STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

JAMES H. TROGDON, III
SECRETARY

July 21, 2017

U. S. Army Corps of Engineers
Raleigh 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 General Permit No. 198200031 and Section 401 General Water Quality Certification**, **and Neuse River Riparian Buffer Authorization** for the proposed I-40 and Aviation Parkway (SR 1002) Interchange Modification, Wake County, Federal Aid Project No. NHPP-040-7(154)284, WBS Element 43608.1.1, TIP Project No. I-5506.

Dear Sir:

The North Carolina Department of Transportation (NCDOT) proposes to modify Interstate 40 (I-40) interchange at Aviation Parkway (SR 1002). The modification involves adding a loop style off ramp from I-40 westbound to Aviation Parkway, realigning the on ramp from Aviation Parkway to I-40 westbound to make space for purposed loop, and construction an auxiliary lane connecting the westbound on ramp from Aviation Parkway to the westbound off ramp to Airport Boulevard.

Please find enclosed the Pre-Construction Notification (PCN) form, stormwater management plan, permit drawings, Jeffrey's Warehouse Mitigation Site debit letter, and roadway design plans for the above referenced project. A Categorical Exclusion (CE) was completed for this project on August 30, 2016, and distributed shortly thereafter. Additional copies are available at the NCDOT website: https://connect.ncdot.gov/resources/Environmental/

Regulatory Approvals

Section 404 Permit: All aspects of this project are being processed by the Federal Highway Administration as a Categorical Exclusion (CE) in accordance with 23 CFR 771.115(b). The NCDOT requests that the project be authorized by a General Permit 198200031 for interchange improvements.

Mailing Address:
NC DEPARTMENT OF TRANSPORTATION
ENVIRONMENTAL ANALYSIS UNIT
1598 MAIL SERVICE CENTER
RALEIGH, NC 27699-1598

Telephone: (919) 707-6000
Fax: (919) 212-5785
Customer Service: 1-877-368-4968

Website: www.ncdot.gov

Location:
1020 BIRCH RIDGE DRIVE
RALEIGH, NC 27610

Section 401 Permit: We anticipate 401 General Certification number 4088 and a Neuse Riparian Buffer Authorization will apply to this project. NCDOT is requesting written concurrence from the North Carolina Department of Environmental Quality, Division of Water Resources.

If you have any questions or need additional information, please contact Deanna Riffey at either driffey@ncdot.gov or (919) 707-6151.

Sincerely,

for Philip S. Harris III, P.E., C.P.M., Unit Head
Environmental Analysis Unit

cc:
NCDOT Permit Application Standard Distribution List

Office Use Only:
Corps action ID no. _____
DWQ project no. _____
Form Version 1.4 January 2009

Pre-Construction Notification (PCN) Form

A. Applicant Information

1. Processing

1a. Type(s) of approval sought from the Corps:	☒ Section 404 Permit ☐ Section 10 Permit	
1b. Specify Nationwide Permit (NWP) number: or General Permit (GP) number: 198200031		
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:	Interchange modification of I-40 an SR 1002 (Aviation Parkway)
2b. County:	Wake
2c. Nearest municipality / town:	Raleigh
2d. Subdivision name:	*not applicable*
2e. NCDOT only, T.I.P. or state project no:	I-5506

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) 707-6151
3g. Fax no.:	(919) 212-5785
3h. Email address:	driffey@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: 35.850288 (DD.DDDDDD) Longitude: - 78.798494 (-DD.DDDDDD)
1c. Property size:	0.84 miles
2. Surface Waters	
2a. Name of nearest body of water (stream, river, etc.) to proposed project:	Brier 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: Land use within the vicinity is forest habitat and and commercial development.	
3b. List the total estimated acreage of all existing wetlands on the property: 1.43 acres	
3c. List the total estimated linear feet of all existing streams (intermittent and perennial) on the property: 1,828 linear feet	
3d. Explain the purpose of the proposed project: The purpose of this project is to improve congestion, level of service, and traffic flow at the existing interchange of I-40 and SR 1002 (Aviation Parkway)	
3e. Describe the overall project in detail, including the type of equipment to be used: The project involves adding a loop style off ramp from I-40 westbound to Aviation Parkway, realigning the on ramp from Aviation Parkway to I-40 westbound to make space for the proposed loop, and construction an auxiliary lane connecting the westbound on ramp from Aviation Parkway to the westbound off ramp to Airport Boulevard. Also, the proposed project includes the replacement of the existing bridge over I-40. Standard road building equipment, such as trucks, dozers, and cranes will be used.	
4. Jurisdictional Determinations	
4a. Have jurisdictional wetland or stream determinations by the Corps or State been requested or obtained for this property / project (including all prior phases) in the past? Comments:	☒ 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): Phil May and Joe Sullivan	Agency/Consultant Company: Other: Carolina Ecosytem
4d. If yes, list the dates of the Corps jurisdictional determinations or State determinations and attach documentation. January 18, 2015; No documentation received.	
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.	
6. Future Project Plans	
6a. Is this a phased project?	☐ Yes ☒ No
6b. If yes, explain.	

C. Proposed Impacts Inventory

1. Impacts Summary

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

☒ 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	2f. Area of impact (acres)
Site 3 ☒ P ☐ T	Fill	Tidal Freshwater Marsh	☒ Yes ☐ No	☒ Corps ☐ DWQ	<0.01
Site 4A ☒ P ☐ T	Fill	Bottomland Hardwood Fores	☒ Yes ☐ No	☒ Corps ☐ DWQ	<0.01
Site 4A ☒ P ☐ T	Mechanized Clearing	Bottomland Hardwood Fores	☒ Yes ☐ No	☒ Corps ☐ DWQ	0.02
Site 4B ☒ P ☐ T	Fill	Bottomland Hardwood Fores	☒ Yes ☐ No	☒ Corps ☐ DWQ	0.01
Site 4B ☒ P ☐ T	Excavation	Bottomland Hardwood Fores	☒ Yes ☐ No	☒ Corps ☐ DWQ	<0.01
Site 4B ☒ P ☐ T	Mechanized Clearing	Bottomland Hardwood Fores	☒ Yes ☐ No	☒ Corps ☐ DWQ	<0.01
Site 4C ☒ P ☐ T	Mechanized Clearing	Bottomland Hardwood Fores	☒ Yes ☐ No	☒ Corps ☐ DWQ	<0.01
Site 6 ☐ P ☐ T		Choose One	☐ Yes ☐ No	☐ Corps ☐ DWQ	
Site 7 ☐ P ☐ T		Choose One	☐ Yes ☐ No	☐ Corps ☐ DWQ	
Site 8 ☐ P ☐ T		Choose One	☐ Yes ☐ No	☐ Corps ☐ DWQ	
				2g. **Total wetland impacts**	0.05 ac Perm 0.00 ac Temp

2h. Comments:

3. Stream Impacts

If there are perennial or intermittent stream impacts (including temporary impacts) proposed on the site, then complete this question for all stream sites impacted.

3a. Stream impact number - Permanent (P) or Temporary (T)	3b. Type of impact	3c. Stream name	3d. Perennial (PER) or intermittent (INT)?	3e. Type of jurisdiction (Corps - 404, 10 DWQ – non-404, other)	3f. Average stream width (feet)	3g. Impact length (linear feet)
Site 1 ☒ P ☐ T	Bank Stabilization	UT to Crabtree Creek	☐ PER ☒ INT	☒ Corps ☐ DWQ	4	17
Site 1 ☐ P ☒ T	Bank Stabilization	UT to Crabtree Creek	☐ PER ☒ INT	☒ Corps ☐ DWQ	4	12
Site 2 ☒ P ☐ T	Fill	UT Brier Creek	☐ PER ☒ INT	☒ Corps ☐ DWQ	5	90
Site 4B ☒ P ☐ T	RCBC	UT Brier Creek	☒ PER ☐ INT	☒ Corps ☐ DWQ	12	45

Site 4B ☐ P ☒ T	RCBC	UT Brier Creek	☒ PER ☐ INT	☒ Corps ☐ DWQ	12	14
Site 5A ☒ P ☐ T	48"CMP	UT Brier Creek	☒ PER ☐ INT	☒ Corps ☐ DWQ	12	16
Site 5A ☒ P ☐ T	Bank Stabilization	UT Brier Creek	☒ PER ☐ INT	☒ Corps ☐ DWQ	12	28
Site 5A ☐ P ☒ T	Bank Stabilization	UT Brier Creek	☒ PER ☐ INT	☒ Corps ☐ DWQ	12	10
Site 5B ☒ P ☐ T	Fill	UT Brier Creek	☐ PER ☒ INT	☒ Corps ☐ DWQ	2	45
Site 5B ☐ P ☒ T	Fill	UT Brier Creek	☐ PER ☒ INT	☒ Corps ☐ DWQ	2	30
Site 5B ☐ P ☒ T	Rip Rap	UT Brier Creek	☐ PER ☒ INT	☒ Corps ☐ DWQ	2	10
Site 6 ☒ P ☐ T	Bank Stabilization	UT Brier Creek	☐ PER ☒ INT	☒ Corps ☐ DWQ	3	15
Site 6 ☐ P ☒ T	Bank Stabilization	UT Brier Creek	☐ PER ☒ INT	☒ Corps ☐ DWQ	3	10
Site 7 ☐ P ☒ T	RCP	UT to Crabtree Creek	☐ PER ☒ INT	☒ Corps ☐ DWQ	3.5	10
					3h. Total stream and tributary impacts	256 ft Perm 96 ft Temp
3i. Comments: After site vist in January of 2015 USACE did not require mitigation for stream (SA) at Site 5B.						

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		X Permanent X Temporary

4g. Comments:

5. Pond or Lake Construction

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

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

5g. Comments:

5h. Is a dam high hazard permit required?	☐ 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	RCP	UT to Crabtree Creek	☐ Yes ☒ No	1,069	720
B2 ☒ P ☐ T	Fill	UT to Brier Creek	☐ Yes ☒ No	6,380	5,499
B3 ☒ P ☐ T	RCBC	UT to Brier Creek	☐ Yes ☒ No	2,993	1,217
B4 ☒ P ☐ T	CMP	UT to Brier Creek	☐ Yes ☒ No	4,150	418
B5 ☒ P ☐ T	RCP	UT to Brier Creek	☐ Yes ☒ No	1,422	597
B6 ☒ P ☐ T	RCP	UT to Crabtree Creek	☐ Yes ☒ No	1,778	1,139
			6h. **Total buffer impacts**	17,792	9,590
6i. Comments: Wetlands in buffers at Site 3: Zone1 = 747ft^2 and Zone 2 = 242 ft^2					

D. Impact Justification and Mitigation		
1. Avoidance and Minimization		
1a. Specifically describe measures taken to avoid or minimize the proposed impacts in designing project. Roadway footprint has been constricted at the beginning of the project to reduce impacts to the 4F property, ditch bases were widened to reduce velocities, and curb and gutter drainage will be treated in media filter basins.		
1b. Specifically describe measures taken to avoid or minimize the proposed impacts through construction techniques. NCDOT Design Standards in Sensitive Watersheds will be employed as well as usage of 2:1 slopes within the project.		
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:		
4c. If using stream mitigation, stream temperature:	☐ warm ☐ cool ☐ cold	
4d. Buffer mitigation requested (DWQ only):	square feet	
4e. Riparian wetland mitigation requested:	acres	
4f. Non-riparian wetland mitigation requested:	acres	
4g. Coastal (tidal) wetland mitigation requested:	acres	
4h. Comments:		
5. Complete if Using a Permittee Responsible Mitigation Plan		
5a. If using a permittee responsible mitigation plan, provide a description of the proposed mitigation plan. See Jeffrey's Warehouse Mitigation Site Debit Ledger. After site vist in January of 2015 USACE did not require mitigation for stream (SA) at Site 5B. Mitigation is for 151 linear feet of permanent stream impacts.		

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			3 (2 for Catawba)	
Zone 2			1.5	
	6f. **Total buffer mitigation required:**			
6g. If buffer mitigation is required, discuss what type of mitigation is proposed (e.g., payment to private mitigation bank, permittee responsible riparian buffer restoration, payment into an approved in-lieu fee fund).				
6h. Comments:				

E. Stormwater Management and Diffuse Flow Plan (required by DWQ)	
1. Diffuse Flow Plan	
1a. Does the project include or is it adjacent to protected riparian buffers identified within one of the NC Riparian Buffer Protection Rules?	☒ Yes ☐ No
1b. If yes, then is a diffuse flow plan included? If not, explain why. Comments:	☒ 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 permit drawings.	
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 N/A
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):		
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. Due to the minimal transportation impacts resulting from improvement to I-40, this project will neither influence nearby land uses nor stimulate growth. A Community Impact Assessment was completed in July 2015 and did not trigger a Transportation Impact Causing Activity. No further study was initiated..		
4. Sewage Disposal (DWQ Requirement)		
4a. Clearly detail the ultimate treatment methods and disposition (non-discharge or discharge) of wastewater generated from the proposed project, or available capacity of the subject facility. not applicable		

5. Endangered Species and Designated Critical Habitat (Corps Requirement)		
5a. Will this project occur in or near an area with federally protected species or habitat?	☐ Yes	☒ No
5b. Have you checked with the USFWS concerning Endangered Species Act impacts?	☒ Yes	☐ No
5c. If yes, indicate the USFWS Field Office you have contacted.	☒ Raleigh ☐ Asheville	
5d. What data sources did you use to determine whether your site would impact Endangered Species or Designated Critical Habitat? USFWS county list and NCNHP database along with field surveys. Habitat was not found in the study area for federally listed dwarf wedgmussel. Habitat for Michaux's sumac and red-cockaded woodpecker was found within the study area and a survey was last done on May 19, 2017. No Michaux's sumac or RCW were located. Biological conclusions for all three species is No Effect. Northern long-eared bat has been added to the species list for Wake County. A programmatic biological opinion (PBO) has been issued for the species. The PBO covers projects in Divisions 1-8. The programmatic determination for NLEB for this project is "May Affect, Likely to Adversely Affect".		
6. Essential Fish Habitat (Corps Requirement)		
6a. Will this project occur in or near an area designated as essential fish habitat?	☐ 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		
8. Flood Zone Designation (Corps Requirement)		
8a. Will this project occur in a FEMA-designated 100-year floodplain?	☒ Yes	☐ No
8b. If yes, explain how project meets FEMA requirements: NCDOT Hydraulics Unit coordination with FEMA		
8c. What source(s) did you use to make the floodplain determination? FEMA Maps		

for Philip S. Harris III, P.E., C.P.M. Applicant/Agent's Printed Name	Colin Mellor Digitally signed by Colin Mellor DN: cn=Colin Mellor, o=NCDOT, ou=NES, email=cmellor@ncdot.gov, c=US Date: 2017.07.21 13:09:19 -04'00' Applicant/Agent's Signature (Agent's signature is valid only if an authorization letter from the applicant is provided.)	July 21, 2017 Date

Jeffrey's Warehouse Mitigation Site
ONEID 096-003

The Jeffrey's Warehouse Mitigation Site is located in Wayne County within the USGS hydrologic unit 03020201 of the Neuse River. NCDOT acquired the 93.16 acre site to mitigate for unavoidable, jurisdictional impacts associated with TIP R-1030AA. Monitoring requirements were performed from 2007 to 2011 and the site was closed out in 2012. Table 1 shows the final mitigation quantities approved for the site. The site has been placed on the NCDOT On-site Debit Ledger for use within HUC 03020201. Tables 2-6 indicate all mitigation debits that have occurred per regulatory agency approval.

In order to offset unavoidable impacts affiliated with TIP I-5506, the Jeffery's Warehouse Mitigation Site will be debited 151 linear feet of Stream Restoration. Debits are shown below.

Table 1. Mitigation Quantities Approved

Mitigation Type	Debit Amount	Starting Amount	Notes
3020201	Non Riparian Wetland Restoration	16.23	
3020201	Riparian Wetland Preservation	12.36	
3020201	Riparian Wetland Restoration	3.66	
3020201	Stream Restoration	3731	
3020201	Buffer Restoration	316507	

Table 2. Mitigation Debits – Non Riparian Wetlands

Mitigation Type	Debit Amount	Status	Site TIP	Action ID#	Notes
Non Riparian Restoration	2.76	Close Out	R-2719A	2008-02460	
Non Riparian Restoration	0.92	Close Out	B-4304	2004-20510	
Non Riparian Restoration	1.96	Close Out	R-2814A&B	2008-01316	

Table 3. Mitigation Debits – Riparian Wetland Preservation

Mitigation Type	Debit Amount	Status	Site TIP	Action ID#	Notes
Riparian Wetland Preservation	3.05	Close Out	R-2814A&B	2008-01316	
Riparian Wetland Preservation	8.61	Close Out	R-2554A	2008-00252	

Table 4. Mitigation Debits – Riparian Wetland Restoration

Mitigation Type	Debit Amount	Status	Site TIP	Action ID#	Notes
Riparian Wetland Restoration	2.49	Close Out	R-2814A&B	2008-01316	
Riparian Wetland Restoration	0.21	Close Out	R-2554A		
Riparian Wetland Restoration	0.22	Close Out	B-4659		2:1 Ratio
Riparian Wetland Restoration	0.15	Close Out	I-3318BB	Proposed Debit	

Table 5. Mitigation Debits – Stream Restoration

Mitigation Type	Debit Amount	Status	Site TIP	Action ID#	Notes
Stream Restoration	452	Close Out	B-3528 226ft@2:1	2008-00153	
Stream Restoration	61	Close Out	U-4011	2005-20914	
Stream Restoration	25	Close Out	U-3344A	2003-20445	
Stream Restoration	279	Close Out	EB-4993	2011-00602	
Stream Restoration	174	Close Out	R-3825a	2011-01695	
Stream Restoration	20	Close Out	I-5311/I-5338	2013-00068	
Stream Restoration	151	Close Out	I-5506		

Table 6. Mitigation Debits – Non-Riparian Wetland Restoration

Mitigation Type	Debit Amount	Status	Site TIP	Action ID#	Notes
Buffer Restoration	38648	Close Out	B-4300	2004-20705	
Buffer Restoration	161453	Close Out	R-2719A	2008-02460	
Buffer Restoration	3653	Close Out	B-4304	2004-20510	
Buffer Restoration	16398	Close Out	B-4592	2008-02056	
Buffer Restoration	24458	Close Out	U-4703	2005-20126	
Buffer Restoration	45558	Close Out	U-3344A	2003-20445	
Buffer Restoration	11393	Close Out	Div Proj. SR 1340	2010-00420	
Buffer Restoration	2199	Close Out	DIV Proj SR1204	No action ID due to a non-reporting NWP14	
Buffer Restoration	3861	Close Out	I-5311/I5338	2013-00068	

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.04; Released November 2015)

General Project Information

WBS Element:	43608.1.1	**TIP Number:**	I-5506	**Project Type:** Roadway Widening	**Date:** 4/18/2016
NCDOT Contact:	Craig Lee, PE	**Contractor / Designer:**	Wetherill Engineering / Anne D. Gamber, PE, CFM		
Address:	1020 Birch Ridge Road Raleigh, NC 27610	**Address:**	1223 Jones Franklin Road Raeigh, NC 27606		
Phone:	919-707-6700	**Phone:**	919-851-8077		
Email:	cjlee@ncdot.gov	**Email:**	agamber@wetherilleng.com		
City/Town:	N/A	**County(ies):**	Wake		
River Basin(s):	Neuse	**CAMA County?**	No		
Wetlands within Project Limits?	Yes				

Project Description

Project Length (lin. miles or feet):	0.848 miles	**Surrounding Land Use:**	Airport / Industrustrial

	Proposed Project	**Existing Site**
Project Built-Upon Area (ac.)	36.3 ac.	33.4 ac.
Typical Cross Section Description:	-L- Typical Section: 4 lane shoulder section (2 lanes each direction); -Y- 10 lane divided highway (5 lanes each direction); -Y- lines C&G entrances to industrial devleopments	-L- Typical Section: 4 lane devided C&G section (2 lanes each direction); -Y- 10 lane divided highway (5 lanes each direction) additional acceleration lane ; -Y- lines C&G entrances to industrial devleopments
Annual Avg Daily Traffic (veh/hr/day):	Design/Future: 37600 Year: 2040	Existing: 28555 Year: 2018
General Project Narrative: (Description of Minimization of Water Quality Impacts)	The North Carolina Department of Transportation proposes to improve the interchange of I-40 and Aviation Parkway near the Raleigh Durham Airport in Wake County. The proposed project consist of adding a loop style off ramp from I-40 westbound to Aviation Parkway. Roadway footprint has been constricted to minimize at the beginning of the project to reduce impacts to the 4(F) propoerty. At the locations of the luscious green wetlands, ditch bases were widened to ensure velocities will be less than 2.0 fps for the 10-year storm. The curb and gutter will be treated in Media Filter Basins to the maximum extent practicable.	

Waterbody Information

Surface Water Body (1):	Brier Creek	**NCDWR Stream Index No.:**	27-33-4
NCDWR Surface Water Classification for Water Body	**Primary Classification:** Class C	**Supplemental Classification:** Nutrient Sensitive Waters (NSW)	
Other Stream Classification:			
Impairments:	mercury (Hg)	turbidity	
Aquatic T&E Species?	Comments:		
NRTR Stream ID:	SD	**Buffer Rules in Effect:**	Neuse
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?** N/A	**Dissipator Pads Provided in Buffer?** N/A
Deck Drains Discharge Over Water Body? N/A (If yes, provide justification in the General Project Narrative)	(If yes, provide justification in the General Project Narrative)	(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)	

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.04; Released November 2015)

WBS Element:	43608.1.1	**TIP No.:**	I-5506	**County(ies):**	Wake	**Page**	2	**of**	5

Additional Waterbody Information

Surface Water Body (2):	Crabtree Lake		**NCDWR Stream Index No.:**	27-33-(3.5)		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class B			
		Supplemental Classification:	Nutrient Sensitive Waters (NSW)			
Other Stream Classification:						
Impairments:						
Aquatic T&E Species?		Comments:				
NRTR Stream ID:	PA			**Buffer Rules in Effect:**	Neuse	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.04; Released November 2015)

WBS Element: **TIP No.:** I-5506 **County(ies):** Wake

Preformed Scour Holes and Energy Dissipators

Sheet No.	Station & Coordinates (Road and Non Road Projects)	Surface Water Body	Energy Dissipator Type	Riprap Type	Drainage Area (ac)	Conveyance Structure	Pipe/Structure Dimensions (in)	Q10 (cfs)	V10 (fps)	BMP Associated w/ Buffer Rules?
4	25+70 -L- (lt) 35.84424 / -78.80238	wetland	PSH	Class 'B'	0.4	Pipe	15	2.0		No

Additional Comments

* Refer to the NCDOT Best Management Practices Toolbox (2014), NCDOT Standards, 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.

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.04; Released November 2015)

WBS Element: 43608.1.1 **TIP No.:** I-5506 **County(ies):** Wake

Level Spreaders, Hazardous Spill Basins, and Forebays

Sheet No.	Station & Coordinates (Road and Non Road Projects)	Surface Water Body	Level Spreader, Hazardous Spill Basin, or Forebay?	Drainage Area (ac)	New Built-Upon Area (ac)	Required / Minimum Treatment			Treatment Achieved		BMP Associated w/ Buffer Rules?
5	-L- 41+10 Lt. 35.84956 / -78.79948	(1)Brier Creek (tributary)	Forebay	1.78	1.27	0.1 inches of runoff from NBUA	438.0	cf	1703.0	cf	No
5	-L- 53+50 Lt. 35.85124 / -78.79876	(1)Brier Creek (tributary)	Forebay	5.42	4.59	0.1 inches of runoff from NBUA	1584.0	cf	3936.0	cf	No

*Hazardous spill basins are pollution prevention measures designed for spill containment rather than stormwater treatment. Under Required / Minimum Treatment and Treatment Achieved, provide the minimum required volume and the actual HSB volume, respectively. Refer to the NCDOT Stormwater Best Management Practices Toolbox (2014) for design guidance.

Additional Comments

Required / Minimum Treatment volumes are cubic feet and not square feet - inch.

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.04; Released November 2015)

WBS Element: 43608.1.1 **TIP No.:** I-5506 **County(ies):** Wake

Other Best Management Practices

Sheet No.	Station & Coordinates (Road and Non Road Projects)	Surface Water Body	BMP Type	Drainage Area (ac)	New Built-Upon Area (ac)	Volume Treated (ac-ft)	Precipitation Depth Treated over NBUA (in)	BMP Associated w/ Buffer Rules?
5	-L- Sta 48+83 (lt) 35.85006 / -78.80040	(1)Brier Creek (tributary)	Filtration Basin	1.8	1.3	0.13	1.29	No
5	-LPB- 14+00 (rt) 35.85156 / 778.79910	(1)Brier Creek (tributary)	Filtration Basin	5.4	4.6	0.43	1.18	No

Additional Comments

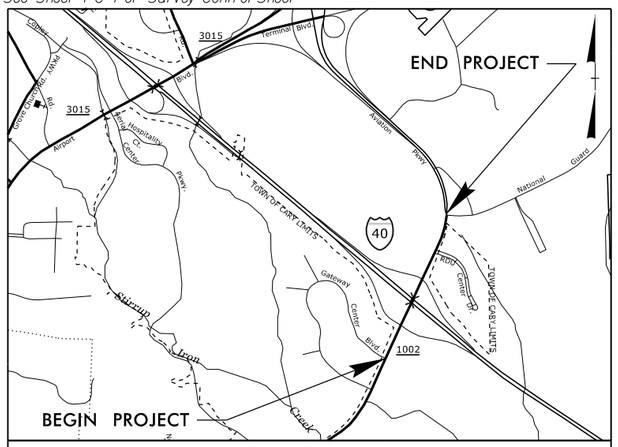
Note: Although the drainage area is 0.4 acres greater than suggested, the media filter basin is utilized to provide the maiximum extent of treatment practicable.

09/08/99

TIP PROJECT: I-5506

CONTRACT: C204069

See Sheet 1-A For Index of Sheets
See Sheet 1-B For Conventional Plan Sheet Symbols
See Sheet 1-C For Survey Control Sheet



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WAKE COUNTY

PERMIT DRAWING
SHEET 1 OF 27

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-5506	1	

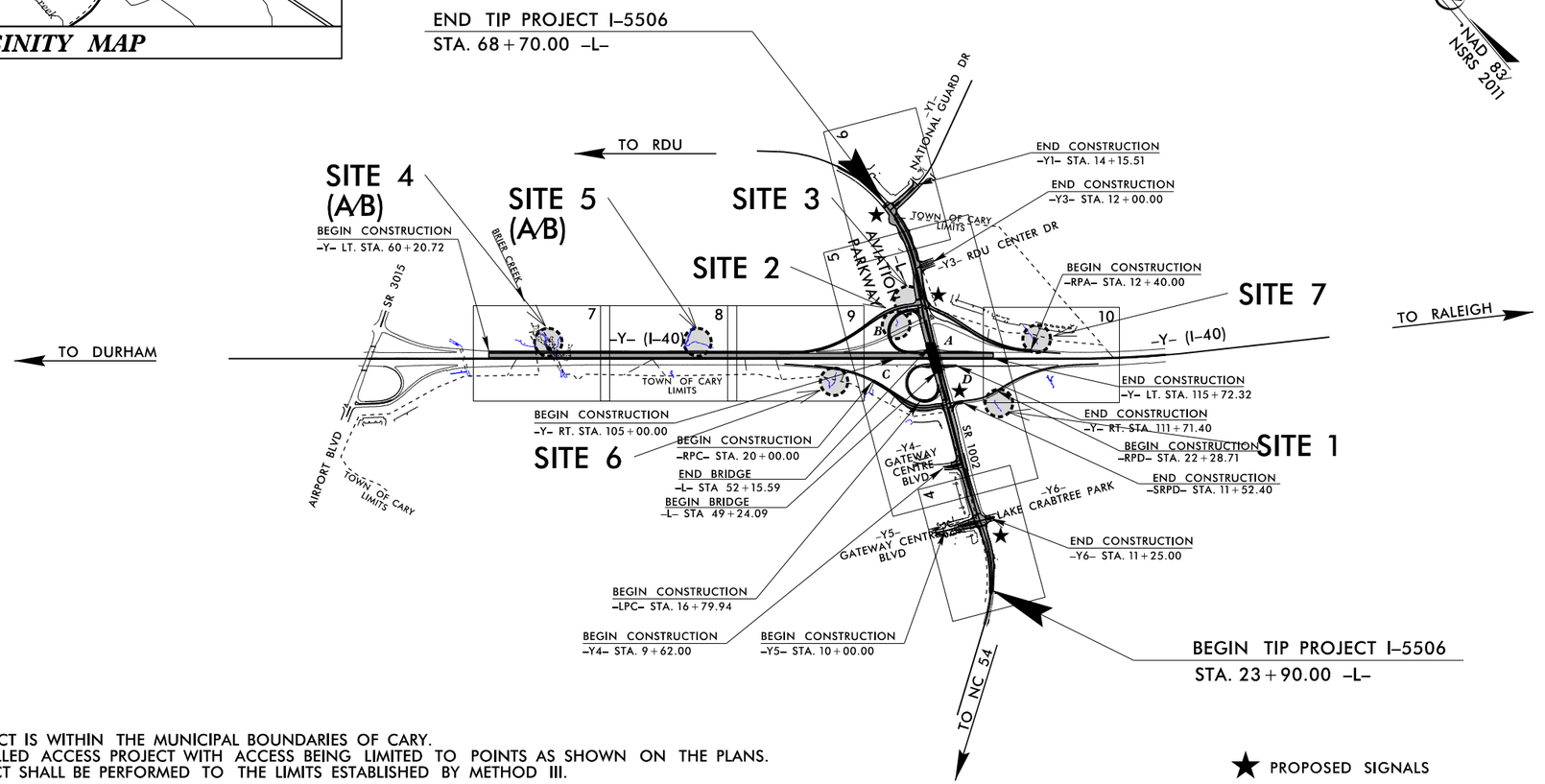
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
43608.1.1	NHPP-040-7(154)284	PE
43608.2.2	NHPP-040-7(154)284	ROW/UTIL.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

LOCATION: I-40 AND SR 1002 (AVIATION PARKWAY) INTERCHANGE

TYPE OF WORK: GRADING, DRAINAGE, PAVING, SIGNALS CULVERTS AND STRUCTURES

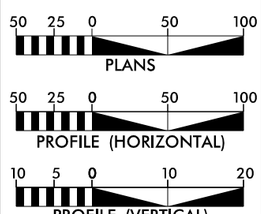
WETLAND AND SURFACE WATER IMPACTS PERMIT



A PORTION OF THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF CARY.
THIS IS A PARTIAL CONTROLLED ACCESS PROJECT WITH ACCESS BEING LIMITED TO POINTS AS SHOWN ON THE PLANS.
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.

★ PROPOSED SIGNALS

GRAPHIC SCALES



DESIGN DATA

ADT 2018 = 28,555
ADT 2040 = 37,600
K = 55 %
D = 10 %
T = 7 % *
V = 50 MPH
* TTST=2% DUAL=5%
FUNC CLASS= "MINOR ARTERIAL"

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT I-5506 = 0.793 MILES
LENGTH STRUCTURE TIP PROJECT I-5506 = 0.055 MILES
TOTAL LENGTH OF TIP PROJECT I-5506 = 0.848 MILES

Prepared for the North Carolina Department of Transportation in the Office of:

WETHERILL ENGINEERING
1223 JONES FRANKLIN ROAD
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: FEBRUARY 24, 2017

LETTING DATE: FEBRUARY 20, 2018

EDWARD G. WETHERILL, PE
PROJECT ENGINEER

BOB A. MAY, PE
PROJECT DESIGN ENGINEER

NCDOT CONTACT: GARY LOVERING, PE
ROADWAY DESIGN: PROJECT ENGINEER

HYDRAULICS ENGINEER

P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

P.E.
SIGNATURE:

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

6/29/2017
tdavis
P:\2013\I-5506\Hydraulics\PERMITS environmental\plan sheets\stream wetland\I5506_Hyd_Prm_wet_tsh.dgn

REVISIONS

WETHERILL ENGINEERING
1512 Jones Franklin Road
Raleigh, N.C. 27606
(919) 859-1212
Fax: 919 859 8072
Fax: 919 851 8796

TRANSPORTATION PLANNING-DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - DES/PS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO.	SHEET NO.
I-5506	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 2 OF 27

NAD 83/NSRS 2011

200' 0' 200'
GRAPHIC SCALE

DENOTES TEMPORARY IMPACTS IN SURFACE WATER
DENOTES IMPACTS IN SURFACE WATER
DENOTES FILL IN WETLAND

SITE 1
SITE 2
SITE 3

A
B
C
D

MATCHLINE -L- STA. 36+50.00 SEE SHEET 4
MATCHLINE -Y- STA. 101+00.00 SEE SHEET 9
MATCHLINE -RPB- STA. 18+50.00 SEE SHEET 9
MATCHLINE -L- STA. 64+00.00 SEE SHEET 6
MATCHLINE -RPD- STA. 21+51.08 SEE SHEET 10
MATCHLINE -Y- STA. 115+50.00 SEE SHEET 10
MATCHLINE -RPA- SEE SHEET 10

-Y4- PT Sta. 11+21.28
-Y4- PC Sta. 9+44.84
-RPC- PRC Sta. 23+70.99
-RPC- PCC Sta. 17+44.35
-LPC- SC Sta. 12+00.00
-LPC- ST Sta. 10+00.00 = -L- POT Sta. 109+18.01 59.00 RT
-LPC- PT Sta. 29+06.66 = -L- POT Sta. 47+81.05 OFF 39 LT.
-RPC- PCC Sta. 26+98.30 S 58°44'28" E
-RPC- PT Sta. 44+42.56 = -L- POT Sta. 44+60.00 OFF 38 RT.
-L- PT Sta. 38+47.36
-Y4- POT Sta. 11+60.00 = -L- POT Sta. 38+65.14
-L- POT Sta. 45+36.93 = -RPC- POT Sta. 29+00.49
-L- POT Sta. 46+32.00 = -L- POT Sta. 44+60.00
-RPD- POT Sta. 26+17.21 = -RPD- POT Sta. 11+58.20
-RPD- PT Sta. 24+59.80
-RPD- PC Sta. 22+11.35
-RPD- ST Sta. 21+76.15
-LPC- POT Sta. 19+13.42 = -L- POT Sta. 46+32.00
-L- POT Sta. 50+46.09 = -Y- POT Sta. 109+26.84
-Y- POT Sta. 102+52.32 = -RPB- ST Sta. 10+00.00 590.61
-SLPB- PT Sta. 01+91.45 = -L- POC Sta. 55+57.80 56.36° LT
-LPB- POT Sta. 01+60.00 = -L- POC Sta. 56+42.80
-RPB- SRS Sta. 20+32.17
-RPB- SC Sta. 23+32.17
-LPB- CS Sta. 16+78.42
-LPB- SC Sta. 12+00.00
-LPB- PCC Sta. 18+00.12
-SLPB- PC Sta. 18+00.12
-RPB- PT Sta. 25+43.62
-RPA- PT Sta. 24+35.35 N 25° 43' 00.3" W
-L- PC Sta. 52+48.35
-RPA- SC Sta. 23+41.93
-RPA- SRS Sta. 21+25.93
-RPA- POT Sta. 26+50.94 = -RPB- POT Sta. 26+93.62 = -L- POC Sta. 56+72.00
-L- PRC Sta. 59+76.63
-Y3- POT Sta. 10+00.00 = -L- POC Sta. 60+78.24
-Y3- PT Sta. 12+05.00
-RPA- CS Sta. 19+09.93

RALEIGH-DURHAM AIRPORT AUTHORITY
ALOADE GATEWAY I, LLC A NORTH CAROLINA LIMITED LIABILITY COMPANY
BAKE GATEWAY, LLC A DELAWARE LIMITED LIABILITY COMPANY
JMDH REAL ESTATE OF RALEIGH, LLC A DELAWARE LIMITED LIABILITY COMPANY
RDU CENTER IV, LLC A NORTH CAROLINA LIMITED LIABILITY COMPANY
BNM LIMITED PARTNERSHIP
MP MORRISVILLE (NC) OWNER, LLC
RALEIGH-DURHAM INTERNATIONAL

DETAIL R
BANK & SCOUR HOLE STABILIZATION
(Not to Scale)
NATURAL GROUND
NATURAL BED SLOPE
1.5:1
GEOTEXTILE
EXISTING SCOUR HOLE
TYPE OF LINER= CLASS I RIPRAP
STA. 15+83 -RPC- RT EST 5 TN CL I RR; 5ST GT
STA. 22+36 -RPD- LT EST 22 TN CL I RR; 30 SY GT

GRAPHIC SCALE
50 25 0 50 100
PLANS

LOCATION:
INTERCHANGE @ I-440 AND SR 1002 (AVIATION PARKWAY)
TIP NO.: I-5506 COUNTY: WAKE
DESIGNED BY: B.A.M.
CHECKED BY: E.G.W. DATE:

6/29/2017
W:\Projects\I-5506-Hydraulics\PERMITS_environmental\plan_sheets_stream_wetland\I5506_Hyd_Pmt_wet_sht05.dgn
P:\2013\I-5506-Hydraulics\PERMITS_environmental\plan_sheets_stream_wetland\I5506_Hyd_Pmt_wet_sht05.dgn

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
I-5506	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

TRANSPORTATION PLANNING - DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 3 OF 27

NAD 83/NSRS 2011

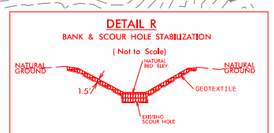
200' 0' 200'
GRAPHIC SCALE

DENOTES TEMPORARY IMPACTS IN SURFACE WATER
DENOTES IMPACTS IN SURFACE WATER
DENOTES FILL IN WETLAND

SITE 1
SITE 2
SITE 3

MATCHLINE -L- STA. 36+50.00 SEE SHEET 4
MATCHLINE -Y- STA. 101+00.00 SEE SHEET 9
MATCHLINE -RPB- STA. 18+50.00 SEE SHEET 9
MATCHLINE -L- STA. 64+00.00 SEE SHEET 6
MATCHLINE -RPD- STA. 21+51.08 SEE SHEET 10
MATCHLINE -Y- STA. 115+50.00 SEE SHEET 10
MATCHLINE -RPA- STA. 5+00.00 SEE SHEET 10

DETAIL R
BANK & SCOUR HOLE STABILIZATION
(Not to Scale)



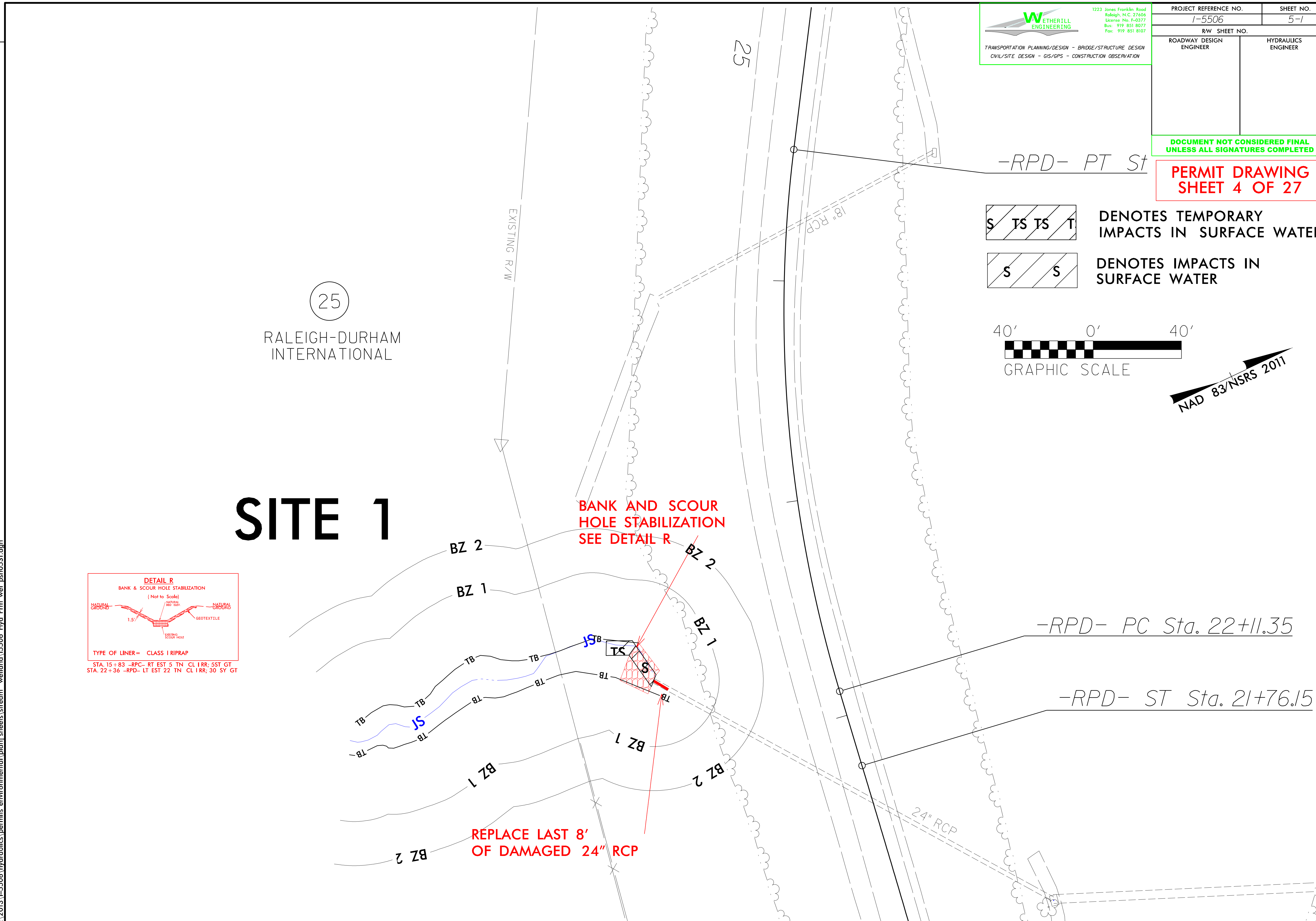
TYPE OF LINER= CLASS I RIPRAP

STA. 15+83 –RPC– RT EST 5 TN CL I RR; 5ST GT
STA. 22+36 –RPD– LT EST 22 TN CL I RR; 30 SY GT

LOCATION:	INTERCHANGE – I-40 AND SR 1002 (ALEXANDER PARKWAY)
TIP NO.: I-5506	COUNTY: WAKE
DESIGNED BY: B.A.M.	
CHECKED BY: E.G.W.	DATE:

GRAPHIC SCALE
50 25 0 50 100
PLANS

6/29/2017
kwood
P:\2013\I-5506\Hydraulics\PERMITS environmental\plan sheets\stream wetland I5506 Hyd Prm wet exhibit con.dgn



WETHERILL ENGINEERING
1223 Jones Franklin Road
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION
PROJECT REFERENCE NO.
I-5506
SHEET NO.
5-1
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
PERMIT DRAWING
SHEET 4 OF 27
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
DENOTES IMPACTS IN SURFACE WATER
40′ 0′ 40′
GRAPHIC SCALE
NAD 83/NSRS 2011
-RPD- PT St
-RPD- PC Sta. 22+11.35
-RPD- ST Sta. 21+76.15
25
RALEIGH-DURHAM INTERNATIONAL
EXISTING R/W
18" RCP
24" RCP
SITE 1
BANK AND SCOUR HOLE STABILIZATION SEE DETAIL R
REPLACE LAST 8′ OF DAMAGED 24" RCP
BZ 2
BZ 1
TB
JS
TS
S
DETAIL R
BANK & SCOUR HOLE STABILIZATION
(Not to Scale)
NATURAL GROUND
NATURAL BED ELEV.
1.5′
GEOTEXTILE
EXISTING SCOUR HOLE
TYPE OF LINER= CLASS I RIPRAP
STA. 15+83 -RPC- RT EST 5 TN CL I RR; 5ST GT
STA. 22+36 -RPD- LT EST 22 TN CL I RR; 30 SY GT

6/29/2017
tdavis
p:\2013\i-5506\hydraulics\permits environmental\plan sheets\stream wetland\I5506 Hyd Prm wet psh05S1.dgn

WETHERILL ENGINEERING
1223 Jones Franklin Road
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO.	SHEET NO.
I-5506	5-1
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 5 OF 27

SITE 1

-RPD- PT St

-RPD- PC Sta. 22+11.35

-RPD- ST Sta. 21+76.15

EXISTING R/W

25

RALEIGH-DURHAM INTERNATIONAL

RCP

24" RCP

S TS TS T — DENOTES TEMPORARY IMPACTS IN SURFACE WATER

S S — DENOTES IMPACTS IN SURFACE WATER

40' 0' 40'
GRAPHIC SCALE

NAD 83/NSRS 2011

BANK AND SCOUR HOLE STABILIZATION SEE DETAIL R

BZ 1

BZ 2

JS

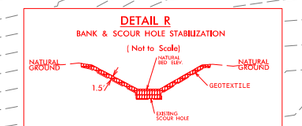
TB

ST

S

REPLACE LAST 8' OF DAMAGED 24" RCP

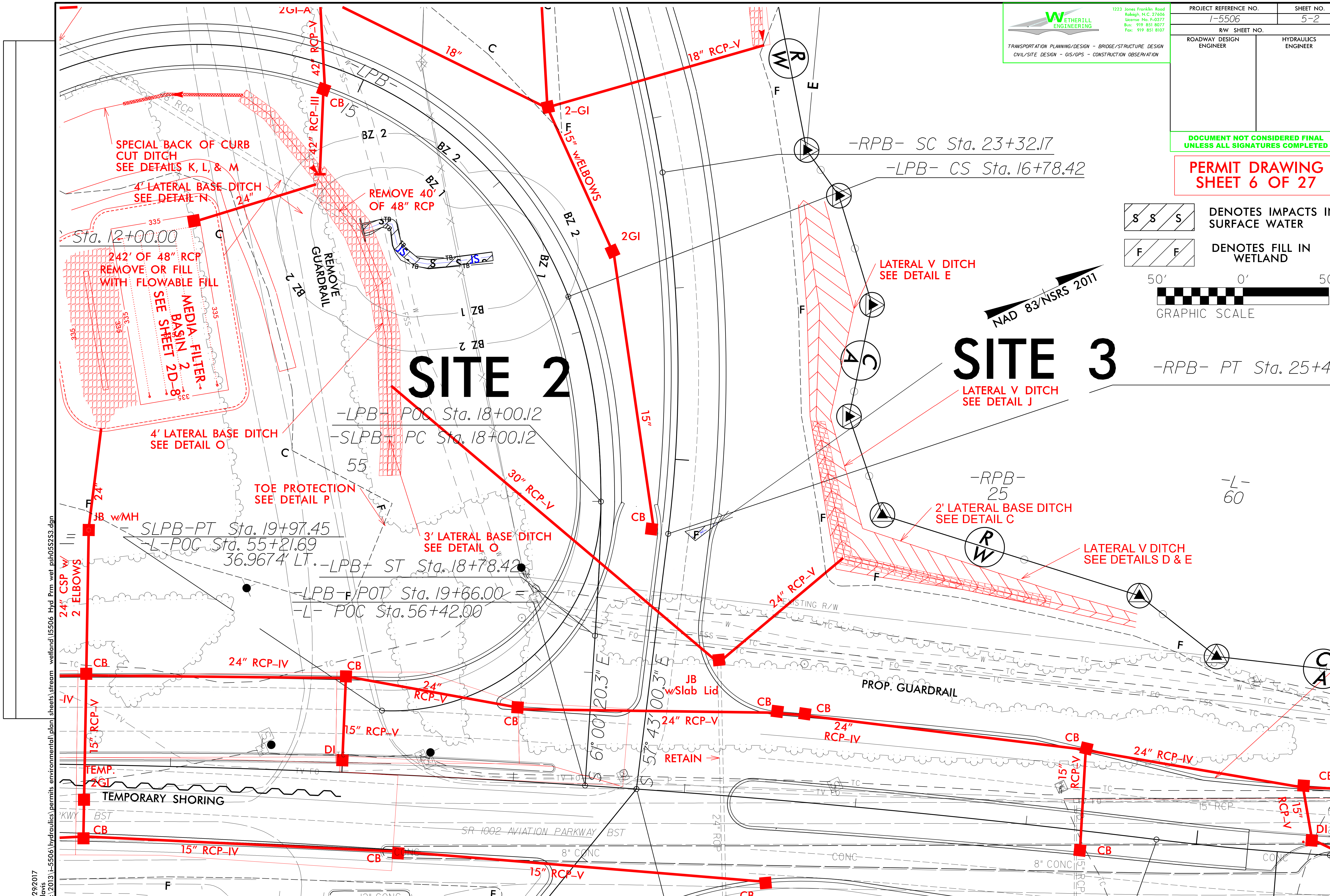
DETAIL R
BANK & SCOUR HOLE STABILIZATION
(Not to Scale)

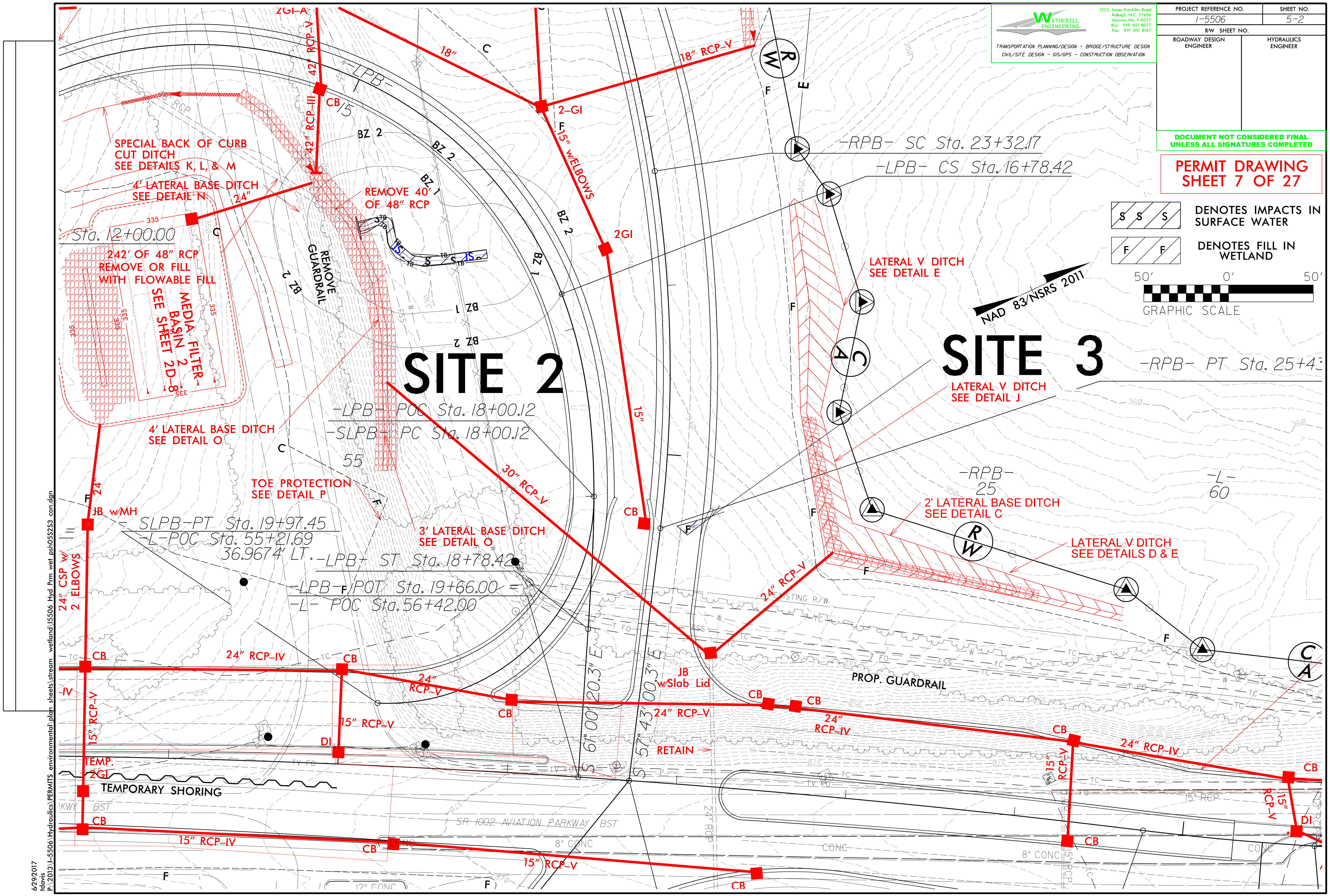


TYPE OF LINER = CLASS I RIPRAP

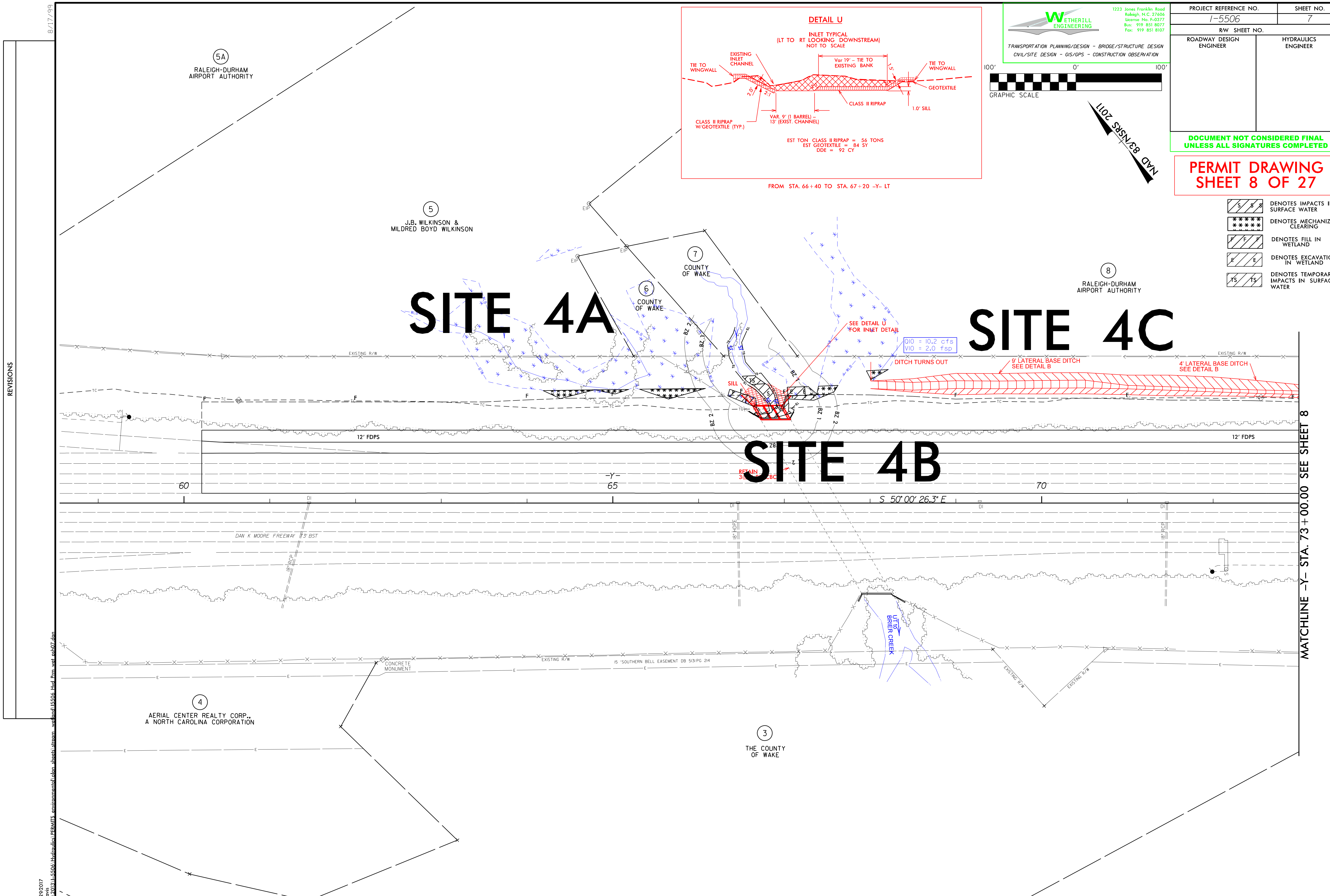
STA. 15+83 -RPC- RT EST 5 TN CL I RR; 5ST GT
STA. 22+36 -RPD- LT EST 22 TN CL I RR; 30 SY GT

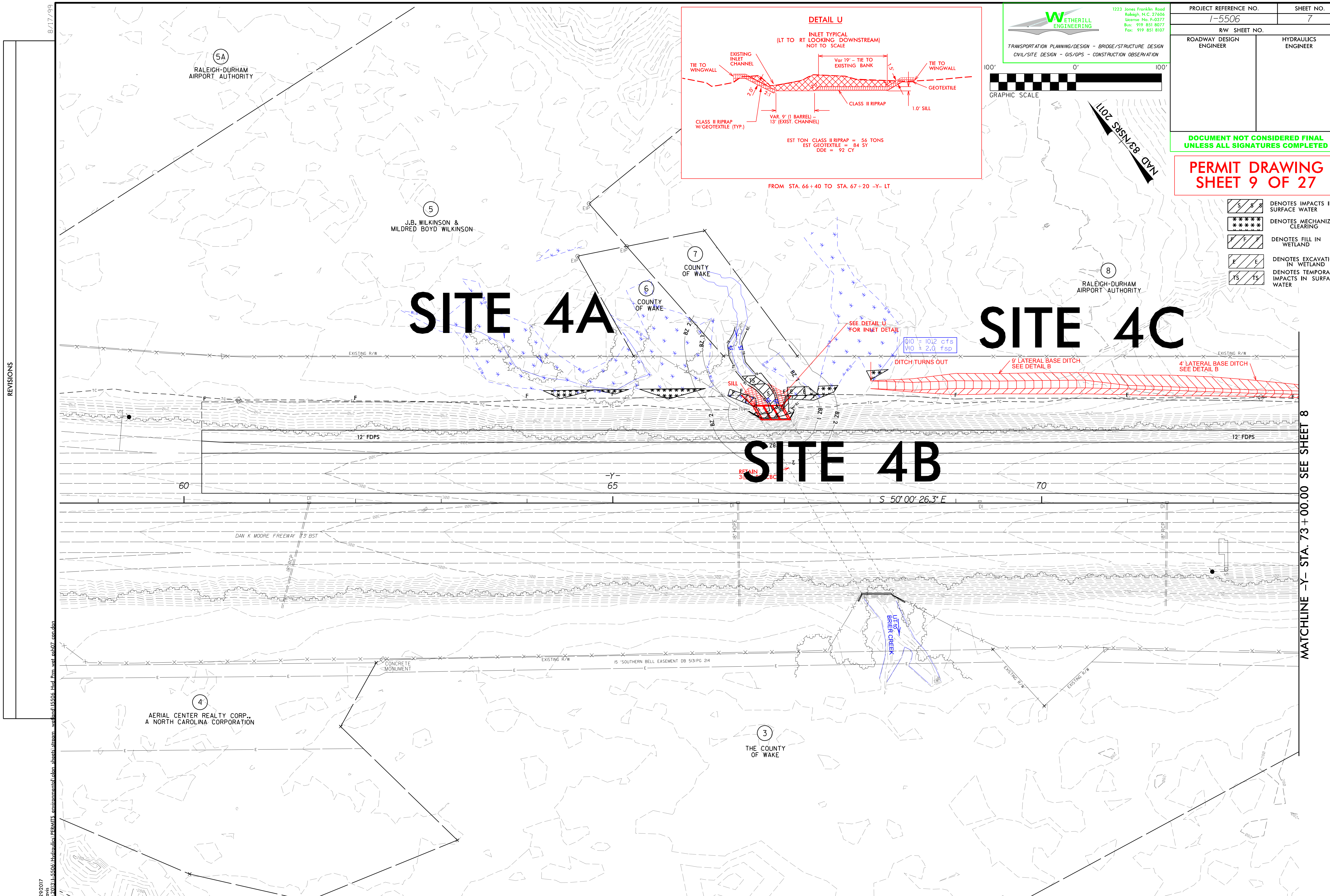
6/29/2017
tdavis
P:\2013\I-5506\Hydraulics\PERMITS environmental\ plan sheets\stream wetland\I5506 Hyd Prm wet psh05S1 con.dgn

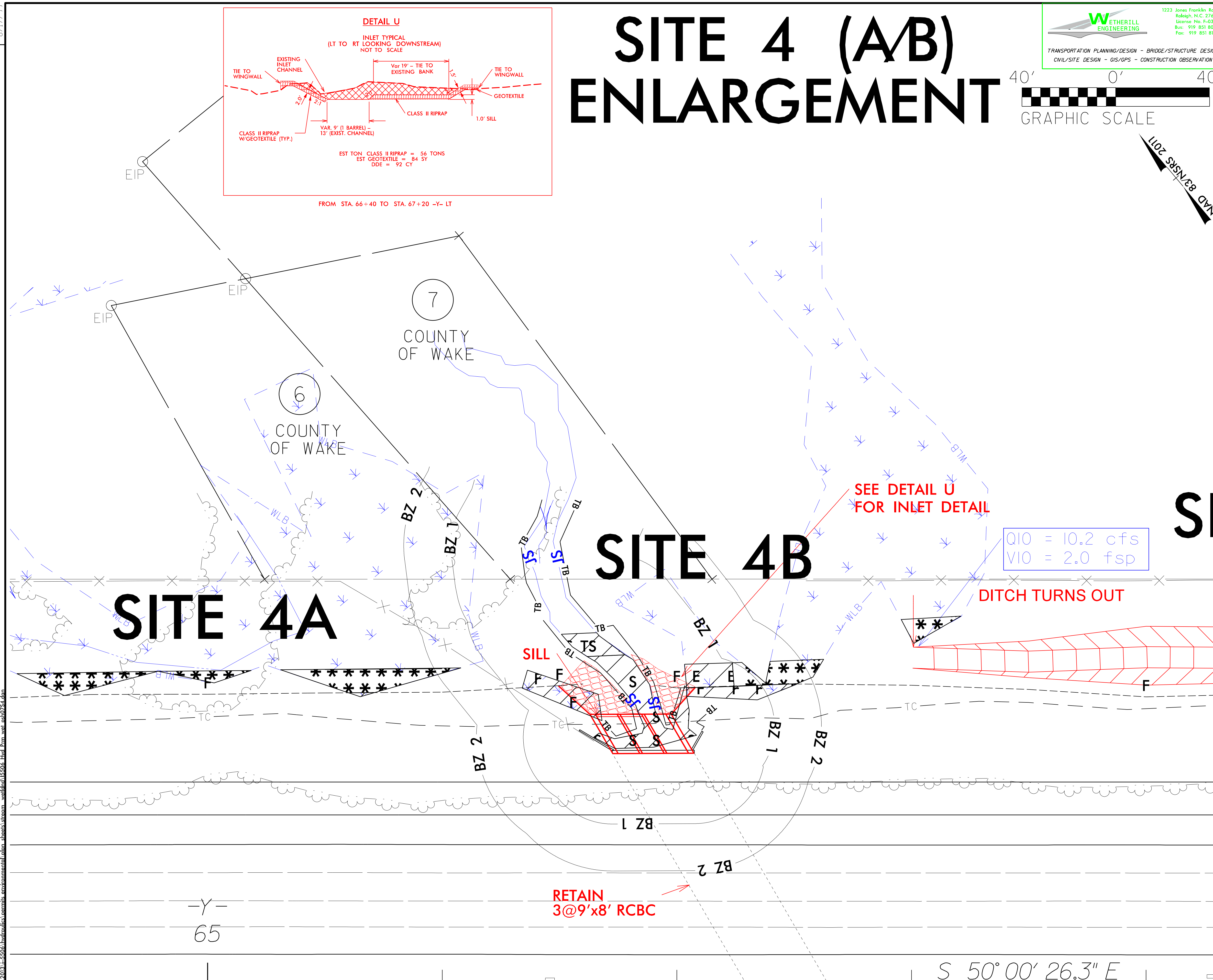

PROJECT REFERENCE NO.
I-5506
SHEET NO.
5-2
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
WETHERILL ENGINEERING
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION
PERMIT DRAWING
SHEET 6 OF 27
DENOTES IMPACTS IN SURFACE WATER
DENOTES FILL IN WETLAND
50' 0' 50'
GRAPHIC SCALE
NAD 83/NSRS 2011
SITE 2
SITE 3
-RPB- SC Sta. 23+32.17
-LPB- CS Sta. 16+78.42
-RPB- PT Sta. 25+43
-LPB- POC Sta. 18+00.12
-SLPB- PC Sta. 18+00.12
-SLPB-PT Sta. 19+97.45
-L-POC Sta. 55+21.69
36.9674' LT.
-LPB- ST Sta. 18+78.42
-LPB-/POT Sta. 19+66.00
-L- POC Sta. 56+42.00
Sta. 12+00.00
SPECIAL BACK OF CURB CUT DITCH
SEE DETAILS K, L, & M
4' LATERAL BASE DITCH
SEE DETAIL N
REMOVE 40' OF 48" RCP
242' OF 48" RCP
REMOVE OR FILL
WITH FLOWABLE FILL
MEDIA FILTER-BASIN 2
SEE SHEET 2D-8
REMOVE GUARDRAIL
4' LATERAL BASE DITCH
SEE DETAIL O
TOE PROTECTION
SEE DETAIL P
3' LATERAL BASE DITCH
SEE DETAIL O
LATERAL V DITCH
SEE DETAIL E
LATERAL V DITCH
SEE DETAIL J
2' LATERAL BASE DITCH
SEE DETAIL C
LATERAL V DITCH
SEE DETAILS D & E
30" RCP-V
24" RCP-V
18" RCP-V
15" W/ELBOWS
42" RCP-V
42" RCP-III
24" CSP w/ 2 ELBOWS
JB w/MH
JB w/Slab Lid
24" RCP-IV
15" RCP-V
15" RCP-IV
TEMP. 2GI
TEMPORARY SHORING
PROP. GUARDRAIL
RETAIN
SR 1002 AVIATION PARKWAY BST
2GI
2GI-A
CB
DI
EXISTING R/W
S 61° 00' 20.3" E
S 57° 43' 00.3" E
-RPB- 25
-L- 60
6/29/2017
p:\2013\i-5506\hydraulics\permits environmental\plan sheets\stream wetland\I5506_Hyd_Prm_wet_psh05S2S3.dgn



PROJECT REFERENCE NO.
I-5506
SHEET NO.
5-2
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
WETHERILL ENGINEERING
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION
PERMIT DRAWING
SHEET 7 OF 27
DENOTES IMPACTS IN SURFACE WATER
DENOTES FILL IN WETLAND
50' 0' 50'
GRAPHIC SCALE
NAD 83/NSRS 2011
SITE 2
SITE 3
-RPB- SC Sta. 23+32.17
-LPB- CS Sta. 16+78.42
-RPB- PT Sta. 25+43
-LPB- POC Sta. 18+00.12
-SLPB- PC Sta. 18+00.12
-SLPB-PT Sta. 19+97.45
-L-POC Sta. 55+21.69
36.9674' LT.
-LPB- ST Sta. 18+78.42
-LPB- POT Sta. 19+66.00
-L- POC Sta. 56+42.00
-Sta. 12+00.00
SPECIAL BACK OF CURB CUT DITCH
SEE DETAILS K, L, & M
4' LATERAL BASE DITCH
SEE DETAIL N
REMOVE 40' OF 48" RCP
242' OF 48" RCP
REMOVE OR FILL WITH FLOWABLE FILL
MEDIA FILTER BASIN 2
SEE SHEET 2D-8
REMOVE GUARDRAIL
4' LATERAL BASE DITCH
SEE DETAIL O
TOE PROTECTION
SEE DETAIL P
3' LATERAL BASE DITCH
SEE DETAIL O
LATERAL V DITCH
SEE DETAIL E
LATERAL V DITCH
SEE DETAIL J
2' LATERAL BASE DITCH
SEE DETAIL C
LATERAL V DITCH
SEE DETAILS D & E
30" RCP-V
24" RCP-V
18" RCP-V
42" RCP-V
42" RCP-III
15" W/ELBOWS
2-GI
2GI
JB w/MH
24" CSP w/ 2 ELBOWS
24" RCP-IV
15" RCP-V
15" RCP-IV
JB w/Slab Lid
RETAIN
PROP. GUARDRAIL
TEMPORARY SHORING
TEMP. 2GI
SR 1002 AVIATION PARKWAY BST
8" CONC
-RPB- 25
-L- 60


PROJECT REFERENCE NO.
I-5506
SHEET NO.
7
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
PERMIT DRAWING SHEET 8 OF 27
WETHERILL ENGINEERING
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION
GRAPHIC SCALE
100'
0'
100'
NAD 83/NSRS 2011
DENOTES IMPACTS IN SURFACE WATER
DENOTES MECHANIZED CLEARING
DENOTES FILL IN WETLAND
DENOTES EXCAVATION IN WETLAND
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
DETAIL U
INLET TYPICAL
(LT TO RT LOOKING DOWNSTREAM)
NOT TO SCALE
TIE TO WINGWALL
EXISTING INLET CHANNEL
Var 19' - TIE TO EXISTING BANK
TIE TO WINGWALL
GEOTEXTILE
CLASS II RIPRAP
1.0' SILL
CLASS II RIPRAP W/GEOTEXTILE (TYP.)
VAR. 9' (1 BARREL) - 13' (EXIST. CHANNEL)
EST TON CLASS II RIPRAP = 56 TONS
EST GEOTEXTILE = 84 SY
DDE = 92 CY
FROM STA. 66+40 TO STA. 67+20 -Y- LT
5A
RALEIGH-DURHAM AIRPORT AUTHORITY
5
J.B. WILKINSON & MILDRED BOYD WILKINSON
7
COUNTY OF WAKE
6
COUNTY OF WAKE
8
RALEIGH-DURHAM AIRPORT AUTHORITY
SITE 4A
SITE 4B
SITE 4C
SEE DETAIL U FOR INLET DETAIL
Q10 = 10.2 cfs
V10 = 2.0 fps
DITCH TURNS OUT
9' LATERAL BASE DITCH SEE DETAIL B
4' LATERAL BASE DITCH SEE DETAIL B
EXISTING R/W
SILL
12' FDPS
-Y-
60
65
70
S 50°00' 26.3" E
DAN K MOORE FREEWAY 73' BST
18" RCP
18" HDPE
UT to BRIER CREEK
CONCRETE MONUMENT
15' SOUTHERN BELL EASEMENT DB 5151 PG 214
4
AERIAL CENTER REALTY CORP., A NORTH CAROLINA CORPORATION
3
THE COUNTY OF WAKE
MATCHLINE -Y- STA. 73+00.00 SEE SHEET 8
REVISIONS
8/17/99
6/29/2017


PROJECT REFERENCE NO.
I-5506
SHEET NO.
7
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
WETHERILL ENGINEERING
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION
PERMIT DRAWING SHEET 9 OF 27
GRAPHIC SCALE
100' 0' 100'
NAD 83/NSRS 2011
DENOTES IMPACTS IN SURFACE WATER
DENOTES MECHANIZED CLEARING
DENOTES FILL IN WETLAND
DENOTES EXCAVATION IN WETLAND
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
DETAIL U
INLET TYPICAL
(LT TO RT LOOKING DOWNSTREAM)
NOT TO SCALE
TIE TO WINGWALL
EXISTING INLET CHANNEL
Var 19' - TIE TO EXISTING BANK
TIE TO WINGWALL
GEOTEXTILE
CLASS II RIPRAP
1.0' SILL
VAR. 9' (1 BARREL) - 13' (EXIST. CHANNEL)
CLASS II RIPRAP W/GEOTEXTILE (TYP.)
EST TON CLASS II RIPRAP = 56 TONS
EST GEOTEXTILE = 84 SY
DDE = 92 CY
FROM STA. 66+40 TO STA. 67+20 -Y- LT
5A
RALEIGH-DURHAM AIRPORT AUTHORITY
5
J.B. WILKINSON & MILDRED BOYD WILKINSON
7
COUNTY OF WAKE
6
COUNTY OF WAKE
8
RALEIGH-DURHAM AIRPORT AUTHORITY
SITE 4A
SITE 4B
SITE 4C
SEE DETAIL U FOR INLET DETAIL
Q10 = 10.2 cfs
V10 = 2.0 fps
DITCH TURNS OUT
9' LATERAL BASE DITCH SEE DETAIL B
4' LATERAL BASE DITCH SEE DETAIL B
EXISTING R/W
SILL
12' FDPS
-Y-
60
65
70
S 50°00'26.3" E
DAN K. MOORE FREEWAY
UT TO BRIER CREEK
CONCRETE MONUMENT
EXISTING R/W
15' SOUTHERN BELL EASEMENT DB 5131 PG 214
4
AERIAL CENTER REALTY CORP., A NORTH CAROLINA CORPORATION
3
THE COUNTY OF WAKE
MATCHLINE -Y- STA. 73+00.00 SEE SHEET 8
REVISIONS
8/17/99
6/29/2017



SITE 4 (A/B) ENLARGEMENT
DETAIL U
INLET TYPICAL
(LT TO RT LOOKING DOWNSTREAM)
NOT TO SCALE
TIE TO WINGWALL
EXISTING INLET CHANNEL
Var 19' – TIE TO EXISTING BANK
1.5'
TIE TO WINGWALL
GEOTEXTILE
2.0'
2:1
CLASS II RIPRAP
1.0' SILL
CLASS II RIPRAP W/GEOTEXTILE (TYP.)
VAR. 9' (1 BARREL) – 13' (EXIST. CHANNEL)
EST TON CLASS II RIPRAP = 56 TONS
EST GEOTEXTILE = 84 SY
DDE = 92 CY
FROM STA. 66+40 TO STA. 67+20 -Y- LT
40' 0' 40'
GRAPHIC SCALE
NAD 83/NSRS 2011
EIP
EIP
EIP
7
COUNTY OF WAKE
6
COUNTY OF WAKE
WLB
BZ 2
BZ 1
TB
TS
SITE 4B
SITE 4A
SITE 4C
SEE DETAIL U FOR INLET DETAIL
Q10 = 10.2 cfs
V10 = 2.0 fsp
DITCH TURNS OUT
9' LATERAL BA
SEE DETAIL B
SILL
F
E
S
TC
RETAIN
3@9'x8' RCBC
-Y-
65
70
S 50° 00' 26.3" E
REVISIONS

WETHERILL ENGINEERING
1223 Jones Franklin Road
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN – BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN – GIS/GPS – CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO.	SHEET NO.
I-5506	7-1

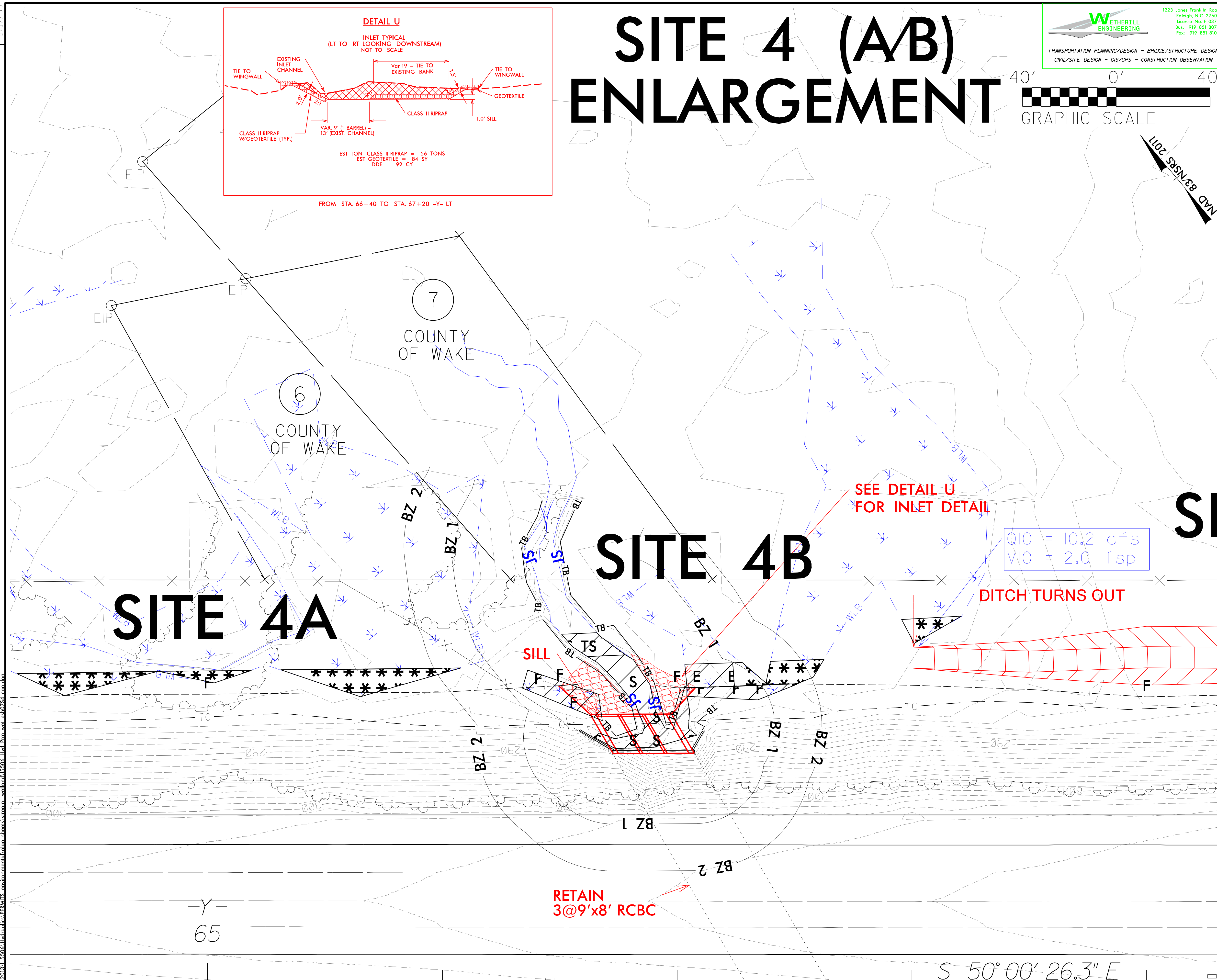
R/W SHEET NO.

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 10 OF 27

- S S — DENOTES IMPACTS IN SURFACE WATER
- * * — DENOTES MECHANIZED CLEARING
- F F — DENOTES FILL IN WETLAND
- E E — DENOTES EXCAVATION IN WETLAND
- TS TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER



WETHERILL ENGINEERING
1223 Jones Franklin Road
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO.	SHEET NO.
I-5506	7-I
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 11 OF 27

S S	DENOTES IMPACTS IN SURFACE WATER
* *	DENOTES MECHANIZED CLEARING
F F	DENOTES FILL IN WETLAND
E E	DENOTES EXCAVATION IN WETLAND
TS TS	DENOTES TEMPORARY IMPACTS IN SURFACE WATER

8/17/99
6/29/2017

PROJECT REFERENCE NO.	SHEET NO.
I-5506	

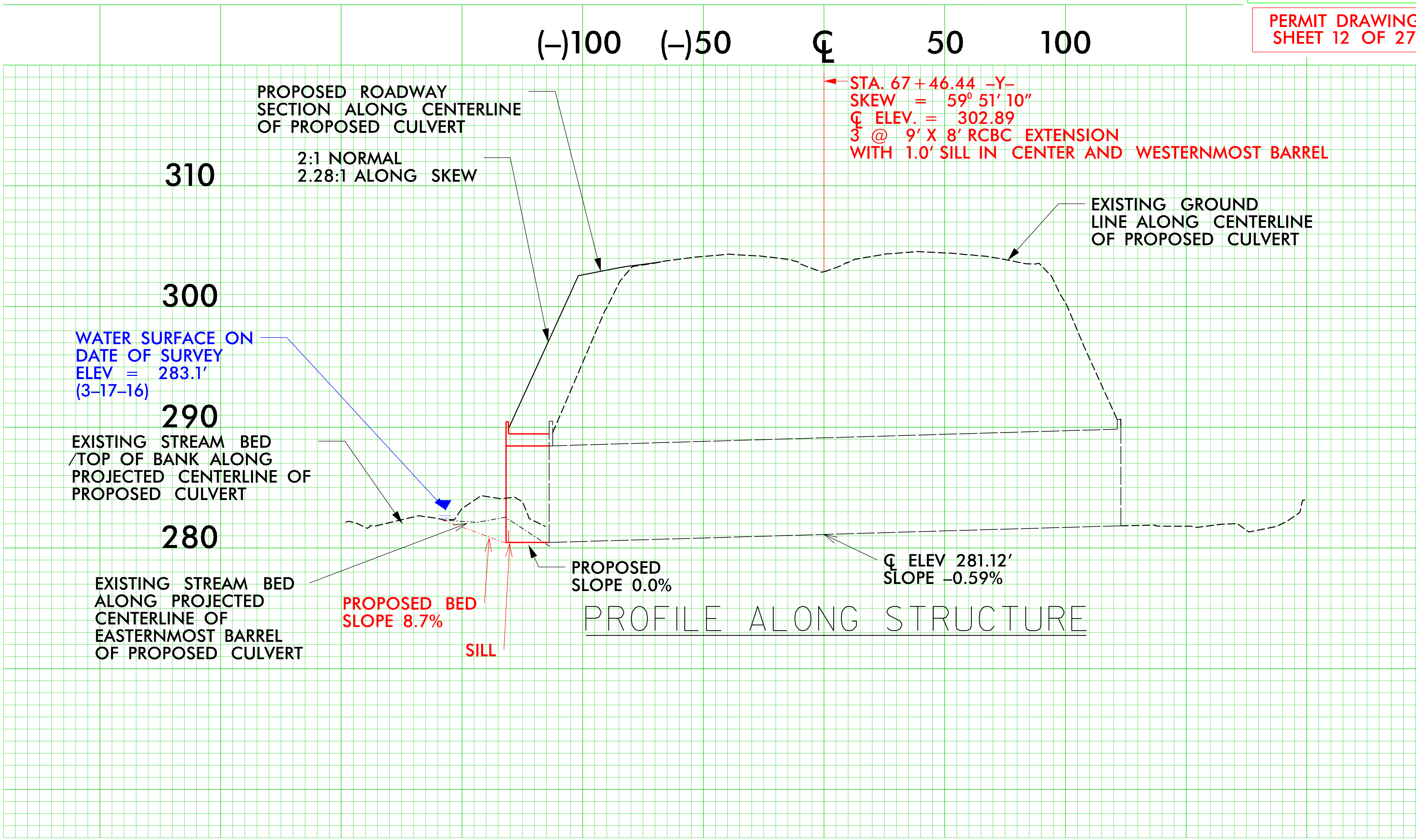
R/W SHEET NO.

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

WETHERILL ENGINEERING
1223 Jones Franklin Road
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PERMIT DRAWING
SHEET 12 OF 27



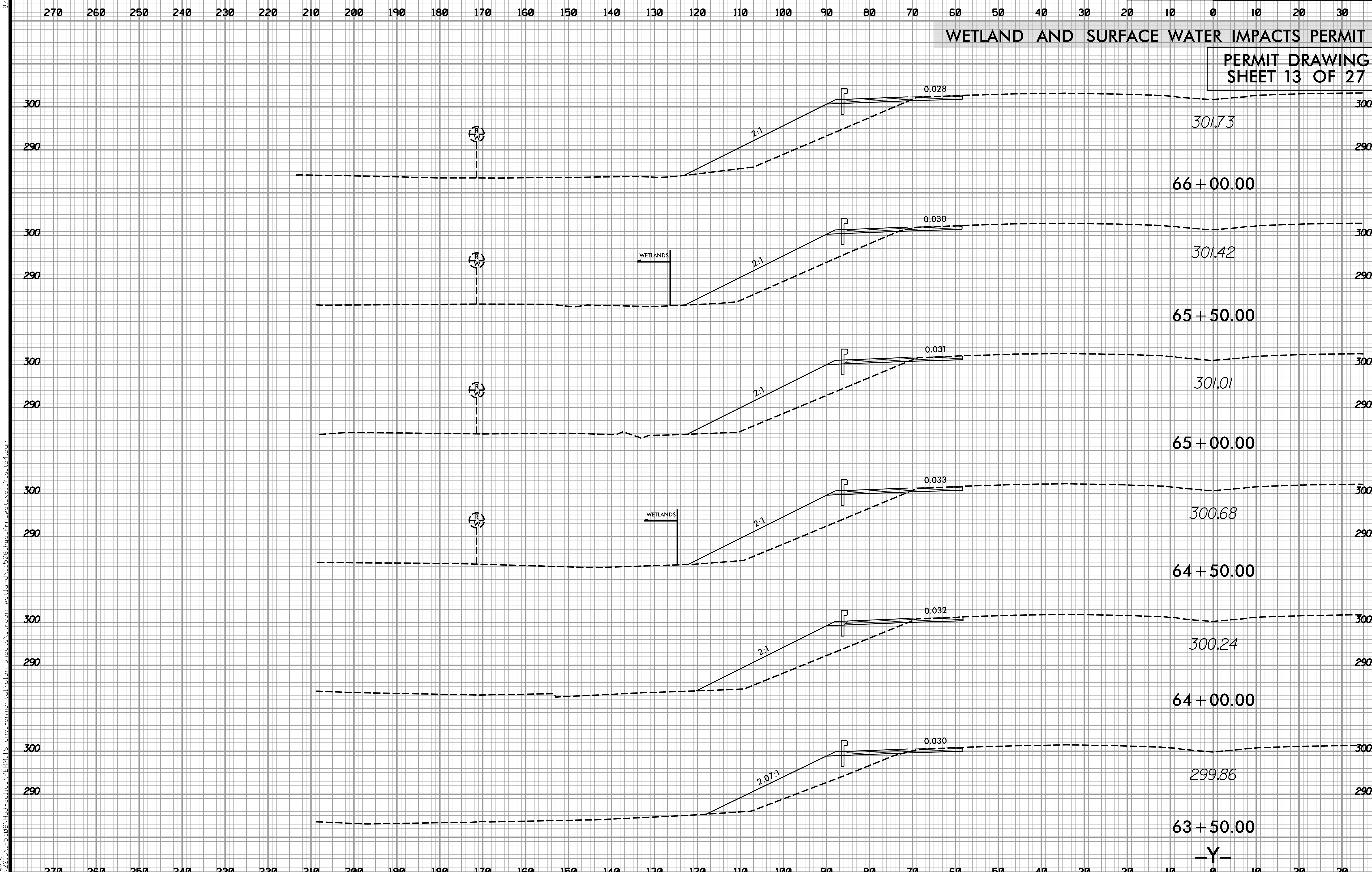
PROFILE ALONG STRUCTURE

8/17/99
6/29/2017
tdavis

PROJ. REFERENCE NO.	SHEET NO.
I-5506	X-25

WETLAND AND SURFACE WATER IMPACTS PERMIT

PERMIT DRAWING
SHEET 13 OF 27



8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	I-5506	X-26

270 260 250 240 230 220 210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30

WETLAND AND SURFACE WATER IMPACTS PERMIT

PERMIT DRAWING
SHEET 14 OF 27

300
290

0.030
2:1
303.30
68+00.00

0.028
WETLANDS
2:1
302.92
67+50.00

0.027
2:1
302.48
67+00.00

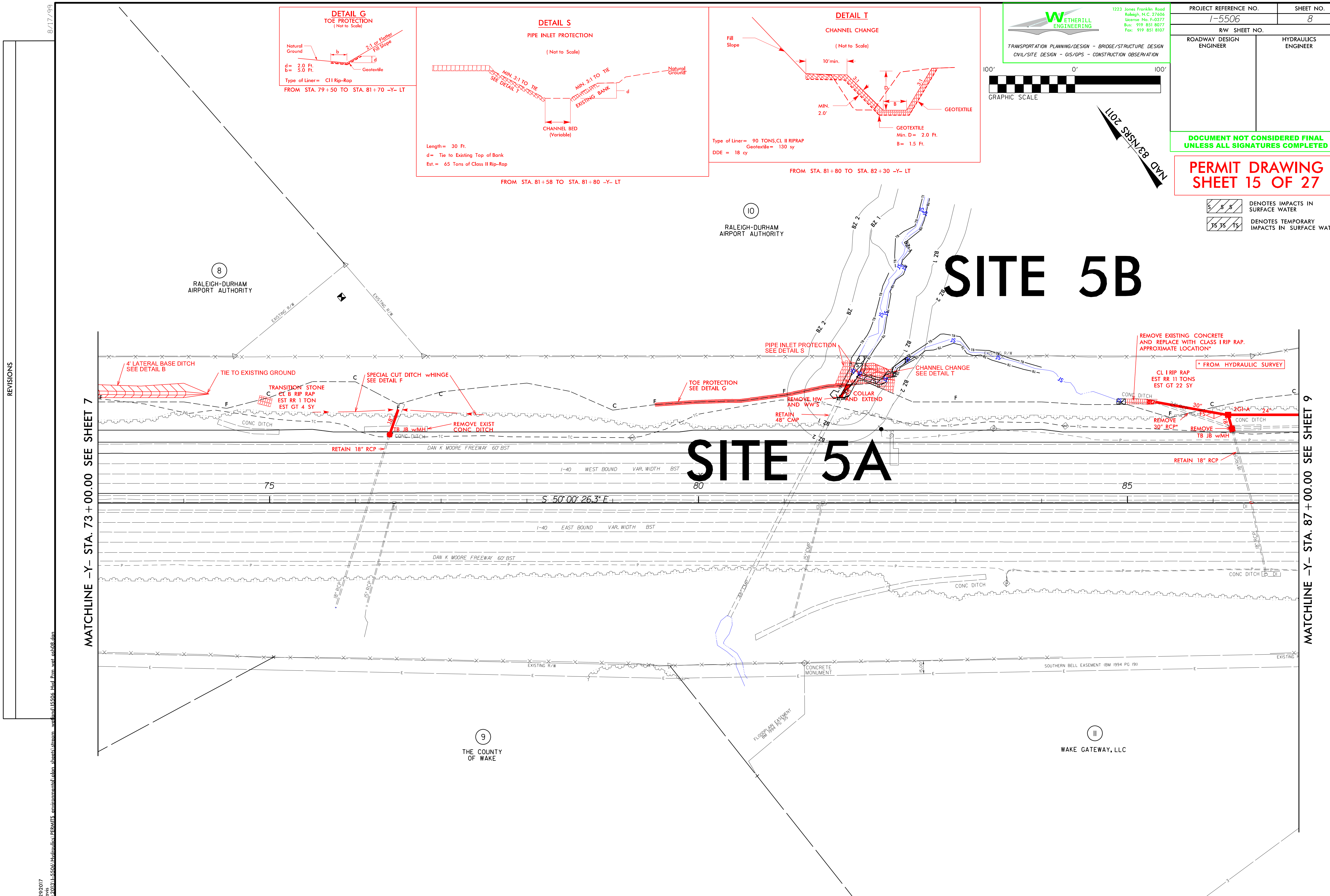
0.028
2:1
302.33
66+76.43

0.030
WETLANDS
2:1
302.03
66+50.00

–Y–

270 260 250 240 230 220 210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30

6/29/2017
5:42:13 PM
P:\2013\I-5506\Hydraulics\PERMITS environmental\plan sheets\stream wetland\I5506_hyd_Prm_wet_xpl_Y site4.dgn


PROJECT REFERENCE NO.
I-5506
SHEET NO.
8
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
WETHERILL ENGINEERING
1223 Jones Franklin Road Raleigh, N.C. 27606 License No. F-0377 Bus: 919 851 8077 Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION
PERMIT DRAWING
SHEET 15 OF 27
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
100' 0' 100'
GRAPHIC SCALE
NAD 83/NSRS 2011
DETAIL G
TOE PROTECTION
(Not to Scale)
Natural Ground
2:1 or Flatter Fill Slope
Geotextile
d= 2.0 Ft.
b= 5.0 Ft.
Type of Liner= CI I Rip-Rap
FROM STA. 79+50 TO STA. 81+70 -Y- LT
DETAIL S
PIPE INLET PROTECTION
(Not to Scale)
MIN. 3:1 TO TIE SEE DETAIL T
MIN. 3:1 TO TIE EXISTING BANK
Natural Ground
CHANNEL BED (Variable)
Length= 30 Ft.
d= Tie to Existing Top of Bank
Est.= 65 Tons of Class II Rip-Rap
FROM STA. 81+58 TO STA. 81+80 -Y- LT
DETAIL T
CHANNEL CHANGE
(Not to Scale)
Fill Slope
10' min.
MIN. 2.0'
GEOTEXTILE
GEOTEXTILE
Min. D= 2.0 Ft.
B= 1.5 Ft.
Type of Liner= 90 TONS,CL II RIPRAP
Geotextile= 130 sy
DDE = 18 cy
FROM STA. 81+80 TO STA. 82+30 -Y- LT
SITE 5B
SITE 5A
RALEIGH-DURHAM AIRPORT AUTHORITY
RALEIGH-DURHAM AIRPORT AUTHORITY
THE COUNTY OF WAKE
WAKE GATEWAY, LLC
4' LATERAL BASE DITCH SEE DETAIL B
TIE TO EXISTING GROUND
TRANSITION STONE CL B RIP RAP EST RR 1 TON EST GT 4 SY
SPECIAL CUT DITCH w/HINGE SEE DETAIL F
REMOVE EXIST CONC DITCH
TB JB w/MH
RETAIN 18" RCP
TOE PROTECTION SEE DETAIL G
PIPE INLET PROTECTION SEE DETAIL S
CHANNEL CHANGE SEE DETAIL T
COLLAR AND EXTEND
REMOVE HW AND WW'S
RETAIN 48" CMP
REMOVE EXISTING CONCRETE AND REPLACE WITH CLASS I RIP RAP. APPROXIMATE LOCATION*
* FROM HYDRAULIC SURVEY
CL I RIP RAP EST RR 11 TONS EST GT 22 SY
REMOVE 30" RCP*
REMOVE TB JB w/MH
RETAIN 18" RCP
CONC DITCH
DAN K MOORE FREEWAY 60' BST
I-40 WEST BOUND VAR. WIDTH BST
I-40 EAST BOUND VAR. WIDTH BST
S 50°00' 26.3" E
75
80
85
SOUTHERN BELL EASEMENT (BM 1994 PG 191)
CONCRETE MONUMENT
FLOODPLAIN EASEMENT (BM 1994 PG 191)
EXISTING R/W
MATCHLINE -Y- STA. 73+00.00 SEE SHEET 7
MATCHLINE -Y- STA. 87+00.00 SEE SHEET 9
REVISIONS
8/17/99
6/29/2017

8/17/99

REVISIONS

WETHERILL ENGINEERING
1223 Jones Franklin Road
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO.	SHEET NO.
I-5506	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 16 OF 27

100' 0' 100'
GRAPHIC SCALE

NAD 83/NSRS 2011

S S S DENOTES IMPACTS IN SURFACE WATER

TS TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DETAIL G
TOE PROTECTION
(Not to Scale)

d= 2.0 Ft.
b= 5.0 Ft.
Type of Liner= CL I Rip-Rap
FROM STA. 79+50 TO STA. 81+70 -Y- LT

DETAIL S
PIPE INLET PROTECTION
(Not to Scale)

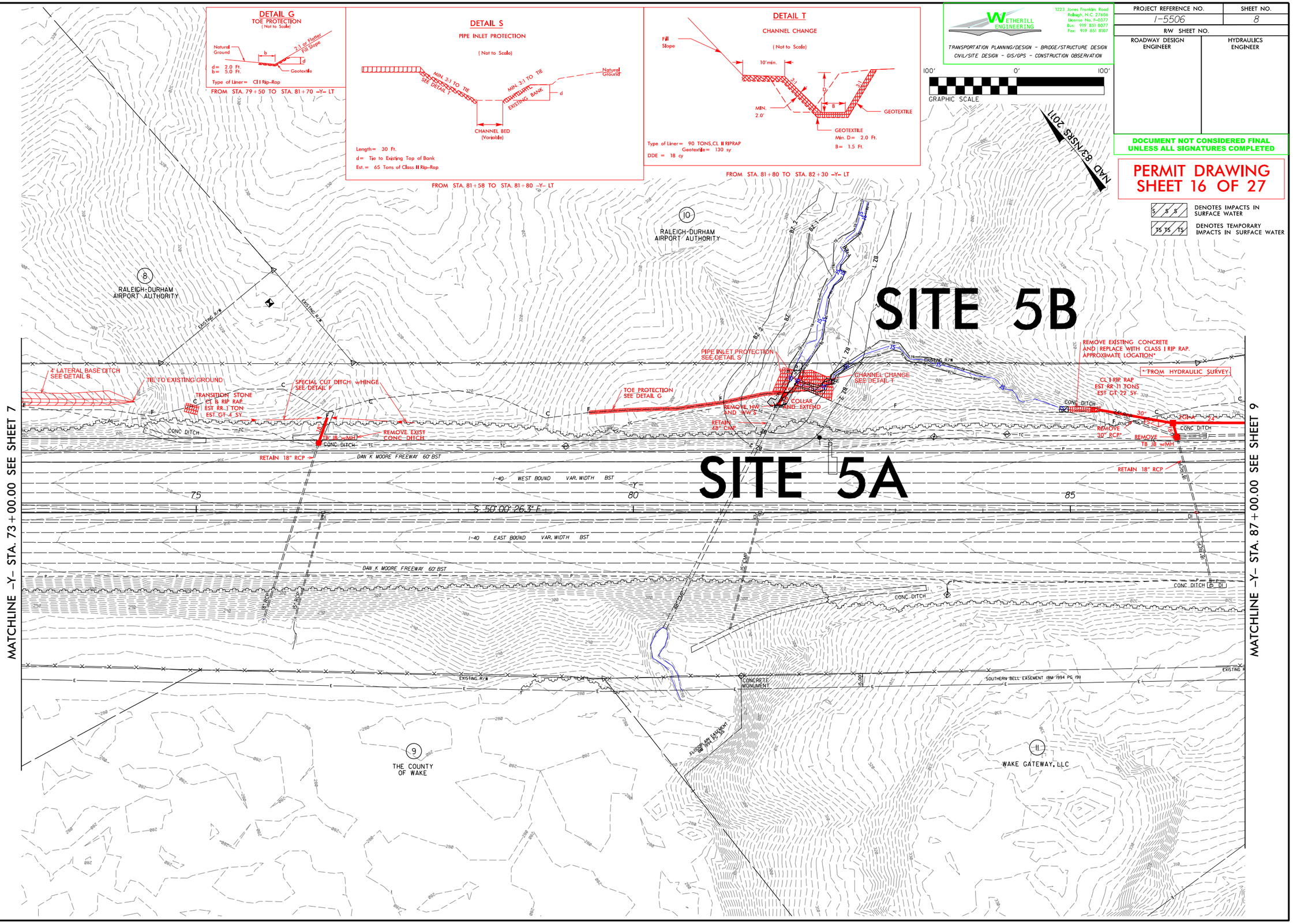
Length= 30 Ft.
d= Tie to Existing Top of Bank
Est.= 65 Tons of Class II Rip-Rap
FROM STA. 81+58 TO STA. 81+80 -Y- LT

DETAIL T
CHANNEL CHANGE
(Not to Scale)

Type of Liner= 90 TONS,CL II RIPRAP
Geotextile= 130 sy
DDE = 18 cy
FROM STA. 81+80 TO STA. 82+30 -Y- LT

SITE 5B

SITE 5A



6/29/2017
Wetherill
P:\2013\I-5506\Hydraulics\PERMITS_environmental\plan_sheets\stream_wetland\I5506_Hyd Perm wet sht08 con.dgn

SITE 5 (A/B) ENLARGEMENT

PROJECT REFERENCE NO.	SHEET NO.
I-5506	8-I
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

WETHERILL ENGINEERING
1223 Jones Franklin Road
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

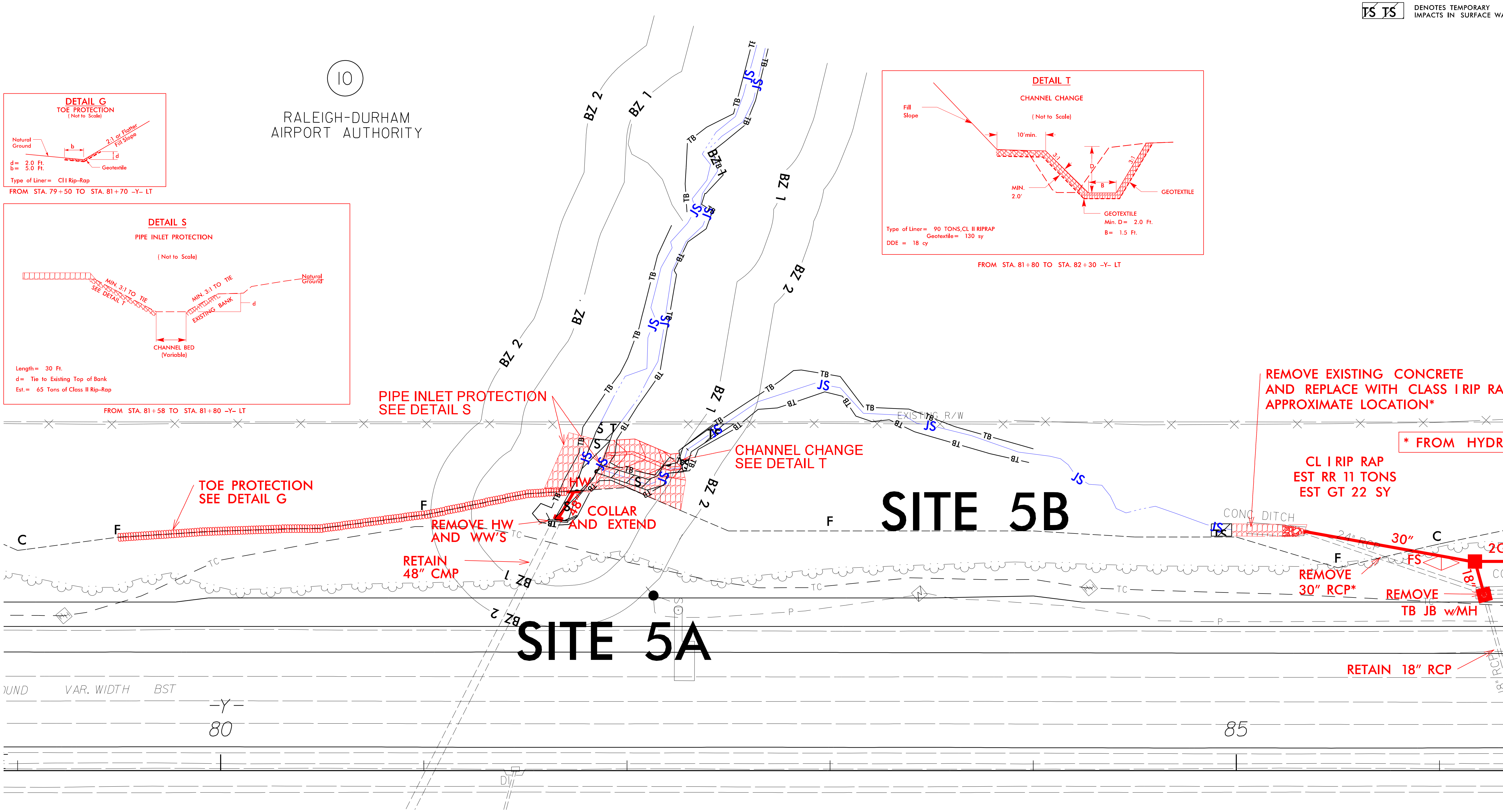
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 17 OF 27

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

NAD 83/NSRS 2011

50' 0' 50'
GRAPHIC SCALE


DETAIL G
TOE PROTECTION
(Not to Scale)
Natural Ground
2:1 or Flatter Fill Slope
Geotextile
d= 2.0 Ft.
b= 5.0 Ft.
Type of Liner= CII Rip-Rap
FROM STA. 79+50 TO STA. 81+70 -Y- LT
DETAIL S
PIPE INLET PROTECTION
(Not to Scale)
MIN. 3:1 TO TIE
SEE DETAIL T
MIN. 3:1 TO TIE
EXISTING BANK
Natural Ground
CHANNEL BED (Variable)
Length= 30 Ft.
d= Tie to Existing Top of Bank
Est.= 65 Tons of Class II Rip-Rap
FROM STA. 81+58 TO STA. 81+80 -Y- LT
10
RALEIGH-DURHAM AIRPORT AUTHORITY
DETAIL T
CHANNEL CHANGE
(Not to Scale)
Fill Slope
10'min.
MIN. 2.0'
GEOTEXTILE
GEOTEXTILE
Min. D= 2.0 Ft.
B= 1.5 Ft.
Type of Liner= 90 TONS,CL II RIPRAP
Geotextile= 130 sy
DDE = 18 cy
FROM STA. 81+80 TO STA. 82+30 -Y- LT
BZ 1
BZ 2
PIPE INLET PROTECTION
SEE DETAIL S
CHANNEL CHANGE
SEE DETAIL T
TOE PROTECTION
SEE DETAIL G
REMOVE HW
AND WW'S
COLLAR
AND EXTEND
RETAIN
48" CMP
EXISTING R/W
SITE 5B
SITE 5A
REMOVE EXISTING CONCRETE
AND REPLACE WITH CLASS I RIP RAP.
APPROXIMATE LOCATION*
* FROM HYDRAU
CL I RIP RAP
EST RR 11 TONS
EST GT 22 SY
CONC DITCH
30"
REMOVE
30" RCP*
REMOVE
TB JB w/MH
RETAIN 18" RCP
VAR. WIDTH BST
-Y-
80
85

REVISIONS

8/17/99

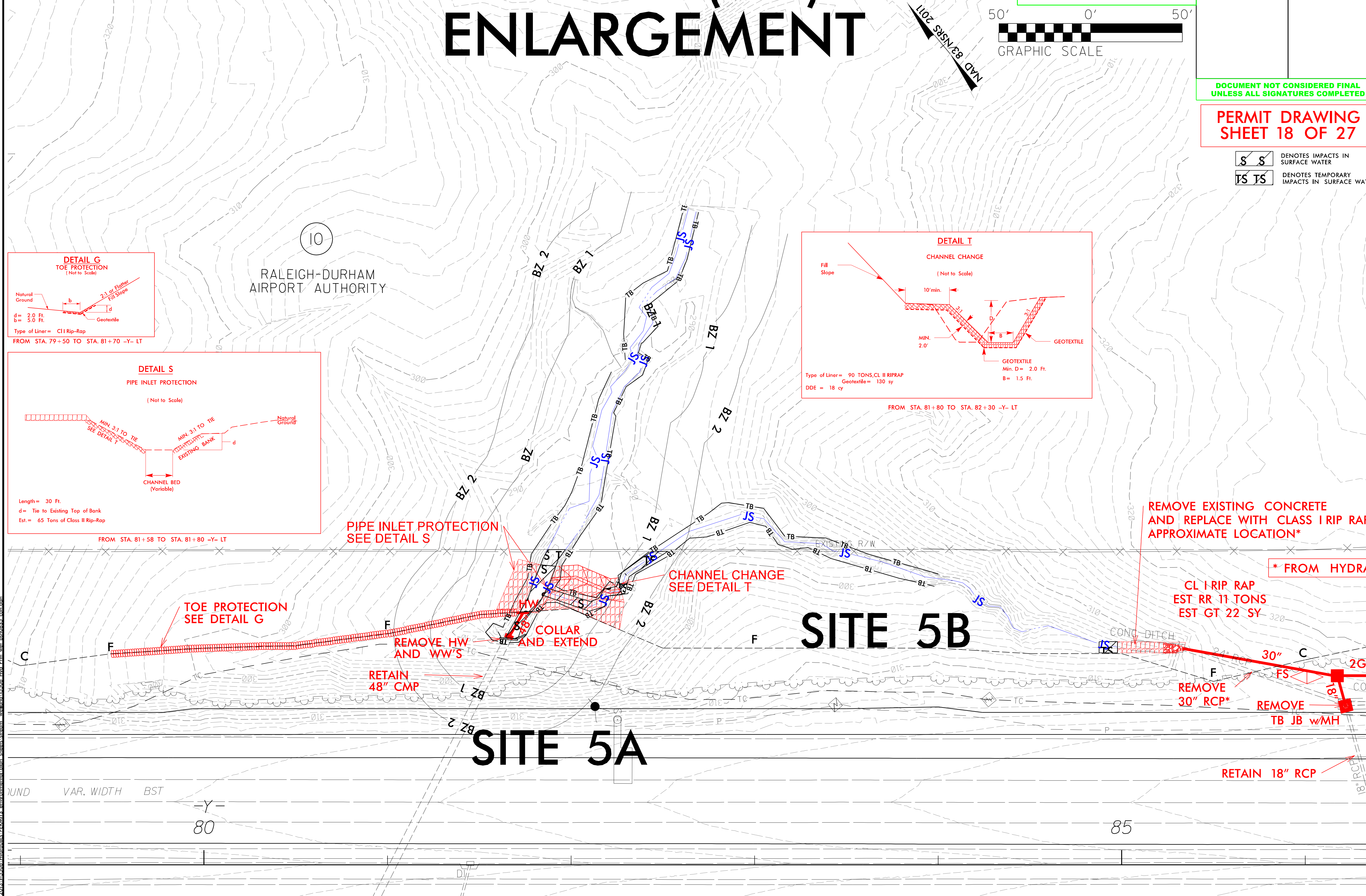
SITE 5 (A/B) ENLARGEMENT

PROJECT REFERENCE NO.	SHEET NO.
I-5506	8-I
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

WETHERILL ENGINEERING
1223 Jones Franklin Road, Raleigh, N.C. 27606, License No. F-0377, Bus: 919 851 8077, Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PERMIT DRAWING
SHEET 18 OF 27



NAD 83/NSRS 2011
50' 0' 50'
GRAPHIC SCALE
S S DENOTES IMPACTS IN SURFACE WATER
TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER
10
RALEIGH-DURHAM AIRPORT AUTHORITY
DETAIL G
TOE PROTECTION
(Not to Scale)
Natural Ground
2:1 or Flatter Fill Slope
Geotextile
d= 2.0 Ft.
b= 5.0 Ft.
Type of Liner= Cl II Rip-Rap
FROM STA. 79+50 TO STA. 81+70 -Y- LT
DETAIL S
PIPE INLET PROTECTION
(Not to Scale)
MIN. 3:1 TO TIE
SEE DETAIL T
EXISTING BANK
Natural Ground
CHANNEL BED (Variable)
Length= 30 Ft.
d= Tie to Existing Top of Bank
Est.= 65 Tons of Class II Rip-Rap
FROM STA. 81+58 TO STA. 81+80 -Y- LT
DETAIL T
CHANNEL CHANGE
(Not to Scale)
Fill Slope
10' min.
MIN. 2.0'
GEOTEXTILE
Min. D= 2.0 Ft.
B= 1.5 Ft.
Type of Liner= 90 TONS,CL II RIPRAP
Geotextile= 130 sy
DDE = 18 cy
FROM STA. 81+80 TO STA. 82+30 -Y- LT
PIPE INLET PROTECTION
SEE DETAIL S
CHANNEL CHANGE
SEE DETAIL T
TOE PROTECTION
SEE DETAIL G
REMOVE HW AND WW'S
COLLAR AND EXTEND
RETAIN 48" CMP
HW
BZ 1
BZ 2
JS
TB
SITE 5B
SITE 5A
EXISTING R/W
REMOVE EXISTING CONCRETE AND REPLACE WITH CLASS I RIP RAP. APPROXIMATE LOCATION*
* FROM HYDRAU
CL I RIP RAP
EST RR 11 TONS
EST GT 22 SY
CONC DITCH
30"
2GI
REMOVE 30" RCP*
REMOVE TB JB w/MH
RETAIN 18" RCP
VAR. WIDTH BST
-Y-
80
85

REVISIONS

8/17/99

6/29/2017

PROJECT REFERENCE NO.	SHEET NO.
I-5506	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

WETHERILL ENGINEERING
1223 Jones Franklin Road
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

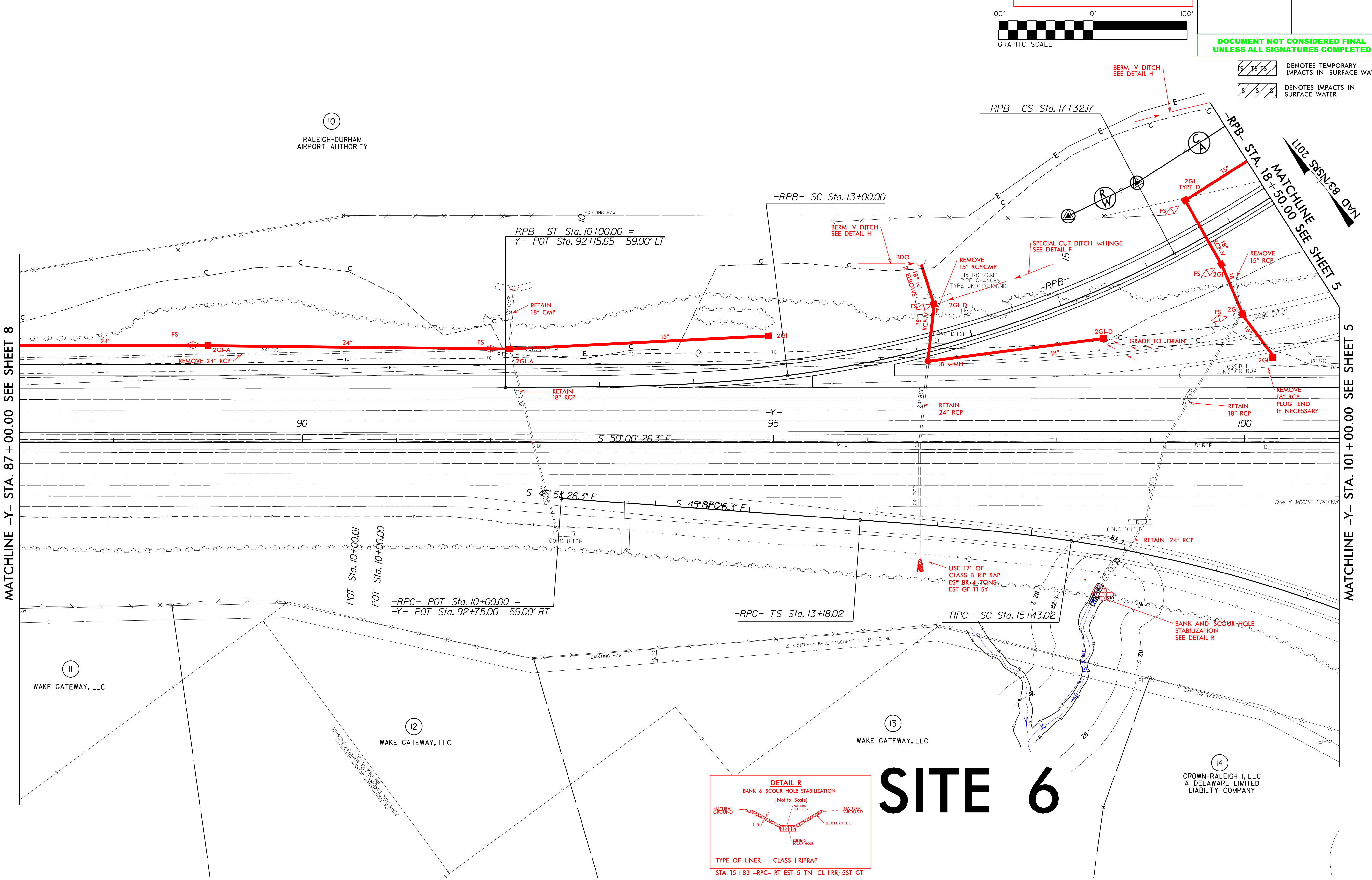
PERMIT DRAWING SHEET 19 OF 27

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DENOTES IMPACTS IN SURFACE WATER

REVISIONS



100' 0' 100'
GRAPHIC SCALE
NAD 83/NSRS 2011
10 RALEIGH-DURHAM AIRPORT AUTHORITY
11 WAKE GATEWAY, LLC
12 WAKE GATEWAY, LLC
13 WAKE GATEWAY, LLC
14 CROWN-RALEIGH I, LLC A DELAWARE LIMITED LIABILTY COMPANY
MATCHLINE -Y- STA. 87+00.00 SEE SHEET 8
MATCHLINE -Y- STA. 101+00.00 SEE SHEET 5
-RPB- STA. 18+50.00 MATCHLINE SEE SHEET 5
-RPB- CS Sta. 17+32.17
-RPB- SC Sta. 13+00.00
-RPB- ST Sta. 10+00.00 =
-Y- POT Sta. 92+15.65 59.00' LT
-RPC- POT Sta. 10+00.00 =
-Y- POT Sta. 92+75.00 59.00' RT
-RPC- TS Sta. 13+18.02
-RPC- SC Sta. 15+43.02
POT Sta. 10+00.01
POT Sta. 10+00.00
S 50°00' 26.3" E
S 45°54' 26.3" E
S 45°54' 26.3" E
-Y-
90
95
100
BERM V DITCH SEE DETAIL H
SPECIAL CUT DITCH w/HINGE SEE DETAIL F
REMOVE 15" RCP/CMP
15" RCP/CMP PIPE CHANGES TYPE UNDERGROUND
RETAIN 18" CMP
RETAIN 18" RCP
RETAIN 24" RCP
REMOVE 24" RCP
REMOVE 15" RCP
REMOVE 18" RCP PLUG END IF NECESSARY
POSSIBLE JUNCTION BOX
GRADE TO DRAIN
JB w/MH
2GI TYPE-D
2GI-A
2GI-D
2GI
BDO
CONC DITCH
EXISTING R/W
USE 12' OF CLASS B RIP RAP EST. RR 4 TONS EST GF 11 SY
RETAIN 24" RCP
BANK AND SCOUR HOLE STABILIZATION SEE DETAIL R
15' SOUTHERN BELL EASEMENT (DB 5131 PG 190)
DAN K MOORE FREEWAY
DETAIL R
BANK & SCOUR HOLE STABILIZATION
(Not to Scale)
NATURAL GROUND
GEOTEXTILE
EXISTING SCOUR HOLE
TYPE OF LINER= CLASS I RIPRAP
STA. 15+83 -RPC- RT EST 5 TN CL I RR; 5ST GT

SITE 6

PROJECT REFERENCE NO.	SHEET NO.
I-5506	9

R/W SHEET NO.

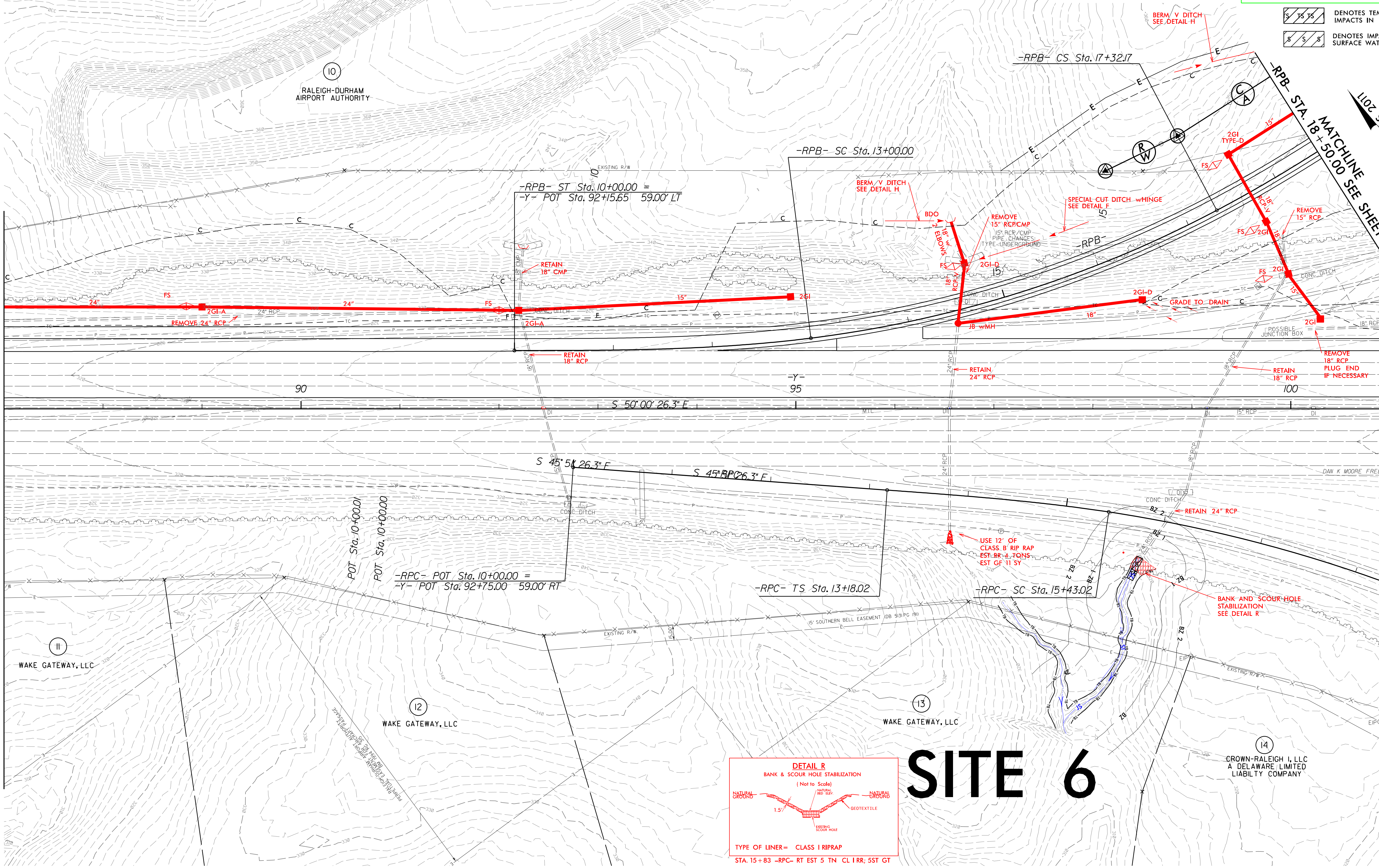
ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

WETHERILL ENGINEERING
1223 Jones Franklin Road
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PERMIT DRAWING SHEET 20 OF 27

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED


100'
0'
100'
GRAPHIC SCALE
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
DENOTES IMPACTS IN SURFACE WATER
NAD 83/NSRS 2011
RALEIGH-DURHAM AIRPORT AUTHORITY
-RPB- CS Sta. 17+32.17
-RPB- SC Sta. 13+00.00
-RPB- ST Sta. 10+00.00 =
-Y- POT Sta. 92+15.65 59.00' LT
BERM V DITCH SEE DETAIL H
SPECIAL CUT DITCH w/HINGE SEE DETAIL F
REMOVE 15" RCP/CMP
15" RCP/CMP PIPE CHANGES TYPE UNDERGROUND
RETAIN 18" CMP
REMOVE 24" RCP
RETAIN 18" RCP
RETAIN 24" RCP
REMOVE 15" RCP
2GI TYPE-D
JB w/MH
GRADE TO DRAIN
POSSIBLE JUNCTION BOX
REMOVE 18" RCP PLUG END IF NECESSARY
-RPB- STA. 18+50.00 MATCHLINE SEE SHEET 5
MATCHLINE -Y- STA. 87+00.00 SEE SHEET 8
MATCHLINE -Y- STA. 101+00.00 SEE SHEET 5
S 50°00' 26.3" E
S 45°51' 26.3" E
-RPC- POT Sta. 10+00.00 =
-Y- POT Sta. 92+75.00 59.00' RT
POT Sta. 10+00.01
POT Sta. 10+00.00
-RPC- TS Sta. 13+18.02
-RPC- SC Sta. 15+43.02
USE 12' OF CLASS B RIP RAP EST RR 4 TONS EST GF 11 SY
BANK AND SCOUR HOLE STABILIZATION SEE DETAIL R
15' SOUTHERN BELL EASEMENT
WAKE GATEWAY, LLC
CROWN-RALEIGH I, LLC A DELAWARE LIMITED LIABILTY COMPANY
DAN K MOORE FREEWAY
DETAIL R
BANK & SCOUR HOLE STABILIZATION
(Not to Scale)
NATURAL GROUND
GEOTEXTILE
EXISTING SCOUR HOLE
TYPE OF LINER= CLASS I RIPRAP
STA. 15+83 -RPC- RT EST 5 TN CL I RR; 5ST GT
SITE 6

REVISIONS

8/17/99

6/29/2017 tdavis

PROJECT REFERENCE NO.	SHEET NO.
I-5506	9-1

R/W SHEET NO.

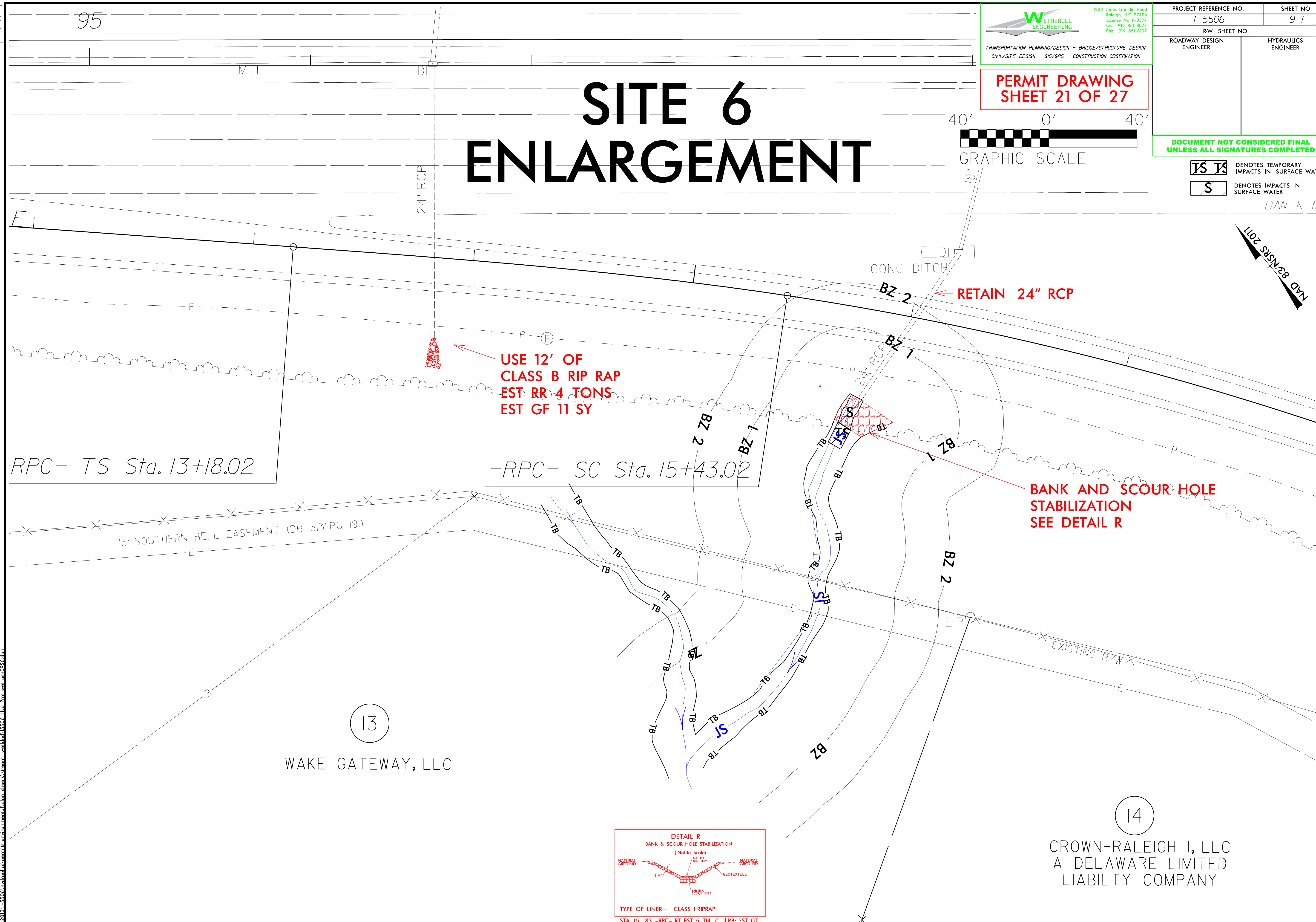
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

WETHERILL ENGINEERING
1223 Jones Franklin Road
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PERMIT DRAWING
SHEET 21 OF 27

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SITE 6 ENLARGEMENT

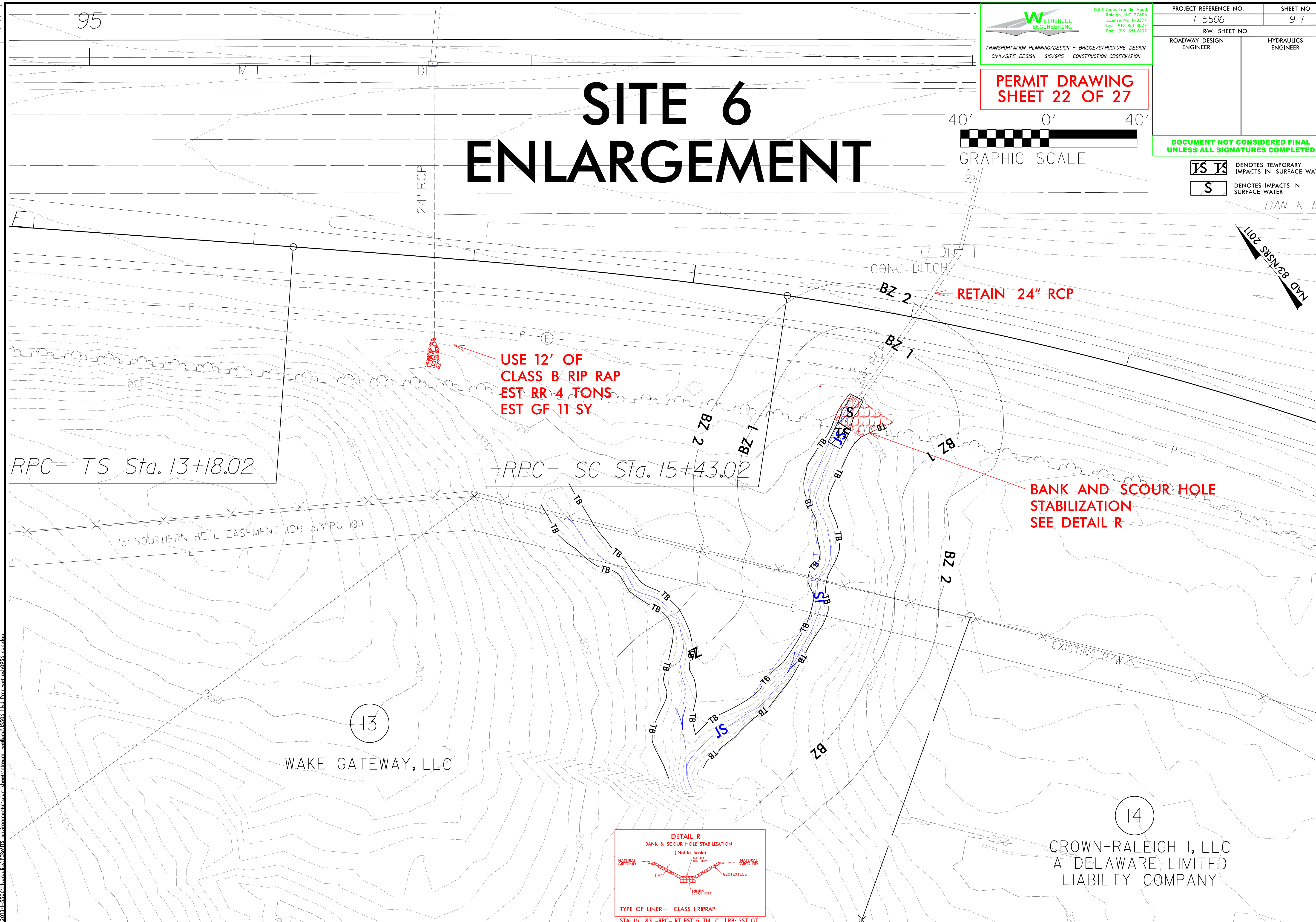


95
MTL
DI
24" RCP
18"
40' 0' 40'
GRAPHIC SCALE
TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER
S DENOTES IMPACTS IN SURFACE WATER
DAN K MC
NAD 83/NSRS 2011
CONC DITCH
RETAIN 24" RCP
USE 12' OF
CLASS B RIP RAP
EST RR 4 TONS
EST GF 11 SY
BZ 2
BZ 1
RPC- TS Sta. 13+18.02
-RPC- SC Sta. 15+43.02
BANK AND SCOUR HOLE
STABILIZATION
SEE DETAIL R
15' SOUTHERN BELL EASEMENT (DB 5131 PG 191)
EXISTING R/W
EIP
JS
TB
13
WAKE GATEWAY, LLC
14
CROWN-RALEIGH I, LLC
A DELAWARE LIMITED
LIABILTY COMPANY
DETAIL R
BANK & SCOUR HOLE STABILIZATION
(Not to Scale)
NATURAL GROUND
GEOTEXTILE
TYPE OF LINER= CLASS I RIPRAP
STA. 15+83 -RPC- RT EST 5 TN CL I RR; 5ST GT

REVISIONS

8/17/99

6/29/2017



95
MTL
DI
24" RCP
SITE 6
ENLARGEMENT
40'
0'
40'
GRAPHIC SCALE
CONC DITCH
DI
BZ 2
RETAIN 24" RCP
BZ 1
USE 12' OF
CLASS B RIP RAP
EST RR 4 TONS
EST GF 11 SY
RPC- TS Sta. 13+18.02
-RPC- SC Sta. 15+43.02
15' SOUTHERN BELL EASEMENT (DB 5131 PG 191)
BANK AND SCOUR HOLE
STABILIZATION
SEE DETAIL R
EIP
EXISTING R/W
13
WAKE GATEWAY, LLC
14
CROWN-RALEIGH I, LLC
A DELAWARE LIMITED
LIABILTY COMPANY
DAN K MC
NAD 83/NSRS 2011
TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER
S DENOTES IMPACTS IN SURFACE WATER
DETAIL R
BANK & SCOUR HOLE STABILIZATION
(Not to Scale)
NATURAL GROUND
NATURAL BED ELEV.
1.5'
GEOTEXTILE
EXISTING SCOUR HOLE
TYPE OF LINER = CLASS I RIPRAP
STA. 15+83 -RPC- RT EST 5 TN CL I RR; 5ST GT

WETHERILL ENGINEERING
1223 Jones Franklin Road
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PERMIT DRAWING
SHEET 22 OF 27

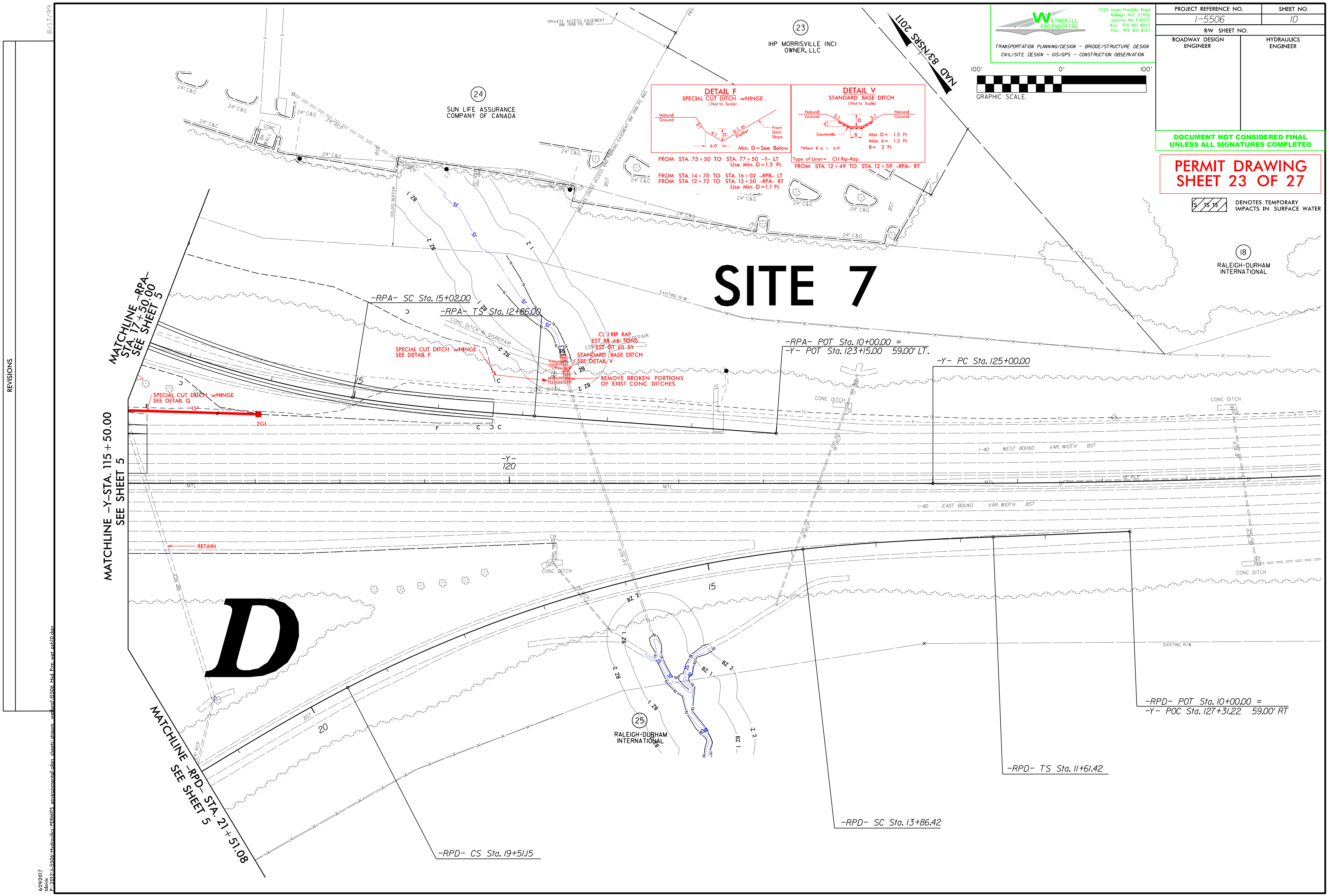
PROJECT REFERENCE NO.	SHEET NO.
I-5506	9-1
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

8/17/99

6/29/2017
tdavis


PROJECT REFERENCE NO. I-5506
SHEET NO. 10
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
PERMIT DRAWING SHEET 23 OF 27
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
WETHERILL ENGINEERING
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION
NAD 83/NSRS 2011
GRAPHIC SCALE
100' 0' 100'
SITE 7
D
DETAIL F
SPECIAL CUT DITCH w/HINGE
(Not to Scale)
Natural Ground
Front Ditch Slope
Min. D = See Below
FROM STA. 75+50 TO STA. 77+50 -Y- LT
Use Min. D = 1.5 Ft.
FROM STA. 14+70 TO STA. 16+02 -RPB- LT
FROM STA. 12+72 TO STA. 13+50 -RPA- RT
Use Min. D = 1.1 Ft.
DETAIL V
STANDARD BASE DITCH
(Not to Scale)
Natural Ground
Geotextile
Min. D = 1.5 Ft.
Max. d = 1.5 Ft.
B = 2 Ft.
Type of Liner = Cl I Rip-Rap
FROM STA. 12+49 TO STA. 12+59 -RPA- RT
24 SUN LIFE ASSURANCE COMPANY OF CANADA
23 IHP MORRISVILLE (NC) OWNER, LLC
18 RALEIGH-DURHAM INTERNATIONAL
25 RALEIGH-DURHAM INTERNATIONAL
PRIVATE ACCESS EASEMENT BM 1998 PG 860
MATCHLINE -RPA- STA. 17+50.00 SEE SHEET 5
MATCHLINE -Y- STA. 115+50.00 SEE SHEET 5
MATCHLINE -RPD- STA. 21+51.08 SEE SHEET 5
-RPA- SC Sta. 15+02.00
-RPA- TS Sta. 12+86.00
-RPA- POT Sta. 10+00.00 =
-Y- POT Sta. 123+15.00 59.00' LT.
-Y- PC Sta. 125+00.00
-RPD- POT Sta. 10+00.00 =
-Y- POC Sta. 127+31.22 59.00' RT
-RPD- TS Sta. 11+61.42
-RPD- SC Sta. 13+86.42
-RPD- CS Sta. 19+51.15
CL I RIP RAP
EST 46 TONS
EST 60 SY
STANDARD BASE DITCH
SEE DETAIL V
SPECIAL CUT DITCH w/HINGE
SEE DETAIL F
SPECIAL CUT DITCH w/HINGE
SEE DETAIL Q
REMOVE BROKEN PORTIONS OF EXIST CONC DITCHES
RETAIN
EXISTING R/W
I-40 WEST BOUND VAR. WIDTH BST
I-40 EAST BOUND VAR. WIDTH BST
CONC DITCH
24" C&G
-Y- 120
REVISIONS
8/17/99
6/29/2017

8/17/99

REVISIONS

WETHERILL ENGINEERING
1223 Jones Franklin Road
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO.	SHEET NO.
I-5506	10

R/W SHEET NO.

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 24 OF 27

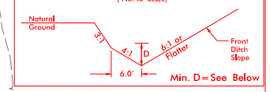
100' 0' 100'
GRAPHIC SCALE

NAD 83/NSRS 2011

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

SITE 7

DETAIL F
SPECIAL CUT DITCH wHINGE
(Not to Scale)



Min. D=See Below

FROM STA. 75+50 TO STA. 77+50 -Y- LT
Use Min. D=1.5 Ft.

FROM STA. 14+70 TO STA. 16+02 -RPB- LT
FROM STA. 12+72 TO STA. 13+50 -RPA- RT
Use Min. D=1.1 Ft.

DETAIL V
STANDARD BASE DITCH
(Not to Scale)

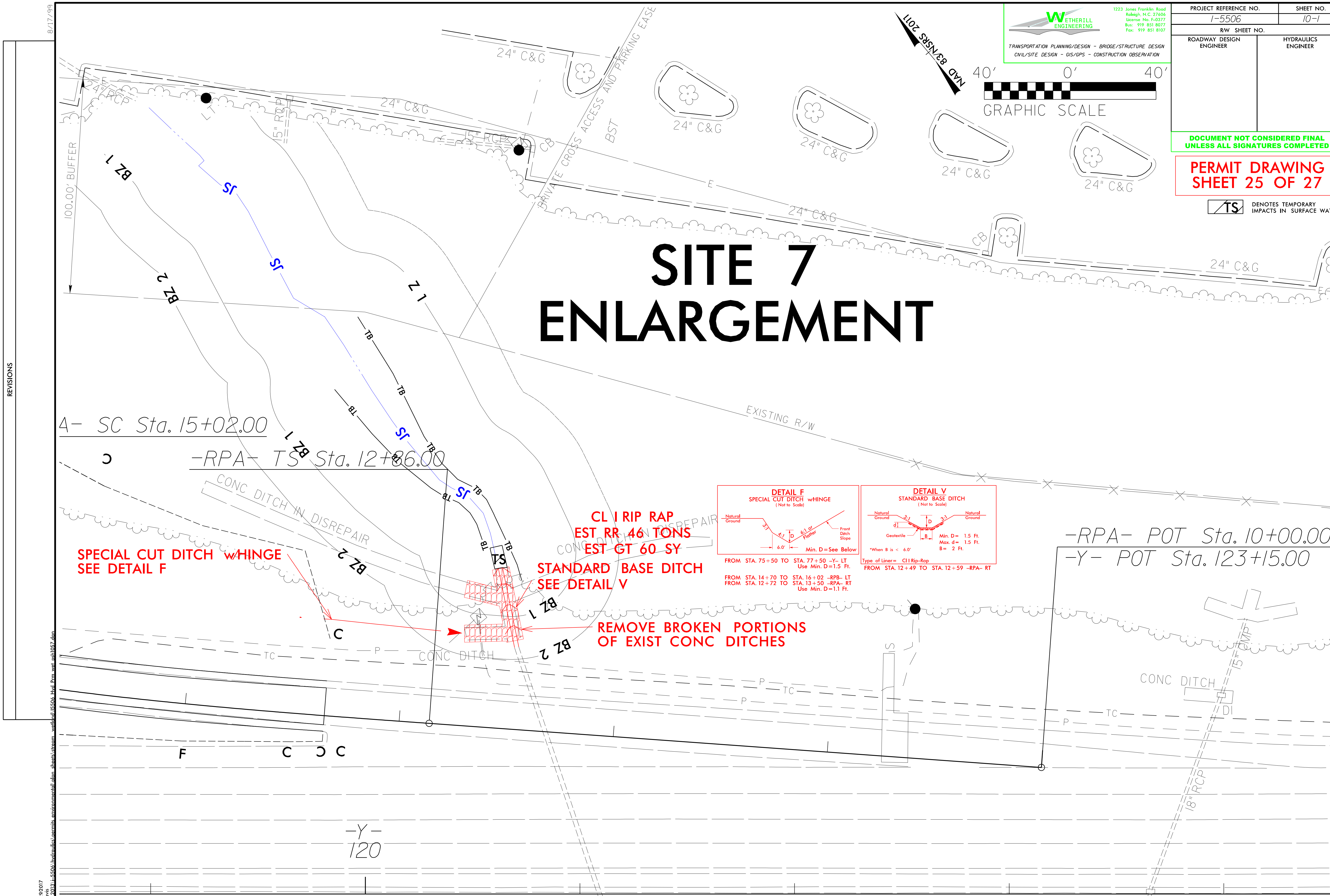
Min. D= 1.5 Ft.
Max. d= 1.5 Ft.
B= 2 Ft.
*When B is < 6.0'

Type of Liner- CII Rip-Rap
FROM STA. 12+49 TO STA. 12+59 -RPA- RT

PRIVATE ACCESS EASEMENT BM 1998 PG 860
IHP MORRISVILLE (NC) OWNER, LLC
SUN LIFE ASSURANCE COMPANY OF CANADA
PRIVATE ACCESS EASEMENT BM 1998 PG 860
RALEIGH-DURHAM INTERNATIONAL
RALEIGH-DURHAM INTERNATIONAL
I-40 WEST BOUND VAR. WIDTH BST
I-40 EAST BOUND VAR. WIDTH BST
EXISTING R/W
CONC DITCH
SOLID BUFFER
24" C&G
24" RCP
18" RCP
CB
DI
MTL
BST
-RPA- SC Sta. 15+02.00
-RPA- TS Sta. 12+86.00
-RPA- POT Sta. 10+00.00 =
-Y- POT Sta. 123+15.00 59.00' LT.
-Y- PC Sta. 125+00.00
-RPD- POT Sta. 10+00.00 =
-Y- POC Sta. 127+31.22 59.00' RT
-RPD- TS Sta. 11+61.42
-RPD- SC Sta. 13+86.42
-RPD- CS Sta. 19+51.15
CONC DITCH IN DISREPAIR
CL II RIP-RAP
EST. RAP IN DISREPAIR
CONC DITCH
REMOVE BROKEN PORTIONS OF EXIST CONC DITCHES
SPECIAL CUT DITCH wHINGE SEE DETAIL F
STANDARD BASE DITCH SEE DETAIL V
RETAIN
2GI
MATCHLINE -RPA- STA 17+50.00 SEE SHEET 5
MATCHLINE -Y- STA. 115+50.00 SEE SHEET 5
MATCHLINE -RPD- STA. 21+51.08 SEE SHEET 5

D

6/29/2017
kbyrne
P:\2013\I-5506\Hydraulics\PERMITS environmental\plan sheets\stream wetland\I5506 Hyd Prm wet sht10 con.dgn


PROJECT REFERENCE NO.
I-5506
SHEET NO.
10-1
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
WETHERILL ENGINEERING
1223 Jones Franklin Road
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED
PERMIT DRAWING
SHEET 25 OF 27
TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER
NAD 83/NSRS 2011
40' 0' 40'
GRAPHIC SCALE
SITE 7
ENLARGEMENT
100.00' BUFFER
24" C&G
24" RCP
15" RCP
CB
PRIVATE CROSS ACCESS AND PARKING EASE
BST
EXISTING R/W
BZ 1
BZ 2
Z 1
Z 2
JS
TB
-A- SC Sta. 15+02.00
-RPA- TS Sta. 12+86.00
CONC DITCH IN DISREPAIR
CL I RIP RAP
EST RR 46 TONS
EST GT 60 SY
SPECIAL CUT DITCH w/HINGE
SEE DETAIL F
STANDARD BASE DITCH
SEE DETAIL V
REMOVE BROKEN PORTIONS
OF EXIST CONC DITCHES
CONC DITCH
DETAIL F
SPECIAL CUT DITCH w/HINGE
(Not to Scale)
Natural Ground
3:1
4:1
D
6:1 or Flatter
Front Ditch Slope
6.0'
Min. D=See Below
FROM STA. 75+50 TO STA. 77+50 -Y- LT
Use Min. D=1.5 Ft.
FROM STA. 14+70 TO STA. 16+02 -RPB- LT
FROM STA. 12+72 TO STA. 13+50 -RPA- RT
Use Min. D=1.1 Ft.
DETAIL V
STANDARD BASE DITCH
(Not to Scale)
Natural Ground
3:1
D
d
Geotextile
B
Min. D= 1.5 Ft.
Max. d= 1.5 Ft.
B= 2 Ft.
*When B is < 6.0'
Type of Liner= Cl I Rip-Rap
FROM STA. 12+49 TO STA. 12+59 -RPA- RT
-RPA- POT Sta. 10+00.00
-Y- POT Sta. 123+15.00
15" CMP
18" RCP
DI
TC
P
E
-Y-
120
REVISIONS
8/17/99
6/29/2017

PROJECT REFERENCE NO.	SHEET NO.
I-5506	10-1
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

WETHERILL ENGINEERING
1223 Jones Franklin Road
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

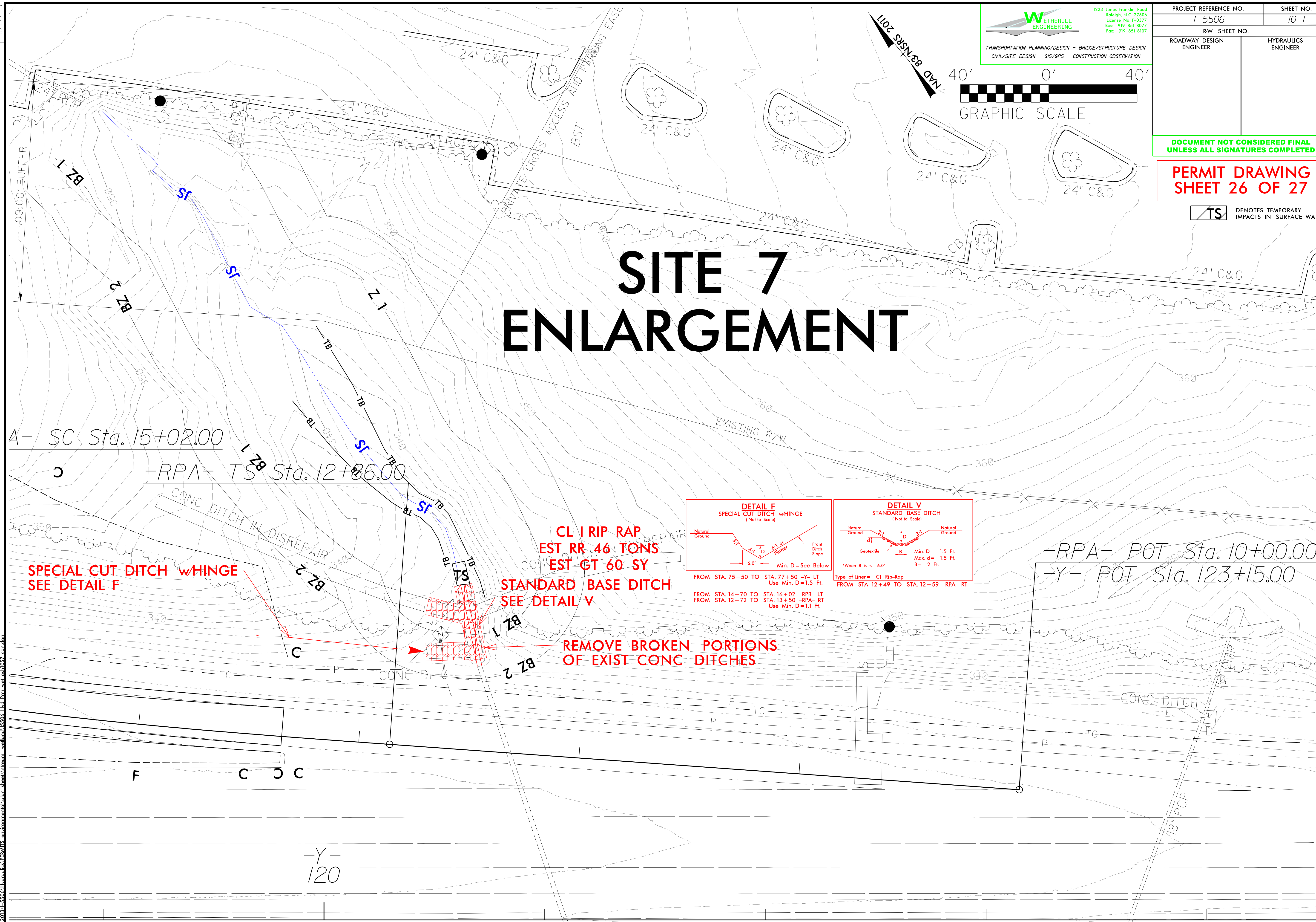
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 26 OF 27

TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER

40' 0' 40'
GRAPHIC SCALE

SITE 7 ENLARGEMENT



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

Natural Ground; 3:1; 4:1; D; 6:1 or Flatter; Front Ditch Slope; 6.0'
Min. D = See Below

FROM STA. 75+50 TO STA. 77+50 -Y- LT
Use Min. D=1.5 Ft.

FROM STA. 14+70 TO STA. 16+02 -RPB- LT
FROM STA. 12+72 TO STA. 13+50 -RPA- RT
Use Min. D=1.1 Ft.

DETAIL V
STANDARD BASE DITCH
(Not to Scale)

Natural Ground; 3:1; D; d; 3:1; Natural Ground; Geotextile; B
Min. D = 1.5 Ft.
Max. d = 1.5 Ft.
B = 2 Ft.
*When B is < 6.0'
Type of Liner = Cl I Rip-Rap

FROM STA. 12+49 TO STA. 12+59 -RPA- RT

REVISIONS

8/17/99

6/29/2017
tdavis
p:\2013\I-5506\Hydraulics\PERMITS_environmental\plan_sheets\stream_wetland\I5506_Hyd_Prm_wet_psh10SZ_con.dgn

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)
1	22+45 -RPD- (LT)	BANK STABILIZATION						< 0.01	< 0.01	17	12	
2	15+53 TO 16+36 -LPB- (RT)	ROAD FILL						0.01		90		
3	25+39 -RPB- (LT)	ROAD FILL	< 0.01									
4A	64+28 TO 66+10 -Y- (LT)	ROAD FILL	< 0.01			0.02						
4B	66+30 TO 67+65 -Y- (LT)	3 @ 9'x8' RCBC	0.01		< 0.01	< 0.01		0.01	< 0.01	45	14	
4C	67+95 TO 68+20 -Y- (LT)	ROAD FILL				< 0.01						
5A	81+73 -Y- (LT)	48" CMP						< 0.01		16		
5A	81+84 -Y- (LT)	BANK STABILIZATION						< 0.01	< 0.01	28	10	
5B	82+85 TO 83+50 -Y- (LT)	ROAD FILL						< 0.01	< 0.01	45	30	
5B	85+00 -Y- (LT)	CL I RIP RAP							< 0.01		10	
6	15+84 -RPC- (RT)	BANK STABILIZATION						< 0.01	< 0.01	15	10	
7	12+58 -RPA- (RT)	24" RCP							< 0.01		10	
TOTALS*:			0.02		< 0.01	0.03		0.04	0.01	256	96	0

*Rounded totals are sum of actual impacts

NOTES:

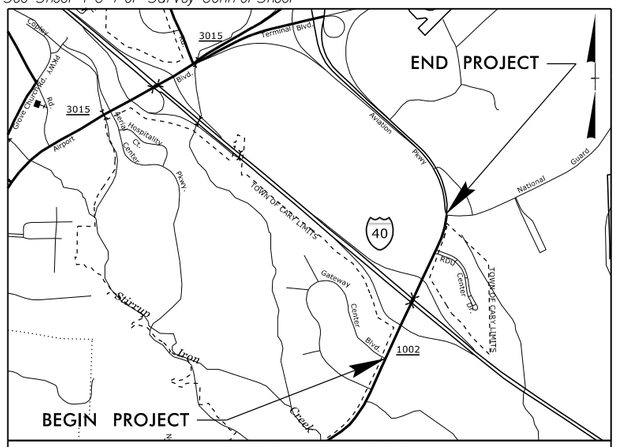
NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
JUNE 29, 2017
WAKE COUNTY
TIP: I-5506
WBS: 43608.1.1

09/08/99

TIP PROJECT: I-5506

CONTRACT:

See Sheet 1-A For Index of Sheets
See Sheet 1-B For Conventional Plan Sheet Symbols
See Sheet 1-C For Survey Control Sheet



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WAKE COUNTY

BUFFER DRAWING SHEET 1 OF 14

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-5506	1	

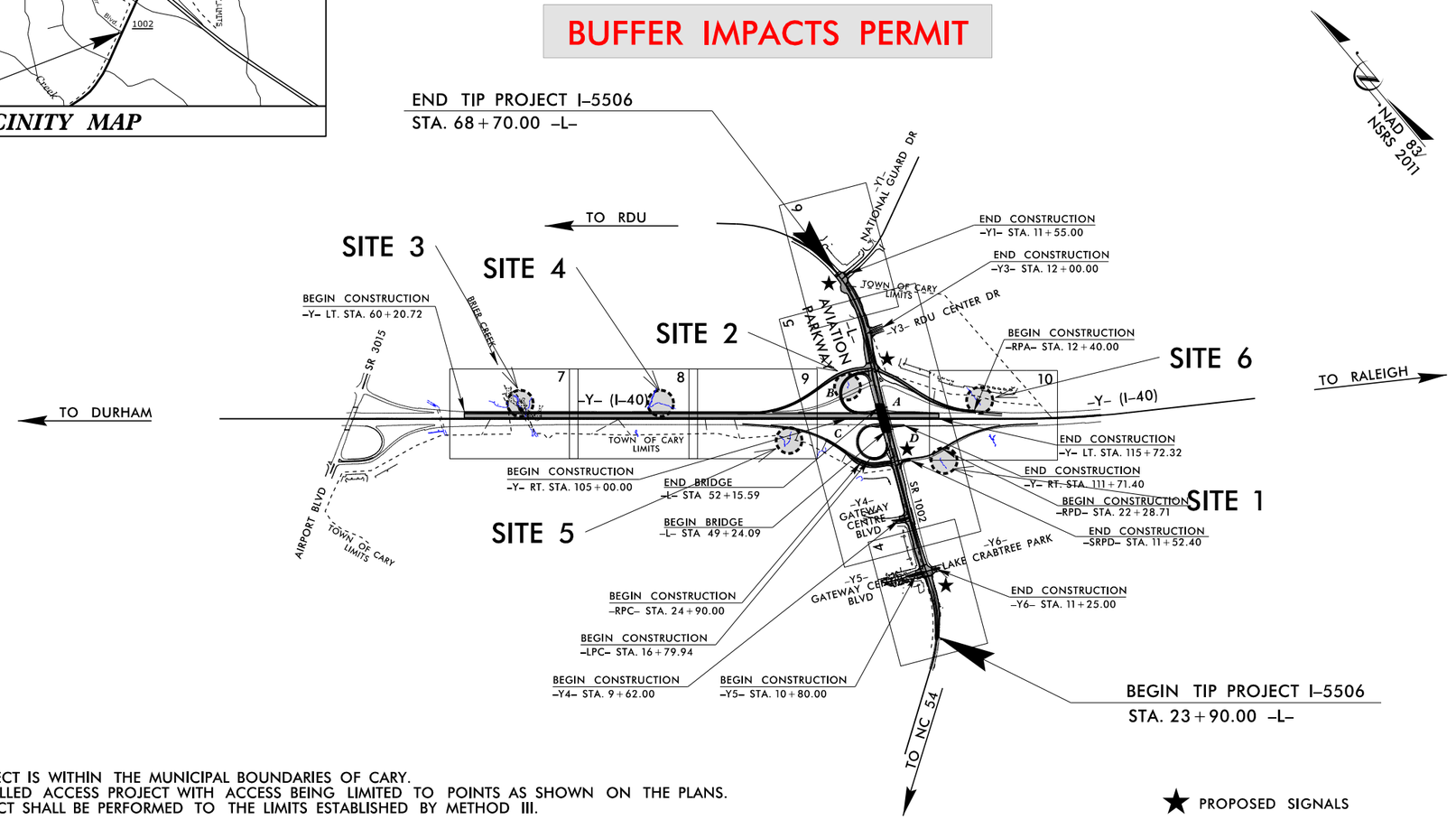
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
43608.1.1	NHPP-040-7(154)284	PE
43608.2.2	NHPP-040-7(154)284	ROW/UTIL.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

LOCATION: I-40 AND SR 1002 (AVIATION PARKWAY) INTERCHANGE

TYPE OF WORK: GRADING, DRAINAGE, PAVING, SIGNALS CULVERTS AND STRUCTURES

BUFFER IMPACTS PERMIT



A PORTION OF THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF CARY.
THIS IS A PARTIAL CONTROLLED ACCESS PROJECT WITH ACCESS BEING LIMITED TO POINTS AS SHOWN ON THE PLANS.
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.

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 2018 = 28,555
ADT 2040 = 37,600
K = 55 %
D = 10 %
T = 7 % *
V = 50 MPH
* TTST=2% DUAL=5%
FUNC CLASS= "MINOR ARTERIAL"

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT I-5506 = 0.793 MILES
LENGTH STRUCTURE TIP PROJECT I-5506 = 0.055 MILES
TOTAL LENGTH OF TIP PROJECT I-5506 = 0.848 MILES

Prepared for the North Carolina Department of Transportation in the Office of:

WETHERILL ENGINEERING
1223 JONES FRANKLIN ROAD
Raleigh, N.C. 27606
License No. F-0377
Phone: 919 851 8077
Fax: 919 851 8107

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: FEBRUARY 24, 2017

LETTING DATE: FEBRUARY 20, 2018

EDWARD G. WETHERILL, PE
PROJECT ENGINEER

BOB A. MAY, PE
PROJECT DESIGN ENGINEER

NCDOT CONTACT: GARY LOVERING, PE
ROADWAY DESIGN: PROJECT ENGINEER

HYDRAULICS ENGINEER

P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

P.E.
SIGNATURE:

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

5/3/2017
tdavis
P:\2013\I-5506\Hydraulics\PERMITS environmental\plan sheets\buffer\I5506_Hyd_Prm_Buf_tsh.dgn

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
I-5506	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BUFFER DRAWING
SHEET 2 OF 14

NAD 83/NSRS 2011

200' 0' 200'
GRAPHIC SCALE

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

MATCHLINE -Y- STA. 101+00.00 SEE SHEET 9

MATCHLINE -RPB- STA. 18+50.00 SEE SHEET 9

MATCHLINE -L- STA. 36+50.00 SEE SHEET 4

MATCHLINE -L- STA. 64+00.00 SEE SHEET 6

MATCHLINE -RPD- STA. 21+51.08 SEE SHEET 10

MATCHLINE -Y- STA. 115+50.00 SEE SHEET 10

MATCHLINE -RPA- STA. 19+00.00 SEE SHEET 10

SITE 1

SITE 2

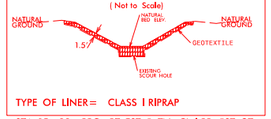
A

B

C

D

DETAIL R
BANK & SCOUR HOLE STABILIZATION
(Not to Scale)



TYPE OF LINER= CLASS I RIPRAP

STA. 15+83 -RPC- RT EST 5 TN CL I RR; 5ST GT
STA. 22+36 -RPD- LT EST 22 TN CL I RR; 30 SY GT

GRAPHIC SCALE
50 25 0 50 100
PLANS

LOCATION:
INTERCHANGE – I-40 AND SR 1002 (ALSTON PARKWAY)

TIP NO.: I-5506 COUNTY: WAKE

DESIGNED BY: B.A.M.

CHECKED BY: E.G.W. DATE:

5/2/2017
10:06:48
P:\2013\I-5506\Hydraulics\PERMITS environmental\plan sheets buffer\I5506_Hyd Prm Buf_sht02.dgn

WETHERILL ENGINEERING
1223 Jones Franklin Road
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO.	SHEET NO.
I-5506	5-I
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BUFFER DRAWING
SHEET 3 OF 14

NAD 83/NSRS 2011

SITE 1

25

RALEIGH-DURHAM
INTERNATIONAL

EXISTING R/W

25

18" RCP

-RPD- PT St

-RPD- PC Sta. 22+11.35

-RPD- ST Sta. 21+76.15

24" RCP

BANK AND SCOUR
HOLE STABILIZATION
SEE DETAIL R

BZ 2
BZ 1
BZ 1
BZ 2
BZ 2
BZ 1
BZ 1
BZ 2

JS
JS

TB

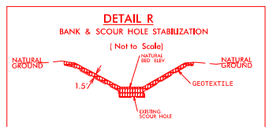
REPLACE LAST 8'
OF DAMAGED 24" RCP

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

40' 0' 40'
GRAPHIC SCALE

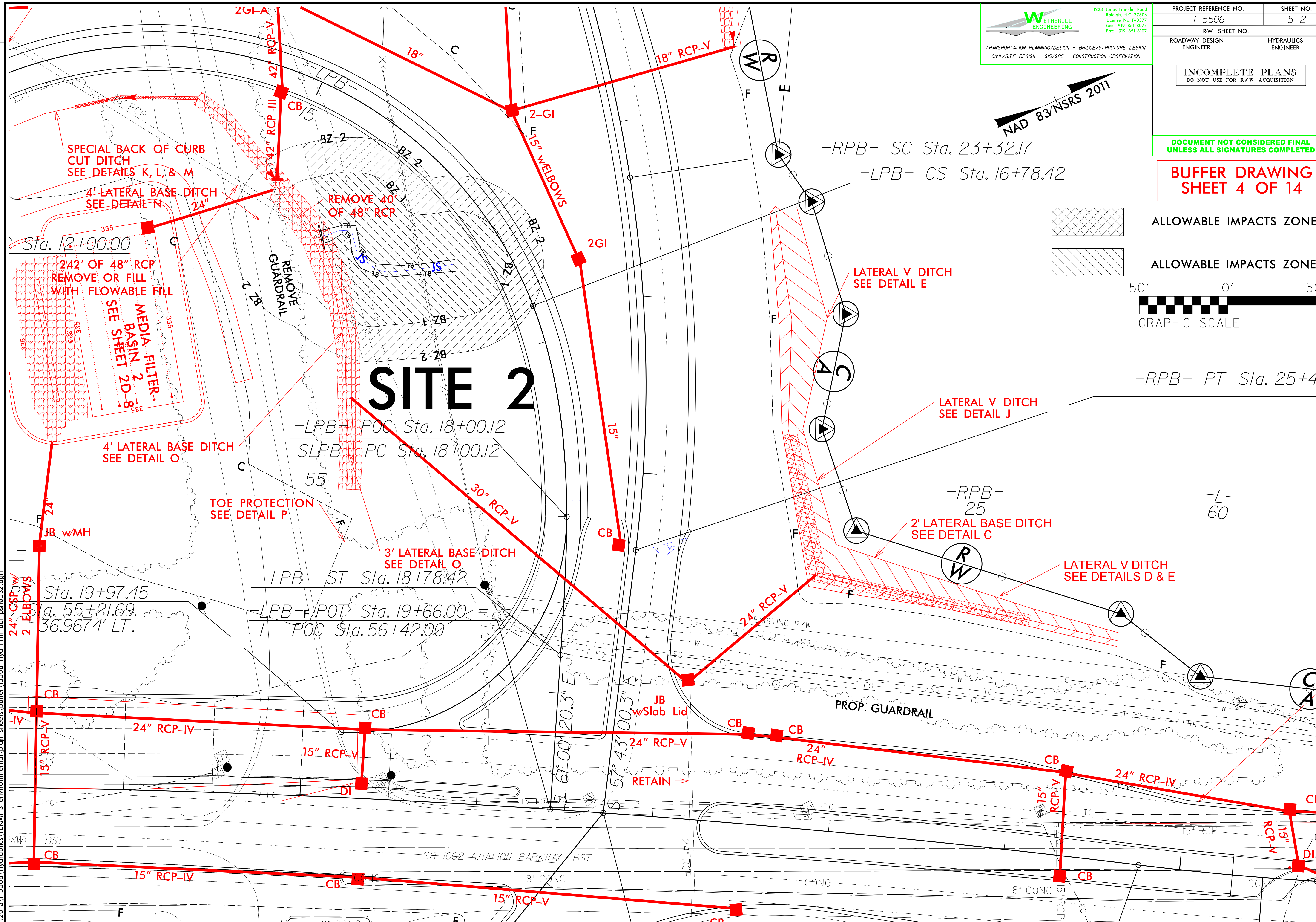
DETAIL R
BANK & SCOUR HOLE STABILIZATION
(Not to Scale)



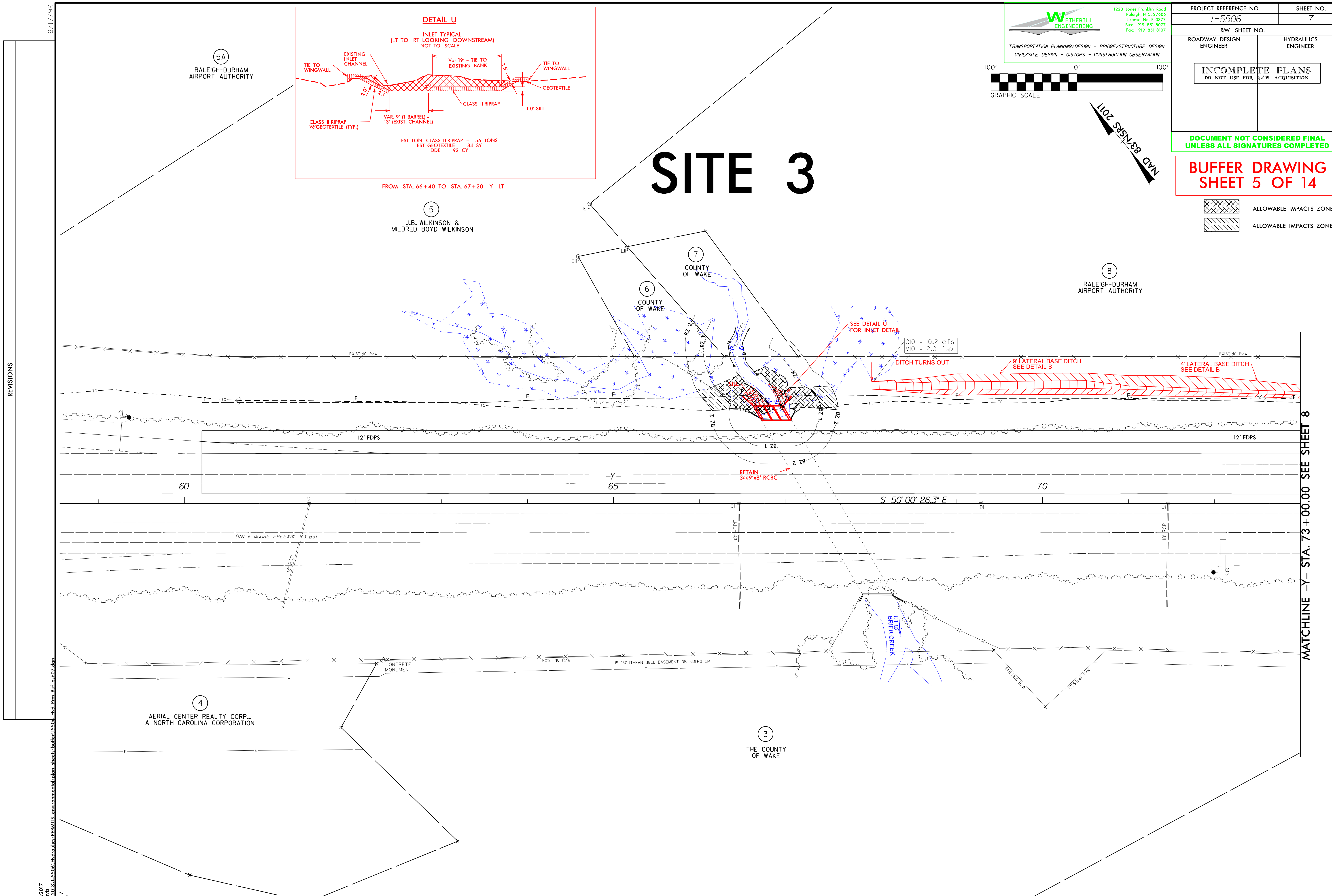
TYPE OF LINER= CLASS I RIPRAP

STA. 15+83 -RPC- RT EST 5 TN CL I RR; 5ST GT
STA. 22+36 -RPD- LT EST 22 TN CL I RR; 30 SY GT

5/2/2017
tdavis
P:\2013\I-5506 Hydraulics\PERMITS environmental\ plan sheets\buffer\I5506 Hyd Prm Buf psh05SI.dgn



PROJECT REFERENCE NO.
I-5506
SHEET NO.
5-2
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED
WETHERILL ENGINEERING
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION
NAD 83/NSRS 2011
BUFFER DRAWING
SHEET 4 OF 14
ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2
50' 0' 50'
GRAPHIC SCALE
SITE 2
-RPB- SC Sta. 23+32.17
-LPB- CS Sta. 16+78.42
-RPB- PT Sta. 25+43
-LPB- POC Sta. 18+00.12
-SLPB- PC Sta. 18+00.12
-LPB- ST Sta. 18+78.42
-LPB-/POT Sta. 19+66.00
-L- POC Sta. 56+42.00
Sta. 12+00.00
Sta. 19+97.45
Sta. 55+21.69
36.9674' LT.
SPECIAL BACK OF CURB CUT DITCH
SEE DETAILS K, L, & M
4' LATERAL BASE DITCH
SEE DETAIL N
242' OF 48" RCP
REMOVE OR FILL
WITH FLOWABLE FILL
MEDIA FILTER-BASIN 2
SEE SHEET 2D-8
REMOVE 40' OF 48" RCP
REMOVE GUARDRAIL
4' LATERAL BASE DITCH
SEE DETAIL O
TOE PROTECTION
SEE DETAIL P
3' LATERAL BASE DITCH
SEE DETAIL O
LATERAL V DITCH
SEE DETAIL E
LATERAL V DITCH
SEE DETAIL J
2' LATERAL BASE DITCH
SEE DETAIL C
LATERAL V DITCH
SEE DETAILS D & E
30" RCP-V
24" RCP-V
18" RCP-V
42" RCP-V
42" RCP-III
15" W/ELBOWS
2-GI
2GI
JB w/MH
JB w/Slab Lid
24" RCP-IV
15" RCP-V
15" RCP-IV
PROP. GUARDRAIL
RETAIN
EXISTING R/W
SR 1002 AVIATION PARKWAY BST
S 61° 00' 20.3" E
S 57° 43' 00.3" E
-RPB- 25
-L- 60


PROJECT REFERENCE NO.
SHEET NO.
I-5506
7
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
WETHERILL ENGINEERING
1223 Jones Franklin Road
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION
100'
0'
100'
GRAPHIC SCALE
NAD 83/NSRS 2011
BUFFER DRAWING
SHEET 5 OF 14
ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2
SITE 3
DETAIL U
INLET TYPICAL
(LT TO RT LOOKING DOWNSTREAM)
NOT TO SCALE
TIE TO WINGWALL
EXISTING INLET CHANNEL
Var 19' - TIE TO EXISTING BANK
TIE TO WINGWALL
GEOTEXTILE
CLASS II RIPRAP
1.0' SILL
CLASS II RIPRAP W/GEOTEXTILE (TYP.)
VAR. 9' (1 BARREL) - 13' (EXIST. CHANNEL)
EST TON CLASS II RIPRAP = 56 TONS
EST GEOTEXTILE = 84 SY
DDE = 92 CY
FROM STA. 66+40 TO STA. 67+20 -Y- LT
5A
RALEIGH-DURHAM AIRPORT AUTHORITY
5
J.B. WILKINSON & MILDRED BOYD WILKINSON
6
COUNTY OF WAKE
7
COUNTY OF WAKE
8
RALEIGH-DURHAM AIRPORT AUTHORITY
SEE DETAIL U FOR INLET DETAIL
Q10 = 10.2 cfs
V10 = 2.0 fps
DITCH TURNS OUT
9' LATERAL BASE DITCH SEE DETAIL B
4' LATERAL BASE DITCH SEE DETAIL B
EXISTING R/W
12' FDPS
12' FDPS
RETAIN 3@9'x8' RCBC
-Y-
60
65
70
S 50°00' 26.3" E
DAN K MOORE FREEWAY 73' BST
18" RCP
18" HDPE
18" RCP
UT to BRIER CREEK
CONCRETE MONUMENT
EXISTING R/W
15' SOUTHERN BELL EASEMENT DB 5131 PG 214
4
AERIAL CENTER REALTY CORP., A NORTH CAROLINA CORPORATION
3
THE COUNTY OF WAKE
MATCHLINE -Y- STA. 73+00.00 SEE SHEET 8
REVISIONS
8/17/99
5/3/2017
tdavis

SITE 3 ENLARGEMENT

WETHERILL ENGINEERING
1223 Jones Franklin Road
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO.	SHEET NO.
I-5506	7-I
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

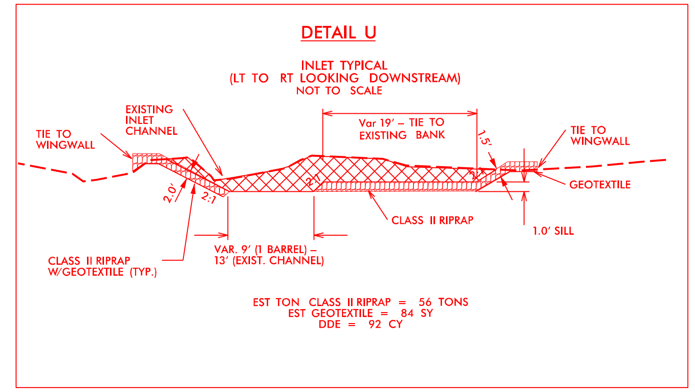
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BUFFER DRAWING SHEET 6 OF 14

40′ 0′ 40′
GRAPHIC SCALE

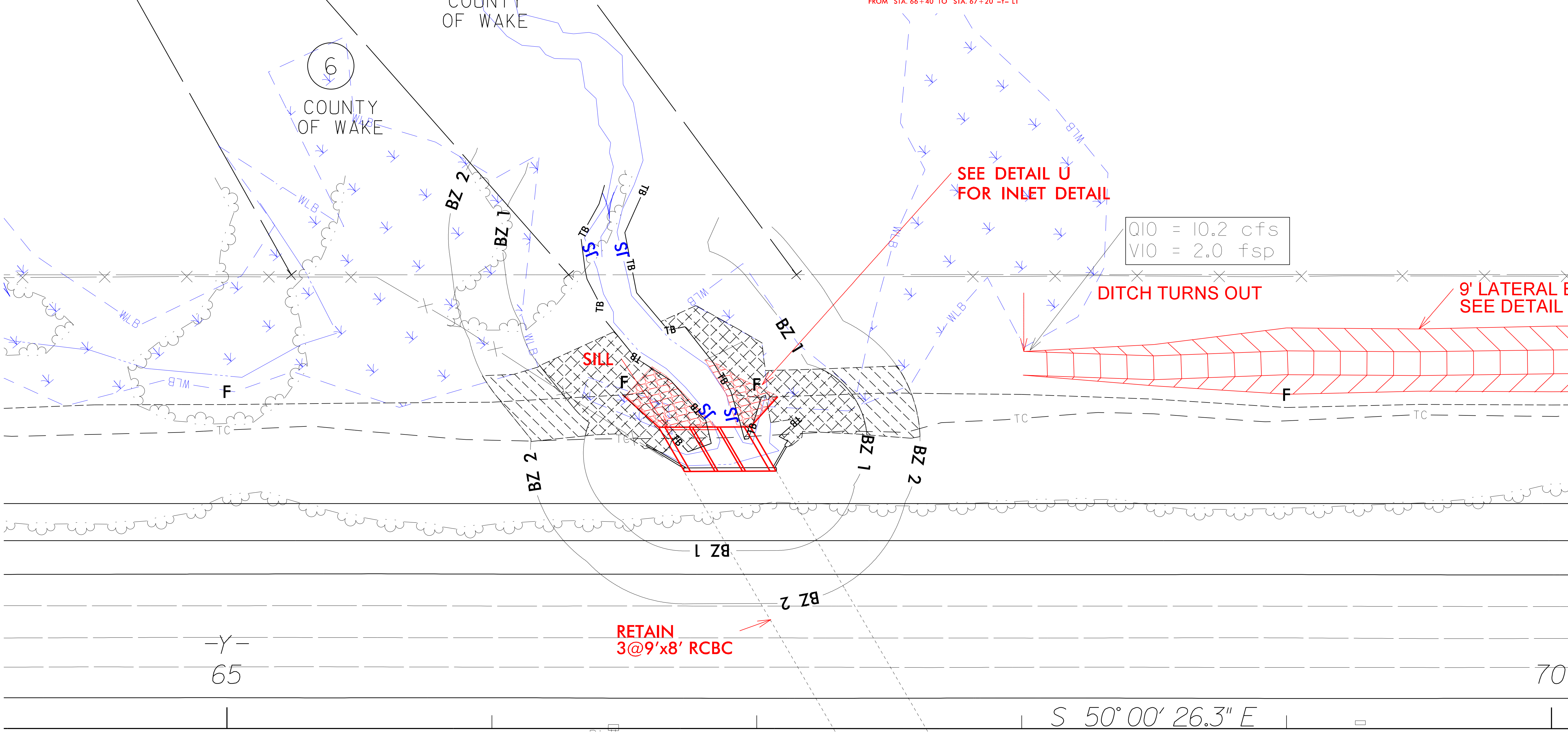
NAD 83/NSRS 2011



FROM STA. 66+40 TO STA. 67+20 -Y- LT

ALLOWABLE IMPACTS ZONE 1

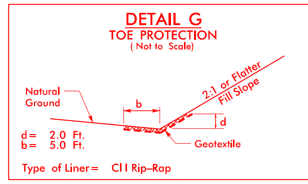
ALLOWABLE IMPACTS ZONE 2



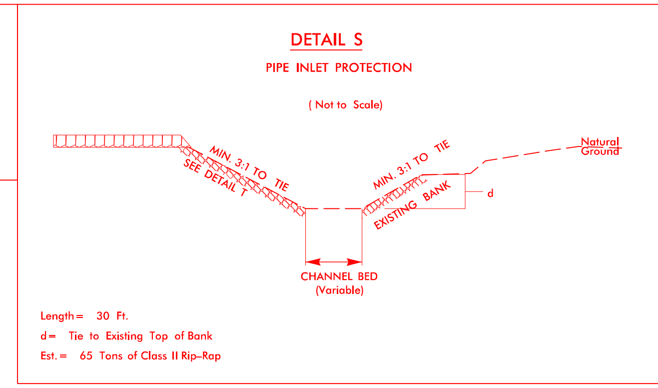
REVISIONS

8/17/99

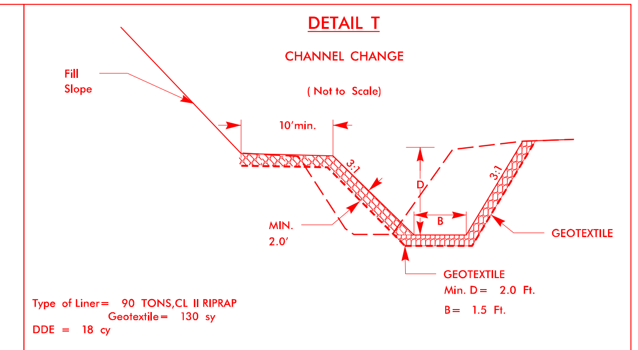
5/3/2017
tdavis



FROM STA. 79+50 TO STA. 81+70 -Y- LT



FROM STA. 81+58 TO STA. 81+80 -Y- LT



FROM STA. 81+80 TO STA. 82+30 -Y- LT

WETHERILL ENGINEERING
1223 Jones Franklin Road
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO.	SHEET NO.
I-5506	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

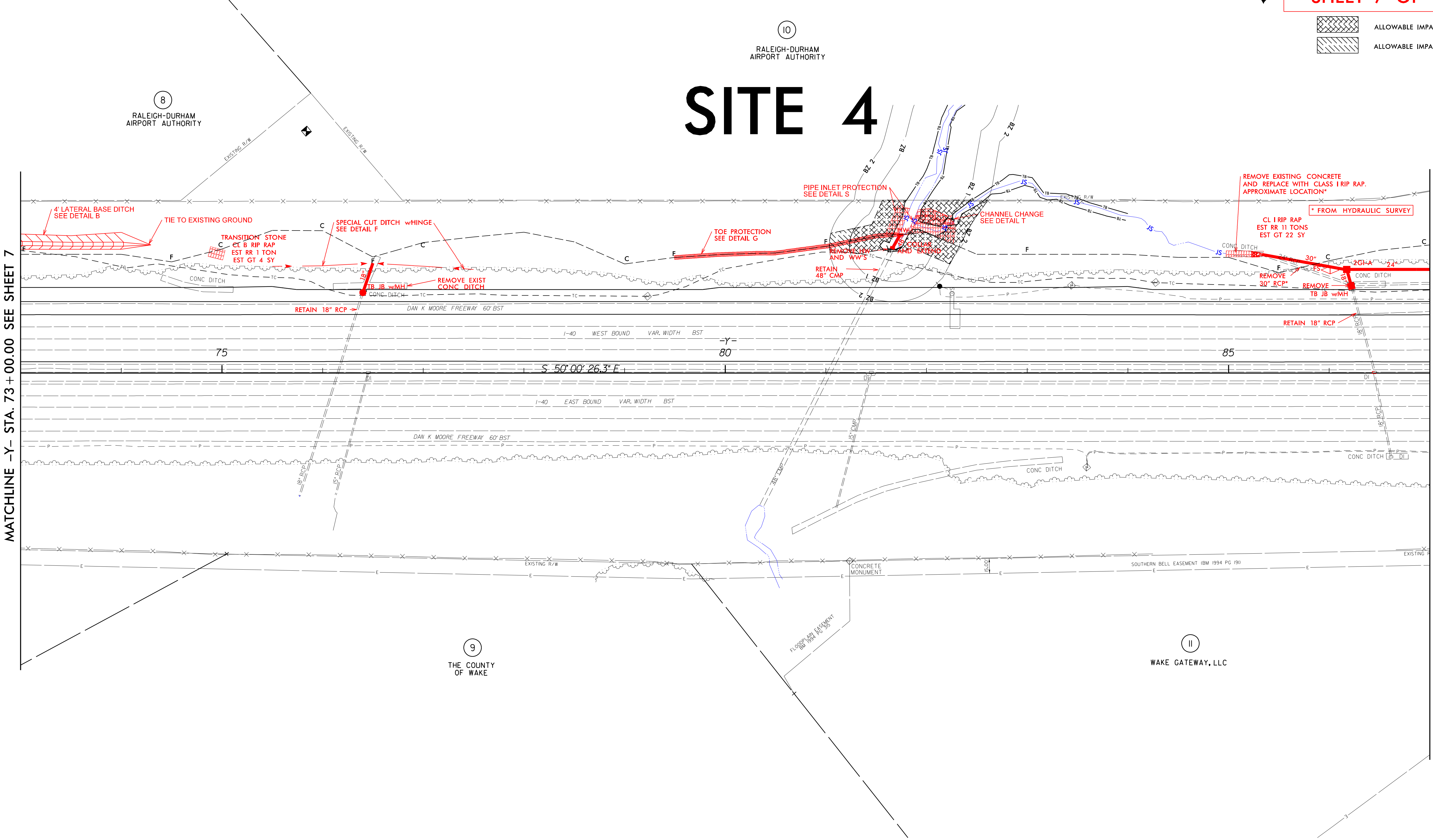
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BUFFER DRAWING SHEET 7 OF 14

ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2

SITE 4



REVISIONS

8/17/99

5/3/2017
tdavis

SITE 4 ENLARGEMENT

WETHERILL ENGINEERING
1223 Jones Franklin Road
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO.	SHEET NO.
I-5506	8-1
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/NSRS 2011

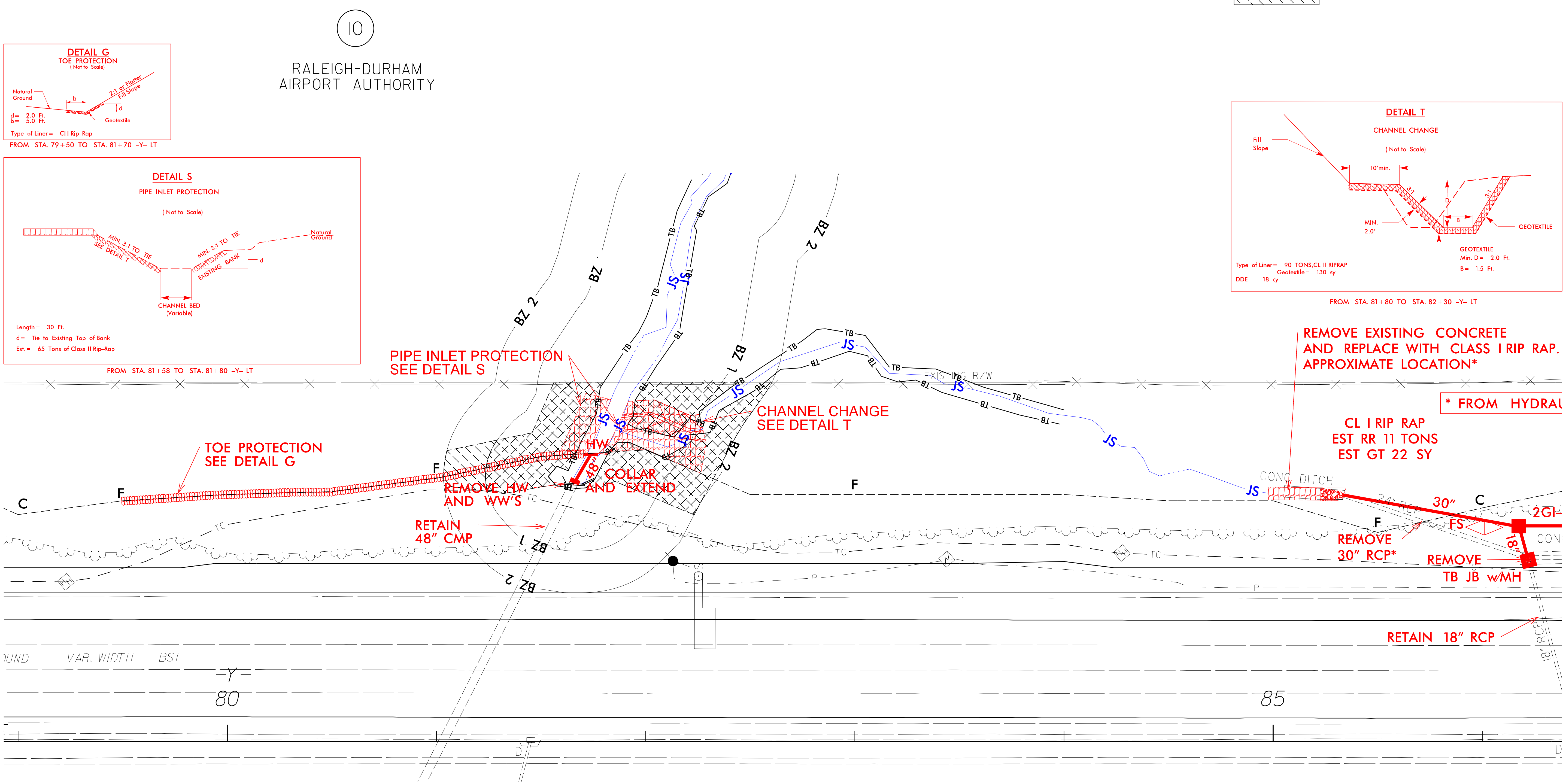
50' 0' 50'
GRAPHIC SCALE

BUFFER DRAWING SHEET 8 OF 14

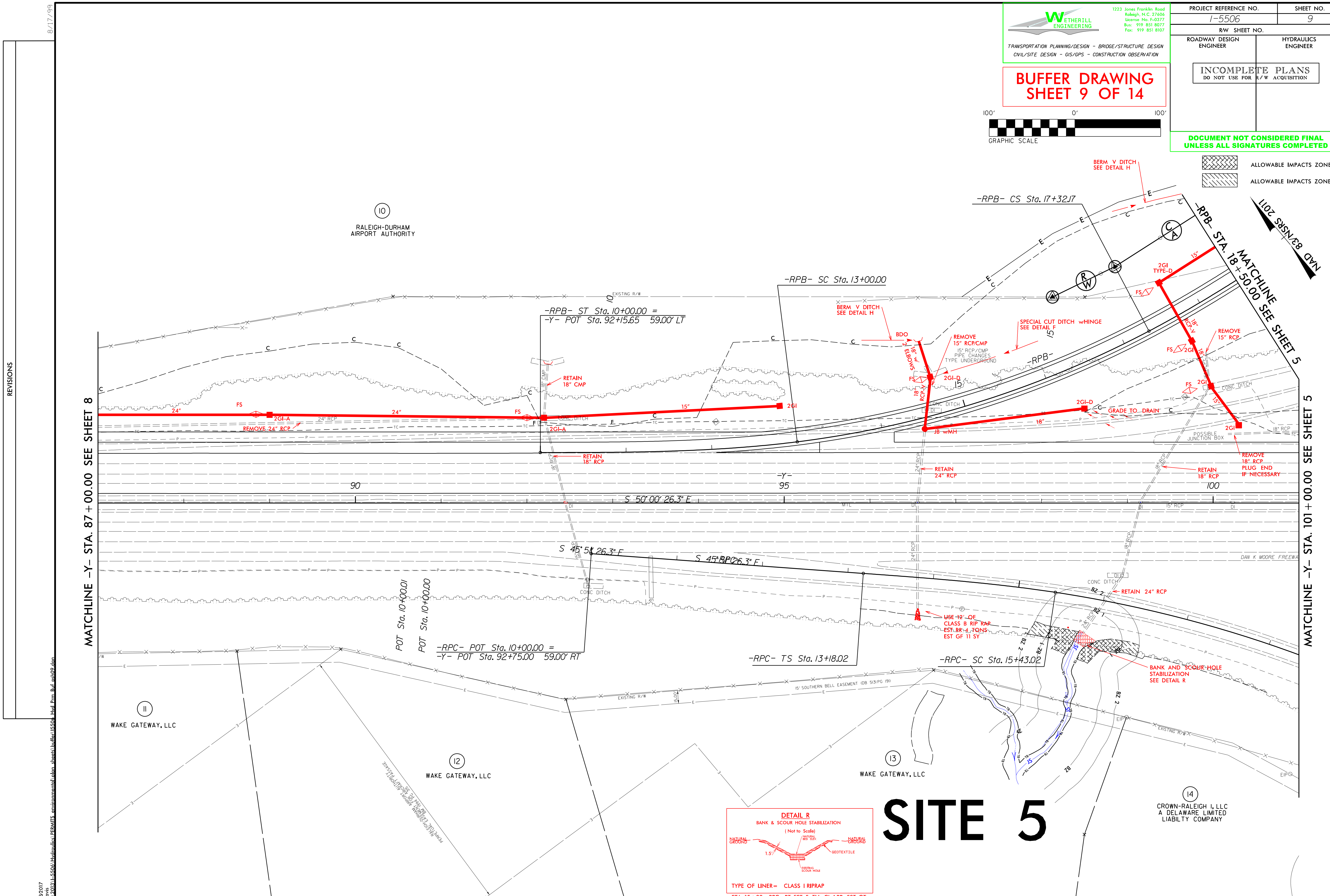
ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

REVISIONS

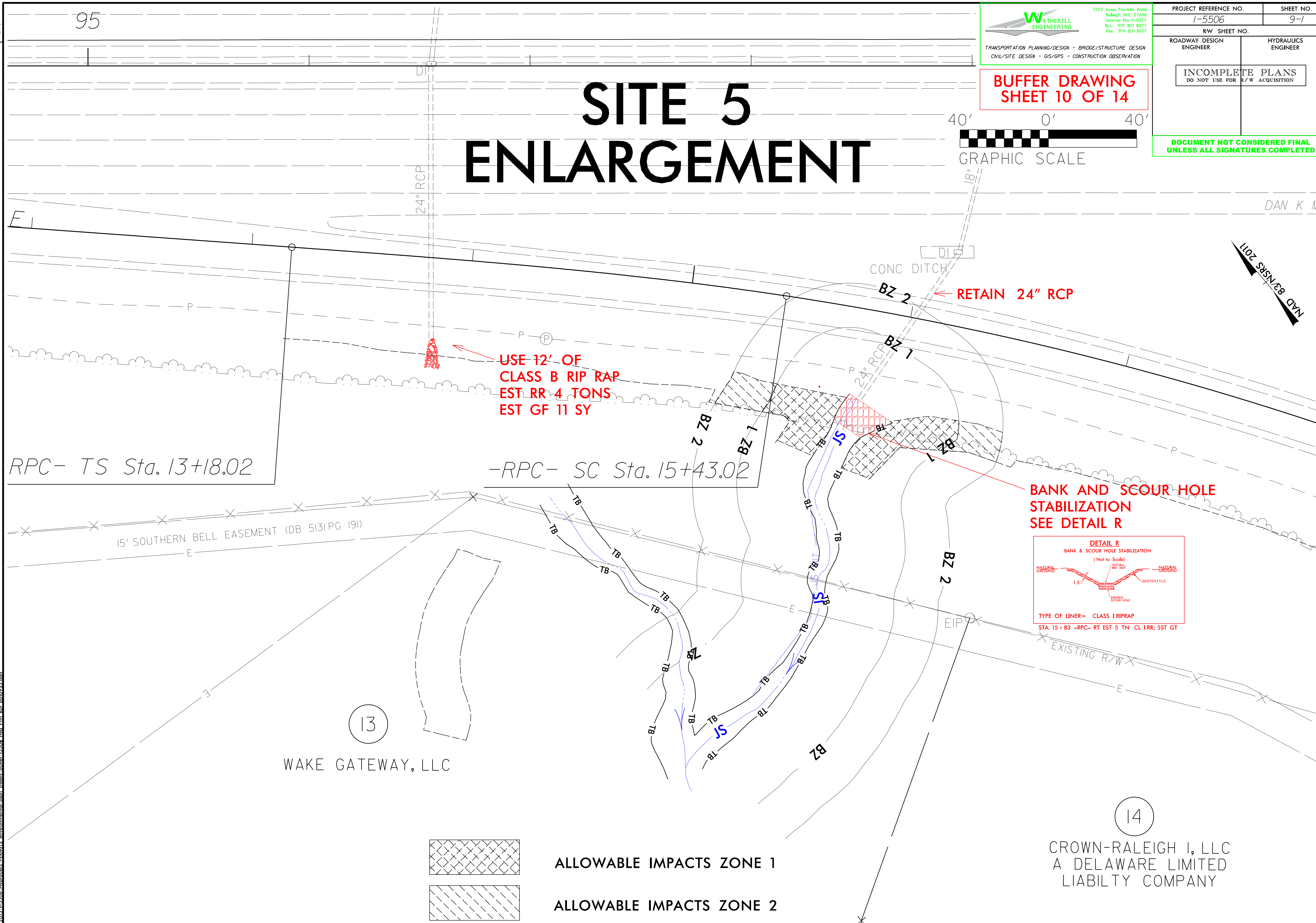

10
RALEIGH-DURHAM
AIRPORT AUTHORITY
DETAIL G
TOE PROTECTION
(Not to Scale)
Natural Ground
2:1 or Flatter Fill Slope
Geotextile
d= 2.0 Ft.
b= 5.0 Ft.
Type of Liner= Cl I Rip-Rap
FROM STA. 79+50 TO STA. 81+70 -Y- LT
DETAIL S
PIPE INLET PROTECTION
(Not to Scale)
MIN. 3:1 TO TIE
SEE DETAIL T
MIN. 3:1 TO TIE
EXISTING BANK
Natural Ground
CHANNEL BED (Variable)
Length= 30 Ft.
d= Tie to Existing Top of Bank
Est.= 65 Tons of Class II Rip-Rap
FROM STA. 81+58 TO STA. 81+80 -Y- LT
DETAIL T
CHANNEL CHANGE
(Not to Scale)
Fill Slope
10'min.
MIN. 2.0'
GEOTEXTILE
Min. D= 2.0 Ft.
B= 1.5 Ft.
Type of Liner= 90 TONS,CL II RIPRAP
Geotextile= 130 sy
DDE = 18 cy
FROM STA. 81+80 TO STA. 82+30 -Y- LT
PIPE INLET PROTECTION
SEE DETAIL S
CHANNEL CHANGE
SEE DETAIL T
TOE PROTECTION
SEE DETAIL G
REMOVE HW
AND WW'S
COLLAR
AND EXTEND
RETAIN
48" CMP
REMOVE EXISTING CONCRETE
AND REPLACE WITH CLASS I RIP RAP.
APPROXIMATE LOCATION*
* FROM HYDRAU
CL I RIP RAP
EST RR 11 TONS
EST GT 22 SY
REMOVE
30" RCP*
REMOVE
TB JB w/MH
RETAIN 18" RCP
EXISTING R/W
CONC DITCH
VAR. WIDTH BST
-Y-
80
85

8/17/99
5/3/2017
tdavis



PROJECT REFERENCE NO. I-5506
SHEET NO. 9
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION
WETHERILL ENGINEERING
1223 Jones Franklin Road Raleigh, N.C. 27606 License No. F-0377 Bus: 919 851 8077 Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION
BUFFER DRAWING
SHEET 9 OF 14
GRAPHIC SCALE
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2
NAD 83/NSRS 2011
REVISIONS
MATCHLINE -Y- STA. 87+00.00 SEE SHEET 8
MATCHLINE -Y- STA. 101+00.00 SEE SHEET 5
-RPB- STA. 18+50.00 MATCHLINE SEE SHEET 5
RALEIGH-DURHAM AIRPORT AUTHORITY
-RPB- ST Sta. 10+00.00 =
-Y- POT Sta. 92+15.65 59.00' LT
-RPB- SC Sta. 13+00.00
-RPB- CS Sta. 17+32.17
BERM V DITCH SEE DETAIL H
SPECIAL CUT DITCH w/HINGE SEE DETAIL F
REMOVE 15" RCP/CMP
REMOVE 15" RCP
RETAIN 18" CMP
RETAIN 18" RCP
RETAIN 24" RCP
RETAIN 18" RCP
REMOVE 24" RCP
REMOVE 18" RCP PLUG END IF NECESSARY
GRADE TO DRAIN
POSSIBLE JUNCTION BOX
S 50°00' 26.3" E
S 45°51' 26.3" E
-RPC- POT Sta. 10+00.00 =
-Y- POT Sta. 92+75.00 59.00' RT
-RPC- TS Sta. 13+18.02
-RPC- SC Sta. 15+43.02
USE 12' OF CLASS B RIP RAP EST. RR 4 TONS EST GF 11 SY
RETAIN 24" RCP
BANK AND SCOUR HOLE STABILIZATION SEE DETAIL R
WAKE GATEWAY, LLC
CROWN-RALEIGH I, LLC A DELAWARE LIMITED LIABILTY COMPANY
DAN K MOORE FREEWAY
DETAIL R
BANK & SCOUR HOLE STABILIZATION
(Not to Scale)
TYPE OF LINER= CLASS I RIPRAP
STA. 15+83 -RPC- RT EST 5 TN CL I RR; 5ST GT
SITE 5

SITE 5 ENLARGEMENT



95
24" RCP
DI
18"
DI
CONC DITCH
RETAIN 24" RCP
DAN K MC
NAD 83/NSRS 2011
BZ 2
BZ 1
P
USE 12' OF
CLASS B RIP RAP
EST RR 4 TONS
EST GF 11 SY
RPC- TS Sta. 13+18.02
-RPC- SC Sta. 15+43.02
BANK AND SCOUR HOLE
STABILIZATION
SEE DETAIL R
DETAIL R
BANK & SCOUR HOLE STABILIZATION
(Not to Scale)
NATURAL GROUND
NATURAL BED ELEV.
GEOTEXTILE
1.5'
EXISTING SCOUR HOLE
TYPE OF LINER= CLASS I RIPRAP
STA. 15+83 -RPC- RT EST 5 TN CL I RR; 5ST GT
15' SOUTHERN BELL EASEMENT (DB 5131 PG 191)
TB
JS
EIP
EXISTING R/W
13
WAKE GATEWAY, LLC
14
CROWN-RALEIGH I, LLC
A DELAWARE LIMITED
LIABILTY COMPANY
ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2

WETHERILL ENGINEERING
1223 Jones Franklin Road
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

BUFFER DRAWING
SHEET 10 OF 14

40' 0' 40'
GRAPHIC SCALE

PROJECT REFERENCE NO.	SHEET NO.
I-5506	9-I
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

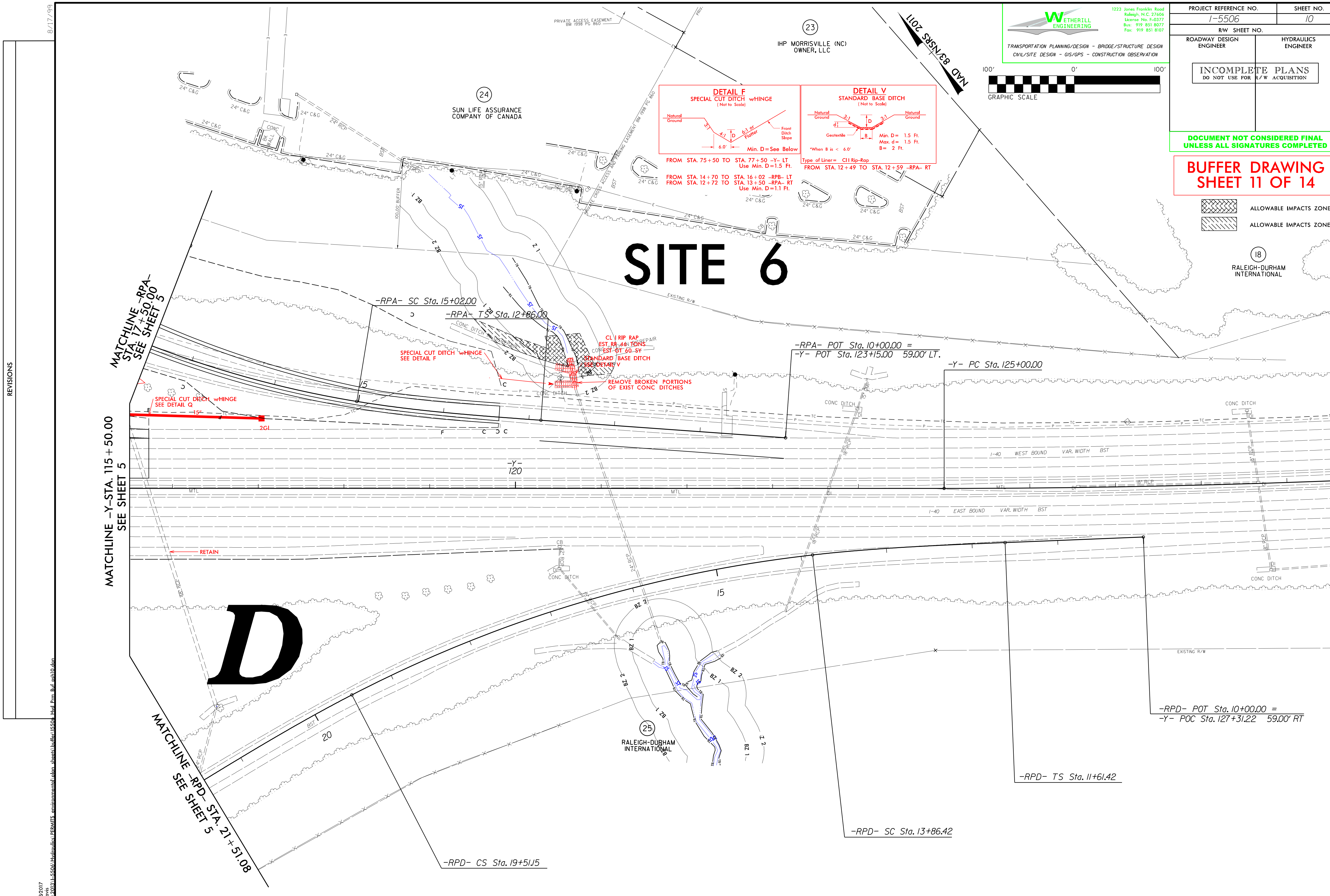
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

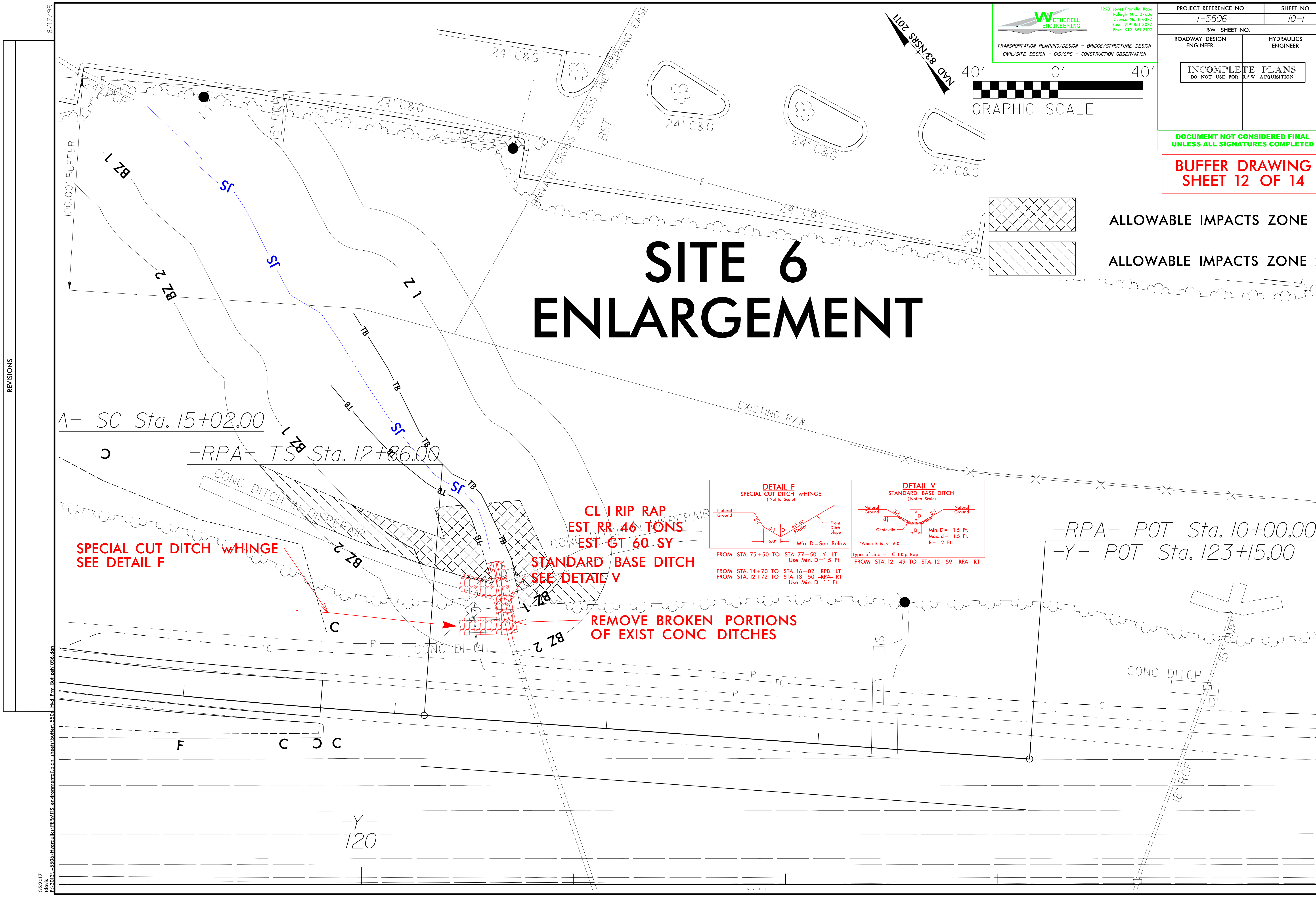
REVISIONS

8/17/99

5/3/2017
tdavis



PROJECT REFERENCE NO. I-5506
SHEET NO. 10
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
WETHERILL ENGINEERING
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION
BUFFER DRAWING SHEET 11 OF 14
ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2
GRAPHIC SCALE
NAD 83/NSRS 2011
SITE 6
D
DETAIL F
SPECIAL CUT DITCH w/HINGE
(Not to Scale)
Min. D=See Below
FROM STA. 75+50 TO STA. 77+50 -Y- LT Use Min. D=1.5 Ft.
FROM STA. 14+70 TO STA. 16+02 -RPB- LT
FROM STA. 12+72 TO STA. 13+50 -RPA- RT Use Min. D=1.1 Ft.
DETAIL V
STANDARD BASE DITCH
(Not to Scale)
Min. D= 1.5 Ft.
Max. d= 1.5 Ft.
B= 2 Ft.
Type of Liner= Cl I Rip-Rap
FROM STA. 12+49 TO STA. 12+59 -RPA- RT
SUN LIFE ASSURANCE COMPANY OF CANADA
IHP MORRISVILLE (NC) OWNER, LLC
RALEIGH-DURHAM INTERNATIONAL
-RPA- SC Sta. 15+02.00
-RPA- TS Sta. 12+86.00
-RPA- POT Sta. 10+00.00 =
-Y- POT Sta. 123+15.00 59.00' LT.
-Y- PC Sta. 125+00.00
SPECIAL CUT DITCH w/HINGE SEE DETAIL F
CL I RIP RAP EST 46 TONS EST GT 60 SY
STANDARD BASE DITCH SEE DETAIL V
REMOVE BROKEN PORTIONS OF EXIST CONC DITCHES
SPECIAL CUT DITCH w/HINGE SEE DETAIL Q
MATCHLINE -RPA- STA. 17+50.00 SEE SHEET 5
MATCHLINE -Y- STA. 115+50.00 SEE SHEET 5
MATCHLINE -RPD- STA. 21+51.08 SEE SHEET 5
RETAIN
I-40 WEST BOUND VAR. WIDTH BST
I-40 EAST BOUND VAR. WIDTH BST
-RPD- POT Sta. 10+00.00 =
-Y- POC Sta. 127+31.22 59.00' RT
-RPD- TS Sta. 11+61.42
-RPD- SC Sta. 13+86.42
-RPD- CS Sta. 19+51.15
EXISTING R/W
REVISIONS
8/17/99



PROJECT REFERENCE NO.
I-5506
SHEET NO.
10-1
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED
WETHERILL ENGINEERING
1223 Jones Franklin Road
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION
NAD 83/NSRS 2011
40' 0' 40'
GRAPHIC SCALE
BUFFER DRAWING
SHEET 12 OF 14
ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2
SITE 6
ENLARGEMENT
REVISIONS
8/17/99
100.00' BUFFER
24" C&G
24" RCP
15" RCP
PRIVATE CROSS ACCESS AND PARKING EASE
BST
EXISTING R/W
-RPA- POT Sta. 10+00.00
-Y- POT Sta. 123+15.00
A- SC Sta. 15+02.00
-RPA- TS Sta. 12+86.00
CONC DITCH IN DISREPAIR
CONC DITCH
CL I RIP RAP
EST RR 46 TONS
EST GT 60 SY
SPECIAL CUT DITCH w/HINGE
SEE DETAIL F
STANDARD BASE DITCH
SEE DETAIL V
REMOVE BROKEN PORTIONS
OF EXIST CONC DITCHES
BZ 1
BZ 2
Z 1
JS
TB
15" CMP
18" RCP
-Y-
120
DETAIL F
SPECIAL CUT DITCH w/HINGE
(Not to Scale)
Natural Ground
3:1
4:1
6:1 or Flatter
Front Ditch Slope
6.0'
Min. D = See Below
FROM STA. 75+50 TO STA. 77+50 -Y- LT
Use Min. D=1.5 Ft.
FROM STA. 14+70 TO STA. 16+02 -RPB- LT
FROM STA. 12+72 TO STA. 13+50 -RPA- RT
Use Min. D=1.1 Ft.
DETAIL V
STANDARD BASE DITCH
(Not to Scale)
Natural Ground
Geotextile
Min. D = 1.5 Ft.
Max. d = 1.5 Ft.
B = 2 Ft.
*When B is < 6.0'
Type of Liner = Cl I Rip-Rap
FROM STA. 12+49 TO STA. 12+59 -RPA- RT
5/3/2017
tdavis

BUFFER IMPACTS SUMMARY

			IMPACT									BUFFER REPLACEMENT	
			TYPE			ALLOWABLE			MITIGABLE				
SITE NO.	STRUCTURE SIZE / TYPE	STATION (FROM/TO)	ROAD CROSSING	BRIDGE	PARALLEL IMPACT	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)
1	24" RCP	-RPD- 22+37 (LT)	X			1069	720	1789					
2	ROAD FILL	-LPB- 15+54 (RT)	X			6380	5499	11879					
3	EXTEND EXISTING RCBC 3 @ 9'x8'	-Y- 66+80 (LT)	X			2993	1217	4210					
4	EXTEND EXISTING 48" CMP	-Y- 81+66 (LT)	X			4150	418	4568					
5	24" RCP	-RPC- 15+84 (RT)	X			1422	597	2019					
6	24" RCP	-RPA- 12+58 (RT)	X			1778	1139	2917					
TOTAL:						17792	9590	27382	0	0	0		

NOTE: SEE WETLANDS IN BUFFER IMPACT SUMMARY SHEET FOR SITE 3

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

WAKE COUNTY
PROJECT: 43608.1.1 (I-5506)

5/3/2017
SHEET 13 OF 14

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)
3	-Y- 66+34 TO 67+57		747	242
TOTAL:			747	242

N.C. DEPT. OF TRANSPORTATION
DIVISION OF HIGHWAYS

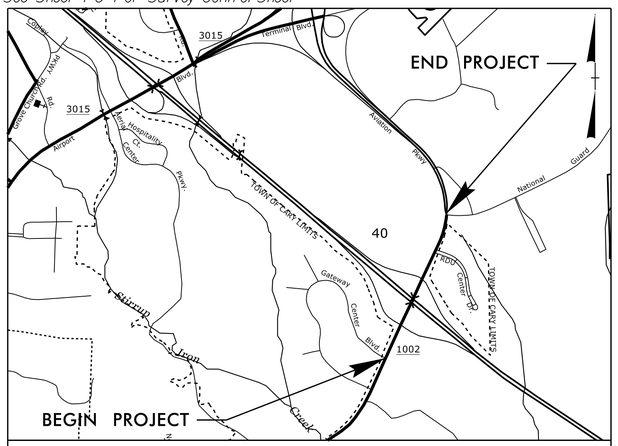
WAKE COUNTY
PROJECT: 43608.1.1 (I-5506)

5/3/2017
SHEET 14 OF 14

09/08/99

TIP PROJECT: I-5506

See Sheet 1-A For Index of Sheets
See Sheet 1-B For Conventional Plan Sheet Symbols
See Sheet 1-C For Survey Control Sheet



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WAKE COUNTY

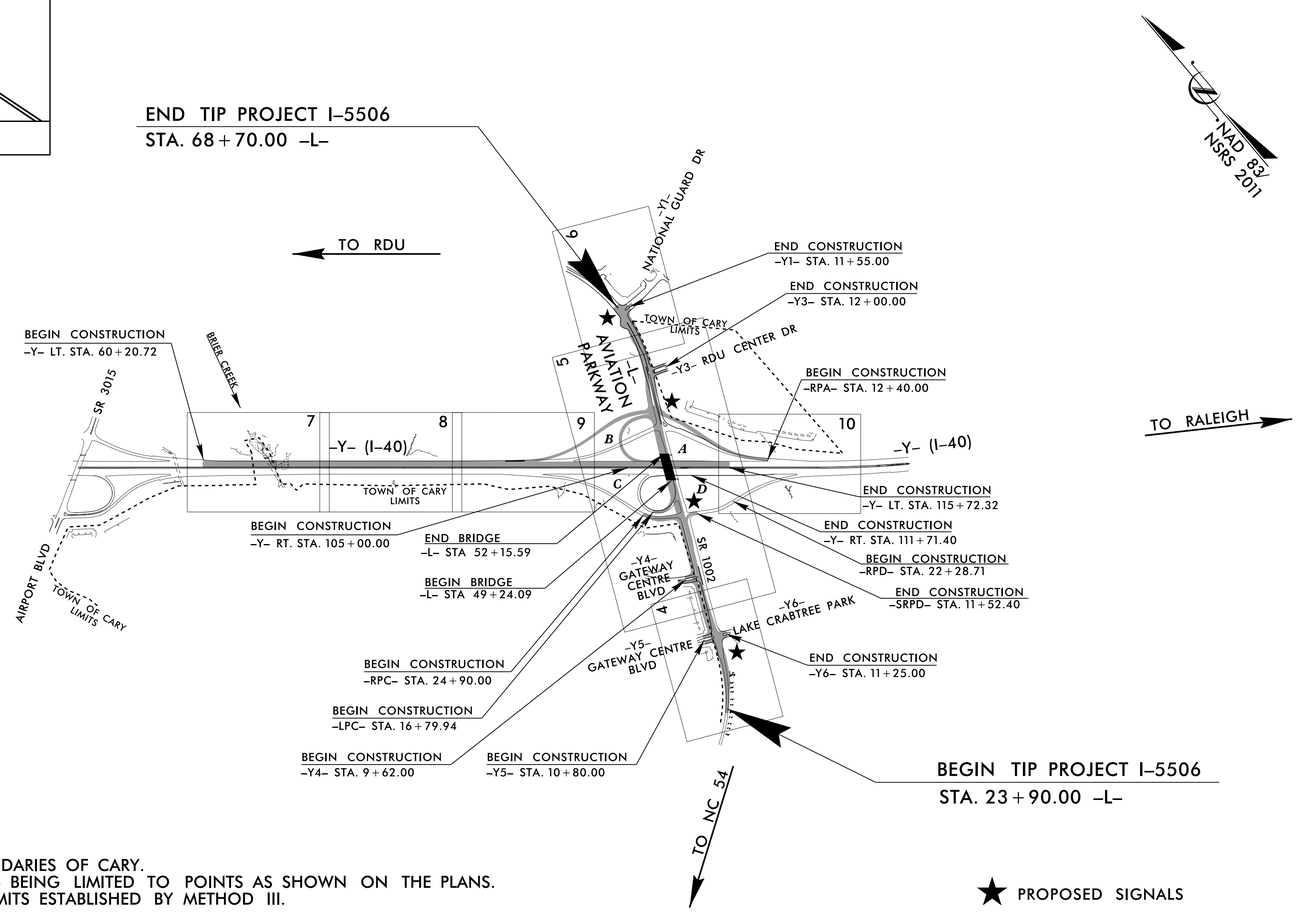
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	I-5506	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
43608.1.1	NHPP-040-7(154)284	PE
43608.2.2	NHPP-040-7(154)284	ROW/UTIL.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

LOCATION: I-40 AND SR 1002 (AVIATION PARKWAY) INTERCHANGE

TYPE OF WORK: GRADING, DRAINAGE, PAVING, SIGNALS CULVERTS AND STRUCTURES



★ PROPOSED SIGNALS

A PORTION OF THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF CARY.
THIS IS A PARTIAL CONTROLLED ACCESS PROJECT WITH ACCESS BEING LIMITED TO POINTS AS SHOWN ON THE PLANS.
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.

CONTRACT:

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 2018 = 28,555
ADT 2040 = 37,600
K = 55 %
D = 10 %
T = 7 % *
V = 50 MPH
* TTST=2% DUAL=5%
FUNC CLASS = "MINOR ARTERIAL"

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT I-5506 = 0.793 MILES
LENGTH STRUCTURE TIP PROJECT I-5506 = 0.055 MILES
TOTAL LENGTH OF TIP PROJECT I-5506 = 0.848 MILES

Prepared for the North Carolina Department of Transportation in the Office of:

WETHERILL ENGINEERING
1223 JONES FRANKLIN ROAD
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: FEBRUARY 24, 2017

LETTING DATE: FEBRUARY 20, 2018

EDWARD G. WETHERILL, PE
PROJECT ENGINEER

BOB A. MAY, PE
PROJECT DESIGN ENGINEER

NCDOT CONTACT: GARY LOVERING, PE
ROADWAY DESIGN: PROJECT ENGINEER

HYDRAULICS ENGINEER

P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

P.E.
SIGNATURE:

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

04/06/15

PROJECT REFERENCE NO.	SHEET NO.
I-5506	1B

STATE OF NORTH CAROLINA, DIVISION OF HIGHWAYS

CONVENTIONAL PLAN SHEET SYMBOLS

Note: Not to Scale **S.U.E. = Subsurface Utility Engineering*

BOUNDARIES AND PROPERTY:

- State Line
- County Line
- Township Line
- City Line
- Reservation Line
- Property Line
- Existing Iron Pin — EIP
- Property Corner
- Property Monument — ECM
- Parcel/Sequence Number — 123
- Existing Fence Line
- Proposed Woven Wire Fence
- Proposed Chain Link Fence
- Proposed Barbed Wire Fence
- Existing Wetland Boundary — WLB
- Proposed Wetland Boundary — WLB
- Existing Endangered Animal Boundary — EAB
- Existing Endangered Plant Boundary — EPB
- Existing Historic Property Boundary — HPB
- Known Contamination Area: Soil — S
- Potential Contamination Area: Soil — S
- Known Contamination Area: Water — W
- Potential Contamination Area: Water — W
- Contaminated Site: Known or Potential

BUILDINGS AND OTHER CULTURE:

- Gas Pump Vent or U/G Tank Cap
- Sign — S
- Well — W
- Small Mine
- Foundation
- Area Outline
- Cemetery
- Building
- School
- Church
- Dam

HYDROLOGY:

- Stream or Body of Water
- Hydro, Pool or Reservoir
- Jurisdictional Stream — JS
- Buffer Zone 1 — BZ 1
- Buffer Zone 2 — BZ 2
- Flow Arrow
- Disappearing Stream
- Spring
- Wetland
- Proposed Lateral, Tail, Head Ditch — FLOW
- False Sump

RAILROADS:

- Standard Gauge — CSX TRANSPORTATION
- RR Signal Milepost — MILEPOST 35
- Switch — SWITCH
- RR Abandoned
- RR Dismantled

RIGHT OF WAY:

- Baseline Control Point
- Existing Right of Way Marker
- Existing Right of Way Line
- Proposed Right of Way Line — RW
- Proposed Right of Way Line with Iron Pin and Cap Marker — RW
- Proposed Right of Way Line with Concrete or Granite R/W Marker — RW
- Proposed Control of Access Line with Concrete C/A Marker — CA
- Existing Control of Access — CA
- Proposed Control of Access — CA
- Existing Easement Line — E
- Proposed Temporary Construction Easement — E
- Proposed Temporary Drainage Easement — TDE
- Proposed Permanent Drainage Easement — PDE
- Proposed Permanent Drainage / Utility Easement — DUE
- Proposed Permanent Utility Easement — PUE
- Proposed Temporary Utility Easement — TUE
- Proposed Aerial Utility Easement — AUE
- Proposed Permanent Easement with Iron Pin and Cap Marker

ROADS AND RELATED FEATURES:

- Existing Edge of Pavement
- Existing Curb
- Proposed Slope Stakes Cut — C
- Proposed Slope Stakes Fill — F
- Proposed Curb Ramp — CR
- Existing Metal Guardrail
- Proposed Guardrail
- Existing Cable Guiderail
- Proposed Cable Guiderail
- Equality Symbol
- Pavement Removal

VEGETATION:

- Single Tree
- Single Shrub
- Hedge
- Woods Line
- Orchard
- Vineyard — Vineyard

EXISTING STRUCTURES:

MAJOR:

- Bridge, Tunnel or Box Culvert — CONC
- Bridge Wing Wall, Head Wall and End Wall — CONC WW

MINOR:

- Head and End Wall — CONC HW
- Pipe Culvert
- Footbridge
- Drainage Box: Catch Basin, DI or JB — CB
- Paved Ditch Gutter
- Storm Sewer Manhole — S
- Storm Sewer — S

UTILITIES:

POWER:

- Existing Power Pole
- Proposed Power Pole
- Existing Joint Use Pole
- Proposed Joint Use Pole
- Power Manhole — P
- Power Line Tower
- Power Transformer
- U/G Power Cable Hand Hole — HH
- H-Frame Pole
- U/G Power Line LOS B (S.U.E.*) — P
- U/G Power Line LOS C (S.U.E.*) — P
- U/G Power Line LOS D (S.U.E.*) — P

TELEPHONE:

- Existing Telephone Pole
- Proposed Telephone Pole
- Telephone Manhole — T
- Telephone Pedestal — T
- Telephone Cell Tower
- U/G Telephone Cable Hand Hole — HH
- U/G Telephone Cable LOS B (S.U.E.*) — T
- U/G Telephone Cable LOS C (S.U.E.*) — T
- U/G Telephone Cable LOS D (S.U.E.*) — T
- U/G Telephone Conduit LOS B (S.U.E.*) — TC
- U/G Telephone Conduit LOS C (S.U.E.*) — TC
- U/G Telephone Conduit LOS D (S.U.E.*) — TC
- U/G Fiber Optics Cable LOS B (S.U.E.*) — T FO
- U/G Fiber Optics Cable LOS C (S.U.E.*) — T FO
- U/G Fiber Optics Cable LOS D (S.U.E.*) — T FO

WATER:

- Water Manhole — W
- Water Meter
- Water Valve
- Water Hydrant
- U/G Water Line LOS B (S.U.E*) — W
- U/G Water Line LOS C (S.U.E*) — W
- U/G Water Line LOS D (S.U.E*) — W
- Above Ground Water Line — A/G Water

TV:

- TV Pedestal — C
- TV Tower
- U/G TV Cable Hand Hole — HH
- U/G TV Cable LOS B (S.U.E.*) — TV
- U/G TV Cable LOS C (S.U.E.*) — TV
- U/G TV Cable LOS D (S.U.E.*) — TV
- U/G Fiber Optic Cable LOS B (S.U.E.*) — TV FO
- U/G Fiber Optic Cable LOS C (S.U.E.*) — TV FO
- U/G Fiber Optic Cable LOS D (S.U.E.*) — TV FO

GAS:

- Gas Valve
- Gas Meter
- U/G Gas Line LOS B (S.U.E.*) — G
- U/G Gas Line LOS C (S.U.E.*) — G
- U/G Gas Line LOS D (S.U.E.*) — G
- Above Ground Gas Line — A/G Gas

SANITARY SEWER:

- Sanitary Sewer Manhole
- Sanitary Sewer Cleanout
- U/G Sanitary Sewer Line — SS
- Above Ground Sanitary Sewer — A/G Sanitary Sewer
- SS Forced Main Line LOS B (S.U.E.*) — FSS
- SS Forced Main Line LOS C (S.U.E.*) — FSS
- SS Forced Main Line LOS D (S.U.E.*) — FSS

MISCELLANEOUS:

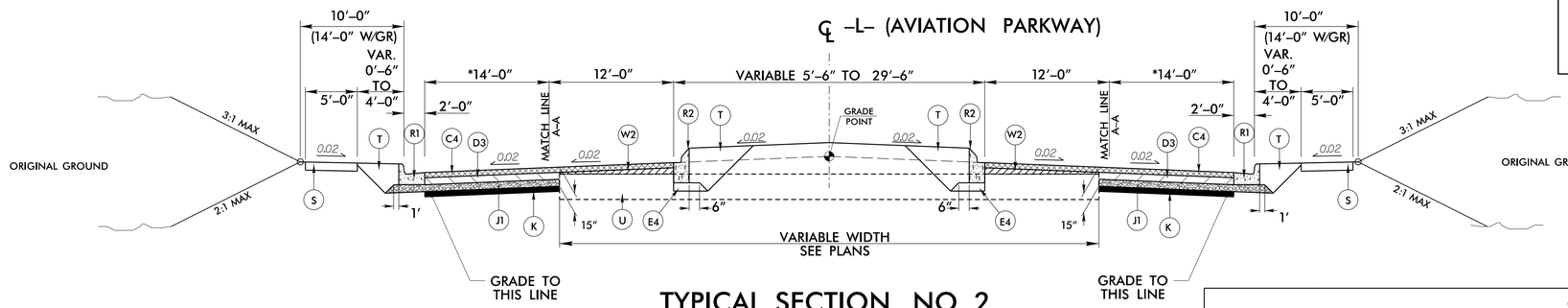
- Utility Pole
- Utility Pole with Base
- Utility Located Object
- Utility Traffic Signal Box — S
- Utility Unknown U/G Line LOS B (S.U.E.*) — ?UTL
- U/G Tank; Water, Gas, Oil
- Underground Storage Tank, Approx. Loc. — UST
- A/G Tank; Water, Gas, Oil
- Geoenvironmental Boring
- U/G Test Hole LOS A (S.U.E.*)
- Abandoned According to Utility Records — AATUR
- End of Information — E.O.I.

8/17/99

WETHERILL ENGINEERING
1223 Jones Franklin Road
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO.	SHEET NO.
I-5506	2A-2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



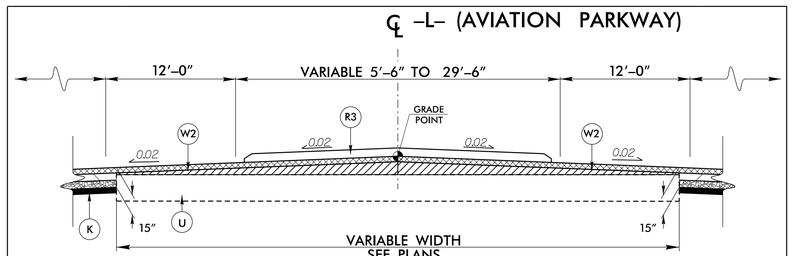
TYPICAL SECTION NO. 2

NOTE: SEE PLANS FOR TURN LANES & AUXILLARY LANES/TAPERS

* – EXTRA WIDTH FOR BICYCLES TO SHARE ROAD

USE TYPICAL SECTION NO. 2

–L– STA. 29+52.97 TO 45+50.00 RT.
–L– STA. 30+05.44 TO 45+50.00 LT.
–L– STA. 55+00.00 TO 65+80.00

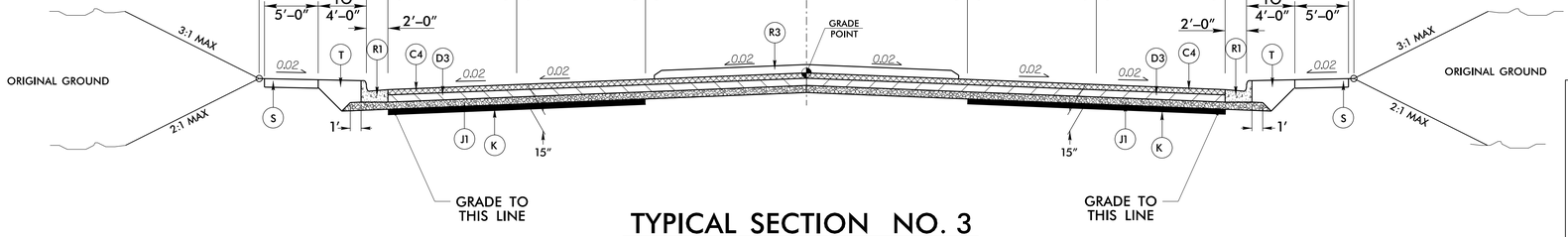


PARTIAL TYPICAL SECTION NO. 2

USE IN CONJUNCTION WITH TYPICAL SECTION NO. 1 & 2

–L– STA. 25+65.56 TO 35+61.48
–L– STA. 60+30.00 TO 65+80.00

PAVEMENT SCHEDULE	
C4	3″ S9.5C
D3	4″ I19.0C
E4	5½″ B25.0C
J1	8″ ABC
K	SUBGRADE STAB.
R1	2′-6″ CURB
R2	1′-6″ CURB
R3	CONC. ISLAND
S	4″ SIDEWALK
T	EARTH MAT.
U	EXIST. PAVEMENT
W	WEDGING



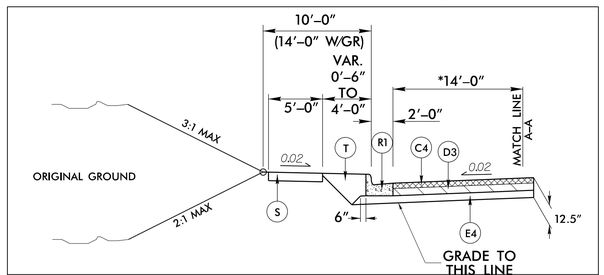
TYPICAL SECTION NO. 3

NOTE: SEE PLANS FOR TURN LANES & AUXILLARY LANES/TAPERS

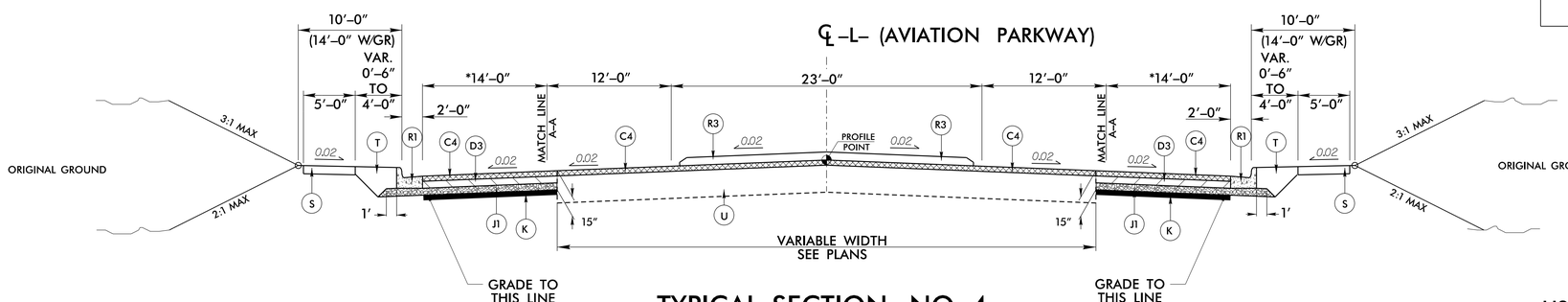
* – EXTRA WIDTH FOR BICYCLES TO SHARE ROAD

USE TYPICAL SECTION NO. 3

–L– STA. 45+50.00 TO 49+24.09 (BEGIN BRIDGE)
–L– STA. 52+15.59 (END BRIDGE) TO 55+00.00



USE WITH TYP. SECTION. NO. 2 & 4
Narrow Widening (10′ or less)



TYPICAL SECTION NO. 4

NOTE: SEE PLANS FOR TURN LANES & AUXILLARY LANES/TAPERS

* – EXTRA WIDTH FOR BICYCLES TO SHARE ROAD

USE TYPICAL SECTION NO. 4

–L– STA. 65+80.00 TO 68+70.00 (RESURFACE & WIDENING ONLY)

PERFORM VARIABLE DEPTH MILLING AT THE FOLLOWING LOCATIONS:
–L– STA. 67+95.00 TO –L– STA. 68+70.00

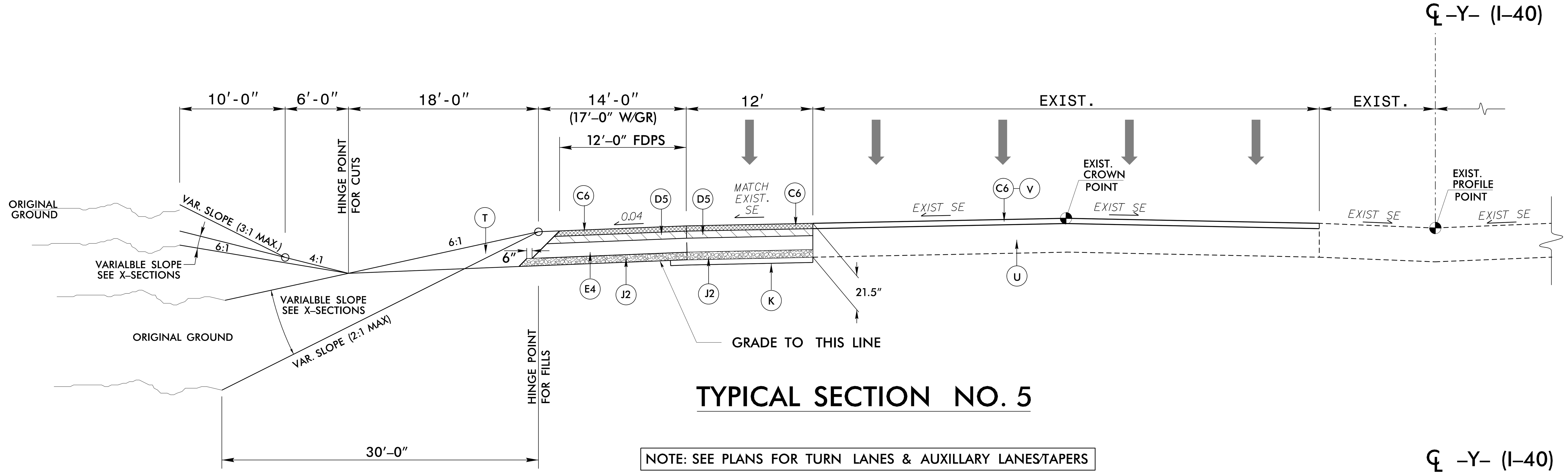
2/20/2017
2:50:07 PM
USER: rdy
I:\5506\roadway\sheets\02A-2_typ.dgn

WETHERILL ENGINEERING
1223 Jones Franklin Road
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN – BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN – GIS/GPS – CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO.	SHEET NO.
I-5506	2A-3
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PAVEMENT SCHEDULE	
C6	3.0" S9.5D
C7	VAR. S9.5D
D5	3.0" I19.0D
E4	5½" B25.0C
E5	10" B25.0C
J2	10" ABC
K	SUBGRADE STAB.
R4	EXPRESSWAY GUTTER
T	EARTH MAT.
U	EXIST. PAVEMENT
V	VAR. MILLING

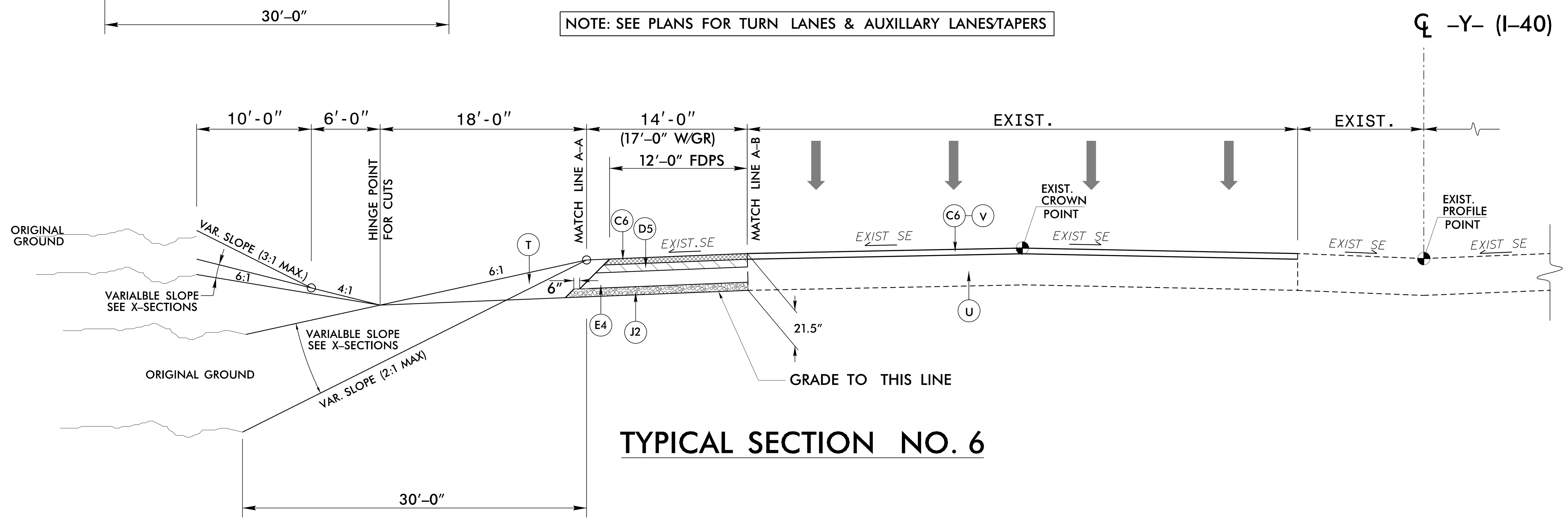


TYPICAL SECTION NO. 5

NOTE: SEE PLANS FOR TURN LANES & AUXILLARY LANES/TAPERS

USE TYPICAL SECTION NO. 5

-Y- STA. 60+20.72 TO -Y- STA. 92+15.65
-Y- STA. 107+52.32 TO -Y- STA. 115+72.32

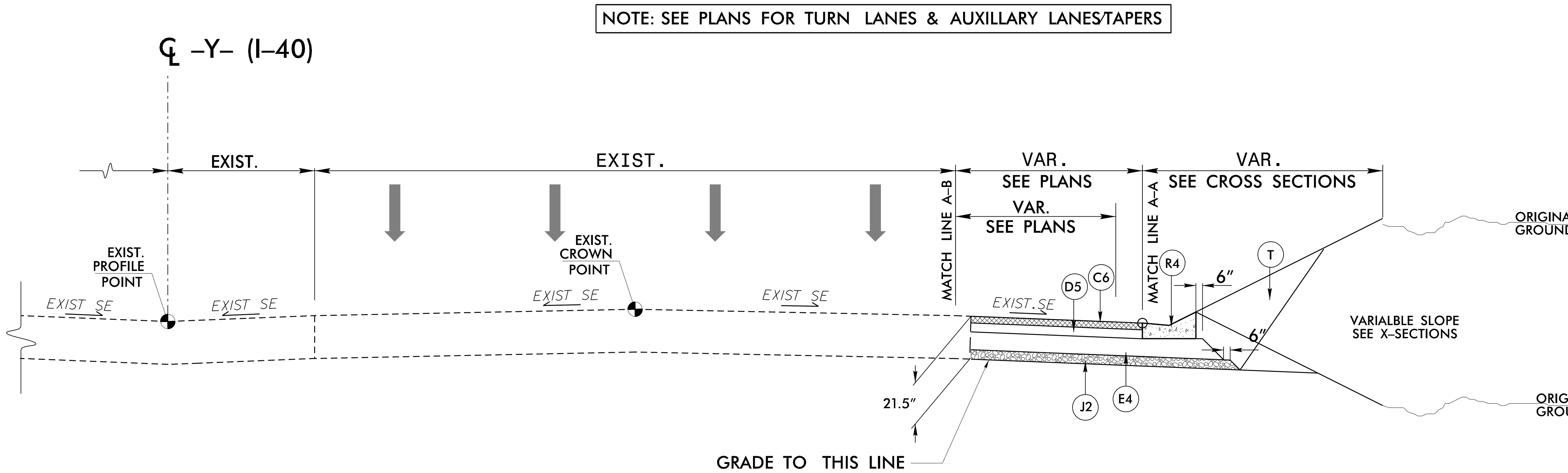


TYPICAL SECTION NO. 6

NOTE: SEE PLANS FOR TURN LANES & AUXILLARY LANES/TAPERS

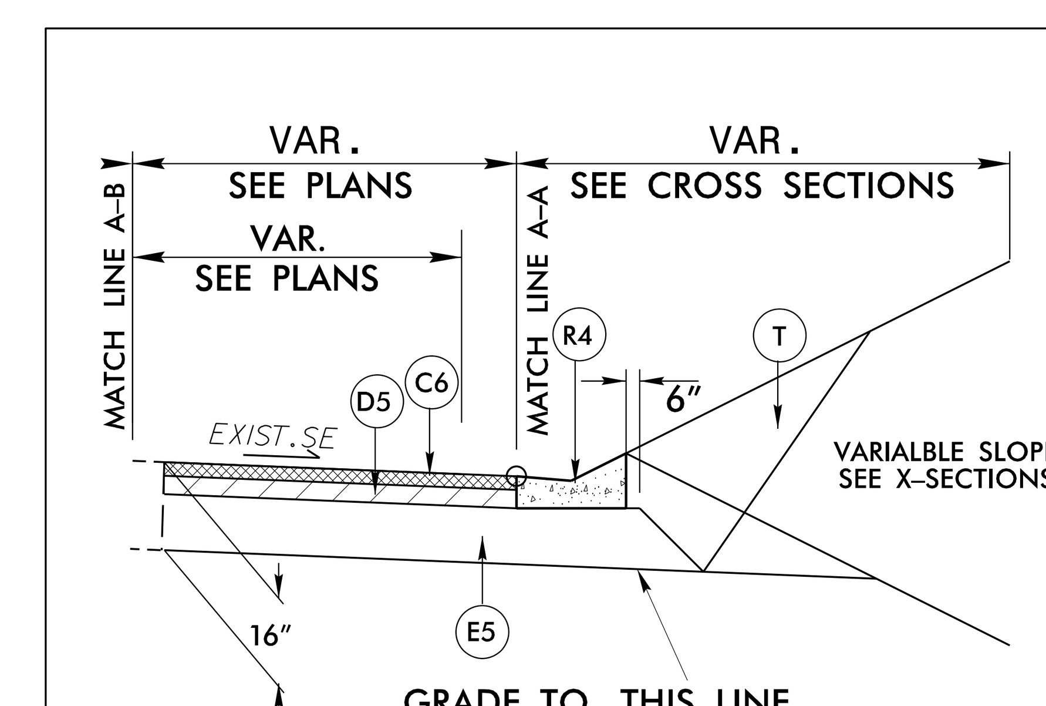
USE TYPICAL SECTION NO. 6

-Y- LT STA. 92+15.65 TO -Y- STA. 107+52.32

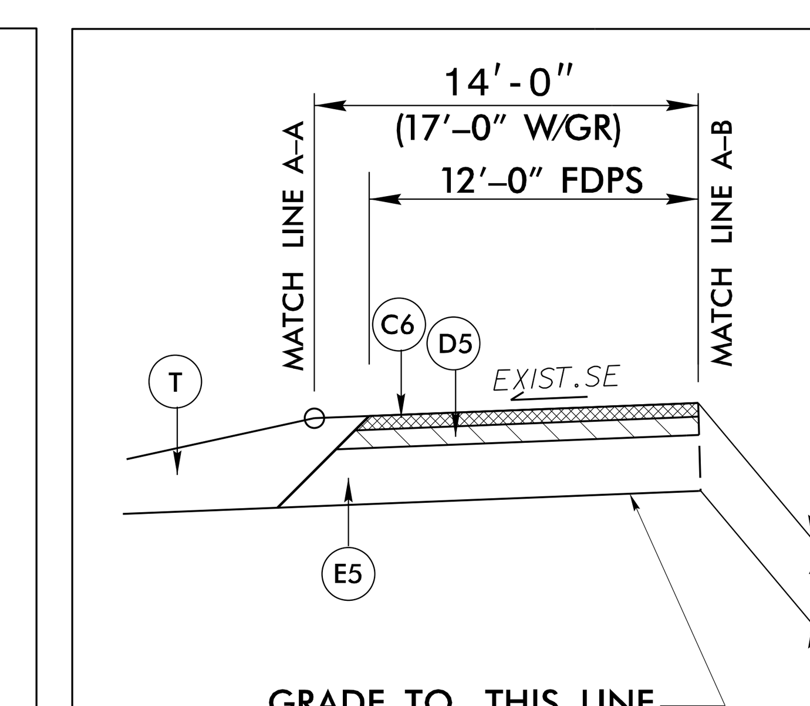


TYPICAL SECTION NO. 7

NOTE: SEE PLANS FOR TURN LANES & AUXILLARY LANES/TAPERS



USE WITH TYP. SECTION NO. 7
Narrow Widening (10' or less)



USE WITH TYP. SECTION NO. 5 & 6
Narrow Widening (10' or less)

USE TYPICAL SECTION NO. 7

-Y- RT STA. 107+91.35 TO -Y- STA. 111+71.40

8/17/99

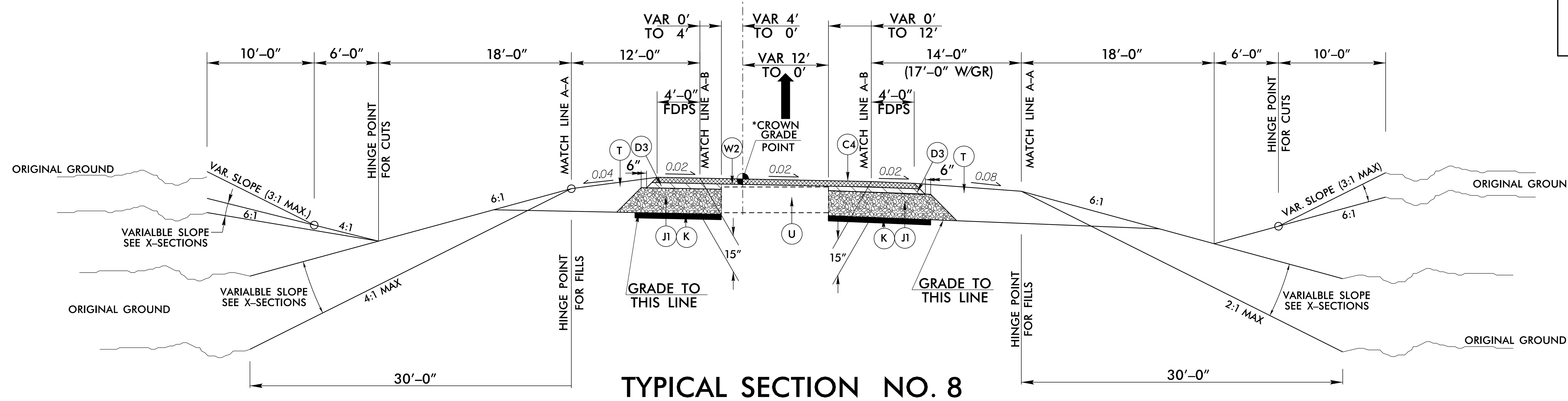
2/17/2017
i5506_rdy_psh_02A-3_typ.dgn

PROJECT REFERENCE NO.	SHEET NO.
I-5506	2A-4
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

WETHERILL ENGINEERING
1223 Jones Franklin Road
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PAVEMENT SCHEDULE	
C4	3" S9.5C
D3	4" I19.0C
E4	5½" B25.0C
J1	8" ABC
K	SUBGRADE STAB.
R1	2'-6" CURB
T	EARTH MAT.
U	EXIST. PAVEMENT
W	WEDGING

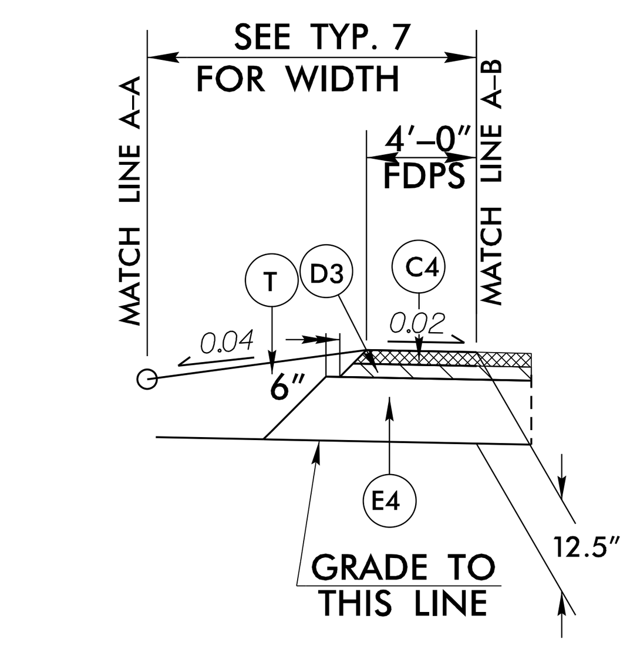


TYPICAL SECTION NO. 8

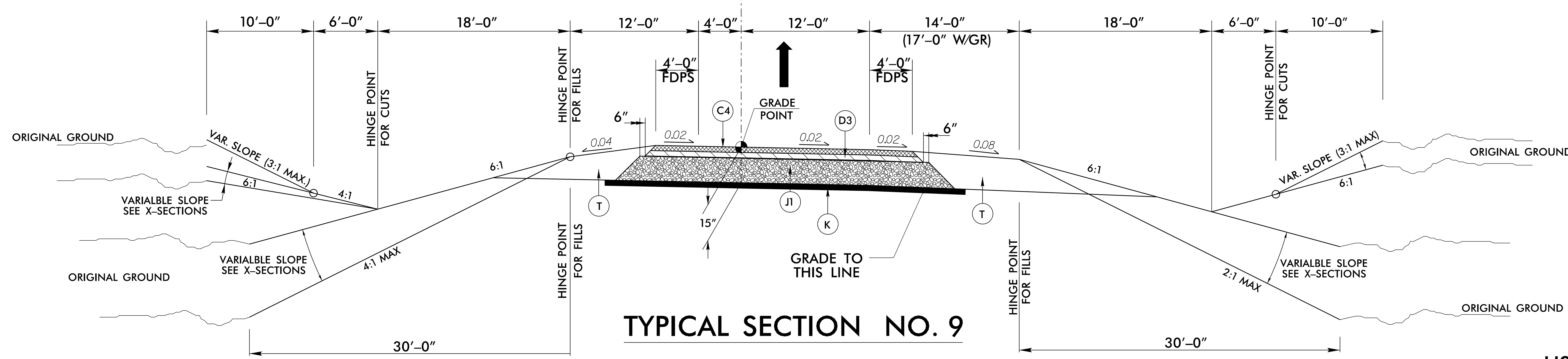
NOTE: SEE PLANS FOR TURN LANES & AUXILLARY LANES/TAPERS

USE TYPICAL SECTION NO. 8

-RPA- STA. 13+35.00 TO 17+82.86
-RPC- STA. 24+90.00 TO 28+50.30
*-RPD- STA. 25+80.00 TO 26+17.21 (INVERT TYPICAL)



USE WITH TYP. SECTION. NO. 8
Narrow Widening (10' or less)

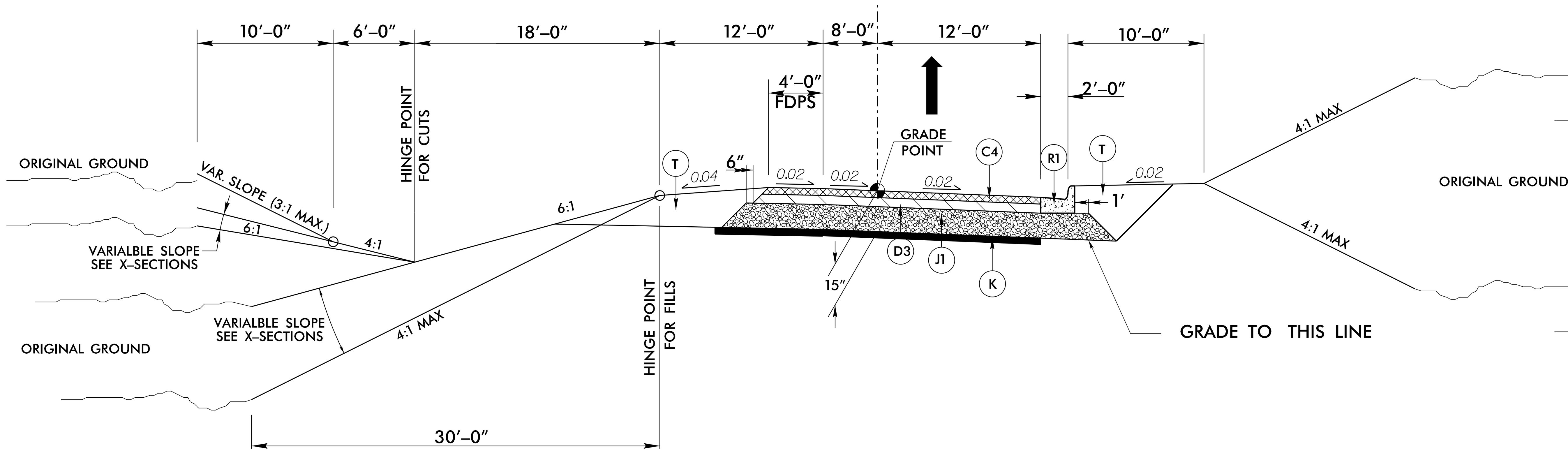


TYPICAL SECTION NO. 9

NOTE: SEE PLANS FOR TURN LANES & AUXILLARY LANES/TAPERS

USE TYPICAL SECTION NO. 9

-RPA- STA. 17+82.86 TO 25+97.12
-RPB- STA. 10+00.00 TO 26+56.07 (INVERT TYPICAL)

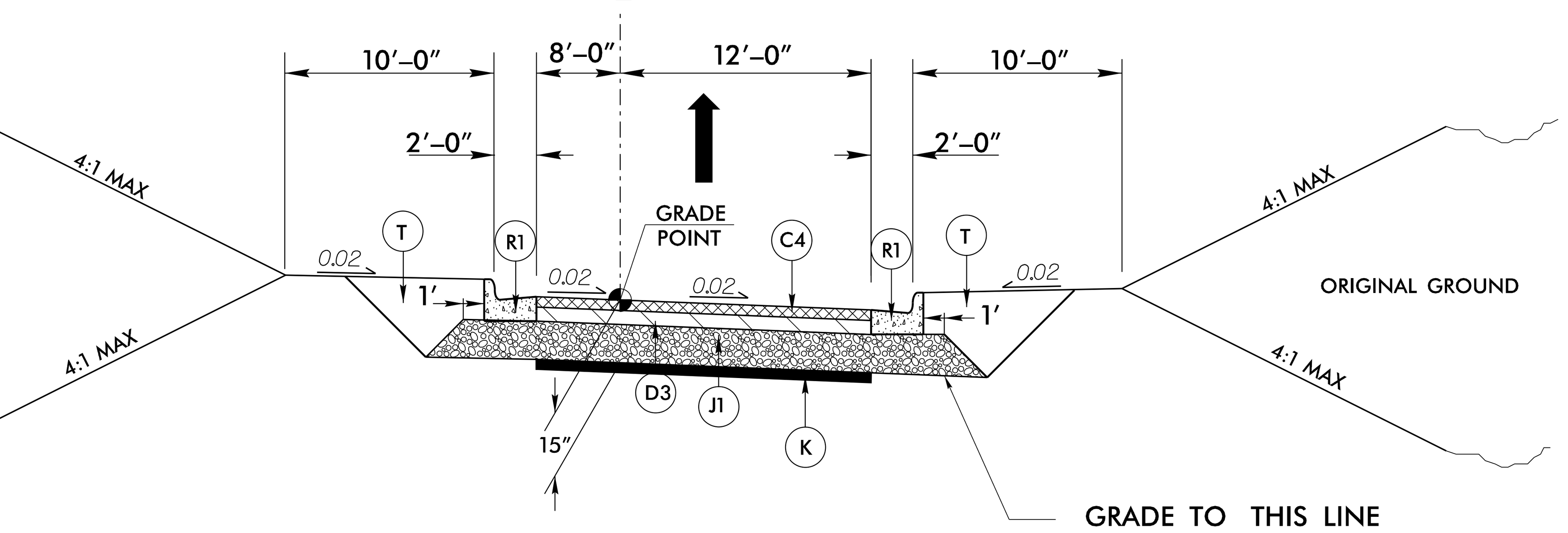


TYPICAL SECTION NO. 10

NOTE: SEE PLANS FOR TURN LANES, AUXILLARY LANES & TAPERS

USE TYPICAL SECTION NO. 10

-LPB- STA. 10+00.00 TO 19+28.50
-LPC- STA. 18+61.30 TO 19+21.92



TYPICAL SECTION NO. 11

NOTE: SEE PLANS FOR TURN LANES, AUXILLARY LANES & TAPERS

USE TYPICAL SECTION NO. 11

-SRPD- STA. 10+00.00 TO 11+52.40

8/17/99
2/20/2017
I5506_rdy_psh_02A-4_typ.dgn

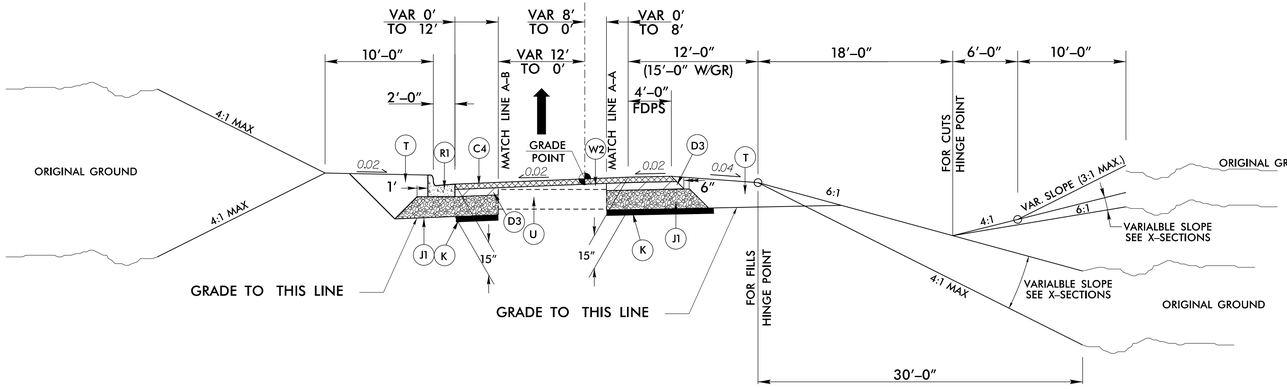
8/17/99

WETHERILL ENGINEERING
1223 Jones Franklin Road
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO.	SHEET NO.
I-5506	2A-5
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

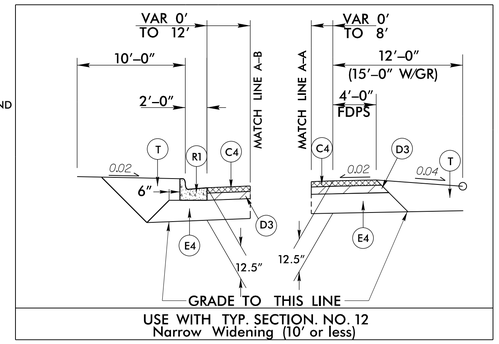
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PAVEMENT SCHEDULE	
C1	1½" S9.5B
C2	3" S9.5B
C4	3" S9.5C
D1	4" I19.0B
D3	4" I19.0C
E1	4" B25.0B
E4	5½" B25.0C
J1	8" ABC
K	SUBGRADE STAB.
R1	2'-6" CURB
R2	1'-6" CURB
S	4" SIDEWALK
T	EARTH MAT.
U	EXIST. PAVEMENT
V	VAR. MILLING
W	WEDGING



TYPICAL SECTION NO. 12

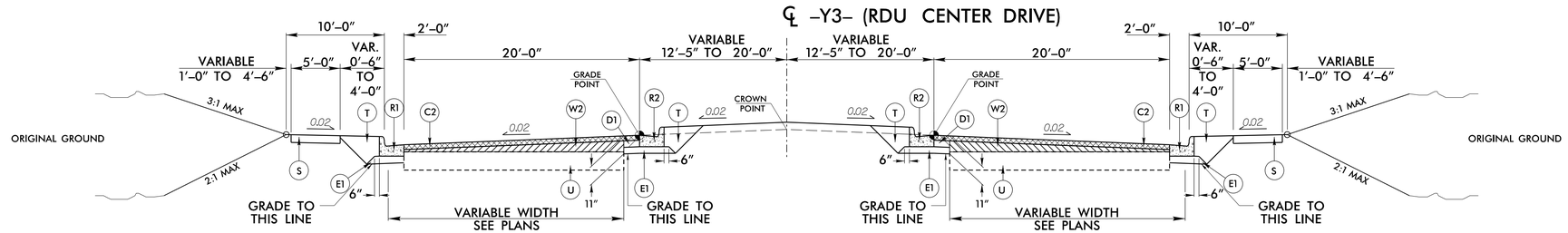
NOTE: SEE PLANS FOR TURN LANES & AUXILLARY LANES/TAPERS



USE WITH TYP. SECTION. NO. 12
Narrow Widening (10' or less)

USE TYPICAL SECTION NO. 12

–LPC– STA. 16+79.94 TO 18+61.30

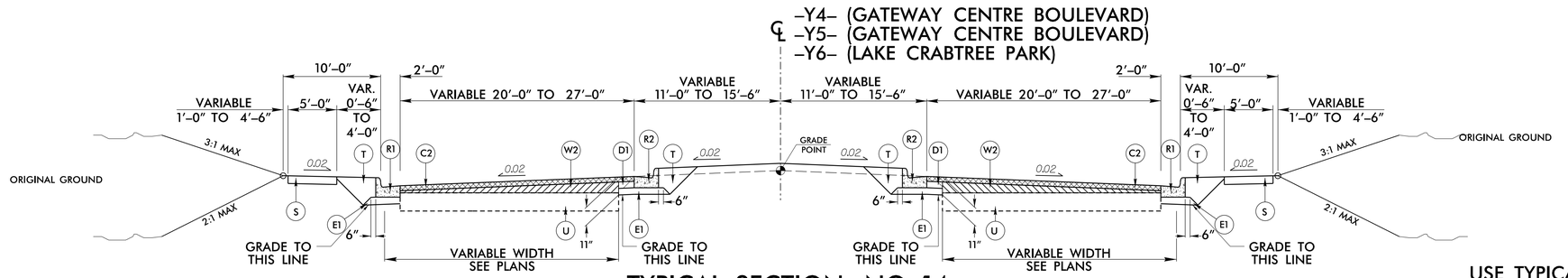


TYPICAL SECTION NO. 13

NOTE: SEE PLANS FOR SIDEWALK LOCATIONS AND WIDTHS

USE TYPICAL SECTION NO. 13

–Y3– STA. 10+42.08 TO 11+90.00

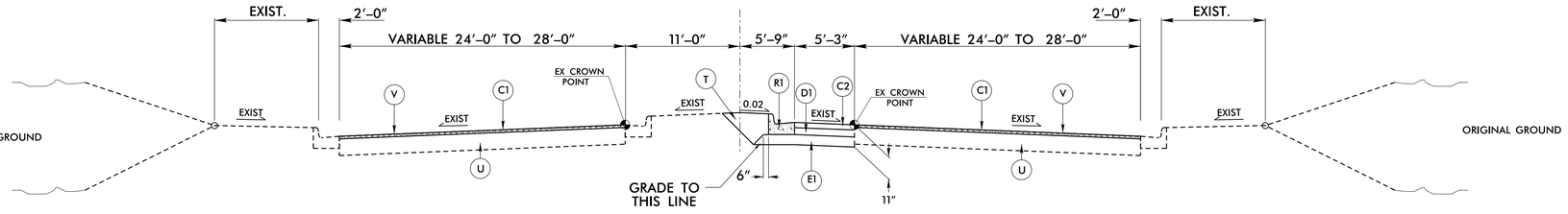


TYPICAL SECTION NO. 14

NOTE: SEE PLANS FOR SIDEWALK LOCATIONS AND WIDTHS

USE TYPICAL SECTION NO. 14

–Y4– STA. 9+62.00 TO 11+25.25 RT.
–Y4– STA. 10+40.00 TO 11+25.25 LT.
–Y5– STA. 11+00.00 TO 11+85.16
–Y6– STA. 10+34.89 TO 11+20.00



TYPICAL SECTION NO. 15

USE TYPICAL SECTION NO. 15

–Y1– STA. 10+37.66 TO 11+45.00

2/17/2017
I-5506 rdy_psh_02A-5_typ.dgn
USER:keus

8/17/99

STRUCTURE RECOMMENDATIONS

WETHERILL ENGINEERING

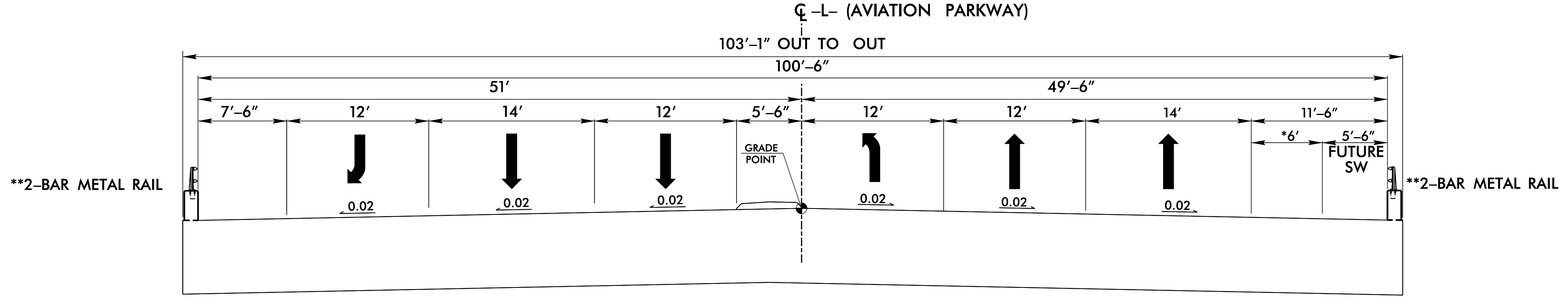
1223 Jones Franklin Road
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107

TRANSPORTATION PLANNING/DESIGN – BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN – GIS/GPS – CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO.	SHEET NO.
I-5506	2A-6
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

–L– (AVIATION PARKWAY) BRIDGE OVER –Y– (I 40)



DESIGN DATA –L–	
ADT 2017	= 27,400
ADT 2040	= 36,600
D	= 10 %
K	= 55 %
TTST	= 2 %
DUAL	= 5 %
V	= 50 MPH

FUNC. CLASS – MINOR ARTERIAL

MINIMUM VERTICAL CLEARANCE = 17′–6″

–L– (AVIATION PARKWAY) STRUCTURE OVER –Y– (I–40)

–Y– STA. 49+24.09 TO –Y– STA. 52+15.59

@SLOPES DETERMINED BY GEOTECHNICAL ENGINEERING UNIT.

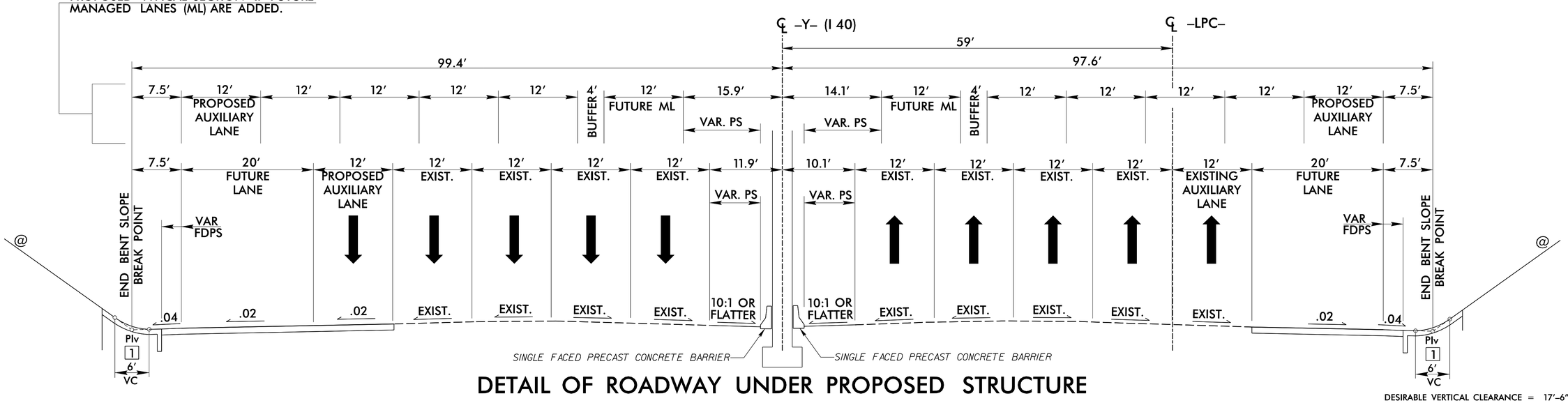
[1] SEE STD. 610.03

NOTE: TRAFFIC DATA FROM TRANSPORTATION PLANNING BRANCH LETTER DATED MAY 6, 2015

*WIDENED TO 6′ TO ACCOMMODATE HYDRAULIC SPREAD

**2 BAR METAL RAIL UTILIZED TO ACCOMMODATE BICYCLE TRAFFIC AND FUTURE SIDEWALK.

PROPOSED TYPICAL SECTION IF FUTURE MANAGED LANES (ML) ARE ADDED.



DETAIL OF ROADWAY UNDER PROPOSED STRUCTURE

DESIRABLE VERTICAL CLEARANCE = 17′–6″

@SLOPES DETERMINED BY GEOTECHNICAL ENGINEERING UNIT.

[1] SEE STD. 610.03

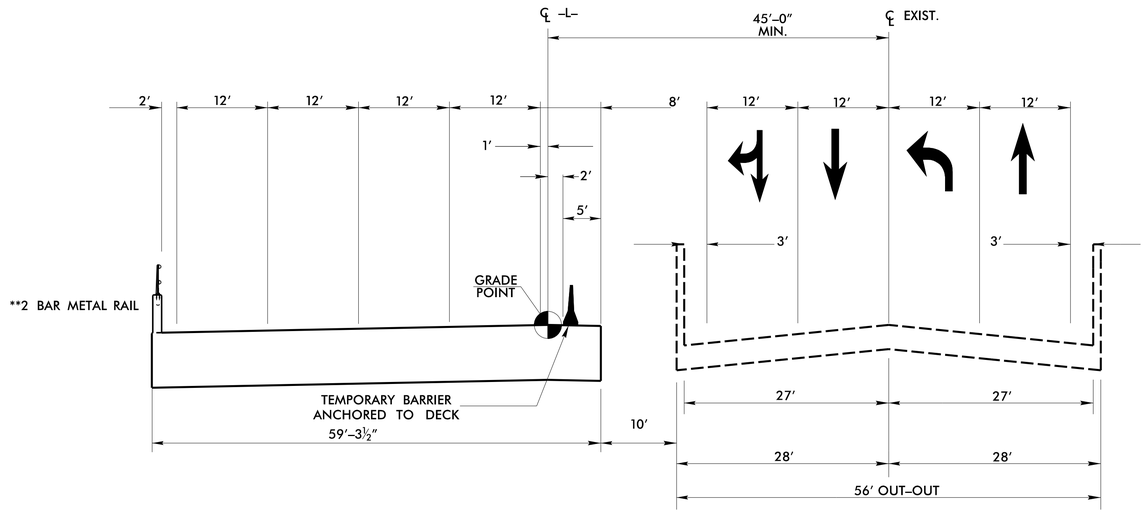
2/17/2017
I-5506_rdy_psh_02A-6_typ.dgn
USER: kaw

8/17/99

WETHERILL ENGINEERING
1223 Jones Franklin Road
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

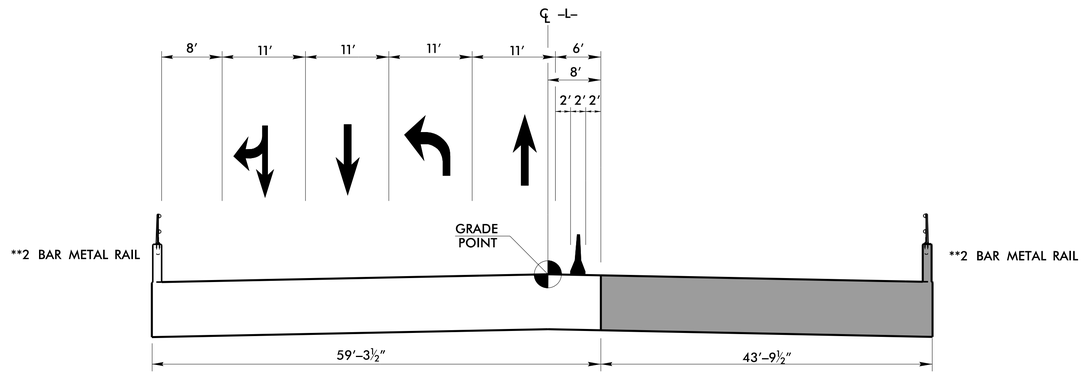
PROJECT REFERENCE NO.	SHEET NO.
I-5506	2A-7
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

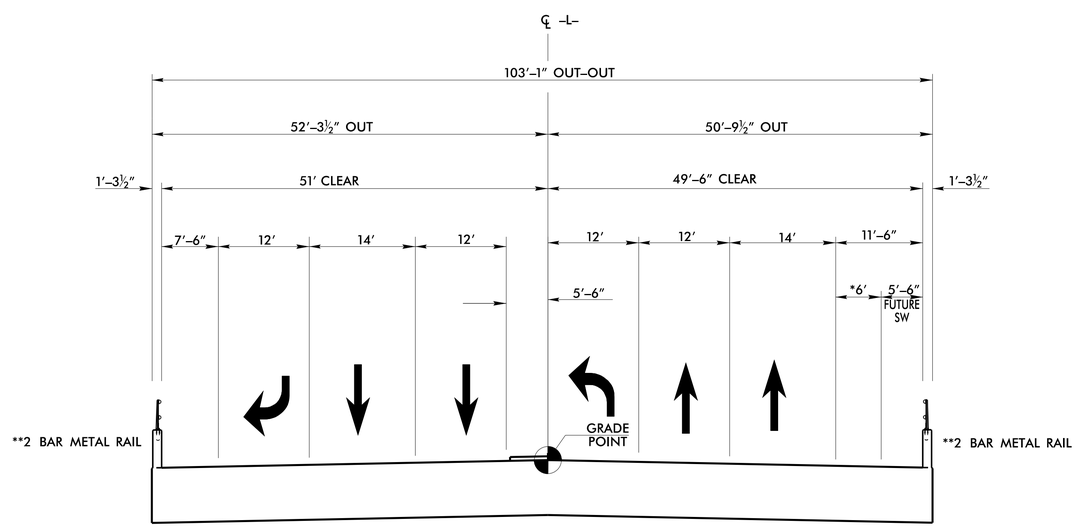


PHASE I BRIDGE TYPICAL

**2 BAR METAL RAIL UTILIZED TO ACCOMMODATE BICYCLE TRAFFIC AND FUTURE SIDEWALK.



PHASE II BRIDGE TYPICAL



FINAL BRIDGE TYPICAL

*6′ TO ACCOMMODATE HYDRAULIC SPREAD WHEN FUTURE SIDEWALK CONSTRUCTED.

PHASE CONSTRUCTION FOR BRIDGE

2/17/2017
I-5506
I-5506_rdy_psh_02A-7_typ.dgn
USER:kevin

8/17/99

WETHERILL ENGINEERING
1223 Jones Franklin Road
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

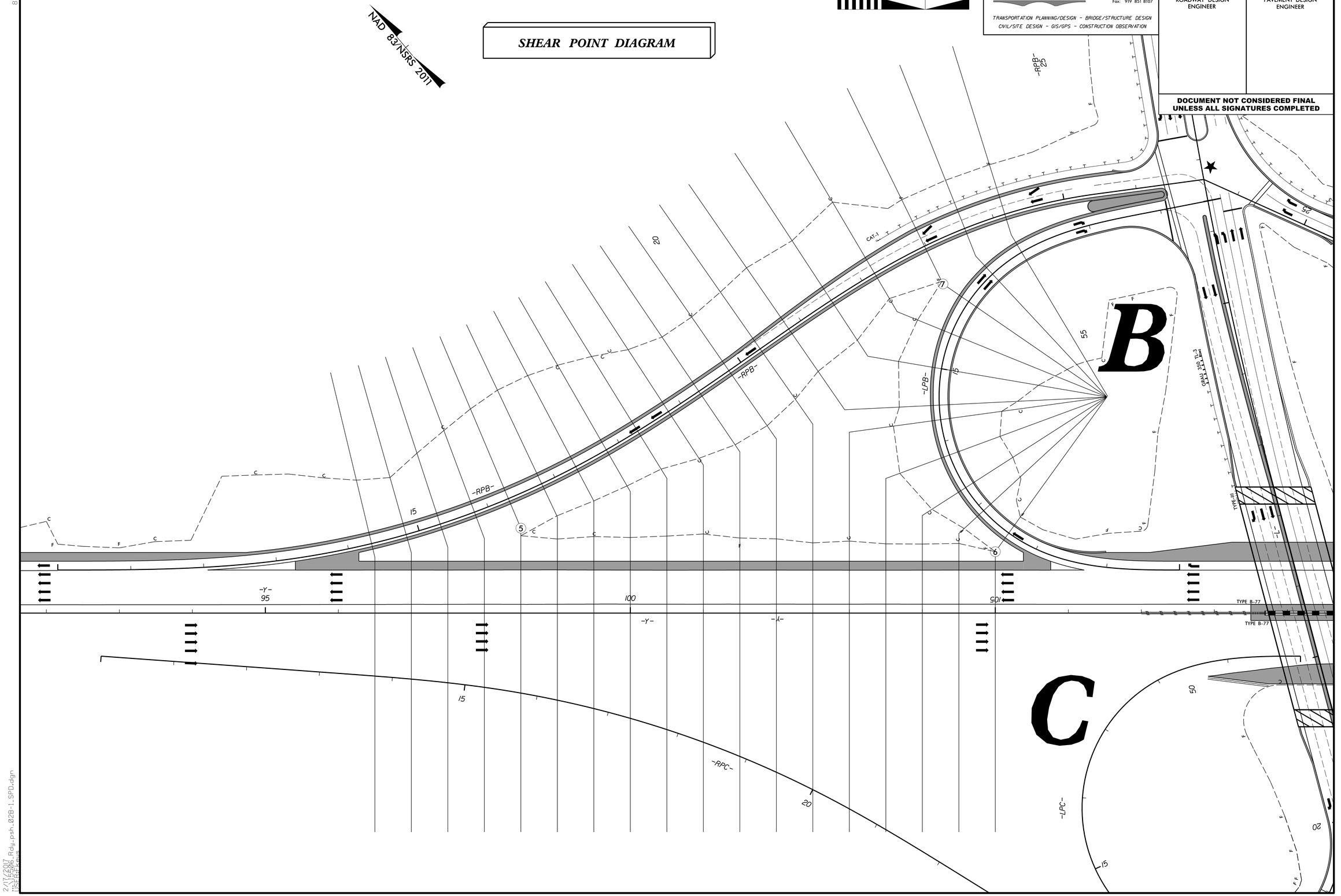
PROJECT REFERENCE NO.	SHEET NO.
I-5506	2B-1
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

60 30 0 60 120

NAD 83/NSRS 2011

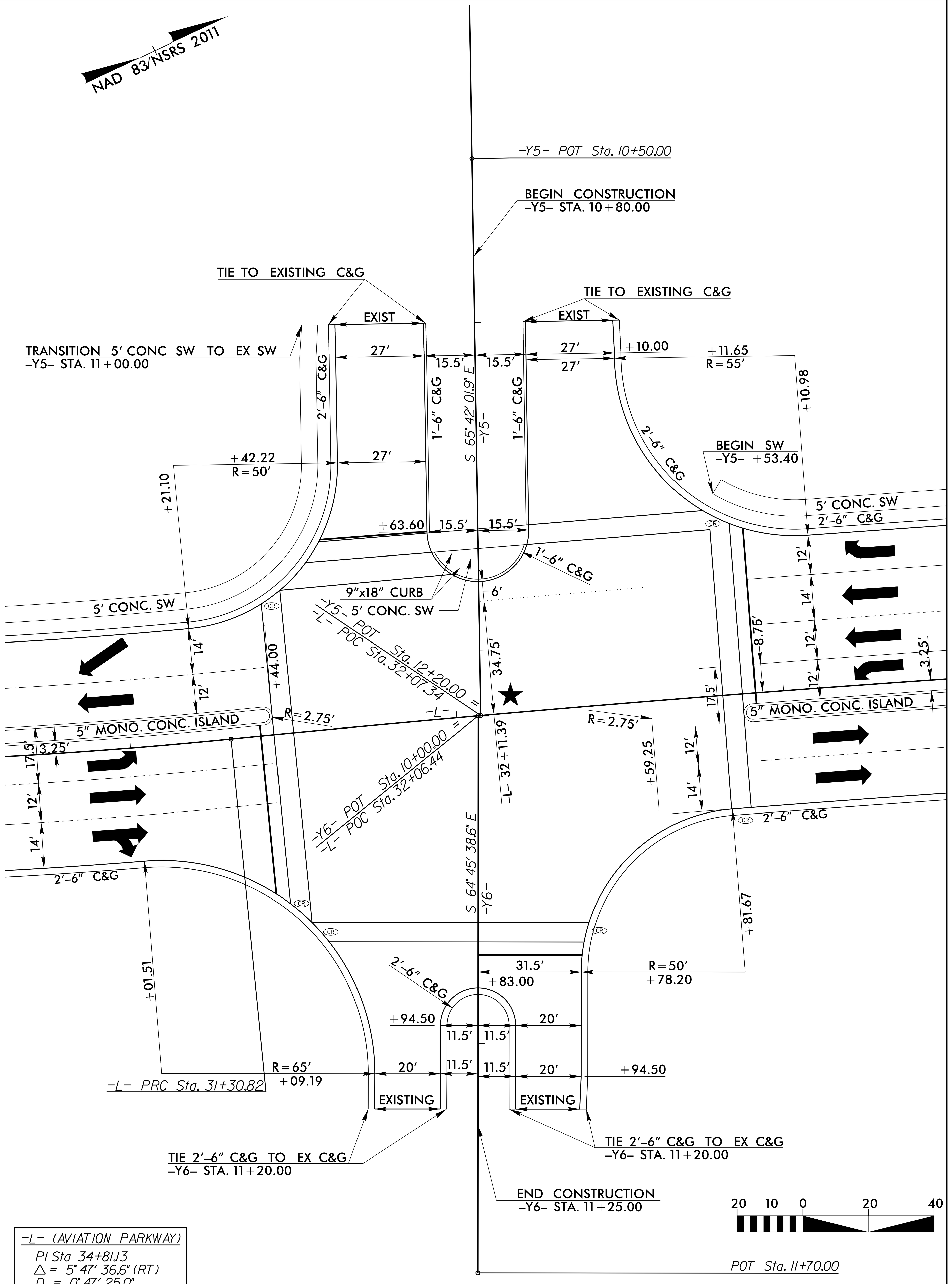
SHEAR POINT DIAGRAM



WETHERILL ENGINEERING
1223 Jones Franklin Road
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO.	SHEET NO.
I-5506	2B-2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

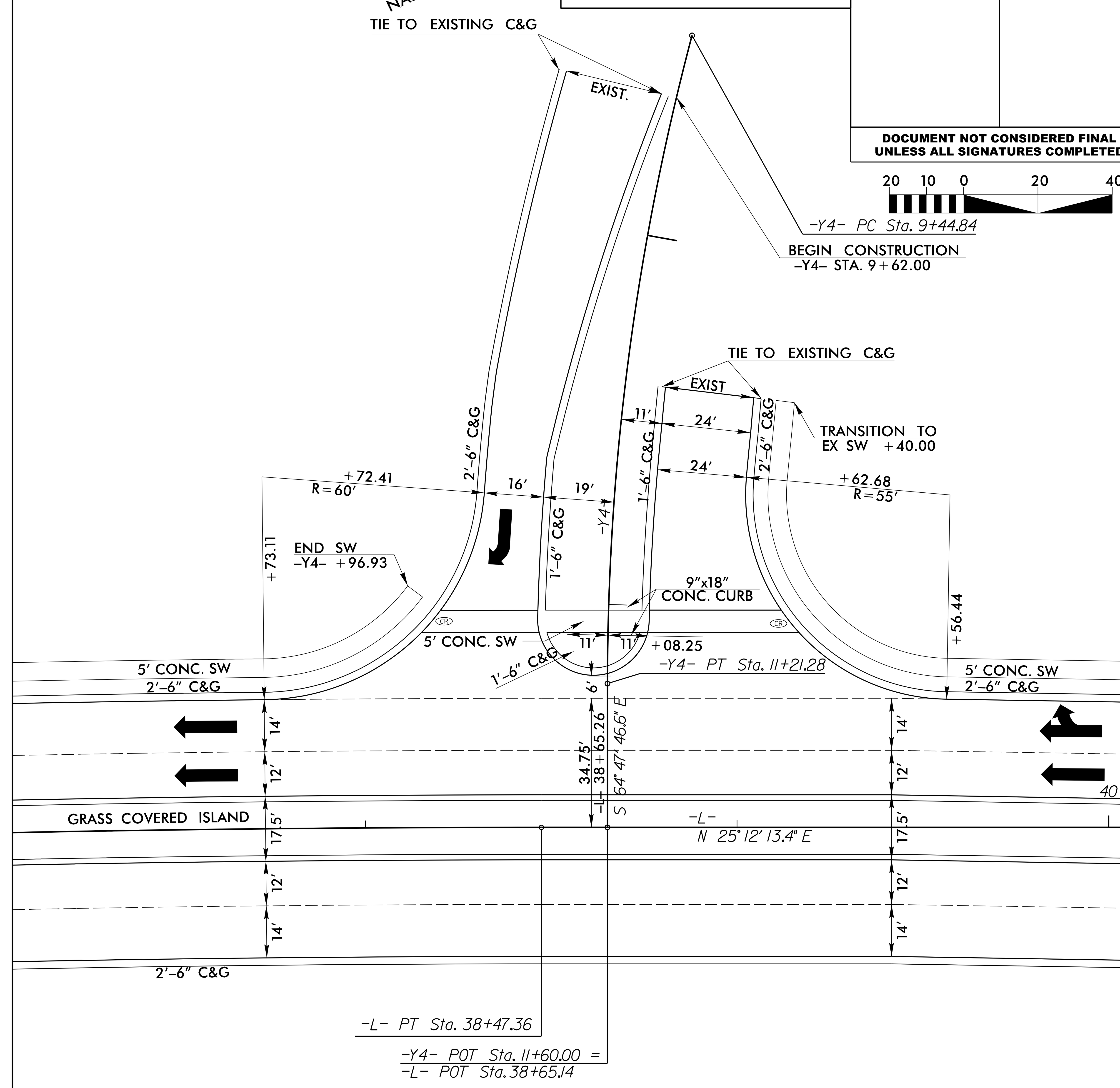
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



-L- (AVIATION PARKWAY)
PI Sta 34+81.13
Δ = 5° 47' 36.6" (RT)
D = 0° 47' 25.0"
L = 733.09'
T = 366.86'
R = 7,250.00'
SE = NC
DS = 50 MPH

SEE SHEET 4 FOR PLAN VIEW

SEE PAVEMENT MARKING PLANS FOR CURB RAMP LOCATIONS AND STATIONING



-L- (AVIATION PARKWAY)
PI Sta 34+81.13
Δ = 5° 47' 36.6" (RT)
D = 0° 47' 25.0"
L = 733.09'
T = 366.86'
R = 7,250.00'
SE = NC
DS = 50 MPH

-Y4- (GATEWAY CENTRE BLVD.)
PI Sta 10+33.56
Δ = 14° 52' 01.2" (LT)
D = 8° 25' 33.1"
L = 176.44'
T = 88.72'
R = 680.00'
SE = EXIST.

SEE SHEET 5 FOR PLAN VIEW

SEE PAVEMENT MARKING PLANS FOR CURB RAMP LOCATIONS AND STATIONING

REVISIONS

WETHERILL ENGINEERING
1223 Jones Franklin Road
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO.	SHEET NO.
I-5506	2B-3
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS 8/17/99

NAD 83/NSRS 2011

-RPC- PT Sta. 27+16.59

4' PS

4' PS

36'

BEGIN C&G
-RPC- +62.39

+85.30

+48.58
R=75'

2'-6" C&G

END SW
-L- +89.11

BEGIN C&G
-RPC- +23.28

9"x18" CURB

R=30'

4'

BEGIN C&G
-LPC- +70.64

4' PS

8'

12'

2'-6" C&G

8'

12'

2'-6" C&G

-RPC- POT Sta. 28+81.98 =
-RPD- POT Sta. 27+57.26 =
-L- POT Sta. 45+49.00

-RPC-
S 58° 47' 46.7" E

R=10'

R=5'

14'

12'

1'-6" C&G

5.5'

45

-L-

GRASS COVERED ISLAND

12'

R=8.75'

N 25° 12' 13.4" E

+00.75

+93.25

R=8.75'

5" MONO. CONC. ISLAND

12'

12'

17.5

12'

14'

R=10'

14'

12'

EDGE OF LANE

4'

2'-6" C&G

12'

R=4'

18'

2'-6" C&G

=

BEG C&G
STA. +17.21

-RPD- POT Sta. 26+17.21=
-SRPD- POT Sta. 11+52.40

BEG C&G
STA. +17.21

EX PS

EX

EX PS

BEGIN CONSTRUCTION
-RPD- STA. 25+80.00

N 57° 46' 30.5" W
-RPD-

20 10 0 20 40

★ REVISED SIGNAL

SEE SHEET 5 FOR PLAN VIEW

SEE PAVEMENT MARKING PLANS FOR CURB RAMP LOCATIONS AND STATIONING

NAD 83/NSRS 2011

25

4' PS

4' PS

+30.47

12'

R=8'

-RPB- PT Sta. 25+43.62

+37.37

BEGIN C&G
-RPB- STA. +71.03

16'

+76.90

-LPB- ST Sta. 18+78.42

12'

4' PS

5" MONO. CONC. ISLAND

R=8.75'

12'

+90.63
R=50'

-LPB- POT Sta. 19+66.00 =
-L- POC Sta. 56+42.00

R=90'

+43.97

+48.35

2'-6" C&G

+49.99

2'-6" C&G

14'

12'

R=2.75'

+24.00

-LPB-
S 61° 00' 20.3" E

52.49'
+62.54

-RPB-
S 57° 43' 00.3" E

5.5' 5" MONO. CONC. ISLAND

12'

12'

6'

-L-

12'

12'

14'

R=10'
+16.41

2'-6" C&G

N 25° 43' 00.3" W
-RPA-

12'

14'

12'

1'-6" C&G

11.5'

GRASS COVERED ISLAND

+25.45

18'

R=14.75'

12'

1'-6" C&G

14'

26'

2'-6" C&G

-RPA- POT Sta. 26+50.94 =
-RPB- POT Sta. 26+93.62 =
-L- POC Sta. 56+72.00

+94.95

R=225'

BEGIN C&G
-RPA- STA. +54.40

4'

+79.38
R=80'

25

12'

12'

4' PS

4' PS

BEGIN C&G
-RPA- STA. +54.40

-RPA- PT Sta. 24+35.35

20 10 0 20 40

★ REVISED SIGNAL

SEE SHEET 5 FOR PLAN VIEW

SEE PAVEMENT MARKING PLANS FOR CURB RAMP LOCATIONS AND STATIONING

2/20/2017
I-5506_2B-3_Inters_rdy.psh, 02B-3_Inters.dgn
USER: kevin

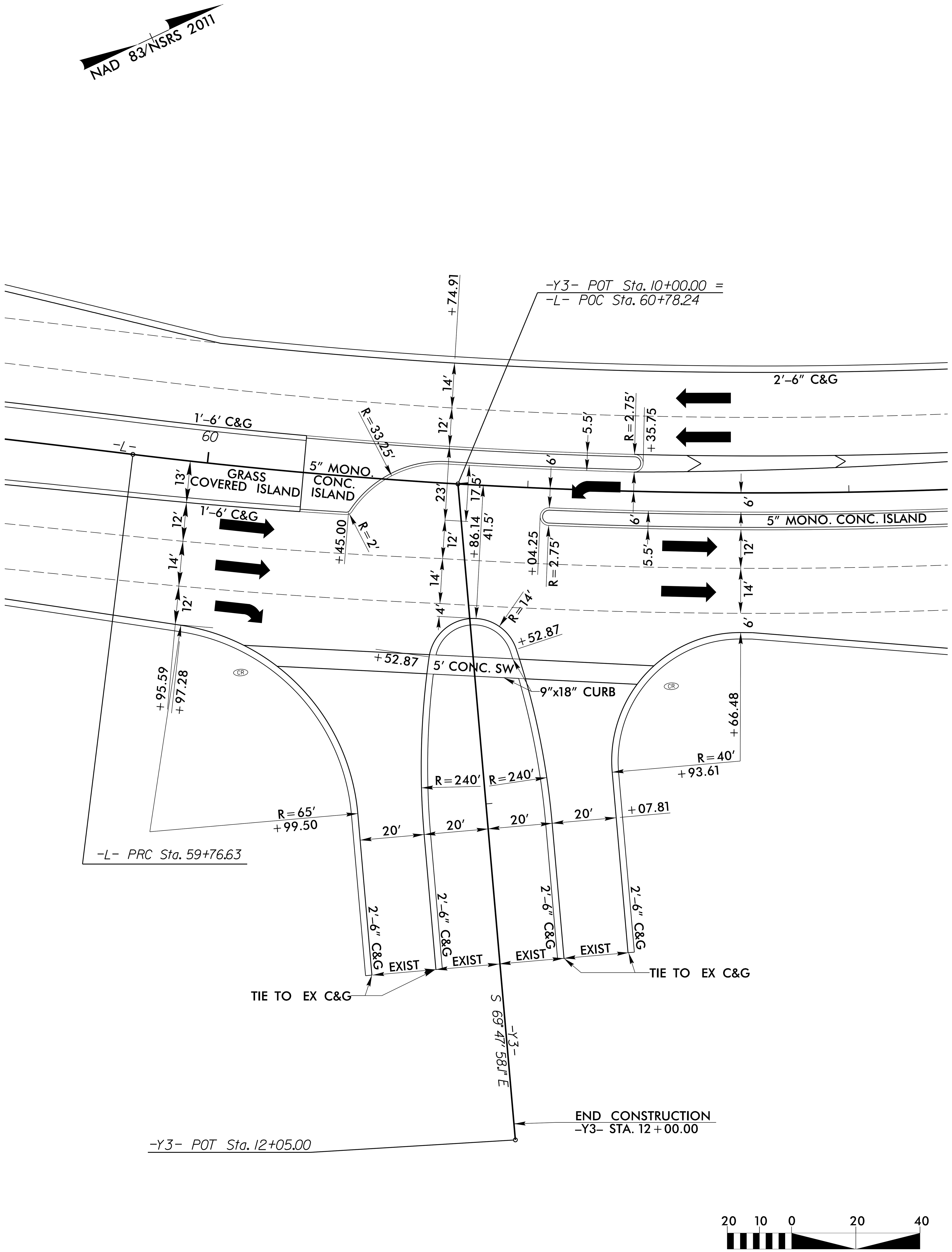
WETHERILL ENGINEERING
1223 Jones Franklin Road
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO.	SHEET NO.
I-5506	2B-4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

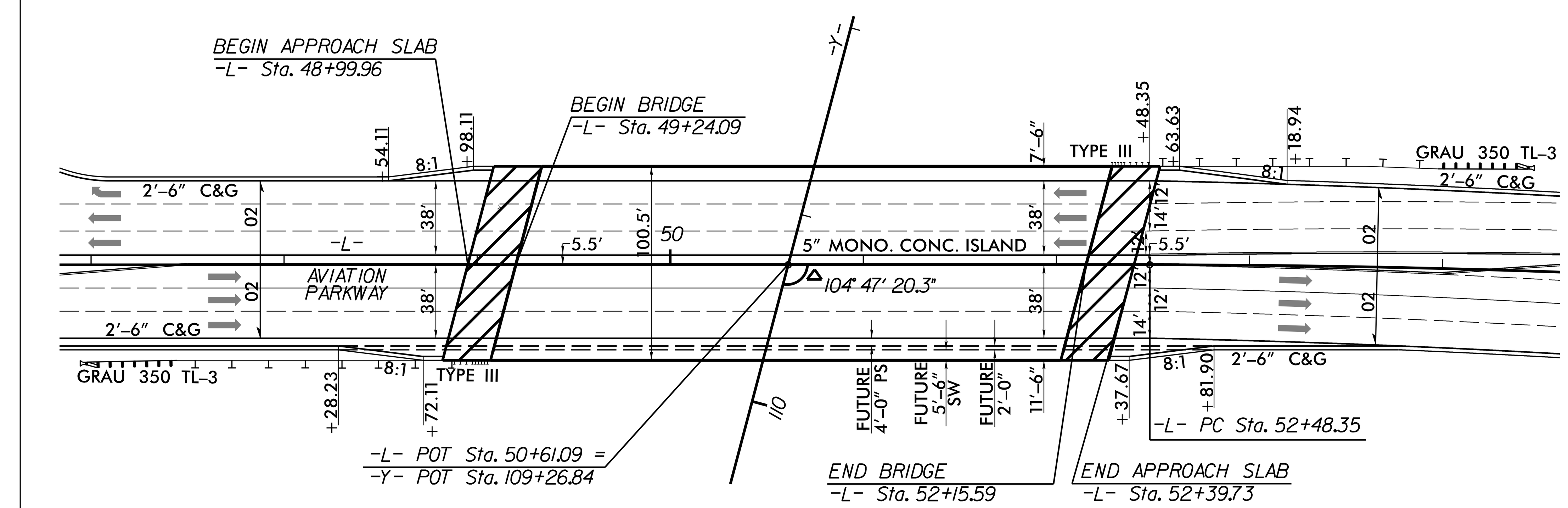
REVISIONS



SEE SHEET 5 FOR PLAN VIEW

SEE PAVEMENT MARKING PLANS FOR CURB RAMP LOCATIONS AND STATIONING

STRUCTURE/PAVEMENT RELATIONSHIP



(SEE SHEET 5 PLAN OVERVIEW)
(SEE SHEETS S-1 THRU S-?? FOR STRUCTURE PLANS)

8/17/99

2/17/2017 I5506_rdy_psh_02B-4_IntersBrgDtl.dgn

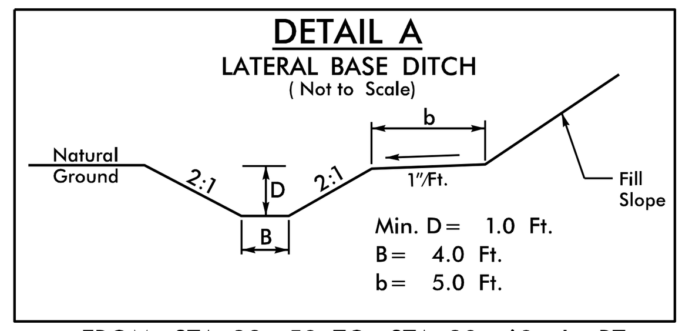
8/17/99

DRAINAGE DETAILS
(NOT TO SCALE)

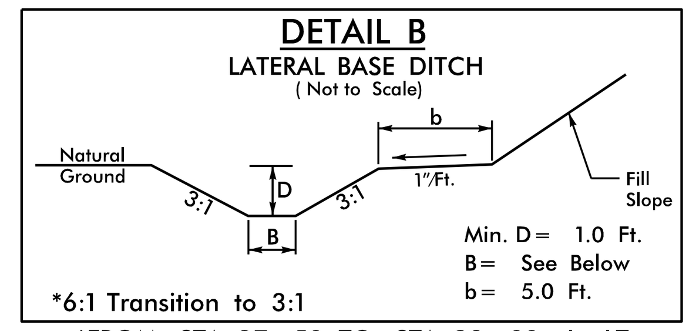
WETHERILL ENGINEERING
1223 Jones Franklin Road
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO.	SHEET NO.
I-5506	2D-1
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



FROM STA. 28+50 TO STA. 30+60 -L- RT

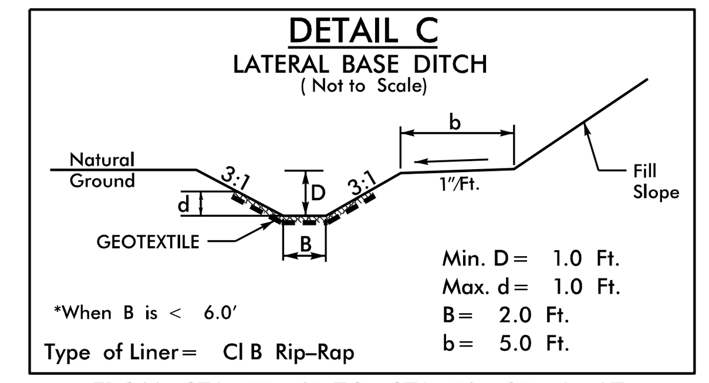


*FROM STA. 27+50 TO STA. 28+00 -L- LT
Use B=8.0 Ft.

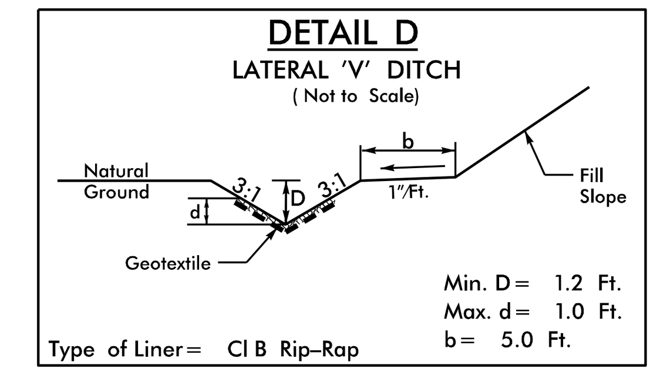
FROM STA. 28+00 TO STA. 29+00 -L- LT
Use B=8.0 Ft.

FROM STA. 68+00 TO STA. 70+50 -Y- LT
Use B=9.0 Ft.

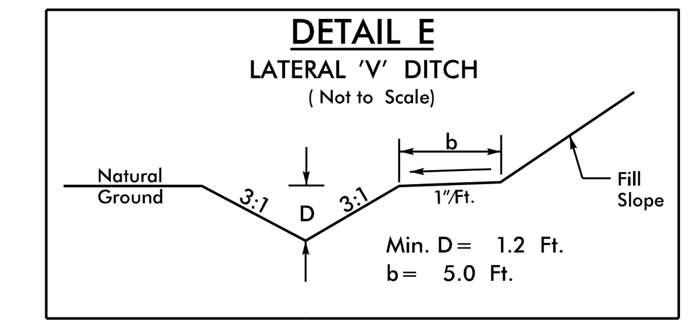
FROM STA. 70+50 TO STA. 74+00 -Y- LT
Use B=4.0 Ft.



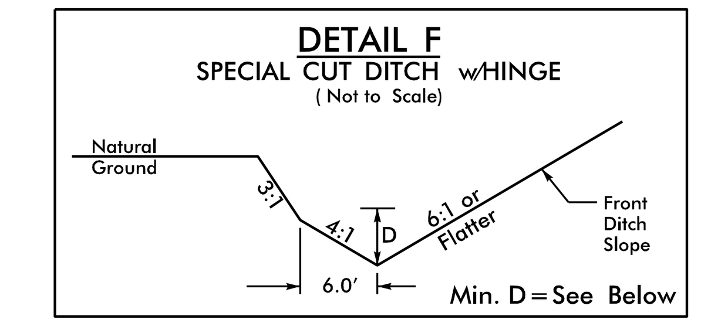
FROM STA. 57+81 TO STA. 58+25 -L- LT



FROM STA. 58+25 TO STA. 59+00 -L- LT

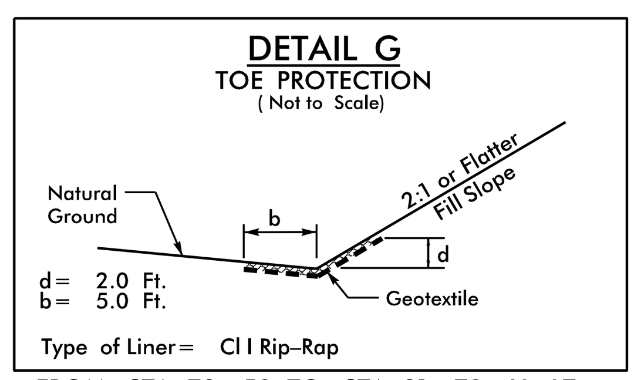


FROM STA. 59+00 TO STA. 59+50 -L- LT
FROM STA. 23+60 TO STA. 24+75 -RPB- LT

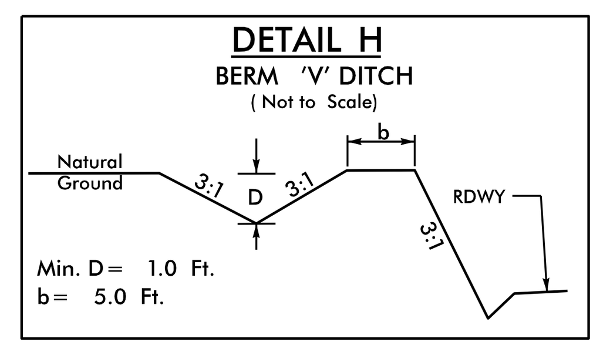


FROM STA. 75+50 TO STA. 77+50 -Y- LT
Use Min. D=1.5 Ft.

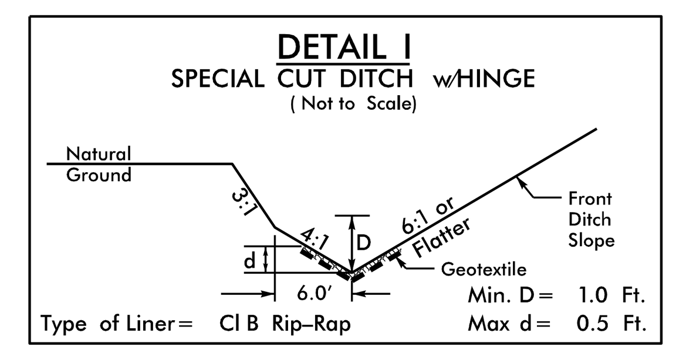
FROM STA. 14+70 TO STA. 16+02 -RPB- LT
FROM STA. 12+72 TO STA. 13+50 -RPA- RT
Use Min. D=1.1 Ft.



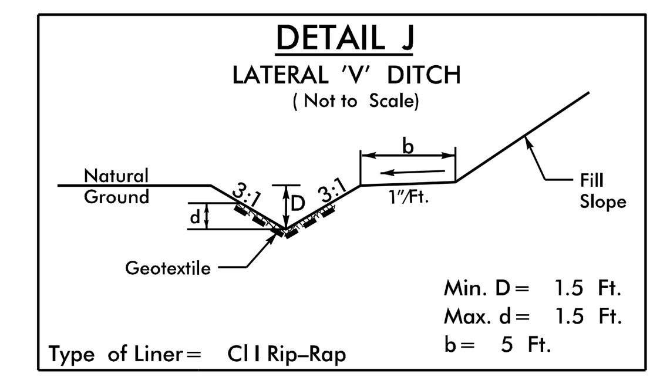
FROM STA. 79+50 TO STA. 81+70 -Y- LT



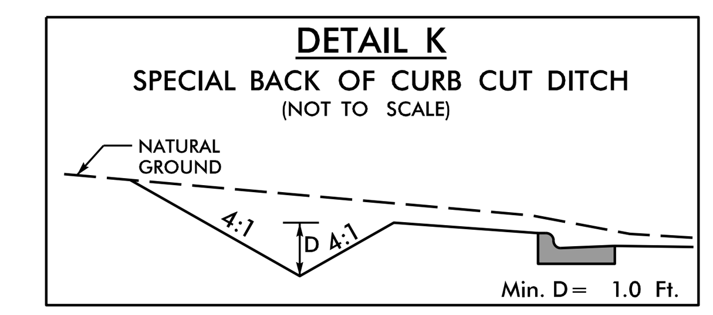
FROM STA. 18+13.5 TO STA. 19+88 -RPA- RT
FROM STA. 14+00 TO STA. 14+68 -RPB- LT
FROM STA. 17+60 TO STA. 19+60 -RPB- LT



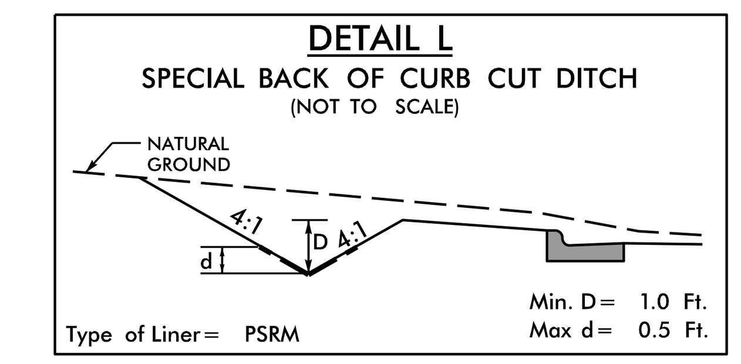
FROM STA. 21+50 TO STA. 22+73 -RPB- LT



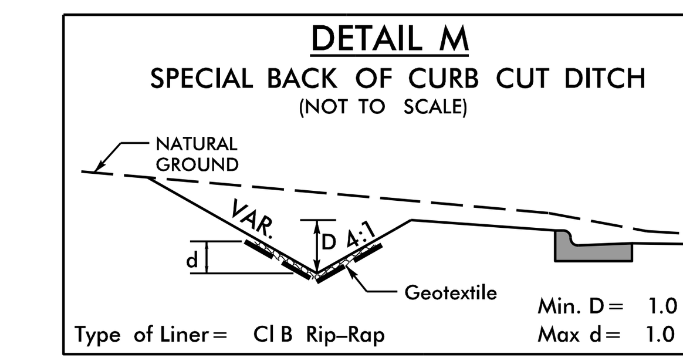
FROM STA. 24+75 TO STA. 25+45 -RPB- LT



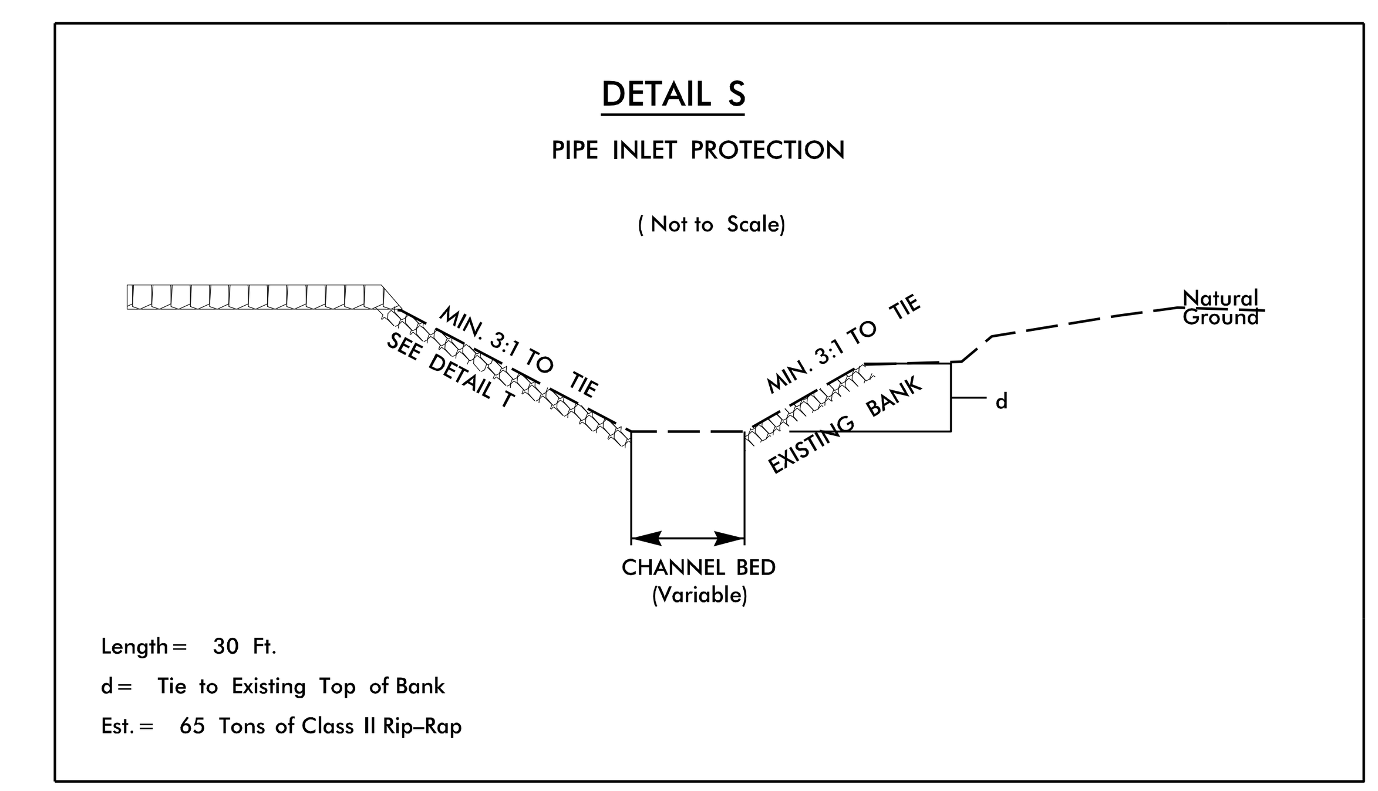
FROM STA. 12+85 TO STA. 13+50 -LPB- RT



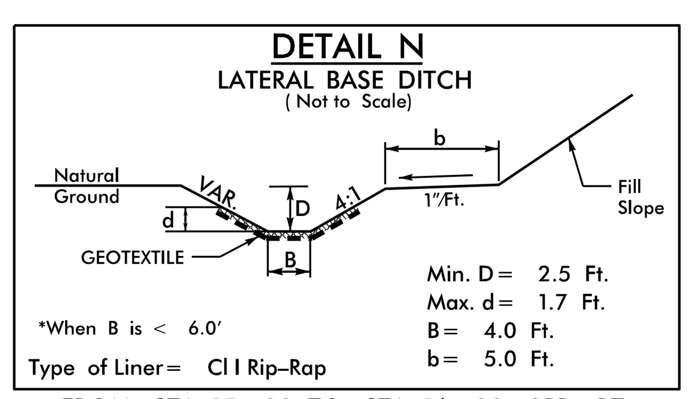
FROM STA. 13+50 TO STA. 14+30 -LPB- RT



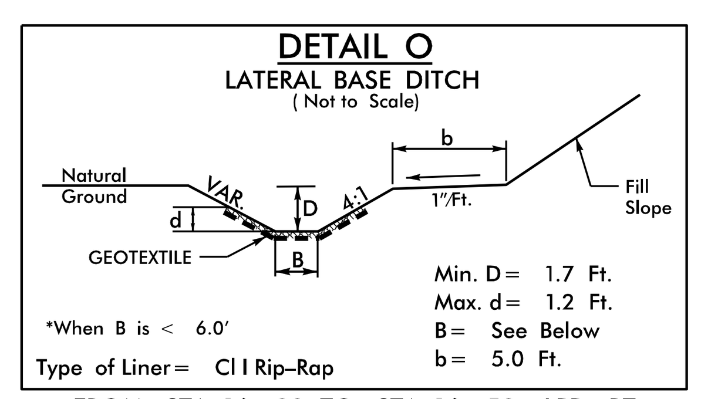
FROM STA. 14+30 TO STA. 15+00 -LPB- RT



FROM STA. 81+58 TO STA. 81+80 -Y- LT

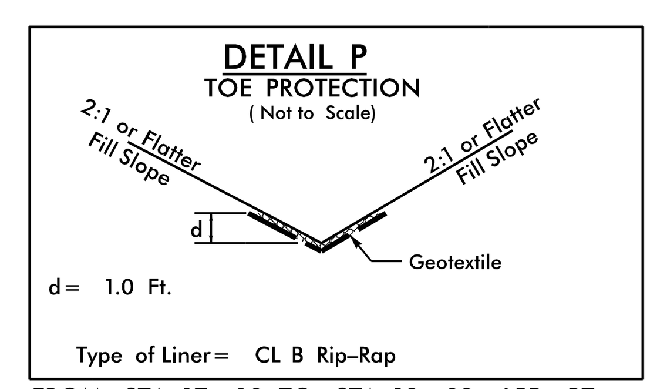


FROM STA. 15+00 TO STA. 16+00 -LPB- RT

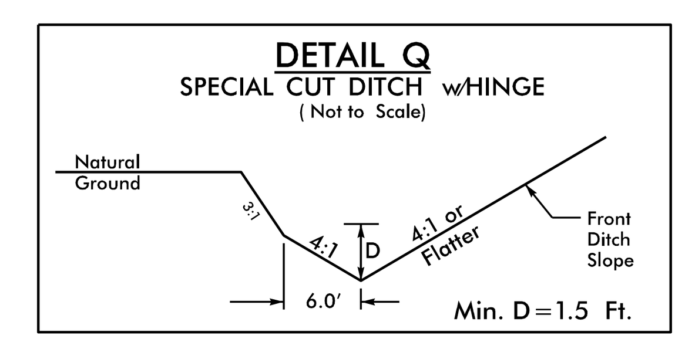


FROM STA. 16+00 TO STA. 16+50 -LPB- RT
Use B=4.0 Ft.

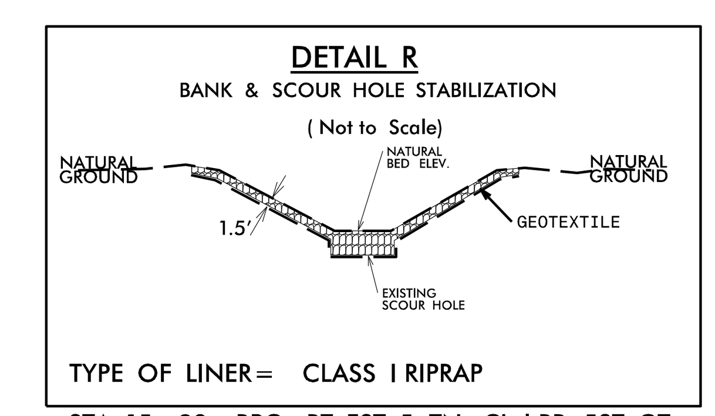
FROM STA. 16+50 TO STA. 17+80 -LPB- RT
Use B=3.0 Ft.



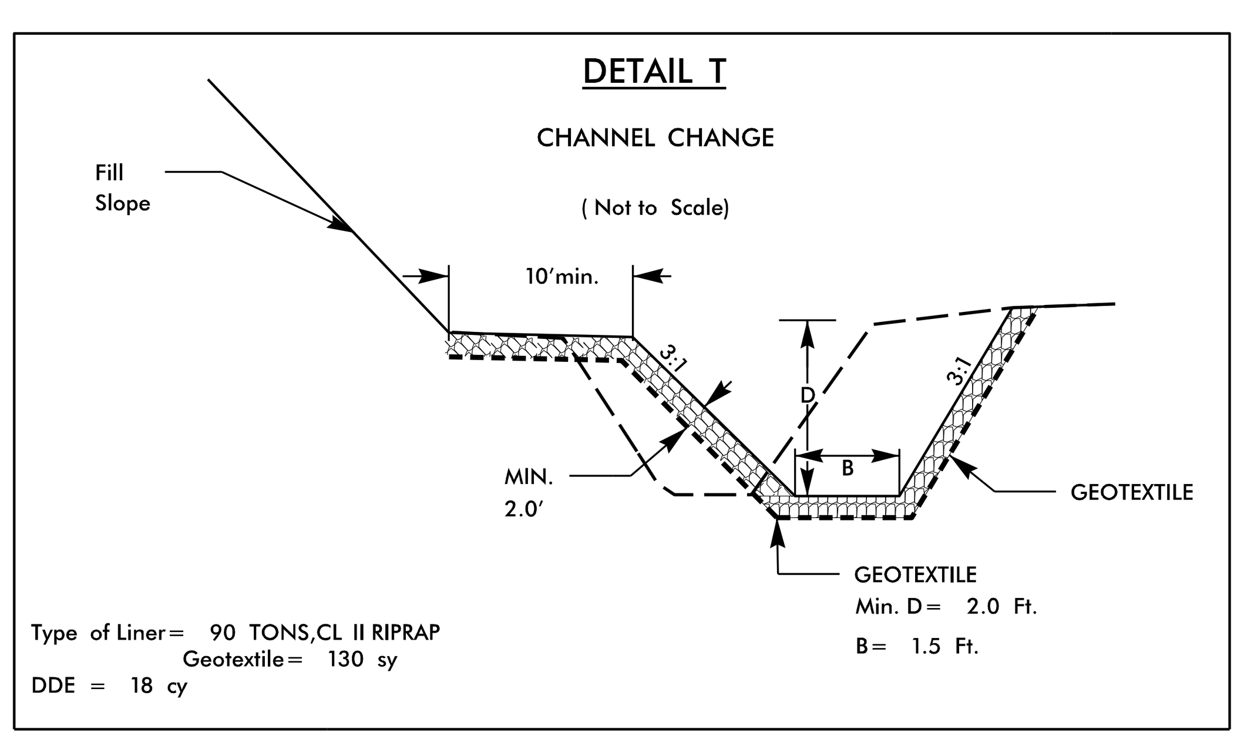
FROM STA. 17+00 TO STA. 18+82 -LPB- RT



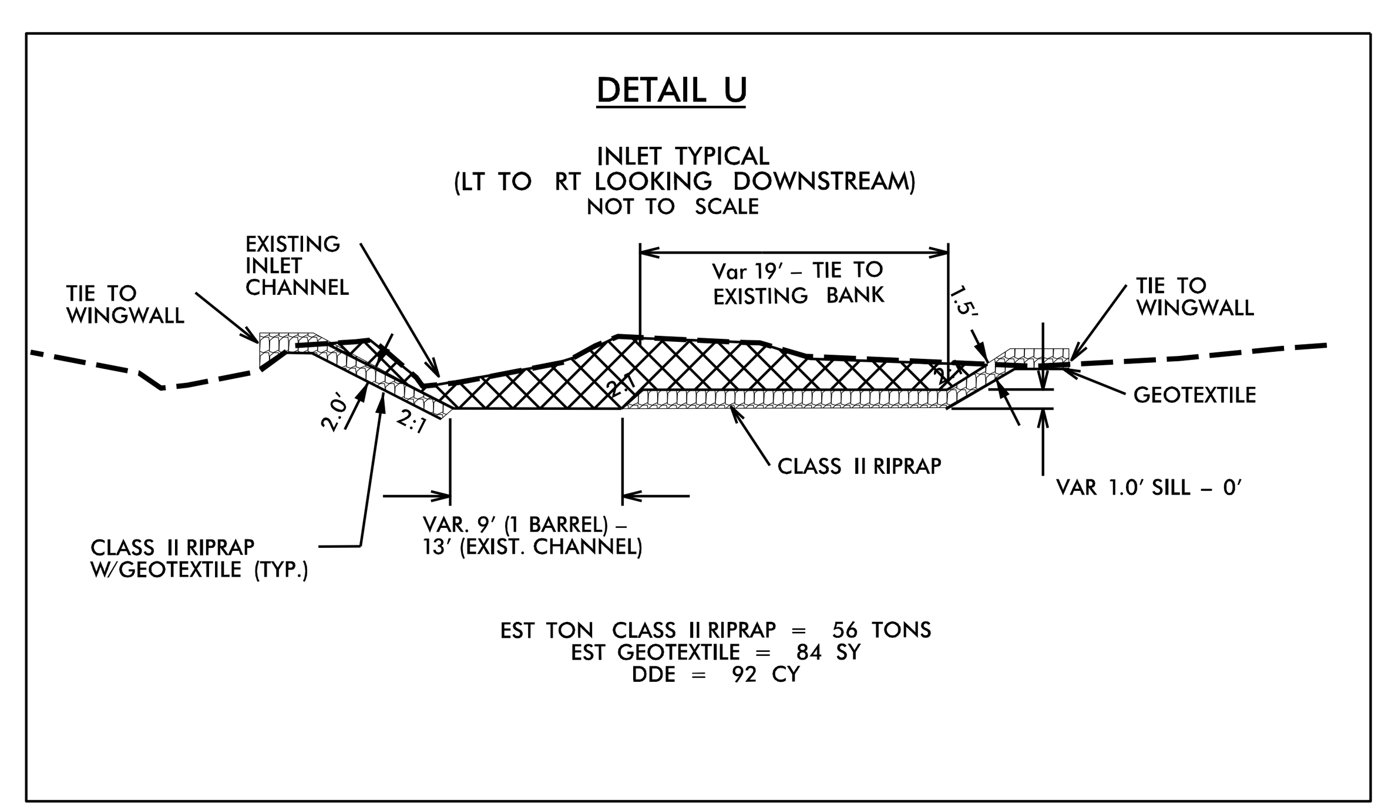
FROM STA. 115+00 TO STA. 115+72.32 -Y- LT



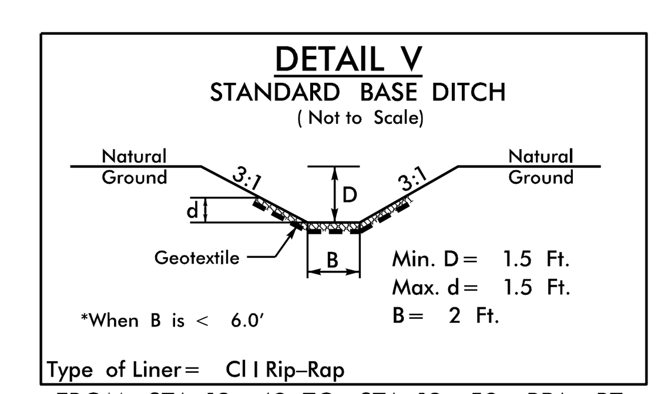
STA. 15+83 -RPC- RT EST 5 TN CL I RR; 5ST GT
STA. 22+36 -RPD- LT EST 22 TN CL I RR; 30 SY GT



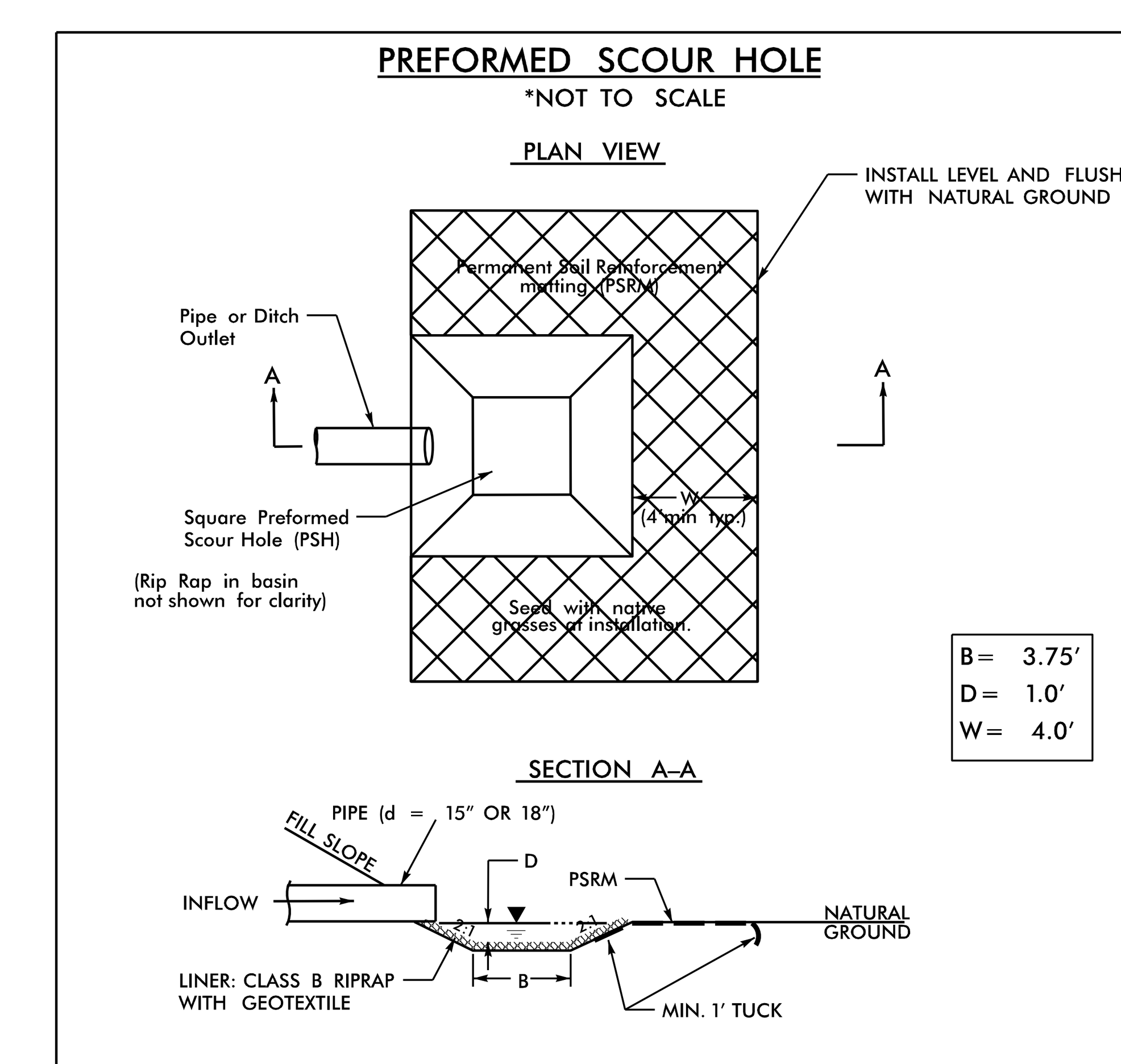
FROM STA. 81+80 TO STA. 82+30 -Y- LT



FROM STA. 66+40 TO STA. 67+20 -Y- LT



FROM STA. 12+49 TO STA. 12+59 -RPA- RT



STA. 25+70 -L- LT

2/17/2017
I5506_rdy_psh_02D-1_DrnDetails.dgn

WETHERILL ENGINEERING
1223 Jones Franklin Road
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO.	SHEET NO.
I-5506	2D-2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MEDIA FILTER TYPICAL CROSS SECTION DETAILS

NOTES

1. FOR BASIN AND FOREBAY LAYOUTS SEE DETAILS SHEETS 2D-7 AND 2D-8.
2. FOREBAYS WITH PIPED INLETS SHALL BE LINED WITH CLASS B RIPRAP.
3. ACCESS BERM SHOULD BE PROVIDED FOR MAINTENANCE.
4. 6-INCH UNDERDRAIN IS THE PRIMARY DRAWDOWN DEVICE.
5. UNDERDRAIN PIPES SHOULD BE PLACED A MAXIMUM OF 5 FEET FROM THE EDGE OF THE BASIN AND MUST HAVE A MAXIMUM OF 10 FEET BETWEEN THE UNDERDRAIN PIPES.
6. UNDERDRAIN SHOULD BE BEDDED ON A THIN LAYER OF NO.57 WASHED STONE AND BACKFILLED TO A TOTAL MINIMUM STONE DEPTH OF 12 INCHES.
7. PERFORATED PIPE HOLES ARE 3/8 INCH IN DIAMETER AND LONGITUDINALLY SPACED 6 INCHES ON CENTER ALONG 4 ROWS.
8. TOP OF MEDIA FILTER MUST BE LEVEL.
9. IF BASIN IS USED TO COLLECT SEDIMENTATION AS AN EROSION CONTROL MEASURE, DO NOT INSTALL UNDERDRAIN PIPES, WASHED STONE, NOR ENGINEERED SOIL MEDIA FILTER UNTIL EROSION CONTROL MEASURES INSIDE MEDIA FILTER BASIN ARE REMOVED.

REFERENCED SPECIAL DETAILS

FOR "OUTLET CONTROL STRUCTURE DETAILS" SEE SHEET 2D-3
FOR "TRASH RACKS DETAILS" SEE SHEET 2D-4
FOR "CLEANOUT DETAIL" SEE SHEET 2D-5

FOR SLUICE GATE DETAILS SEE MANUFACTURER'S DIMENSIONS AND SPECIFICATIONS

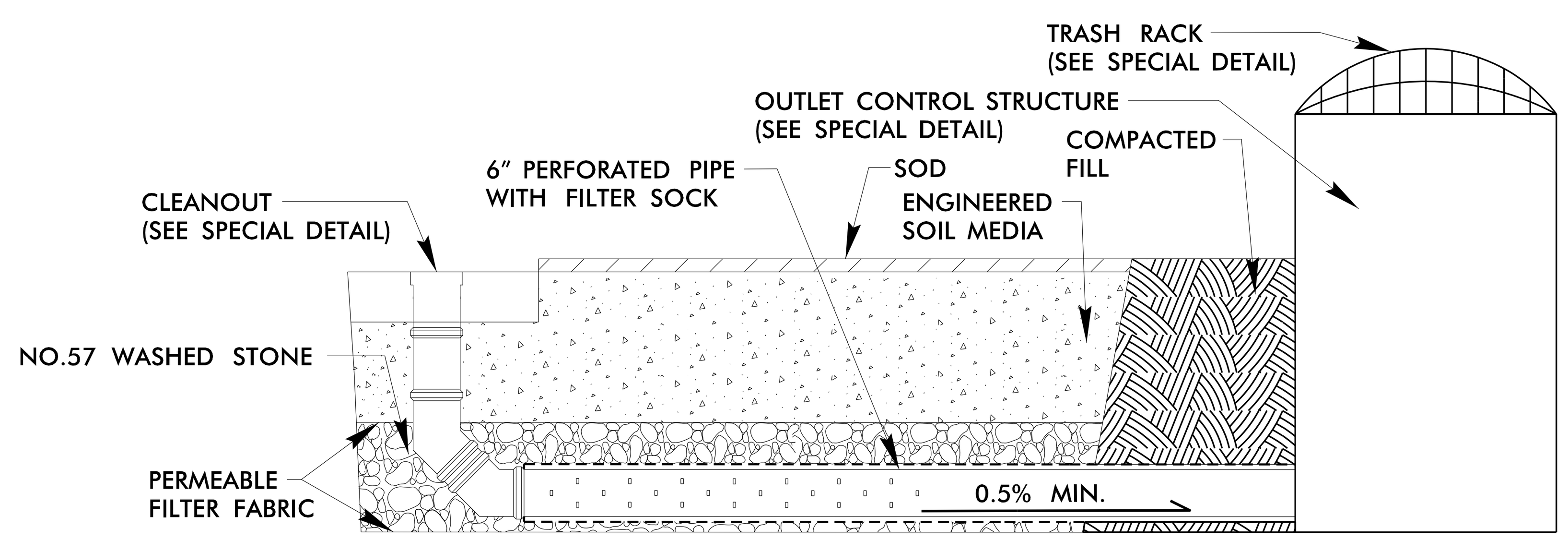
SPECIFICATIONS

ENGINEERED SOIL MEDIA SHALL CONSIST OF:
- 95-97% TYPE 2S OR TYPE 2MS COARSE SAND OF NON-LIMESTONE MATERIAL
- 3-5% FINELY GROUND PINE BARK AS ORGANIC MATERIAL

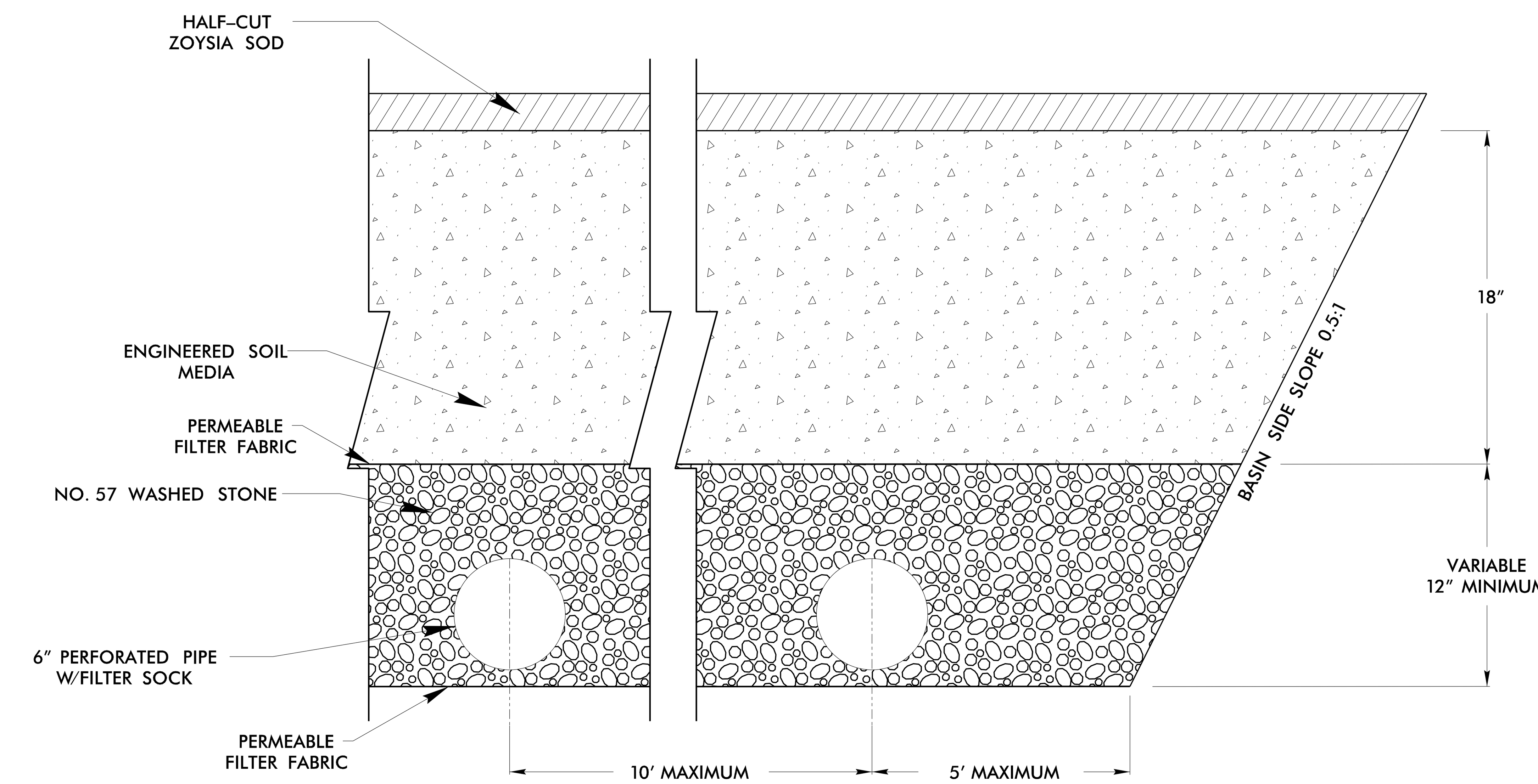
PLAN

SEE SHEET 2D-7 FOR "PLAN VIEW - BASIN 1"
SEE SHEET 2D-8 FOR "PLAN VIEW - BASIN 2"

SECTION C-C

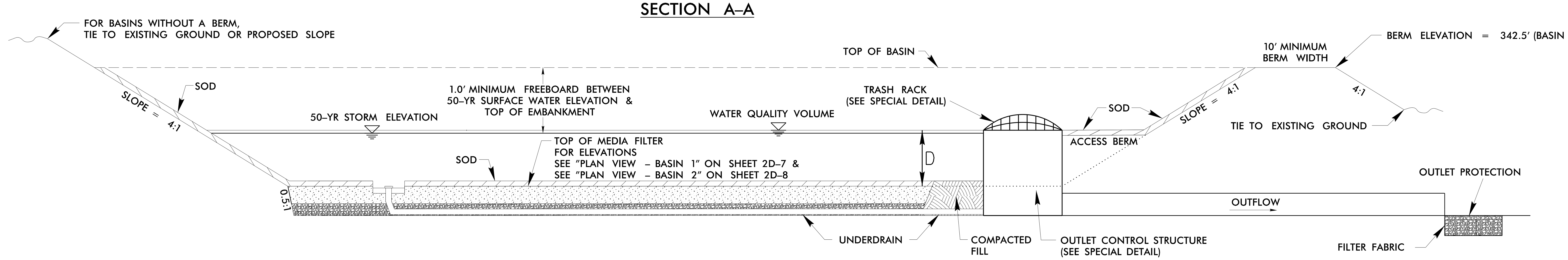


SECTION B-B



PROFILE

SECTION A-A



NOT TO SCALE

PLAN VIEW – BASIN 1

WETHERILL ENGINEERING
1223 Jones Franklin Road
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO.	SHEET NO.
I-5506	2D-7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

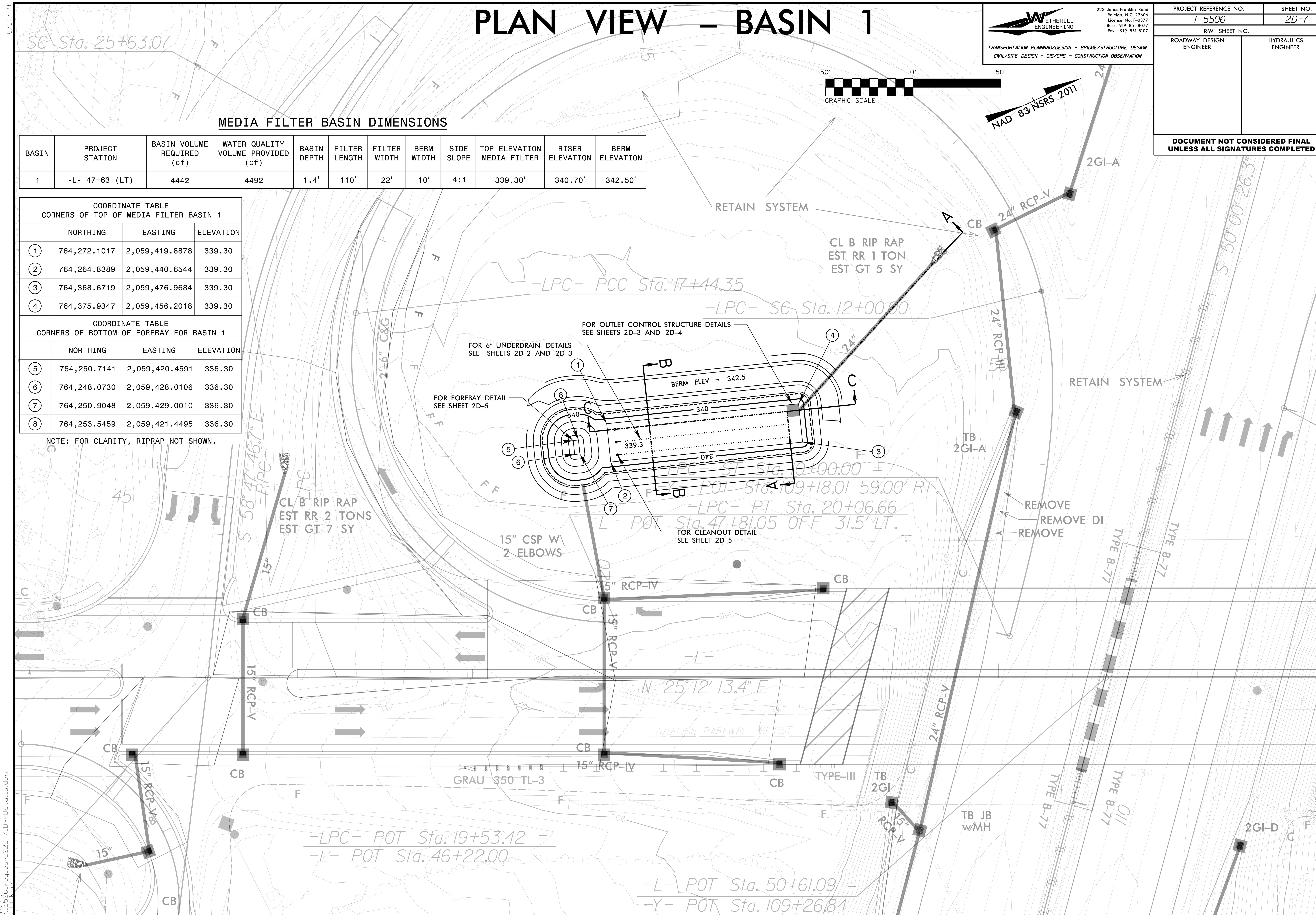
MEDIA FILTER BASIN DIMENSIONS

BASIN	PROJECT STATION	BASIN VOLUME REQUIRED (cf)	WATER QUALITY VOLUME PROVIDED (cf)	BASIN DEPTH	FILTER LENGTH	FILTER WIDTH	BERM WIDTH	SIDE SLOPE	TOP ELEVATION MEDIA FILTER	RISER ELEVATION	BERM ELEVATION
1	-L- 47+63 (LT)	4442	4492	1.4'	110'	22'	10'	4:1	339.30'	340.70'	342.50'

COORDINATE TABLE CORNERS OF TOP OF MEDIA FILTER BASIN 1			
	NORTHING	EASTING	ELEVATION
1	764,272.1017	2,059,419.8878	339.30
2	764,264.8389	2,059,440.6544	339.30
3	764,368.6719	2,059,476.9684	339.30
4	764,375.9347	2,059,456.2018	339.30

COORDINATE TABLE CORNERS OF BOTTOM OF FOREBAY FOR BASIN 1			
	NORTHING	EASTING	ELEVATION
5	764,250.7141	2,059,420.4591	336.30
6	764,248.0730	2,059,428.0106	336.30
7	764,250.9048	2,059,429.0010	336.30
8	764,253.5459	2,059,421.4495	336.30

NOTE: FOR CLARITY, RIPRAP NOT SHOWN.

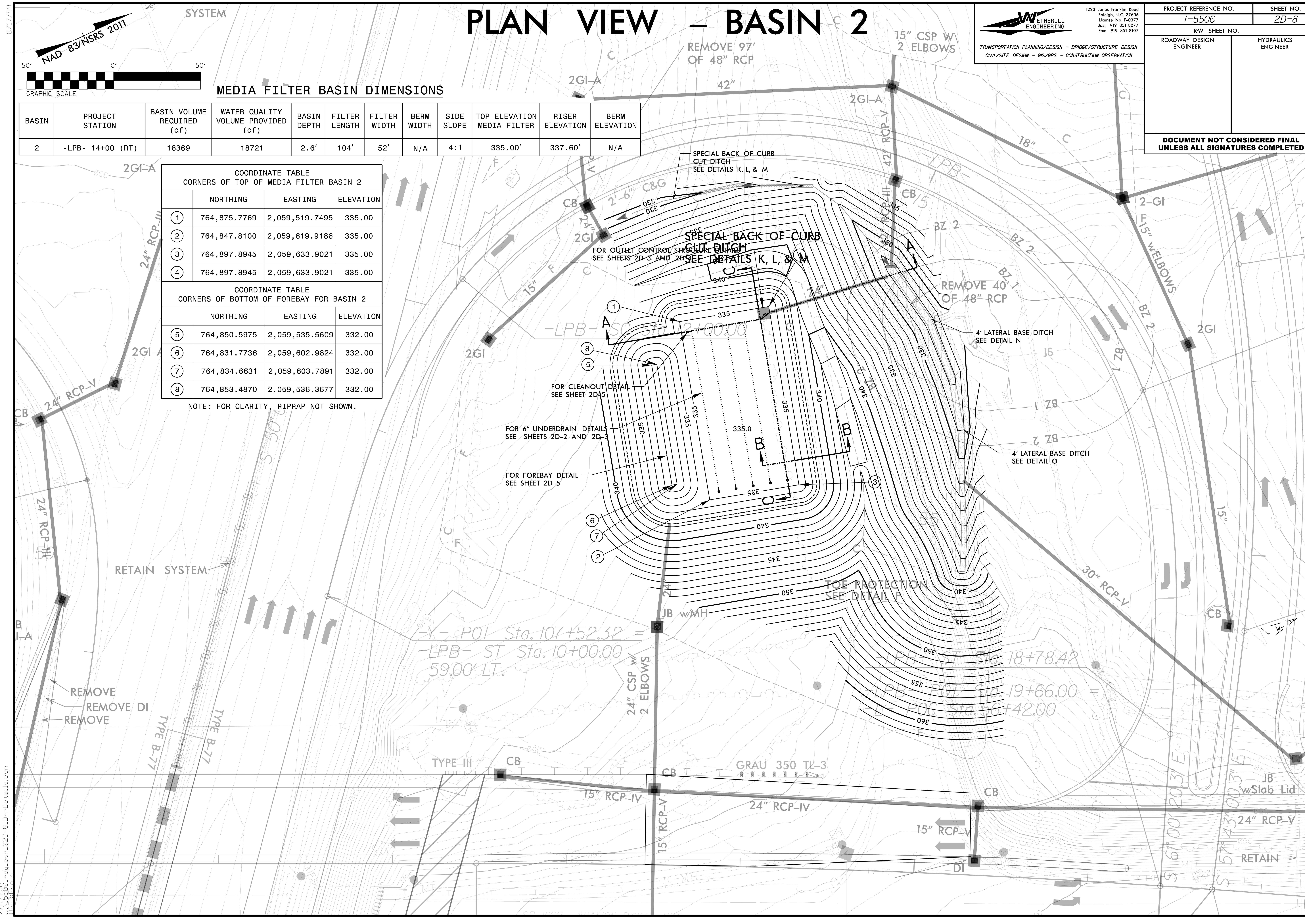


PLAN VIEW – BASIN 2

WETHERILL ENGINEERING
1223 Jones Franklin Road
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO.	SHEET NO.
I-5506	2D-8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



MEDIA FILTER BASIN DIMENSIONS

BASIN	PROJECT STATION	BASIN VOLUME REQUIRED (cf)	WATER QUALITY VOLUME PROVIDED (cf)	BASIN DEPTH	FILTER LENGTH	FILTER WIDTH	BERM WIDTH	SIDE SLOPE	TOP ELEVATION MEDIA FILTER	RISER ELEVATION	BERM ELEVATION
2	-LPB- 14+00 (RT)	18369	18721	2.6'	104'	52'	N/A	4:1	335.00'	337.60'	N/A

COORDINATE TABLE
CORNERS OF TOP OF MEDIA FILTER BASIN 2

	NORTHING	EASTING	ELEVATION
1	764,875.7769	2,059,519.7495	335.00
2	764,847.8100	2,059,619.9186	335.00
3	764,897.8945	2,059,633.9021	335.00
4	764,897.8945	2,059,633.9021	335.00

COORDINATE TABLE
CORNERS OF BOTTOM OF FOREBAY FOR BASIN 2

	NORTHING	EASTING	ELEVATION
5	764,850.5975	2,059,535.5609	332.00
6	764,831.7736	2,059,602.9824	332.00
7	764,834.6631	2,059,603.7891	332.00
8	764,853.4870	2,059,536.3677	332.00

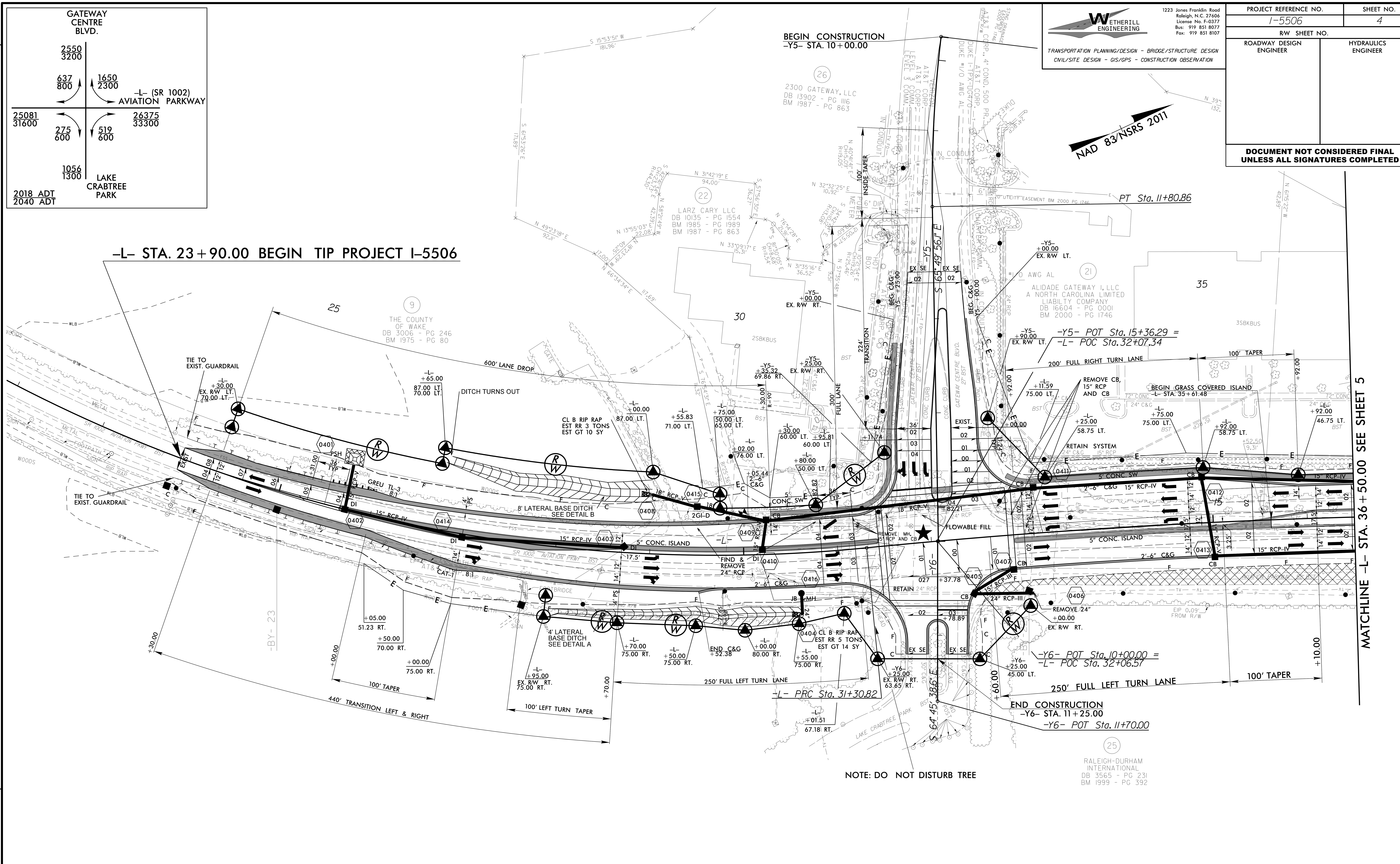
NOTE: FOR CLARITY, RIPRAP NOT SHOWN.

PROJECT REFERENCE NO.	SHEET NO.
I-5506	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

WETHERILL ENGINEERING
1223 Jones Franklin Road
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

REVISIONS
07/06/17 RIGHT OF WAY REVISION: ADDED ADDITIONAL TCE TO PARCELS 21 & 22, LT & RT OF Y5-(WEI-reo)



-Y1- (GATEWAY CENTER BLVD.)
PI Sta 10+90.57
Δ = 7° 43' 21.7" (LT)
D = 4° 16' 12.0"
L = 180.86'
T = 90.57'
R = 1,341.82'
SE = EXIST. FT/FT
DS = 40 MPH

-L- (AVIATION PARKWAY)	
PI Sta 26+25.20	PI Sta 34+89.38
Δ = 37° 07' 16.9" (LT)	Δ = 5° 39' 45.6" (RT)
D = 3° 32' 12.4"	D = 0° 47' 25.0"
L = 1,049.58'	L = 716.53'
T = 543.95'	T = 358.56'
R = 1,620.00'	R = 7,250.00'
SE = 0.04 FT/FT	SE = NC
DS = 50 MPH	DS = 50 MPH

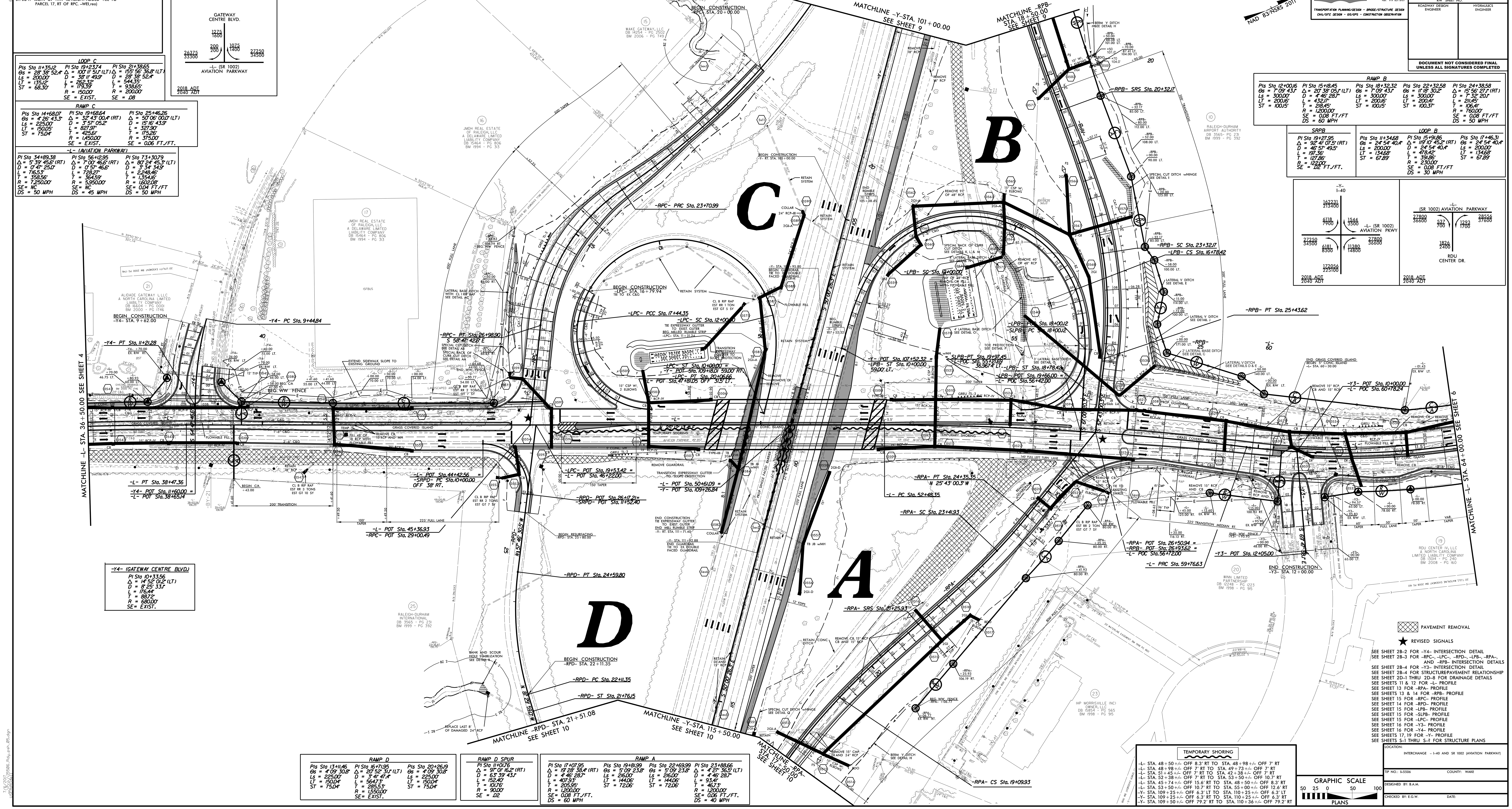
PAVEMENT REMOVAL

★ REVISED SIGNAL

SEE SHEET 2B-2 FOR -Y5- AND -Y6- INTERSECTION DETAILS
SEE SHEET 11 FOR -L- PROFILE
SEE SHEET 16 FOR -Y5- AND -Y6- PROFILES
SEE SHEET 2D-1 FOR DITCH DETAILS

8/17/99
7/6/2017

REVISIONS
07/06/17 RIGHT OF WAY REVISION: ADDED TCE TO PARCEL 17, RT OF RPC. -WEI,reo)



LOOP C		
PIs Sta 11+35.12	PI Sta 19+23.74	PI Sta 21+38.65
θs = 28° 38′ 52.4″	Δ = 100° 11′ 51.1″ (LT)	Δ = 155° 56′ 36.8″ (LT)
Ls = 200.00′	D = 38° 11′ 49.9″	D = 28° 38′ 52.4″
LT = 135.12′	L = 262.32′	L = 544.35′
ST = 68.30′	T = 179.39′	T = 938.65′
	R = 150.00′	R = 200.00′
	SE = EXIST.	SE = .08

RAMP C		
PIs Sta 14+68.07	PI Sta 19+68.64	PI Sta 25+46.26
θs = 4° 26′ 43.3″	Δ = 32° 43′ 00.4″ (RT)	Δ = 50° 06′ 00.0″ (LT)
Ls = 225.00′	D = 3° 57′ 05.2″	D = 15° 16′ 43.9″
LT = 150.05′	L = 827.97′	L = 327.90′
ST = 75.04′	T = 425.61′	T = 175.26′
	R = 1,450.00′	R = 375.00′
	SE = EXIST.	SE = 0.06 FT./FT.

-L- (AVIATION PARKWAY)		
PI Sta 34+89.38	PI Sta 56+12.95	PI Sta 73+30.79
Δ = 5° 39′ 45.6″ (RT)	Δ = 7° 00′ 46.6″ (RT)	Δ = 80° 24′ 45.3″ (LT)
D = 0° 47′ 25.0″	D = 0° 57′ 46.6″	D = 3° 34′ 34.9″
L = 716.53′	L = 728.27′	L = 2,248.46′
T = 358.56′	T = 364.59′	T = 1,354.16′
R = 7,250.00′	R = 5,950.00′	R = 1,602.08′
SE = NC	SE = NC	SE = 0.04 FT/FT
DS = 50 MPH	DS = 45 MPH	DS = 50 MPH

-Y4- (GATEWAY CENTRE BLVD.)
PI Sta 10+33.56
Δ = 14° 52′ 01.2″ (LT)
D = 8° 25′ 33.1″
L = 176.44′
T = 88.72′
R = 680.00′
SE = EXIST.

1223 Jones Franklin Road
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107

WETHERILL ENGINEERING
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO.	SHEET NO.
I-5506	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

RAMP B				
PIs Sta 12+00.16	PI Sta 15+18.45	PIs Sta 18+32.32	PIs Sta 22+32.58	PI Sta 24+38.58
θs = 7° 09′ 43.1″	Δ = 20° 38′ 05.1″ (LT)	θs = 7° 09′ 43.1″	θs = 11° 18′ 30.2″	Δ = 15° 56′ 27.1″ (RT)
Ls = 300.00′	D = 4° 46′ 28.7″	Ls = 300.00′	Ls = 300.00′	D = 7° 32′ 20.1″
LT = 200.16′	L = 432.17′	LT = 200.16′	LT = 200.41′	L = 211.45′
ST = 100.15′	T = 218.45′	ST = 100.15′	ST = 100.37′	T = 106.41′
	R = 1,200.00′			R = 760.00′
	SE = 0.08 FT/FT			SE = 0.08 FT/FT
	DS = 60 MPH			DS = 50 MPH

SRPB
PI Sta 19+27.95
Δ = 92° 41′ 07.5″ (RT)
D = 46° 57′ 49.5″
L = 197.36′
T = 127.86′
R = 122.00′
SE = .02 FT./FT.

LOOP B		
PIs Sta 11+34.68	PI Sta 15+91.86	PIs Sta 17+46.31
θs = 24° 54′ 40.4″	Δ = 119° 10′ 45.2″ (RT)	θs = 24° 54′ 40.4″
Ls = 200.00′	D = 24° 54′ 40.4″	Ls = 200.00′
LT = 134.68′	L = 478.42′	LT = 134.68′
ST = 67.89′	T = 391.86′	ST = 67.89′
	R = 230.00′	
	SE = 0.08 FT/FT	
	DS = 30 MPH	

PAVEMENT REMOVAL

★ REVISED SIGNALS

SEE SHEET 2B-2 FOR -Y4- INTERSECTION DETAIL
SEE SHEET 2B-3 FOR -RPC-, -LPC-, -RPD-, -LPB-, -RPA-, AND -RPB- INTERSECTION DETAILS
SEE SHEET 2B-4 FOR -Y3- INTERSECTION DETAIL
SEE SHEET 2B-4 FOR STRUCTURE/PAVEMENT RELATIONSHIP
SEE SHEET 2D-1 THRU 2D-8 FOR DRAINAGE DETAILS
SEE SHEETS 11 & 12 FOR -L- PROFILE
SEE SHEET 13 FOR -RPA- PROFILE
SEE SHEETS 13 & 14 FOR -RPB- PROFILE
SEE SHEET 15 FOR -RPC- PROFILE
SEE SHEET 14 FOR -RPD- PROFILE
SEE SHEET 15 FOR -LPB- PROFILE
SEE SHEET 15 FOR -SLPB- PROFILE
SEE SHEET 15 FOR -LPC- PROFILE
SEE SHEET 16 FOR -Y3- PROFILE
SEE SHEET 16 FOR -Y4- PROFILE
SEE SHEETS 17, 19 FOR -Y- PROFILE
SEE SHEETS S-1 THRU S-? FOR STRUCTURE PLANS

RAMP D		
PIs Sta 13+11.46	PI Sta 16+71.95	PIs Sta 20+26.19
θs = 4° 09′ 30.8″	Δ = 20° 52′ 31.1″ (LT)	θs = 4° 09′ 30.8″
Ls = 225.00′	D = 3° 41′ 47.4″	Ls = 225.00′
LT = 150.04′	L = 564.73′	LT = 150.04′
ST = 75.04′	T = 285.53′	ST = 75.04′
	R = 1,550.00′	
	SE = EXIST.	

RAMP D SPUR
PI Sta 11+01.76
Δ = 97° 01′ 16.2″ (RT)
D = 63° 39′ 43.1″
L = 152.40′
T = 101.76′
R = 90.00′
SE = .02

RAMP A			
PI Sta 17+07.95	PIs Sta 19+81.99	PIs Sta 22+69.99	PI Sta 23+88.66
Δ = 19° 28′ 38.4″ (RT)	θs = 5° 09′ 23.8″	θs = 5° 09′ 23.8″	Δ = 4° 27′ 36.5″ (LT)
D = 4° 46′ 28.7″	Ls = 216.00′	Ls = 216.00′	D = 4° 46′ 28.7″
L = 407.93′	LT = 144.06′	LT = 144.06′	L = 93.41′
T = 205.95′	ST = 72.06′	ST = 72.06′	T = 46.73′
R = 1,200.00′			R = 1,200.00′
SE = 0.08 FT./FT.			SE = 0.06 FT./FT.
DS = 60 MPH			DS = 40 MPH

TEMPORARY SHORING
-L- STA. 48+50+/- OFF 8.3′ RT TO STA. 48+98+/- OFF 7′ RT
-L- STA. 48+98+/- OFF 7′ RT TO STA. 49+73+/- OFF 7′ RT
-L- STA. 51+45+/- OFF 7′ RT TO STA. 42+38+/- OFF 7′ RT
-L- STA. 52+38+/- OFF 7′ RT TO STA. 53+50+/- OFF 10.7′ RT
-L- STA. 45+74+/- OFF 15.6′ RT TO STA. 48+50+/- OFF 8.3′ RT
-L- STA. 53+50+/- OFF 10.7′ RT TO STA. 55+00+/- OFF 12.6′ RT
-Y- STA. 109+25+/- OFF 6.3′ LT TO STA. 110+25+/- OFF 6.3′ LT
-Y- STA. 109+25+/- OFF 6.3′ RT TO STA. 110+25+/- OFF 6.3′ RT
-Y- STA. 109+50+/- OFF 79.2′ RT TO STA. 110+36+/- OFF 79.2′ RT

GRAPHIC SCALE
50 25 0 50 100
PLANS

LOCATION:
INTERCHANGE - I-40 AND SR 1002 (AVIATION PARKWAY)

TIP NO.: I-5506 COUNTY: WAKE

DESIGNED BY: B.A.M.

CHECKED BY: E.G.W. DATE:

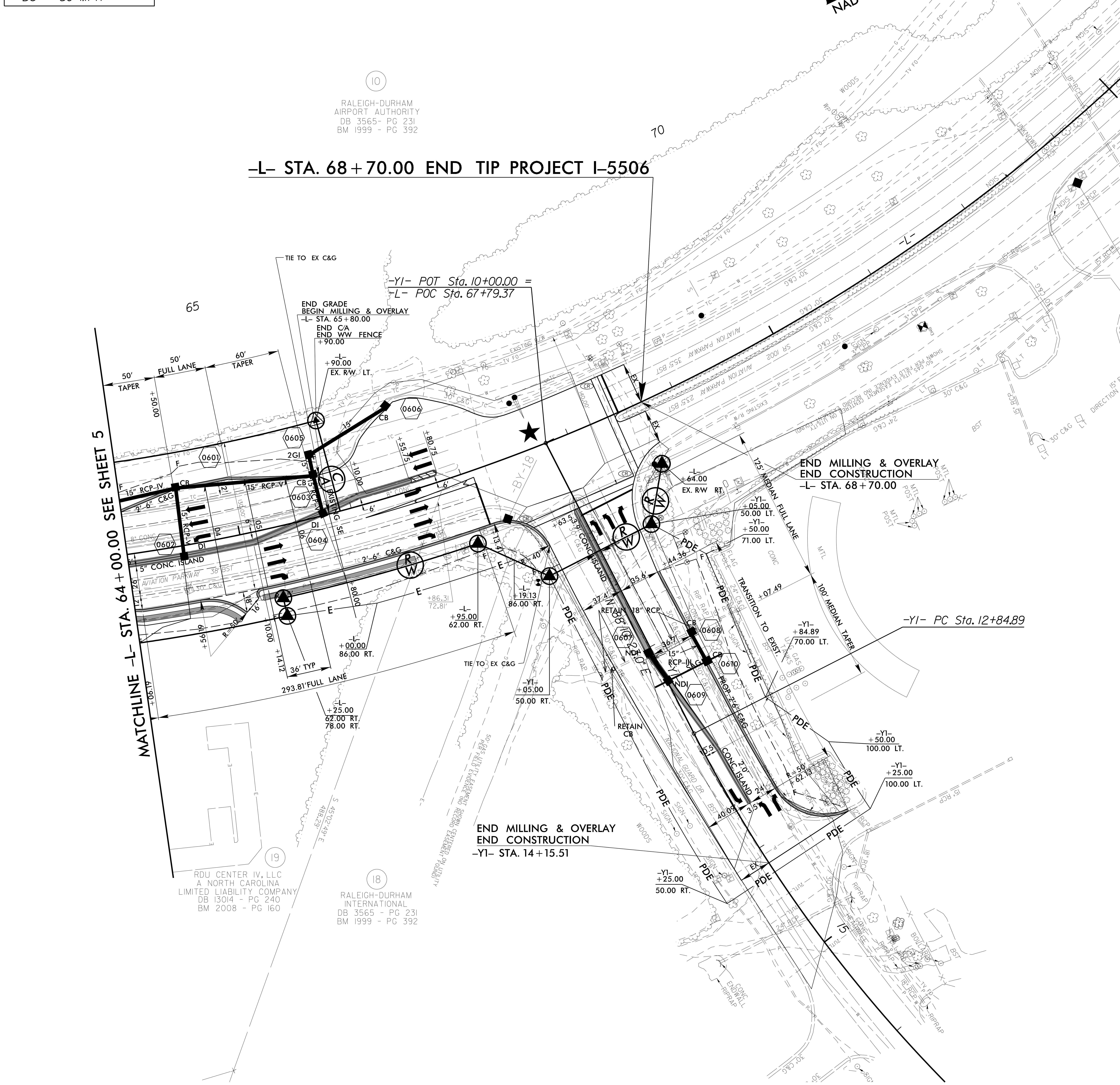
-L- (AVIATION PARKWAY)	-Y1- (NATIONAL GUARD DR.)
PI Sta 73+30.79	PI Sta 15+38.84
Δ = 80° 24' 45.3" (LT)	Δ = 23° 14' 21.4" (LT)
D = 3° 34' 34.9"	D = 4° 38' 21.6"
L = 2,248.46'	L = 500.92'
T = 1,354.16'	T = 253.95'
R = 1,602.08'	R = 1,235.00'
SE = 0.04 FT/FT	SE = EXIST.
DS = 50 MPH	

WETHERILL ENGINEERING
1223 Jones Franklin Road
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8017
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

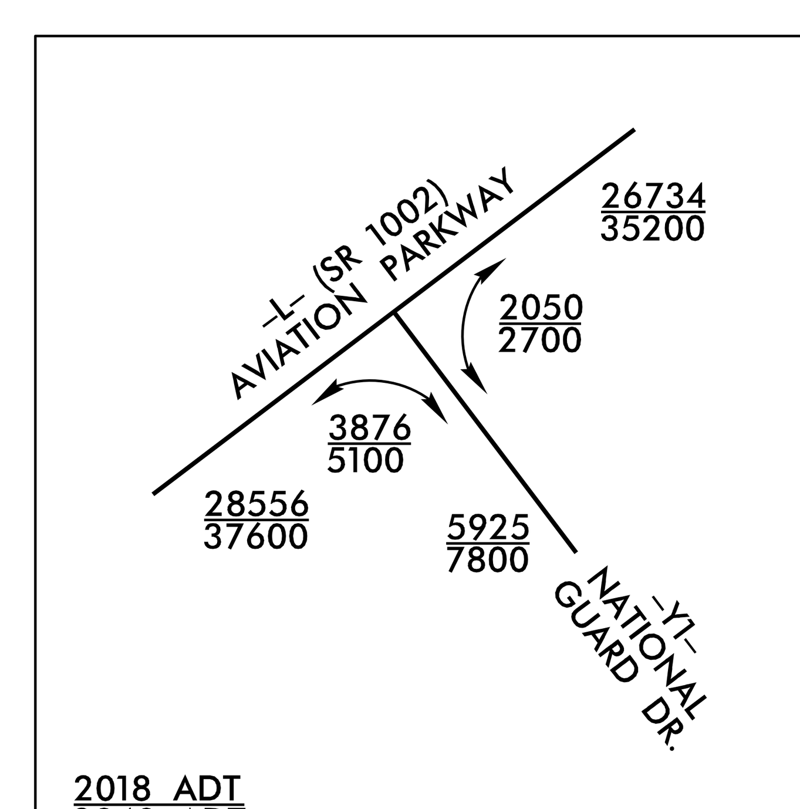
PROJECT REFERENCE NO.	SHEET NO.
I-5506	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS
07/06/17 RIGHT OF WAY REVISION: ADDED PDE TO PARCEL 18, LT. & RT. -Y1-. -(WEI,reo)



NAD 83/NSRS 2011
-L- STA. 68+70.00 END TIP PROJECT I-5506
-Y1- POT Sta. 10+00.00 = -L- POC Sta. 67+79.37
END GRADE
BEGIN MILLING & OVERLAY
-L- STA. 65+80.00
END C/A
END WW FENCE
END MILLING & OVERLAY
END CONSTRUCTION
-L- STA. 68+70.00
-Y1- PC Sta. 12+84.89
END MILLING & OVERLAY
END CONSTRUCTION
-Y1- STA. 14+15.51
MATCHLINE -L- STA. 64+00.00 SEE SHEET 5
RALEIGH-DURHAM AIRPORT AUTHORITY
DB 3565 - PG 231
BM 1999 - PG 392
RALEIGH-DURHAM INTERNATIONAL
DB 3565 - PG 231
BM 1999 - PG 392
RDU CENTER IV, LLC
A NORTH CAROLINA LIMITED LIABILITY COMPANY
DB 13014 - PG 240
BM 2008 - PG 160
293.81' FULL LANE
125' MEDIAN FULL LANE
100' MEDIAN TAPER
TRANSITION TO EXIST.



★ REVISED SIGNAL

SEE SHEET 12 FOR -L- PROFILE

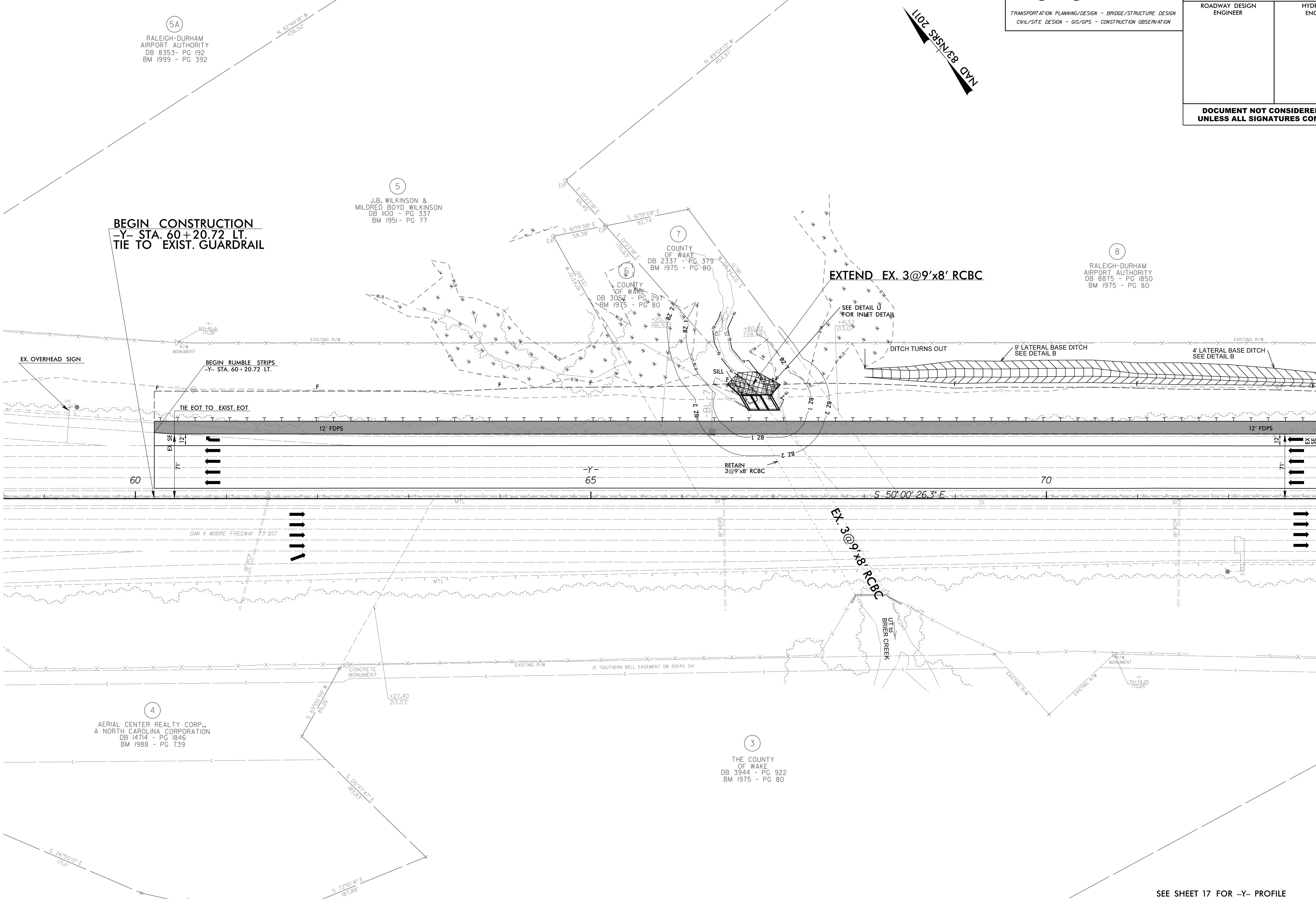
WETHERILL ENGINEERING
1223 Jones Franklin Road
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107

TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO.	SHEET NO.
I-5506	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS



NAD 83/NSRS 2011
5A
RALEIGH-DURHAM AIRPORT AUTHORITY
DB 8353- PG 192
BM 1999 - PG 392
5
J.B. WILKINSON & MILDRED BOYD WILKINSON
DB 1100 - PG 337
BM 1951- PG 77
7
COUNTY OF WAKE
DB 2337 - PG 379
BM 1975 - PG 80
6
COUNTY OF WAKE
DB 3057 - PG 297
BM 1975 - PG 80
8
RALEIGH-DURHAM AIRPORT AUTHORITY
DB 8875 - PG 1850
BM 1975 - PG 80
BEGIN CONSTRUCTION
-Y- STA. 60+20.72 LT.
TIE TO EXIST. GUARDRAIL
EXTEND EX. 3@9'x8' RCBC
SEE DETAIL U FOR INLET DETAIL
DITCH TURNS OUT
9' LATERAL BASE DITCH SEE DETAIL B
4' LATERAL BASE DITCH SEE DETAIL B
EX. OVERHEAD SIGN
BEGIN RUMBLE STRIPS
-Y- STA. 60+20.72 LT.
TIE EOT TO EXIST. EOT
SILL
12' FDPS
RETAIN 3@9'x8' RCBC
-Y-
60
65
70
S 50°00' 26.3" E
DAN K MOORE FREEWAY
EX. 3@9'x8' RCBC
UT to BRIER CREEK
EXISTING R/W
CONCRETE MONUMENT
4
AERIAL CENTER REALTY CORP., A NORTH CAROLINA CORPORATION
DB 14714 - PG 1846
BM 1988 - PG 739
3
THE COUNTY OF WAKE
DB 3944 - PG 922
BM 1975 - PG 80
MATCHLINE -Y- STA. 73+00.00 SEE SHEET 8

SEE SHEET 17 FOR -Y- PROFILE
SEE SHEET S-1 THRU S-? FOR CULVERT PLANS
SEE SHEET 2D-1 FOR DRAINAGE DETAILS

8/17/99
2/17/2017
I5506_Rdy_psh_07.dgn

WETHERILL ENGINEERING
1223 Jones Franklin Road
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107

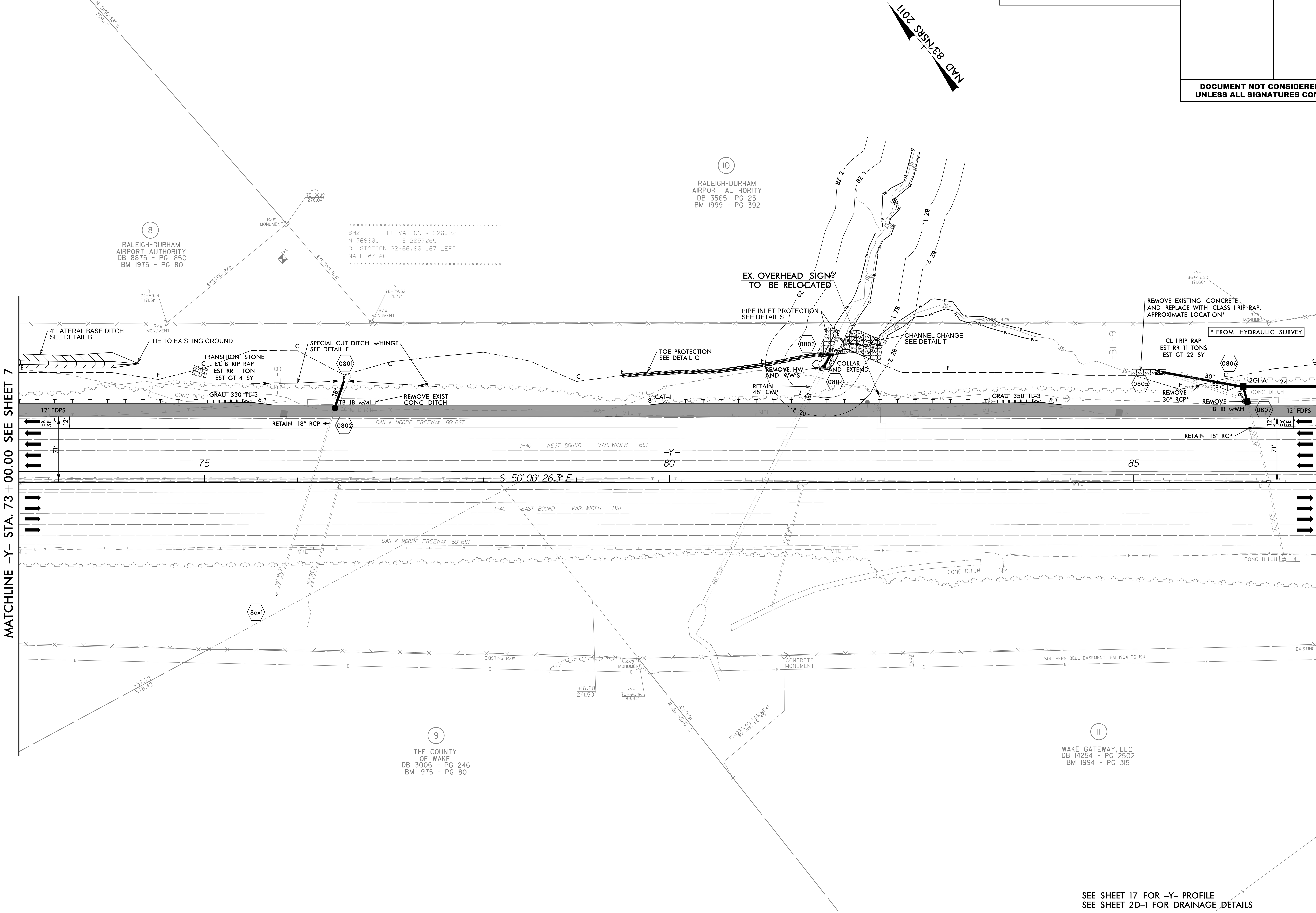
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO.	SHEET NO.
I-5506	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

8/17/99



NAD 83/NSRS 2011
MATCHLINE -Y- STA. 73+00.00 SEE SHEET 7
MATCHLINE -Y- STA. 87+00.00 SEE SHEET 9
8
RALEIGH-DURHAM AIRPORT AUTHORITY
DB 8875 - PG 1850
BM 1975 - PG 80
10
RALEIGH-DURHAM AIRPORT AUTHORITY
DB 3565- PG 231
BM 1999 - PG 392
BM2 ELEVATION - 326.22
N 766801 E 2057265
BL STATION 32+66.00 167 LEFT
NAIL W/TAG
EX. OVERHEAD SIGN TO BE RELOCATED
PIPE INLET PROTECTION SEE DETAIL S
CHANNEL CHANGE SEE DETAIL T
4' LATERAL BASE DITCH SEE DETAIL B
TIE TO EXISTING GROUND
SPECIAL CUT DITCH w/HINGE SEE DETAIL F
TRANSITION STONE
CL B RIP RAP
EST RR 1 TON
EST GT 4 SY
TOE PROTECTION SEE DETAIL G
REMOVE HW AND WW'S
COLLAR AND EXTEND
RETAIN 48" CMP
REMOVE EXIST CONC DITCH
TB JB w/MH
GRAU 350 TL-3
CAT-1
RETAIN 18" RCP
REMOVE EXISTING CONCRETE AND REPLACE WITH CLASS I RIP RAP. APPROXIMATE LOCATION*
* FROM HYDRAULIC SURVEY
CL I RIP RAP
EST RR 11 TONS
EST GT 22 SY
REMOVE 30" RCP*
REMOVE TB JB w/MH
2GI-A
12' FDPS
0801
0802
0803
0804
0805
0806
0807
8ex1
DAN K MOORE FREEWAY 60' BST
I-40 WEST BOUND VAR. WIDTH BST
I-40 EAST BOUND VAR. WIDTH BST
-Y-
75
80
85
S 50°00' 26.3" E
CONC DITCH
SOUTHERN BELL EASEMENT (BM 1994 PG 191)
CONCRETE MONUMENT
EXISTING R/W
R/W MONUMENT
9
THE COUNTY OF WAKE
DB 3006 - PG 246
BM 1975 - PG 80
11
WAKE GATEWAY, LLC
DB 14254 - PG 2502
BM 1994 - PG 315

SEE SHEET 17 FOR -Y- PROFILE
SEE SHEET 2D-1 FOR DRAINAGE DETAILS

2/17/2017
...\I5506_Rdy_psh_08.dgn

8/17/99

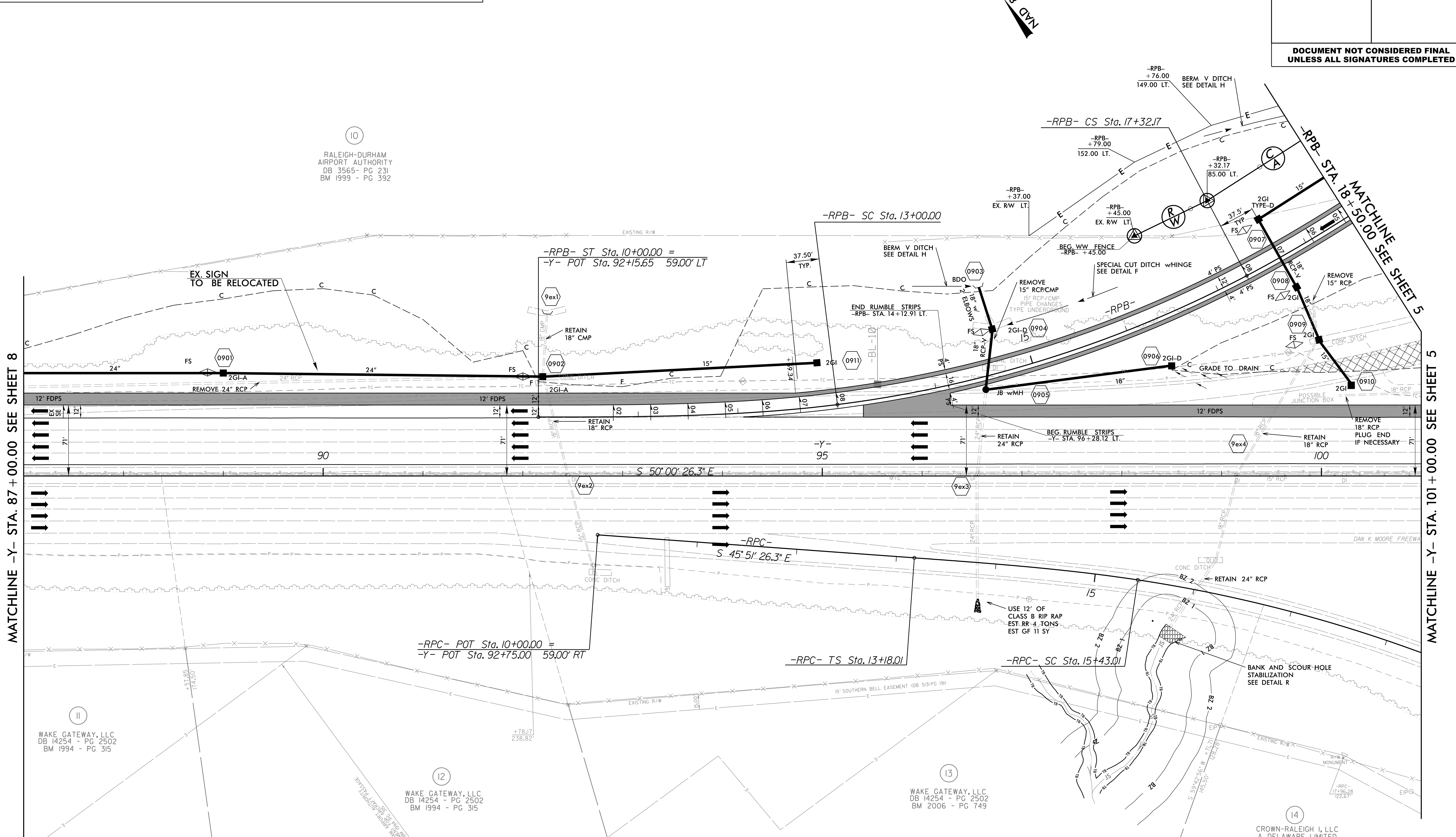
RAMP B				
PIs Sta 12+00.16	PI Sta 15+18.45	PIs Sta 18+32.32	PIs Sta 22+32.58	PI Sta 24+38.58
Θs = 7° 09′ 43.1″	△ = 20° 38′ 05.1″ (LT)	Θs = 7° 09′ 43.1″	Θs = 11° 18′ 30.2″	△ = 15° 56′ 27.1″ (RT)
Ls = 300.00′	D = 4° 46′ 28.7″	Ls = 300.00′	Ls = 300.00′	D = 7° 32′ 20.1″
LT = 200.16′	L = 432.17′	LT = 200.16′	LT = 200.41′	L = 211.45′
ST = 100.15′	T = 218.45′	ST = 100.15′	ST = 100.37′	T = 106.41′
	R = 1,200.00′			R = 760.00′
	SE = 0.08 FT/FT			SE = 0.08 FT/FT
	DS = 60 MPH			DS = 50 MPH

WETHERILL ENGINEERING
1223 Jones Franklin Road
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

PROJECT REFERENCE NO.	SHEET NO.
I-5506	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS



NAD 83/NSRS 2011
RALEIGH-DURHAM AIRPORT AUTHORITY
DB 3565- PG 231
BM 1999 - PG 392
EX. SIGN TO BE RELOCATED
-RPB- ST Sta. 10+00.00 =
-Y- POT Sta. 92+15.65 59.00′ LT
-RPB- SC Sta. 13+00.00
-RPB- CS Sta. 17+32.17
BERM V DITCH SEE DETAIL H
SPECIAL CUT DITCH w/HINGE SEE DETAIL F
BEG. WW FENCE -RPB- +45.00
END RUMBLE STRIPS -RPB- STA. 14+12.91 LT.
BEG. RUMBLE STRIPS -Y- STA. 96+28.12 LT.
REMOVE 15″ RCP/CMP
RETAIN 18″ CMP
RETAIN 18″ RCP
RETAIN 24″ RCP
REMOVE 24″ RCP
REMOVE 15″ RCP
REMOVE 18″ RCP PLUG END IF NECESSARY
GRADE TO DRAIN
JB w/MH
12′ FDPS
-RPB-
-Y-
S 50° 00′ 26.3″ E
MATCHLINE -Y- STA. 87+00.00 SEE SHEET 8
MATCHLINE -Y- STA. 101+00.00 SEE SHEET 5
MATCHLINE -RPB- STA. 18+50.00 SEE SHEET 5
-RPC-
S 45° 51′ 26.3″ E
-RPC- POT Sta. 10+00.00 =
-Y- POT Sta. 92+75.00 59.00′ RT
-RPC- TS Sta. 13+18.01
-RPC- SC Sta. 15+43.01
USE 12′ OF CLASS B RIP RAP EST RR 4 TONS EST GF 11 SY
BANK AND SCOUR HOLE STABILIZATION SEE DETAIL R
DAN K MOORE FREEWAY
WAKE GATEWAY, LLC
DB 14254 - PG 2502
BM 1994 - PG 315
WAKE GATEWAY, LLC
DB 14254 - PG 2502
BM 1994 - PG 315
WAKE GATEWAY, LLC
DB 14254 - PG 2502
BM 2006 - PG 749
CROWN-RALEIGH I, LLC
A DELAWARE LIMITED LIABILITY COMPANY
DB 11919 - PG 2203
BM 2006 - PG 749

RAMP C				
PIs Sta 14+68.06	PI Sta 17+83.25	PIs Sta 20+94.20	PIs Sta 24+88.78	PI Sta 26+40.92
Θs = 4° 26′ 43.3″	△ = 18° 48′ 52.8″ (RT)	Θs = 4° 26′ 43.3″	Θs = 17° 11′ 19.4″	△ = 23° 27′ 20.3″ (LT)
Ls = 225.00′	D = 3° 57′ 05.2″	Ls = 225.00′	Ls = 225.00′	D = 15° 16′ 43.9″
LT = 150.05′	L = 476.15′	LT = 150.05′	LT = 150.71′	L = 153.52′
ST = 75.04′	T = 240.24′	ST = 75.04′	ST = 75.65′	T = 77.85′
	R = 1,450.00′			R = 375.00′
	SE = EXIST.			SE = 0.06 FT./FT.

PAVEMENT REMOVAL

SEE SHEET 2D-1 FOR DRAINAGE DETAILS
SEE SHEET 18 FOR -Y- PROFILE

2/17/2017
\15506_Rdy_psh_09.dgn

PROJECT REFERENCE NO. I-5506 | SHEET NO. 10
R/W SHEET NO.
ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

WETHERILL ENGINEERING
1223 Jones Franklin Road
Raleigh, N.C. 27606
License No. F-0377
Bus: 919 851 8077
Fax: 919 851 8107
TRANSPORTATION PLANNING/DESIGN - BRIDGE/STRUCTURE DESIGN
CIVIL/SITE DESIGN - GIS/GPS - CONSTRUCTION OBSERVATION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

REVISIONS

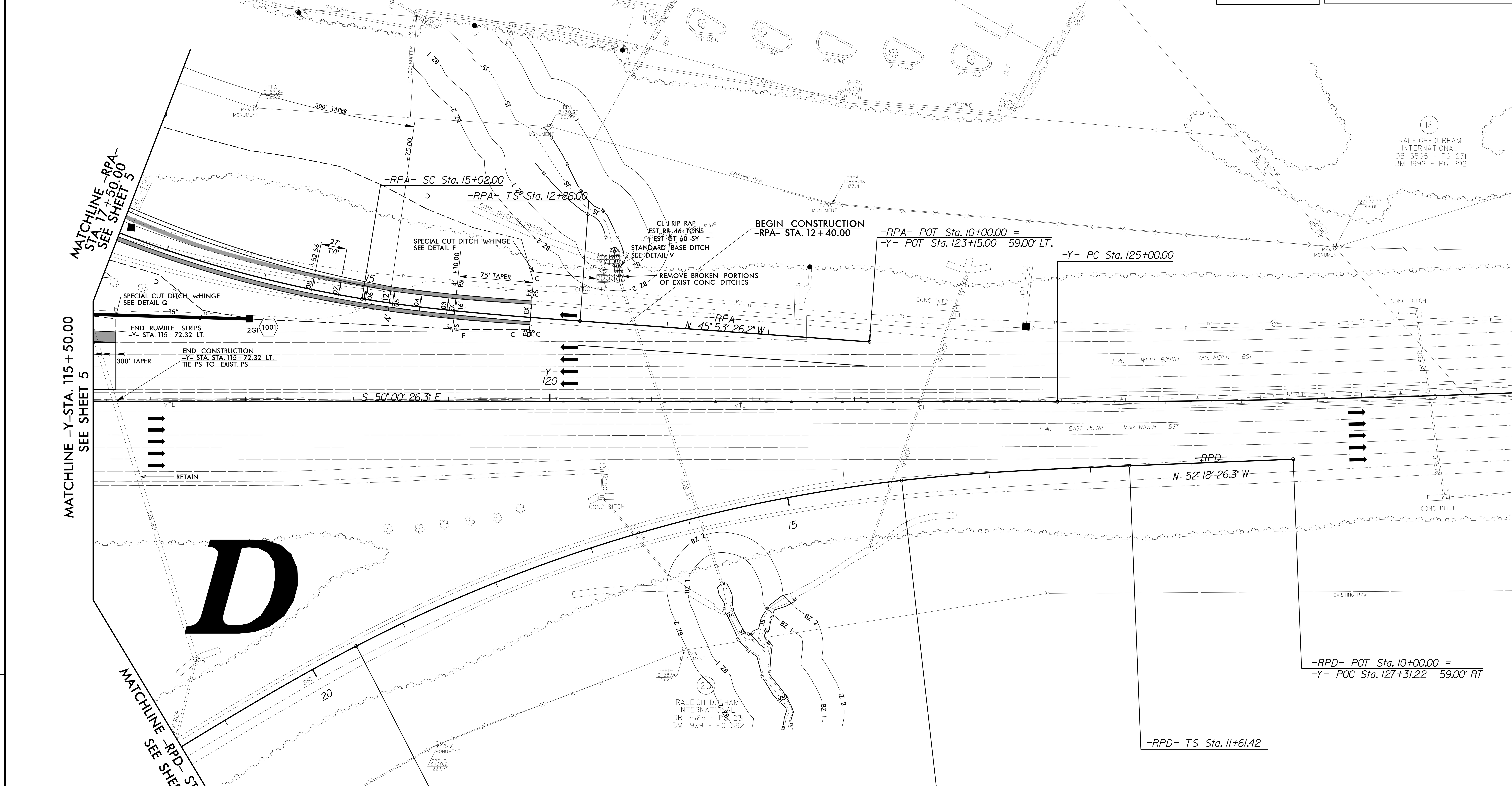
NAD 83/NSRS 2011

RAMP A

PIs Sta 14+30.06	PI Sta 17+07.95
Θs = 5° 09' 23.8"	Δ = 19° 28' 38.4" (RT)
Ls = 216.00'	D = 4° 46' 28.7"
LT = 144.06'	L = 407.93'
ST = 72.06'	T = 205.95'
	R = 1,200.00'
	SE = 0.08 FT./FT.
	DS = 60 MPH

-Y- (I-40)

PI Sta 131+44.25
Δ = 6° 24' 06.4" (LT)
D = 0° 29' 50.5"
L = 1,287.15'
T = 644.25'
R = 11,520.00'
SE = EXIST.


MATCHLINE -RPA- STA. 17+50.00 SEE SHEET 5
MATCHLINE -Y- STA. 115+50.00 SEE SHEET 5
MATCHLINE -RPD- STA. 21+51.08 SEE SHEET 5
-RPA- SC Sta. 15+02.00
-RPA- TS Sta. 12+86.00
BEGIN CONSTRUCTION -RPA- STA. 12+40.00
-RPA- POT Sta. 10+00.00 = -Y- POT Sta. 123+15.00 59.00' LT.
-Y- PC Sta. 125+00.00
-RPA- N 45° 53' 26.2" W
S 50° 00' 26.3" E
-RPD- N 52° 18' 26.3" W
-RPD- POT Sta. 10+00.00 = -Y- POC Sta. 127+31.22 59.00' RT
-RPD- TS Sta. 11+61.42
-RPD- SC Sta. 13+86.42
-RPD- CS Sta. 19+51.15
SPECIAL CUT DITCH wHINGE SEE DETAIL F
SPECIAL CUT DITCH wHINGE SEE DETAIL Q
CL I RIP RAP EST RR 46 TONS EST GT 60 SY
STANDARD BASE DITCH SEE DETAIL V
REMOVE BROKEN PORTIONS OF EXIST CONC DITCHES
END RUMBLE STRIPS -Y- STA. 115+72.32 LT.
END CONSTRUCTION -Y- STA. 115+72.32 LT. TIE PS TO EXIST. PS
300' TAPER
75' TAPER
RETAIN
I-40 WEST BOUND VAR. WIDTH BST
I-40 EAST BOUND VAR. WIDTH BST
SUN LIFE ASSURANCE COMPANY OF CANADA DB 8648 - PG 1715 BM 1998 - PG 860
IHP MORRISVILLE (NC) OWNER, LLC DB 15854 - PG 565 BM 1998 - PG 915
RALEIGH-DURHAM INTERNATIONAL DB 3565 - PG 231 BM 1999 - PG 392
PRIVATE ACCESS EASEMENT BM 1998 PG 860
D

RAMP D

PIs Sta 13+11.46	PI Sta 16+71.95	PIs Sta 20+26.19
Θs = 4° 09' 30.8"	Δ = 20° 52' 31.1" (LT)	Θs = 4° 09' 30.8"
Ls = 225.00'	D = 3° 41' 47.4"	Ls = 225.00'
LT = 150.04'	L = 564.73'	LT = 150.04'
ST = 75.04'	T = 285.53'	ST = 75.04'
	R = 1,550.00'	
	SE = EXIST.	

SEE SHEET 2D-1 FOR DRAINAGE DETAILS
SEE SHEET 13 FOR -RPA- PROFILE
SEE SHEETS 18, 19 FOR -Y- PROFILE

8/17/99
6/7/2017 I5506_Rdy_psh_10.dgn