation	Replace structure
M-333		same as 332	358+32		same as 332	Replace structure
M-331	3110	335+98.2	352+26		Clean out pipe, daylight outlet to drain, & slip-line pipe	Replace pipe
M-335	3115	336+30	349+56	LT	Repair washout behind curb & on slope	Install SBG
M-336	3116	Hammond Rd Ramp	349+56		Repair washout behind curb & on slope	Install SBG
M-342	3119	329+23.7	345+52	LT	Clean out curb line & drainage system	Replace structure
M-343	3120	329+23.7	345+52	LT	Clean out curb line & drainage system	Replace structure

I-40 WEST 3 OF 4

Item Number	NCDOT Box #	NCDOT Station	Proposed Station	RT/LT	RFP Required Repairs	Proposed Repairs
M-345	3121	326+26	342+53	LT	Clean out curb & remove vegetation	Replace structure
M-350	3121	326+17	342+44	LT	clean out pipe & reestablish outlet drainage	Replace pipe
M-351	3121A	326+00	340+76	LT	Clean out pipe & drainage inlet	Clean out pipe and inlet
M-352	3122	326+00	340+76	LT	Clean out pipe & drainage inlet	Clean out pipe and inlet
M-353	3122	315+42	332+62	LT	Repair shoulder washout	Install SBG
M-358	3126	327+56	343+75	LT	Clean out pipe & grade outlet to drain	Clean out pipe and grade outlet
M-360	3128	329+21	345+39	LT	Clean out ditch & drainage system	Clean out ditch and system
M-361	3129	329+25	345+39	LT	Construct concrete apron	Replace structure
M-363	3129	Hammond Rd	343+57	LT	Construct concrete apron	Construct concrete apron
M-366	3132A	Hammond Rd	343+57	LT	Remove trees over outlet	Remove trees
M-367	3132B	319+98	336+03	LT	Repair washout on shoulder	Install SBG
M-368	3132C	298+65	314+98	LT	Clean out curb line and drainage system	Install SBG
M-369	3133	298+65	314+98	LT	Clean out curb line	Install SBG
M-370	3133	298+65	314+92	LT	Repair washout on shoulder	Repair as stated
M-371	3133A	294+49	310+76	LT	Repair washout on shoulder	Will be repaired during construction
M-376	3136	285+43	301+68	LT	Clean out pipe and outlet	Will be repaired during construction
M-382	3142	278+94	295+19	LT	Repair shoulder	Will be repaired during construction
M-384	2001	280+62	296+87	LT	Remove debris and trash around structure and seed area	Will be repaired during construction
M-385	2002	281+67	297+96	LT	Replace FES	Replace structure
M-388	2005	273+90	290+15	LT	Repair shoulder	Will be repaired during construction
M-392	2006	267+59	283+84	LT	Repair shoulder	Will be repaired during construction
M-393		265+72	281+97	LT	Clean out pipe and daylight outlet to drain.	Will be repaired during construction
M-396	2008	263+03	279+28	LT	Remove tree over FES, clean out pipe, and daylight outlet to drain	Repair as stated
M-402	2013	242+24	258+49	LT	Clean out pipe and daylight outlet to drain.	Repair as stated
M-403	2014	238+65	254+90	LT	Uncover structure	Repair as stated
M-405	2015	238+65	254+90	LT	Remove vegetation and debris build up around structure	Repair as stated
M-406	2015	239+39	255+64	LT	Repair shoulder, replace with pavement and construct shoulder berm gutter	SBG may not be needed with proposed design
M-407	2016	238+93	255+18	LT	Remove trees at outlet and over pipe	Repair as stated
M-411	2020	238+67	254+92	LT	Uncover buried drainage structure, clean out drainage system, and regrade lateral ditch	Replace structure
M-412	2021	232+78	249+03	LT	Construct concrete apron and regrade around drainage structure	Repair as stated
M-413	2500	232+73	248+98	LT	Replace FES and slip line pipe if left in place	Remove FES
M-414	2501	226+00	242+25	LT	Remove tree, construct energy dissipater, and slip line pipe	Repair as stated
M-415	2502	225+95	242+20	LT	Repair shoulder washout and replace funnel drain with drainage structure	SBG may not be needed with proposed design
M-416	2503	225+84	242+09	LT	Repair washout on shoulder	Will be repaired during construction
M-417	2504	224+64	240+89	LT	Repair shoulder washout and replace funnel drain with drainage structure	SBG may not be needed with proposed design
M-418	2505	222+83	239+08	LT	Replace funnel drain with drainage structure	SBG may not be needed with proposed design
M-419	2506	219+85	236+10	LT	Remove trees around pipe outlet and over pipe	Repair as stated
M-420	2507	218+81	234+25	LT	Construct concrete apron, remove trees, and repair hole	Repair as stated
M-421	2508	214+65	230+90	LT	Construct concrete apron and repair the pipe and drainage structure	Replace structure
M-423	2510	205+46	221+71	LT	Construct concrete apron and repair the pipe and drainage structure	Replace structure
M-424	2511	200+52	216+77	LT	Construct concrete apron and repair the pipe and drainage structure	Replace structure
M-425	2512	195+48	211+73	LT	Construct concrete apron, remove vegetation, and repair the pipe and drainage structure	Replace structure
M-426	2513	190+04	206+29	LT	Replace with drainage structure	Replace structure
M-427	2514	188+23	204+48	LT	Replace with drainage structure	Replace structure
M-428	2515	186+78	203+03	LT	Replace with drainage structure	Replace structure
M-429	2516	184+60	200+85	LT	Replace with drainage structure	Replace structure

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

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	3-D
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DRAINAGE MAINTENANCE APPROACH

I-40 WEST 4 OF 4

Item Number	NCDOT Box #	NCDOT Station	Proposed Station	RT/LT	RFP Required Repairs	Proposed Repairs
M-430	2517	184+83	201+08	LT	Clean out ditch	Replace structure
M-432	2519	186+02	202+27	LT	Repair ditch and riprap with fabric	Install new concrete ditch
M-433	2520	179+62	195+87	LT	Remove sediment from ditch to ensure drainage	Repaired during construction
M-434	2521	179+63	195+88	LT	Construct concrete apron	New concrete apron and ditch
M-437	2524	170+07	186+32	LT	Clean out BDO	Repaired during construction
M-438	2525	165+06	181+31	LT	Clean out underdrain and daylight	Replace structure
M-439	2526	163+52	179+77	LT	Replace with drainage structure and replace 12" pipe with 15" pipe	Replace structure
M-440	2527	161+52	177+77	LT	Replace with drainage structure and replace 12" pipe with 15" pipe	Replace structure
M-441		160+12	176+37	LT	Repair slope washout	Repaired during construction
M-442	2528	159+52	175+77	LT	Replace with drainage structure and replace 12" pipe with 15" pipe	Replace structure
M-443	2529	157+52	173+77	LT	Replace with drainage structure and replace 12" pipe with 15" pipe	Replace structure
M-445	2531	153+82	170+07	LT	Remove tree at outlet and clean out pipe and daylight outlet to drain	Repaired during construction
M-448	2534	145+32	161+57	LT	Replace grates with correct grates	Replace structure
M-450		127+00	143+25	LT	Replace curb and gutter from bridge to drainage structure (Gorman St)	Repaired during construction
M-451	2536	102+77	119+02	LT	Construct concrete apron and repair pipe and box	New concrete apron and ditch
M-452	1537	101+85	118+10	LT	Remove trees at FES and over the pipe	Repaired during construction
M-453	1538	100+35	116+60	LT	Repair dislodged pipe, clean out pipe, remove tree, and grade outlet to drain	Repaired during construction
M-454	1539	97+65	113+90	LT	Remove trees at FES and over the pipe	Repaired during construction
M-455	1540	100+41	116+66	LT	Replace with drainage structure and replace 12" pipe with 15" pipe	Replace structure
M-456	1541	96+99	113+24	LT	Replace with drainage structure and replace 12" pipe with 15" pipe	Replace structure
M-458	1543	90+63	106+88	LT	Remove and replace last section of pipe and paved ditch and repairconcrete ditch	Replace concrete ditch with riprap and filter fabric
M-459	1544	90+09	106+34	LT	Replace with drainage structure and replace 12" pipe with 15" pipe	Replace structure
M-460	1545	89+11	105+36	LT	Replace with drainage structure and replace 12" pipe with 15" pipe	Replace structure
M-461	1546	88+24	104+49	LT	Repair/replace headwall and slip line pipes. Determine need for cross veins	Repair/replace bricks as needed
M-462	1547	87+26	103+51	LT	Repair washout and replace drainage	Install riprap and filter fabric
M-463	1548	87+36	103+61	LT	Repair washout	Replace structure
M-466	1551	79+84	96+09	LT	Construct concrete apron	New concrete apron and ditch
M-469	1554	70+14	85+75	LT	Construct concrete apron	New concrete apron and ditch
M-470	1555	66+46	83+25	LT	Construct concrete apron	New concrete apron and ditch
M-471	1556	66+48	83+25	LT	Remove tree at FES	Repaired during construction
M-472	1557	68+27	84+52	LT	Remove tree at pipe inlet and slip line pipe	Repaired during construction
M-473		62+44	78+69	LT	Replace with drainage structure and replace 12" pipe with 15" pipe	Repaired during construction
M-474	1558	60+18	76+43	LT	Slip line pipe	Replace structure
M-475		59+80	76+05	LT	Replace guardrail and damaged curb	Repaired during construction
M-476	1559	57+35	73+60	RT	Remove fallen trees at pipe inlet, repair cracked headwall, and slip line pipe	Repaired during construction
M-477	1560	55+18	71+43	LT	Slip line pipe and move rip rap to open drainage outlet	Repaired during construction
M-478		54+52	70+77	LT	Replace with drainage structure, replace 12" pipe with 15" pipe, repair washout on slope, and replace guardrail	Repaired during construction
M-480		51+88	68+13	LT	Replace funnel drain with drainage structure and repair washout	Repaired during construction

I-40 MEDIAN

Item Number	NCDOT Box #	NCDOT Station	Proposed Station	RT/LT	RFP Required Repairs	Proposed Repairs
M-483	1563	65+63.2	82+00	Median	Construct concrete apron, repair drainage structure and pipe, and backfill	Replace structure and pipe, repair pipe as needed
M-486	1565	72+13	91+00	Median	Construct concrete apron	Replace structure
M-488	1567	80+99	97+36	Median	Construct concrete apron, repair drainage structure and pipe, and backfill	Replace structure and pipe, repair pipe as needed
M-491	1570	89+63	106+00	Median	Construct concrete apron	Replace structure
M-493	1572	96+00	112+37	Median	Clean out shoulder drain and provide positive drainage	Remove shoulder drains - not required in this locatior
M-495	1574	103+94	120+31	Median	Construct concrete apron	Replace structure
M-496	1575	110+31	126+68	Median	Construct concrete apron	Replace structure
M-497	1576	110+48	126+85	Median	Construct concrete apron	Replace structure
M-498	1577	113+63	130+00	Median	Construct concrete apron	Replace structure
M-499	1578	120+63	137+00	Median	Construct concrete apron	Replace structure
M-500	1579	124+88	141+25	Median	Construct concrete apron and repair concrete ditch	Replace structure
M-502	1581	134+26	150+63	Median	Construct concrete apron	Replace structure
M-503	1582	138+61	154+98	Median	Construct concrete apron	Replace structure
M-504	1583	141+09	157+46	Median	Construct concrete apron	Replace structure
M-505	1584	144+99	161+36	Median	Construct concrete apron	Replace structure
M-508	1587	155+37	171+74	Median	Construct concrete apron	Replace structure
M-509	1588	156+64	173+01	Median	Clean out shoulder drain and provide positive drainage including median ditch	Remove shoulder drains - not required in this locatior, proposed 22' median with concrete barrier will provide positive drainage
M-511	1590	164+63	181+00	Median	Construct concrete apron	Replace structure
M-512	1591	169+73	186+10	Median	Construct concrete apron, repair drainage structure and pipe, and backfill	Replace structure and pipe
M-514	1593	178+64	195+01	Median	Construct concrete apron	Replace structure
M-515	1594	183+64	200+01	Median	Construct concrete apron	Replace structure
M-516	2701	188+04	204+41	Median	Construct concrete apron	Replace structure
M-517	2702	195+63	212+00	Median	Construct concrete apron, repair drainage structure and pipe, and backfill	Replace structure and pipes
M-518	2703	200+62	216+99	Median	Construct concrete apron, repair drainage structure and pipe, and backfill	Replace structure and pipes
M-519	2704	205+62	221+99	Median	Construct concrete apron	Replace structure and pipes
M-520	2705	209+63	226+00	Median	Construct concrete apron, repair drainage structure, and reset anchor unit	Replace structure and pipes, remove guiderail and anchor unit and replace
M-521	2706	214+06	230+43	Median	Construct concrete apron, repair drainage structure and pipe, and backfill	Replace structure and pipes
M-525	2710	229+65	246+02	Median	Construct concrete apron, repair drainage structure and pipe, and backfill	Replace structure and pipe
M-527	2712	234+71	251+08	Median	Construct concrete apron	Replace structure
M-529	2714	247+76	264+13	Median	Construct concrete apron, repair drainage structure and pipe, and backfill	Replace structure and pipe
M-533	2718	259+18	275+55	Median	Clean out ditch at drainage structure	Replace structure and pipes, convert ditch to 22' median with concrete
M-535	2720	259+18	275+55	Median	Clean out ditch at drainage structure	Replace structure and pipes, convert ditch to 22' median with concrete median barrie
M-536	2720	264+67	281+04	Median	Construct concrete apron	Replace structure
728	105	610+80	627+17	Median	Repair ditch mat & reseed	Repair ditch and reseed
729	106	615+10	631+47	Median	Clean out sediment to ensure proper drainage	Clean out sediment

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

6/2/99

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	3-E
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DRAINAGE MAINTENANCE APPROACH

I-40 INTERCHANGES

Item Number	NCDOT Box #	NCDOT Station	Proposed Station	RT/LT	RFP Required Repairs	Proposed Repairs
M-1		SW Quad Gorman Street			Remove trees around pipe outlet, replace FES, slip-line pipe, and grade drainage outlet	Repair as stated
M-4					Remove trees around pipe outlet and replace or slip-line pipe	Repair as stated
M-5					Remove trees around pipe outlet, clean out ditch, and remove debris from around box	Repair as stated
M-7		SE Quad Gorman Street			Replace funnel drain	New shoulder berm gutter with new drainage structures will be installed as needed
M-8					Replace funnel drain	New shoulder berm gutter with new drainage structures will be installed as needed
M-10		SW Quad Lake Wheeler Road			Replace concrete apron	Replace structure
M-11		NE Quad Lake Wheeler Road			Replace curb with shoulder berm gutter	Repair as stated
M-12					Repair washed out slope	Repair as stated
M-13					Repair washed out slope	Repair as stated
M-14					Repair washed out slope	Repair as stated
M-15		NW Quad Lake Wheeler Road			Replace funnel drain with masonry drainage structure and replace pipe	New shoulder berm gutter with new drainage structures will be installed as needed
M-16					Restore washed out area and replace funnel drain with drainage structure	New shoulder berm gutter with new drainage structures will be installed as needed
M-17					Restore washed out area and replace funnel drain with drainage structure	New shoulder berm gutter with new drainage structures will be installed as needed
M-18					Restore washed out area and replace funnel drain with drainage structure	New shoulder berm gutter with new drainage structures will be installed as needed
M-19					Restore washed out area and replace funnel drain with drainage structure	New shoulder berm gutter with new drainage structures will be installed as needed
M-20					Restore washed out area and replace funnel drain with drainage structure	New shoulder berm gutter with new drainage structures will be installed as needed
M-21		Poole Rd Interchange			Repair seperated joint of a 30" CMP, slip line pipe (located halfway up the ramp)	Slipline pipe
M-22					Slipline pipe	Slipline pipe
M-23		I-440/I-40 Interchange I-40 on Ramp			Clear tree at outlet & reset the separated joint & FES	Remove tree and reset FES or extend pipe as needed
M-24		same as 23			same as 23	See M-23
M-25					Repair box & pipe & construct a new apron	Construct concrete apron
M-26					Repair box & pipe & construct a new apron	Construct concrete apron
M-27					Construct a new apron	Construct concrete apron
M-28		Rock Quarry Interchange-Off			Repair box & pipe & construct a new apron	Replace structure
M-29					Repair box & pipe & construct a new apron	Replace structure
M-30					Repair box & pipe & construct a new apron	Replace structure
M-31		On Ramp EB			Restore washed out box	Replace structure
M-32					Restore buried/overgrown drainage system from stock pile goingeast	Restore drainage system
M-33		Off Ramp WB			Repair box & pipe & construct a new apron	Replace structure
M-34					Restore box & paved ditch that has been washed out	Restore drainage system
M-35		On Ramp WB			Restore possible sink hole over 54" pipe, draining from the gore I-40 West	Restore sink hole
M-36					Repair the curb & gutter that is settling & causing drainage issues. (Located at the end of merge lane)	Install SBG
M-43		Hammond Rd Interchange - W3 Off Ramp			Repair the gutter that has settled & restore the slope that has been washed out	Install SBG
M-44		Hammond Rd Interchange -NW			Relieve ponding water	Relieve ponding water
M-45					Rehabilitate paved ditch	Repair concrete ditch

$$$$SYSTEM$$$$
$$$$ENGINEER$$$$

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	31

R/W SHEET NO.

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

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PRELIMINARY PLANS
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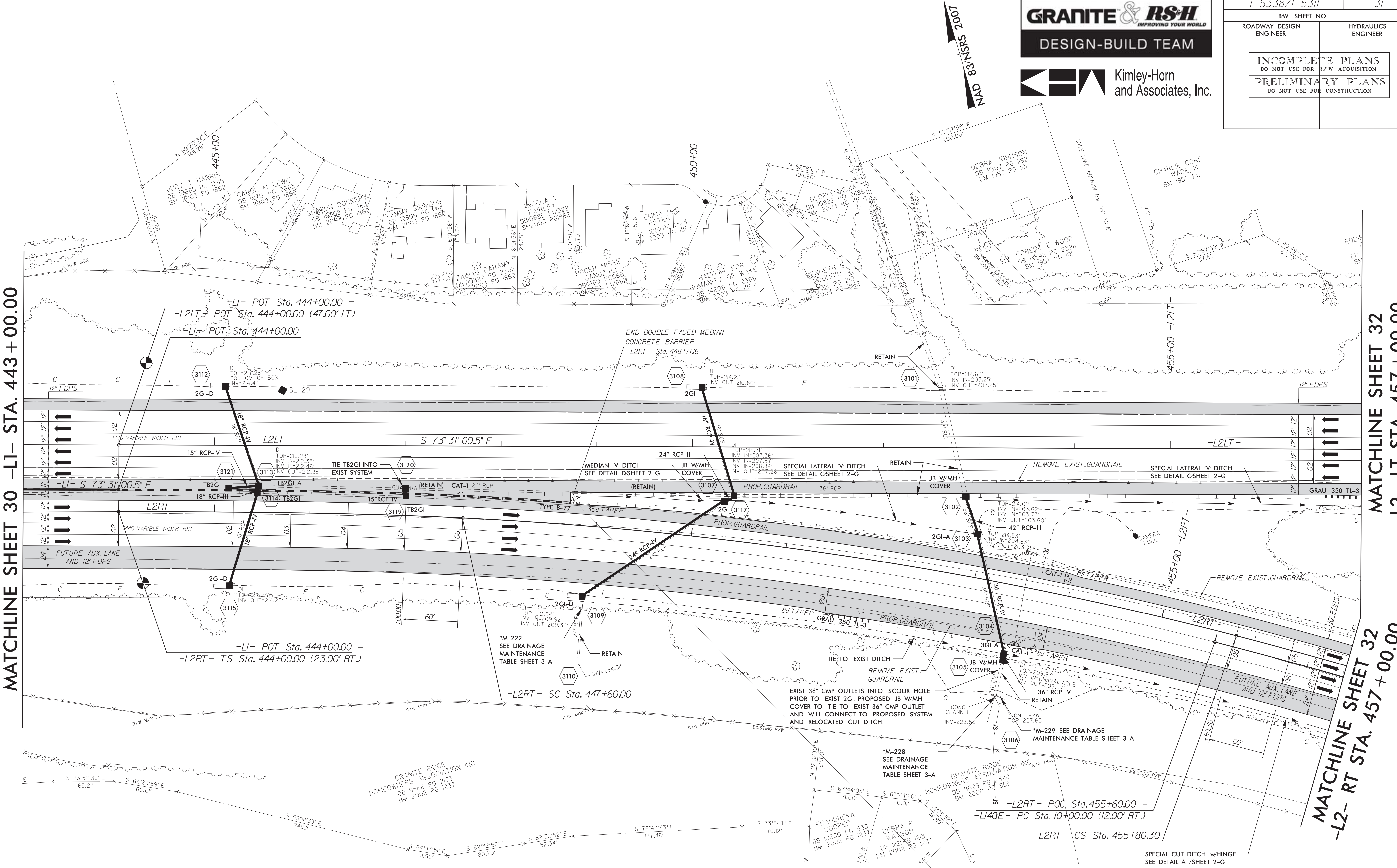
DESIGN-BUILD TEAM

Kimley-Horn and Associates, Inc.

REVISIONS



-L2RT- CURVE DATA

PIs Sta 446+40.03	PI Sta 451+71.60	PIs Sta 457+00.33
θs = 2° 34' 41.9"	Δ = 11° 45' 00.0" (RT)	θs = 2° 34' 41.9"
Ls = 360.00'	D = 1° 25' 56.6"	Ls = 360.00'
LT = 240.03'	L = 820.30'	LT = 240.03'
ST = 120.02'	T = 411.60'	ST = 120.02'
	R = 4,000.00'	
	V = 76 MPH	
	SE = .06	

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

8/17/99

08-NOV-2013 07:38

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	32

R/W SHEET NO.

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

GRANITE & RS&H DESIGN-BUILD TEAM

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INCOMPLETE PLANS
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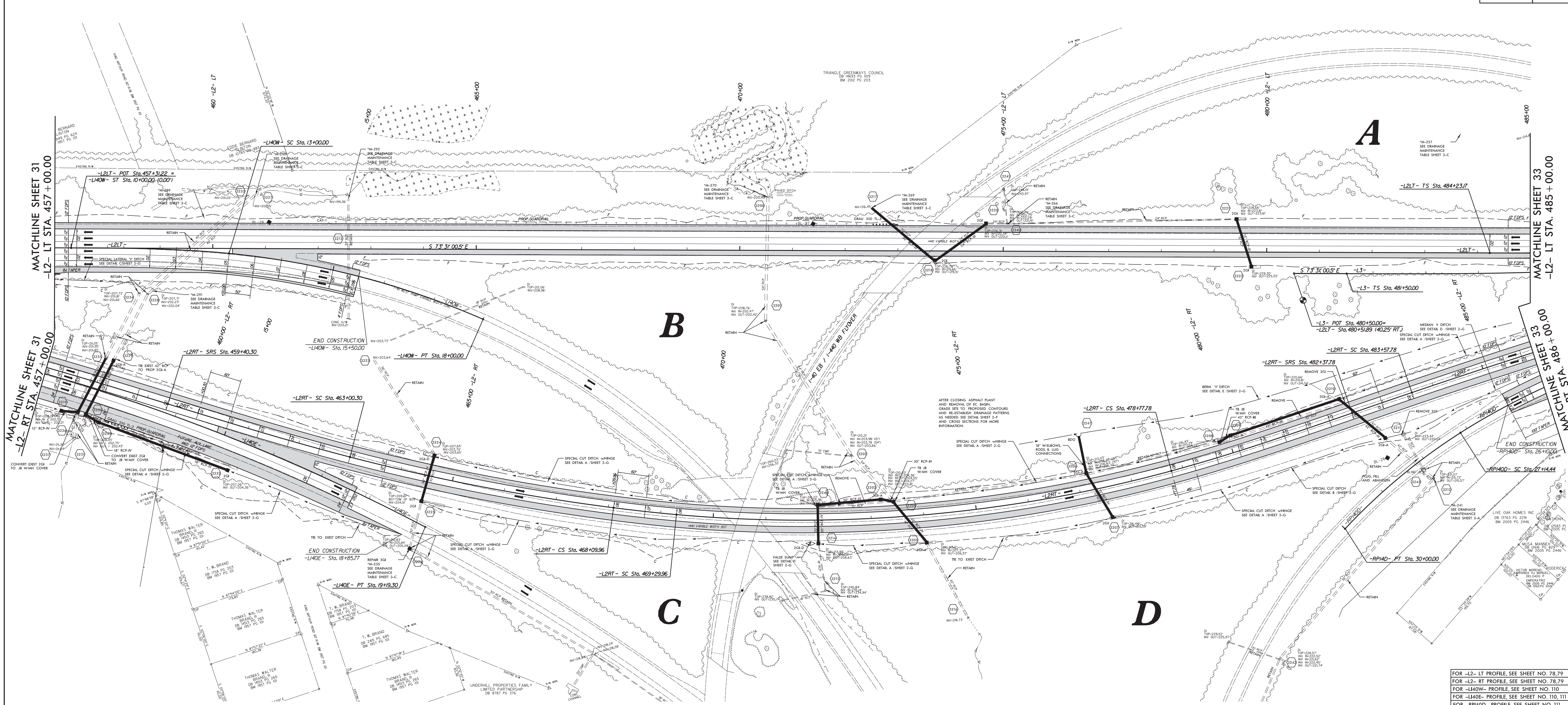
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83/NSRS 2007



FOR -L2- LT PROFILE, SEE SHEET NO. 78,79
FOR -L2- RT PROFILE, SEE SHEET NO. 78,79
FOR -LI40W- PROFILE, SEE SHEET NO. 110
FOR -LI40E- PROFILE, SEE SHEET NO. 110, 111
FOR -RPI40D- PROFILE, SEE SHEET NO. 111

-L2RT- CURVE DATA

PIs Sta 457+00.33	PIs Sta 461+80.33	PI Sta 465+55.48	PIs Sta 468+73.92	PI Sta 474+08.87	PIs Sta 479+97.84	PIs Sta 483+17.78
Θs = 2° 34' 41.9"	Θs = 2° 34' 41.9"	Δ = 7° 18' 01.0" (LT)	Θs = 0° 51' 33.9"	Δ = 20° 15' 48.8" (LT)	Θs = 3° 50' 53.6"	Θs = 0° 15' 52.0"
Ls = 360.00'	Ls = 360.00'	D = 1° 25' 56.6"	Θs = 1° 16' 57.9"	D = 2° 08' 16.4"	Ls = 360.00'	Ls = 120.00'
LT = 240.03'	LT = 240.03'	L = 509.65'	Ls = 120.00'	L = 947.82'	LT = 240.06'	LT = 80.00'
ST = 120.02'	ST = 120.02'	T = 255.17'	LT = 63.96'	T = 478.91'	ST = 120.05'	ST = 40.00'
		R = 4,000.00'	ST = 56.05'	R = 2,680.00'		
		V = 76 MPH		V = 73 MPH		
		SE = 06		SE = 08		

-LI40E- CURVE DATA

PI Sta 14+61.75
Δ = 13° 22' 06.7" (RT)
D = 1° 27' 15.1"
L = 919.30'
T = 461.75'
R = 3,940.00'
V = 76 MPH
SE = 06

-LI40W- CURVE DATA

PIs Sta 12+00.09	PI Sta 15+52.05
Θs = 5° 22' 17.3"	Δ = 17° 54' 17.8" (RT)
Ls = 300.00'	D = 3° 34' 51.6"
LT = 200.09'	L = 500.00'
ST = 100.08'	T = 252.05'
	R = 1,600.00'
	V = 69 MPH
	SE = 10

-L3- CURVE DATA

PIs Sta 484+83.41
Θs = 3° 45' 45.1"
Ls = 500.00'
LT = 333.41'
ST = 166.74'

-L2LT- CURVE DATA

PIs Sta 486+63.21
Θs = 3° 20' 15.4"
Ls = 360.00'
LT = 240.04'
ST = 120.04'

-RPI40D- CURVE DATA

PIs Sta 25+15.91	PI Sta 28+57.98
Θs = 15° 08' 39.3"	Δ = 14° 24' 56.0" (LT)
Ls = 600.00'	D = 5° 02' 53.1"
LT = 401.47'	L = 285.56'
ST = 201.34'	T = 143.54'
	R = 1,135.00'
	V = 59 MPH
	SE = 08

GRAPHIC SCALE
50 25 0 50 100
PLANS

LOCATION:

TIP NO.: COUNTY:

DESIGNED BY:

CHECKED BY: DATE:

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	33
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
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PRELIMINARY PLANS
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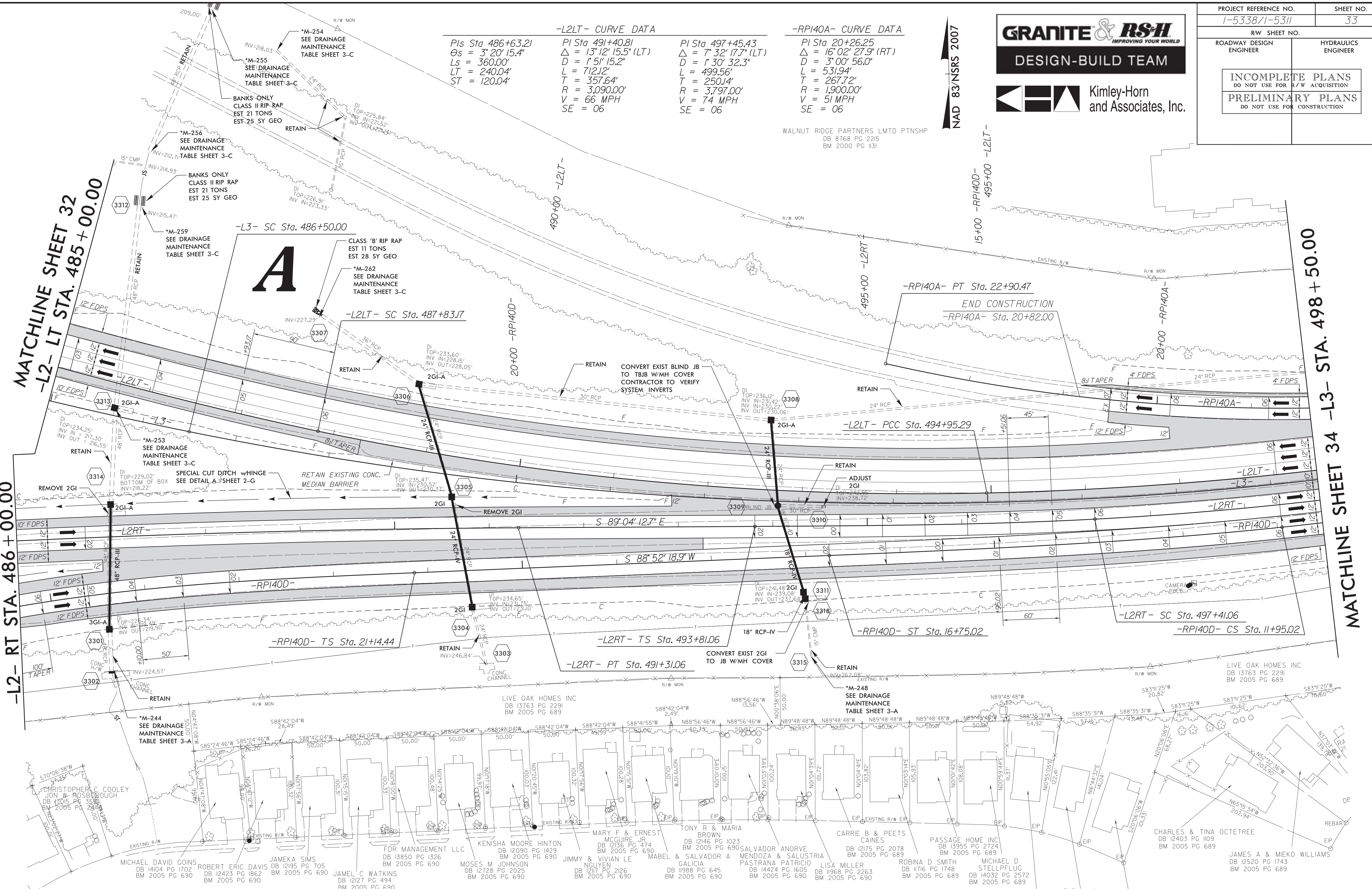
NAD 83/NSRS 2007

-L2LT- CURVE DATA

PIs Sta 486+63.21	PI Sta 491+40.81	PI Sta 497+45.43
Θs = 3° 20' 15.4"	Δ = 13° 12' 15.5" (LT)	Δ = 7° 32' 17.7" (LT)
Ls = 360.00'	D = 1° 51' 15.2"	D = 1° 30' 32.3"
LT = 240.04'	L = 712.12'	L = 499.56'
ST = 120.04'	T = 357.64'	T = 250.14'
	R = 3,090.00'	R = 3,797.00'
	V = 66 MPH	V = 74 MPH
	SE = .06	SE = .06

-RPI40A- CURVE DATA

PI Sta 20+26.25
Δ = 16° 02' 27.9" (RT)
D = 3° 00' 56.0"
L = 531.94'
T = 267.72'
R = 1,900.00'
V = 51 MPH
SE = .06



-L2RT- CURVE DATA

PI Sta 487+44.53	PIs Sta 496+21.08	PI Sta 499+36.14
Δ = 3° 24' 29.1" (RT)	Θs = 2° 41' 36.4"	Δ = 5° 50' 00.0" (LT)
D = 0° 26' 26.7"	Ls = 360.00'	D = 1° 29' 46.9"
L = 773.27'	LT = 240.03'	L = 389.83'
T = 386.75'	ST = 120.03'	T = 195.09'
R = 13,000.00'		R = 3,829.00'
V = 78 MPH		V = 75 MPH
SE = .02		SE = .06

-RPI40D- CURVE DATA

PIs Sta 13+55.08	PIs Sta 25+15.91
Θs = 3° 34' 08.1"	Θs = 15° 08' 39.3"
Ls = 480.00'	Ls = 600.00'
LT = 320.07'	LT = 401.47'
ST = 160.06'	ST = 201.34'

-L3- CURVE DATA

PI Sta 498+02.52
Δ = 33° 41' 10.1" (LT)
D = 1° 30' 18.0"
L = 2,238.26'
T = 1,152.52'
R = 3,807.00'
V = 74 MPH
SE = .06

FOR -L2- LT PROFILE, SEE SHEET NO. 80
FOR -L2- RT PROFILE, SEE SHEET NO. 80
FOR -RPI40A- PROFILE, SEE SHEET NO. 110
FOR -RPI40D- PROFILE, SEE SHEET NO. 111

REVISIONS

8/17/99

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PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	34
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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

Kimley-Horn and Associates, Inc.

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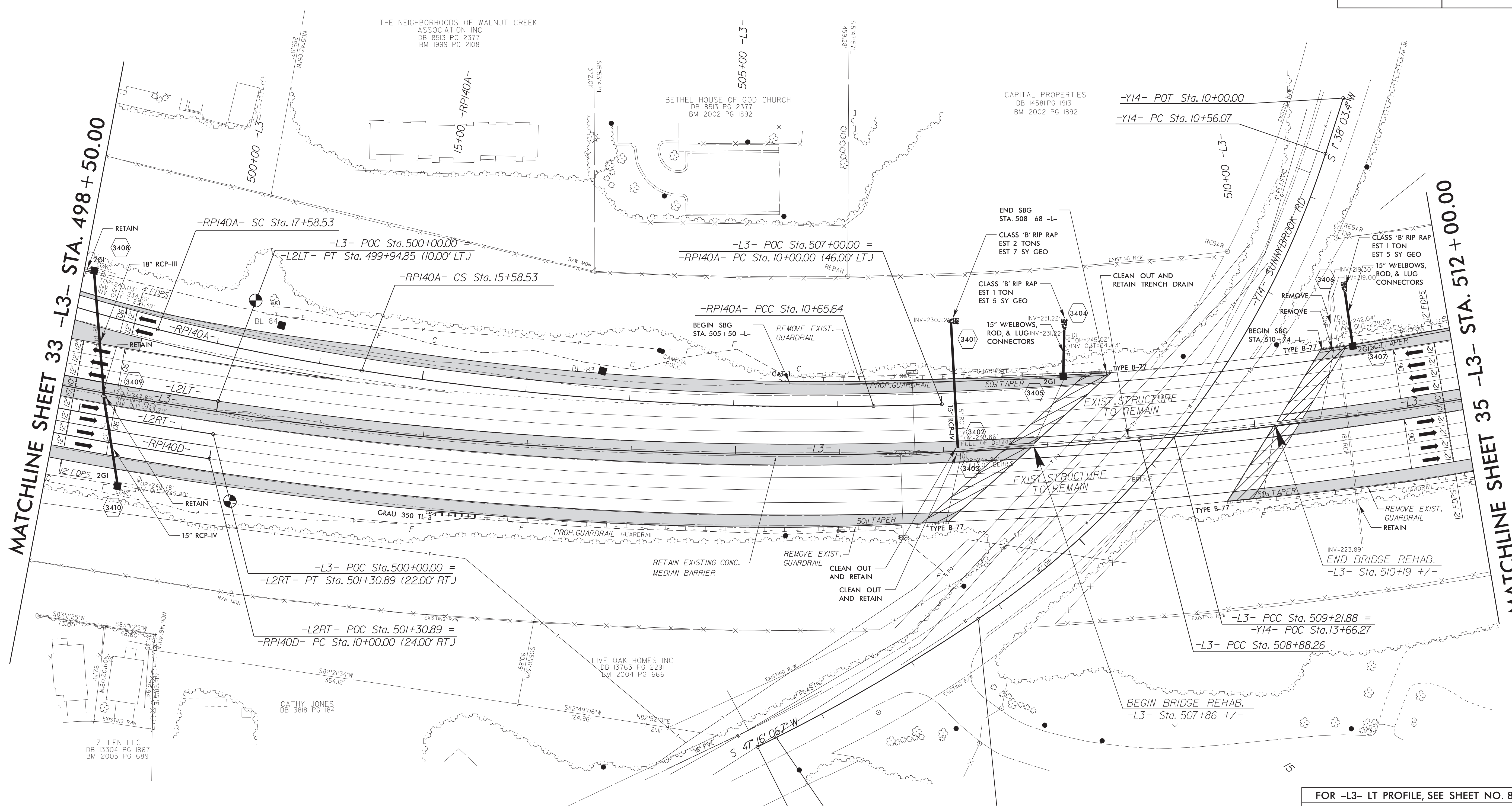
REVISIONS

-RPI40A- CURVE DATA

PI Sta 10+32.82	PI Sta 13+12.72	PIs Sta 16+64.98
△ = 1° 00′ 00.0″ (RT)	△ = 10° 05′ 08.9″ (RT)	Θs = 2° 02′ 45.5″
D = 1° 31′ 24.3″	D = 2° 02′ 46.6″	Θs = 3° 00′ 57.1″
L = 65.64′	L = 492.88′	Ls = 200.00′
T = 32.82′	T = 247.08′	LT = 106.45′
R = 3,761.00′	R = 2,800.00′	ST = 93.68′
V = 76 MPH	V = 66 MPH	
SE = .06	SE = .06	



NAD 83/NSRS 2007
MATCHLINE SHEET 33 -L3- STA. 498+50.00
MATCHLINE SHEET 35 -L3- STA. 512+00.00
THE NEIGHBORHOODS OF WALNUT CREEK ASSOCIATION INC
DB 8513 PG 2377
BM 1999 PG 2108
BETHEL HOUSE OF GOD CHURCH
DB 8513 PG 2377
BM 2002 PG 1892
CAPITAL PROPERTIES
DB 14581 PG 1913
BM 2002 PG 1892
LIVE OAK HOMES INC
DB 13763 PG 2291
BM 2004 PG 666
CATHY JONES
DB 3818 PG 184
ZILLEN LLC
DB 13304 PG 1867
BM 2005 PG 689
500+00 -L3-
505+00 -L3-
510+00 -L3-
15+00 -RPI40A-
-Y14- POT Sta. 10+00.00
-Y14- PC Sta. 10+56.07
S 1° 38′ 03.4″ W
S 47° 16′ 06.7″ W
-RPI40A- SC Sta. 17+58.53
-L3- POC Sta.500+00.00 =
-L2LT- PT Sta. 499+94.85 (10.00′ LT.)
-RPI40A- CS Sta. 15+58.53
-L3- POC Sta.507+00.00 =
-RPI40A- PC Sta. 10+00.00 (46.00′ LT.)
-RPI40A- PCC Sta. 10+65.64
BEGIN SBG STA. 505+50 -L-
REMOVE EXIST. GUARDRAIL
END SBG STA. 508+68 -L-
CLASS 'B' RIP RAP EST 2 TONS EST 7 SY GEO
CLASS 'B' RIP RAP EST 1 TON EST 5 SY GEO
15″ W/ELBOWS, ROD, & LUG CONNECTORS
CLEAN OUT AND RETAIN TRENCH DRAIN
BEGIN SBG STA. 510+74 -L-
REMOVE
RETAIN
EXIST. STRUCTURE TO REMAIN
-L3- POC Sta.500+00.00 =
-L2RT- PT Sta. 501+30.89 (22.00′ RT.)
-L2RT- POC Sta. 501+30.89 =
-RPI40D- PC Sta. 10+00.00 (24.00′ RT.)
RETAIN EXISTING CONC. MEDIAN BARRIER
REMOVE EXIST. GUARDRAIL
CLEAN OUT AND RETAIN
END BRIDGE REHAB. -L3- Sta. 510+19 +/-
-L3- PCC Sta. 509+21.88 =
-Y14- POC Sta.13+66.27
-L3- PCC Sta. 508+88.26
BEGIN BRIDGE REHAB. -L3- Sta. 507+86 +/-
-Y14- PCC Sta. 16+23.75
-Y14- PT Sta. 18+49.02
-Y14- POT Sta. 18+69.02
SUNNYBROOK RD
PROP. GUARDRAIL
50:1 TAPER
TYPE B-77
GRAU 350 TL-3

-L2RT- CURVE DATA

PI Sta 499+36.14
△ = 5° 50′ 00.0″ (LT)
D = 1° 29′ 46.9″
L = 389.83′
T = 195.09′
R = 3,829.00′
V = 75 MPH
SE = .06

-RPI40D- CURVE DATA

PI Sta 10+97.53
△ = 2° 54′ 00.0″ (RT)
D = 1° 29′ 13.4″
L = 195.02′
T = 97.53′
R = 3,853.00′
V = 77 MPH
SE = .06

-Y14- CURVE DATA

PI Sta 13+50.81	PI Sta 17+36.55
△ = 38° 02′ 30.0″ (RT)	△ = 7° 35′ 33.3″ (RT)
D = 6° 42′ 04.5″	D = 3° 22′ 13.2″
L = 567.68′	L = 225.28′
T = 294.75′	T = 112.80′
R = 855.00′	R = 1,700.00′

FOR -L3- LT PROFILE, SEE SHEET NO. 81
FOR -L3- RT PROFILE, SEE SHEET NO. 81
FOR -L2- LT PROFILE, SEE SHEET NO. 81
FOR -L2- RT PROFILE, SEE SHEET NO. 81
FOR -RPI40A- PROFILE, SEE SHEET NO. 110
FOR -RPI40D- PROFILE, SEE SHEET NO. 111

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PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	35
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

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DESIGN-BUILD TEAM

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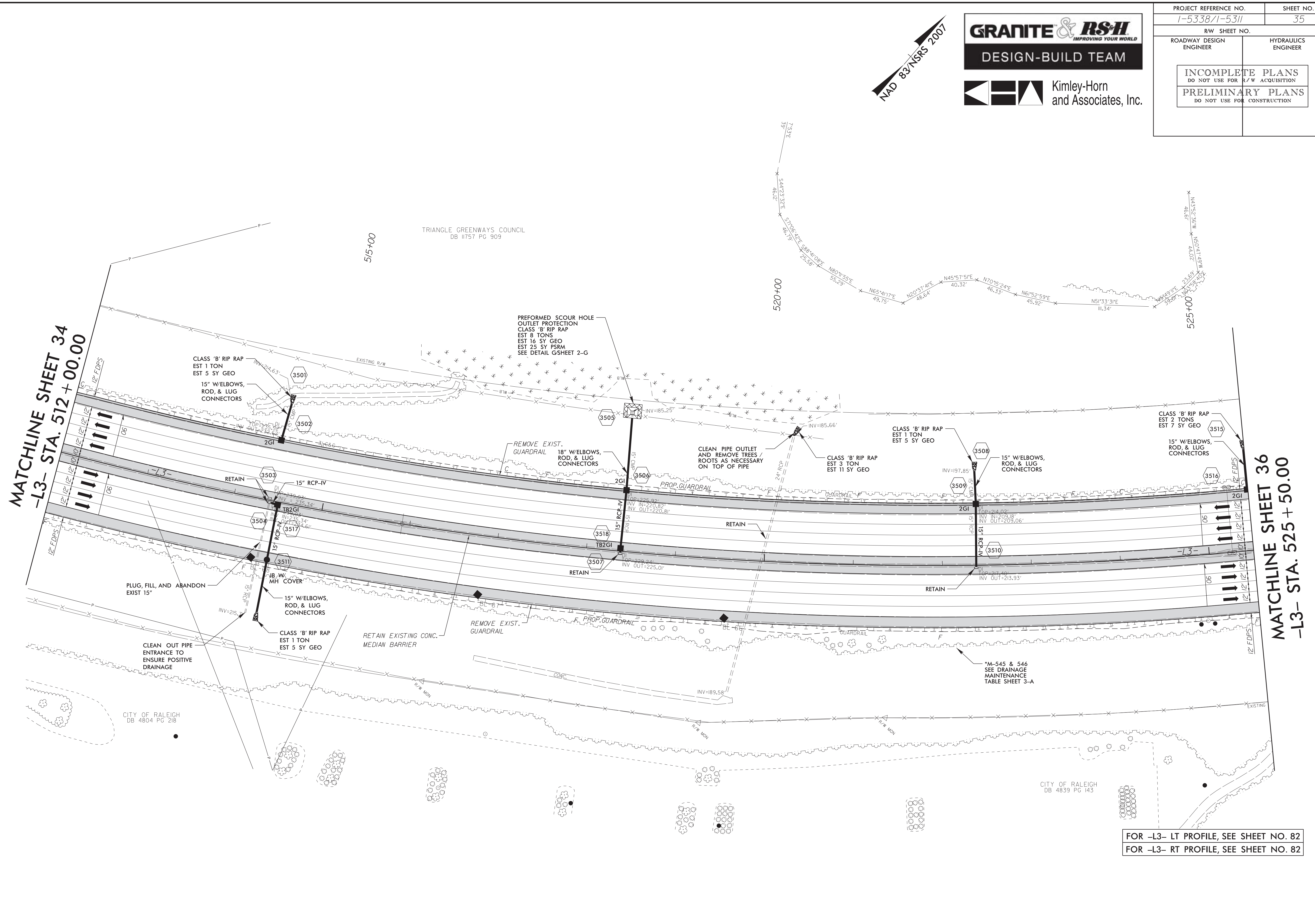

NAD 83/NSRS 2007
TRIANGLE GREENWAYS COUNCIL
DB 11757 PG 909
515+00
520+00
525+00
MATCHLINE SHEET 34
-L3- STA. 512+00.00
MATCHLINE SHEET 36
-L3- STA. 525+50.00
CLASS 'B' RIP RAP
EST 1 TON
EST 5 SY GEO
15" W/ELBOWS, ROD, & LUG CONNECTORS
PREFORMED SCOUR HOLE OUTLET PROTECTION
CLASS 'B' RIP RAP
EST 8 TONS
EST 16 SY GEO
EST 25 SY PSRM
SEE DETAIL G/SHEET 2-G
REMOVE EXIST. GUARDRAIL
18" W/ELBOWS, ROD, & LUG CONNECTORS
CLEAN PIPE OUTLET AND REMOVE TREES / ROOTS AS NECESSARY ON TOP OF PIPE
CLASS 'B' RIP RAP
EST 3 TON
EST 11 SY GEO
CLASS 'B' RIP RAP
EST 2 TONS
EST 7 SY GEO
PROP. GUARDRAIL
RETAIN
15" RCP-IV
TB2GI
2GI
JB W/ MH COVER
PLUG, FILL, AND ABANDON EXIST 15"
CLEAN OUT PIPE ENTRANCE TO ENSURE POSITIVE DRAINAGE
RETAIN EXISTING CONC. MEDIAN BARRIER
*M-545 & 546 SEE DRAINAGE MAINTENANCE TABLE SHEET 3-A
CITY OF RALEIGH
DB 4804 PG 218
CITY OF RALEIGH
DB 4839 PG 143
3501
3502
3503
3504
3505
3506
3507
3508
3509
3510
3511
3515
3516
3517
3518

FOR -L3- LT PROFILE, SEE SHEET NO. 82
FOR -L3- RT PROFILE, SEE SHEET NO. 82

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PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	36
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

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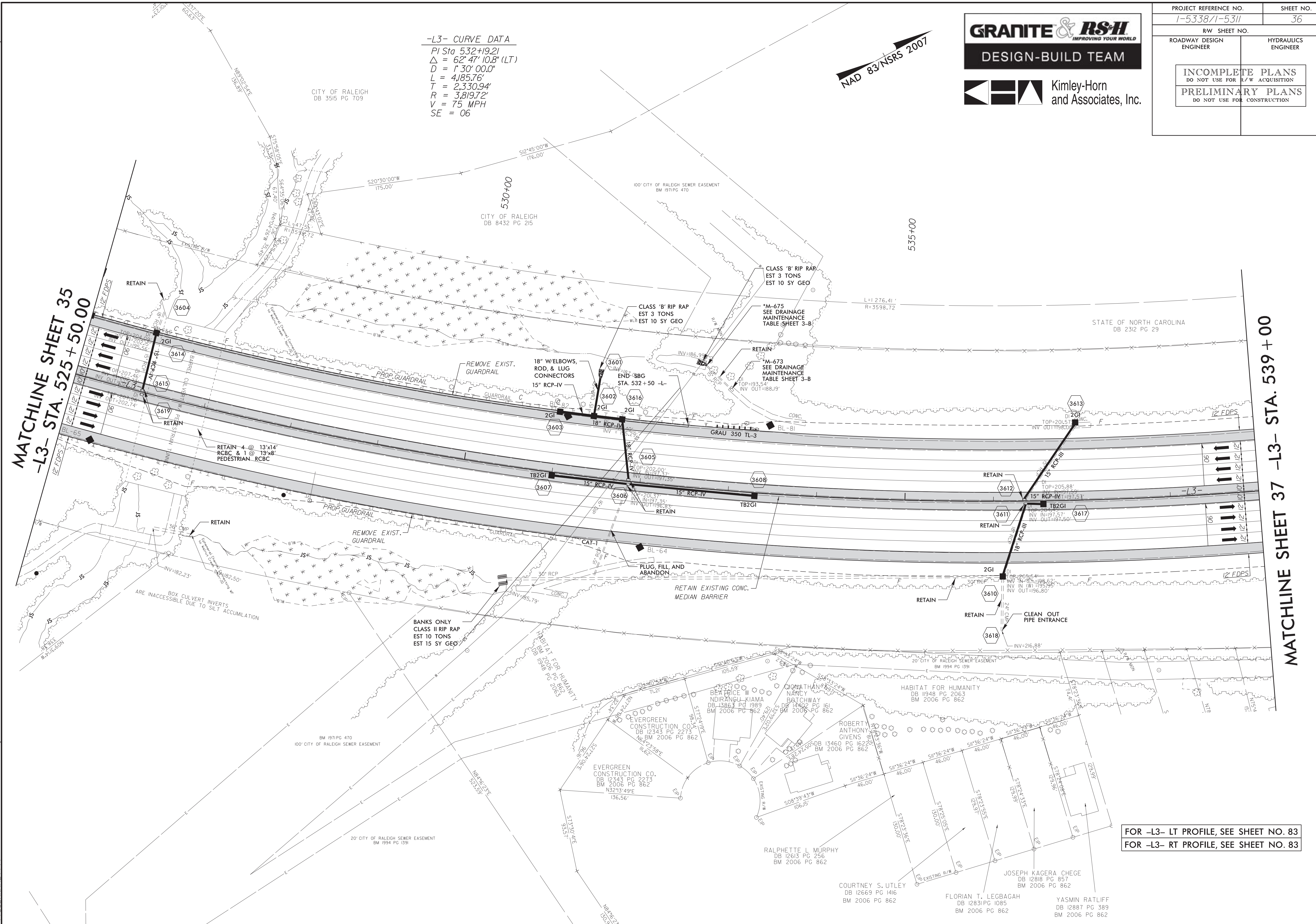

FOR -L3- LT PROFILE, SEE SHEET NO. 83
FOR -L3- RT PROFILE, SEE SHEET NO. 83

REVISIONS

8/17/99

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PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	37
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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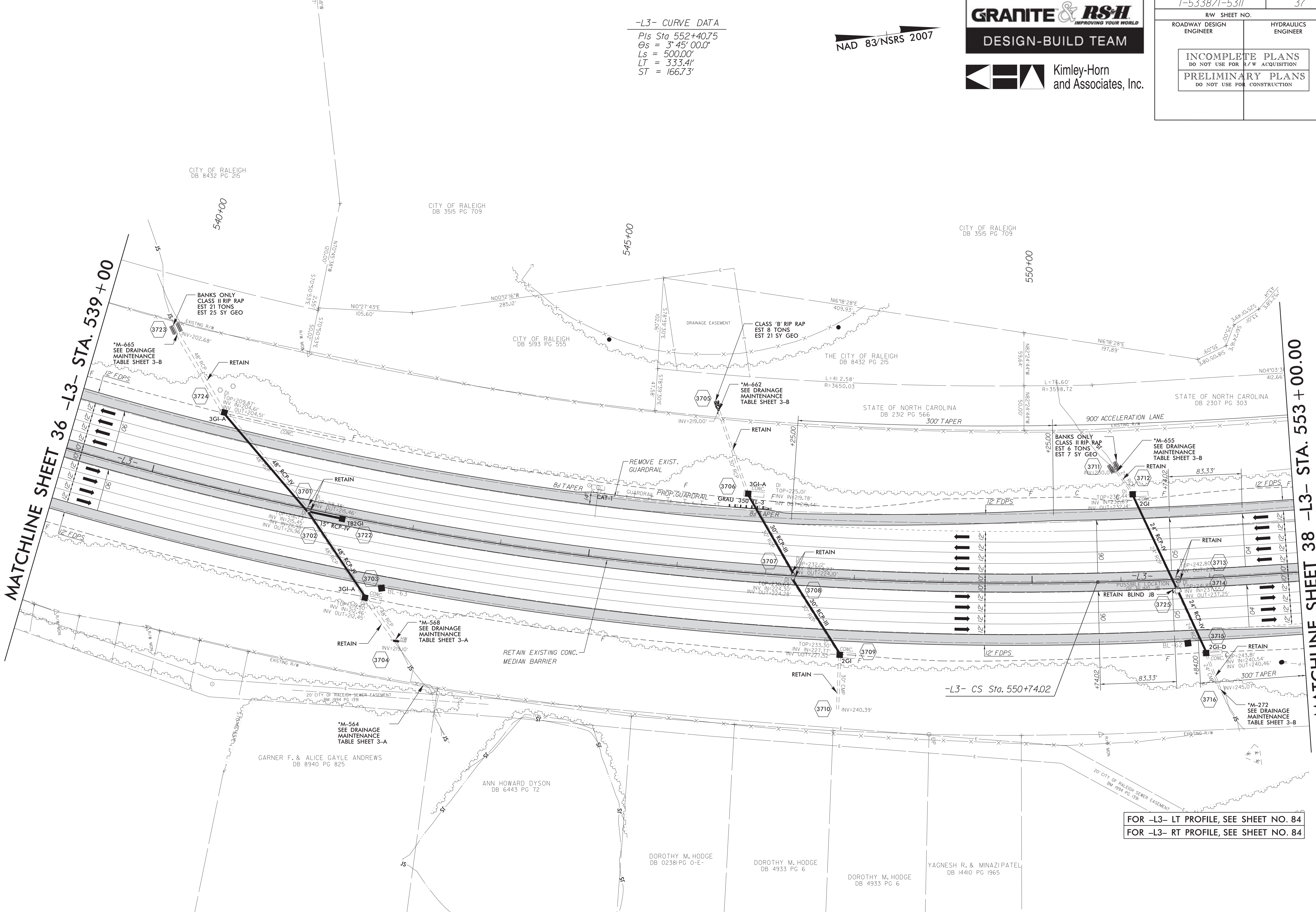
DESIGN-BUILD TEAM

Kimley-Horn and Associates, Inc.

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS



-L3- CURVE DATA
PIs Sta 552+40.75
Θs = 3° 45' 00.0"
Ls = 500.00'
LT = 333.41'
ST = 166.73'
NAD 83/NSRS 2007
MATCHLINE SHEET 36 -L3- STA. 539+00
MATCHLINE SHEET 38 -L3- STA. 553+00.00
540+00
545+00
550+00
CITY OF RALEIGH DB 8432 PG 215
CITY OF RALEIGH DB 3515 PG 709
CITY OF RALEIGH DB 5193 PG 555
THE CITY OF RALEIGH DB 8432 PG 215
STATE OF NORTH CAROLINA DB 2312 PG 566
STATE OF NORTH CAROLINA DB 2307 PG 303
GARNER F. & ALICE GAYLE ANDREWS DB 8940 PG 825
ANN HOWARD DYSON DB 6443 PG 72
DOROTHY M. HODGE DB 02381 PG 0-E-
DOROTHY M. HODGE DB 4933 PG 6
DOROTHY M. HODGE DB 4933 PG 6
YAGNESH R. & MINAZI PATEL DB 14410 PG 1965
BANKS ONLY CLASS II RIP RAP EST 21 TONS EST 25 SY GEO
CLASS 'B' RIP RAP EST 8 TONS EST 21 SY GEO
BANKS ONLY CLASS II RIP RAP EST 6 TONS EST 7 SY GEO
*M-665 SEE DRAINAGE MAINTENANCE TABLE SHEET 3-B
*M-662 SEE DRAINAGE MAINTENANCE TABLE SHEET 3-B
*M-655 SEE DRAINAGE MAINTENANCE TABLE SHEET 3-B
*M-568 SEE DRAINAGE MAINTENANCE TABLE SHEET 3-A
*M-564 SEE DRAINAGE MAINTENANCE TABLE SHEET 3-A
*M-272 SEE DRAINAGE MAINTENANCE TABLE SHEET 3-B
DRAINAGE EASEMENT
REMOVE EXIST. GUARDRAIL
RETAIN EXISTING CONC. MEDIAN BARRIER
300' TAPER
900' ACCELERATION LANE
12' FDPS
48" RCP-IV
30" RCP-III
24" RCP-IV
15" RCP-IV
RETAIN
POSSIBLE LOCATION OF BLIND JB
RETAIN BLIND JB
-L3- CS Sta. 550+74.02
20' CITY OF RALEIGH SEWER EASEMENT

FOR -L3- LT PROFILE, SEE SHEET NO. 84

FOR -L3- RT PROFILE, SEE SHEET NO. 84

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REVISIONS

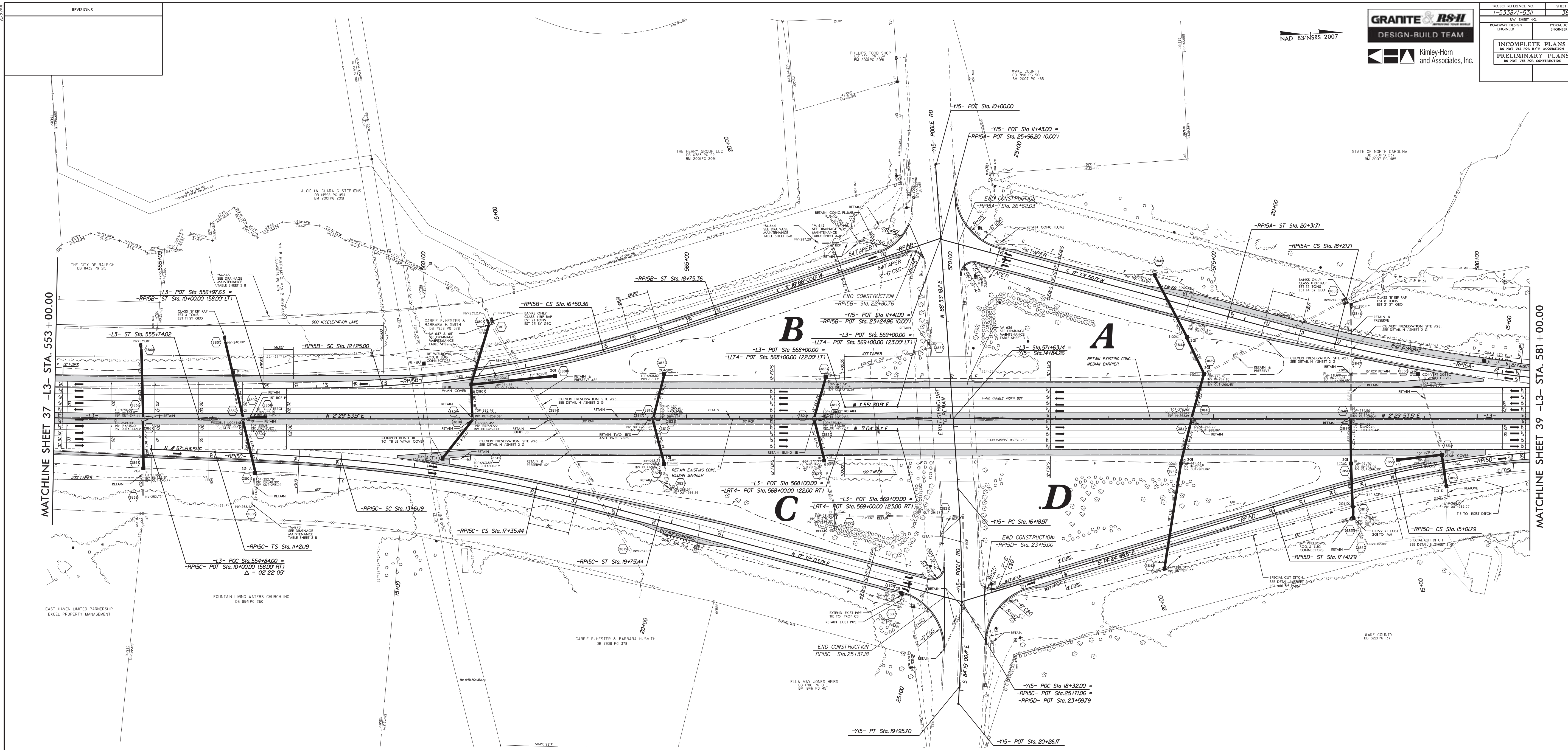
PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	38
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

GRANITE & RS&H DESIGN-BUILD TEAM

Kimley-Horn and Associates, Inc.

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



-RP15B- CURVE DATA

PIs Sta 11+50.02	PI Sta 14+38.49	PIs Sta 17+25.39
Θs = 3° 13' 22.4"	Δ = 12° 11' 08.7" (LT)	Θs = 3° 13' 22.4"
Ls = 225.00'	D = 2° 51' 53.2"	Ls = 225.00'
LT = 150.02'	L = 425.36'	LT = 150.02'
ST = 75.02'	T = 213.49'	ST = 75.02'
	R = 2,000.00'	
	V = 56 MPH	
	SE = 06	

-RP15C- CURVE DATA

PIs Sta 12+81.21	PI Sta 15+48.60	PIs Sta 18+15.46
Θs = 2° 27' 19.9"	Δ = 7° 39' 29.7" (RT)	Θs = 2° 27' 19.9"
Ls = 240.00'	D = 2° 02' 46.6"	Ls = 240.00'
LT = 160.02'	L = 374.25'	LT = 160.02'
ST = 80.01'	T = 187.41'	ST = 80.01'
	R = 2,800.00'	
	V = 58 MPH	
	SE = 05	

-Y15- CURVE DATA

PI Sta 18+07.58
Δ = 7° 11' 41.5" (RT)
D = 1° 54' 35.5"
L = 376.72'
T = 188.61'
R = 3,000.00'

-RP15A- CURVE DATA

PI Sta 15+16.83	PIs Sta 18+91.71
Δ = 11° 12' 55.5" (RT)	Θs = 1° 55' 30.5"
D = 1° 50' 00.5"	Ls = 210.00'
L = 611.71'	LT = 140.01'
T = 306.83'	ST = 70.01'
R = 3,125.00'	
V = 62 MPH	
SE = 05	

-RP15D- CURVE DATA

PI Sta 13+71.15	PIs Sta 15+81.83
Δ = 8° 49' 23.2" (LT)	Θs = 4° 02' 39.9"
D = 3° 22' 13.2"	Ls = 240.00'
L = 261.79'	LT = 160.04'
T = 131.15'	ST = 80.04'
R = 1,700.00'	
V = 52 MPH	
SE = 06	

FOR -L3- LT PROFILE, SEE SHEET NO. 85,86
FOR -L3- RT PROFILE, SEE SHEET NO. 85,86
FOR -RP15A- PROFILE, SEE SHEET NO. 112
FOR -RP15B- PROFILE, SEE SHEET NO. 112,113
FOR -RP15C- PROFILE, SEE SHEET NO. 113
FOR -RP15D- PROFILE, SEE SHEET NO. 113,114

GRAPHIC SCALE
50 25 0 50 100
PLANS

LOCATION:

TIP NO.: COUNTY:

DESIGNED BY:

CHECKED BY: DATE:

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	39
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

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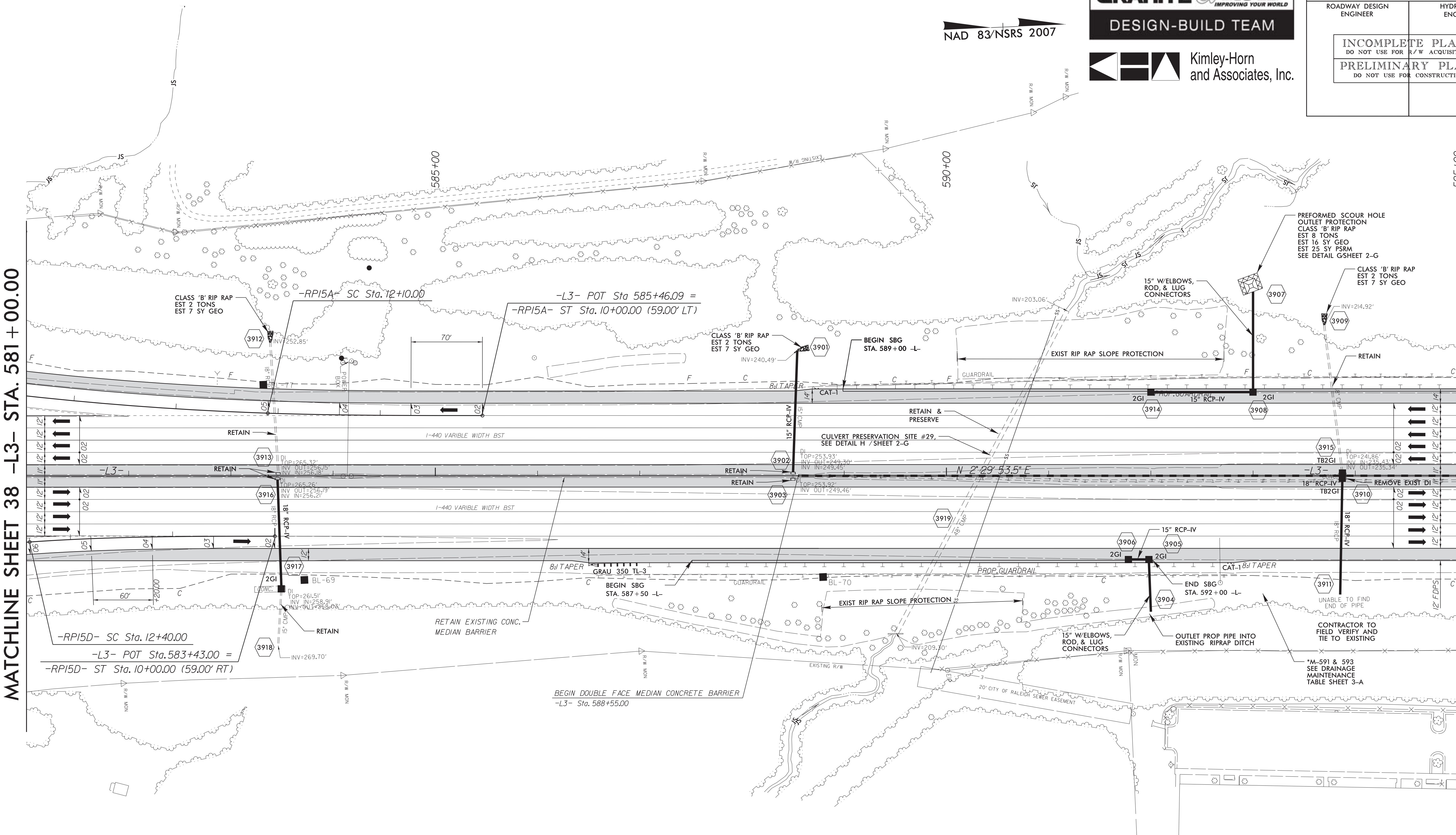

NAD 83/NSRS 2007
MATCHLINE SHEET 38 -L3- STA. 581+00.00
MATCHLINE SHEET 40 -L3- STA. 595+00.00
585+00
590+00
595+00
CLASS 'B' RIP RAP
EST 2 TONS
EST 7 SY GEO
-RP15A- SC Sta. 12+10.00
-L3- POT Sta 585+46.09 =
-RP15A- ST Sta. 10+00.00 (59.00' LT)
BEGIN SBG
STA. 589+00 -L-
EXIST RIP RAP SLOPE PROTECTION
PREFORMED SCOUR HOLE
OUTLET PROTECTION
CLASS 'B' RIP RAP
EST 8 TONS
EST 16 SY GEO
EST 25 SY PSRM
SEE DETAIL GSHEET 2-G
15" W/ELBOWS, ROD, & LUG CONNECTORS
RETAIN
RETAIN & PRESERVE
CULVERT PRESERVATION SITE #29, SEE DETAIL H / SHEET 2-G
I-440 VARIBLE WIDTH BST
N 2° 29' 53.5" E
REMOVE EXIST DI
18" RCP-IV
15" RCP-IV
-L3-
BEGIN SBG
STA. 587+50 -L-
GRAU 350 TL-3
END SBG
STA. 592+00 -L-
OUTLET PROP PIPE INTO EXISTING RIPRAP DITCH
UNABLE TO FIND END OF PIPE
CONTRACTOR TO FIELD VERIFY AND TIE TO EXISTING
*M-591 & 593 SEE DRAINAGE MAINTENANCE TABLE SHEET 3-A
RETAIN EXISTING CONC. MEDIAN BARRIER
BEGIN DOUBLE FACE MEDIAN CONCRETE BARRIER
-L3- Sta. 588+55.00
-RP15D- SC Sta. 12+40.00
-L3- POT Sta.583+43.00 =
-RP15D- ST Sta. 10+00.00 (59.00' RT)
20' CITY OF RALEIGH SEWER EASEMENT
PROP GUARDRAIL
CAT-1
8:1 TAPER
BL-69
BL-70
3901
3902
3903
3904
3905
3906
3907
3908
3909
3910
3911
3912
3913
3914
3915
3916
3917
3918
3919

-RP15A- CURVE DATA
PIs Sta 11+40.01
Θs = 1° 55' 30.5"
Ls = 210.00'
LT = 140.01'
ST = 70.01'

-RP15D- CURVE DATA
PIs Sta 11+60.04
Θs = 4° 02' 39.9"
Ls = 240.00'
LT = 160.04'
ST = 80.04'

FOR -L3- LT PROFILE, SEE SHEET NO. 87
FOR -L3- RT PROFILE, SEE SHEET NO. 87
FOR -RP15A- PROFILE, SEE SHEET NO. 109
FOR -RP15D- PROFILE, SEE SHEET NO. 110,111

8/17/99

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PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	40
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

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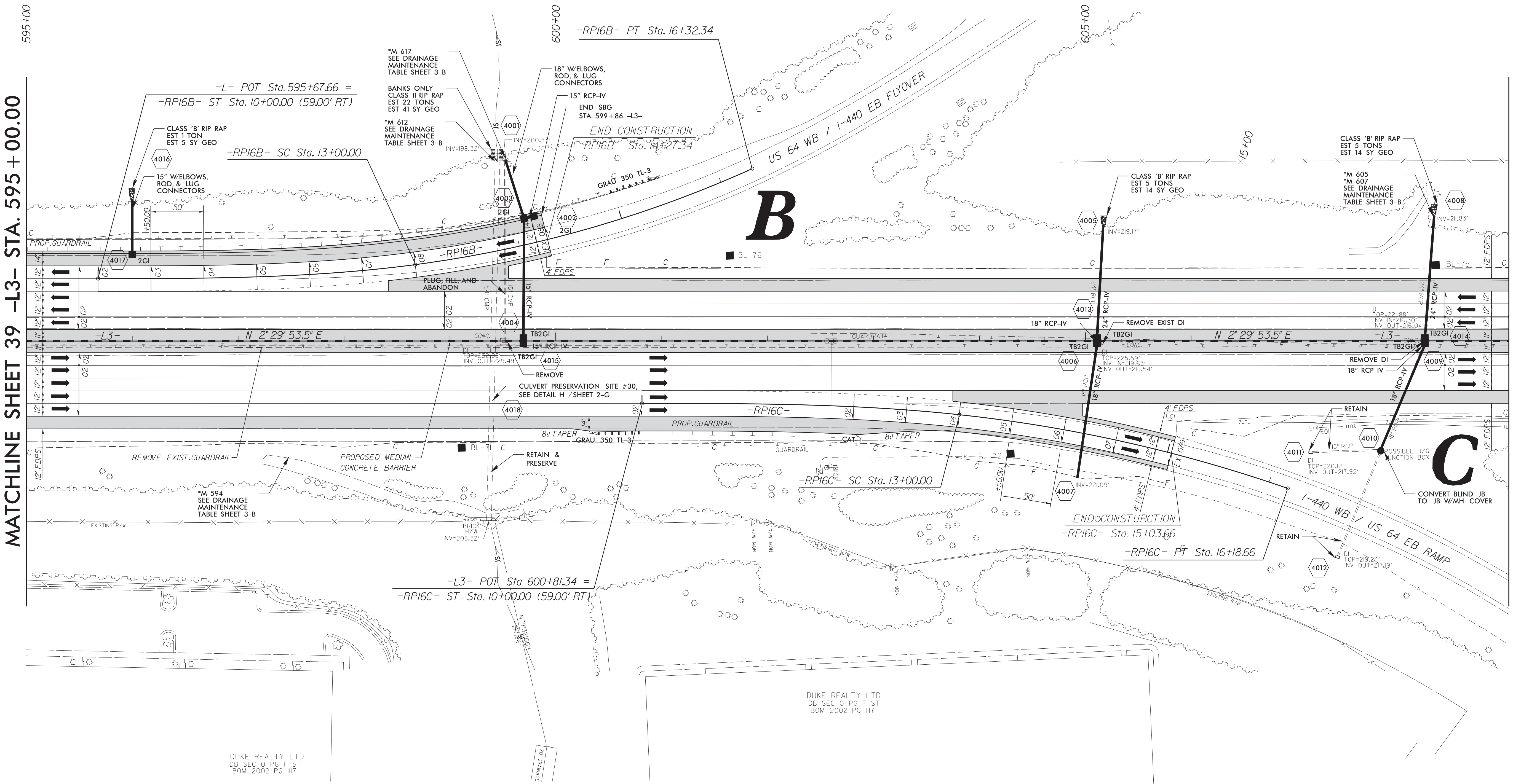
NAD 83/NSRS 2007



MATCHLINE SHEET 39 -L3- STA. 595+00.00
MATCHLINE SHEET 41 -L3- STA. 609+00.00
595+00
600+00
605+00
-L- POT Sta.595+67.66 =
-RP16B- ST Sta. 10+00.00 (59.00' RT)
-RP16B- SC Sta. 13+00.00
-RP16B- PT Sta. 16+32.34
END CONSTRUCTION
-RP16B- Sta. 14+27.34
US 64 WB / I-440 EB FLYOVER
B
C
N 2° 29' 53.5" E
-L3-
-RP16B-
-RP16C-
CLASS 'B' RIP RAP
EST 1 TON
EST 5 SY GEO
15" W/ELBOWS, ROD, & LUG CONNECTORS
18" W/ELBOWS, ROD, & LUG CONNECTORS
15" RCP-IV
END SBG STA. 599+86 -L3-
*M-617 SEE DRAINAGE MAINTENANCE TABLE SHEET 3-B
BANKS ONLY CLASS II RIP RAP EST 22 TONS EST 41 SY GEO
*M-612 SEE DRAINAGE MAINTENANCE TABLE SHEET 3-B
PLUG, FILL, AND ABANDON
REMOVE
CULVERT PRESERVATION SITE #30, SEE DETAIL H / SHEET 2-G
REMOVE EXIST. GUARDRAIL
PROPOSED MEDIAN CONCRETE BARRIER
RETAIN & PRESERVE
*M-594 SEE DRAINAGE MAINTENANCE TABLE SHEET 3-B
-L3- POT Sta 600+81.34 =
-RP16C- ST Sta. 10+00.00 (59.00' RT)
-RP16C- SC Sta. 13+00.00
END CONSTRUCTION
-RP16C- Sta. 15+03.66
-RP16C- PT Sta. 16+18.66
I-440 WB / US 64 EB RAMP
CLASS 'B' RIP RAP EST 5 TONS EST 14 SY GEO
*M-605 *M-607 SEE DRAINAGE MAINTENANCE TABLE SHEET 3-B
REMOVE EXIST DI
REMOVE DI
18" RCP-IV
24" RCP-IV
RETAIN
POSSIBLE U/G JUNCTION BOX
CONVERT BLIND JB TO JB W/MH COVER
PROP. GUARDRAIL
GRAU 350 TL-3
DUKE REALTY LTD DB SEC 0 PG F ST BOM 2002 PG 1117
DUKE REALTY LTD DB SEC 0 PG F ST BOM 2002 PG 1117
4001
4002
4003
4004
4005
4006
4007
4008
4009
4010
4011
4012
4013
4014
4015
4016
4017
4018
BL-75
BL-76

-RP16B- CURVE DATA

PIs Sta 12+00.18	PI Sta 14+67.36
Θs = 7° 32' 20.1"	Δ = 16° 42' 12.5" (LT)
Ls = 300.00'	D = 5° 01' 33.4"
LT = 200.18'	L = 332.34'
ST = 100.17'	T = 167.36'
	R = 1,140.00'
	V = 59 MPH
	SE = 08

-RP16C- CURVE DATA

PIs Sta 12+00.12	PI Sta 14+60.02
Θs = 6° 08' 19.8"	Δ = 13° 02' 28.7" (RT)
Ls = 300.00'	D = 4° 05' 33.2"
LT = 200.12'	L = 318.66'
ST = 100.11'	T = 160.02'
	R = 1,400.00'
	V = 54 MPH
	SE = 07

FOR -L3- LT PROFILE, SEE SHEET NO. 88
FOR -L3- RT PROFILE, SEE SHEET NO. 88
FOR -RP16B- PROFILE, SEE SHEET NO. 112
FOR -RP16C- PROFILE, SEE SHEET NO. 112

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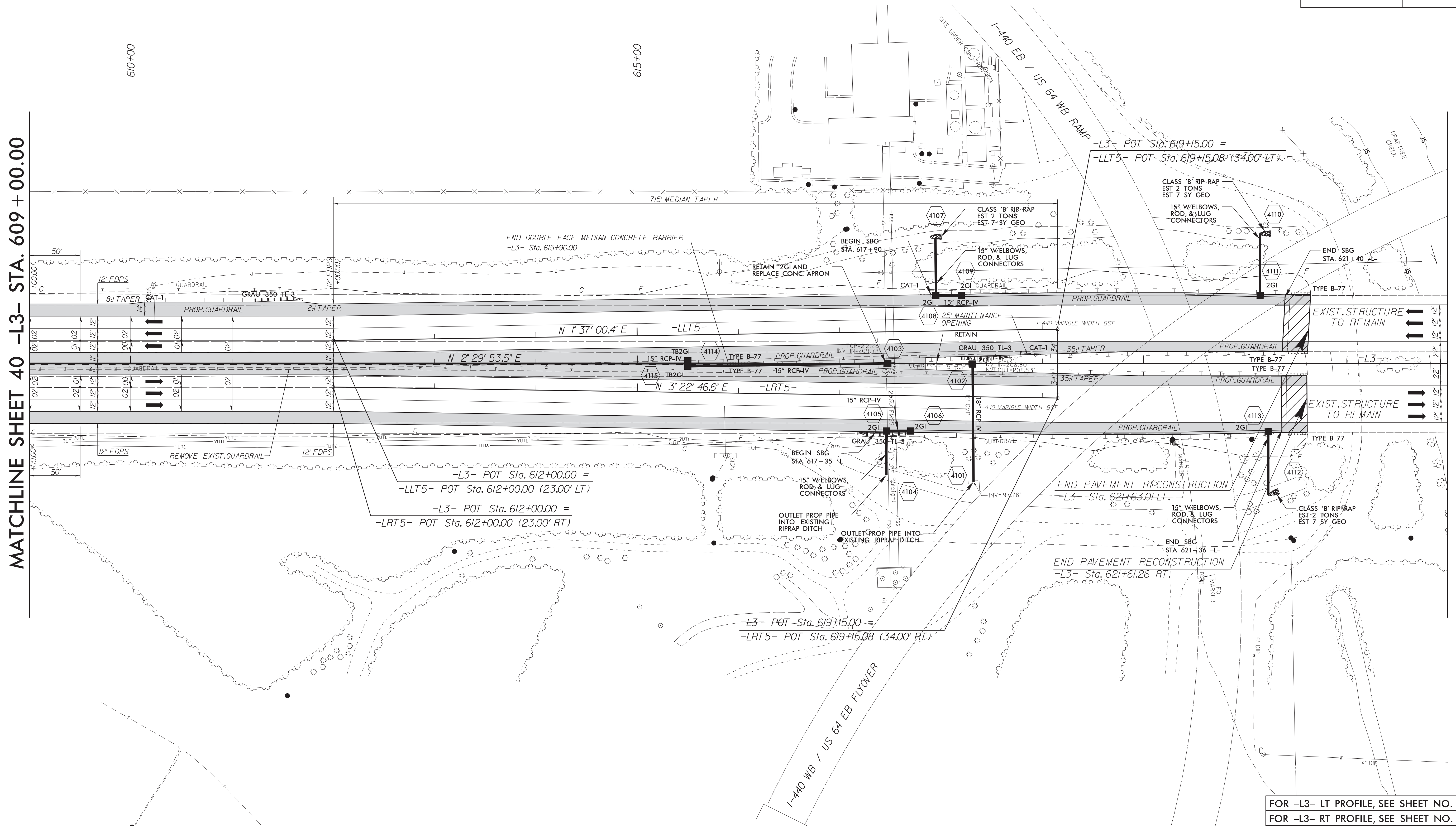
PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	41
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83/NSRS 2007



MATCHLINE SHEET 40 -L3- STA. 609+00.00
MATCHLINE SHEET 42 -L3- STA. 623+00.00
610+00
615+00
I-440 EB / US 64 WB RAMP
I-440 WB / US 64 EB FLYOVER
715' MEDIAN TAPER
END DOUBLE FACE MEDIAN CONCRETE BARRIER
-L3- Sta. 615+90.00
N 1° 37' 00.4" E
-LLT5-
N 2° 29' 53.5" E
N 3° 22' 46.6" E
-LRT5-
-L3- POT Sta. 612+00.00 =
-LLT5- POT Sta. 612+00.00 (23.00' LT)
-L3- POT Sta. 612+00.00 =
-LRT5- POT Sta. 612+00.00 (23.00' RT)
-L3- POT Sta. 619+15.00 =
-LLT5- POT Sta. 619+15.08 (34.00' LT)
-L3- POT Sta. 619+15.00 =
-LRT5- POT Sta. 619+15.08 (34.00' RT)
EXIST. STRUCTURE TO REMAIN
EXIST. STRUCTURE TO REMAIN
END PAVEMENT RECONSTRUCTION
-L3- Sta. 621+63.01 LT.
END PAVEMENT RECONSTRUCTION
-L3- Sta. 621+61.26 RT.
25' MAINTENANCE OPENING
RETAIN 2GI AND REPLACE CONC. APRON
BEGIN SBG STA. 617+90
BEGIN SBG STA. 617+35 -L-
END SBG STA. 621+40 -L-
END SBG STA. 621+36 -L-
CLASS 'B' RIP RAP EST 2 TONS EST 7 SY GEO
15" W/ELBOWS, ROD, & LUG CONNECTORS
OUTLET PROP PIPE INTO EXISTING RIPRAP DITCH
GRAU 350 TL-3
CAT-1
TYPE B-77
PROP. GUARDRAIL
REMOVE EXIST. GUARDRAIL
12' FDPS
8:1 TAPER
35:1 TAPER
15" RCP-IV
18" RCP-IV
2GI
TB2GI
4101
4102
4103
4104
4105
4106
4107
4108
4109
4110
4111
4112
4113
4114
4115
SITE UNDER CONSTRUCTION
CRABTREE CREEK

FOR -L3- LT PROFILE, SEE SHEET NO. 89
FOR -L3- RT PROFILE, SEE SHEET NO. 89

REVISIONS

8/17/99

08-NOV-2013 07:39
I5338_Rdy_psh_41.dgn
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PROJECT REFERENCE NO.	SHEET NO.
I-5339/I-5311	42

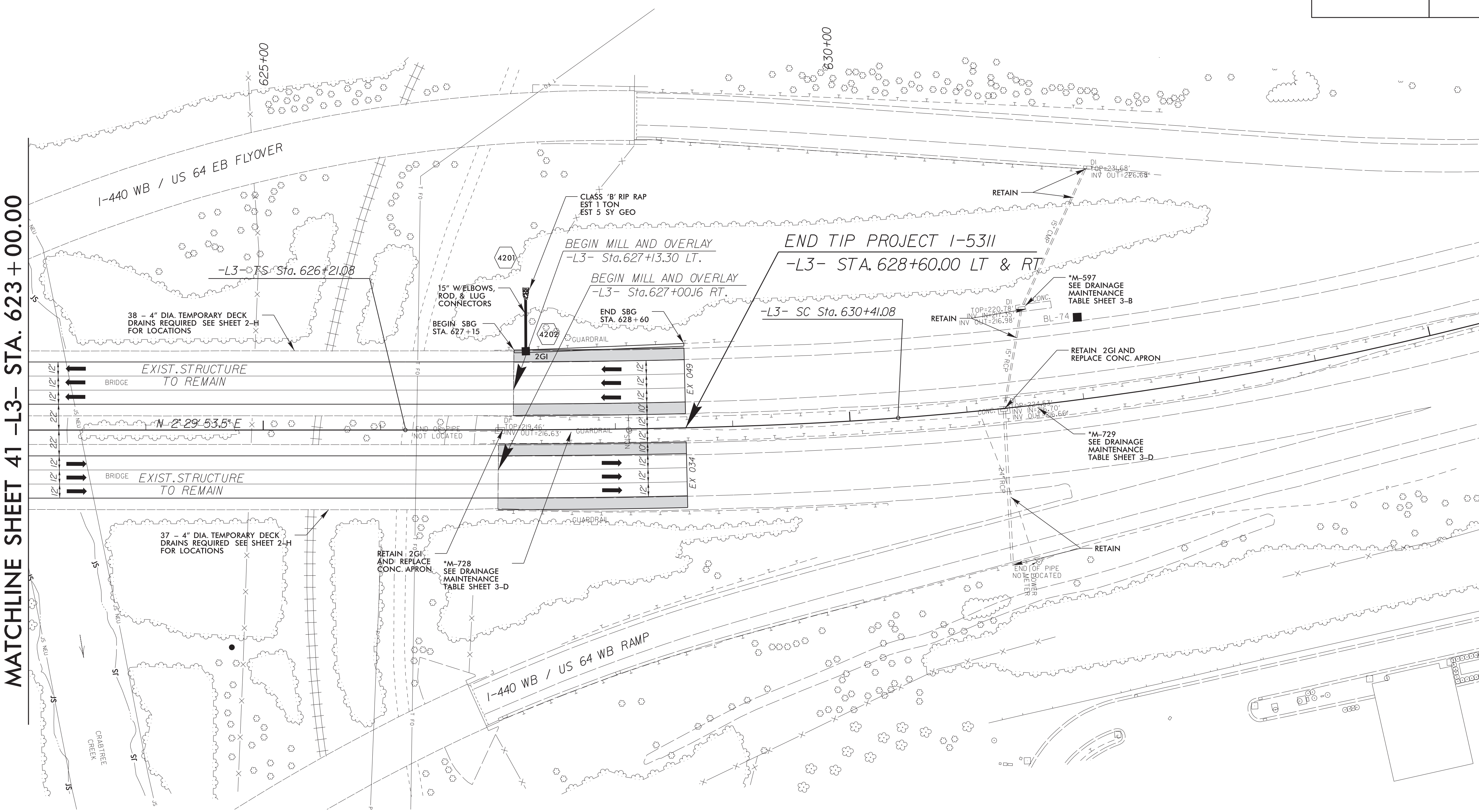
GRANITE & RS&H IMPROVING YOUR WORLD
DESIGN-BUILD TEAM
Kimley-Horn and Associates, Inc.

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

-L3- CURVE DATA

PIs Sta 629+01.16	PI Sta 637+56.35
Θs = 4° 12' 00.0"	Δ = 28° 02' 15.6" (LT)
Ls = 420.00'	D = 2° 00' 00.0"
LT = 280.08'	L = 1,401.88'
ST = 140.07'	T = 715.27'
	R = 2,864.79'



FOR -L3- LT PROFILE, SEE SHEET NO. 90
FOR -L3- RT PROFILE, SEE SHEET NO. 90

REVISIONS

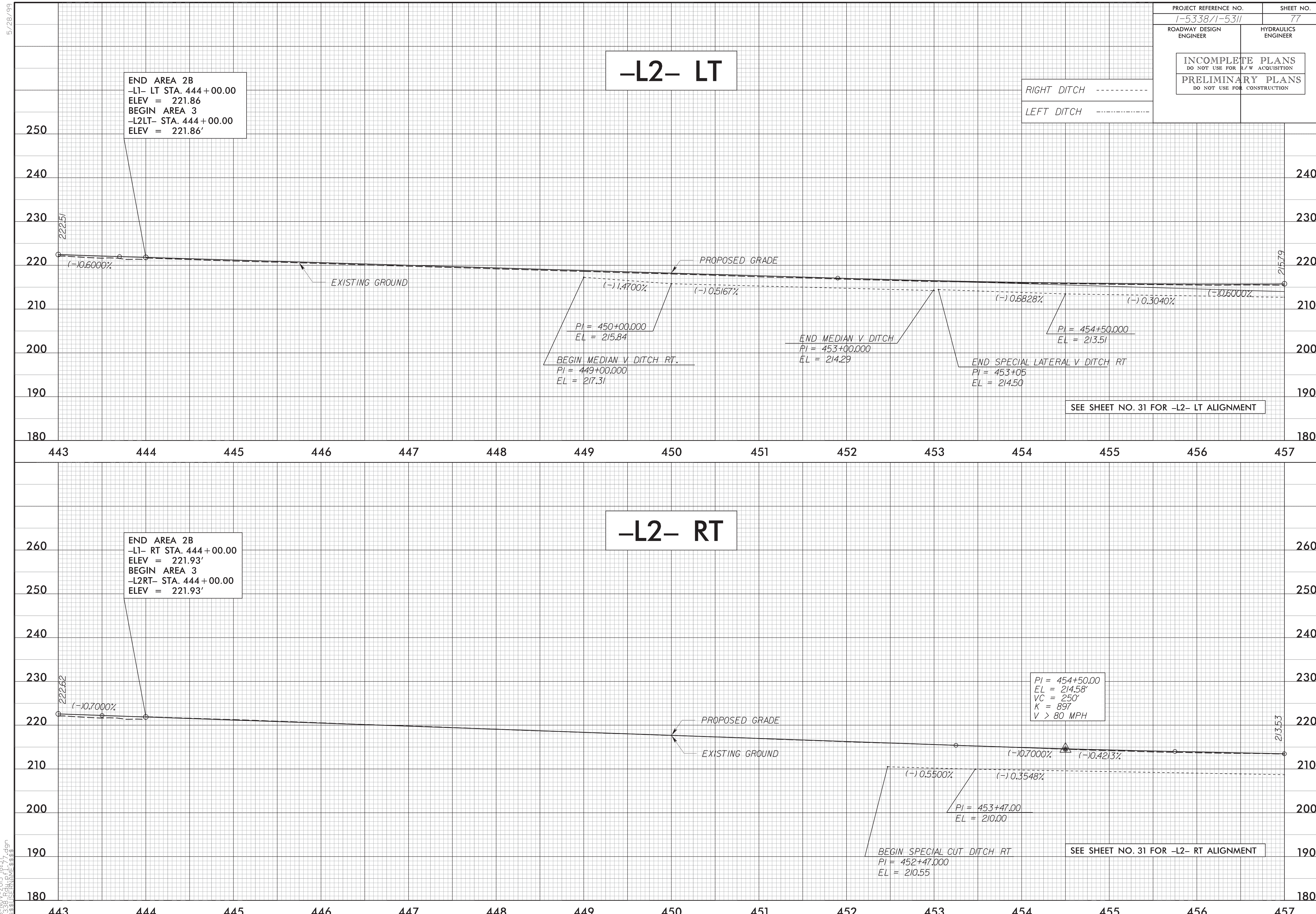
8/17/99

08-NOV-2013 07:39
15338_Rdy_psh_42.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	77
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



-L2- LT
RIGHT DITCH
LEFT DITCH
END AREA 2B
-L1- LT STA. 444+00.00
ELEV = 221.86
BEGIN AREA 3
-L2LT- STA. 444+00.00
ELEV = 221.86'
222.51
(-)0.6000%
EXISTING GROUND
PROPOSED GRADE
(-) 1.4700%
(-) 0.5167%
PI = 450+00.000
EL = 215.84
BEGIN MEDIAN V DITCH RT.
PI = 449+00.000
EL = 217.31
END MEDIAN V DITCH
PI = 453+00.000
EL = 214.29
(-) 0.6828%
(-) 0.3040%
(-)0.6000%
PI = 454+50.000
EL = 213.51
END SPECIAL LATERAL V DITCH RT
PI = 453+05
EL = 214.50
215.79
SEE SHEET NO. 31 FOR -L2- LT ALIGNMENT
-L2- RT
END AREA 2B
-L1- RT STA. 444+00.00
ELEV = 221.93'
BEGIN AREA 3
-L2RT- STA. 444+00.00
ELEV = 221.93'
222.62
(-)0.7000%
PROPOSED GRADE
EXISTING GROUND
PI = 454+50.00
EL = 214.58'
VC = 250'
K = 897
V > 80 MPH
(-)0.7000%
(-)0.4213%
213.53
(-) 0.5500%
(-) 0.3548%
PI = 453+47.00
EL = 210.00
BEGIN SPECIAL CUT DITCH RT
PI = 452+47.000
EL = 210.55
SEE SHEET NO. 31 FOR -L2- RT ALIGNMENT
180 190 200 210 220 230 240 250 260
443 444 445 446 447 448 449 450 451 452 453 454 455 456 457

5/28/99

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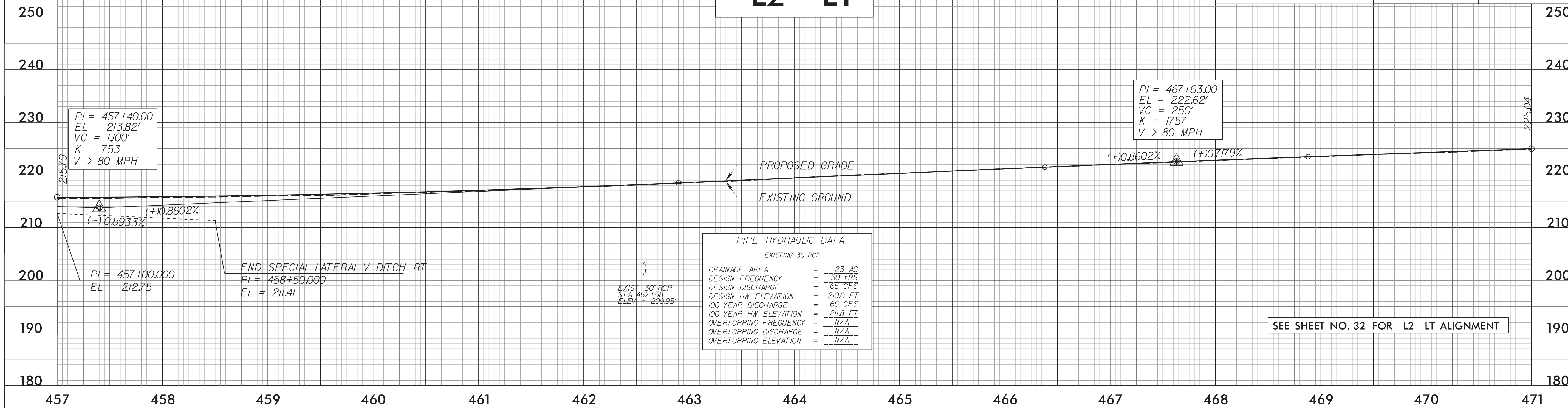
PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	78
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

RIGHT DITCH
LEFT DITCH

-L2- LT



PI = 457+40.00
EL = 213.82'
VC = 1,100'
K = 753
V > 80 MPH
215.79
(-) 0.8933%
(+)0.8602%
PI = 457+00.000
EL = 212.75
END SPECIAL LATERAL V DITCH RT
PI = 458+50.000
EL = 211.41
PROPOSED GRADE
EXISTING GROUND
EXIST 30" RCP
STA 462+58
ELEV = 200.95'
PI = 467+63.00
EL = 222.62'
VC = 250'
K = 1757
V > 80 MPH
(+)0.8602%
(+)0.7179%
225.04

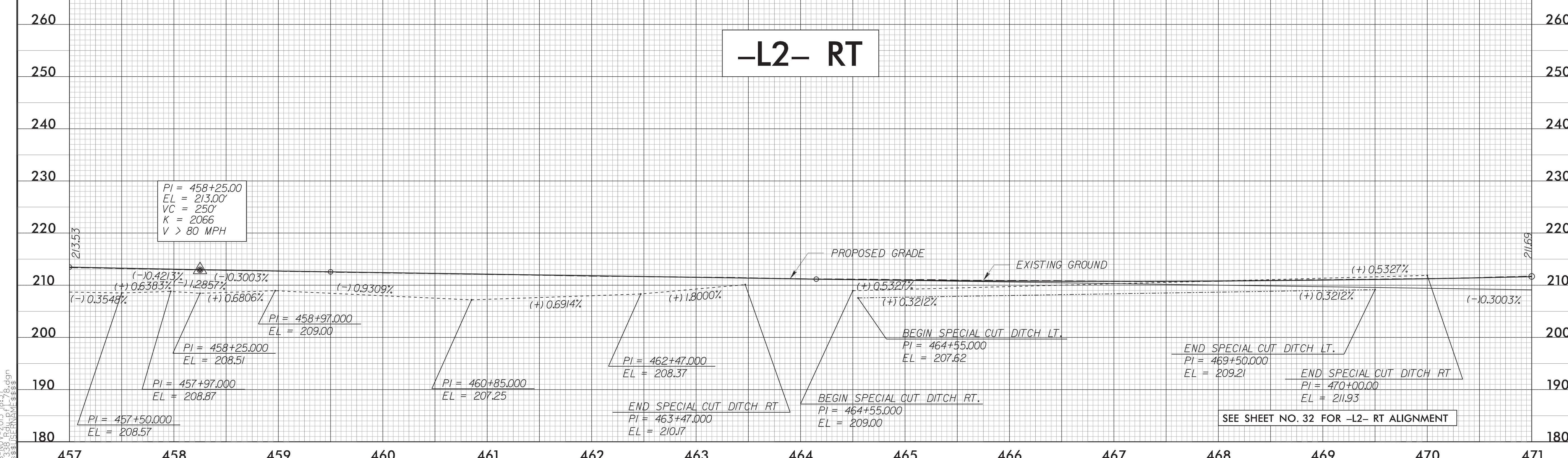
PIPE HYDRAULIC DATA

EXISTING 30" RCP

DRAINAGE AREA	=	23 AC
DESIGN FREQUENCY	=	50 YRS
DESIGN DISCHARGE	=	65 CFS
DESIGN HW ELEVATION	=	210.0 FT
100 YEAR DISCHARGE	=	65 CFS
100 YEAR HW ELEVATION	=	211.8 FT
OVERTOPPING FREQUENCY	=	N/A
OVERTOPPING DISCHARGE	=	N/A
OVERTOPPING ELEVATION	=	N/A

SEE SHEET NO. 32 FOR -L2- LT ALIGNMENT

-L2- RT



PI = 458+25.00
EL = 213.00'
VC = 250'
K = 2066
V > 80 MPH
213.53
(-)0.4213%
(+) 0.6383%
(-) 1.2857%
(-)0.3003%
(-) 0.3548%
(+) 0.6806%
(-) 0.9309%
PI = 458+97.000
EL = 209.00
PI = 458+25.000
EL = 208.51
PI = 457+97.000
EL = 208.87
PI = 457+50.000
EL = 208.57
(+) 0.6914%
PI = 460+85.000
EL = 207.25
(+) 1.8000%
PI = 462+47.000
EL = 208.37
END SPECIAL CUT DITCH RT
PI = 463+47.000
EL = 210.17
PROPOSED GRADE
EXISTING GROUND
(+) 0.5327%
(+) 0.3212%
BEGIN SPECIAL CUT DITCH LT.
PI = 464+55.000
EL = 207.62
BEGIN SPECIAL CUT DITCH RT.
PI = 464+55.000
EL = 209.00
END SPECIAL CUT DITCH LT.
PI = 469+50.000
EL = 209.21
(+) 0.3212%
(+) 0.5327%
END SPECIAL CUT DITCH RT
PI = 470+00.000
EL = 211.93
(-)0.3003%
211.69

SEE SHEET NO. 32 FOR -L2- RT ALIGNMENT

5/28/99
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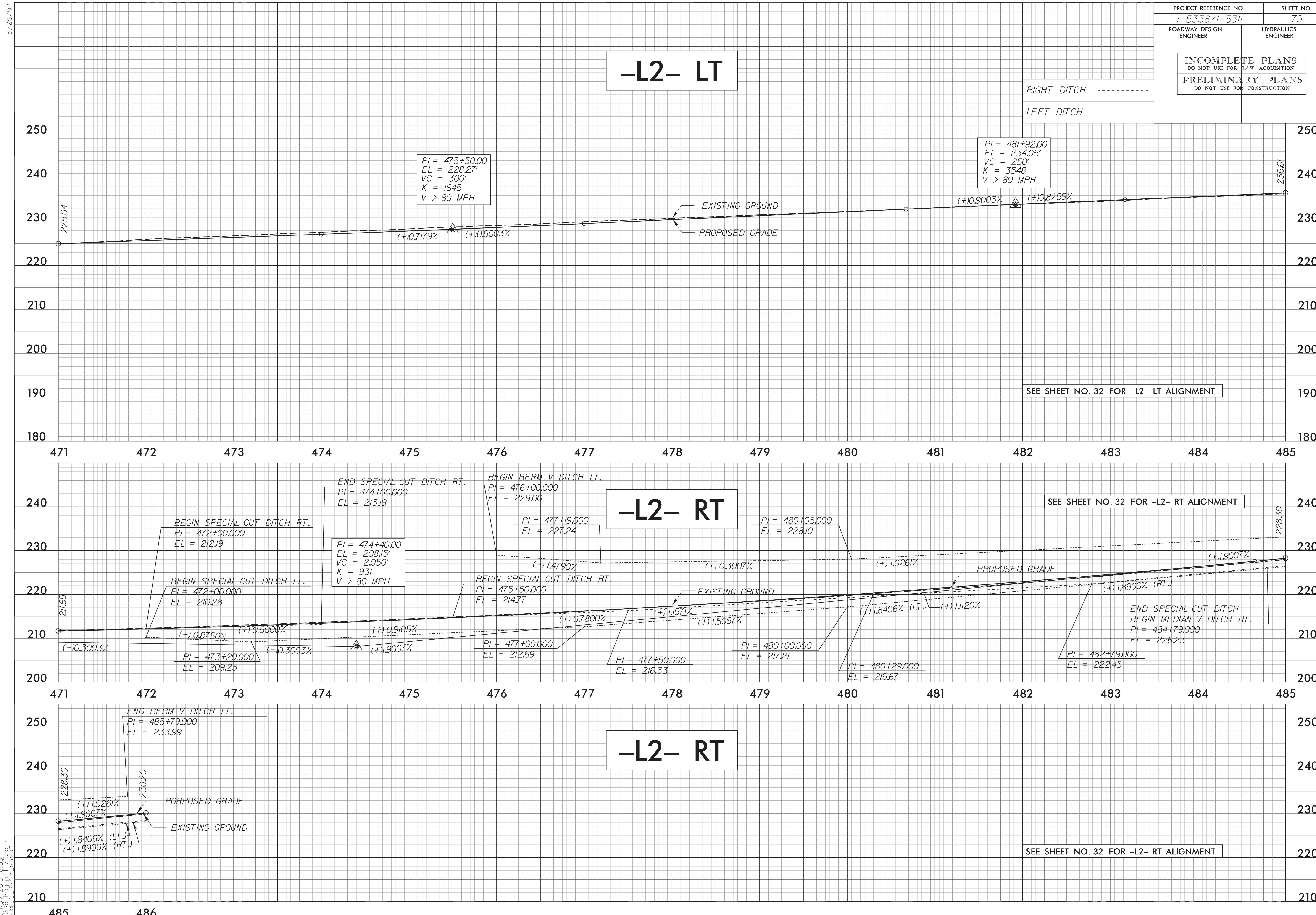
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	79
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



-L2- LT
RIGHT DITCH
LEFT DITCH
PI = 475+50.00
EL = 228.27'
VC = 300'
K = 1645
V > 80 MPH
PI = 481+92.00
EL = 234.05'
VC = 250'
K = 3548
V > 80 MPH
225.04
236.61
(+)0.7179%
(+)0.9003%
(+)0.9003%
(+)0.8299%
EXISTING GROUND
PROPOSED GRADE
SEE SHEET NO. 32 FOR -L2- LT ALIGNMENT
-L2- RT
END SPECIAL CUT DITCH RT.
PI = 474+00.000
EL = 213.19
BEGIN BERM V DITCH LT.
PI = 476+00.000
EL = 229.00
SEE SHEET NO. 32 FOR -L2- RT ALIGNMENT
BEGIN SPECIAL CUT DITCH RT.
PI = 472+00.000
EL = 212.19
PI = 477+19.000
EL = 227.24
PI = 480+05.000
EL = 228.10
228.30
PI = 474+40.00
EL = 208.15'
VC = 2,050'
K = 931
V > 80 MPH
(-) 1.4790%
(+) 0.3007%
(+) 1.0261%
(+)1.9007%
PROPOSED GRADE
BEGIN SPECIAL CUT DITCH LT.
PI = 472+00.000
EL = 210.28
BEGIN SPECIAL CUT DITCH RT.
PI = 475+50.000
EL = 214.77
EXISTING GROUND
(+) 1.8900% (RT.)
211.69
(-) 0.8750%
(+) 0.5000%
(+) 0.9105%
(+) 0.7800%
(+) 1.1971%
(+) 1.5067%
(+) 1.8406% (LT.)
(+) 1.1120%
END SPECIAL CUT DITCH
BEGIN MEDIAN V DITCH RT.
PI = 484+79.000
EL = 226.23
(-)0.3003%
(-)0.3003%
(+)1.9007%
PI = 473+20.000
EL = 209.23
PI = 477+00.000
EL = 212.69
PI = 477+50.000
EL = 216.33
PI = 480+00.000
EL = 217.21
PI = 480+29.000
EL = 219.67
PI = 482+79.000
EL = 222.45
-L2- RT
END BERM V DITCH LT.
PI = 485+79.000
EL = 233.99
228.30
230.20
(+) 1.0261%
(+)1.9007%
PORPOSED GRADE
EXISTING GROUND
(+) 1.8406% (LT.)
(+) 1.8900% (RT.)
SEE SHEET NO. 32 FOR -L2- RT ALIGNMENT

5/28/99

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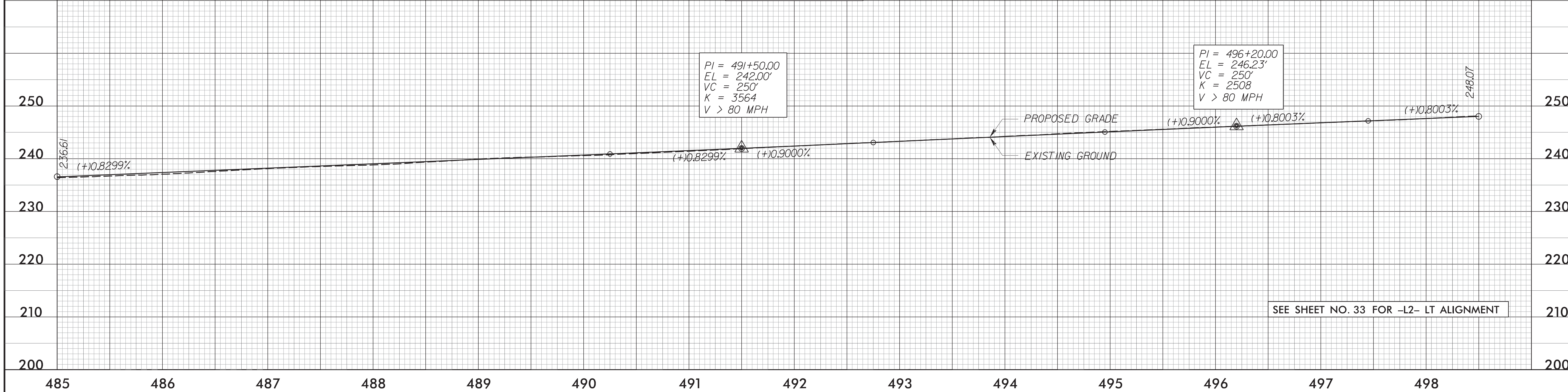
PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	80
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

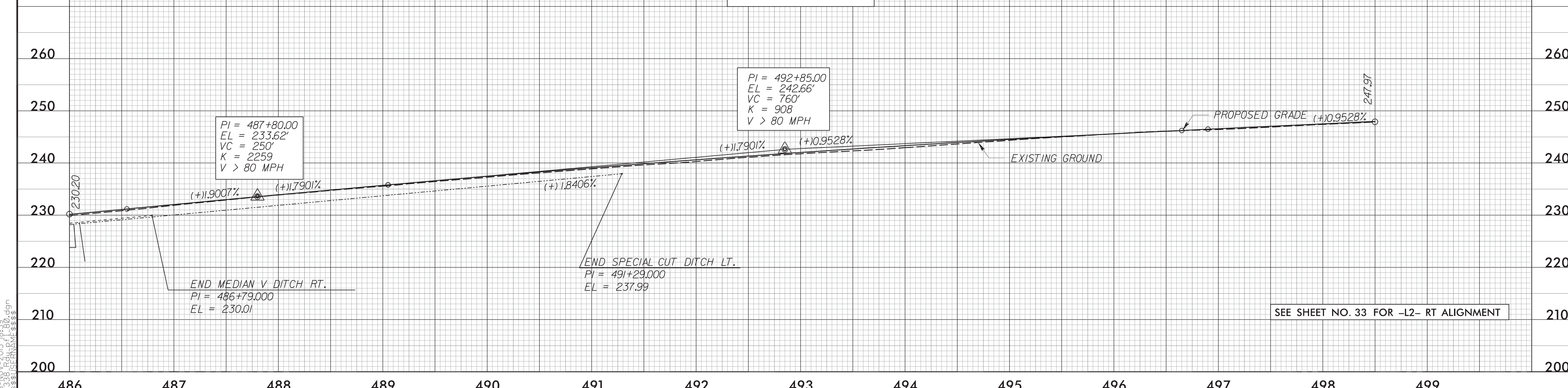
RIGHT DITCH - - - - - - - - -
LEFT DITCH -·-·-·-·-·-·-

-L2- LT



SEE SHEET NO. 33 FOR -L2- LT ALIGNMENT

-L2- RT



SEE SHEET NO. 33 FOR -L2- RT ALIGNMENT

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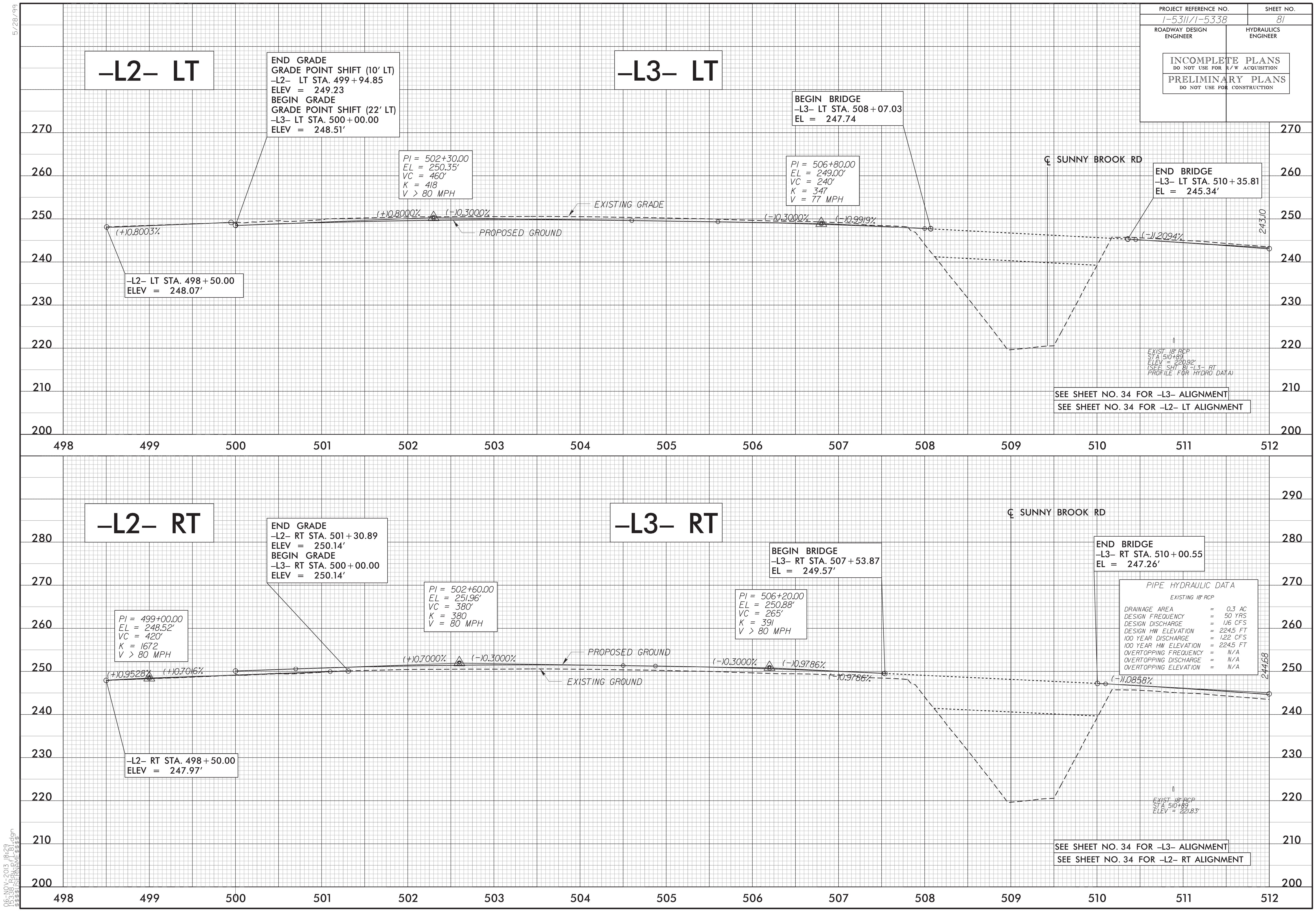

PROJECT REFERENCE NO.
I-5311/I-5338
SHEET NO.
81
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
-L2- LT
-L3- LT
END GRADE
GRADE POINT SHIFT (10' LT)
-L2- LT STA. 499+94.85
ELEV = 249.23
BEGIN GRADE
GRADE POINT SHIFT (22' LT)
-L3- LT STA. 500+00.00
ELEV = 248.51'
PI = 502+30.00
EL = 250.35'
VC = 460'
K = 418
V > 80 MPH
EXISTING GRADE
PROPOSED GROUND
(+)0.8003%
(+)0.8000%
(-)0.3000%
-L2- LT STA. 498+50.00
ELEV = 248.07'
PI = 506+80.00
EL = 249.00'
VC = 240'
K = 347
V = 77 MPH
(-)0.3000%
(-)0.9919%
BEGIN BRIDGE
-L3- LT STA. 508+07.03
EL = 247.74
℄ SUNNY BROOK RD
END BRIDGE
-L3- LT STA. 510+35.81
EL = 245.34'
(-)1.2094%
243.10
EXIST 18" RCP
STA 510+89
ELEV = 220.92'
(SEE SHT 81 -L3- RT
PROFILE FOR HYDRO DATA)
SEE SHEET NO. 34 FOR -L3- ALIGNMENT
SEE SHEET NO. 34 FOR -L2- LT ALIGNMENT
270
260
250
240
230
220
210
200
498
499
500
501
502
503
504
505
506
507
508
509
510
511
512
-L2- RT
-L3- RT
END GRADE
-L2- RT STA. 501+30.89
ELEV = 250.14'
BEGIN GRADE
-L3- RT STA. 500+00.00
ELEV = 250.14'
PI = 499+00.00
EL = 248.52'
VC = 420'
K = 1672
V > 80 MPH
(+)0.9528%
(+)0.7016%
PI = 502+60.00
EL = 251.96'
VC = 380'
K = 380
V = 80 MPH
(+)0.7000%
(-)0.3000%
PROPOSED GROUND
EXISTING GROUND
-L2- RT STA. 498+50.00
ELEV = 247.97'
PI = 506+20.00
EL = 250.88'
VC = 265'
K = 391
V > 80 MPH
(-)0.3000%
(-)0.9786%
(-)0.9786%
BEGIN BRIDGE
-L3- RT STA. 507+53.87
EL = 249.57'
℄ SUNNY BROOK RD
END BRIDGE
-L3- RT STA. 510+00.55
EL = 247.26'
(-)1.0858%
244.68
PIPE HYDRAULIC DATA
EXISTING 18" RCP
DRAINAGE AREA = 0.3 AC
DESIGN FREQUENCY = 50 YRS
DESIGN DISCHARGE = 1.16 CFS
DESIGN HW ELEVATION = 224.5 FT
100 YEAR DISCHARGE = 1.22 CFS
100 YEAR HW ELEVATION = 224.5 FT
OVERTOPPING FREQUENCY = N/A
OVERTOPPING DISCHARGE = N/A
OVERTOPPING ELEVATION = N/A
EXIST 18" RCP
STA 510+89
ELEV = 221.83'
SEE SHEET NO. 34 FOR -L3- ALIGNMENT
SEE SHEET NO. 34 FOR -L2- RT ALIGNMENT
290
280
270
260
250
240
230
220
210
200
498
499
500
501
502
503
504
505
506
507
508
509
510
511
512
5/28/99
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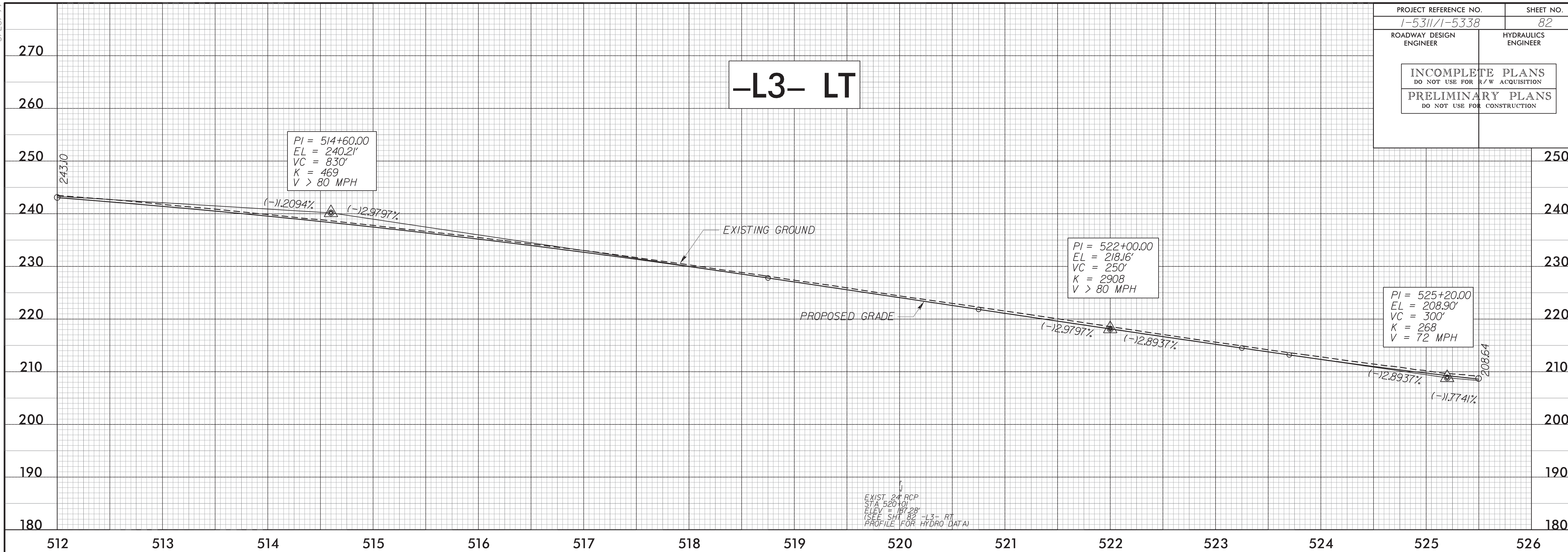
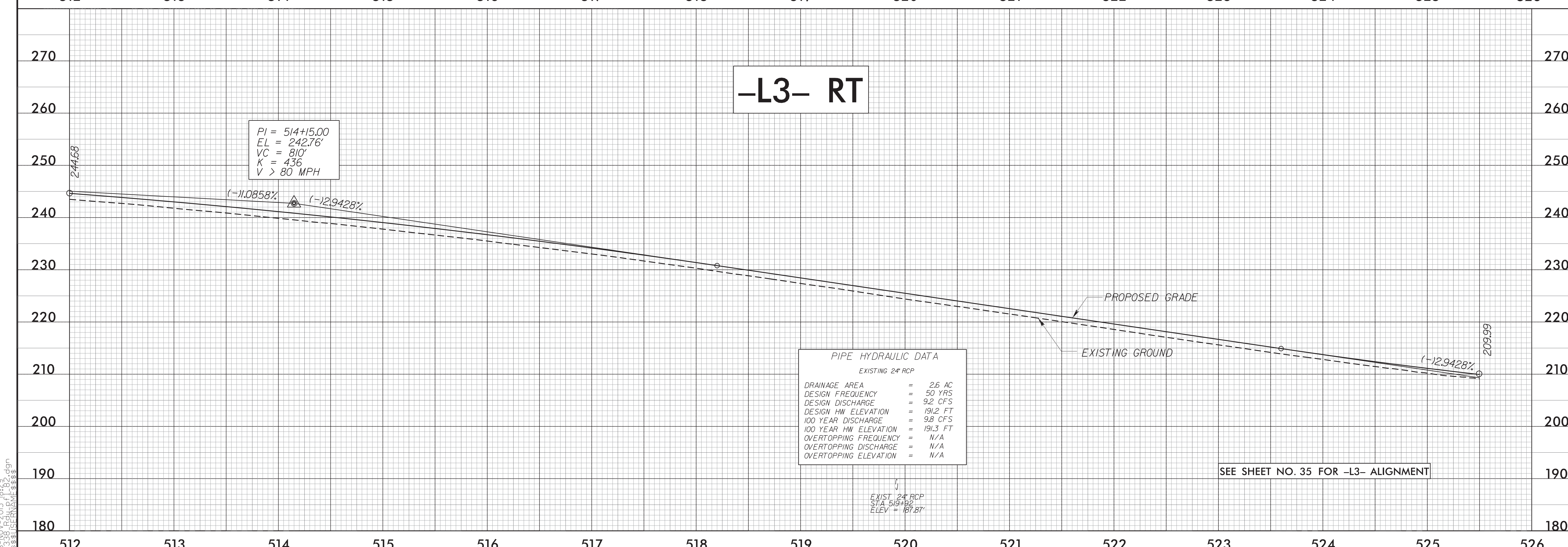
PROJECT REFERENCE NO.	SHEET NO.
I-5311/I-5338	82
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION





PIPE HYDRAULIC DATA

EXISTING 24" RCP

DRAINAGE AREA	=	2.6 AC
DESIGN FREQUENCY	=	50 YRS
DESIGN DISCHARGE	=	9.2 CFS
DESIGN HW ELEVATION	=	191.2 FT
100 YEAR DISCHARGE	=	9.8 CFS
100 YEAR HW ELEVATION	=	191.3 FT
OVERTOPPING FREQUENCY	=	N/A
OVERTOPPING DISCHARGE	=	N/A
OVERTOPPING ELEVATION	=	N/A

5/28/99

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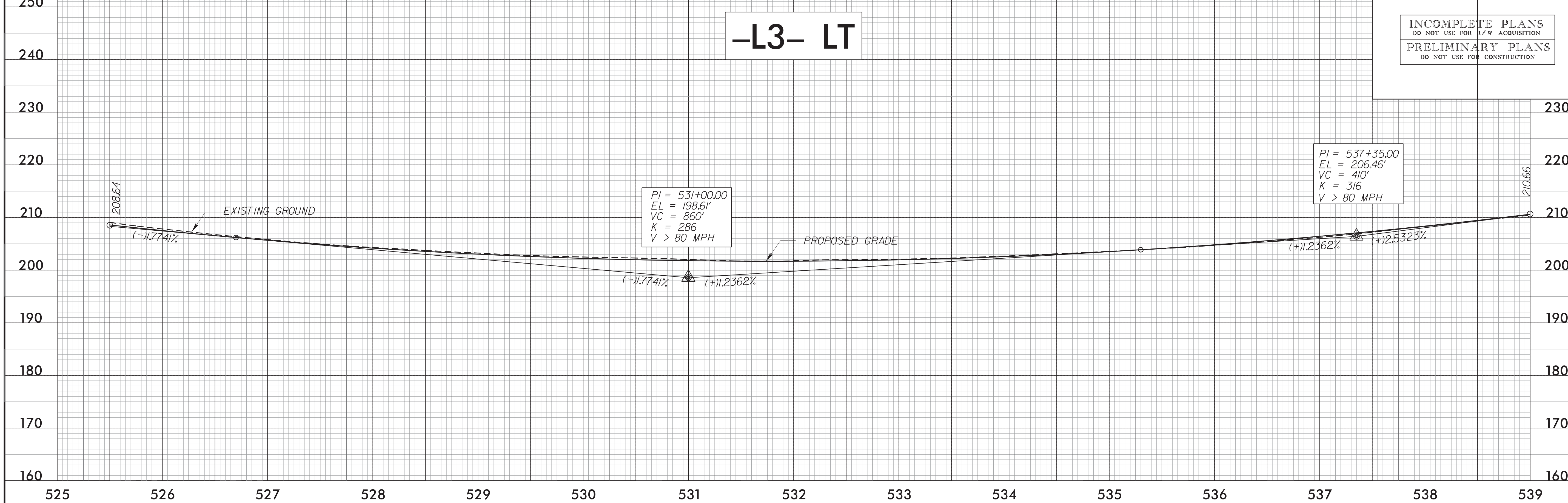
PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	83

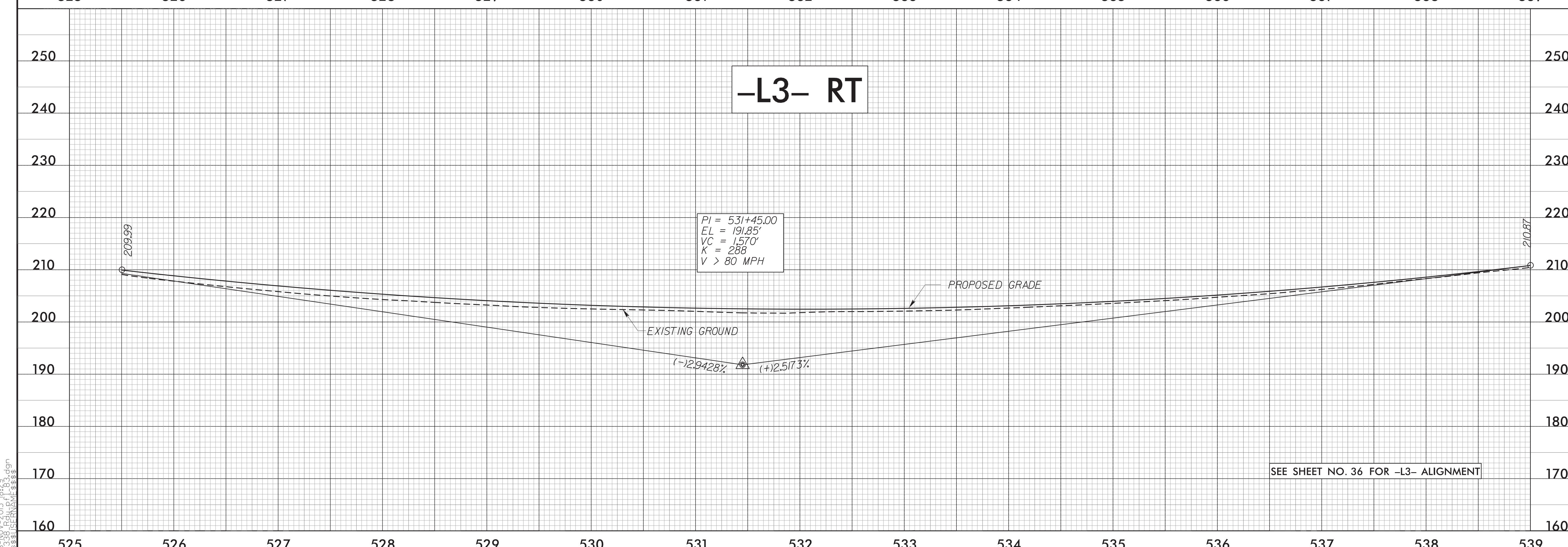
ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION





SEE SHEET NO. 36 FOR -L3- ALIGNMENT

5/28/99

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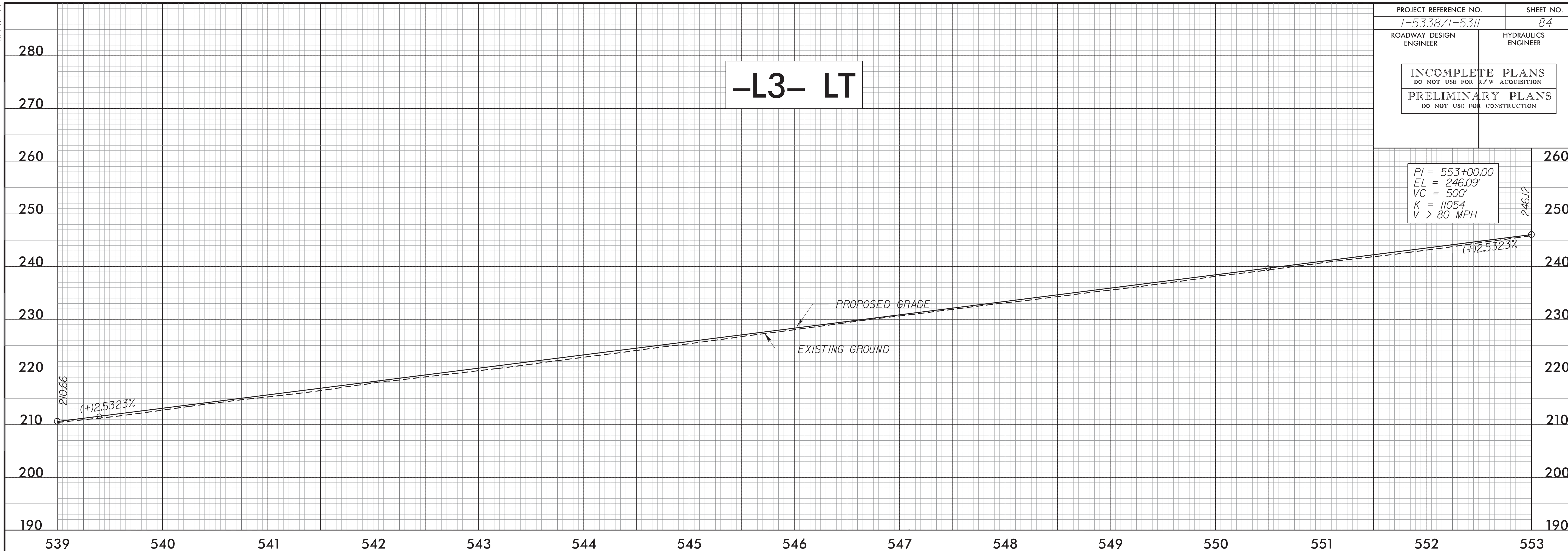
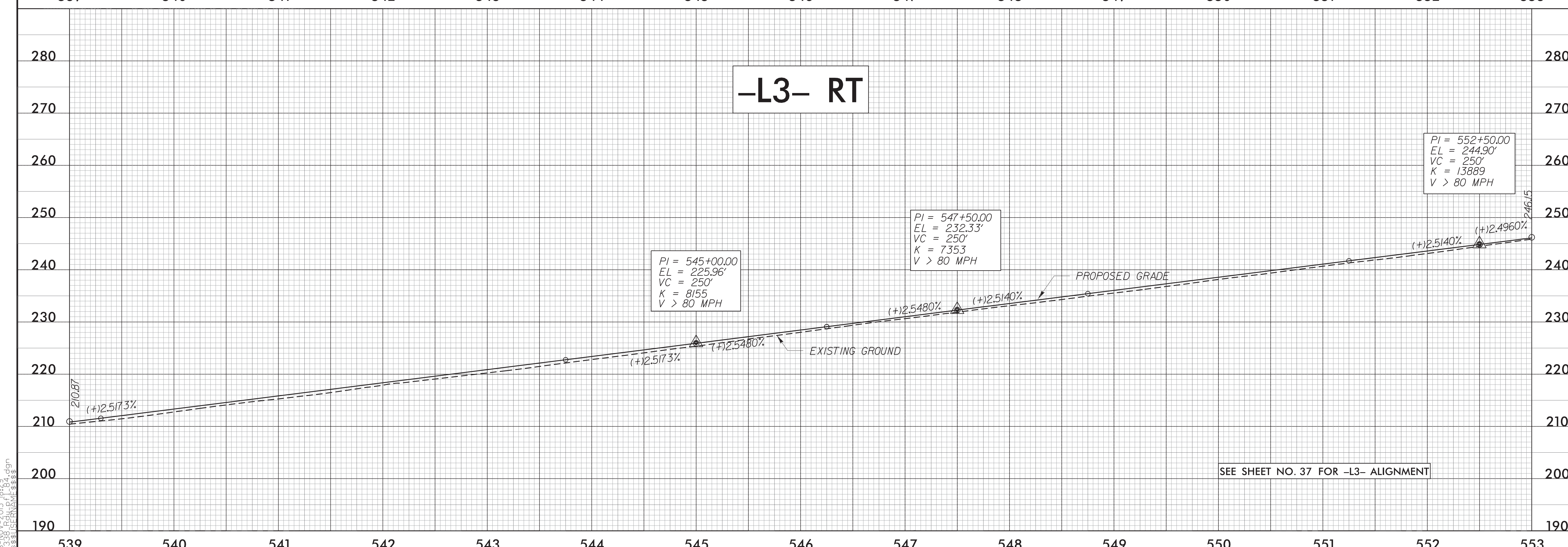
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	84
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



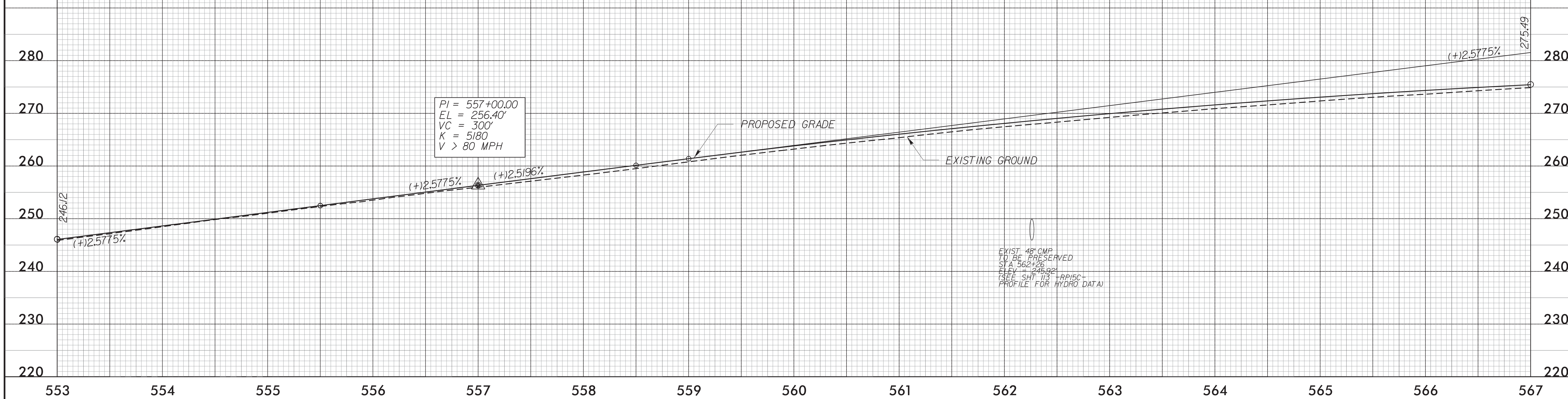


PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	85
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

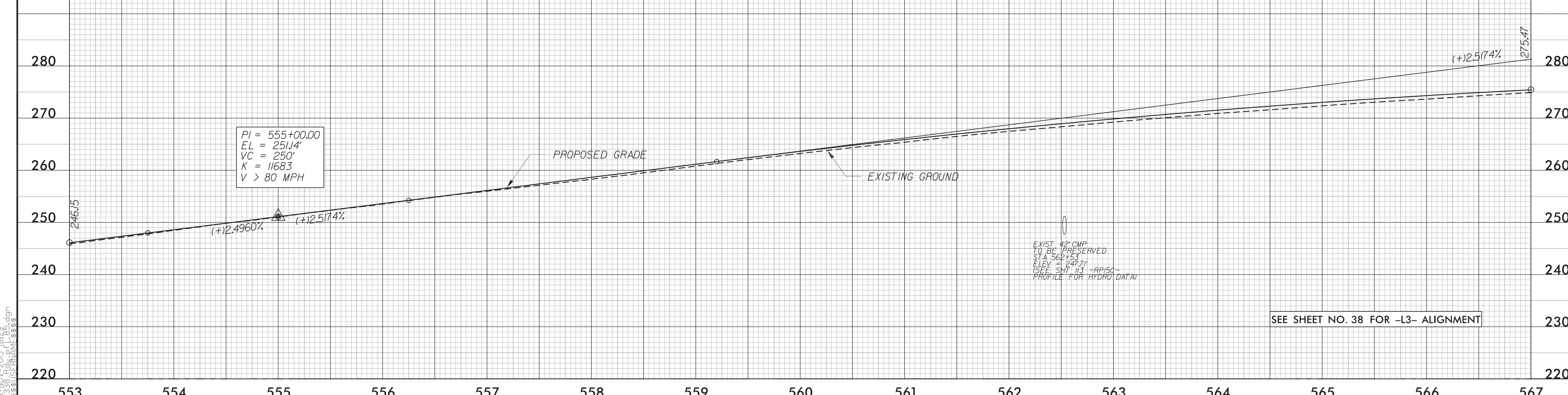
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-L3- LT



-L3- RT



SEE SHEET NO. 38 FOR -L3- ALIGNMENT

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PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	86

ROADWAY DESIGN ENGINEER

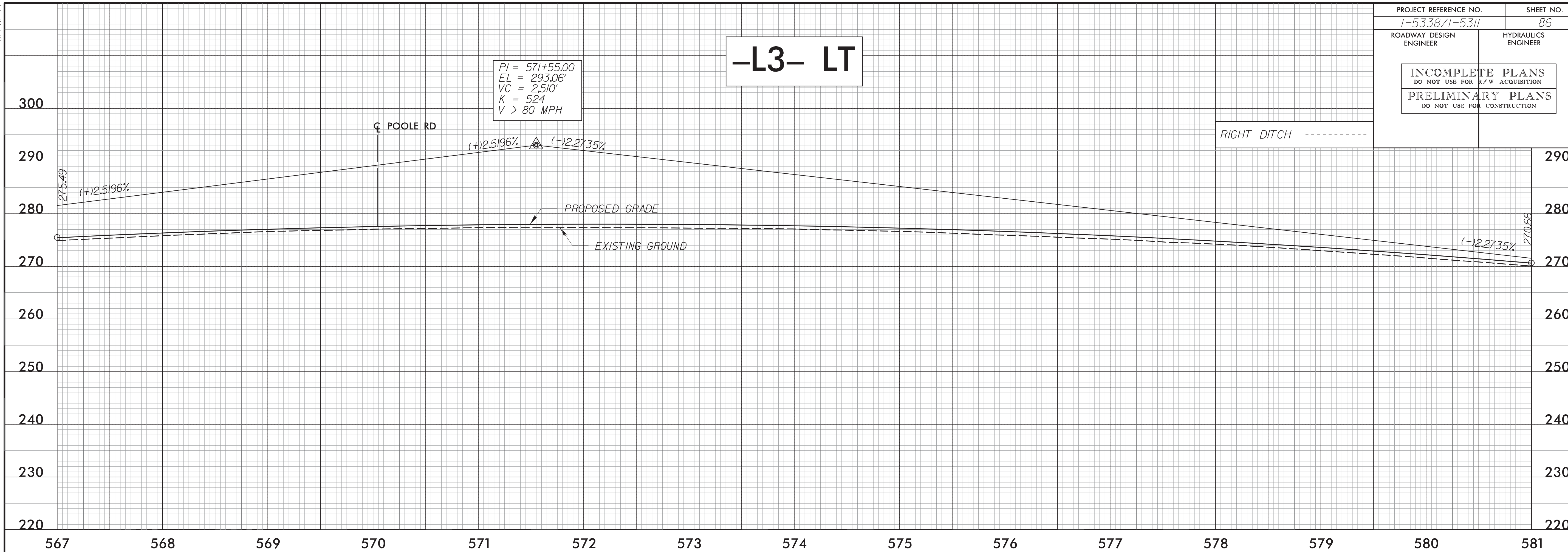
HYDRAULICS ENGINEER

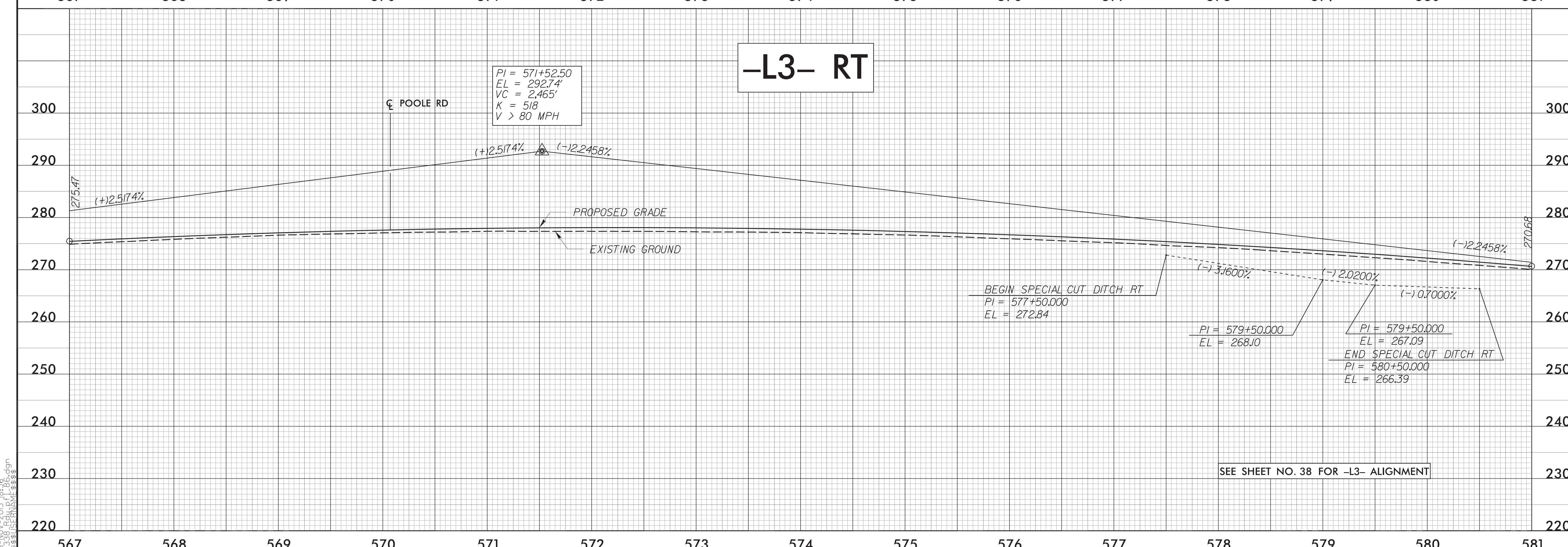
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

RIGHT DITCH

5/28/99





SEE SHEET NO. 38 FOR -L3- ALIGNMENT

06-NOV-2013 18:36
I5338_Rdy_pfl_86.dgn
$$$$USERNAME$$$$

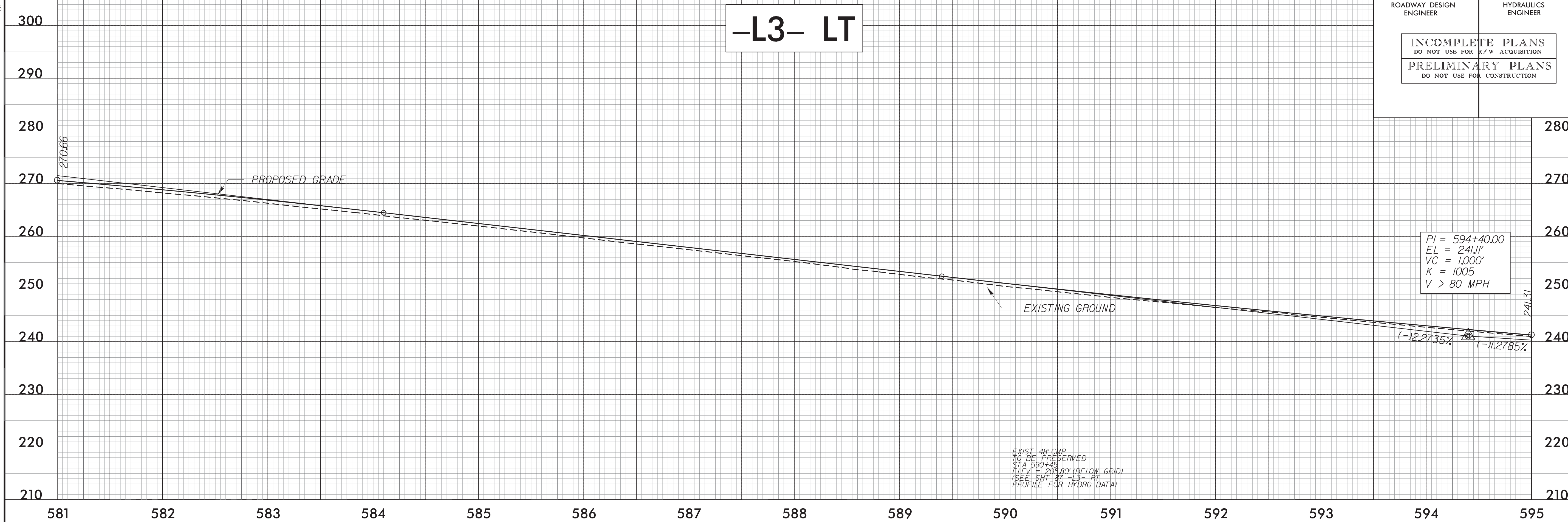
PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	87

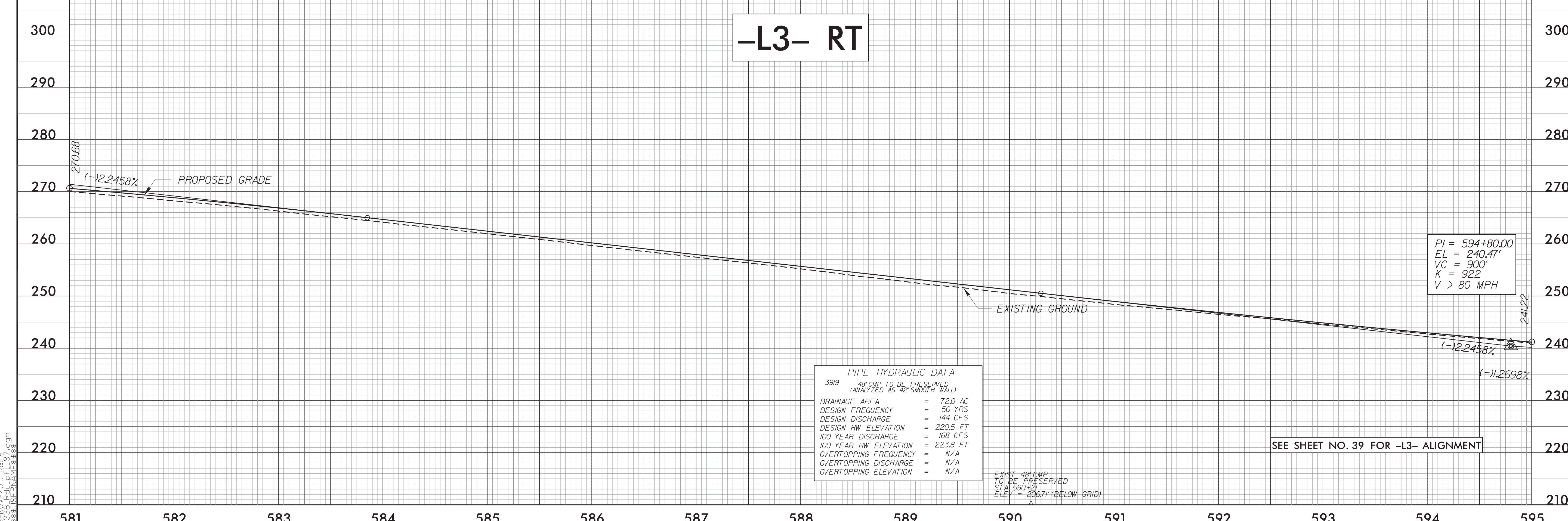
ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION





PIPE HYDRAULIC DATA

3919 48" CMP TO BE PRESERVED (ANALYZED AS 42" SMOOTH WALL)

DRAINAGE AREA	=	72.0 AC
DESIGN FREQUENCY	=	50 YRS
DESIGN DISCHARGE	=	144 CFS
DESIGN HW ELEVATION	=	220.5 FT
100 YEAR DISCHARGE	=	168 CFS
100 YEAR HW ELEVATION	=	223.8 FT
OVERTOPPING FREQUENCY	=	N/A
OVERTOPPING DISCHARGE	=	N/A
OVERTOPPING ELEVATION	=	N/A

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PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	88

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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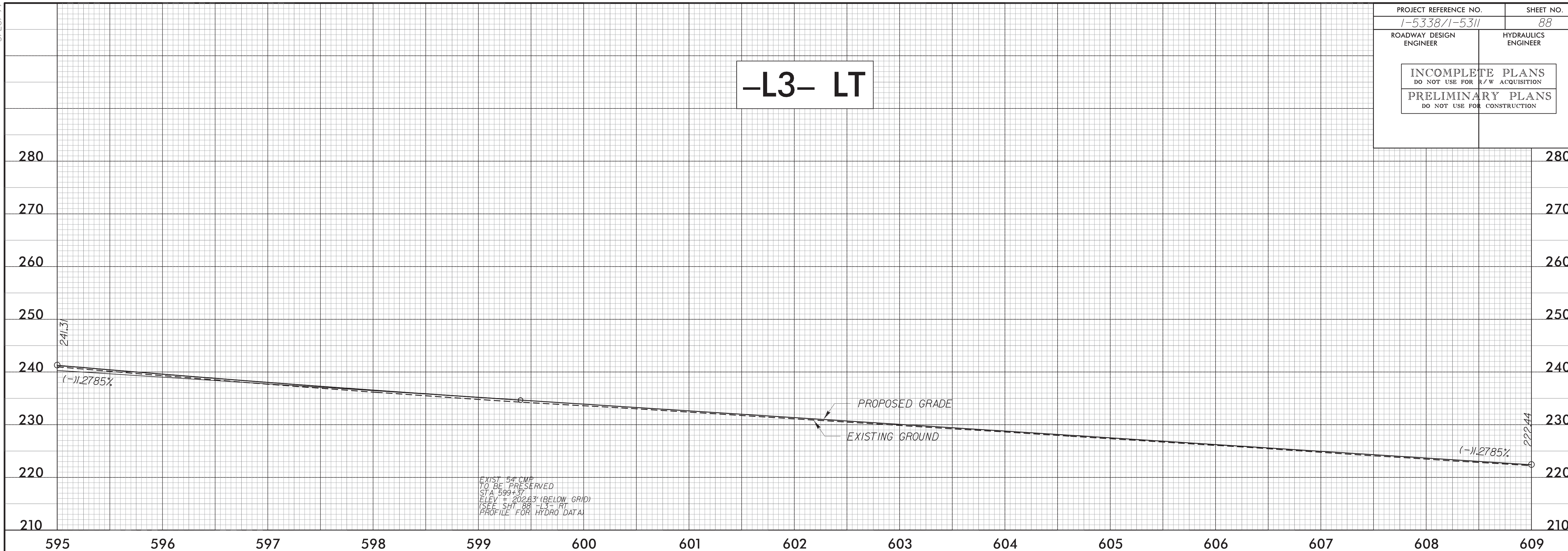

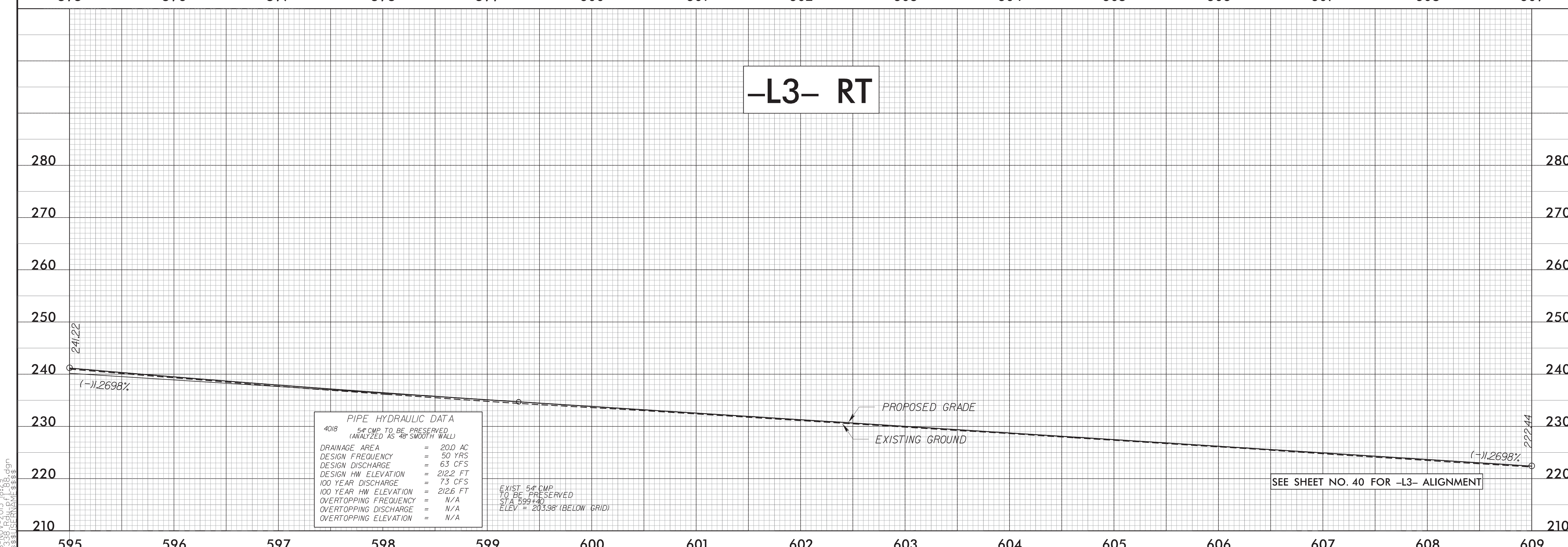

PIPE HYDRAULIC DATA

4018 54" CMP TO BE PRESERVED (ANALYZED AS 48" SMOOTH WALL)

DRAINAGE AREA	=	20.0 AC
DESIGN FREQUENCY	=	50 YRS
DESIGN DISCHARGE	=	63 CFS
DESIGN HW ELEVATION	=	212.2 FT
100 YEAR DISCHARGE	=	73 CFS
100 YEAR HW ELEVATION	=	212.6 FT
OVERTOPPING FREQUENCY	=	N/A
OVERTOPPING DISCHARGE	=	N/A
OVERTOPPING ELEVATION	=	N/A

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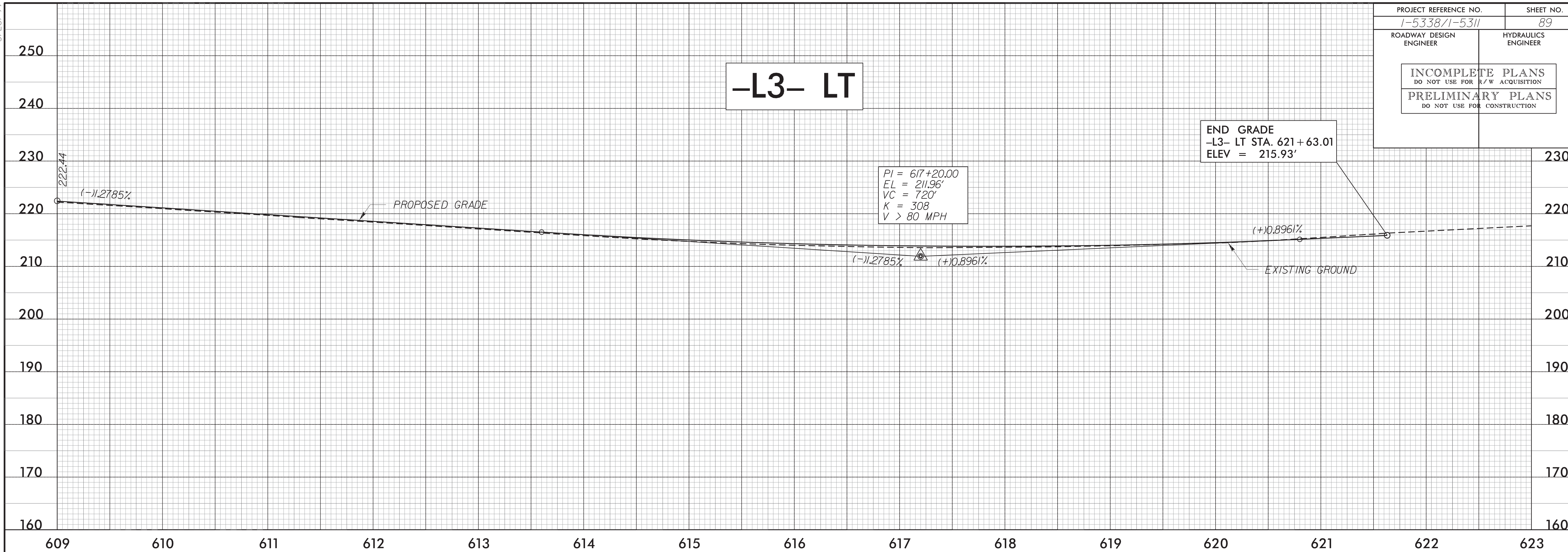
PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	89

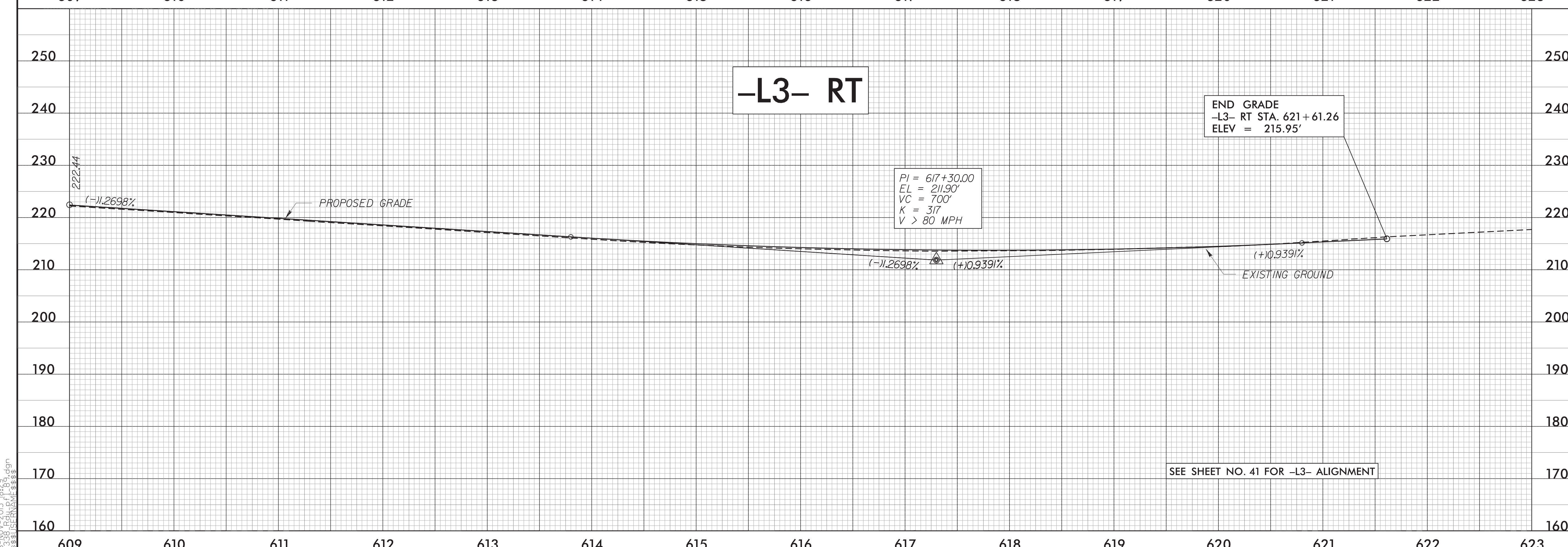
ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION





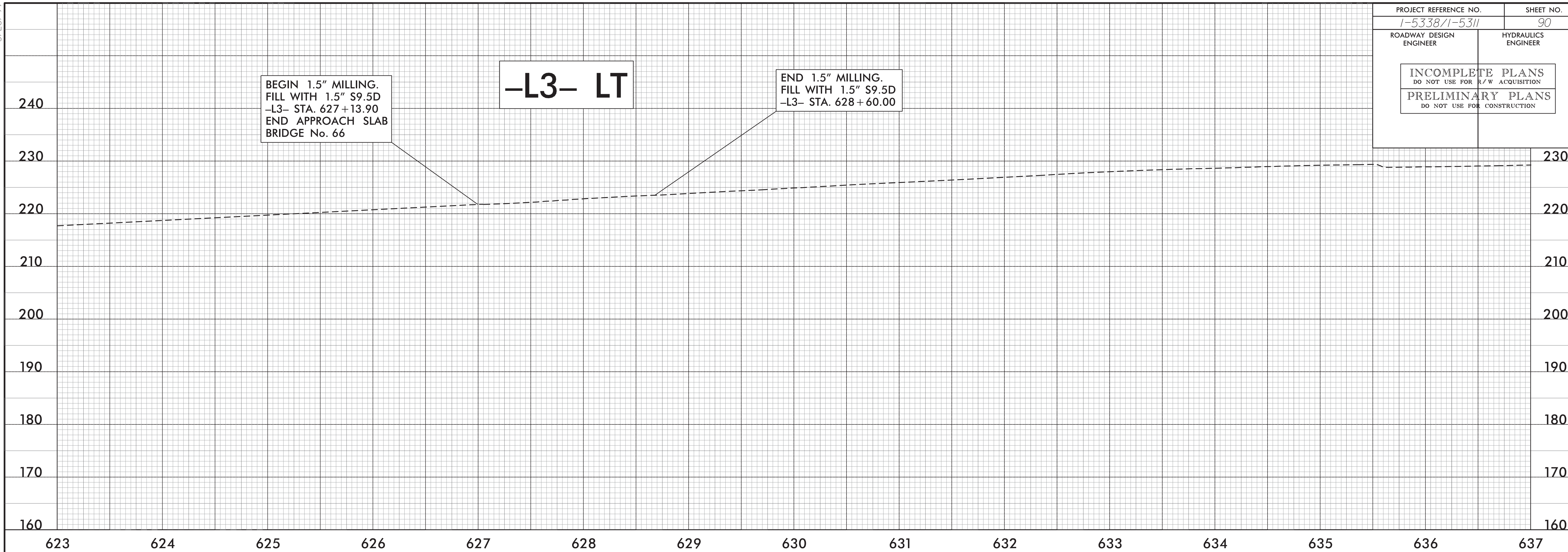
SEE SHEET NO. 41 FOR -L3- ALIGNMENT

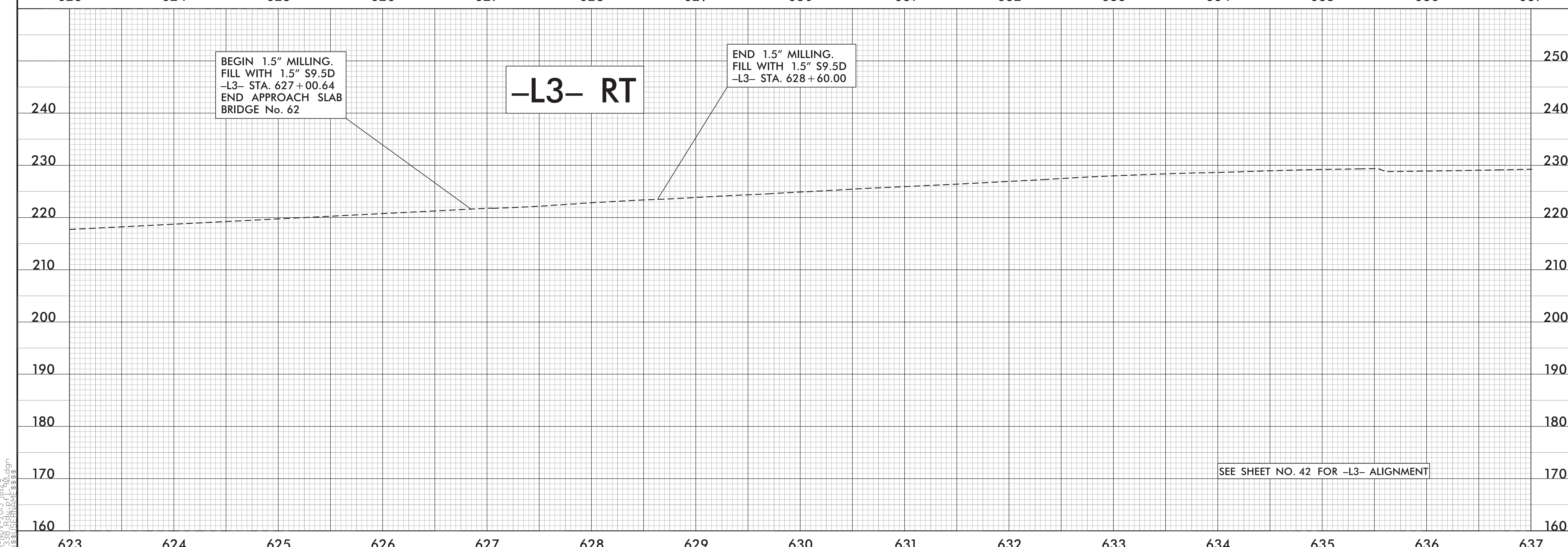
PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	90
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

5/28/99





SEE SHEET NO. 42 FOR -L3- ALIGNMENT

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PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	110
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

–RP140A–

BEGIN GRADE
–RP14A– STA. 10+00.00
ELEV = 247.22'

PI = 12+75.00
EL = 249.09'
VC = 550'
K = 419
V > 80 MPH

PI = 17+50.00
EL = 246.08'
VC = 350'
K = 272
V = 72 MPH

END GRADE
–RP14A– STA. 20+50.00
ELEV = 240.32'

(+)0.6800%
(+)0.6800%
(–)0.6337%
PROPOSED GRADE
(–)0.6337%
(–)1.9200%
EXISTING GROUND

SEE SHEET NO. 33,34 FOR –RP140A– ALIGNMENT

–LI40W–

BEGIN GRADE
–RP14B– STA. 10+00.00
ELEV = 215.82'

END GRADE
–RP14B– STA. 15+50.00
ELEV = 218.35

PI = 11+25.00
EL = 216.04'
VC = 250'
K = 1278
V > 80 MPH

PI = 13+75.00
EL = 216.98'
VC = 250'
K = 616
V > 80 MPH

PROPOSED GRADE
(+)0.1800%
(+)0.3756%
EXISTING GROUND
(+)0.3756%
(+)0.7811%

SEE SHEET NO. 32 FOR –LI40W– ALIGNMENT

–LI40E–

BEGIN GRADE
–RP14C– STA. 10+00.00
ELEV = 213.40'

PI = 12+10.00
EL = 212.90'
VC = 250'
K = 3125
V > 80 MPH

(–)0.2400%
(–)0.3200%
PROPOSED GRADE
EXISTING GROUND
211.92

SEE SHEET NO. 31, 32 FOR –LI40E– ALIGNMENT

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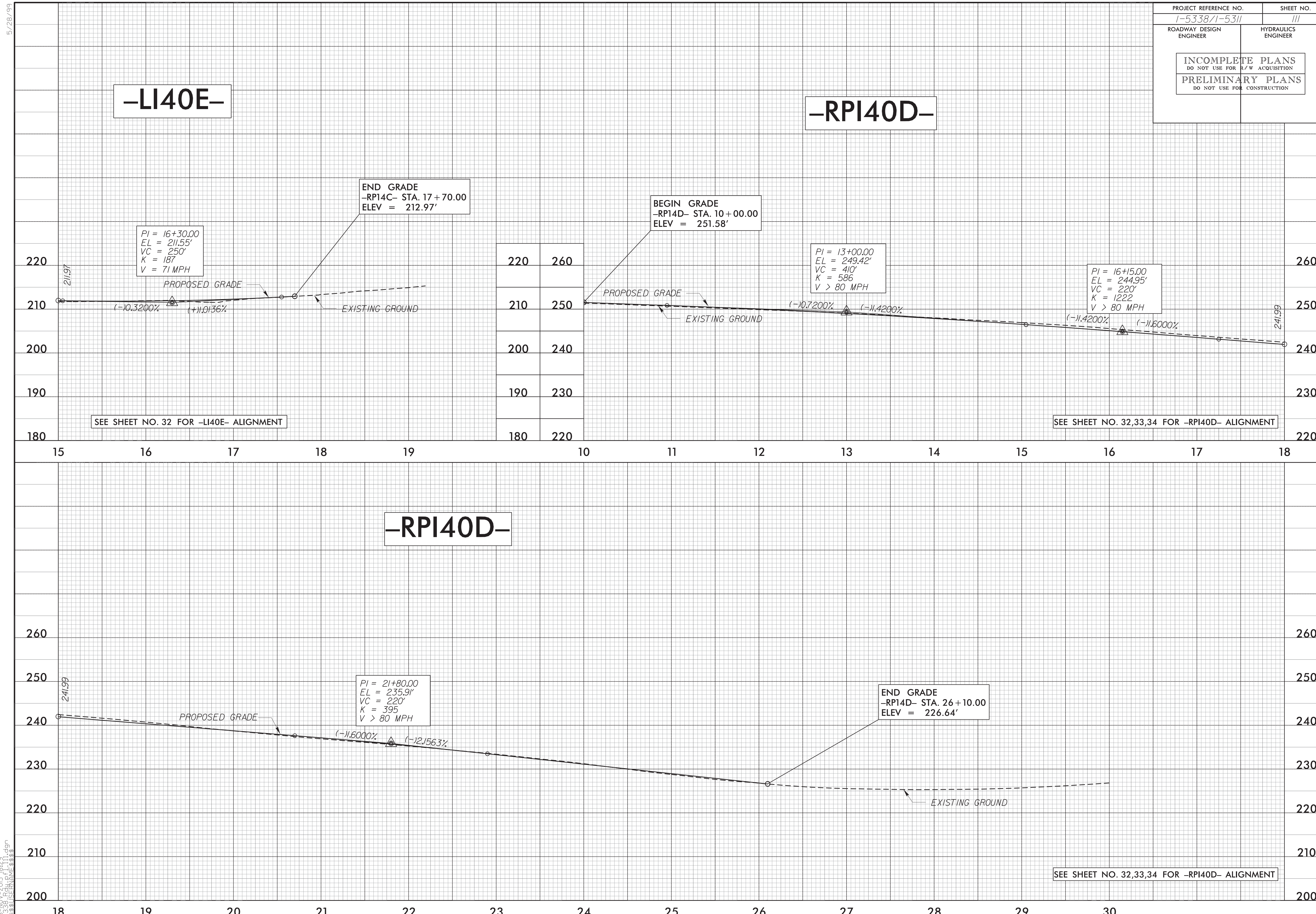
PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	111
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



-LI40E-
END GRADE
-RP14C- STA. 17+70.00
ELEV = 212.97'
PI = 16+30.00
EL = 211.55'
VC = 250'
K = 187
V = 71 MPH
211.97
PROPOSED GRADE
EXISTING GROUND
(-)0.3200%
(+)1.0136%
SEE SHEET NO. 32 FOR -LI40E- ALIGNMENT
-RPI40D-
BEGIN GRADE
-RP14D- STA. 10+00.00
ELEV = 251.58'
PI = 13+00.00
EL = 249.42'
VC = 410'
K = 586
V > 80 MPH
PI = 16+15.00
EL = 244.95'
VC = 220'
K = 1222
V > 80 MPH
PROPOSED GRADE
EXISTING GROUND
(-)0.7200%
(-)1.4200%
(-)1.4200%
(-)1.6000%
241.99
SEE SHEET NO. 32,33,34 FOR -RPI40D- ALIGNMENT
220 210 200 190 180
260 250 240 230 220
15 16 17 18 19 10 11 12 13 14 15 16 17 18
-RPI40D-
241.99
PI = 21+80.00
EL = 235.91'
VC = 220'
K = 395
V > 80 MPH
PROPOSED GRADE
(-)1.6000%
(-)2.1563%
END GRADE
-RP14D- STA. 26+10.00
ELEV = 226.64'
EXISTING GROUND
SEE SHEET NO. 32,33,34 FOR -RPI40D- ALIGNMENT
260 250 240 230 220 210 200
18 19 20 21 22 23 24 25 26 27 28 29 30

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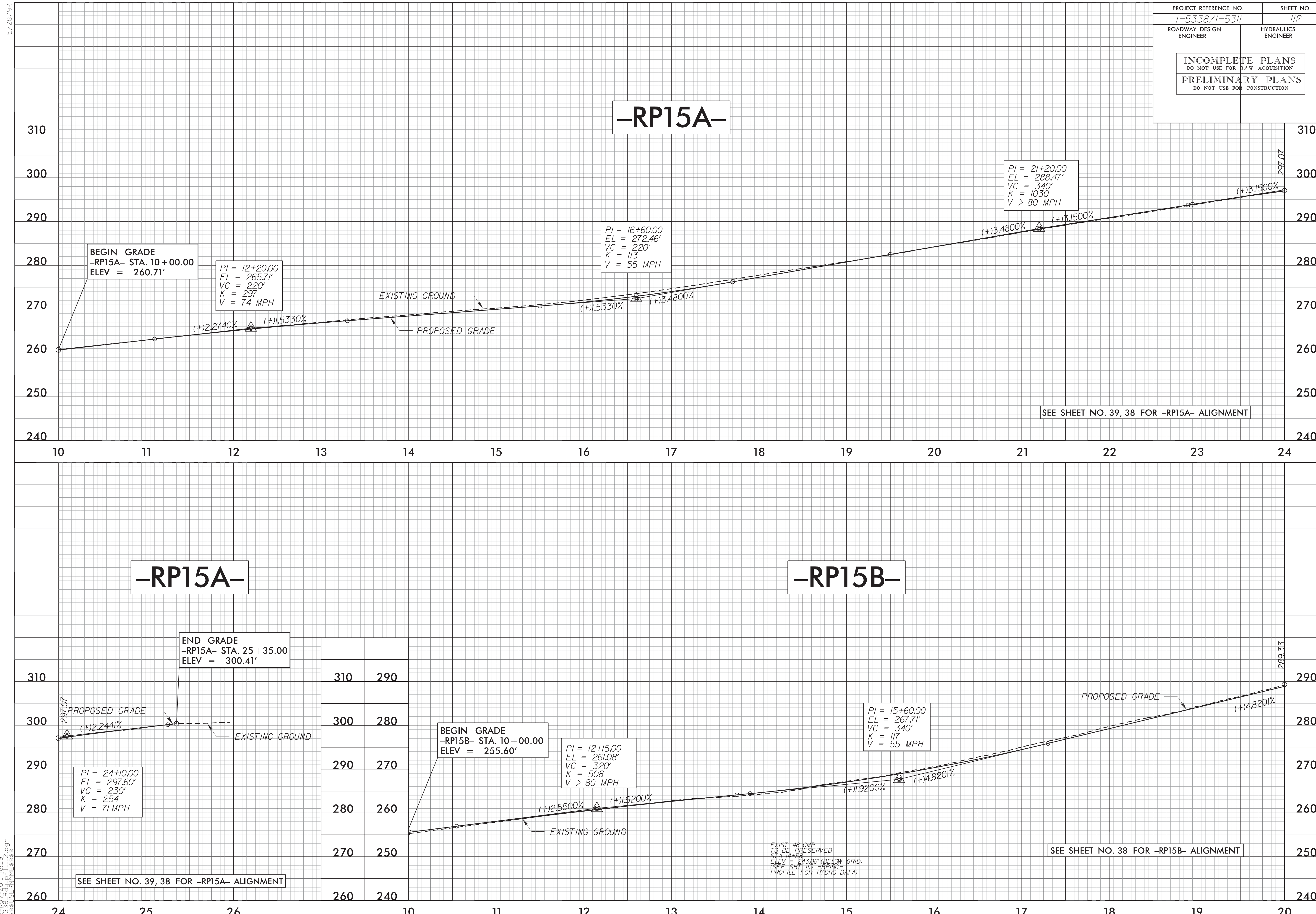
PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	112
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



-RP15A-
BEGIN GRADE
-RP15A- STA. 10+00.00
ELEV = 260.71'
PI = 12+20.00
EL = 265.71'
VC = 220'
K = 297
V = 74 MPH
(+)2.2740%
(+)1.5330%
EXISTING GROUND
PROPOSED GRADE
PI = 16+60.00
EL = 272.46'
VC = 220'
K = 113
V = 55 MPH
(+)1.5330%
(+)3.4800%
PI = 21+20.00
EL = 288.47'
VC = 340'
K = 1030
V > 80 MPH
(+)3.4800%
(+)3.1500%
297.07
SEE SHEET NO. 39, 38 FOR -RP15A- ALIGNMENT
-RP15A-
END GRADE
-RP15A- STA. 25+35.00
ELEV = 300.41'
297.07
PROPOSED GRADE
(+)2.2441%
EXISTING GROUND
PI = 24+10.00
EL = 297.60'
VC = 230'
K = 254
V = 71 MPH
SEE SHEET NO. 39, 38 FOR -RP15A- ALIGNMENT
-RP15B-
BEGIN GRADE
-RP15B- STA. 10+00.00
ELEV = 255.60'
PI = 12+15.00
EL = 261.08'
VC = 320'
K = 508
V > 80 MPH
(+)2.5500%
(+)1.9200%
EXISTING GROUND
PI = 15+60.00
EL = 267.71'
VC = 340'
K = 117
V = 55 MPH
(+)1.9200%
(+)4.8201%
PROPOSED GRADE
289.33
EXIST 48" CMP
TO BE PRESERVED
STA 14+58
ELEV = 243.08' (BELOW GRID)
(SEE SHT 113 -RP15C-
PROFILE FOR HYDRO DATA)
SEE SHEET NO. 38 FOR -RP15B- ALIGNMENT

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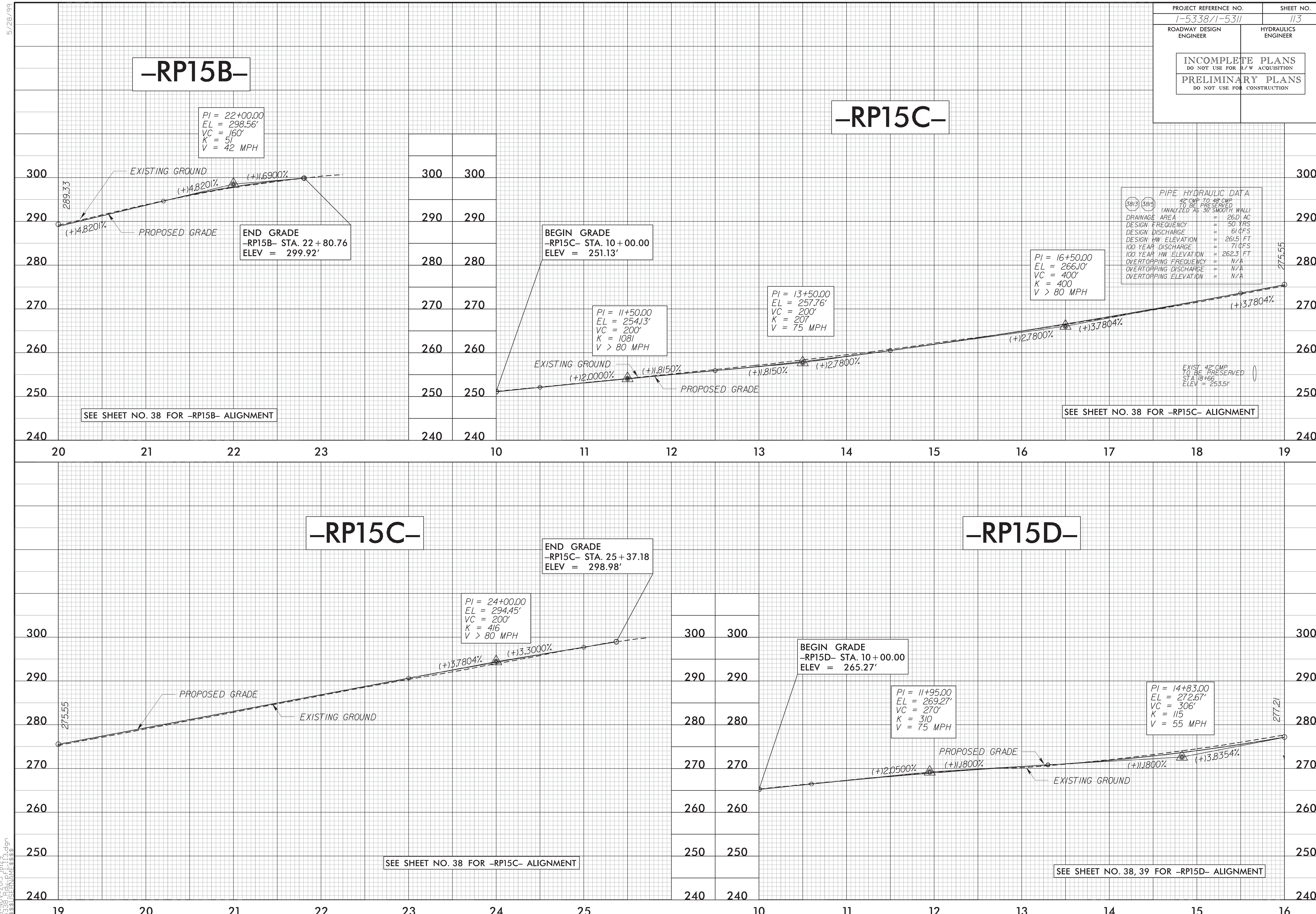
PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	113

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



-RP15B-
PI = 22+00.00
EL = 298.56'
VC = 160'
K = 51
V = 42 MPH
EXISTING GROUND
PROPOSED GRADE
289.33
(+)4.8201%
(+)1.6900%
END GRADE
-RP15B- STA. 22+80.76
ELEV = 299.92'
SEE SHEET NO. 38 FOR -RP15B- ALIGNMENT
-RP15C-
BEGIN GRADE
-RP15C- STA. 10+00.00
ELEV = 251.13'
PI = 11+50.00
EL = 254.13'
VC = 200'
K = 1081
V > 80 MPH
PI = 13+50.00
EL = 257.76'
VC = 200'
K = 207
V = 75 MPH
PI = 16+50.00
EL = 266.10'
VC = 400'
K = 400
V > 80 MPH
(+)2.0000%
(+)1.8150%
(+)2.7800%
(+)3.7804%
275.55
PIPE HYDRAULIC DATA
3813
3815
42" CMP TO 48" CMP
TO BE PRESERVED
(ANALYZED AS 36" SMOOTH WALL)
DRAINAGE AREA = 26.0 AC
DESIGN FREQUENCY = 50 YRS
DESIGN DISCHARGE = 61 CFS
DESIGN HW ELEVATION = 261.5 FT
100 YEAR DISCHARGE = 71 CFS
100 YEAR HW ELEVATION = 262.3 FT
OVERTOPPING FREQUENCY = N/A
OVERTOPPING DISCHARGE = N/A
OVERTOPPING ELEVATION = N/A
EXIST 42" CMP
TO BE PRESERVED
STA 18+66
ELEV = 253.51'
SEE SHEET NO. 38 FOR -RP15C- ALIGNMENT
END GRADE
-RP15C- STA. 25+37.18
ELEV = 298.98'
PI = 24+00.00
EL = 294.45'
VC = 200'
K = 416
V > 80 MPH
(+)3.3000%
SEE SHEET NO. 38 FOR -RP15C- ALIGNMENT
-RP15D-
BEGIN GRADE
-RP15D- STA. 10+00.00
ELEV = 265.27'
PI = 11+95.00
EL = 269.27'
VC = 270'
K = 310
V = 75 MPH
PI = 14+83.00
EL = 272.67'
VC = 306'
K = 115
V = 55 MPH
(+)2.0500%
(+)1.1800%
(+)3.8354%
277.21
SEE SHEET NO. 38, 39 FOR -RP15D- ALIGNMENT

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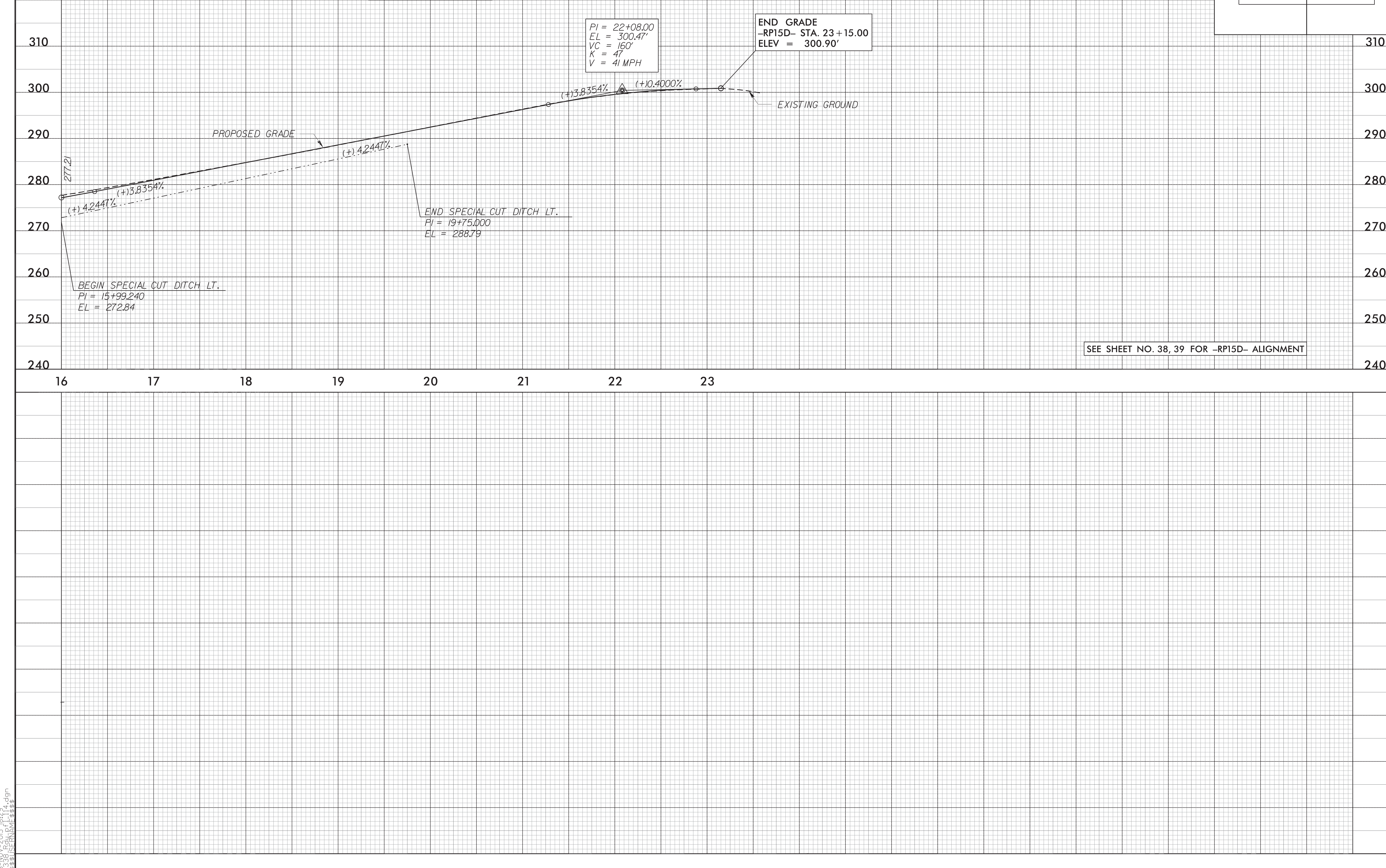
PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	114
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-RP15D-



SEE SHEET NO. 38, 39 FOR -RP15D- ALIGNMENT

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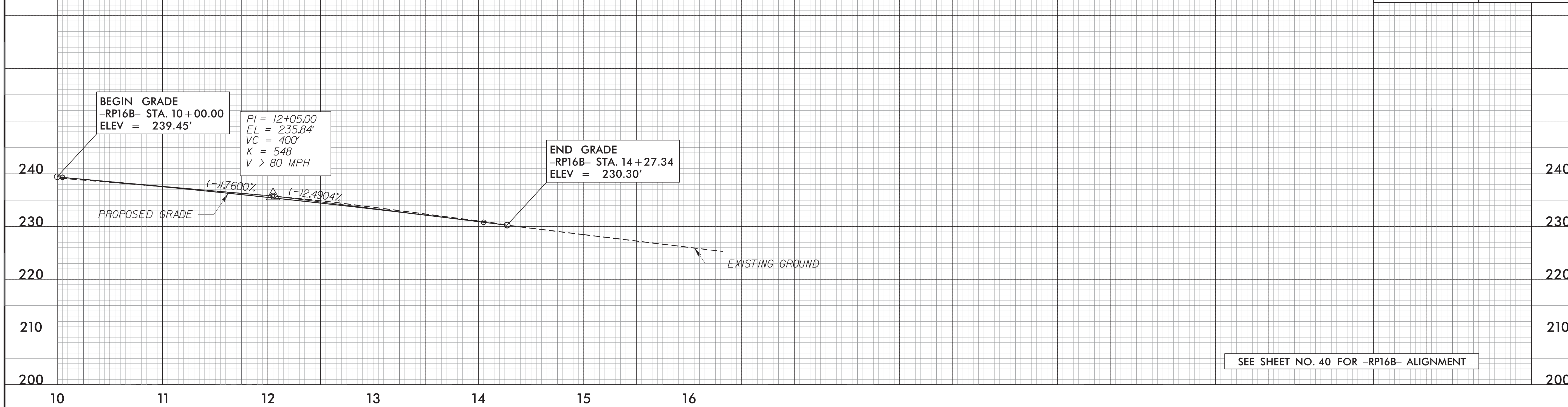
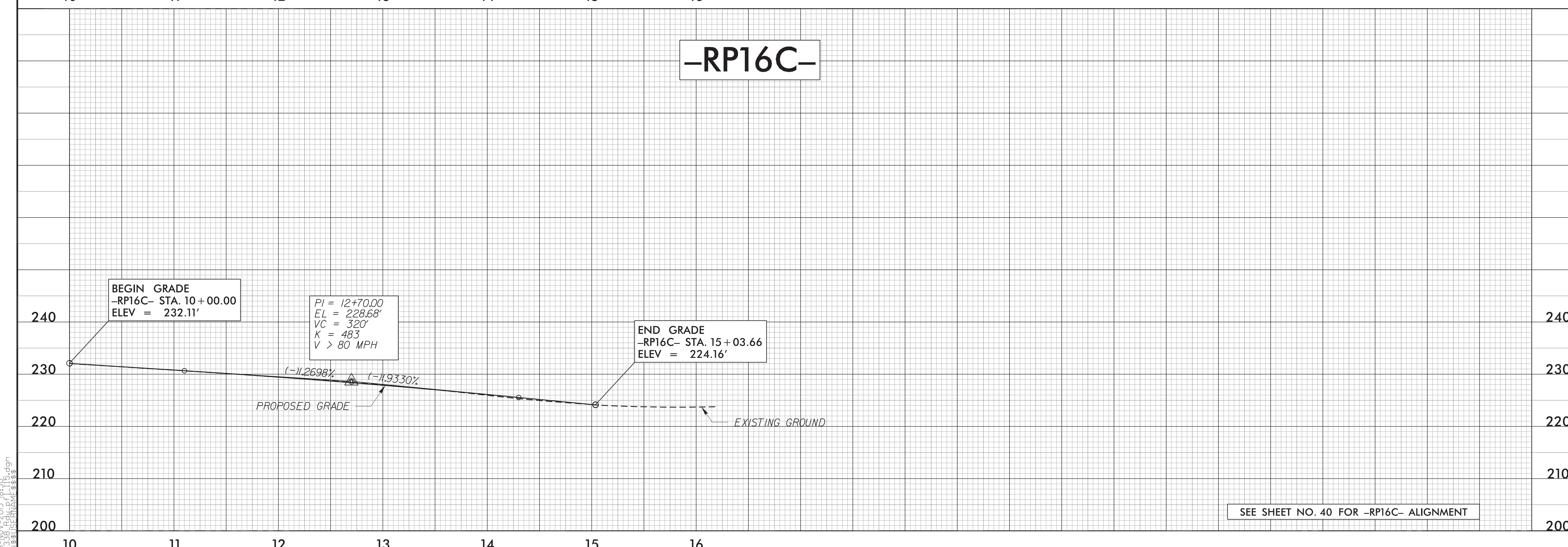
PROJECT REFERENCE NO.	SHEET NO.
I-5338/I-5311	115
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

5/28/99





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