



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

JAMES H. TROGDON, III
SECRETARY

June 13, 2017

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

ATTN: Mr. James Lastinger
NCDOT Division 9 Project Coordinator

SUBJECT: **Application for Section 404 General Permit No. 198200031 and Section 401 General Water Quality Certification No. 4088** for the proposed US 421/I-40 Business pavement reconstruction, bridge replacements and interchange modifications from west of 4th St. to east of Church St., and a multi-use path from 4th St. to Liberty St., Forsyth County, Division 9. Federal Aid Project No. NHF-0421(5), TIP Project No. U-2827B / C-5620A.

Debit \$570.00 from WBS 34872.3.4

Dear Sir:

The North Carolina Department of Transportation (NCDOT) proposes pavement reconstruction for approximately 1.2 miles of I-40 Business, bridge replacements, interchange modifications, and widening of Peters Creek Parkway in Forsyth County. As part of the project, 8.5 miles of 2-inch parallel fiber optic conduits and signage for ITS communication will be installed. In conjunction with U-2827B, project C-5620A a multi-use path along US 421/I-40 Business from Lockland Avenue to Liberty Street will be constructed. No jurisdictional impacts are proposed for the installation of the fiber optic conduits, signage, and multi-use path.

There will be a total of 380 linear feet of permanent stream impact and 236 linear feet of temporary stream impact associated with construction of the project. There will be no temporary or permanent impacts to wetlands.

Please find enclosed the Pre-Construction Notification (PCN), stormwater management plan, roadway permit drawings, utility permit drawings, roadway plans, N.C. Division of Mitigation Services letter, Northern long-eared bat 4(d) memo, and Jurisdictional Determination. An Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) were completed

Mailing Address:
NC DEPARTMENT OF TRANSPORTATION
Environmental Analysis Unit
1598 MAIL SERVICE CENTER
RALEIGH, NC 27699-1598

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Customer Service: 1-877-368-4968

Website: www.ncdot.gov

Location:
1020 BIRCH RIDGE DRIVE
RALEIGH, NC 27610

for this project in February 2014 and February 2015, along with a Programmatic Categorical Exclusion (PCE) in July 2016 for C-5620A. Documents were distributed shortly thereafter. A Right of Way Consultation updating the EA was completed in August 2016 to address the ITS improvements and signing installation for U-2827B. Copies of these documents are available at the NCDOT website: <https://connect.ncdot.gov/resources/Environmental>.

The let date for this project was August 30, 2016. Final completion is anticipated in November 2020.

A copy of this permit application will be posted on the NCDOT Website at <https://connect.ncdot.gov/resources/Environmental>, under *Quick Links > Permit Applications*.

Regulatory Approvals

Section 404 Permit: All aspects of this project are being processed by the Federal Highway Administration as an EA(U-2827B) and PCE (C-5620A) in accordance with 23 CFR 771.115(b). The NCDOT requests that the project be authorized by a General Permit 198200031 for interchange improvements.

Section 401 Permit: We anticipate 401 General Certification number 4088 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.
Environmental Analysis Unit Head

cc:
NCDOT Permit Application Standard Distribution List
Michael Penney, NCDOT Design-Build



North Carolina Department of Transportation

Highway Stormwater Program
STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS



(Version 2.05; Released April 2016)

WBS Element:	34872.3.4	TIP No.:	U-2827B / C-5620A	County(ies):	Forsyth	Page	1	of	3
General Project Information									
WBS Element:	34872.3.4	TIP Number:	U-2827B / C-5620A	Project Type:	Pavement Reconstruction	Date:	5/4/2017		
NCDOT Contact:	Matt Lauffer			Contractor / Designer:	James Rice				
Address:	1020 Birch Ridge Dr. Raleigh, NC 27610			Address:	555 Fayetteville St., Suite 900 Raleigh, NC 27601				
	Phone: 919-707-6703				Phone: 919-232-6621				
	Email: mslauffer@ncdot.gov				Email: james.rice@hdrinc.com				
City/Town:	Winston Salem			County(ies):	Forsyth				
River Basin(s):	Yadkin-Pee Dee			CAMA County?	No				
Wetlands within Project Limits?	No								
Project Description									
Project Length (lin. miles or feet):	1.26		Surrounding Land Use:	Urban					
	Proposed Project			Existing Site					
Project Built-Up Area (ac.)	30.2 ac.			32.2 ac.					
Typical Cross Section Description:	4 lane divided freeway w/ an 11 ft median: (2) 10 foot outside paved shoulders, (2) 12 foot travel lanes, (2) 5.5 foot paved median shoulder - Total width of 79'			4 lane divided freeway w/ an 11ft median: (2) 12 foot outside paved shoulders, (2) 12 foot travel lanes, (2) 5.5 foot paved median shoulders - Total width of 83'					
Annual Avg Daily Traffic (veh/hr/day):	Design/Future: 96,400		Year: 2040	Existing: 74,800		Year: 2011			
General Project Narrative: (Description of Minimization of Water Quality Impacts)	The project consists of pavement reconstruction of approximately 1.2 miles of I-40 Business, bridge replacements, interchange modifications, construction of multi-use path, and widening of Peters Creek Parkway. There is one culvert extension for a box culvert under Peters Creek Parkway, a pipe extension on the same tributary upstream of I-40 business where a supplemental pipe will be required, and a stream relocation for a small tributary that ties to the Peters Creek Tributary. An existing pipe that carries Tar Branch will also need to be replaced within the ROW limits of the project. There will be an additional 5.0 acres of impervious area added to the project due to the widening of Peters Creek Parkway. Stormwater control measures in the form of Media Filters have been proposed in this area to incorporate some stormwater treatment for part of this additional impervious area. In other areas of the project, there has been a decrease of impervious area by 7.0 acres due to the removal of select ramps and loops (see plans). The proposed project has a net reduction in Impervious area of 2.0 acres. The Design-Build Team has also flattened proposed ditches whenever possible to aide in as much treatment as possible.								
Waterbody Information									
Surface Water Body (1):	UT to Peters Creek			NCDWR Stream Index No.:	NA - Peters Creek: 12-94-12-8				
NCDWR Surface Water Classification for Water Body	Primary Classification:			Class C					
	Supplemental Classification:			None					
Other Stream Classification:	None								
Impairments:	None								
Aquatic T&E Species?	No			Comments:					
NRTR Stream ID:	SA			Buffer Rules in Effect:		N/A			
Project Includes Bridge Spanning Water Body?	No			Deck Drains Discharge Over Buffer?	N/A		Dissipator Pads Provided in Buffer?		
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 2.05; Released April 2016)

WBS Element: 34872.3.4 TIP No.: U-2827B / C-5620A County(ies): Forsyth Page 2 of 3

Additional Waterbody Information

Surface Water Body (2):	Tar Branch		NCDWR Stream Index No.:	12-94-12-7	
NCDWR Surface Water Classification for Water Body	Primary Classification:	Class C			
	Supplemental Classification:	None			
Other Stream Classification:	None				
Impairments:	None				
Aquatic T&E Species?	No	Comments:			
NRTR Stream ID:	SC		Buffer Rules in Effect:	N/A	
Project Includes Bridge Spanning Water Body?	No	Deck Drains Discharge Over Buffer?	N/A	Dissipator Pads Provided in Buffer?	
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)					

Surface Water Body (3):			NCDWR Stream Index No.:		
NCDWR Surface Water Classification for Water Body	Primary Classification:				
	Supplemental Classification:				
Other Stream Classification:					
Impairments:					
Aquatic T&E Species?		Comments:			
NRTR Stream ID:			Buffer Rules in Effect:		
Project Includes Bridge Spanning Water Body?		Deck Drains Discharge Over Buffer?		Dissipator Pads Provided in Buffer?	
Deck Drains Discharge Over Water Body?		(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)					

Surface Water Body (4):			NCDWR Stream Index No.:		
NCDWR Surface Water Classification for Water Body	Primary Classification:				
	Supplemental Classification:				
Other Stream Classification:					
Impairments:					
Aquatic T&E Species?		Comments:			
NRTR Stream ID:			Buffer Rules in Effect:		
Project Includes Bridge Spanning Water Body?		Deck Drains Discharge Over Buffer?		Dissipator Pads Provided in Buffer?	
Deck Drains Discharge Over Water Body?		(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)					

Surface Water Body (5):			NCDWR Stream Index No.:		
NCDWR Surface Water Classification for Water Body	Primary Classification:				
	Supplemental Classification:				
Other Stream Classification:					
Impairments:					
Aquatic T&E Species?		Comments:			
NRTR Stream ID:			Buffer Rules in Effect:		
Project Includes Bridge Spanning Water Body?		Deck Drains Discharge Over Buffer?		Dissipator Pads Provided in Buffer?	
Deck Drains Discharge Over Water Body?		(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)					



FOR NCDOT PROJECTS

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Additional Comments



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:	U-2827B - US 421 /I-40 Business pavement reconstruction, bridge replacements, interchange modifications, and widening of Peters Creek Parkway in Forsyth County.
2b. County:	Forsyth
2c. Nearest municipality / town:	Winston-Salem
2d. Subdivision name:	<i>not applicable</i>
2e. NCDOT only, T.I.P. or state project no:	U-2827B

3. Owner Information

3a. Name(s) on Recorded Deed:	North Carolina Department of Transportation
3b. Deed Book and Page No.	<i>not applicable</i>
3c. Responsible Party (for LLC if applicable):	<i>not applicable</i>
3d. Street address:	1598 Mail Service Center
3e. City, state, zip:	Raleigh, NC 27699-1598
3f. Telephone no.:	(919) 707-6151
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:	<i>not applicable</i>
4c. Business name (if applicable):	
4d. Street address:	
4e. City, state, zip:	
4f. Telephone no.:	
4g. Fax no.:	
4h. Email address:	
5. Agent/Consultant Information (if applicable)	
5a. Name:	<i>not applicable</i>
5b. Business name (if applicable):	
5c. Street address:	
5d. City, state, zip:	
5e. Telephone no.:	
5f. Fax no.:	
5g. Email address:	

B. Project Information and Prior Project History	
1. Property Identification	
1a. Property identification no. (tax PIN or parcel ID):	<i>not applicable</i>
1b. Site coordinates (in decimal degrees):	Latitude: 36.089888 Longitude: - 80.258213
1c. Property size:	Approx.32.2 acres
2. Surface Waters	
2a. Name of nearest body of water (stream, river, etc.) to proposed project:	Peters Creek, Tar Branch
2b. Water Quality Classification of nearest receiving water:	Class C
2c. River basin:	Yadkin
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 project vicinity consists mainly of residential, commercial and industrial areas.	
3b. List the total estimated acreage of all existing wetlands on the property: There are no wetlands within the project study area.	
3c. List the total estimated linear feet of all existing streams (intermittent and perennial) on the property: Approximately 5,900 linear feet of stream were identified within the project study area for the U-2728B roadway improvements.	
3d. Explain the purpose of the proposed project: The purpose of the proposed project is to improve traffic flow, operations and safety on US 421/I-40 Business from west of Fourth Street to east of Church Street.	
3e. Describe the overall project in detail, including the type of equipment to be used: The North Carolina Department of Transportation (NCDOT) proposes pavement reconstruction for approximately 1.2 miles of I-40 Business, bridge replacements, interchange modifications, construction of a multi-use path, and widening of Peters Creek Parkway. Full control of access will be maintained. The project will improve interchange spacing and geometrics by reducing the number of interchanges from six (6) existing interchanges (two full and four partial movement) to three (3) interchanges (two full and one partial movement). In conjunction with U-2827B, project C-5620A, which is a multi-use path along US 421/I-40 Business from Lockland Avenue to Liberty Street, will be constructed. Standard road building equipment 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): NCDOT	Agency/Consultant Company: Other:
4d. If yes, list the dates of the Corps jurisdictional determinations or State determinations and attach documentation. 06/09/2014 (Action ID 200901193)	
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 1 ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ		
Site 2 ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ		
Site 3 ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ		
Site 4 ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ		
Site 5 ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ		
Site 6 ☐ P ☐ T			☐ Yes ☐ No	☐ Corps ☐ DWQ		
2g. Total wetland impacts						
2h. Comments: No wetland impacts						
3. Stream Impacts						
If there are perennial or intermittent stream impacts (including temporary impacts) proposed on the site, then complete this question for all stream sites impacted.						
3a. Stream impact number - Permanent (P) or Temporary (T)	3b. Type of impact	3c. Stream name	3d. Perennial (PER) or intermittent (INT)?	3e. Type of jurisdiction (Corps - 404, 10 DWQ – non- 404, other)	3f. Average stream width (feet)	3g. Impact length (linear feet)
Site 1 ☒ P ☐ T	Slip Line Extend 48" and Extend with 42"	UT to Peters Creek (SB)	☒ PER ☐ INT	☒ Corps ☐ DWQ	12	214
Site 1 ☐ P ☒ T	Slip Line Extend 48" and Extend with 42"	UT to Peters Creek (SB)	☒ PER ☐ INT	☒ Corps ☐ DWQ	12	10
Site 2 ☒ P ☐ T	5'X6' RCBC	UT to Peters Creek (SB)	☒ PER ☐ INT	☒ Corps ☐ DWQ	12	50
Site 2 ☐ P ☒ T	5'X6' RCBC	UT to Peters Creek (SB)	☒ PER ☐ INT	☒ Corps ☐ DWQ	12	10
Site 2 ☒ P ☐ T	Bank Stabilization	UT to Peters Creek (SB)	☒ PER ☐ INT	☒ Corps ☐ DWQ	12	33
Site 3 ☒ P ☐ T	Stream Relocation	UT to Peters Creek (SA)	☒ PER ☐ INT	☒ Corps ☐ DWQ	2-4	42
Site 3 ☐ P ☒ T	Stream Relocation	UT to Peters Creek (SA)	☒ PER ☐ INT	☒ Corps ☐ DWQ	2-4	10

Site 4 ☐ P ☒ T	78" CMP Dewatering	Tar Branch	☒ PER ☐ INT	☒ Corps ☐ DWQ	6-8	196		
Site 1 ☒ P ☐ T	12" Sanitary Sewer	UT to Peters Creek (SB)	☒ PER ☐ INT	☒ Corps ☐ DWQ	12	20		
Site 1 ☐ P ☒ T	12" Sanitary Sewer	UT to Peters Creek (SB)	☒ PER ☐ INT	☒ Corps ☐ DWQ	12	10		
Site 2 ☒ P ☐ T	18" Sanitary Sewer	UT to Peters Creek (SB)	☒ PER ☐ INT	☒ Corps ☐ DWQ	12	21		
3h. Total stream and tributary impacts						380' permanent, 236' temporary		
3i. Comments:								
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								
4g. Comments: No open water impacts								
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: No pond impacts								
5h. Is a dam high hazard permit required?		☐ Yes ☐ No If yes, permit ID no:						
5i. Expected pond surface area (acres):								
5j. Size of pond watershed (acres):								
5k. Method of construction:								

6. Buffer Impacts (for DWQ)

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

6a. Project is in which protected basin?			☐ Neuse ☐ Catawba	☐ Tar-Pamlico ☐ Randleman	☐ Other:
6b. Buffer impact number – Permanent (P) or Temporary (T)	6c. Reason for impact	6d. Stream name	6e. Buffer mitigation required?	6f. Zone 1 impact (square feet)	6g. Zone 2 impact (square feet)
B1 ☐ P ☐ T			☐ Yes ☐ No		
B2 ☐ P ☐ T			☐ Yes ☐ No		
B3 ☐ P ☐ T			☐ Yes ☐ No		
6h. Total buffer impacts					
6i. Comments: There are no regulated buffers within the project area.					

D. Impact Justification and Mitigation		
1. Avoidance and Minimization		
1a. Specifically describe measures taken to avoid or minimize the proposed impacts in designing project. Improvements to Peters Creek Parkway (NC 150) have caused the stormwater system in this area to be redesigned. Toe protection (rip-rap) has been placed at the base of the fill slope adjacent to the upstream section of stream SB. This design element would assist in preventing fill slope failure. Stormwater control measures in the form of Media Filters at Peters Creek Parkway loops have been proposed, where possible, to incorporate some stormwater treatment and introduce stormwater detention to the system. Due to the urban nature of the project there are limited opportunities to achieve grass swale credit. As noted in the 4B Merger Team meeting on February 8, 2016, the overall project is reducing impervious surface area by ~2 acres. Minimization efforts to bury the 42" pipe extension for fish passage at Site 1 was not feasible since it is part of a larger pipe system that does not allow fish passage. Bore pits that may be required for trenchless installation of pipes are all outside jurisdictional resources. Bank stabilization will be used at Site 2 to minimize future scour and sedimentation at the 18" pipe and stream relocation area. Avoidance of historic resources at Y1 Sta. 30+00 – 31+50 Rt will be attained by the extension of a retaining wall. See hydraulic plan notes.		
1b. Specifically describe measures taken to avoid or minimize the proposed impacts through construction techniques. Dewatering of Tar Branch for the replacement of a 78" will be constructed in phases to minimize turbidity to Tar Branch. A more comprehensive plan will be developed in conjunction with Roadside Environmental staff prior to construction. NCDOT Best Management Practices for Construction and Maintenance Activities and Best Management Practices for the Protection of Surface Waters will be employed. Temporary fill areas associated with stream crossings will be revegetated and seeded with native seeds according to the special provisions in the erosion control plans. During the preconstruction meeting, these specifications will be reviewed with the agencies and contractor. All jurisdictional areas not affected by the project will be protected from unnecessary encroachment.		
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: <i>not applicable</i>		
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:			347 linear feet	
4c. If using stream mitigation, stream temperature:			☒ warm ☐ cool ☐ cold	
4d. Buffer mitigation requested (DWQ only):			0 square feet	
4e. Riparian wetland mitigation requested:			acres	
4f. Non-riparian wetland mitigation requested:			acres	
4g. Coastal (tidal) wetland mitigation requested:			acres	
4h. Comments: See attached DMS letter.				
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.				
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: There are no state regulated buffers for the project area.				

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 Stormwater Management Plan and Project Plan Sheets.	
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?	<i>not applicable</i>
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: See attached Project Commitments developed during preparation of the Environmental Assessment/Finding of No Significant Impact dated February 2015.	☒ 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. The following was summarized from Section V. Indirect and Cumulative Effects of the Environmental Assessment approved February 2014. The project will be confined almost entirely to the existing US 421/I-40 Business right-of-way and will essentially reconfigure interchanges thus changing access. Travel patterns will be shifted due to this project but are unlikely to create changes in land use as a result of the project. Furthermore there is very limited available land in the Future Land Use Study Area (FLUSA). Implementation of the US 421/I-40 Business project would not contribute, in conjunction with past, present, or future projects, to significantly adverse indirect or cumulative effects on the resources in the FLUSA.	
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. <i>Not applicable</i>	

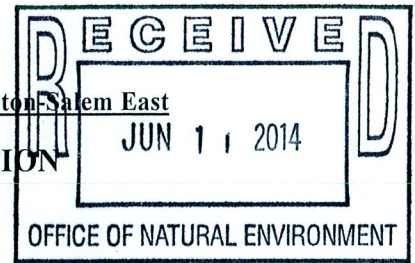
5. Endangered Species and Designated Critical Habitat (Corps Requirement)		
5a. Will this project occur in or near an area with federally protected species or habitat?	☐ Yes	☒ No
5b. Have you checked with the USFWS concerning Endangered Species Act impacts?	☒ Yes	☐ No
5c. If yes, indicate the USFWS Field 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? The USFWS county list and NCNHP database were consulted for Forsyth County. A No Effect Biological Conclusion was determined for small anthered bittercress since suitable habitat is not present within the study area (NRTR documentation). Since the approval of the EA and FONSI, the Northern long-eared bat has been listed for Forsyth County. A memo regarding the project's 4(d) compliance was sent to the USFWS on July 25, 2016 (see attached).		
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 Environmental Assessment (EA) approved February 2014 and Finding of No Significant Impact (FONSI) approved February 2015.		
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 <u>Philip S. Harris III, P.E., C.P.M.</u> 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: 2017.06.13 11:41:04 -04'00' Applicant/Agent's Signature (Agent's signature is valid only if an authorization letter from the applicant is provided.)	<u>06-13-2017</u> Date

U.S. ARMY CORPS OF ENGINEERS
WILMINGTON DISTRICT

Action Id. 200901193

County: Forsyth

U.S.G.S. Quad: Winston-Salem East



NOTIFICATION OF JURISDICTIONAL DETERMINATION

Property Owner/Agent: Deanna Riffey

Address: NC DOT
1598 Mail Service Center
Raleigh, NC 27699-1598

Telephone No.: 919 715-7217

Property description:

Size (acres) 40

Nearest Waterway Peters Creek & Tar Branch

USGS HUC 03040101

Nearest Town Winston-Salem

River Basin Yadkin River

Coordinates N 36.0899935 W -80.2576873

Location description I-40 BUS US-421/158 from west of 4th Street to east of Church Street, adjacent to Peters Creek and Tar Branch, in Winston-Salem, in Forsyth County, North Carolina. TIP U-2827B.

Per your request dated June 6, 2014, this jurisdiction determination is reverified without change from original verification.

Indicate Which of the Following Apply:

A. Preliminary Determination

- ☐ Based on preliminary information, there may be wetlands on the above described property. We strongly suggest you have this property inspected to determine the extent of Department of the Army (DA) jurisdiction. To be considered final, a jurisdictional determination must be verified by the Corps. This preliminary determination is not an appealable action under the Regulatory Program Administrative Appeal Process (Reference 33 CFR Part 331).

B. Approved Determination

- ☐ There are Navigable Waters of the United States within the above described property subject to the permit requirements of Section 10 of the Rivers and Harbors Act and Section 404 of the Clean Water Act. Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.

- ☒ There are waters of the U.S. on the above described project area subject to the permit requirements of Section 404 of the Clean Water Act (CWA)(33 USC § 1344). Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.

☐ We strongly suggest you have the wetlands on your property delineated. Due to the size of your property and/or our present workload, the Corps may not be able to accomplish this wetland delineation in a timely manner. For a more timely delineation, you may wish to obtain a consultant. To be considered final, any delineation must be verified by the Corps.

☒ The waters of the U.S. on your project area have been delineated and the delineation has been verified by the Corps. We strongly suggest you have this delineation surveyed. Upon completion, this survey should be reviewed and verified by the Corps. Once verified, this survey will provide an accurate depiction of all areas subject to CWA jurisdiction on your property which, provided there is no change in the law or our published regulations, may be relied upon for a period not to exceed five years.

☐ The wetlands have been delineated and surveyed and are accurately depicted on the plat signed by the Corps Regulatory Official identified below on _____. Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.

- ☐ There are no waters of the U.S., to include wetlands, present on the above described property which are subject to the permit requirements of Section 404 of the Clean Water Act (33 USC 1344). Unless there is a change in the law or our published regulations, this determination may be relied upon for a period not to exceed five years from the date of this notification.

Action ID: _____

- The property is located in one of the 20 Coastal Counties subject to regulation under the Coastal Area Management Act (CAMA). You should contact the Division of Coastal Management in Washington, NC, at (252) 946-6481 to determine their requirements.

Placement of dredged or fill material within waters of the US and/or wetlands without a Department of the Army permit may constitute a violation of Section 301 of the Clean Water Act (33 USC § 1311). If you have any questions regarding this determination and/or the Corps regulatory program, please contact **John Thomas** at **919 554-4884 ext. 25**.

C. Basis For Determination

There are stream channels within your project site which are tributaries of Peters Creek and Tar Branch which flows into the Yadkin River and the Atlantic Ocean.

D. Remarks

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

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

District Engineer, Wilmington Regulatory Division
Attn: Jean Manuele, Project Manager,
Raleigh Regulatory Field Office
3331 Heritage Trade Drive, Suite 105
Wake Forest, North Carolina 27587

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 CFR part 331.5, and that it has been received by the District Office within 60 days of the date of the NAP. Should you decide to submit an RFA form, it must be received at the above address by **August 9, 2019**.

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

Corps Regulatory Official: _____

Date **06/09/2014**

Expiration Date **06/09/2019**

The Wilmington District is committed to providing the highest level of support to the public. To help us ensure we continue to do so, please complete the Customer Satisfaction Survey located at our website at <http://regulatory.usacesurvey.com/> to complete the survey online.

Copy furnished:



ROY COOPER
Governor

May 18, 2017

Mr. Philip S. Harris, P.E., CPM
Project Development and Environmental Analysis Unit
North Carolina Department of Transportation
1598 Mail Service Center
Raleigh, North Carolina 27699-1598

Dear Mr. Harris:

Subject: EEP Mitigation Acceptance Letter:

U-2827B, Winston-Salem – I-40 Business / US 421 from East of Church Street to West of 4th Street, Forsyth County

The purpose of this letter is to notify you that the Division of Mitigation Services (DMS) will provide the compensatory stream mitigation for the subject project. Based on the information supplied by you on May 17, 2017, the impacts are located in CU 03040101 of the Yadkin River basin in the Central Piedmont (CP) Eco-Region, and are as follows:

Yadkin 03040101 CP	Stream			Wetlands			Buffer (Sq. Ft.)	
	Cold	Cool	Warm	Riparian	Non-Riparian	Coastal Marsh	Zone 1	Zone 2
Impacts (feet/acres)	0	0	347.0	0	0	0	0	0

This mitigation acceptance letter replaces the mitigation acceptance letter issued on July 27, 2016. This impact and associated mitigation need were under projected by the NCDOT in the 2016 impact data. DMS will commit to implement sufficient compensatory stream mitigation credits to offset the impacts associated with this project as determined by the regulatory agencies using the delivery timeline listed in Section F.3.c.iii of the In-Lieu Fee Instrument dated July 28, 2010. If the above referenced impact amounts are revised, then this mitigation acceptance letter will no longer be valid and a new mitigation acceptance letter will be required from EEP.

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

Sincerely,

James B. Stanfill
EEP Credit Management Supervisor

cc: Mr. James Lastinger, USACE – Raleigh Regulatory Field Office
Ms. Amy Chapman, NCDWR
File: U-2827B Revised



July 25, 2016

MEMORANDUM TO: Deanna Riffey, Environmental Senior Specialist
Environmental Coordination & Permitting Group Eastern, NES -
PDEA

CC: Karen B. Capps, PE, Design-Build Squad Leader
Design-Build

FROM: Chris Manley, Environmental Program Consultant
Biological Surveys Group, NES - PDEA

SUBJECT: *Streamline Section 7 Consultation for the Northern Long-Eared Bat*
associated with the improvements to US 421/I-40 Business in Forsyth
County, **TIP No. U-2827B.**

The North Carolina Department of Transportation (NCDOT, Division 9) proposes to improve US 421 / I-40 Business. The proposed project involves pavement reconstruction, bridge replacements, and interchange modifications from west of Fourth Street to east of Church Street; and Multi-Use Path from Fourth Street to Liberty Street in Forsyth County, TIP No. U-2827B. This section of US 421/I-40 Business was designed in the early 1950's, constructed in the late 1950's and was opened in 1958 as Winston-Salem's East-West Expressway. This facility was designated as the first section of I-40 in North Carolina. With the relocation of I-40 south of Winston-Salem, from the US 421/I-40 split west of Winston-Salem to west of Deep River, in 1992 the original I-40 was designated as I-40 Business. In 1992, rehabilitation of I-40 Business from US 421 to Linville Road began. Originally, NCDOT envisioned the US 421/I-40 Business project as a pavement rehabilitation effort. However, as the project evolved, NCDOT realized that minor rehabilitation would not address the safety and mobility deficiencies throughout the corridor. Thus, NCDOT incorporated more operational and safety improvements into the project scope.

The project to improve US 421/I-40 Business has been reviewed for effects on the northern long-eared bat (NLEB). As of May 4, 2015, NLEB is listed by the U.S. Fish and Wildlife Service (USFWS) as "Threatened" under the Endangered Species Act of 1973. As of July 21, 2016, NLEB is listed by USFWS (http://www.fws.gov/raleigh/species/cntylist/nc_counties.html) as "probable/potential" in Forsyth County. USFWS also established a final rule under the authority of section 4(d) of the Endangered Species Act that provides measures for the conservation of NLEB. The USFWS has tailored the final 4(d) rule to prohibit the take of NLEB from certain activities within areas where they are in decline. This incidental take protection applies only to known NLEB occupied maternity roost trees and known NLEB hibernacula. Effective February 16, 2016, incidental take resulting from tree removal is prohibited if it 1) occurs within a ¼ mile



radius of known NLEB hibernacula; or 2) cuts or destroys known occupied maternity roost trees, or any other trees within a 150-foot radius from the known maternity tree during the pup season (June 1-July 31).

According to the North Carolina Natural Heritage Program (NHP) Biotics Database, most recently updated July 2016, **the nearest NLEB hibernacula record is 87 miles west of the project (EO ID 32171) and no known NLEB roost trees occur within 150 feet of the project area.** EO 32171 represents Black Rock Cliffs Cave near Grandfather Mountain with multiple observations from 1986 to 2011.

NCDOT has also reviewed the USFWS Asheville Field office website (http://www.fws.gov/asheville/htmls/project_review/NLEB_in_WNC.html) for consistency with NHP records. This project is located entirely outside of the red highlighted areas (12-digit HUC) that the USFWS Asheville Field Office has determined to be representative of an area that may require consultation.

For the proposed action, NCDOT has committed to the conservation measures listed below:

- 1) No alterations of a known hibernacula entrance or interior environment if it impairs an essential behavioral pattern, including sheltering northern long-eared bats (January 1 through December 31);
- 2) No tree removal within a 0.25 mile radius of a known hibernacula (January 1 through December 31); and
- 3) No cutting or destroying a known, occupied maternity roost tree, or any other trees within a 150-foot radius from the known, occupied maternity tree during the period from June 1 through and including July 31.

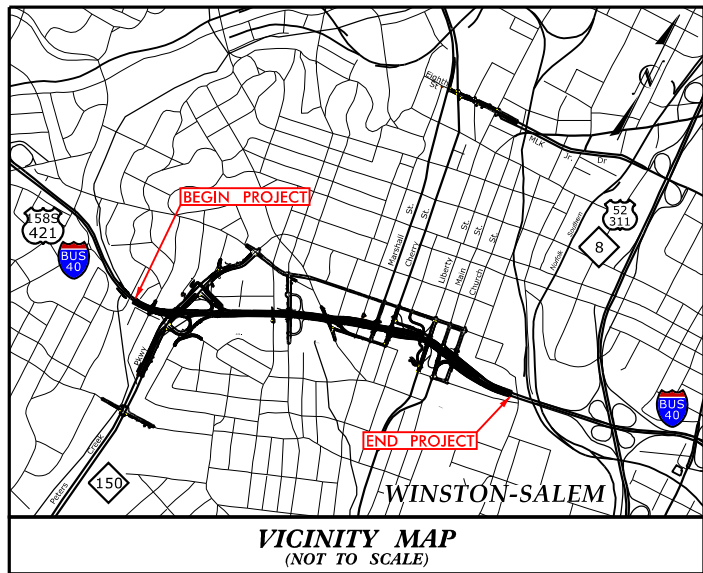
NCDOT has determined that the proposed action does not require separate consultation on the grounds that the proposed action is consistent with the final Section 4(d) rule, codified at 50 C.F.R. § 17.40(o) and effective February 16, 2016. NCDOT may presume its determination is informed by best available information and consider Section 7 responsibilities fulfilled for NLEB.

If you need any additional information, please contact Chris Manley at 919-707-6135.

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TIP PROJECT: U-2827B,C-5620A



25% PLAN SUBMITTAL

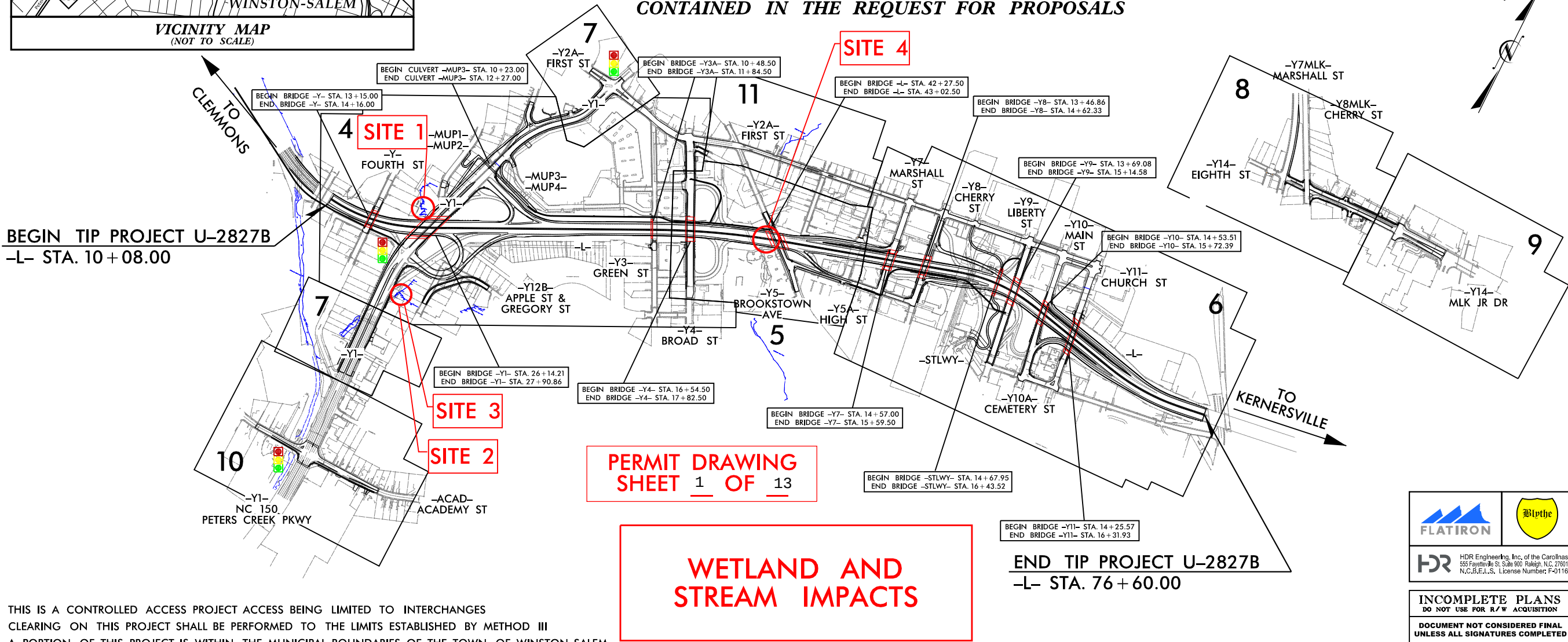
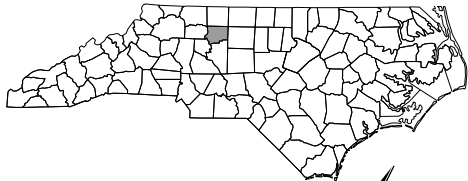
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

FORSYTH COUNTY

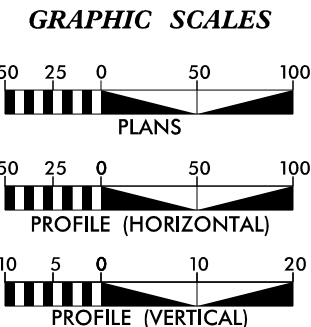
**LOCATION: US 421 /I-40 BUSINESS PAVEMENT RECONSTRUCTION,
BRIDGE REPLACEMENTS, AND INTERCHANGE MODIFICATIONS
FROM WEST OF FOURTH STREET TO EAST OF CHURCH STREET;
AND MULTI-USE PATH FROM FOURTH STREET TO LIBERTY STREET**

**TYPE OF WORK: DESIGN-BUILD AS SPECIFIED IN THE SCOPE OF WORK
CONTAINED IN THE REQUEST FOR PROPOSALS**

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-2827B	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
34872.3.4	NHP-0421(087)		



THIS IS A CONTROLLED ACCESS PROJECT ACCESS BEING LIMITED TO INTERCHANGES
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III
A PORTION OF THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF THE TOWN OF WINSTON-SALEM

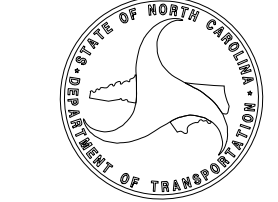


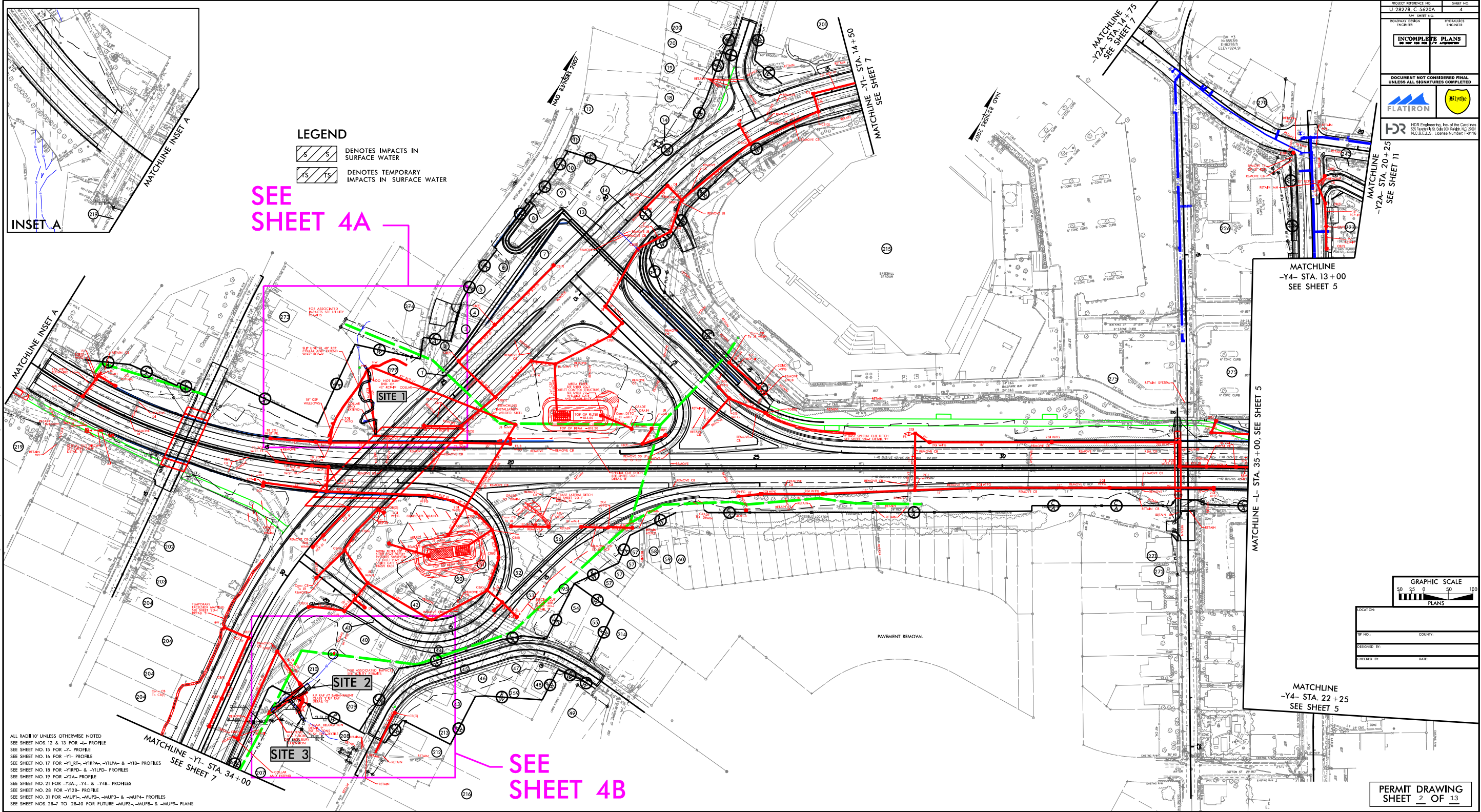
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T	= 13% *
V	= 50 MPH
* (TTST 7% + DUALS 6%)	
FUNC CLASS	= FREEWAY
STATEWIDE TIER	

PROJECT LENGTH	
LENGTH ROADWAY TIP PROJECT U-2827B	= 1.246 MILES
LENGTH STRUCTURE TIP PROJECT U-2827B	= 0.014 MILES
TOTAL LENGTH TIP PROJECT U-2827B	= 1.260 MILES
BRIDGE LENGTH BASED ON CENTERLINE PROJECTION STATION	

Prepared for the Office of: DIVISION OF HIGHWAYS 1000 Birch Ridge Dr., Raleigh NC, 27610	
2012 STANDARD SPECIFICATIONS	
RIGHT OF WAY DATE: AUGUST 30, 2016	RODNEY MONEY, P.E. PROJECT ENGINEER
LETTING DATE: AUGUST 30, 2016	JAMES RICE, P.E. PROJECT DESIGN ENGINEER

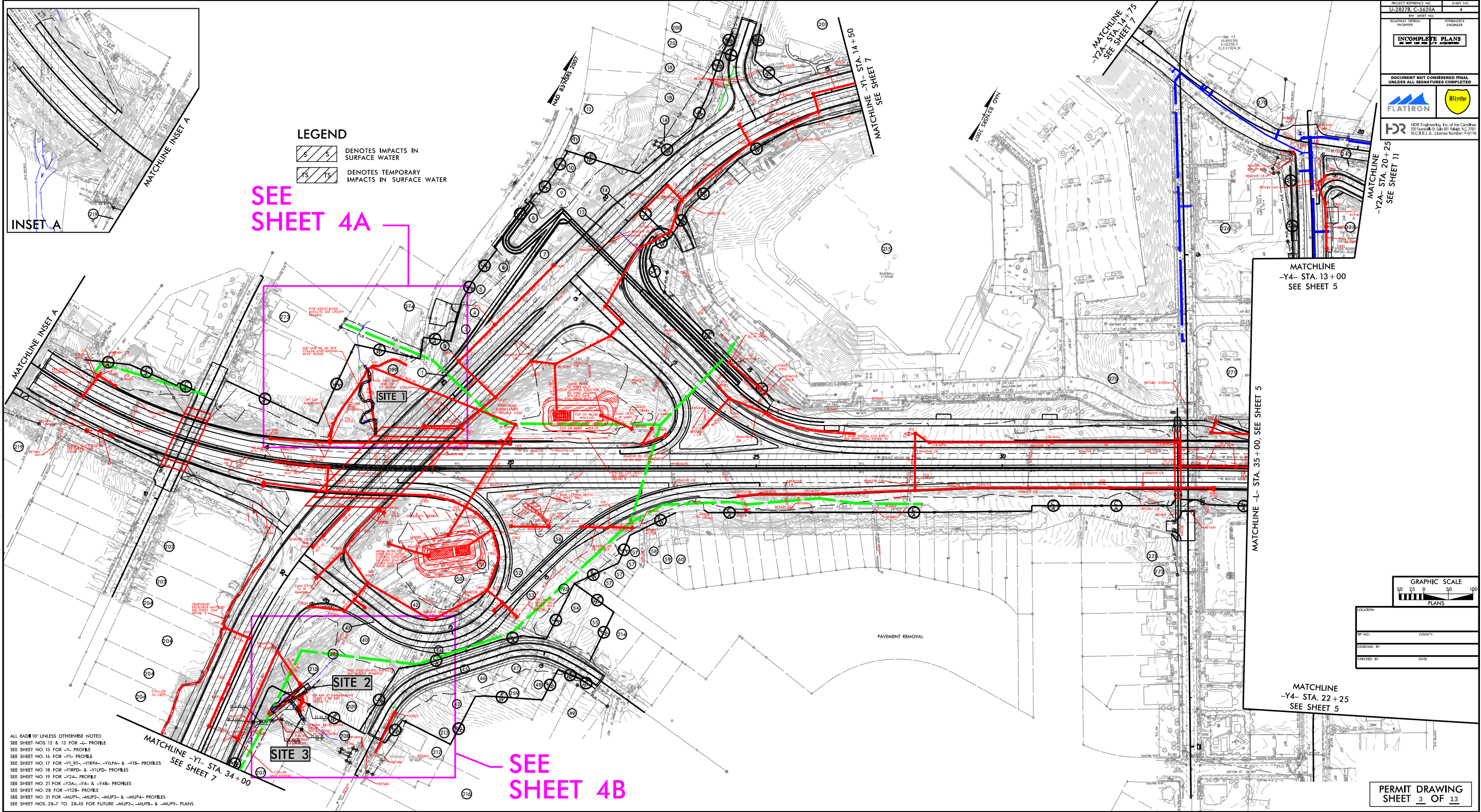
HYDRAULICS ENGINEER P.E.	
JAMES RICE, P.E. SIGNATURE:	
ROADWAY DESIGN ENGINEER P.E.	
LYDIA BUEHRER, P.E. SIGNATURE:	





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SEE SHEET NO. 15 FOR -Y1- PROFILE
SEE SHEET NO. 16 FOR -Y1- PROFILE
SEE SHEET NO. 17 FOR -Y1RT-, -Y1RPA-, -Y1LPA- & -Y1B- PROFILES
SEE SHEET NO. 18 FOR -Y1RPD- & -Y1LPD- PROFILES
SEE SHEET NO. 19 FOR -Y2A- PROFILE
SEE SHEET NO. 21 FOR -Y2A-, -Y4- & -Y4B- PROFILES
SEE SHEET NO. 28 FOR -Y2B- PROFILE
SEE SHEET NO. 31 FOR -MUP1-, -MUP2-, -MUP3- & -MUP4- PROFILES
SEE SHEET NOS. 28-7 TO 28-10 FOR FUTURE -MUP3-, -MUP8- & -MUP9- PLANS



LEGEND

- DENOTES IMPACTS IN SURFACE WATER
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER

SEE SHEET 4A

SEE SHEET 4B

MATCHLINE INSET A

INSET A

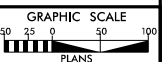
MATCHLINE INSET A

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INVOICES	INVOICES
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DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
HDR Engineering, Inc. of the Carolinas 400 Poplarville St., Suite 100 Raleigh, NC 27601 N.C.B.E.L.S. License Number: F-0116	

MATCHLINE
-Y2A- STA. 20+25
SEE SHEET 11

MATCHLINE
-Y4- STA. 13+00
SEE SHEET 5

MATCHLINE -L- STA. 35+00, SEE SHEET 5



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DRAWN BY:	
CHECKED BY:	DATE:

MATCHLINE
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SEE SHEET 5

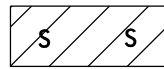
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SHEET 3 OF 13

ALL RADII 10' UNLESS OTHERWISE NOTED
SEE SHEET NOS. 12 & 13 FOR -L- PROFILE
SEE SHEET NO. 15 FOR -Y1- PROFILE
SEE SHEET NO. 16 FOR -Y1- PROFILE
SEE SHEET NO. 17 FOR -Y1RT-, -Y1RPA-, -Y1LPA- & -Y1B- PROFILES
SEE SHEET NO. 18 FOR -Y1RPD- & -Y1LPD- PROFILES
SEE SHEET NO. 19 FOR -Y2A- PROFILE
SEE SHEET NO. 21 FOR -Y2A-, -Y4- & -Y4B- PROFILES
SEE SHEET NO. 28 FOR -Y2B- PROFILE
SEE SHEET NO. 31 FOR -MUP1-, -MUP2-, -MUP3- & -MUP4- PROFILES
SEE SHEET NOS. 28-7 TO 28-10 FOR FUTURE -MUP3-, -MUP8- & -MUP9- PLANS

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REVISIONS

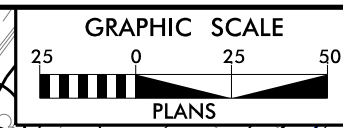
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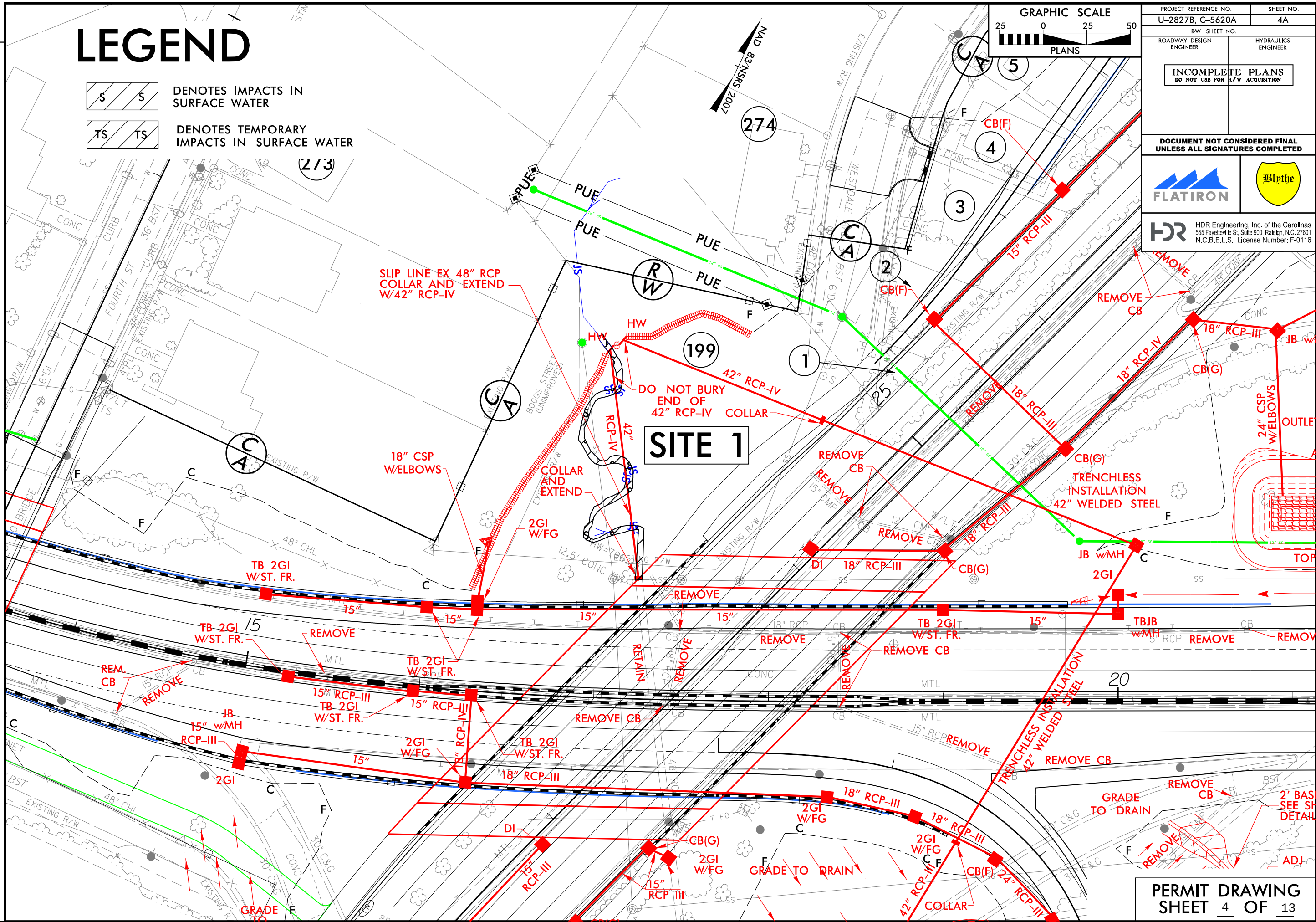
DENOTES IMPACTS IN
SURFACE WATER



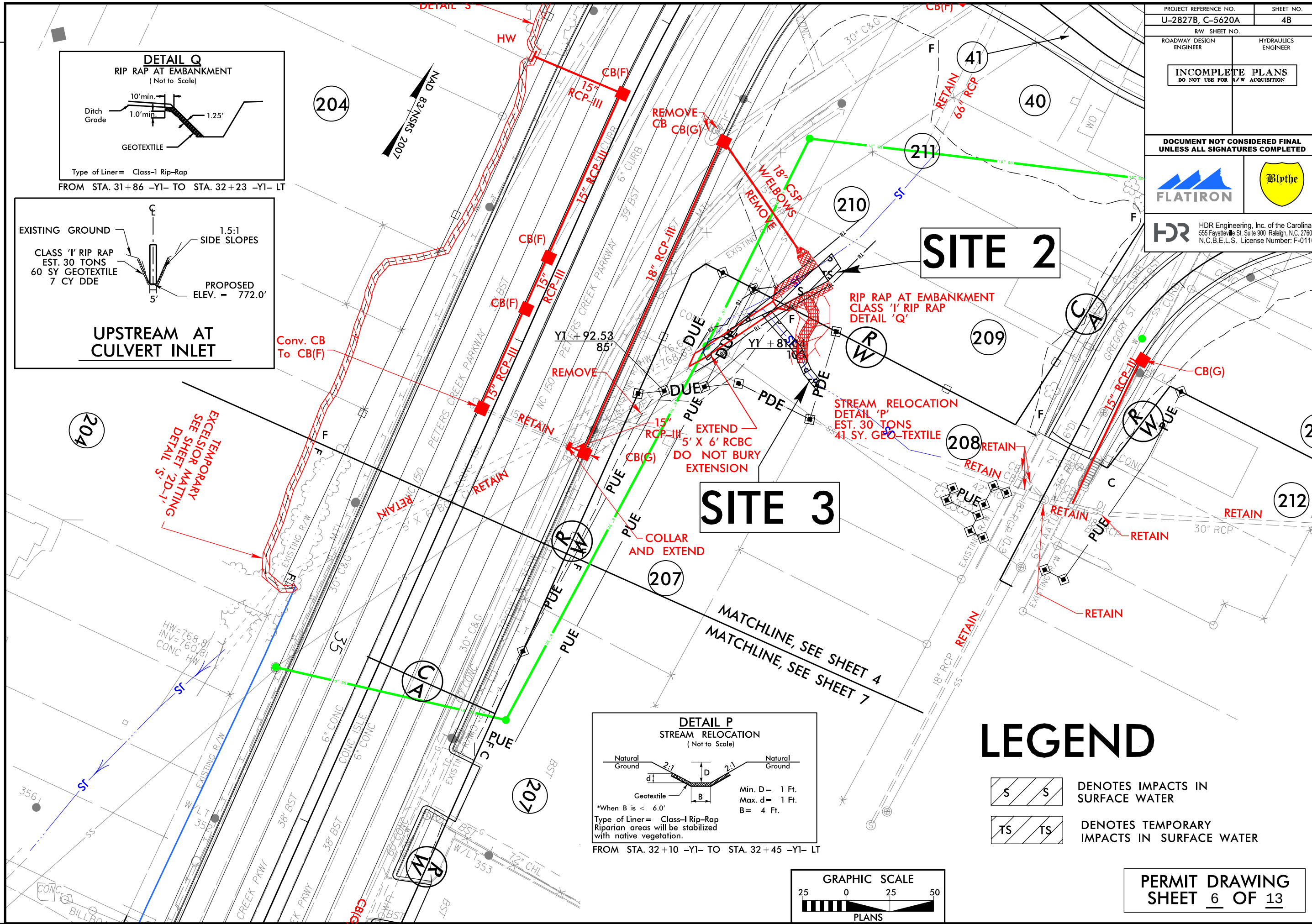
DENOTES TEMPORARY
IMPACTS IN SURFACE WATER



PROJECT REFERENCE NO. U-2827B, C-5620A		SHEET NO. 4A	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION			
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			
HDR Engineering, Inc. of the Carolinas 555 Fayetteville St. Suite 900 Raleigh, N.C. 27601 N.C.B.E.L.S. License Number: F-0116			

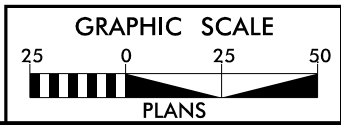
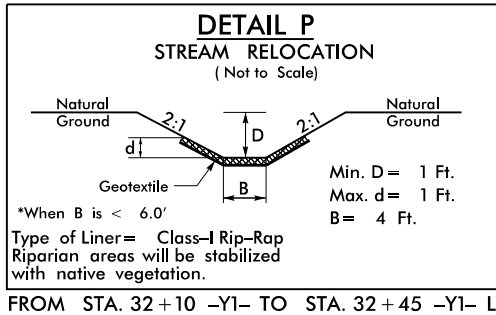
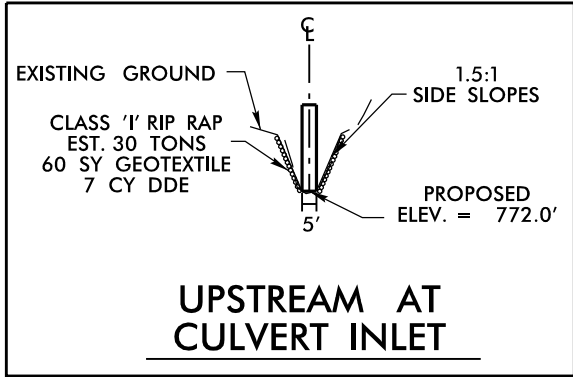
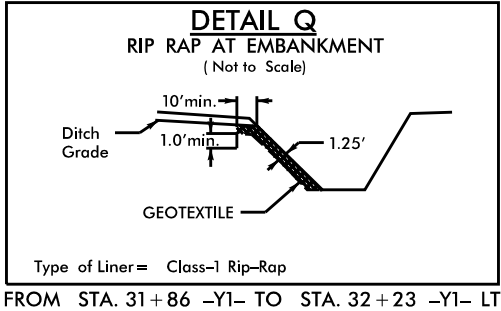
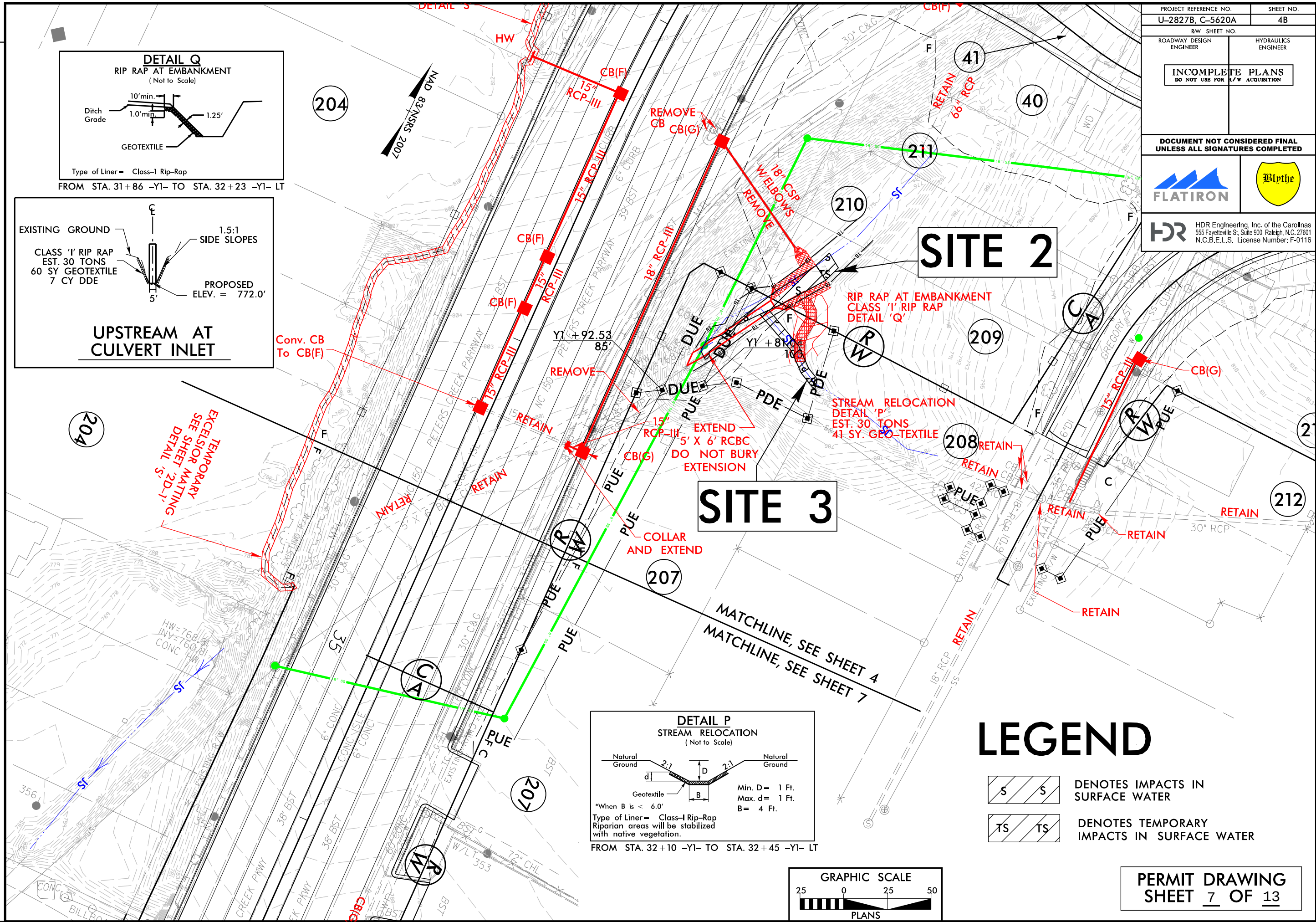


REVISIONS



PROJECT REFERENCE NO. U-2827B, C-5620A		SHEET NO. 4B	
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ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION			
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			
FLATIRON		Blythe	
HDR Engineering, Inc. of the Carolinas 555 Fayetteville St. Suite 900 Raleigh, N.C. 27601 N.C.B.E.L.S. License Number: F-0116			

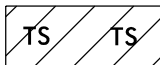
REVISIONS



LEGEND



DENOTES IMPACTS IN SURFACE WATER



DENOTES TEMPORARY IMPACTS IN SURFACE WATER

PERMIT DRAWING
SHEET 7 OF 13

PROJECT REFERENCE NO. U-2827B, C-5620A		SHEET NO. 4B	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION			
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			
FLATIRON		Blythe	
HDR Engineering, Inc. of the Carolinas 555 Fayetteville St. Suite 900 Raleigh, N.C. 27601 N.C.B.E.L.S. License Number: F-0116			

REVISIONS

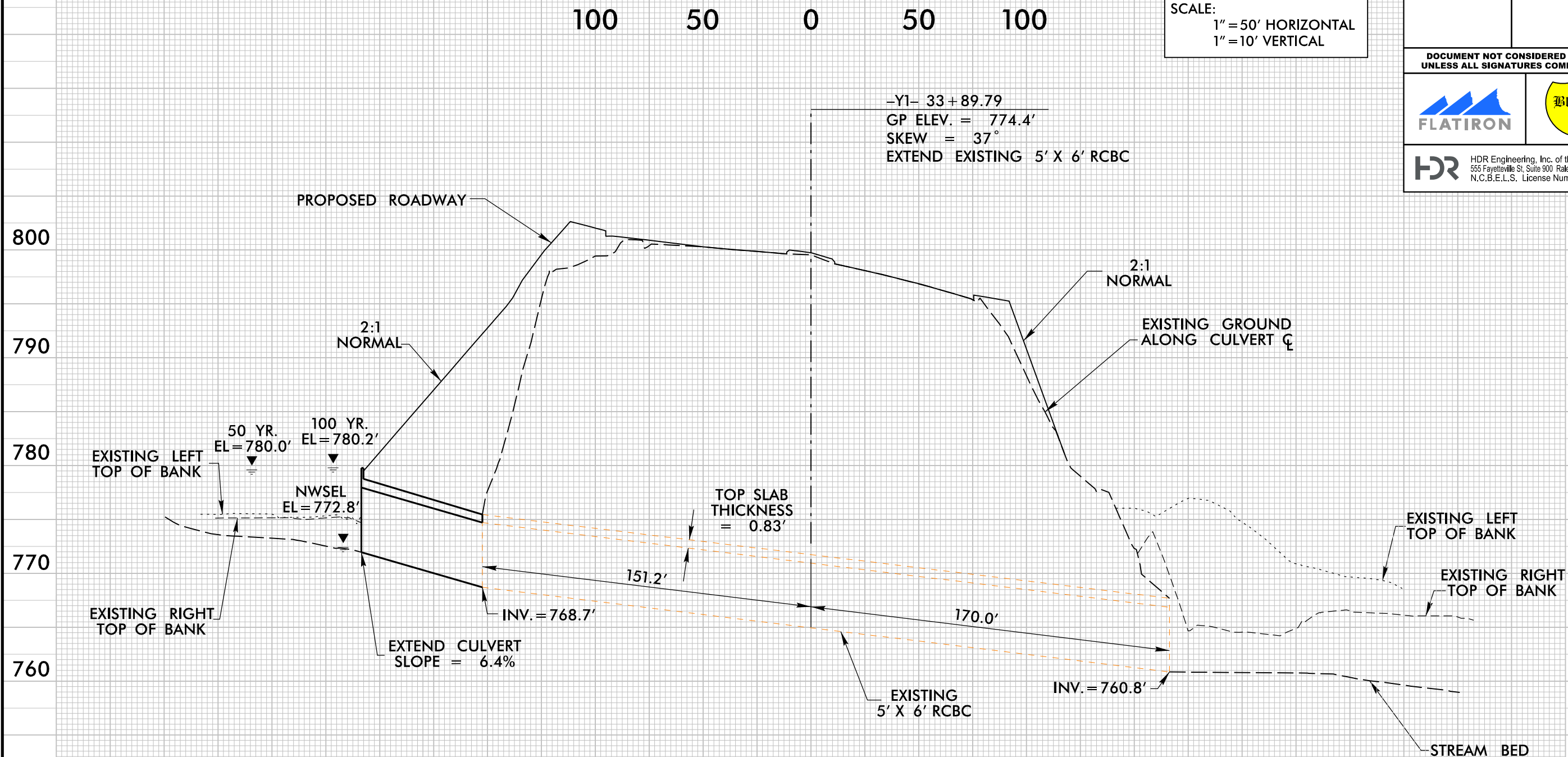
5/14/99



HDR Engineering, Inc. of the Carolinas
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

PROJECT REFERENCE NO.		SHEET NO.	
U-2827B, C-5620A		4C	
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			
			
		HDR Engineering, Inc. of the Carolina 555 Fayetteville St, Suite 900 Raleigh, N.C. 27601 N.C.B.E.L.S. License Number: F-0116	

SCALE:
1" = 50' HORIZONTAL
1" = 10' VERTICAL

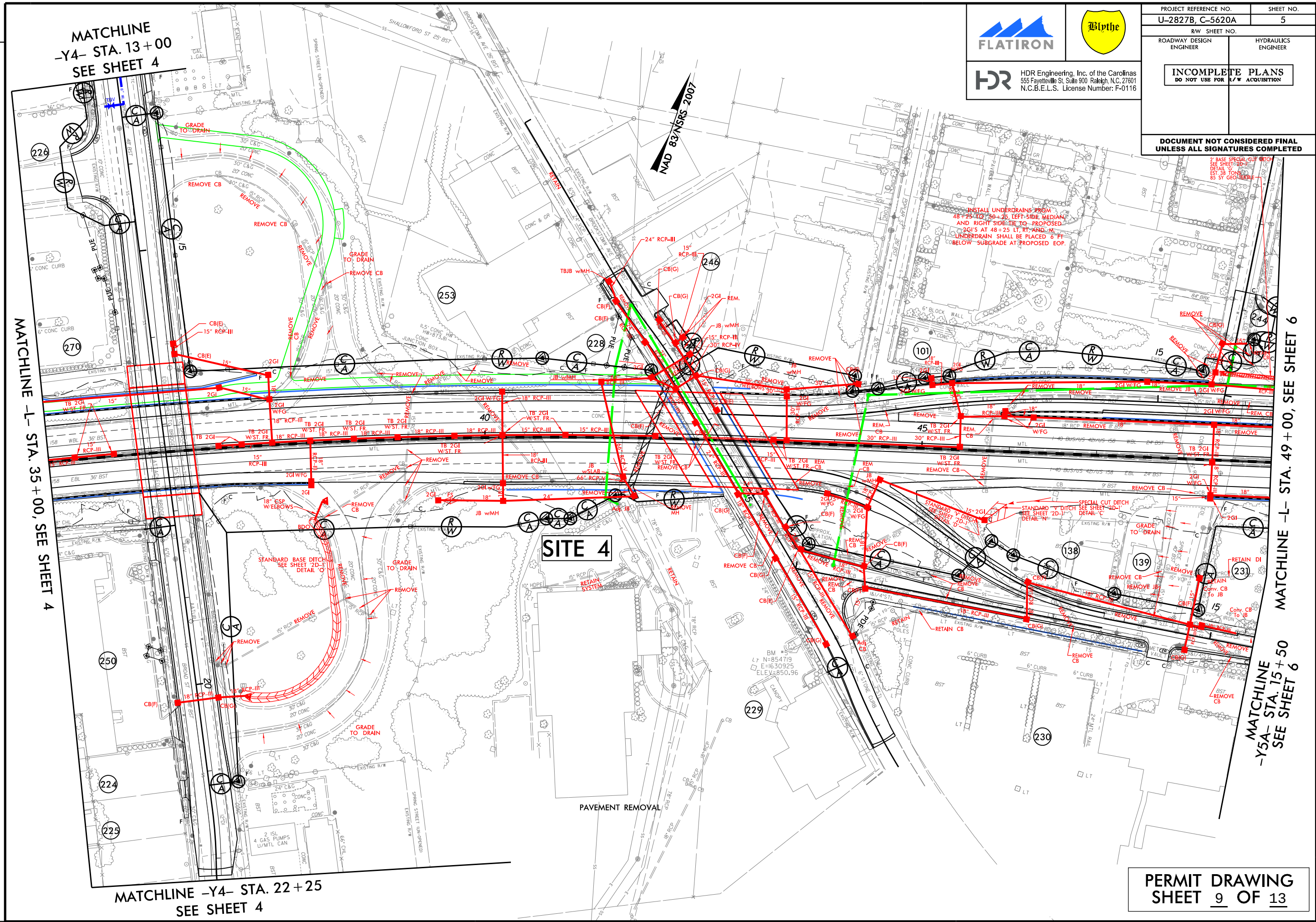


PROFILE ALONG CL OF CULVERT

PERMIT DRAWING
SHEET 8 OF 13

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DATE: 5/15/2017

REVISIONS



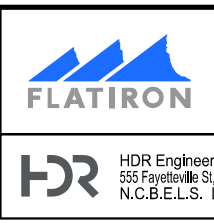
MATCHLINE
-Y4- STA. 13+00
SEE SHEET 4

MATCHLINE -L- STA. 35+00, SEE SHEET 4

MATCHLINE -Y4- STA. 22+25
SEE SHEET 4

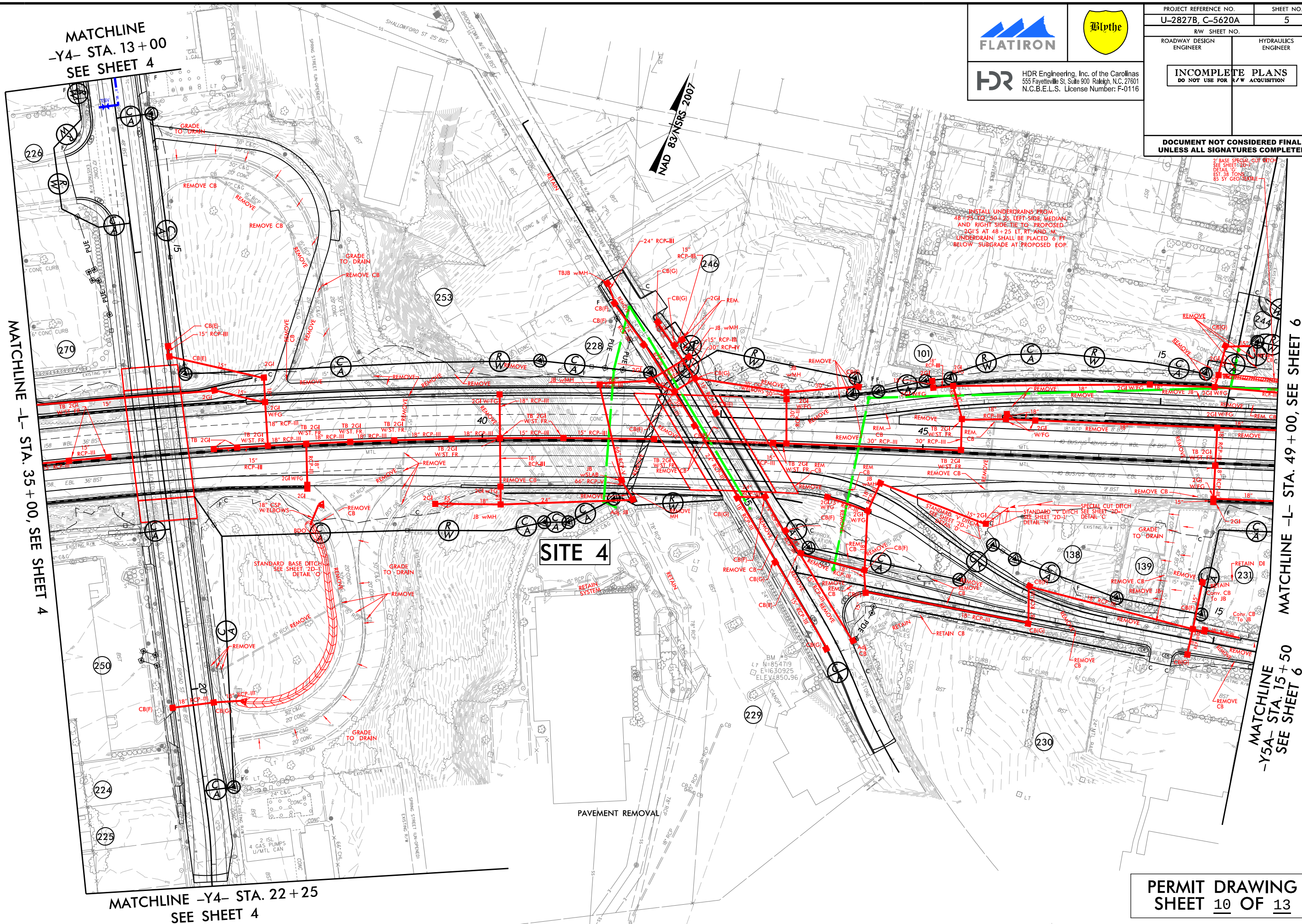
MATCHLINE -L- STA. 49+00, SEE SHEET 6

MATCHLINE
-Y5A- STA. 15+50
SEE SHEET 6



PROJECT REFERENCE NO.		SHEET NO.	
U-2827B, C-5620A		5	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION			
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			

PERMIT DRAWING
SHEET 9 OF 13



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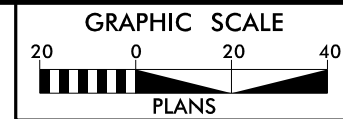
REVISIONS

LEGEND

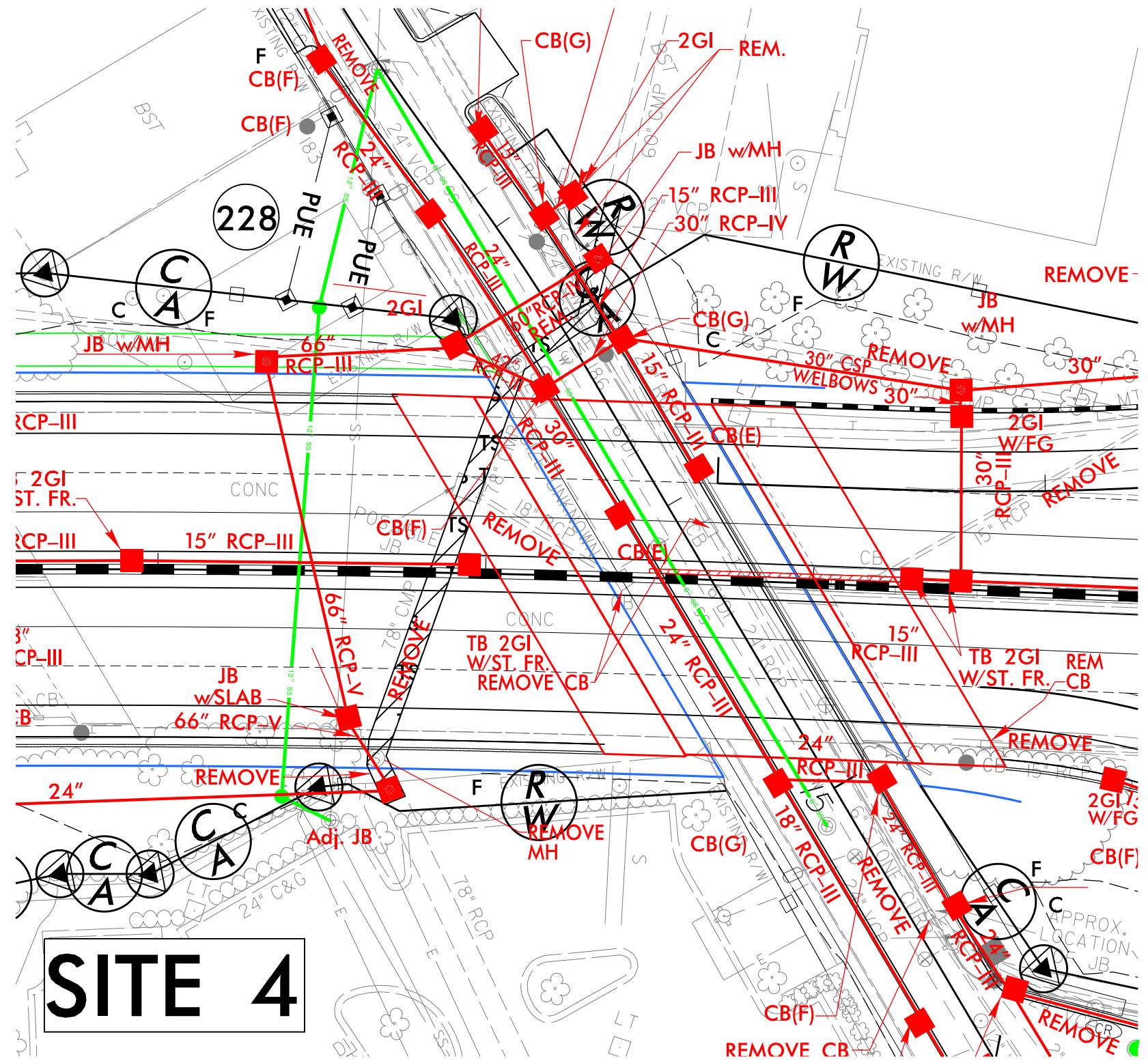


DENOTES TEMPORARY
IMPACTS IN SURFACE WATER

NOTE:
TEMPORARY STREAM IMPACTS TAKEN ALONG THE
FLOW LINE OF TAR BRANCH TO ACCOUNT FOR
DEWATERING DURING PIPE RELOCATION.



NAD 83/NSRS 2007



SITE 4

PERMIT DRAWING
SHEET 11 OF 13

PROJECT REFERENCE NO.		SHEET NO.	
U-2827B, C-5620A		5A	
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			
			
		HDR Engineering, Inc. of the Carolinas 555 Fayetteville St. Suite 900 Raleigh, N.C. 27601 N.C.B.E.L.S. License Number: F-0116	

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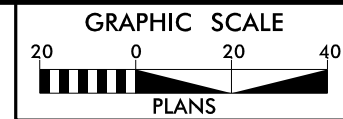
REVISIONS

LEGEND



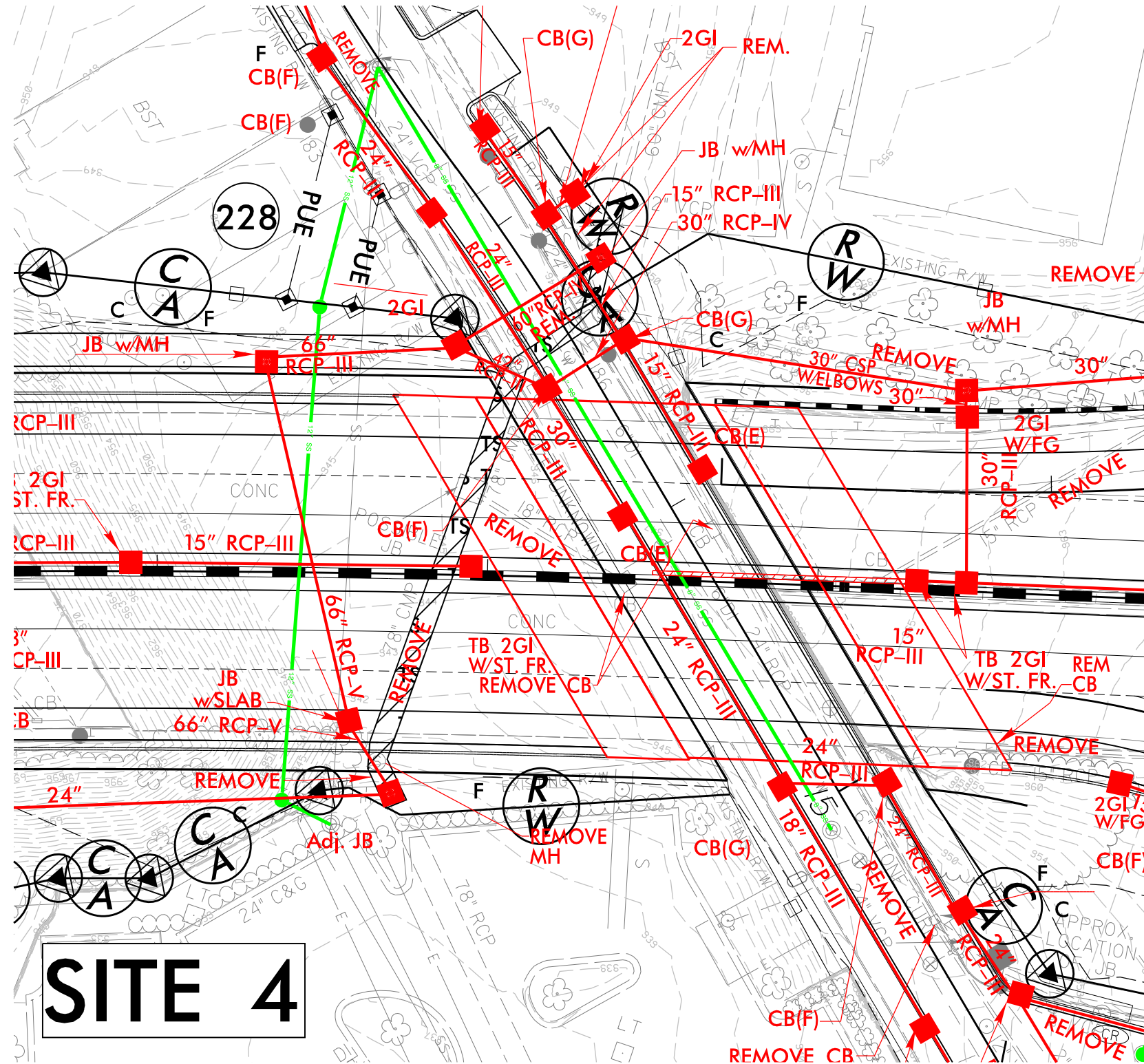
DENOTES TEMPORARY
IMPACTS IN SURFACE WATER

NOTE:
TEMPORARY STREAM IMPACTS TAKEN ALONG THE
FLOW LINE OF TAR BRANCH TO ACCOUNT FOR
DEWATERING DURING PIPE RELOCATION.



NAD 83/NSRS 2007

PROJECT REFERENCE NO.		SHEET NO.	
U-2827B, C-5620A		5A	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION			
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			
			
		HDR Engineering, Inc. of the Carolinas 555 Fayetteville St. Suite 900 Raleigh, N.C. 27601 N.C.B.E.L.S. License Number: F-0116	



PERMIT DRAWING
SHEET 12 OF 13

WETLAND AND SURFACE WATER IMPACTS 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	17+35 -L- LT	42" RCP-IV						0.02	< 0.01	214	10	
2	33+90 -Y1- LT	5'X6' RCBC						< 0.01	< 0.01	50	10	
2	33+90 -Y1- LT	BANK STABILIZATION						< 0.01		33		
3	32+30 -Y1- LT	STREAM RELOCATION						< 0.01	< 0.01	42	10	
4	41+85 -L-	78" CMP DE-WATERING							0.03		196	
TOTALS*:								0.03	0.03	339	226	0

*Rounded totals are sum of actual impacts

NOTES:

PROPOSED STREAM RELOCATION AT SITE 3 = 42'

NC DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

5/22/2017

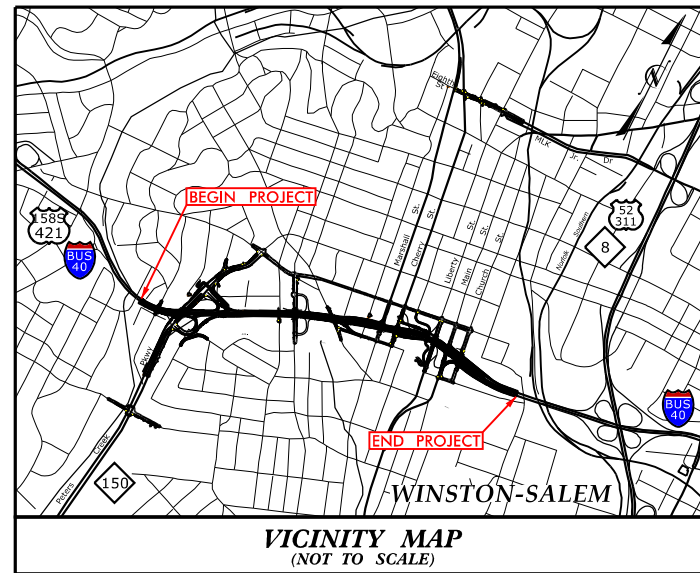
FORSYTH COUNTY

U-2827B

34872.3.4

TIP PROJECT: U-2827B,C-5620A

CONTRACT: C203862



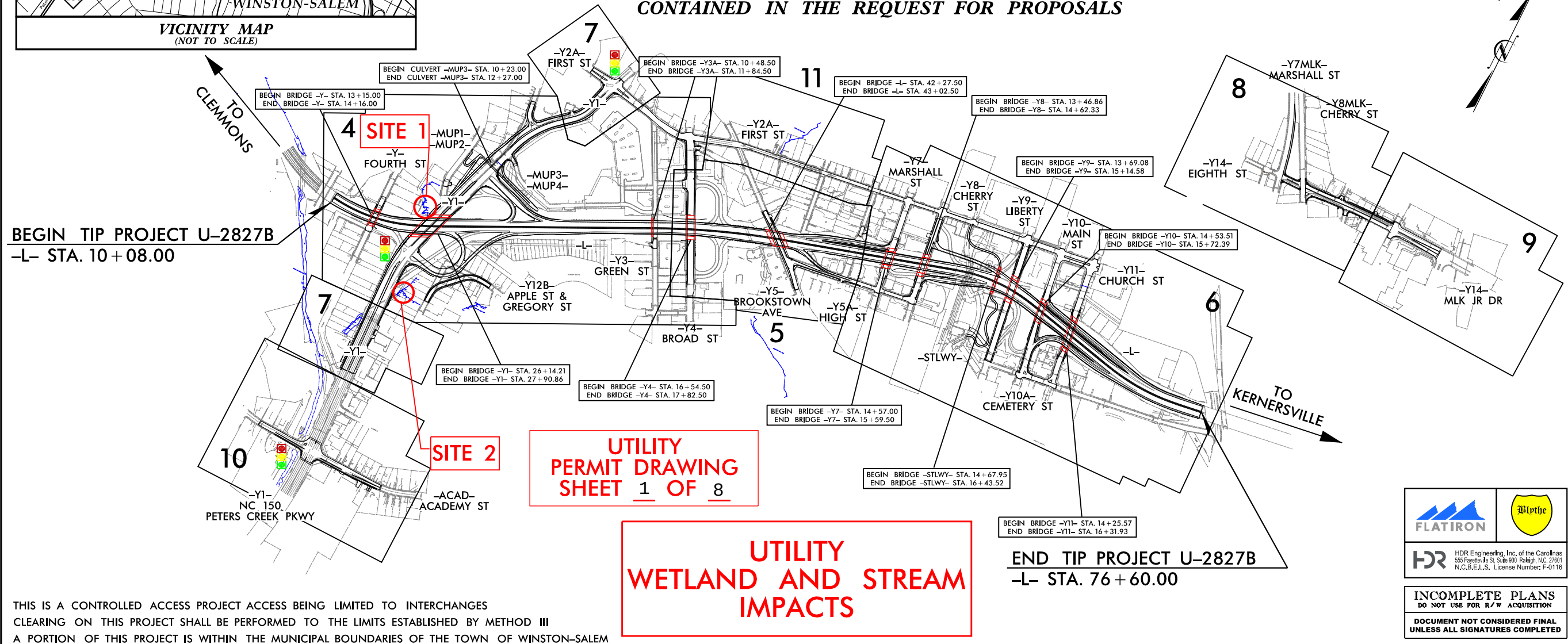
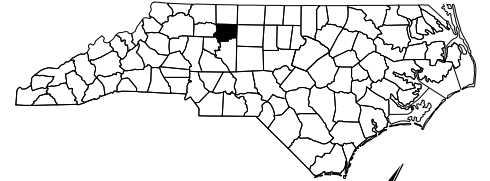
25% PLAN SUBMITTAL

STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS

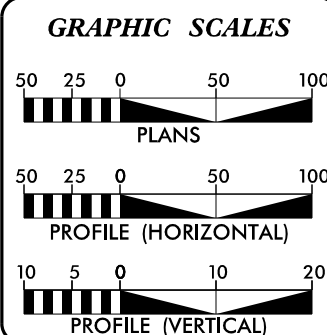
FORSYTH COUNTY

**LOCATION: US 421 /I-40 BUSINESS PAVEMENT RECONSTRUCTION,
BRIDGE REPLACEMENTS, AND INTERCHANGE MODIFICATIONS
FROM WEST OF FOURTH STREET TO EAST OF CHURCH STREET;
AND MULTI-USE PATH FROM FOURTH STREET TO LIBERTY STREET**

**TYPE OF WORK: DESIGN-BUILD AS SPECIFIED IN THE SCOPE OF WORK
CONTAINED IN THE REQUEST FOR PROPOSALS**

[illegible]

THIS IS A CONTROLLED ACCESS PROJECT ACCESS BEING LIMITED TO INTERCHANGES
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III
A PORTION OF THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF THE TOWN OF WINSTON-SALEM



DESIGN DATA

ADT 2011 = 74,800
ADT 2040 = 96,400
DHV = 9%
D = 60%
T = 13% *
V = 50 MPH
* (TTST 7% + DUALS 6%)
FUNC CLASS = FREEWAY
STATEWIDE TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-2827B = 1.246 MILES
 LENGTH STRUCTURE TIP PROJECT U-2827B = 0.014 MILES
 TOTAL LENGTH TIP PROJECT U-2827B = 1.260 MILES

BRIDGE LENGTH BASED ON CENTERLINE PROJECTION STATION

Prepared for the Office of:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh NC, 27610

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
AUGUST 30, 2016

LETTING DATE:
AUGUST 30, 2016

RODNEY MONEY, P.E.
PROJECT ENGINEER

JAMES RICE, P.E.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

P.E.

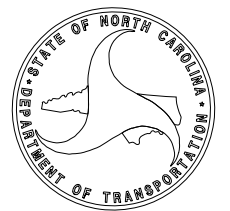
JAMES RICE, P.E.
SIGNATURE:

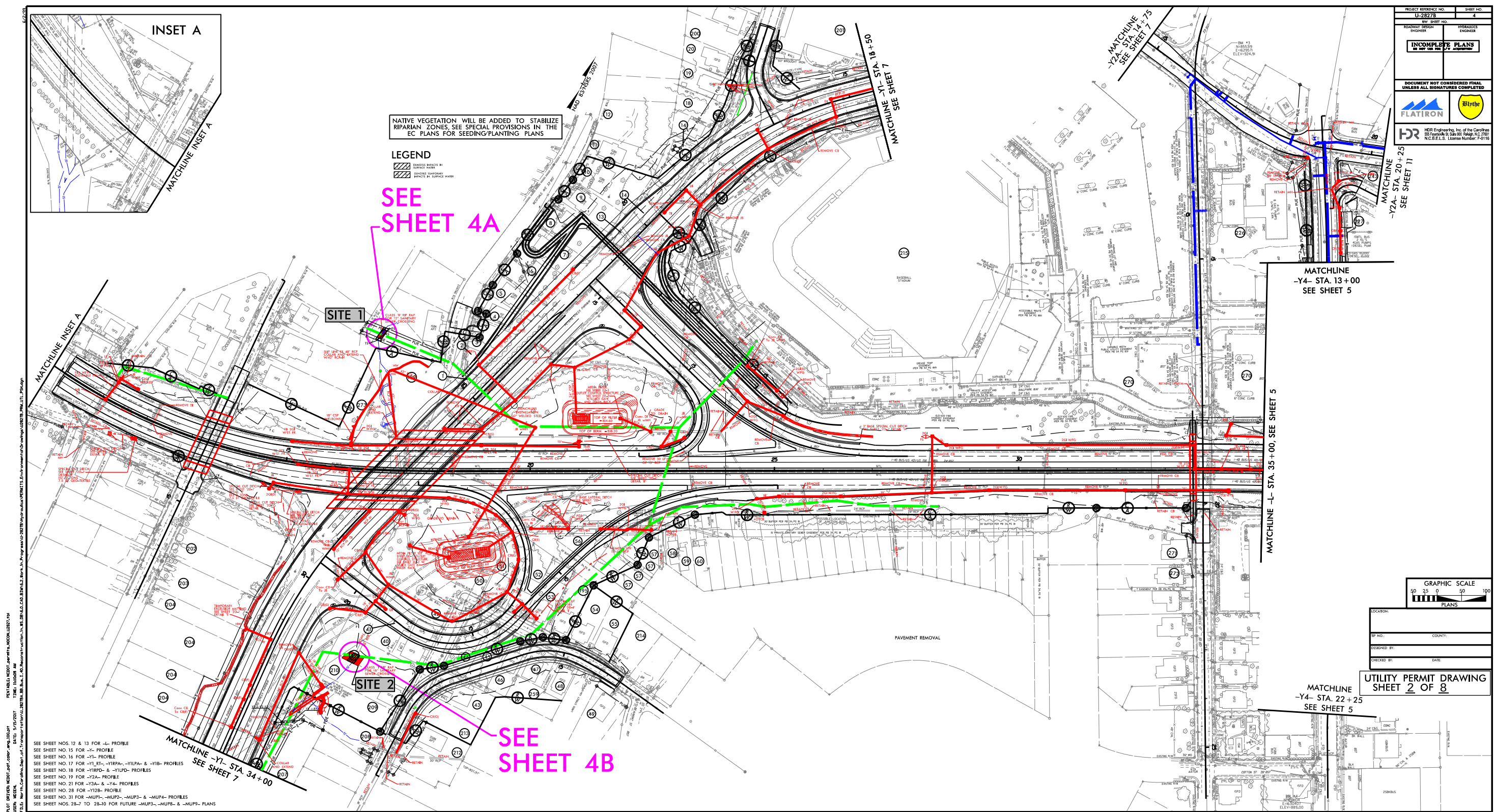
ROADWAY DESIGN ENGINEER

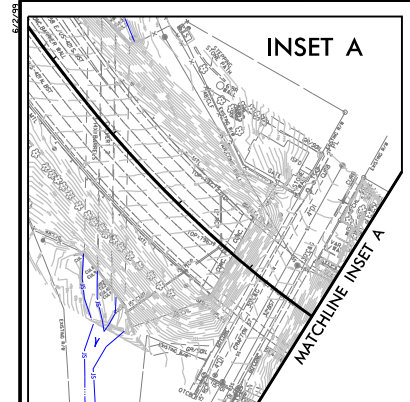
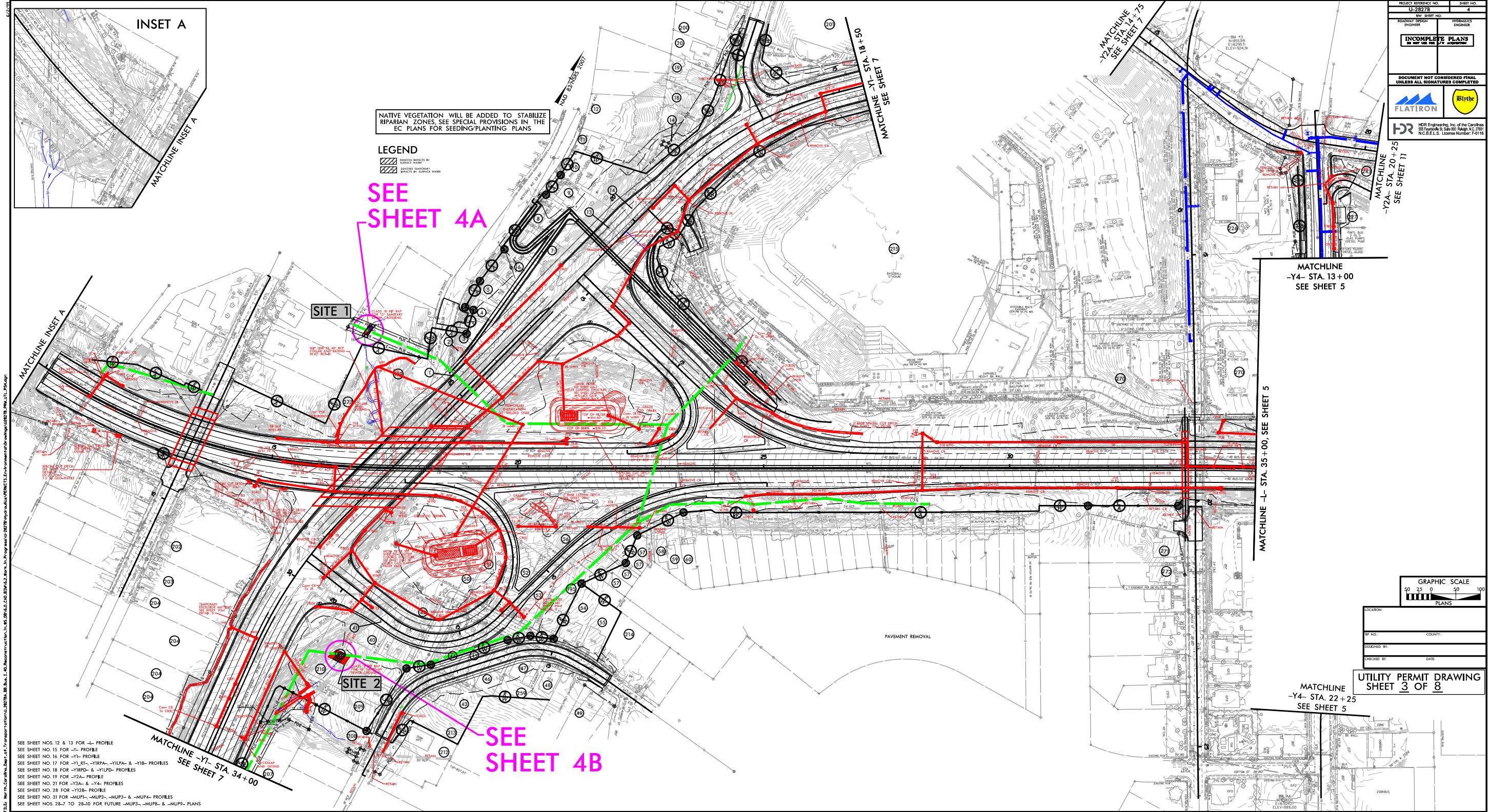
P.E.

LYDIA BUEHRER, P.E.

SIGNATURE:







NATIVE VEGETATION WILL BE ADDED TO STABILIZE RIPARIAN ZONES, SEE SPECIAL PROVISIONS IN THE EC PLANS FOR SEEDING/PLANTING PLANS

LEGEND
[Symbol] REMOVED VEGETATION
[Symbol] REMOVED RIPARIAN ZONES

SEE SHEET 4A

SEE SHEET 4B

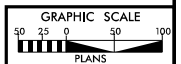
SEE SHEET NOS. 12 & 13 FOR -L- PROFILE
SEE SHEET NOS. 15 FOR -Y1- PROFILE
SEE SHEET NOS. 16 FOR -Y1- PROFILE
SEE SHEET NOS. 17 FOR -Y1RT-, -Y1RPA-, -Y1LPA- & -Y1B- PROFILES
SEE SHEET NOS. 18 FOR -Y1RFD- & -Y1LPD- PROFILES
SEE SHEET NOS. 19 FOR -Y2A- PROFILE
SEE SHEET NOS. 21 FOR -Y2A- & -Y2B- PROFILES
SEE SHEET NOS. 28 FOR -Y2B- PROFILE
SEE SHEET NOS. 31 FOR -MUP1-, -MUP2-, -MUP3- & -MUP4- PROFILES
SEE SHEET NOS. 28-7 TO 28-10 FOR FUTURE -MUP3-, -MUP8- & -MUP9- PLANS

PROJECT REFERENCE NO.	SHEET NO.
U-28278	4
REV. SHEET NO.	
ROADWAY DESIGN	HYDRAULICS
INCOMPLETE PLANS	INCOMPLETE
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
FLATIRON	Hythe
HDR Engineering, Inc. of the Carolinas 200 Poplar St. Suite 100 Raleigh, NC 27601 N.C.E.E.L.S. License Number: F-0116	

MATCHLINE -Y2A- STA. 20+25
SEE SHEET 11

MATCHLINE -Y4- STA. 13+00
SEE SHEET 5

MATCHLINE -L- STA. 35+00, SEE SHEET 5

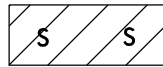


LOCATION:	
TP NO.:	COUNTY:
DRAWN BY:	
CHECKED BY:	DATE:

UTILITY PERMIT DRAWING
SHEET 3 OF 8

REVISIONS

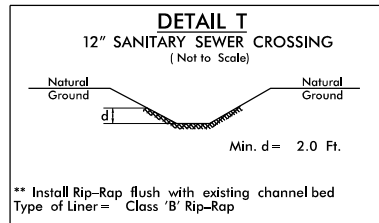
LEGEND



DENOTES IMPACTS IN
SURFACE WATER



DENOTES TEMPORARY
IMPACTS IN SURFACE WATER



NATIVE VEGETATION WILL BE ADDED TO STABILIZE
RIPARIAN ZONES, SEE SPECIAL PROVISIONS IN THE
EC PLANS FOR SEEDING/PLANTING PLANS

SITE 1

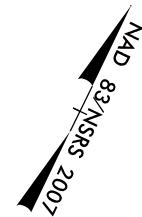
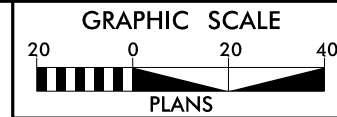
SLIP LINE EX 48" RCP
COLLAR AND EXTEND
W/42" RCP-IV

CLASS 'B' RIP RAP
FOR 12" SANITARY
SEWER CROSSING

DO NOT BURY
42" EXTENSION

COLLAR

REMOVE
CB
REX

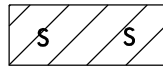


PROJECT REFERENCE NO.		SHEET NO.	
U-2827B, C-5620A		4A	
R/W SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION			
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			
			
		HDR Engineering, Inc. of the Carolinas 555 Fayetteville St. Suite 900 Raleigh, N.C. 27601 N.C.B.E.L.S. License Number: F-0116	

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REVISIONS

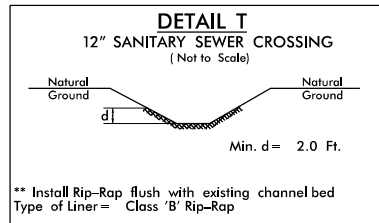
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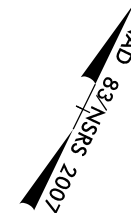
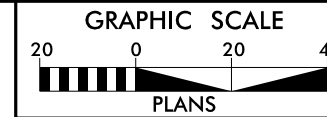
DENOTES IMPACTS IN
SURFACE WATER



DENOTES TEMPORARY
IMPACTS IN SURFACE WATER



NATIVE VEGETATION WILL BE ADDED TO STABILIZE
RIPARIAN ZONES, SEE SPECIAL PROVISIONS IN THE
EC PLANS FOR SEEDING/PLANTING PLANS



PROJECT REFERENCE NO. U-2827B, C-5620A		SHEET NO. 4A	
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			
			
		HDR Engineering, Inc. of the Carolinas 555 Fayetteville St. Suite 900 Raleigh, N.C. 27601 N.C.B.E.L.S. License Number: F-0116	

SITE 1

SLIP LINE EX 48" RCP
COLLAR AND EXTEND
W/42" RCP-IV

CLASS 'B' RIP RAP
FOR 12" SANITARY
SEWER CROSSING

DO NOT BURY
42" EXTENSION

COLLAR

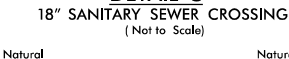
REMOVE
CB
REL

UTILITY PERMIT DRAWING
SHEET 5 OF 8

A rectangular block with diagonal hatching (lines from top-left to bottom-right). Two 'S' labels are placed within the block, one on the left and one on the right.

DETAIL U

18" SANITARY SEWER CROSSING
(Not to Scale)



Min. d = 5.0 Ft.

**** Install Rip-Rap flush with existing channel bed**
Type of Liner = Class '1' Rip-Rap

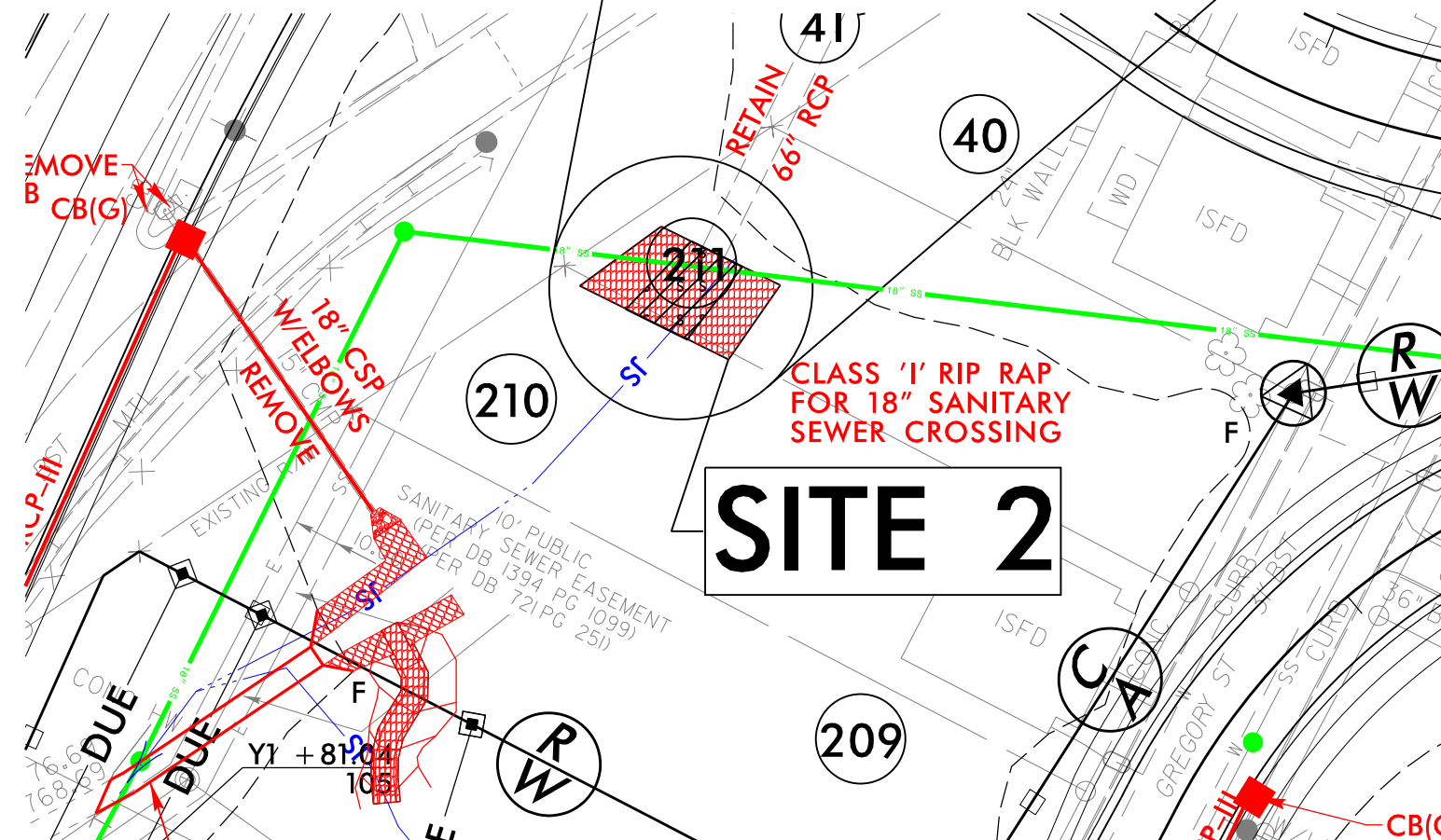
STA. 30 + 90 -Y1- LT

GRAPHIC SCALE

20 0 20 40

PLANS

PROJECT REFERENCE NO.	SHEET NO.
U-2827B, C-5620A	4B
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	
	
	HDR Engineering, Inc. of the Carolinas 555 Fayetteville St. Suite 900 Raleigh, N.C. 27601 N.C.B.E.L.S. License Number: F-0116



UTILITY PERMIT DRAWING
SHEET 6 OF 8

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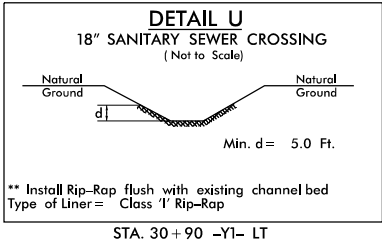
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REVISIONS

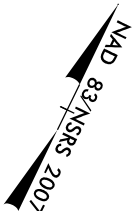
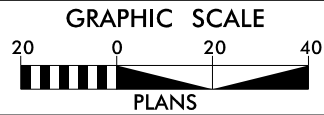
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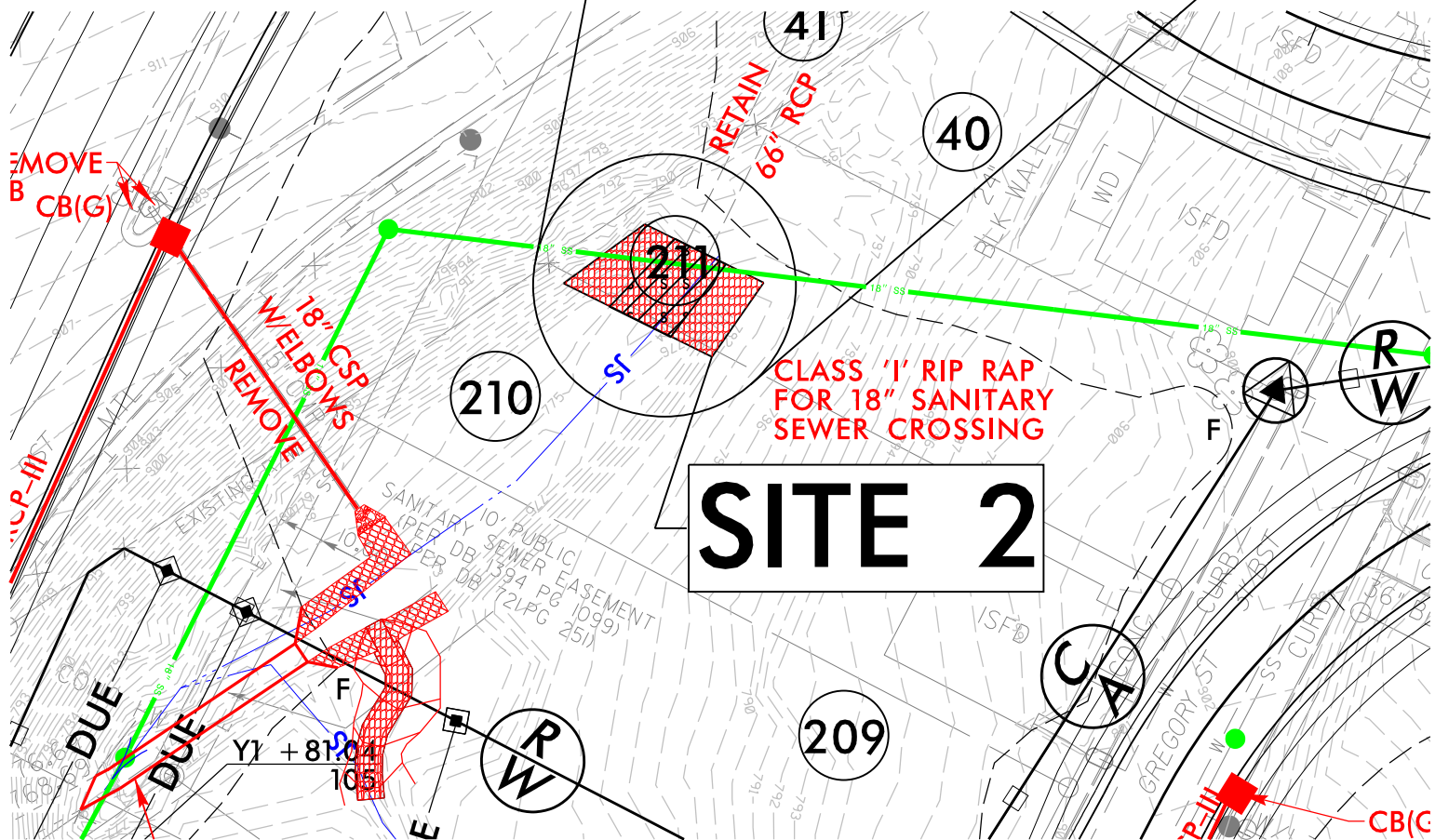
DENOTES IMPACTS IN
SURFACE WATER



NATIVE VEGETATION WILL BE ADDED TO STABILIZE
RIPARIAN ZONES, SEE SPECIAL PROVISIONS IN THE
EC PLANS FOR SEEDING/PLANTING PLANS



PROJECT REFERENCE NO. U-2827B, C-5620A		SHEET NO. 4B	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION			
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			
			
		HDR Engineering, Inc. of the Carolinas 555 Fayetteville St, Suite 900 Raleigh, N.C. 27601 N.C.B.E.L.S. License Number: F-0116	



WETLAND AND SURFACE WATER IMPACTS 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	25+40 -Y1- RT	12" SANITARY SEWER						< 0.01	< 0.01	20	10	
2	30+90 -YI- LT	18" SANITARY SEWER						0.02		21		
TOTALS*:								0.02	< 0.01	41	10	0

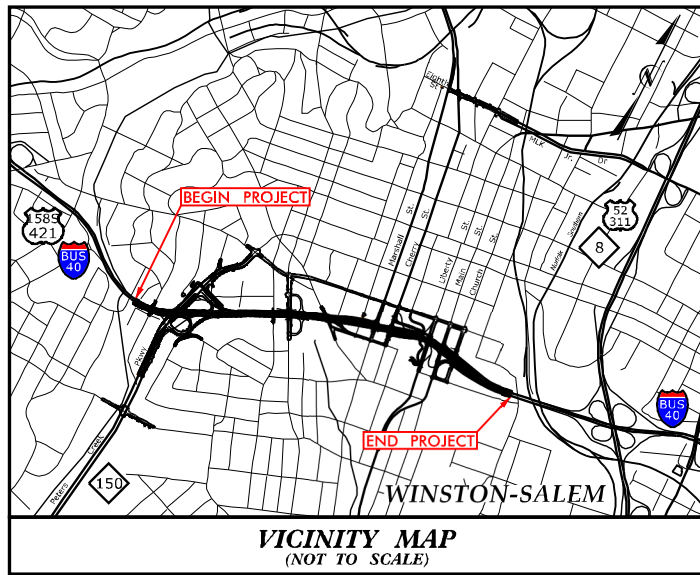
*Rounded totals are sum of actual impacts

NOTES:

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
5/15/2017
FORSYTH COUNTY
U-2827B
34872.3.4
SHEET 8 OF 8

CONTRACT: C203862

TIP PROJECT: U-2827B, C-5620A



VICINITY MAP
(NOT TO SCALE)

60% PLAN SUBMITTAL

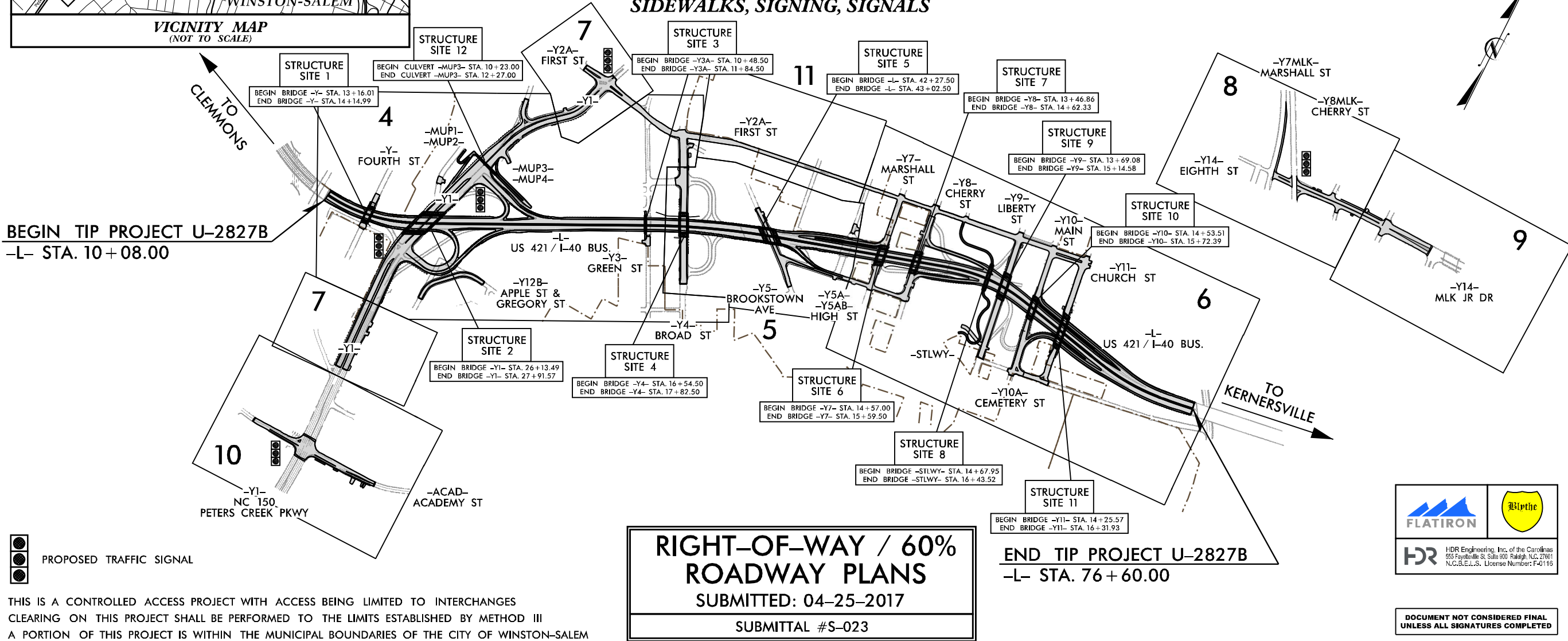
STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

FORSYTH COUNTY

**LOCATION: US 421 / I-40 BUSINESS PAVEMENT RECONSTRUCTION,
BRIDGE REPLACEMENTS, AND INTERCHANGE MODIFICATIONS
FROM WEST OF FOURTH STREET TO EAST OF CHURCH STREET;
AND MULTI-USE PATH FROM FOURTH STREET TO LIBERTY STREET**

**TYPE OF WORK: GRADING, DRAINAGE, PAVING, STRUCTURE, CULVERTS, CURB AND GUTTER,
SIDEWALKS, SIGNING, SIGNALS**

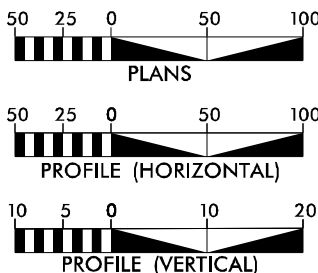
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-2827B, C-5620A	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
34872.3.4	NHP-0421(087)		



PROPOSED TRAFFIC SIGNAL

THIS IS A CONTROLLED ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III
A PORTION OF THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF THE CITY OF WINSTON-SALEM

GRAPHIC SCALES



DESIGN DATA

ADT 2011 = 74,800
ADT 2040 = 96,400
DHV = 9%
D = 60%
T = 13% *
V = 50 MPH
* (TTST 7% + DUALS 6%)
FUNC CLASS = FREEWAY
STATEWIDE TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-2827B = 1.246 MILES
LENGTH STRUCTURE TIP PROJECT U-2827B = 0.014 MILES
TOTAL LENGTH TIP PROJECT U-2827B = 1.260 MILES
BRIDGE LENGTH BASED ON CENTERLINE PROJECTION STATION
NCDOT CONTACT: K. ZAK HAMIDI, PE, DESIGN BUILD UNIT

Prepared for the Office of:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh NC, 27610

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
AUGUST 30, 2016

LETTING DATE:
AUGUST 30, 2016

RODNEY MONEY, P.E.
PROJECT ENGINEER

JAMES RICE, P.E.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

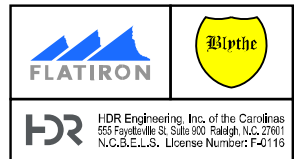
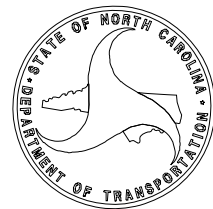
P.E.

JAMES RICE, P.E.
SIGNATURE:

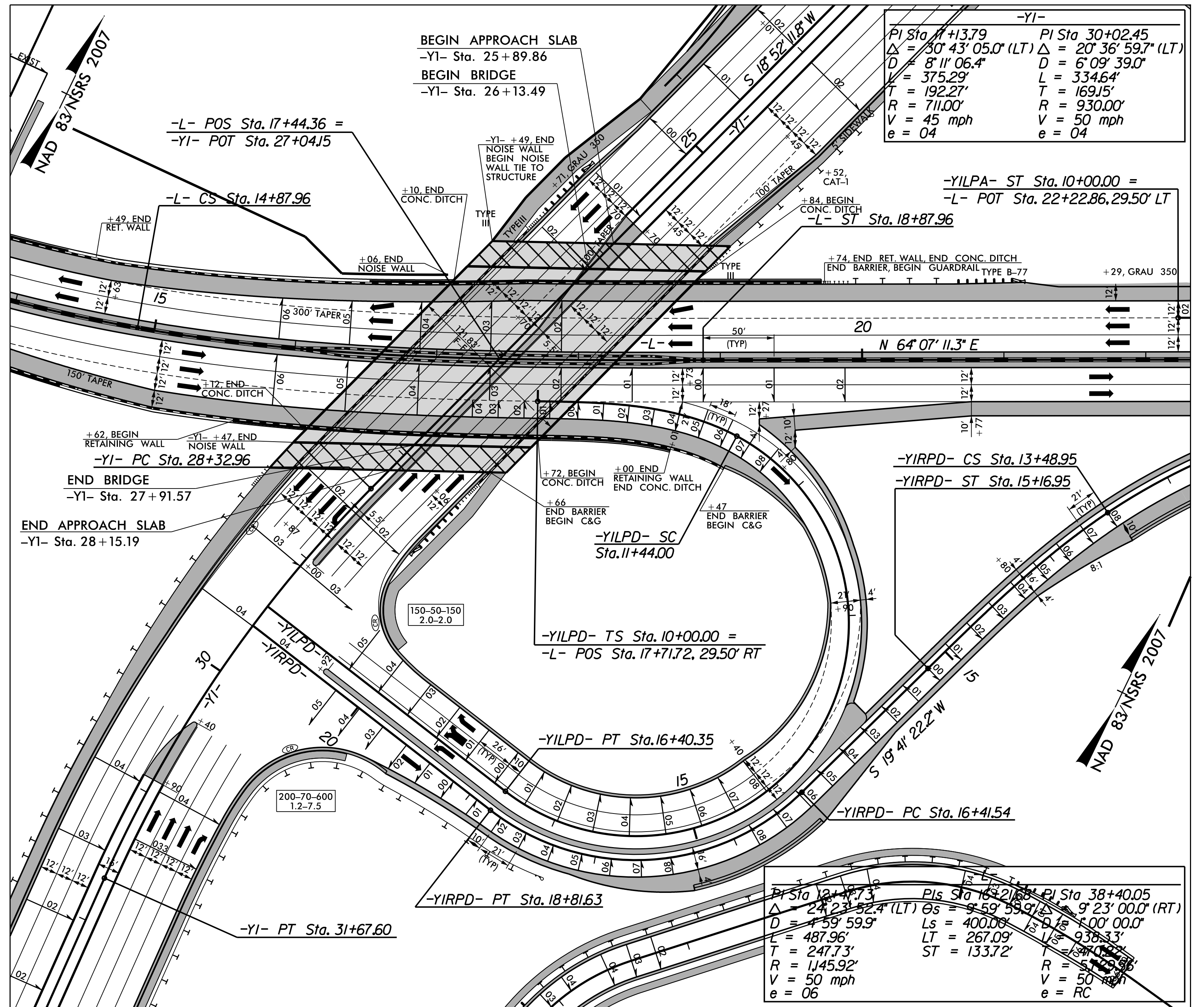
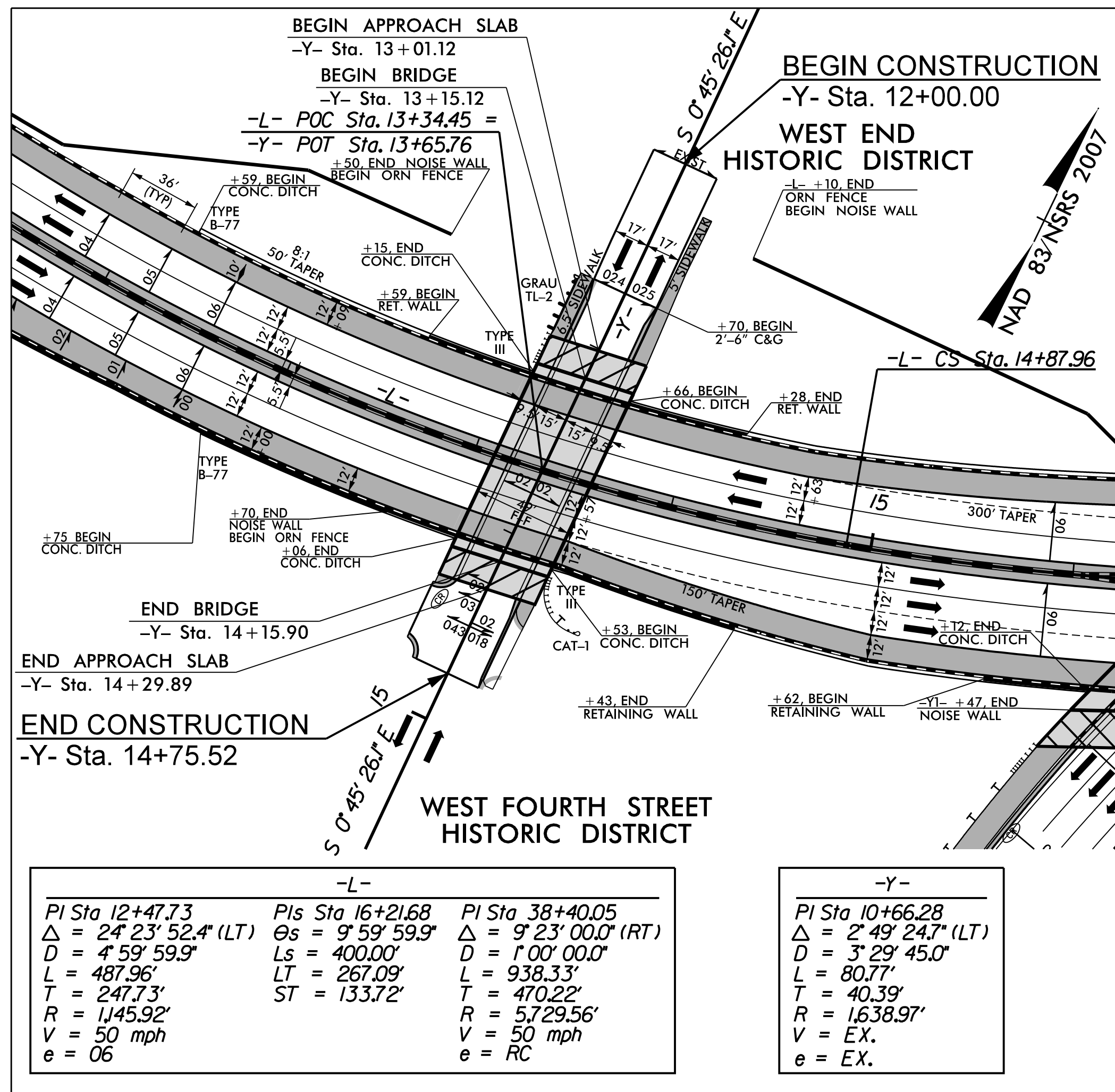
ROADWAY DESIGN
ENGINEER

P.E.

LYDIA BUEHRER, P.E.
SIGNATURE:



DOCUMENT NOT CONSIDERED FINAL
UNLESS ALL SIGNATURES COMPLETED

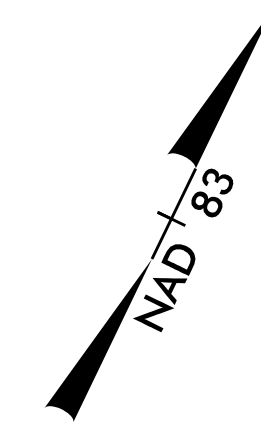


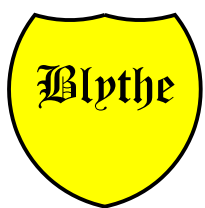
PROJECT REFERENCE NO.		SHEET NO.	
U-2827B, C-5620A		2B-1	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			
HDR Engineering, Inc. of the Carolinas 555 Fayetteville St. Suite 900 Raleigh, N.C. 27601 N.C.B.E.L.S. License Number: F-0116			

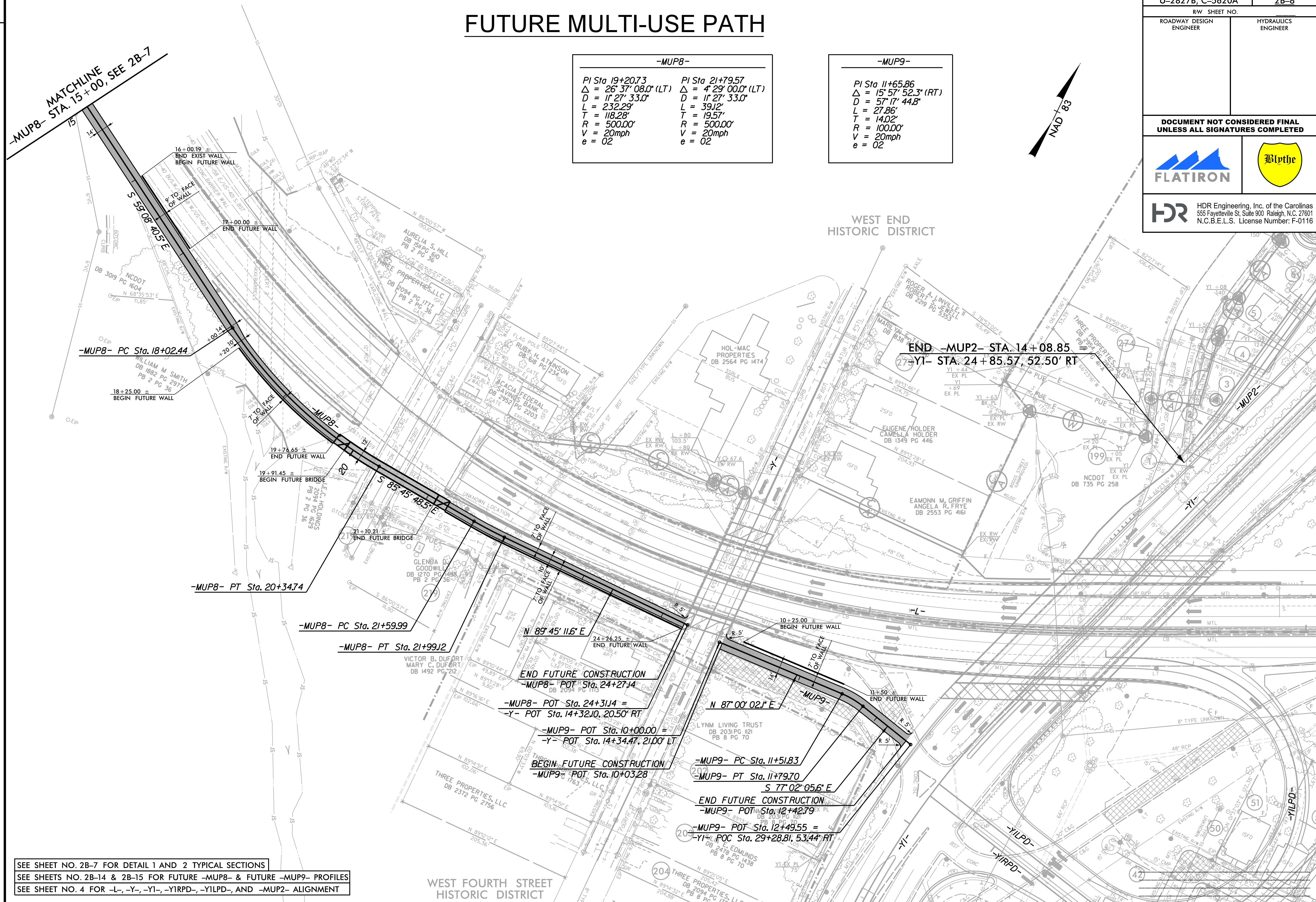
-MUP8-	
<i>PI Sta 19+20.73</i>	<i>PI Sta 21+79.57</i>
$\Delta = 26^{\circ} 37' 08.0''$ (LT)	$\Delta = 4^{\circ} 29' 00.0''$ (LT)
<i>D = 11' 27" 33.0"</i>	<i>D = 11' 27" 33.0"</i>
<i>L = 232.29'</i>	<i>L = 39.12'</i>
<i>T = 118.28'</i>	<i>T = 19.57'</i>
<i>R = 500.00'</i>	<i>R = 500.00'</i>
<i>V = 20mph</i>	<i>V = 20mph</i>
<i>e = 02</i>	<i>e = 02</i>

-MUP9-

Sta 11+65.86
= 15° 57' 52.3" (RT)
= 57° 17' 44.8"
27.86'
= 14.02'
= 100.00'
20mph
02



PROJECT REFERENCE NO.		SHEET NO.	
U-2827B, C-5620A		<u>2B-8</u>	
RW SHEET NO.			
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED			
			
		HDR Engineering, Inc. of the Carolinas 555 Fayetteville St, Suite 900 Raleigh, N.C. 27601 N.C.B.E.L.S. License Number: F-0116	



SEE SHEET NO. 2B-7 FOR DETAIL 1 AND 2 TYPICAL SECTIONS
SEE SHEETS NO. 2B-14 & 2B-15 FOR FUTURE -MUP8- & FUTURE -MUP9- PROFILES
SEE SHEET NO. 4 FOR -L-, -Y-, -Y1-, -Y1RPD-, -Y1LPD-, AND -MUP2- ALIGNMENT

WEST FOURTH STREET
HISTORIC DISTRICT

PLOT DRIVER: NC00T_.pdf_color_eng_50_U2827B.plt
PENTABLE: NC00T_.pshp.fl_U2827B.tbl
USER: CHARNDEN
DATE: 6/5/2017
TIME: 11:56:05 AM
PLOT FILE: North_Carolina_Dept_of_Transportation\U_2827BA_BB_Bus_1_40_Reconstruction.in_WS.DB\6.0_CAD.BIN\6.2_Work_in_Progress\U-2827B_Roadway\Pro\U2827B_RDV_PSH-02808_MUP.dgn

REVISIONS

REVISIONS

END -MUP1- STA. 12+55.84 =
BEGIN -MUP2- STA. 10+00.00 =
BEGIN -MUP3- STA. 10+00.00

BEGIN -MUP1-
STA. 10+00.00 =

FUTURE
CONCRETE
STEPS

FUTURE MULTI-USE PATH

-MUP3-		
PI Sta 16+05.72 $\Delta = 44^{\circ} 32' 20.5" (LT)$ $D = 22^{\circ} 55' 05.9"$ $L = 194.34'$ $T = 102.38'$ $R = 250.00'$ $V = 20mph$ $e = 02$	PI Sta 24+77.20 $\Delta = 20^{\circ} 36' 40.5" (RT)$ $D = 57^{\circ} 17' 44.8"$ $L = 35.91'$ $T = 18.18'$ $R = 100.00'$ $V = 20mph$ $e = 02$	PI Sta 25+57.72 $\Delta = 19^{\circ} 25' 50.8" (LT)$ $D = 57^{\circ} 17' 44.8"$ $L = 33.91'$ $T = 17.12'$ $R = 100.00'$ $V = 20mph$ $e = 02$

BEGIN -MUP4- STA. 10+00.00

END -MUP4- STA. 13+79.05 =
-MUP3- STA. 15+03.35, 15.00' LT

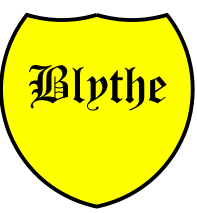
-MUP3- PC Sta. 15+03.35
BEGIN FUTURE CONSTRUCTION
-MUP3- Sta. 15+80.00
-MUP3- PT Sta. 16+97.68

16+30.00 ±
BEGIN FUTURE WALL
17+40.00 ±
END FUTURE WALL

BEGIN EX WALL - W.L.S.
BEGIN EX BARRIER

* NOTE: SEE WALL PLANS
FOR PROPOSED WALL LOCATIONS

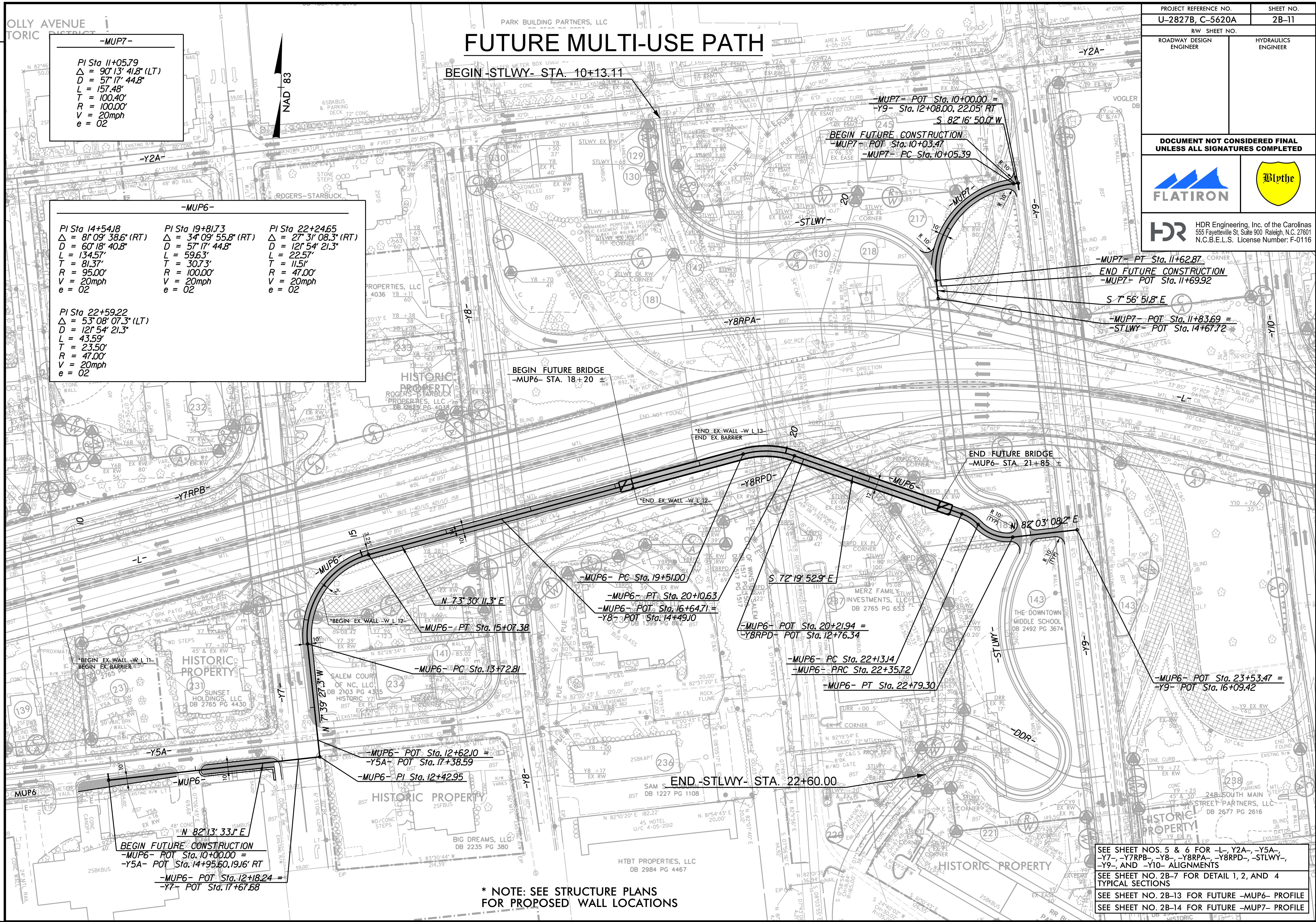
SEE SHEET NO. 4 FOR -L-, -Y1-, -YIRPA-, -YILPA-,
-YIRPD-, -YILPD-, -Y12B-, -MUP1-, -MUP2-, -MUP3-,
AND -MUP4 ALIGNMENTS
SEE SHEET NO. 2B-7 FOR DETAIL 1 AND 2
TYPICAL SECTIONS
SEE SHEET NO. 2B-12 FOR FUTURE -MUP3- PROFILE
SEE SHEET NO. 2B-15 FOR FUTURE -STAIRS1- PROFILE

PROJECT REFERENCE NO. U-2827B, C-5620A	SHEET NO. 2B-9
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
	
 HDR Engineering, Inc. of the Carolinas 555 Fayetteville St. Suite 900 Raleigh, N.C. 27601 N.C.B.E.L.S. License Number: F-0116	

MATCHLINE -MUP3- STA. 23+00, SEE SHEET 2B-10

PLOT DRIVERS: NCDOT, pdf_color_eng, 50_U2827B.plt
PENTABLE: NCDOT, dshp fl_U2827B.tbl
USER: CHAPNDEN
DATE: 6/5/2017
FILE: North.Carolina.Dept.of.Transportation\U2827BA.BB.Bus.I..40.Reconstruction.in.WS.DB.V6.0.CAD.BIM.6.2.Work.in.Progress.U-2827B.Roadway\Proj\U2827B.RDY.PSH-02B11.MUP.dgn

REVISIONS



-MUP7-
PI Sta 11+05.79
Δ = 90°13' 41.8" (LT)
D = 57°17' 44.8"
L = 157.48'
T = 100.40'
R = 100.00'
V = 20mph
e = 02

-MUP6-
PI Sta 14+54.18
Δ = 81°09' 38.6" (RT)
D = 60°18' 40.8"
L = 134.57'
T = 81.37'
R = 95.00'
V = 20mph
e = 02
PI Sta 19+81.73
Δ = 34°09' 55.8" (RT)
D = 57°17' 44.8"
L = 59.63'
T = 30.73'
R = 100.00'
V = 20mph
e = 02
PI Sta 22+24.65
Δ = 27°31' 08.3" (RT)
D = 121°54' 21.3"
L = 22.57'
T = 11.51'
R = 47.00'
V = 20mph
e = 02
PI Sta 22+59.22
Δ = 53°08' 07.3" (LT)
D = 121°54' 21.3"
L = 43.59'
T = 23.50'
R = 47.00'
V = 20mph
e = 02

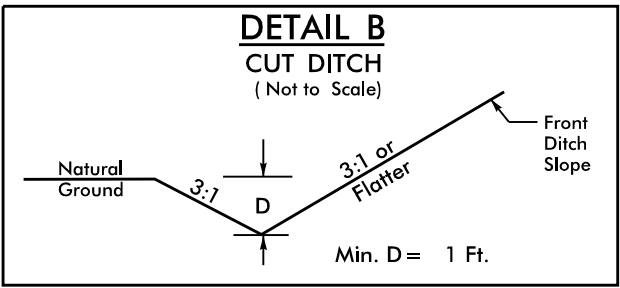
FUTURE MULTI-USE PATH

PROJECT REFERENCE NO. U-2827B, C-5620A		SHEET NO. 2B-11
RW SHEET NO.		
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER	
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED		
HDR Engineering, Inc. of the Carolinas 555 Fayetteville St. Suite 900 Raleigh, N.C. 27601 N.C.B.E.L.S. License Number: F-0116		

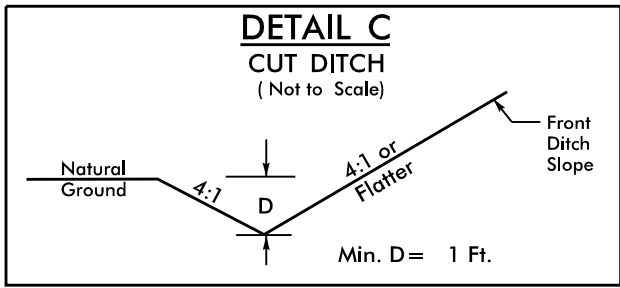
* NOTE: SEE STRUCTURE PLANS
FOR PROPOSED WALL LOCATIONS

SEE SHEET NOS. 5 & 6 FOR -L-, Y2A-, -Y5A-,
-Y7-, -Y7RPB-, -Y8-, -Y8RPA-, -Y8RPD-, -STLWY-,
-Y9-, AND -Y10- ALIGNMENTS
SEE SHEET NO. 2B-7 FOR DETAIL 1, 2, AND 4
TYPICAL SECTIONS
SEE SHEET NO. 2B-13 FOR FUTURE -MUP6- PROFILE
SEE SHEET NO. 2B-14 FOR FUTURE -MUP7- PROFILE

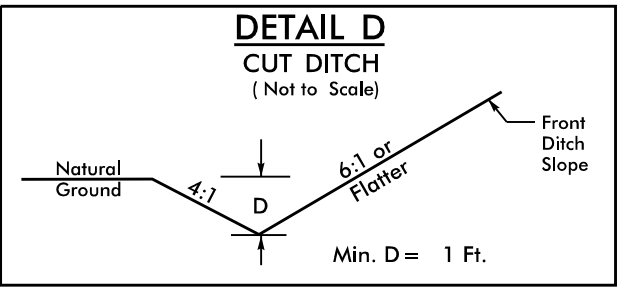
REVISIONS



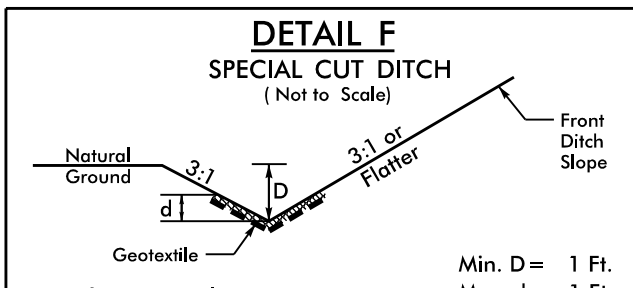
FROM STA. 11+50 -L- TO STA. 11+75 -L- RT
FROM STA. 19+74 -L- TO STA. 20+00 -L- LT
FROM STA. 20+00 -L- TO STA. 22+00 -L- LT



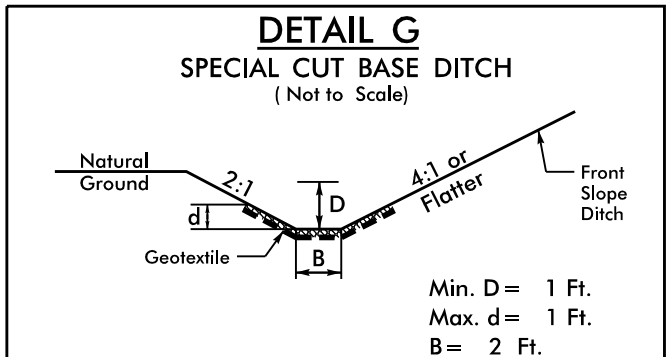
FROM STA. 46+00 -L- TO STA. 46+50 -L- RT



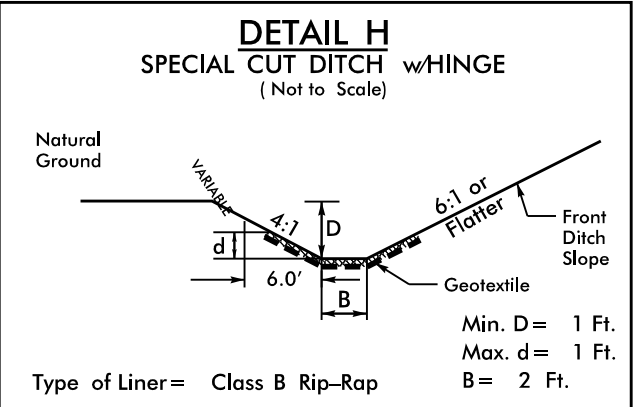
FROM STA. 45+50 -L- TO STA. 45+75 -L- RT



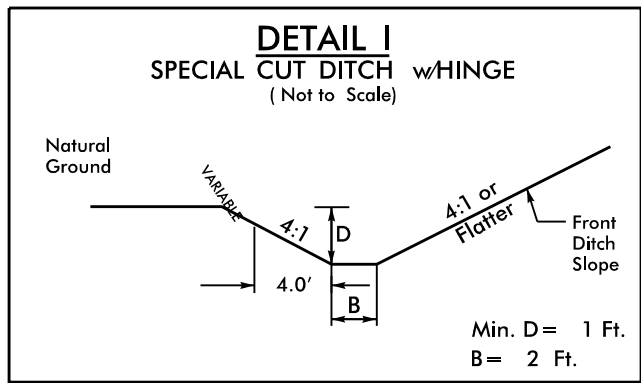
FROM STA. 11+90 -L- TO STA. 12+00 -L- RT



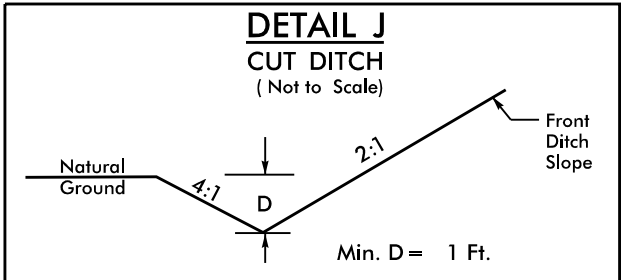
FROM STA. 15+66 -Y7RPB- TO STA. 16+82 -Y7RPB- LT



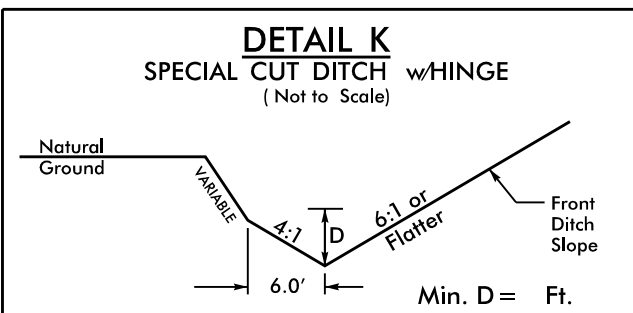
FROM STA. 25+18 -L- TO STA. 27+00 -L- LT



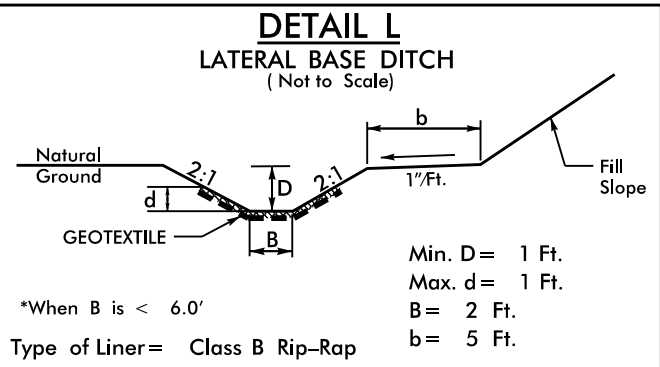
FROM STA. 14+00 -Y1RPD- TO STA. 16+00 -Y1RPD- LT



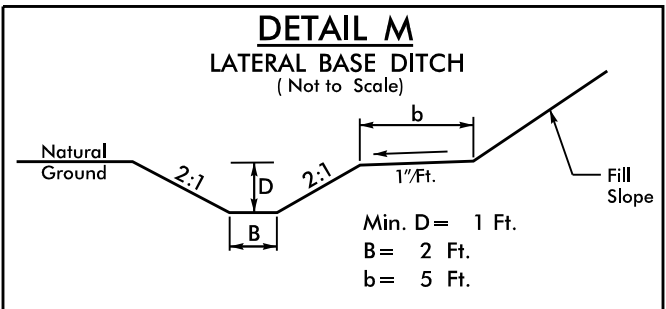
FROM STA. 55+00 -L- TO STA. 57+00 -L- RT



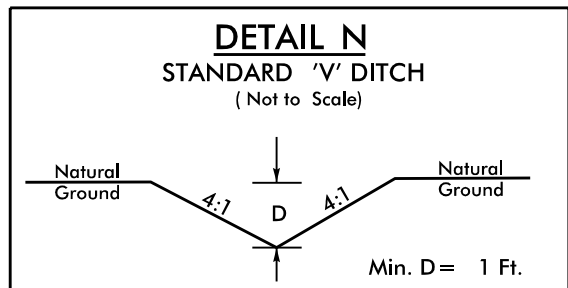
FROM STA. 75+05 -L- TO STA. 76+20 -L- LT



FROM STA. 15+70 -Y9- TO STA. 16+00 -Y9- LT

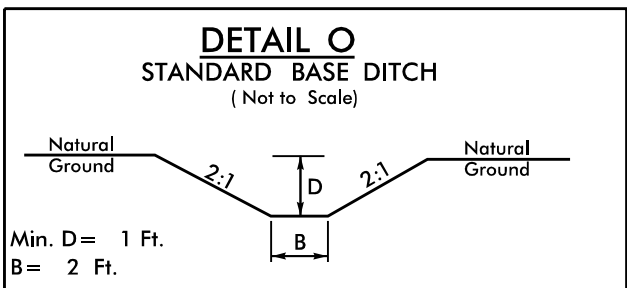


FROM STA. 12+21 -Y1LPD- TO STA. 12+63 -Y1LPD- LT
FROM STA. 16+00 -Y9- TO STA. 18+17 -Y9- LT



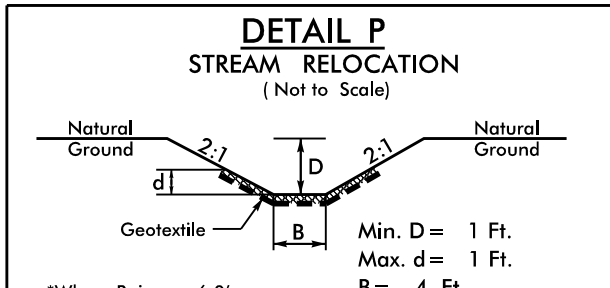
FROM STA. 45+75 -L- TO STA. 46+00 -L- RT

LENGTH 31'
SLOPE% 4.83

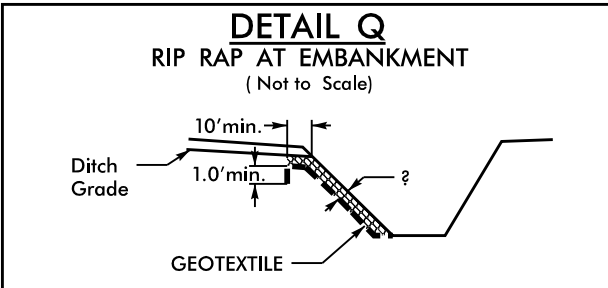


FROM STA. 38+00 -L- RT TO STA. 19+32 -Y4- LT
FROM STA. 19+32 -Y4- LT TO STA. 20+20 -Y4- LT

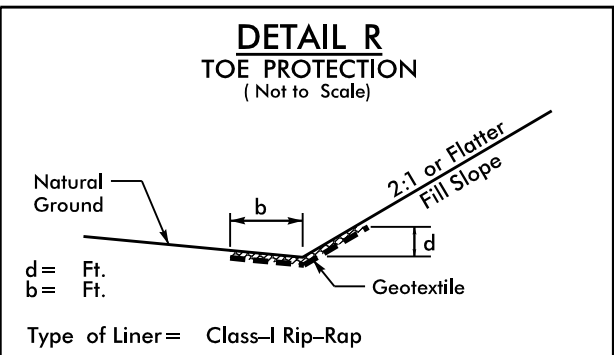
LENGTH 103'
SLOPE% 2.79



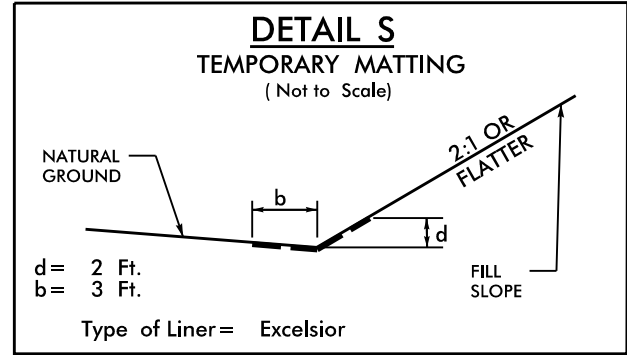
FROM STA. 32+10 -Y1- TO STA. 32+45 -Y1- LT



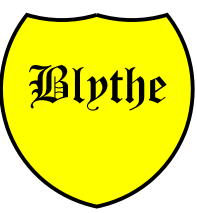
FROM STA. 31+86 -Y1- TO STA. 32+23 -Y1- LT

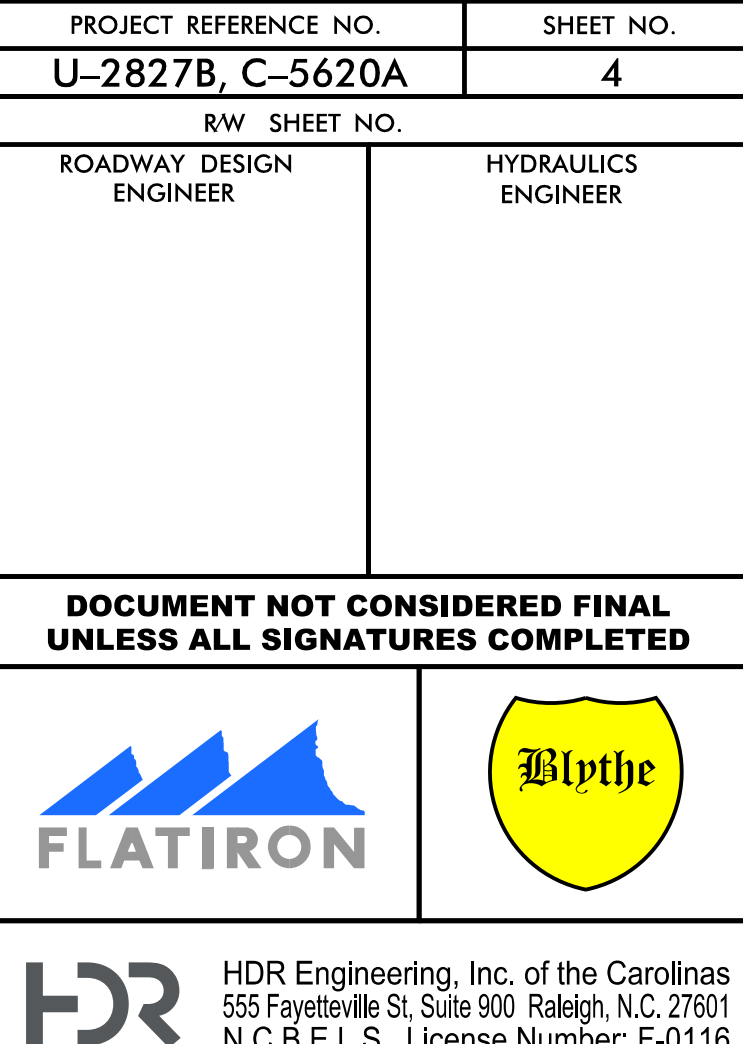


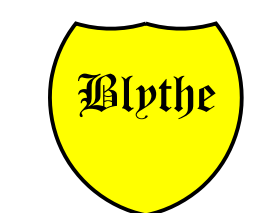
FROM STA. 25+34 -Y1- TO STA. 27+29 -Y1- RT



FROM STA. 30+00 -Y1- TO STA. 34+85 -Y1- RT

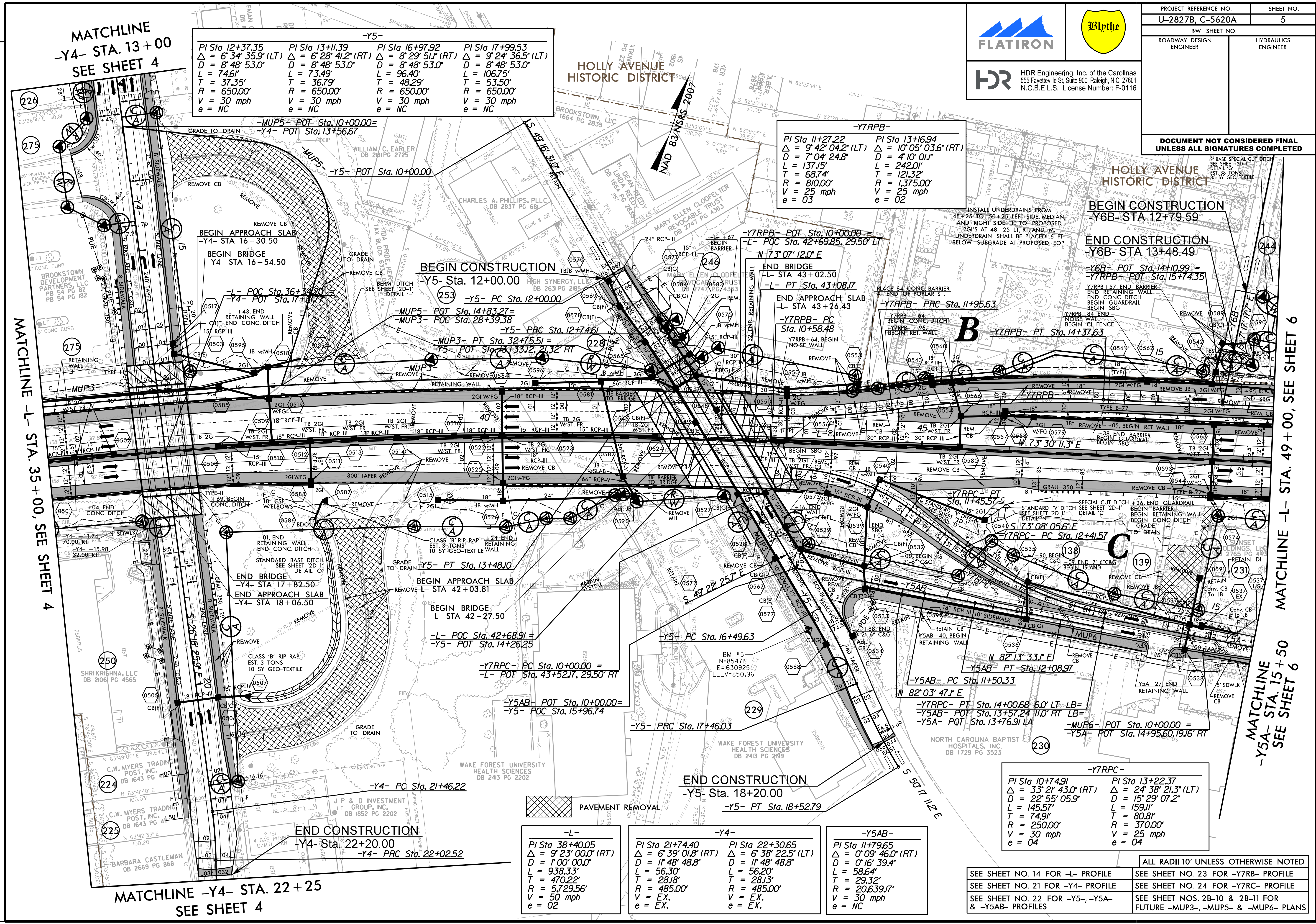
PROJECT REFERENCE NO.	SHEET NO.
U-2827B, C-5620A	2D-1
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
	
HDR Engineering, Inc. of the Carolinas 555 Fayetteville St. Suite 900 Raleigh, N.C. 27601 N.C.B.E.L.S. License Number: F-0116	

 HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: E-0116



HDR Engineering, Inc. of the Carolinas
555 Fayetteville St., Suite 900, Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

PROJECT REFERENCE NO.	SHEET NO.
U-2827B, C-5620A	5
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	



MATCHLINE
-Y4- STA. 13+00
SEE SHEET 4

MATCHLINE -L- STA. 35+00, SEE SHEET 4

MATCHLINE -Y4- STA. 22+25
SEE SHEET 4

MATCHLINE -L- STA. 49+00, SEE SHEET 6
-Y5A- STA. 15+50
SEE SHEET 6

-Y5-			
PI Sta 12+37.35 $\Delta = 6' 34'' 35.9''$ (LT) $D = 8' 48'' 53.0''$ $L = 74.61'$ $T = 37.35'$ $R = 650.00'$ $V = 30$ mph $e = NC$	PI Sta 13+11.39 $\Delta = 6' 28'' 41.2''$ (RT) $D = 8' 48'' 53.0''$ $L = 73.49'$ $T = 36.79'$ $R = 650.00'$ $V = 30$ mph $e = NC$	PI Sta 16+97.92 $\Delta = 8' 29'' 51.1''$ (RT) $D = 8' 48'' 53.0''$ $L = 96.40'$ $T = 48.29'$ $R = 650.00'$ $V = 30$ mph $e = NC$	PI Sta 17+99.53 $\Delta = 9' 24'' 36.5''$ (LT) $D = 8' 48'' 53.0''$ $L = 106.75'$ $T = 53.50'$ $R = 650.00'$ $V = 30$ mph $e = NC$

-Y7RBP-	
PI Sta 11+27.22 $\Delta = 9' 42'' 04.2''$ (LT) $D = 7' 04'' 24.8''$ $L = 137.15'$ $T = 68.74'$ $R = 810.00'$ $V = 25$ mph $e = 03$	PI Sta 13+16.94 $\Delta = 10' 05'' 03.6''$ (RT) $D = 4' 10'' 01.1''$ $L = 242.01'$ $T = 121.32'$ $R = 1,375.00'$ $V = 25$ mph $e = 02$

-Y7RPC-	
PI Sta 10+74.91 $\Delta = 33' 21'' 43.0''$ (RT) $D = 22' 55'' 05.9''$ $L = 145.57'$ $T = 74.91'$ $R = 250.00'$ $V = 30$ mph $e = 04$	PI Sta 13+22.37 $\Delta = 24' 38'' 21.3''$ (LT) $D = 15' 29'' 07.2''$ $L = 159.11'$ $T = 80.81'$ $R = 370.00'$ $V = 25$ mph $e = 04$

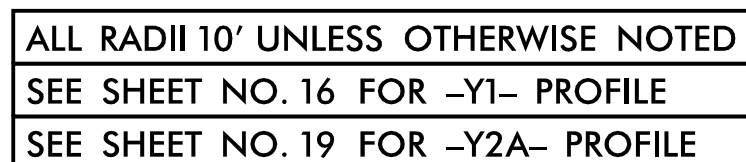
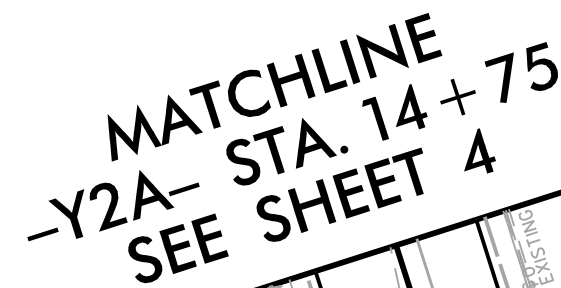
-L-
PI Sta 38+40.05 $\Delta = 9' 23'' 00.0''$ (RT) $D = 1' 00'' 00.0''$ $L = 938.33'$ $T = 470.22'$ $R = 5729.56'$ $V = 50$ mph $e = 02$

-Y4-
PI Sta 21+74.40 $\Delta = 6' 39'' 01.8''$ (RT) $D = 1' 16'' 48.8''$ $L = 56.30'$ $T = 28.18'$ $R = 485.00'$ $V = EX.$ $e = EX.$

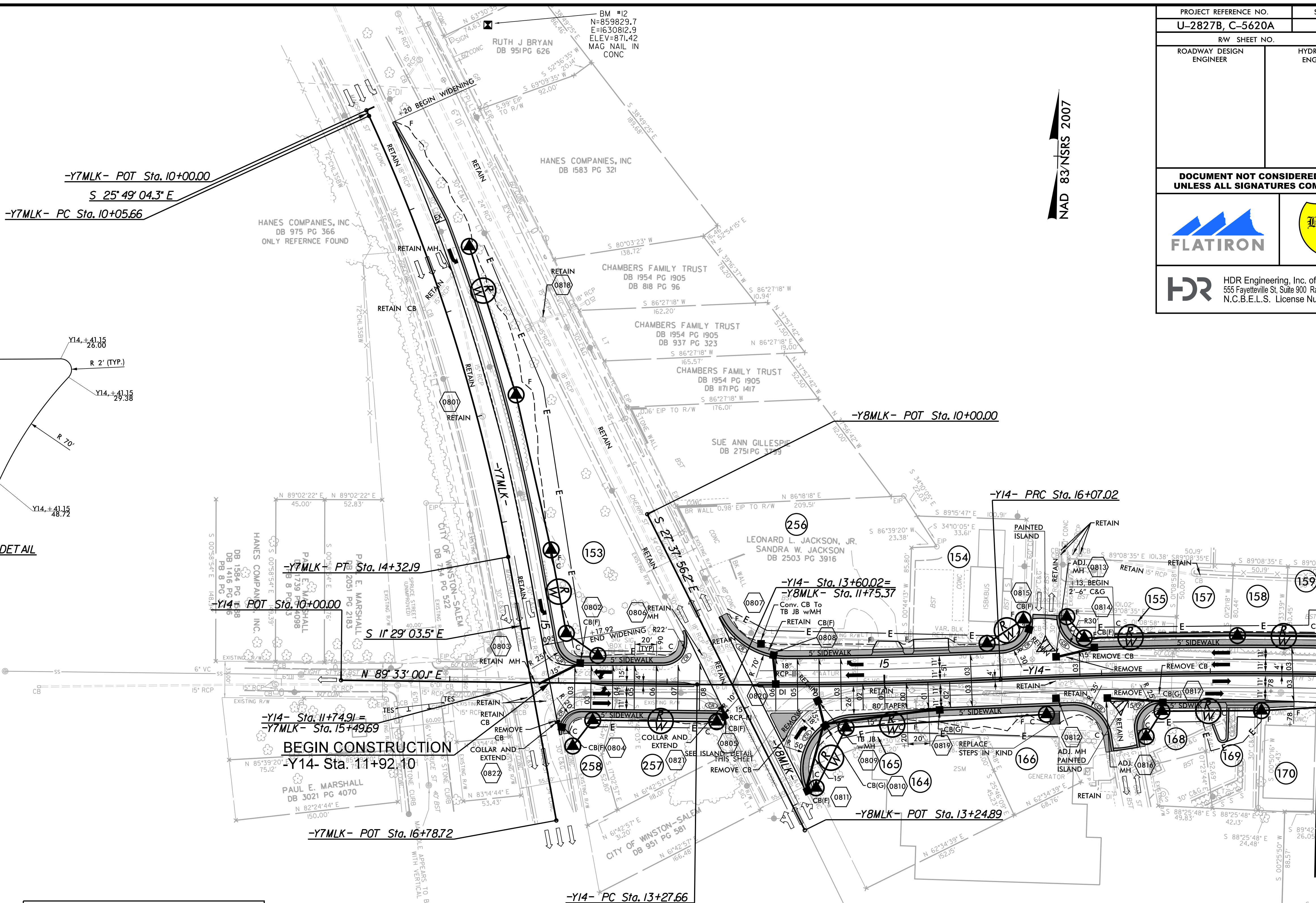
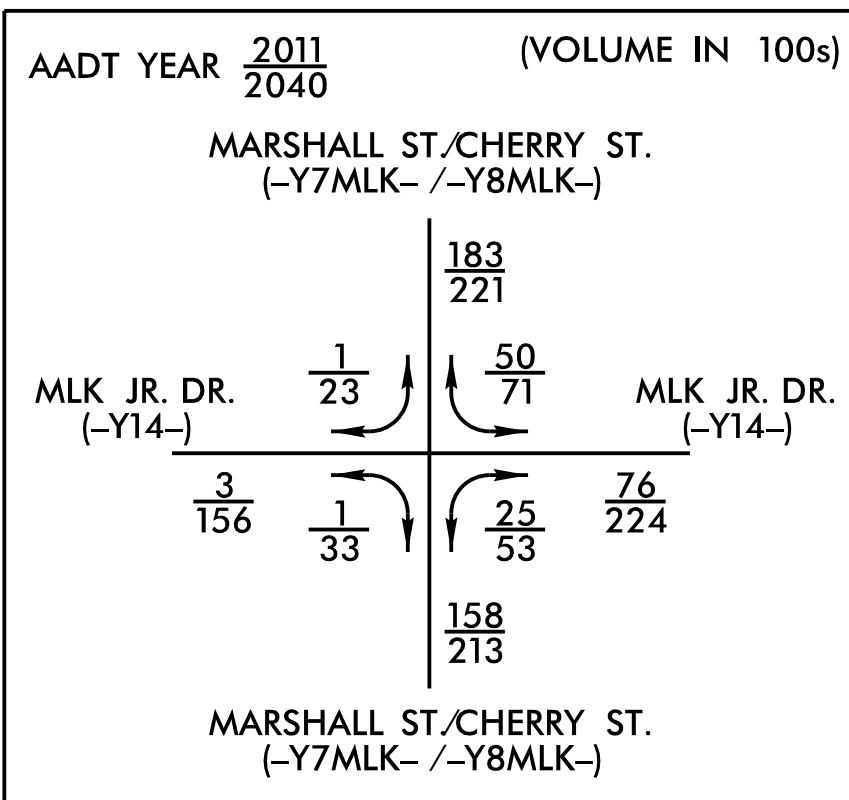
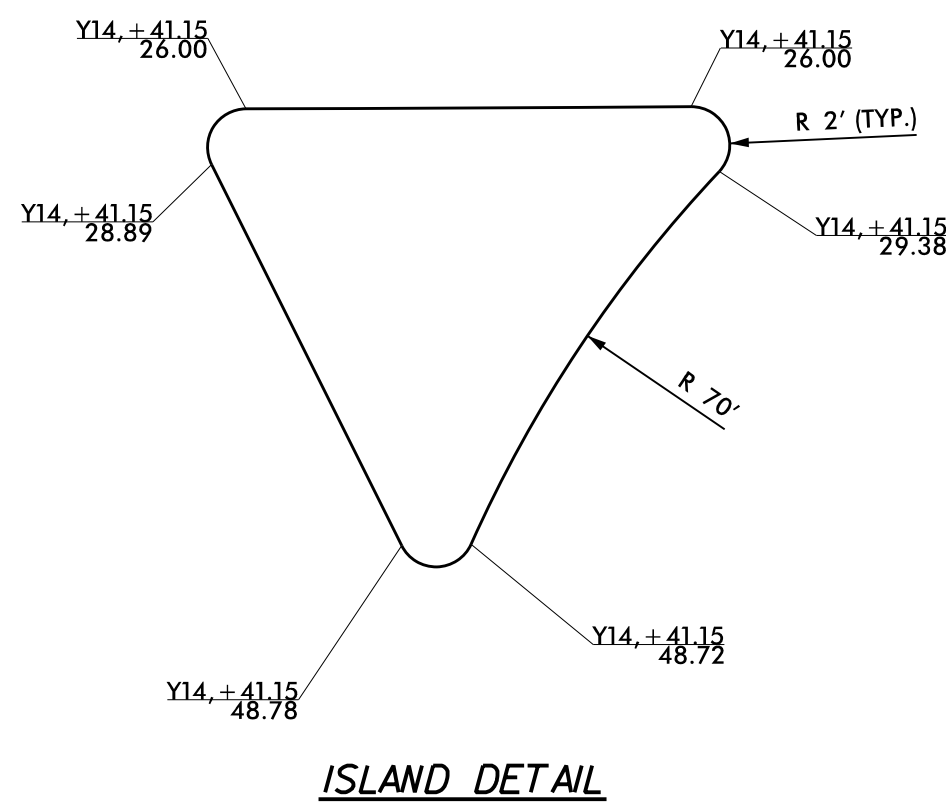
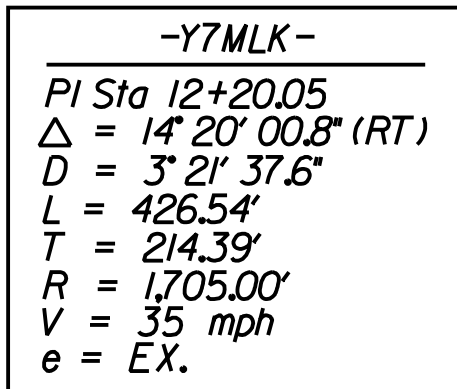
-Y5AB-
PI Sta 11+79.65 $\Delta = 0' 09'' 46.0''$ (RT) $D = 0' 16'' 39.4''$ $L = 58.64'$ $T = 29.32'$ $R = 206.3971'$ $V = 30$ mph $e = NC$

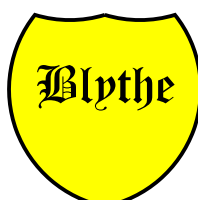
SEE SHEET NO. 14 FOR -L- PROFILE	SEE SHEET NO. 23 FOR -Y7RB- PROFILE
SEE SHEET NO. 21 FOR -Y4- PROFILE	SEE SHEET NO. 24 FOR -Y7RC- PROFILE
SEE SHEET NO. 22 FOR -Y5-, -Y5A- & -Y5AB- PROFILES	SEE SHEET NOS. 28-10 & 28-11 FOR FUTURE -MUP3-, -MUP5- & -MUP6- PLANS

PLOT DRIVER: NCDOT...
PENTABLE: NCDOT...
TIME: 11:57:06 AM
DATE: 6/5/2017
USER: CHAPENDEN
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DATE: 6/5/2017
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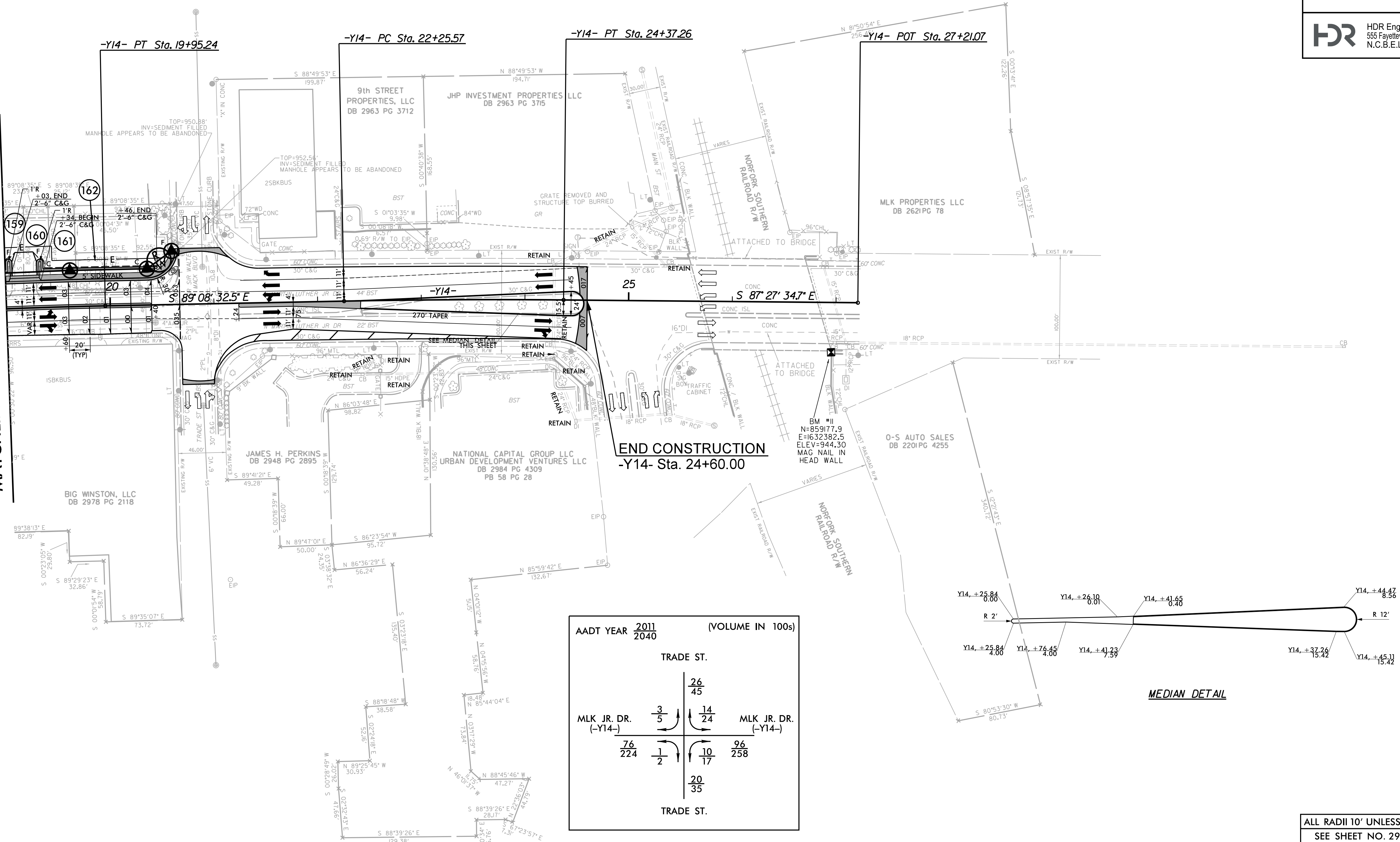
PROJECT REFERENCE NO.	SHEET NO.
U-2827B, C-5620A	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	
	
	
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ALL RADII 10' UNLESS OTHERWISE NOTED
SEE SHEET NO. 29 FOR -Y14- & -Y7MLK- PROFILES

REVISIONS

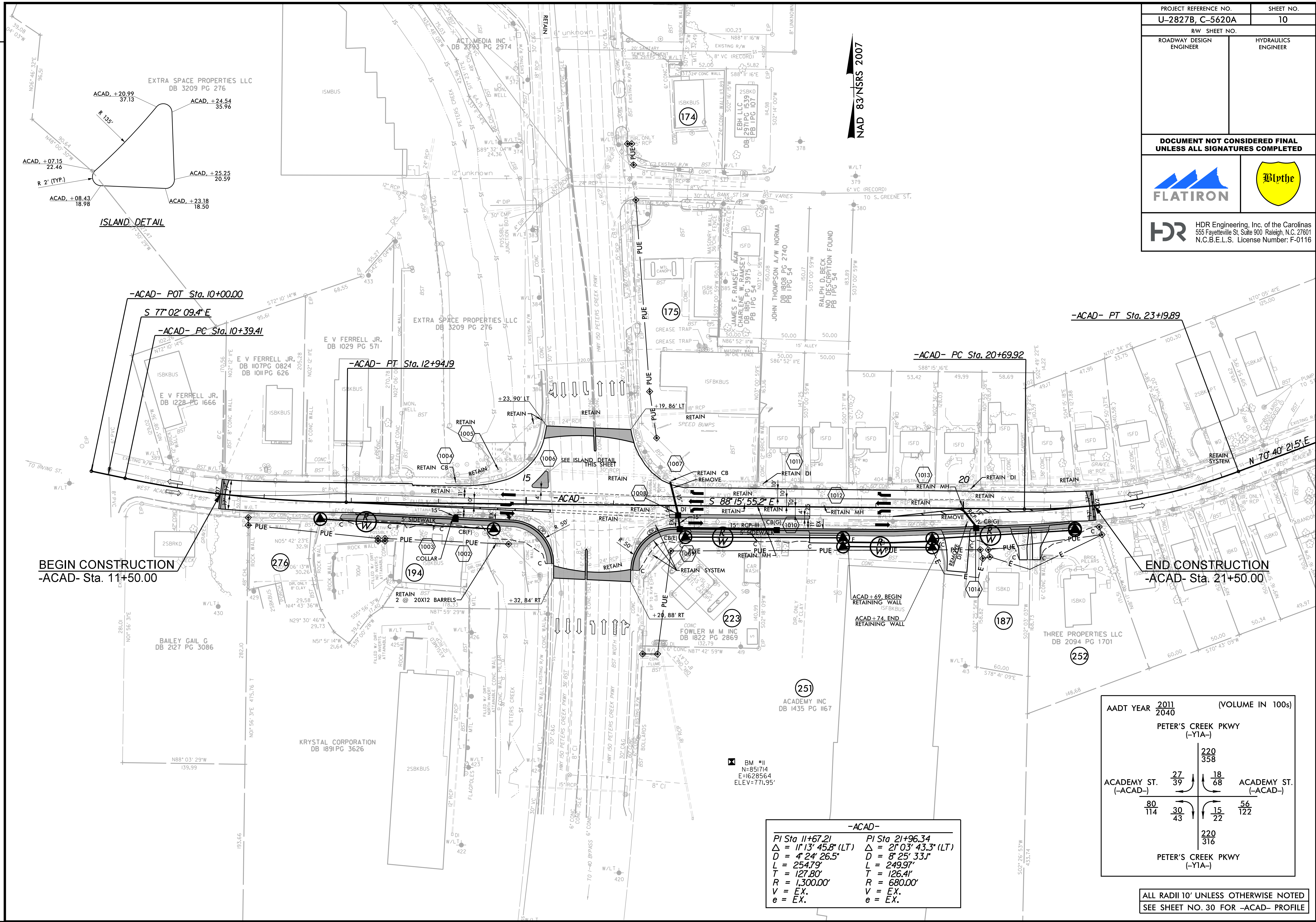
MATCHLINE -Y14- STA. 19 + 00, SEE SHEET 8

-Y14-	
PI Sta 18+01.24	PI Sta 23+31.43
$\Delta = 4^{\circ}39'47.4"$ (RT)	$\Delta = 1^{\circ}40'57.8"$ (RT)
D = 112' 04.2"	D = 0' 47' 41.6"
L = 388.22'	L = 211.69'
T = 194.22'	T = 105.85'
R = 4,770.00'	R = 7,208.00'
V = 40 mph	V = EX.
e = NC	e = EX.



PLOT DRIVER: NCDOT_pdf_color_eng_50_U2827B.plt
PENTABLE: NCDOT_pshp fl_U2827B.tbl
USER: CHARNDEN
DATE: 6/5/2017
FILE: North.Carolina.Dept.of.Transportation\U.2827BA.BB.Bus.I.40.Reconstruction.in.WS.DB.6.0.CAD.BIM.6.2.Work.in.Progress.U-2827B.Roadway\Proj\U2827B.RDY.PSH.10.dgn

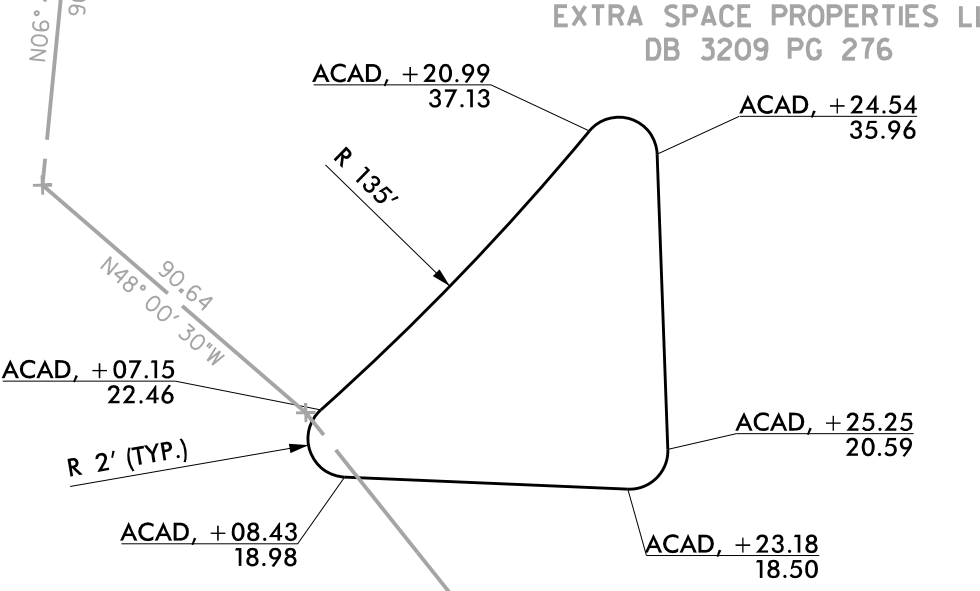
REVISIONS



BEGIN CONSTRUCTION
-ACAD- Sta. 11+50.00

END CONSTRUCTION
-ACAD- Sta. 21+50.00

ISLAND DETAIL



-ACAD-	
PI Sta 11+67.21	PI Sta 21+96.34
$\Delta = 11^{\circ}13'45.8''$ (LT)	$\Delta = 21^{\circ}03'43.3''$ (LT)
$D = 4^{\circ}24'26.5''$	$D = 8^{\circ}25'33.1''$
$L = 254.79'$	$L = 249.97'$
$T = 127.80'$	$T = 126.41'$
$R = 1,300.00'$	$R = 680.00'$
$V = EX.$	$V = EX.$
$e = EX.$	$e = EX.$

AADT YEAR <u>2011</u> 2040		(VOLUME IN 100s)		
PETER'S CREEK PKWY (-Y1A-)				
ACADEMY ST. (-ACAD-)	27 39	18 68	ACADEMY ST. (-ACAD-)	
	80 114	56 122		
		220 316	PETER'S CREEK PKWY (-Y1A-)	

ALL RADII 10' UNLESS OTHERWISE NOTED
SEE SHEET NO. 30 FOR -ACAD- PROFILE

PROJECT REFERENCE NO. U-2827B, C-5620A	SHEET NO. 10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
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