STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

J.R. "JOEY" HOPKINS
SECRETARY

September 17, 2024

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

N.C. Division of Water Resources
Transportation Permitting Branch
1617 Mail Service Center
Raleigh, NC 27699-1617

ATTN: Mr. Eric Alsmeyer
NCDOT Coordinator

Mr. Rob Ridings
NCDOT Coordinator

Subject: Request for Modification of the Phased Section 404 Individual Permit and Section 401 Individual Water Quality Certification, Neuse River Riparian Buffer Authorization for the construction of the Triangle Expressway Southeast Extension from NC-55 Bypass in Apex to I-40, Wake and Johnston Counties. TIP Nos. R-2721, R-2828, and R-2829. Federal Aid Project No. 0540047. Debit $767.00 from WBS 35517.3.TA1.

Reference: USACE Section 404 Authorization SAW-2009-02240, issued October 24, 2019, modified February 4, 2020 (corrected revision issued February 7, 2020), April 29, 2020, January 7, 2021, March 19, 2021, March 3, 2022, July 1, 2022, September 13, 2022, February 17, 2023, June 21, 2023, July 19, 2023, August 4, 2023, August 11, 2023, December 13, 2023, January 22, 2024, and May 29, 2024.

NCDWR Water Quality Certification Number 4179 and Neuse River Riparian Buffer Authorization, issued February 15, 2019, modified January 30, 2020, April 20, 2020 (corrected revision issued April 23, 2020), June 1, 2020, December 29, 2020, March 9, 2021, April 8, 2021, November 1, 2021, May 18, 2022, July 22, 2022, February 15, 2023, July 19, 2023, August 4, 2023, August 11, 2023, June 19, 2023, December 12, 2023, January 22, 2024, and May 29, 2024.

Dear Sirs:

As you are aware, the North Carolina Department of Transportation (NCDOT) applied for a phased Section 404 Individual Permit, Section 401 Individual Water Quality Certification (WQC), Neuse River Riparian Buffer Authorization, Non-404 Jurisdictional Wetlands and Waters Permit for the subject project in September 2018. The project, also known as Complete 540, encompasses three NCDOT Transportation Improvement Program (TIP) projects: R-2721 (NC-55 Bypass to US-401), R-2828 (east of US-401 to I-40 Interchange) and R-2829 (east of I-40/I-42 to US 64/264). Revised permit applications were submitted in February 2019 and the NC Division of Water Resources (NCDWR) Riparian Buffer Authorization, 401 WQC, and US Army Corps of Engineers (USACE)

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404 Permit were issued in February and October of 2019. Additionally, NCDOT received a modified 401 WQC for the Complete 540 Project on January 30, 2020, April 20, 2020 (corrected revision issued April 23, 2020), June 1, 2020, December 29, 2020, March 9, 2021, April 8, 2021, November 1, 2021, May 18, 2022, July 22, 2022, February 15, 2023, July 19, 2023, August 4, 2023, August 11, 2023, June 19, 2023, December 12, 2023, January 22, 2024, and May 29, 2024.from the NC Division of Water Resources (NCDWR) and a modified Department of the Army authorization #SAW-2009-02240 on February 4, 2020 (corrected revision issued February 7, 2020), April 29, 2020, January 7, 2021, March 19, 2021, March 3, 2022, July 1, 2022, September 13, 2022, February 17, 2023, June 21, 2023, July 19, 2023, August 4, 2023, August 11, 2023, December 13, 2023, January 22, 2024, and May 29, 2024.

At the time of the original permit application submittal, the design for R-2829 was in the preliminary phase. R-2829 is divided into two segments, R-2829A and R-2829B. This permit modification request is for R-2829A due to completion of final design.

R-2829A is a 4.165 mile new location project from I-40/I-42 to south of Rock Quarry Road in both Wake and Johnston Counties. The new alignment generally consists of a six-lane typical section, three lanes in each direction, with a 70-foot median. Proposed interchange locations are at: I-40/I-42, White Oak Road, and US 70.

We are requesting a modification to the Section 404 Authorization SAW-2019-02240 and to modify the existing 401 WQC, Permit Number 20181249. Additional information included in the application package is as follows: 4B and 4C SAFETEA-LU Section 6002 meeting minutes, stormwater management plan, permit drawings, buffer permit drawings, utility permit drawings, utility buffer drawings, roadway plans, North Carolina Division of Mitigation Services (NCDMS) Acceptance Letter, private mitigation banks acceptance letters, and NC State Historic Preservation Office (SHPO) June 14, 2024 letter.

NEPA Document Status

The Draft Environmental Impact Statement (DEIS) and Final EIS (FEIS) were approved in October 2015 and December 2017, respectively. The Record of Decision (ROD) was signed on June 6, 2018. These documents are available at https://www.ncdot.gov/projects/complete-540/Pages/default.aspx. A Construction Consultation for Complete 540 was approved in December 2019. A Construction Consultation for R-2829 was approved in May 2023. Final design of R-2829A required the addition of several small study area extensions and design changes. As a result, to maintain compliance with the National Environmental Policy Act (NEPA), a Construction Consultation for R-2829A is currently being prepared.

Summary of Impacts

Revised impacts for final design for R-2829A include: 7.112 acres of permanent wetland (riparian and non-riparian) impacts, 9,326 linear feet of permanent stream impact, 4.422 acres of permanent surface water impacts, and 1,139,942 square feet of Neuse River Riparian Buffer impacts.

Revised Table 5. R-2829A Jurisdictional Resources Impacts

Riparian Wetlands Perm./ Temp. (ac)	Non-Riparian Wetlands Perm./ Temp. (ac)	Isolated Wetlands (ac)	Ponds (ac)	Isolated Ponds (ac)	Streams (lf)			Mitigable Riparian Buffer Impacts Z1/Z2 (sq ft)
					Perm.	Temp.	Structure Stab.*	
6.702 / 1.636	0.410 / 0.010	n/a	3.49	n/a	8,444	812	1,261	639,219/ 400,131

*Structure stabilization includes pipe, culvert, and bank stabilization.

Water Resource Classifications

The study area lies within the Piedmont physiographic region of North Carolina. Jurisdictional features within the project footprint are located in the Neuse River Basin (USGS Hydrologic Unit Code 03020201).

Revised Table 7. R-2829A Impacted Jurisdictional Streams

Stream Name	Number of Impacted Unnamed Tributaries (UT)	NCDWR Index Number	NCDWR Classification
UT to Swift Creek	9	27-43-(8)	C;NSW
UT to White Oak Creek (Austin Pond)	18	27-43-11	C;NSW
White Oak Creek (Austin Pond)	1	27-43-11	C;NSW

There are no designated Outstanding Resource Waters (ORW), High Quality Waters (HQW), Water Supply I (WS-I), or Water Supply II (WS-II) present in, or located within 1.0 mile downstream of, the project area. There are no streams present in, or located within 1.0 mile downstream of, the project area listed on the North Carolina 2022 Final 303(d) list of impaired waters. Detailed information about the type and quality of the streams can be found in the Natural Resource Technical Report (NRTR 2014) and the Natural Resources Memos (NRM 2017, 2023, 2024).

IMPACTS TO JURISDICTIONAL RESOURCES

R-2829A Jurisdictional Impacts

Tables 20 through 22 provide individual site proposed impact amounts to wetlands, surface waters, and Neuse River Riparian Buffers. Permit drawings provide the station number, structure size/type, jurisdictional feature name, and type of impact associated with each site. All impacts are within the Neuse River Basin (HUC 03020201).

Revised Table 20. R-2829A Wetland Impacts

Permit Drawing Site Number	NRTR Label	Impact Type	Wetland Type	Temporary Wetland Impacts (ac)	Permanent Wetland Impacts (ac)
1	WFG	Fill	Non-Riparian		0.055
2	WFJ	Fill	Non-Riparian		0.098
2	WFJ	Excavation	Non-Riparian		0.023
3	WFN(2)	Fill	Riparian		0.176
3	WFN(2)	Fill	Riparian	0.716	
3	WFN(2)	Excavation	Riparian		0.018
3	WFN(2)	Mechanized Clearing	Riparian		0.034
3	WFN(2)	Hand Clearing	Riparian	0.660	
3	WFN(1)	Fill	Riparian		0.257
3	WFN(1)	Fill	Riparian	0.049	
3	WFN(1)	Excavation	Riparian		0.001
3	WFN(1)	Mechanized Clearing	Riparian		0.098
3	WFN(1)	Hand Clearing	Riparian	0.037	

Revised Table 20 continued

Permit Drawing Site Number	NRTR Label	Impact Type	Wetland Type	Temporary Wetland Impacts (ac)	Permanent Wetland Impacts (ac)
4	WFY	Fill	Riparian		0.449
4	WFY	Mechanized Clearing	Riparian		0.034
7	WFZ	Fill	Riparian		0.113
7	WFZ	Excavation	Riparian		0.015
7	WFZ	Mechanized Clearing	Riparian		0.010
8	WGD	Fill	Riparian		0.021
8	WGD	Mechanized Clearing	Riparian		0.001
8	WGC	Fill	Riparian		0.013
8	WGB	Fill	Riparian		0.079
9	WGF	Fill	Riparian		0.016
9	WGG	Fill	Riparian		0.156
9	WAAE	Fill	Riparian		0.092
9	WAAF	Fill	Non-Riparian	0.010	
10	WGJ	Fill	Non-Riparian		0.013
10	WGJ	Mechanized Clearing	Non-Riparian		0.010
11	WGM	Fill	Riparian		0.023
12	WGN	Fill	Riparian		0.001
12	WGN	Mechanized Clearing	Riparian		0.005
13	WGO	Fill	Non-Riparian		0.028
13	WGO	Mechanized Clearing	Non-Riparian		0.004
15	WGR	Fill	Riparian		0.760
15	WGR	Excavation	Riparian		0.061
15	WGR	Mechanized Clearing	Riparian		0.112
16	WGR	Fill	Riparian		1.387
16	WGR	Mechanized Clearing	Riparian		0.088
16	WGT	Excavation	Riparian		0.008
16	WGT	Mechanized Clearing	Riparian		0.018
17	WGS	Fill	Riparian		0.237
17	WGS	Mechanized Clearing	Riparian		0.009
19	WGR	Fill	Riparian		0.202
19	WGR	Mechanized Clearing	Riparian		0.020
20A	WGU(2)	Mechanized Clearing	Riparian		0.001
21	WGY	Fill	Non-Riparian		0.099
22	WGZ	Fill	Non-Riparian		0.059
22	WGZ	Mechanized Clearing	Non-Riparian		0.016
23	WHB	Fill	Riparian		1.178
23	WHB	Excavation	Riparian		0.002
23	WHB	Mechanized Clearing	Riparian		0.061
24*	WHC	Hand Clearing	Riparian	0.020	
25	WHD(1)	Fill	Riparian		0.255
25	WHD(1)	Excavation	Riparian		0.015
25	WHD(1)	Mechanized Clearing	Riparian		0.027
25	WHD(2)	Fill	Riparian		0.195
25	WHD(2)	Excavation	Riparian		0.009
25	WHD(2)	Mechanized Clearing	Riparian		0.013
27	WHD(2)	Fill	Riparian		0.108

Revised Table 20 continued

Permit Drawing Site Number	NRTR Label	Impact Type	Wetland Type	Temporary Wetland Impacts (ac)	Permanent Wetland Impacts (ac)
27	WHD(2)	Excavation	Riparian		0.037
27	WHD(2)	Mechanized Clearing	Riparian		0.023
29(A)	WNM	Fill	Riparian		0.021
29(A)	WNM	Mechanized Clearing	Riparian		0.044
31	WGW	Fill	Riparian		0.023
31	WGW	Excavation	Riparian		0.004
31	WGW	Mechanized Clearing	Riparian		0.019
31*	WGW	Hand Clearing	Riparian	0.034	
31*	WGV(1)	Hand Clearing	Riparian	0.120	
31	WGV(1)	Fill	Riparian		0.055
31	WGV(1)	Excavation	Riparian		0.010
31	WGV(1)	Mechanized Clearing	Riparian		0.021
33	WHD(2)	Excavation	Riparian		0.007
33	WHD(2)	Mechanized Clearing	Riparian		0.014
33	WAAK	Fill	Riparian		0.026
33	WAAK	Mechanized Clearing	Riparian		0.020
36	WFK	Mechanized Clearing	Non-Riparian		0.005
	Total Permanent Riparian Impacts HUC 03020201:			6.702	
	Total Permanent Non-Riparian Impacts HUC 03020201:			0.410	
	Total Riparian Temporary Impacts HUC 03020201:			1.636	
	Total Non-Riparian Temporary Impacts HUC 03020201:			0.010	

*Impact due to utilities

Revised Table 21. R-2829A Surface Waters Impacts

Permit Drawing Site Number	NRTR Label	Impact Type	Permanent Surface Water Impacts (Ponds) (ac)	Permanent Surface Water Impacts (Stream) (lf)	Temporary Surface Water Impacts (Stream) (lf)	Stream Flow
3	SEW	Fill		319		Intermittent
3	SEY	Fill		15	174	Intermittent
5	SFH	RCBC		384	96	Perennial
5	SFH	Structure Stabilization		63		Perennial
6	SFF	RCBC		533	60	Perennial
6	SFF	Structure Stabilization		86		Perennial
7	SFE	Fill		759	21	Perennial
8	SFB	RCP		222		Intermittent
8	SFB	Structure Stabilization		24	10	Intermittent
9	SFA	RCP		124		Intermittent
9	PAD	Pond Drainage (RCP)	2.695			Pond
11	SFD	Fill		71		Intermittent
12	SFC	RCP		479		Intermittent
12	SFC	Structure Stabilization		22	12	Intermittent
12*	SFC	Fill			48	Intermittent

Revised Table 21 continued

Permit Drawing Site Number	NRTR Label	Impact Type	Permanent Surface Water Impacts (Ponds) (ac)	Permanent Surface Water Impacts (Stream) (lf)	Temporary Surface Water Impacts (Stream) (lf)	Stream Flow
14	SFV	Bank Stabilization		70	185	Perennial
15	SFR	RCBC		164	19	Perennial
15	SFR	Structure Stabilization		5		Perennial
16	SFN	RCBC		413		Intermittent
18	SFQ	Fill		571	8	Perennial
18	SFQ	Structure Stabilization		34		Perennial
19	SFS	RCP		445		Intermittent
19	SFS	Structure Stabilization		21	10	Intermittent
20	SFT	RCP/CAAP		757		Intermittent
20	SFT	Structure Stabilization		47	25	Intermittent
20*	SFT	Fill			76	Intermittent
23	SGC	RCBC		398	25	Intermittent
23	SGC	Structure Stabilization		20		Intermittent
24	SGD	RCP/CAAP		387		Intermittent
24	SGD	Structure Stabilization		92	25	Intermittent
24	SGD	Bank Stabilization		71		Intermittent
24*	SGD	Fill			36	Intermittent
25	SGE	RCBC		443	23	Intermittent
25	SGE	Structure Stabilization		46	33	Intermittent
26	SGG	Fill		723	11	Intermittent
26	SGG	Structure Stabilization		21		Intermittent
27	SGF	Fill		309	40	Perennial
27	SGF	Structure Stabilization		37		Perennial
28	SKR	RCBC		117	44	Perennial
28	SKR	Structure Stabilization		75		Perennial
29	SFJ	RCP		64		Intermittent
29	SFJ	Structure Stabilization		20	10	Intermittent
29A	SFJ	RCP		78	12	Intermittent
29A	SFJ	Structure Stabilization		24	10	Intermittent
30	SHT	RCP		225		Intermittent
30	PAO	Pond Drainage (RCP)	0.792			Pond
31	SFY	RCBC/WSP		6		Perennial
31	SFY	Structure Stabilization		34	10	Perennial
31*	SFY	Fill			68	Perennial
31*	SFZ	Fill			12	Intermittent
32	SGA	RCBC/WSP		270	7	Perennial
32	SGA	Structure Stabilization		30	12	Perennial
33	SGA	RCBC		137	11	Perennial

Revised Table 21 continued

Permit Drawing Site Number	NRTR Label	Impact Type	Permanent Surface Water Impacts (Ponds) (ac)	Permanent Surface Water Impacts (Stream) (lf)	Temporary Surface Water Impacts (Stream) (lf)	Stream Flow
33	SGA	Structure Stabilization		40	37	Perennial
34	SAAK	RCBC		31	11	Perennial
35	SAAL	RCBC			10	Perennial
	Total Impacts:		**3.49**	**9,326**	**1,191**	
	Total Bank/Structure Stabilization:			**882**	**379**	
	Total Requiring Mitigation:			**8,444**		

*Impact due to utilities

Revised Table 22. R-2829A Riparian Buffer Impacts

		Allowable		Mitigable		Wetlands in Buffer	
Buffer Drawing Site Number	**NRTR Label**	**Zone 1 (sq. ft.)**	**Zone 2 (sq. ft.)**	**Zone 1 (sq. ft.)**	**Zone 2 (sq. ft.)**	**Zone 1 (sq. ft.)**	**Zone 2 (sq. ft.)**
3	SEW			22,475	18,026	14,933	5,374
3	SEY			7,307	5,956		
5	SFH			28,877	15,537		
6	SFF			35,906	21,030		
7	SFE			46,871	30,603	5,152	
8	SFB			17,618	11,963	1,651	1,085
9	SFA			9,205	7,844	7,356	2,447
9	PAO			47,156	32,542		
11	SFD	3,272	2,607			67	325
12	SFC			30,849	18,794	412	123
14	SFV	28,224	18,386				
15	SFR			12,233	9,537	8,053	4,017
16	SFN			28,382	20,727	11,578	10,282
18	SFQ			37,277	23,720	13,751	9,196
19	SFS			29,264	19,579	8,191	142
20	SFT			47,166	30,260		
23	SGC			27,372	19,144	18,620	8,475
24	SGD			33,039	20,649		
25	SGE			29,121	15,656	11,692	2,873
26	SGG			38,653	23,438	3,382	98
27	SGF			24,466	15,544	6,569	168
28	SKR			14,200	9,344		
29	SFJ	5,463	3,197				
29A	SFJ	6,983	4,483			1,870	497
30	SHT			13,221	8,303	2,225	576
30	PAO			26,069	1,955		
31	SFY	2,350	2,397			728	547
32	SGA			11,974	7,535		
33	SGA	9,237	4,493			706	863
35	SAAL	297	214				

Revised Table 22 continued

		Allowable		Mitigable		Wetlands in Buffer	
Buffer Drawing Site Number	**NRTR Label**	**Zone 1 (sq. ft.)**	**Zone 2 (sq. ft.)**	**Zone 1 (sq. ft.)**	**Zone 2 (sq. ft.)**	**Zone 1 (sq. ft.)**	**Zone 2 (sq. ft.)**
37	SFX	1,625	1,881			102	
38	SFK	134	1,572				
Utility Site 12	SFC			10,341	5,473		
Utility Site 20	SFT			4,679	2,964		
Utility Site 20	SFT		249				
Utility Site 24	SGD			2,110	1,268	715	
Utility Site 29	SFJ			1,983	2,013		
Utility Site 31	SFY		1,174	590		532	1,174
Utility Site 32	SGA	118	232				
Utility Site 32	SGA		280	815	727		
Utility Site 37	SFX	1,018	706				
HUC 03020201							
Totals		58,721	41,871	639,219	400,131	118,285	48,262
Total Buffer Impacts Requiring Mitigation				524,407	355,275		

Utility Impacts

Jurisdictional impacts necessary for the relocations of multiple utilities are included in this permit modification request. The impacts associated with these relocations are provided above in Tables 5 and 20-22 and are summarized by permit site below.

Permit Site 12

Duke Energy (overhead) power lines will be relocated within an easement that will be shared with Spectrum (overhead) and AT&T (overhead), requiring riparian buffer impacts along stream SFC. Temporary fill in stream SFC is proposed for access.

Permit Site 20

Duke Energy (overhead) power lines will be relocated within an easement that will be shared with Spectrum (overhead) and AT&T (overhead), requiring riparian buffer impacts along stream SFT. A Dominion Energy gas line will be installed via open cut however the trench will occur within the permanent impacts associated with the 54" RCP at this site. City of Raleigh (underground) water lines will be installed via jack and bore however bore pits will be located outside stream SFT and associated riparian buffers.

Permit Site 24

Duke Energy (overhead) power lines will be relocated within an easement that will be shared with Spectrum (overhead) and AT&T (overhead), requiring riparian buffer impacts along stream SGD as well as hand clearing in wetland WHC.

Permit Site 29

Duke Energy (overhead) power lines will be relocated within an easement that will be shared with Spectrum (overhead) and AT&T (overhead), requiring riparian buffer impacts along stream SFJ. Within the same easement, MCI/Verizon (underground) will be installed via directional drill below stream SFJ and associated riparian buffers. A City of Raleigh (underground) sewer line will be installed via jack and bore however bore pits will be located outside stream SFJ and associated riparian buffers.

Permit Site 29A
A SDO Investments private (underground) waterline will be relocated via open cut however the trench will occur within the permanent impacts associated with the 54" RCP at this site.

Permit Site 31
MCI/Verizon (underground) will be installed via directional drill below wetland WGW. A Dominion Energy gas line will be installed via open cut, however the trench will occur within the permanent impacts associated with the 72" pipe at this site, with the exception of riparian buffers for SFY. Temporary fill in stream SFZ(1) is proposed for access. A City of Raleigh (underground) water line will be installed via directional drill below wetland WGW.

Permit Site 32
Duke Energy (overhead) power lines will be relocated within an easement that will be shared with Spectrum (overhead) and AT&T (overhead), requiring riparian buffer impacts along stream SGA. Within the same easement, MCI/Verizon (underground) will be installed via directional drill below stream SGA and its associated riparian buffers. A City of Raleigh (underground) water line will be installed via jack and bore however bore pits will be located outside stream SGA and associated riparian buffers. A Dominion Energy gas line will be installed via open cut however the trench will occur within the permanent impacts associated with the 72" pipe at this site.

Permit Site 37
Duke Energy (overhead) power lines will be relocated within an easement that will be shared with Spectrum (overhead) and AT&T (overhead), requiring riparian buffer impacts along stream SFX.

MITIGATION OPTIONS

NCDOT is committed to incorporating all reasonable and practicable design features to avoid and minimize jurisdictional impacts, and to provide full compensatory mitigation of all remaining, unavoidable jurisdictional impacts. Avoidance measures were taken during the planning and NEPA compliance stages and minimization measures were incorporated as part of the project design.

Avoidance and Minimization:
NCDOT has avoided impacting wetlands, streams, and riparian buffers to the greatest extent practicable. Several minimization measures are provided in the Stormwater Management Plan. Additional implemented measures include:

- NCDOT made every reasonable effort to provide buffer swale filtration throughout the project. While the Department is able to achieve this at some of the buffered crossings, it was unachievable at other locations primarily due to the steep contours in the area and the need to meet stable hydraulic ditch requirements. To compensate, swales are provided at other locations that do not drain to buffered crossings to achieve as much treatment as possible.
- The Bushy Branch [wetland WFN(1)] bridge is anticipated to be constructed with a causeway and not mats, though no anticipated hauling across Bushy Branch. The intent is to leave an opening to provide flow through this crossing (opening near -L- 974+00) and only need a causeway on the right side of Bushy Branch with the utilization of cranes by only on one side. Geotextile fabric will be placed beneath the rip rap to assist in removal. The appropriate riparian seed mix will be applied after the temporary fill is removed. The temporarily impacted area will be monitored per NCDOT's standard after the restoration is completed.
- Baffles will be installed in specific culverts to avoid over-widening stream channels.

- Rip rap pads will be countersunk at pipe inlets and outlets where noted on the permit drawings.
- Class I rip rap will be added to assist with water level/stabilization at the swales adjacent to White Oak Creek back flow.
- Specific wetlands considered as total takes (indicated on Impact Summary Sheets) will not be hatched beyond the needed actual impact to minimize disturbance.
- Placement of interior columns to maintain adequate distance to the top of banks and accommodate future widening at the White Oak Creek crossing.
- Designed the outlet of stormwater pipes to areas just outside of wetlands at -Y23DR- 50+00 RT to minimize impacts and provide additional hydrology to help maintain wetland function.
- Minimized direct connections from impervious surfaces to receiving waters to the maximum extent practicable by utilizing buffered swales at -L- 1024+00 LT.
- Utilized energy dissipator basins and rip rap lined ditches to lower velocities into receiving waters at -Y23RPB- 23+50 LT.
- Provided a drainage design that considers existing outfalls at -L- 1087+00 LT, (White Oak Creek) and feeds jurisdictional features, in locations of the new -L- alignment such as the gore areas in the US 70 interchange.
- Investigated construction crossings and identify access routes that will minimize jurisdictional impacts and clearing of stream-side vegetation such as no temporary construction methods required in White Oak Creek.
- Utilized Design Standards in Sensitive Watersheds in the Neuse River Watershed.
- The third -Y22RPAFLY- bridge over Bushy Branch was removed by shifting the alignment/lane taper onto the -L- LT bridge which greatly reduced the wetland impacts at this location.
- The preliminary design did not have stormwater detention and the design now includes four stormwater ponds, one of which negates the increase in post peak discharge rate to the railroad right-of-way.
- The current design incorporated a roundabout at Raynor Road and revised alignment to reduce impacts to the Mount Herman Christian Church.
- Slopes in jurisdictional features will be constructed at 2:1 to the maximum extent practicable as shown on the permit drawings.
- No land clearing within jurisdictional features except where authorized by the permits.
- Borrow & waste sites will not be located within jurisdictional features.
- Sills and baffles will be constructed in specific culverts at the entrances/ exits to retain existing stream widths and to create low flow channels as shown on the permit drawings. Per NCTA direction, given the RCBC slopes and the Qs, alternating baffles are not utilized inside any of the RCBCs.
- Sedimentation and erosion control will follow NCDOT protocols for Environmentally Sensitive Areas.

The avoidance and minimization efforts incorporated into the final design resulted in reduction of 1.55 acre of permanent wetland impact, 822 LF acre of permanent stream impact, 185,117 sq ft of riparian buffer impact, and 0.79 acre of pond impact as detailed in the table below.

Jurisdictional Impacts from Preliminary Design to Current Proposed Design

Category	Preliminary Design*	Revised Design^	Change^^
Streams (lf)	10,148	9,326**	-822
Streams (number)	23	28	5
Buffer Zone 1 (sq ft)	714,081	639,219	-74,862
Buffer Zone 2 (sq ft)	510,386	400,131	-110,255
Wetlands (ac)	8.67	7.12	-1.55
Wetlands (number)	26	34	8
Ponds (ac)	4.28	3.49	-0.79
Ponds (number)	2	2	0

*Preliminary impacts were calculated using proposed slope stakes plus 25 feet. **Includes bank and structure stabilization. ^Current proposed design includes impacts associated with all utilities which were not accounted for in preliminary design. ^^Features added with study area expansion at East Garner Road.

Compensatory Mitigation:

Compensatory mitigation for the unavoidable non-riparian and buffer impacts for R-2829A will be provided by the NC Division of Mitigation Services (NCDMS). Private Mitigation Banks will provide mitigation for the riparian wetland and stream impacts associated with R-2829A. Included in this permit modification request are the acceptance letters for NCDMS Mitigation and the Private Mitigation Banks. Below is a summary of the proposed impacts.

Revised Table 28. R-2829A Proposed Compensatory Mitigation

Mitigation Type	Riparian Wetland (ac)	Non-Riparian Wetland (ac)	Stream (lf)	Riparian Buffer (sq. ft.)		Riparian Buffer Total (sq. ft.)
				Zone 1	Zone 2	
Neuse River Basin (HUC 03020201)	6.702	0.410	8,444	524,407	355,275	879,682

NCDOT has requested mitigation from NCDMS to cover 0.410 acres (ac) of non-riparian wetland impacts and 879,682 square feet of buffer impacts in Hydrological Unit 03020201. There are 524,407 square feet of impacts in Buffer Zone 1 and 355,275 square feet of impacts in Buffer Zone 2. The proposed impact amounts approved by NCDMS and the mitigation banks for R-2829A were multiplied by the appropriate mitigation ratios to calculate the proposed mitigation amounts (2:1 for streams and wetlands, 3:1 for Zone 1 riparian buffer impacts, and 1.5:1 for Zone 2 riparian buffer impacts).

Compensatory stream mitigation for R-2829A is provided by way of NCDOT credit purchases from Falling Creek Umbrella and Restoration Systems Mitigation Banks. Compensatory riparian wetland mitigation for R-2829A will be provided by way of NCDOT credit purchases from Falling Creek Mitigation Bank. The Falling Creek mitigation site is part of the Falling Creek Umbrella Mitigation Bank. The 260-acre site is adjacent to Falling Creek in the Upper Neuse Cataloging Unit (03020201) and is located northwest of the intersection of Grantham School Road and Corbett Hill Road in Wayne County North Carolina (NC). The Milburnie Dam mitigation site is part of Milburnie Dam Mitigation Bank. This site is located 0.14-mile northeast of the terminus of Raleigh Beach Road, adjacent to the Neuse River Greenway in Wake County in Raleigh, NC. The site involves the Neuse River and is in the Upper Neuse Cataloging Unit (03020201). The Grantham Branch mitigation site is part of the Falling Creek Umbrella Mitigation Bank. The 94-acre site

adjacent to Falling Creek in the Upper Neuse Cataloging Unit (03020201) is located south of the intersection of Grantham School Road and US Highway 13 south, in Wayne County, NC.

Tables 28A and 28B below show the impacts associated with R-2829A and the stream and wetland mitigation credits from Falling Creek Umbrella Mitigation Bank and Milburnie Dam Mitigation Bank.

Table 28A R-2829A Compensatory Stream Mitigation Banks

Site Name	Stream Type	Bank Developer	Purchased Mitigation Bank Credits (ft)	Stream Impacts (ft)	Stream Mitigation Required (ft)
Falling Creek	Warm	Falling Creek Umbrella Mitigation Bank	9,867.58	4933	9866
Milburnie Dam	Warm	Restoration Systems	29,033	3219	6438
Grantham Branch	Warm	Falling Creek Umbrella Mitigation Bank	1,687	292	584

Table 28B R-2829A Compensatory Riparian Wetland Mitigation Bank

Site Name	Wetland Type	Bank Developer	Purchased Wetland Mitigation Credits (ac)	Wetland Impacts (ac)	Wetland Mitigation Required (ac)
Falling Creek	Riparian	Falling Creek Umbrella Mitigation Bank	32.0	6.702	13.4

FEDERALLY PROTECTED SPECIES

A revised biological opinion has been provided by the United Stated Fish and Wildlife Service (USFWS). Currently the USFWS lists seven federally protected species and two species proposed for federal protection under the Endangered Species Act (ESA) for the project vicinity (Table 29). The USFWS also lists critical habitat for five of these species.

A revised Biological Assessment that assessed the Complete 540 impacts to these species was completed in July 2019. A revised Biological/Conference Opinion from the USFWS was issued in October 2019 which can be found at: https://www.ncdot.gov/projects/complete-540/Pages/default.aspx. A summary of the findings relevant to R-2829A is provided in Table 29.

Revised Table 29. R-2829A ESA federally protected species (IPaC: July 12, 2024)

Scientific Name	Common Name	Federal Status	Habitat Present	Biological Conclusion
Perimyotis subflavus	tricolored bat	PE	Yes	MA-LAA
Picoides borealis	red-cockaded woodpecker	E	Yes	No Effect
Necturus lewisi	Neuse River waterdog	T	Yes	MA-NLAA
Fusconaia masoni	Atlantic pigtoe	T	Yes	MA-LAA

Revised Table 29 continued

Scientific Name	Common Name	Federal Status	Habitat Present	Biological Conclusion
Alasmidonta heterodon	dwarf wedgemussel	E	Yes	MA-LAA
Lasmigona subviridis	green floater	PT	Yes	MA-LAA
Elliptio lanceolata	yellow lance	T	Yes	MA-LAA
Rhus michauxii	Michaux's sumac	E	Yes	MA-NLAA

IPaC - Information for Planning and Consultation
E - Endangered; P- Proposed; T - Threatened
MA-LAA - May Affect, Likely to Adversely Affect
MA-NLAA - May Affect, Not Likely to Adversely Affect

Tricolored bat

The USFWS has issued a programmatic conference opinion (PCO) in conjunction with the Federal Highway Administration (FHWA), the USACE, and NCDOT for the tricolored bat (TCB) (*Perimyotis subflavus*) in eastern North Carolina. The PCO covers the entire NCDOT program in Divisions 1-8, including all NCDOT projects and activities. NCDOT, FHWA, and USACE have agreed to three conservation measures (listed in the PCO) which will avoid/minimize take to TCBs. These conservation measures apply to all counties in Divisions 1-8. The programmatic determination for TCB for the NCDOT program is May Affect, Likely to Adversely Affect. Once the TCB is officially listed, the PCO will become the programmatic biological opinion (PBO) by formal request from FHWA and USACE. The PBO will ensure compliance with Section 7 of the Endangered Species Act for approximately five years (effective through December 31, 2028) for all NCDOT projects with a federal nexus in Divisions 1-8, which includes Wake and Johnston Counties, where R-2829A is located.

Neuse River Waterdog (Critical Habitat), Atlantic Pigtoe (Critical Habitat), Dwarf Wedgemussel, Green Floater (Critical Habitat), Yellow Lance, and Michaux's Sumac

Section 7 concurrence has been addressed for these species in a 2019 Biological Opinion (BO)/Conference Opinion (CO) Revised. A 2024 Conference Opinion request is currently in the review process with the USFWS for the proposed listing of the Green floater. A summary of the biological conclusion findings are provided in Revised Table 29.

Copies of the USFWS revised 2019 BO/CO letter and report can be found at: https://www.ncdot.gov/projects/complete-540/Pages/project-documents.aspx

Northern long-eared bat

The USFWS has issued a programmatic biological opinion (PBO) in conjunction with the FHWA, the USACE, and NCDOT for the northern long-eared bat (NLEB) (*Myotis septentrionalis*) in eastern North Carolina. The PBO covers the entire NCDOT program in Divisions 1-8, including all NCDOT projects and activities. Although this programmatic covers Divisions 1-8, The USFWS only considers NLEBs to be known or potentially found in 30 counties within Divisions 1-8. NCDOT, FHWA, and USACE have agreed to two conservation measures which will avoid/minimize mortality of NLEBs. These conservation measures only apply to the 30 current known/potential counties shown on Figure 2 of the PBO at this time. The programmatic determination for NLEB for the NCDOT program is May Affect, Likely to Adversely Affect. The PBO will ensure compliance with Section 7 of the Endangered Species Act for ten years (effective through December 31, 2030) for all NCDOT projects with a federal nexus in Divisions 1-8, which includes Wake and Johnston Counties, where R-2829A is located.

Bald Eagle and Golden Eagle Protection Act

The current proposed design will continue to be in compliance with the protections established in the Bald Eagle and Golden Eagle Protection Act of 1962 and the Bald Eagle will not be affected.

CULTURAL RESOURCES

Historic Architectural Resources

The NCDOT evaluated historic architectural resources of the Detailed Study Alternatives (DSAs) for compliance with Section 4(f) of the United States Department of Transportation Act (USDOT) of 1966 and Section 106 of the National Historic Preservation Act of 1966. A Historic Architectural Resources Survey Report was completed in November 2014 for the DSAs within the Complete 540 project. On December 10, 2014, the NC State Historic Preservation Office (SHPO) concurred with NCDOT's finding that the Preferred Alternative for the Complete 540 – Triangle Expressway Southeast Extension would have no effect on 23 of the 25 properties in the Area of Potential Effect that are listed on or eligible for listing on the National Register of Historic Places (NRHP). The two properties that would be affected are not within the R-2829A project limits. In response to the expansion of the study area, the SHPO determined that the project as proposed will not have an effect on any historic structures, as stated in a letter dated June 14, 2024 which is included with this permit modification request.

Archaeological Resources

Prior to the FEIS, an archaeological survey was completed for the Complete 540 Preferred Alternative in September 2017 (*Intensive Archaeological Survey and Evaluation of the Preferred Alternative for Complete 540/Triangle Expressway Southeast Extension*). The June 14, 2024 letter from the SHPO also stated that no sites located within the R-2829A project limits were recommended as eligible for the NRHP.

The letter also stated no additional archaeological survey or investigations are necessary and recommended impacts to the Mount Herman Christian Church cemetery be avoided. If avoidance is not possible, additional archaeological testing and mitigation of the cemetery under NCGS 65 may be necessary. As currently designed, the project would not impact the Mount Herman Christian Church cemetery.

R-2829A Section 4(f) Resources

There are no Section 4(f) resources within the R-2829A project corridor.

FEMA COMPLIANCE

There are three Federal Emergency Management Agency (FEMA) crossings on the R-2829A project that will require FEMA or North Carolina Floodplain Mapping Program (NCFMP) coordination.

- Site 14: White Oak Creek, SFV - new bridge crossing. This is a CLOMR that is currently under review by NCTA and will be sent to the FEMA office in Atlanta for review.
- Site 31: SFY - existing RCBC crossing to be extended and supplemented with a 72" WSP. This is an SFC under review by NCTA and will be sent to NCFMP for review.
- Site 32: SGA - existing RCBC crossing to be extended and supplemented with a 72" WSP. This is an SFC under review by NCTA and will be sent to NCFMP for review.

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REGULATORY APPROVALS

Section 404

We are requesting a modification to the USACE Permit Number SAW-2009-02240 Section 404 Individual Permit for the above-described activities. The current permit will expire on December 31, 2026. NCDOT asks that the expiration date be extended to December 31, 2029 to allow sufficient time for construction.

Section 401 and Riparian Buffer Authorization

We are requesting a modification to the WQC Permit Number 4179 Section 401 Individual WQC and the Neuse Riparian Buffer Authorization. We are providing this permit modification request to NCDEQ, for their approval. Authorization to debit the $767.00 permit modification fee from TIP No. R-2829A, WBS 35517.3.TA1 is hereby given.

The individual permit modification package for the Complete 540 project (STIP Projects R-2721, R-2828, and R-2829) is available at https://xfer.services.ncdot.gov/pdea/PermApps/

Thank you for your assistance with this project. If you have any questions or need additional information, please contact Deanna Riffey at driffey@ncdot.gov or 919-707-6151.

Sincerely,

DocuSigned by:
Patrick A. Norman
34F914AC31694A5...

Patrick Norman, P.E.
Chief Engineer
North Carolina Turnpike Authority

cc: NCDOT Permit Application Standard Distribution List

SAFETEA-LU Section 6002 4B Meeting Minutes

R-2829A SAFETEA-LE Section 6002 Interagency Meeting (Concurrence Point 4B)

Branch-S.T. Wooten Joint Venture

Date: April 17, 2024
Location: CCA Technical Services Conference Room
Time: 1:00PM
Attendees:

Jenny Fleming– NCTA (VHB)
Rob Ridings – NCDWR
Jennifer Harris – NCTA
Cameron Richards – NCDOT
Chris Martin – Branch Civil
Roy Bruce – NCTA
Alexis Burke – RK&K
Chris Rivenbark – RK&K
Paul Nishimoto – Branch Civil
Nikki Duprey – NCTA (Sage)
*Monte Matthews – USACE
Aaron Harper – NCDOT REU
*Jared Gray – NCDOT EAU
*Marissa Cox – NCDOT EPU
*Tim Ritacco- NCDOT ADU
Deanna Riffey – NCDOT EAU
Ron McCollum – NCTA
Dennis Jernigan – NCTA
Jonathan Bivens – ST Wooten
Alan Shapiro – NCTA
Matthew Cook – RK&K
Byron Holden – RK&K
Jason Kiser– Branch Civil
*Christina Yokeley – Lochner
Abi Sheffey – NCTA (Sage)
Susan Locklear – NCDEQ
*Wesley Chandler – NCDOT REU
*Wesley Cartner – NCDOT PMU
*Donnie Brew – FHWA

(* virtual via Microsoft Teams)

The 30% Hydraulic Review was held in order to reach compliance on SAFETEA-LE Section 6002 (equivalent to concurrence point 4B and further know in the minutes as 4B) for R-2829A Complete 540 in Wake County. The following items were discussed and conclusions reached:

Jennifer Harris kicked off the 4B Meeting with introductions in Mike Sanderson's absence. In person and virtual attendees were noted and introduced. Ms. Harris turned the meeting over to Monte Matthews who was standing in for Eric Alsmeyer (USACE) and noted that he and Mr. Alsmeyer had previously gone through the plans together and had noted comments to discuss at those locations. Ms. Harris then turned the meeting over to the design build team.

Matthew Cook introduced the DB Team for the project which is a joint venture team of Branch Civil/ST Wooten (contractors) and RK&K (prime engineer). The project begins just southwest of I-40; the beginning of the R-2829A job consists of primarily pavement overlay inside the R-2828 turbine area and full construction of the mainline begins around -L- 965+50 (location was noted on the title sheet). The R-2829A portion of the project joins in to the R-2829B project just south of Rock Quarry Rd or north of East Garner Rd.

This project does currently have a preliminary permit in hand. The DB Team will be submitting a permit modification once the equivalent 4C meeting is held and the plans / impacts are completed. Construction will not occur inside any jurisdictional features until a new signed permit 401/404 has been issued. There is an early start package under review at this time at the beginning of the job bordering on the R-2828 turbine area. This early start package does not impact any jurisdictional features; however Chris Rivenbark will send an email to Deanna Riffey to send to the agencies stating the date construction in this area is set to begin.

General Notes:

- Permit is already in hand; however, it has differing permit and buffer site numbers. Per coordination with NCTA and agencies, the DB Team will renumber the buffer sites to match the wetland/stream site numbers. If an additional site is added to the job that was not part of the original permit, that site will be given a new number consecutively to the

last wetland/stream site number on the R-2829A job. R-2829B job will have its own permit numbers and not dictate R-2829A permit site numbering.

- There are two hydraulic bridges on the job (Bushy Branch & White Oak Creek) and 10 box culverts. Bushy Branch bridge is however not hydraulically controlled by flow, but the crossing is dictated by wetland impact commitments.
- Drainage design shown on the 4B plan set is what was submitted for the initial/first review of 100% drainage (on 4/3/24) to NCTA/VHB. 100% drainage comments will be received next week (anticipated 4/24/24). Both hydraulic bridges and all but 4 CSRs (C300, C400, C700, & C1000) have been reviewed once by NCTA/VHB prior to issuance of the 4B set.
- At this time, the 4C Meeting is anticipated to stay on the requested June 20th, 2024, date.
- Locations where streams start or stop their jurisdictional functionality will be revised to have a label of "JS Begins" or "JS Ends" added into the 4C plan set to avoid confusion of where the features/impacts change.
- There are locations where a wetland (or stream) will be a total take even though a portion of the feature is outside the right of way/easement. These will be noted in the permit impact summary table "notes" at the bottom and values in the table will show the maximum take. This area of the jurisdictional feature outside the ROW will not be hatched in plan view on the permit drawings to avoid any access/construction limits confusion. "Total Take" will not be used as an identifier on the plan sheets.
- Locations of wetlands where ¼ acre or more remains untouched will be looked at case by case to determine if the remaining wetland will be viable and not show as a 'total take.' As noted by Mr. Matthews, Rob Ridings, and Mr. Rivenbark, these locations will likely need to be monitored for functionality post construction to determine if impact values would need to be modified if the feature does not replenish.
- The DB Team held an internal preliminary constructability meeting on Monday (4/15/24) before the 4B meeting to aid with discussion of how these jurisdictional feature crossings will be constructed. Anticipated construction sequencing and permit impacts will be discussed per plan sheet at these sites.
- Mr. Cook discussed that the DB Team tried very hard to include buffer swale filtration throughout the project (Neuse River Basin utilizing 100' swale filtration per acre draining to a buffered hydraulic crossing). While the DB Team is able to achieve this at some of the buffered crossings, it was unachievable at other locations primarily due to the steep contours in the area and the need to meet stable hydraulic ditch requirements. The DB Team has provided swales at other locations that do not drain to buffered crossings in a good faith effort to achieve as much as possible.
- During discussions of RCBCs, it was noted by Nikki Duprey that native material backfill was longer being required at RCBCs.
- Green sheet commitments were discussed and reviewed.

Section 1 Equivalent 4B Planset:

Mr. Cook kicked off the review of the 4B plan sheets, starting with the ditch detail sheets. (Note: permit site numbers below correspond to the original permit site number in the preliminary permit.)

Plan Sheet 4-5

- These sheets are inside the R-2828 turbine area, and we do not anticipate any impacts to any R-2828 or I-5111 permit sites since the R-2829A DB team is primarily paving and staying at the top of the roadway surface away from jurisdictional features.

Plan Sheet 6

- Wetland WFK: no permit number (will be assigned next consecutive number on the job) at the bottom right of the plan sheet along -Y22RPE_REV-.
    - Temporary impact anticipated to the wetland edge due to the need to drain all ponds on the R-2829A job and to breach the existing dam down to the wetland.
    - The pond under -Y22RPE_REV- feeding wetland WFK is not jurisdictional and will be provided a "pond drainage plan".
- Mr. Matthews and USACE questioned if the stream shown under -Y22RPAFLY_REV- (60" RCP crossing conveyance) was jurisdictional. Mr. Cook responded that it was not a JS.

Plan Sheet 7

- Wetland WFJ: Permit site #2, total take under the -L- LT fill slope.

- Bushy Branch, Wetland WFN(1): permit site #3, bridge structure B5 is designed with 54" FIBs, 4 spans, a Q100 of roughly 2100 cfs, and is not a FEMA crossing (or hydraulically controlled).
    - Bushy Branch Bridge is anticipated to be constructed with a causeway and not mats. It should be noted that during the proposal stage DB Team noted there would not be hauling across Bushy Branch. Mr. Cook discussed the anticipated location of the temporary causeway via sketch on the screen. The intent is to leave an opening to provide flow through this crossing (opening near -L- 974+00). The intent is to only need a causeway on the right side of Bushy Branch with the utilization of cranes by only needing to come in on one side. Since this is a wetland system, high normal water surface levels nor a tall temporary causeway are anticipated. Contractor was requesting the use of class A rock to aid with drivability for regular delivery trucks along this causeway and lower 100year water surface level.
        - Discussion was had about class A being acceptable if a construction entrance was formed at the top of the temporary causeway. Contractor agreed to this installation method.
    - Mr. Matthews asked what kind of impact is anticipated with the bridge?
        - Mr. Cook explained that he didn't have final impact numbers however he was anticipating hand clearing impacts for the entire limits of the wetland WFN(1) under the bridge footprint + 15' additional along the bridges. The temporary causeway limits will be a temporary wetland impact. Permanent impacts due to the bridge bents will be noted on the impact summary table at the bottom. Mechanized clearing impacts will be included along the end bents.
    - Mr. Matthews expressed concerns with the larger riprap of the temporary causeway and issues with removal. Would there be a restoration plan for this area?
        - Jonathan Bivens explained that the DB team would be taking all the rock out since it would be reused in later work areas. He also explained that they have not had issues with this rock removal, but it is noted that other jobs in the area have. Mr. Bivens also explained that they usually include strong geotextile underneath to aid in the removal process.
        - Mr. Rivenbark explained that in conclusion to this temporary causeway rock discussion that the DB Team will show this as a temporary wetland impact and include a small write up in the permit modification noting this construction technique. Mr. Matthews agreed that this would be acceptable as long as the DB Team will just monitor the wetland after removal for appropriate restoration to function.
    - Discussion was held concerning wetland seed mix for this area once the temporary causeway is removed to aid with replanting. Wetland tree planting was also discussed but with this wetland being located under the bridge not considered a viable option and usage of a wetland seed mix was determined appropriate. Mr. Ridings noted that he and Mr. Alsmeyer had been conducting field visits in very similar areas and know what to look for from a revegetation standpoint to aid with mitigation/compensation values at a later date.
- Stream SEW & wetland WFN(1): Permit site #3, impacts due to channel change along -L- LT
    - Upland wetland WFN(1) finger will be considered a total take. See the general note above. This location was discussed to possibly be a 1/4ac viable wetland to remain however discussion felt taking the total wetland piece would be the best action. This finger of the WFN(1) wetland was shown fully impacted in the original permit takes as well. This wetland feeding stream SEW is outside the ROW and will not show impacts hatched in plan view outside easements. Stream SEW will be a total take.
- Stream SEY: Permit site #3: temporary and permanent stream impacts anticipated due to channel change along -L- RT and bridge approach construction.
    - Stream SEY will be given a "JS Ends" label close to the right bridge approach per general comments.

Plan Sheet 8

- Wetland WFY: Permit Site #4, impacts due to 48" RCP (Not Buried)
    - Mr. Matthews and USACE had questions about the riprap inlet/outlet protection detail for the 48" crossing. He noted that detail AL for this countersunk riprap pad appears to show an existing channel bed to be rock lined. He requested that since this is a wetland system and does not have defined base/channel flow, that a different detail be shown for this type of location.
    - DB Team agreed per Jenny Fleming guidance to add an additional detail (similar to detail AL) for wetland system inlet/outlet countersunk riprap pads without a base channel.
- Additional general discussion was held concerning the class of rock utilized for these wetland system countersunk riprap pads. Class II rock is shown per RFP guidelines that >48" pipes utilize this size. However, agreement was made

that Class I should be utilized at this 48" WFY wetland system crossing (inlet and outlet), as the larger rock is not anticipated to be needed with no defined channel flow.

- Mr. Cook asked if the inlet RT wetland finger of WFY be a 'total take' due to viability after ditch ties to the edge of this wetland piece to bring it into the 48" crossing. Mr. Ridings stated this finger should not be a 'total take'.
- Mr. Cook then discussed the general comment noted above that buffer swale filtration was designed with a good faith effort to be before buffered streams, however was difficult to reach required lengths due to topography. At locations such as this 48" wetland system crossing, it was noted that DB team showed proposed buffer swales down to the wetland even though it is not a buffered stream.
    - Mr. Ridings agreed to keep these additional filtration locations to show effort to provide filtration along the job since these locations do likely feed a buffered area off site.
    - Ms. Duprey asked if these non-buffered stream swales will be placed inside the SMP document to count toward treatment. Mr. Cook responded no, only the required filtration locations would be shown in this table however we would keep these other locations per NCDWR guidance on a case-by-case basis to continue showing effort.

Plan Sheet 9

- Stream SFH: Permit site #5, perennial stream with a 2' base channel at the entrance and a 2' base channel at the exit. Conveying this channel is culvert C100 which is currently sized as a 9'x8', Buried 1.0'. Drainage area is 40 acres with a Q100 of 130 cfs.
    - Mr. Cook asked if baffles would be necessary to convey this 2' stream through the 9' wide culvert barrel to avoid over-widening the channel which is a permit commitment. Ms. Fleming asked the slope of the proposed culvert which was found to 2.13%.
        - Discussion was had for the merits of placing baffles throughout the culvert vs a modified sill at the entrance and exit to include a baffle on top of the 1' sill.
            - ✓ Modified 1' sill with a 4' baffle only at the entrance and exit of C100 was decided.
        - Countersunk riprap dissipator pads at inlets and outlets were clarified for Mr. Matthews.
    - Construction sequence of C100 preliminarily discussed as a temporary channel change along the left side of SFH stream, and only using temporary pump arounds for the final culvert ties to the main channel.
- Stream SFF: Permit Site #6, conveys C200 which is currently sized as a 12'x8' RCBC, Buried 1.0 with a Q100 of 190cfs. There is additionally a channel change that conveys stream SFE on the bottom right into Stream SFF.
    - Baffles: a modified sill with a 6' baffle only at the entrance and exit will be added to C200 (2.2% slope of culvert)
    - Construction sequence of C200 discussed as a temporary channel change along the right at the downstream end of stream SFF only.
- Stream SFG will not be impacted.
- Stream SFE: Permit site #7, downstream end of C200 and impacts due to lateral base swale along -L- LT & channel change along -L- RT.
- Mr. Cook noted that Cardinal Pipeline was relocating a gas line from -L- 1010+50 to -L- 1012+50 crossing the entire project. Cardinal has noted existing rock in the ground which will require blasting.
    - Everyone agreed to address on a case-by-case basis if additional riprap in the channel beds of these culverts is necessary if existing bedrock is encountered during construction.
    - Additionally discussed removing need for "backfill with native material" from the culvert survey reports and plan to allow for the RCBC bottoms to naturally fill in. The only exception is for placement of rock "turtle ramps" within the high flow barrel of 2-cell RCBCs to allow for passage of wildlife, as shown on plansheet 16.
- Wetland WFZ: permit site #7 will be a total take due to mainline fill and channel change conveying to entrance of C200.

Plan Sheet 10

- Wetland WFZ and stream SFE: see notes on plan sheet 9. No impacts to wetland WGA.
- Stream SFB, wetland WGB (total take), Wetland WGC (total take), & Wetland WGD: Permit Site #8, conveyed by a 42" RCP (not buried) due to no jurisdictional flow entering the inlet of the pipe.
    - "JS Begins" label will be added near the centerline of road for stream SFB
    - Wetland WGD will have an impact due to the roadway fill, ditch and crossing however it will maintain its functionality and not be a total take like the others at this site.

- Wetland WGE: No impacts, PDE will be pulled back and ditch ties down to the existing topography before the edge of the wetland.
- Existing Pond at -L- 1031+00 LT is not jurisdictional, however it will be drained according to a 'pond drainage plan'.

Plan Sheet 11

- Pond PAD: Permit site #9, will be completely drained according to the 'pond drainage plan'.
- Wetlands WAAF & WAAE: were added via a supplemental survey conducted by Kimley Horn after the initial permit and were included as part of a supplemental NRTR. These will need to be provided with a new permit # for their impacts.
    - WAAE will be a total take per discussions due to this wetland being the overflow of the pond that is being drained and the wetland no longer viable. The permit # for the impacts will be part of site #9.
    - WAAF discussed to be a temporary impact to remove the dam on the existing pond, however it will not be a total take since water will still be received.
- Stream SFA: Permit site #9, 48" RCP (Not buried) due to no jurisdictional call at upstream end. Stream SFA is a total take.
- Wetland WGF: Permit site #9, total take; borders on edge of drained pond PAD (was not part of the original permit package impacts).
- Wetland WGG: Permit site #9, total take under roadway fill.
- Mr. Cook noted that in the original permit, there is an open area with no jurisdictional functionality between pond PAD and wetland WGG. Also, originally stream SFA tied into the pond. A new file provided by NCTA stops the stream short of the pond. Mr. Cook asked if the pond should continue up to wetland WGG. It was agreed that it should.
- Mr. Cook noted that the DB team has preliminarily shown a stormwater detention pond inside the limits of the drainage pond PAD due to a velocity concern of the post Q leaving the construction site. The proposed pond would likely be built with a berm across the middle of the existing pond PAD to limit excavation needs and maintain the existing footprint.
    - Ms. Duprey had concerns about constructing a new pond within the limits of an existing drained pond due to EPA requirements.
    - Mr. Ridings & Mr. Matthews noted that the EPA standard in question is at locations where a jurisdictional resource is used as an inline system because it potentially takes everything downstream out of jurisdiction. This site is completely removing pond PAD's jurisdictionally with no jurisdictional features upstream; however, wetland WAFF and other off-site jurisdictional features may remain downstream. Mr. Matthews stated that he would check into this and report back during the 4C meeting.
    - Additional concerns about the area between the outlet of the 48" and the new limits of the constructed stormwater pond with how the right of way stands. Mr. Cook noted that we would coordinate with NCTA and Ms. Fleming on how this area shall be shown if rock/earthen dam/berm be required per RFP requirements of ponds in the ROW.
- Wetland WGJ: Permit site #10, impact due to ditch tie.
- Stream SFK: buffer impact anticipated due to energy dissipator basin & driveway. New consecutive site # will be added.
- Susan Locklear asked if the 24" storm drainage along loop B could be outletted sooner into the loop ditch and cut down on pipe to provide more open flow?
    - Alexis Burke noted this was attempted during 100% drainage design but due to the elevations of the systems and the sag location on loop B, was not possible.
- Wetland WGI: no impact
- Wetland WGM: Permit site #12, total take. Located on the matchline between PSH 11 and 12 under roadway fill.

Plan Sheet 12:

- Wetland WGM: see notes on plan sheet 11.
- Stream SFC: permit site #13, 48" RCP (Not Buried), as the jurisdictional stream begins just below the headwall of the pipe – "JS Begins" label will be added at this location.
    - Due to wetland on inlet and stream on outlet end; inlet end of pipe will have class I riprap countersunk riprap pad and outlet end will keep class II as shown.
- Wetland WGN: permit site #13, 48" RCP (Not Buried). Impact due to the countersunk riprap pad. This wetland will not be a total take.

- Stream SFD: permit site #12, total take
- Wetland WGO: Permit site #14, impact due to roadway fill and toe protection.
    - Ms. Fleming noted that a spring box may be necessary around -Y23DR- 49+00 to continue feeding the wetland WGO. Mr. Bivens noted that if they were to encounter a spring during construction, they would have to install a spring box regardless to avoid a failure of the roadbed. Mr. Cook stated that a potential spring box note will be added to the plans in this area.
    - Discussion was held concerning the viability of the wetland given the overland flow changing in the area due to the roadway facility. Mr. Cook pointed out the majority of the -L- and -Y23DR- drainage was designed to continue to feed the wetland.

Plan Sheet 13:

- White Oak Creek, stream SFV: buffer site #11, will need to reassign a new permit # (next consecutive number) and revise buffer site # to match.
    - White Oak Creek has a drainage area of 6.2 sq. miles, Q100 is 3160 cfs, bridge uses 3 spans with 54" FIBs with no anticipated causeways (will be constructed with cranes from either side). Only impacts to Stream SFV are from the swales entering the creek from the drainage design.
- Ms. Locklear asked if the DB team was comfortable with the 4' base ditch entering the 36" pipe under the greenway. Mr. Cook explained that the standard minimum base width for ditches was 4' wide and not typically dictated by the size of pipe it enters.
- Ms. Fleming confirmed that the designed swales are tying into White Oak Creek at the base of flow elevation. Mr. Cook responded that they were tying down and not utilizing a 'riprap at embankment' detail for these locations.
    - Ms. Fleming & Ms. Duprey expressed concerns with the back flow of White Oak Creek continuing up these swales and asked to add some rock at these tie points to aid with this water level/stabilization. Mr. Cook confirmed that Class I riprap a distance of 20'up the swales will be added with a detail in the drainage plans.
- Paul Nishimoto noted that we will likely be hauling across White Oak Creek. DB Team stated that a temporary bridge may be necessary at this location, however additional impacts are not anticipated to stream SFV.

<u>Section 2 4B Planset:</u>

Ms. Burke took over going through the 4B plan sheets after a brief break.

Plan Sheet 14:

- Stream SFR & wetland WGR: Permit site #15, C300 has not been submitted for review at this time and size/data is still from proposal design. Initially sized as an 8'x8' RCBC, Buried 1.0'.
- Ms. Burke asked if baffles/sills would be needed for this site as stream SFR has a 6' wide base and feeds a wetland system.
    - Mr. Ridings & Mr. Matthews confirmed that they only bury if it is a jurisdictional stream in/jurisdictional stream out.
    - In conclusion, C300 will not be buried, remove the sill and baffles, and become an 8'x7' RCBC.
- Construction sequence anticipated to be a temporary channel change along the right side of the culvert along the edge of the wetland.
    - Ms. Burke asked how the outlet of this temporary channel change should come into the wetland; tie to the culvert exit area or straight down to the wetland/fill slope edge. Ms. Duprey & Ms. Fleming agreed that dissipation of this channel away from the culvert would cut down on temporary wetland impacts and be the preferred construction method along with Class I riprap. Class II riprap will still be used at the inlet.
    - Ms. Burke asked how the wetland WGR at the entrance of C300 be handled for impacts with drainage swale tie and temporary channel change. Ms. Riffey & Ms. Duprey confirmed that viability would likely be loss during construction phasing and would like to show it as a total take of this inlet finger of Wetland WGR. However, hatching of the wetland outside the ROW will not be shown in plan view but noted per general comment above. Hatching inside the construction zone will be broken out per excavation in wetlands due to temporary ditch and mechanized clearing (with separate shapes per type of impact).
        - Lateral ditch will be extended through wetland WGR at -L- RT to the entrance of C300 to aid with stabilization (riprap lined).

Plan Sheet 15

- Wetland WGR: permit site #15 impacted by roadway fill and toe protection.
- Stream SFN & wetland WGR: permit site #16, outlet of C400 (to be discussed on next plan sheet).
    - Original permit showed impacts of fill slope to buffers of stream SFN and called this location only buffer site #13. Confirmed to remove differing buffer number and label all of C400 impacts as permit site #16.
- Wetland WGS: permit site #17, temporary impact anticipated for swale tie and toe protection along fill slope.
    - Discussed viability of this WGS finger due to upstream site still feeding wetland. Confirmed to not have this finger be a total take.

Plan Sheet 16

- Stream SFN, stream SFQ: permit site #16, C400 CSR has not been submitted at this time. Initially sized as (2)11'x9', buried 1.0', Q100 is 474cfs.
    - Channel change designed to pick up stream SFQ (coming out of Pond PAF) and combining with SFN to cross inside the RCBC.
    - Due to primarily relocated channel and wetland on the exit end, confirmed to remove sill (not bury) on the low flow cell with no baffles, culvert will likely be resized to (2)11'x8' RCBC, not buried. The high flow cell will have a 1' sill. Keep class II riprap on entrance and exit due to high volume of water. Add small rock pile ("turtle ramp") behind high flow barrel sill to aid with critter escape.
    - The remainder of stream SFQ that is not impacted that adjoins pond PAF will not be a total take.
- Construction sequence of C400 was discussed as two shorter pieces of a temporary channel change to the left of the culvert near the entrance and another channel close to the outlet (PSH 15) that does not tie back down to the culvert outlet but dissipates at the fill slope location to avoid additional wetland impacts to WGR.
- Pond PAF: no impact, not draining.
- Wetland WGT: permit site #18, fed by water existing pond PAF. Ms. Burke noted that stream SFN will be given a "JS Begins" label near the entrance of C400 and that the 4B drawings incorrectly showed the JS line style through wetland WGT (will be revised).
- Wetland WGS: permit site #17 wetland finger to left of C400 entrance will only be shown as temporary impacts.
    - Ms. Fleming noted to shift the outlet of the 15" pipe and ditch start 10-15' further to the right to avoid drawing down the existing wetland quickly into the channel that enters C400. By shifting this, the hope is this wetland finger will retain its viability and not be a total take. It will need to be monitored for potential loss of function.
- Stream SFS, wetland WGR: permit site #19, 60" RCP (Not Buried), due to jurisdictional stream beginning under fill slope.
    - Mr. Matthews noted that a detail for the countersunk riprap pad at this 60" crossing was not called out and should be added. Ms. Burke noted that the detail would become AL.

Plan Sheet 17

- WGU(1): no impact.
- Stream SFT: permit site #20, 54" RCP/WSP under -Y24RPDR-, -Y24R- (US 70), -L-, and -Y24RPBR-.
    - Ms. Burke explained that multiple designs were considered for this SFT crossing during the proposal stage. Preliminary design had shown a box culvert diagonal under the US 70 bridges which the DB team found difficult to safely stage and difficult for NCTA to maintain.
    - Construction sequencing of the 54" pipe design consists of channel changes and utilization of the existing 36" pipe under US70. Discussion was had to shift the last 2GI near ramp B further to the left away from the existing stream bed to shorten that temporary channel change.
    - A 'JS Begins' label will be added to Stream SFT at the inlet entrance near the outlet of wetland WHA (no impact).
- Wetland WGU(2): No permit site number in preliminary permit, per discussion will become permit site #20 due to a ditch impact.
- Ms. Locklear asked if there was any way to outlet some of the systems along US70 into the proposed roadside ditches as opposed to closed storm drainage systems, specifically noting changes in 2 locations.
    - Outlet 24" crossing at -Y24R- 47+50 into roadside ditch/send to 42" crossing. Ms. Burke noted that this might increase the size of the 42" RCP, but it can be considered.
    - Shorten ditch to be outside buffer zone, -Y24R- 40+00 RT.

- Wetland WGY: Permit site #22, total take under roadway fill.
- Wetland WGZ: permit site #23, viability still considered with design shown – not a total take. Impacts are due to ditch tie-ins.
- Stream SGC and wetland WHB: Permit site #24, C500 currently sized as 6'x8', buried 1.0', Q100 is 170cfs.
    - Narrow (1.5' width) stream entering inlet of RCBC. Use a modified sill at entrance/exit with a 3' wide baffle.
    - Construction sequence of C500 anticipates temporary pipe at entrance end to avoid additional construction impacts to Wetland WHB and a channel change along the left side of C500.
    - Stream SGC will remain; therefore it is not anticipated that the remaining portions of wetland WHB will lose function and will not be considered a total take.

Plan Sheet 18

- Wetland WHB: see notes on plan sheet 17; the portion of the wetland on this plansheet will be under fill.
- Stream SGD: permit site #25, 60" CAAP crossing is currently buried 1.0'.
    - Discussion to remove burial of this pipe due to overall length (450') for fish passage. Pipe will be unburied and decrease in size to a 54" CAAP.
    - Ms. Duprey brought up the discussion of lining the portion of the SGD stream downstream of the existing 4'x4' RCBC to aid with stabilization downstream of all the construction/realigned channels which have riprap lining. Group decided to line 'on banks only' this portion of the untouched downstream SGD stream and to show as a 'bank stabilization' impact in the summary table.
        - Mr. McCollum requested the DB team revise PDE/ROW around this newly lined SGD stream.
- Wetland WHC: no impacts for drainage (upstream of stream SGD), PUE shown inside this wetland limits however and utility permit drawings/impacts will be coordinated for 4C.
- The non-jurisdictional pond off of Aggravation Lane will be drained for the project and will have a pond drainage plan.

Plan Sheet 19

- Stream SGE: permit site #26, C600 currently sized as 11'x8' RCBC, buried 1.0', Q100 is 230cfs.
    - Discussed placing a 6' baffle on entrance and exit to provide modified sill to the narrow stream traveling through this RCBC.
    - Mr. Cook asked if the agencies preferred a particular side for the baffles to be placed – if it should differ from inlet/outlet? Ms. Fleming requested that alternating the side the baffle was on was more of a case-by-case basis as to which direction the flow would likely be coming in to mimic closer to the existing condition the stream wants to take.
- Wetland WHD(1): permit site #26, at entrance of C600 also.
    - Labeled as "WHD" in original permit and 4B drawings, however NRTR indicates WHD(1), which label is correct? Ms. Riffey indicated WHD(1) was correct.
    - Discussed if the portion of the wetland WHD(1) outside the limits of the channel change would be a "total take." Mr. Ridings & Ms. Duprey agreed that the stream SGE would continue providing Wetland WHD(1) viability and shall remain.
- Wetland WHD(2): Permit site #26, impacts at outlet end of C600 and roadway fill.
- Wetland WHF: no impacts from drainage, will determine any utility impacts for 4C.
- Stream SGF & Wetland WHD(2): Permit site #27, impacts due to channel change and roadway fill.
    - Ms. Duprey asked that channel blocks be provided along the stretches of stream SGF near the fill slope. The DB Team agreed to add these blocks into the plan and add to detail BK.
    - Mr. Cook asked if stream impacts were required to be shown inside the entire limits of the PDE along the channel change (-L1- 1179+00 LT) even if the DB Team does not anticipate impacting/constructing inside a portion of the stream. Ms. Duprey noted that permanent impacts were not necessary due to the Nationwide 3 permit that NCDOT utilizes will allow for maintenance of this area without impacts.
- Stream SGG: permit site #28, conveyed in a channel change to culvert C600 with stream SGE.
    - Discussed removing the 2GI and 15" system near the toll gantry which outlets into buffer zones of SGG to avoid additional impacts. The DB Team agreed to research the amount of water traveling out of this cut ditch and possibly place a flared riprap pad to outlet at the cut/fill transition to avoid construction inside the buffer zones.

Plan Sheet 20

- No impacts.
- There is a proposed stormwater detention pond shown on this sheet that will be designed by the R-2829A team, however it is on the R-2829B project. This requires coordination between the two DB Teams. Project breakpoint from R-2829A to R-2829B is -L1- 1185+19.
    - Ms. Burke explained that this is not a water quality basin but is designed to detain the increase in Post 100 year peak flowrate to the railroad right of way per the RFP requirement. (The railroad crossing is at -Y26R- 19+00 RT, E. Garner Rd.)

Plan Sheet 21

- Wetland WFG: permit site #1, total take under roadway fill.
    - Ms. Burke noted that the existing ponds shown will be provided with 'pond drainage plans' and much of the roadway work of -Y22RPAFLY_REV- will be constructed in the previously mentioned early start package but will not impact wetland WFG before the permit is in hand.

Plan Sheet 22

- No impacts.

Plan Sheet 23

- Stream SKR: was not a permit site in the original permit (outside study area). The site will be numbered as the next consecutive new number on the R-2829A project. C700 has not been submitted for review at this time, however proposal design showed a (2)12'x9' RCBC, buried 1.0' to convey the Q100=832 cfs.
    - Ms. Burke noted that multiple crossing types were discussed during the proposal stage (including a possible bridge) and the size is subject to change due to the hydro pre-design meeting which requires the sizing of dual barrel culverts within HECRAS (original size completed in HY-8).
    - Average width of stream is around 10' base, decided to bury box culvert (1' sill) but not place any baffles in the low flow barrel and utilize a 2' sill in the other barrel to restrict flow to the low flow barrel in low flow conditions.
    - A rock "turtle ramp" will placed at the 2' sill within the high flow barrel at the inlet and outlet of the 2-cell RCBC to allow for passage of wildlife.
    - Ms. Burke stated she would look into adjusting the RCBC to avoid hitting any hard angles with the inlet or outlet.

Plan Sheet 24

- No impacts.

Plan Sheet 25

- Pond PAO & wetland WGH: permit site #61, fed by 36" RCP (not buried). Pond to be drained and provided with a 'pond drainage plan.' Additional impacts to pond seen on plan sheet 28.

Plan Sheet 26

- Stream SFJ: permit site #62, 36" RCP (not buried) impacts and roadway fill.

Plan Sheet 27

- No impacts.

Plan Sheet 28

- Pond PAO, stream SHT, & wetland WGH: permit site #61, pond to be drained (via 'pond drainage plan') and water conveyed downstream via 48" RCP (buried 1.0').
    - Discussed since upstream pond will be removed that stream SHT will no longer be jurisdictional and pipe crossing can be unburied. Pipe will be revised to 42" RCP (not buried).
    - Concerns with angle of the crosspipe entering the existing 24" HDPE and surrounding property buildings. Discussed revising the angle of the proposed crossing to better align closer to the existing downstream pipe. Stream SHT will become a total take due to construction limits.

- Wetland WGH discussed as not being a total take since once pond PAO is drained, will likely regenerate as a larger wetland. Mr. Ridings & Ms. Riffey agreed to leave the wetland unhatched and unimpacted in the permit drawings inside the limits of pond PAO. Mr. Ridings confirmed that buffer impacts should be included. Ms. Duprey requested that orange fence be placed along the fill slope line of -Y23DR- to limit construction activity inside the drained pond and protect the wetland to remain.

Plan Sheet 29

- Stream SFX: permit site #11, buffer impacts anticipated due to 42" RCP (Not buried) but not anticipating any stream impacts.
  - "JS Begins" label to be added near current DUE line outside limits of the riprap pad of the 42" RCP.
  - Mr. Matthews noted that the limits of stream SFX differed from the original permit. Ms. Burke & Ms. Riffey confirmed this as correct per the updated wetland file provided by NCTA.

Plan Sheet 30

- No impacts.

Plan Sheet 31

- Stream SFJ & wetland WNM: no permit number in original permit. Since this impact is downstream of permit site #62 along White Oak Road (PSH 26), it will become permit site #62A. Impacts by 54" RCP (buried 1.0') and roadway fill.
  - Ms. Locklear asked if the stability of the outlet channels of the 42" RCP (under Y23AR) and 54" RCP (under Y23FR) had been evaluated. Mr. Cook responded that the outlet ditch was stable with riprap per hydraulic calcs but non-erosive velocities had not been checked for entering the JS and would be provided later.
  - The DB Team will consider use of a temporary pipe instead of a temporary diversion channel during construction in order to not draw down the wetland.
  - The swales adjacent to wetland WNM will end at the wetland instead of the pipe headwall.

Plan Sheet 32

- No impacts. The DB team noted that a new alignment of Raynor Road on this plan sheet is being studied to stay away from the septic field and septic repair field at the Mount Herman Christian Church property. RK&K natural resources group is anticipating surveying this area (which is outside the R-2829 study area) to determine if any jurisdictional features are present.
- Future Raynor Road site development is currently under construction and shown shaded back on this plan sheet. Site development includes stormwater detention ponds which eventually do drain down to White Oak Creek.

Plan Sheet 33

- No impacts. Raynor Road site development (currently under construction) is also on this plan sheet.

Plan Sheet 34

- Wetland WGW, stream SFY, wetland WGV(1), and stream SFZ(1): permit site #63, crossing is C800 which is an extension of the existing 5'x6' RCBC with a supplemental 72" WSP (via trenchless installation) placed 2' above the flow line adjacent to the RCBC. This is a FEMA crossing and the Q100 FEMA posted value controlled at 660cfs.
  - Note that the stream is not jurisdictional at the entrance of the RCBC, only wetland WGW. Ms. Fleming requested the top of banks removed from this entrance channel to avoid confusion on jurisdiction.
  - "JS Begins" label will be added to Stream SFY near the exit of the culvert extension.
  - Ms. Burke noted that the NRTR indicated stream SFZ(1) is not subject to buffers, however stream SFY is subject to buffers. The buffered streams shown on current drawing match the buffering call outs on the original permit (which shows buffers on the opposite streams). Ms. Riffey confirmed that the buffers were drawn on the incorrect stream and plan view would need to be revised to match the NRTR; SFZ(1) not buffered, SFY is buffered. (Ms. Riffey also confirmed that we can include NRTR jurisdictional feature names in the summary sheet to help distinguish impacts in close proximity to each other.)
  - Construction sequence of C800 is anticipated to utilize impervious dikes around the culvert extension sections, trenchless installation bore/receiving pit of the supplemental 72" pipe. Ms. Burke noted that the supplemental pipe invert would be installed 2' above the RCBC invert, however the necessary pooling of

water in the area to rise up to this higher elevation was not anticipated to be an issue (no nearby structures at risk of flooding).

Plan Sheet 35

- Stream SGA: Permit site #64, crossing is C900 which is an extension of a 6'x8' (entrance) and 6'x9' (outlet) RCBC with a supplemental 72" WSP (via trenchless installation) placed 2' above the flow line adjacent to the RCBC. This is a FEMA crossing and the calculated Q100 is higher than the posted FEMA Q at 850 cfs.
    - Construction sequence of C900 matches C800 with the utilization of impervious dikes to send temporary flow through the higher supplemental trenchless installation pipe.
    - Additional stabilization can possibly be used at the outlet of the RCBC as a potential solution to design concerns of stability. This will be addressed during the 100% Hydraulic Design review.
    - There are no impacts to stream SGI.

Plan Sheet 36

- No impacts.

Plan Sheet 36A

- Stream SGA, stream SAAK, stream SAAL, wetland WHD, wetland WAAK: permit site #65, crossing is C1000 and has not been submitted at this time; preliminarily sized as a 10'x9' RCBC (Buried 1.0') with RFP requirement a minimum conveyance opening of 77sqft. Q100 is 599cfs and baffles are anticipated (5' wide).
    - RK&K (Hal Bain, Josh Tutt, & Gordon Marsh) delineated the additional streams and wetlands shown on the sheet (SAAL, SAAK, WAAJ, WAAK) that were outside the study area along E. Garner Rd. and coordinated via email with Ms. Riffey & Ms. Duprey (dated 3/22/24) on the naming conventions and buffering status. The draft PJD package for these additional features was submitted on 3/29/24 and was under review during the 4B meeting.
    - With the additional streams coming into C1000, it is anticipated to be angled more to what is considered the main entrance stream of SGA. Ms. Fleming requested that the entrance channel change be revised to clearly show how stream SAAL and stream SAAK will be brought into the RCBC.
    - Construction sequence is anticipated to utilize the existing 4'x4' RCBC under E. Garner Rd. and construct a temporary channel around the outlet end to stay out of the C1000 construction zone.
    - Wetland WHD upon further NRTR review and 4B discussion shall be renamed to WHD(2).
- Wetland WAAJ: no impacts anticipated.
- Stream SGD: permit site #25, crossing is a 60" RCP (buried 1.0') and is fed by additional SGD crossings shown on plan sheet 18.
    - Construction sequencing of the 60" is anticipated to be a temporary channel change around the left side of the work zone.
- Ms. Burke noted that the downstream structures of these two crossings (C1000 RCBC & 60" RCP) are the existing dual 60" RCPs under the railroad. This railroad right of way is the location where the RFP dictated no increase to the peak Q100 flowrate, requiring a designed stormwater pond for attenuation (shown on plan sheet 20).

Plan Sheet 36B

- No Impacts.

The meeting adjourned.

SAFETEA-LU Section 6002 4C Meeting Minutes

R-2829A SAFETEA-LU Section 6002 Interagency Meeting (Concurrence Point 4C)

Branch-S.T. Wooten Joint Venture

Date: June 20, 2024
Location: CCA Structures Conference Room
Time: 1:00PM
Attendees:

Jenny Fleming– NCTA (VHB)
Rob Ridings – NCDWR
Jennifer Harris – NCTA
Cameron Richards – NCDOT
Chris Martin – Branch Civil
Roy Bruce – NCTA
Alexis Burke – RK&K
Chris Rivenbark – RK&K
Paul Nishimoto – Branch Civil
Nikki Duprey – NCTA (Sage)
Aaron Harper – NCDOT REU
Jared Gray – NCDOT EAU
*Tony Houser – RK&K
*Adam Freeman – STV
Deanna Riffey – NCDOT EAU
Ron McCollum – NCTA
Eric Alsmeyer - USACE
Jonathan Bivens – ST Wooten
*Alan Shapiro – NCTA
Matthew Cook – RK&K
Byron Holden – RK&K
Jason Kiser– Branch Civil
Andy Barry – ST Wooten
Abi Sheffey – NCTA (Sage)
*Wesley Chandler – NCDOT REU
*Marissa Cox – NCDOT EPU
Elizabeth Harvey – NCDOT EAU

(* virtual via Microsoft Teams)

An interagency meeting was held to review the permit drawings in order to reach compliance on SAFETEA-LU Section 6002 (equivalent to Interagency Concurrence Point 4C and here forth in the minutes as 4C) for R-2829A Complete 540 in Wake County. The following items were discussed and conclusions reached:

Jennifer Harris kicked off the 4C meeting with introductions; in person and virtual attendees were noted and introduced. Ms. Harris turned the meeting over to Eric Alsmeyer (USACE) who had no opening remarks and then turned the meeting over to the design build (DB) team.

Matthew Cook introduced the DB Team for the project which is a joint venture team of Branch Civil/ST Wooten (contractors) and RK&K (prime engineer). The project begins just southwest of I-40; the beginning of the R-2829A job consists of primarily pavement overlay inside the R-2828 / I-5111 turbine area, and full construction of the mainline begins around -L- 965+50. The R-2829A portion of the project joins the R-2829B project just south of Rock Quarry Rd or north of East Garner Rd.

This project does currently have a preliminary permit in hand. The DB Team will be submitting a permit modification request to NCTA once the minutes of this equivalent 4C meeting are approved and the plans / impacts are completed. Per the RFP, NCTA will review the package for approximately 20 days starting around mid-July. The DB Team will work with NCTA during the review process before submitting the permit modification request to the agencies likely in mid-August. The agencies' review is anticipated to take up to 120 days (per the RFP) to review the permit modification request with hopes for an approved permit modification in order to begin construction in early December 2024.

Construction will not occur inside any jurisdictional features until a new signed permit modification has been issued. As discussed in the 4B meeting, there is an early start work package which already has issued RFC Plans in the area of construction near the R-2828 turbine area. There will be no jurisdictional features impacted with this early work construction and the erosion control plans have also been coordinated with Aaron Harper and his REU group to make sure the DB team stays away from these jurisdictional features in the area. Per Mr. Bivens, construction on this early work is anticipated to begin after the fourth of July holiday. The agencies will be receiving official notification from the DB Team (via NCTA) prior to construction.

Eric Alsmeyer added that a few items related to the time frame of the permit. An issue will need to go out for public notice once the agencies have the permit mod request and the final drawings are complete. However, Mr. Alsmeyer did not indicate that the agencies would have issues meeting the proposed approval date. Also, agencies have given concurrence on the additional PJD area off East Garner Road, and the jurisdictional areas should be correct on the plans shown today. Chris Rivenbark asked about the possibility of an abbreviated notice, i.e. a 15-day notice, since the DB Team anticipates impacts to be lower than what the corridor permit indicated. Mr. Alsmeyer said that will likely be possible if requested by the DB Team.

The expiration date of the current permit will also need to be extended for the construction of the R-2829 jobs. Mr. Rivenbark noted that the DB Team would work with NCTA to determine if R-2829A or R-2829B would be turned in first and who would need to request that extension. Discussion was had on the status of the current permit modification which is agreed to be valid through December 31, 2026. Construction of R-2829A will continue through year 2028, and our DB Team will request the permit modification extension to allow for that timeline.

Mr. Cook reviewed the current status of the R-2829A design, the DB Team is currently at the right of way plan stage. The hydraulic plans have been approved, noting there are 12 major hydraulic structures on the job; (10) box culverts and (2) hydraulic bridges – Bushy Branch & White Oak Creek. Seven of these major structures have been 'comments as noted' and the remaining five should receive approval well before the permit modification goes to the agencies. There are a few stormwater detention ponds on the project that are currently being designed, however they should not have any permit impacts as they are not on any jurisdictional features that have not already been affected by the roadway facility.

Mr. Cook then reviewed the utilization of the Arc-GIS Online (AGOL) tool, which has been under development with NCDOT for years to provide a more digital permit process. The AGOL is accessed via a website managed by RK&K. The AGOL utilizes different backgrounds (aerial photos was used for this example with USGS among others available) with the roadway facility, existing features (NCTA planimetric file), and permit impacts overlayed in the tool. Mr. Cook also explained that this tool can indicate your exact location inside those permit impact limits and can be utilized as a tool in the field via phone or iPad to aid with the official pdf permit drawings. Safeguards will be put in place to make sure the agencies can be assured the permit impacts shown are only the ones approved. The web address for the AGOL is the following:
https://experience.arcgis.com/experience/810887e3636442ccb71d5d223ace82a4/

General Notes:

- Due to multiple packages to review (stream and wetland, buffers, utility stream and wetland, utility buffers), Mr. Cook described the review process they would use during the meeting. Each individual site would be evaluated for all potential impacts instead of moving completely through one package and then needing to go back through all the sites again due to a different package. For instance, the same site would be reviewed for all stream and wetland impacts, then buffer impacts, then any impacts due to utilities.
- Throughout the permit drawing review, discussions were held involving the impacts due to the utility work. Currently, the utility designs are in flux. The DB Team is diligently working through our utility coordinator and utility designer to incorporate up to date utility relocations, and our hydraulics and environmental personnel coordinate daily with them. There are several locations where NCTA purchased easements during the preliminary design in anticipation of utilities needing them. There are also some sites where the DB Team, based on the information we currently have from the utilities, where we are fairly certain what utility will use the easement and how much jurisdictional impact will be required. However, there are a couple sites where we are still working through what is needed. After discussions during the meeting and reductions in proposed impacts, Mr. Alsmeyer and Rob Ridings agreed to move forward with the jurisdictional impacts, known or anticipated, in the permit package. They will be updated as we receive more information, even potentially during the permit modification review process, and this should not hinder or hold up the review process.
- Site numbers generally match those from the preliminary permit. However, buffer sites have been renumbered to match the stream and wetland sites. Any new sites were given a number sequential after the initial set of site numbers.

Section 1 Equivalent 4C Permit Drawings:

Mr. Cook kicked off the review of the 4C permit drawings, starting with the ditch detail sheets and the buffer swale information. He noted that full buffer filtration treatment length was not achieved at all locations but as discussed in the 4B meeting, additional filtration areas were provided to non-buffered areas to try to offset the limitations of the project.

Permit Drawing 8 of 103

- **Site 36:** Wetland WFK. Mechanized clearing impact at the wetland edge due to the need to drain all ponds on the R-2829A job and to breach the existing dam with a standard riprap lined ditch down to the wetland.
    - The pond under -Y22RPE_REV- feeding wetland WFK is not jurisdictional.

Permit Drawing 10 of 103, Buffer Drawing 10 of 36

- **Site 2:** Wetland WFJ, total take due to roadway fill and ditch.
- **Site 3:** Bushy Branch, Wetland WFN(1). Bridge structure B5 is designed with 54" FIBs, (4) 115' spans, a Q100 of roughly 2100 cfs, and is not a FEMA crossing (or hydraulically controlled).
    - Bridge is anticipated to be constructed with a causeway with no anticipated hauling across Bushy Branch. The temporary work pad detail can be seen on permit drawing 13 of 103. Per 4B, class A rock will be utilized along the top to aid with drivability for regular delivery trucks along this causeway.
        - Impacts: Temporary wetland impacts under the causeway, mechanized clearing impacts will be included along the end bents, and hand clearing impacts for the remainder of the wetland under the bridge +15' along the edges. Permanent impacts due to the bridge bents will be noted on the impact summary table at the bottom.
- Site 3: Stream SEW (buffered) & wetland WFN(1): impacts due to ditch along -L- LT
    - Upland wetland WFN(1) finger will be considered a total take; plan view hatching limits are only what is necessary for construction.
    - Stream SEW (buffered) will be a total take; plan view hatching limits are only what is necessary for construction. Remainder of impact take not shown will be noted in the impact summary tables.
        - Mr. Ridings noted that all buffer impacts associated with stream SEW shall be shown as mitigable. The impacts would have been allowable due to the bridge if stream SEW was to remain. Also requested that all associated buffer impact to SEW be shown on a single line in the impact summary table.
    - Designed swales have provided 400' of additional filtration that will be extra on the project due to stream SEW being a total take and no longer buffered. These locations of additional filtration were discussed during the 4B meeting to remain, especially in areas where full limits necessary for filtration were not met.
- Site 3: Stream SEY (buffered), temporary and permanent stream impacts anticipated due to channel change along -L- RT and bridge approach construction & access needs.
    - Temporary impacts for construction access are just to drive around the bridge bent. Mr. Alsmeyer asked how long this temporary impact to stream SEW was and asked how they will protect the existing stream contours? Mr. Cook explained they could pipe it if they must but that the contractor will return this piece of the stream to the original condition. Mr. Bivens noted that this is not the main access for construction. The causeway is the main access, and this temporary stream impact is just to driving around the end bent for final dressing.

Permit Drawing 18 of 103

- **Site 4:** Wetland WFY, permanent fill impacts are due to 48" RCP (not buried) and the roadway facility. The mechanized clearing impacts are temporary and for construction/access.
    - This is not a jurisdictional stream and therefore was not a buried pipe. An additional 280' of buffer swale was designed to this outfall as extra filtration.
    - Neither wetland fingers at the entrance of the pipe crossing are considered total take and were discussed at 4B to both continue being viable and not further impacted.

Permit Drawing 21 of 103, Buffer Drawing 11 of 36

- **Site 5:** Stream SFH (buffered), permanent and temporary stream impacts due to culvert C100, which is a 9'x8', buried 1.0' with a 4' wide baffle. Drainage area is 40 acres with a Q100 of 130 cfs.

- Riprap at the entrance and exit channels of C100 are per the RFP. Note that all crossings were updated based on the Class I vs Class II discussion during the 4B meeting.
- Temporary stream impacts and mitigable buffer impacts do include the necessary temporary construction channel (currently design along the left side of the culvert) as discussed for the C100 construction sequence.

- **Site 6:** Stream SFF (buffered), permanent and temporary stream impacts (mitigable buffer impacts) due to culvert C200 which is a 12'x8' RCBC, buried 1.0 with a 6' wide baffle (Q100=190cfs). There is additionally a channel change that conveys stream SFE (Site 7) on the bottom right into Stream SFF (Site 6).
- **Site 7:** Stream SFE (buffered): permanent and temporary stream impacts (mitigable buffer impacts) due to channel changes conveying stream to C200.
  - Temporary stream impacts (mitigable buffer only within the buffer closest to roadway facility {east side}) near the outlet of C200 are due to the small piece of temporary channel relocation around right side of the C200 outlet per the construction sequence.
- Mr. Bivens noted that Cardinal Pipeline has already relocated their gas line from -L- 1010+50 to -L- 1012+50 (work completed about 2-3 weeks ago). Cardinal has noted existing rock in the ground which required blasting and indicated R-2829A project may encounter more rock in the C100 & C200 construction. Discussed during 4B to only place rock back in the culverts if rock not already present on a case-by-case basis.
- Site 7: Wetland WFZ, total take due to mainline fill and channel change conveying to entrance of C200.
- Note that there is a datum on this plan sheet around plan sheet 1007+00 and the roadway facility is intentionally shown at different offsets here.

Permit Drawing 27 of 103, Buffer Drawing 12 of 36

- **Site 7:** Wetland WFZ and stream SFE (buffered): see impacts on previous permit drawings.
- **Site 8:** Stream SFB (buffered), permanent and temporary stream impacts (mitigable buffer impacts) due to 42" RCP (not buried) and roadway facility.
  - Designed swales have provided 432' of buffer filtration (525' was desired).
  - Nikki Duprey requested that the riprap pad on the 42" include/extend through to where the swale ditch tie down to the wetland to provide additional stabilization. DB Team agreed that during construction, that riprap would be field adjusted to tie through to the swale edge as needed.
- Site 8: Wetland WGB & Wetland WGC are both total takes due to the roadway facility.
- Site 8: Wetland WGD, permanent fill and mechanized clearing impacts due to the outlet of 42" RCP

Permit Drawing 31 of 103, Buffer Drawing 13 of 36

- **Site 9:** Pond PAD (buffered), will be completely drained according to the 'pond drainage plan' and a total take (mitigable buffer impacts)
- Site 9: Wetland WAAE, WAAF, WGF: these wetlands border on the Pond PAD
  - WAAE will be a total take per discussions due to this wetland being the overflow of the pond that is being drained and the wetland viability removed.
  - WAAF shown as temporary wetland impact to remove the dam on the existing pond.
    - Abi Sheffey asked if this temporary impact was temporary fill or mechanized clearing. DB Team confirmed that temporary fill in the wetland was shown since the impact is just to breech the dam and the expectation is to have the wetland restored to its previous condition post construction.
- Site 9: Stream SFA (buffered) & Wetland WGG, total take due to 48" RCP (not buried) and roadway facility.
- Site 9: Wetland WGF is a total take; borders on edge of drained pond PAD (was not part of the original permit package impacts).
- **Site 10**: Wetland WGJ, permanent fill and mechanized clearing impact due to ditch tie & roadway fill.
- **Site 39:** Stream SFK (buffered): allowable buffer impact only (no surface water impacts) due to energy dissipator basin.
- **Site 11:** Wetland WGM, total take. Located on the matchline between PSH 11 and 12 under roadway fill.
- (3) stormwater detention ponds will be designed on plan sheet 11 (-L1- 1036+00 LT, -L1- 1046+00 LT/ramp B, & Loop B quadrant). No additional jurisdictional features will be impacted with these future detention ponds, however data will be reported on the SMP.
  - Mr. Alsmeyer confirmed that constructing a stormwater detention pond was allowable in an existing jurisdictional ponds footprint due to the pond being completely drained and accounted for as a total take for the permit impacts and no additional jurisdictional features upstream.

- All designed buffer swales from the PSH 10/11 matchline up to proposed White Oak Rd are additional and not "required" due to the removal of the downstream buffered pond PAD. Per 4B discussions, this additional filtration will remain in the proposed design due to limitations on filtration in other areas.

Permit Drawing 35 of 103, Buffer Drawing 14 of 36

- **Site 11:** Wetland WGM: see notes on permit drawing 31 of 103.
- Site 11: Stream SFD (buffered), total take due to roadway facility.
    - Buffer impacts to be revised to allowable impacts instead of mitigable.
- **Site 12:** Stream SFC (buffered) & Wetland WGN, permanent and temporary impacts with structure stabilization stream impacts at the outlet end of the 48" RCP/54" RCP (not buried).
    - Wetland WGN will not be a total take per 4B discussions.
    - Buffer impacts to SFC will be considered mitigable and only to the limits necessary for drainage construction downstream.
- **Site 13**: Wetland WGO, impact due to roadway fill, toe protection and access to construct tail ditch.
    - Spring box note was added into the plans at the top of this wetland to field verify if needed.

Utility Permit Drawing 2 of 11, Utility Buffer Drawing 2 of 11

- Site 12: Stream SFC (buffered), temporary stream impacts shown currently to the edge of the DUE limits (allowable buffer impacts to edge of DUE limits)
    - Easements shown are all early acquisition parcels and NCTA has requested these stay as is.
    - Agencies discussed due to the utility being an overhead power line and no construction access issues, that the impacts to the stream and buffers be limited to 15' offset from the overhead line and not to the edge of the DUE. Buffer impacts will be on both sides of the JS, however temporary stream impacts will only be an approximate 30' wide swath (15' offset on either side of where the OH line will go over the stream) and not tie to the remainder of the JS impact on stream SFC.
    - Ms. Duprey requested that the toe protection along the driveway be pulled back outside of the buffer zones near this DUE/utility line which the DB team agreed to.

Permit Drawing 40 of 103, Buffer Drawing 15 of 36

- **Site 14:** White Oak Creek, Stream SFV (buffered), White Oak Creek bridge; 3 span (86', 117' 112')- 54" FIBs, Q100 is 3160 cfs (FEMA).
    - No anticipated causeways (will be constructed with cranes from either side), temporary and permanent stream impacts are only due to swale/riprap tie downs to White Oak Creek.
    - Allowable buffer impacts under the entire limits of the bridge due to bridge construction and ditches.
- Ms. Duprey asked who was constructing the greenway under the White Oak Creek Bridge. DB team confirmed the piece shown in solid lines would be built under R-2829A and tied to by the town of Garner in the future.

<u>Section 2 Equivalent 4C Permit Drawings:</u>

Ms. Burke began review of the second half of the 4C permit drawings after a brief break.

Permit Drawing 44 of 103, Buffer Drawing 16 of 36

- **Site 15:** Stream SFR (buffered) & wetland WGR, permanent and temporary impacts (mitigable buffer impact) due to C300, which is an 8'x7' RCBC (not buried, no baffles), Q100 is 166 cfs.
    - Upland portion of wetland WGR is a total take, however hatching only shows inside the ROW and the remainder of the impact is noted on the summary table.
    - Designed buffer swales provide 180' of treatment (91' desired) LT of RCBC entrance and 133' of treatment (202' desired) RT of the RCBC entrance.

Permit Drawing 48 of 103, Buffer Drawing 17 of 36

- **Site 15**: Wetland WGR, Fill in wetland and mechanized clearing impacts due to roadway fill and toe protection.
- **Site 16:** Stream SFN (buffered) & wetland WGR, outlet of C400 (to be discussed on next plan sheet).
- **Site 38 (buffer only):** Stream SFN (buffered), allowable impacts due to roadway fill.

- Ms. Riffey requested that Site 38 be removed and grouped in with Site 16 since this is the same buffered stream and only a few hundred feet away. Impact will also need to be revised to mitigable to match other impact.

- **Site 17:** Wetland WGS, fill in wetland and mechanized clearing due to roadway facility/toe protection and swale tie.
  - Discussed viability of this WGS upland finger during 4B to not be a total take.

Permit Drawing 52 of 103, Buffer Drawing 18 of 36

- **Site 16:** Stream SFN (buffered) & Wetland WGR, total take of stream SFN upstream of wetland WGR (Mitigable buffer impacts are a total take), Conveyed in C400, which is a 7'x7' RCBC (not buried, no baffles), Q100 is 430cfs.
  - Upstream piece of buffer impacts not hatched outside of right of way, however noted in the impact summary table.
- Site 16: Wetland WGT, fed by water exiting pond PAF. Permanent and mechanized clearing wetland impacts due to C400 entrance & ditch ties.
- **Site 17:** Wetland WGS, permanent fill in wetland and mechanized clearing due to toe protection and roadway facility
  - Shifted outlet of 15" system and ditch "begin" farther away from wetland WGS to avoid drawing the wetland down per 4B request by NCTA. WGS is not a total take.
- **Site 18**: Stream SFQ (buffered), also fed by water exiting pond PAF. SFQ is not a total take, portion exiting pond is not impacted. Permanent and temporary stream impacts due to channel change conveyed to entrance of C400 culvert.
  - Mitigable buffer impacts only to limits necessary for L1 RT ditch construction (not to edge of PDE). Buffer hatching not shown to edge of ROW intentionally for portion of SFQ along L1 LT, however this piece is a total take and noted in the impact summary table.
  - Designed buffer swales provide 290' of treatment to SFQ (98' desired).
- **Site 19**: Stream SFS (buffered) & wetland WGR. Permanent and temporary stream impacts, permanent & mechanized clearing wetland impacts due to 60" RCP (not buried) and roadway facility.
  - Mitigable buffer impacts to stream SFS only inside the limits necessary for construction (not to PDE).

Permit Drawing 59 of 103, Buffer Drawing 19 of 36

- **Site 20:** Stream SFT (buffered), 54" RCP/WSP/CAAP (buried 1.0') under -Y24RPDR-, -Y24R- (US 70), -L-, and -Y24RPBR-.
  - Permanent and temporary stream impacts to Stream SFT with structure stabilization impacts at the entrance & exit of the pipe.
  - Ms. Burke noted the drainage system running down US 70 was revised to outlet earlier into the riprap lined ditch per DWRs request at 4B (-Y24R- 50+00 RT)
  - Shifted 24" CSP outlet/ditch to start outside of the buffer zone for SFT (near outlet of 54" crossing, Y24R 39+00 RT) per 4B.
  - Designed buffer swales provide 250' of treatment (325' desired).
- **Site 20A:** Wetland WGU(2), mechanized clearing in wetland due to ditch outfall tie construction.
  - Noted that hatching is shown outside of right of way, request to revise impact to construction limits.
  - Ms. Duprey requested an additional inset (or leader lines) for clarity on Site 20A.
- **Site 21:** Wetland WGY, total take under roadway facility.
- **Site 22:** Wetland WGZ, permanent fill and mechanized clearing due to roadway fill, toe protection and ditch ties. Discussed viability of wetland at 4B and wetland to remain outside of roadway footprint and not be a total take.
- **Site 23:** Stream SGC (buffered) and wetland WHB, conveyed in C500 a 6'x8' (buried 1.0') with 3' wide baffles, Q100 is 170cfs.
  - Permanent and temporary stream impacts due to roadway facility and C500. Mitigable buffer impacts shown under the roadway facility.
  - Stream SGC will remain; therefore, it is not anticipated that the remaining portions of wetland WHB will lose function and will not be considered a total take; permanent fill in wetland and mechanized clearing impacts.
    - Ms. Duprey requested additional mechanized clearing pattern "star" hatching to clarify impact type inside wetland shape.

Utility Permit Drawing 3 of 11, Utility Buffer Drawing 3 of 11

- **Site 20:** Stream SFT (buffered), temporary stream and mitigable buffer impacts currently shown for entire limits of DUE/PUE for overhead power line and 12" directional drill gas line (parallel with US70).

- Discussions that utilities in this area are currently under design and easements shown are what was provided for the early acquisition by NCTA.
- Mr. Rivenbark noted that RK&K utility coordinators are being provided daily updates on these US 70 utility designs. DB Team noted that the current location of the OH line pole will likely shift up and away from the R-2829A designed ditch which would realign the OH utility angle.
- Mr. Alsmeyer recommended revising the permit impacts to only show hatching (temporary stream & buffer) up to the DUE line and remove impacts shown in the PUE triangle. DB Team agreed to revise and coordinate further with the utility owners as designs finalize.
- Discussions on if the buffer impact shall remain mitigable or revise to allowable due to angle/type of utility construction utilized in the area. Agencies agreed to leave impact as mitigable for now since it is the most conservative. Directional drill labels and type of buffer impact to possibly change if utility owners determine to jack & bore the steel utility pipe.
- Inset A on utility permit drawing 3 of 11 needs to clip out wetland WGU(2) shapes due to overlap.

Permit Drawing 64 of 103, Buffer Drawing 20 of 36

- **Site 23**: Wetland WHB: see notes on plan sheet 17, the portion of the wetland on this plansheet will be under roadway fill and a total take.
- **Site 24:** Stream SGD (buffered), temporary and permanent stream (mitigable buffer) impacts due to 54" CAAP (not buried)
  - Discussed during 4B to remove burial on this pipe crossing due to overall length being too long for aquatic passage (this reduced the pipe size also).
  - Per 4B, the portion of the existing SGD stream downstream of 54" CAAP has been revised to show bank stabilization riprap lining with a corresponding detail for installation. Permit impacts show "bank stabilization" surface water impacts to SGD for this riprap and mitigable buffer impacts (around the existing transportation facility of the driveways in the area).

Utility Permit Drawing 4 of 11, Utility Buffer Permit Drawing 4 of 11

- **Site 24**: Stream SGD (buffered) & Wetland WHC, temporary stream impacts and hand clearing shown inside the PUE due to the overhead power utility line in the easement.
  - Buffer impacts to the utility line will be allowable.

Permit Drawing 67 of 103, Buffer Drawing 21 of 36

- **Site 25:** Stream SGE (buffered), temporary and permanent stream (mitigable buffer) impacts and structure stabilization impacts due to C600; an 11'x8' RCBC (buried 1.0) with 5.5' wide baffles. Q100 is 230cfs.
  - Additional temporary stream (and mechanized clearing) impacts shown up to the PDE at C600 inlet & outlet due to construction sequence which includes (2) small pieces of temporary channel change for culvert construction.
- Site 25: Wetland WHD(1), permanent and mechanized clearing impacts due to C600 and roadway facility.
  - Per 4B, the portion of the wetland WHD(1) outside the limits of the channel change would still be considered viable due to stream SGE in the area and not be a total take.
- Site 25: Wetland WHD(2), permanent and mechanized clearing impacts due to outlet of C600 and roadway fill.
- **Site 26:** Stream SGG (buffered), permanent and temporary stream (mitigable buffer) impacts due to channel change conveying to C600 entrance and roadway facility.
  - Per 4B, removed drainage system near toll gantry (-L1- 1180+00 RT) to avoid additional impact to SGG buffer. Revised design includes a swale with riprap dissipation at the end. This swale is now outside the buffer limits with no additional permit impacts to stream SGG (swale provides 240' of buffer filtration, 200' desired).
- **Site 27:** Stream SGF (buffered) & Wetland WHD(2), permanent and temporary stream (mitigable buffer) impacts due to channel change and roadway fill. Permanent fill and mechanized clearing wetland impacts due to same design.
- Location of stormwater detention pond due to no net increase to the railroad right of way (PSH 36A, Permit Drawing 93 of 103 at -Y26R- 19+00 250' RT) was noted to be on the next plansheet (PSH 20, not included due to no jurisdictional feature impacts). The detention pond will be located on the R-2829B job and is currently being coordinated between the DB teams and NCTA.

Permit Drawing 73 of 103

- **Site 1:** Wetland WFG, total take under roadway facility.
    - This permit site is downstream of the Early Start Package discussed at the beginning of the meeting. Early construction works will not impact wetland WFG before the final permit modification is in hand.

Permit Drawing 76 of 103, Buffer Drawing 22 of 36

- **Site 28:** Stream SKR (buffered), permanent and temporary stream (mitigable buffer) impacts due to C700, (2) 12'x8' RCBC (buried 1.0), no baffles with a 2' sill in the high flow cell. Q100 is 830 cfs.
    - Temporary stream (mitigable buffer) impacts go all the way to the PDE edges due to construction sequence of C700 with a temporary channel around the left side of the culvert.

Buffer Drawing 23 of 36

- **Site 30:** Pond PAO (buffered). Total take mitigable buffer impacts only on plan sheet 25. Pond PAO jurisdictional surface water limits are on the plan sheet 28 below.
    - Wetland WGH (inside buffer limits of Pond PAO) was discussed during 4B to remain unimpacted since it will likely stay viable during the drainage of the pond.
    - DB Team to check the limits of the pond versus the buffer zone lines to ensure correct impact numbers.

Permit Drawing 79 of 103, Buffer Drawing 24 of 36

- **Site 29:** Stream SFJ (buffered), permanent and temporary stream (allowable buffer) impact due to 36" RCP (not buried) and roadway widening. Structure stabilization stream impacts due to outlet riprap pad.
    - Designed swales provide 195' of buffer filtration, 355' desired.
    - Roadway and drainage design change anticipated along -Y23R- 55+00 - 61+00 RT due to newly installed curb by developer and Mount Herman Church access.

Utility Drawing 6 of 11, Utility Buffer Permit Drawing 5 of 11

- **Site 29:** Stream SFJ (buffered), temporary stream impacts (allowable buffer) impacts due to overhead utility power line. Permit impacts currently shown in full limits of PUE/DUE up to impacts required for 36" RCP.
    - Mr. Alsmeyer requested that the temporary stream impacts be removed from stream SFJ for the OH utility. DB Team confirmed that access can be provided from each side and impacts to the stream are not necessary to construct. Buffer impacts to remain as shown for necessary clearing.
        - Removal of stream impacts will remove Utility Drawing Sheet 6 of 11 from the set.

Permit Drawing 81 of 103, Buffer Drawing 25 of 36

- **Site 30:** Pond PAO (buffered), permanent pond surface water (mitigable buffer) impacts due to draining existing pond in right of way. Note Wetland WGH above Pond PAO is to remain unimpacted.
- Site 30: Stream SHT (buffered), total take of stream due to 42" RCP (not buried) and roadway facility.
    - Per 4B, pipe crossing was unburied and angle revised to provide better water passage into the downstream 24" HDPE and limit surrounding property concerns.
    - Ms. Duprey requested a channel block/filling of the existing abandoned channel near -Y23DR- 25+00 RT. DB team agreed to revise plans to account for this.
    - Mitigable impacts (total take) for Stream SHT to be revised to not show hatching outside the easements and to provide a note in the impact summary table.

Buffer Drawing 26 of 36

- **Site 37**: Stream SFX (buffered), allowable buffer impacts only at this site due to 42" RCP (not buried) and roadway facility.
    - Designed swales provide 650' of buffer filtration, 195' desired.

Utility Buffer Drawing 6 of 11

- **Site 37:** Stream SFX (buffered), allowable buffer impacts up to DUE limits due to proposed overhead utility line. Allowable utility buffer impacts tie to buffer impacts necessary for 42" pipe crossing.

Permit Drawing 83 of 103, Buffer Drawing 27 of 36

- **Site 29A**: Stream SFJ (buffered) & wetland WNM: permanent and temporary stream (allowable buffer) impacts with structure stabilization due to 54" RCP (buried 1.0') and roadway facility. Permanent fill and mechanized clearing impacts for Wetland WNM.
    - Designed swales provide 437' total of buffer filtration to Stream SFJ, 437' total desired.

Permit Drawing 86 of 103, Buffer Drawing 28 of 36

- **Site 31:** Wetland WGW, permanent and mechanized clearing wetland impacts at the entrance of C800. Culvert is an existing 5'x6' RCBC extension and also a supplemental 72" WSP (via trenchless installation) placed 2' above the flow line adjacent to the RCBC. This is a FEMA crossing and the Q100 FEMA posted value controlled at 660cfs.
- Site 31: Stream SFY (buffered), Wetland WGW, Wetland WGV(1), permanent and temporary (allowable buffer) impacts at upstream and downstream end of C800. Permanent and mechanized clearing wetland impacts due to roadway fill and toe protection.
    - Note that the "stream" is not jurisdictional at the entrance of the RCBC, only wetland WGW.
    - SFZ(1) stream is not subject to buffers nor impacted by C800 or the roadway facility.
    - Designed swales provide 228' total buffer filtration, 928' total desired.

Utility Permit Drawing 7 of 11, Utility Buffer Permit Drawing 7 of 11

- **Site 31:** Wetland WGW, hand clearing wetland impact due to 16" water line which will be directionally drilled.
- Site 31: Wetland WGV(1), Stream SFY (buffered), Stream SFZ(1), Temporary stream impacts (allowable buffer) and hand clearing wetland impact due to future utility line inside the DUE/PUE at the downstream end of C800.
    - Impacts for the -Y24R- RT utility lines (anticipate 4 fiber lines & gas) are set as conservatively as possible until utility design in the area is confirmed (see general note above).
    - Discussions about City of Raleigh requirement for clearing all easements for water lines, therefore -Y24R- LT impact is to remain hand clearing inside the full PUE limits (as currently shown) to avoid any delay on the project.
    - Ms. Sheffey requested that a "JS Begins" label be added at the outlet of RCBC to indicate where the buffered stream begins.

Permit Drawing 90 of 103, Buffer Drawing 29 of 36

- **Site 32:** Stream SGA (buffered), permanent and temporary stream (mitigable buffer) impacts due to crossing C900. Culvert is an extension of an existing 6'x8' (entrance) and 6'x9' (outlet) RCBC with a supplemental 72" WSP (via trenchless installation) placed 2' above the flow line adjacent to the RCBC. This is a FEMA crossing and the calculated Q100 is higher than the posted FEMA Q at 850 cfs.
    - Structure stabilization stream impacts are shown at the entrance end of C900.
    - Designed swales provide 317' total buffer filtration, 424' desired.

Utility Buffer Drawing 8 of 11

- **Site 32:** Stream SGA (buffered), allowable buffer impacts due to 16" water line (-Y24R- LT) and fiber and gas utility lines (-Y24R- RT).

Permit Drawing 93 of 103, Buffer Drawing 30 of 36

- **Site 33:** Stream SGA (buffered), permanent and temporary stream impacts (allowable buffer impacts) due to C1000, 10'x9' RCBC (buried 1.0') with 5' wide baffles. RFP required a minimum conveyance opening of 77sqft, Q100 is 600 cfs.
    - Structure stabilization type impacts at the outlet end of C1000.
    - Ms. Flemming requested that the C1000 entrance show the bench necessary up to the baffle in plan view.
- **Site 34:** Stream SAAK, permanent and temporary stream impacts due to channel change at the entrance of C1000.
    - Requested to show channel block/fill in stream of the abandoned channels at the entrance of C1000.
- **Site 35:** Stream SAAL (buffered), permanent and temporary stream impacts due to channel change at the entrance of C1000 and the removal of the existing 4'x4' RCBC under E. Garner Road. No buffer impacts anticipated on Stream SAAL, only shown on the main stem SGA.
- Site 33: Wetland WHD(2), permanent and mechanized clearing wetland impact due to the channel work at the entrance of C1000.
- Site 33: Wetland WAAK, permanent and mechanized clearing wetland impact due the roadway facility, toe protection and temporary channel change necessary for the construction sequence of C1000.

    - Temporary channel for the construction sequence starts at the exit of the existing 4'x4' RCBC and travels around the left side of C1000 back to Stream SGA. Mechanized clearing is shown in wetland WAAK where this temporary channel borders on the wetland.
- The PJD Package for the additional features (SAAK, SAAL, WAAJ & WAAK) delineated by RK&K in March 2024 and recently approved.
- **Site 24:** Stream SGD (buffered), permanent and temporary stream impacts (mitigable buffer) impacts due to 60' RCP (buried 1.0') on the matchline with plan sheet 18.

Utility Drawing 9 of 11, Utility Buffer Drawing 9 of 11

- **Site 33:** Stream SGA (buffered), Wetland WHD(2), Temporary stream impacts (allowable buffer) and hand clearing wetland impact due to the anticipated utility line which was set to the full limits of the early acquisition easements for the utility owners along E. Garner Road.
- **Site 34:** Stream SAAK, temporary stream impacts inside full limits of the utility easement.
- **Site 35:** Wetland WAAJ, hand clearing impact shown inside the full limits of the utility easement.
- Discussed how the proposed utility relocations for E. Garner Road are currently under design. With the DB teams Alternative Technical Concept (approved during procurement), E. Garner Road was shifted away from the existing alignment. Current discussions with the utility owners indicate they will not be placing the utility lines inside this early acquisition easement due to the new alignment of E. Garner Road.
    - Mr. Alsmeyer requested all permit impacts (including buffer) in this area be removed from the permit package due to no construction anticipated in these areas anymore.

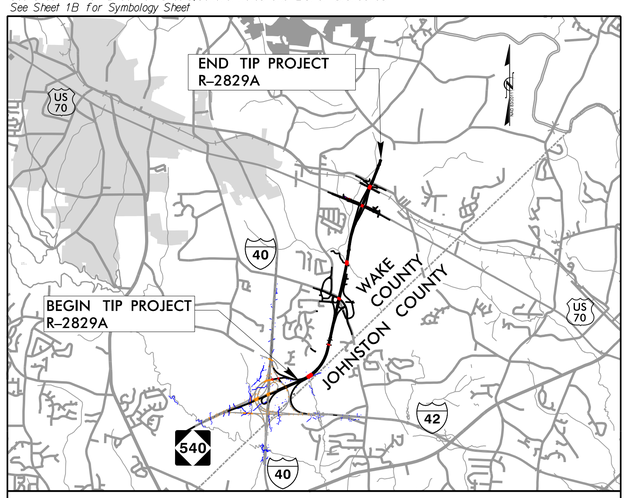
Mr. Cook asked if a post 4B or 4C field visit would be necessary. Agencies agreed no field visit was necessary and the meeting was adjourned.

Permit Drawings

09/08/99

CONTRACT: C204824 TIP PROJECT: R–2829A

See Sheet 1A for Index of Sheets, General Notes and List of Standards
See Sheet 1B for Symbology Sheet



VICINITY MAP (NTS)

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WAKE COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R–2829A	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
35517.3.TA1	N/A, 0540047	DESIGN–BUILD
35517.3. TAGV1	N/A, 0540047	DESIGN–BUILD



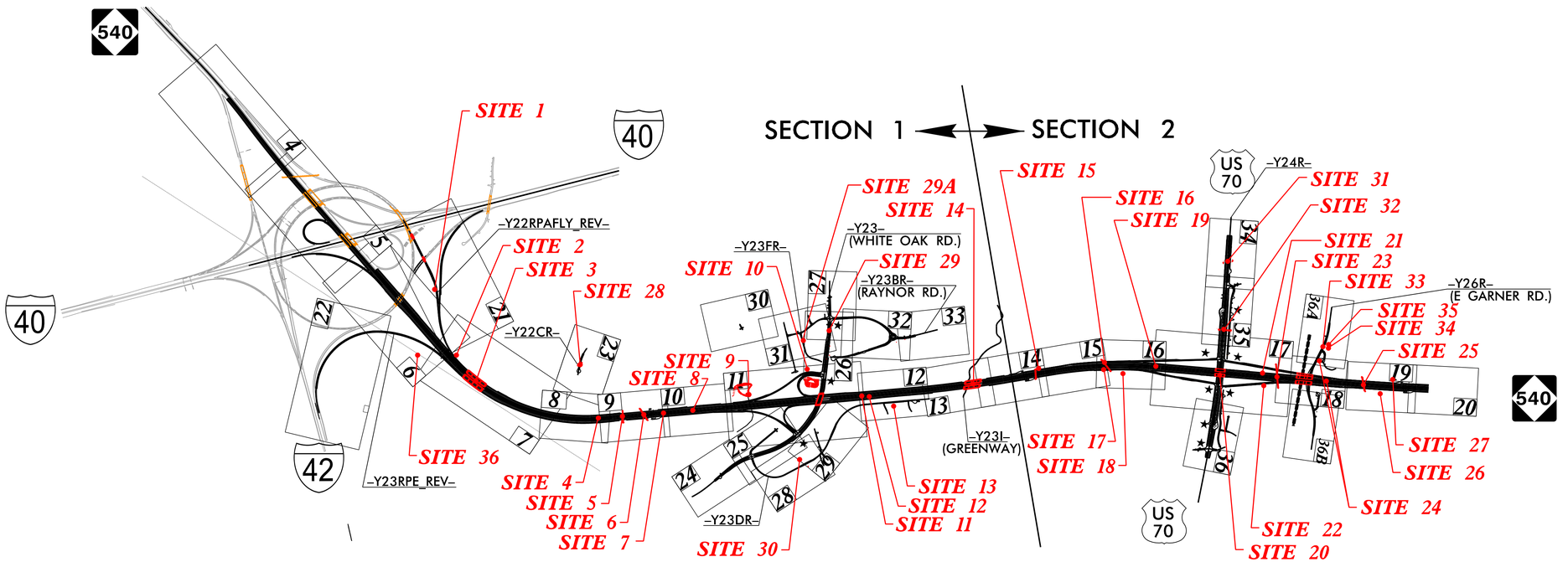
LOCATION: *TRIANGLE EXPRESSWAY SOUTHEAST EXTENSION FROM I–40 TO SOUTH OF SR 2542 (ROCK QUARRY RD.)*

TYPE OF WORK: *GRADING, DRAINAGE, PAVING, LIGHTING, SIGNING, ITS, CULVERTS & STRUCTURES*

SAFETEA–LU SECTION 6002
HYDRAULIC DESIGN MEETING PLANS

PERMIT DRAWING
SHEET 1 OF 103

Submittal September 17, 2024



NOTES:
1. THIS IS A CONTROLLED–ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.

★ PROPOSED TRAFFIC SIGNAL

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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 2023 = 15,440
ADT 2043 = 22,040
K = 12%
D = 65%
T = 10% *
V = 75 MPH

FUNC CLASS: INTERSTATE
* (TTST 4% + DUALS 6%)

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R–2829A.....3.922 MILES
LENGTH STRUCTURE TIP PROJECT R–2829A.....0.242 MILES
TOTAL LENGTH TIP PROJECT R–2829A.....4.164 MILES

NCTA CONTACT

Ron McCollum, PE
DEPUTY CHIEF ENGINEER for PRECONSTRUCTION TURNPIKE AUTHORITY

PLANS PREPARED BY:

RK&K
RUMMEL, KLEPPER & KAHL, LLP
8601 SIX FORKS ROAD, FORUM 1, SUITE 700
RALEIGH, NORTH CAROLINA 27615–3960
NC LICENSE NO. F–0112

FOR NORTH CAROLINA TURNPIKE AUTHORITY

2018 STANDARD SPECIFICATIONS

LETTING DATE:
October 17, 2023

C. Byron Holden, PE
PROJECT ENGINEER

Anthony A. Houser, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: *P.E.*

ROADWAY DESIGN ENGINEER

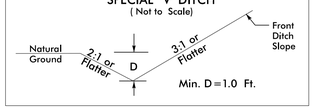
SIGNATURE: *P.E.*

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

9/3/2024
R:\Hydraulics\Permits_Environmental\Drawings\4C\R-2829A_hyd_wet_tsh.dgn
dburke

Submittal September 17, 2024

DETAIL A
SPECIAL 'V' DITCH
(Not to Scale)

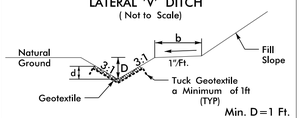


Min. D = 1.0 Ft.

–Y22RPE_REV– STA. 42+00 TO STA. 45+50 LT
–Y22RPE_REV– STA. 48+88 TO STA. 51+93 RT
–L– STA. 996+00 TO STA. 1000+00 LT
–L– STA. 1000+00 TO STA. 1001+00 LT
–L– STA. 1000+50 TO STA. 1002+10 RT
–L1– STA. 1025+50 TO STA. 1026+50 LT
–L1– STA. 1027+50 TO STA. 1030+35 LT
–L1– STA. 1040+35 TO STA. 1044+50 RT
–L1– STA. 1045+50 TO STA. 1048+50 RT
–L1– STA. 1057+00 TO STA. 1057+50 LT
–L1– STA. 1071+50 TO STA. 1073+00 LT
–L1– STA. 1093+50 TO STA. 1094+00 RT
–Y22CR– STA. 15+00 TO STA. 15+50 LT
–Y23R– STA. 16+00 TO STA. 16+50 LT
–Y23R– STA. 16+00 TO STA. 17+00 RT
–Y23R– STA. 17+84 TO STA. 18+50 RT
–Y23R– STA. 19+00 TO STA. 20+00 RT
–Y23R– STA. 22+50 TO STA. 23+80 RT
–Y23R– STA. 23+80 TO STA. 25+30 LT
–Y23R– STA. 23+80 TO STA. 25+25 RT
–Y23R– STA. 26+00 TO STA. 27+15 RT
–Y23R– STA. 62+00 TO STA. 63+35 RT
–Y23R– STA. 63+00 TO STA. 63+32 LT
–Y23R– STA. 68+75 TO STA. 69+00 RT
–Y23AR– STA. 10+30 TO STA. 12+50 RT
–Y23AR– STA. 16+50 TO STA. 17+50 RT
–Y23DR– STA. 10+50 TO STA. 11+50 LT
–Y23DR– STA. 15+00 TO STA. 15+50 LT
–Y23DR– STA. 10+50 TO STA. 16+50 RT
–Y23DR– STA. 20+50 TO STA. 23+50 RT
–Y23DR– STA. 37+00 TO STA. 40+00 LT
–Y23DR– STA. 38+38 TO STA. 41+00 RT
–Y23DR– STA. 54+94 TO STA. 55+65 RT
–Y23E– STA. 10+00 TO STA. 10+56 RT
–Y23E– STA. 10+20 TO STA. 10+50 LT
–Y23G– STA. 10+50 TO STA. 11+50 LT
–Y23J– STA. 14+00 TO STA. 15+30 RT
–DR2– STA. 10+24 TO STA. 11+50 LT
–DR2– STA. 10+70 TO STA. 11+50 RT
–Y23BR_REV– STA. 10+59 TO STA. 12+00 RT
–Y23BR_REV– STA. 10+80 TO STA. 14+50 LT
–Y23BR_REV– STA. 22+50 TO STA. 24+59 LT
–Y23BR_RAB– STA. 11+37 TO STA. 12+00 RT
–Y23BR_RAB– STA. 10+50 TO STA. 10+67 RT
–Y23BR_RAB– STA. 13+53 TO STA. 13+58 LT
–Y23CR_REV– STA. 23+00 TO STA. 24+00 LT
–Y23CR_A– STA. 14+00 TO STA. 14+91 LT

–Y24A– STA. 11+85 TO STA. 13+49 LT
–Y24E– STA. 10+50 TO STA. 11+00 LT
–Y24F– STA. 10+50 TO STA. 12+50 LT
–Y24R– STA. 13+00 TO STA. 16+00 RT
–Y24R– STA. 14+00 TO STA. 15+50 LT
–Y24R– STA. 23+50 TO STA. 24+48 LT
–Y24R– STA. 25+75 TO STA. 26+50 LT
–Y24RPC– STA. 26+30 TO STA. 28+50 LT
–Y26R– STA. 13+00 TO STA. 14+50 LT
–Y26_DRW1– STA. 10+10 TO STA. 12+50 LT
–Y26_DRW1– STA. 10+50 TO STA. 12+50 RT
–Y26RSR1– STA. 12+25 TO STA. 13+82 RT
–Y26RSR2– STA. 10+10 TO STA. 10+50 RT
–L1– STA. 1094+00 TO STA. 1097+00 RT
–Y26R– STA. 13+00 TO STA. 13+50 RT
–L1– STA. 1131+00 TO STA. 1134+50 RT

DETAIL M
LATERAL 'V' DITCH
(Not to Scale)



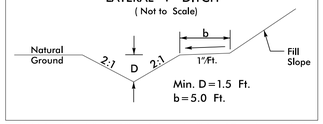
Min. D = 1 Ft.
d = 1 Ft.
b = 5 Ft.

Type of Liner = CL I Rip–Rap, Keyed–In

–Y23RPB– STA. 28+50 TO STA. 29+80 LT
–Y22RPA_REV– STA. 10+00 TO STA. 12+00 RT
–Y22RPAFLY_REV– STA. 19+75 TO 21+46 RT

–Y26R– STA. 22+02 TO STA. 22+40 LT

DETAIL B
LATERAL 'V' DITCH
(Not to Scale)

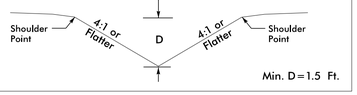


Min. D = 1.5 Ft.
b = 5.0 Ft.

*–Y22RPAFLY_REV– STA. 32+50 TO STA. 34+50 RT
–Y22RPAFLY_REV– STA. 18+54 TO STA. 20+00 LT
–Y22RPA_REV– STA. 21+36 TO STA. 23+00 LT
–Y22RPE_REV– STA. 35+50 TO STA. 39+00 LT
–Y23R– STA. 48+00 TO STA. 49+50 RT
–Y23R– STA. 59+00 TO STA. 60+00 RT
–Y23BR– STA. 22+00 TO STA. 22+75 LT
–L1– STA. 1026+50 TO STA. 1027+50 LT
–L1– STA. 1033+00 TO STA. 1034+00 LT
–L1– STA. 1069+50 TO STA. 1071+50 LT

–L1– STA. 1135+50 TO STA. 1136+00 RT
–L1– STA. 1164+50 TO STA. 1168+50 LT

DETAIL G
MEDIAN 'V' DITCH
(Not to Scale)

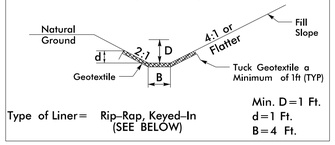


Min. D = 1.5 Ft.

*–L– STA. 962+50 TO STA. 964+00 RT
–L1– STA. 1038+50 TO STA. 1043+50 CL
–L1– STA. 1038+00 TO STA. 1040+35 RT
–L1– STA. 1038+00 TO STA. 1040+50 LT
–L1– STA. 1044+50 TO STA. 1045+00 RT
–L1– STA. 1060+00 TO STA. 1071+00 RT
–Y23RPB– STA. 24+50 TO STA. 25+50 RT
–Y23RPC– STA. 19+00 TO STA. 20+00 LT

–L1– STA. 1128+50 TO STA. 1131+00 RT

DETAIL J
SPECIAL LATERAL BASE DITCH
(Not to Scale)

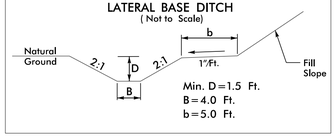


Min. D = 1 Ft.
d = 1 Ft.
B = 4 Ft.

Type of Liner = Rip–Rap, Keyed–In (SEE BELOW)

*DETAIL ONLY USED IN EARLY START

DETAIL C
LATERAL BASE DITCH
(Not to Scale)

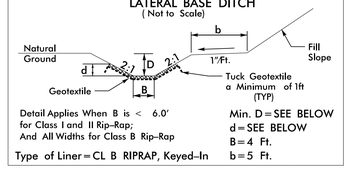


Min. D = 1.5 Ft.
B = 4.0 Ft.
b = 5.0 Ft.

–L– STA. 1003+00 TO STA. 1004+34 RT
–Y23R– STA. 53+00 TO STA. 55+00 RT
–Y23R– STA. 55+00 TO STA. 56+16 LT
–Y23R– STA. 60+95 TO STA. 62+00 RT
–Y22RPA_REV– STA. 14+55 TO STA. 19+50 RT
–Y22RPE_REV– STA. 41+00 TO STA. 42+00 LT

–Y26R– STA. 29+25 TO STA. 34+50 RT

DETAIL H
LATERAL BASE DITCH
(Not to Scale)



Detail Applies When B is < 6.0' for Class I and II Rip–Rap; And All Widths for Class B Rip–Rap

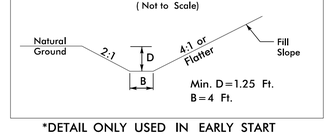
Min. D = SEE BELOW
d = SEE BELOW
B = 4 Ft.
b = 5 Ft.

Type of Liner = CL B RIPRAP, Keyed–In

–Y22RPA_REV– 19+50 TO STA. 20+73 RT, D/d = 1.0'
–Y22RPE_REV– STA. 39+00 TO STA. 41+00 LT, D/d = 1.0'
–L– STA. 966+00 TO STA. 971+50 LT, D/d = 3.0'
–L– STA. 1002+40 TO STA. 1003+00 RT, D/d = 1.5'
–L1– STA. 1015+50 TO STA. 1018+00 LT, D/d = 1.0'
–L1– STA. 1017+85 TO STA. 1019+00 RT, D/d = 1.0'
–L1– STA. 1087+00 TO STA. 1089+50 RT, D/d = 1.0'
–L1– STA. 1092+00 TO STA. 1094+00 LT, D/d = 1.0'
–Y23DR– STA. 34+15 TO STA. 36+00 LT D/d = 1.0'
–Y23DR– STA. 51+00 TO STA. 51+93 RT, D/d = 1.0'
–Y23RPB– STA. 22+50 TO STA. 23+50 RT, D/d = 1.0'

–Y24RPDR– STA. 14+75 TO STA. 17+48 LT, D/d = 2.0'
–Y24RPC– STA. 19+00 TO STA. 21+50 RT, D/d = 1.0'

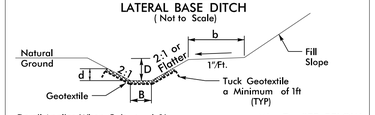
DETAIL K
SPECIAL LATERAL BASE DITCH
(Not to Scale)



Min. D = 1.25 Ft.
B = 4 Ft.

*DETAIL ONLY USED IN EARLY START

DETAIL N
LATERAL BASE DITCH
(Not to Scale)



Detail Applies When B is < 6.0' for Class I and II Rip–Rap; And All Widths for Class B Rip–Rap

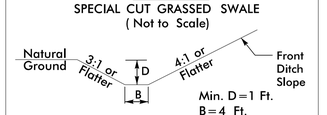
Min. D = SEE BELOW
d = SEE BELOW
B = 4 Ft.
b = 5 Ft.

Type of Liner = CL I Rip–Rap, Keyed–In

–Y22RPAFLY_REV– STA. 15+37 TO 19+75 RT, D/d = 2.75'
–Y22RPAFLY_REV– STA. 21+24 TO STA. 28+00 LT, D/d = 2.5'
–L– STA. 979+00 TO STA. 982+00 RT, D/d = 1.5'
–L– STA. 980+24 TO STA. 986+00 LT, D/d = 1.5'
–Y23R– STA. 31+50 TO STA. 34+75 RT, D/d = 1.5'
–Y23DR– STA. 24+50 TO STA. 27+50 LT, D/d = 1.0'
–Y23DR– STA. 24+00 TO STA. 24+75 RT, D/d = 1.0'
–Y23DR– STA. 32+50 TO STA. 34+15 LT, D/d = 1.0'
–Y23DR– STA. 51+93 TO STA. 52+50 RT, D/d = 1.0'

–L1– STA. 1163+00 TO STA. 1164+50 RT, D/d = 1.5'
–L1– STA. 1163+00 TO STA. 1164+50 LT, D/d = 1.5'
–L1– STA. 1165+50 TO STA. 1167+50 RT, D/d = 1.5'
–L1– STA. 1170+00 TO STA. 1171+38 RT, D/d = 1.5'
–L1– STA. 1179+40 TO STA. 1181+00 LT, D/d = 1.5'
–Y24RPAR– STA. 21+00 TO STA. 21+78 RT, D/d = 1.5'
–Y24RPDR– STA. 12+80 TO STA. 14+24 LT, D/d = 1.5'
–Y24R– STA. 15+50 TO STA. 18+00 LT, D/d = 1.5'
–Y24R– STA. 16+00 TO STA. 19+00 RT, D/d = 1.5'

DETAIL O
SPECIAL CUT GRASSED SWALE
(Not to Scale)

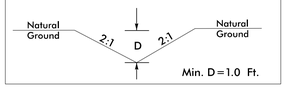


Min. D = 1 Ft.
B = 4 Ft.

–L– STA. 992+00 TO STA. 996+00 LT
–L– STA. 1001+00 TO STA. 1003+00 LT
–L1– STA. 1005+50 TO STA. 1007+00 RT
–L1– STA. 1010+50 TO STA. 1012+86 RT
–L1– STA. 1018+00 TO STA. 1021+50 LT
–L1– STA. 1019+00 TO STA. 1020+00 RT
–L1– STA. 1022+50 TO STA. 1024+18 RT
–L1– STA. 1026+00 TO STA. 1029+50 RT
–L1– STA. 1054+50 TO STA. 1056+00 RT
–L1– STA. 1059+00 TO STA. 1060+50 LT
–Y23R– STA. 18+50 TO STA. 19+00 LT
–Y23R– STA. 38+20 TO STA. 39+00 LT
–Y23RPC– STA. 14+29 TO STA. 17+00 RT
–Y23RPC– STA. 18+00 TO STA. 19+00 RT
–Y23RPC– STA. 20+00 TO STA. 23+50 LT
–Y23RPC– STA. 19+00 TO STA. 24+00 RT
–Y23LPC– STA. 14+00 TO STA. 15++45 RT
–Y23RPB– STA. 16+08 TO STA. 17+12 LT
–Y23RPB– STA. 18+05 TO STA. 22+50 RT
–Y23AR– STA. 13+30 TO STA. 14+50 RT
–Y23DR– STA. 21+00 TO STA. 23+00 LT
–Y23DR– STA. 29+85 TO STA. 32+50 LT
–Y23DR– STA. 36+00 TO STA. 37+00 LT
–Y23DR– STA. 44+43 TO STA. 45+43 RT
–Y23J– STA. 14+00 TO STA. 14+85 LT

–L1– STA. 1094+00 TO STA. 1098+00 LT
–L1– STA. 1097+00 TO STA. 1098+50 RT
–L1– STA. 1101+00 TO STA. 1101+50 RT
–L1– STA. 1119+00 TO STA. 1124+50 RT
–Y24R– STA. 32+50 TO STA. 33+99 RT
–Y24A– STA. 19+51 TO STA. 20+01 LT
–Y24RPBR– STA. 30+50 TO STA. 32+00 LT
–Y24RPC– STA. 21+50 TO STA. 24+50 RT
–L1– STA. 1094+00 TO STA. 1096+16 LT
–L1– STA. 1180+00 TO STA. 1181+50 RT

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

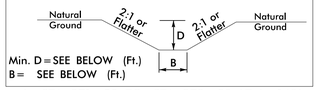


Min. D = 1.0 Ft.

–Y22RPE_REV– STA. 51+93 TO STA. 53+40 RT
BEGIN ELEV = 245.6, END ELEV = 242.3
S = 2.3%, L = 151'
—Y23DR– STA. 55+65 TO STA. 56+18 RT
BEGIN ELEV = 278.7, END ELEV = 277.5
S = 4.5%, L = 53'

–L1– STA. 1161+20 RT
BEGIN ELEV = 308.10, END ELEV = 307.60
S = 1.9%, L = 26'
–Y24RPC– STA. 28+50 TO 28+76 LT
BEGIN ELEV = 300.0, END ELEV = 299.8
S = 0.3%, L = 58'

DETAIL I
STANDARD BASE DITCH
(Not to Scale)

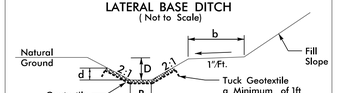


Min. D = SEE BELOW (Ft.)
B = SEE BELOW (Ft.)

–L– STA. 971+50 TO STA. 972+93 LT, L = 143'
BEGIN ELEV = 217.5', END ELEV = 217.0', S = 0.3%
MIN D = 2.75', B = 10'
–Y23R– STA. 23+80 RT, L = 82', S = 0.3%
BEGIN ELEV = 335.25, END ELEV = 335.0',
MIN D = 1.5', B = 4'
–Y23DR– STA. 15+50 RT, L = 100', S = 0.3%
BEGIN ELEV = 316.5, END ELEV = 316.2',
MIN D = 1.5', B = 4'
–L1– STA. 1027+00 LT, L = 205', S = 0.3%
BEGIN ELEV = 296.7, END ELEV = 296.0,
MIN D = 1.5', B = 4'
–L1– STA. 1030+35 LT, L = 172', S = 0.5%
BEGIN ELEV = 301.8, END ELEV = 301.0,
MIN D = 1.5', B = 4'
–Y23DR– STA. 51+00 LT, L = 97', S = 1.2%
BEGIN ELEV = 265.0 END ELEV = 263.8,
MIN D = 2.0', B = 4'
–Y23BR_REV– STA. 24+25 LT, L = 116', S = 0.34%
BEGIN ELEV = 330.50 END ELEV = 330.10,
MIN D = 1.5', B = 4'

–Y24E– STA. 10+60 LT
BEGIN ELEV = 336.2', END ELEV = 336.0', L = 58', S = 0.3%
MIN D = 1', B = 2'
–Y24R– STA. 37+00 RT
BEGIN ELEV = 264.2', END ELEV = 264.1', L = 37', S = 0.3%
MIN D = 2', B = 4'

DETAIL P
LATERAL BASE DITCH
(Not to Scale)



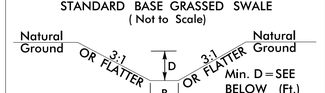
Detail Applies When B is < 6.0' for Class I and II Rip–Rap; And All Widths for Class B Rip–Rap

Min. D = 1.5'
d = 1.5'
B = 4 Ft.
b = 5 Ft.

Type of Liner = CL II Rip–Rap, Keyed–In

–Y24RPBR– STA. 32+00 TO STA. 34+00 LT

DETAIL Q
STANDARD BASE GRASSED SWALE
(Not to Scale)



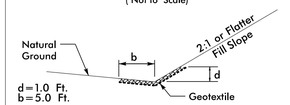
Min. D = SEE BELOW (Ft.)
B = 4 Ft.

*NOTES:
1) LONGITUDINAL SLOPES BETWEEN 0.3% AND 4.0%.
2) MODIFICATIONS MAY BE NEEDED, AS APPROVED BY ENGINEER.

–L1– STA. 1056+00 RT, D = 1'
BEGIN ELEV = 311.9, END ELEV = 311.0, S = 0.9%, L = 100'
–L1– STA. 1084+71 TO STA. 1087+00 RT, D = 2'
BEGIN ELEV = 230.0, END ELEV = 230.8, S = 0.4%, L = 279'
–L1– STA. 1085+06 TO –L– 1086+20 LT, D = 2'
BEGIN ELEV = 229.9, END ELEV = 229.3, S = 0.5%, L = 114'

–L1– STA. 1118+85 TO STA. 1119+00 RT, D = 1'
–L1– STA. 1179+10 TO STA. 1180+00 RT, D = 1'

DETAIL E
TOE PROTECTION
(Not to Scale)



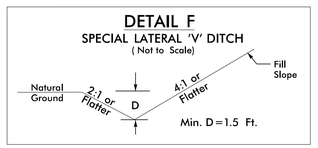
d = 1.0 Ft.
b = 5.0 Ft.

Type of Liner = CLASS B RIPRAP

*–Y22RPAFLY1– STA. 62+90 TO 63+70 LT
*–Y22RPAFLY_REV– STA. 39+50 TO 39+69 LT
*–Y22LPC– STA. 24+13 TO STA. 26+25 RT
*–L– STA. 930+24 TO STA. 930+72 RT
–Y22RPE– STA. 27+50 TO STA. 33+50 RT
–Y22RPE_REV– STA. 39+00 TO STA. 43+00 RT
–L– STA. 1002+00 TO STA. 1002+75 RT
–L– STA. 1003+50 TO STA. 1004+50 LT
–L– STA. 1004+25 TO STA. 1004+75 RT
–L1– STA. 1007+00 TO STA. 1010+00 RT
–L1– STA. 1007+50 TO STA. 1008+75 LT
–L1– STA. 1011+60 TO STA. 1012+41 LT
–L1– STA. 1013+00 TO STA. 1014+00 RT
–L1– STA. 1091+69 TO STA. 1093+51 LT
–Y22CR– STA. 15+50 TO STA. 16+00 LT
–Y22CR– STA. 15+50 TO STA. 16+00 RT
–Y23RPB– STA. 12+50 TO STA. 15+15 LT
–Y23R– STA. 39+00 TO STA. 40+60 RT
–Y23R– STA. 55+93 TO STA. 57+88 RT
–Y23DR– STA. 34+70 TO STA. 35+50 RT
–Y23DR– STA. 51+88 TO STA. 52+47 RT
–Y23E– STA. 10+66 TO STA. 10+81 RT
–DR1– STA. 10+33 TO STA. 11+12 RT
–Y23DR– STA. 47+54 TO STA. 47+92 RT
–Y23DR– STA. 49+24 TO STA. 49+83 RT
–Y23RPB– STA. 27+50 TO STA. 28+00 LT
–Y23FR– STA. 11+15 TO STA. 11+67 LT

–Y24RPAR– STA. 22+86 TO STA. 24+04 RT
–Y24RPDR– STA. 24+10 TO STA. 25+50 LT
–Y26R– STA. 21+70 TO STA. 22+75 RT
–L1– STA. 1104+59 TO STA. 1105+35 LT
–L1– STA. 1170+60 TO STA. 1172+00 LT
–L1– STA. 1123+12 TO STA. 1124+20 LT
–L1– STA. 1125+00 TO STA. 1126+07 LT
–L1– STA. 1128+50 TO STA. 1129+00 LT
–L1– STA. 1098+63 TO STA. 1104+59 LT
–L1– STA. 1169+54 TO STA. 1170+37 LT
–L1– STA. 1174+50 TO STA. 1175+55 LT
–L1– STA. 1113+24 TO STA. 1114+41 RT
–L1– STA. 1110+09 TO STA. 1113+58 LT
–L1– STA. 1113+86 TO STA. 1116+96 LT
–L1– STA. 1124+19 TO STA. 1125+00 LT
–Y23RPBR– STA. 27+50 TO STA. 28+00 LT
–Y24R– STA. 19+75 TO STA. 20+50 LT
–Y24R– STA. 20+00 TO STA. 21+50 RT
–Y24R– STA. 61+15 TO STA. 62+50 LT
–Y24RPAR– STA. 21+70 TO STA. 22+86 RT
–Y24RPDR– STA. 14+30 TO STA. 14+80 LT
–Y24RPDR– STA. 17+40 TO STA. 18+00 LT
–Y26R– STA. 16+80 TO STA. 18+40 RT

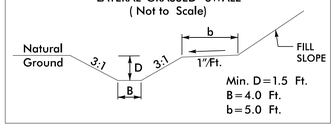
DETAIL F
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Min. D = 1.5 Ft.

*–Y22RPA_REV– STA. 23+00 TO STA. 27+50 RT
*–Y22RPA_REV– STA. 23+00 TO STA. 27+85 LT
–Y23R– STA. 21+50 TO STA. 22+50 RT
*–L– STA. 958+00 TO STA. 962+50 RT
*–L– STA. 957+00 TO STA. 962+50 LT

DETAIL L
LATERAL GRASSED SWALE
(Not to Scale)

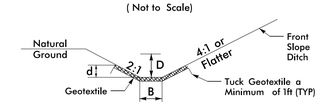


Min. D = 1.5 Ft.
B = 4.0 Ft.
b = 5.0 Ft.

–L– STA. 1003+00 TO STA. 1003+80 LT
–L1– STA. 1009+03 TO STA. 1011+50 LT
–L1– STA. 1014+00 TO STA. 1015+50 LT
–L1– STA. 1023+00 TO STA. 1023+84 LT
–L1– STA. 1024+18 TO STA. 1025+00 RT
–L1– STA. 1034+00 TO STA. 1036+38 LT
–L1– STA. 1089+50 TO STA. 1093+50 RT
–L1– STA. 1090+00 TO STA. 1092+00 LT
–Y23R– STA. 19+00 TO STA. 23+00 LT
–Y23R– STA. 39+00 TO STA. 41+00 LT
–Y23R– STA. 49+50 TO STA. 53+00 RT
–Y23R– STA. 60+00 TO STA. 60+95 RT
–Y23RPC– STA. 17+00 TO STA. 18+00 RT
–Y23FR– STA. 10+25 TO STA. 11+15 LT
–Y23FR– STA. 11+69 TO STA. 12+40 RT
–Y23FR– STA. 11+94 TO STA. 13+50 LT

–L1– STA. 1136+00 TO STA. 1137+00 RT
–L1– STA. 1164+50 TO STA. 1165+50 RT
–L1– STA. 1167+50 TO STA. 1170+00 RT
–L1– STA. 1168+50 TO STA. 1169+50 LT
–Y24RPBR– STA. 29+50 TO STA. 30+50 LT
–Y24RPDR– STA. 11+60 TO STA. 12+80 LT
–Y24R– STA. 18+00 TO STA. 19+17 LT
–Y24R– STA. 19+00 TO STA. 20+11 RT
–Y24R– STA. 33+99 TO STA. 34+68 RT
–L1– STA. 1113+00 TO STA. 1113+26 RT

DETAIL R
SPECIAL BASE DITCH
(Not to Scale)



Min. D = 1.5Ft.
d = 1.5Ft.
B = 4Ft.

Type of Liner = CL B Rip–Rap

–L– STA. 982+00 TO STA. 988+00 RT
–L1– STA. 1025+00 TO STA. 1026+00 RT
–L1– STA. 1029+50 TO STA. 1030+35 RT
–Y23K– STA. 11+98 TO STA. 12+60 LT
(BEGIN ELEV = 308.2, END ELEV = 304.5, S = 6.0%, L = 62')
–Y23AR– STA. 11+50 TO STA. 15+50 LT (Min. D = 2.0')

PROJECT REFERENCE NO.	SHEET NO.
R–2829A	2D–1

HYDRAULICS DESIGN ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 2 OF 103

NOTE: * INDICATE DITCHES INSIDE THE EARLY START PACKAGE

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aburke

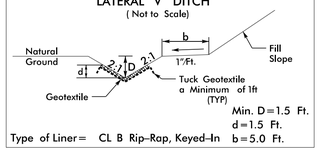
Submittal September 17, 2024

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	2D-2
	HYDRAULICS DESIGN ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 3 OF 103

DETAIL S
LATERAL 'V' DITCH
(Not to Scale)



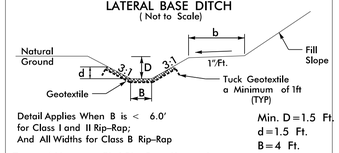
Min. D=1.5 Ft.
d=1.5 Ft.
b=5.0 Ft.

Type of Liner= CL B Rip-Rap, Keyed-In

-Y22RPAFLY_REV- STA. 20+00 TO STA. 21+24 LT
-Y23R- STA. 41+00 TO STA. 43+00 LT
-Y23RPB- STA. 23+50 TO STA. 24+50 RT
-Y23FR- STA. 13+50 TO STA. 14+00 LT

-Y26R- STA. 20+30 TO STA. 22+02 LT
-Y26R- STA. 28+50 TO STA. 29+25 RT

DETAIL T
LATERAL BASE DITCH
(Not to Scale)



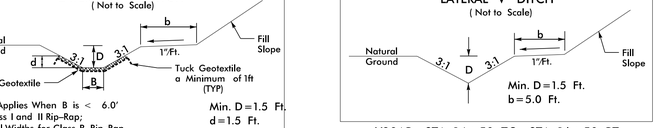
Detail Applies When B is < 6.0' for Class I and II Rip-Rap; And All Widths for Class B Rip-Rap

Min. D=1.5 Ft.
d=1.5 Ft.
B=4 Ft.
b=5 Ft.

Type of Liner= CL I Rip-Rap, Keyed-In

-Y23RPB- STA. 28+20 TO STA. 28+50 LT
-Y22RPAFLY_REV- STA. 28+00 TO STA. 30+00 LT

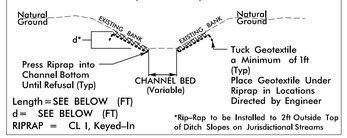
DETAIL U
LATERAL 'V' DITCH
(Not to Scale)



Min. D=1.5 Ft.
b=5.0 Ft.

-Y23AR- STA. 14+50 TO STA. 16+50 RT
-Y23AR- STA. 17+50 TO STA. 19+80 RT

DETAIL V
BANK STABILIZATION
(Not to Scale)

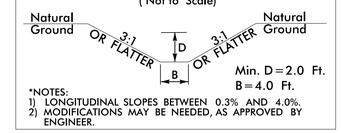


Length=SEE BELOW (FT)
d= SEE BELOW (FT)
RIPRAP = CL I, Keyed-In

*Rip-Rap to be Installed to 2ft Outside Top of Ditch Slopes on Jurisdictional Streams

-Y26R- STA. 22+25 LT,
L=72', d=3'
48 TONS CL I RIPRAP, W/107 SY GEOFAB

DETAIL W
STANDARD BASE GRASSED SWALE
(Not to Scale)

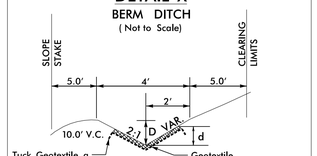


Min. D=2.0 Ft.
B=4.0 Ft.

*NOTES:
1) LONGITUDINAL SLOPES BETWEEN 0.3% AND 4.0%.
2) MODIFICATIONS MAY BE NEEDED, AS APPROVED BY ENGINEER.

-Y23RPB- STA. 23+50 RT, L=143'
BEGIN ELEV=317.1', END ELEV=315.7', S=1.0%
MIN D=1.0', B=4'

DETAIL X
BERM DITCH
(Not to Scale)



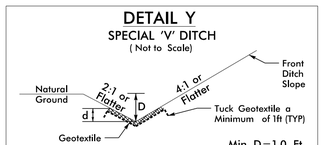
Min. D=1.0 Ft.
d=1.0 Ft.

Type of Liner=CLASS B RIPRAP, Keyed-In

-Y23RPC- STA. 14+29 TO STA. 16+00 RT
-L1- STA. 1053+30 TO STA. 1058+00 LT

-L1- STA. 1108+85 TO STA. 1112+50 RT

DETAIL Y
SPECIAL 'V' DITCH
(Not to Scale)



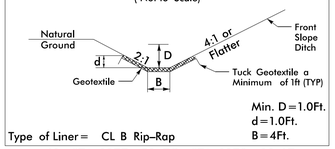
Min. D=1.0 Ft.

Type of Liner=Class B Rip-Rap, Keyed-In d=1.0 Ft.

-L1- STA. 1021+50 TO STA. 1022+00 LT
-L1- STA. 1020+00 TO STA. 1021+00 RT
-L1- STA. 1096+50 TO STA. 1097+00 RT
-L1- STA. 1073+00 TO STA. 1075+50 LT
-Y22CR- STA. 14+50 TO STA 15+00 LT
-Y23BR_REV- STA. 21+00 TO STA. 22+50 RT
-Y23CR_REV- STA. 21+50 TO STA. 23+00 LT
-Y23R- STA. 64+65 TO STA. 69+00 LT
-Y23R- STA. 66+50 TO STA. 68+30 RT
-Y23LPB- STA. 14+50 TO STA. 15+00 LT
-Y23DR- STA. 27+50 TO STA. 28+80 LT
-Y23DR- STA. 36+00 TO STA. 38+38 RT

-L1- STA. 1181+50 TO STA. 1182+50 RT
-Y24R- STA. 31+00 TO STA. 32+50 RT
-Y24A- STA. 10+90 TO STA. 11+45 LT (L=83')
-Y24A- STA. 10+75 TO 11+00 RT (L=33')
-Y24A- STA. 11+00 TO 12+65 RT (L=97')
-Y24A- STA. 12+65 TO 13+49 RT
-Y24A- STA. 19+01 TO STA. 19+51 LT

DETAIL Z
SPECIAL BASE DITCH
(Not to Scale)

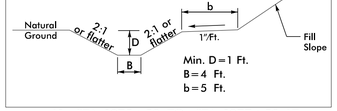


Min. D=1.0Ft.
d=1.0Ft.
B=4Ft.

Type of Liner= CL B Rip-Rap

-L1- STA. 1077+50 TO STA. 1079+00 LT
-Y23DR- STA. 23+50 TO STA. 24+00 RT
-L1- STA. 1061+00 TO STA. 1062+61 LT
-Y23R- STA. 64+50 TO STA. 66+50 RT

DETAIL AA
LATERAL BASE DITCH
(Not to Scale)

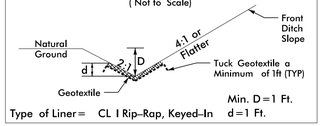


Min. D=1 Ft.
B=4 Ft.
b=5 Ft.

-L1- STA. 1075+50 TO STA. 1077+50 LT
-L1- STA. 1066+00 TO STA. 1069+50 LT

-L1- STA. 1098+00 TO STA. 1098+80 LT
-Y24R- STA. 37+00 TO STA. 39+50 RT
-Y24RPDR- STA. 18+00 TO STA. 21+50 LT
-L1- STA. 1114+70 TO STA 1115+77 RT

DETAIL AB
SPECIAL 'V' DITCH
(Not to Scale)



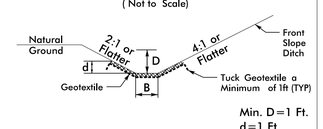
Min. D=1 Ft.

Type of Liner= CL I Rip-Rap, Keyed-In d=1 Ft.

-Y23I_REV- STA. 14+00 TO STA. 14+90 RT
-Y23I_REV- STA. 14+00 TO STA. 15+00 LT
-Y23DR- STA. 52+50 TO STA 53+23 RT
-Y23FR- STA. 13+50 TO STA. 14+00 RT

-Y24B- STA. 10+26 TO STA. 11+00 RT

DETAIL AC
SPECIAL BASE DITCH
(Not to Scale)



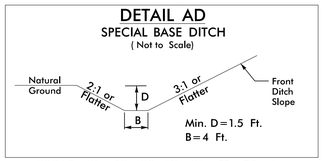
Min. D=1 Ft.
d=1 Ft.
B=4Ft.

Type of Liner= CL I Rip-Rap, Keyed-In

-L- STA. 990+00 TO STA. 991+00 LT
-Y23DR- STA. 23+00 TO STA. 24+50 LT
-Y23H- STA. 10+50 TO STA. 11+85 RT
-Y23R- STA. 32+50 TO STA. 33+50 LT

-Y24R- STA. 47+00 TO STA. 51+50 RT

DETAIL AD
SPECIAL BASE DITCH
(Not to Scale)

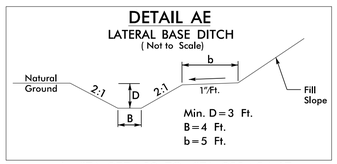


Min. D=1.5 Ft.
B=4 Ft.

-Y23AR- STA. 10+30 TO STA. 11+50 LT
-Y23R- STA. 33+50 TO STA. 36+00 LT
-Y23RPC- STA. 24+00 TO STA. 27+00 RT

-Y26R- STA. 34+50 TO STA. 39+50 RT

DETAIL AE
LATERAL BASE DITCH
(Not to Scale)

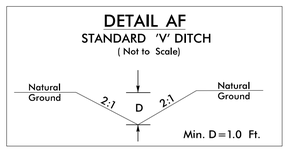


Min. D=3 Ft.
B=4 Ft.
b=5 Ft.

-L- STA. 977+00 TO STA. 980+24 LT

-Y24RPC- STA. 15+67 TO STA. 17+32 RT

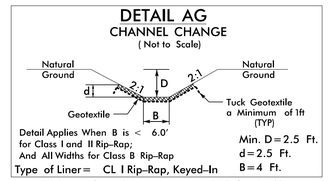
DETAIL AF
STANDARD 'V' DITCH
(Not to Scale)



Min. D=1.0 Ft.

-Y23CR_REV- STA. 12+07 TO STA. 14+50,
BEGIN ELEV=347.50', END ELEV=354.73'
S=2.8%, L=266'

DETAIL AG
CHANNEL CHANGE
(Not to Scale)



Detail Applies When B is < 6.0' for Class I and II Rip-Rap; And All Widths for Class B Rip-Rap

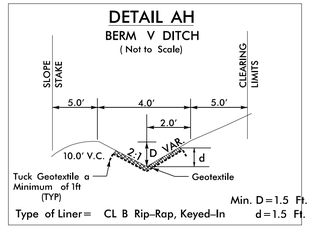
Min. D=2.5 Ft.
d=2.5 Ft.
B=4 Ft.

Type of Liner= CL I Rip-Rap, Keyed-In

-Y23DR- STA. 24+75 RT, L=38', S=0.5%
BEGIN ELEV=279.6', END ELEV=279.4', D/d=3.5'

-L1- STA. 1161+40 TO 1162+07 LT
BEGIN ELEV=291.0', END ELEV=288.5', L=110', S=2.3%
-L1- STA. 1162+07 TO 1163+00 LT
BEGIN ELEV=294.5', END ELEV=291.0', L=108', S=3.2%

DETAIL AH
BERM V DITCH
(Not to Scale)

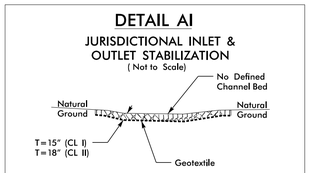


Min. D=1.5 Ft.

Type of Liner= CL B Rip-Rap, Keyed-In d=1.5 Ft.

-L1- STA. 1030+50 TO STA. 1034+50 RT

DETAIL AI
JURISDICTIONAL INLET & OUTLET STABILIZATION
(Not to Scale)



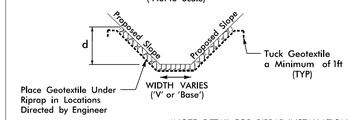
Length of Pad= SEE BELOW
*Minimum 10' at Inlet
*Minimum 20' at Outlet

Width of Pad = See STD. 876.02

Type of Liner= CL I or CL II Rip-Rap - Keyed-In\Countersunk

-L- STA. 1004+00 LT, CL I RIPRAP, L=20'
-L1- STA. 1036+50 LT, CL I RIPRAP, L=20'

DETAIL AJ
RIPRAP STABILIZATION
(Not to Scale)



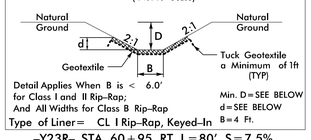
*NOTE: DETAIL FOR RIPRAP INSTALLATION SHALL BE USED IN CONJUNCTION WITH ANY PROPOSED DITCH DETAIL AND/OR ROADWAY TYPICAL DITCH.

Length= SEE BELOW (Ft.)
Type of Liner= CL B or I Rip-Rap - Keyed-In (SEE BELOW)

-Y22RPA_REV- STA. 20+80 LT (RDY TYPICAL DITCH)
L=110', MIN d=1.0'
45 TONS CL B RIPRAP, W/101 SY GEOFAB
-Y23DR- STA. 15+50 RT (END OF STD. DITCH),
L=6', MIN d=1.5'
3 TONS CL B RIPRAP, W/9 SY GEOFAB
-Y23DR- STA. 51+07 RT (END OF STD. DITCH),
L=6', MIN d=2.0'
4 TONS CL I RIPRAP, W/9 SY GEOFAB
-L1- STA. 1086+20 RT (END OF SWALE),
L=20', MIN d=2.0'
18 TONS CL I RIPRAP, W/37 SY GEOFAB
-L1- STA. 1084+85 RT (END OF SWALE),
L=20', MIN d=2.0'
18 TONS CL I RIPRAP, W/37 SY GEOFAB
-L1- STA. 1087+05 LT (END OF SWALE),
L=20', MIN d=2.0'
23 TONS CL I RIPRAP, W/46 SY GEOFAB

-L1- STA. 1145+00 TO 1147+00 RT
L=200', MIN d=1.0'
82 TONS CL B RIPRAP, W/183 SY GEOFAB
-L1- STA. 1179+10 RT (END OF SWALE),
L=12', MIN d=1.0'
6 TONS CL B RIPRAP, W/14 SY GEOFAB

DETAIL AK
STANDARD BASE DITCH
(Not to Scale)



Detail Applies When B is < 6.0' for Class I and II Rip-Rap; And All Widths for Class B Rip-Rap

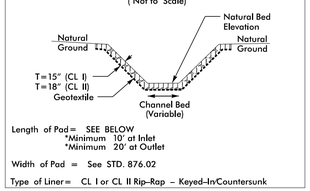
Min. D=SEE BELOW
d=SEE BELOW
B=4 Ft.

Type of Liner= CL I Rip-Rap, Keyed-In

-Y23R- STA. 60+95 RT, L=80', S=7.5%
BEGIN ELEV=332.0, END ELEV=326.0', D/d=1.0'
-Y23AR- STA. 11+50 RT, L=24', S=1.4%
BEGIN ELEV=299.0', END ELEV=298.67', D/d=2.5'
-L- STA. 975+75 TO STA. 977+00 LT, L=125', S=0.3%
BEGIN ELEV=214.5', END ELEV=214.9', D/d=3.5'
-Y23DR- STA. 23+85 LT, L=91', S=8.0%
BEGIN ELEV=293.4', END ELEV=286.1', D/d=1.5'
-Y23DR- STA. 38+35 RT, L=27', S=6.7%
BEGIN ELEV=293.8', END ELEV=292.0', D/d=1.0'
-L1- STA. 1034+79 LT, L=60'
BEGIN ELEV=284.0', END ELEV=284.5', S=0.8%
MIN D=1.5, B=4'
-L1- STA. 1035+11 LT, L=67'
BEGIN ELEV=284.5', END ELEV=292.0', S=1.1%
MIN D=1.5', B=4'

-Y26- STA. 14+50 LT, L=73', S=14.0%, D/d=1.0'
BEGIN ELEV=300.0', END ELEV=289.8'
-Y26_DRW1- STA. 10+50 RT, L=40', S=16.6%, D/d=1.0'
BEGIN ELEV=297.3', END ELEV=290.6'

DETAIL AL
JURISDICTIONAL INLET & OUTLET CHANNEL STABILIZATION
(Not to Scale)



Length of Pad= SEE BELOW
*Minimum 10' at Inlet
*Minimum 20' at Outlet

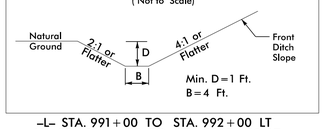
Width of Pad = See STD. 876.02

Type of Liner= CL I or CL II Rip-Rap - Keyed-In\Countersunk

-L- STA. 1003+00 RT, CL I RIPRAP, L=16'
-L1- STA. 1023+00 LT, CL II RIPRAP, L=20'
-L1- STA. 1062+62 LT, CL I RIPRAP, L=16'
-Y23DR- STA. 46+25 RT, CL I RIPRAP, L=20'
-Y23R- STA. 61+14 LT, CL I RIPRAP, L=20'
-Y23DR- STA. 34+15 LT, CL I RIPRAP, L=16'
-Y23DR- STA. 34+31 RT, CL I RIPRAP, L=20'
-Y23FR- STA. 11+71 LT, CL II RIPRAP, L=20'
-Y23FR- STA. 11+64 RT, CL II RIPRAP, L=20'

-L1- STA. 1024+00 LT, CL II RIPRAP, L=20'
-L1- STA. 1163+00 RT, CL II RIPRAP, L=20'
-Y24RPBR- STA. 34+00 RT, CL II RIPRAP, L=20'
-Y24RPDR- STA. 24+73 LT, CL I RIPRAP, L=20'
-Y26R- STA. 21+69 RT, CL II RIPRAP, L=20'
-Y26R- STA. 22+02 LT, CL II RIPRAP, L=20'

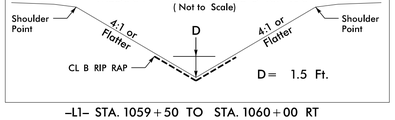
DETAIL AM
SPECIAL BASE DITCH
(Not to Scale)



Min. D=1 Ft.
B=4 Ft.

-L- STA. 991+00 TO STA. 992+00 LT
-L1- STA. 1046+00 TO STA. 1047+50 LT
-L1- STA. 1057+50 TO STA. 1059+00 LT
-Y23R- STA. 23+00 TO STA. 23+80 LT
-Y23R- STA. 31+50 TO STA. 32+50 LT
-Y23LPB- STA. 13+22 TO STA. 14+50 LT

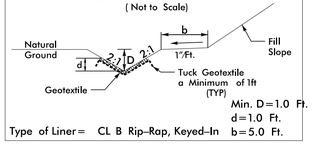
DETAIL AN
MEDIAN V DITCH W/CL B RIP RAP
(Not to Scale)



D= 1.5 Ft.

-L1- STA. 1059+50 TO STA. 1060+00 RT

DETAIL AO
LATERAL 'V' DITCH
(Not to Scale)



Min. D=1.0 Ft.
d=1.0 Ft.
b=5.0 Ft.

Type of Liner= CL B Rip-Rap, Keyed-In

-Y22CR- STA. 13+61 TO STA 14+50 LT
-Y22CR- STA. 14+26 TO STA 15+50 RT
-L1- STA. 1070+50 TO STA. 1071+50 RT

-L1- STA. 1161+20 TO STA. 1161+60 RT

NOTE: * INDICATE DITCHES INSIDE THE EARLY START PACKAGE

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9/3/2024 R:\Hydraulics\Permits_Enviromental\Drawings\4C\R-2829A_hyd_wet_DitchDetails.dgn aburke

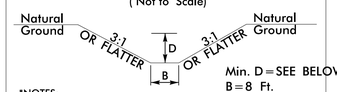
Submittal September 17, 2024

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	2D-3
	HYDRAULICS DESIGN ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 4 OF 103

DETAIL AP
STANDARD BASE GRASSED SWALE
(Not to Scale)

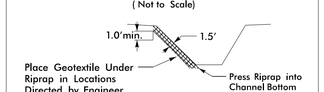


Min. D = SEE BELOW (Ft.)
B = 8 Ft.

*NOTES:
1) LONGITUDINAL SLOPES BETWEEN 0.3% AND 4.0%.
2) MODIFICATIONS MAY BE NEEDED, AS APPROVED BY ENGINEER.

–L1– STA. 1086 + 92 TO STA. 1090 + 00 LT, D = 2 FT
–BEGIN ELEV = 230.0, END ELEV = 231.0 S = 0.3%, L = 312'

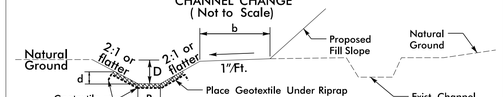
DETAIL AQ
BANK STABILIZATION
(Not to Scale)



Type of Liner = CL I Rip–Rap, Keyed–In

–L1– STA. 1086 + 29 LT
5 TONS CL I RIPRAP, W/10 SY GEOFAB
–L1– STA. 1086 + 92 LT
5 TONS CL I RIPRAP, W/10 SY GEOFAB
–L1– STA. 1086 + 75 RT
5 TONS CL I RIPRAP, W/10 SY GEOFAB

DETAIL AR
CHANNEL CHANGE
(Not to Scale)



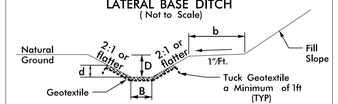
Type of Liner = SEE BELOW

Min. D = SEE BELOW
d = SEE BELOW
B = SEE BELOW
b = 5.0 Ft.

–L1– 1014 + 00 RT, B = 7', CL II RIPRAP, D/d = 3.0'
BEGIN ELEV. = 255.5, END ELEV. = 257.0, L = 73' (RCBC INLET)
–L1– STA. 1014 + 50 TO STA. 1015 + 10 RT, B = 7', CL II RIPRAP, MIN D/d = 3.0'
–L1– STA. 1015 + 10 TO STA. 1016 + 00 RT, B = 7', CL II RIPRAP, MIN D/d = 1.0'
–L1– STA. 1016 + 50 TO STA. 1018 + 29 RT, B = 5', GRASS, MIN D/d = 1.5'

–L1– STA. 1171 + 38 TO STA. 1176 + 30 RT, CL I RIPRAP, MIN D/d = 4.0'
–L1– STA. 1175 + 56 TO STA. 1178 + 09 LT, CL I RIPRAP, MIN D/d = 4.0'
–L1– STA. 1115 + 82 TO STA. 1118 + 00 RT, CL II RIP RAP, MIN D/d = 2.5, B = 8'
–L1– STA. 1118 + 85 TO STA. 1119 + 12 RT, CL II RIP RAP, MIN D/d = 3.0, B = 4–8'
–L1– STA. 1179 + 00 TO STA. 1179 + 40 LT, CL I RIP RAP, MIN D/d = 5.0, B = 4'

DETAIL AS
LATERAL BASE DITCH
(Not to Scale)



Detail Applies When B is < 6.0' for Class I and II Rip–Rap; And All Widths for Class B Rip–Rap

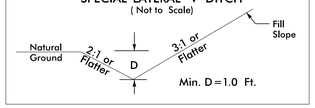
Type of Liner = CL B RIPRAP, Keyed–In

Min. D = SEE BELOW
d = SEE BELOW
B = 4 Ft.
b = 5 Ft.

–L1– STA. 1079 + 00 TO STA. 1084 + 50 LT, D/d = 1.0'

–L1– STA. 1159 + 62 TO STA. 1161 + 20 RT, D/d = 1.0'
–L1– STA. 1161 + 60 TO STA. 1163 + 00 RT, D/d = 1.0'

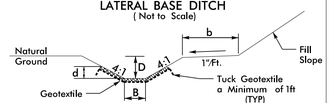
DETAIL AT
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Min. D = 1.0 Ft.

–Y26RSR2– STA. 10 + 70 TO STA. 14 + 20 LT

DETAIL AU
LATERAL BASE DITCH
(Not to Scale)



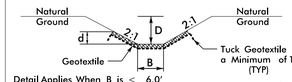
Detail Applies When B is < 6.0' for Class I and II Rip–Rap; And All Widths for Class B Rip–Rap

Type of Liner = CL B Rip–Rap, Keyed–In

Min. D = 2 Ft.
d = 2 Ft.
B = 4 Ft.
b = 5 Ft.

–Y23AR– STA. 16 + 55 TO STA. 18 + 90 LT

DETAIL AV
STANDARD BASE DITCH
(Not to Scale)



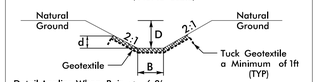
Detail Applies When B is < 6.0' for Class I and II Rip–Rap; And All Widths for Class B Rip–Rap

Type of Liner = CL B Rip–Rap, Keyed–In

Min. D = SEE BELOW
d = SEE BELOW
B = SEE BELOW

–L– STA. 978 + 30 TO STA. 979 + 00 RT, L = 78'
BEGIN ELEV = 221.8', END ELEV = 222.1', S = 0.4%
MIN D = 2.5', B = 6'
–Y22RPE_REV– STA. 42 + 00 RT, L = 330'
BEGIN ELEV = 252.7', END ELEV = 240.4', S = 3.8%
MIN D = 1.5', B = 4'
–Y22RPE_REV– STA. 45 + 00 RT, L = 100'
BEGIN ELEV = 240.4', END ELEV = 240.0', S = 0.4%
MIN D = 2.5', B = 4'

DETAIL AW
STANDARD BASE DITCH
(Not to Scale)



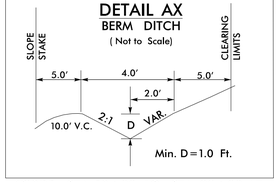
Detail Applies When B is < 6.0' for Class I and II Rip–Rap; And All Widths for Class B Rip–Rap

Type of Liner = CL I Rip–Rap, Keyed–In

Min. D = 1.5 Ft.
d = 1.5 Ft.
B = 4 Ft.

–L1– STA. 1161 + 64 LT
BEGIN ELEV = 295.0', END ELEV = 289.6', L = 90', S = 6.0%

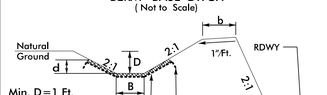
DETAIL AX
BERM DITCH
(Not to Scale)



Min. D = 1.0 Ft.

–Y23DR– STA. 13 + 00 TO STA. 23 + 00 LT

DETAIL AY
BERM BASE DITCH
(Not to Scale)



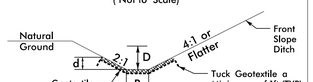
Min. D = 1 Ft.
d = 1 Ft.
B = 4 Ft.
b = 4 Ft.

Type of Liner = CL B Rip–Rap, Keyed–In

–L– STA. 987 + 50 TO STA. 997 + 50 RT
–L1– STA. 1058 + 00 TO STA. 1060 + 50 LT

–L1– STA. 1103 + 79 TO STA. 1108 + 85 RT

DETAIL AZ
SPECIAL BASE DITCH
(Not to Scale)

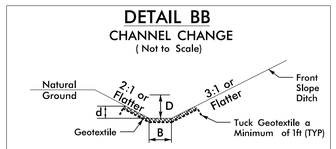


Type of Liner = CL II Rip–Rap, Keyed–In

Min. D = 1 Ft.
d = 1 Ft.
B = 5 Ft.

–L1– STA. 1100 + 00 TO STA. 1101 + 00 RT

DETAIL BB
CHANNEL CHANGE
(Not to Scale)



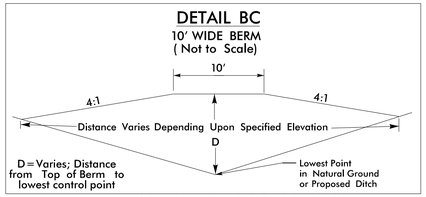
Min. D = See Below
d = See Below
B = See Below

Type of Liner = CL I OR II RIPRAP, Keyed–In

–L1– STA. 1016 + 00 TO STA. 1016 + 50 RT, CL I RIPRAP
MIN D/d = 1.0, B = 7'

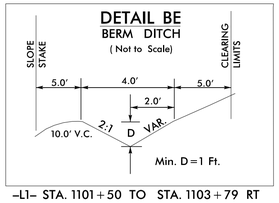
–L1– STA. 1118 + 00 TO STA. 1118 + 85 RT, CL II RIPRAP
MIN D/d = 2.5', B = 8'

DETAIL BC
10' WIDE BERM
(Not to Scale)



–L1– STA. 1161 + 60 LT, TOP ELEV = 311.0'

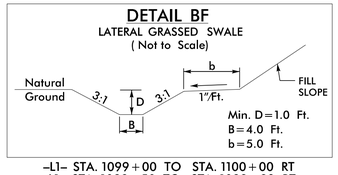
DETAIL BE
BERM DITCH
(Not to Scale)



Min. D = 1 Ft.

–L1– STA. 1101 + 50 TO STA. 1103 + 79 RT

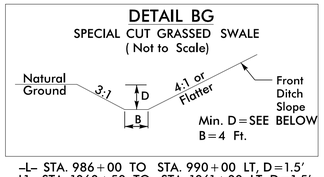
DETAIL BF
LATERAL GRASSED SWALE
(Not to Scale)



Min. D = 1.0 Ft.
B = 4.0 Ft.
b = 5.0 Ft.

–L1– STA. 1099 + 00 TO STA. 1100 + 00 RT
–L1– STA. 1098 + 50 TO STA. 1098 + 83 RT
–Y24A– STA. 20 + 01 TO STA. 20 + 50 LT

DETAIL BG
SPECIAL CUT GRASSED SWALE
(Not to Scale)

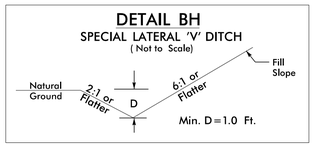


Min. D = SEE BELOW
B = 4 Ft.

–L– STA. 986 + 00 TO STA. 990 + 00 LT, D = 1.5'
–L1– STA. 1060 + 50 TO STA. 1061 + 00 LT, D = 1.5'

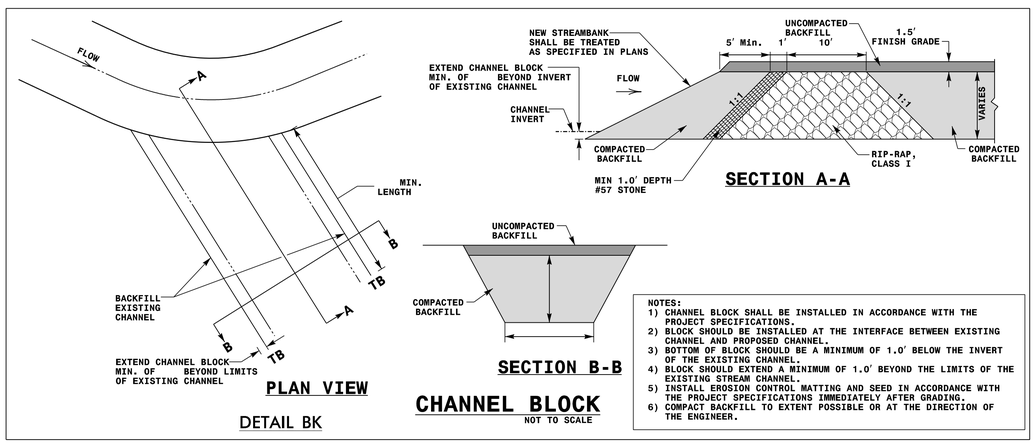
–Y24RPC– STA. 24 + 50 TO STA. 29 + 00 RT, D = 2'

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



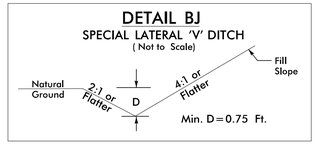
Min. D = 1.0 Ft.

–Y24R– STA. 41 + 75 TO STA. 43 + 00 LT



DETAIL BK

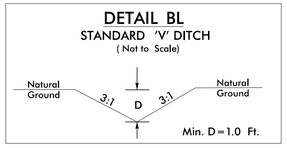
DETAIL BJ
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Min. D = 0.75 Ft.

–Y24E– STA. 10 + 80 TO STA. 12 + 00 RT

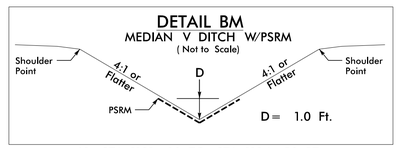
DETAIL BL
STANDARD 'V' DITCH
(Not to Scale)



Min. D = 1.0 Ft.

–Y23J– STA. 13 + 00 TO STA. 14 + 00 RT
BEGIN ELEV = 321.7', END ELEV = 318.0'
S = 3.7%, L = 100'
–Y23J– STA. 13 + 00 TO STA. 14 + 00 LT
BEGIN ELEV = 323.1', END ELEV = 317.0'
S = 6.1%, L = 100'

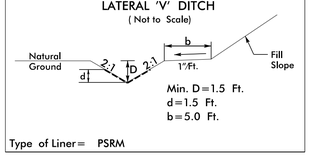
DETAIL BM
MEDIAN V DITCH W/PSRM
(Not to Scale)



D = 1.0 Ft.

–L1– STA. 1131 + 00 TO STA. 1134 + 50 RT

DETAIL BN
LATERAL 'V' DITCH
(Not to Scale)



Min. D = 1.5 Ft.
d = 1.5 Ft.
b = 5.0 Ft.

Type of Liner = PSRM

–Y22RPAFLY_REV– STA. 30 + 00 TO STA. 31 + 50 LT

NOTE: * INDICATE DITCHES INSIDE THE EARLY START PACKAGE

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aburke

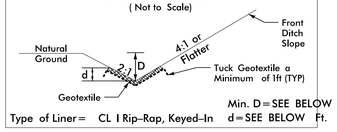
Submittal September 17, 2024

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	2D-4
	HYDRAULICS DESIGN ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 5 OF 103

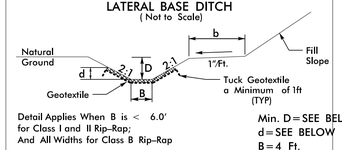
DETAIL BO
SPECIAL 'V' DITCH
(Not to Scale)



Type of Liner= CL I Rip–Rap, Keyed–In Min. D=SEE BELOW Ft. d=SEE BELOW Ft.

–L1– STA. 1063+00 TO STA. 1066+00 LT, D/d= 2.0′
–L1– STA. 1057+50 TO STA. 1058+00 LT, D/d= 1.5′

DETAIL BP
LATERAL BASE DITCH
(Not to Scale)

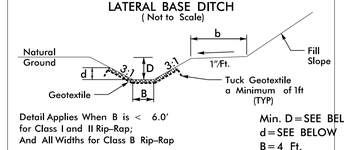


Detail Applies When B is < 6.0′ for Class I and II Rip–Rap; And All Widths for Class B Rip–Rap

Type of Liner= CL I Rip–Rap, Keyed–In Min. D=SEE BELOW Ft. d=SEE BELOW Ft. B=4 Ft. b=5 Ft.

–Y24RPC– STA. 17+32 TO STA. 19+00 RT, D/d=2.5′
–L1– STA. 1124+50 TO STA. 1125+30 RT, D/d=1.0′

DETAIL BQ
LATERAL BASE DITCH
(Not to Scale)

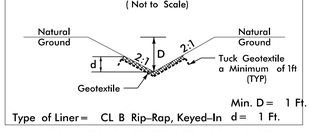


Detail Applies When B is < 6.0′ for Class I and II Rip–Rap; And All Widths for Class B Rip–Rap

Type of Liner= CL I Rip–Rap, Keyed–In Min. D=SEE BELOW Ft. d=SEE BELOW Ft. B=4 Ft. b=5 Ft.

–Y23RPB– STA. 28+75 TO STA. 30+45 RT
–Y22RPE_REV–STA. 28+00 TO STA. 30+00 LT

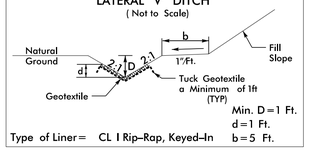
DETAIL BR
STANDARD 'V' DITCH
(Not to Scale)



Type of Liner= CL B Rip–Rap, Keyed–In Min. D= 1 Ft. d= 1 Ft.

–Y23J– STA. 9+50 TO STA. 10+00 RT
BEGIN ELEV=316.8, END ELEV=313.8
S=6.0%, L=50′

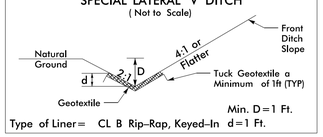
DETAIL BT
LATERAL 'V' DITCH
(Not to Scale)



Type of Liner= CL I Rip–Rap, Keyed–In Min. D=1 Ft. d=1 Ft. b=5 Ft.

–Y23FR– STA. 12+40 TO STA. 13+50 RT

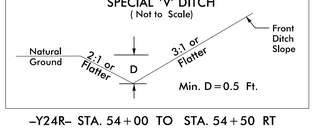
DETAIL BU
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Type of Liner= CL B Rip–Rap, Keyed–In Min. D=1 Ft. d=1 Ft.

–Y23R– STA. 20+00 TO STA. 21+50 RT

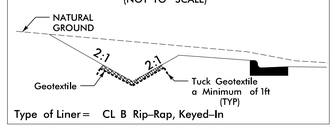
DETAIL BV
SPECIAL 'V' DITCH
(Not to Scale)



Min. D=0.5 Ft.

–Y24R– STA. 54+00 TO STA. 54+50 RT

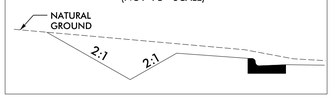
DETAIL BX
SPECIAL BACK OF CURB CUT DITCH
(NOT TO SCALE)



Type of Liner= CL B Rip–Rap, Keyed–In

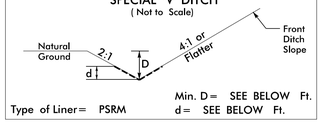
–Y23CR_REV– STA. 11+14 TO STA. 12+20 RT

DETAIL BY
SPECIAL BACK OF CURB CUT DITCH
(NOT TO SCALE)



–Y23CR_REV– STA. 10+00 TO STA. 10+93 RT

DETAIL BZ
SPECIAL 'V' DITCH
(Not to Scale)

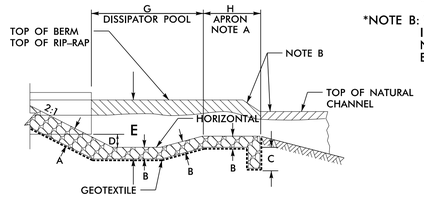


Type of Liner= PSRM Min. D= SEE BELOW Ft. d= SEE BELOW Ft.

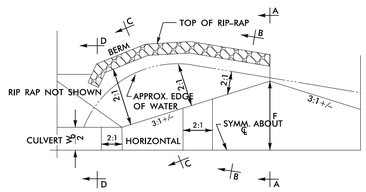
–Y23BR_REV– STA. 23+00 TO STA. 24+02 RT, D/d=1.0′
–Y23BR_REV– STA. 24+02 TO STA. 24+39 RT, D/d=1.5′

DETAIL BS
RIP–RAPPED ENERGY DISSIPATOR BASIN

℄ SECTION

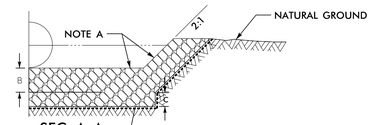


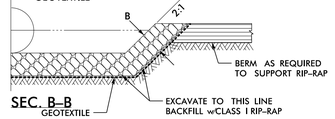
HALF PLAN

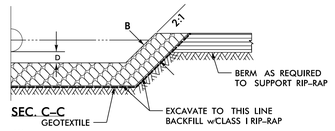


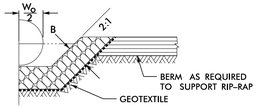
*NOTE A: IF EXIT VELOCITY OF BASIN IS SPECIFIED, EXTEND BASIN AS REQUIRED TO OBTAIN SUFFICIENT CROSS SECTIONAL AREA AT SECTION A–A SUCH THAT Q des/(CROSS SECTION AREA AT SEC. A–A)= SPECIFIED VELOCITY.

*NOTE B: WARP BASIN TO CONFORM TO NATURAL STREAM CHANNEL. TOP OF RIP–RAP IN FLOOR OF BASIN SHOULD BE AT SAME ELEVATION OR LOWER THAN NATURAL CHANNEL BOTTOM AT SEC. A–A. PROVIDE SMOOTH TRANSITION FROM END OF APRON TO NATURAL CHANNEL WIDTH.









NOTE:
Wo= DIAMETER OF PIPE, WIDTH OF BOX OR SPAN OF PIPE–ARCH CULVERTS

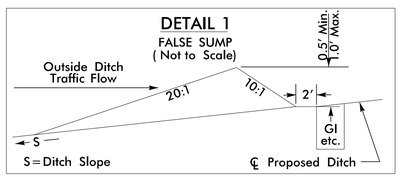
DIM.	RIP RAP BASIN #							
	1	2	3	4	5	6	7	8
A	0.4′	0.4′						
B	0.3′	0.3′						
C	3.0′	3.0′						
D	2.1′	4.7′						
E	3.3′	5.2′						
F	15.0′	17.6′						
G	21.1′	47.0′						
H	10.5′	23.5′						

*ALL DIMENSIONS APPROXIMATE IN FT

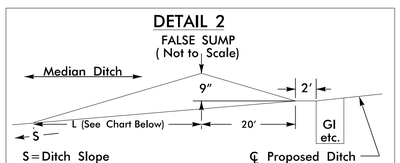
BASIN #	LOCATION (AT OUTLET)
1	–Y23RPB– 23+55
2	–L1– STA. 1105+37 LT
3	
4	
5	
6	
7	
8	

5/05

DETAIL 1
FALSE SUMP
(Not to Scale)

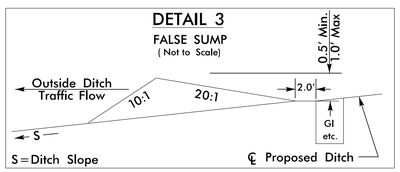


DETAIL 2
FALSE SUMP
(Not to Scale)



Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20′	Over 4.0% To 6.0%	40′
Over 2.0% To 4.0%	30′	Over 6.0%	50′

DETAIL 3
FALSE SUMP
(Not to Scale)



NOTE: * INDICATE DITCHES INSIDE THE EARLY START PACKAGE

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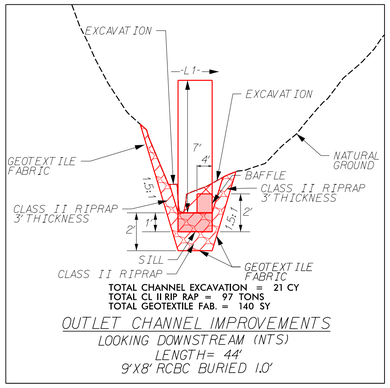
9/3/2024
R:\Hydraulics\Permits_Enviromental\Drawings\4C\R-2829A_hyd_wet_DitchDetails.dgn
aburke

Submittal September 17, 2024

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	2D-5
	HYDRAULICS DESIGN ENGINEER

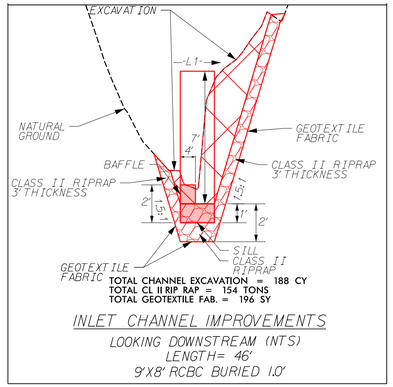
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 6 OF 103



TOTAL CHANNEL EXCAVATION = 21 CY
TOTAL CL II RIP RAP = 97 TONS
TOTAL GEOTEXTILE FAB. = 140 SY

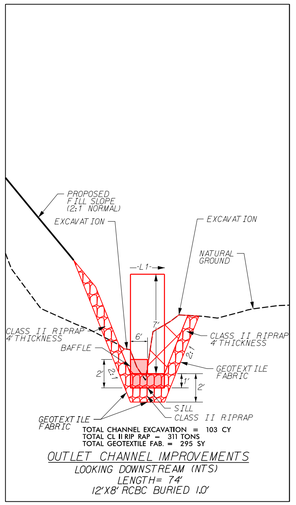
OUTLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM (NTS)
LENGTH= 44'
9'X8' RCBC BURIED 1.0'



TOTAL CHANNEL EXCAVATION = 188 CY
TOTAL CL II RIP RAP = 154 TONS
TOTAL GEOTEXTILE FAB. = 196 SY

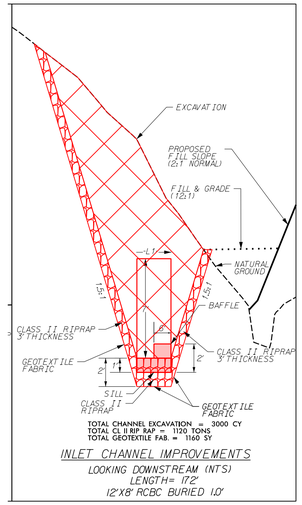
INLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM (NTS)
LENGTH= 46'
9'X8' RCBC BURIED 1.0'

CULVERT INLET/OUTLET DETAILS
C100
-L1- STA. 1008+75
(DETAIL CA)



TOTAL CHANNEL EXCAVATION = 103 CY
TOTAL CL II RIP RAP = 311 TONS
TOTAL GEOTEXTILE FAB. = 295 SY

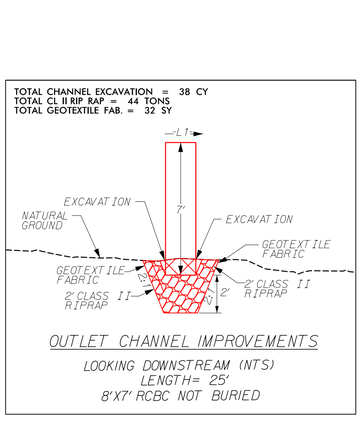
OUTLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM (NTS)
LENGTH= 74'
12'X8' RCBC BURIED 1.0'



TOTAL CHANNEL EXCAVATION = 3000 CY
TOTAL CL II RIP RAP = 1120 TONS
TOTAL GEOTEXTILE FAB. = 1160 SY

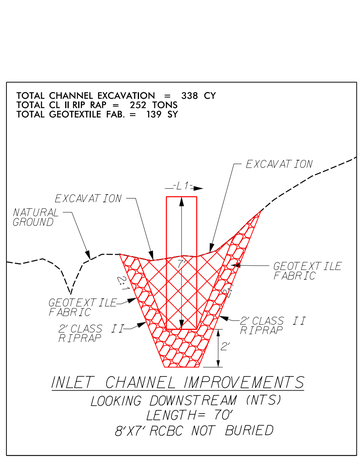
INLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM (NTS)
LENGTH= 172'
12'X8' RCBC BURIED 1.0'

CULVERT INLET/OUTLET DETAILS
C200
-L1- STA. 1013+50
(DETAIL CB)



TOTAL CHANNEL EXCAVATION = 38 CY
TOTAL CL II RIP RAP = 44 TONS
TOTAL GEOTEXTILE FAB. = 32 SY

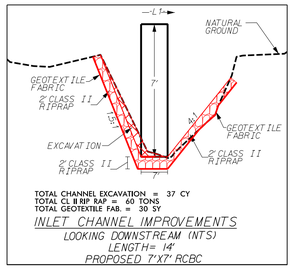
OUTLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM (NTS)
LENGTH= 25'
8'X7' RCBC NOT BURIED



TOTAL CHANNEL EXCAVATION = 338 CY
TOTAL CL II RIP RAP = 252 TONS
TOTAL GEOTEXTILE FAB. = 139 SY

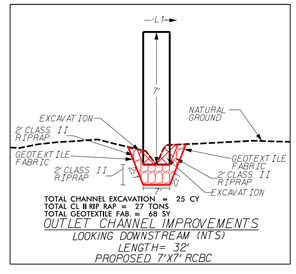
INLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM (NTS)
LENGTH= 70'
8'X7' RCBC NOT BURIED

CULVERT INLET/OUTLET DETAILS
C300
-L1- STA. 1099+00
(DETAIL CC)



TOTAL CHANNEL EXCAVATION = 37 CY
TOTAL CL II RIP RAP = 60 TONS
TOTAL GEOTEXTILE FAB. = 30 SY

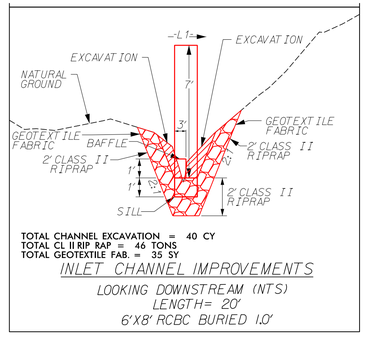
INLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM (NTS)
LENGTH= 14'
PROPOSED 7'X7' RCBC



TOTAL CHANNEL EXCAVATION = 25 CY
TOTAL CL II RIP RAP = 27 TONS
TOTAL GEOTEXTILE FAB. = 68 SY

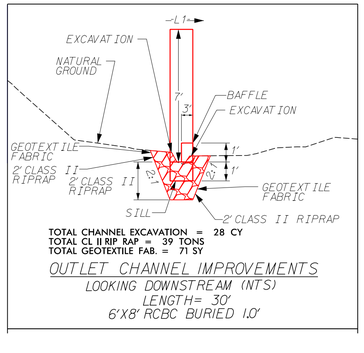
OUTLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM (NTS)
LENGTH= 32'
PROPOSED 7'X7' RCBC

CULVERT INLET/OUTLET DETAILS
C400
-L1- STA. 1114+75
(DETAIL CD)



TOTAL CHANNEL EXCAVATION = 40 CY
TOTAL CL II RIP RAP = 46 TONS
TOTAL GEOTEXTILE FAB. = 35 SY

INLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM (NTS)
LENGTH= 20'
6'X8' RCBC BURIED 1.0'



TOTAL CHANNEL EXCAVATION = 28 CY
TOTAL CL II RIP RAP = 39 TONS
TOTAL GEOTEXTILE FAB. = 71 SY

OUTLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM (NTS)
LENGTH= 30'
6'X8' RCBC BURIED 1.0'

CULVERT INLET/OUTLET DETAILS
C500
-L1- STA. 1152+00
(DETAIL CE)

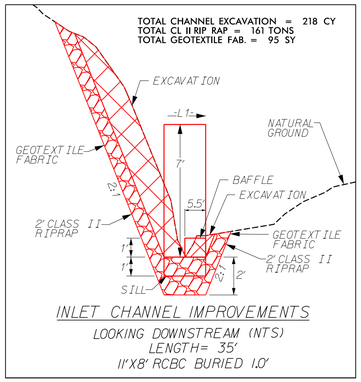
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aburke

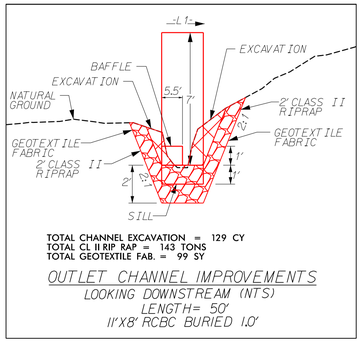
PROJECT REFERENCE NO.	SHEET NO.
R-2829A	2D-6
	HYDRAULICS DESIGN ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 7 OF 103



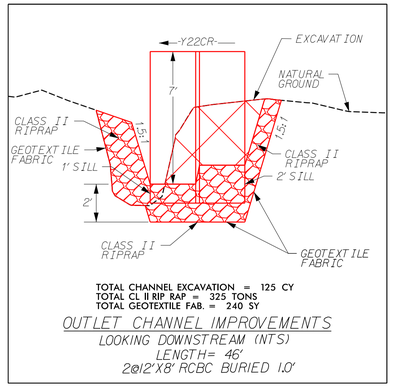
INLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM (NTS)
LENGTH= 35'
11'X8' RCBC BURIED 1.0'



TOTAL CHANNEL EXCAVATION = 129 CY
TOTAL CL II RIP RAP = 143 TONS
TOTAL GEOTEXTILE FAB. = 99 SY

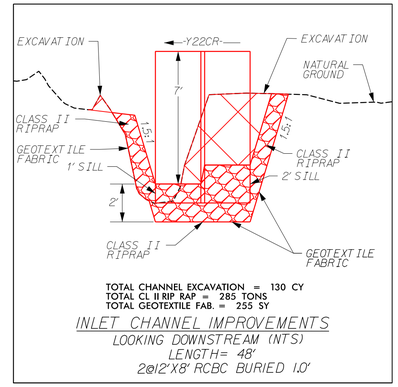
OUTLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM (NTS)
LENGTH= 50'
11'X8' RCBC BURIED 1.0'

CULVERT INLET/OUTLET DETAILS
C600
–L1– STA. 1171+00
(DETAIL CF)



TOTAL CHANNEL EXCAVATION = 125 CY
TOTAL CL II RIP RAP = 325 TONS
TOTAL GEOTEXTILE FAB. = 240 SY

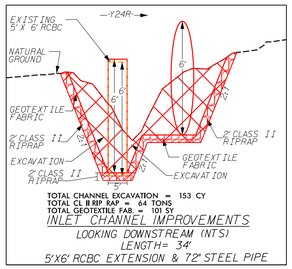
OUTLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM (NTS)
LENGTH= 46'
2@12'X8' RCBC BURIED 1.0'



TOTAL CHANNEL EXCAVATION = 130 CY
TOTAL CL II RIP RAP = 285 TONS
TOTAL GEOTEXTILE FAB. = 255 SY

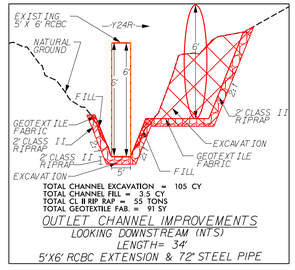
INLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM (NTS)
LENGTH= 48'
2@12'X8' RCBC BURIED 1.0'

CULVERT INLET/OUTLET DETAILS
C700
–Y22CR– STA. 14+00
(DETAIL CG)



TOTAL CHANNEL EXCAVATION = 153 CY
TOTAL CL II RIP RAP = 64 TONS
TOTAL GEOTEXTILE FAB. = 101 SY

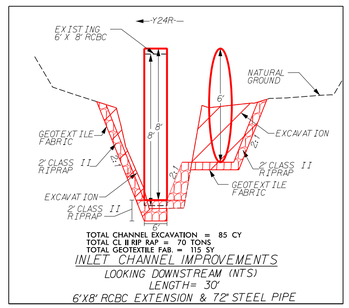
INLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM (NTS)
LENGTH= 34'
5'X6' RCBC EXTENSION & 72" STEEL PIPE



TOTAL CHANNEL EXCAVATION = 105 CY
TOTAL CHANNEL FILL = 3.5 CY
TOTAL CL II RIP RAP = 55 TONS
TOTAL GEOTEXTILE FAB. = 91 SY

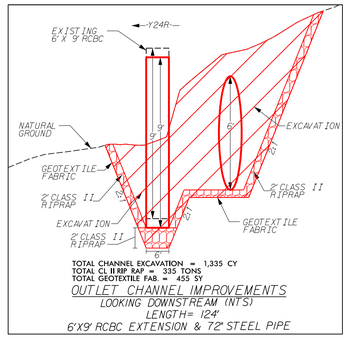
OUTLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM (NTS)
LENGTH= 34'
5'X6' RCBC EXTENSION & 72" STEEL PIPE

CULVERT INLET/OUTLET DETAILS
C800
–Y24R– 19+50
(DETAIL CH)



TOTAL CHANNEL EXCAVATION = 85 CY
TOTAL CL II RIP RAP = 70 TONS
TOTAL GEOTEXTILE FAB. = 115 SY

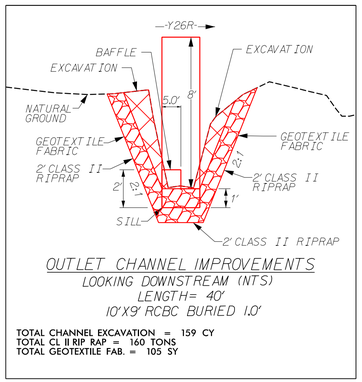
INLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM (NTS)
LENGTH= 30'
6'X8' RCBC EXTENSION & 72" STEEL PIPE



TOTAL CHANNEL EXCAVATION = 1,335 CY
TOTAL CL II RIP RAP = 335 TONS
TOTAL GEOTEXTILE FAB. = 455 SY

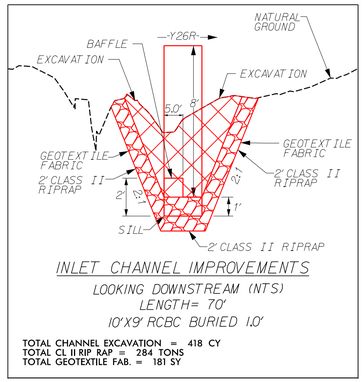
OUTLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM (NTS)
LENGTH= 124'
6'X9' RCBC EXTENSION & 72" STEEL PIPE

CULVERT INLET/OUTLET DETAILS
C900
–Y24R– 34+50
(DETAIL CI)



OUTLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM (NTS)
LENGTH= 40'
10'X9' RCBC BURIED 1.0'

TOTAL CHANNEL EXCAVATION = 159 CY
TOTAL CL II RIP RAP = 160 TONS
TOTAL GEOTEXTILE FAB. = 105 SY



INLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM (NTS)
LENGTH= 70'
10'X9' RCBC BURIED 1.0'

TOTAL CHANNEL EXCAVATION = 418 CY
TOTAL CL II RIP RAP = 284 TONS
TOTAL GEOTEXTILE FAB. = 181 SY

CULVERT INLET/OUTLET DETAILS
C1000
–Y26R– 18+75
(DETAIL CJ)

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aburke

Submittal September 17, 2024

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-2828A	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 8 OF 103

MATCHLINE -Y22FLYCC- STA. 100+00 SEE SHT 21

MATCHLINE -Y22RPAFLY_REV- STA. 23+00 SEE SHEET 21

MATCHLINE -L- STA. 939+00 SEE SHEET 5

MATCHLINE -Y22RPD- STA. 25+00 SEE SHEET 5

MATCHLINE -L- STA. 965+50 SEE SHEET 7

MATCHLINE -Y22RPE_REV- STA. 35+00 SEE SHEET 22

1 NC DEPT. OF TRANSPORTATION DB 18373 PG 815 AREA ONE

2 MARY WHITE, ISABELL & ADRIA WALKER RM 2012 PG 1326 DB 4163 PG 369

NCDOT (ROBERT BRYAN, SR)

NC DEPT. OF TRANSPORTATION DB 18373 PG 815 AREA TWO & THREE

ROBERT BRYAN, SR DB 3400 PG 208 (JOHNSTON COUNTY)

SITE 36

WFK

WFL

SEE INSET A

INSET A

300' TAPER LANE

PROP. GUIDERAIL

ENGLISH

SCALE 100 0 100 200

SCALE FOR INSETS 50 0 50 100

MECHANIZED CLEARING (GRUBBING)

GRAPHIC SCALE 50 25 0 50 100

PLANS

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R-2828A_Roadway_Environmental/10-Drawings/401/Matchline/R-2828A_Sht_401_Match_Line_RDs.dgn

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 9 OF 103

MATCHLINE -Y22FLYCC- STA. 100+00 SEE SHT 21

MATCHLINE -Y22RPAFLY_REV- STA. 23+00 SEE SHEET 21

MATCHLINE -L- STA. 939+00 SEE SHEET 5

MATCHLINE -Y22RPD- STA. 25+00 SEE SHEET 5

MATCHLINE -L- STA. 965+50 SEE SHEET 7

MATCHLINE -Y22RPE_REV- STA. 35+00 SEE SHEET 22

NC DEPT. OF TRANSPORTATION
DB 18373 PG 815
AREA ONE

MARY WHITE ISABELL & ADRIA WALKER
BM 2012 PG 1326
DB 4163 PG 369

NCDOT
(ROBERT BRYAN, SR)

ROBERT BRYAN, SR
DB 3400 PG 208 (JOHNSTON COUNTY)

NC DEPT. OF TRANSPORTATION
DB 18373 PG 815
AREA TWO & THREE

SEE INSET A

INSET A

SITE 36

WFK

WFL

PDE

ENGLISH

SCALE
100 0 100 200

SCALE FOR INSETS
50 0 50 100

MECHANIZED CLEARING (GRUBBING)

GRAPHIC SCALE
50 25 0 50 100
PLANS

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REVISIONS

ENGLISH

SCALE 100 0 100 200

S S	SURFACE WATER IMPACTS
TS TS	TEMPORARY SURFACE WATER IMPACTS
HC HC	HAND CLEARING (NON-GRUBBING)
T T	TEMPORARY FILL IN WETLAND
* * * *	MECHANIZED CLEARING (GRUBBING)
E E	WETLAND EXCAVATION
F F	FILL IN WETLAND

NAD 83/NSRS 2011

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 10 OF 103

MARY WHITE, ISABELL WARD, & ADRIA WALKER
BM 2012 PG 1326
DB 4163 PG 369

DB 6385 PG 925 (WAKE COUNTY)
DB 4055 PG 194 (WAKE COUNTY)
DB 1058 PG 695 (JOHNSTON COUNTY)
BM 1988 PG 1683

POSSIBLE DEED OVERLAP
MARY WHITE, ISABELL WARD, & ADRIA WALKER
ROBERT BRYAN, SR

SITE 2

SITE 3

SEE INSET A
SHEET 12 OF 103

MATCHLINE -L- STA. 965+50 SEE SHEET 6

MATCHLINE -L- STA. 992+00 SEE SHEET 8

WFN(2)
WFJ
SEW
SEY
WFN(1)
WFW
WFX

JS BEGINS
JS ENDS

LATERAL 4' BASE DITCH W/CL II RIPRAP SEE DETAIL H

STD. 10' BASE DITCH SEE DETAIL I

STANDARD 4' BASE DITCH W/CL I RIPRAP SEE DETAIL AK

DITCH Q10 = 68.3cfs V10 = 2.92fps

LATERAL 4' BASE DITCH SEE DETAIL AE

LATERAL 4' BASE DITCH W/CL I RIPRAP SEE DETAIL N

SPECIAL CUT 4' BASE SWALE SEE DETAIL BG

SPECIAL 4' BASE DITCH W/CL I RIPRAP SEE DETAIL AC

SPECIAL CUT SEE DETAIL AM

SPECIAL CUT SEE DETAIL A

STD V DITCH SEE DETAIL D

TIE PROPOSED DITCH TO R-2828 RIPRAP PAD

TIE TO EXISTING INFALL W/CL II RIPRAP

SPECIAL CUT 4' BASE DITCH W/CL II RIPRAP SEE DETAIL K

SEE PROFILE FOR BERM DITCH GRADE -L- 990+50.993=150 RT

1185 TONS CL II RIPRAP

1229 TONS CL II RIPRAP

DITCH V10 = 12.54cfs V05 = 1.99fps

STANDARD 4' BASE DITCH W/CL II RIPRAP SEE DETAIL AJ

LATERAL 4' BASE DITCH W/CL I RIPRAP SEE DETAIL N

FLOW DISSIPATES FROM JS AND CONTINUES UNIMPEDED TO THE WETLAND AROUND CL II/LIMED BRIDGE APPROACH

BM#37
N: 636,017
E: 2,030,004
-BL- STA. 480+64.47
O/S: 262.26' RT
EL: 276.49' (NAD 83)
BENCH TIE IN BASE OF 14" POPLAR

BM#38
N: 638,826
E: 2,031,403
-BL- STA. 498+37.99
O/S: 486.04' RT
EL: 276.49' (NAD 83)
BENCH TIE IN BASE OF 9" PINE

WAKE COUNTY
JOHNSTON COUNTY

JOHN AMAN
DB 6385 PG 925 (WAKE COUNTY)
DB 4055 PG 194 (WAKE COUNTY)
DB 1058 PG 695 (JOHNSTON COUNTY)
BM 1988 PG 1683

FOR SITE 5 BRIDGE PLANS SEE SHTS S5L-1 THRU S5L-49 AND S5R-1 THRU S5R-49

GRAPHIC SCALE 50 25 0 50 100
PLANS

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RIGHT OF WAY PLANS
Plotted: 10/1/2024
By: Jeffrey Lee
Z:\Projects\Projects_Environmental\Drawings\ROW\Roadway\R-2829A_hyd_ROW.dgn

Submittal September 17, 2024

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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SHEET 11 OF 103

NAD 83/NSRS 2011

ENGLISH

SCALE 100 0 100 200

S S	SURFACE WATER IMPACTS
TS TS	TEMPORARY SURFACE WATER IMPACTS
HC HC	HAND CLEARING (NON-GRUBBING)
T T	TEMPORARY FILL IN WETLAND
* *	MECHANIZED CLEARING (GRUBBING)
E E	WETLAND EXCAVATION
F F	FILL IN WETLAND

MARY WHITE, ISABELL WARD, & ADRIA WALKER
BM 2012 PG 1326
DB 4163 PG 369

DB 6385 PG 925 (WAKE COUNTY)
DB 4055 PG 194 (WAKE COUNTY)
DB 1058 PG 695 (JOHNSTON COUNTY)
BM 1988 PG 1683

POSSIBLE DEED OVERLAP
MARY WHITE, ISABELL WARD, & ADRIA WALKER
ROBERT BRYAN, SR

SITE 2

SITE 3

SEE INSET A
SHEET 12 OF 103

MATCHLINE -L- STA. 965+50 SEE SHEET 6

MATCHLINE -L- STA 992+00 SEE SHEET 8

JS BEGINS

JS ENDS

WFN(2)

WFJ

SEW

SEY

WFW

WFX

WFN(1)

970+00

975+00

980+00

985+00

990+00

N 65° 41' 56" E

55+00

WAKE COUNTY
JOHNSTON COUNTY

JOHN AMAN
DB 6385 PG 925 (WAKE COUNTY)
DB 4055 PG 194 (WAKE COUNTY)
DB 1058 PG 695 (JOHNSTON COUNTY)
BM 1988 PG 1683

FOR SITE 5 BRIDGE PLANS
SEE SHTS SSL-1 THRU SSL-49
AND SSR-1 THRU SSR-49

GRAPHIC SCALE
50 25 0 50 100
PLANS

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8/17/99

ENGLISH

25 0 25 50
SCALE FOR INSETS

S S	SURFACE WATER IMPACTS	F F	FILL IN WETLAND
TS TS	TEMPORARY SURFACE WATER IMPACTS	* * *	MECHANIZED CLEARING (GRUBBING)
HC HC	HAND CLEARING (NON-GRUBBING)	E E	WETLAND EXCAVATION
		T T	TEMPORARY FILL IN WETLAND

PROJECT REFERENCE NO.	SHEET NO.
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

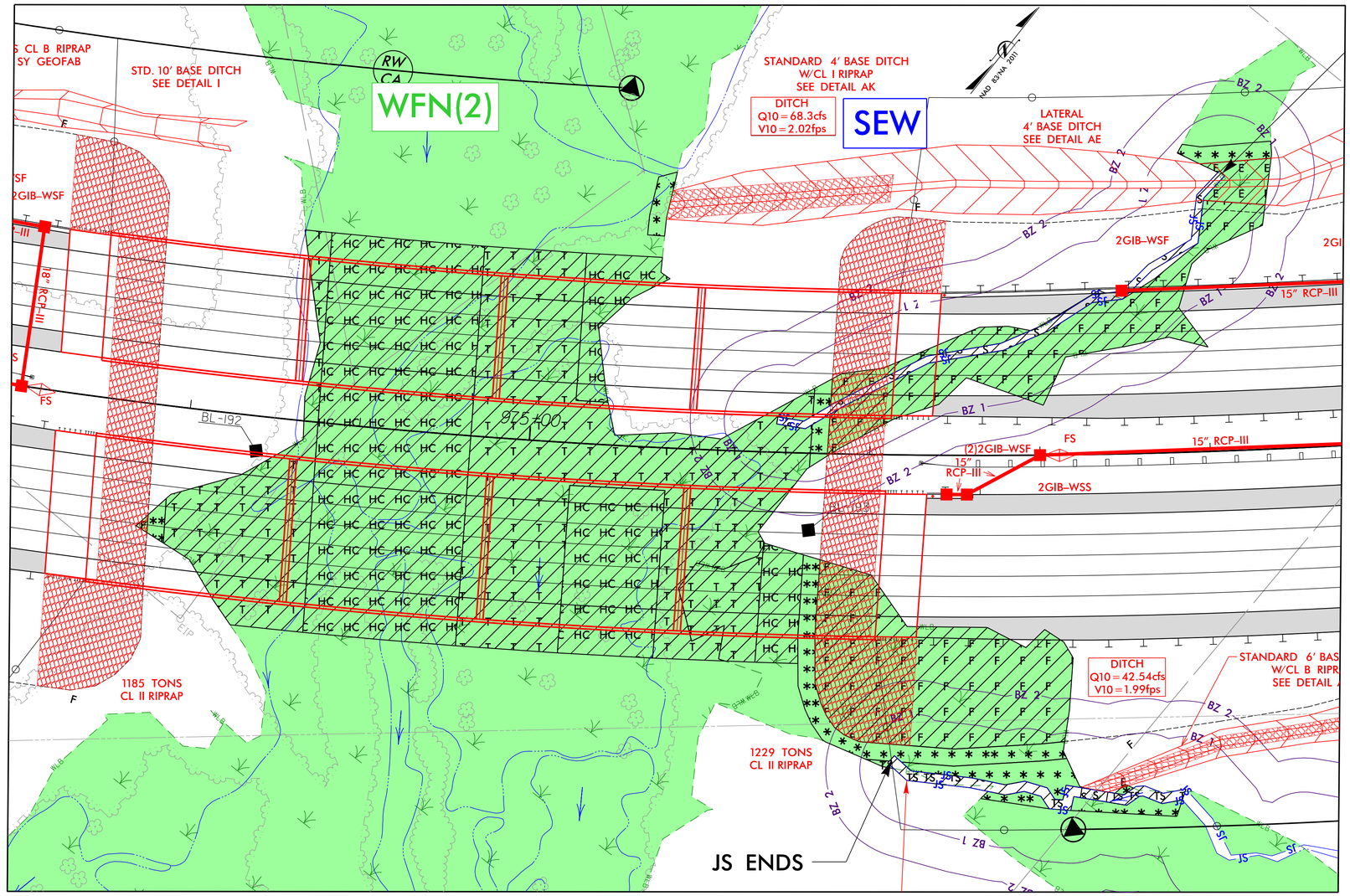
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

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PERMIT DRAWING
SHEET 12 OF 103

SITE 3

INSET A



9/4/2024
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dwise

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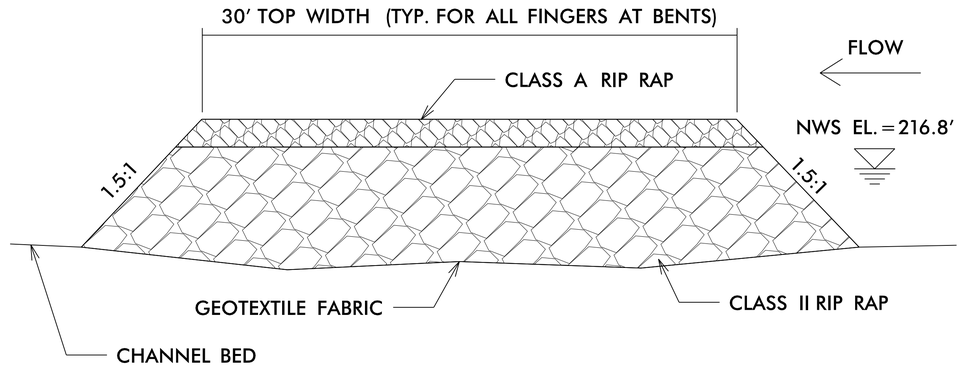
PROJECT REFERENCE NO.	SHEET NO.
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

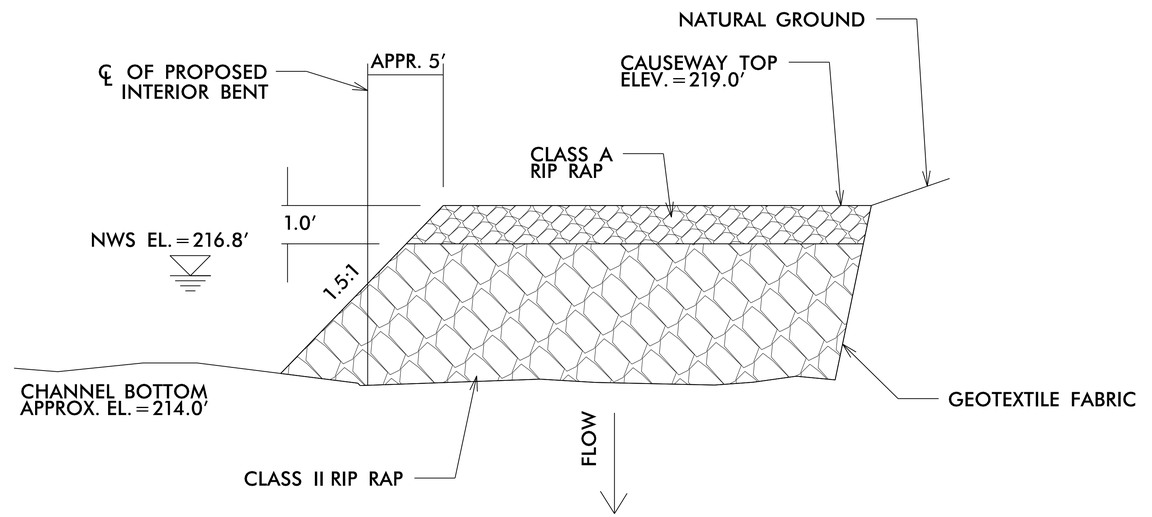
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 13 OF 103

TEMPORARY WORK PAD DETAIL

NOT TO SCALE





8/23/2024
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dwg

Submittal September 17, 2024

5/28/99

–LSEC1–

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	39
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 14 OF 103

BM#36 (FROM R-2828_ncdot_FS.dgn FILE)
N:686,830 E:2,130,512
-BL- STA 457+36.37 O/S 466.89' RT
-L- STA 948+16.59 O/S 502.55' RT
ELEV.= 278.56', BENCH TIE IN 14" GUM

–Y22FLYCC–

PROPOSED GRADE

EXISTING GROUND

(-)12.2351%

END PAVING ONLY
BEGIN GRADING AND PAVING
-LSEC1- STA.957+30.00
EL = 261.60'

PI = 959+80.00
EL = 256.01'
VC = 500'
K = 303
DS > 80 MPH

BEGIN SP.LAT.V DITCH LT
-L- STA.957+00.00
EL = 258.47'

(-) 3.0200%

(-) 2.6489%

(-) 2.2778%

PI = 958+00.00 LT
EL = 255.45'

BEGIN SP.LAT.V DITCH RT
-L- STA.958+00.00
EL = 255.99'

945+00 946+00 947+00 948+00 949+00 950+00 951+00 952+00 953+00 954+00 955+00 956+00 957+00 958+00 959+00

320 310 300 290 280 270 260 250 240 230

BM#37 (FROM R-2828_ncdot_FS.dgn FILE)
N:688,017 E:2,132,602
-BL- STA 481+51.64 O/S 262.92' RT
-L- STA 971+76.64 O/S 265.42' RT
ELEV.= 221.92', BENCH TIE IN 14" POPLAR

–LSEC1–

SITE 3

BEGIN BRIDGE
-LSEC1- 972+43.90 LT
-LSEC1- 972+48.07 RT

SITE 5

PI = 959+80.00
EL = 256.01'
VC = 500'
K = 303
DS > 80 MPH

(-)12.2351%

(-)10.5827%

(-) 2.6489%

(-) 2.2778%

(-) 0.3000%

PI = 961+50.00 RT
EL = 246.72'

END SP.LAT.V DITCH RT
BEGIN MEDIAN V DITCH RT
-L- STA.962+50.00 RT
EL = 246.42'

END SP.LAT.V DITCH LT
-L- STA.962+50.00
EL = 245.20'

(+) 2.2933%

END MEDIAN V DITCH RT
-L- STA.964+00.00
EL = 249.86'

BEGIN SP.V DITCH RT
-L- STA.965+00.00
EL = 248.00'

BEGIN LAT.BASE DITCH LT
-L- STA.966+00.00
EL = 227.00'

END SP.V DITCH RT
BEGIN V DITCH RT
-L- STA.966+50.00
EL = 246.20'

(-) 1.2000%

PROPOSED GRADE

PI = 967+50.00 RT
EL = 245.00'

(-) 1.2000%

(-) 2.8723%

END V DITCH RT
-L- STA.968+44.00
EL = 242.30'

EXISTING GROUND

(-) 1.7364%

CLASS II RIPRAP (TYP.)

1.5:1 NORMAL TO END BENT

3'-6" KEY-IN (TYP.)

(-) 0.3147%

END LAT.BASE DITCH LT
BEGIN BASE DITCH LT
-L- STA.971+50.00
EL = 217.45'

END BASE DITCH LT
-L- STA.972+93.00
EL = 217.00'

LEFT DITCH

RIGHT DITCH

FOR –LSEC1– PLAN SEE SHTS. 6 THRU 7

959+00 960+00 961+00 962+00 963+00 964+00 965+00 966+00 967+00 968+00 969+00 970+00 971+00 972+00 973+00

280 270 260 250 240 230 220 210 200 190

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Submittal September 17, 2024

5/28/99

–LSEC1–

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	40
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

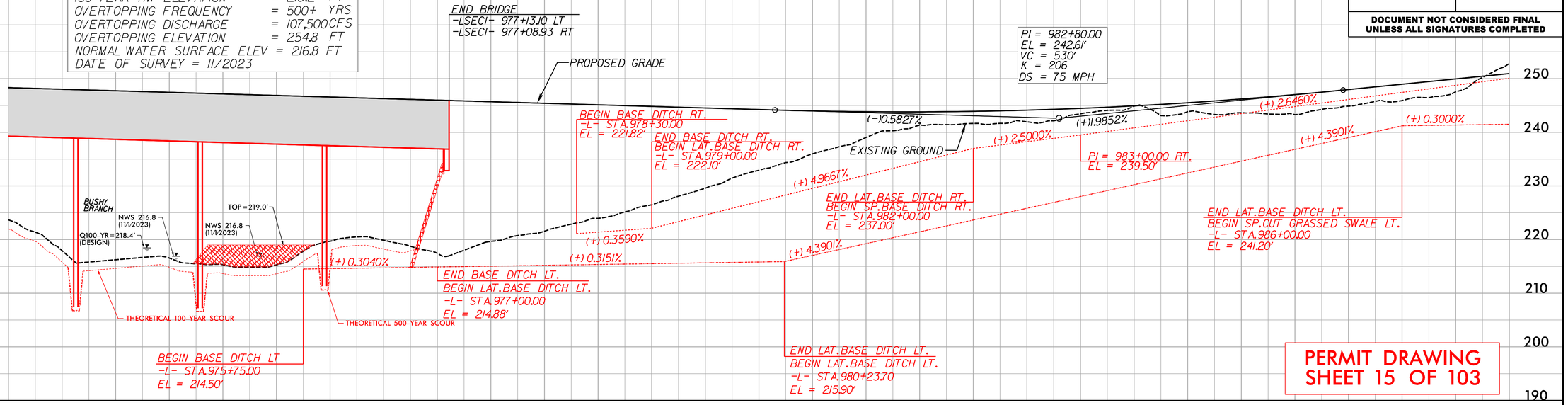
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BRIDGE HYDRAULIC DATA
Sta. 974+79 -LI-

DESIGN FREQUENCY	= 100	YRS
DESIGN DISCHARGE	= 2,100	CFS
DESIGN HW ELEVATION	= 218.2	FT
100 YEAR DISCHARGE	= 2,100	CFS
100 YEAR FREQUENCY	= 100	YRS
100 YEAR HW ELEVATION	= 218.2	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 107,500	CFS
OVERTOPPING ELEVATION	= 254.8	FT

NORMAL WATER SURFACE ELEV = 216.8 FT
DATE OF SURVEY = 11/2023

SITE 3

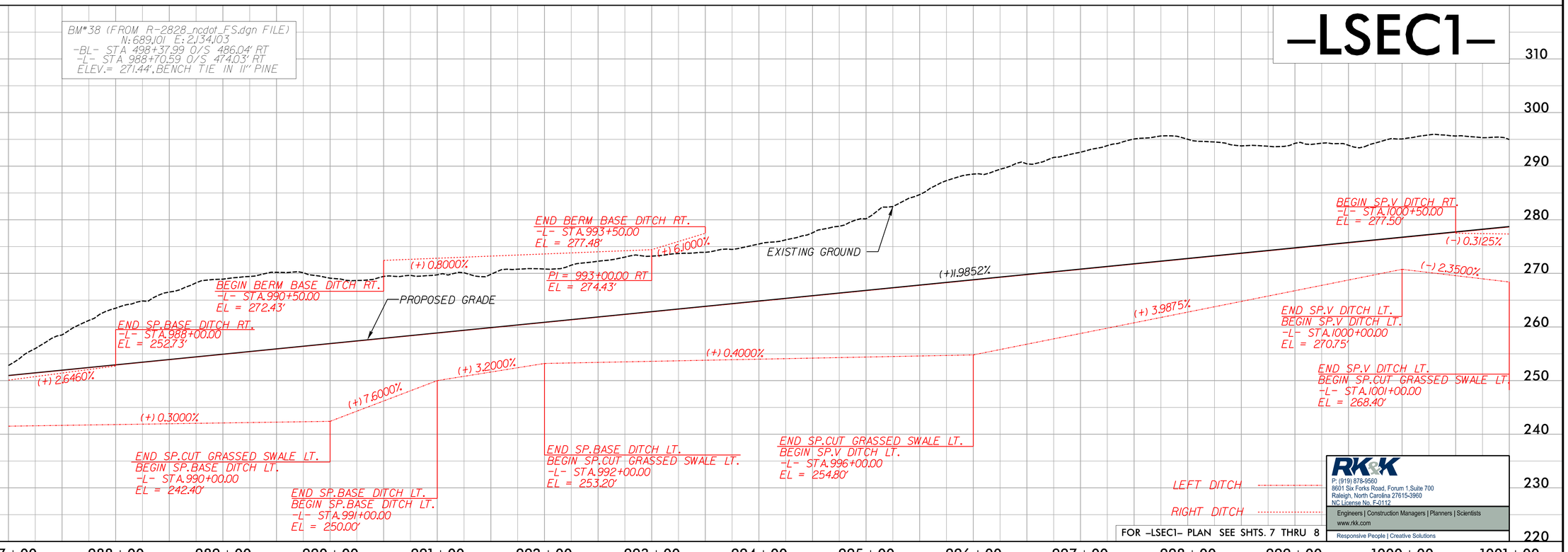


PERMIT DRAWING SHEET 15 OF 103

973+00 974+00 975+00 976+00 977+00 978+00 979+00 980+00 981+00 982+00 983+00 984+00 985+00 986+00 987+00

–LSEC1–

BM#38 (FROM R-2828_ncdot_FS.dgn FILE)
N: 689,101 E: 2,134,103
-BL- STA 498+37.99 O/S 486.04' RT
-L- STA 988+70.59 O/S 474.03' RT
ELEV.= 271.44', BENCH TIE IN 11" PINE



FOR –LSEC1– PLAN SEE SHTS. 7 THRU 8

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987+00 988+00 989+00 990+00 991+00 992+00 993+00 994+00 995+00 996+00 997+00 998+00 999+00 1000+00 1001+00

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Bentley

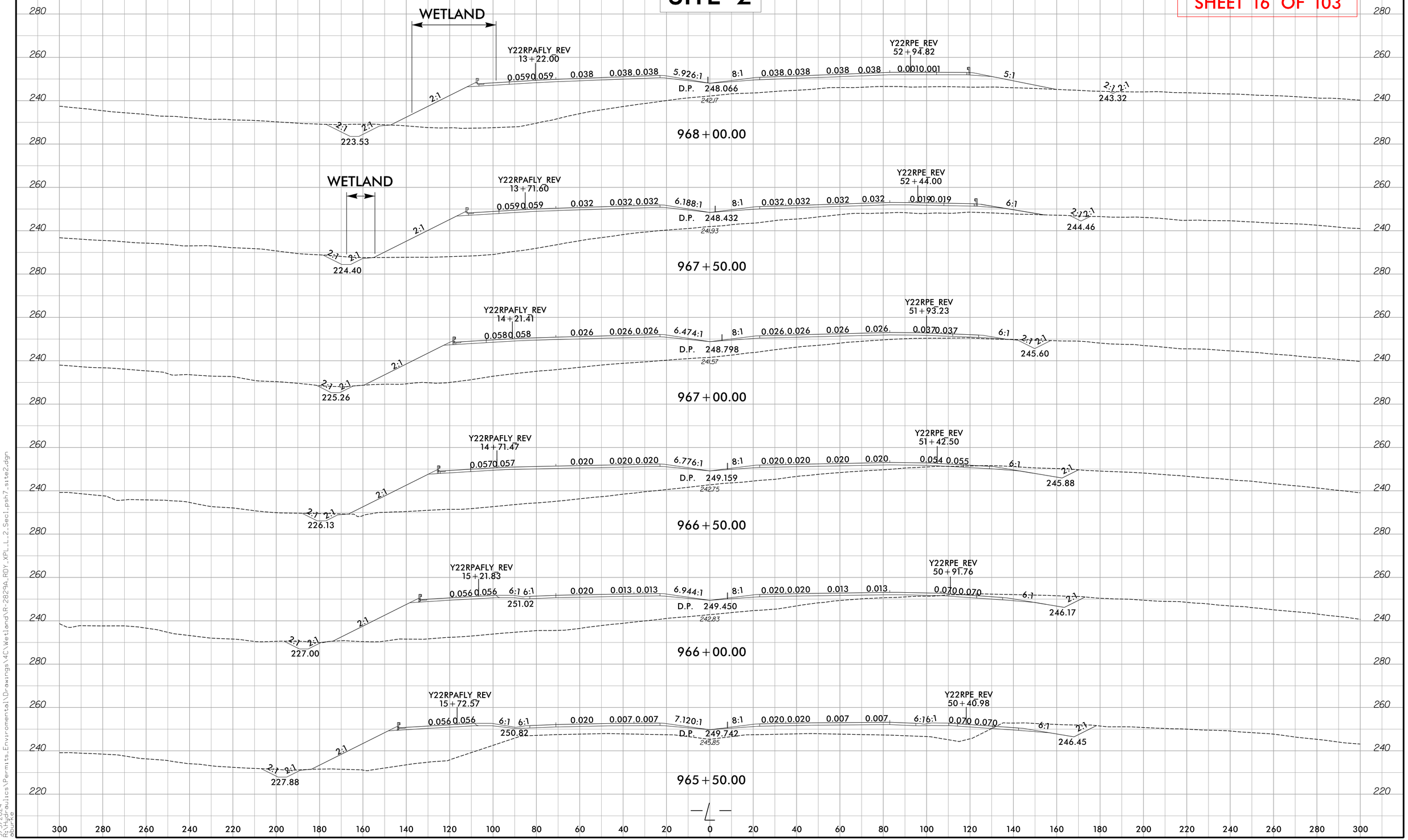
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0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	R-2829A	S1 X-42

SITE 2

PERMIT DRAWING
SHEET 16 OF 103



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dbucke

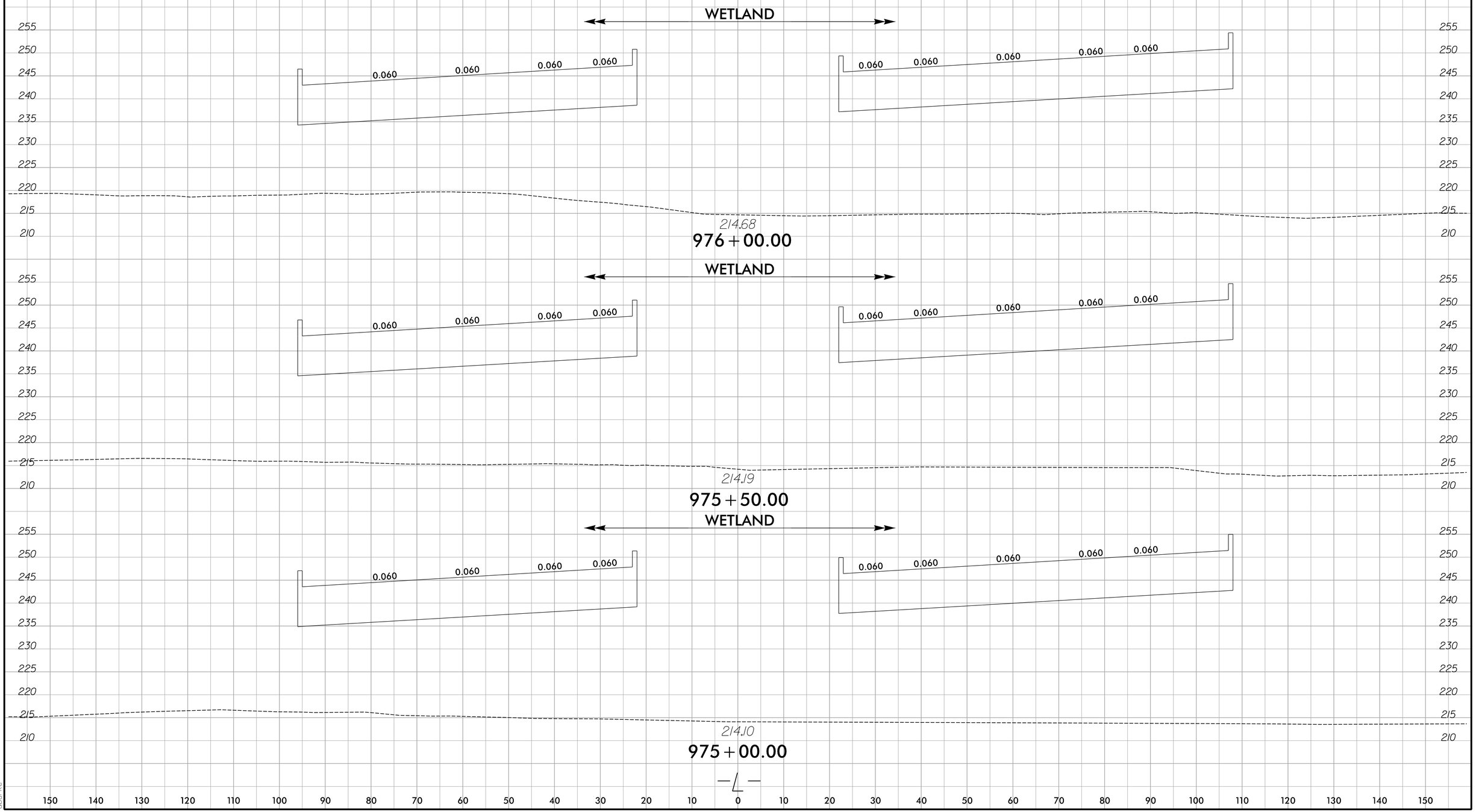
Submittal September 17, 2024

6/23/16

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	R-2829A	S1 X-46

SITE 3

PERMIT DRAWING
SHEET 17 OF 103



9/3/2024
12:37:16 PM
dbuhr

Submittal September 17, 2024

8/17/99

ENGLISH

50 0 50 100
SCALE

25 0 25 50
SCALE FOR INSETS

FILL IN WETLAND

MECHANIZED CLEARING (GRUBBING)

JOHN AMAN

INSET A

0806
Q10 = 43.0cfs
V10 = 1.67fps

0801
Q10 = 4.7cfs
V10 = 0.87fps

15" RCP

2 TONS CL B RIPRAP
W/7 SY GEOFAB

LATERAL

NAD 83/NA 2011

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	8
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 18 OF 103

SITE 4

WFY

TOE PROTECTION W/CL B RIPRAP SEE DETAIL E

OUTLET STABILIZATION W/CL I RIPRAP SEE DETAIL AI

40 TONS CL I RIPRAP W/75 SY GEOFAB

SWALE
Q10 = 9.83cfs
V10 = 1.83fps

SEE INSET A

RW CA

0806
Q10 = 43.0cfs
V10 = 1.67fps

0801
Q10 = 4.7cfs
V10 = 0.87fps

15" RCP-III

2 TONS CL B RIPRAP W/7 SY GEOFAB

LATERAL 4' BASE SWALE SEE DETAIL L

MATCHLINE -L- STA. 992+00 SEE SHEET 7

MATCHLINE -L- STA. 1005+00 SEE SHEET 9

PROP. WW FENCE

SPECIAL CUT 4' BASE SWALE SEE DETAIL O

2 TONS CL B RIPRAP W/7 SY GEOFAB

NC 540

SPECIAL V DITCH SEE DETAIL A

995+00

1000+00

1005+00

15" RCP-III

FS

2GIB-WSS

SEE PROFILE FOR BERM DITCH GRADE -L- 990+50-993+50 RT

BERM 4' BASE DITCH W/CL B RIPRAP SEE DETAIL AY

JOHN AMAN
DB 6385 PG 925 (WAKE COUNTY)
DB 4055 PG 194 (WAKE COUNTY)
DB 1058 PG 695 (JOHNSTON COUNTY)
BM 1988 PG 1683

JOHN AMAN

FS MIN. ELEV=278.9

TOE PROTECTION W/CL B RIPRAP SEE DETAIL E

DITCH
Q10 = 0.80cfs
V10 = 0.89fps

LATERAL 4' BASE DITCH W/CL B RIPRAP SEE DETAIL H

HW

INLET CHANNEL STABILIZATION W/CL I RIPRAP SEE DETAIL AL

LATERAL 4' BASE DITCH SEE DETAIL C

TOE PROTECTION W/CL B RIPRAP SEE DETAIL E

WFY

SITE 4

JOHN AMAN

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dwhite

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8/17/99

ENGLISH

SCALE 50 0 50 100

SCALE FOR INSETS 25 0 25 50

F F FILL IN WETLAND

MECHANIZED CLEARING (GRUBBING)

JOHN AMAN

INSET A

0806
Q10 = 43.0cfs
V10 = 1.67fps

0801
Q10 = 4.7cfs
V10 = 0.87fps

15" RCP

2 TONS CL B RIPRAP W/7 SY GEOFAB

LATERAL

NAD 83/NA 2011

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	8
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 19 OF 103

MATCHLINE -L- STA. 992+00 SEE SHEET 7

MATCHLINE -L- STA. 1005+00 SEE SHEET 9

NC 540

PROP. WW FENCE

SPECIAL CUT 4' BASE SWALE SEE DETAIL O

2 TONS CL B RIPRAP W/7 SY GEOFAB

SPECIAL V DITCH SEE DETAIL A

15" RCP

FS

2GIB-WSS

995+00

1000+00

1005+00

SITE 4

WFY

TOE PROTECTION W/CL B RIPRAP SEE DETAIL E

OUTLET STABILIZATION W/CL I RIPRAP SEE DETAIL AI

40 TONS CL I RIPRAP W/75 SY GEOFAB

SWALE
Q10 = 9.83cfs
V10 = 1.83fps

SEE INSET A

LATERAL 4' BASE SWALE SEE DETAIL I

SEE PROFILE FOR BERM DITCH GRADE -L- 990+50-993+50 RT

BERM 4' BASE DITCH W/CL B RIPRAP SEE DETAIL AY

SPECIAL V DITCH SEE DETAIL A

FS MIN. ELEV = 278.9

TOE PROTECTION W/CL B RIPRAP SEE DETAIL E

DITCH
Q10 = 0.80cfs
V10 = 0.89fps

HW

LATERAL 4' BASE DITCH SEE DETAIL C

INLET CHANNEL STABILIZATION W/CL I RIPRAP SEE DETAIL AL

LATERAL 4' BASE DITCH W/CL B RIPRAP SEE DETAIL H

JOHN AMAN
DB 6385 PG 925 (WAKE COUNTY)
DB 4055 PG 194 (WAKE COUNTY)
DB 1058 PG 695 (JOHNSTON COUNTY)
BM 1988 PG 1683

JOHN AMAN

JOHN AMAN

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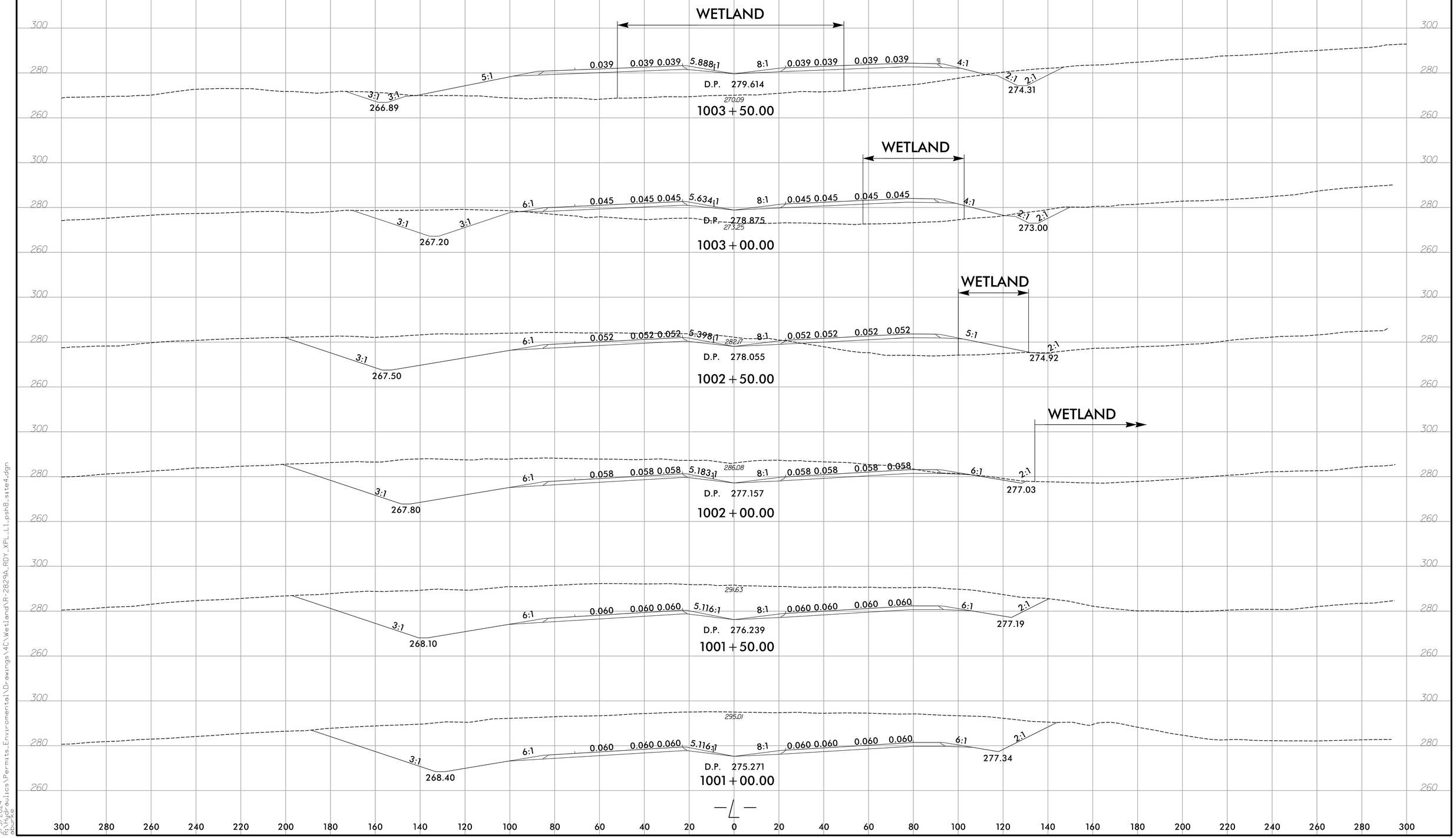
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0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	R-2829A	S1 X-56

SITE 4

PERMIT DRAWING
SHEET 20 OF 103



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dsurge

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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	9
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 21 OF 103

50 0 50 100
SCALE

ENGLISH

S S	SURFACE WATER IMPACTS
TS TS	TEMPORARY SURFACE WATER IMPACTS
F F	FILL IN WETLAND
E E	WETLAND EXCAVATION

NAD 83/NA 2011

MATCHLINE -L- STA. 1005+00 SEE SHEET 8

MATCHLINE -L1- STA. 1018+00 SEE SHEET 10

JOHN AMAN

R. GARLAND BURNETTE

COORDINATE EQUALITY
-L- POT Sta. 1007+09.30 BK=
-LI- ST Sta. 1006+86.76 AH
(691059.355576, 2134406.728485)

COORDINATE EQUALITY
-L- POT Sta. 1007+09.30 BK=
-LI- ST Sta. 1006+86.76 AH
(691062.705847, 2134410.760568)

SFE

SFH

SITE 5

SITE 7

SITE 6

SFF

SFG

WFZ

SEE INSET A SHEET 23 OF 103

SEE INSET B SHEET 23 OF 103

SEE INSET C SHEET 23 OF 103

C100 OUTLET STABILIZATION 41 TONS CL II RIPRAP W/111 SY GEOFAB SEE DETAIL CA

C200 OUTLET STABILIZATION 95 TONS CL II RIPRAP W/241 SY GEOFAB SEE DETAIL CB

2 TONS CL B RIPRAP W/7 SY GEOFAB

5 TONS CL B RIPRAP W/14 SY GEOFAB

LATERAL 4' BASE SWALE SEE DETAIL L

LATERAL 4' BASE DITCH W/CL B RIPRAP SEE DETAIL H

JS BEGINS

JS ENDS

CHANNEL BLOCK SEE DETAIL BK FILL REMAINDER OF CHANNEL

TOE PROTECTION W/CL B RIPRAP SEE DETAIL E

SPECIAL CUT 4' BASE SWALE SEE DETAIL O

LINE CUT-FILL TRANSITION W/ 2 TONS CL B RIPRAP W/7 SY GEOFAB

C100 INLET STABILIZATION 74 TONS CL II RIPRAP W/178 SY GEOFAB SEE DETAIL CA

C200 INLET STABILIZATION 368 TONS CL II RIPRAP W/730 SY GEOFAB SEE DETAIL CB

CHANNEL CHANGE W/CL II RIPRAP SEE DETAIL AR

CHANNEL CHANGE W/CL I RIPRAP SEE DETAIL BB

GRADE TO DRAIN

15" RCP-III

24" RCP-III

15" CSP

24" CSP W/ELBOWS

2GIB-WSF

2GIA-WSF

2GIB-WSS

2GIA-WSS

FS

JB w/MH

12'x8' RCBC BURIED 10'

9'-8" RCBC BURIED 10'

1005+00

1010+00

1015+00

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dbuie

Submittal September 17, 2024

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	9
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 22 OF 103

50 0 50 100
SCALE

ENGLISH

S S	SURFACE WATER IMPACTS
TS TS	TEMPORARY SURFACE WATER IMPACTS
F F	FILL IN WETLAND
E E	WETLAND EXCAVATION

NAD 83/NA 2011

MATCHLINE -L- STA. 1005+00 SEE SHEET 8

MATCHLINE -L1- STA. 1018+00 SEE SHEET 10

JOHN AMAN

R. GARLAND BURNETTE

COORDINATE EQUALITY
-L- POT Sta. 1007+09.30 BK=
-LI- ST Sta. 1006+86.76 AH
(691059.355576, 2134406.728485)

COORDINATE EQUALITY
-L- POT Sta. 1007+09.30 BK=
-LI- ST Sta. 1006+86.76 AH
(691062.705847, 2134410.760568)

SFE

SFH

SFE

SFH

SFF

SFG

WFZ

SITE 5

SITE 6

SITE 7

SITE 7

SEE INSET A
SHEET 23 OF 103

SEE INSET B
SHEET 23 OF 103

SEE INSET C
SHEET 23 OF 103

C100 OUTLET STABILIZATION
41 TONS CL II RIPRAP
W/111 SY GEOFAB
SEE DETAIL CA

C200 OUTLET STABILIZATION
95 TONS CL II RIPRAP
W/241 SY GEOFAB
SEE DETAIL CB

5 TONS CL B RIPRAP
W/14 SY GEOFAB

2 TONS CL B RIPRAP
W/7 SY GEOFAB

LATERAL
4' BASE SWALE
SEE DETAIL L

LATERAL 4' BASE DITCH
W/CL B RIPRAP
SEE DETAIL H

JS BEGINS
JS ENDS

CHANNEL BLOCK
SEE DETAIL BK
FILL REMAINDER
OF CHANNEL

TOE PROTECTION
W/CL B RIPRAP
SEE DETAIL E

SPECIAL CUT
4' BASE SWALE
SEE DETAIL O

LINE CUT/FILL
TRANSITION W/
2 TONS CL B RIPRAP
W/7 SY GEOFAB

C100 INLET STABILIZATION
74 TONS CL II RIPRAP
W/178 SY GEOFAB
SEE DETAIL CA

C200 INLET STABILIZATION
368 TONS CL II RIPRAP
W/730 SY GEOFAB
SEE DETAIL CB

CHANNEL CHANGE
W/CL II RIPRAP
SEE DETAIL AR

CHANNEL CHANGE
W/CL I RIPRAP
SEE DETAIL BB

CHANNEL CHANGE
SEE DETAIL AR

GRADE TO DRAIN

15" RCP-III
18" RCP-III
24" RCP-III
15" CSP
24" CSP W/ELBOWS
2GIB-WSF
2GIB-WSS
2GIA-WSF
2GIA-WSS
FS
JB w/2H

1005+00
1010+00
1015+00

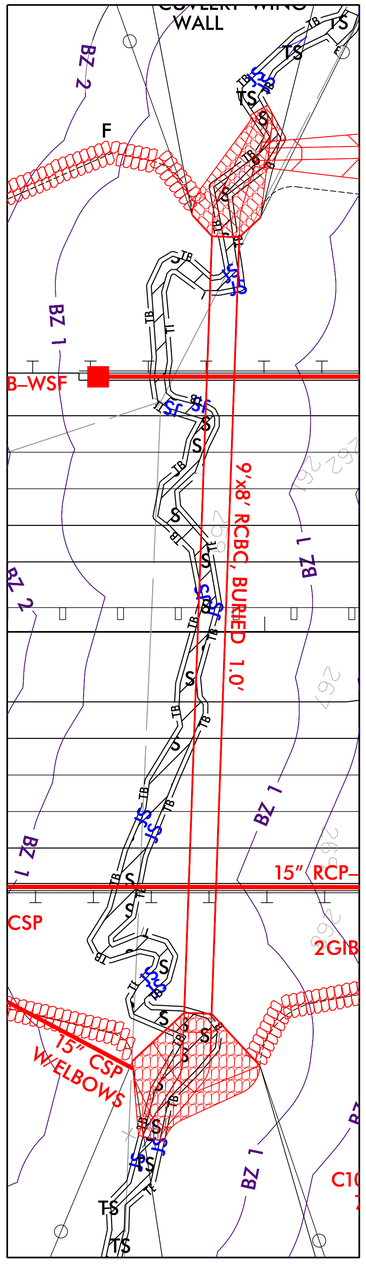
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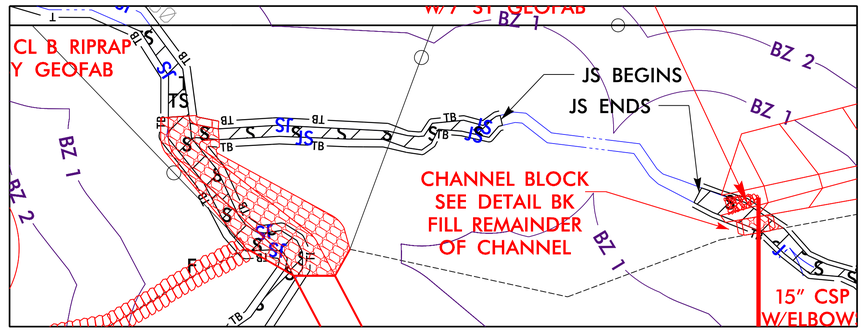
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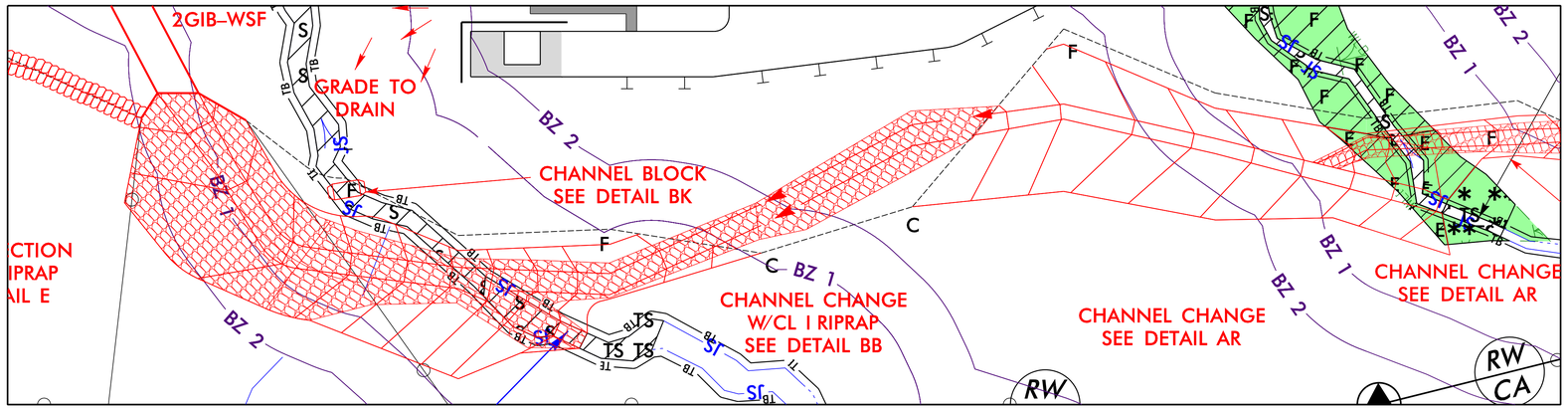
INSET A



INSET B



INSET C



25 0 25 50

SCALE FOR INSET

ENGLISH

	MECHANIZED CLEARING (GRUBBING)
S S	SURFACE WATER IMPACTS
TS TS	TEMPORARY SURFACE WATER IMPACTS
F F	FILL IN WETLAND
E E	WETLAND EXCAVATION

NAD 83/NA 2011

PROJECT REFERENCE NO.	SHEET NO.
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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dbuie

Submittal September 17, 2024

5/14/99

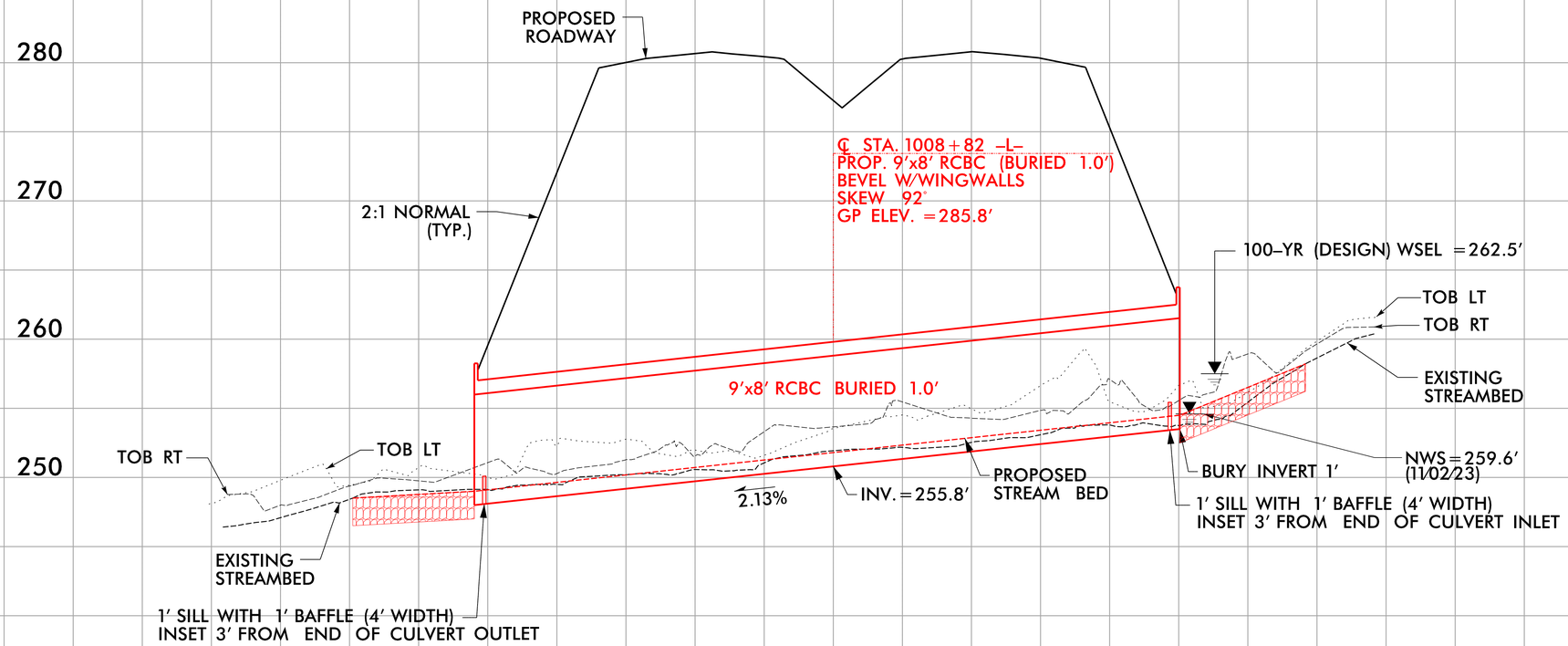
PROJECT REFERENCE NO.	SHEET NO.
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 24 OF 103

ENGLISH

SITE 5
–L1– STA. 1008 + 82



9'x8' RCBC
(Buried 1.0', Length = 258')

8/31/2024
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dlucas

Submittal September 17, 2024

5/14/99

PROJECT REFERENCE NO.	SHEET NO.

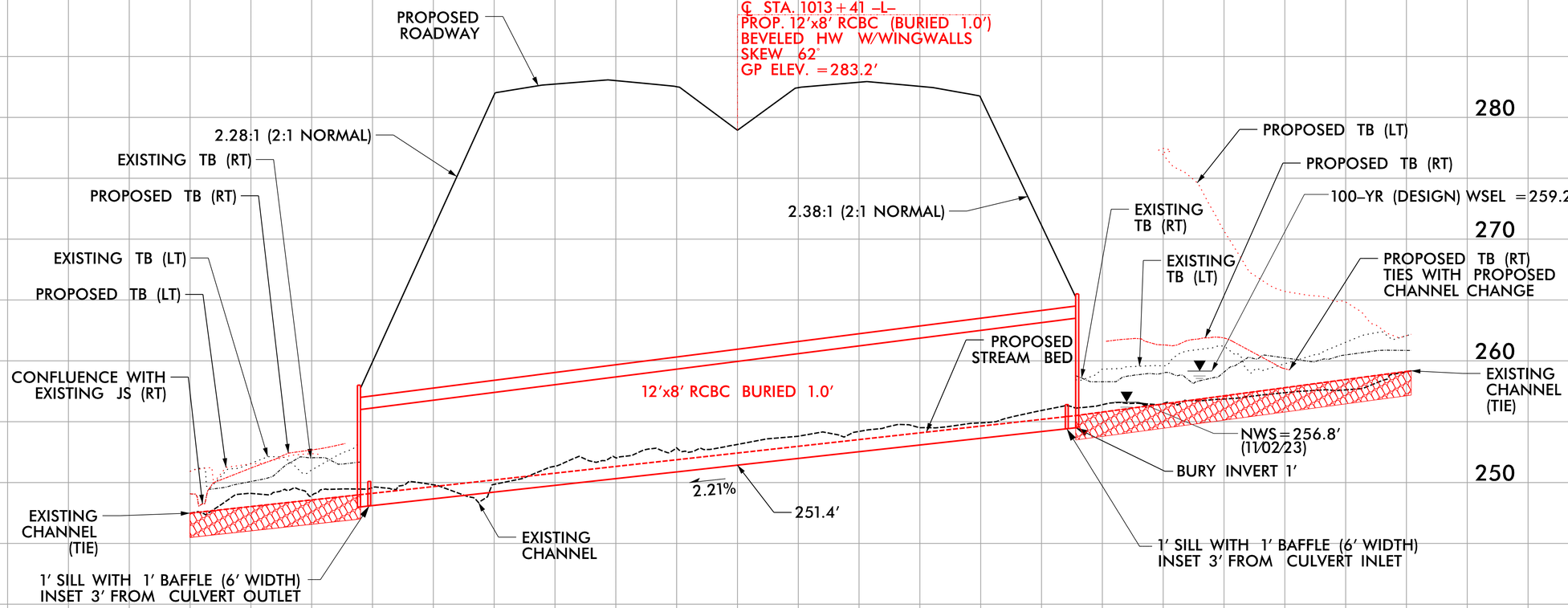
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 25 OF 103

ENGLISH

SITE 6
–L1– STA. 1013 + 41



12'x8' RCBC
(Buried 1.0', Length = 294')

8/3/2024
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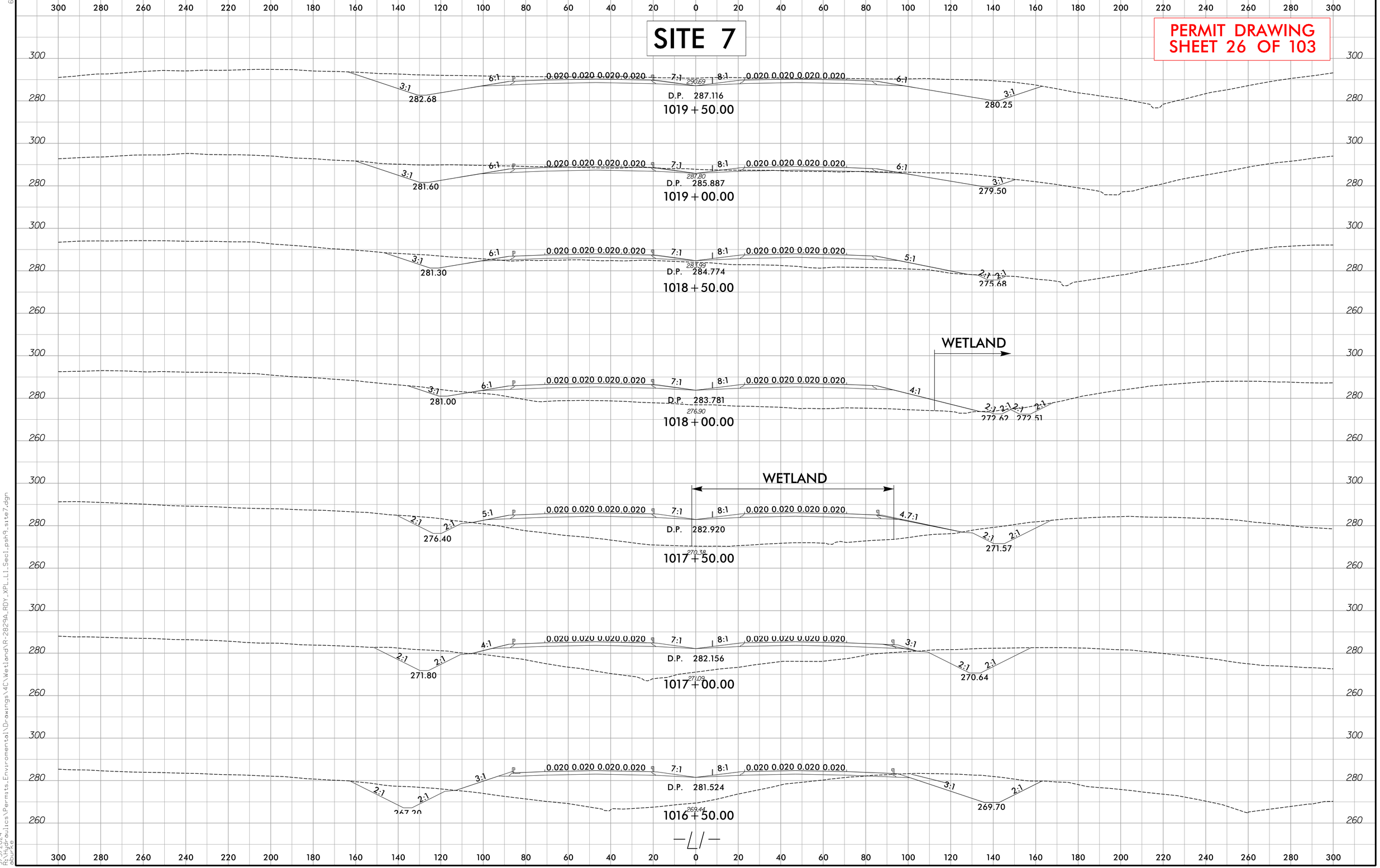
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0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	R-2829A	S1 X-64

SITE 7

PERMIT DRAWING
SHEET 26 OF 103



9/3/2024
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dsuttle

Submittal September 17, 2024

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	10
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NAD 83/NA 2011

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PERMIT DRAWING SHEET 27 OF 103

MATCHLINE -L1- STA. 1018+00 SEE SHEET 9

MATCHLINE -L1- STA. 1032+00 SEE SHEET 11

R. GARLAND BURNETTE

PDQ

WGE

WGD

1009
Q10 = 18.0cfs
V10 = 1.25fps

SITE 8

SWALE
Q10 = 4.00cfs
V10 = 1.63fps

SFB

SEE INSET A
SHEET 29 OF 103

DITCH
Q10 = 15.44cfs
V10 = 1.78fps

PDE

48 TONS CL II RIPRAP W/90 SY GEOFAB OUTLET CHANNEL STABILIZATION W/CL II RIPRAP SEE DETAIL AL

2' TIE RIPRAP PAD UP INTO SWALE DITCH

STANDARD 4' BASE DITCH SEE DETAIL I

STANDARD 4' BASE DITCH SEE DETAIL I

18 TONS CL I RIPRAP W/30 SY GEOFAB

RW CA

2 TONS CL B RIPRAP W/7 SY GEOFAB

SPECIAL V DITCH W/CL B RIPRAP SEE DETAIL Y

SPECIAL CUT 4' BASE SWALE SEE DETAIL O

LATERAL 4' BASE SWALE SEE DETAIL L

WGC

2 TONS CL B RIPRAP W/7 SY GEOFAB

2 TONS CL B RIPRAP W/7 SY GEOFAB

LATERAL V DITCH SEE DETAIL B

SPECIAL V DITCH SEE DETAIL A

SPECIAL V DITCH SEE DETAIL A

DRAIN POND (SEE POND DRAINAGE PLANS)

POND WSE = 311.5'

PIPES DO NOT INTERSECT

2GIB-WSF

15" RCP-IV

15" CSP W/ELBOWS

42" RCP-IV SOD FORMER BURIED UPSIZED FOR MAINT

18" RCP-IV

36" RCP-III (NOT BURIED, UPSIZED FOR MAINT.)

15" RCP-III 2GIB-WSF

1020+00

1025+00

1030+00

FS

2GIB-WSS

JS BEGINS

24" CSP W/ELBOWS

BDO

SPECIAL CUT 4' BASE SWALE SEE DETAIL O

SPECIAL V DITCH W/CL B RIPRAP SEE DETAIL Y

SEE INSET C ON PERMIT DRAWING 23 OF 103

LATERAL 4' BASE DITCH W/CL B RIPRAP SEE DETAIL H

CHANNEL CHANGE SEE DETAIL AR

FS MIN ELEV = 296.0'

SPECIAL CUT 4' BASE SWALE SEE DETAIL O

LATERAL 4' BASE SWALE SEE DETAIL L

SPECIAL CUT 4' BASE DITCH W/CL B RIPRAP SEE DETAIL R

SPECIAL CUT 4' BASE SWALE SEE DETAIL O

SPECIAL CUT 4' BASE DITCH W/CL B RIPRAP SEE DETAIL R

BERM V DITCH W/CL B RIPRAP SEE DETAIL AH

HW

WGB

SITE 8

WFZ

SFE

SITE 7

WGA

BZ 1

BZ 2

JS

ENGLISH

SCALE 50 0 50 100

MECHANIZED CLEARING (GRUBBING)

F F FILL IN WETLAND

T T TEMPORARY FILL IN WETLAND

S S SURFACE WATER IMPACTS

TS TS TEMPORARY SURFACE WATER IMPACTS

E E WETLAND EXCAVATION

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PROJECT REFERENCE NO.	SHEET NO.
R-2829A	10
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 28 OF 103

NAD 83/NA 2011

MATCHLINE -L1- STA. 1018+00 SEE SHEET 9

MATCHLINE -L1- STA. 1032+00 SEE SHEET 11

INSET A

SEE INSET A SHEET 29 OF 103

SITE 8

SITE 7

R. GARLAND BURNETTE

PDQ

WGE

WGD

WGC

WGB

WGA

SFB

SFE

WFZ

1009 Q10 = 18.0cfs V10 = 1.25fps

SWALE Q10 = 4.00cfs V10 = 1.63fps

DITCH Q10 = 15.44cfs V10 = 1.78fps

48 TONS CL II RIPRAP W/90 SY GEOFAB OUTLET CHANNEL STABILIZATION W/CL II RIPRAP SEE DETAIL AL

2 TIE RIPRAP PAD UP INTO SWALE DITCH

2 TONS CL B RIPRAP W/7 SY GEOFAB

SPECIAL V DITCH W/CL B RIPRAP SEE DETAIL Y

SPECIAL CUT 4' BASE SWALE SEE DETAIL O

LATERAL 4' BASE SWALE SEE DETAIL L

STANDARD 4' BASE DITCH SEE DETAIL I

LATERAL V DITCH SEE DETAIL B

SPECIAL V DITCH SEE DETAIL A

STANDARD 4" BASE DITCH SEE DETAIL I

15 TONS CL I RIPRAP W/30 SY GEOFAB

DRAIN POND (SEE POND DRAINAGE PLANS)

POND WSE = 310.5'

PIPES DO NOT INTERSECT

15" RCP-IV

18" RCP-IV

42" RCP-III NSBC BARREL (UPSIZED FOR MAINT.)

24" CSP W/ELBOWS

2GIB-WSF

2GIB-WSS

36" RCP-III (NOT BURIED, UPSIZED FOR MAINT.)

15" RCP-III 2GIB-WSF

JS BEGINS

SEE INSET C ON PERMIT DRAWING 23 OF 103

SPECIAL CUT 4' BASE SWALE SEE DETAIL O

SPECIAL V DITCH W/CL B RIPRAP SEE DETAIL Y

FS MIN ELEV = 296.0'

SPECIAL CUT 4' BASE SWALE SEE DETAIL O

LATERAL 4' BASE SWALE SEE DETAIL L

SPECIAL CUT 4' BASE DITCH W/CL B RIPRAP SEE DETAIL R

SPECIAL CUT 4' BASE SWALE SEE DETAIL O

SPECIAL CUT 4' BASE DITCH W/CL B RIPRAP SEE DETAIL R

LATERAL 4' BASE DITCH W/CL B RIPRAP SEE DETAIL H

CHANNEL CHANGE SEE DETAIL AR

BERM V DITCH W/CL B RIPRAP SEE DETAIL AH

BDO

HW

RW CA

PDE

BZ 1

BZ 2

JS

SS

TS

F F FILL IN WETLAND

T T TEMPORARY FILL IN WETLAND

S S SURFACE WATER IMPACTS

TS TS TEMPORARY SURFACE WATER IMPACTS

E E WETLAND EXCAVATION

* * MECHANIZED CLEARING (GRUBBING)

ENGLISH

50 0 50 100

SCALE

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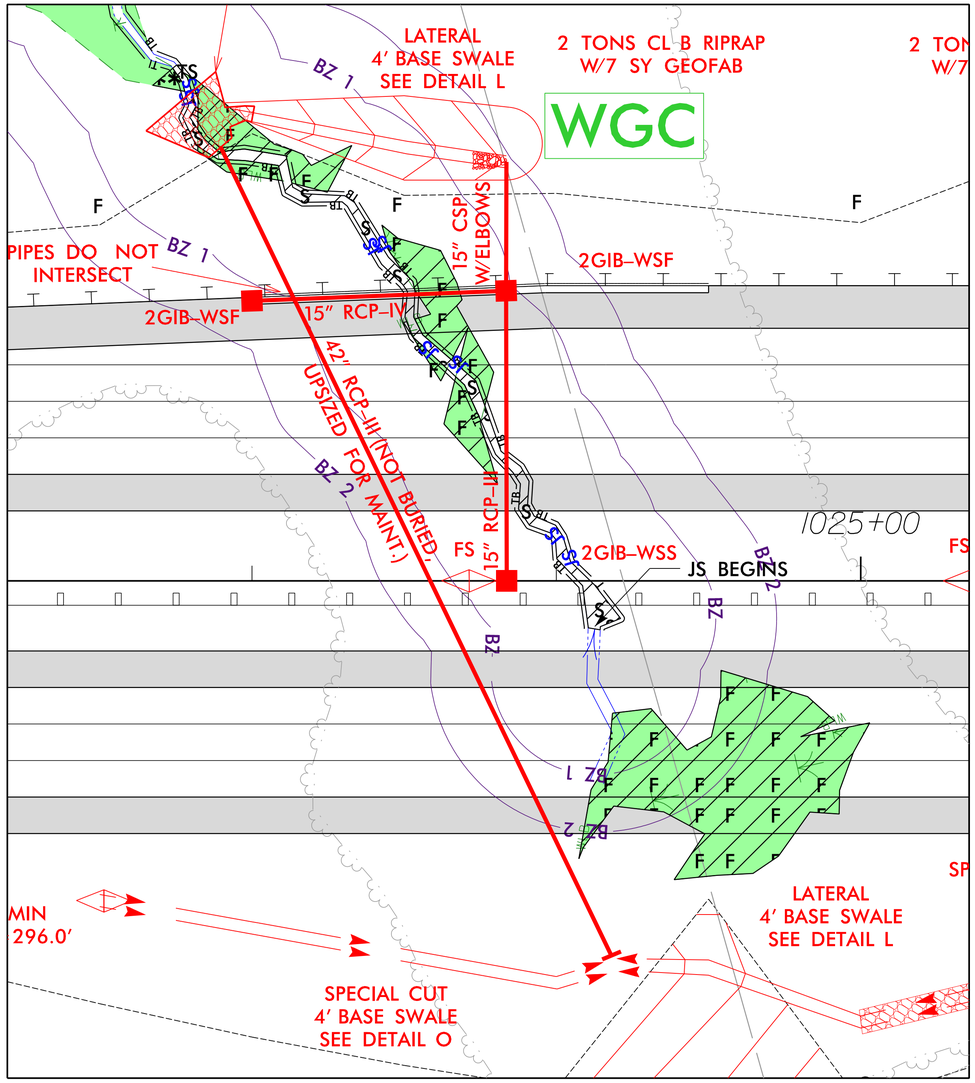
PROJECT REFERENCE NO.	SHEET NO.
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 29 OF 103

NAD 83/NA 2011

INSET A



ENGLISH

25 0 25 50
SCALE FOR INSET

MECHANIZED CLEARING (GRUBBING)

F F	FILL IN WETLAND
T T	TEMPORARY FILL IN WETLAND
S S	SURFACE WATER IMPACTS
TS TS	TEMPORARY SURFACE WATER IMPACTS
E E	WETLAND EXCAVATION

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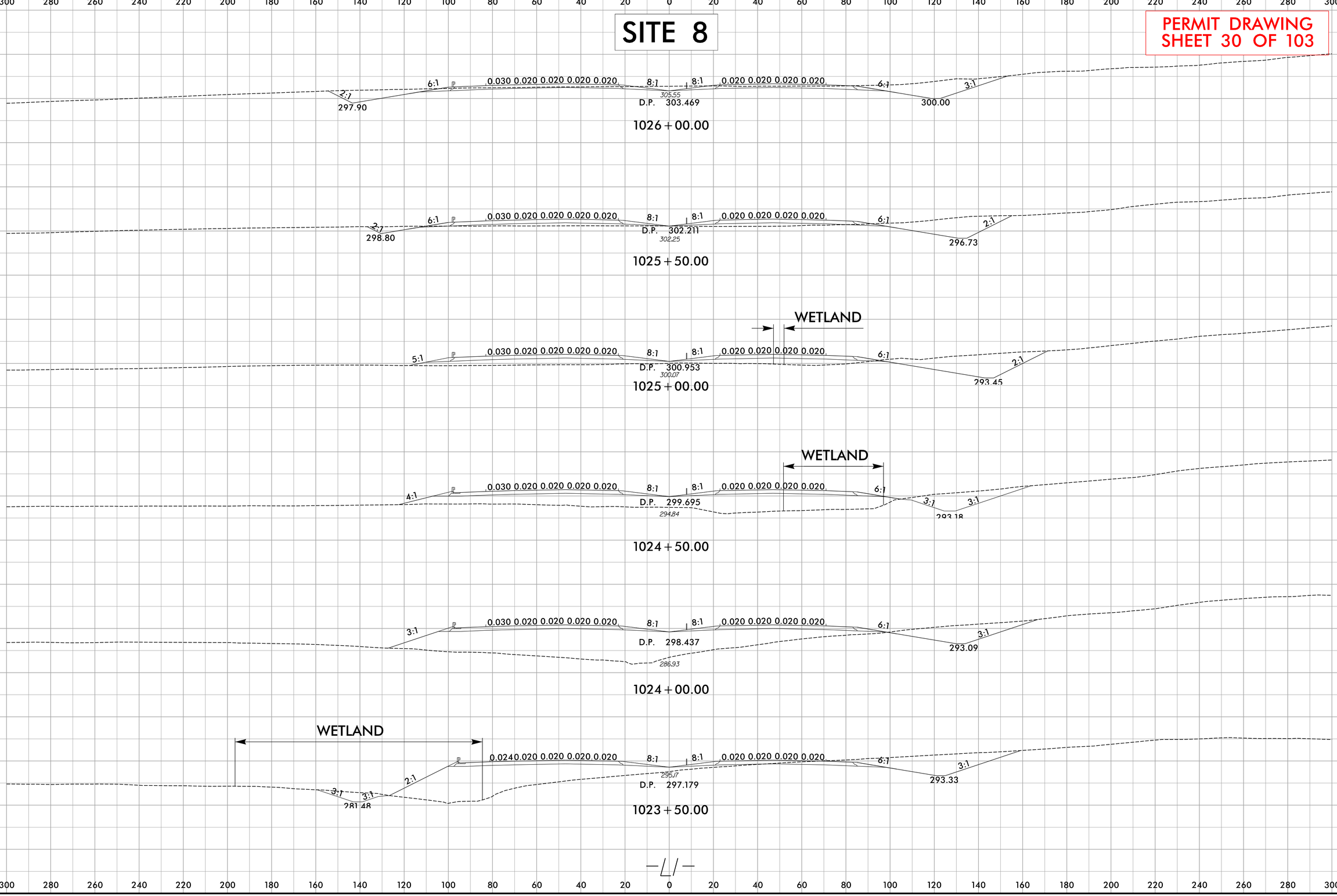
Submittal September 17, 2024

6/23/16

0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	R-2829A	S1 X-66

SITE 8

PERMIT DRAWING
SHEET 30 OF 103



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PROJECT REFERENCE NO.	SHEET NO.
R-2829A	11
RW. SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 31 OF 103

SITE 9

SITE 10

SITE 11

INSET A

INSET B

SEE INSET A

SEE INSET B

MATCHLINE -L1- STA. 1032+00 SEE SHEET 10

MATCHLINE -L1- STA. 1061+00 SEE SHEET 12

MATCHLINE -Y23R- STA. 53+00 SEE SHEET 26

MATCHLINE -Y23G- STA. 16+00 SEE SHEET 25

MATCHLINE -Y23R- STA. 36+00 SEE SHEET 25

MATCHLINE -Y23J- STA. 12+00 SEE SHEET 29

MATCHLINE -Y23DR- STA. 37+00 SEE SHEET 29

WAAF WAAE WGI WGJ SFK SFA WGF WGG WGM PAD

ENGLISH

SCALE 100 0 100 200

SCALE FOR INSET 50 0 50 100

SURFACE WATER IMPACTS POND

SURFACE WATER IMPACTS

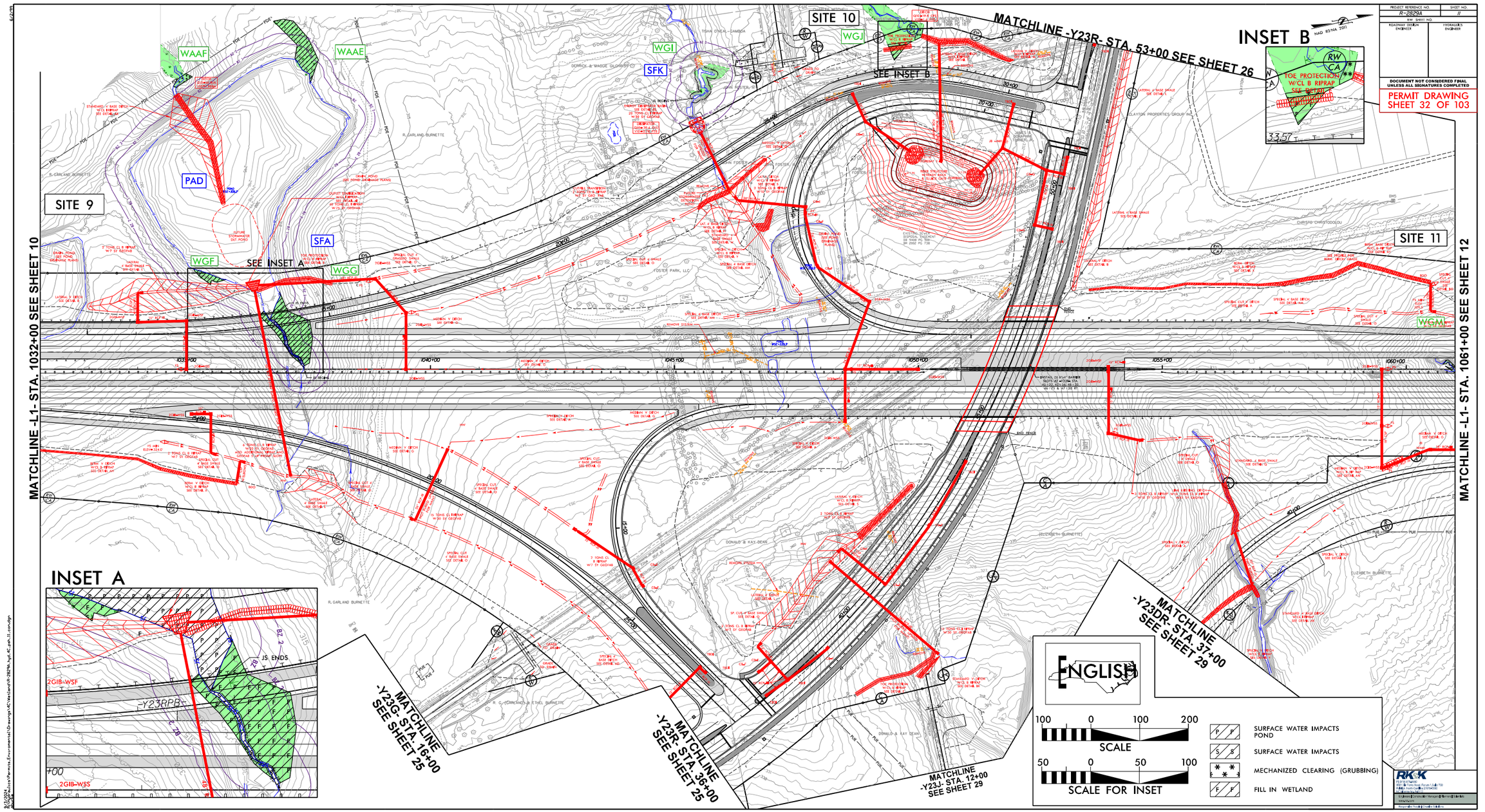
MECHANIZED CLEARING (GRUBBING)

FILL IN WETLAND

RKK

8/21/2024

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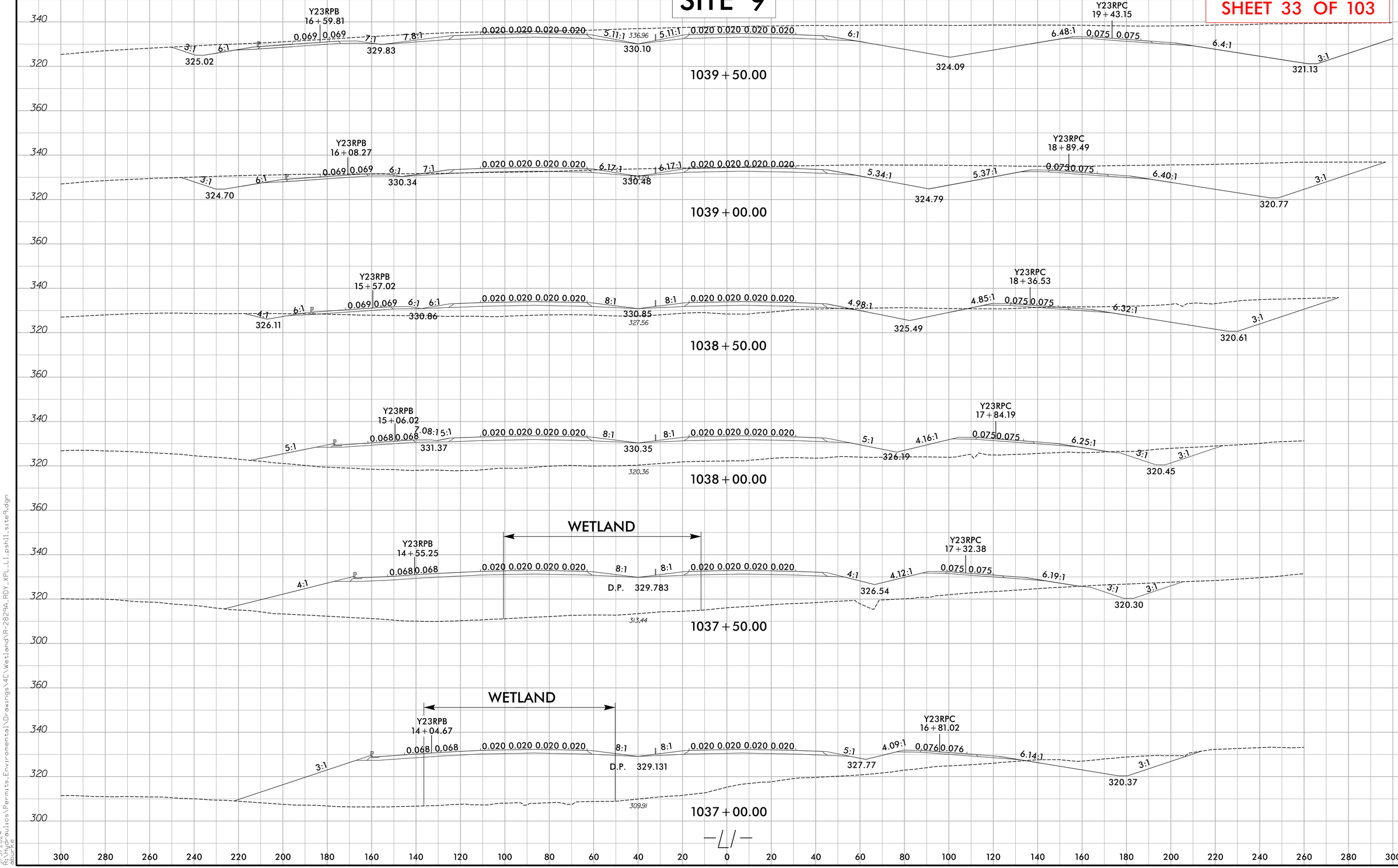


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	R-2829A	S1 X-71

SITE 9

PERMIT DRAWING
SHEET 33 OF 103



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pshill

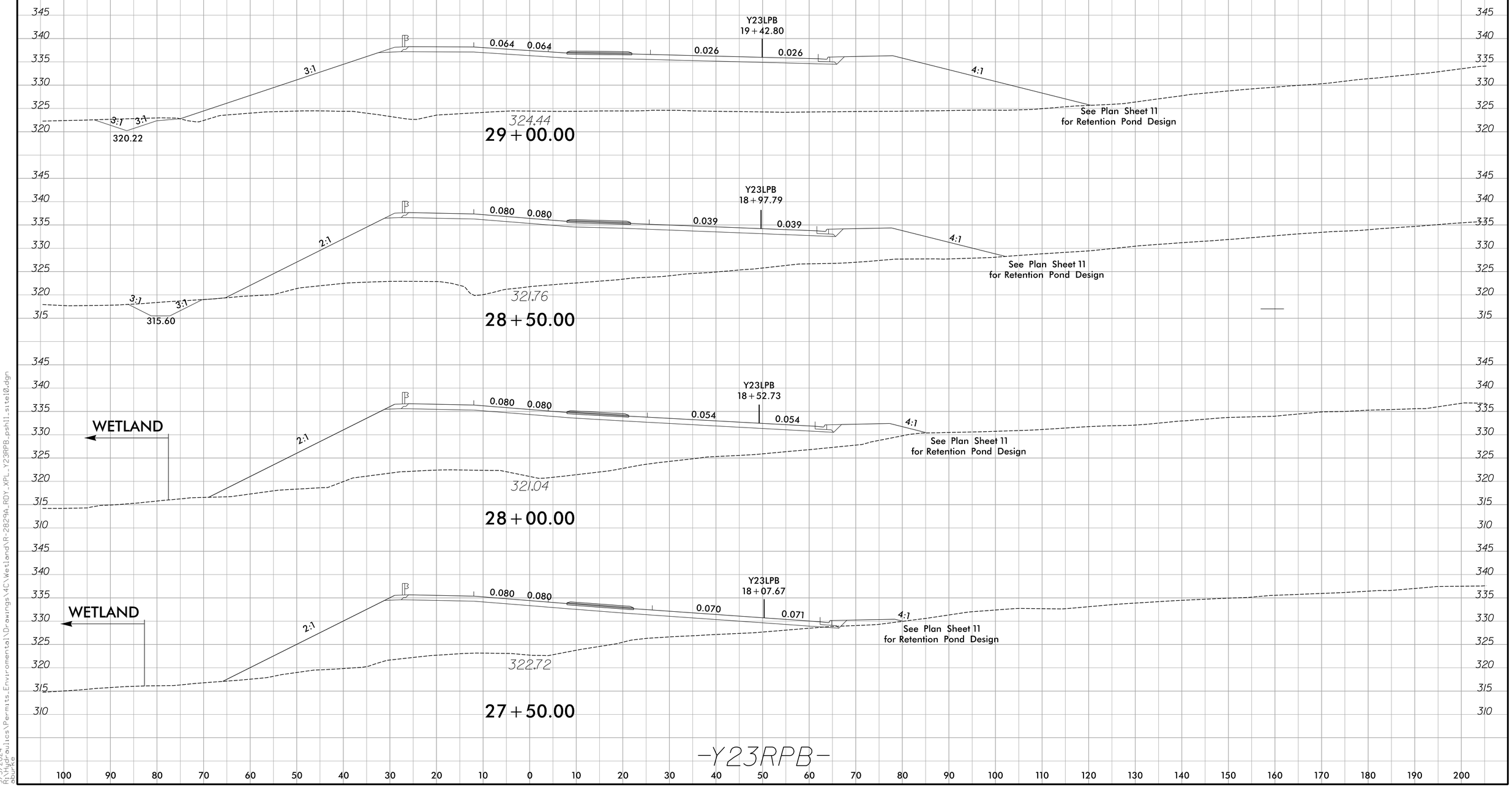
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0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2829A	S1 X-164

SITE 10

PERMIT DRAWING
SHEET 34 OF 103



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dburke

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PROJECT REFERENCE NO.	SHEET NO.
R-2829A	12
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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PERMIT DRAWING SHEET 35 OF 103

ENGLISH

F F FILL IN WETLAND

* * * MECHANIZED CLEARING (GRUBBING)

S S SURFACE WATER IMPACTS

TS TS TEMPORARY SURFACE WATER IMPACTS

SCALE 50 0 50 100

SCALE FOR INSET 25 0 25 50

NAD 83/NA 2011

MATCHLINE -L1- STA 1061+00 SEE SHEET 11

MATCHLINE -L1- STA. 1075+00 SEE SHEET 13

INSET A

INSET B

SITE 11

SITE 12

SITE 13

SFD

SFC

WGN

WGM

WGO

SEE INSET A

SEE INSET B

JS BEGINS

HW

FS MIN ELEV 309.0

FS MIN ELEV. 290.1

SPECIAL CUT DITCH W/CL I RIP RAP SEE DETAIL BO

SPECIAL CUT DITCH SEE DETAIL A

SPECIAL CUT DITCH W/CL B RIP RAP SEE DETAIL Y

LATERAL 4' BASE DITCH SEE DETAIL AA

LATERAL V DITCH SEE DETAIL B

DRAIN POND (SEE POND DRAINAGE PLANS)

POND WSE=284.0'

REMOVE

1065+00

1070+00

1075+00

45+00

50+00

55+00

2GIB-WSS

15" RCP-III

18" RCP-III

24" RCP-IV

15" RCP-IV

42" RCP-IV (NOT BURIED OR USED FOR MAINT.)

18" RCP-IV

MEDIAN V DITCH SEE DETAIL G

SPECIAL CUT SWALE SEE DETAIL O

TOE PROTECTION W/CL B RIPRAP SEE DETAIL E

1 TON CL B RIPRAP W/5 SY GEOFAB

INLET CHANNEL STABILIZATION W/CL I RIPRAP SEE DETAIL AL 33 TONS CL I RIPRAP W/62 SY GEOFAB

OUTLET CHANNEL STABILIZATION W/CL II RIPRAP SEE DETAIL AL 48 TONS CL II RIPRAP W/90 SY GEOFAB

VERIFY IN FIELD FOR A POTENTIAL SPRING BOX

TB 2GIB-NSF

24" CSP W/ELBOWS

18" CSP W/ELBOWS

LATERAL BASE DITCH W/CL B RIP RAP SEE DETAIL H

20 TON CL I RIPRAP W/39 SY GEOFAB

3 TON CL B RIPRAP W/11 SY GEOFAB

LATERAL BASE DITCH W/CL I RIP RAP SEE DETAIL N

STD. 4' BASE DITCH SEE DETAIL I

SPECIAL V DITCH W/CL I RIP RAP SEE DETAIL AB

SPECIAL CUT DITCH SEE DETAIL A

LINE END OF STD DITCH W/ 1 TON CL B RIPRAP W/4 SY GEOFAB

STD. V DITCH SEE DETAIL D

LINE END OF STD DITCH W/ CL I RIPRAP SEE DETAIL AJ

1220
Q10=14.4cfs
V10=1.89fps

CLAYTON PROPERTIES GROUP INC

ELIZABETH BURNETTE

JOSEPH & VELANCIA BAILEY

SARA EARLY

VELMO T WILLIAMS TRUST ALICE H WILLIAMS

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PROJECT REFERENCE NO.	SHEET NO.
R-2829A	12
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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PERMIT DRAWING SHEET 36 OF 103

ENGLISH

F F	FILL IN WETLAND
* * *	MECHANIZED CLEARING (GRUBBING)
S S	SURFACE WATER IMPACTS
TS TS	TEMPORARY SURFACE WATER IMPACTS

50 0 50 100 SCALE

25 0 25 50 SCALE FOR INSET

NAD 83/NA 2011

MATCHLINE -L1- STA 1061+00 SEE SHEET 11

MATCHLINE -L1- STA. 1075+00 SEE SHEET 13

INSET A

INSET B

SITE 12

SITE 11

SITE 13

WGN

WGM

WGO

SFC

SFD

SEE INSET A

SEE INSET B

JS BEGINS

FS MIN ELEV 309.0

FS MIN ELEV. 290.1

SPECIAL CUT DITCH W/CL I RIP RAP SEE DETAIL BO

LATERAL 4' BASE DITCH SEE DETAIL AA

LATERAL V DITCH SEE DETAIL B

SPECIAL CUT DITCH SEE DETAIL A

SPECIAL CUT DITCH W/CL B RIP RAP SEE DETAIL Y

DRAIN POND (SEE POND DRAINAGE PLANS)

POND WSE=284.0'

INLET CHANNEL STABILIZATION W/CL I RIPRAP SEE DETAIL AL 33 TONS CL I RIPRAP W/62 SY GEOFAB

OUTLET CHANNEL STABILIZATION W/CL II RIPRAP SEE DETAIL AL 48 TONS CL II RIPRAP W/90 SY GEOFAB

MEDIAN V DITCH SEE DETAIL G

SPECIAL CUT SWALE SEE DETAIL O

TOE PROTECTION W/CL B RIPRAP SEE DETAIL E

1 TON CL B RIPRAP W/5 SY GEOFAB

3 TON CL B RIPRAP W/11 SY GEOFAB

20 TON CL I RIPRAP W/39 SY GEOFAB

VERIFY IN FIELD FOR A POTENTIAL SPRING BOX

LATERAL BASE DITCH W/CL B RIP RAP SEE DETAIL N

LATERAL BASE DITCH W/CL I RIP RAP SEE DETAIL N

STD. 4' BASE DITCH SEE DETAIL I

SPECIAL V DITCH W/CL I RIP RAP SEE DETAIL AB

SPECIAL CUT DITCH SEE DETAIL A

LINE END OF STD DITCH W/ CL I RIPRAP SEE DETAIL AJ

LINE END OF STD DITCH W/ 1 TON CL B RIPRAP W/4 SY GEOFAB

STD V DITCH SEE DETAIL D

1220 Q10=14.4cfs V10=1.89fps

1065+00 1070+00 1075+00 45+00 50+00 55+00

2GIB-WSS FS 15" RCP-III 18" RCP-III 15" RCP-IV 18" RCP-IV 24" RCP-IV 42" RCP-IV (NOT BURIED) BURIED FOR MAINT.) 24" CSP W/ELBOWS 18" CSP W/ELBOWS TB 2GIB-NSF

CLAYTON PROPERTIES GROUP INC

SARA EARLY

ELIZABETH BURNETTE

JOSEPH & VELANCIA BAILEY

VELMO T WILLIAMS TRUST ALICE H WILLIAMS

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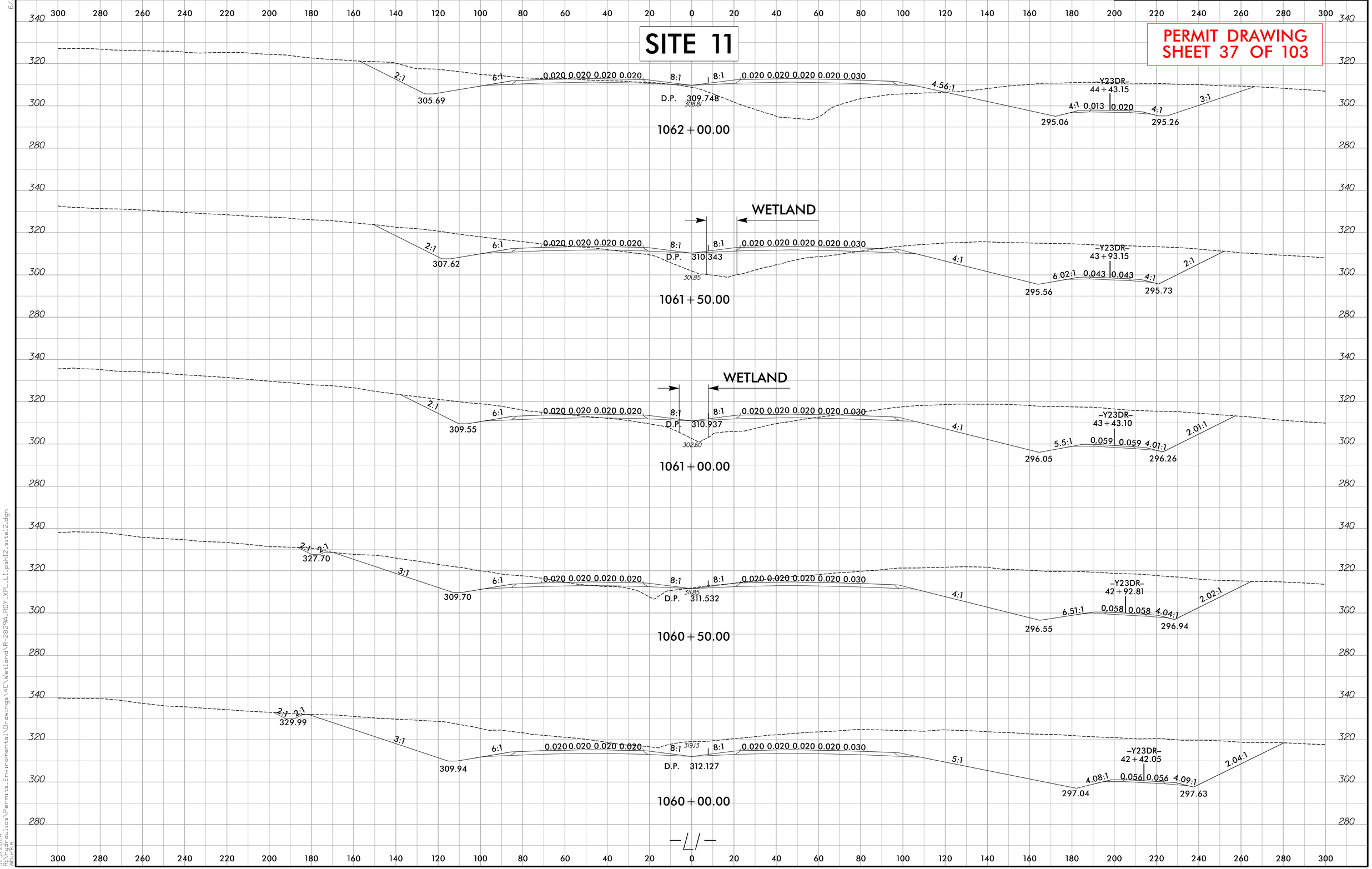
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0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	R-2829A	S1 X-79

SITE 11

PERMIT DRAWING
SHEET 37 OF 103



9/3/2024
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dsmith

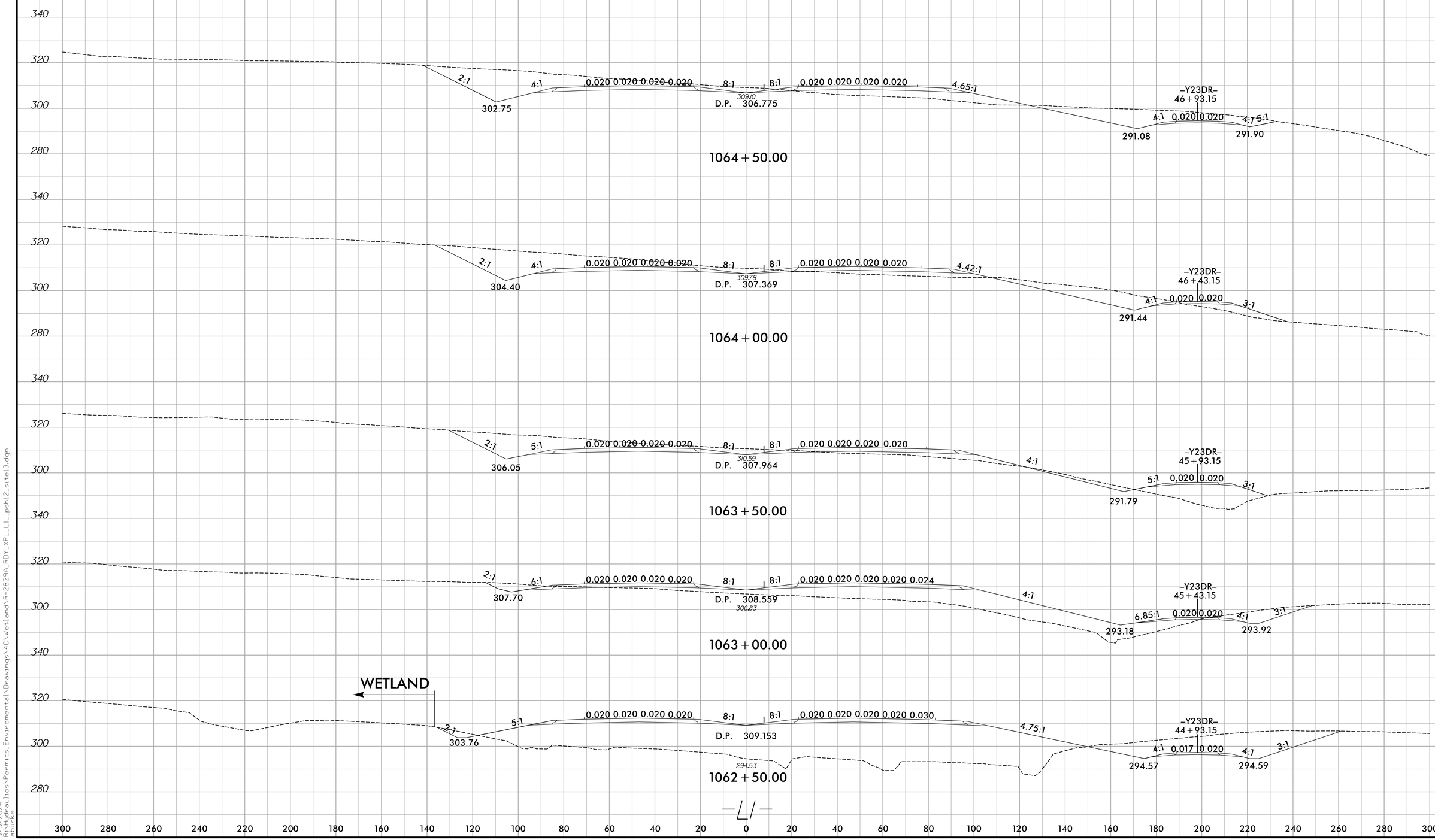
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0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	R-2829A	S1 X-80

SITE 12

PERMIT DRAWING
SHEET 38 OF 103



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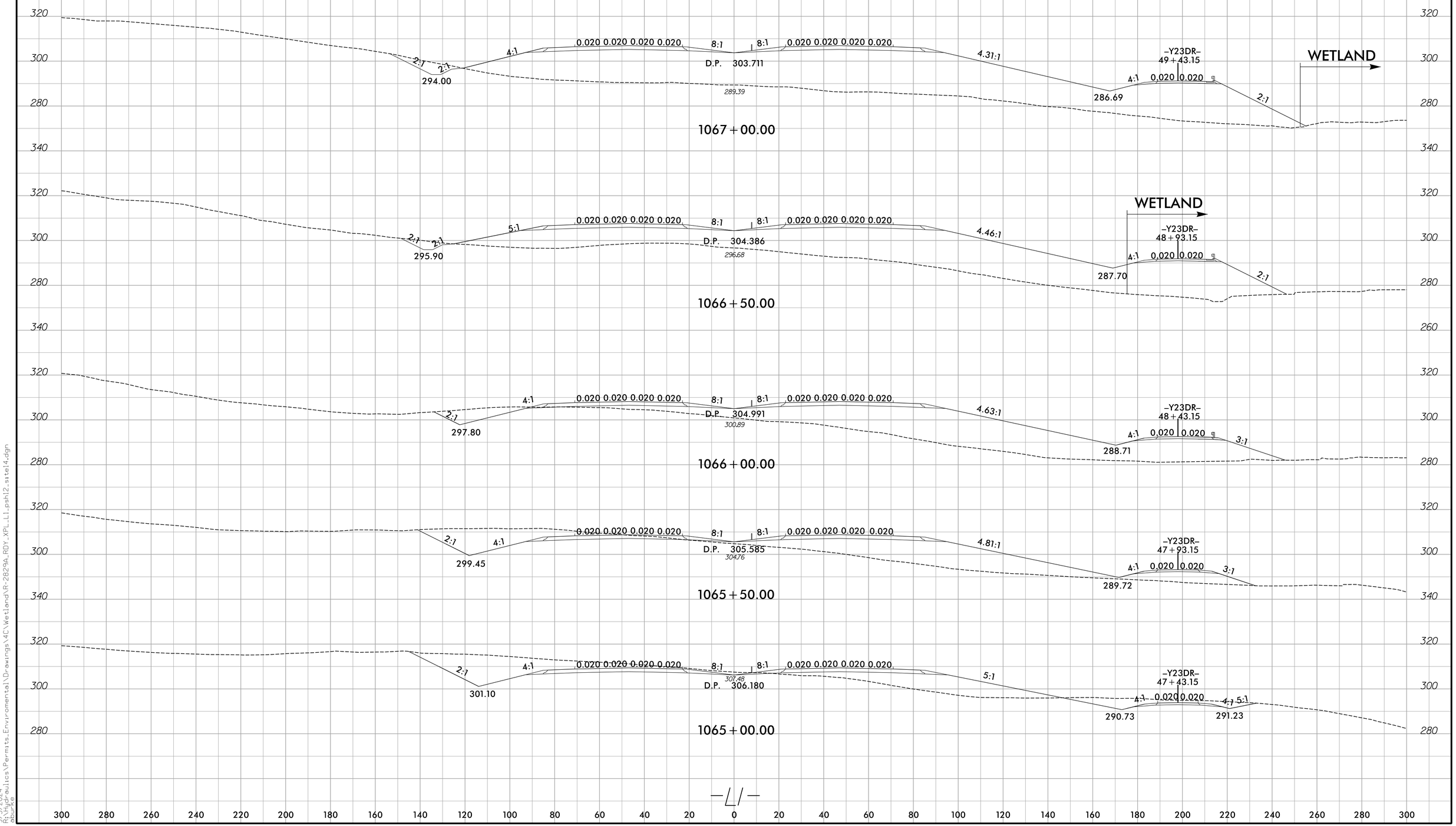
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6/23/16

0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	R-2829A	S1 X-81

SITE 13

PERMIT DRAWING
SHEET 39 OF 103



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dsmith

Submittal September 17, 2024

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ENGLISH

50 0 50 100
SCALE

SURFACE WATER IMPACTS

TEMPORARY SURFACE WATER IMPACTS

NAD 83/NA 2011

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	13
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 40 OF 103

SITE 14

CLAYTON PROPERTIES GROUP INC

ELMO T WILLIAMS TRUST ALICE H WILLIAMS

CAPITAL CITIES COMMUNICATIONS, INC.

MATCHLINE -L1- STA. 1075+00 SEE SHEET 12

MATCHLINE -L1- STA. 1089+00 SEE SHEET 14

SPECIAL V DITCH W/CL B RIP RAP SEE DETAIL Y

LATERAL 4' BASE DITCH SEE DETAIL AA

SPECIAL 4' BASE DITCH W/CL B RIP RAP SEE DETAIL Z

LATERAL 4' BASE DITCH W/CL B RIP RAP SEE DETAIL AS

SP. CUT DITCH W/CL I RIP RAP SEE DETAIL AB

LINE END OF SWALE W/CL I RIPRAP SEE DETAIL AJ & AQ

SPECIAL CUT DITCH W/CL I RIP RAP SEE DETAIL AB

STD. 4' BASE SWALE SEE DETAIL Q

LINE END OF SWALE W/CL I RIPRAP SEE DETAIL AJ & AQ

STD. 8' BASE SWALE SEE DETAIL AP

PS MIN / ELEV = 235.5

HW 36" RCP-IV BURIED

END FENCE

BEG FENCE

15 TON CL I RIPRAP W/30 SY GEOFAB

15" CSP W/ELBOWS

2GIB-WSS

2GIB-WSF

15" RCP-IV

1190 TONS CL II RIPRAP

776 TONS CL II RIPRAP

WHITEOAK CREEK

1 TON CL B RIPRAP W/5 SY GEOFAB

GRADE TO DRAIN

LINE END OF SWALE W/CL I RIPRAP SEE DETAIL AJ & AQ

BEG FENCE

15" RCP-III

2GIB-WSF 2GIB-WSF 15" CSP W/ ELBOWS

STD. 4' SWALE SEE DETAIL Q

LATERAL 4' BASE DITCH W/CL B RIP RAP SEE DETAIL H

SFV

WGP

1075+00

1080+00

1085+00

1090+00

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dbuffa

Submittal September 17, 2024

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	13
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 41 OF 103

ENGLISH

50 0 50 100
SCALE

S/S SURFACE WATER IMPACTS

TS/TS TEMPORARY SURFACE WATER IMPACTS

NAD 83/NA 2011

SITE 14

CLAYTON PROPERTIES GROUP INC

CAPITAL CITIES COMMUNICATIONS, INC.

ELMO T WILLIAMS TRUST ALICE H WILLIAMS

MATCHLINE -L1- STA. 1075+00 SEE SHEET 12

MATCHLINE -L1- STA. 1089+00 SEE SHEET 14

SPECIAL V DITCH W/CL B RIP RAP SEE DETAIL Y

LATERAL 4' BASE DITCH SEE DETAIL AA

SPECIAL 4' BASE DITCH W/CL B RIP RAP SEE DETAIL Z

LATERAL 4' BASE DITCH W/CL B RIP RAP SEE DETAIL AS

SP. CUT DITCH W/CL I RIP RAP SEE DETAIL AB

LINE END OF SWALE W/CL I RIPRAP SEE DETAIL AJ & AQ

SPECIAL CUT DITCH W/CL I RIP RAP SEE DETAIL AB

STD. 4' BASE SWALE SEE DETAIL Q

LINE END OF SWALE W/CL I RIPRAP SEE DETAIL AJ & AQ

STD. 8' BASE SWALE SEE DETAIL AP

PS MIN / ELEV = 235.5

15 TON CL I RIPRAP W/ 30 SY GEOFAB

HW

36" RCP-IV

END FENCE

INVERT BURIED

BEG FENCE

15" CSP W/ELBOWS

2GIB-WSF

2GIB-WSS

15" RCP-IV

FS

1 TON CL B RIPRAP W/5 SY GEOFAB

GRADE TO DRAIN

1190 TONS CL II RIPRAP

776 TONS CL II RIPRAP

WHITEOAK CREEK

LINE END OF SWALE W/CL I RIPRAP SEE DETAIL AJ & AQ

BEG FENCE

15" RCP-III

2GIB-WSF 2GIB-WSS

2GIB-WSF 15" CSP W/ ELBOWS

STD. 4' SWALE SEE DETAIL Q

LATERAL 4' BASE DITCH W/CL B RIP RAP SEE DETAIL H

SFV

SFV

SFV

WGP

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dbuffa

Submittal September 17, 2024

5/28/99

–L1SEC1–

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	43
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BM#5 (FROM R-2829_ls_ncdot_FS.dgn FILE)
N: 696,293 E: 2,135,230
-BL- STA 64+65.00 O/S 371.90' LT
-L1- STA 1059+73.27 O/S 345.52' LT
ELEV.= 345.06', BENCH TIE IN 10" GUM

PIPE HYDRAULIC DATA
48" RCP @ -L1- STA.1063+00

DRAINAGE AREA	= 14.6	AC
DESIGN FREQUENCY	= 100	YRS
DESIGN DISCHARGE	= 67.0	CFS
DESIGN HW ELEVATION	= 307.23	FT
100 YEAR DISCHARGE	= 67.0	CFS
100 YEAR HW ELEVATION	= 307.23	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 125.0	CFS
OVERTOPPING ELEVATION	= 310.8	FT

PIPE HYDRAULIC DATA
42" RCP @ -L1- STA.1069+18

DRAINAGE AREA	= 8.0	AC
DESIGN FREQUENCY	= 100	YRS
DESIGN DISCHARGE	= 27.9	CFS
DESIGN HW ELEVATION	= 287.42	FT
100 YEAR DISCHARGE	= 27.9	CFS
100 YEAR HW ELEVATION	= 287.42	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 88.0	CFS
OVERTOPPING ELEVATION	= 291.6	FT

BEGIN BERM BASE DITCH LT.
-L1- STA.1058+00.00
EL = 339.17'

(-) 4.5868%

END BERM BASE DITCH LT.
-L1- STA.1060+50.00
EL = 327.70'

EXISTING GROUND

END SP.BASE DITCH LT.
BEGIN SP.CUT GRASSED SWALE LT.

END SP.CUT GRASSED SWALE LT.
BEGIN SP.CUT BASE DITCH LT.
-L- STA.1061+00.00
EL = 309.55'

PROPOSED GRADE

(-) 1.1200%

(-) 3.3800%

PI = 1058+00 LT
EL = 310.66'

(-) 0.4800%

PI = 1060+50.00 LT
EL = 309.70'

(-) 0.3000%

(-) 3.8571%

PI = 1070+15.00
EL = 303.00'
VC = 780'
K = 313
DS = 75 MPH

(-) 1.1893%

BEGIN MED.V DITCH RT.
-L1- STA.1059+50.00
EL = 299.79'

(-) 5.5000%

END MED.V DITCH RT.
BEGIN MED.V DITCH RT.
-L1- STA.1060+00.00
EL = 297.04'

(-) 0.9880%

48" RCP

(-) 2.7800%

PI = 1062+50.00 RT.
EL = 294.57'

END DITCH LT.
BEGIN SP.V DITCH LT.
-L- STA.1062+61.00
EL = 303.34'

(-) 3.3000%

PI = 1065+00.00 RT.
EL = 290.73'

(-) 0.7067%

PI = 1063+50.00 RT.
EL = 291.79'

BEGIN SP.CUT DITCH LT.
-L1- STA.1063+00.00
EL = 307.70'

END SP.V DITCH LT.
BEGIN SP.BASE DITCH LT.
-L1- STA.1057+50.00
EL = 314.04'

BEGIN SP.V DITCH LT.
-L1- STA.1057+00.00
EL = 314.60'

(-) 3.8000%

(-) 2.0200%

END SP.CUT DITCH LT.
BEGIN LAT.BASE DITCH LT.
-L1- STA.1066+00.00
EL = 297.80'

PI = 1067+00.00 LT
EL = 294.00'

(-) 3.6400%

PI = 1068+00.00 RT.
EL = 284.67'

(+) 0.3000%

(-) 1.7933%

42" RCP

PI = 1069+50 RT.
EL = 281.98'

END LAT.BASE DITCH LT.
BEGIN LAT.V DITCH LT.
-L1- STA.1069+50.00
EL = 284.90'

1056+00 1057+00 1058+00 1059+00 1060+00 1061+00 1062+00 1063+00 1064+00 1065+00 1066+00 1067+00 1068+00 1069+00 1070+00

BM#6 (FROM R-2829_ls_ncdot_FS.dgn FILE)
N: 698,091 E: 2,136,341
-BL- STA 87+23.00 O/S 369.10' RT
-L1- STA 1079+60.57 O/S 356.75' RT
ELEV.= 233.77', BENCH TIE IN 20" OAK

–L1SEC1–

PERMIT DRAWING SHEET 42 OF 103

SITE 14

PI = 1070+15.00
EL = 303.00'
VC = 780'
K = 313
DS = 75 MPH

(-)3.6842%

EXISTING GROUND

PROPOSED GRADE

(+) 0.3000%

(+) 0.5533%

(+) 0.4667%

END LAT.V DITCH LT.
BEGIN SP.V DITCH LT.
-L1- STA.1071+50.00
EL = 285.50'

END MED.V DITCH RT.
-L1- STA.1071+00
EL = 282.81'

END SP.V DITCH LT.
BEGIN SP.V DITCH LT.
-L1- STA.1073+00.00
EL = 286.20'

(-) 5.9800%

END SP.V DITCH LT.
BEGIN LAT.BASE DITCH LT.
-L1- STA.1075+50.00
EL = 271.25'

(-) 2.6250%

END LAT.BASE DITCH LT.
BEGIN SP.BASE DITCH LT.
-L1- STA.1077+50.00
EL = 266.00'

(-) 4.3333%

END SP.BASE DITCH LT.
BEGIN LAT.BASE DITCH LT.
-L1- STA.1079+00.00
EL = 259.50'

BEGIN BRIDGE
-L1SEC1- STA.1083+85.06 LT
-L1SEC1- STA.1083+59.88 RT

PI = 1082+50.00
EL = 257.50'
VC = 700'
K = 207
DS = 75 MPH

(-)3.6842%

(-)10.3065%

PI= 1083+50.00 LT.
EL= 237.00'

(-) 5.0000%

LEFT DITCH

RIGHT DITCH

FOR –L1SEC1– PLAN SEE SHTS. 11 THRU 13

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1070+00 1071+00 1072+00 1073+00 1074+00 1075+00 1076+00 1077+00 1078+00 1079+00 1080+00 1081+00 1082+00 1083+00 1084+00

8/23/2024
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Submittal September 17, 2024

8/17/99

–L1SEC2–

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	44
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BM#7 (FROM R-2829_ls_ncdot_FS.dgn FILE)
N: 700,050 E: 2,136,602
-BL- STA 106+96.00 0/S 271.20' RT
-L1- STA 1099+19.29 309.96' RT
ELEV.= 259.88' BENCHTIE IN 12" POPLAR

PERMIT DRAWING SHEET 43 OF 103

BRIDGE HYDRAULIC DATA
Sta. 1085+31 -L-

DESIGN FREQUENCY	= 100	YRS
DESIGN DISCHARGE	= 3,160	CFS
DESIGN HW ELEVATION	= 238.7	FT
100 YEAR DISCHARGE	= 3,160	CFS
100 YEAR FREQUENCY	= 100	YRS
100 YEAR HW ELEVATION	= 238.7	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 50,000	CFS
OVERTOPPING ELEVATION	= 254.0	FT
NORMAL WATER SURFACE ELEV	= 231.0	FT
DATE OF SURVEY	= 12/2023	

SITE 14

℄ STA. 1085+31 -L1-
PROP. 3 SPAN (1@122',1@117',1@78')
OAL 317', 54" FIB
SKEW 110, GP ELEV. 256.8'

END BRIDGE
-L1SEC1- STA. 1086+89.50+/-

PROPOSED GRADE

EXISTING GROUND

WHITE OAK CREEK GREENWAY

Q100-YR=238.54' (FEMA)

Q100-YR=238.7' (DESIGN)

NWS 231.0' (12.07.2023)

(-) 4.1304%

END BENT

1.5:1 NORMAL TO END BENT

END LAT.BASE DITCH LT.
-L1- STA.1084+50.00
EL = 233.00'

BEGIN LAT.BASE DITCH RT.
-L1- STA.1087+00.00
EL = 230.80'

PI = 1088+82.00 RT.
EL = 238.30'

(+) 4.1209%

(+) 3.9706%

END LAT.BASE DITCH RT.
BEGIN LAT.BASE SWALE RT.
-L1- STA.1089+50.00
EL = 241.00'

(+) 0.5000%

BEGIN LAT.BASE SWALE LT.
-L1- STA.1090+00.00
EL = 231.00'

(+) 0.3500%

END LAT.GRASSED SWALE RT.
BEGIN SP.V DITCH RT.
-L1- STA.1093+50
EL = 243.00'

(+) 5.7143%

PI= 1093+47.00 LT.
EL= 240.10'

END LAT.GRASSED SWALE LT.
BEGIN LAT.BASE DITCH LT.
-L1- STA.1092+00.00
EL = 231.70'

(+) 2.0000%

(+) 5.4117%

END GRADE SECTION 1
BEGIN GRADE SECTION 2
-LSEC2- STA.1094+00.00
EL = 253.98'

BEGIN SP.V DITCH RT.
-L1- STA.1094+00.00
EL = 244.00'

END LAT.BASE DITCH LT.
BEGIN SP.BASE SWALE LT.
-L1- STA.1094+00.00
EL = 243.00'

(+) 2.7500%

(+) 1.3889%

PI= 1096+16.00 LT.
EL = 246.00'

(+) 1.7500%

END SP.BASE SWALE LT.
BEGIN LAT.BASE DITCH LT.
-L1- STA.1098+00.00
EL = 244.50'

(-) 0.8152%

PI= 1096+00.00 RT.
EL = 249.50'

(-)0.3065%

(-) 0.8333%

END SP.V DITCH RT.
BEGIN SP.GRASSED SWALE RT.
-L1- STA.1097+00.00
EL = 247.75'

PI = 1098+00.00
EL = 252.75'
VC = 500'
K = 214
DS = 75 MPH

FOR –L1– PLAN SEE SHTS. 13 & 14

1084+00 1085+00 1086+00 1087+00 1088+00 1089+00 1090+00 1091+00 1092+00 1093+00 1094+00 1095+00 1096+00 1097+00 1098+00

310 300 290 280 270 260 250 240 230 220

–L1SEC2–

CULVERT HYDRAULIC DATA
8'x7' RCBC NOT BURIED @ -L1- STA.1099+26

DRAINAGE AREA	= 0.12	SQ MI
DESIGN FREQUENCY	= 100	YRS
DESIGN DISCHARGE	= 170	CFS
DESIGN HW ELEVATION	= 248.4	FT
100 YEAR DISCHARGE	= 170	CFS
100 YEAR HW ELEVATION	= 248.4	FT
OVERTOPPING FREQUENCY	= 500+	YRS
OVERTOPPING DISCHARGE	= 400	CFS
OVERTOPPING ELEVATION	= 251.2	FT

END SP.GRASSED SWALE RT.
BEGIN LAT.GRASSED SWALE RT.
-L1- STA.1098+50.00
EL = 246.50'

END LAT.GRASSED SWALE RT.
-L1- STA.1098+83.00
EL = 245.97'

END LAT.GRASSED SWALE RT.
BEGIN SP.BASE DITCH RT.
-L1- STA.1100+00.00
EL = 246.35'

PI = 1098+00.00
EL = 252.75'
VC = 500'
K = 214
DS = 75 MPH

PROPOSED GRADE

EXISTING GROUND

(+)2.0294%

8' x 7' RCBC

(+) 0.4287%

(+) 1.5600%

(+) 8.6500%

(-) 1.6061%

(-) 0.9375%

PI= 1119+17 RT.
EL = 246.00'

BEGIN LAT.GRASSED SWALE RT.
-L1- STA.1099+00.00
EL = 245.93'

END LAT.BASE DITCH LT.
-L1- STA.1098+80.00
EL = 243.75'

END SP.V GRASSED SWALE LT.
BEGIN LAT.BASE DITCH LT.
-L1- STA.1098+00.00
EL = 244.50'

END SP.BASE DITCH RT.
BEGIN SP.V GRASSED SWALE RT.
-L1- STA.1101+00.00
EL = 255.00'

END SP.V GRASSED SWALE RT.
-L1- STA.1101+50.00
EL = 255.78'

PI = 1106+50.00
EL = 270.00'
VC = 850'
K = 363
DS = 79 MPH

(+)2.0294%

(-)0.3095%

(-) 2.1800%

BEGIN LAT.V DITCH RT.
-L1- STA.1111+50.00
EL = 263.36'

FOR –L1– PLAN SEE SHTS. 14 & 15

1098+00 1099+00 1100+00 1101+00 1102+00 1103+00 1104+00 1105+00 1106+00 1107+00 1108+00 1109+00 1110+00 1111+00 1112+00

310 300 290 280 270 260 250 240 230 220

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Submittal September 17, 2024

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PROJECT REFERENCE NO.	SHEET NO.
R-2829A	14
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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PERMIT DRAWING SHEET 44 OF 103

NC DEPARTMENT OF TRANSPORTATION

NAD 83/NA 2011

INSET A

PROTECTION W/CL B RIP RAP SEE DETAIL E

17 TOE W/C SE

TIE TO

15" RCP-III 2GIB-WSF

CAPITAL CITIES COMMUNICATIONS, INC.

N 82°57'19" E 405.28'

SITE 15 WGR

MATCHLINE -L1- STA. 1089+00 SEE SHEET 13

STD. 8' BASE SWALE SEE DETAIL AP

PDE

RW CA

LATERAL 4' BASE SWALE SEE DETAIL L

LATERAL 4' BASE DITCH W/CL B RIP RAP SEE DETAIL H

INV OUT = 240.1

SPECIAL 4' BASE SWALE SEE DETAIL O

24" CSP W/ELBOWS 15" RCP-III

2GIB-WSF

24" RCP-IV

GREU TL-3

1090+00

15" RCP-III

FS

2GIB-WSS

1095+00

18" RCP-III

-L1-

SWALE V10=1.9 FT/S Q10=3.6 CFS

2 TON CL B RIPRAP W/7 SY GEOFAB

LAT. 4' BASE DITCH SEE DETAIL AA

C300 OUTLET STABILIZATION 38 TONS CL I RIPRAP W/32 SY GEOFAB SEE DETAIL CC

SEE INSET A

TOE PROTECTION W/CL B RIP RAP SEE DETAIL E

GRADE TO DRAIN

15" CSP W/ELBOWS

15" RCP-IV

JS ENDS

1100+00

SEE INSET B

MATCHLINE -L1- STA. 1100+50 SEE SHEET 15

GRADE TO DRAIN

SPECIAL V DITCH SEE DETAIL A

SPECIAL CUT 4' SWALE SEE DETAIL O

TDE

LATERAL 4' BASE SWALE SEE DETAIL BF

SPECIAL 4' BASE W/CL II RIP RAP SEE DETAIL AZ

SFR WGR

SITE 15

C300 INLET STABILIZATION 252 TONS CL II RIPRAP W/139 SY GEOFAB SEE DETAIL CC

CAPITAL CITIES COMMUNICATIONS, INC.

CAPITOL BROADCASTING COMPANY, INC.

INSET B

BZ 1 BZ 2 TS TB JS

ENGLISH

S S	SURFACE WATER IMPACTS
TS TS	TEMPORARY SURFACE WATER IMPACTS
E E	WETLAND EXCAVATION
F F	FILL IN WETLAND
* * *	MECHANIZED CLEARING (GRUBBING)

50 0 50 100 SCALE

25 0 25 50 SCALE FOR INSET

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dwhite

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PROJECT REFERENCE NO.	SHEET NO.
R-2829A	14
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

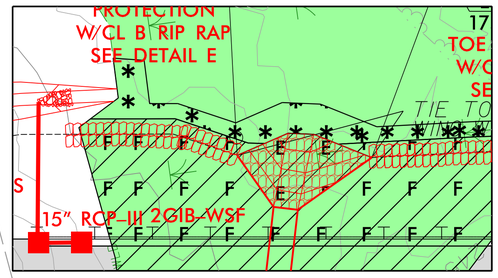
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PERMIT DRAWING SHEET 45 OF 103

NC DEPARTMENT OF TRANSPORTATION

NAD 83/NA 2011

INSET A



CAPITAL CITIES COMMUNICATIONS, INC.

SITE 15 WGR

STD. 8' BASE SWALE SEE DETAIL AP

LATERAL 4' BASE DITCH W/CL B RIP RAP SEE DETAIL H

LATERAL 4' BASE SWALE SEE DETAIL L

INV OUT = 240.1

SPECIAL 4' BASE SWALE SEE DETAIL O

SWALE V10=1.9 FTS Q10=3.6 CFS

2 TON CL B RIPRAP W/7 SY GEOFAB LAT. 4' BASE DITCH SEE DETAIL AA

C300 OUTLET STABILIZATION 38 TONS CL I RIPRAP W/32 SY GEOFAB SEE DETAIL CC

SEE INSET A

TOE PROTECTION W/CL B RIP RAP SEE DETAIL E

GRADE TO DRAIN

15" CSP W/ELBOWS 2GIB-WSF

15" RCP-IV 2GIB-WSF

JS ENDS

1100+00

24" CSP W/ELBOWS 15" RCP-III 2GIB-WSF

24" RCP-IV

15" RCP-III 2GIB-WSS

GREU TL-3

FS

1090+00

1095+00

18" RCP-III

MATCHLINE -L1- STA. 1089+00 SEE SHEET 13

MATCHLINE -L1- STA. 1100+50 SEE SHEET 15

SEE INSET B

GRADE TO DRAIN

SPECIAL V DITCH SEE DETAIL A

SPECIAL CUT 4' SWALE SEE DETAIL O

LATERAL 4' BASE DITCH W/CL B RIP RAP SEE DETAIL H

LATERAL 4' BASE SWALE SEE DETAIL L

LATERAL 4' BASE SWALE SEE DETAIL BF

SPECIAL 4' BASE W/CL II RIP RAP SEE DETAIL AZ

TDE

SFR WGR

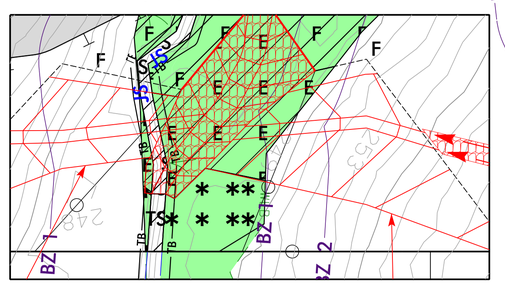
SITE 15

C300 INLET STABILIZATION 252 TONS CL II RIPRAP W/139 SY GEOFAB SEE DETAIL CC

CAPITAL CITIES COMMUNICATIONS, INC.

CAPITOL BROADCASTING COMPANY, INC.

INSET B



ENGLISH

S S	SURFACE WATER IMPACTS
TS TS	TEMPORARY SURFACE WATER IMPACTS
E E	WETLAND EXCAVATION
F F	FILL IN WETLAND
* * *	MECHANIZED CLEARING (GRUBBING)

50 0 50 100
SCALE

25 0 25 50
SCALE FOR INSET

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PROJECT REFERENCE NO.	SHEET NO.

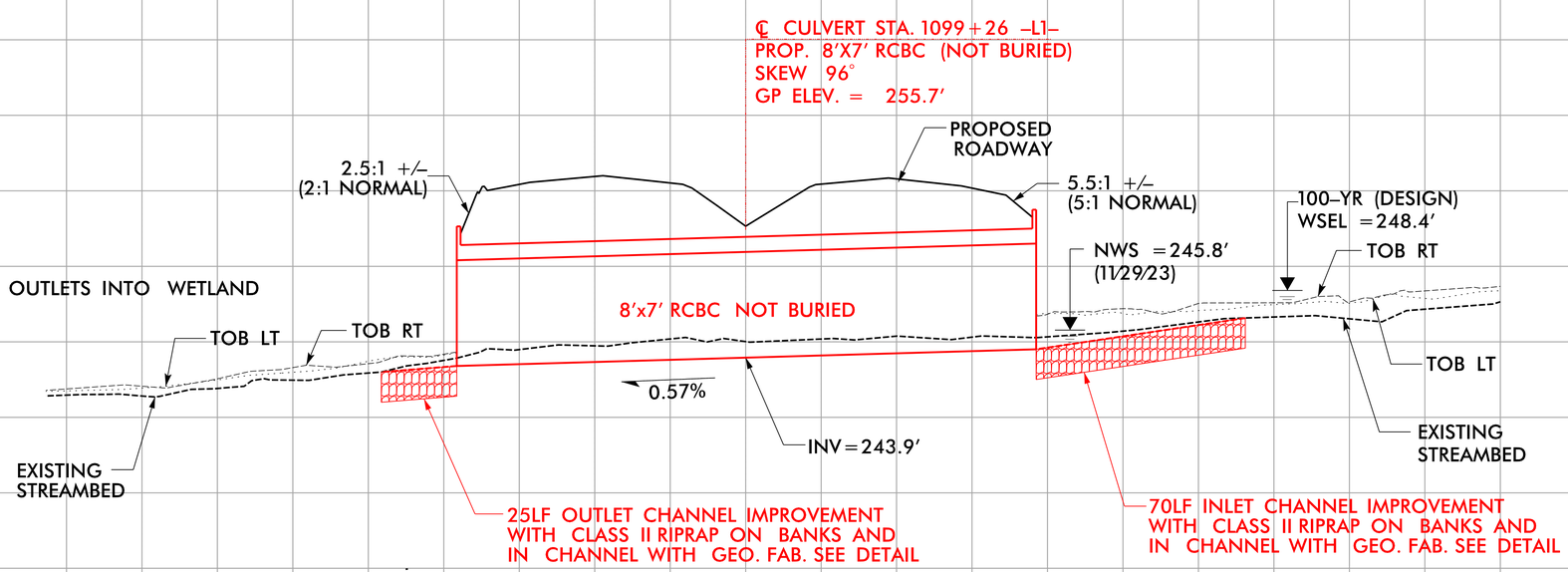
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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PERMIT DRAWING
SHEET 46 OF 103

ENGLISH

SITE 15
–L1– STA. 1099+00



8'x7' RCBC
(Not Buried, Length =192')

8/31/2024
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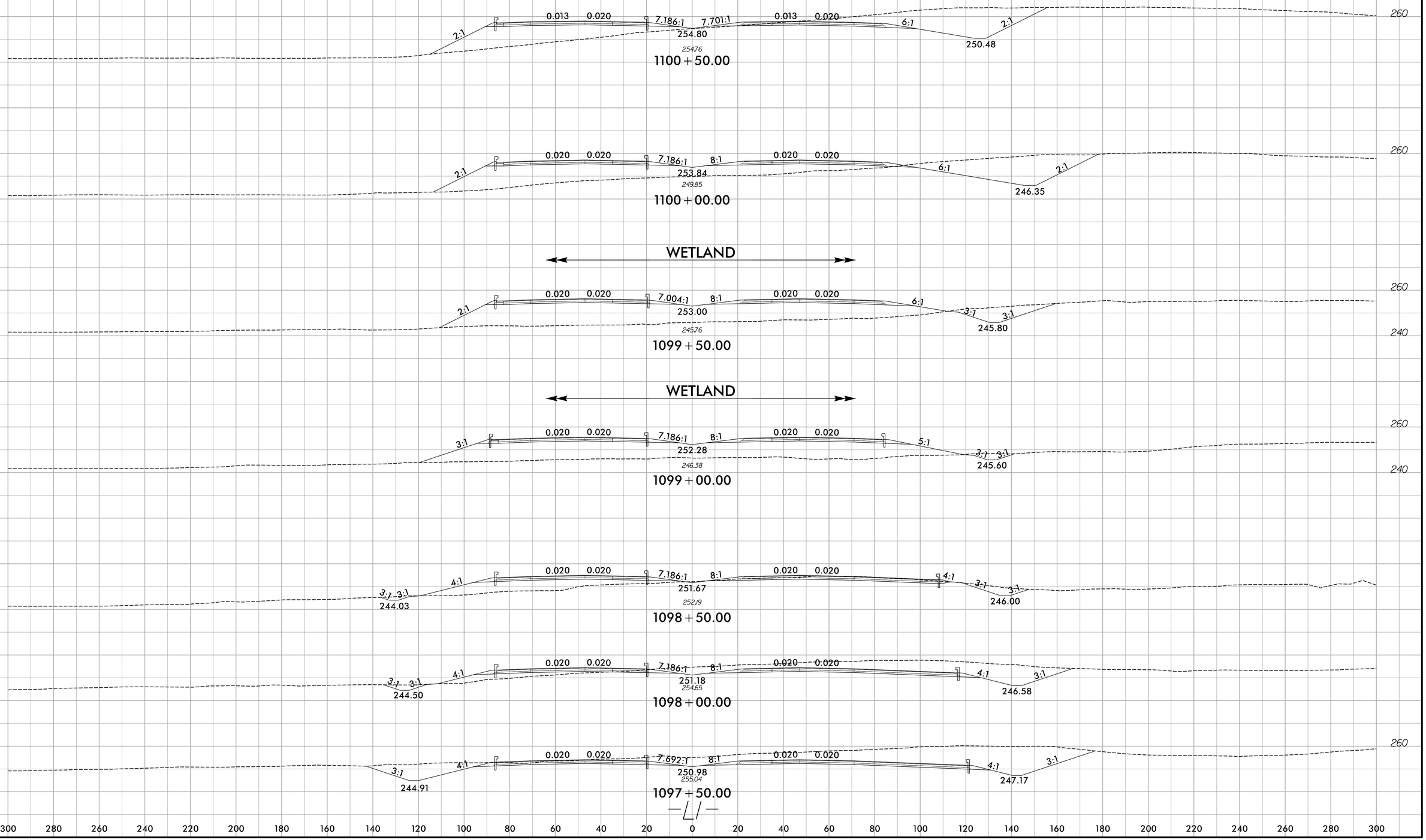
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0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	R-2829A	S2 X-2

300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

SITE 15

PERMIT DRAWING
SHEET 47 OF 103



9/3/2024
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dsmith

Submittal September 17, 2024

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PROJECT REFERENCE NO.	SHEET NO.
R-2829A	15
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 48 OF 103

INSET A

NC DEPARTMENT OF TRANSPORTATION

BOBBY & MARGARET RAYNOR

NAD 83/NA 2011

SITE 15

WGR

7'R7' RCBC (NOT BURIED)

SITE 16

WGR

SFN

WGR

NC 540

SEE INSET A

ENERGY DISSIPATOR BASIN SEE DETAIL BS

DISSIPATOR V10=1.0 FT/S Q10=30.0 CFS

36" CSP W/ELBOWS (NOT BURIED, UPSIZED FOR MAINT.)

TB 2GIB-WSF

36" RCP-III (UPSIZED FOR MAINT.)

2GIA-WSS

1105+00

1110+00

15" RCP-III

2GIB-WSS

24" RCP-IV

30" CSP W/ ELBOWS

SPECIAL CUT 4' SWALE SEE DETAIL O

BDO

SPECIAL 4' BASE W/CL II RIP RAP SEE DETAIL AZ

BERM DITCH SEE DETAIL BE

BERM 4' BASE DITCH W/CL B RIP RAP SEE DETAIL AY

BERM DITCH W/CL B RIPRAP SEE DETAIL X

SPECIAL V DITCH SEE DETAIL A

18" CSP W/ELBOWS

5 TON CL B RIPRAP W/14 SY GEOFAB

FS MIN ELEV=272.0

3 TON CL B RIPRAP W/10 SY GEOFAB

LATERAL 4' BASE SWALE SEE DETAIL L

SWALE V10=1.8 FT/S Q10=21.5 CFS

TOE PROTECTION W/CL B RIP RAP SEE DETAIL E

C400 OUTLET STABILIZATION 76 TONS CL II RIPRAP W/118 SY GEOFAB SEE DETAIL CD

TOE PROTECTION W/CL B RIP RAP SEE DETAIL E

JS ENDS

APPROX. LOCATION OF RELOCATED WRAL TV TOWER ANCHOR

SITE 17

WGS

MATCHLINE -L1- STA. 1100+50 SEE SHEET 14

MATCHLINE -L1- STA. 1114+00 SEE SHEET 16

* SUPER INCREASED TO 0.04 FOR HYDROPLANING

CAPITOL BROADCASTING COMPANY, INC.

ENGLISH

SURFACE WATER IMPACTS

MECHANIZED CLEARING (GRUBBING)

FILL IN WETLAND

SCALE 50 0 50 100

SCALE FOR INSET 25 0 25 50

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PROJECT REFERENCE NO.	SHEET NO.
R-2829A	15
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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PERMIT DRAWING SHEET 49 OF 103

INSET A

NC DEPARTMENT OF TRANSPORTATION

BOBBY & MARGARET RAYNOR

NAD 83/NA 2011

SITE 15

WGR

SITE 16

WGR

WGR

SFN

NC 540

7'-7" RCBC (NOT BURIED)

ENERGY DISSIPATOR BASIN SEE DETAIL BS

DISSIPATOR V10=1.0 FT/S Q10=30.0 CFS

TOE PROTECTION W/CL B RIP RAP SEE DETAIL E

36" CSP W/ELBOWS (NOT BURIED, UPSIZED FOR MAINT.)

TB 2GIB-WSF

36" RCP-III (UPSIZED FOR MAINT.)

2GIA-WSS

1105+00

1110+00

-L1-

C400 OUTLET STABILIZATION 76 TONS CL II RIPRAP W/118 SY GEOFAB SEE DETAIL CD

SEE INSET A

JS ENDS

2GIB-WSF

7'-7" RCBC (NOT BURIED)

15" RCP-III

24" RCP-IV

2GIB-WSS

30" CSP W/ ELBOWS

SPECIAL CUT 4' SWALE SEE DETAIL O

BDO

SPECIAL 4' BASE W/CL II RIP RAP SEE DETAIL AZ

BERM DITCH SEE DETAIL BE

BERM 4' BASE DITCH W/CL B RIP RAP SEE DETAIL AY

BERM DITCH W/CL B RIPRAP SEE DETAIL X

SPECIAL V DITCH SEE DETAIL A

18" CSP W/ELBOWS

5 TON CL B RIPRAP W/14 SY GEOFAB

FS MIN ELEV=272.0

BDO 3 TON CL B RIPRAP W/10 SY GEOFAB

LATERAL 4' BASE SWALE SEE DETAIL L

SWALE V10=1.8 FT/S Q10=21.5 CFS

TOE PROTECTION W/CL B RIP RAP SEE DETAIL E

WGS

SITE 17

APPROX. LOCATION OF RELOCATED WRAL TV TOWER ANCHOR

MATCHLINE -L1- STA. 1100+50 SEE SHEET 14

MATCHLINE -L1- STA. 1114+00 SEE SHEET 16

* SUPER INCREASED TO 0.04 FOR HYDROPLANING

CAPITOL BROADCASTING COMPANY, INC.

ENGLISH

SURFACE WATER IMPACTS

MECHANIZED CLEARING (GRUBBING)

FILL IN WETLAND

SCALE 50 0 50 100

SCALE FOR INSET 25 0 25 50

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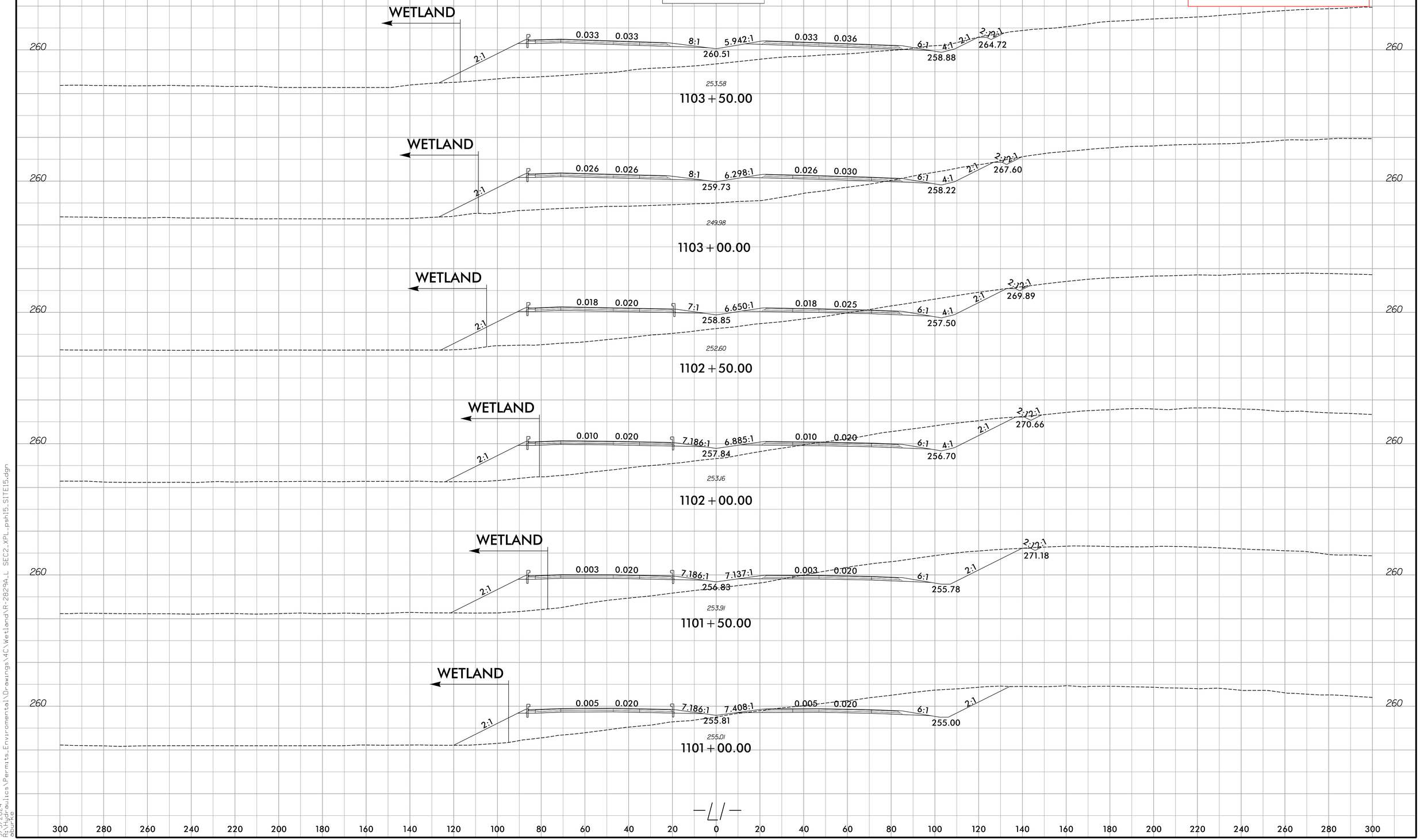
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6/23/16

0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	R-2829A	S2 X-3

SITE 15

PERMIT DRAWING
SHEET 50 OF 103



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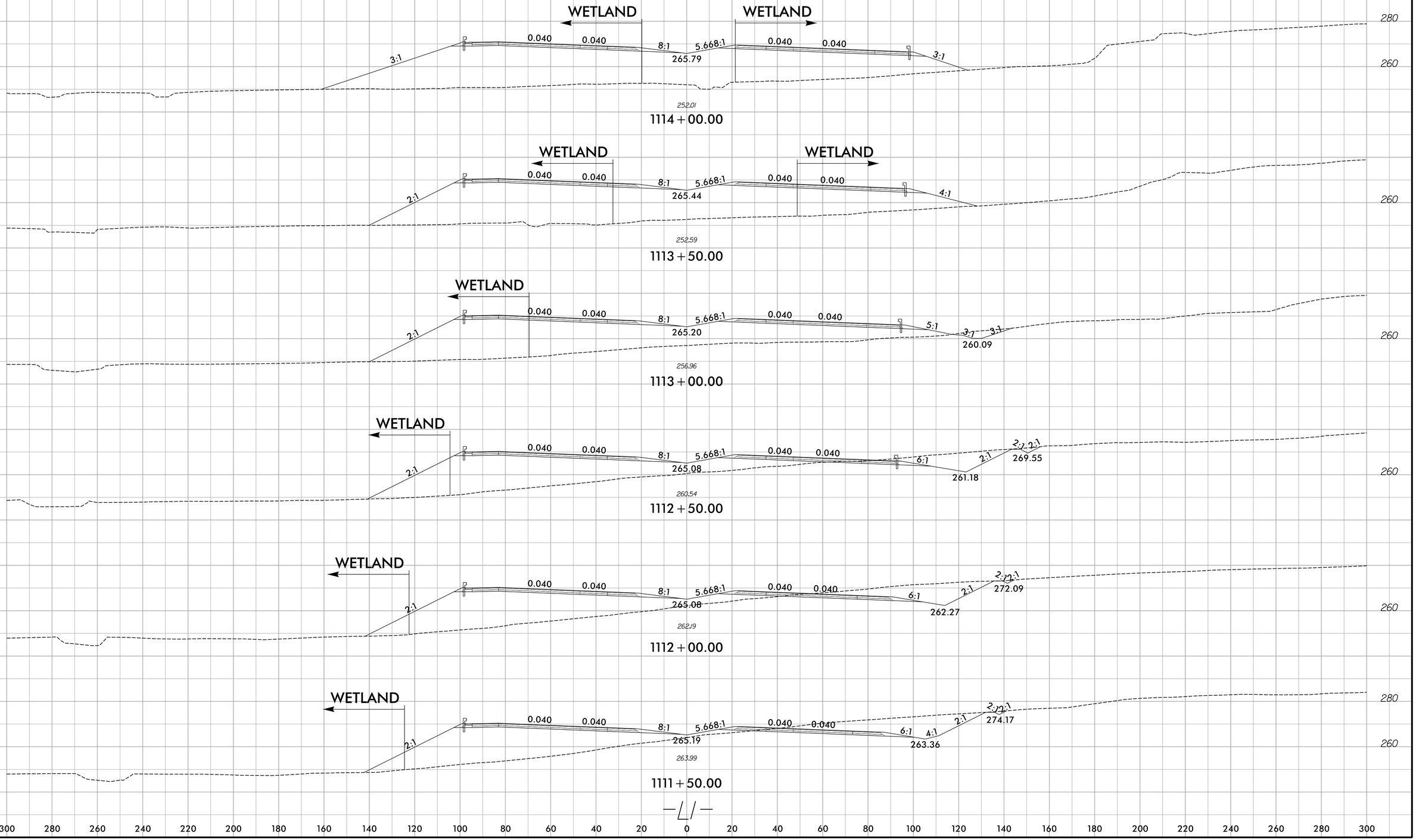
PROJ. REFERENCE NO.	SHEET NO.
R-2829A	S2 X-7

SITE 16

SITE 17

PERMIT DRAWING
SHEET 51 OF 103

300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300



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akunze

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PROJECT REFERENCE NO.	SHEET NO.
R-2829A	16
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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PERMIT DRAWING SHEET 52 OF 103

BOBBY & MARGARET RAYNOR

NC DEPARTMENT OF TRANSPORTATION

NAD 83/NA 2011

SITE 16 WGR

SFQ SITE 18

SITE 19

RICHARD RAGSDALE REVOCABLE

WGR

SFS

SEE INSET A
SHEET 54 OF 103

MATCHLINE -L1- STA. 1114+00
SEE SHEET 15

MATCHLINE -L1- STA. 1127+00
-Y24RPBR- STA. 22+00
SEE SHEET 17

MATCHLINE
-Y24RPC- STA. 16+50
SEE SHEET 17

-L1- 1120+00

-Y24RPBR-

-Y24RPC-

15+00

20+00

1125+00

OUTLET CHANNEL STABILIZATION
W/CL II RIPRAP
SEE DETAIL AL
48 TONS CL II RIPRAP
W/90 SY GEOFAB

TOE PROTECTION
W/CL B RIP RAP
SEE DETAIL E

TOE PROTECTION
W/CL B RIP RAP 1 TON CL B RIPRAP
W/5 SY GEOFAB
SEE DETAIL E

LINE CUT/FILL TRANSITION
TOE PROTECTION
W/CL B RIP RAP
SEE DETAIL E

1612
V10 = 0.5 FT/S
Q10 = 1.9 CFS

15" CSP
W/ELBOWS

2GIB-WSF

2GIB-WSS

15" RCP-III

15" RCP-IV

60' RCE/W (INST)
BZ 2 (MAINT)

JS ENDS

TOE PROTECTION
W/CL B RIP RAP

JS BEGINS

CHANNEL BLOCK
SEE DETAIL BK

STANDARD 4' BASE SWALE
SEE DETAIL O

SPECIAL CUT 4' SWALE
SEE DETAIL O

FS MIN
ELEV = 279.5

2 TON CL B RIPRAP
W/7 SY GEOFAB

TOE PROTECTION
W/CL B RIP RAP
SEE DETAIL E

LATERAL 4' BASE DITCH
SEE DETAIL AA

CHANNEL CHANGE
W/CL II RIPRAP
SEE DETAIL AR

CHANNEL CHANGE
W/CL II RIPRAP
SEE DETAIL BB

2 TONS CL B RIPRAP
W/7 SY GEOFAB
C400 INLET
STABILIZATION
39 TONS CL II RIPRAP
W/73 SY GEOFAB
SEE DETAIL CD

WGS

SFN

WGT

SEE INSET B
SHEET 54 OF 103

SITE 17

SITE 16

SITE 18

SFQ

CHANNEL CHANGE
W/CL II RIPRAP
SEE DETAIL AR

LATERAL 4' BASE DITCH
W/CL I RIP RAP
SEE DETAIL BP

LATERAL 4'
BASE DITCH
SEE DETAIL AE

SFS

JS BEGINS

SITE 19

PAF

CAPITOL BROADCASTING COMPANY, INC.

PDE

TDE

RW CA

ENGLISH

S S	SURFACE WATER IMPACTS
TS TS	TEMPORARY SURFACE WATER IMPACTS
E E	WETLAND EXCAVATION
F F	FILL IN WETLAND
* *	MECHANIZED CLEARING (GRUBBING)

SCALE 50 0 50 100

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PROJECT REFERENCE NO.	SHEET NO.
R-2829A	16
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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PERMIT DRAWING SHEET 53 OF 103

BOBBY & MARGARET RAYNOR

NC DEPARTMENT OF TRANSPORTATION

NAD 83/NA 2011

SITE 16 WGR

SFQ SITE 18

SITE 19 WGR SFS

SEE INSET A SHEET 54 OF 103

MATCHLINE -L1- STA. 1114+00 SEE SHEET 15

MATCHLINE -L1- STA. 1127+00 -Y24RPBR- STA. 22+00 SEE SHEET 17

MATCHLINE -Y24RPC- STA. 16+50 SEE SHEET 17

-L1- 1120+00

-Y24RPBR-

-Y24RPC-

15+00

20+00

1125+00

JS BEGINS

JS ENDS

TOE PROTECTION W/CL B RIP RAP

LATERAL 4' BASE DITCH SEE DETAIL AA

CHANNEL BLOCK SEE DETAIL BK

STANDARD 4' BASE SWALE SEE DETAIL O

SPECIAL CUT 4' SWALE SEE DETAIL O

FS MIN ELEV= 279.5

2 TON CL B RIPRAP W/7 SY GEOFAB

CHANNEL CHANGE W/CL II RIPRAP SEE DETAIL AR

CHANNEL CHANGE W/CL II RIPRAP SEE DETAIL BB

2 TONS CL B RIPRAP W/7 SY GEOFAB

C400 INLET STABILIZATION

39 TONS CL II RIPRAP W/73 SY GEOFAB SEE DETAIL CD

OUTLET CHANNEL STABILIZATION W/CL II RIPRAP SEE DETAIL AL 48 TONS CL II RIPRAP W/90 SY GEOFAB

TOE PROTECTION W/CL B RIP RAP 1 TON CL B RIPRAP W/5 SY GEOFAB SEE DETAIL E

LINE CUTFILL TRANSITION TOE PROTECTION W/CL B RIP RAP SEE DETAIL E

1612 V10 = 0.5 FT/S Q10 = 1.9 CFS

15" CSP W/ELBOWS

15" RCP-III

18" RCP-III

15" RCP-IV

2GIB-WSF

2GIB-WSS

LATERAL 4' BASE DITCH W/CL I RIP RAP SEE DETAIL BP

LATERAL 4' BASE DITCH SEE DETAIL AE

SITE 17 WGS

SFN WGT SEE INSET B SHEET 54 OF 103

SITE 16

PAF

SFS

SITE 19

CAPITOL BROADCASTING COMPANY, INC.

ENGLISH

S S	SURFACE WATER IMPACTS
TS TS	TEMPORARY SURFACE WATER IMPACTS
E E	WETLAND EXCAVATION
F F	FILL IN WETLAND
* * * *	MECHANIZED CLEARING (GRUBBING)

SCALE 50 0 50 100

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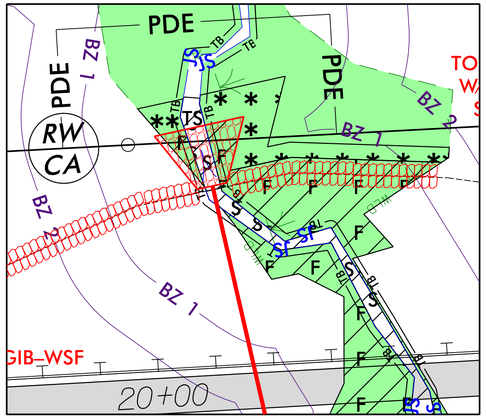
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PROJECT REFERENCE NO.	SHEET NO.
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

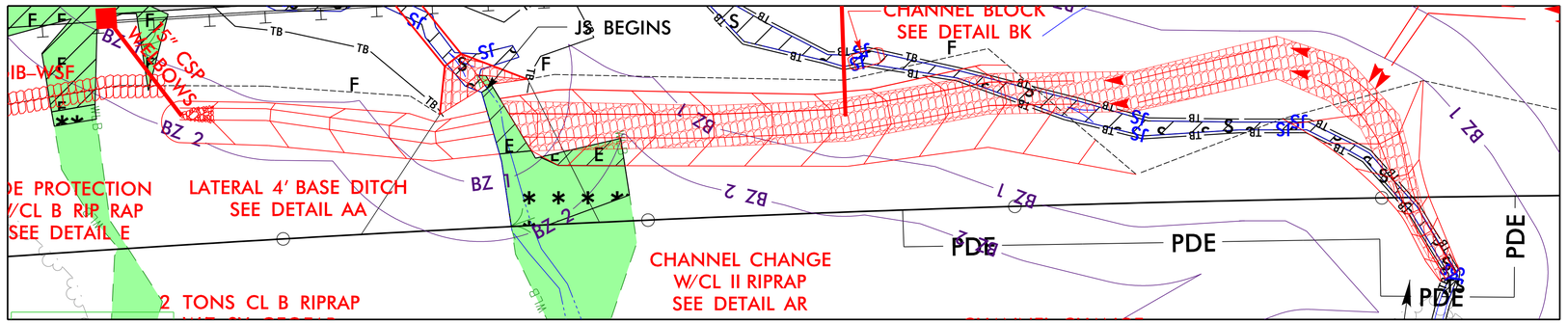
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NAD 83/NA 2011



INSET A



INSET B

ENGLISH

S S	SURFACE WATER IMPACTS
TS TS	TEMPORARY SURFACE WATER IMPACTS
E E	WETLAND EXCAVATION
F F	FILL IN WETLAND
* * *	MECHANIZED CLEARING (GRUBBING)

25 0 25 50
SCALE FOR INSERT

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Hydraulics
Roads

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PROJECT REFERENCE NO.	SHEET NO.

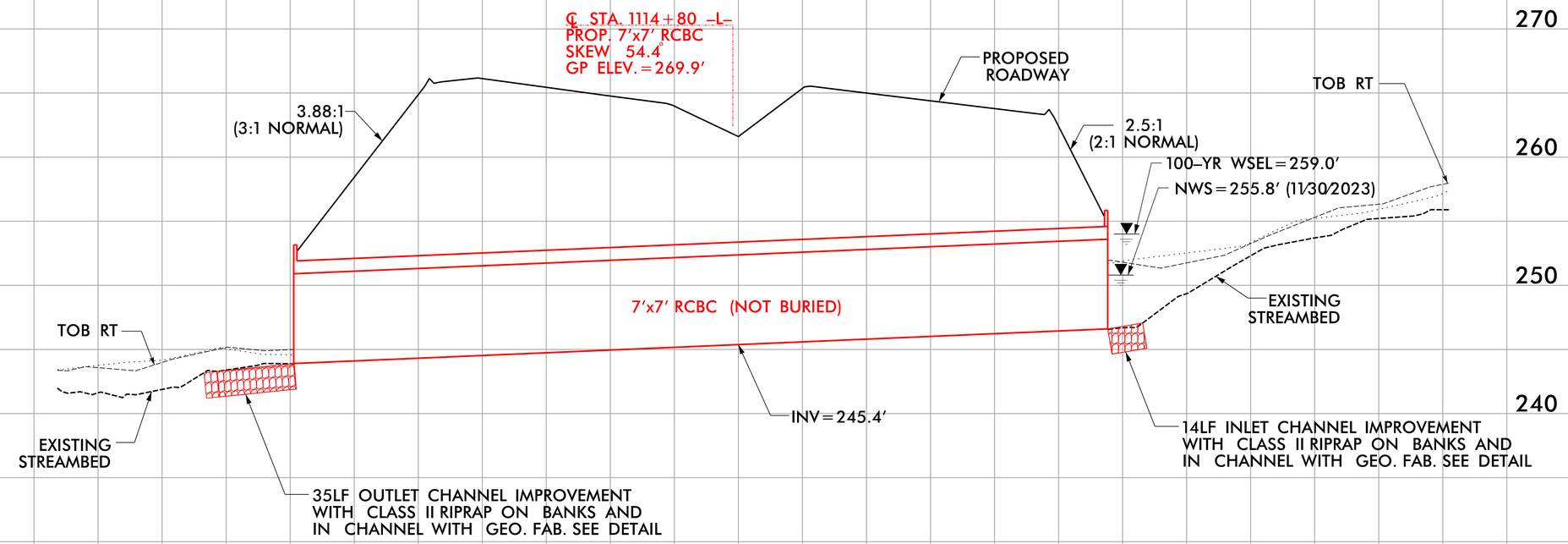
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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PERMIT DRAWING
SHEET 55 OF 103

ENGLISH

SITE 16, 17, & 18
–L1– STA. 1114+80



7'x7' RCBC
(Not buried, Length = 318')

9/3/2024
Plotted by: Jeff Hughes
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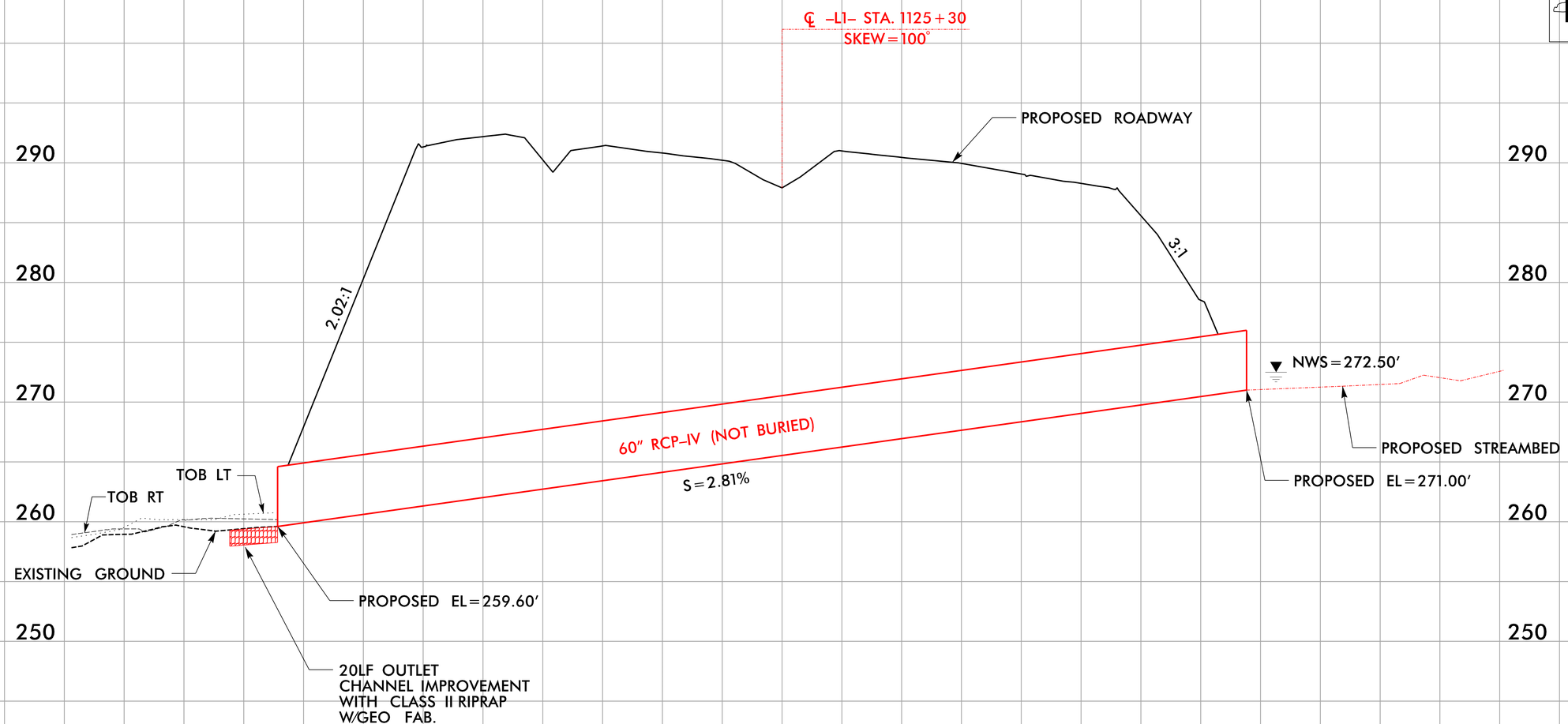
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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ENGLISH

SITE 19
–L1– STA. 1125 + 30



60" RCP–IV
(Not buried, Length = 405')

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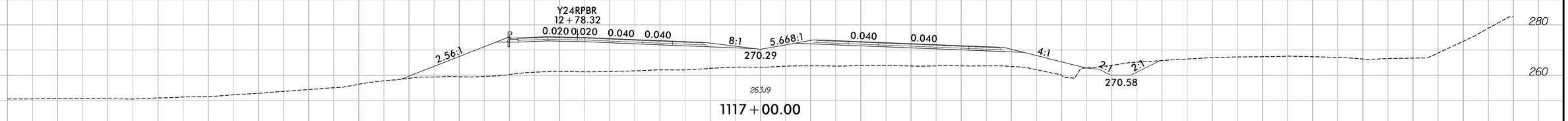
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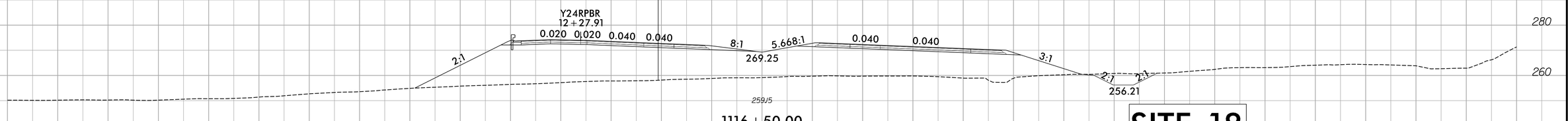
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	R-2829A	S2 X-8

PERMIT DRAWING
SHEET 57 OF 103

SITE 16



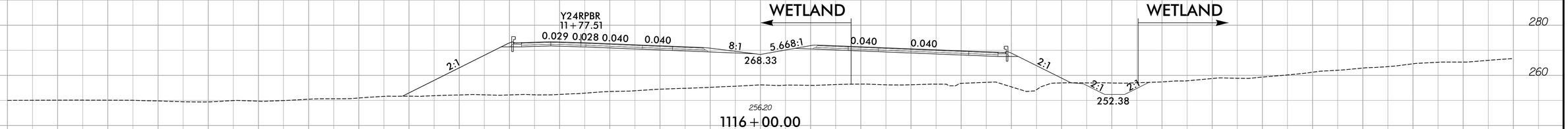
WETLAND

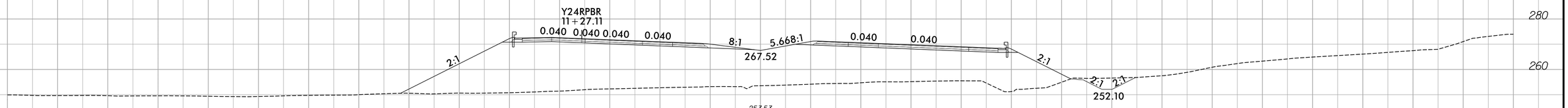


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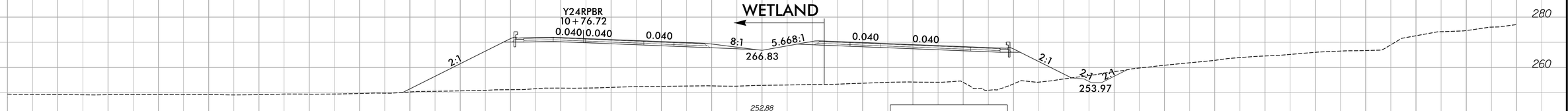
WETLAND

WETLAND





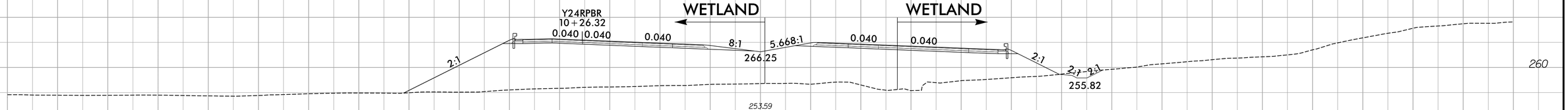
WETLAND



SITE 17

WETLAND

WETLAND



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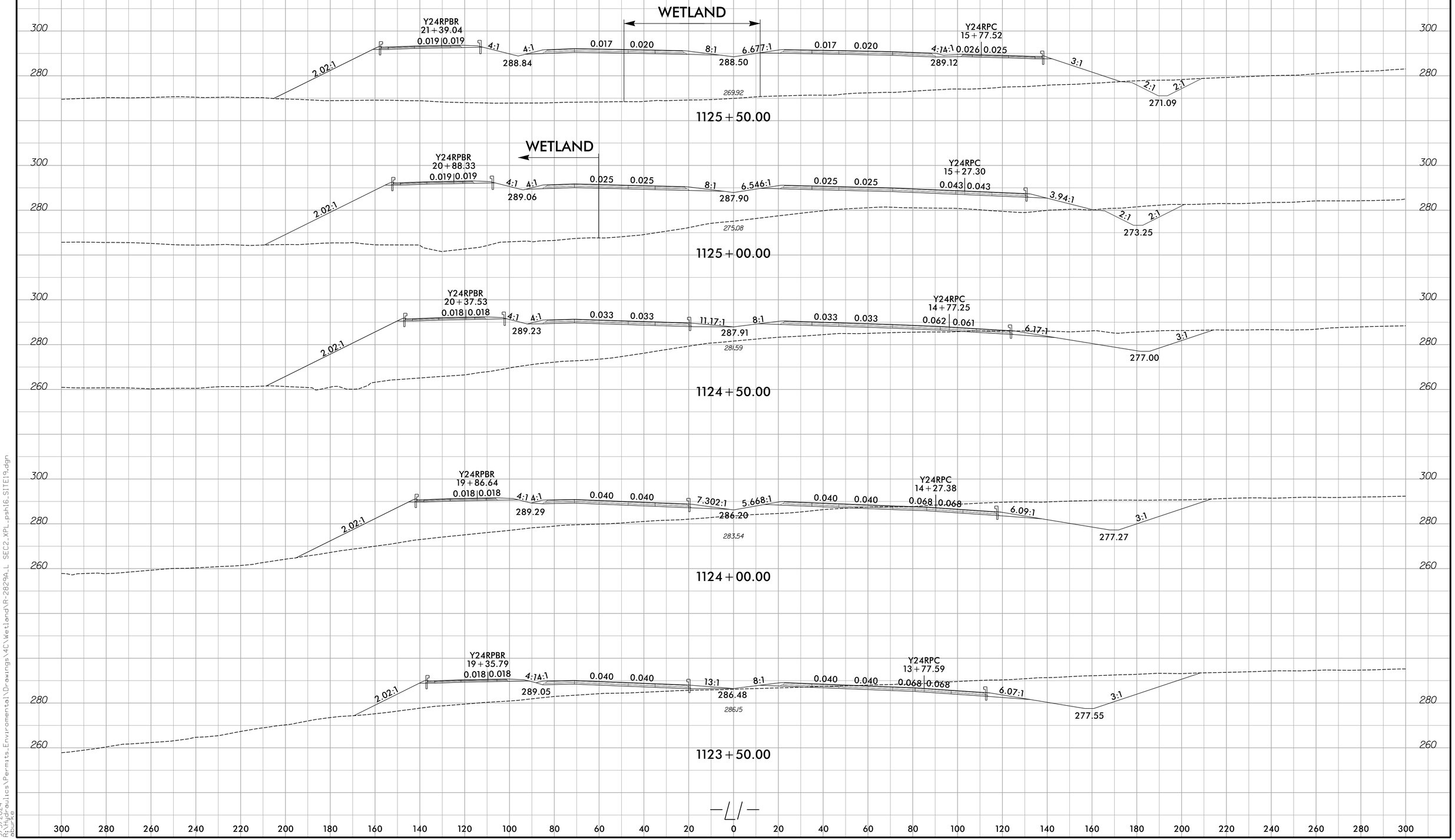
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	R-2829A	S2 X-11

SITE 19

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SHEET 58 OF 103



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REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 59 OF 103

INSET A

INSET B

INSET C

INSET D

INSET E

SEE INSET A

SEE INSET B

SEE INSET C

SEE INSET D

SEE INSET E

SITE 19 — SFS

SITE 20 — SFT

SITE 20A — SFT

SITE 21 — WGY

SITE 22 — WGZ

SITE 23 — SGC, WHB

SGA

WGU (1)

WGU (2)

WGX(1)

WGX(2)

WHA

WHB

MATCHLINE -Y24RPBR- STA. 22+00 SEE SHEET 16

MATCHLINE -L1- STA. 112+00 SEE SHEET 16

MATCHLINE -Y24RPC- STA. 16+50 SEE SHEET 16

MATCHLINE -Y24R- STA. 36+50 SEE SHEET 35

MATCHLINE -Y24RPAR- STA. 20+00 SEE SHEET 18

MATCHLINE -L- STA. 115+00 SEE SHEET 18

MATCHLINE -Y24RPDR- STA. 12+50 SEE SHEET 18

MATCHLINE -Y24R- STA. 51+50 SEE SHEET 36

MATCHLINE -Y24CR- STA. 14+00 SEE SHEET 36

RICHARD ROGERS REVOCABLE TRUST

CAPITOL BROADCASTING COMPANY, INC.

BUFFALOE ENTERPRISES, LLC

L&L COMPANY LLC

RANDY ALEXANDER

ELAINE COATES

WILLIAM & EUNICE LEE

GARNER INDUSTRIAL V, LLC

ENGLISH

100 0 100 200
SCALE

50 0 50 100
SCALE FOR INSET

T T	TEMPORARY FILL IN WETLAND
F F	FILL IN WETLAND
S S	SURFACE WATER IMPACTS
TS TS	TEMPORARY SURFACE WATER IMPACTS
* *	MECHANIZED CLEARING (GRUBBING)

NAD 83/NA 2011

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REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 60 OF 103

INSET E

MATCHLINE -Y24R- STA. 36+50 SEE SHEET 35

SEE INSET E

INSET A

SGA

WGU (2)

WGU (1)

SITE 20A

SFT

SITE 20

SEE INSET A

WGX(2)

WGX(1)

INSET C

SITE 23

SGC WHB

SEE INSET C

SITE 21

WGY

WHB

MATCHLINE -Y24RPBR- STA. 22+00 SEE SHEET 16

MATCHLINE -Y24RPAR- STA. 20+00 SEE SHEET 18

MATCHLINE -L1- STA. 1127+00 SEE SHEET 16

MATCHLINE -L1- STA. 1154+00 SEE SHEET 18

MATCHLINE -Y24RPC- STA. 16+50 SEE SHEET 16

MATCHLINE -Y24RPDR- STA. 12+50 SEE SHEET 18

SFT SITE 20

SFS SITE 19

SEE INSET B

SITE 22

WGZ

SFT

WHA

SGC WHB

SITE 23

SEE INSET D

INSET B

INSET D

ENGLISH

100 0 100 200
SCALE

50 0 50 100
SCALE FOR INSET

T T	TEMPORARY FILL IN WETLAND
F F	FILL IN WETLAND
S S	SURFACE WATER IMPACTS
TS TS	TEMPORARY SURFACE WATER IMPACTS
* *	MECHANIZED CLEARING (GRUBBING)

MATCHLINE -Y24R- STA. 51+50 SEE SHEET 36

MATCHLINE -Y24CR- STA. 14+00 SEE SHEET 36

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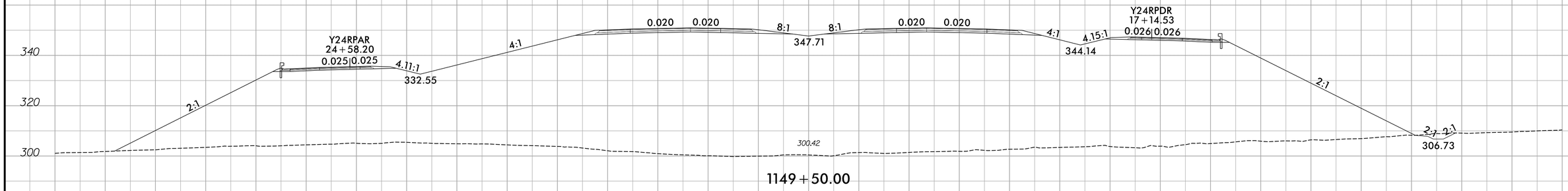
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6/23/16

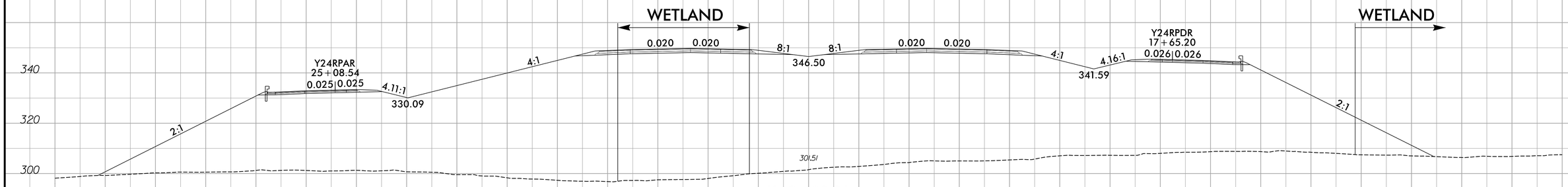
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	R-2829A	S2 X-20

PERMIT DRAWING
SHEET 61 OF 103

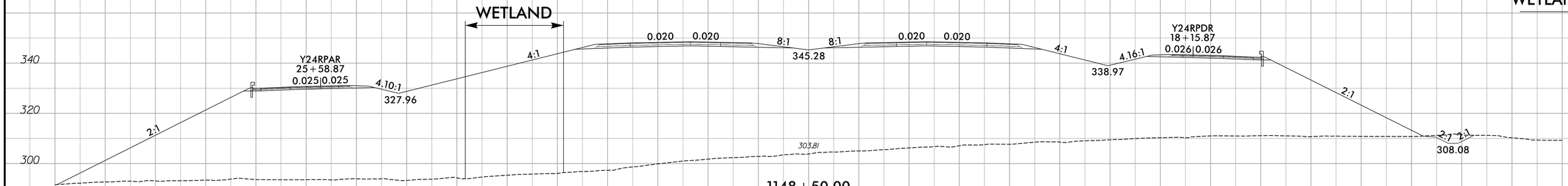
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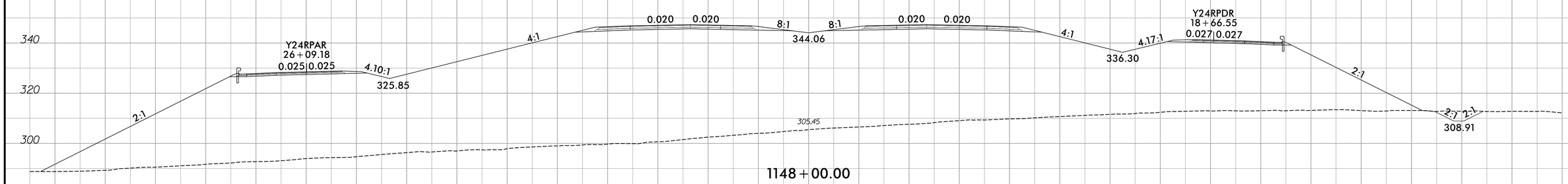
1149+50.00



1149+00.00



1148+50.00



1148+00.00

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5/14/99

PROJECT REFERENCE NO.	SHEET NO.

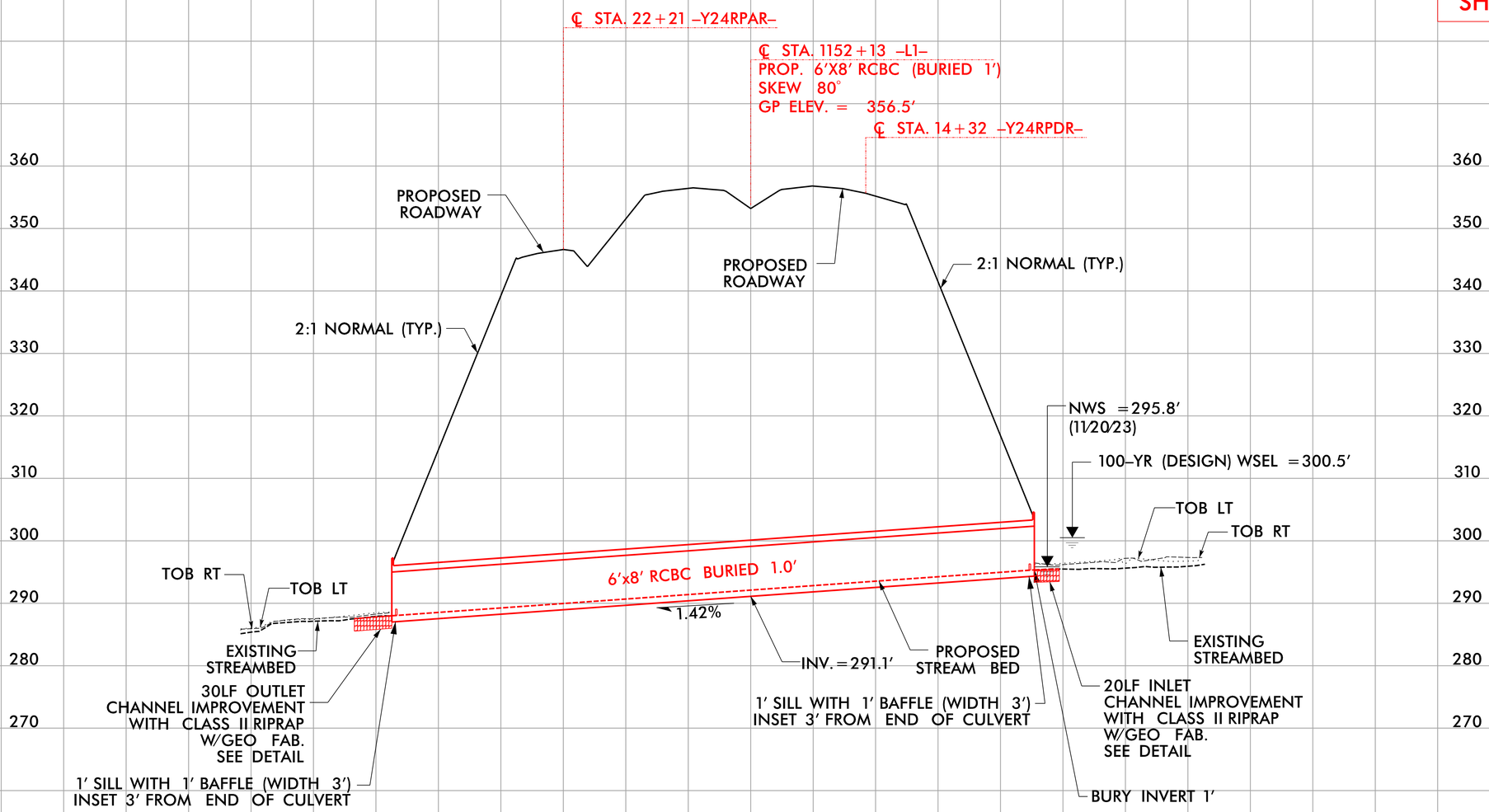
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 62 OF 103

ENGLISH

SITE 23
–L1– STA. 1152+13



6'x8' RCBC
(Buried 1.0', Length =516')

8/31/2024
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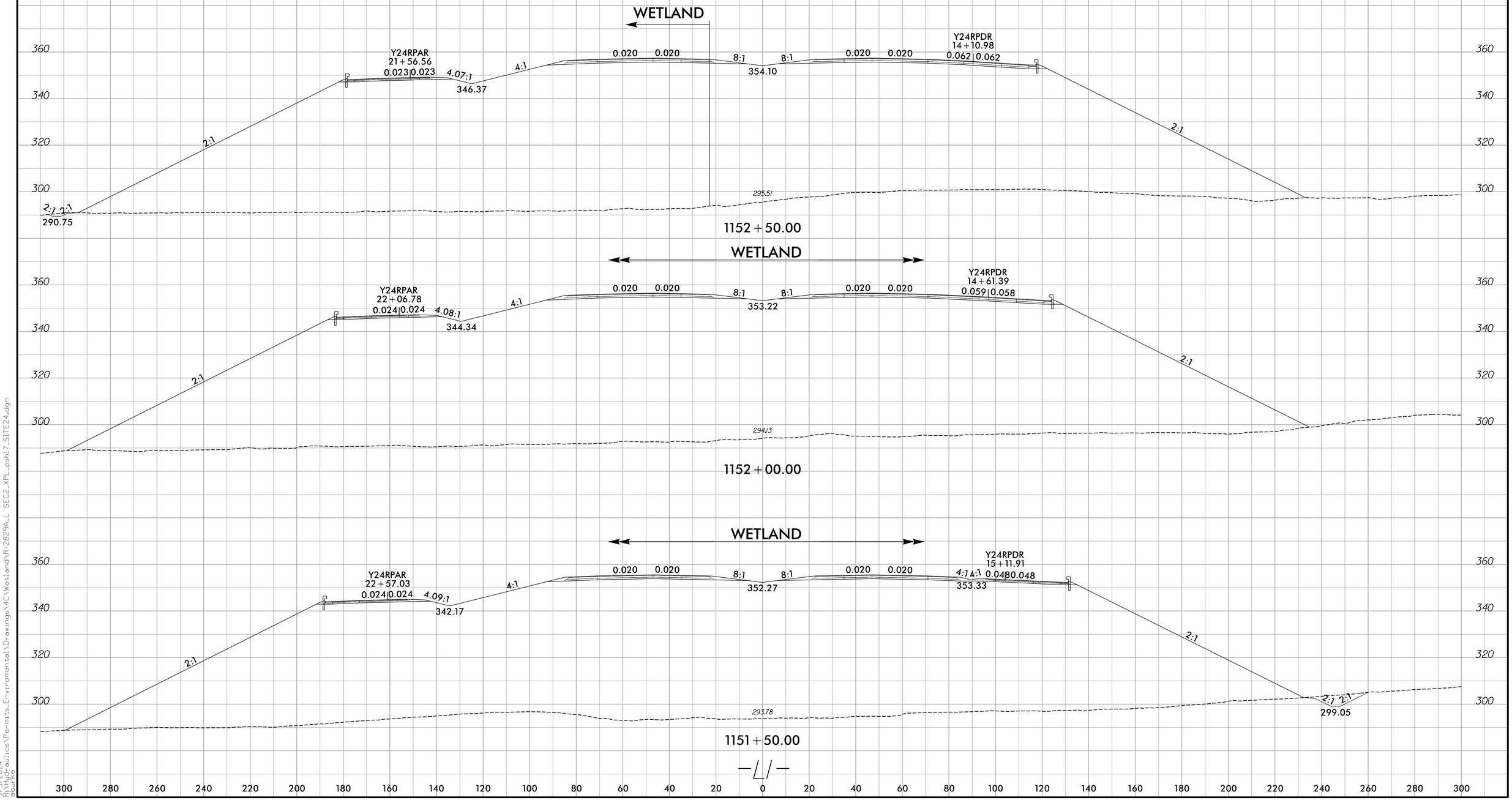
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	R-2829A	S2 X-22

SITE 23

PERMIT DRAWING
SHEET 63 OF 103



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dsmith

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PROJECT REFERENCE NO.	SHEET NO.
R-2829A	18
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 64 OF 103

MATCHLINE -Y25- STA. 15+00 SEE SHEET 36A

MATCHLINE -Y26R- STA. 22+00 SEE SHEET 36A

MATCHLINE -Y26R-SR1- STA. 12+50 SEE SHEET 36A

SGA

SEE INSET A SHEET 66 OF 103

MATCHLINE -Y24RPAR- STA. 20+00 SEE SHEET 17

MATCHLINE -L1- STA. 1154+00 SEE SHEET 17

MATCHLINE -Y24RPDR- STA. 12+50 SEE SHEET 17

MATCHLINE -L1- STA. 1167+50 SEE SHEET 19

NC 540

SITE 24

SITE 23

WHB

WHC

SGD

SEE INSET B SHEET 66 OF 103

NAD 83/NA 2011

NC RAILROAD COMPANY

JEFFREY P CATES & NANCY S CATES

APUGRAF HOLDINGS LLC

WILLIAM T RHODES

L&L COMPANY LLC

RUSSELL G & ANNETTE K BULLOCK JR

EDGE OF AUBURN LLC

LARRY R STALLINGS

ANTHONY J & JULIE MCLEMORE

NCDOT

NC DEPARTMENT OF TRANSPORTATION

BRENDA J & MARK R CUNNINGHAM

GARNER INDUSTRIAL V, LLC

MEREDITHE & BERNADETTE E JESSUP

PATRICIA WILLIAMS

BARBARA W GAUL

LAURA L WATTS &

EAST GARNER ROAD

TOE PROTECTION W/CL B RIPRAP SEE DETAIL E

40 TONS CL II RIPRAP W/75 SY GEOFAB INLET CHANNEL STABILIZATION W/CL II RIPRAP SEE DETAIL AL

LATERAL V DITCH W/CL I RIP RAP SEE DETAIL M

BANK STABIL W/CL I RIP RAPREMOVE SEE DETAIL V CMP

SPECIAL CUT DITCH SEE DETAIL A

STD. 4' BASE DITCH W/CL I RIP RAP SEE DETAIL AK

GRADE TO DRAIN

SP. CUT DITCH SEE DETAIL A

REMOVE RCBC

STANDARD 4' BASE DITCH W/CL I RIP RAP SEE DETAIL AW

2 TONS CL B RIPRAP W/7 SY GEOFAB

CHANNEL CHANGE W/CL I RIP RAP SEE DETAIL AG

DRAIN POND & FILL TO ELEV. 308.0' (SEE POND DRAINAGE PLANS)

POND WSE=304.9'

LATERAL 4' BASE DITCH W/CL I RIP RAP SEE DETAIL N

LATERAL V DITCH SEE DETAIL B

LATERAL V DITCH W/CL I RIP RAP SEE DETAIL S

LATERAL 4' BASE DITCH W/CL B RIP RAP SEE DETAIL AS

LATERAL V DITCH W/CL B RIP RAP SEE DETAIL AO

10' WIDE BERM SEE DETAIL BC

LATERAL 4' SWALE SEE DETAIL L

LATERAL 4' GRASSED SWALE SEE DETAIL L

STANDARD V DITCH SEE DETAIL D

SP. CUT V DITCH SEE DETAIL A

SP. LATERAL V DITCH SEE DETAIL AT

LATERAL 4' BASE DITCH SEE DETAIL C

42" CAMP NOT BURIED UPSIZED FOR MAINLINE

54" CAMP NOT BURIED UPSIZED FOR MAINLINE

15" RCP-III

15" RCP-IV

15" CSP W/ELBOWS

2GIB-WSF

2GIB-WSS

2GIB-NSS

MATCHLINE -Y25- STA. 24+30 SEE SHEET 36B

MATCHLINE -Y26R- STA. 31+00 SEE SHEET 36B

MATCHLINE -Y26R-SR2- STA. 11+50 SEE SHEET 36B

ENGLISH

SCALE 50 0 50 100

S S SURFACE WATER IMPACTS

TS TS TEMPORARY SURFACE WATER IMPACTS

F F FILL IN WETLAND

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PROJECT REFERENCE NO.	SHEET NO.
R-2829A	18
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 65 OF 103

MATCHLINE -Y25- STA. 15+00 SEE SHEET 36A

MATCHLINE -Y26R- STA. 22+00 SEE SHEET 36A

MATCHLINE -Y26R-SR1- STA. 12+50 SEE SHEET 36A

SGA

SEE INSET A SHEET 66 OF 103

SITE 24

NAD 83/NA 2011

MATCHLINE -Y24RPAR- STA. 20+00 SEE SHEET 17

MATCHLINE -L1- STA. 1154+00 SEE SHEET 17

MATCHLINE -Y24RPDR- STA. 12+50 SEE SHEET 17

MATCHLINE -L1- STA. 1167+50 SEE SHEET 19

NC 540

WHB

SITE 23

SGD

WHC

SEE INSET B SHEET 66 OF 103

MATCHLINE -Y25- STA. 24+30 SEE SHEET 36B

MATCHLINE -Y26R- STA. 31+00 SEE SHEET 36B

MATCHLINE -Y26R-SR2- STA. 11+50 SEE SHEET 36B

TOE PROTECTION W/CL B RIPRAP SEE DETAIL E

40 TONS CL II RIPRAP W/75 SY GEOFAB INLET CHANNEL STABILIZATION W/CL II RIPRAP SEE DETAIL AL

LATERAL V DITCH W/CL I RIP RAP SEE DETAIL M

SPECIAL CUT DITCH SEE DETAIL A

STD. 4' BASE DITCH W/CL I RIP RAP SEE DETAIL AK

GRADE TO DRAIN

BANK STABIL W/CL I RIP RAP REMOVE SEE DETAIL V CMP

REMOVE RCBC

SP. CUT DITCH SEE DETAIL A

DRAIN POND & FILL TO ELEV. 308.0' (SEE POND DRAINAGE PLANS)

STANDARD 4' BASE DITCH W/CL I RIP RAP SEE DETAIL AW

2 TONS CL B RIPRAP W/7 SY GEOFAB

CHANNEL CHANGE W/CL I RIP RAP SEE DETAIL AG

LATERAL 4' BASE DITCH W/CL I RIP RAP SEE DETAIL N

LATERAL V DITCH SEE DETAIL B

LATERAL 4' SWALE SEE DETAIL L

LATERAL V DITCH W/CL B RIP RAP SEE DETAIL S

LATERAL 4' BASE DITCH W/CL B RIP RAP SEE DETAIL AS

LATERAL V DITCH W/CL B RIP RAP SEE DETAIL AO

10' WIDE BERM SEE DETAIL BC

LATERAL 4' GRASSED SWALE SEE DETAIL L

STANDARD V DITCH SEE DETAIL D

SP. CUT V DITCH SEE DETAIL A

SP. LATERAL V DITCH SEE DETAIL AT

LATERAL 4' BASE DITCH SEE DETAIL C

NC RAILROAD COMPANY

JEFFREY P CATES & NANCY S CATES

APWGRAF HOLDINGS LLC

WILLIAM T RHODES

L&L COMPANY LLC

GARNER INDUSTRIAL V, LLC

MEREDITHE & BERNADETTE E JESSUP

PATRICIA WILLIAMS

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NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

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EDGE OF ANBURN LLC

LARRY R STALLINGS

ANTHONY J & JULIE MCLEMORE

BARBARA W GAUL

LAURA L WATTS &

EAST GARNER ROAD

ENGLISH

SCALE 50 0 50 100

S S SURFACE WATER IMPACTS

TS TS TEMPORARY SURFACE WATER IMPACTS

F F FILL IN WETLAND

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Plotted By: Ryan Gordon
Plot Date: 8/23/2024
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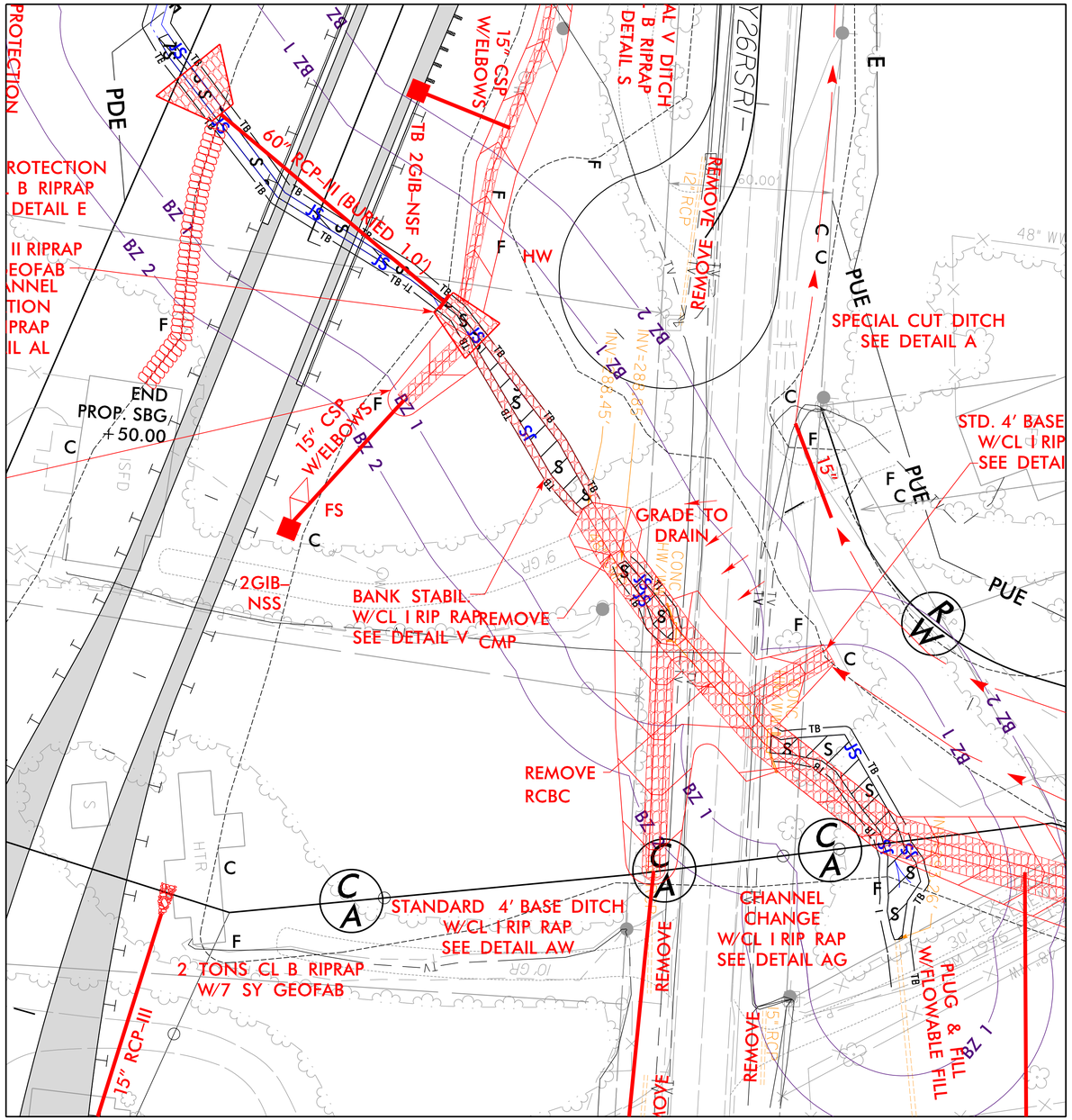
8/17/99

PROJECT REFERENCE NO.	SHEET NO.
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

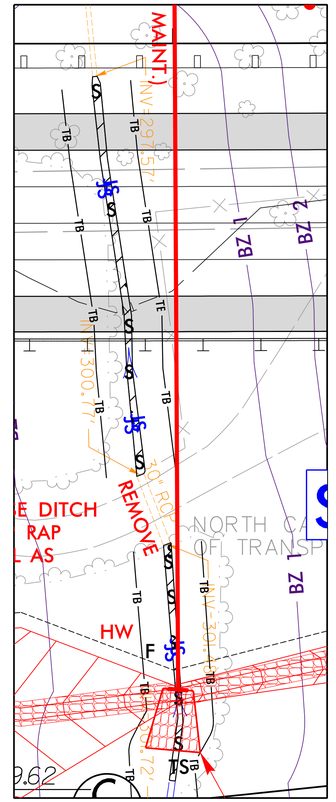
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PERMIT DRAWING SHEET 66 OF 103

NAD 83/NA 2011



INSET A



INSET B

ENGLISH

SCALE FOR INSET 25 0 25 50

SURFACE WATER IMPACTS

TEMPORARY SURFACE WATER IMPACTS

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dcruz

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	19
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 67 OF 103

NAD 83/NA 2011

MATCHLINE -L1- STA. 1167+50 SEE SHEET 18

MATCHLINE -L1- STA. 1181+50 SEE SHEET 20

WHD(2)

SGA

EDGE OF AUBURN LLC

JANET P STORMS & LINDA S POWELL

DENNIS R STALLINGS

SWALE Q10 = 6.45cfs V10 = 2.01fps

2 TONS CL B RIPRAP W/7 SY GEOFAB

LATERAL V DITCH SEE DETAIL B

C600 OUTLET STABILIZATION 42 TONS CL II RIPRAP W/84 SY GEOFAB SEE DETAIL CF

SITE 25

TOE PROTECTION W/CL B RIP RAP SEE DETAIL E

SEE INSET A SHEET 69 OF 103

LATERAL 4' SWALE SEE DETAIL L

SGE

WHD(2)

SEE INSET C SHEET 69 OF 103

WHD(2)

SITE 27

SGF

CHANNEL CHANGE W/CL I RIP RAP SEE DETAIL AR

CHANNEL BLOCK SEE DETAIL BK

LATERAL 4' BASE DITCH W/CL I RIP RAP SEE DETAIL N

15" CSP W/ 2 ELBOWS

2GIB-WSF

11+18 RCP(C) 6.4 RISE 9.6 SPAN

1170+00

1175+00

1180+00

15" RCP-III

24" CSP W/ ELBOWS

24" RCP-IV

18" RCP-IV

15" RCP-IV

15" CSP W/ BZ ELBOWS

18" CSP W/ELBOWS

2GIB-WSS

FS

-L1-

15" CSP W/ELBOWS

EOI

DENNIS R YARBROUGH

ISFD

EIP

CHANNEL BLOCK SEE DETAIL BK

GRADE TO DRAIN

LINE END OF SWALE W/CL B RIPRAP SEE DETAIL AJ

STD. 4' BASE SWALE SEE DETAIL Q

SP. CUT 4' SWALE SEE DETAIL O

SEE INSET D SHEET 69 OF 103

SGG

SITE 26

JS BEGINS

PUE

EDGE OF AUBURN LLC

AUBURN ASSOCIATES

WHF

LATERAL 4' SWALE SEE DETAIL L

2 TONS CL B RIPRAP W/7 SY GEOFAB

LATERAL 4' BASE DITCH W/CL I RIP RAP SEE DETAIL N

C600 INLET STABILIZATION 18 TONS CL II RIPRAP W/35 SY GEOFAB SEE DETAIL CF

CHANNEL CHANGE W/CL I RIP RAP SEE DETAIL AR

DONALD R & SANDRA C LOCKAMON JR

AUBURN AS

SEE INSET B SHEET 69 OF 103

WHD(1)

SGE

SITE 25

JOHN B MCINTYRE

50 0 50 100

SCALE

ENGLISH

S S SURFACE WATER IMPACTS

TS TS TEMPORARY SURFACE WATER IMPACTS

E E WETLAND EXCAVATION

F F FILL IN WETLAND

* * MECHANIZED CLEARING (GRUBBING)

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PROJECT REFERENCE NO.	SHEET NO.
R-2829A	19
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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PERMIT DRAWING SHEET 68 OF 103

NAD 83/NA 2011

MATCHLINE -L1- STA. 1167+50 SEE SHEET 18

MATCHLINE -L1- STA. 1181+50 SEE SHEET 20

WHD(2) SGA SGE WHD(2) SITE 27 SGF WHD(2) SGG SITE 26 WHD(1) SGE SITE 25 WHF

SITE 25

SITE 27

SITE 26

SEE INSET A SHEET 69 OF 103

SEE INSET B SHEET 69 OF 103

SEE INSET C SHEET 69 OF 103

SEE INSET D SHEET 69 OF 103

EDGE OF AUBURN LLC

JANET P STORMS & LINDA S POWELL

DENNIS R YARBROUGH

DONALD R & SANDRA C LOCKAMON JR

JOHN B MCINTYRE

AUBURN ASSOCIATES

SWALE Q10 = 6.45cfs V10 = 2.01fps

2 TONS CL B RIPRAP W/7 SY GEOFAB

LATERAL V DITCH SEE DETAIL B

C600 OUTLET STABILIZATION 42 TONS CL II RIPRAP W/84 SY GEOFAB SEE DETAIL CF

TOE PROTECTION W/CL B RIP RAP SEE DETAIL E

LATERAL 4' SWALE SEE DETAIL L

LATERAL 4' BASE DITCH W/CL I RIP RAP SEE DETAIL N

C600 INLET STABILIZATION 18 TONS CL II RIPRAP W/35 SY GEOFAB SEE DETAIL CF

CHANNEL CHANGE W/CL I RIP RAP SEE DETAIL AR

CHANNEL BLOCK SEE DETAIL BK

CHANNEL BLOCK W/CL I RIP RAP SEE DETAIL AR

LINE END OF SWALE W/CL B RIPRAP SEE DETAIL AJ

STD. 4' BASE SWALE SEE DETAIL Q

SP. CUT 4' SWALE SEE DETAIL O

GRADE TO DRAIN

JS BEGINS

15" CSP W/ELBOWS

24" CSP W/ELBOWS

18" CSP W/ELBOWS

11.8" RCCP BARREL

15" RCP-III

18" RCP-IV

24" RCP-IV

2GIB-WSF

2GIB-WSS

1170+00

1175+00

1180+00

-L-

FS

50 0 50 100

SCALE

ENGLISH

S S	SURFACE WATER IMPACTS	F F	FILL IN WETLAND
TS TS	TEMPORARY SURFACE WATER IMPACTS	* *	MECHANIZED CLEARING (GRUBBING)
E E	WETLAND EXCAVATION		

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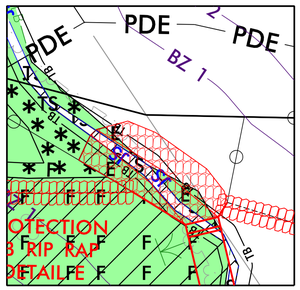
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RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NAD 83/NA 2011

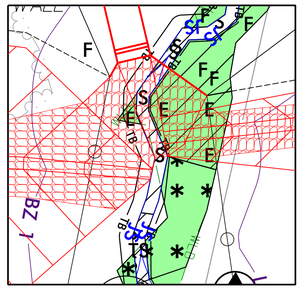
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PERMIT DRAWING SHEET 69 OF 103

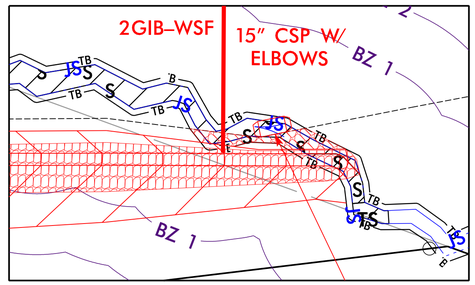
INSET A

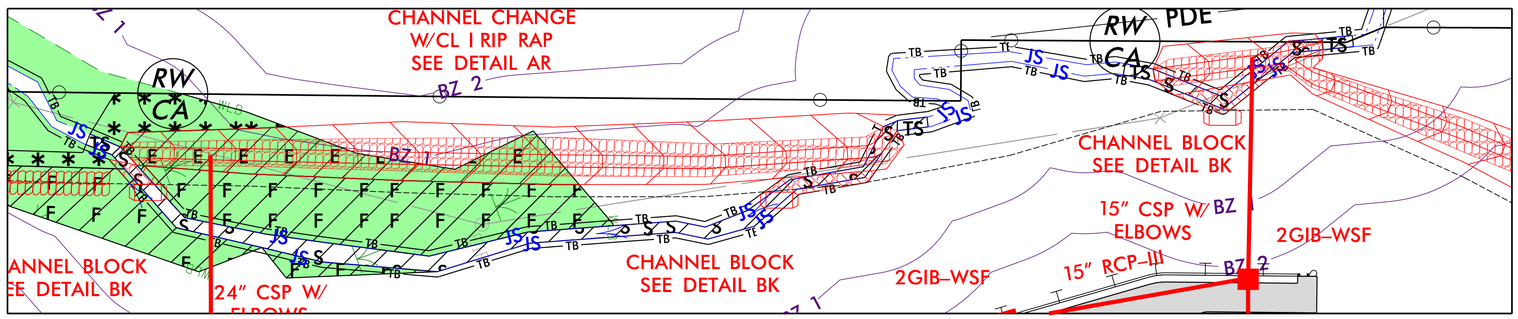


INSET B



INSET D





INSET C

25 0 25 50
SCALE FOR INSET

ENGLISH

- SURFACE WATER IMPACTS
- TEMPORARY SURFACE WATER IMPACTS
- WETLAND EXCAVATION
- FILL IN WETLAND
- MECHANIZED CLEARING (GRUBBING)

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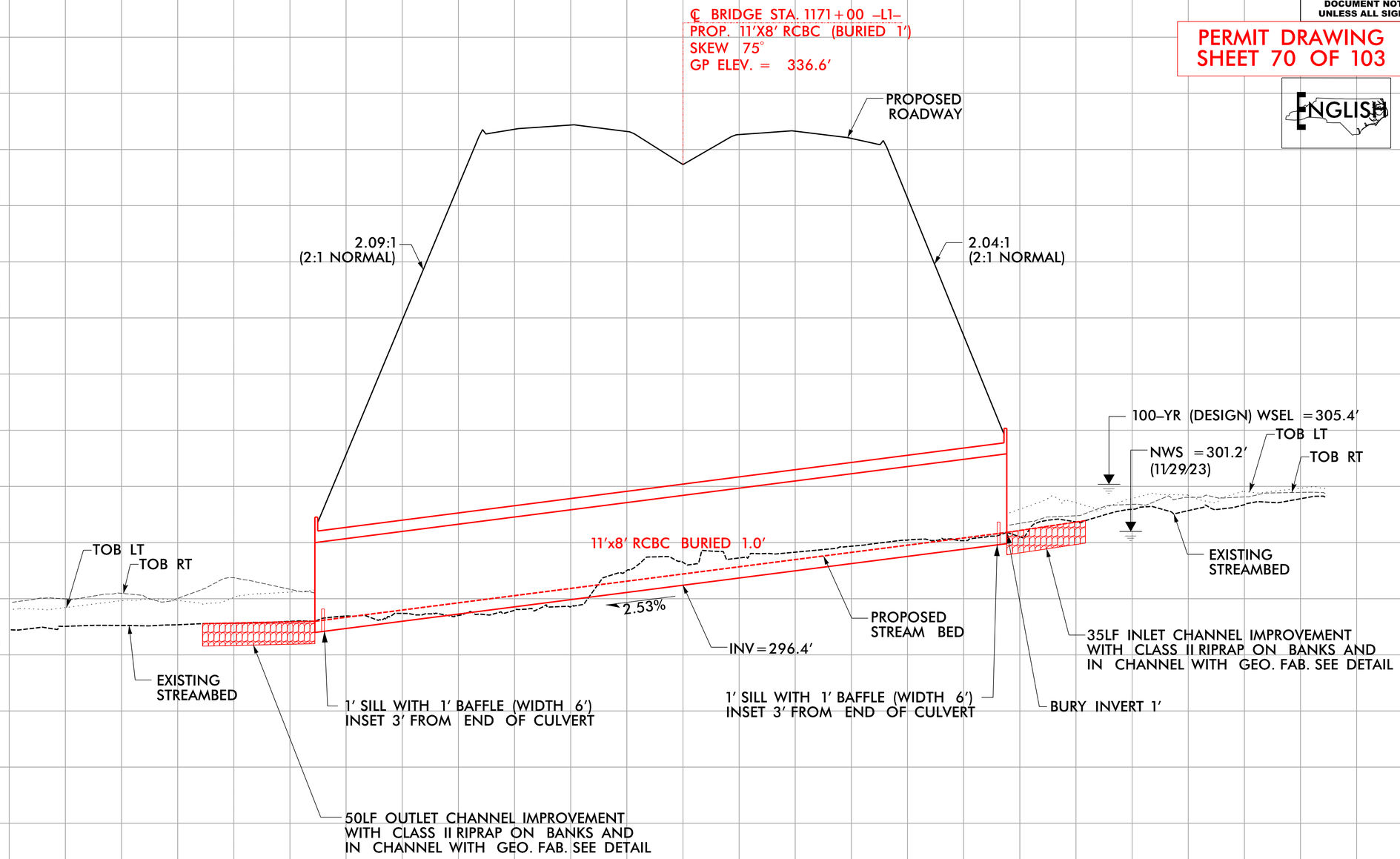
PROJECT REFERENCE NO.	SHEET NO.
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 70 OF 103

ENGLISH

SITE 25
–L1– STA. 1171+00



11'x8' RCBC
(Buried 1.0', Length =313')

8/13/2024
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dbuser

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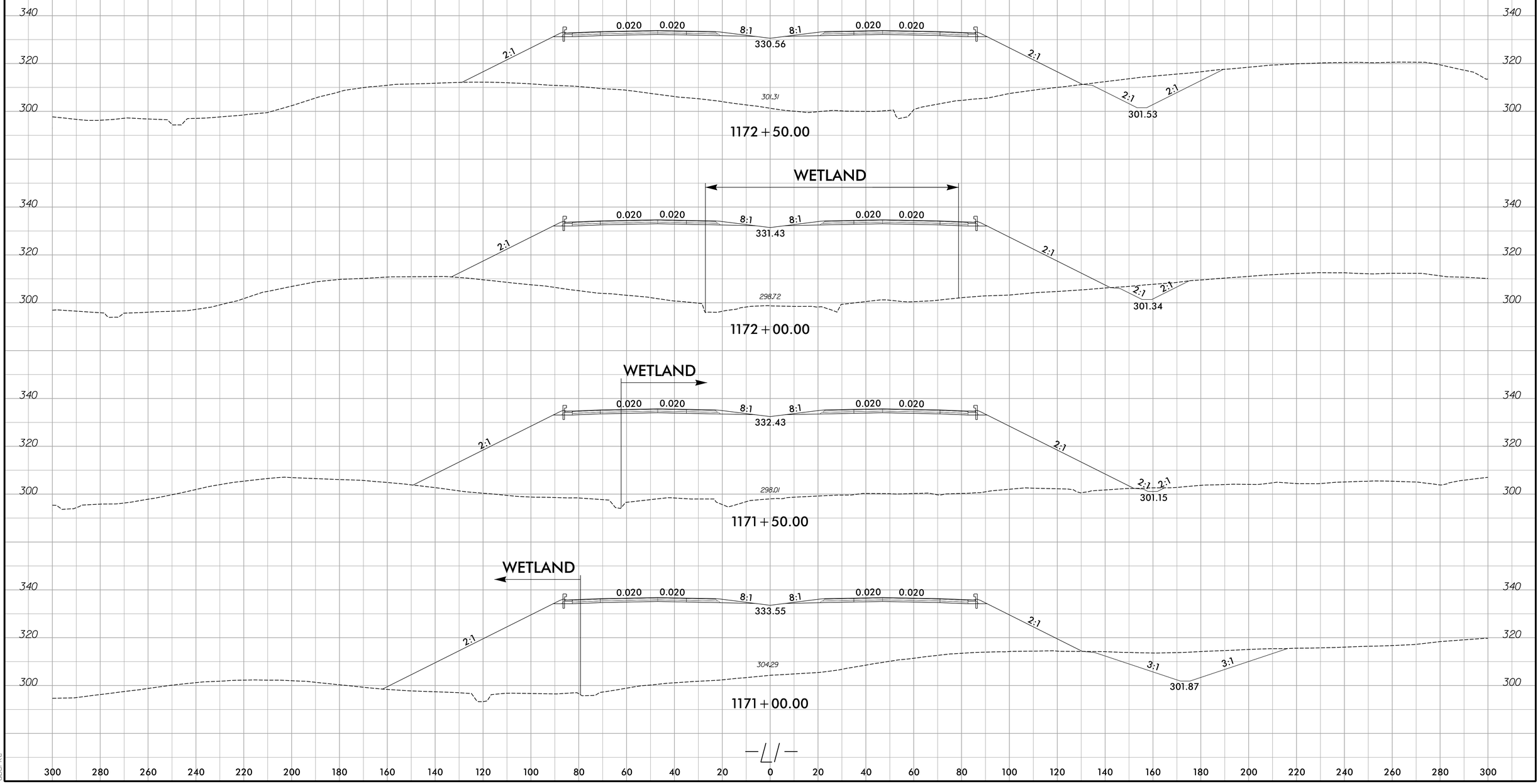
6/23/16

0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	R-2829A	S2 X-32

300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

SITE 25

PERMIT DRAWING
SHEET 71 OF 103



9/3/2024
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dburke

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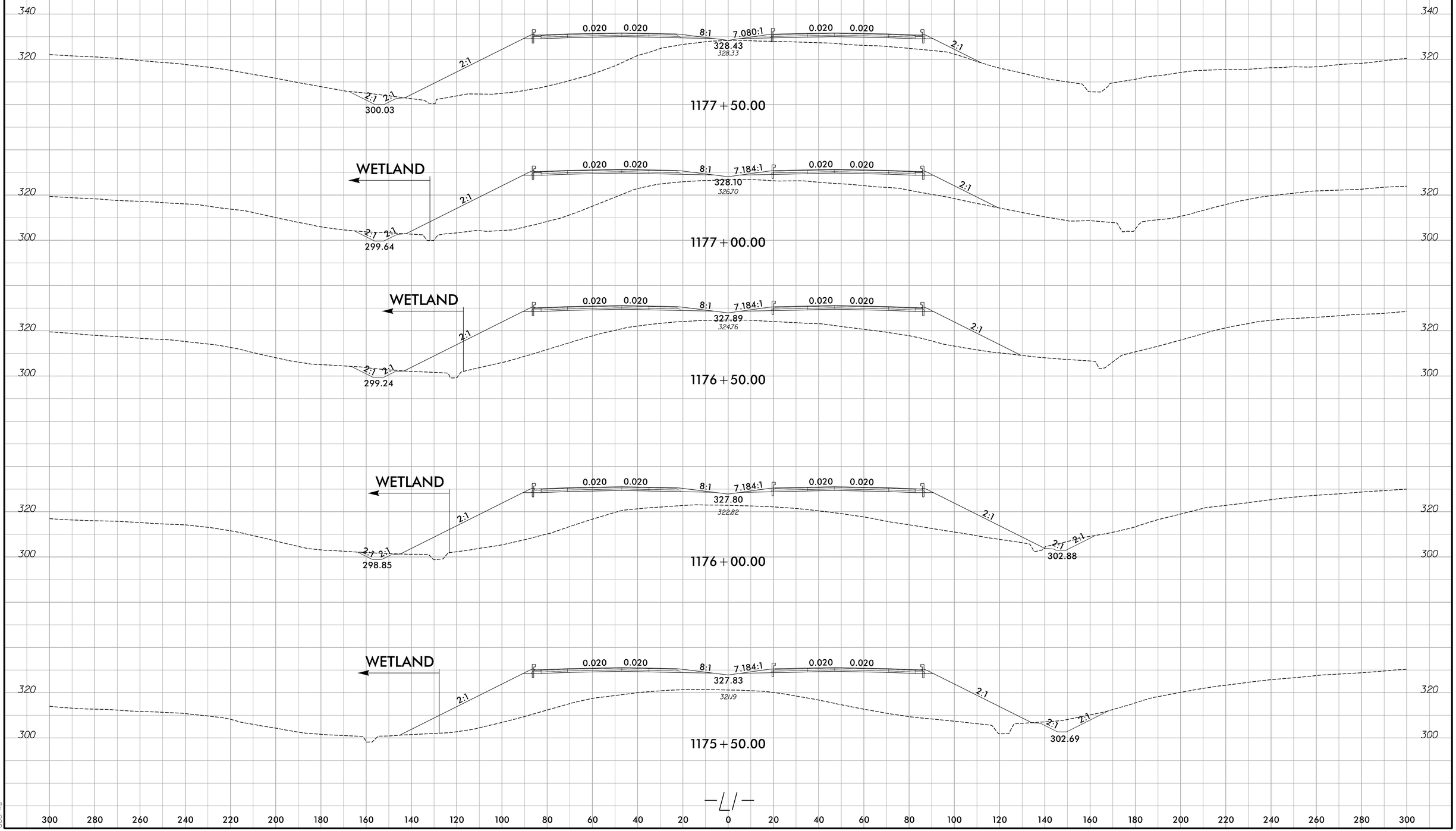
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0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	R-2829A	S2 X-34

SITE 27

PERMIT DRAWING
SHEET 72 OF 103

300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300



9/17/2024
11:16:28 AM
dburke

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	27
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 73 OF 103

NAD 83/NSRS 2011

DOROTHY BEASLEY

TIMOTHY COLLINS

DOROTHY BEASLEY

MARY POWELL WARD WHITE

DOROTHY BEASLEY
DB 1797 PG 28

DOROTHY BEASLEY
DB 2573 PG 482

MARY WHITE, ISABELL WARD, & ADRIA WALKER
BM 2012 PG 1326
DB 4163 PG 369

MARY WHITE

NC DEPT. OF TRANSPORTATION
DB 18373 PG 815
AREA ONE

SUSAN [illegible] DAVIS
DB 8284 [illegible]
BM 1999 [illegible]

JOYCE J. NIXON

WFG
SITE 1

INSET A

SEE INSET A

WNP

WFG
SITE 1

WFB
I-5111
SITE 34
WORK BY OTHERS

*WORK BY OTHERS
I-5111 SITE 33

WFD
SDT

MATCHLINE -Y22FLYCC-
STA. 100+00 SEE SHT 6

MATCHLINE -Y22RPAFLY REV-
STA. 23+00 SEE SHEET 6

ENGLISH

FILL IN WETLAND

SCALE
100 0 100 200

SCALE FOR INSET
50 0 50 100

FOR SITE 1 MSE WALL PLANS SEE SHTS. W_S1-1 THRU W_S1_5
FOR SITE 1 BRIDGE PLANS SEE SHTS. S1-1 THRU S1-33
FOR SITE 2 MSE WALL PLANS SEE SHTS. W_S2-1 THRU W_S2-
FOR SITE 2 BRIDGE PLANS SEE SHTS. S2-1 THRU S2-31

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9/27/2024
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REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	27
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 74 OF 103

NAD 83/NSRS 2011

INSET A

SITE 1

WFG

WNP

WFB

WFD

SDT

I-5111
SITE 34
WORK BY OTHERS

*WORK BY OTHERS
I-5111 SITE 33

SEE INSET A

MATCHLINE -Y22FLYCC-
STA. 100+00 SEE SHT 6

MATCHLINE -Y22RPAFLY REV-
STA. 23+00 SEE SHEET 6

DOROTHY BEASLEY
DB 2573 PG 482

MARY WHITE, ISABELL WARD, & ADRIA WALKER
BM 2012 PG 1326
DB 4163 PG 369

DOROTHY BEASLEY
DB 1797 PG 28

NC DEPT. OF TRANSPORTATION
DB 18373 PG 815
AREA ONE

JOYCE J. NIXON

MARY POWELL WARD WHITE

DOROTHY BEASLEY

TIMOTHY COLLINS

ENGLISH

FILL IN WETLAND

SCALE
100 0 100 200

SCALE FOR INSET
50 0 50 100

FOR SITE 1 MSE WALL PLANS SEE SHTS. W_S1-1 THRU W_S1_5
FOR SITE 1 BRIDGE PLANS SEE SHTS. S1-1 THRU S1-33
FOR SITE 2 MSE WALL PLANS SEE SHTS. W_S2-1 THRU W_S2-
FOR SITE 2 BRIDGE PLANS SEE SHTS. S2-1 THRU S2-31

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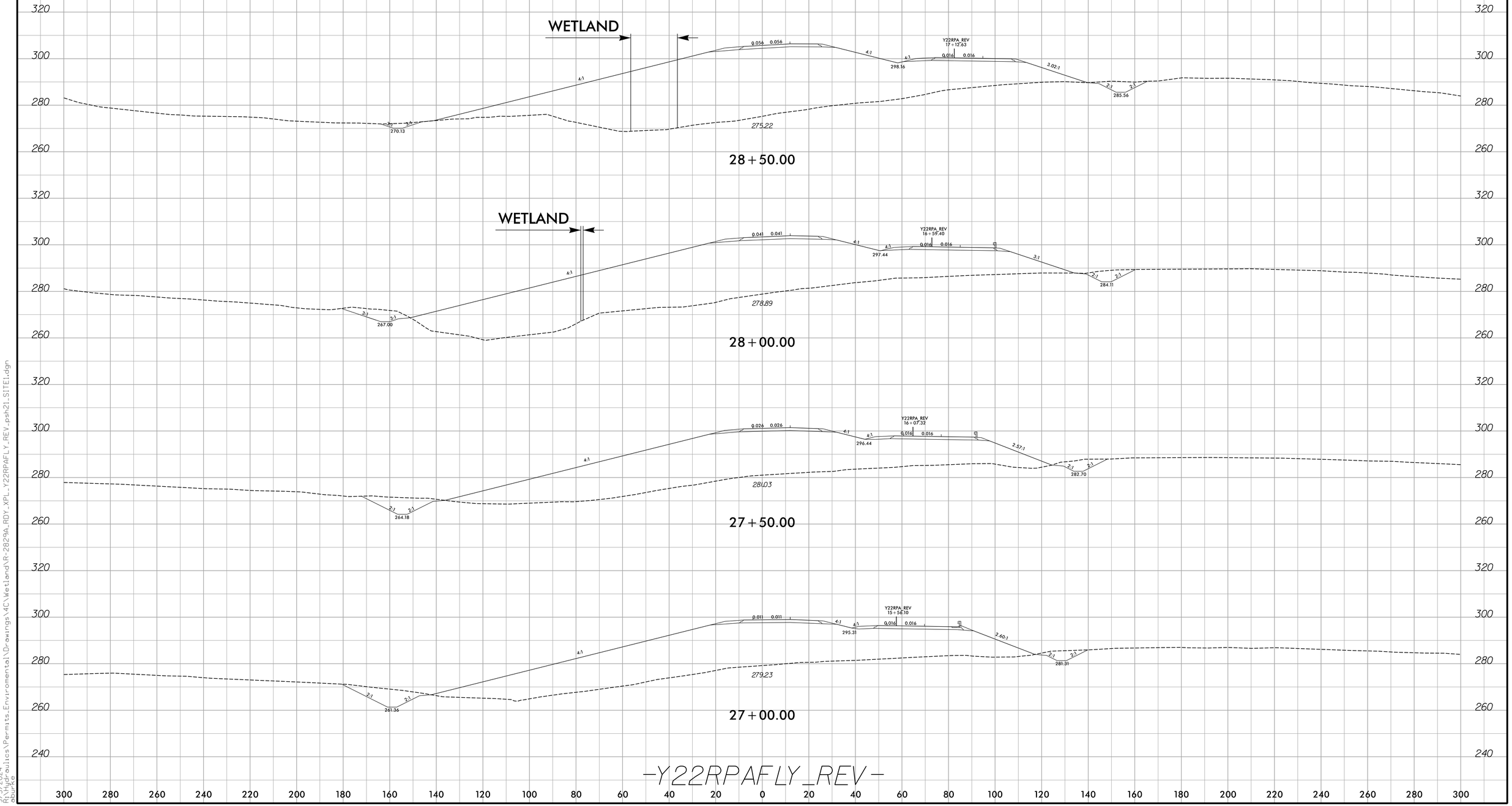
Submittal September 17, 2024

6/23/16

0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	R-2829A	S1 X-105

SITE 1

PERMIT DRAWING
SHEET 75 OF 103



-Y22RPAFLY_REV-

9/3/2024
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Submittal September 17, 2024

8/17/99

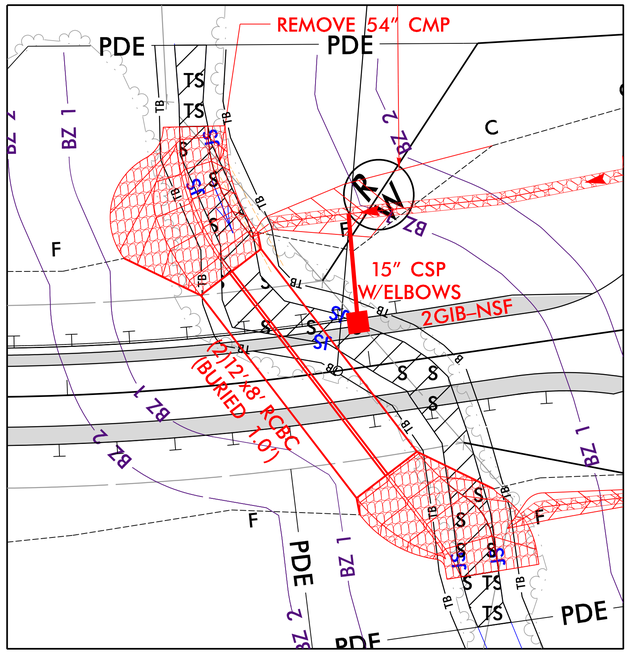
PROJECT REFERENCE NO.	SHEET NO.
R-2829A	23
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 76 OF 103

NAD 83/NA 2011

INSET A



JOHN AMAN

APPROX. LOCATION OF 15' DRAINAGE EASEMENT SCALED FROM BM 2004 PG 423-424

SITE 28

SKR

LARRY WHEELER, JR.

C700 INLET STABILIZATION
285 TONS CL II RIPRAP
W/255 SY GEOFAB
SEE DETAIL CG

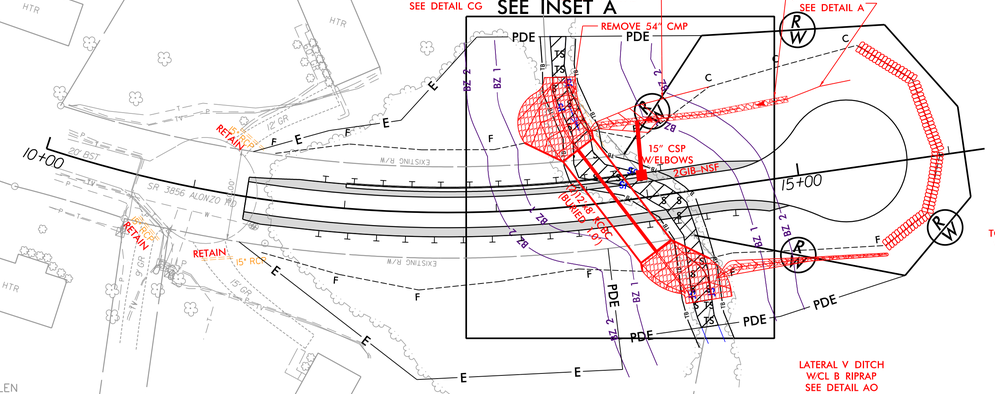
2 TONS CL B RIPRAP
W/7 SY GEOFAB

LATERAL V DITCH
W/CL B RIPRAP
SEE DETAIL AO

SPECIAL V DITCH
W/CL B RIPRAP
SEE DETAIL Y

SPECIAL V DITCH
SEE DETAIL A

SEE INSET A



TOE PROTECTION
W/CL B RIPRAP
SEE DETAIL E

LATERAL V DITCH
W/CL B RIPRAP
SEE DETAIL AO

SYLVIA ALLEN

HERBERT, JR. & ELIZABETH THOMASON

C700 OUTLET STABILIZATION
325 TONS CL II RIPRAP
W/240 SY GEOFAB
SEE DETAIL CG

20' DRAINAGE EASEMENT
BM 2004 PG 423

PATRICIA & RAYFORD PAGE

ENGLISH

50 0 50 100
SCALE

25 0 25 50
SCALE FOR INSET

SURFACE WATER IMPACTS

TEMPORARY SURFACE WATER IMPACTS

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Roadways\Permits_Environmental\Drawings\4C\Wetland\R-2829A_hyd_4C_psh_23.dgn
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8/17/99

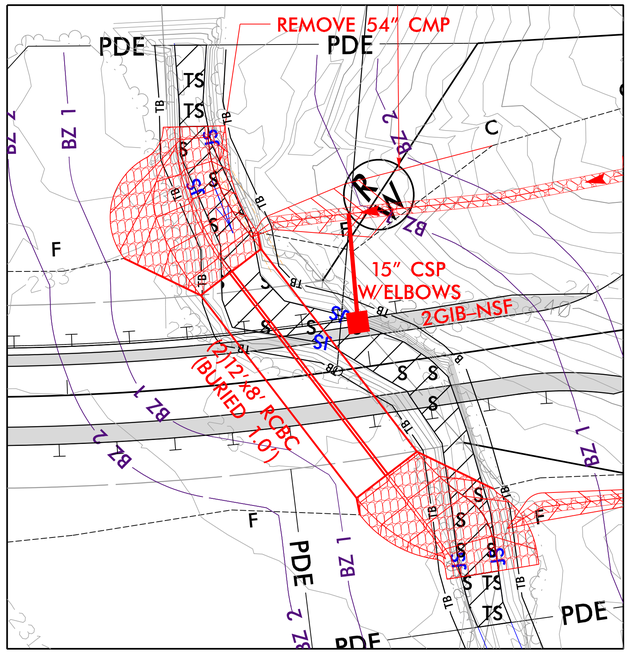
PROJECT REFERENCE NO.	SHEET NO.
R-2829A	23
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 77 OF 103

NAD 83/NA 2011

INSET A



JOHN AMAN

APPROX. LOCATION OF 15' DRAINAGE EASEMENT SCALED FROM BM 2004 PG 423-424

LARRY WHEELER, JR.

SITE 28

SKR

C700 INLET STABILIZATION 285 TONS CL II RIPRAP W/255 SY GEOFAB SEE DETAIL CG

2 TONS CL B RIPRAP W/7 SY GEOFAB

LATERAL V DITCH W/CL B RIPRAP SEE DETAIL AO

SPECIAL V DITCH W/CL B RIPRAP SEE DETAIL Y

SPECIAL V DITCH SEE DETAIL A

SEE INSET A

REMOVE 54" CMP

15" CSP W/ELBOWS

2GIB-NSF

(2)12'x8' RCBC (BURIED 1.0')

RETAIN

15' RW

10+00

15+00

SR 3866 ALONZO RD

TOE PROTECTION W/CL B RIPRAP SEE DETAIL E

LATERAL V DITCH W/CL B RIPRAP SEE DETAIL AO

SYLVIA ALLEN

HERBERT, JR. & ELIZABETH THOMASON

C700 OUTLET STABILIZATION 325 TONS CL II RIPRAP W/240 SY GEOFAB SEE DETAIL CG

20' DRAINAGE EASEMENT BM 2004 PG 423

PATRICIA & RAYFORD PAGE

ENGLISH

SURFACE WATER IMPACTS

TEMPORARY SURFACE WATER IMPACTS

SCALE 50 0 50 100

SCALE FOR INSET 25 0 25 50

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Drainage Details
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Submittal September 17, 2024

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PROJECT REFERENCE NO.	SHEET NO.

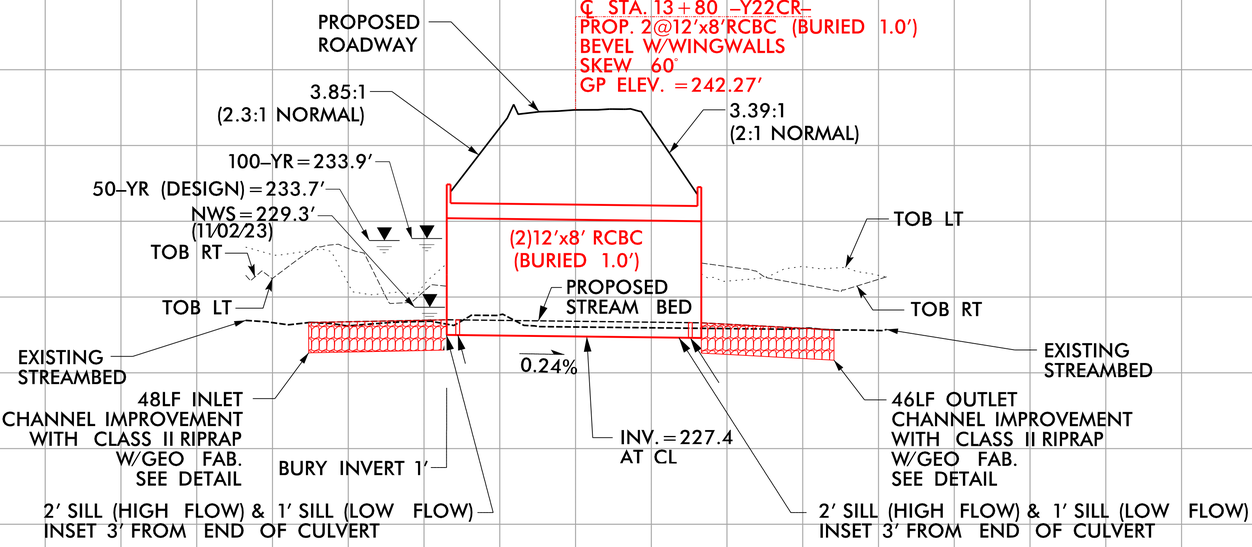
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 78 OF 103

ENGLISH

SITE 28 –Y22CR– STA. 14+00



2@ 12'x8' RCBC
(Buried 1.0', Length =80')

9/3/2024
Hydraulics\Permits_Environmental\Drawings\4C\Wetland\R-2829A_hyd_4C_psh_23_siteXX_PFL.dgn

8/17/99

ENGLISH

50 0 50 100
SCALE

25 0 25 50
SCALE FOR INSET

S S SURFACE WATER IMPACTS

TS TS TEMPORARY SURFACE WATER IMPACTS

NAD 83/NA 2011

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	26
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 79 OF 103

MATCHLINE -Y23FR- STA. 15+00 SEE SHEET 31

MATCHLINE -Y23R- STA. 53+00 SEE SHEET 11

MATCHLINE -Y23R- STA. 62+00 SEE SHEET 27

MATCHLINE -Y23CR_REV- STA. 14+80 SEE SHEET 32

SFJ

SITE 29

SDO INVESTMENTS, LLC.

TIM FOWLER

SCOTT PEACOCK, SYLVIA MATTHEWS, & STEPHEN PEACOCK

MOUNT HERMAN CHRISTIAN CHURCH

ELLA & PHILLIP PARRISH

PROPERTIES GROUP INC

MUP BY OTHERS

CITY OF RALEIGH WATER EASEMENT

LATERAL 4' BASE DITCH SEE DETAIL C

CONV. DI TO JB W/MH

8 TONS CL B RIPRAP W/21 SY GEOFAB

40 TONS CL I RIPRAP W/75 SY GEOFAB OUTLET CHANNEL STABILIZATION W/CL I RIPRAP SEE DETAIL AL

CUT/FILL TRANSITION 1 TON CL B RIPRAP W/5 SY GEOFAB

SEE INSET A

TOE PROTECTION W/CL B RIPRAP SEE DETAIL E

RETAIN SYSTEM

REMOVE

REMOVE CB & 24"

REMOVE SYSTEM

GRADE TO DRAIN

ADJUST DI

REMOVE EX. DI TB JB wMH

2 TONS CL B RIPRAP W/7 SY GEOFAB

SP. BACK OF CURB DITCH SEE DETAIL BY

SP. BACK OF CURB DITCH W/CL B RIP RAP SEE DETAIL BX

STANDARD V DITCH SEE DETAIL AF

3 TON CL B RIPRAP W/10 SY GEOFAB

LATERAL V DITCH SEE DETAIL B

LATERAL 4' BASE SWALE SEE DETAIL L

STD 4' BASE DITCH W/CL I RIPRAP SEE DETAIL AK

LAT. 4' BASE DITCH SEE DETAIL C

CONV. DI TO JB W/MH

CONV. CB TO DI

CONV. CB TO JB W/MH

CONV. DI2 TBDI (TEMP07) TO JB W/SLAB LID

INSET A

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PROJECT REFERENCE NO.	SHEET NO.
R-2829A	26
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 80 OF 103

ENGLISH

50 0 50 100 SCALE

25 0 25 50 SCALE FOR INSET

NAD 83/NA 2011

SURFACE WATER IMPACTS

TEMPORARY SURFACE WATER IMPACTS

MATCHLINE -Y23FR- STA. 15+00 SEE SHEET 31

MATCHLINE -Y23R- STA. 53+00 SEE SHEET 11

MATCHLINE -Y23R- STA. 62+00 SEE SHEET 27

MATCHLINE -Y23CR_REV- STA. 14+80 SEE SHEET 32

SFJ

SITE 29

SEE INSET A

INSET A

SOO INVESTMENTS, LLC

TIM FOWLER

SCOTT PEACOCK, SYLVIA MATTHEWS, & STEPHEN PEACOCK

MOUNT HERMAN CHRISTIAN CHURCH

ELLA & PHILLIP PARRISH

PROPERTIES GROUP INC

CITY OF RALEIGH WATER EASEMENT

LATERAL 4' BASE DITCH SEE DETAIL C

CONV. DI TO TBDI (TEMP07) TO JB W/SLAB LID

8 TONS CL B RIPRAP W/21 SY GEOFAB

40 TONS CL I RIPRAP W/75 SY GEOFAB OUTLET CHANNEL STABILIZATION W/CL I RIPRAP SEE DETAIL AL

CUT/FILL TRANSITION 1 TON CL B RIPRAP W/5 SY GEOFAB

REMOVE CB & 24"

2 TONS CL B RIPRAP W/7 SY GEOFAB

SP. BACK OF CURB DITCH SEE DETAIL BY

SP. BACK OF CURB DITCH W/CL B RIP RAP SEE DETAIL BX

STANDARD V DITCH SEE DETAIL AF

GRADE TO DRAIN

CONV. DI TO JB W/MH

ADJUST DI

REMOVE EX. DI TB JB w/MH

TOE PROTECTION W/CL B RIPRAP SEE DETAIL E

CONV. CB TO DI

CONV. CB TO JB W/MH

RETAIN SYSTEM

REMOVE SYSTEM

3 TON CL B RIPRAP W/10 SY GEOFAB

LATERAL V DITCH SEE DETAIL B

LATERAL 4' BASE SWALE SEE DETAIL L

STD 4' BASE DITCH W/CL I RIPRAP SEE DETAIL AK

MUP BY OTHERS

55+00

60+00

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R-2829A_hyd_4C_psh_26_con.dgn
dsmith

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	28
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 81 OF 103

NAD 83/NA 2011

MATCHLINE -Y23DR- STA. 14+00 SEE SHEET 25

MATCHLINE SEE SHEET 25

MATCHLINE -Y23DR- STA. 27+00 SEE SHEET 29

SPECIAL CUT DITCH SEE DETAIL A

BERM V DITCH SEE DETAIL AX

SPECIAL V DITCH SEE DETAIL A

15+00

18" CSP W/ELBOWS

BDO

FS

18" RCP-III

2GIB-WSS

STD. 4' BASE DITCH SEE DETAIL I

LINE END OF STD. DITCH W/ CL B RIPRAP SEE DETAIL AJ

PDE

3 TONS CL B RIPRAP W/10 SY GEOFAB

SPECIAL CUT DITCH SEE DETAIL A

(R. G. (GARLAND) & ETHEL BURNETTE

WGH

BERM V DITCH SEE DETAIL AX

SP. CUT 4' SWALE SEE DETAIL O

20+00

SPECIAL V DITCH SEE DETAIL A

SPECIAL 4' BASE DITCH W/CL B RIP RAP SEE DETAIL Z

LATERAL 4' BASE DITCH W/CL I RIPRAP SEE DETAIL N

CHANNEL CHANGE W/CL I RIPRAP SEE DETAIL AG

SEE INSET A

SHT SITE 30

CLARENCE, JR. & SAMANTHA BOYD

PAO

BRAIR POND PREEXISTING DRAINAGE PIERNS

STANDARD 4' BASE DITCH W/CL I RIPRAP SEE DETAIL AK

SP. BASE 4' DITCH W/CL I RIPRAP SEE DETAIL AP

JOHN CAVINESS

HW

REMOVE

JS BEGINS

15" CSP W/ELBOWS

42" RCP-III (NOT BZ 1 BURIED)

2GIB-NSF

2GIB NSF 25+00

LATERAL 4' BASE DITCH W/CL I RIPRAP SEE DETAIL N

FILL IN ABANDONED CHANNEL

BEGIN

24" HDPE

JOHN & DIANE CAVINESS

R. G. (GARLAND) & ETHEL BURNETTE

INSET A

ENGLISH

SURFACE WATER IMPACTS

SURFACE WATER IMPACTS POND

FILL IN WETLAND

SCALE 50 0 50 100

SCALE FOR INSET 25 0 25 50

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dwg

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	28
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 82 OF 103

NAD 83/NA 2011

MATCHLINE -Y23DR- STA. 14+00 SEE SHEET 25

MATCHLINE SEE SHEET 25

MATCHLINE -Y23DR- STA. 27+00 SEE SHEET 29

SPECIAL CUT DITCH SEE DETAIL A

BERM V DITCH SEE DETAIL AX

SPECIAL V DITCH SEE DETAIL A

15+00

18" CSP W/ELBOWS

BDO

FS

2GIB-WSS

18" RCP-III

STD. 4' BASE DITCH SEE DETAIL I

LINE END OF STD. DITCH W/ CL B RIPRAP SEE DETAIL AJ

PDE

3 TONS CL B RIPRAP W/10 SY GEOFAB

SPECIAL CUT DITCH SEE DETAIL A

(R. G. (GARLAND) & ETHEL BURNETTE)

WGH

BERM V DITCH SEE DETAIL AX

SP. CUT 4' SWALE SEE DETAIL O

20+00

SPECIAL V DITCH SEE DETAIL A

PAO

BZ 1

BZ 2

CLARENCE, JR. & SAMANTHA BOYD

RAIN POND

PROPOSED DRAINAGE PIPING

STANDARD 4' BASE DITCH W/CL I RIPRAP SEE DETAIL AK

SP. BASE 4' DITCH W/CL I RIPRAP SEE DETAIL AP

HW

JOHN CAVINESS

JS BEGINS

LATERAL 4' BASE DITCH W/CL I RIPRAP SEE DETAIL N

15" CSP W/ELBOWS

REMOVE

42" RCP-III (NOT BUIED)

2GIB-NSF

25+00

FILL IN ABANDONED CHANNEL

SEE INSET A

SPECIAL 4' BASE DITCH W/CL B RIP RAP SEE DETAIL Z

LATERAL 4' BASE DITCH W/CL I RIPRAP SEE DETAIL N

CHANNEL CHANGE W/CL I RIPRAP SEE DETAIL AG

REMOVE

24" NOTE

SHT SITE 30

JOHN & DIANE CAVINESS

R. G. (GARLAND) & ETHEL BURNETTE

INSET A

ENGLISH

SURFACE WATER IMPACTS

SURFACE WATER IMPACTS POND

FILL IN WETLAND

SCALE 50 0 50 100

SCALE FOR INSET 25 0 25 50

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Submittal September 17, 2024

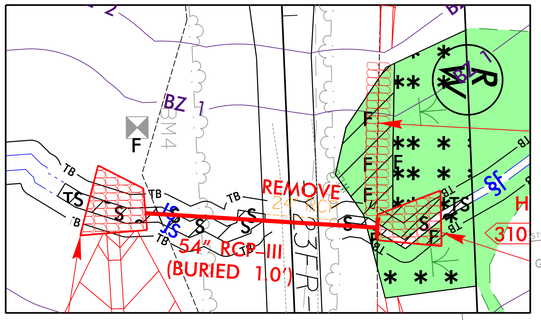
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PROJECT REFERENCE NO.	SHEET NO.
R-2829A	31
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 83 OF 103

NAD 83/NA 2011



INSET A

ERNEST DeVANE & CLARLYNDA WILLIAMS-DeVANE

LESLIE & JOSEPH WARD

JENNY BIGGS

LAURENCIO & LEONARDA BENITEZ

JOHN BOYKIN

SDO INVESTMENTS, LLC.

APPROX. LOCATION OF EXISTING 100' WELL EASEMENT BM 2005 PG 470

BORASKI, STEVEN
BORASKI, GINA

STEVEN C & GINA BORASKI

JERRY LENGER

HEATHER YARBROUGH

KATIE S EDGERTON

HOMECARE-DO, INC

KENNETH SMITH

LILA SMITH

PAMELA BATEY BRIGHT REVOCABLE LIVING TRUST, PAMELA BATEY BRIGHT TRUSTEE

SP. CUT 4' BASE DITCH W/CL I RIPRAP SEE DETAIL AC

INV OUT=311.0'

SPECIAL 4' BASE DITCH W/CL B RIPRAP SEE DETAIL R

SPECIAL 4' BASE DITCH SEE DETAIL AD

HW INV IN=300.7

SP. CUT 4' BASE DITCH W/CL B RIPRAP SEE DETAIL R

HW INV IN =313.0

MATCHLINE -Y23AR-STA. 17+00 SEE SHEET 27

LATERAL 4' BASE DITCH W/CL B RIPRAP SEE DETAIL AU

SPECIAL V DITCH SEE DETAIL A

LATERAL V DITCH SEE DETAIL U

SPECIAL CUT 4' SWALE SEE DETAIL O

LATERAL 4' BASE SWALE SEE DETAIL L

SWALE Q10=6.9 CFS V10=1.8 FT/S

DO NOT INSTALL TOE PROTECTION WITHIN 16' OF TRAVEL LANE

INV OUT =299.0

SP. CUT DITCH SEE DETAIL A

SEE INSET A

STANDARD 4' BASE DITCH W/CL I RIPRAP SEE DETAIL AK

OUTFALL 31-1

INV OUT=297.7
PIPE INV OUT=296.8

LATERAL 4' SWALE SEE DETAIL L

INV IN=305.2
PIPE INV IN=304.3

DITCH Q10=1.6 CFS V10=1.9 FT/S

INLET CHANNEL STABILIZATION W/CL II RIPRAP SEE DETAIL AL 33 TONS CL II RIPRAP W/62 SY GEOFAB

OUTLET CHANNEL STABILIZATION W/CL II RIPRAP SEE DETAIL AL 48 TONS CL II RIPRAP W/90 SY GEOFAB

LATERAL V DITCH W/CL I RIPRAP SEE DETAIL BT

SPECIAL V DITCH W/CL I RIPRAP SEE DETAIL AB

LATERAL 4' SWALE SEE DETAIL L

LATERAL V DITCH W/CL B RIPRAP SEE DETAIL S

SITE 29A

MATCHLINE -Y23FR- STA. 15+00 SEE SHEET 26

WNM

SFJ

ENGLISH

50 0 50 100
SCALE

25 0 25 50
SCALE FOR INSET

SURFACE WATER IMPACTS

TEMPORARY SURFACE WATER IMPACTS

MECHANIZED CLEARING (GRUBBING)

FILL IN WETLAND

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8/2/2024
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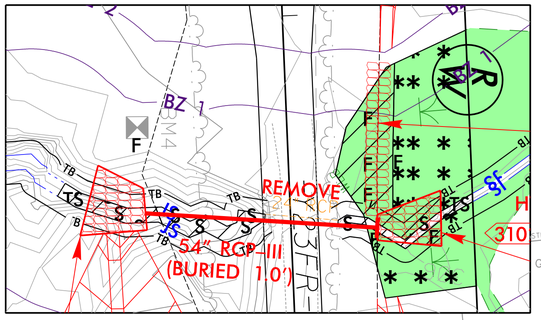
8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	31
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 84 OF 103

NAD 83/NA 2011



INSET A

ERNEST DeVANE & CLARLYNDA WILLIAMS-DeVANE

LESLIE & JOSEPH WARD

JENNY BIGGS

LAURENCIO & LEONARDA BENITEZ

JOHN BOYKIN

SDO INVESTMENTS, LLC.

APPROX. LOCATION OF EXISTING 100' WELL EASEMENT RM 2005, PG 470

STEVEN C & GINA BORASKI

BORASKI, STEVEN
BORASKI, GINA

JERRY LENGER

HEATHER YARBROUGH

KATIE S EDGERTON

HOMECRE-DO, INC

KENNETH SMITH

LILA SMITH

PAMELA BATEY BRIGHT REVOCABLE LIVING TRUST
PAMELA BATEY BRIGHT TRUSTEE

SP. CUT 4' BASE DITCH W/CL I RIPRAP SEE DETAIL AC

SPECIAL 4' BASE DITCH W/CL B RIPRAP SEE DETAIL R

SP. CUT 4' BASE DITCH W/CL B RIPRAP SEE DETAIL R

SPECIAL 4' BASE DITCH SEE DETAIL AD

42" RCP III (NOT BURIED)

48" RCP III (NOT BURIED)

SP. CUT DITCH SEE DETAIL A

SEE INSET A

STANDARD 4' BASE DITCH W/CL I RIPRAP SEE DETAIL AK

LATERAL 4' SWALE SEE DETAIL L

OUTLET CHANNEL STABILIZATION W/CL II RIPRAP SEE DETAIL AL 48 TONS CL II RIPRAP W/90 SY GEOFAB

LATERAL V DITCH W/CL I RIPRAP SEE DETAIL BT

SPECIAL V DITCH W/CL I RIPRAP SEE DETAIL AB

LATERAL 4' BASE SWALE SEE DETAIL L

LATERAL V DITCH W/CL B RIPRAP SEE DETAIL S

SITE 29A

LATERAL 4' BASE DITCH W/CL B RIPRAP SEE DETAIL AU

SPECIAL V DITCH SEE DETAIL A

LATERAL V DITCH SEE DETAIL U

SPECIAL CUT 4' SWALE SEE DETAIL O

SWALE Q10 = 6.9 CFS V10 = 1.8 FT/S

DO NOT INSTALL TOE PROTECTION WITHIN 16' OF TRAVEL LANE

DITCH Q10 = 1.6 CFS V10 = 1.9 FT/S

INLET CHANNEL STABILIZATION W/CL II RIPRAP SEE DETAIL AL 33 TONS CL II RIPRAP W/62 SY GEOFAB

WNM

SFJ

MATCHLINE -Y23AR-STA. 17+00 SEE SHEET 27

MATCHLINE -Y23FR- STA. 15+00 SEE SHEET 26

ENGLISH

SCALE: 50 0 50 100

SCALE FOR INSET: 25 0 25 50

SURFACE WATER IMPACTS

TEMPORARY SURFACE WATER IMPACTS

MECHANIZED CLEARING (GRUBBING)

FILL IN WETLAND

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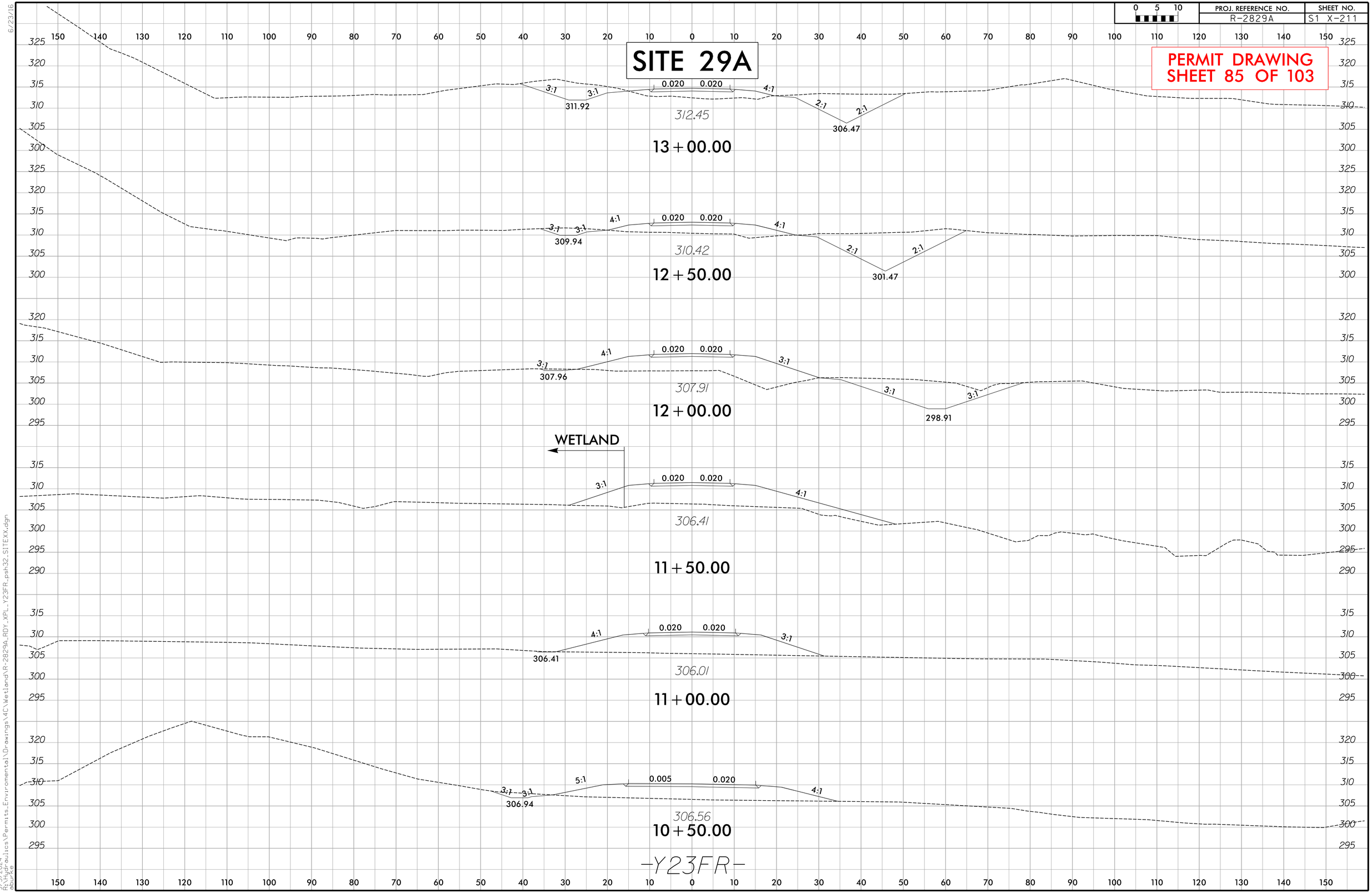
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6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2829A	S1 X-211

SITE 29A

PERMIT DRAWING
SHEET 85 OF 103



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PROJECT REFERENCE NO.	SHEET NO.
R-2829A	34
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 86 OF 103

ENGLISH

SCALE 50 0 50 100

SCALE FOR INSET 25 0 25 50

S / S SURFACE WATER IMPACTS

TS / TS TEMPORARY SURFACE WATER IMPACTS

F / F FILL IN WETLAND

MECHANIZED CLEARING (GRUBBING)

NAD 83/NA 2011

SEVENTY EAST ASSOCIATES, LLC.

CHRISTOPHER DANIELS

DAVID HAWLEY

R. GARLAND BURNETTE

STEC

INSET A

SEE DETAIL E

PUE 2 TONS CL B RIPRAP W/7 SY GEOFAB

SQUARE CONC. LID (CHECK STORM SEWER)

6" PVC 16" PVC

SP. DET. HW.

CONC HW/WW

EXTEND EXISTING 5'x6'

2GIB –WSF

15" CSP W/ELBOWS

BY3-314

144 FO

24 FO

96 FO

REMOVE 60' EXIST 15"

20+00

FS

REMOVE DI

2GIB–

TB JB w/MH

15" RCP-III

TRENCHLESS INSTALLATION 72" WELDED STEEL

END UNK

PLUG & FILL W/FF

15" CSP W/ELBOWS

EXTEND EXISTING 5'x6'

JS BEGINS SP. DET. HW.

600 PR

BZ 1

BZ 2

PUE

DUE

SITE 31

WGW

C800 INLET STABILIZATION 58 TONS CL II RIPRAP W/86 SY GEOFAB SEE DETAIL CH

3406 Q10 = 1.03cfs V10 = 0.36fps

SWALE Q10 = 12.57cfs V10 = 1.97fps

TDE

LATERAL 4' BASE DITCH W/CL I RIPRAP SEE DETAIL N

SEE INSET A

TOE PROTECTION W/CL B RIPRAP SEE DETAIL E

LINE CUT-FILL TRANSITION W/ 2 TONS CL B RIPRAP W/7 SY GEOFAB

RETAIN SYSTEM

18" RCP

SEPTIC CONTROL BOX

CONC HW/WW

EXTEND EXISTING 5'x6'

2GIB –WSF

15" CSP W/ELBOWS

LATERAL 4' BASE SWALE SEE DETAIL L

SILT FENCE

REMOVE CONC PAVED DITCH ~ 100 LF

CONC PAVED DITCH

2GIB–WSS

2GIB–WSF

1 TONS CL B RIPRAP W/5 SY GEOFAB

TOE PROTECTION W/CL B RIPRAP SEE DETAIL E

SFZ(1)

2 TONS CL B RIPRAP W/7 SY GEOFAB

SWALE Q10 = 25.43cfs V10 = 1.94fps

SITE 31

WGV(1)

SFY

C800 OUTLET STABILIZATION 51 TONS CL II RIPRAP W/68 SY GEOFAB SEE DETAIL CH

SPECIAL V DITCH SEE DETAIL A

-Y24R-

US 70 BUS WB 3rf BST

US 70 BUS EB 3rf BST

CABLE

MATCHLINE -Y24R- STA. 24+00 SEE SHEET 35

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PROJECT REFERENCE NO.	SHEET NO.
R-2829A	34
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 87 OF 103

ENGLISH

50 0 50 100
SCALE
25 0 25 50
SCALE FOR INSET

S S SURFACE WATER IMPACTS
TS TS TEMPORARY SURFACE WATER IMPACTS
F F FILL IN WETLAND
MECHANIZED CLEARING (GRUBBING)

NAD 83/NA 2011

STEC

SEVENTY EAST ASSOCIATES, LLC.

CHRISTOPHER DANIELS

DAVID HAWLEY

R. GARLAND BURNETTE

INSET A

SEE DETAIL E

PUE
2 TONS CL B RIPRAP
W/7 SY GEOFAB

SP. DET. HW.

TRENCHLESS INSTALLATION 72" WELDED STEEL

EXTEND EXISTING 5'x6'

2GIB –WSF

15" CSP W/ELBOWS

REMOVE 60' EXIST 15"

FS

TB JB w/MH

15" RCP-III

REMOVE DI

2GIB–

PLUG & FILL W/FF

JS BEGINS SP. DET. HW.

BZ 1

BZ 2

SITE 31

WGW

C800 INLET STABILIZATION
58 TONS CL II RIPRAP
W/86 SY GEOFAB
SEE DETAIL CH

SEE INSET A

3406
Q10 = 1.03cfs
V10 = 0.36fps

SWALE
Q10 = 12.57cfs
V10 = 1.97fps

LATERAL 4' BASE DITCH
W/CL I RIPRAP
SEE DETAIL N

TOE PROTECTION
W/CL B RIPRAP
SEE DETAIL E

LINE CUT/FILL
TRANSITION W/
2 TONS CL B RIPRAP
W/7 SY GEOFAB

RETAIN SYSTEM

18" RCP

LATERAL 4' BASE SWALE
SEE DETAIL

SPECIAL V DITCH
SEE DETAIL F

REMOVE CONC PAVED DITCH ~ 100 LF

2GIB–WSS

2GIB–WSF

1 TONS CL B RIPRAP
W/5 SY GEOFAB

LATERAL 4' BASE DITCH
W/CL I RIPRAP
SEE DETAIL N

2 TONS CL B RIPRAP
W/7 SY GEOFAB

SWALE
Q10 = 25.43cfs
V10 = 1.94fps

LATERAL 4' BASE SWALE
SEE DETAIL L

SFZ(1)

SITE 31

WGV(1)

SFY

C800 OUTLET STABILIZATION
51 TONS CL II RIPRAP
W/68 SY GEOFAB
SEE DETAIL CH

MATCHLINE -Y24R- STA. 24+00
SEE SHEET 35

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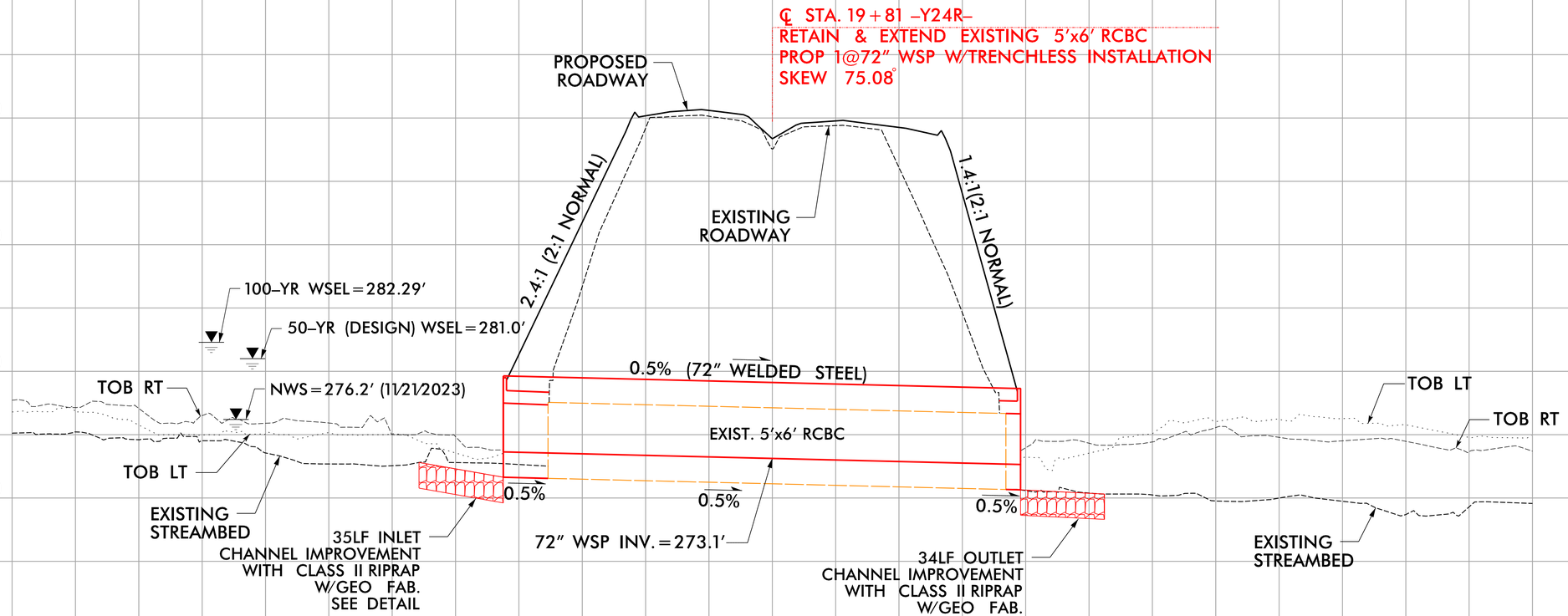
PROJECT REFERENCE NO.	SHEET NO.
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 88 OF 103

ENGLISH

SITE 31
–Y24R– STA. 19+81



RETAIN AND EXTEND 5'x6' RCBC + 72" WELDED STEEL PIPE
(Not buried, Length =181')

9/3/2024
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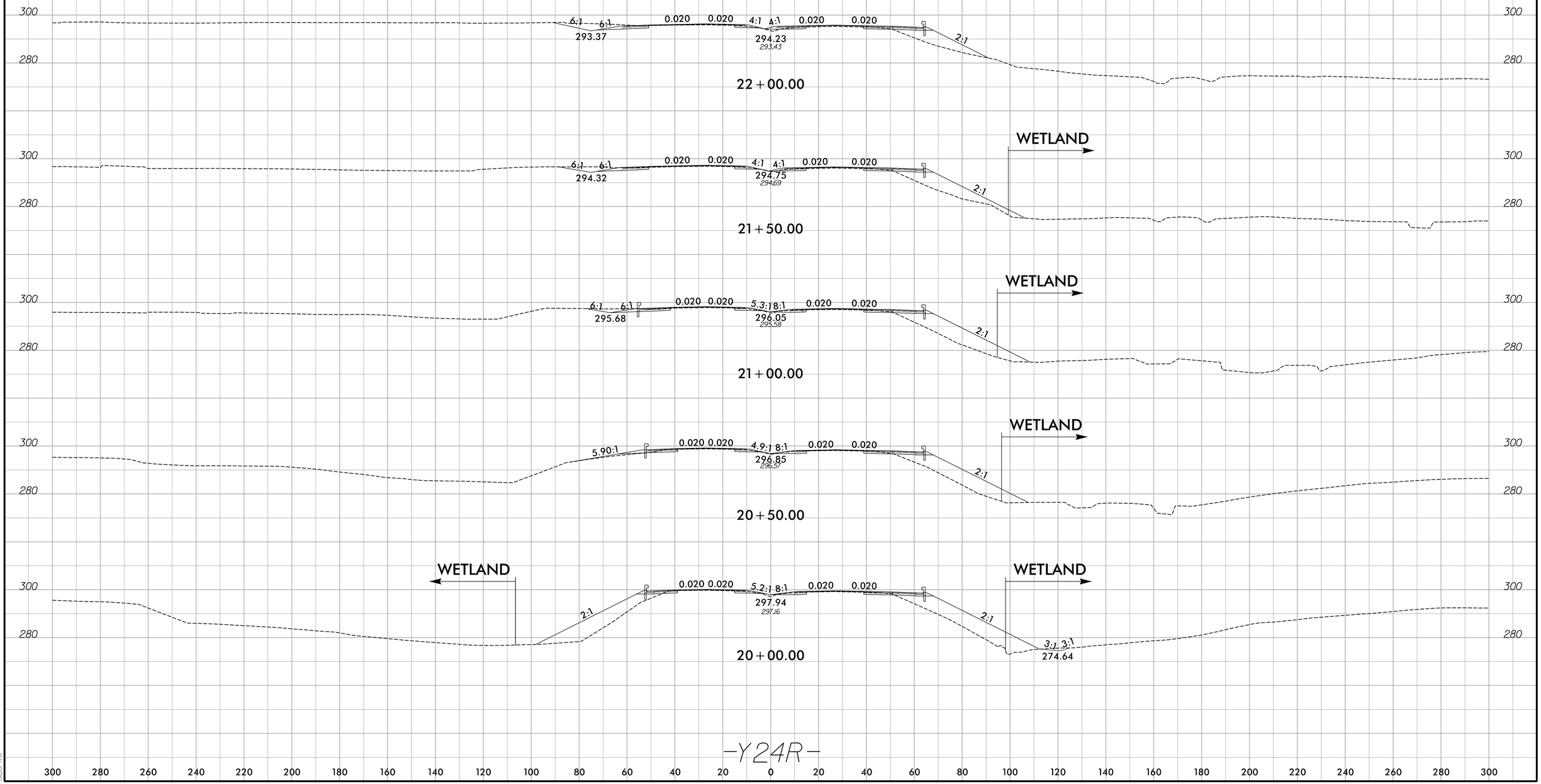
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	R-2829A	S2 X-40

300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

SITE 31

PERMIT DRAWING
SHEET 89 OF 103



9/3/2024
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PROJECT REFERENCE NO.	SHEET NO.
R-2829A	35
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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PERMIT DRAWING SHEET 90 OF 103

INSET A

WGX(2)

SGI

SITE 32

SGA

NAD 83/NA 2011

SEVENTY EAST ASSOCIATES, LLC.

ENTERPRISES, LLC.

BUFFALO ACRES LN

WALNUT DR

PROP. SIGN

SIGNAL POLE

SEE INSET A

SEE INSET B

PARTLO GARNER, LLC.

R. GARLAND BURNETTE

W. H. & THELMA MEDLIN

MATCHLINE -Y24R- STA. 24+00
SEE SHEET 34

MATCHLINE -Y24R- STA. 36+50
SEE SHEET 17

-Y24A-

-Y24R-

15+00 20+00 25+00 30+00 35+00

SPECIAL V DITCH W/CL I RIPRAP SEE DETAIL AB

SPECIAL V DITCH SEE DETAIL A

SPECIAL V DITCH W/CL B RIPRAP SEE DETAIL Y

8' V DITCH W/CL B RIPRAP SEE DETAIL Y

10' V DITCH W/CL B RIPRAP SEE DETAIL Y

C900 INLET STABILIZATION
52 TONS CL II RIPRAP
W/89 SY GEOFAB
SEE DETAIL CI

2 TONS CL B RIPRAP W/7 SY GEOFAB

8 TONS CL B RIPRAP W/21 SY GEOFAB

LAT. 4' BASE SWALE SEE DETAIL L

SP. 4' BASE SWALE SEE DETAIL O

SPECIAL 4' BASE SWALE SEE DETAIL O

LATERAL 4' BASE SWALE SEE DETAIL L

C900 OUTLET STABILIZATION
241 TONS CL II RIPRAP
W/294 SY GEOFAB
SEE DETAIL CI

2GIB-NSS

2GIB-NSF

2GIB-WSS

(2) 2GIB-WSF

30" RCP-III

24" RCP-III

18" RCP-III

15" RCP-III

15" RCP-IV

15" CSP W/ELBOWS

SP. DET. HW.

EXTEND EXIST 6'x8'

EXTEND EXIST 6'x9'

TRENCHLESS INSTALLATION (60' WELDED STEEL)

PLUG & FILL W/FLOWABLE FILL

REMOVE DI

REMOVE JB

REMOVE SYSTEM

TRENCHLESS INSTALLATION (72" WELDED STEEL)

ENGLISH

SCALE 50 0 50 100

SCALE FOR INSET 25 0 25 50

S S SURFACE WATER IMPACTS

TS TS TEMPORARY SURFACE WATER IMPACTS

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PROJECT REFERENCE NO.	SHEET NO.
R-2829A	35
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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PERMIT DRAWING SHEET 91 OF 103

MATCHLINE -Y24R- STA. 24+00 SEE SHEET 34

MATCHLINE -Y24R- STA. 36+50 SEE SHEET 17

INSET A

INSET B

WGX(2)

SGI

SGA

SITE 32

SEE INSET A

SEE INSET B

SEVENTY EAST ASSOCIATES, LLC.

ENTERPRISES, LLC.

PARTLO GARNER, LLC.

R. GARLAND BURNETTE

W. H. & THELMA MEDLIN

NAD 83/NA 2011

PROP. SIGN

SIGNAL POLE

SP. DET. HW.

EXTEND EXIST 6'x8'

EXTEND EXIST 6'x9'

35+00

30+00

25+00

20+00

15+00

-Y24A-

-Y24R-

2GIB-NSS

2GIB-NSF

2GIB-WSS

(2) 2GIB-WSF

18" RCP-III

15" RCP-III

15" RCP-IV

24" RCP-III

30" RCP-III

15" CSP W/ELBOWS

16" PVC

TBDI

REMOVE DI

REMOVE JB

REMOVE SYSTEM

PLUG & FILL W/FLOWABLE FILL

TRENCHLESS INSTALLATION (60' WELDED STEEL)

SPECIAL V DITCH W/CL I RIPRAP SEE DETAIL AB

SPECIAL V DITCH SEE DETAIL A

SPECIAL V DITCH W/CL B RIPRAP SEE DETAIL Y

8" V DITCH W/CL B RIPRAP SEE DETAIL Y

SPECIAL V DITCH W/CL B RIPRAP SEE DETAIL Y

8 TONS CL B RIPRAP W/21 SY GEOFAB

2 TONS CL B RIPRAP W/7 SY GEOFAB

LAT. 4' BASE SWALE SEE DETAIL L

SP. 4' BASE SWALE SEE DETAIL O

C900 INLET STABILIZATION 52 TONS CL II RIPRAP W/89 SY GEOFAB SEE DETAIL CI

SPECIAL V DITCH W/CL B RIPRAP SEE DETAIL Y

SPECIAL 4' BASE SWALE SEE DETAIL O

2 TONS CL B RIPRAP W/7 SY GEOFAB

LATERAL 4' BASE SWALE SEE DETAIL L

C900 OUTLET STABILIZATION 241 TONS CL II RIPRAP W/294 SY GEOFAB SEE DETAIL CI

ENGLISH

SCALE 50 0 50 100

SCALE FOR INSET 25 0 25 50

S S SURFACE WATER IMPACTS

TS TS TEMPORARY SURFACE WATER IMPACTS

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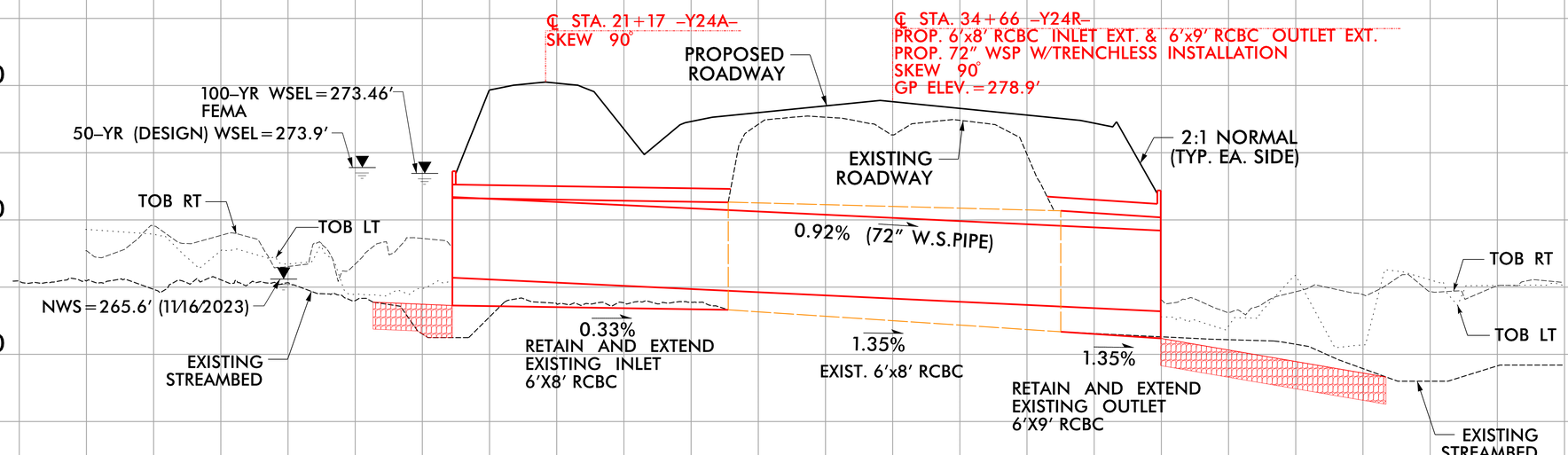
PROJECT REFERENCE NO.	SHEET NO.
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 92 OF 103

ENGLISH

SITE 32
–Y24– STA. 34+66



5'x6' RETAIN AND EXTEND EXISTING RCBC
72" WELDED STEEL SUPPLEMENTAL PIPE
(Not buried, Length =124')

8/31/2024
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PROJECT REFERENCE NO.	SHEET NO.
R-2829A	36A
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 93 OF 103

ENGLISH

SCALE 50 0 50 100

SCALE FOR INSET 25 0 25 50

NAD 83/NA 2011

S S SURFACE WATER IMPACTS

TS TS TEMPORARY SURFACE WATER IMPACTS

F F FILL IN WETLAND

E E WETLAND EXCAVATION

MECHANIZED CLEARING (GRUBBING)

BOBBY B GRADY

JANET P STORMS & LINDA S POWELL

JANET P HINTON

JANET P STORMS & LINDA S POWELL

POND WSE=304'

SAAL

SITE 35

SAAK

EDGE OF AUBURN LLC

SITE 34

SITE 33

C1000 INLET STABILIZATION 39 TONS CL II RIPRAP W/73 SY GEOFAB SEE DETAIL CJ

FILL IN ABANDONED CHANNELS

SEE INSET A

CHANNEL BLOCKS SEE DETAIL BK

STANDARD 4' BASE DITCH W/CL I RIP RAP SEE DETAIL AK

SPECIAL CUT DITCH SEE DETAIL A

WAAJ

WHD(2)

SPECIAL CUT DITCH SEE DETAIL A 2 TONS CL B RIP RAP W/ SY GEOFAB

GRADE TO DRAIN

REMOVE

2GIB–NSS

FS 15" RCP

TB 2GIB–NSF

15" CSP W/ELBOWS

1 TONS CL B RIP RAP W/5 SY GEOFAB

36A05 Q10 = 1.00cfs V10 = 1.22fps

WAAK

TOE PROTECTION W/CL B RIPRAP SEE DETAIL E

C1000 OUTLET STABILIZATION 76 TONS CL II RIPRAP W/118 SY GEOFAB SEE DETAIL CJ

SITE 33

SGA

JEFFREY P CATES & NANCY S CATES

48 TONS CL II RIPRAP W/98 SY GEOFAB OUTLET CHANNEL STABILIZATION W/CL II RIPRAP SEE DETAIL AL

L & L COMPANY LLC

SGD

SITE 24

NC RAILROAD COMPANY

NORFOLK–SOUTHERN RR

LATERAL V DITCH W/CL B RIPRAP SEE DETAIL S

MATCHLINE -Y26R-SR1- STA. 12+50 SEE SHEET 18

MATCHLINE -Y26R- STA. 22+00 SEE SHEET 18

MATCHLINE -Y25- STA. 15+00 SEE SHEET 18

INSET A

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8/23/2024

NHughes

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PROJECT REFERENCE NO.	SHEET NO.
R-2829A	36A
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 94 OF 103

ENGLISH

SCALE 50 0 50 100

SCALE FOR INSET 25 0 25 50

S S SURFACE WATER IMPACTS

TS TS TEMPORARY SURFACE WATER IMPACTS

F F FILL IN WETLAND

E E WETLAND EXCAVATION

MECHANIZED CLEARING (GRUBBING)

NAD 83/NA 2011

BOBBY B GRADY

JANET P STORMS & LINDA S POWELL

JANET P HINTON

JANET P STORMS & LINDA S POWELL

POND WSE=304'

SAAL

SITE 35

SAAK

EDGE OF AUBURN LLC

SITE 34

SITE 33

15+00

10+00

STANDARD 4' BASE DITCH W/CL I RIP RAP SEE DETAIL AK

SPECIAL CUT DITCH SEE DETAIL A

WAAJ

C1000 INLET STABILIZATION 39 TONS CL II RIPRAP W/73 SY GEOFAB SEE DETAIL CJ

FILL IN ABANDONED CHANNELS

SEE INSET A

CHANNEL BLOCKS SEE DETAIL BK

SPECIAL CUT DITCH SEE DETAIL A 2 TONS CL B RIP RAP W/ SY GEOFAB

WHD(2)

GRADE TO DRAIN

REMOVE

2GIB-NSS

FS 15" RCP

TB 2GIB-NSF

15" CSP W/ELBOWS

1 TONS CL B RIP RAP W/5 SY GEOFAB

36A05 Q10=1.00cfs V10=1.22fps

WAAK

TOE PROTECTION W/CL B RIPRAP SEE DETAIL E

LATERAL V DITCH W/CL B RIPRAP SEE DETAIL S

-Y26RSR1-

-Y26R-

MATCHLINE -Y26R-SR1-STA. 12+50 SEE SHEET 18

MATCHLINE -Y26R-STA. 22+00 SEE SHEET 18

JEFFREY P CATES & NANCY S CATES

48 TONS CL II RIPRAP W/98 SY GEOFAB OUTLET CHANNEL STABILIZATION W/CL II RIPRAP SEE DETAIL AL

C1000 OUTLET STABILIZATION 76 TONS CL II RIPRAP W/198 SY GEOFAB SEE DETAIL CJ

SITE 33

SGA

SGD

SITE 24

NC RAILROAD COMPANY

-Y25-

MATCHLINE -Y25- STA. 15+00 SEE SHEET 18

INSET A

JANET P BOBBY GERALD

SUCRISTO

ABAND

8/13/2024
4:14:46 PM
dbrigg

STV Engineers, Inc.
P: (704) 372-1885
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

Submittal September 17, 2024

5/14/99

PROJECT REFERENCE NO.	SHEET NO.

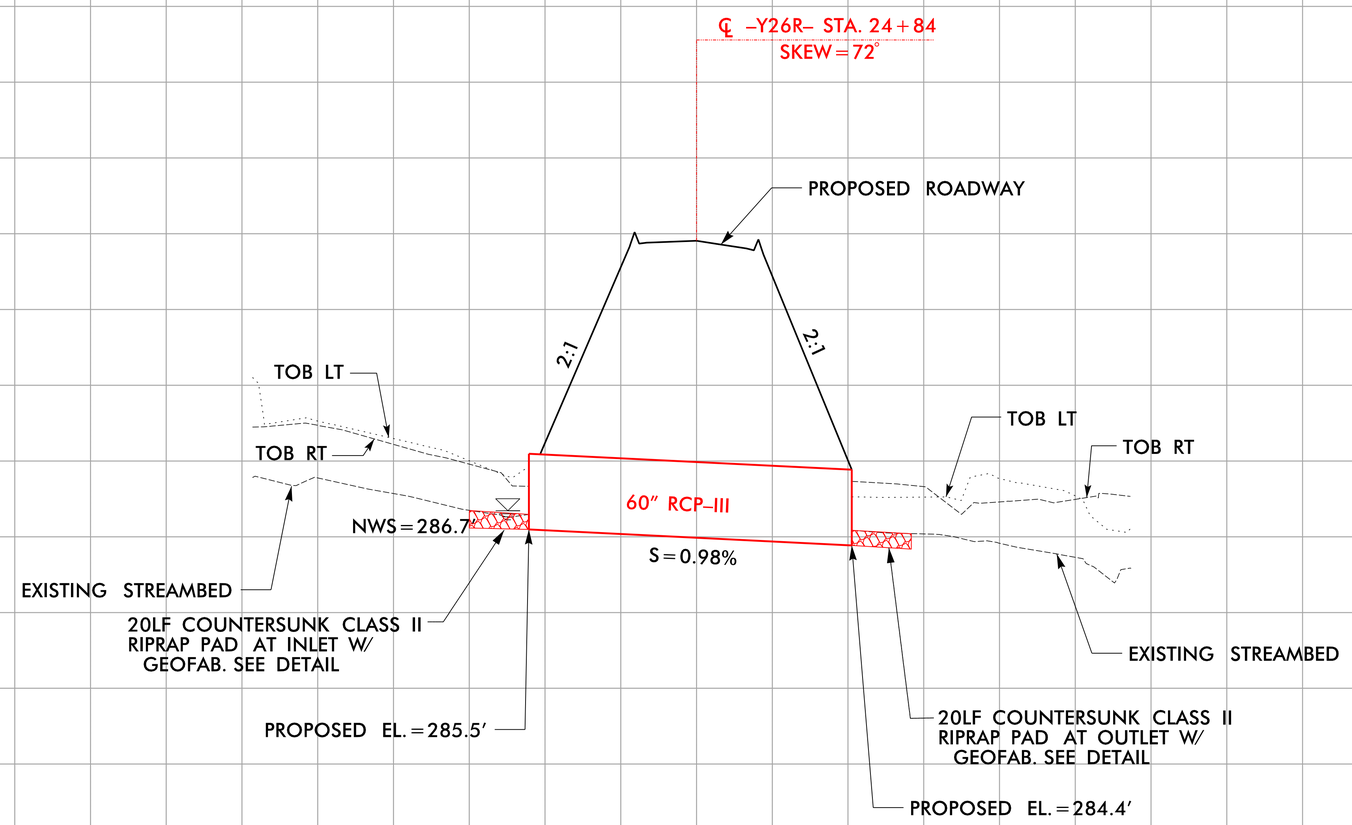
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 95 OF 103

ENGLISH

SITE 24
–Y26R– STA. 24+84



60" RCP–III
(Buried 1.0', Length =107')

8/13/2024
R:\Hydraulics\Permits_Environmental\Drawings\4C\Wetland\R-2829A_hyd_4C_psh_36A_site25_PFL.dgn
dbuie

Submittal September 17, 2024

5/14/99

PROJECT REFERENCE NO.	SHEET NO.

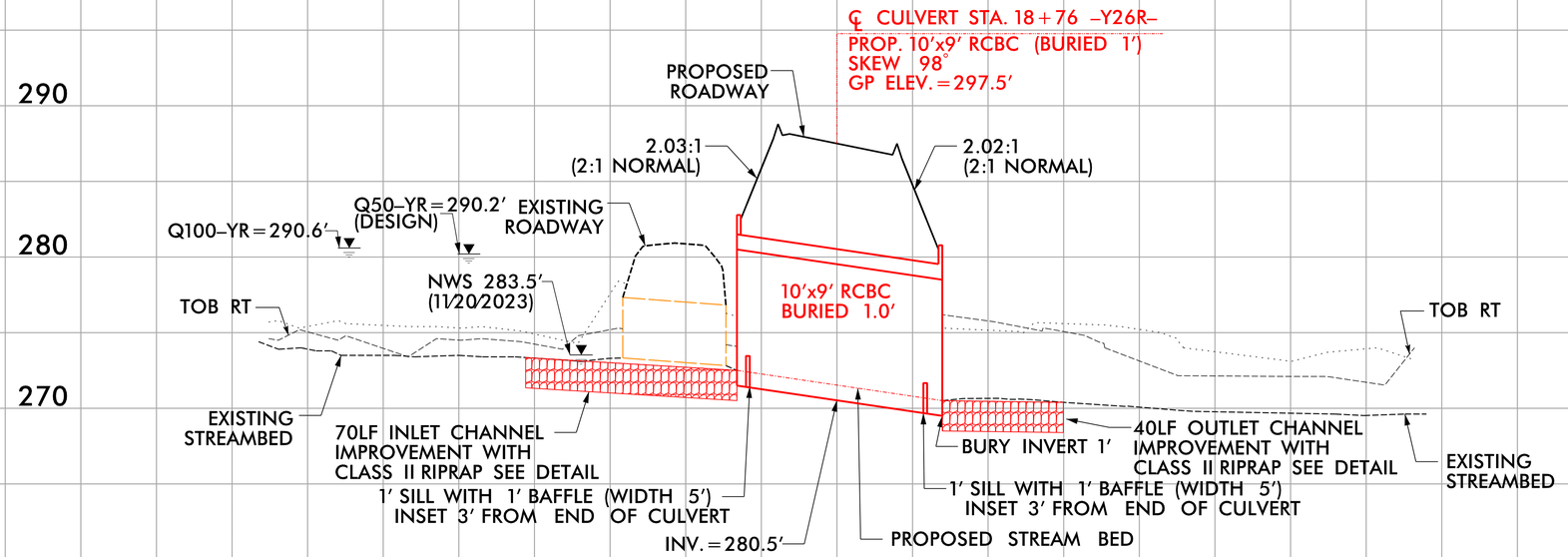
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 96 OF 103

ENGLISH

SITE 33, 34, & 35
–Y26R– STA. 18+75



10'x9' RCBC
(Buried 1.0', Length = 68')

9/3/2024
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Submittal September 17, 2024

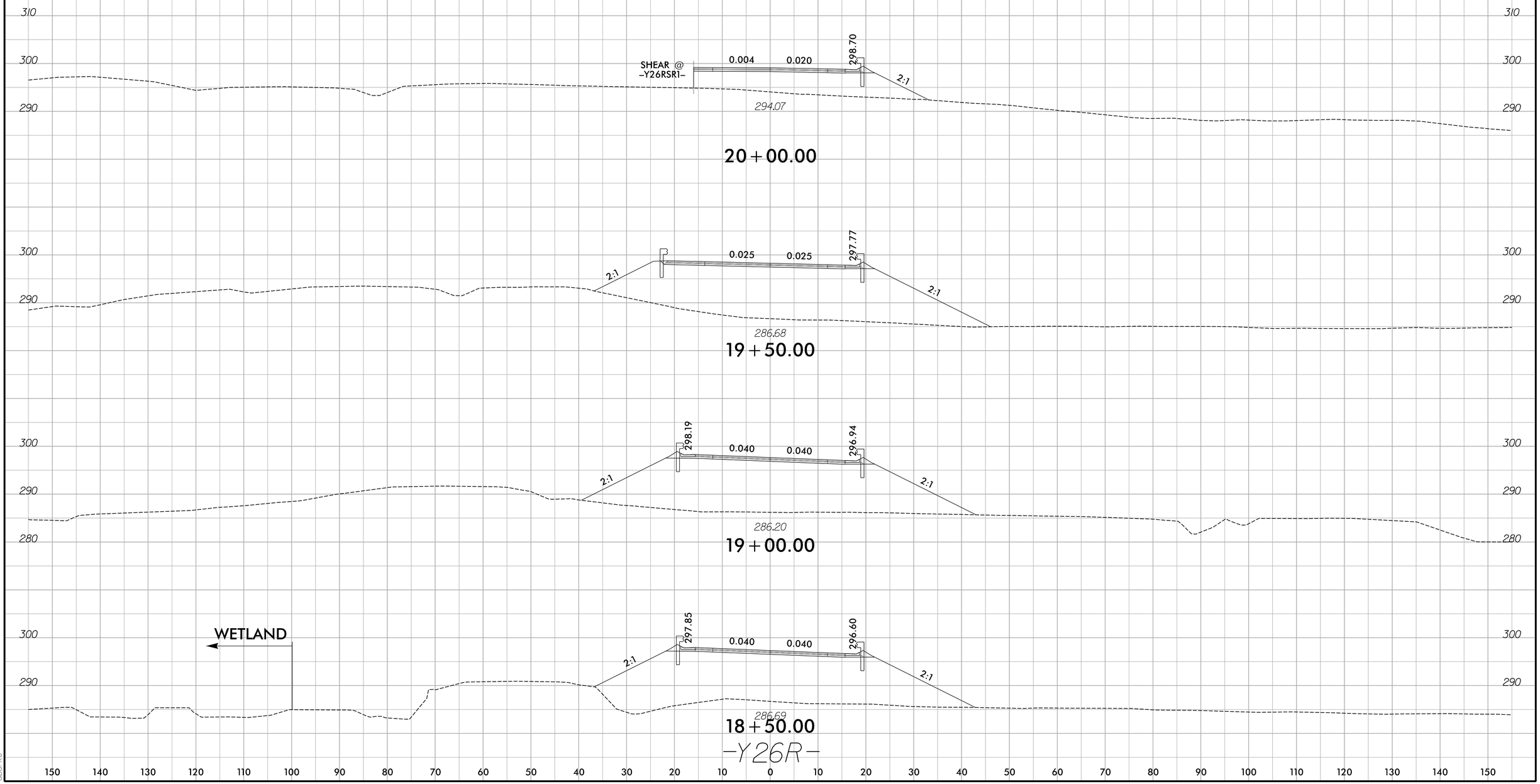
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0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2829A	S2 X-85

150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

SITE 34

PERMIT DRAWING
SHEET 97 OF 103



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dbuhle

Submittal September 17, 2024

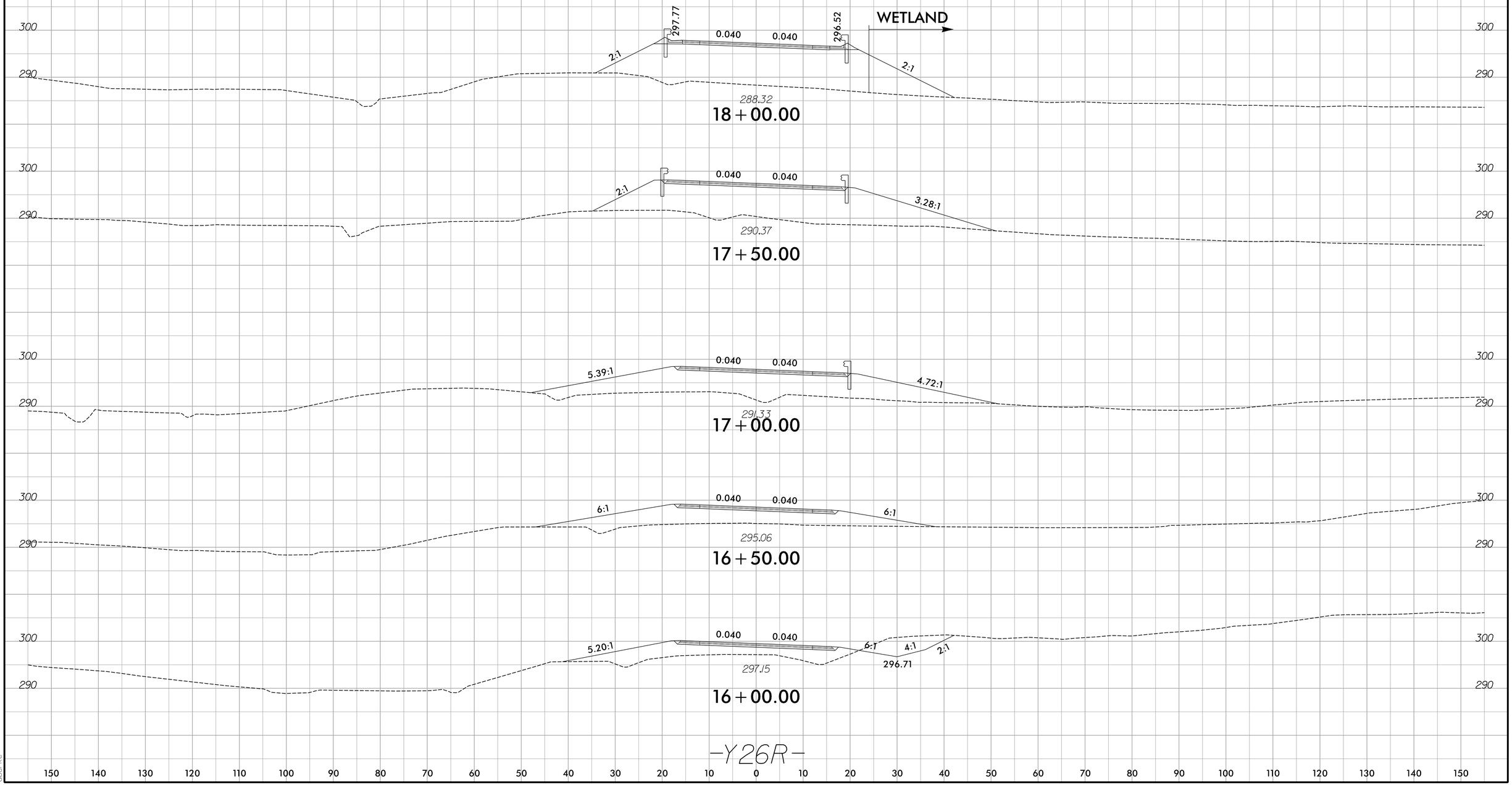
6/23/16

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	R-2829A	S2 X-84

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SITE 35

PERMIT DRAWING
SHEET 98 OF 103



-Y26R-

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dburke

WETLAND AND SURACE WATER IMPACTS SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS: Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	SURFACE WATER IMPACTS: Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	-Y22RPAFLY_REV- 28+00 - 29+58 LT	Roadway Fill: WFG	0.055									
2	-L- 967+04 - 968+83 LT	Roadway Fill: WFJ	0.098		0.023							
3	-L- 972+77 - 979+44 LT	Bridge: SEW						0.031		319		
		WFN(2)	0.176	0.716	0.018	0.034	0.660					
	-L- 976+61 - 978+80 RT	Roadway Fill: SEY						0.002	0.023	15	174	
		WFN(1)	0.257	0.049	0.001	0.098	0.037					
4	-L- 1001+92 - 1004+65 RT	48" RCP: WFY	0.449			0.034						
5	-L1- 1008+79	9'x8' RCBC, SFH						0.042	0.010	384	96	
		Structure Stabilization						0.007		63		
6	-L1- 1013+72	12'x8' RCBC, SFF						0.070	0.009	533	60	
		Structure Stabilization						0.012		86		
7	-L1- 1012+26 LT - 1018+49 RT	Roadway Fill: SFE						0.060	0.002	759	21	
		WFZ	0.113		0.015	0.010						
8	-L1- 1022+67 LT - 1025+03 RT	42" RCP: SFB						0.017		222		
		Structure Stabilization						0.001	0.001	24	10	
		WGD	0.021			0.001						
		WGC	0.013									
		WGB	0.079									
SHEET TOTALS*:			**1.261**	**0.765**	**0.057**	**0.177**	**0.697**	**0.242**	**0.045**	**2405**	**361**	**0**

*Rounded totals are sum of actual impacts

NOTES:

Site 3: 4 interior bents with 4 @ 3.5' diameter columns per bent= total 154.4sq ft (0.004ac) permanent wetland impact (included above)
Site 3: WFN(1) piece above SEW is a total take in summary above; hatching outside construction impacts is not shown
Site 7: WFZ is a total take in summary above; hatching outside construction impacts is not shown

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
9/4/2024
Wake County
R-2829A

WETLAND AND SURACE WATER IMPACTS SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS: Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	SURFACE WATER IMPACTS: Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
9	-L1- 1035+14 - 1037+70 LT	48" RCP: SFA						0.008		124		
		WGF	0.016									
		WGG	0.156									
		WAAE	0.092									
		WAAF				0.010						
	-L1- 1033+83 - 1038+36 LT	PAD						2.695				
10	-Y23RPB- 27+59 - 28+23 LT	Roadway Fill: WGJ	0.013			0.010						
11	-L1- 1060+75 - 1062+35 CL	Roadway Fill: SFD						0.009		71		
		WGM	0.023									
12	-L1- 1062+62 LT - 1063+75 RT	Roadway Fill: SFC						0.038		479		
		Structure Stabilization						0.002	0.001	22	12	
		WGN	0.001			0.005						
13	-L1- 1066+33 - 1067+40 RT	Roadway Fill: WGO	0.028			0.004						
14	-L1- 1084+46 RT - 1086+92 LT	Bank Stabilization: Ditches; SFV						0.017	0.080	70	185	
		(White Oak Creek)										
15	-L1- 1098+69 - 1104+74 LT	8'x7' RCBC, SFR						0.014	0.002	164	19	
		Structure Stabilization						0.001		5		
		WGR	0.760		0.061	0.112						
SHEET TOTALS*:			**1.089**	**0.000**	**0.061**	**0.141**	**0.000**	**2.784**	**0.083**	**935**	**216**	**0**

*Rounded totals are sum of actual impacts

NOTES:

Site 15: WGR is a total take in summary above; hatching outside construction impacts is not shown

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
9/4/2024
Wake County
R-2829A

WETLAND AND SURACE WATER IMPACTS SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS: Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	SURFACE WATER IMPACTS: Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
16	-L1- 1110+56 LT - 1116+24 RT	Roadway Fill, 7'x7' RCBC: SFN						0.041		413		
		WGR	1.387			0.088						
		WGT			0.008	0.018						
17	-L1- 1113+08 - 1114+68 RT	Roadway Fill: WGS	0.237			0.009						
18	-L1- 1114+82 LT - 1119+07 RT	Roadway Fill: SFQ						0.048	0.001	571	8	
		Structure Stabilization						0.002		34		
19	-L1- 1124+16 LT - 1126+26 RT	60" RCP: SFS						0.031		445		
		Structure Stabilization						0.003	0.002	21	10	
		WGR	0.202			0.020						
20	-L1- 1137+84 LT - 1142+30 RT	54" RCP/WSP/CAAP: SFT						0.054		757		
		Structure Stabilization						0.004	0.002	47	25	
20A	-Y24R- 36+70 RT	Ditch: WGU(2)				0.001						
21	-L1- 1148+27 LT - 1149+37 RT	Roadway Fill: WGY	0.099									
22	-L1- 1148+75 - 1149+39 RT	Roadway Fill: WGZ	0.059			0.016						
23	-L1- 1151+32 LT - 1154+50 RT	6'x8' RCBC, SGC						0.026	0.002	398	25	
		Structure Stabilization						0.001		20		
		WHB	1.178		0.002	0.061						
SHEET TOTALS*:			**3.162**	**0.000**	**0.010**	**0.213**	**0.000**	**0.210**	**0.007**	**2706**	**68**	**0**

*Rounded totals are sum of actual impacts

NOTES:

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
9/4/2024
Wake County
R-2829A

WETLAND AND SURACE WATER IMPACTS SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS: Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	SURFACE WATER IMPACTS: Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
24	-L1- 1159+88 LT - 1162+99 RT	54" CAAP / 60" RCP: SGD						0.034		387		
		Structure Stabilization						0.007	0.003	92	25	
	-L1- 1161+00 - 1161+40 LT	Bank Stabilization						0.010		71		
25	-L1- 1169+38 LT - 1172+22 RT	11'x8' RCBC: SGE						0.036	0.002	443	23	
		Structure Stabilization						0.003	0.002	46	33	
		WHD(1)	0.255		0.015	0.027						
		WHD(2)	0.195		0.009	0.013						
26	-L1- 1171+28 LT - 1178+18 RT	Roadway Fill: SGG						0.084	0.001	723	11	
		Structure Stabililzation						0.002		21		
27	-L1- 1174+66 - 1179+63 LT	Roadway Fill: SGF						0.030	0.004	309	40	
		Structure Stabililzation						0.003		37		
		WHD(2)	0.108		0.037	0.023						
28	-Y22CR- 13+50 LT - 14+26 RT	2 @ 12'x8' RCBC: SKR						0.036	0.011	117	44	
		Structure Stabilization						0.016		75		
29	-Y23R- 61+16 LT	36" RCP: SFJ						0.008		64		
		Structure Stabilization						0.002	0.001	20	10	
29A	-Y23FR- 11+07 - 12+01 LT	54" RCP: SFJ						0.007	0.001	78	12	
		Structure Stabilization						0.003	0.001	24	10	
		WNM	0.021			0.044						
SHEET TOTALS*:			**0.579**	**0.000**	**0.061**	**0.107**	**0.000**	**0.281**	**0.026**	**2507**	**208**	**0**

*Rounded totals are sum of actual impacts

NOTES:

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
9/4/2024
Wake County
R-2829A

WETLAND AND SURACE WATER IMPACTS SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS: Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	SURFACE WATER IMPACTS: Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
30	-Y23DR- 23+90 LT - 25+00 RT	42" RCP: SHT						0.011		225		
	-Y23DR- 23+59 - 25+53 LT	PAO						0.792				
31	-Y24R- 19+06 LT - 21+74 RT	5'x6' RCBC Ext / 72" WSP: SFY						0.001		6		
		Structure Stabilization						0.005	0.002	34	10	
		WGW	0.023		0.004	0.019						
		WGV(1)	0.055		0.010	0.021						
32	-Y24R- 34+65 CT	6'x8'/9' RCBC Ext / 72" WSP: SGA						0.064	0.001	270	7	
		Structure Stabilization						0.007	0.003	30	12	
33	-Y26R- 18+73 CT	10'x9' RCBC: SGA						0.016	0.001	137	11	
		Structure Stabilization						0.007	0.006	40	37	
		WHD(2)			0.007	0.014						
		WAAK	0.026			0.020						
34	-Y26R- 18+50 LT	10'x9' RCBC: SAAK						0.002	0.001	31	11	
35	-Y26R- 18+35 LT	10'x9' RCBC: SAAL							0.001		10	
36	-Y22RPE_REV- 45+95 - 46+14 RT	Ditch: WFK				0.005						
SHEET TOTALS*:			**0.104**	**0.000**	**0.021**	**0.079**	**0.000**	**0.905**	**0.015**	**773**	**98**	**0**
PROJECT TOTALS*:			**6.195**	**0.765**	**0.210**	**0.717**	**0.697**	**4.422**	**0.176**	**9326**	**951**	**0**

*Rounded totals are sum of actual impacts

NOTES:

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
9/4/2024
Wake County
R-2829A

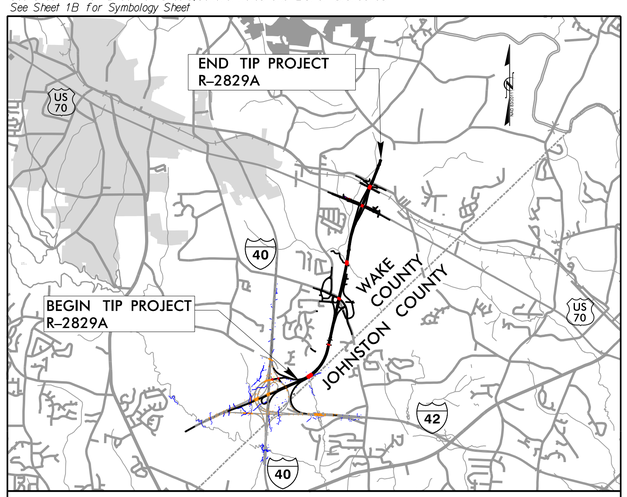
Utility Permit Drawings

09/08/99

TIP PROJECT: R–2829A

CONTRACT: C204824

See Sheet 1A for Index of Sheets, General Notes and List of Standards
See Sheet 1B for Symbology Sheet



VICINITY MAP (NTS)

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WAKE COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R–2829A	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
35517.3.TA1	N/A, 0540047	DESIGN–BUILD
35517.3. TAGV1	N/A, 0540047	DESIGN–BUILD



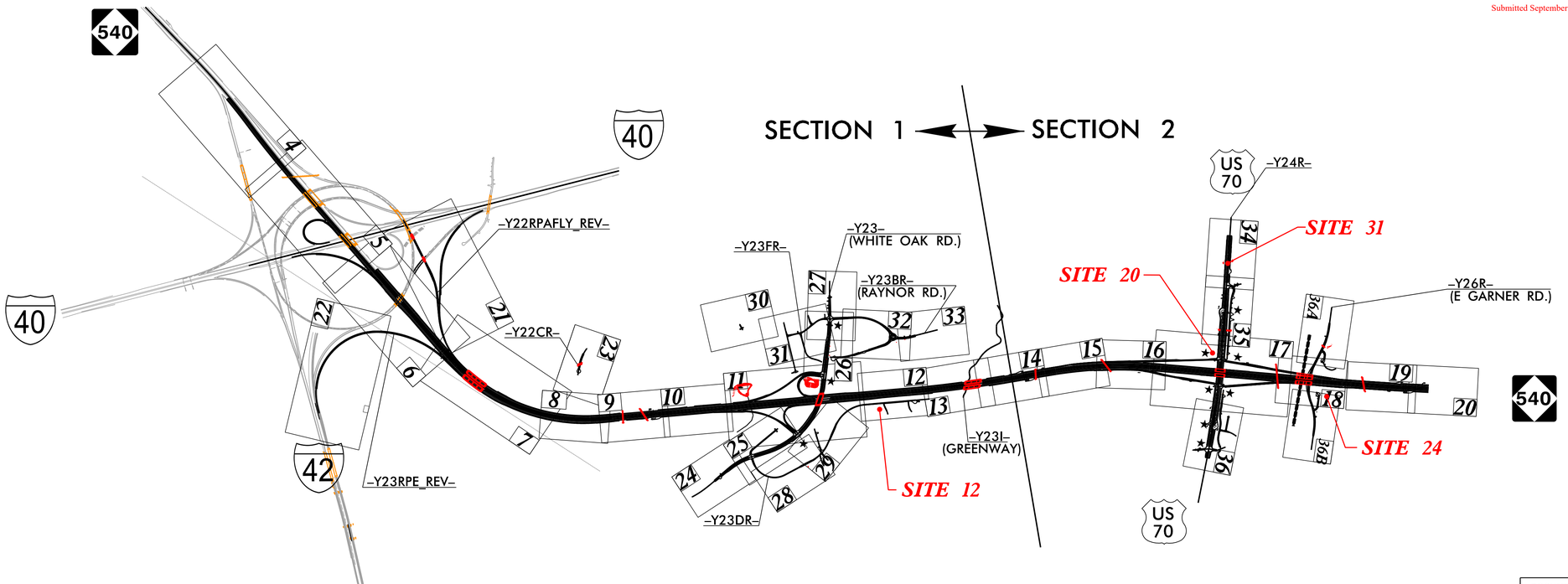
LOCATION: ***TRIANGLE EXPRESSWAY SOUTHEAST EXTENSION FROM I–40 TO SOUTH OF SR 2542 (ROCK QUARRY RD.)***

TYPE OF WORK: ***GRADING, DRAINAGE, PAVING, LIGHTING, SIGNING, ITS, CULVERTS & STRUCTURES***

SAFETEA–LU SECTION 6002
HYDRAULIC DESIGN MEETING PLANS

UTILITY PERMIT DRAWING
SHEET 1 OF 8

Submitted September 17, 2024



NOTES:
1. THIS IS A CONTROLLED–ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.

★ PROPOSED TRAFFIC SIGNAL

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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 2023 = 15,440
ADT 2043 = 22,040
K = 12%
D = 65%
T = 10% *
V = 75 MPH

FUNC CLASS: INTERSTATE
* (TTST 4% + DUALS 6%)

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R–2829A.....3.922 MILES
LENGTH STRUCTURE TIP PROJECT R–2829A.....0.242 MILES
TOTAL LENGTH TIP PROJECT R–2829A.....4.164 MILES

NCTA CONTACT

Ron McCollum, PE
DEPUTY CHIEF ENGINEER for PRECONSTRUCTION
TURNPIKE AUTHORITY

PLANS PREPARED BY:

RK&K
RUMMEL, KLEPPER & KAHL, LLP
8601 SIX FORKS ROAD, FORUM 1, SUITE 700
RALEIGH, NORTH CAROLINA 27615–3960
NC LICENSE NO. F–0112

FOR NORTH CAROLINA TURNPIKE AUTHORITY

2018 STANDARD SPECIFICATIONS

LETTING DATE:
October 17, 2023

C. Byron Holden, PE
PROJECT ENGINEER

Anthony A. Houser, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

P.E.
SIGNATURE:

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

9/3/2024
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dburke

Submitted September 17, 2024

8/17/99

ENGLISH

SCALE 50 0 50 100

SCALE FOR INSET 25 0 25 50

TS TEMPORARY SURFACE WATER IMPACTS

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	12
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

UTILITY PERMIT DRAWING SHEET 2 OF 8

NAD 83/NA 2011

MATCHLINE -L1- STA 1061+00 SEE SHEET 11

MATCHLINE -L1- STA. 1075+00 SEE SHEET 13

CHRISTO CHRISTODOLOU

ELIZABETH BURNETTE

CLAYTON PROPERTIES GROUP INC

INSET A

SFC

RIPRAP OFAB

PROP O/H POW TEL & CATV LINES

DUE

BZ 1

BZ 2

SITE 12

WGN

SFC

INLET CHANNEL STABILIZATION W/CL I RIPRAP SEE DETAIL AL 33 TONS CL I RIPRAP W/62 SY GEOFAB

SPECIAL CUT 4' BASE W/CL B RIP RAP SEE DETAIL Z

JS BEGINS

SPECIAL CUT DITCH W/CL I RIP RAP SEE DETAIL BO

FS MIN ELEV 309.0

LATERAL 4' BASE DITCH SEE DETAIL AA

LATERAL V DITCH SEE DETAIL B

SPECIAL CUT DITCH SEE DETAIL A

DRAIN POND (SEE POND DRAINAGE PLANS)

POND WSE=284.0'

FS MIN ELEV. 290.1

SPECIAL CUT DITCH W/CL B RIP RAP SEE DETAIL Y

WGM

SFD

MEDIAN V DITCH SEE DETAIL G

TO BE ABANDONED

12" RCP REMOVE

1065+00

1070+00

1075+00

2GIB-WSS

FS

15" RCP-III

18" RCP-III

18" RCP-IV

15" RCP-IV

42" RCP-IV (NOT BURIED UPSIZED FOR MAINT)

45+00

50+00

55+00

24" RCP-IV

18" RCP-III

15" RCP-IIIF

2GIA-WSS

SPECIAL CUT SWALE SEE DETAIL O

1 TON CL B RIPRAP W/5 SY GEOFAB

TOE PROTECTION W/CL B RIPRAP SEE DETAIL E

VERIFY IN FIELD FOR A POTENTIAL SPRING BOX

TB 2GIB-NSF

24" CSP W/ELBOWS

18" CSP W/ELBOWS

20 TON CL I RIPRAP W/39 SY GEOFAB

3 TON CL B RIPRAP W/11 SY GEOFAB

LATERAL BASE DITCH W/CL B RIP RAP SEE DETAIL H

LATERAL BASE DITCH W/CL I RIP RAP SEE DETAIL N

STD. 4' BASE DITCH SEE DETAIL I

SPECIAL V DITCH W/CL I RIP RAP SEE DETAIL AB

SPECIAL CUT DITCH SEE DETAIL A

LINE END OF STD DITCH W/ 1 TON CL B RIPRAP W/4 SY GEOFAB

STD. V DITCH SEE DETAIL D

LINE END OF STD DITCH W/ CL I RIPRAP SEE DETAIL AJ

1220
Q10=14.4cfs
V10=1.89fps

SEE INSET A

OUTLET CHANNEL STABILIZATION W/CL II RIPRAP SEE DETAIL AL 48 TONS CL II RIPRAP W/90 SY GEOFAB

SARA EARLY

2701 HIDDEN ACRE LAND TRUST

ELMO T WILLIAMS TRUST ALICE H WILLIAMS

JOSEPH & VELANCIA BAILEY

WGO

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
Engineers | Construction Managers | Planners | Scientists
www.rkk.com
Responsive People | Creative Solutions

8/3/2024
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dbuse

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

UTILITY PERMIT DRAWING
SHEET 3 OF 8

NAD 83/NA 1011

INSET A

MATCHLINE -Y24R- STA. 36+50 SEE SHEET 35

MATCHLINE -Y24RPBR- STA. 22+00 SEE SHEET 16

MATCHLINE -L1- STA. 112+00 SEE SHEET 16

MATCHLINE -Y24RPC- STA. 16+50 SEE SHEET 16

MATCHLINE -Y24RPAR- STA. 20+00 SEE SHEET 18

MATCHLINE -L- STA. 154+00 SEE SHEET 18

MATCHLINE -Y24RPDR- STA. 12+50 SEE SHEET 18

MATCHLINE -Y24R- STA. 51+50 SEE SHEET 36

MATCHLINE -Y24CR- STA. 14+00 SEE SHEET 36

SITE 20

SITE 19

SEE INSET A

SFT

SFS

SGC

WHB

WGU

WGU (2)

WGX(1)

WGX(2)

WGY

WGZ

WHA

5 TONS CL B RIPRAP W/14 SY GEOFAB

24" CSP W/ELBOWS

DIRECTIONAL DRILL NEW UTILITIES (NO BORE PIT REQUIRED)

BUFFALOE ENTERPRISES, LLC

L&L COMPANY LLC

RANDY ALEXANDER

BOTH BROWN, BRUNDA MROSE, SEMORE JOHNSON, LA BOYETTE, JERRY JOHNSON

ELAINE COATES

WILLIAM & EUNICE LEE

RICHARD ROGERS REVOCABLE TRUST

CAPITOL BROADCASTING COMPANY, INC.

GARNER INDUSTRIAL V, LLC

JACK & BORE (NEW UTILITIES (BORE PIT LOCATED OUTSIDE OF BUFFER ZONES)

TEMPORARY SURFACE WATER IMPACTS

SCALE

100 0 100 200

SCALE FOR INSET

50 0 50 100

ENGLISH

STV Engineers, Inc.
P: (704) 370-1985
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

RK&K
P: (919) 870-0090
8601 Six Forks Road, Forum 1, Suite 700
Raleigh, North Carolina 27615-2965
NC License Number C-0832

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Submitted September 17, 2024

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	18
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

UTILITY PERMIT DRAWING SHEET 4 OF 8

50 0 50 100 SCALE

25 0 25 50 SCALE FOR INSET

ENGLISH

HC HC HAND CLEARING (NON-GRUBBING)

TS TS TEMPORARY SURFACE WATER IMPACTS

MATCHLINE -Y25- STA. 15+00 SEE SHEET 36A

MATCHLINE -Y26R- STA. 22+00 SEE SHEET 36A

MATCHLINE -Y26R-SR1- STA. 12+50 SEE SHEET 36A

SGA

SGD

WHB

WHC

SITE 24

SEE INSET A

INSET A

MATCHLINE -Y24RPAR- STA. 20+00 SEE SHEET 17

MATCHLINE -L1- STA. 1154+00 SEE SHEET 17

MATCHLINE -Y24RPDR- STA. 12+50 SEE SHEET 17

MATCHLINE -L1- STA. 1167+50 SEE SHEET 19

MATCHLINE -Y25- STA. 24+30 SEE SHEET 36B

MATCHLINE -Y26R- STA. 31+00 SEE SHEET 36B

MATCHLINE -Y26R-SR2- STA. 11+50 SEE SHEET 36B

NC 540

EAST GARNER ROAD

NAD 83/NA 2011

JEFFREY P CATES & NANCY S CATES

NC RAILROAD COMPANY

APUGRAF HOLDINGS LLC

WILLIAM T RHODES

L&L COMPANY LLC

EDGE OF AUBURN LLC

RUSSELL G & ANNETTE K BULLOCK JR

LARRY R STALLINGS

ANTHONY J & JULIE MCLEMORE

NCDOT

NC DEPARTMENT OF TRANSPORTATION

BRENDA J & MARK R CUNNINGHAM

GARNER INDUSTRIAL V, LLC

MEREDITHE & BERNADETTE E JESSUP

PATRICIA WILLIAMS

LAURA L WATTS & BARBARA W GAUL

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

TOE PROTECTION W/CL B RIPRAP SEE DETAIL E

40 TONS CL II RIPRAP W/75 SY GEOFAB INLET CHANNEL STABILIZATION W/CL II RIPRAP SEE DETAIL AL

LATERAL V DITCH W/CL I RIP RAP SEE DETAIL M

BANK STABIL W/CL I RIP RAPREMOVE SEE DETAIL V CMP

SPECIAL CUT DITCH SEE DETAIL A

STD. 4' BASE DITCH W/CL I RIP RAP SEE DETAIL AK

GRADE TO DRAIN

REMOVE RCBC

STANDARD 4' BASE DITCH W/CL I RIP RAP SEE DETAIL AW

2 TONS CL B RIPRAP W/7 SY GEOFAB

CHANNEL CHANGE W/CL I RIP RAP SEE DETAIL AG

SP. CUT DITCH SEE DETAIL A

DRAIN POND & FILL TO ELEV. 308.0' (SEE POND DRAINAGE PLANS)

POND WSE=304.9'

LATERAL V DITCH SEE DETAIL B

LATERAL V BASE DITCH W/CL I RIP RAP SEE DETAIL N

LATERAL V DITCH W/CL B RIP RAP SEE DETAIL S

LATERAL 4' BASE DITCH W/CL B RIP RAP SEE DETAIL AS

LATERAL 4' BASE DITCH W/CL I RIP RAP SEE DETAIL N

LATERAL V DITCH W/CL B RIP RAP SEE DETAIL AQ

10' WIDE BERM SEE DETAIL BC

LATERAL 4' SWALE SEE DETAIL L

LATERAL 4' GRASSED SWALE SEE DETAIL L

STANDARD V DITCH SEE DETAIL D

SP. CUT V DITCH SEE DETAIL A

SP. LATERAL V DITCH SEE DETAIL AT

LATERAL 4' BASE DITCH SEE DETAIL C

30' BERM (NOT BURIED)

42" CAMP (NOT BURIED UPSIZED FOR MAINT.)

54" CAMP (NOT BURIED UPSIZED FOR MAINT.)

15" RCP-III

15" RCP-IV

18" RCP-III

15" CSP W/ELBOWS

2GIB-WSF

2GIB-WSS

2GIB-NSS

2-26" DRWI

25 PR

12 GR

RETAIN

REMOVE

FILL

PUE

F

W

SS

OHE

TDE

RIPRAP

STV Engineers, Inc.
P: (704) 372-1885
900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

RK&K
P: (919) 878-9560
8601 Six Forks Road, Forum 1,Suite 700
Raleigh, North Carolina 27615-3960
NC License No. F-0112
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8/13/2024
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dhughes

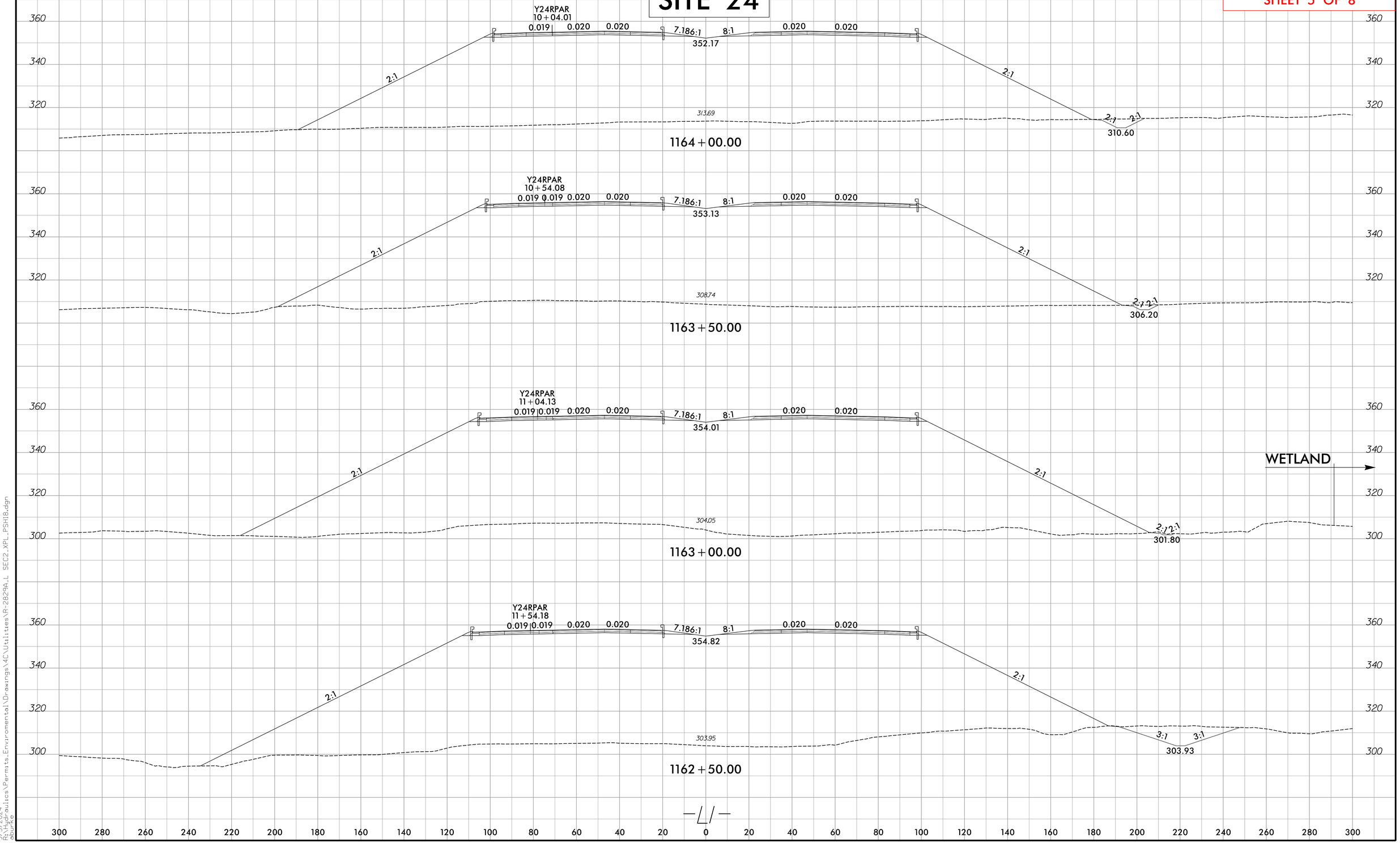
Submitted September 17, 2024

6/23/16

0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	R-2829A	S2 X-28

SITE 24

UTILITY PERMIT DRAWING
SHEET 5 OF 8



9/3/2024
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dsmith

Submitted September 17, 2024

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	34
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

UTILITY PERMIT DRAWING
SHEET 6 OF 8

ENGLISH

SCALE 50 0 50 100

SCALE FOR INSET 25 0 25 50

HC HC HAND CLEARING (NON-GRUBBING)

TS TS TEMPORARY SURFACE WATER IMPACTS

NAD 83/NA 2011

STEC

SEVENTY EAST ASSOCIATES, LLC.

CHRISTOPHER DANIELS

R. GARLAND BURNETTE

SQUIRE CONRAD

INSET A

SEE DETAIL E

LINE CUT/FILL TRANSITION W/ 2 TONS CL B RIPRAP W/7 SY GEOFAB

PUE 14+50 15+00 15+50 16+00

16" WL

HC HC HC

Submitted September 17, 2024

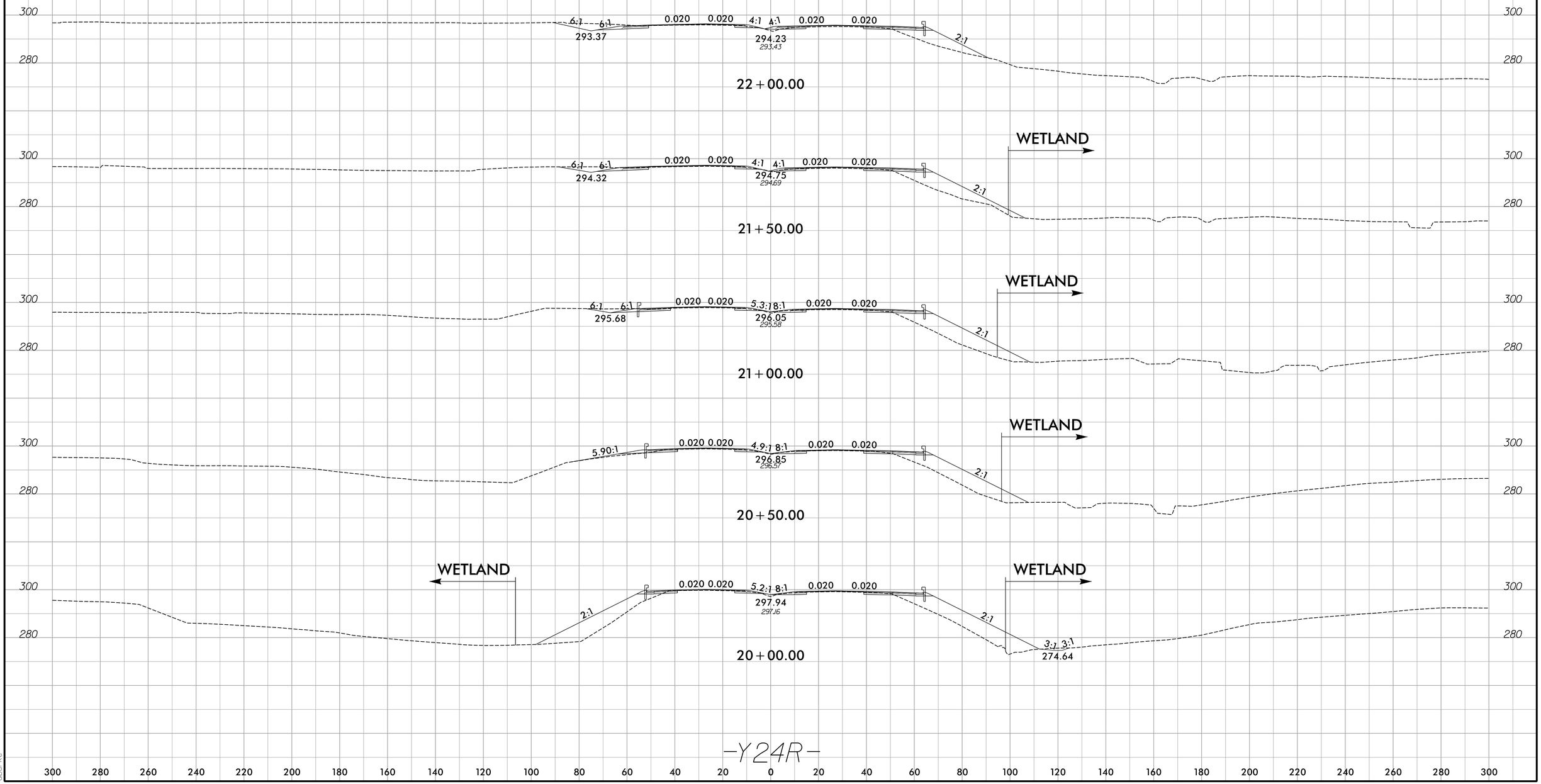
6/23/16

0 10 20	PROJ. REFERENCE NO.	SHEET NO.
	R-2829A	S2 X-40

300 280 260 240 220 200 180 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 180 200 220 240 260 280 300

SITE 31

UTILITY PERMIT DRAWING
SHEET 7 OF 8



9/3/2024
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dbrown

Submitted September 17, 2024

WETLAND AND SURACE WATER IMPACTS SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS: Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	SURFACE WATER IMPACTS: Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
12	-Y23DR- 46+82 - 47+18 RT	Overhead Power: SFC							0.003		48	
20	-L1- 1137+51 - 1137+85 LT	Overhead Power, UG Gas & Telephone: SFT							0.006		76	
24	-L1- 1162+71 - 1163+11 RT	Overhead Power: SGD							0.003		36	
		WHC					0.020					
31	-Y24R- 18+90 - 20+18 LT	UG Waterline: WGW					0.034					
	-Y24R-20+37 - 22+10 RT	Overhead Power & Anticipated Utility Line: SFY							0.007		68	
		WGV(1)					0.120					
	-Y24R- 20+25 - 20+38 RT	SFZ(1)							0.002		12	
PROJECT TOTALS*:			**0.000**	**0.000**	**0.000**	**0.000**	**0.174**	**0.000**	**0.021**	**0**	**240**	**0**

*Rounded totals are sum of actual impacts

NOTES:

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
9/4/2024
Wake County
R-2829A

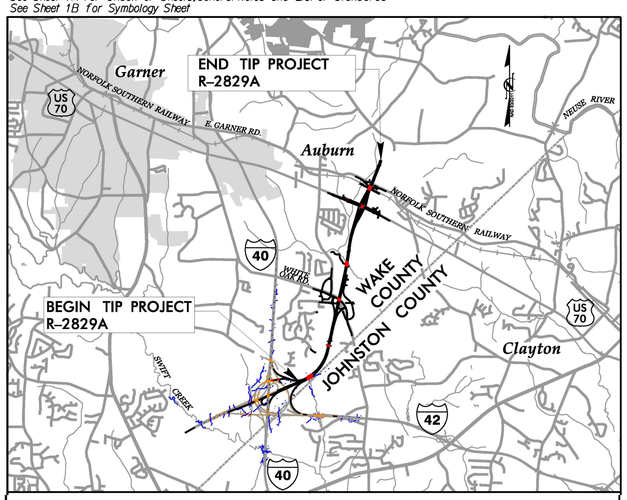
Buffer Drawings

09/08/09

TIP PROJECT: R-2829A

CONTRACT: C204824

See Sheet 1A for Index of Sheets, General Notes and List of Standards
See Sheet 1B for Symbology Sheet



VICINITY MAP (NTS)

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

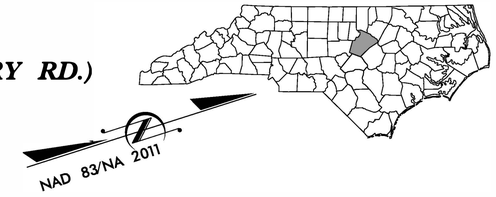
WAKE COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2829A	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
35517.3.TA1	N/A, 0540047	DESIGN-BUILD
35517.3. TAGV1	N/A, 0540047	DESIGN-BUILD

LOCATION: *TRIANGLE EXPRESSWAY SOUTHEAST EXTENSION FROM I-40 TO SOUTH OF SR 2542 (ROCK QUARRY RD.)*

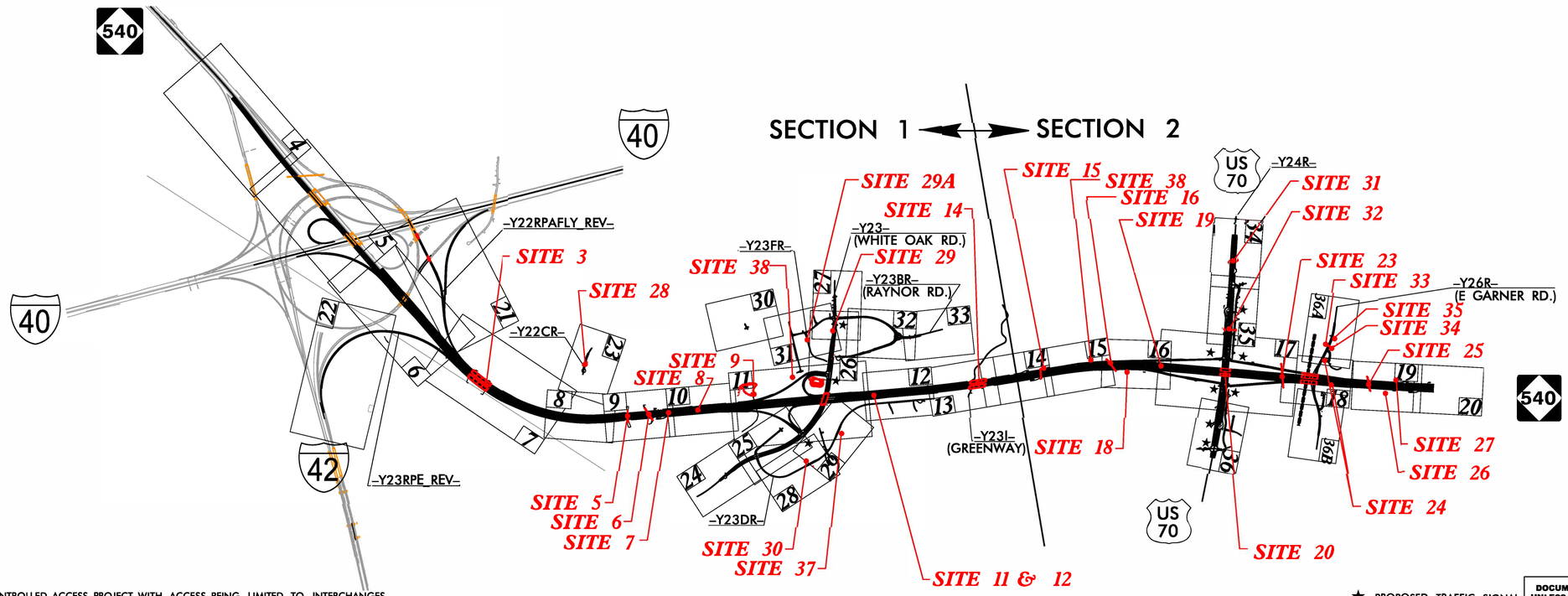
TYPE OF WORK: *GRADING, DRAINAGE, PAVING, LIGHTING, SIGNING, ITS, CULVERTS & STRUCTURES*



SAFETEA-LU SECTION 6002
HYDRAULIC DESIGN MEETING PLANS

BUFFER DRAWING SHEET 1 OF 36

Submitted September 17, 2024



NOTES:
1. THIS IS A CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.

★ PROPOSED TRAFFIC SIGNAL

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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 2023 = 15,440
ADT 2043 = 22,040
K = 12%
D = 65%
T = 10% *
V = 75 MPH

FUNC CLASS: INTERSTATE
* (TTST 4% + DUALS 6%)

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-2829A.....3.922 MILES
LENGTH STRUCTURE TIP PROJECT R-2829A.....0.242 MILES
TOTAL LENGTH TIP PROJECT R-2829A.....4.164 MILES

NCTA CONTACT

Ron McCollum, PE
DEPUTY CHIEF ENGINEER for PRECONSTRUCTION
TURNPIKE AUTHORITY

PLANS PREPARED BY:

RK&K
RUMMEL, KLEPPER & KAHL, LLP
8601 SIX FORKS ROAD, FORUM 1, SUITE 700
RALEIGH, NORTH CAROLINA 27615-3960
NC LICENSE NO. F-0112

FOR NORTH CAROLINA TURNPIKE AUTHORITY

2018 STANDARD SPECIFICATIONS

C. Byron Holden, PE
PROJECT ENGINEER

Anthony A. Houser, PE
PROJECT DESIGN ENGINEER

LETTING DATE:
October 17, 2023

HYDRAULICS ENGINEER

SIGNATURE: *P.E.*

ROADWAY DESIGN ENGINEER

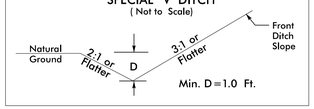
SIGNATURE: *P.E.*

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

9/3/2024
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aburke

Submitted September 17, 2024

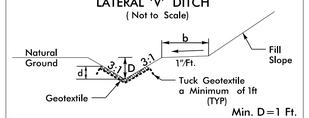
DETAIL A
SPECIAL 'V' DITCH
(Not to Scale)



–Y22RPE_REV– STA. 42+00 TO STA. 45+50 LT
–Y22RPE_REV– STA. 48+88 TO STA. 51+93 RT
–L– STA. 996+00 TO STA. 1000+00 LT
–L– STA. 1000+00 TO STA. 1001+00 LT
–L– STA. 1000+50 TO STA 1002+10 RT
–L1– STA. 1025+50 TO STA. 1026+50 LT
–L1– STA. 1027+50 TO STA. 1030+35 LT
–L1– STA. 1040+35 TO STA. 1044+50 RT
–L1– STA. 1045+50 TO STA. 1048+50 RT
–L1– STA. 1057+00 TO STA. 1057+50 LT
–L1– STA. 1071+50 TO STA. 1073+00 LT
–L1– STA. 1093+50 TO STA. 1094+00 RT
–Y22CR– STA. 15+00 TO STA. 15+50 LT
–Y23R– STA. 16+00 TO STA. 16+50 LT
–Y23R– STA. 16+00 TO STA. 17+00 RT
–Y23R– STA. 17+84 TO STA. 18+50 RT
–Y23R– STA. 19+00 TO STA. 20+00 RT
–Y23R– STA. 22+50 TO STA 23+80 RT
–Y23R– STA. 23+80 TO STA. 25+30 LT
–Y23R– STA. 23+80 TO STA. 25+25 RT
–Y23R– STA. 26+00 TO STA. 27+15 RT
–Y23R– STA. 62+00 TO STA. 63+35 RT
–Y23R– STA. 63+00 TO STA. 63+32 LT
–Y23R– STA. 68+75 TO STA. 69+00 RT
–Y23AR– STA. 10+30 TO STA. 12+50 RT
–Y23AR– STA. 16+50 TO STA. 17+50 RT
–Y23DR– STA. 10+50 TO STA. 11+50 LT
–Y23DR– STA. 15+00 TO STA. 15+50 LT
–Y23DR– STA. 10+50 TO STA. 16+50 RT
–Y23DR– STA. 20+50 TO STA. 23+50 RT
–Y23DR– STA. 37+00 TO STA. 40+00 LT
–Y23DR– STA. 38+38 TO STA. 41+00 RT
–Y23DR– STA. 54+94 TO STA. 55+65 RT
–Y23E– STA. 10+00 TO STA. 10+56 RT
–Y23E– STA. 10+20 TO STA. 10+50 LT
–Y23G– STA. 10+50 TO STA. 11+50 LT
–Y23J– STA. 14+00 TO STA. 15+30 RT
–DR2– STA. 10+24 TO STA. 11+50 LT
–DR2– STA. 10+70 TO STA. 11+50 RT
–Y23BR_REV– STA. 10+59 TO STA. 12+00 RT
–Y23BR_REV– STA. 10+80 TO STA. 14+50 LT
–Y23BR_REV– STA. 22+50 TO STA. 24+59 LT
–Y23BR_RAB– STA. 11+37 TO STA. 12+00 RT
–Y23BR_RAB– STA. 10+50 TO STA. 10+67 RT
–Y23BR_RAB– STA. 13+53 TO STA. 13+58 LT
–Y23CR_REV– STA. 23+00 TO STA. 24+00 LT
–Y23CR_A– STA. 14+00 TO STA. 14+91 LT

–Y24A– STA. 11+85 TO STA. 13+49 LT
–Y24E– STA. 10+50 TO STA. 11+00 LT
–Y24F– STA. 10+50 TO STA. 12+50 LT
–Y24R– STA. 13+00 TO STA. 16+00 RT
–Y24R– STA. 14+00 TO STA. 15+50 LT
–Y24R– STA. 23+50 TO STA. 24+48 LT
–Y24R– STA. 25+75 TO STA. 26+50 LT
–Y24RPC– STA. 26+30 TO STA. 28+50 LT
–Y26R– STA. 13+00 TO STA. 14+50 LT
–Y26_DRW1– STA. 10+10 TO STA. 12+50 LT
–Y26_DRW1– STA. 10+50 TO STA. 12+50 RT
–Y26RSR1– STA. 12+25 TO STA. 13+82 RT
–Y26RSR2– STA. 10+10 TO STA. 10+50 RT
–L1– STA. 1094+00 TO STA. 1097+00 RT
–Y26R– STA. 13+00 TO STA. 13+50 RT
–L1– STA. 1131+00 TO STA. 1134+50 RT

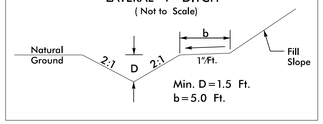
DETAIL M
LATERAL 'V' DITCH
(Not to Scale)



–Y23RPB– STA. 28+50 TO STA. 29+80 LT
–Y22RPA_REV– STA. 10+00 TO STA. 12+00 RT
–Y22RPAFLY_REV– STA. 19+75 TO 21+46 RT

–Y26R– STA. 22+02 TO STA. 22+40 LT

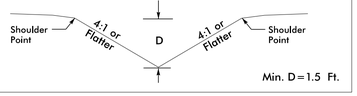
DETAIL B
LATERAL 'V' DITCH
(Not to Scale)



*–Y22RPAFLY_REV– STA. 32+50 TO STA. 34+50 RT
–Y22RPAFLY_REV– STA. 18+54 TO STA. 20+00 LT
–Y22RPA_REV– STA. 21+36 TO STA. 23+00 LT
–Y22RPE_REV– STA. 35+50 TO STA. 39+00 LT
–Y23R– STA. 48+00 TO STA. 49+50 RT
–Y23R– STA. 59+00 TO STA. 60+00 RT
–Y23BR– STA. 22+00 TO STA. 22+75 LT
–L1– STA. 1026+50 TO STA. 1027+50 LT
–L1– STA. 1033+00 TO STA. 1034+00 LT
–L1– STA. 1069+50 TO STA. 1071+50 LT

–L1– STA. 1135+50 TO STA. 1136+00 RT
–L1– STA. 1164+50 TO STA. 1168+50 LT

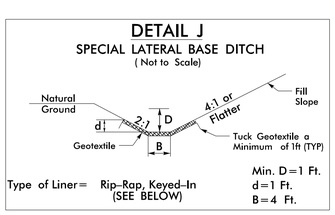
DETAIL G
MEDIAN 'V' DITCH
(Not to Scale)



*–L– STA. 962+50 TO STA. 964+00 RT
–L1– STA. 1038+50 TO STA. 1043+50 CL
–L1– STA. 1038+00 TO STA. 1040+35 RT
–L1– STA. 1038+00 TO STA. 1040+50 LT
–L1– STA. 1044+50 TO STA. 1045+00 RT
–L1– STA. 1060+00 TO STA. 1071+00 RT
–Y23RPB– STA. 24+50 TO STA. 25+50 RT
–Y23RPC– STA. 19+00 TO STA. 20+00 LT

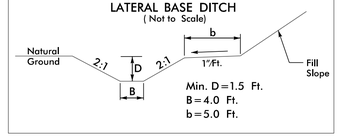
–L1– STA. 1128+50 TO STA. 1131+00 RT

DETAIL J
SPECIAL LATERAL BASE DITCH
(Not to Scale)



*DETAIL ONLY USED IN EARLY START

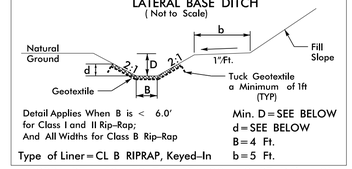
DETAIL C
LATERAL BASE DITCH
(Not to Scale)



–L– STA. 1003+00 TO STA. 1004+34 RT
–Y23R– STA. 53+00 TO STA. 55+00 RT
–Y23R– STA. 55+00 TO STA. 56+16 LT
–Y23R– STA. 60+95 TO STA. 62+00 RT
–Y22RPA_REV– STA. 14+55 TO STA. 19+50 RT
–Y22RPE_REV– STA. 41+00 TO STA. 42+00 LT

–Y26R– STA. 29+25 TO STA. 34+50 RT

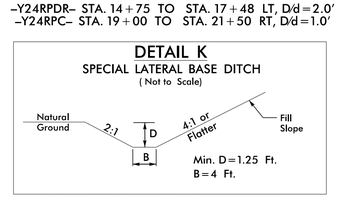
DETAIL H
LATERAL BASE DITCH
(Not to Scale)



–Y22RPA_REV– 19+50 TO STA. 20+73 RT, D/d=1.0'
–Y22RPE_REV– STA. 39+00 TO STA. 41+00 LT, D/d=1.0'
–L– STA. 966+00 TO STA. 971+50 LT, D/d=3.0'
–L– STA. 1002+40 TO STA. 1003+00 RT, D/d=1.5'
–L1– STA. 1015+50 TO STA. 1018+00 LT, D/d=1.0'
–L1– STA. 1017+85 TO STA. 1019+00 RT, D/d=1.0'
–L1– STA. 1087+00 TO STA. 1089+50 RT, D/d=1.0'
–L1– STA. 1092+00 TO STA. 1094+00 LT, D/d=1.0'
–Y23DR– STA. 34+15 TO STA. 36+00 LT D/d=1.0'
–Y23DR– STA. 51+00 TO STA. 51+93 RT, D/d=1.0'
–Y23RPB– STA. 22+50 TO STA. 23+50 RT, D/d=1.0'

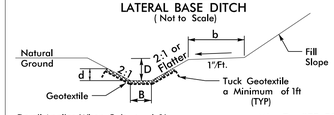
–Y24RPDR– STA. 14+75 TO STA. 17+48 LT, D/d=2.0'
–Y24RPC– STA. 19+00 TO STA. 21+50 RT, D/d=1.0'

DETAIL K
SPECIAL LATERAL BASE DITCH
(Not to Scale)



*DETAIL ONLY USED IN EARLY START

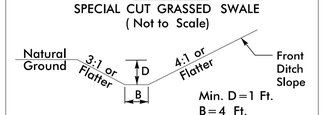
DETAIL N
LATERAL BASE DITCH
(Not to Scale)



–Y22RPAFLY_REV– STA. 15+37 TO 19+75 RT, D/d=2.75'
–Y22RPAFLY_REV– STA. 21+24 TO STA. 28+00 LT, D/d=2.5'
–L– STA. 979+00 TO STA. 982+00 RT, D/d=1.5'
–L– STA. 980+24 TO STA. 986+00 LT, D/d=1.5'
–Y23R– STA. 31+50 TO STA. 34+75 RT, D/d=1.5'
–Y23DR– STA. 24+50 TO STA. 27+50 LT, D/d=1.0'
–Y23DR– STA. 24+00 TO STA. 24+75 RT, D/d=1.0'
–Y23DR– STA. 32+50 TO STA. 34+15 LT, D/d=1.0'
–Y23DR– STA. 51+93 TO STA. 52+50 RT, D/d=1.0'

–L1– STA. 1163+00 TO STA. 1164+50 RT, D/d=1.5'
–L1– STA. 1163+00 TO STA. 1164+50 LT, D/d=1.5'
–L1– STA. 1165+50 TO STA. 1167+50 RT, D/d=1.5'
–L1– STA. 1170+00 TO STA. 1171+38 RT, D/d=1.5'
–L1– STA. 1179+40 TO STA. 1181+00 LT, D/d=1.5'
–Y24RPAR– STA. 21+00 TO STA. 21+78 RT, D/d=1.5'
–Y24RPDR– STA. 12+80 TO STA. 14+24 LT, D/d=1.5'
–Y24R– STA. 15+50 TO STA. 18+00 LT, D/d=1.5'
–Y24R– STA. 16+00 TO STA. 19+00 RT, D/d=1.5'

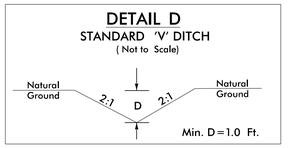
DETAIL O
SPECIAL CUT GRASSED SWALE
(Not to Scale)



–L– STA. 992+00 TO STA. 996+00 LT
–L– STA. 1001+00 TO STA. 1003+00 LT
–L1– STA. 1005+50 TO STA. 1007+00 RT
–L1– STA. 1010+50 TO STA. 1012+86 RT
–L1– STA. 1018+00 TO STA. 1021+50 LT
–L1– STA. 1019+00 TO STA. 1020+00 RT
–L1– STA. 1022+50 TO STA. 1024+18 RT
–L1– STA. 1026+00 TO STA. 1029+50 RT
–L1– STA. 1054+50 TO STA. 1056+00 RT
–L1– STA. 1059+00 TO STA. 1060+50 LT
–Y23R– STA. 18+50 TO STA. 19+00 LT
–Y23R– STA. 38+20 TO STA. 39+00 LT
–Y23RPC– STA. 14+29 TO STA. 17+00 RT
–Y23RPC– STA. 18+00 TO STA. 19+00 RT
–Y23RPC– STA. 20+00 TO STA. 23+50 LT
–Y23RPC– STA. 19+00 TO STA. 24+00 RT
–Y23LPC– STA. 14+00 TO STA. 15++45 RT
–Y23RPB– STA. 16+08 TO STA. 17+12 LT
–Y23RPB– STA. 18+05 TO STA. 22+50 RT
–Y23AR– STA. 13+30 TO STA. 14+50 RT
–Y23DR– STA. 21+00 TO STA. 23+00 LT
–Y23DR– STA. 29+85 TO STA. 32+50 LT
–Y23DR– STA. 36+00 TO STA. 37+00 LT
–Y23DR– STA. 44+43 TO STA. 45+43 RT
–Y23J– STA. 14+00 TO STA. 14+85 LT

–L1– STA. 1094+00 TO STA. 1098+00 LT
–L1– STA. 1097+00 TO STA. 1098+50 RT
–L1– STA. 1101+00 TO STA. 1101+50 RT
–L1– STA. 1119+00 TO STA. 1124+50 RT
–Y24R– STA. 32+50 TO STA. 33+99 RT
–Y24A– STA. 19+51 TO STA. 20+01 LT
–Y24RPBR– STA. 30+50 TO STA. 32+00 LT
–Y24RPC– STA. 21+50 TO STA. 24+50 RT
–L1– STA. 1094+00 TO STA. 1096+16 LT
–L1– STA. 1180+00 TO STA. 1181+50 RT

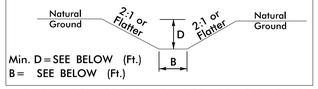
DETAIL D
STANDARD 'V' DITCH
(Not to Scale)



–Y22RPE_REV– STA. 51+93 TO STA. 53+40 RT
BEGIN ELEV=245.6, END ELEV=242.3
S=2.3%, L=151'
—Y23DR– STA. 55+65 TO STA. 56+18 RT
BEGIN ELEV=278.7, END ELEV=277.5
S=4.5%, L=53'

–L1– STA. 1161+20 RT
BEGIN ELEV=308.10, END ELEV=307.60
S=1.9%, L=26'
–Y24RPC– STA. 28+50 TO 28+76 LT
BEGIN ELEV=300.0, END ELEV=299.8
S=0.3%, L=58'

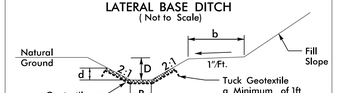
DETAIL I
STANDARD BASE DITCH
(Not to Scale)



–L– STA. 971+50 TO STA. 972+93 LT, L=143'
BEGIN ELEV=217.5', END ELEV=217.0', S=0.3%
MIN D=2.75', B=10'
–Y23R– STA. 23+80 RT, L=82', S=0.3%
BEGIN ELEV=335.25, END ELEV=335.0',
MIN D=1.5', B=4'
–Y23DR– STA. 15+50 RT, L=100', S=0.3%
BEGIN ELEV=316.5, END ELEV=316.2',
MIN D=1.5', B=4'
–L1– STA. 1027+00 LT, L=205', S=0.3%
BEGIN ELEV=296.7, END ELEV=296.0,
MIN D=1.5', B=4'
–L1– STA. 1030+35 LT, L=172', S=0.5%
BEGIN ELEV=301.8, END ELEV=301.0,
MIN D=1.5', B=4'
–Y23DR– STA. 51+00 LT, L=97', S=1.2%
BEGIN ELEV=265.0 END ELEV=263.8,
MIN D=2.0', B=4'
–Y23BR_REV– STA. 24+25 LT, L=116', S=0.34%
BEGIN ELEV=330.50 END ELEV=330.10,
MIN D=1.5', B=4'

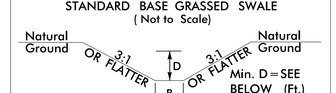
–Y24E– STA. 10+60 LT
BEGIN ELEV=336.2', END ELEV=336.0', L=58', S=0.3%
MIN D=1', B=2'
–Y24R– STA. 37+00 RT
BEGIN ELEV=264.2', END ELEV=264.1', L=37', S=0.3%
MIN D=2', B=4'

DETAIL P
LATERAL BASE DITCH
(Not to Scale)



–Y24RPBR– STA. 32+00 TO STA. 34+00 LT

DETAIL Q
STANDARD BASE GRASSED SWALE
(Not to Scale)

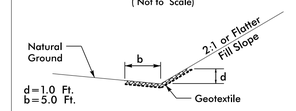


*NOTES:
1) LONGITUDINAL SLOPES BETWEEN 0.3% AND 4.0%.
2) MODIFICATIONS MAY BE NEEDED, AS APPROVED BY ENGINEER.

–L1– STA. 1056+00 RT, D=1'
BEGIN ELEV=311.9, END ELEV=311.0, S=0.9%, L=100'
–L1– STA. 1084+71 TO STA. 1087+00 RT, D=2'
BEGIN ELEV=230.0, END ELEV=230.8, S=0.4%, L=279'
–L1– STA. 1085+06 TO –L– 1086+20 LT, D=2'
BEGIN ELEV=229.9, END ELEV=229.3, S=0.5%, L=114'

–L1– STA. 1118+85 TO STA. 1119+00 RT, D=1'
–L1– STA. 1179+10 TO STA. 1180+00 RT, D=1'

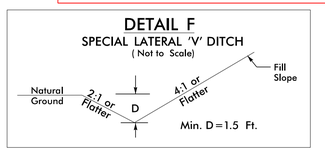
DETAIL E
TOE PROTECTION
(Not to Scale)



*–Y22RPAFLY1– STA. 62+90 TO 63+70 LT
*–Y22RPAFLY_REV– STA. 39+50 TO 39+69 LT
*–Y22LPC– STA. 24+13 TO STA. 26+25 RT
*–L– STA. 930+24 TO STA. 930+72 RT
–Y22RPE– STA. 27+50 TO STA. 33+50 RT
–Y22RPE_REV– STA. 39+00 TO STA. 43+00 RT
–L– STA. 1002+00 TO STA. 1002+75 RT
–L– STA. 1003+50 TO STA. 1004+50 LT
–L– STA. 1004+25 TO STA. 1004+75 RT
–L1– STA. 1007+00 TO STA. 1010+00 RT
–L1– STA. 1007+50 TO STA. 1008+75 LT
–L1– STA. 1011+60 TO STA. 1012+41 LT
–L1– STA. 1013+00 TO STA. 1014+00 RT
–L1– STA. 1091+69 TO STA. 1093+51 LT
–Y22CR– STA. 15+50 TO STA. 16+00 LT
–Y22CR– STA. 15+50 TO STA. 16+00 RT
–Y23RPB– STA. 12+50 TO STA. 15+15 LT
–Y23R– STA. 39+00 TO STA. 40+60 RT
–Y23R– STA. 55+93 TO STA. 57+88 RT
–Y23DR– STA. 34+70 TO STA. 35+50 RT
–Y23DR– STA. 51+88 TO STA. 52+47 RT
–Y23E– STA. 10+66 TO STA. 10+81 RT
–DR1– STA. 10+33 TO STA. 11+12 RT
–Y23DR– STA. 47+54 TO STA. 47+92 RT
–Y23DR– STA. 49+24 TO STA. 49+83 RT
–Y23RPB– STA. 27+50 TO STA. 28+00 LT
–Y23FR– STA. 11+15 TO STA. 11+67 LT

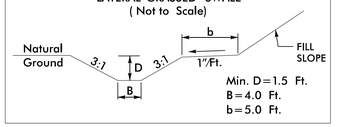
–Y24RPAR– STA. 22+86 TO STA. 24+04 RT
–Y24RPDR– STA. 24+10 TO STA. 25+50 LT
–Y26R– STA. 21+70 TO STA. 22+75 RT
–L1– STA. 1104+59 TO STA. 1105+35 LT
–L1– STA. 1170+60 TO STA. 1172+00 LT
–L1– STA. 1123+12 TO STA. 1124+20 LT
–L1– STA. 1125+00 TO STA. 1126+07 LT
–L1– STA. 1128+50 TO STA. 1129+00 LT
–L1– STA. 1098+63 TO STA. 1104+59 LT
–L1– STA. 1169+54 TO STA. 1170+37 LT
–L1– STA. 1174+50 TO STA. 1175+55 LT
–L1– STA. 1113+24 TO STA. 1114+41 RT
–L1– STA. 1109+09 TO STA. 1113+58 LT
–L1– STA. 1113+86 TO STA. 1116+96 LT
–L1– STA. 1124+19 TO STA. 1125+00 LT
–Y23RPBR– STA. 27+50 TO STA. 28+00 LT
–Y24R– STA. 19+75 TO STA. 20+50 LT
–Y24R– STA. 20+00 TO STA. 21+50 RT
–Y24R– STA. 61+15 TO STA. 62+50 LT
–Y24RPAR– STA. 21+70 TO STA. 22+86 RT
–Y24RPDR– STA. 14+30 TO STA. 14+80 LT
–Y24RPDR– STA. 17+40 TO STA. 18+00 LT
–Y26R– STA. 16+80 TO STA. 18+40 RT

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



*–Y22RPA_REV– STA. 23+00 TO STA. 27+50 RT
*–Y22RPA_REV– STA. 23+00 TO STA. 27+85 LT
–Y23R– STA. 21+50 TO STA 22+50 RT
*–L– STA. 958+00 TO STA. 962+50 RT
*–L– STA. 957+00 TO STA. 962+50 LT

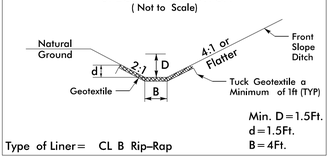
DETAIL L
LATERAL GRASSED SWALE
(Not to Scale)



–L– STA. 1003+00 TO STA. 1003+80 LT
–L1– STA. 1009+03 TO STA. 1011+50 LT
–L1– STA. 1014+00 TO STA. 1015+50 LT
–L1– STA. 1023+00 TO STA. 1023+84 LT
–L1– STA. 1024+18 TO STA. 1025+00 RT
–L1– STA. 1034+00 TO STA. 1036+38 LT
–L1– STA. 1089+50 TO STA. 1093+50 RT
–L1– STA. 1090+00 TO STA. 1092+00 LT
–Y23R– STA. 19+00 TO STA. 23+00 LT
–Y23R– STA. 39+00 TO STA. 41+00 LT
–Y23R– STA. 49+50 TO STA. 53+00 RT
–Y23R– STA. 60+00 TO STA. 60+95 RT
–Y23RPC– STA. 17+00 TO STA. 18+00 RT
–Y23FR– STA. 10+25 TO STA. 11+15 LT
–Y23FR– STA. 11+69 TO STA. 12+40 RT
–Y23FR– STA. 11+94 TO STA. 13+50 LT

–L1– STA. 1136+00 TO STA. 1137+00 RT
–L1– STA. 1164+50 TO STA. 1165+50 RT
–L1– STA. 1167+50 TO STA. 1170+00 RT
–L1– STA. 1168+50 TO STA. 1169+50 LT
–Y24RPBR– STA. 29+50 TO STA. 30+50 LT
–Y24RPDR– STA. 11+60 TO STA. 12+80 LT
–Y24R– STA. 18+00 TO STA. 19+17 LT
–Y24R– STA. 19+00 TO STA. 20+11 RT
–Y24R– STA. 33+99 TO STA. 34+68 RT
–L1– STA. 1113+00 TO STA. 1113+26 RT

DETAIL R
SPECIAL BASE DITCH
(Not to Scale)



–L– STA. 982+00 TO STA. 988+00 RT
–L1– STA. 1025+00 TO STA. 1026+00 RT
–L1– STA. 1029+50 TO STA. 1030+35 RT
–Y23K– STA. 11+98 TO STA. 12+60 LT
(BEGIN ELEV=308.2, END ELEV=304.5, S=6.0%, L=62')
–Y23AR– STA. 11+50 TO STA. 15+50 LT (Min. D=2.0')

PROJECT REFERENCE NO.	SHEET NO.
R–2829A	2D–1

HYDRAULICS DESIGN ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BUFFER DRAWING SHEET 2 OF 36

NOTE: * INDICATE DITCHES INSIDE THE EARLY START PACKAGE

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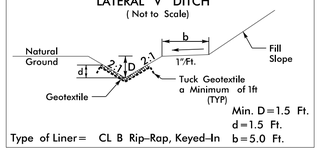
Submitted September 17, 2024

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	2D-2
	HYDRAULICS DESIGN ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BUFFER DRAWING SHEET 3 OF 36

DETAIL S
LATERAL 'V' DITCH
(Not to Scale)



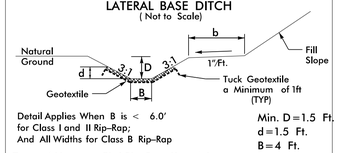
Min. D=1.5 Ft.
d=1.5 Ft.
b=5.0 Ft.

Type of Liner= CL B Rip-Rap, Keyed-In

–Y22RPAFLY_REV– STA. 20+00 TO STA. 21+24 LT
–Y23R– STA. 41+00 TO STA. 43+00 LT
–Y23RPB– STA. 23+50 TO STA. 24+50 RT
–Y23FR– STA. 13+50 TO STA. 14+00 LT

–Y26R– STA. 20+30 TO STA. 22+02 LT
–Y26R– STA. 28+50 TO STA. 29+25 RT

DETAIL T
LATERAL BASE DITCH
(Not to Scale)



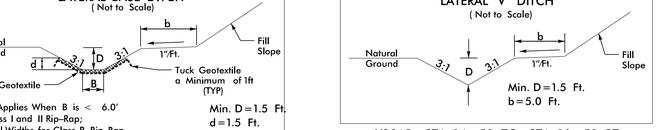
Detail Applies When B is < 6.0' for Class I and II Rip-Rap; And All Widths for Class B Rip-Rap

Min. D=1.5 Ft.
d=1.5 Ft.
B=4 Ft.
b=5 Ft.

Type of Liner= CL I Rip-Rap, Keyed-In

–Y23RPB– STA. 28+20 TO STA. 28+50 LT
–Y22RPAFLY_REV– STA. 28+00 TO STA. 30+00 LT

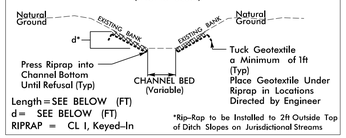
DETAIL U
LATERAL 'V' DITCH
(Not to Scale)



Min. D=1.5 Ft.
b=5.0 Ft.

–Y23AR– STA. 14+50 TO STA. 16+50 RT
–Y23AR– STA. 17+50 TO STA. 19+80 RT

DETAIL V
BANK STABILIZATION
(Not to Scale)

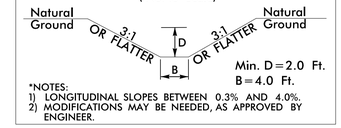


Length=SEE BELOW (FT)
d= SEE BELOW (FT)
RIPRAP = CL I, Keyed-In

*Rip-Rap to be Installed to 2ft Outside Top of Ditch Slopes on Jurisdictional Streams

–Y26R– STA. 22+25 LT,
L=72', d=3'
48 TONS CL I RIPRAP, W/107 SY GEOFAB

DETAIL W
STANDARD BASE GRASSED SWALE
(Not to Scale)

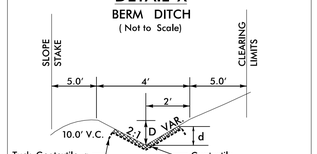


Min. D=2.0 Ft.
B=4.0 Ft.

*NOTES:
1) LONGITUDINAL SLOPES BETWEEN 0.3% AND 4.0%.
2) MODIFICATIONS MAY BE NEEDED, AS APPROVED BY ENGINEER.

–Y23RPB– STA. 23+50 RT, L=143'
BEGIN ELEV=317.1', END ELEV=315.7', S=1.0%
MIN D=1.0', B=4'

DETAIL X
BERM DITCH
(Not to Scale)



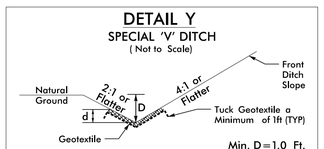
Min. D=1.0 Ft.
d=1.0 Ft.

Type of Liner=CLASS B RIPRAP, Keyed-In

–Y23RPC– STA. 14+29 TO STA. 16+00 RT
–L1– STA. 1053+30 TO STA. 1058+00 LT

–L1– STA. 1108+85 TO STA. 1112+50 RT

DETAIL Y
SPECIAL 'V' DITCH
(Not to Scale)



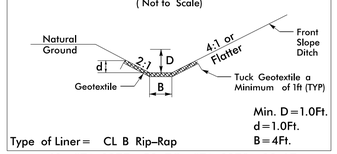
Min. D=1.0 Ft.

Type of Liner=Class B Rip-Rap, Keyed-In d=1.0 Ft.

–L1– STA. 1021+50 TO STA. 1022+00 LT
–L1– STA. 1020+00 TO STA. 1021+00 RT
–L1– STA. 1096+50 TO STA. 1097+00 RT
–L1– STA. 1073+00 TO STA. 1075+50 LT
–Y22CR– STA. 14+50 TO STA 15+00 LT
–Y23BR_REV– STA. 21+00 TO STA. 22+50 RT
–Y23CR_REV– STA. 21+50 TO STA. 23+00 LT
–Y23R– STA. 64+65 TO STA. 69+00 LT
–Y23R– STA. 66+50 TO STA. 68+30 RT
–Y23LPB– STA. 14+50 TO STA. 15+00 LT
–Y23DR– STA. 27+50 TO STA. 28+80 LT
–Y23DR– STA. 36+00 TO STA. 38+38 RT

–L1– STA. 1181+50 TO STA. 1182+50 RT
–Y24R– STA. 31+00 TO STA. 32+50 RT
–Y24A– STA. 10+90 TO STA. 11+45 LT (L=83')
–Y24A– STA. 10+75 TO 11+00 RT (L=33')
–Y24A– STA. 11+00 TO 12+65 RT (L=97')
–Y24A– STA. 12+65 TO 13+49 RT
–Y24A– STA. 19+01 TO STA. 19+51 LT

DETAIL Z
SPECIAL BASE DITCH
(Not to Scale)

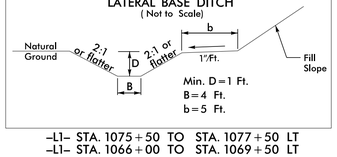


Min. D=1.0Ft.
d=1.0Ft.
B=4Ft.

Type of Liner= CL B Rip-Rap

–L1– STA. 1077+50 TO STA. 1079+00 LT
–Y23DR– STA. 23+50 TO STA. 24+00 RT
–L1– STA. 1061+00 TO STA. 1062+61 LT
–Y23R– STA. 64+50 TO STA. 66+50 RT

DETAIL AA
LATERAL BASE DITCH
(Not to Scale)

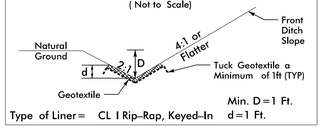


Min. D=1 Ft.
B=4 Ft.
b=5 Ft.

–L1– STA. 1075+50 TO STA. 1077+50 LT
–L1– STA. 1066+00 TO STA. 1069+50 LT

–L1– STA. 1098+00 TO STA. 1098+80 LT
–Y24R– STA. 37+00 TO STA. 39+50 RT
–Y24RPDR– STA. 18+00 TO STA. 21+50 LT
–L1– STA. 1114+70 TO STA 1115+77 RT

DETAIL AB
SPECIAL 'V' DITCH
(Not to Scale)



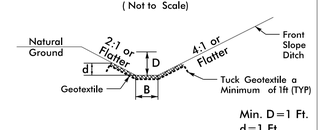
Min. D=1 Ft.

Type of Liner= CL I Rip-Rap, Keyed-In d=1 Ft.

–Y23I_REV– STA. 14+00 TO STA. 14+90 RT
–Y23I_REV– STA. 14+00 TO STA. 15+00 LT
–Y23DR– STA. 52+50 TO STA 53+23 RT
–Y23FR– STA. 13+50 TO STA. 14+00 RT

–Y24B– STA. 10+26 TO STA. 11+00 RT

DETAIL AC
SPECIAL BASE DITCH
(Not to Scale)



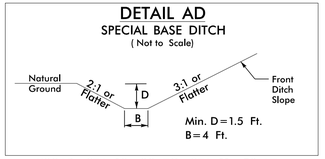
Min. D=1 Ft.
d=1 Ft.
B=4Ft.

Type of Liner= CL I Rip-Rap, Keyed-In

–L– STA. 990+00 TO STA. 991+00 LT
–Y23DR– STA. 23+00 TO STA. 24+50 LT
–Y23H– STA. 10+50 TO STA. 11+85 RT
–Y23R– STA. 32+50 TO STA. 33+50 LT

–Y24R– STA. 47+00 TO STA. 51+50 RT

DETAIL AD
SPECIAL BASE DITCH
(Not to Scale)

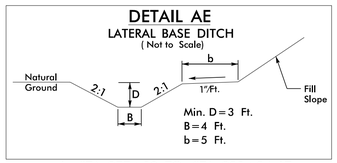


Min. D=1.5 Ft.
B=4 Ft.

–Y23AR– STA. 10+30 TO STA. 11+50 LT
–Y23R– STA. 33+50 TO STA. 36+00 LT
–Y23RPC– STA. 24+00 TO STA. 27+00 RT

–Y26R– STA. 34+50 TO STA. 39+50 RT

DETAIL AE
LATERAL BASE DITCH
(Not to Scale)

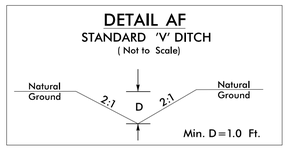


Min. D=3 Ft.
B=4 Ft.
b=5 Ft.

–L– STA. 977+00 TO STA. 980+24 LT

–Y24RPC– STA. 15+67 TO STA. 17+32 RT

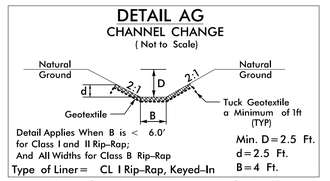
DETAIL AF
STANDARD 'V' DITCH
(Not to Scale)



Min. D=1.0 Ft.

–Y23CR_REV– STA. 12+07 TO STA. 14+50,
BEGIN ELEV=347.50', END ELEV=354.73'
S=2.8%, L=266'

DETAIL AG
CHANNEL CHANGE
(Not to Scale)



Detail Applies When B is < 6.0' for Class I and II Rip-Rap; And All Widths for Class B Rip-Rap

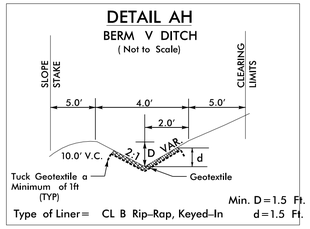
Min. D=2.5 Ft.
d=2.5 Ft.
B=4 Ft.

Type of Liner= CL I Rip-Rap, Keyed-In

–Y23DR– STA. 24+75 RT, L=38', S=0.5%
BEGIN ELEV=279.6', END ELEV=279.4', D/d=3.5'

–L1– STA. 1161+40 TO 1162+07 LT
BEGIN ELEV=291.0', END ELEV=288.5', L=110', S=2.3%
–L1– STA. 1162+07 TO 1163+00 LT
BEGIN ELEV=294.5', END ELEV=291.0', L=108', S=3.2%

DETAIL AH
BERM V DITCH
(Not to Scale)

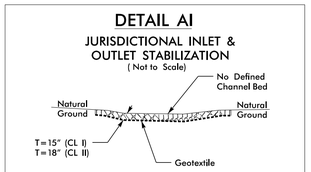


Min. D=1.5 Ft.

Type of Liner= CL B Rip-Rap, Keyed-In d=1.5 Ft.

–L1– STA. 1030+50 TO STA. 1034+50 RT

DETAIL AI
JURISDICTIONAL INLET & OUTLET STABILIZATION
(Not to Scale)



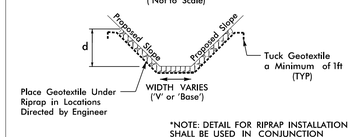
Length of Pad= SEE BELOW
*Minimum 10' at Inlet
*Minimum 20' at Outlet

Width of Pad = See STD. 876.02

Type of Liner= CL I or CL II Rip-Rap – Keyed-In/Countersunk

–L– STA. 1004+00 LT, CL I RIPRAP, L=20'
–L1– STA. 1036+50 LT, CL I RIPRAP, L=20'

DETAIL AJ
RIPRAP STABILIZATION
(Not to Scale)



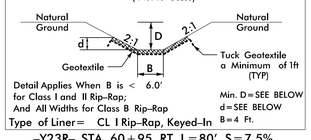
*NOTE: DETAIL FOR RIPRAP INSTALLATION SHALL BE USED IN CONJUNCTION WITH ANY PROPOSED DITCH DETAIL AND/OR ROADWAY TYPICAL DITCH.

Length= SEE BELOW (Ft.)
Type of Liner= CL B or I Rip-Rap – Keyed-In (SEE BELOW)

–Y22RPA_REV– STA. 20+80 LT (RDY TYPICAL DITCH)
L=110', MIN d=1.0'
45 TONS CL B RIPRAP, W/101 SY GEOFAB
–Y23DR– STA. 15+50 RT (END OF STD. DITCH),
L=6', MIN d=1.5'
3 TONS CL B RIPRAP, W/9 SY GEOFAB
–Y23DR– STA. 51+07 RT (END OF STD. DITCH),
L=6', MIN d=2.0'
4 TONS CL I RIPRAP, W/9 SY GEOFAB
–L1– STA. 1086+20 RT (END OF SWALE),
L=20', MIN d=2.0'
18 TONS CL I RIPRAP, W/37 SY GEOFAB
–L1– STA. 1084+85 RT (END OF SWALE),
L=20', MIN d=2.0'
18 TONS CL I RIPRAP, W/37 SY GEOFAB
–L1– STA. 1087+05 LT (END OF SWALE),
L=20', MIN d=2.0'
23 TONS CL I RIPRAP, W/46 SY GEOFAB

–L1– STA. 1145+00 TO 1147+00 RT
L=200', MIN d=1.0'
82 TONS CL B RIPRAP, W/183 SY GEOFAB
–L1– STA. 1179+10 RT (END OF SWALE),
L=12', MIN d=1.0'
6 TONS CL B RIPRAP, W/14 SY GEOFAB

DETAIL AK
STANDARD BASE DITCH
(Not to Scale)



Detail Applies When B is < 6.0' for Class I and II Rip-Rap; And All Widths for Class B Rip-Rap

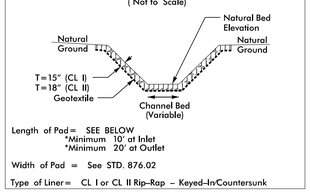
Min. D=SEE BELOW
d=SEE BELOW
B=4 Ft.

Type of Liner= CL I Rip-Rap, Keyed-In

–Y23R– STA. 60+95 RT, L=80', S=7.5%
BEGIN ELEV=332.0, END ELEV=326.0', D/d=1.0'
–Y23AR– STA. 11+50 RT, L=24', S=1.4%
BEGIN ELEV=299.0', END ELEV=298.67', D/d=2.5'
–L– STA. 975+75 TO STA. 977+00 LT, L=125', S=0.3%
BEGIN ELEV=214.5', END ELEV=214.9', D/d=3.5'
–Y23DR– STA. 23+85 LT, L=91', S=8.0%
BEGIN ELEV=293.4', END ELEV=286.1', D/d=1.5'
–Y23DR– STA. 38+35 RT, L=27', S=6.7%
BEGIN ELEV=293.8', END ELEV=292.0', D/d=1.0'
–L1– STA. 1034+79 LT, L=60'
BEGIN ELEV=284.0', END ELEV=284.5', S=0.8%
MIN D=1.5, B=4'
–L1– STA. 1035+11 LT, L=67'
BEGIN ELEV=284.5', END ELEV=292.0', S=1.1%
MIN D=1.5', B=4'

–Y26– STA. 14+50 LT, L=73', S=14.0%, D/d=1.0'
BEGIN ELEV=300.0', END ELEV=289.8'
–Y26_DRW1– STA. 10+50 RT, L=40', S=16.6%, D/d=1.0'
BEGIN ELEV=297.3', END ELEV=290.6'

DETAIL AL
JURISDICTIONAL INLET & OUTLET CHANNEL STABILIZATION
(Not to Scale)



Length of Pad= SEE BELOW
*Minimum 10' at Inlet
*Minimum 20' at Outlet

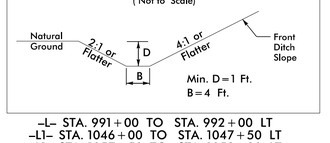
Width of Pad = See STD. 876.02

Type of Liner= CL I or CL II Rip-Rap – Keyed-In/Countersunk

–L– STA. 1003+00 RT, CL I RIPRAP, L=16'
–L1– STA. 1023+00 LT, CL II RIPRAP, L=20'
–L1– STA. 1062+62 LT, CL I RIPRAP, L=16'
–Y23DR– STA. 46+25 RT, CL I RIPRAP, L=20'
–Y23R– STA. 61+14 LT, CL I RIPRAP, L=20'
–Y23DR– STA. 34+15 LT, CL I RIPRAP, L=16'
–Y23DR– STA. 34+31 RT, CL I RIPRAP, L=20'
–Y23FR– STA. 11+71 LT, CL II RIPRAP, L=20'
–Y23FR– STA. 11+64 RT, CL II RIPRAP, L=20'

–L1– STA. 1024+00 LT, CL II RIPRAP, L=20'
–L1– STA. 1163+00 RT, CL II RIPRAP, L=20'
–Y24RPBR– STA. 34+00 RT, CL II RIPRAP, L=20'
–Y24RPDR– STA. 24+73 LT, CL I RIPRAP, L=20'
–Y26R– STA. 21+69 RT, CL II RIPRAP, L=20'
–Y26R– STA. 22+02 LT, CL II RIPRAP, L=20'

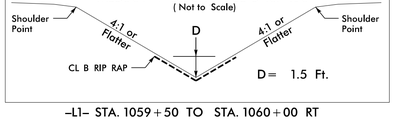
DETAIL AM
SPECIAL BASE DITCH
(Not to Scale)



Min. D=1 Ft.
B=4 Ft.

–L– STA. 991+00 TO STA. 992+00 LT
–L1– STA. 1046+00 TO STA. 1047+50 LT
–L1– STA. 1057+50 TO STA. 1059+00 LT
–Y23R– STA. 23+00 TO STA. 23+80 LT
–Y23R– STA. 31+50 TO STA. 32+50 LT
–Y23LPB– STA. 13+22 TO STA. 14+50 LT

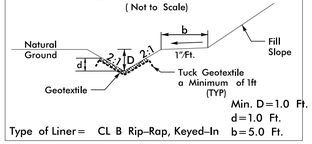
DETAIL AN
MEDIAN V DITCH W/CL B RIP RAP
(Not to Scale)



D= 1.5 Ft.

–L1– STA. 1059+50 TO STA. 1060+00 RT

DETAIL AO
LATERAL 'V' DITCH
(Not to Scale)



Min. D=1.0 Ft.
d=1.0 Ft.
b=5.0 Ft.

Type of Liner= CL B Rip-Rap, Keyed-In

–Y22CR– STA. 13+61 TO STA 14+50 LT
–Y22CR– STA. 14+26 TO STA 15+50 RT
–L1– STA. 1070+50 TO STA. 1071+50 RT

–L1– STA. 1161+20 TO STA. 1161+60 RT

NOTE: * INDICATE DITCHES INSIDE THE EARLY START PACKAGE

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9/3/2024 R:\Hydraulics\Permits_Enviromental\Drawings\4C\R-2829A_hyd_buf_DitchDetails.dgn aburke

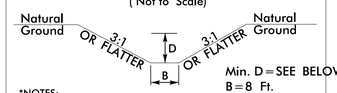
Submitted September 17, 2024

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	2D-3
	HYDRAULICS DESIGN ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BUFFER DRAWING SHEET 4 OF 36

DETAIL AP
STANDARD BASE GRASSED SWALE
(Not to Scale)

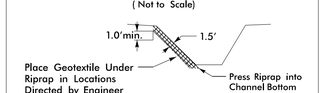


Min. D = SEE BELOW (Ft.)
B = 8 Ft.

*NOTES:
1) LONGITUDINAL SLOPES BETWEEN 0.3% AND 4.0%.
2) MODIFICATIONS MAY BE NEEDED, AS APPROVED BY ENGINEER.

–L1– STA. 1086+92 TO STA. 1090+00 LT, D=2 FT
–BEGIN ELEV=230.0, END ELEV=231.0 S=0.3%, L=312'

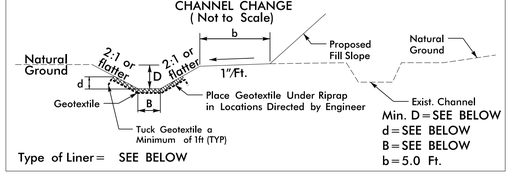
DETAIL AQ
BANK STABILIZATION
(Not to Scale)



Type of Liner = CL I Rip–Rap, Keyed–In

–L1– STA. 1086+29 LT
5 TONS CL I RIPRAP, W/10 SY GEOFAB
–L1– STA. 1086+92 LT
5 TONS CL I RIPRAP, W/10 SY GEOFAB
–L1– STA. 1086+75 RT
5 TONS CL I RIPRAP, W/10 SY GEOFAB

DETAIL AR
CHANNEL CHANGE
(Not to Scale)



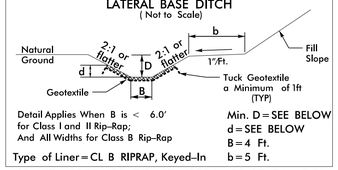
Type of Liner = SEE BELOW

Min. D = SEE BELOW
d = SEE BELOW
B = SEE BELOW
b = 5.0 Ft.

–L1– 1014+00 RT, B=7', CL II RIPRAP, D/d=3.0'
BEGIN ELEV.=255.5, END ELEV.=257.0, L=73' (RCBC INLET)
–L1– STA. 1014+50 TO STA. 1015+10 RT, B=7', CL II RIPRAP, MIN D/d=3.0'
–L1– STA. 1015+10 TO STA. 1016+00 RT, B=7', CL II RIPRAP, MIN D/d=1.0'
–L1– STA. 1016+50 TO STA. 1018+29 RT, B=5', GRASS, MIN D/d=1.5'

–L1– STA. 1171+38 TO STA. 1176+30 RT, CL I RIPRAP, MIN D/d=4.0'
–L1– STA. 1175+56 TO STA. 1178+09 LT, CL I RIPRAP, MIN D/d=4.0'
–L1– STA. 1115+82 TO STA. 1118+00 RT, CL II RIP RAP, MIN D/d=2.5, B=8'
–L1– STA. 1118+85 TO STA. 1119+12 RT, CL II RIP RAP, MIN D/d=3.0, B=4–8'
–L1– STA. 1179+00 TO STA. 1179+40 LT, CL I RIP RAP, MIN D/d=5.0, B=4'

DETAIL AS
LATERAL BASE DITCH
(Not to Scale)



Detail Applies When B is < 6.0' for Class I and II Rip–Rap; And All Widths for Class B Rip–Rap

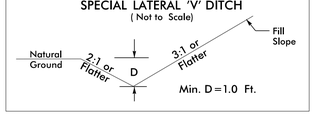
Min. D = SEE BELOW
d = SEE BELOW
B = 4 Ft.
b = 5 Ft.

Type of Liner = CL B RIPRAP, Keyed–In

–L1– STA. 1079+00 TO STA. 1084+50 LT, D/d=1.0'

–L1– STA. 1159+62 TO STA. 1161+20 RT, D/d=1.0'
–L1– STA. 1161+60 TO STA. 1163+00 RT, D/d=1.0'

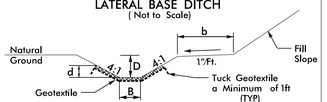
DETAIL AT
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Min. D = 1.0 Ft.

–Y26RSR2– STA. 10+70 TO STA. 14+20 LT

DETAIL AU
LATERAL BASE DITCH
(Not to Scale)



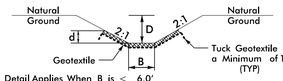
Detail Applies When B is < 6.0' for Class I and II Rip–Rap; And All Widths for Class B Rip–Rap

Min. D = 2 Ft.
d = 2 Ft.
B = 4 Ft.
b = 5 Ft.

Type of Liner = CL B Rip–Rap, Keyed–In

–Y23AR– STA. 16+55 TO STA. 18+90 LT

DETAIL AV
STANDARD BASE DITCH
(Not to Scale)



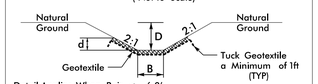
Detail Applies When B is < 6.0' for Class I and II Rip–Rap; And All Widths for Class B Rip–Rap

Min. D = SEE BELOW
d = SEE BELOW
B = SEE BELOW

Type of Liner = CL B Rip–Rap, Keyed–In

–L– STA. 978+30 TO STA. 979+00 RT, L=78'
BEGIN ELEV=221.8', END ELEV=222.1', S=0.4%
MIN D=2.5', B=6'
–Y22RPE_REV– STA. 42+00 RT, L=330'
BEGIN ELEV=252.7', END ELEV=240.4', S=3.8%
MIN D=1.5', B=4'
–Y22RPE_REV– STA. 45+00 RT, L=100'
BEGIN ELEV=240.4', END ELEV=240.0', S=0.4%
MIN D=2.5', B=4'

DETAIL AW
STANDARD BASE DITCH
(Not to Scale)



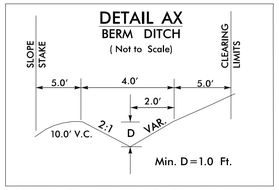
Detail Applies When B is < 6.0' for Class I and II Rip–Rap; And All Widths for Class B Rip–Rap

Min. D = 1.5 Ft.
d = 1.5 Ft.
B = 4 Ft.

Type of Liner = CL I Rip–Rap, Keyed–In

–L1– STA. 1161+64 LT
BEGIN ELEV=295.0', END ELEV=289.6', L=90', S=6.0%

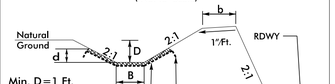
DETAIL AX
BERM DITCH
(Not to Scale)



Min. D = 1.0 Ft.

–Y23DR– STA. 13+00 TO STA. 23+00 LT

DETAIL AY
BERM BASE DITCH
(Not to Scale)



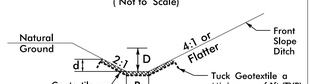
Min. D = 1 Ft.
d = 1 Ft.
B = 4 Ft.
b = 4 Ft.

Type of Liner = CL B Rip–Rap, Keyed–In

–L– STA. 987+50 TO STA. 997+50 RT
–L1– STA. 1058+00 TO STA. 1060+50 LT

–L1– STA. 1103+79 TO STA. 1108+85 RT

DETAIL AZ
SPECIAL BASE DITCH
(Not to Scale)

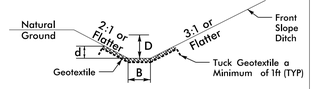


Min. D = 1 Ft.
d = 1 Ft.
B = 5 Ft.

Type of Liner = CL II Rip–Rap, Keyed–In

–L1– STA. 1100+00 TO STA. 1101+00 RT

DETAIL BB
CHANNEL CHANGE
(Not to Scale)



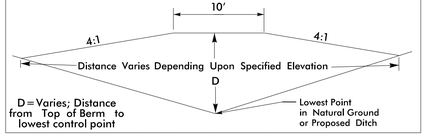
Min. D = See Below
d = See Below
B = See Below

Type of Liner = CL I OR II RIPRAP, Keyed–In

–L1– STA. 1016+00 TO STA. 1016+50 RT, CL I RIPRAP
MIN D/d=1.0, B=7'

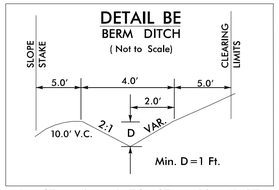
–L1– STA. 1118+00 TO STA. 1118+85 RT, CL II RIPRAP
MIN D/d=2.5', B=8'

DETAIL BC
10' WIDE BERM
(Not to Scale)



–L1– STA. 1161+60 LT, TOP ELEV=311.0'

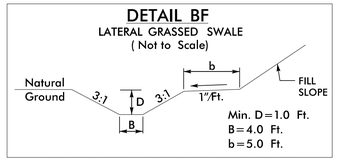
DETAIL BE
BERM DITCH
(Not to Scale)



Min. D = 1 Ft.

–L1– STA. 1101+50 TO STA. 1103+79 RT

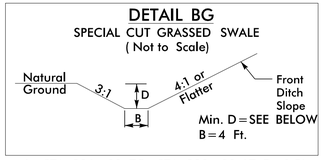
DETAIL BF
LATERAL GRASSED SWALE
(Not to Scale)



Min. D = 1.0 Ft.
B = 4.0 Ft.
b = 5.0 Ft.

–L1– STA. 1099+00 TO STA. 1100+00 RT
–L1– STA. 1098+50 TO STA. 1098+83 RT
–Y24A– STA. 20+01 TO STA. 20+50 LT

DETAIL BG
SPECIAL CUT GRASSED SWALE
(Not to Scale)

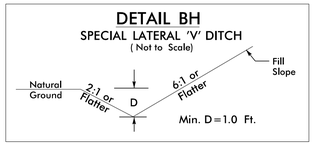


Min. D = SEE BELOW
B = 4 Ft.

–L– STA. 986+00 TO STA. 990+00 LT, D=1.5'
–L1– STA. 1060+50 TO STA. 1061+00 LT, D=1.5'

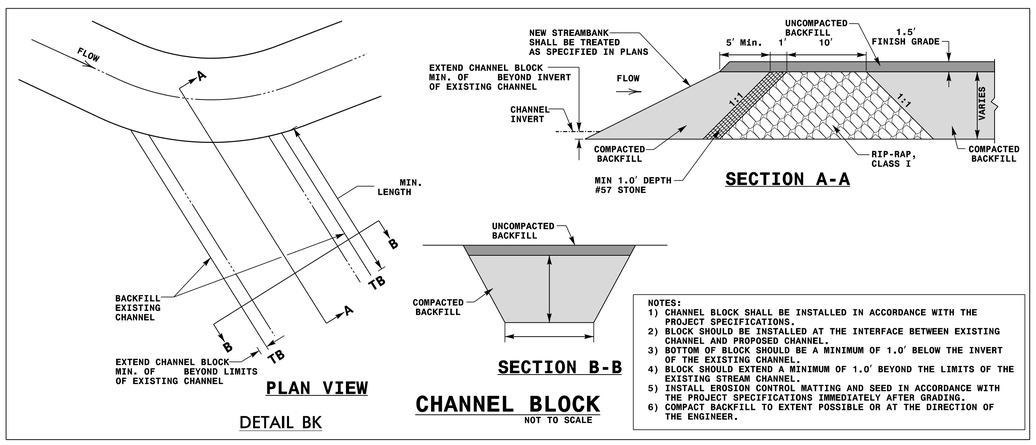
–Y24RPC– STA. 24+50 TO STA. 29+00 RT, D=2'

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



Min. D = 1.0 Ft.

–Y24R– STA. 41+75 TO STA. 43+00 LT

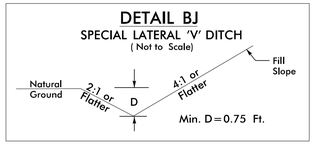


CHANNEL BLOCK
NOT TO SCALE

NOTES:
1) CHANNEL BLOCK SHALL BE INSTALLED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
2) BLOCK SHOULD BE INSTALLED AT THE INTERFACE BETWEEN EXISTING CHANNEL AND PROPOSED CHANNEL.
3) BOTTOM OF BLOCK SHOULD BE A MINIMUM OF 1.0' BELOW THE INVERT OF THE EXISTING CHANNEL.
4) BLOCK SHOULD EXTEND A MINIMUM OF 1.0' BEYOND THE LIMITS OF THE EXISTING STREAM CHANNEL.
5) INSTALL EROSION CONTROL MATTING AND SEED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS IMMEDIATELY AFTER GRADING.
6) COMPACT BACKFILL TO EXTENT POSSIBLE OR AT THE DIRECTION OF THE ENGINEER.

DETAIL BK

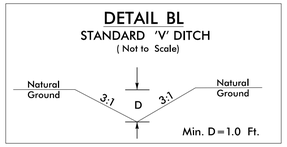
DETAIL BJ
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Min. D = 0.75 Ft.

–Y24E– STA. 10+80 TO STA. 12+00 RT

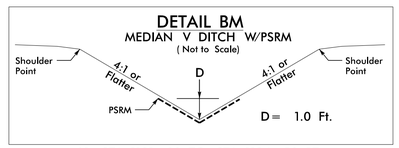
DETAIL BL
STANDARD 'V' DITCH
(Not to Scale)



Min. D = 1.0 Ft.

–Y23J– STA. 13+00 TO STA. 14+00 RT
BEGIN ELEV=321.7', END ELEV=318.0'
S=3.7%, L=100'
–Y23J– STA. 13+00 TO STA. 14+00 LT
BEGIN ELEV=323.1', END ELEV=317.0'
S=6.1%, L=100'

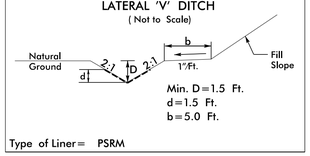
DETAIL BM
MEDIAN V DITCH W/PSRM
(Not to Scale)



D = 1.0 Ft.

–L1– STA. 1131+00 TO STA. 1134+50 RT

DETAIL BN
LATERAL 'V' DITCH
(Not to Scale)



Min. D = 1.5 Ft.
d = 1.5 Ft.
b = 5.0 Ft.

Type of Liner = PSRM

–Y22RPAFLY_REV– STA. 30+00 TO STA. 31+50 LT

NOTE: * INDICATE DITCHES INSIDE THE EARLY START PACKAGE

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9/3/2024
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aburke

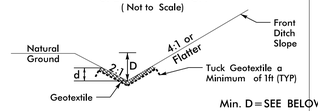
Submitted September 17, 2024

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	2D-4
	HYDRAULICS DESIGN ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BUFFER DRAWING SHEET 5 OF 36

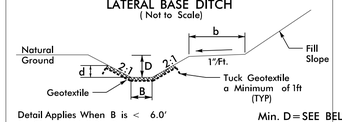
DETAIL BO
SPECIAL 'V' DITCH
(Not to Scale)



Type of Liner= CL I Rip-Rap, Keyed-In Min. D=SEE BELOW Ft. d=SEE BELOW Ft.

–L1– STA. 1063+00 TO STA. 1066+00 LT, D/d= 2.0′
–L1– STA. 1057+50 TO STA. 1058+00 LT, D/d= 1.5′

DETAIL BP
LATERAL BASE DITCH
(Not to Scale)



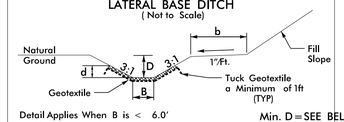
Detail Applies When B is < 6.0′ for Class I and II Rip-Rap; And All Widths for Class B Rip-Rap

Min. D=SEE BELOW Ft. d=SEE BELOW Ft. B=4 Ft. b=5 Ft.

Type of Liner= CL I Rip-Rap, Keyed-In

–Y24RPC– STA. 17+32 TO STA. 19+00 RT, D/d=2.5′
–L1– STA. 1124+50 TO STA. 1125+30 RT, D/d=1.0′

DETAIL BQ
LATERAL BASE DITCH
(Not to Scale)



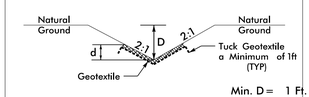
Detail Applies When B is < 6.0′ for Class I and II Rip-Rap; And All Widths for Class B Rip-Rap

Min. D=SEE BELOW Ft. d=SEE BELOW Ft. B=4 Ft. b=5 Ft.

Type of Liner= CL I Rip-Rap, Keyed-In

–Y23RPB– STA. 28+75 TO STA. 30+45 RT
–Y22RPE_REV–STA. 28+00 TO STA. 30+00 LT

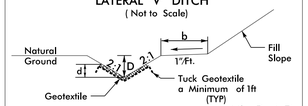
DETAIL BR
STANDARD 'V' DITCH
(Not to Scale)



Type of Liner= CL B Rip-Rap, Keyed-In Min. D= 1 Ft. d= 1 Ft.

–Y23J– STA. 9+50 TO STA. 10+00 RT
BEGIN ELEV=316.8, END ELEV=313.8
S=6.0%, L=50′

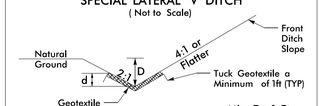
DETAIL BT
LATERAL 'V' DITCH
(Not to Scale)



Type of Liner= CL I Rip-Rap, Keyed-In Min. D=1 Ft. d=1 Ft. b=5 Ft.

–Y23FR– STA. 12+40 TO STA. 13+50 RT

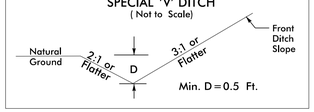
DETAIL BU
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Type of Liner= CL B Rip-Rap, Keyed-In Min. D=1 Ft. d=1 Ft.

–Y23R– STA. 20+00 TO STA. 21+50 RT

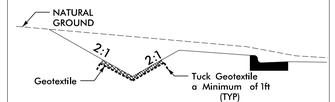
DETAIL BV
SPECIAL 'V' DITCH
(Not to Scale)



Min. D=0.5 Ft.

–Y24R– STA. 54+00 TO STA. 54+50 RT

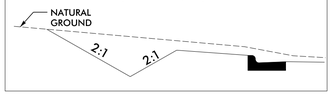
DETAIL BX
SPECIAL BACK OF CURB CUT DITCH
(NOT TO SCALE)



Type of Liner= CL B Rip-Rap, Keyed-In

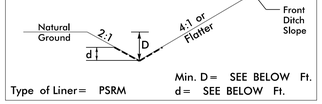
–Y23CR_REV– STA. 11+14 TO STA. 12+20 RT

DETAIL BY
SPECIAL BACK OF CURB CUT DITCH
(NOT TO SCALE)



–Y23CR_REV– STA. 10+00 TO STA. 10+93 RT

DETAIL BZ
SPECIAL 'V' DITCH
(Not to Scale)



Type of Liner= PSRM Min. D= SEE BELOW Ft. d= SEE BELOW Ft.

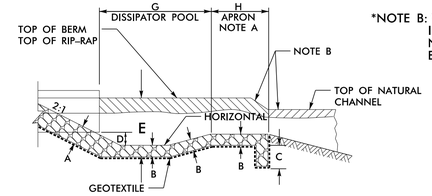
–Y23BR_REV– STA. 23+00 TO STA. 24+02 RT, D/d=1.0′
–Y23BR_REV– STA. 24+02 TO STA. 24+39 RT, D/d=1.5′

DETAIL BS
RIP–RAPPED ENERGY DISSIPATOR BASIN

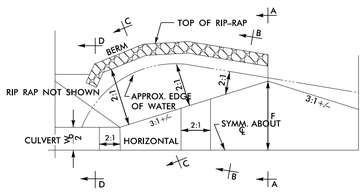
*NOTE A: IF EXIT VELOCITY OF BASIN IS SPECIFIED, EXTEND BASIN AS REQUIRED TO OBTAIN SUFFICIENT CROSS SECTIONAL AREA AT SECTION A–A SUCH THAT Q des/(CROSS SECTION AREA AT SEC. A–A)= SPECIFIED VELOCITY.

*NOTE B: WARP BASIN TO CONFORM TO NATURAL STREAM CHANNEL. TOP OF RIP–RAP IN FLOOR OF BASIN SHOULD BE AT SAME ELEVATION OR LOWER THAN NATURAL CHANNEL BOTTOM AT SEC. A–A. PROVIDE SMOOTH TRANSITION FROM END OF APRON TO NATURAL CHANNEL WIDTH.

℄ SECTION



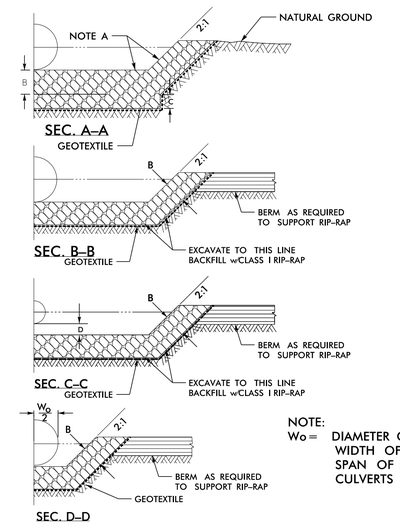
HALF PLAN



DIM.	RIP RAP BASIN #							
	1	2	3	4	5	6	7	8
A	0.4′	0.4′						
B	0.3′	0.3′						
C	3.0′	3.0′						
D	2.1′	4.7′						
E	3.3′	5.2′						
F	15.0′	17.6′						
G	21.1′	47.0′						
H	10.5′	23.5′						

*ALL DIMENSIONS APPROXIMATE IN FT

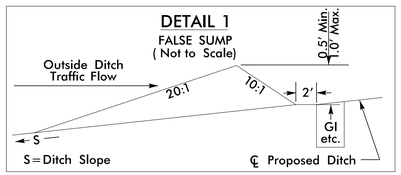
BASIN #	LOCATION (AT OUTLET)
1	–Y23RPB– 23+55
2	–L1– STA. 1105+37 LT
3	
4	
5	
6	
7	
8	



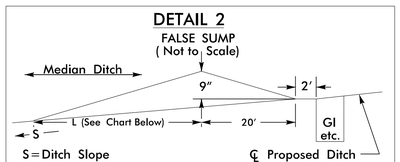
NOTE:
Wo= DIAMETER OF PIPE, WIDTH OF BOX OR SPAN OF PIPE–ARCH CULVERTS

5/05

DETAIL 1
FALSE SUMP
(Not to Scale)

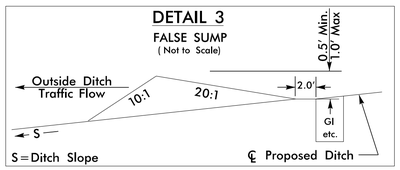


DETAIL 2
FALSE SUMP
(Not to Scale)



Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20′	Over 4.0% To 6.0%	40′
Over 2.0% To 4.0%	30′	Over 6.0%	50′

DETAIL 3
FALSE SUMP
(Not to Scale)



NOTE: * INDICATE DITCHES INSIDE THE EARLY START PACKAGE

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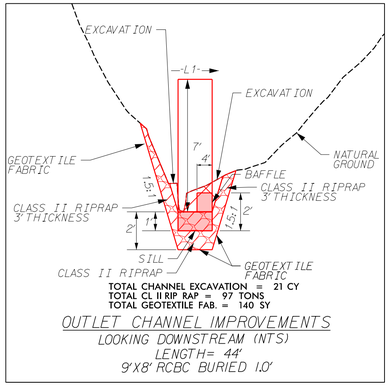
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aburke

Submitted September 17, 2024

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	2D-5
	HYDRAULICS DESIGN ENGINEER

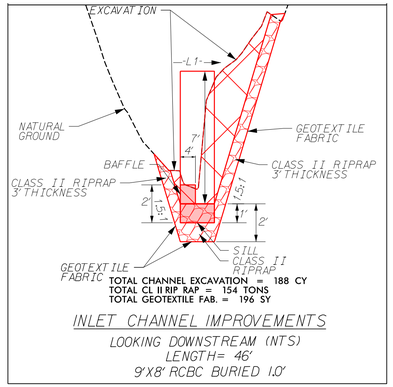
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BUFFER DRAWING SHEET 6 OF 36



TOTAL CHANNEL EXCAVATION = 21 CY
TOTAL CL II RIP RAP = 97 TONS
TOTAL GEOTEXTILE FAB. = 140 SY

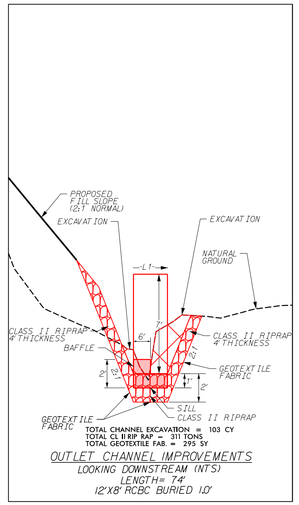
OUTLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM (NTS)
LENGTH= 44'
9'X8' RCBC BURIED 1.0'



TOTAL CHANNEL EXCAVATION = 188 CY
TOTAL CL II RIP RAP = 154 TONS
TOTAL GEOTEXTILE FAB. = 196 SY

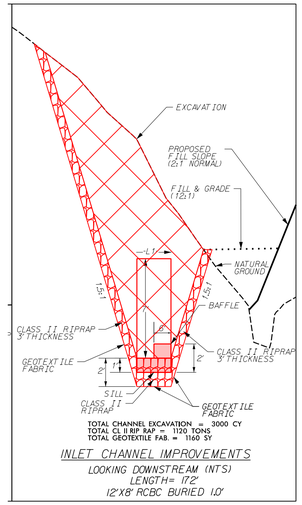
INLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM (NTS)
LENGTH= 46'
9'X8' RCBC BURIED 1.0'

CULVERT INLET/OUTLET DETAILS
C100
–L1– STA. 1008+75
(DETAIL CA)



TOTAL CHANNEL EXCAVATION = 103 CY
TOTAL CL II RIP RAP = 311 TONS
TOTAL GEOTEXTILE FAB. = 295 SY

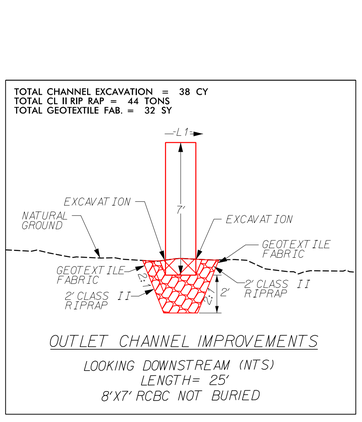
OUTLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM (NTS)
LENGTH= 74'
12'X8' RCBC BURIED 1.0'



TOTAL CHANNEL EXCAVATION = 3000 CY
TOTAL CL II RIP RAP = 1120 TONS
TOTAL GEOTEXTILE FAB. = 1160 SY

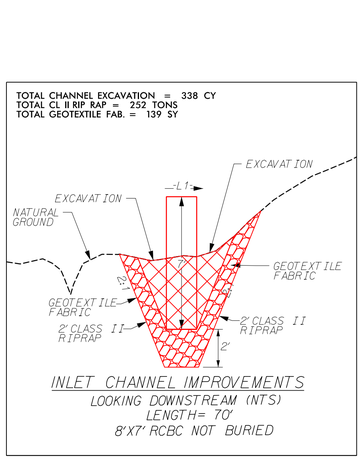
INLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM (NTS)
LENGTH= 172'
12'X8' RCBC BURIED 1.0'

CULVERT INLET/OUTLET DETAILS
C200
–L1– STA. 1013+50
(DETAIL CB)



TOTAL CHANNEL EXCAVATION = 38 CY
TOTAL CL II RIP RAP = 44 TONS
TOTAL GEOTEXTILE FAB. = 32 SY

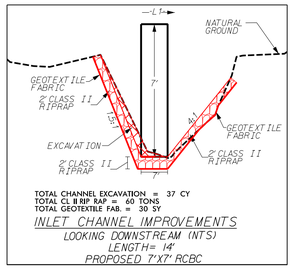
OUTLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM (NTS)
LENGTH= 25'
8'X7' RCBC NOT BURIED



TOTAL CHANNEL EXCAVATION = 338 CY
TOTAL CL II RIP RAP = 252 TONS
TOTAL GEOTEXTILE FAB. = 139 SY

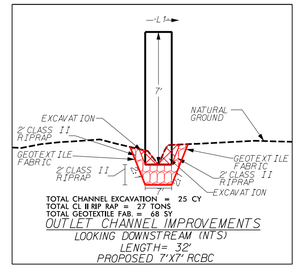
INLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM (NTS)
LENGTH= 70'
8'X7' RCBC NOT BURIED

CULVERT INLET/OUTLET DETAILS
C300
–L1– STA. 1099+00
(DETAIL CC)



TOTAL CHANNEL EXCAVATION = 37 CY
TOTAL CL II RIP RAP = 60 TONS
TOTAL GEOTEXTILE FAB. = 30 SY

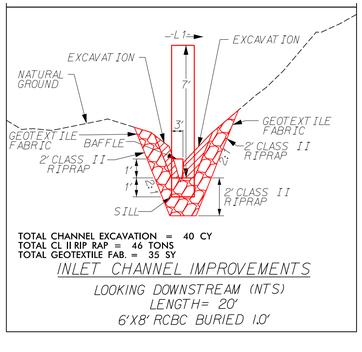
INLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM (NTS)
LENGTH= 14'
PROPOSED 7'X7' RCBC



TOTAL CHANNEL EXCAVATION = 25 CY
TOTAL CL II RIP RAP = 27 TONS
TOTAL GEOTEXTILE FAB. = 68 SY

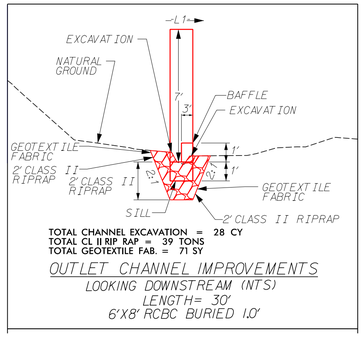
OUTLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM (NTS)
LENGTH= 32'
PROPOSED 7'X7' RCBC

CULVERT INLET/OUTLET DETAILS
C400
–L1– STA. 1114+75
(DETAIL CD)



TOTAL CHANNEL EXCAVATION = 40 CY
TOTAL CL II RIP RAP = 46 TONS
TOTAL GEOTEXTILE FAB. = 35 SY

INLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM (NTS)
LENGTH= 20'
6'X8' RCBC BURIED 1.0'



TOTAL CHANNEL EXCAVATION = 28 CY
TOTAL CL II RIP RAP = 39 TONS
TOTAL GEOTEXTILE FAB. = 71 SY

OUTLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM (NTS)
LENGTH= 30'
6'X8' RCBC BURIED 1.0'

CULVERT INLET/OUTLET DETAILS
C500
–L1– STA. 1152+00
(DETAIL CE)

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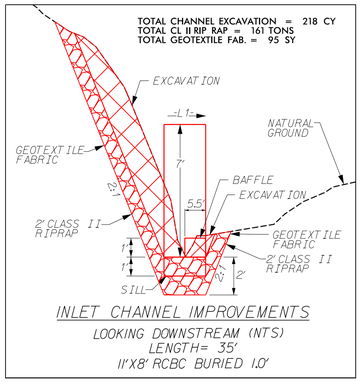
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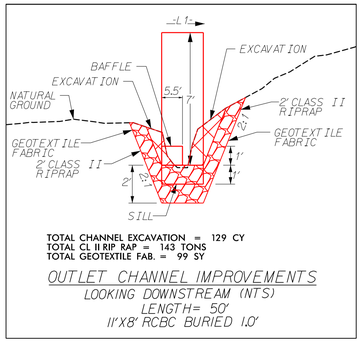
PROJECT REFERENCE NO.	SHEET NO.
R-2829A	2D-6
	HYDRAULICS DESIGN ENGINEER

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BUFFER DRAWING SHEET 7 OF 36



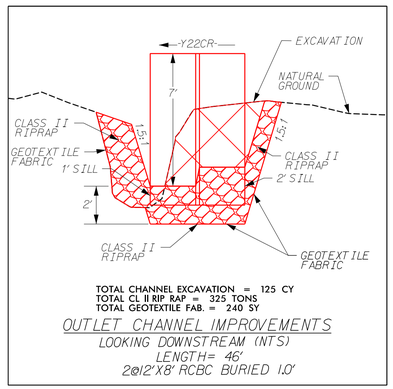
INLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM (NTS)
LENGTH= 35'
11'X8' RCBC BURIED 1.0'



TOTAL CHANNEL EXCAVATION = 129 CY
TOTAL CL II RIP RAP = 143 TONS
TOTAL GEOTEXTILE FAB. = 99 SY

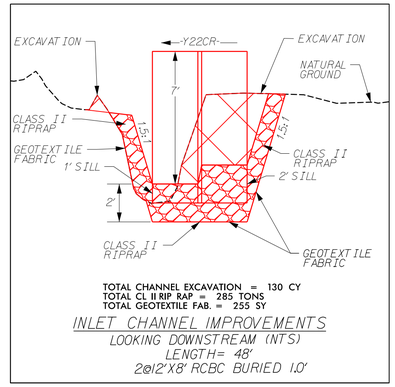
OUTLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM (NTS)
LENGTH= 50'
11'X8' RCBC BURIED 1.0'

CULVERT INLET/OUTLET DETAILS
C600
–L1– STA. 1171+00
(DETAIL CF)



TOTAL CHANNEL EXCAVATION = 125 CY
TOTAL CL II RIP RAP = 325 TONS
TOTAL GEOTEXTILE FAB. = 240 SY

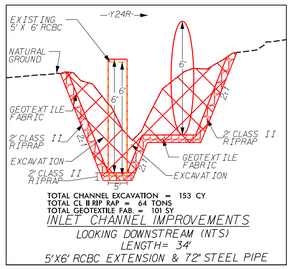
OUTLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM (NTS)
LENGTH= 46'
2@12'X8' RCBC BURIED 1.0'



TOTAL CHANNEL EXCAVATION = 130 CY
TOTAL CL II RIP RAP = 285 TONS
TOTAL GEOTEXTILE FAB. = 255 SY

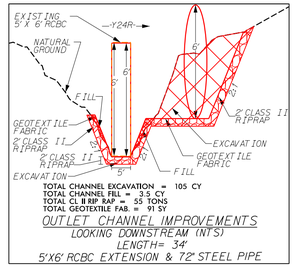
INLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM (NTS)
LENGTH= 48'
2@12'X8' RCBC BURIED 1.0'

CULVERT INLET/OUTLET DETAILS
C700
–Y22CR– STA. 14+00
(DETAIL CG)



TOTAL CHANNEL EXCAVATION = 153 CY
TOTAL CL II RIP RAP = 64 TONS
TOTAL GEOTEXTILE FAB. = 101 SY

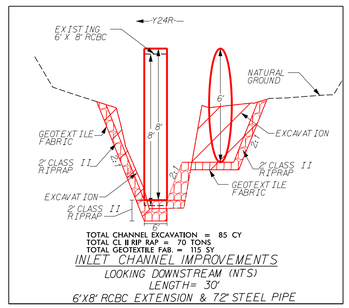
INLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM (NTS)
LENGTH= 34'
5'X6' RCBC EXTENSION & 72" STEEL PIPE



TOTAL CHANNEL EXCAVATION = 105 CY
TOTAL CHANNEL FILL = 3.5 CY
TOTAL CL II RIP RAP = 55 TONS
TOTAL GEOTEXTILE FAB. = 91 SY

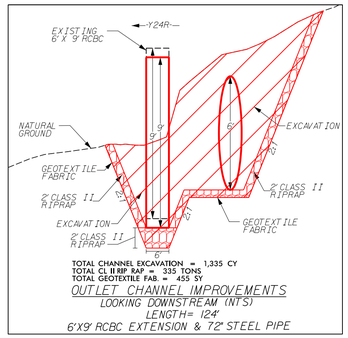
OUTLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM (NTS)
LENGTH= 34'
5'X6' RCBC EXTENSION & 72" STEEL PIPE

CULVERT INLET/OUTLET DETAILS
C800
–Y24R– 19+50
(DETAIL CH)



TOTAL CHANNEL EXCAVATION = 85 CY
TOTAL CL II RIP RAP = 70 TONS
TOTAL GEOTEXTILE FAB. = 115 SY

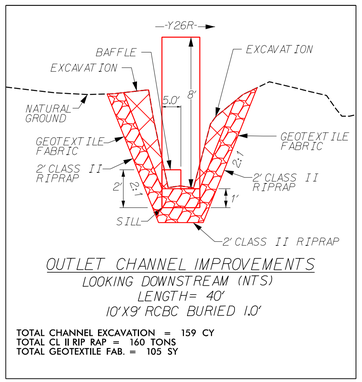
INLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM (NTS)
LENGTH= 30'
6'X8' RCBC EXTENSION & 72" STEEL PIPE



TOTAL CHANNEL EXCAVATION = 1,335 CY
TOTAL CL II RIP RAP = 335 TONS
TOTAL GEOTEXTILE FAB. = 455 SY

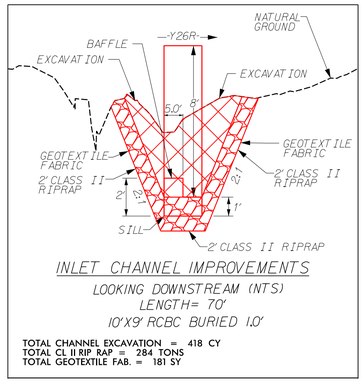
OUTLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM (NTS)
LENGTH= 124'
6'X9' RCBC EXTENSION & 72" STEEL PIPE

CULVERT INLET/OUTLET DETAILS
C900
–Y24R– 34+50
(DETAIL CI)



OUTLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM (NTS)
LENGTH= 40'
10'X9' RCBC BURIED 1.0'

TOTAL CHANNEL EXCAVATION = 159 CY
TOTAL CL II RIP RAP = 160 TONS
TOTAL GEOTEXTILE FAB. = 105 SY



INLET CHANNEL IMPROVEMENTS
LOOKING DOWNSTREAM (NTS)
LENGTH= 70'
10'X9' RCBC BURIED 1.0'

TOTAL CHANNEL EXCAVATION = 418 CY
TOTAL CL II RIP RAP = 284 TONS
TOTAL GEOTEXTILE FAB. = 181 SY

CULVERT INLET/OUTLET DETAILS
C1000
–Y26R– 18+75
(DETAIL CJ)

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Submitted September 17, 2024

SECTION 1 – SWALE DATA

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	SWALE DATA

BUFFER DRAWING SHEET 8 OF 36

GRASS SWALE DATA							
DA =	6.86	AC					
SLOPE =	0.30	%					
L REQ=	686	FT					
L PRO.=	400	FT					
Q2=	21.95	CFS					
V2=	1.98	FT/S					
D2=	1.24	FT					
Q10=	28.09	CFS					
V10=	2.11	FT/S					
D10=	1.39	FT					
STA=	L	98600	TO	99000	LT		

*TREATMENT PROVIDED IS ADDITIONAL & TO A NON-BUFFERED AREA

GRASS SWALE DATA							
DA =	4.02	AC					
SLOPE =	0.40	%					
L REQ=	402	FT					
L PRO.=	400	FT					
Q2=	12.86	CFS					
V2=	1.90	FT/S					
D2=	0.89	FT					
Q10=	16.46	CFS					
V10=	2.04	FT/S					
D10=	1.01	FT					
STA=	L	99200	TO	99600	LT		

*TREATMENT PROVIDED IS ADDITIONAL & TO A NON-BUFFERED AREA

GRASS SWALE DATA							
DA =	1.91	AC					
SLOPE =	0.60	%					
L REQ=	191	FT					
L PRO.=	200	FT					
Q2=	6.98	CFS					
V2=	1.95	FT/S					
D2=	0.61	FT					
Q10=	8.94	CFS					
V10=	2.09	FT/S					
D10=	0.70	FT					
STA=	L	100100	TO	100300	LT		

*TREATMENT PROVIDED IS ADDITIONAL & TO A NON-BUFFERED AREA

GRASS SWALE DATA							
DA =	2.10	AC					
SLOPE =	0.63	%					
L REQ=	210	FT					
L PRO.=	80	FT					
Q2=	7.68	CFS					
V2=	1.70	FT/S					
D2=	0.73	FT					
Q10=	9.83	CFS					
V10=	1.83	FT/S					
D10=	0.83	FT					
STA=	L	100300	TO	100380	LT		

*TREATMENT PROVIDED IS ADDITIONAL & TO A NON-BUFFERED AREA

GRASS SWALE DATA							
DA =	0.43	AC					
SLOPE =	0.49	%					
L REQ=	43	FT					
L PRO.=	150	FT					
Q2=	1.39	CFS					
V2=	1.03	FT/S					
D2=	0.25	FT					
Q10=	1.78	CFS					
V10=	1.12	FT/S					
D10=	0.29	FT					
STA=	L1	100550	TO	100700	RT		

GRASS SWALE DATA							
DA =	3.34	AC					
SLOPE =	0.73	%					
L REQ=	334	FT					
L PRO.=	247	FT					
Q2=	10.68	CFS					
V2=	1.97	FT/S					
D2=	0.83	FT					
Q10=	13.68	CFS					
V10=	2.12	FT/S					
D10=	0.95	FT					
STA=	L1	100903	TO	101150	LT		

GRASS SWALE DATA							
DA =	4.70	AC					
SLOPE =	0.58	%					
L REQ=	470	FT					
L PRO.=	173	FT					
Q2=	12.89	CFS					
V2=	1.91	FT/S					
D2=	0.97	FT					
Q10=	16.50	CFS					
V10=	2.05	FT/S					
D10=	1.10	FT					
STA=	L1	101377	TO	101550	LT		

GRASS SWALE DATA							
DA =	2.11	AC					
SLOPE =	0.60	%					
L REQ=	211	FT					
L PRO.=	100	FT					
Q2=	6.75	CFS					
V2=	1.93	FT/S					
D2=	0.60	FT					
Q10=	8.64	CFS					
V10=	2.07	FT/S					
D10=	0.69	FT					
STA=	L1	101800	TO	101900	LT		

GRASS SWALE DATA							
DA =	0.54	AC					
SLOPE =	2.16	%					
L REQ=	54	FT					
L PRO.=	250	FT					
Q2=	1.97	CFS					
V2=	1.96	FT/S					
D2=	0.21	FT					
Q10=	2.53	CFS					
V10=	2.13	FT/S					
D10=	0.24	FT					
STA=	L1	101900	TO	102150	LT		

GRASS SWALE DATA							
DA =	0.88	AC					
SLOPE =	0.79	%					
L REQ=	88	FT					
L PRO.=	236	FT					
Q2=	2.82	CFS					
V2=	1.04	FT/S					
D2=	0.46	FT					
Q10=	3.60	CFS					
V10=	1.11	FT/S					
D10=	0.53	FT					
STA=	L1	101050	TO	101286	RT		

GRASS SWALE DATA							
DA =	0.75	AC					
SLOPE =	1.50	%					
L REQ=	75	FT					
L PRO.=	100	FT					
Q2=	2.40	CFS					
V2=	1.85	FT/S					
D2=	0.26	FT					
Q10=	3.07	CFS					
V10=	2.00	FT/S					
D10=	0.30	FT					
STA=	L1	101900	TO	102000	RT		

GRASS SWALE DATA							
DA =	0.56	AC					
SLOPE =	0.48	%					
L REQ=	56	FT					
L PRO.=	168	FT					
Q2=	1.79	CFS					
V2=	1.15	FT/S					
D2=	0.30	FT					
Q10=	2.29	CFS					
V10=	1.24	FT/S					
D10=	0.34	FT					
STA=	L1	102250	TO	102418	RT		

GRASS SWALE DATA							
DA =	0.98	AC					
SLOPE =	0.95	%					
L REQ=	98	FT					
L PRO.=	84	FT					
Q2=	3.13	CFS					
V2=	1.51	FT/S					
D2=	0.40	FT					
Q10=	4.00	CFS					
V10=	1.63	FT/S					
D10=	0.46	FT					
STA=	L1	102300	TO	102384	LT		

GRASS SWALE DATA							
DA =	5.25	AC					
SLOPE =	0.55	%					
L REQ=	525	FT					
L PRO.=	82	FT					
Q2=	14.40	CFS					
V2=	1.94	FT/S					
D2=	1.04	FT					
Q10=	18.43	CFS					
V10=	2.07	FT/S					
D10=	1.18	FT					
STA=	L1	102418	TO	102500	RT		

GRASS SWALE DATA							
DA =	2.67	AC					
SLOPE =	0.57	%					
L REQ=	267	FT					
L PRO.=	350	FT					
Q2=	8.54	CFS					
V2=	1.85	FT/S					
D2=	0.64	FT					
Q10=	10.93	CFS					
V10=	1.98	FT/S					
D10=	0.72	FT					
STA=	L1	102600	TO	102950	RT		

GRASS SWALE DATA							
DA =	1.78	AC					
SLOPE =	1.16	%					
L REQ=	178	FT					
L PRO.=	233	FT					
Q2=	5.69	CFS					
V2=	1.94	FT/S					
D2=	0.53	FT					
Q10=	7.29	CFS					
V10=	2.09	FT/S					
D10=	0.60	FT					
STA=	L1	103400	TO	103633	LT		

*TREATMENT PROVIDED IS ADDITIONAL & TO A NON-BUFFERED AREA

GRASS SWALE DATA							
DA =	1.34	AC					
SLOPE =	0.88	%					
L REQ=	134	FT					
L PRO.=	271	FT					
Q2=	4.29	CFS					
V2=	1.92	FT/S					
D2=	0.42	FT					
Q10=	5.49	CFS					
V10=	2.08	FT/S					
D10=	0.48	FT					
STA=	Y23RPC	1429	TO	1700	RT		

*TREATMENT PROVIDED IS ADDITIONAL & TO A NON-BUFFERED AREA

GRASS SWALE DATA							
DA =	12.02	AC					
SLOPE =	0.30	%					
L REQ=	1202	FT					
L PRO.=	100	FT					
Q2=	32.96	CFS					
V2=	1.94	FT/S					
D2=	1.81	FT					
Q10=	42.19	CFS					
V10=	2.06	FT/S					
D10=	2.03	FT					
STA=	Y23RPC	1700	TO	1800	RT		

*TREATMENT PROVIDED IS ADDITIONAL & TO A NON-BUFFERED AREA

GRASS SWALE DATA							
DA =	8.45	AC					
SLOPE =	0.30	%					
L REQ=	845	FT					
L PRO.=	100	FT					
Q2=	23.17	CFS					
V2=	1.96	FT/S					
D2=	1.24	FT					
Q10=	29.66	CFS					
V10=	2.09	FT/S					
D10=	1.39	FT					
STA=	Y23RPC	1800	TO	1900	RT		

*TREATMENT PROVIDED IS ADDITIONAL & TO A NON-BUFFERED AREA

GRASS SWALE DATA							
DA =	0.28	AC					
SLOPE =	0.62	%					
L REQ=	28	FT					
L PRO.=	103	FT					
Q2=	1.02	CFS					
V2=	1.05	FT/S					
D2=	0.21	FT					
Q10=	1.31	CFS					
V10=	1.14	FT/S					
D10=	0.24	FT					
STA=	Y23RPB	1608.27	TO	1711.67	LT		

*TREATMENT PROVIDED IS ADDITIONAL & TO A NON-BUFFERED AREA

GRASS SWALE DATA							
DA =	0.35	AC					
SLOPE =	3.53	%					
L REQ=	35	FT					
L PRO.=	85	FT					
Q2=	0.96	CFS					
V2=	1.82	FT/S					
D2=	0.12	FT					
Q10=	1.23	CFS					
V10=	1.98	FT/S					
D10=	0.14	FT					
STA=	Y23J	1400	TO	1485	LT		

GRASS SWALE DATA							
DA =	1.00	AC					
SLOPE =	1.13	%					
L REQ=	100	FT					
L PRO.=	265	FT					
Q2=	2.74	CFS					
V2=	1.78	FT/S					
D2=	0.30	FT					
Q10=	3.51	CFS					
V10=	1.93	FT/S					
D10=	0.35	FT					
STA=	Y23DR	2985	TO	3250	LT		

GRASS SWALE DATA							
DA =	0.60	AC					
SLOPE =	3.00	%					
L REQ=	60	FT					
L PRO.=	100	FT					
Q2=	1.37	CFS					
V2=	1.96	FT/S					
D2=	0.15	FT					
Q10=	1.76	CFS					
V10=	2.13	FT/S					
D10=	0.18	FT					
STA=	Y23DR	3600	TO	3700	LT		

GRASS SWALE DATA							
DA =	3.55	AC					
SLOPE =	0.47	%					
L REQ=	355	FT					
L PRO.=	95	FT					
Q2=	13.47	CFS					
V2=	1.80	FT/S					
D2=	1.05	FT					
Q10=	17.24	CFS					
V10=	1.93	FT/S					
D10=	1.18	FT					
STA=	Y23R	6000	TO	6095	RT		

GRASS SWALE DATA							
DA =	1.80	AC					
SLOPE =	0.95	%					
L REQ=	180	FT					
L PRO.=	105	FT					
Q2=	5.35	CFS					
V2=	1.78	FT/S					
D2=	0.54	FT					
Q10=	6.84	CFS					
V10=	1.91	FT/S					
D10=	0.61	FT					
STA=	Y23R	6095	TO	6200	RT		

GRASS SWALE DATA							
DA =	1.82	AC					
SLOPE =	1.00	%					
L REQ=	182	FT					
L PRO.=	90	FT					
Q2=	5.41	CFS					
V2=	1.81	FT/S					
D2=	0.53	FT					
Q10=	6.92	CFS					
V10=	1.95	FT/S					
D10=	0.61	FT					
STA=	Y23FR	1025	TO	1115	LT		

GRASS SWALE DATA							
DA =	1.70	AC					
SLOPE =	0.50	%					
L REQ=	170	FT					
L PRO.=	120	FT					
Q2=	5.05	CFS					
V2=	1.62	FT/S					
D2=	0.53	FT					
Q10=	6.46	CFS					
V10=	1.74	FT/S					
D10=	0.61	FT					
STA=	Y23AR	1330	TO	1450	RT		

GRASS SWALE DATA							
DA =	0.35	AC					
SLOPE =	3.90	%					
L REQ=	35	FT					
L PRO.=	71	FT					
Q2=	0.80	CFS					
V2=	1.96	FT/S					
D2=	0.34	FT					
Q10=	1.02	CFS					
V10=	2.15	FT/S					
D10=	0.40	FT					
STA=	Y23FR	1169	TO	1240	RT		

GRASS SWALE DATA							
DA =	0.50	AC					
SLOPE =	3.96	%					
L REQ=	50	FT					
L PRO.=	156	FT					
Q2=	1.26	CFS					
V2=	1.78	FT/S					
D2=	0.16	FT					
Q10=	1.61	CFS					
V10=	1.95	FT/S					
D10=	0.18	FT					
STA=	Y23FR	1194	TO	1350	LT		

GRASS SWALE DATA							
DA =	1.42	AC					
SLOPE =	1.31	%					
L REQ=	142	FT					
L PRO.=	445	FT					
Q2=	2.60	CFS					
V2=	1.84	FT/S					
D2=	0.28	FT					
Q10=	3.32	CFS					
V10=	1.99	FT/S					
D10=	0.32	FT					
STA=	Y23RPB	1805	TO	2250	RT		

GRASS SWALE DATA							
DA =	2.32	AC					
SLOPE =	0.98	%					
L REQ=	232	FT					
L PRO.=	143	FT					
Q2=	5.83	CFS					
V2=	1.84	FT/S					
D2=	0.56	FT					
Q10=	7.46	CFS					
V10=	1.98	FT/S					
D10=	0.64	FT					
STA=	Y23RPB	2350	TO	-	RT		

GRASS SWALE DATA							
DA =	2.52	AC					
SLOPE =	0.41	%					
L REQ=	252	FT					
L PRO.=	162	FT					
Q2=	6.91	CFS					
V2=	1.42	FT/S					
D2=	0.77	FT					
Q10=	8.85	CFS					
V10=	1.53	FT/S					
D10=	0.87	FT					
STA=	Y23R	3900	TO	4062	LT		

*TREATMENT PROVIDED IS ADDITIONAL & TO A NON-BUFFERED AREA

GRASS SWALE DATA							
DA =	2.31	AC					
SLOPE =	0.53	%					
L REQ=	231	FT					
L PRO.=	38	FT					
Q2=	9.50	CFS					
V2=	1.70	FT/S					
D2=	0.85	FT					
Q10=	12.16	CFS					
V10=	1.82	FT/S					
D10=	0.97	FT					
STA=	Y23R	4062	TO	4100	LT		

*TREATMENT PROVIDED IS ADDITIONAL & TO A NON-BUFFERED AREA

GRASS SWALE DATA							
DA =	1.60	AC					
SLOPE =	0.47	%					
L REQ=	160	FT					
L PRO.=	150	FT					
Q2=	4.75	CFS					
V2=	1.52	FT/S					
D2=	0.52	FT					
Q10=	6.08	CFS					
V10=	1.63	FT/S					
D10=	0.59	FT					
STA=	L1	105450	TO	105600	RT		

*TREATMENT PROVIDED IS ADDITIONAL & TO A NON-BUFFERED AREA

GRASS SWALE DATA							
DA =	2.10	AC					
SLOPE =	0.90	%					
L REQ=	210	FT					
L PRO.=	100	FT					
Q2=	4.74	CFS					
V2=	2.44	FT/S					
D2=	0.70	FT					
Q10=	6.24	CFS					
V10=	1.82	FT/S					
D10=	0.59	FT					
STA=	L1	105600	TO	-	RT		

*TREATMENT PROVIDED IS ADDITIONAL & TO A NON-BUFFERED AREA

GRASS SWALE DATA							
DA =	3.10	AC					
SLOPE =	0.31	%					
L REQ=	310	FT					
L PRO.=	350	FT					
Q2=	8.50	CFS					
V2=	1.60	FT/S					
D2=	0.79	FT					
Q10=	10.88	CFS					
V10=	1.71	FT/S					
D10=	0.89	FT					
STA=	Y23RPC	2000	TO	2350	LT		

*TREATMENT PROVIDED IS ADDITIONAL & TO A NON-BUFFERED AREA

GRASS SWALE DATA							
DA =	0.50	AC					
SLOPE =	3.10	%					
L REQ=	50	FT					
L PRO.=	145	FT					
Q2=	0.91	CFS					
V2=	1.71	FT/S					
D2=	0.12	FT					
Q10=	1.17	CFS					
V10=	1.87	FT/S					
D10=	0.14	FT					
STA=	Y23LPC	1400	TO	1545	RT		

*TREATMENT PROVIDED IS ADDITIONAL & TO A NON-BUFFERED AREA

GRASS SWALE DATA							
DA =	1.60	AC					
SLOPE =	0.76	%					
L REQ=	160	FT					
L PRO.=	500	FT					
Q2=	4.39	CFS					
V2=	1.58	FT/S					
D2=	0.49	FT					
Q10=	5.62	CFS					
V10=	1.94	FT/S					
D10=	0.50	FT					
STA=	Y23RPC	1900	TO	2400	RT		

*TREATMENT PROVIDED IS ADDITIONAL & TO A NON-BUFFERED AREA

GRASS SWALE DATA							
DA =	0.15	AC					
SLOPE =	3.90	%					
L REQ=	15	FT					
L PRO.=	50	FT					
Q2=	0.31	CFS					
V2=	1.23	FT/S					
D2=	0.06	FT					
Q10=	0.39	CFS					
V10=	1.35	FT/S					
D10=	0.07	FT					
STA=	Y23R	1850	TO	1900	LT		

*TREATMENT PROVIDED IS ADDITIONAL & TO A NON-BUFFERED AREA

GRASS SWALE DATA							
DA =	1.10	AC					
SLOPE =	1.52	%					
L REQ=	110	FT					
L PRO.=	400	FT					
Q2=	2.26	CFS					
V2=	1.59	FT/S					
D2=	0.29	FT					
Q10=	2.90	CFS					
V10=	1.72	FT/S					
D10=	0.34	FT					
STA=	Y23R	1900	TO	2300	LT		

*TREATMENT PROVIDED IS ADDITIONAL & TO A NON-BUFFERED AREA

GRASS SWALE DATA							
DA =	1.30	AC					
SLOPE =	0.93	%					
L REQ=	130	FT					
L PRO.=	200	FT					
Q2=	3.56	CFS					
V2=	1.81	FT/S					
D2=	0.37	FT					
Q10=	4.56	CFS					
V10=	1.95	FT/S					
D10=	0.43	FT					
STA=	Y23DR	2100	TO	2300	LT		

*TREATMENT PROVIDED IS ADDITIONAL & TO A NON-BUFFERED AREA

GRASS SWALE DATA							
DA =	2.00	AC					
SLOPE =	1.03	%					
L REQ=	200	FT					
L PRO.=	350	FT					
Q2=	5.94	CFS					
V2=	1.88	FT/S					
D2=	0.56	FT					
Q10=	7.61	CFS					
V10=	2.02	FT/S					
D10=	0.64	FT					
STA=	Y23R	4950	TO	5300	RT		

*TREATMENT PROVIDED IS ADDITIONAL & TO A NON-BUFFERED AREA

GRASS SWALE DATA							
DA =	0.65	AC					
SLOPE =	1.10	%					
L REQ=	65	FT					
L PRO.=	300	FT					
Q2=	1.49	CFS					
V2=	1.41	FT/S					
D2=	0.21	FT					
Q10=	1.90	CFS					
V10=	1.57	FT/S					
D10=	0.25	FT					
STA=	Y23BR	1850	TO	2150	RT		

*TREATMENT PROVIDED IS ADDITIONAL & TO A NON-BUFFERED AREA

GRASS SWALE DATA							
DA =	1.00	AC					
SLOPE =	0.90	%					
L REQ=	100	FT					
L PRO.=	100	FT					
Q2=	2.29	CFS					
V2=	1.34	FT/S					
D2=	0.34	FT					
Q10=	2.93	CFS					
V10=	1.45	FT/S					
D10=	0.39	FT					
STA=	Y23BR	2150	TO	2250	RT		

*TREATMENT PROVIDED IS ADDITIONAL & TO A NON-BUFFERED AREA

GRASS SWALE DATA							
DA =	0.65	AC					
SLOPE =	1.60	%					
L REQ=	65	FT					
L PRO.=	200	FT					
Q2=	2.08	CFS					
V2=	1.83	FT/S					
D2=	0.24	FT					
Q10=	2.66	CFS					
V10=	1.99	FT/S					
D10=	0.27	FT					
STA=	Y23CR	2050	TO	2250	LT		

*TREATMENT PROVIDED IS ADDITIONAL & TO A NON-BUFFERED AREA

GRASS SWALE DATA							
DA =	0.75	AC					
SLOPE =	2.15	%					
L REQ=	75	FT					
L PRO.=	65	FT					
Q2=	2.40	CFS					
V2=	1.82	FT/S					
D2=	0.27	FT					
Q10=	3.07	CFS					
V10=	1.98	FT/S					
D10=	0.31	FT					
STA=	Y23CR	2250	TO	2315	LT		

*TREATMENT PROVIDED IS ADDITIONAL & TO A NON-BUFFERED AREA

GRASS SWALE DATA							
DA =	0.70	AC					
SLOPE =	3.31	%					
L REQ=	70	FT					
L PRO.=	160	FT					
Q2=	1.60	CFS					
V2=	1.83	FT/S					
D2=	0.19	FT					
Q10=	2.05	CFS					
V10=	1.99	FT/S					
D10=	0.22	FT					
STA=	Y23BR	2340	TO	2500	RT		

*TREATMENT PROVIDED IS ADDITIONAL & TO A NON-BUFFERED AREA

GRASS SWALE DATA							
DA =	0.80	AC					
SLOPE =	0.60	%					
L REQ=	80	FT					
L PRO.=	50	FT					
Q2=	2.01	CFS					
V2=	1.12	FT/S					
D2=	0.36	FT					
Q10=	2.57	CFS					
V10=	1.21	FT/S					
D10=	0.41	FT					
STA=	Y23BR	2500	TO	2550	RT		

*TREATMENT PROVIDED IS ADDITIONAL & TO A NON-BUFFERED AREA

GRASS SWALE DATA							
DA =	6.61	AC					
SLOPE =	0.60	%					
L REQ=	661	FT					
L PRO.=	114	FT					
Q2=	18.43	CFS					
V2=	1.98	FT/S					
D2=	1.22	FT					
Q10=	23.59	CFS					
V10=	2.28	FT/S					
D10=	1.31	FT					
STA=	L1	108506	TO	108620	LT		

GRASS SWALE DATA							
DA =	8.28	AC					
SLOPE =	0.35	%					
L REQ=	828	FT					
L PRO.=	229	FT					
Q2=	22.70	CFS					
V2=	1.86	FT/S					
D2=	1.46	FT					
Q10=	29.06	CFS					
V10=	1.98	FT/S					
D10=	1.64	FT					
STA=	L1	108471	TO	108700	RT		

GRASS SWALE DATA							
DA =	4.41	AC					
SLOPE =	0.50	%					
L REQ=	441	FT					
L PRO.=	400	FT					
Q2=	14.11	CFS					
V2=	1.86	FT/S					
D2=	1.06	FT					
Q10=	18.06	CFS					
V10=	1.99	FT/S					
D10=	1.20	FT					
STA=	L1	108950	TO	109350	RT		

GRASS SWALE DATA							
DA =	10.03	AC					
SLOPE =	0.32	%					
L REQ=	1003	FT					
L PRO.=	308	FT					
Q2=	34.38	CFS					
V2=	1.93	FT/S					
D2=	1.44	FT					
Q10=	41.07	CFS					
V10=	2.04	FT/S					
D10=	1.58	FT					
STA=	L1	108692	TO	109000	LT		

GRASS SWALE DATA							
DA =	3.37	AC					
SLOPE =	0.35	%					
L REQ=	337	FT					
L PRO.=	200	FT					
Q2=	13.09	CFS					
V2=	1.60	FT/S					
D2=	1.11	FT					
Q10=	16.76	CFS					
V10=	1.71	FT/S					
D10=	1.26	FT					
STA=	L1	109000	TO	109200	LT		

GRASS SWALE DATA							
DA =	0.67	A

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SECTION 2 – SWALE DATA

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	SWALE DATA

BUFFER DRAWING SHEET 9 OF 36

GRASS SWALE DATA						
DA =	0.60	AC				
SLOPE =	1.39	%				
L REQ=	60	FT				
L PRO.=	216	FT				
Q2=	2.33	CFS				
V2=	1.56	FT/S				
D2=	0.30	FT				
Q10=	2.98	CFS				
V10=	1.69	FT/S				
D10=	0.35	FT				
STA=	L1	109400	TO	109615.6	LT	

GRASS SWALE DATA						
DA =	0.47	AC				
SLOPE =	0.81	%				
L REQ=	47	FT				
L PRO.=	184	FT				
Q2=	1.72	CFS				
V2=	1.18	FT/S				
D2=	0.30	FT				
Q10=	2.20	CFS				
V10=	1.28	FT/S				
D10=	0.34	FT				
STA=	L1	109615.6	TO	109800	LT	

GRASS SWALE DATA						
DA =	0.83	AC				
SLOPE =	0.50	%				
L REQ=	83	FT				
L PRO.=	150	FT				
Q2=	2.66	CFS				
V2=	1.48	FT/S				
D2=	0.35	FT				
Q10=	3.40	CFS				
V10=	1.47	FT/S				
D10=	0.44	FT				
STA=	L1	109700	TO	109850	RT	

GRASS SWALE DATA						
DA =	0.91	AC				
SLOPE =	1.61	%				
L REQ=	91	FT				
L PRO.=	33	FT				
Q2=	3.33	CFS				
V2=	1.89	FT/S				
D2=	0.38	FT				
Q10=	3.73	CFS				
V10=	1.96	FT/S				
D10=	0.40	FT				
STA=	L1	109850	TO	109883	RT	

GRASS SWALE DATA						
DA =	2.17	AC				
SLOPE =	0.41	%				
L REQ=	217	FT				
L PRO.=	17	FT				
Q2=	7.93	CFS				
V2=	1.41	FT/S				
D2=	0.75	FT				
Q10=	10.16	CFS				
V10=	1.58	FT/S				
D10=	0.94	FT				
STA=	L1	109900	TO	109917	RT	

GRASS SWALE DATA						
DA =	2.02	AC				
SLOPE =	0.42	%				
L REQ=	202	FT				
L PRO.=	83	FT				
Q2=	7.39	CFS				
V2=	1.47	FT/S				
D2=	0.67	FT				
Q10=	9.45	CFS				
V10=	1.44	FT/S				
D10=	0.77	FT				
STA=	L1	109917	TO	110000	RT	

GRASS SWALE DATA						
DA =	0.60	AC				
SLOPE =	1.56	%				
L REQ=	60	FT				
L PRO.=	50	FT				
Q2=	2.06	CFS				
V2=	1.84	FT/S				
D2=	0.24	FT				
Q10=	2.63	CFS				
V10=	2.00	FT/S				
D10=	0.27	FT				
STA=	L1	110100	TO	110150	RT	

GRASS SWALE DATA						
DA =	4.91	AC				
SLOPE =	0.35	%				
L REQ=	491	FT				
L PRO.=	26	FT				
Q2=	16.83	CFS				
V2=	1.71	FT/S				
D2=	1.26	FT				
Q10=	21.54	CFS				
V10=	1.82	FT/S				
D10=	1.43	FT				
STA=	L1	111300	TO	111326	RT	

GRASS SWALE DATA						
DA =	0.98	AC				
SLOPE =	1.47	%				
L REQ=	98	FT				
L PRO.=	15	FT				
Q2=	3.58	CFS				
V2=	1.82	FT/S				
D2=	0.38	FT				
Q10=	4.59	CFS				
V10=	1.97	FT/S				
D10=	0.44	FT				
STA=	L1	111885	TO	111900	RT	

GRASS SWALE DATA						
DA =	0.92	AC				
SLOPE =	1.48	%				
L REQ=	92	FT				
L PRO.=	275	FT				
Q2=	3.36	CFS				
V2=	1.79	FT/S				
D2=	0.37	FT				
Q10=	4.31	CFS				
V10=	1.94	FT/S				
D10=	0.42	FT				
STA=	L1	111900	TO	112175	RT	

GRASS SWALE DATA						
DA =	2.10	AC				
SLOPE =	0.55	%				
L REQ=	210	FT				
L PRO.=	275	FT				
Q2=	7.68	CFS				
V2=	1.62	FT/S				
D2=	0.76	FT				
Q10=	9.83	CFS				
V10=	1.74	FT/S				
D10=	0.86	FT				
STA=	L1	112175	TO	112450	RT	

*TREATMENT PROVIDED IS ADDITIONAL & TO A NON-BUFFERED AREA

*TREATMENT PROVIDED IS ADDITIONAL & TO A NON-BUFFERED AREA

GRASS SWALE DATA						
DA =	0.70	AC				
SLOPE =	1.47	%				
L REQ=	70	FT				
L PRO.=	300	FT				
Q2=	2.56	CFS				
V2=	1.64	FT/S				
D2=	0.32	FT				
Q10=	3.28	CFS				
V10=	1.77	FT/S				
D10=	0.36	FT				
STA=	Y24RPC	2150	TO	2450	RT	

GRASS SWALE DATA						
DA =	3.00	AC				
SLOPE =	0.83	%				
L REQ=	300	FT				
L PRO.=	120	FT				
Q2=	7.54	CFS				
V2=	1.88	FT/S				
D2=	0.67	FT				
Q10=	9.65	CFS				
V10=	2.01	FT/S				
D10=	0.76	FT				
STA=	Y24RPDR	1160.23	TO	1280	LT	

GRASS SWALE DATA						
DA =	0.83	AC				
SLOPE =	2.00	%				
L REQ=	83	FT				
L PRO.=	100	FT				
Q2=	2.28	CFS				
V2=	1.75	FT/S				
D2=	0.27	FT				
Q10=	2.91	CFS				
V10=	1.89	FT/S				
D10=	0.31	FT				
STA=	L1	116450	TO	116550	RT	

GRASS SWALE DATA						
DA =	1.84	AC				
SLOPE =	1.15	%				
L REQ=	184	FT				
L PRO.=	100	FT				
Q2=	5.05	CFS				
V2=	1.86	FT/S				
D2=	0.49	FT				
Q10=	6.46	CFS				
V10=	2.01	FT/S				
D10=	0.57	FT				
STA=	L1	116850	TO	116950	LT	

GRASS SWALE DATA						
DA =	12.10	AC				
SLOPE =	0.32	%				
L REQ=	1210	FT				
L PRO.=	250	FT				
Q2=	33.18	CFS				
V2=	1.99	FT/S				
D2=	1.79	FT				
Q10=	42.47	CFS				
V10=	2.12	FT/S				
D10=	2.00	FT				
STA=	L1	116750	TO	117000	RT	

GRASS SWALE DATA						
DA =	2.52	AC				
SLOPE =	0.74	%				
L REQ=	252	FT				
L PRO.=	188	FT				
Q2=	6.91	CFS				
V2=	2.00	FT/S				
D2=	0.55	FT				
Q10=	8.85	CFS				
V10=	2.15	FT/S				
D10=	0.63	FT				
STA=	Y24RPC	2450	TO	2638	RT	

GRASS SWALE DATA						
DA =	10.88	AC				
SLOPE =	0.31	%				
L REQ=	1088	FT				
L PRO.=	262	FT				
Q2=	23.45	CFS				
V2=	2.02	FT/S				
D2=	1.27	FT				
Q10=	30.41	CFS				
V10=	2.17	FT/S				
D10=	1.44	FT				
STA=	Y24RPC	2638	TO	2900	RT	

GRASS SWALE DATA						
DA =	0.75	AC				
SLOPE =	1.00	%				
L REQ=	75	FT				
L PRO.=	100	FT				
Q2=	2.40	CFS				
V2=	1.41	FT/S				
D2=	0.34	FT				
Q10=	3.07	CFS				
V10=	1.52	FT/S				
D10=	0.39	FT				
STA=	L1	113600	TO	113700	RT	

GRASS SWALE DATA						
DA =	3.25	AC				
SLOPE =	0.80	%				
L REQ=	325	FT				
L PRO.=	100	FT				
Q2=	8.91	CFS				
V2=	1.94	FT/S				
D2=	0.74	FT				
Q10=	11.41	CFS				
V10=	2.08	FT/S				
D10=	0.84	FT				
STA=	Y24RPBR	2950	TO	3050	LT	

GRASS SWALE DATA						
DA =	3.25	AC				
SLOPE =	0.80	%				
L REQ=	325	FT				
L PRO.=	150	FT				
Q2=	8.91	CFS				
V2=	1.94	FT/S				
D2=	0.74	FT				
Q10=	11.41	CFS				
V10=	2.08	FT/S				
D10=	0.84	FT				
STA=	Y24RPBR	3050	TO	3200	LT	

GRASS SWALE DATA						
DA =	3.07	AC				
SLOPE =	0.64	%				
L REQ=	307	FT				
L PRO.=	117	FT				
Q2=	9.82	CFS				
V2=	1.84	FT/S				
D2=	0.82	FT				
Q10=	12.57	CFS				
V10=	1.97	FT/S				
D10=	0.94	FT				
STA=	Y24R	1800	TO	1917	LT	

GRASS SWALE DATA						
DA =	6.21	AC				
SLOPE =	0.36	%				
L REQ=	621	FT				
L PRO.=	111	FT				
Q2=	19.87	CFS				
V2=	1.81	FT/S				
D2=	1.36	FT				
Q10=	25.43	CFS				
V10=	1.94	FT/S				
D10=	1.53	FT				
STA=	Y24R	1900	TO	2011	RT	

GRASS SWALE DATA						
DA =	1.00	AC				
SLOPE =	1.40	%				
L REQ=	100	FT				
L PRO.=	50	FT				
Q2=	3.20	CFS				
V2=	1.98	FT/S				
D2=	0.31	FT				
Q10=	4.10	CFS				
V10=	2.14	FT/S				
D10=	0.35	FT				
STA=	Y24A	1951	TO	2001	LT	

GRASS SWALE DATA						
DA =	1.04	AC				
SLOPE =	2.02	%				
L REQ=	104	FT				
L PRO.=	49	FT				
Q2=	3.33	CFS				
V2=	1.99	FT/S				
D2=	0.33	FT				
Q10=	4.26	CFS				
V10=	2.15	FT/S				
D10=	0.38	FT				
STA=	Y24A	2001.06	TO	2050.45	LT	

GRASS SWALE DATA						
DA =	2.14	AC				
SLOPE =	0.60	%				
L REQ=	214	FT				
L PRO.=	149	FT				
Q2=	6.85	CFS				
V2=	1.94	FT/S				
D2=	0.61	FT				
Q10=	8.76	CFS				
V10=	2.09	FT/S				
D10=	0.69	FT				
STA=	Y24R	3250	TO	3399.34	RT	

GRASS SWALE DATA						
DA =	3.20	AC				
SLOPE =	0.68	%				
L REQ=	320	FT				
L PRO.=	69	FT				
Q2=	10.24	CFS				
V2=	1.90	FT/S				
D2=	0.83	FT				
Q10=	13.10	CFS				
V10=	2.04	FT/S				
D10=	0.94	FT				
STA=	Y24R	3399.34	TO	3468.33	RT	

GRASS SWALE DATA						
DA =	2.00	AC				
SLOPE =	1.30	%				
L REQ=	200	FT				
L PRO.=	90	FT				
Q2=	5.48	CFS				
V2=	1.99	FT/S				
D2=	0.50	FT				
Q10=	7.02	CFS				
V10=	2.15	FT/S				
D10=	0.57	FT				
STA=	L1	117910	TO	118000	RT	

GRASS SWALE DATA						
DA =	1.79	AC				
SLOPE =	0.92	%				
L REQ=	179	FT				
L PRO.=	50	FT				
Q2=	4.89	CFS				
V2=	1.91	FT/S				
D2=	0.43	FT				
Q10=	6.27	CFS				
V10=	2.06	FT/S				
D10=	0.49	FT				
STA=	L1	118000	TO	118050	RT	

GRASS SWALE DATA						
DA =	1.71	AC				
SLOPE =	1.07	%				
L REQ=	171	FT				
L PRO.=	100	FT				
Q2=	4.69	CFS				
V2=	1.99	FT/S				
D2=	0.40	FT				
Q10=	6.00	CFS				
V10=	2.14	FT/S				
D10=	0.46	FT				
STA=	L1	118050	TO	118150	RT	

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aburke

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BUFFER DRAWING SHEET 10 OF 36

NAD 83/NSRS 2011

50 0 50 100
SCALE

ENGLISH

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

MATCHLINE -L- STA. 965+50 SEE SHEET 6

MATCHLINE -L- STA 992+00 SEE SHEET 8

SITE 3

WFN(2)

WFJ

WFN(2)

WFN(2)

SEW

SEY

SEY

WFN(1)

WFW

WFX

JS BEGINS

JS ENDS

SITE 3

WAKE COUNTY
JOHNSTON COUNTY

FOR SITE 5 BRIDGE PLANS SEE SHTS. SSL-1 THRU SSL-49 AND SSR-1 THRU SSR-49

GRAPHIC SCALE
50 25 0 50 100
PLANS

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Submitted September 17, 2024

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	9
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

NAD 83/NA 2011

50 0 50 100
SCALE

ENGLISH

MITIGABLE IMPACTS ZONE 1
MITIGABLE IMPACTS ZONE 2

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BUFFER DRAWING SHEET 11 OF 36

MATCHLINE -L- STA. 1005+00 SEE SHEET 8

MATCHLINE -L1- STA. 1018+00 SEE SHEET 10

JOHN AMAN

R. GARLAND BURNETTE

COORDINATE EQUALITY
-L- POT Sta. 1007+09.30 BK=
-LI- ST Sta. 1006+86.76 AH
(691059.355576, 2134406.728485)

COORDINATE EQUALITY
-L- POT Sta. 1007+09.30 BK=
-LI- ST Sta. 1006+86.76 AH
(691062.705847, 2134410.760568)

SFE

SFH

SITE 5

SITE 7

SITE 6

SFF

SFG

WFZ

C100 OUTLET STABILIZATION
41 TONS CL II RIPRAP
W/111 SY GEOFAB
SEE DETAIL CA

C200 OUTLET STABILIZATION
95 TONS CL II RIPRAP
W/241 SY GEOFAB
SEE DETAIL CB

2 TONS CL B RIPRAP
W/7 SY GEOFAB

5 TONS CL B RIPRAP
W/14 SY GEOFAB

TIE FENCE TO CUVLERT WING WALL

LATERAL
4' BASE SWALE
SEE DETAIL L

LATERAL 4' BASE DITCH
W/CL B RIPRAP
SEE DETAIL H

JS BEGINS
JS ENDS

CHANNEL BLOCK
SEE DETAIL BK
FILL REMAINDER
OF CHANNEL

TOE PROTECTION
W/CL B RIPRAP
SEE DETAIL E

TOE PROTECTION
W/CL B RIPRAP
SEE DETAIL F

15" RCP-III
24" RCP-III
24" CSP W/ELBOWS
15" CSP W/ELBOWS
2GIB-WSF
2GIA-WSF
2GIB-WSS
2GIA-WSS
FS
JB w/HH
DRAIN TO STREAM

SPECIAL CUT
4' BASE SWALE
SEE DETAIL O

LINE CUT/FILL
TRANSITION W/
2 TONS CL B RIPRAP
W/7 SY GEOFAB

C100 INLET STABILIZATION
74 TONS CL II RIPRAP
W/178 SY GEOFAB
SEE DETAIL CA

C200 INLET STABILIZATION
368 TONS CL II RIPRAP
W/730 SY GEOFAB
SEE DETAIL CB

CHANNEL CHANGE
W/CL II RIPRAP
SEE DETAIL AR

CHANNEL CHANGE
W/CL I RIPRAP
SEE DETAIL BB

CHANNEL CHANGE
SEE DETAIL AR

CARDINAL PIPELINE SOUTH EASEMENT (60' R/W PER 9897/1)

EXISTING R/W PER 10403RWF2_PSD

BOULDERS

1005+00
1010+00
1015+00

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dkluge

Submitted September 17, 2024

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PROJECT REFERENCE NO.	SHEET NO.
R-2829A	10
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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BUFFER DRAWING SHEET 12 OF 36

NAD 83/NA 2011

MATCHLINE -L1- STA. 1018+00 SEE SHEET 9

MATCHLINE -L1- STA. 1032+00 SEE SHEET 11

R. GARLAND BURNETTE

PDQ

WGE

WGD

1009
Q10 = 18.0cfs
V10 = 1.25fps

SITE 8

SFB

SWALE
Q10 = 4.00cfs
V10 = 1.63fps

WGC

WGB

SITE 8

WFZ

SFE

SITE 7

WGA

DITCH
Q10 = 15.44cfs
V10 = 1.78fps

PDE

RW
CA

48 TONS CL II RIPRAP W/90 SY GEOFAB OUTLET CHANNEL STABILIZATION W/CL II RIPRAP — SEE DETAIL AL
TIE RIPRAP PAD UP INTO SWALE DITCH

2 TONS CL B RIPRAP W/7 SY GEOFAB

SPECIAL V DITCH W/CL B RIPRAP SEE DETAIL Y

SPECIAL CUT 4' BASE SWALE SEE DETAIL O

LATERAL 4' BASE SWALE SEE DETAIL L

PIPES DO NOT INTERSECT

15" RCP-IV

18" RCP-IV

2GIB-WSF

2GIB-WSS

FS

1020+00

1025+00

1030+00

35' BEGINS

STANDARD 4' BASE DITCH SEE DETAIL I

LATERAL V DITCH SEE DETAIL B

SPECIAL V DITCH SEE DETAIL A

15 TONS CL I RIPRAP W/30 SY GEOFAB

DRAIN POND (SEE POND DRAINAGE PLANS)

POND WSE=310.5'

36" RCP-III (NOT BURIED, UPSIZED FOR MAINT.)

15" RCP-III 2GIB-WSF

SPECIAL CUT 4' BASE DITCH W/CL B RIPRAP SEE DETAIL R

24" CSP W/ELBOWS

BDO

BERM V DITCH W/CL B RIPRAP SEE DETAIL AH

LATERAL 4' BASE DITCH W/CL B RIPRAP SEE DETAIL H

CHANNEL CHANGE SEE DETAIL AR

FS MIN ELEV=296.0'

HW

BM1
ELEVATION = 307.61'
N 692,519 E 2,135,147
BL STATION 26+20.00
OFFSET 368.2' RIGHT
BE... OAK

50 0 50 100
SCALE

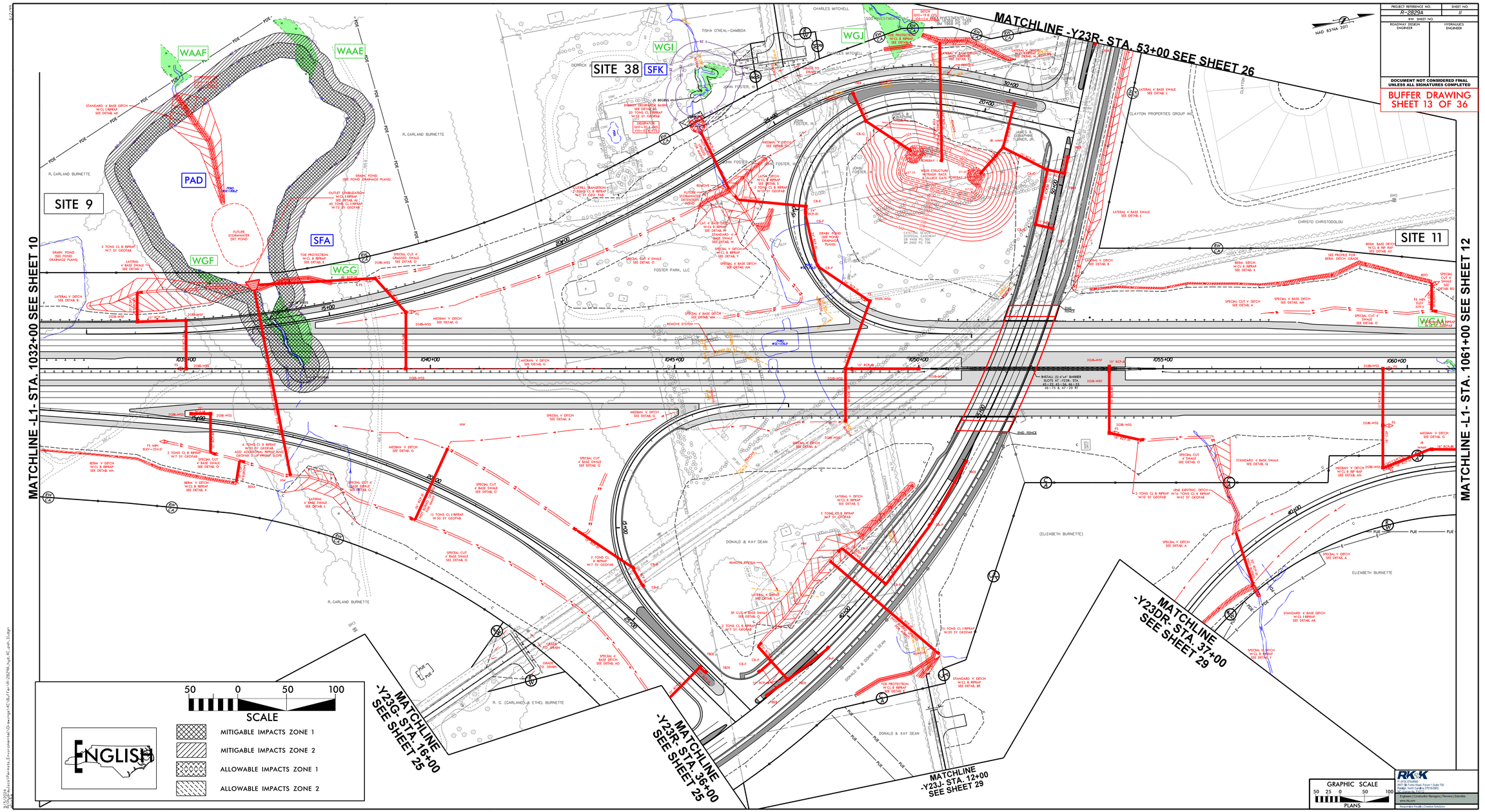
ENGLISH

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

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dbell


MATCHLINE -L1- STA. 1032+00 SEE SHEET 10
MATCHLINE -L1- STA. 1061+00 SEE SHEET 12
MATCHLINE -Y23R- STA. 53+00 SEE SHEET 26
MATCHLINE -Y23G- STA. 16+00 SEE SHEET 25
MATCHLINE -Y23R- STA. 36+00 SEE SHEET 25
MATCHLINE -Y23J- STA. 12+00 SEE SHEET 29
MATCHLINE -Y23DR- STA. 37+00 SEE SHEET 29
SITE 9
SITE 38
SITE 11
PAD
SFA
SFK
WAAF
WAAE
WGF
WGG
WGI
WGJ
WGM
R. GARLAND BURNETTE
R. G. (GARLAND) & ETHEL BURNETTE
FOSTER PARK, LLC
JOHN FOSTER, JR.
CHARLES MITCHELL
TISHA O'NEAL-GAMBOA
DERRICK HOLT
CLAYTON PROPERTIES GROUP INC
CHRISTO CHRISTODOULOU
DONALD & KAY DEAN
DONALD W. & DONNA S. DEAN
(ELIZABETH BURNETTE)
ELIZABETH BURNETTE
CHARLES & DAUPHINE TURNER, JR.
SCALE
50 0 50 100
ENGLISH
MITIGABLE IMPACTS ZONE 1
MITIGABLE IMPACTS ZONE 2
ALLOWABLE IMPACTS ZONE 1
ALLOWABLE IMPACTS ZONE 2
GRAPHIC SCALE
50 25 0 50 100
PLANS
NAD 83/NA 2011
PROJECT REFERENCE NO.
R-2829A
SHEET NO.
11
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
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PROJECT REFERENCE NO.	SHEET NO.
R-2829A	12
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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BUFFER DRAWING SHEET 14 OF 36

NAD 83/NA 2011

MATCHLINE -L1- STA 1061+00 SEE SHEET 11

MATCHLINE -L1- STA. 1075+00 SEE SHEET 13

MAP BY OTHERS

MAP BY OTHERS

60' PRIVATE INGRESS & EGRESS EASEMENT BM 1996 PG 628

60' PRIVATE INGRESS & EGRESS EASEMENT BM 1996 PG 628

CHRISTO CHRISTODOLOU

SARA EARLY

CLAYTON PROPERTIES GROUP INC

ELIZABETH BURNETTE

JOSEPH & VELANCIA BAILEY

SITE 12

WGN

SFC

INLET CHANNEL STABILIZATION W/CL I RIPRAP SEE DETAIL AL 33 TONS CL I RIPRAP W/62 SY GEOFAB

SPECIAL CUT 4' BASE W/CL B RIP RAP SEE DETAIL Z

JS BEGINS

SPECIAL CUT DITCH W/CL I RIP RAP SEE DETAIL BO

FS MIN ELEV 309.0

LATERAL 4' BASE DITCH SEE DETAIL AA

LATERAL V DITCH SEE DETAIL B

SPECIAL CUT DITCH SEE DETAIL A

DRAIN POND (SEE POND DRAINAGE PLANS)

POND WSE=284.0'

FS MIN ELEV. 290.1

SPECIAL CUT DITCH W/CL B RIP RAP SEE DETAIL Y

WGM

SFD

SITE 11

MEDIAN V DITCH SEE DETAIL G

SPECIAL CUT SWALE SEE DETAIL O

1 TON CL B RIPRAP W/5 SY GEOFAB

SITE 12

SFC

OUTLET CHANNEL STABILIZATION W/CL II RIPRAP SEE DETAIL AL 48 TONS CL II RIPRAP W/90 SY GEOFAB

ELIZABETH BURNETTE

1065+00

1070+00

1075+00

45+00

50+00

55+00

2GIB-WSS

FS

15" RCP-III

18" RCP-IV

24" RCP-IV

15" RCP-IV

42" RCP-IV (NOT BURIED UPSIZED FOR MAINT.)

INV=284.93'

INV=286.25'

REMOVE

TB 2GIB-NSF

24" CSP W/ELBOWS

18" CSP W/ELBOWS

VERIFY IN FIELD FOR A POTENTIAL SPRING BOX

TOE PROTECTION W/CL B RIPRAP SEE DETAIL E

20 TON CL I RIPRAP W/39 SY GEOFAB

3 TON CL B RIPRAP W/11 SY GEOFAB

LATERAL BASE DITCH W/CL B RIP RAP SEE DETAIL H

LATERAL BASE DITCH W/CL I RIP RAP SEE DETAIL N

STD. 4' BASE DITCH SEE DETAIL I

SPECIAL V DITCH W/CL I RIP RAP SEE DETAIL AB

SPECIAL CUT DITCH SEE DETAIL A

1220
Q10=14.4cfs
V10=1.89fps

WGO

2701 HIDDEN ACRE LAND TRUST

SARA EARLY

LINE END OF STD DITCH W/ CL I RIPRAP SEE DETAIL AJ

LINE END OF STD DITCH W/ 1 TON CL B RIPRAP W/4 SY GEOFAB

STD. V DITCH SEE DETAIL D

ELMO T WILLIAMS TRUST ALICE H WILLIAMS

JOSEPH & VELANCIA BAILEY

PUE

DUE

PDE

BZ 1

BZ 2

ENGLISH

SCALE 50 0 50 100

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

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dbuffe

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PROJECT REFERENCE NO.	SHEET NO.
R-2829A	13
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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BUFFER DRAWING SHEET 15 OF 36

SITE 14

50 0 50 100
SCALE

ENGLISH

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

CLAYTON PROPERTIES GROUP INC

NAD 83/NA 2011

N 17° 36' 33.5" W

N 38° 12' 58.2" W

N 80° 45' 20.6" W

N 80° 25' 12.6" W

MATCHLINE -L1- STA. 1075+00 SEE SHEET 12

MATCHLINE -L1- STA. 1089+00 SEE SHEET 14

1075+00

1080+00

1085+00

1090+00

SPECIAL V DITCH W/CL B RIP RAP SEE DETAIL Y

LATERAL 4' BASE DITCH SEE DETAIL AA

SPECIAL 4' BASE DITCH W/CL B RIP RAP SEE DETAIL Z

LATERAL 4' BASE DITCH W/CL B RIP RAP SEE DETAIL AS

SP. CUT DITCH W/CL I RIP RAP SEE DETAIL AB

LINE END OF SWALE W/CL I RIPRAP SEE DETAIL AJ & AQ

SPECIAL CUT DITCH W/CL I RIP RAP SEE DETAIL AB

STD. 4' BASE SWALE SEE DETAIL Q

LINE END OF SWALE W/CL I RIPRAP SEE DETAIL AJ & AQ

STD. 8' BASE SWALE SEE DETAIL AP

SFV

PS MIN 7 ELEV = 235.5

15 TON CL I RIPRAP W/30 SY GEOFAB

HW

36" RCP-IV BURIED

END FENCE

BEG FENCE

15" CSP W/ELBOWS

2GIB-WSF

15" RCP-IV

2GIB-WSS

776 TONS CL II RIPRAP

15" RCP-III

2GIB-WSF 2GIB-WSF 15" CSP W/ ELBOWS

1 TON CL B RIPRAP W/5 SY GEOFAB

GRADE TO DRAIN

LINE END OF SWALE W/CL I RIPRAP SEE DETAIL AJ & AQ

BEG FENCE

STD. 4' SWALE SEE DETAIL Q

LATERAL 4' BASE DITCH W/CL B RIP RAP SEE DETAIL H

ELMO T WILLIAMS TRUST ALICE H WILLIAMS

CAPITAL CITIES COMMUNICATIONS, INC.

WHITEOAK CREEK

BM6

WGP

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dbuffa

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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	14
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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BUFFER DRAWING SHEET 16 OF 36

50 0 50 100
SCALE

ENGLISH

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

NC DEPARTMENT OF TRANSPORTATION

NAD 83/NA 2011

CAPITAL CITIES COMMUNICATIONS, INC.

N 82°57'19" E 405.28'

SITE 15 WGR

MATCHLINE -L1- STA. 1089+00 SEE SHEET 13

MATCHLINE -L1- STA. 1100+50 SEE SHEET 15

STD. 8' BASE SWALE SEE DETAIL AP

LATERAL 4' BASE SWALE SEE DETAIL L

LATERAL 4' BASE DITCH W/CL B RIP RAP SEE DETAIL H

SPECIAL 4' BASE SWALE SEE DETAIL O

SWALE V10=1.9 FT/S Q10=3.6 CFS

2 TON CL B RIPRAP W/7 SY GEOFAB LAT. 4' BASE DITCH SEE DETAIL AA

C300 OUTLET STABILIZATION 38 TONS CL I RIPRAP W/32 SY GEOFAB SEE DETAIL CC

TOE PROTECTION W/CL B RIP RAP SEE DETAIL E

24" CSP W/ELBOWS 15" RCP-III 2GIB-WSF

15" CSP W/ELBOWS 2GIB-WSF

15" RCP-III 2GIB-WSF

24" RCP-IV

GRADE TO DRAIN

15" RCP-III 2GIB-WSS

1090+00

FS

1095+00

18" RCP-III 2GIB-WSS

-L1-

JS ENDS

1100+00

15" RCP-IV

BL-120

GRADE TO DRAIN

SPECIAL V DITCH SEE DETAIL A

SPECIAL CUT 4' SWALE SEE DETAIL O

TDE

SFR WGR

SITE 15

C300 INLET STABILIZATION 252 TONS CL II RIPRAP W/139 SY GEOFAB SEE DETAIL CC

LATERAL 4' BASE SWALE SEE DETAIL BF

SPECIAL 4' BASE W/CL II RIP RAP SEE DETAIL AZ

BZ 1 BZ 2

CAPITAL CITIES COMMUNICATIONS, INC.

CAPITOL BROADCASTING COMPANY, INC.

STV Engineers, Inc.
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900 West Trade St., Suite 715
Charlotte, NC 28202
NC License Number F-0991

RK&K
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Submitted September 17, 2024

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	15
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BUFFER DRAWING SHEET 17 OF 36

CLAYTON PROPERTIES GROUP INC

NC DEPARTMENT OF TRANSPORTATION

BOBBY & MARGARET RAYNOR

70' CP&L EASEMENT

WGR

WGR

WGR

SFN

SITE 16

BZ 1

BZ 2

WLB

JS

SF

RW CA

TOE PROTECTION W/CL B RIP RAP SEE DETAIL E

TYPE III PEDESTAL

ENERGY DISSIPATOR BASIN SEE DETAIL BS

DISSIPATOR V10=1.0 FT/S Q10=30.0 CFS

36" CSP W/ELBOWS (NOT BURIED, UPSIZED FOR MAINT.)

TB 2GIB-WSF

36" RCP-III (UPSIZED FOR MAINT.)

NC 540

BL-121

BL-122

BL-123

2GIA-WSS

2GIB-WSS

FS

-L1-

PROP. GUIDERAIL

1105+00

1110+00

30" CSP W/ ELBOWS

BDO

SPECIAL CUT 4' SWALE SEE DETAIL O

SPECIAL 4' BASE W/CL II RIP RAP SEE DETAIL AZ

BERM DITCH SEE DETAIL BE

BERM 4' BASE DITCH W/CL B RIP RAP SEE DETAIL AY

BERM DITCH W/CL B RIPRAP SEE DETAIL X

SPECIAL V DITCH SEE DETAIL A

15" RCP-III

24" RCP-IV

18" CSP W/ELBOWS

5 TON CL B RIPRAP W/14 SY GEOFAB

FS MIN ELEV=272.0

C400 OUTLET STABILIZATION 76 TONS CL II RIPRAP W/118 SY GEOFAB SEE DETAIL CD

PDE

JS ENDS

2GIB-WSF

4'-0" SCBC (NOT BURIED)

3 TON CL B RIPRAP W/10 SY GEOFAB

LATERAL 4' BASE SWALE SEE DETAIL L

SWALE V10=1.8 FT/S Q10=21.5 CFS

TOE PROTECTION W/CL B RIP RAP SEE DETAIL E

WGS

APPROX. LOCATION OF RELOCATED WRAL TV TOWER ANCHOR

CAPITOL BROADCASTING COMPANY, INC.

* SUPER INCREASED TO 0.04 FOR HYDROPLANING

MATCHLINE -L1- STA. 1100+50
SEE SHEET 14

MATCHLINE -L1- STA. 1114+00
SEE SHEET 16

50 0 50 100
SCALE

ENGLISH

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

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dbrooks

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PROJECT REFERENCE NO.	SHEET NO.
R-2829A	16
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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BUFFER DRAWING SHEET 18 OF 36

50 0 50 100
SCALE

ENGLISH

MITIGABLE IMPACTS ZONE 1

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NAD 83/NA 2011

BOBBY & MARGARET RAYNOR

NC DEPARTMENT OF TRANSPORTATION

RICHARD RAGSDALE REVOCABLE

CAPITOL BROADCASTING COMPANY, INC.

SITE 16 WGR

SFQ SITE 18

SITE 19 WGR SFS

WGS SFN WGT SITE 16

PAF

SITE 18 SFQ

SFS SITE 19

MATCHLINE -L1- STA. 1114+00 SEE SHEET 15

MATCHLINE -L1- STA. 1127+00 -Y24RPBR- STA. 22+00 SEE SHEET 17

MATCHLINE -Y24RPC- STA. 16+50 SEE SHEET 17

-L1- 1120+00

-Y24RPBR-

-Y24RPC-

15+00

20+00

JS ENDS

JS BEGINS

TOE PROTECTION W/CL B RIP RAP SEE DETAIL E

LINE CUT/FILL TRANSITION TOE PROTECTION W/CL B RIP RAP SEE DETAIL E

OUTLET CHANNEL STABILIZATION W/CL II RIPRAP SEE DETAIL AL 48 TONS CL II RIPRAP W/90 SY GEOFAB

TOE PROTECTION W/CL B RIP RAP 1 TON CL B RIPRAP W/5 SY GEOFAB SEE DETAIL E

1612 V10 = 0.5 FT/S Q10 = 1.9 CFS

15" CSP W/ELBOWS

2GIB-WSF

2GIB-WSS

15" RCP-III

15" RCP-IV

CHANNEL BLOCK SEE DETAIL BK

STANDARD 4' BASE SWALE SEE DETAIL O

SPECIAL CUT 4' SWALE SEE DETAIL O

FS MIN ELEV = 279.5

2 TON CL B RIPRAP W/7 SY GEOFAB

LATERAL 4' BASE DITCH SEE DETAIL AA

CHANNEL CHANGE W/CL II RIPRAP SEE DETAIL AR

2 TONS CL B RIPRAP W/7 SY GEOFAB C400 INLET STABILIZATION 39 TONS CL II RIPRAP W/73 SY GEOFAB SEE DETAIL CD

CHANNEL CHANGE W/CL II RIPRAP SEE DETAIL BB

LATERAL 4' BASE DITCH SEE DETAIL AA

LATERAL 4' BASE DITCH W/CL I RIP RAP SEE DETAIL BP

LATERAL 4' BASE DITCH SEE DETAIL AE

HW

PDE

TDE

RW CA

BZ 1

BZ 2

JS

ST

WLB

RWB

INV=265.31

8/3/2024
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dwheeler

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PROJECT REFERENCE NO.	SHEET NO.
R-2829A	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BUFFER DRAWING SHEET 19 OF 36

NAD 83/NA 2011

MATCHLINE -Y24R- STA. 36+50 SEE SHEET 35

MATCHLINE -Y24RPBR- STA. 22+00 SEE SHEET 16

MATCHLINE -L1- STA. 112+00 SEE SHEET 16

MATCHLINE -Y24RPC- STA. 16+50 SEE SHEET 16

MATCHLINE -Y24RPAR- STA. 20+00 SEE SHEET 18

MATCHLINE -L- STA. 115+00 SEE SHEET 18

MATCHLINE -Y24RPDR- STA. 12+50 SEE SHEET 18

MATCHLINE -Y24R- STA. 51+50 SEE SHEET 36

MATCHLINE -Y24CR- STA. 14+00 SEE SHEET 36

SITE 20

SITE 19

SITE 23

SGA WGU (2) WGU (1) SFT SFS WGX(2) WGX(1) WGY SGC WHB WGZ WHA

BOBBY & MARGARET RAYNOR

RICHARD ROGERS REVOCABLE TRUST

CAPITOL BROADCASTING COMPANY, INC.

BUFFALOE ENTERPRISES, LLC.

L&L COMPANY LLC

RANDY ALEXANDER

BETH BROWN, BRUNDA MIRSE, SENIOR JOHNSON, LA BONETTE, JERRY JOHNSON

ELAINE COATES

WILLIAM & EUNICE LEE

GARNER INDUSTRIAL V, LLC

SEEDLING TECHNOLOGY CENTER, LLC.

DEPARTMENT OF TRANSPORTATION

50 0 50 100
SCALE

ENGLISH

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

GRAPHIC SCALE
50 25 0 50 100
PLANS

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PROJECT REFERENCE NO.	SHEET NO.
R-2829A	18
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BUFFER DRAWING SHEET 20 OF 36

50 0 50 100
SCALE

ENGLISH

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

MATCHLINE -Y25- STA. 15+00 SEE SHEET 36A

MATCHLINE -Y26R- STA. 22+00 SEE SHEET 36A

MATCHLINE -Y26R-SR1- STA. 12+50 SEE SHEET 36A

SGA

SITE 24

NAD 83/NA 2011

MATCHLINE -Y24RPAR- STA. 20+00 SEE SHEET 17

MATCHLINE -L1- STA. 1154+00 SEE SHEET 17

MATCHLINE -Y24RPDR- STA. 12+50 SEE SHEET 17

MATCHLINE -L1- STA. 1167+50 SEE SHEET 19

NC 540

SGD

WHB

WHC

SITE 24

A

D

NC RAILROAD COMPANY

JEFFREY P CATES & NANCY S CATES

APUGRAF HOLDINGS LLC

WILLIAM T RHODES

L&L COMPANY LLC

EDGE OF AUBURN LLC

RUSSELL G & ANNETTE K BULLOCK JR

LARRY R STALLINGS

ANTHONY J & JULIE MCLEMORE

NCDOT

NC DEPARTMENT OF TRANSPORTATION

BRENDA J & MARK R CUNNINGHAM

GARNER INDUSTRIAL V, LLC

MEREDITHE & BERNADETTE E JESSUP

PATRICIA WILLIAMS

LAURA L WATTS & BARBARA W GAUL

EAST GARNER ROAD

TOE PROTECTION W/CL B RIPRAP SEE DETAIL E

40 TONS CL II RIPRAP W/75 SY GEOFAB INLET CHANNEL STABILIZATION W/CL II RIPRAP SEE DETAIL AL

LATERAL V DITCH W/CL I RIP RAP SEE DETAIL M

BANK STABIL W/CL I RIP RAP REMOVE SEE DETAIL V

GRADE TO DRAIN

SPECIAL CUT DITCH SEE DETAIL A

STD. 4' BASE DITCH W/CL I RIP RAP SEE DETAIL AK

SP. CUT DITCH SEE DETAIL A

DRAIN POND & FILL TO ELEV. 308.0' (SEE POND DRAINAGE PLANS)

POND WSE=304.9'

REMOVE RCBC

STANDARD 4' BASE DITCH W/CL I RIP RAP SEE DETAIL AW

2 TONS CL B RIPRAP W/7 SY GEOFAB

CHANNEL CHANGE W/CL I RIP RAP SEE DETAIL AG

HAUL & FILL WITH ONSITE/ APPROVABLE FILL

LATERAL 4' BASE DITCH W/CL I RIP RAP SEE DETAIL N

LATERAL V DITCH SEE DETAIL B

15" CSP W/ELBOWS

54" CAMP NOT BURIED UPSIZED FOR MAINT.

42" CAMP NOT BURIED UPSIZED FOR MAINT.

15" RCP-III

15" RCP-IV

2GIB-WSF

2GIB-WSS

2GIB-NSS

LATERAL V DITCH W/CL B RIP RAP SEE DETAIL S

LATERAL 4' BASE DITCH W/CL B RIP RAP SEE DETAIL AS

LATERAL V DITCH W/CL B RIP RAP SEE DETAIL AQ

10' WIDE BERM SEE DETAIL BC

LATERAL 4' BASE DITCH W/CL I RIP RAP SEE DETAIL N

LATERAL 4' BASE DITCH W/CL I RIP RAP SEE DETAIL N

LATERAL 4' SWALE SEE DETAIL L

LATERAL 4' GRASSED SWALE SEE DETAIL L

2 TONS CL B RIPRAP W/7 SY GEOFAB

STANDARD V DITCH SEE DETAIL D

SP. CUT V DITCH SEE DETAIL A

SP. LATERAL V DITCH SEE DETAIL AT

40 TONS CL II RIPRAP W/75 SY GEOFAB INLET CHANNEL STABILIZATION W/CL II RIPRAP SEE DETAIL AL

LATERAL 4' BASE DITCH W/CL B RIP RAP SEE DETAIL C

GTD

-Y24RPAR-

-Y24RPDR-

-Y25-

-Y26R-

-Y26RSR2-

-L1-

20+00

25+00

15+00

30+00

60+00

1155+00

1165+00

BL-132

BL-133

BL-134

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PROJECT REFERENCE NO.	SHEET NO.
R-2829A	19
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BUFFER DRAWING SHEET 21 OF 36

MATCHLINE -L1- STA. 1167+50 SEE SHEET 18

MATCHLINE -L1- STA. 1181+50 SEE SHEET 20

WHD(2)

SGA

SITE 25

SGE

WHD(2)

WHD(2)

SITE 27

SGF

SGG

SITE 26

WHD(1)

SGE

SITE 25

WHF

EDGE OF AUBURN LLC

JANET P STORMS & LINDA S POWELL

NAD 83/NA 2011

DENNIS R YARBROUGH

DONALD R & SANDRA C LOCKAMON JR

JOHN B MCINTYRE

AUBURN ASSOCIATES

SWALE Q10 = 6.45cfs V10 = 2.01fps

2 TONS CL B RIPRAP W/7 SY GEOFAB

LATERAL V DITCH SEE DETAIL B

C600 OUTLET STABILIZATION 42 TONS CL II RIPRAP W/84 SY GEOFAB SEE DETAIL CF

TOE PROTECTION W/CL B RIP RAP SEE DETAIL E

LATERAL 4' SWALE SEE DETAIL L

15" CSP 2 ELBOWS

2GIB-WSF

CHANNEL CHANGE W/CL I RIP RAP SEE DETAIL AR

CHANNEL BLOCK SEE DETAIL BK

24" CSP W/ ELBOWS

15" RCP-III

15" RCP-IV

18" CSP W/ELBOWS

18" RCP-IV

LATERAL 4' BASE DITCH W/CL I RIP RAP SEE DETAIL N

LATERAL 4' BASE DITCH W/CL I RIP RAP SEE DETAIL N

2 TONS CL B RIPRAP W/7 SY GEOFAB

C600 INLET STABILIZATION 18 TONS CL II RIPRAP W/35 SY GEOFAB SEE DETAIL CF

CHANNEL CHANGE W/CL I RIP RAP SEE DETAIL AR

15" CSP W/ELBOWS

GRADE TO DRAIN

LINE END OF SWALE W/CL B RIPRAP SEE DETAIL AJ

STD. 4' BASE SWALE SEE DETAIL Q

SP. CUT 4' SWALE SEE DETAIL O

JS BEGINS

1170+00

1175+00

1180+00

BL -135

BL -136

50 0 50 100

SCALE

ENGLISH

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

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SCALE

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MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

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PROJECT REFERENCE NO.	SHEET NO.
R-2829A	23
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BUFFER DRAWING SHEET 22 OF 36

JOHN AMAN

APPROX. LOCATION OF 15' DRAINAGE EASEMENT SCALED FROM BM 2004 PG 423-424

SITE 28

SKR

LARRY WHEELER, JR.

C700 INLET STABILIZATION
285 TONS CL II RIPRAP
W/255 SY GEOFAB
SEE DETAIL CG

2 TONS CL B RIPRAP
W/7 SY GEOFAB

LATERAL V DITCH
W/CL B RIPRAP
SEE DETAIL AO

SPECIAL V DITCH
W/CL B RIPRAP
SEE DETAIL Y

SPECIAL V DITCH
SEE DETAIL A

REMOVE 54" CMP

15" CSP
W/ REBOOT

10+00

15+00

-Y22CR-

SR 3956 ALONZO RD

RETAIN

TOE PROTECTION
W/CL B RIPRAP
SEE DETAIL E

LATERAL V DITCH
W/CL B RIPRAP
SEE DETAIL AO

SYLVIA ALLEN

HERBERT, JR. & ELIZABETH THOMASON

C700 OUTLET STABILIZATION
325 TONS CL II RIPRAP
W/240 SY GEOFAB
SEE DETAIL CG

20' DRAINAGE EASEMENT
BM 2004 PG 423

PATRICIA & RAYFORD PAGE

HTR

EXISTING R/W

PDE

RK&K
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dtuttle

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6/23/16

PROJ. REFERENCE NO.	SHEET NO.
R-2829A	

BUFFER DRAWING
SHEET 23 OF 36

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aburke

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	26
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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BUFFER DRAWING SHEET 24 OF 36

50 0 50 100
SCALE

ENGLISH

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

NAD 83/NA 2011

MATCHLINE -Y23FR- STA. 15+00 SEE SHEET 31

MATCHLINE -Y23R- STA. 53+00 SEE SHEET 11

MATCHLINE -Y23R- STA. 62+00 SEE SHEET 27

MATCHLINE -Y23CR_REV- STA. 14+80 SEE SHEET 32

SFJ

SITE 29

SDO INVESTMENTS, LLC.

TIM FOWLER

SCOTT PEACOCK, SYLVIA MATTHEWS, & STEPHEN PEACOCK

MOUNT HERMAN CHRISTIAN CHURCH

ELLA & PHILLIP PARRISH

PROPERTIES GROUP INC

MUP BY OTHERS

CITY OF RALEIGH WATER EASEMENT

LATERAL 4' BASE DITCH SEE DETAIL C

CONV. DET2 TBDI (TEMP07) TO JB W/SLAB LID

8 TONS CL B RIPRAP W/21 SY GEOFAB

CUT/FILL TRANSITION 1 TON CL B RIPRAP W/5 SY GEOFAB

40 TONS CL I RIPRAP W/75 SY GEOFAB OUTLET CHANNEL STABILIZATION W/CL I RIPRAP SEE DETAIL AL

REMOVE 24"

REMOVE CB & 24"

REMOVE SYSTEM

TOE PROTECTION W/CL B RIPRAP SEE DETAIL E

CONV. CB TO DI

CONV. DI TO JB W/MH

CONV. CB TO JB W/MH

RETAIN SYSTEM

LAT. 4' BASE DITCH SEE DETAIL C

2 TONS CL B RIPRAP W/7 SY GEOFAB

SP. BACK OF CURB DITCH SEE DETAIL BY

GRADE TO DRAIN

ADJUST DI

REMOVE EX. DI TB JB wMH

SP. BACK OF CURB DITCH W/CL B RIP RAP SEE DETAIL BX

STANDARD V DITCH SEE DETAIL AF

3 TON CL B RIPRAP W/10 SY GEOFAB

LATERAL V DITCH SEE DETAIL B

LATERAL 4' BASE SWALE SEE DETAIL L

STD 4' BASE DITCH W/CL I RIPRAP SEE DETAIL AK

HW

55+00

60+00

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PROJECT REFERENCE NO.	SHEET NO.
R-2829A	28
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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BUFFER DRAWING SHEET 25 OF 36

ENGLISH

50 0 50 100
SCALE

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

NAD 83/NA 2011

MATCHLINE -Y23DR- STA. 14+00 SEE SHEET 25

MATCHLINE SEE SHEET 25

MATCHLINE -Y23DR- STA. 27+00 SEE SHEET 29

SPECIAL CUT DITCH SEE DETAIL A

BERM V DITCH SEE DETAIL AX

SPECIAL V DITCH SEE DETAIL A

15+00

18" CSP W/ELBOWS

BDO

FS

18" RCP

2GIB-WSS

STD. 4' BASE DITCH SEE DETAIL I

LINE END OF STD. DITCH W/ CL B RIPRAP SEE DETAIL AJ

PDE

3 TONS CL B RIPRAP W/10 SY GEOFAB

SPECIAL CUT DITCH SEE DETAIL A

(R. G. (GARLAND) & ETHEL BURNETTE)

WGH

BERM V DITCH SEE DETAIL AX

SP. CUT 4' SWALE SEE DETAIL O

20+00

SPECIAL V DITCH SEE DETAIL A

SPECIAL 4' BASE DITCH W/CL B RIP RAP SEE DETAIL Z

LATERAL 4' BASE DITCH W/CL I RIPRAP SEE DETAIL N

CHANNEL CHANGE W/CL I RIPRAP SEE DETAIL AG

PAO

POND WSE=309.7

DRAIN POND (SEE POND DRAINAGE PLANS)

STANDARD 4' BASE DITCH W/CL I RIPRAP SEE DETAIL AK

SP. BASE 4' DITCH W/CL I RIPRAP SEE DETAIL AC

15" CSP W/ELBOWS

2GIB-WSS

JS BEGINS

LATERAL 4' BASE DITCH W/CL I RIPRAP SEE DETAIL N

25+00

FILL IN ABANDONED CHANNEL

BZ 2

BEGIN

24" HDPE

CLARENCE, JR. & SAMANTHA BOYD

JOHN CAVINESS

JOHN & DIANE CAVINESS

R. G. (GARLAND) & ETHEL BURNETTE

SHT SITE 30

RK&K

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dlucas

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50 0 50 100
SCALE

ENGLISH

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

NAD 83/NA 2011

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	29
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BUFFER DRAWING SHEET 26 OF 36

MATCHLINE -Y23J- STA. 12+00 SEE SHEET 11

MATCHLINE - Y23DR- STA. 27+00 SEE SHEET 28

MATCHLINE -Y23DR- STA. 37+00 SEE SHEET 11

DONALD & KAY DEAN

CLARENCE, JR. & SAMANTHA BOYD

JOHN CAVINESS

JOHN & DIANE CAVINESS

RIC & DAWN SWANINGSON

STEVEN & ANNE TRUELOVE

ELIZABETH BURNETTE

(ELIZABETH BURNETTE)

PUE

STANDARD V DITCH SEE DETAIL BL

SPECIAL V DITCH SEE DETAIL A

LATERAL 4' BASE DITCH W/CL I RIPRAP SEE DETAIL N

SPECIAL V DITCH W/CL B RIPRAP SEE DETAIL Y

SPECIAL CUT 4' SWALE SEE DETAIL O

REMOVE

30+00

35+00

20 TONS CL I RIPRAP W/39 SY GEOFAB INLET CHANNEL STABILIZATION W/CL I RIPRAP SEE DETAIL AL

HW

LATERAL 4' BASE DITCH W/CL I RIPRAP SEE DETAIL N

LATERAL 4' BASE DITCH W/CL B RIPRAP SEE DETAIL H

SPECIAL CUT 4' SWALE SEE DETAIL O

2GIB-NSF

18" CSP W/ELBOWS

22' RCP CULVERT W/ 2 FLARE END SECTIONS

TOE PROTECTION W/CL B RIPRAP SEE DETAIL E

SPECIAL V DITCH W/CL B RIPRAP SEE DETAIL Y

DUE TO CLEARZONE PULL IN RIPRAP TO BASE OF CHANNEL 36+00 TO 36+25 RT

JS BEGINS

OUTLET CHANNEL STABILIZATION W/CL I RIPRAP SEE DETAIL AL 33 TONS CL I RIPRAP W/60 SY GEOFAB

SFX

SITE 37

Additional Taking for Parcel 1003

BZ 1

BZ 2

8/23/2024
NHughes
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8/17/99

50 0 50 100
SCALE

ENGLISH

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

NAD 83/NA 2011

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	31
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BUFFER DRAWING SHEET 27 OF 36

ERNEST DeVANE & CLARLYNDA WILLIAMS-DeVANE

LESLIE & JOSEPH WARD

JENNY BIGGS

LAURENCIO & LEONARDA BENITEZ

JOHN BOYKIN

SDO INVESTMENTS, LLC.

APPROX. LOCATION OF EXISTING 100' WELL EASEMENT BM 2005 PG 470

BORASKI, STEVEN
BORASKI, GINA

STEVEN C & GINA BORASKI

GEORGE GANUS

HEATHER YARBROUGH

JERRY LENGER

KATIE S EDGERTON

KENNETH E SMITH

HOMECRE-DO, INC

LILA SMITH

PAMELA BATEY BRIGHT REVOCABLE LIVING TRUST, PAMELA BATEY BRIGHT TRUSTEE

VILLA ST 17" BST

OLD CASCADE DR

EXISTING R/W

10+00

15+00

15+00

SPECIAL 4' BASE DITCH W/CL B RIPRAP SEE DETAIL R

SPECIAL 4' BASE DITCH SEE DETAIL AD

SP. CUT 4' BASE DITCH W/CL B RIPRAP SEE DETAIL R

SP. CUT 4' BASE DITCH W/CL I RIPRAP SEE DETAIL AC

42" RCP (NOT BURIED)

SP. CUT DITCH SEE DETAIL A

STANDARD 4' BASE DITCH W/CL I RIPRAP SEE DETAIL AK

LATERAL 4' SWALE SEE DETAIL L

OUTLET CHANNEL STABILIZATION W/CL II RIPRAP SEE DETAIL AL 48 TONS CL II RIPRAP W/90 SY GEOFAB

LATERAL V DITCH W/CL I RIPRAP SEE DETAIL BT

SPECIAL V DITCH W/CL I RIPRAP SEE DETAIL AB

LATERAL 4' BASE DITCH W/CL B RIPRAP SEE DETAIL AU

SPECIAL V DITCH SEE DETAIL A

LATERAL V DITCH SEE DETAIL U

SPECIAL CUT 4' SWALE SEE DETAIL O

LATERAL 4' BASE SWALE SEE DETAIL L

SWALE Q10=6.9 CFS V10=1.8 FT/S

DO NOT INSTALL TOE PROTECTION WITHIN 16' OF TRAVEL LANE

DITCH Q10=1.6 CFS V10=1.9 FT/S

INLET CHANNEL STABILIZATION W/CL II RIPRAP SEE DETAIL AL 33 TONS CL II RIPRAP W/62 SY GEOFAB

LATERAL 4' SWALE SEE DETAIL L

LATERAL V DITCH W/CL B RIPRAP SEE DETAIL S

SITE 29A

WNM

SFJ

MATCHLINE -Y23AR- STA. 17+00 SEE SHEET 27

MATCHLINE -Y23FR- STA. 15+00 SEE SHEET 26

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PROJECT REFERENCE NO.	SHEET NO.
R-2829A	34
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BUFFER DRAWING SHEET 28 OF 36

MATCHLINE -Y24R- STA. 24+00 SEE SHEET 35

STEC

SEVENTY EAST ASSOCIATES, LLC.

CHRISTOPHER DANIELS

DAVID HAWLEY

R. GARLAND BURNETTE

N 87°08'26" E 1053.06'

S 68° 21' 36.6" E -Y24R-

NAD 83/NA 2011

SITE 31

WGW

SITE 31

WGV(1)

SFZ(1)

SFY

C800 INLET STABILIZATION 58 TONS CL II RIPRAP W/86 SY GEOFAB SEE DETAIL CH

3406 Q10 = 1.03cfs V10 = 0.36fps

SWALE Q10 = 12.57cfs V10 = 1.97fps

LATERAL 4' BASE DITCH W/CL I RIPRAP SEE DETAIL N

TOE PROTECTION W/CL B RIPRAP SEE DETAIL E

LINE CUT-FILL TRANSITION W/ 2 TONS CL B RIPRAP W/7 SY GEOFAB

RETAIN SYSTEM

REMOVE CONC. PAVED DITCH – 60 LF

SPECIAL V DITCH SEE DETAIL A

LATERAL 4' BASE SWALE SEE DETAIL L

15" CSP W/ELBOWS

EXTEND EXISTING 5'x6' CONC HW/WW

REMOVE 60' EXIST 15" CMP

REMOVE CONC. PAVED DITCH – 100 LF

JS BEGINS SP. DET. HW

PLUG & FILL W/FF

TB JB w/MH

2 TONS CL B RIPRAP W/7 SY GEOFAB

SWALE Q10 = 25.43cfs V10 = 1.94fps

C800 OUTLET STABILIZATION 51 TONS CL II RIPRAP W/68 SY GEOFAB SEE DETAIL CH

20+00

15+00

SCALE 50 0 50 100

ENGLISH

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

STV Engineers, Inc.
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Submitted September 17, 2024

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	35
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BUFFER DRAWING SHEET 29 OF 36

50 0 50 100
SCALE

ENGLISH

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

WGX(2)

SGI

SITE 32

SGA

NAD 83/NA 2011

MATCHLINE -Y24R- STA. 24+00 SEE SHEET 34

MATCHLINE -Y24R- STA. 36+50 SEE SHEET 17

SEVENTY EAST ASSOCIATES, LLC.

BUFFALOE MINI STORAGE, LLC.

PARTLO GARNER, LLC.

R. GARLAND BURNETTE

W. H. & THELMA MEDLIN

NC DEPARTMENT OF TRANSPORTATION

-Y24A-

-Y24R-

-R2829-2

15+00 20+00 25+00 30+00 35+00

SPECIAL V DITCH W/CL I RIPRAP SEE DETAIL AB

SPECIAL V DITCH SEE DETAIL A

SPECIAL V DITCH W/CL B RIPRAP SEE DETAIL Y

SP. V DITCH W/CL B RIPRAP SEE DETAIL Y

2 TONS CL B RIPRAP W/7 SY GEOFAB

8 TONS CL B RIPRAP W/21 SY GEOFAB

LAT. 4' BASE SWALE SEE DETAIL BF

SP. 4' BASE SWALE SEE DETAIL O

C900 INLET STABILIZATION 52 TONS CL II RIPRAP W/89 SY GEOFAB SEE DETAIL CI

C900 OUTLET STABILIZATION 241 TONS CL II RIPRAP W/294 SY GEOFAB SEE DETAIL CI

SPECIAL 4' BASE SWALE SEE DETAIL O

2 TONS CL B RIPRAP W/7 SY GEOFAB

LATERAL 4' BASE SWALE SEE DETAIL L

PROP. SIGN

SIGNAL POLE

REMOVE SYSTEM

REMOVE DI

REMOVE JB

PLUG & FILL W/FLOWABLE FILL

TRENCHLESS INSTALLATION (24" WELDED STEEL)

EXTEND 24" RCP-III

15" CSP W/ELBOWS

SP. DET. HW

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Submitted September 17, 2024

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	36A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BUFFER DRAWING SHEET 30 OF 36

NAD 83/NA 2011

BOBBY B GRADY

JANET P STORMS & LINDA S POWELL

JANET P HINTON

JANET P STORMS & LINDA S POWELL

POND WSE=304'

SAAL

SITE 35

SAAK

EDGE OF AUBURN LLC

SITE 33

WAAJ

WHD(2)

15+00

10+00

STANDARD 4' BASE DITCH W/CL I RIP RAP SEE DETAIL AK

SPECIAL CUT DITCH SEE DETAIL A

C1000 INLET STABILIZATION 39 TONS CL II RIPRAP W/73 SY GEOFAB SEE DETAIL CJ

FILL IN ABANDONED CHANNELS

CHANNEL BZ BLOCKS SEE DETAIL BK

GRADE TO DRAIN

SPECIAL CUT DITCH SEE DETAIL A 2 TONS CL B RIP RAP W/ SY GEOFAB

LATERAL V DITCH W/CL B RIPRAP SEE DETAIL S

SR 1004 EAST GARNER RD 20' BST

EXISTING R/W

REMOVE 12"RCP

2GIB-NSS

FS 15" RCP

TB 2GIB-NSF

15" CSP W/ELBOWS

-Y26R-

-Y26RSR1-

MATCHLINE -Y26R-STA. 12+50 SEE SHEET 18

MATCHLINE -Y26R-STA. 22+00 SEE SHEET 18

SPECIAL CUT DITCH SEE DETAIL A

La SANGRE De JESUCRISTO

ABAND

RUINS

WAAK

1 TONS CL B RIP RAP W/5 SY GEOFAB

36A05 Q10 = 1.00cfs V10 = 1.22fps

TOE PROTECTION W/CL B RIPRAP SEE DETAIL E

JANET P BOBBY GERALD STORMS

JEFFREY P CATES & NANCY S CATES

48 TONS CL II RIPRAP W/98 SY GEOFAB OUTLET CHANNEL STABILIZATION W/CL II RIPRAP SEE DETAIL AL

C1000 OUTLET STABILIZATION 76 TONS CL II RIPRAP W/118 SY GEOFAB SEE DETAIL CJ

SITE 33

SGA

L & L COMPANY LLC

SGD

SITE 24

NC RAILROAD COMPANY

-Y25-

MATCHLINE -Y25- STA. 15+00 SEE SHEET 18

NORFOLK SOUTHERN RR

60" RCP

RETAIN

SCALE 50 0 50 100

ENGLISH

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

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dbrugh

RIPARIAN BUFFER IMPACTS SUMMARY

Site No.	Station (From/To)	Structure Size / Type	IMPACTS									BUFFER REPLACEMENT	
			TYPE			ALLOWABLE			MITIGABLE				
			ROAD CROSSING	BRIDGE	PARALLEL IMPACT	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)
3	-L- 975+94 - 979+70 LT	Bridge & Roadway Fill: SEW		X					22475	18026	40501		
	-L- 976+79 - 980+27 RT	Bridge & Roadway Fill: SEY			X				7307	5956	13263		
5	-L1- 1007+92 - 1009+78	Proposed 9'x8' RCBC: SFH	X						28877	15537	44414		
6	-L1- 1010+87 - 1016+55	Proposed 12'x8' RCBC: SFF	X						35906	21030	56936		
7	-L1- 1012+32 LT - 1019+97	Roadway Fill: SFE	X						46871	30603	77474		
8	-L1- 1022+33 LT - 1024+72	42" RCP: SFB	X						17618	11963	29581		
9	-L1- 1033+27 - 1038+89 LT	48" RCP: SFA	X						9205	7844	17049		
		Drain Pond: PAO	X						47156	32542	79698		
11	-L1- 1061+42 - 1062+34 RT	Roadway Fill: SFD	X			3272	2607	5879					
12	-L1- 1061+90 LT - 1065+96	48" RCP: SFC	X						30849	18794	49643		
14	-L1- 1083+35 RT - 1087+56	BRIDGE: SFV		X		28224	18386	46610					
15	-L1- 1098+23 - 1099+67 RT	8'x7' RCBC: SFR	X						12233	9537	21770		
SHEET TOTALS*:						**31496**	**20993**	**52489**	**258497**	**171832**	**430329**	**0**	**0**

NOTES:
Site 3: SEW buffer is a total take in summary above; hatching outside construction impacts is not shown
Site 7: Downstream end of SFE buffer is a total take in summary above; hatching outside construction impacts is not shown
Site 11: Shown as mitigable due to proximity to Site 12 and Site 12 being a mitigable impact.

Submitted September 17, 2024

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
9/4/2024
Wake County
R-2829A

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	-L- 975+94 - 979+70		14933	5374
7	-L1- 1012+32 LT - 1019+97		5152	
8	-L1- 1022+33 LT - 1024+72		1651	1085
9	-L1- 1033+27 - 1038+89 LT		7356	2447
11	-L1- 1061+42 - 1062+34 RT		67	325
12	-L1- 1061+90 LT - 1065+96		412	123
15	-L1- 1098+23 - 1099+67 RT		8053	4017
SHEET TOTAL:			**37624**	**13371**

Submitted September 17, 2024

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
9/4/2024
Wake County
R-2829A

RIPARIAN BUFFER IMPACTS SUMMARY

Site No.	Station (From/To)	Structure Size / Type	IMPACTS									BUFFER REPLACEMENT	
			TYPE			ALLOWABLE			MITIGABLE				
			ROAD CROSSING	BRIDGE	PARALLEL IMPACT	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)
16	-L1- 1112+89 LT - 1116+23	Proposed 7'x7' RCBC: SFN	X						26808	17524	44332		
	-L1- 1109+67 - 1111+44 LT	Roadway Fill: SFN	X						1574	3203	4777		
18	-L1- 1114+31 LT - 1119+44	Roadway Fill: SFQ	X						37277	23720	60997		
19	-L1- 1123+75 LT - 1126+80	60" RCP: SFS	X						29264	19579	48843		
20	-L1- 1136+80 LT - 1142+77	54" RCP/WSP/CAAP: SFT	X						47166	30260	77426		
23	-L1- 1151+13 - 1153+09	Proposed 6'x8' RCBC: SGC	X						27372	19144	46516		
24	-Y26R- 21+00 RT - 22+90 LT	60" RCP: SGD	X						13415	7967	21382		
	-Y26R- 22+58 - 23+47 LT	Roadway Ditch: SGD	X						6205	3826	10031		
	-L1- 1162+07 - 1163+15 LT	Roadway Fill: SGD	X						11996	7367	19363		
	-L1- 1162+17 - 1163+63 RT	54" CAAP: SGD	X						1423	1489	2912		
25	-L1- 1169+25 LT - 1172+20	Proposed 11'x8' RCBC: SGE	X						29121	15656	44777		
26	-L1- 1171+27 LT - 1177+70	Roadway Fill: SGG	X						38653	23438	62091		
27	-L1- 1173+89 - 1180+26 LT	Roadway Fill: SGF			X				24466	15544	40010		
28	-Y22CR- 12+89 LT - 14+89	Proposed 2 @ 12'x8' RCBC: SKR	X						14200	9344	23544		
SHEET TOTALS*:						**0**	**0**	**0**	**308940**	**198061**	**507001**	**0**	**0**

NOTES:
Site 16: SFN buffer at -L- 1115+75 RT is a total take in summary above; hatching outside construction impacts is not shown
Site 18: SFQ buffer at -L- 1116+60 LT and up to limit of stream impact at -L- 1119+00 RT is a total take in summary above; hatching outside construction impacts is not shown

Submitted September 17, 2024

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
9/4/2024
Wake County
R-2829A

WETLANDS IN BUFFER IMPACTS SUMMARY

SITE NO.	STATION (FROM/TO)		WETLANDS IN BUFFERS ZONE 1 (ft^2)	WETLANDS IN BUFFERS ZONE 2 (ft^2)
16	-L1- 1112+89 LT - 1116+23		11142	9727
	-L1- 1109+67 - 1111+44 LT		436	555
18	-L1- 1114+31 LT - 1119+44		13751	9196
19	-L1- 1123+75 LT - 1126+80		8191	142
23	-L1- 1151+13 - 1153+09		18620	8475
25	-L1- 1169+25 LT - 1172+20		11692	2873
26	-L1- 1171+27 LT - 1177+70		3382	98
27	-L1- 1173+89 - 1180+26 LT		6569	168
SHEET TOTAL:			**73783**	**31234**

Submitted September 17, 2024

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
9/4/2024
Wake County
R-2829A

RIPARIAN BUFFER IMPACTS SUMMARY

Site No.	Station (From/To)	Structure Size / Type	IMPACTS									BUFFER REPLACEMENT	
			TYPE			ALLOWABLE			MITIGABLE				
			ROAD CROSSING	BRIDGE	PARALLEL IMPACT	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)
29	-Y23R- 60+57 - 61+89 LT	36" RCP: SFJ	X			5463	3197	8660					
29A	-Y23FR- 10+96 LT - 12+29	54" RCP: SFJ	X			6983	4483	11466					
30	-Y23DR- 21+73 - 26+13	42" RCP: SHT	X						13221	8303	21524		
		Drain Pond: PAO							26069	1955	28024		
31	-Y24R- 19+52 - 21+38 RT	5'x6' RCBC Ext / 72" WSP: SFY	X			2350	2397	4747					
32	-Y24R- 34+03 - 35+90	6'x8'/9' RCBC Ext / 72" WSP: SGA	X						11974	7535	19509		
33	-Y26R- 18+03 - 19+32	Proposed 10'x9' RCBC: SGA	X			9237	4493	13730					
35	-Y26R- 16+88 - 18+47 LT	Proposed 10'x9' RCBC: SAAL	X			297	214	511					
37	-Y23DR- 33+79 - 34+82 RT	42" RCP: SFX	X			1625	1881	3506					
38	-Y23RPB- 23+37 - 24+97 LT	42" Energy Dissipator: SFK	X			134	1572	1706					
SHEET TOTALS*:						**26089**	**18237**	**44326**	**51264**	**17793**	**69057**	**0**	**0**
PROJECT TOTALS*:						**57585**	**39230**	**96815**	**618701**	**387686**	**1006387**	**0**	**0**

NOTES:
Site 30: Buffer impact outside ROW / PDE at -Y23DR- 24+75 RT is a total take in summary above;
hatching outside construction impacts is not shown

Submitted September 17, 2024

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
9/4/2024
Wake County
R-2829A

WETLANDS IN BUFFER IMPACTS SUMMARY

SITE NO.	STATION (FROM/TO)		WETLANDS IN BUFFERS ZONE 1 (ft^2)	WETLANDS IN BUFFERS ZONE 2 (ft^2)
29A	-Y23FR- 10+96 LT - 12+29		1870	497
30	-Y23DR- 23+89 - 24+74 LT		2225	576
31	-Y24R- 19+52 - 21+38 RT		728	547
33	-Y26R- 18+03 - 19+32		706	863
35	-Y26R- 16+88 - 18+47 LT		102	0
SHEET TOTAL:			**5631**	**2483**
PROJECT TOTAL:			**117038**	**47088**

NOTES:
SITE 30: Wetland WGH located inside Pond PAO limits is not to be impacted

Submitted September 17, 2024

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
9/4/2024
Wake County
R-2829A

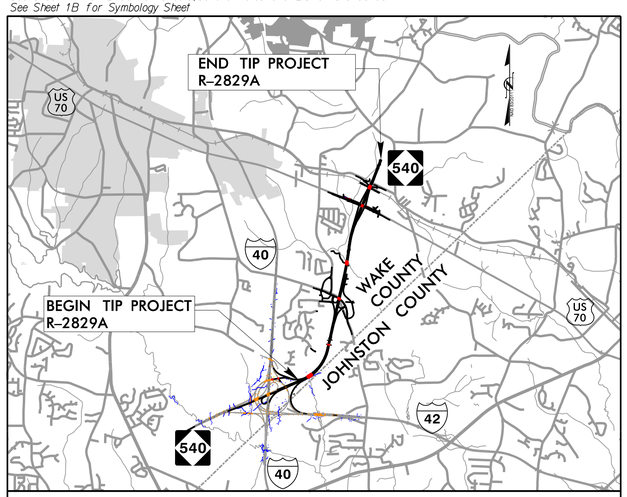
Utility Buffer Drawings

09/08/99

TIP PROJECT: R–2829A

CONTRACT: C204824

See Sheet 1A for Index of Sheets, General Notes and List of Standards
See Sheet 1B for Symbology Sheet



VICINITY MAP (NTS)

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

WAKE COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R–2829A	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
35517.3.TA1	N/A, 0540047	DESIGN–BUILD
35517.3. TAGV1	N/A, 0540047	DESIGN–BUILD



NAD 83/NA 2011

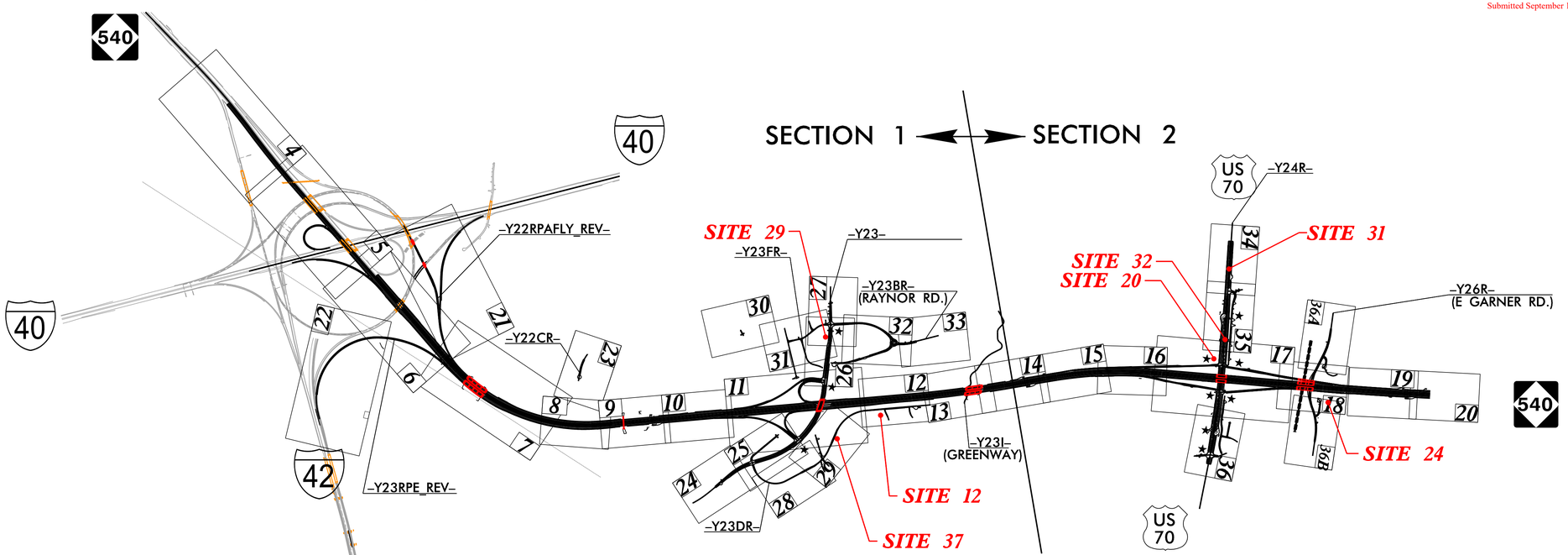
LOCATION: ***TRIANGLE EXPRESSWAY SOUTHEAST EXTENSION FROM I–40 TO SOUTH OF SR 2542 (ROCK QUARRY RD.)***

TYPE OF WORK: ***GRADING, DRAINAGE, PAVING, LIGHTING, SIGNING, ITS, CULVERTS & STRUCTURES***

SAFETEA–LU SECTION 6002
HYDRAULIC DESIGN MEETING PLANS

UTILITY BUFFER DRAWING
SHEET 1 OF 10

Submitted September 17, 2024



NOTES:
1. THIS IS A CONTROLLED–ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.

★ PROPOSED TRAFFIC SIGNAL

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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 2023 = 15,440
ADT 2043 = 22,040
K = 12%
D = 65%
T = 10% *
V = 75 MPH

FUNC CLASS: INTERSTATE
* (TTST 4% + DUALS 6%)

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R–2829A.....3.922 MILES
LENGTH STRUCTURE TIP PROJECT R–2829A.....0.242 MILES
TOTAL LENGTH TIP PROJECT R–2829A.....4.164 MILES

NCTA CONTACT

Ron McCollum, PE
DEPUTY CHIEF ENGINEER for PRECONSTRUCTION
TURNPIKE AUTHORITY

PLANS PREPARED BY:

RK&K
RUMMEL, KLEPPER & KAHL, LLP
8601 SIX FORKS ROAD, FORUM 1, SUITE 700
RALEIGH, NORTH CAROLINA 27615–3960
NC LICENSE NO. F–0112

FOR NORTH CAROLINA TURNPIKE AUTHORITY

2018 STANDARD SPECIFICATIONS

LETTING DATE:
October 17, 2023

C. Byron Holden, PE
PROJECT ENGINEER

Anthony A. Houser, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: *P.E.*

ROADWAY DESIGN ENGINEER

SIGNATURE: *P.E.*

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

9/3/2024
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dburke

Submitted September 17, 2024

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	12
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

UTILITY BUFFER DRAWING SHEET 2 OF 10

50 0 50 100
SCALE

ENGLISH

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

NAD 83/NA 2011

MATCHLINE -L1- STA 1061+00 SEE SHEET 11

MATCHLINE -L1- STA. 1075+00 SEE SHEET 13

MAP BY OTHERS

MAP BY OTHERS

60' PRIVATE INGRESS & EGRESS EASEMENT BM 1996 PG 628

60' PRIVATE INGRESS & EGRESS BM 1996 PG 628

CHRISTO CHRISTODOLOU

SARA EARLY

CLAYTON PROPERTIES GROUP INC

ELIZABETH BURNETTE

JOSEPH & VELANCIA BAILEY

SITE 12

WGN

SFC

WGM

SFD

WGO

SITE 12

SFC

INLET CHANNEL STABILIZATION W/CL I RIPRAP SEE DETAIL AL 33 TONS CL I RIPRAP W/62 SY GEOFAB

SPECIAL CUT 4' BASE W/CL B RIP RAP SEE DETAIL Z

JS BEGINS

SPECIAL CUT DITCH W/CL I RIP RAP SEE DETAIL BO

FS MIN ELEV 309.0

LATERAL 4' BASE DITCH SEE DETAIL AA

LATERAL V DITCH SEE DETAIL B

SPECIAL CUT DITCH SEE DETAIL A

DRAIN POND (SEE POND DRAINAGE PLANS)

POND WSE=284.0'

FS MIN ELEV. 290.1

SPECIAL CUT DITCH W/CL B RIP RAP SEE DETAIL Y

1065+00

1070+00

1075+00

2GIB-WSS

FS

15" RCP-III

42" RCP-IV (NOT BURIED UPSIZED FOR MAINT)

INV=284.93'

INV=286.25'

REMOVE

18" RCP-IV

MEDIAN V DITCH SEE DETAIL G

18" RCP-III

45+00

50+00

55+00

2GIA-WSS

15" RCP-IV

24" RCP-IV

VERIFY IN FIELD FOR A POTENTIAL SPRING BOX

TB 2GIB-NSF

24" CSP W/ELBOWS

18" CSP W/ELBOWS

15" RCP-III

20 TON CL I RIPRAP W/39 SY GEOFAB

LATERAL BASE DITCH W/CL B RIP RAP SEE DETAIL H

LATERAL BASE DITCH W/CL I RIP RAP SEE DETAIL N

STD. 4' BASE DITCH SEE DETAIL I

SPECIAL V DITCH W/CL I RIP RAP SEE DETAIL AB

SPECIAL CUT DITCH SEE DETAIL A

LINE END OF STD DITCH W/ 1 TON CL B RIPRAP W/4 SY GEOFAB

STD. V DITCH SEE DETAIL D

SPECIAL CUT SWALE SEE DETAIL O

1 TON CL B RIPRAP W/5 SY GEOFAB

TOE PROTECTION W/CL B RIPRAP SEE DETAIL E

3 TON CL B RIPRAP W/11 SY GEOFAB

1220
Q10=14.4cfs
V10=1.89fps

LINE END OF STD DITCH W/ CL I RIPRAP SEE DETAIL AJ

OUTLET CHANNEL STABILIZATION W/CL II RIPRAP SEE DETAIL AL 48 TONS CL II RIPRAP W/90 SY GEOFAB

ELIZABETH BURNETTE

2701 HIDDEN ACRE LAND TRUST

ELMO T WILLIAMS TRUST ALICE H WILLIAMS

JOSEPH & VELANCIA BAILEY

PUE

DUE

PDE

BZ 1

BZ 2

8/23/2024
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REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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UTILITY BUFFER DRAWING SHEET 3 OF 10

NAD 83/NA 1011

MATCHLINE -Y24R- STA. 36+50 SEE SHEET 35

INSET A

SEE INSET A

SITE 20

SITE 19

SEE INSET B

INSET B

MATCHLINE -Y24RPBR- STA. 22+00 SEE SHEET 16

MATCHLINE -L1- STA. 112+00 SEE SHEET 16

MATCHLINE -Y24RPC- STA. 16+50 SEE SHEET 16

MATCHLINE -Y24RPC- STA. 12+50 SEE SHEET 18

MATCHLINE -L- STA. 115+00 SEE SHEET 18

MATCHLINE -Y24RPDR- STA. 20+00 SEE SHEET 18

MATCHLINE -Y24R- STA. 51+50 SEE SHEET 36

MATCHLINE -Y24CR- STA. 14+00 SEE SHEET 36

SGA WGU (1) WGU (2) SFT SFS WGX(1) WGX(2) SGC WHB WGY WGZ WHA

BOBBY & MARGARET RAYNOR

DEPARTMENT OF TRANSPORTATION

BUFFALOE ENTERPRISES, LLC

BUFFALOE ENTI

L&L COMPANY LLC

BETH BROWN, BRUNDA MROSE, SENIOR JOHNSON, LA BOYETTE, JERRY JOHNSON

RANDY ALEXANDER

ELAINE COATES

WILLIAM & EUNICE LEE

RICHARD ROGERS REVOCABLE TRUST

CAPITOL BROADCASTING COMPANY, INC.

GARNER INDUSTRIAL V, LLC

5 TONS CL B RIPRAP W/14 SY GEOFAB

24" CSP W/ELBOWS

ENGLISH

100 0 100 200

SCALE

50 0 50 100

SCALE FOR INSET

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

ALLOWABLE IMPACTS ZONE 2

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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	18
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

UTILITY BUFFER DRAWING SHEET 4 OF 10

50 0 50 100
SCALE

ENGLISH

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

MATCHLINE -Y25- STA. 15+00 SEE SHEET 36A

MATCHLINE -Y26R- STA. 22+00 SEE SHEET 36A

MATCHLINE -Y26R-SR1- STA. 12+50 SEE SHEET 36A

SGA

MATCHLINE -Y24RPAR- STA. 20+00 SEE SHEET 17

MATCHLINE -Y24RPDR- STA. 12+50 SEE SHEET 17

MATCHLINE -L1- STA. 1154+00 SEE SHEET 17

MATCHLINE -L1- STA. 1167+50 SEE SHEET 19

MATCHLINE -Y25- STA. 24+30 SEE SHEET 36B

MATCHLINE -Y26R- STA. 31+00 SEE SHEET 36B

MATCHLINE -Y26R-SR2- STA. 11+50 SEE SHEET 36B

SGD

WHB

WHC

SITE 24

NAD 83/NA 2011

JEFFREY P CATES & NANCY S CATES

NC RAILROAD COMPANY

APUGRAF HOLDINGS LLC

WILLIAM T RHODES

L&L COMPANY LLC

NCDOT

NC DEPARTMENT OF TRANSPORTATION

EDGE OF AUBURN LLC

RUSSELL G & ANNETTE K BULLOCK JR

LARRY R STALLINGS

ANTHONY J & JULIE MCLEMORE

BRENDA J & MARK R CUNNINGHAM

GARNER INDUSTRIAL V, LLC

MEREDITHE & BERNADETTE E JESSUP

PATRICIA WILLIAMS

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

LAURA L WATTS & BARBARA W GAUL

TOE PROTECTION W/CL B RIPRAP SEE DETAIL E

40 TONS CL II RIPRAP W/75 SY GEOFAB INLET CHANNEL STABILIZATION W/CL II RIPRAP SEE DETAIL AL

LATERAL V DITCH W/CL I RIP RAP SEE DETAIL M

SPECIAL CUT DITCH SEE DETAIL A

STD. 4' BASE DITCH W/CL I RIP RAP SEE DETAIL AK

GRADE TO DRAIN

BANK STABIL W/CL I RIP RAP REMOVE SEE DETAIL CMP

REMOVE RCBC

STANDARD 4' BASE DITCH W/CL I RIP RAP SEE DETAIL AW

2 TONS CL B RIPRAP W/7 SY GEOFAB

CHANNEL CHANGE W/CL I RIP RAP SEE DETAIL AG

SP. CUT DITCH SEE DETAIL A

DRAIN POND & FILL TO ELEV. 308.0' (SEE POND DRAINAGE PLANS)

POND WSE=304.9'

LATERAL V DITCH SEE DETAIL B

LATERAL 4' BASE DITCH W/CL I RIP RAP SEE DETAIL AN

LATERAL 4' SWALE SEE DETAIL L

LATERAL V DITCH W/CL B RIP RAP SEE DETAIL S

LATERAL 4' BASE DITCH W/CL B RIP RAP SEE DETAIL AS

LATERAL V DITCH W/CL B RIP RAP SEE DETAIL AO

10' WIDE BERM SEE DETAIL BC

LATERAL 4' BASE DITCH W/CL I RIP RAP SEE DETAIL N

LATERAL 4' GRASSED SWALE SEE DETAIL L

STANDARD V DITCH SEE DETAIL D

SP. CUT V DITCH SEE DETAIL A

SP. LATERAL DITCH SEE DETAIL AS

LATERAL 4' BASE DITCH SEE DETAIL C

42" CAP NOT BURIED, UPSIZED FROM MAINT.

54" CAP NOT BURIED, UPSIZED FROM MAINT.

15" CSP W/ELBOWS

15" RCP-III

15" RCP-IV

2GIB-WSF

2GIB-WSS

2GIB-NSS

2x26 DRWI

1155+00

1160+00

1165+00

20+00

25+00

15+00

30+00

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dlee

Submitted September 17, 2024

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	26
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

UTILITY BUFFER DRAWING SHEET 5 OF 10

ENGLISH

50 0 50 100
SCALE

MITIGABLE IMPACTS ZONE 1

MITIGABLE IMPACTS ZONE 2

NAD 83/NA 2011

MATCHLINE -Y23FR- STA. 15+00 SEE SHEET 31

MATCHLINE -Y23R- STA. 53+00 SEE SHEET 11

MATCHLINE -Y23R- STA. 62+00 SEE SHEET 27

MATCHLINE -Y23CR_REV- STA. 14+80 SEE SHEET 32

SFJ

SITE 29

JACK & BORE FORCE MAIN (BORE PIT LOCATED OUTSIDE OF BUFFER ZONES)
40 TONS CL I RIPRAP W/75 SY GEOFAB
OUTLET CHANNEL STABILIZATION W/CL I RIPRAP
SEE DETAIL AL

CUT/FILL TRANSITION
1 TON CL B RIPRAP
W/5 SY GEOFAB

LATERAL 4' BASE DITCH
SEE DETAIL C

8 TONS CL B RIPRAP
W/21 SY GEOFAB

CONV. DI TO TBDI (TEMP) TO JB W/SLOPE LID

REMOVE SYSTEM
SEE DETAIL C
REMOVE CB & 24"

2 TONS CL B RIPRAP
2 TONS CL B RIPRAP W/7 SY GEOFAB

SP. BACK OF CURB DITCH
SEE DETAIL BY

SP. BACK OF CURB DITCH
W/CL B RIP RAP
SEE DETAIL BX

STANDARD V DITCH
SEE DETAIL AF

GRADE TO DRAIN

ADJUST DI

CONV. CB TO DI

CONV. DI TO JB W/MH

TOE PROTECTION
W/CL B RIPRAP
SEE DETAIL E

REMOVE EX. DI
TB JB W/MH

CONV. CB TO JB W/MH

3 TON CL B RIPRAP
W/10 SY GEOFAB

LATERAL V DITCH
SEE DETAIL B

LATERAL 4' BASE SWALE
SEE DETAIL L

STD 4' BASE DITCH
W/CL I RIPRAP
SEE DETAIL AK

LAT. 4' BASE DITCH
SEE DETAIL C

REMOVE SYSTEM

MUP BY OTHERS

MOUNT HERMAN CHURCH

CEMETERY

CITY OF RALEIGH WATER EASEMENT

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dbuffa

Submitted September 17, 2024

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	29
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

UTILITY BUFFER DRAWING SHEET 6 OF 10

NAD 83/NA 2011

50 0 50 100
SCALE

ENGLISH

ALLOWABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

MATCHLINE -Y23J- STA. 12+00 SEE SHEET 11

MATCHLINE -Y23DR- STA. 27+00 SEE SHEET 28

MATCHLINE -Y23DR- STA. 37+00 SEE SHEET 11

2318 DONALD & KAY DEAN DB 3717 PG 70 BM 1983 PG 398

2339 CLARENCE, JR. & SAMANTHA BOYD DB 3127 PG 6 BM 1983 PG 398

2340 JOHN CAVINESS DB 10713 PG 175 BM 1986 PG 1207

2341 JOHN & DIANE CAVINESS DB 11876 PG 255 BM 1986 PG 1207

2342 RIC & DAWN SWANINGSON DB 16517 PG 1122 BM 2012 PG 961

2343 STEVEN & ANNE TRUELOVE DB 15410 PG 622 BM 2012 PG 961

*1003Z NCDOT (ELIZABETH BURNETTE)

*1003Z ELIZABETH BURNETTE DB 2280 PG 301

STANDARD V DITCH SEE DETAIL BL

SPECIAL V DITCH SEE DETAIL Q

LATERAL 4' BASE DITCH W/CL I RIPRAP SEE DETAIL N

SPECIAL V DITCH W/CL B RIPRAP SEE DETAIL Y

SPECIAL CUT 4' SWALE SEE DETAIL O

REMOVE

20 TONS CL I RIPRAP W/39 SY GEOFAB INLET CHANNEL STABILIZATION W/CL I RIPRAP SEE DETAIL AL

LATERAL 4' BASE DITCH W/CL B RIPRAP SEE DETAIL H

LATERAL 4' BASE DITCH W/CL I RIPRAP SEE DETAIL N

HW

SPECIAL CUT 4' SWALE SEE DETAIL O

2GIB-NSF

35+00

24" CSP W/3 ELBOWS

72" RCP

22" RCP

30" RCP

TOE PROTECTION W/CL B RIPRAP SEE DETAIL E

SPECIAL V DITCH W/CL B RIPRAP SEE DETAIL Y

DUE TO CLEARZONE PULL IN RIPRAP TO BASE OF CHANNEL 36+00 TO 36+25 RT

JS BEGINS

OUTLET CHANNEL STABILIZATION W/CL I RIPRAP SEE DETAIL AL 33 TONS CL I RIPRAP W/60 SY GEOFAB

30+00

Additional Taking for Parcel 1003

PROP O/H POW TEL & CATV LINES

PROP U/G POW TEL & CATV LINES

PUE

ONE

SFX

SITE 37

RK&K
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dbuhle

Submitted September 17, 2024

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PROJECT REFERENCE NO.	SHEET NO.
R-2829A	34
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

UTILITY BUFFER DRAWING SHEET 7 OF 10

ENGLISH

SCALE 50 0 50 100

SCALE FOR INSET 25 0 25 50

MITIGABLE IMPACTS ZONE 1

ALLOWABLE IMPACTS ZONE 2

NAD 83/NA 2011

STEC

DAVID HAWLEY

CHRISTOPHER DANIELS

SEVENTY EAST ASSOCIATES, LLC.

R. GARLAND BURNETTE

SITE 31

WGW

SITE 31

WGV(1)

SFY

SFZ(1)

C800 INLET STABILIZATION 58 TONS CL II RIPRAP W/86 SY GEOFAB SEE DETAIL CH

DIRECTIONAL DRILL NEW UTILITY (NO BORE PIT REQUIRED)

3406 Q10 = 1.03cfs V10 = 0.36fps

SWALE Q10 = 12.57cfs V10 = 1.97fps

LATERAL 4' BASE DITCH W/CL I RIPRAP SEE DETAIL N

TOE PROTECTION W/CL B RIPRAP SEE DETAIL E

LINE CUT/FILL TRANSITION W/ 2 TONS CL B RIPRAP W/7 SY GEOFAB

RETAIN SYSTEM

SPECIAL V DITCH SEE DETAIL A

REMOVE CONC. PAVED DITCH – 60 LF

LATERAL 4' BASE SWALE SEE DETAIL L

REMOVE 60' EXIST 15" CSP

EXTEND EXISTING 5'x6' CONC HW

15" CSP W/ELBOWS

2GIB-WSF

PLUG & FILL W/FF

TB JB w/MH

2GIB-WSS

15" RCP-III

JS BEGINS SP. DET. HW.

2 TONS CL B RIPRAP W/7 SY GEOFAB

SWALE Q10 = 25.43cfs V10 = 1.94fps

C800 OUTLET STABILIZATION 51 TONS CL II RIPRAP W/68 SY GEOFAB SEE DETAIL CH

INSET A

SEE INSET A

MATCHLINE -Y24R- STA. 24+00 SEE SHEET 35

STV Engineers, Inc.
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Submitted September 17, 2024

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	35
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

UTILITY BUFFER DRAWING SHEET 8 OF 10

SCALE 50 0 50 100

ENGLISH

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

WGX(2)

NAD 83/NA 2011

SGI

SITE 32

SGA

SEE INSET A

C900 INLET STABILIZATION 52 TONS CL II RIPRAP W/89 SY GEOFAB SEE DETAIL CI

JACK & BORE NEW UTILITY (BORE PIT LOCATED OUTSIDE OF BUFFER ZONES)

INSET A

INSET B

SEE INSET B

SITE 32

C900 OUTLET STABILIZATION 241 TONS CL II RIPRAP W/294 SY GEOFAB SEE DETAIL CI

DIRECTIONAL DRILL NEW UTILITIES (NO BORE PIT REQUIRED)

MATCHLINE -Y24R- STA. 24+00 SEE SHEET 34

MATCHLINE -Y24R- STA. 36+50 SEE SHEET 17

SEVENTY EAST ASSOCIATES, LLC.

BUFFALOE MINI STORAGE, LLC.

PARTLO GARNER, LLC.

R. GARLAND BURNETTE

W. H. & THELMA MEDLIN

NC DEPARTMENT OF TRANSPORTATION

SPECIAL V DITCH W/CL I RIPRAP SEE DETAIL AB

SPECIAL V DITCH SEE DETAIL A

SPECIAL V DITCH W/CL B RIPRAP SEE DETAIL Y

SP. V DITCH W/CL B RIPRAP SEE DETAIL Y

2 TONS CL B RIPRAP W/7 SY GEOFAB

SPECIAL 4' BASE SWALE SEE DETAIL O

LAT. 4' BASE SWALE SEE DETAIL BF

LATERAL 4' BASE SWALE SEE DETAIL L

SP. DET. HW.

EXTEND EXIST 48" RCP

REMOVE SYSTEM

TRENCHLESS INSTALLATION (NO WELDED STEEL)

PLUG & FILL W/FLOWABLE FILL

REMOVE DI

REMOVE JB

REMOVE

2GIB-NSS

2GIB-WSS

2GIB-NSF

2GIB-WSF

15" RCP-III

15" RCP-IV

18" RCP

15" CSP W/ELBOWS

TBDI

(2) TBDI

PROP U/G COMMUN CONDUIT

PROP U/G POW CABLES

PROP O/H POW & COMMUN LINES

12" GAS

16" PVC

144 FO SEE DETAIL A

96 FO

84 FO

50 PR

100 PR

200 PR

400 PR

360 FO

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NC License Number F-0991

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RIPARIAN BUFFER IMPACTS SUMMARY

Site No.	Station (From/To)	Structure Size / Type	IMPACTS									BUFFER REPLACEMENT	
			TYPE			ALLOWABLE			MITIGABLE				
			ROAD CROSSING	BRIDGE	PARALLEL IMPACT	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)	TOTAL (ft^2)	ZONE 1 (ft^2)	ZONE 2 (ft^2)
12	-Y23DR- 45+55- 48+40 RT	Overhead Power: SFC	X						10341	5473	15814		
20	-Y24R- 39+28 - 40+20 RT	Overhead Power, UG Gas & Telephone: SFT	X						4679	2964	7643		
	-Y24RPDR- 24+84 - 25+03 LT	Overhead Power: SFT	X				249	249					
24	-L1- 1162+12 - 1163+45 RT	Overhead Power: SGD, WHC	X						2110	1268	3378		
29	-Y23R- 60+10- 61+74 LT	Overhead Power: SFJ	X						1983	2013	3996		
31	-Y24R- 20+37 - 21+38 RT	UG Gas: SFY, WGV(1)	X				1174	1174	590		590		
32	-Y24R- 34+93 - 35+25 LT	UG Waterline: SGA	X			118	232	350					
	-Y24R- 35+50 - 36+06 RT	UG Gas, UG Telephone & Overhead Power: SGA	X				280	280	815	727	1542		
37	-Y23DR- 33+72 - 34+89 RT	Overhead Power: SFX	X			1018	706	1724					
TOTALS*:						**1136**	**2641**	**3777**	**20518**	**12445**	**32963**	**0**	**0**

NOTES:

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
9/4/2024
Wake County
R-2829A

Submitted September 17, 2024

WETLANDS IN BUFFER IMPACTS SUMMARY

SITE NO.	STATION (FROM/TO)		WETLANDS IN BUFFERS ZONE 1 (ft^2)	WETLANDS IN BUFFERS ZONE 2 (ft^2)
24	-L1- 1162+12 RT		715	
31	-Y24R- 20+50 RT		532	1174
TOTAL:			**1247**	**1174**

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
9/4/2024
Wake County
R-2829A

SHEET 10 OF 10

Revised 2018 Feb

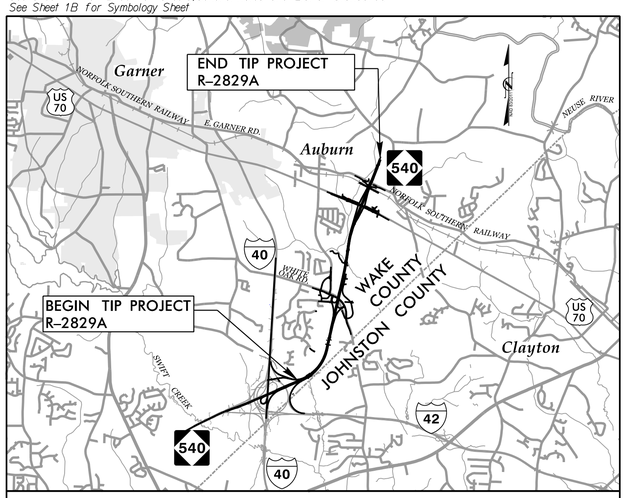
Rev. Jan 2009

Roadway Plans

09/08/49

CONTRACT: C204824 TIP PROJECT: R-2829A

See Sheet 1A for Index of Sheets, General Notes and List of Standards
See Sheet 1B for Symbology Sheet



VICINITY MAP (NTS)

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

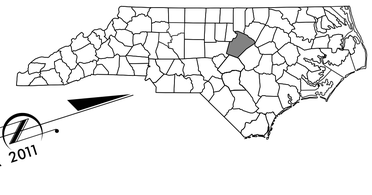
WAKE COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2829A	1	

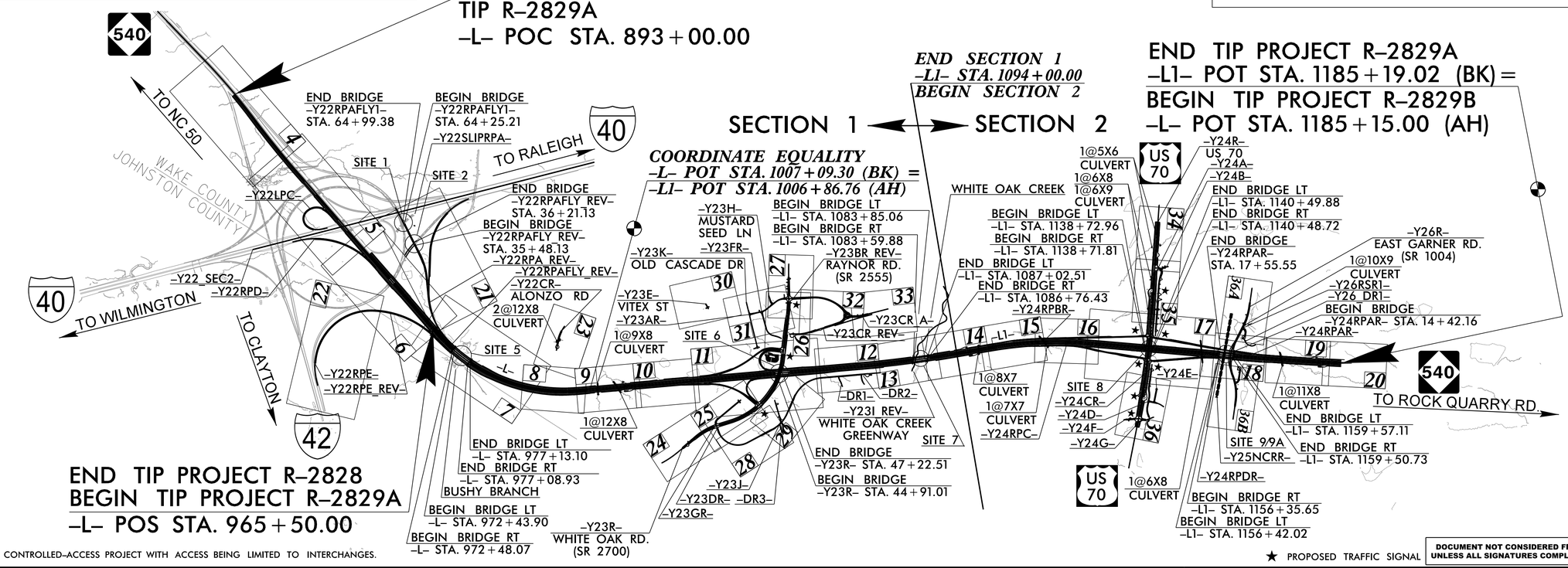
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
35517.3.TA1	N/A, 0540047	DESIGN-BUILD
35517.3. TAGV1	N/A, 0540047	DESIGN-BUILD

LOCATION: ***TRIANGLE EXPRESSWAY SOUTHEAST EXTENSION FROM I-40 TO SOUTH OF SR 2542 (ROCK QUARRY RD.)***

TYPE OF WORK: ***GRADING, DRAINAGE, PAVING, LIGHTING, SIGNING, ITS, CULVERTS & STRUCTURES***



FINAL ROADWAY PLANS
SUBMITTAL NO.: A-080
DATE: 08/05/2024

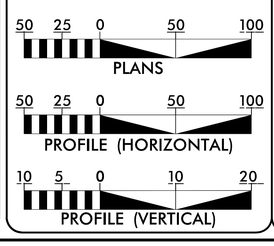


NOTES:
1. THIS IS A CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.

★ PROPOSED TRAFFIC SIGNAL

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES



DESIGN DATA

ADT 2023 = 15,440
ADT 2043 = 22,040
K = 12%
D = 65%
T = 10% *
V = 75 MPH

FUNC CLASS: INTERSTATE
* (TTST 4% + DUALS 6%)

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-2829A.....3.922 MILES
LENGTH STRUCTURE TIP PROJECT R-2829A.....0.242 MILES
TOTAL LENGTH TIP PROJECT R-2829A.....4.164 MILES

NCTA CONTACT

Ron McCollum, PE
DEPUTY CHIEF ENGINEER for PRECONSTRUCTION
TURNPIKE AUTHORITY

PLANS PREPARED BY:

RK&K — RUMMEL, KLEPPER & KAHL, LLP
8601 SIX FORKS ROAD, FORUM 1, SUITE 700
RALEIGH, NORTH CAROLINA 27615-3960
NC LICENSE NO. F-0112

FOR NORTH CAROLINA TURNPIKE AUTHORITY

BRANCH CIVIL®
S.T. WOOTEN

2018 STANDARD SPECIFICATIONS

C. Byron Holden, PE
PROJECT ENGINEER

LETTING DATE:
October 17, 2023

Anthony A. Houser, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

P.E.
SIGNATURE:

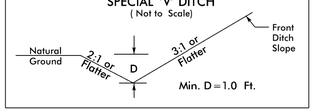
STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

8/2/2024
R:\Roadway\Proj\R-2829A_Rdy_tsh.dgn
chouser

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	2D-1
	HYDRAULICS DESIGN ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

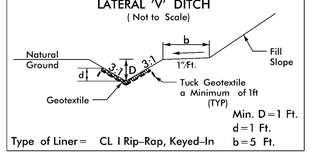
DETAIL A
SPECIAL 'V' DITCH
(Not to Scale)



–Y22RPE_REV– STA. 42+00 TO STA. 45+50 LT
–Y22RPE_REV– STA. 48+88 TO STA. 51+93 RT
–L– STA. 996+00 TO STA. 1000+00 LT
–L– STA. 1000+00 TO STA. 1001+00 LT
–L– STA. 1000+50 TO STA. 1002+10 RT
–L1– STA. 1025+50 TO STA. 1026+50 LT
–L1– STA. 1027+50 TO STA. 1030+35 LT
–L1– STA. 1040+35 TO STA. 1044+50 RT
–L1– STA. 1045+50 TO STA. 1048+50 RT
–L1– STA. 1057+00 TO STA. 1057+50 LT
–L1– STA. 1071+50 TO STA. 1073+00 LT
–L1– STA. 1093+50 TO STA. 1094+00 RT
–Y22CR– STA. 15+00 TO STA. 15+50 LT
–Y23R– STA. 16+00 TO STA. 16+50 LT
–Y23R– STA. 16+00 TO STA. 16+50 RT
–Y23R– STA. 19+00 TO STA. 20+00 RT
–Y23R– STA. 22+50 TO STA 23+80 RT
–Y23R– STA. 23+80 TO STA. 25+30 LT
–Y23R– STA. 23+80 TO STA. 25+25 RT
–Y23R– STA. 26+00 TO STA. 27+15 RT
–Y23R– STA. 62+00 TO STA. 62+75 RT
–Y23R– STA. 63+00 TO STA. 63+32 LT
–Y23R– STA. 63+00 TO STA. 63+35 RT
–Y23R– STA. 68+75 TO STA. 69+00 RT
–Y23AR– STA. 10+30 TO STA. 12+50 RT
–Y23AR– STA. 16+50 TO STA. 17+50 RT
–Y23DR– STA. 10+50 TO STA. 11+50 LT
–Y23DR– STA. 15+00 TO STA. 15+50 LT
–Y23DR– STA. 10+50 TO STA. 16+50 RT
–Y23DR– STA. 20+50 TO STA. 23+50 RT
–Y23DR– STA. 37+00 TO STA. 40+00 LT
–Y23DR– STA. 38+38 TO STA. 41+00 RT
–Y23DR– STA. 54+94 TO STA. 55+65 RT
–Y23E– STA. 10+00 TO STA. 10+56 RT
–Y23E– STA. 10+20 TO STA. 10+50 LT
–Y23G– STA. 10+50 TO STA. 11+50 LT
–Y23J– STA. 14+00 TO STA. 15+30 RT
–DR2– STA. 10+24 TO STA. 11+50 LT
–DR2– STA. 10+70 TO STA. 11+50 RT
–Y23BR_REV– STA. 10+59 TO STA. 12+00 RT
–Y23BR_REV– STA. 10+80 TO STA. 14+50 LT
–Y23BR_REV– STA. 22+50 TO STA. 24+59 LT
–Y23BR_RAB– STA. 11+37 TO STA. 12+00 RT
–Y23BR_RAB– STA. 10+50 TO STA. 10+67 RT
–Y23BR_RAB– STA. 13+53 TO STA. 13+58 LT
–Y23CR_REV– STA. 23+00 TO STA. 24+00 LT

–Y24A– STA. 11+85 TO STA. 13+49 LT
–Y24E– STA. 10+50 TO STA. 11+00 LT
–Y24F– STA. 10+50 TO STA. 12+50 LT
–Y24R– STA. 13+00 TO STA. 16+00 RT
–Y24R– STA. 14+00 TO STA. 15+50 LT
–Y24R– STA. 23+50 TO STA. 24+48 LT
–Y24R– STA. 25+75 TO STA. 26+50 LT
–Y24RPC– STA. 26+30 TO STA. 28+50 LT
–Y26R– STA. 13+00 TO STA. 14+50 LT
–Y26_DRW1– STA. 10+10 TO STA. 12+50 LT
–Y26_DRW1– STA. 10+50 TO STA. 12+50 RT
–Y26RSR1– STA. 12+25 TO STA. 13+82 RT
–Y26RSR2– STA. 10+10 TO STA. 10+50 RT
–L1– STA. 1094+00 TO STA. 1097+00 RT
–Y26R– STA. 13+00 TO STA. 13+50 RT
–L1– STA. 1131+00 TO STA. 1134+50 RT

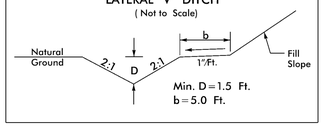
DETAIL M
LATERAL 'V' DITCH
(Not to Scale)



–Y23RPB– STA. 28+50 TO STA. 29+80 LT
–Y22RPA_REV– STA. 10+00 TO STA. 12+00 RT
–Y22RPAFLY_REV– STA. 19+75 TO 21+46 RT

–Y26R– STA. 22+02 TO STA. 22+40 LT

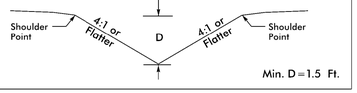
DETAIL B
LATERAL 'V' DITCH
(Not to Scale)



*–Y22RPAFLY_REV– STA. 32+50 TO STA. 34+50 RT
–Y22RPAFLY_REV– STA. 18+54 TO STA. 20+00 LT
–Y22RPA_REV– STA. 21+36 TO STA. 23+00 LT
–Y22RPE_REV– STA. 35+50 TO STA. 39+00 LT
–Y23R– STA. 48+00 TO STA. 49+50 RT
–Y23R– STA. 59+00 TO STA. 60+00 RT
–Y23BR– STA. 22+00 TO STA. 22+75 LT
–L1– STA. 1026+50 TO STA. 1027+50 LT
–L1– STA. 1033+00 TO STA. 1034+00 LT
–L1– STA. 1069+50 TO STA. 1071+50 LT

–L1– STA. 1135+50 TO STA. 1136+00 RT
–L1– STA. 1164+50 TO STA. 1168+50 LT

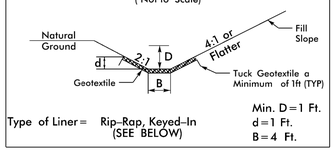
DETAIL G
MEDIAN 'V' DITCH
(Not to Scale)



*–L– STA. 962+50 TO STA. 964+00 RT
–L1– STA. 1038+50 TO STA. 1043+50 CL
–L1– STA. 1038+00 TO STA. 1040+35 RT
–L1– STA. 1038+00 TO STA. 1040+50 LT
–L1– STA. 1044+50 TO STA. 1045+00 RT
–L1– STA. 1060+00 TO STA. 1071+00 RT
–Y23RPB– STA. 24+50 TO STA. 25+50 RT
–Y23RPC– STA. 19+00 TO STA. 20+00 LT

–L1– STA. 1128+50 TO STA. 1131+00 RT

DETAIL J
SPECIAL LATERAL BASE DITCH
(Not to Scale)



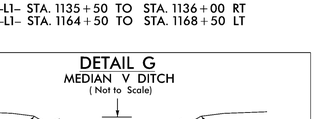
*DETAIL ONLY USED IN EARLY START

DETAIL C
LATERAL BASE DITCH
(Not to Scale)

–L– STA. 1003+00 TO STA. 1004+34 RT
–Y23R– STA. 53+00 TO STA. 55+00 RT
–Y23R– STA. 55+00 TO STA. 56+16 LT
–Y23R– STA. 60+95 TO STA. 62+00 RT
–Y22RPA_REV– STA. 14+55 TO STA. 19+50 RT
–Y22RPE_REV– STA. 41+00 TO STA. 42+00 LT

–Y26R– STA. 29+25 TO STA. 34+50 RT

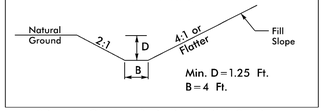
DETAIL H
LATERAL BASE DITCH
(Not to Scale)



–Y22RPA_REV– 19+50 TO STA. 20+73 RT, D/d=1.0'
–Y22RPE_REV– STA. 39+00 TO STA. 41+00 LT, D/d=1.0'
–L– STA. 966+00 TO STA. 971+50 LT, D/d=3.0'
–L– STA. 1002+40 TO STA. 1003+00 RT, D/d=1.5'
–L1– STA. 1015+50 TO STA. 1018+00 LT, D/d=1.0'
–L1– STA. 1017+85 TO STA. 1019+00 RT, D/d=1.0'
–L1– STA. 1087+00 TO STA. 1089+50 RT, D/d=1.0'
–L1– STA. 1092+00 TO STA. 1094+00 LT, D/d=1.0'
–Y23DR– STA. 34+15 TO STA. 36+00 LT D/d=1.0'
–Y23DR– STA. 51+00 TO STA. 51+93 RT, D/d=1.0'
–Y23RPB– STA. 22+50 TO STA. 23+50 RT, D/d=1.0'

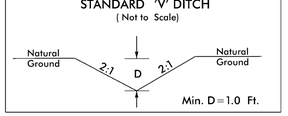
–Y24RPDR– STA. 14+75 TO STA. 17+48 LT, D/d=2.0'
–Y24RPC– STA. 19+00 TO STA. 21+50 RT, D/d=1.0'

DETAIL K
SPECIAL LATERAL BASE DITCH
(Not to Scale)



*DETAIL ONLY USED IN EARLY START

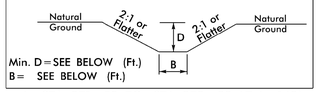
DETAIL D
STANDARD 'V' DITCH
(Not to Scale)



–Y22RPE REV– STA. 51+93 TO STA. 53+40 RT
BEGIN ELEV=245.6, END ELEV=242.3
S=2.3%, L=151'
—Y23DR– STA. 55+65 TO STA. 56+18 RT
BEGIN ELEV=278.7, END ELEV=277.5
S=4.5%, L=53'

–L1– STA. 1161+20 RT
BEGIN ELEV=308.10, END ELEV=307.60
S=1.9%, L=26'
–Y24RPC– STA. 28+50 TO 28+76 LT
BEGIN ELEV=300.0, END ELEV=299.8
S=0.3%, L=58'

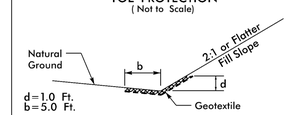
DETAIL I
STANDARD BASE DITCH
(Not to Scale)



–L– STA. 971+50 TO STA. 972+93 LT, L=143'
BEGIN ELEV=217.5', END ELEV=217.0', S=0.3%
MIN D=2.75', B=10'
–Y23R– STA. 23+80 RT, L=82', S=0.3%
BEGIN ELEV=335.25, END ELEV=335.0',
MIN D=1.5', B=4'
–Y23DR– STA. 15+50 RT, L=100', S=0.3%
BEGIN ELEV=316.5, END ELEV=316.2',
MIN D=1.5', B=4'
–L1– STA. 1027+00 LT, L=205', S=0.3%
BEGIN ELEV=296.7, END ELEV=296.0,
MIN D=1.5', B=4'
–L1– STA. 1030+35 LT, L=172', S=0.5%
BEGIN ELEV=301.8, END ELEV=301.0,
MIN D=1.5', B=4'
–Y23DR– STA. 51+00 LT, L=97', S=1.2%
BEGIN ELEV=265.0 END ELEV=263.8,
MIN D=2.0', B=4'
–Y23BR_REV– STA. 24+25 LT, L=116', S=0.34%
BEGIN ELEV=330.50 END ELEV=330.10,
MIN D=1.5', B=4'

–Y24E– STA. 10+60 LT
BEGIN ELEV=336.2', END ELEV=336.0', L=58', S=0.3%
MIN D=1', B=2'
–Y24R– STA. 37+00 RT
BEGIN ELEV=264.2', END ELEV=264.1', L=37', S=0.3%
MIN D=2', B=4'

DETAIL E
TOE PROTECTION
(Not to Scale)

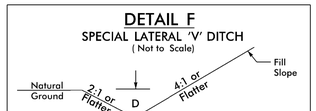


Type of Liner = CLASS B RIPRAP

*–Y22RPAFLY1– STA. 62+90 TO 63+70 LT
*–Y22RPAFLY_REV– STA. 39+50 TO 39+69 LT
*–Y22LPC– STA. 24+13 TO STA. 26+25 RT
*–L– STA. 930+24 TO STA. 930+72 RT
–Y22RPE– STA. 27+50 TO STA. 33+50 RT
–Y22RPE_REV– STA. 39+00 TO STA. 43+00 RT
–L– STA. 1002+00 TO STA. 1002+75 RT
–L– STA. 1003+50 TO STA. 1004+50 LT
–L– STA. 1004+25 TO STA. 1004+75 RT
–L1– STA. 1007+00 TO STA. 1010+00 RT
–L1– STA. 1007+50 TO STA. 1008+75 LT
–L1– STA. 1011+60 TO STA. 1012+41 LT
–L1– STA. 1013+00 TO STA. 1014+00 RT
–L1– STA. 1091+69 TO STA. 1093+51 LT
–Y22CR– STA. 15+50 TO STA. 16+00 LT
–Y22CR– STA. 15+50 TO STA. 16+00 RT
–Y23RPB– STA. 12+50 TO STA. 15+15 LT
–Y23R– STA. 39+00 TO STA. 40+60 RT
–Y23R– STA. 55+93 TO STA. 57+88 RT
–Y23DR– STA. 34+70 TO STA. 35+50 RT
–Y23DR– STA. 51+88 TO STA. 52+47 RT
–Y23E– STA. 10+66 TO STA. 10+81 RT
–DR1– STA. 10+33 TO STA. 11+12 RT
–Y23DR– STA. 47+54 TO STA. 47+92 RT
–Y23DR– STA. 49+24 TO STA. 49+83 RT
–Y23RPB– STA. 27+50 TO STA. 28+00 LT
–Y23FR– STA. 11+15 TO STA. 11+67 LT

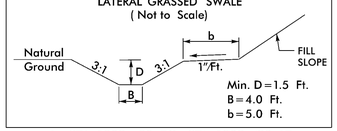
–Y24RPAR– STA. 22+86 TO STA. 24+04 RT
–Y24RPDR– STA. 24+10 TO STA. 25+50 LT
–Y26R– STA. 21+70 TO STA. 22+75 RT
–L1– STA. 1104+59 TO STA. 1105+35 LT
–L1– STA. 1170+60 TO STA. 1172+00 LT
–L1– STA. 1123+12 TO STA. 1124+20 LT
–L1– STA. 1125+00 TO STA. 1126+07 LT
–L1– STA. 1128+50 TO STA. 1129+00 LT
–L1– STA. 1098+63 TO STA. 1104+59 LT
–L1– STA. 1169+54 TO STA. 1170+37 LT
–L1– STA. 1174+50 TO STA. 1175+55 LT
–L1– STA. 1113+24 TO STA. 1114+41 RT
–L1– STA. 1110+09 TO STA. 1113+58 LT
–L1– STA. 1113+86 TO STA. 1116+96 LT
–L1– STA. 1124+19 TO STA. 1125+00 LT
–Y23RPBR– STA. 27+50 TO STA. 28+00 LT
–Y24R– STA. 19+75 TO STA. 20+50 LT
–Y24R– STA. 20+00 TO STA. 21+50 RT
–Y24R– STA. 61+15 TO STA. 62+50 LT
–Y24RPAR– STA. 21+70 TO STA. 22+86 RT
–Y24RPDR– STA. 14+30 TO STA. 14+80 LT
–Y24RPDR– STA. 17+40 TO STA. 18+00 LT
–Y26R– STA. 16+80 TO STA. 18+40 RT

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



*–Y22RPA_REV– STA. 23+00 TO STA. 27+50 RT
*–Y22RPA_REV– STA. 23+00 TO STA. 27+85 LT
–Y23R– STA. 21+50 TO STA 22+50 RT
*–L– STA. 958+00 TO STA. 962+50 RT
*–L– STA. 957+00 TO STA. 962+50 LT

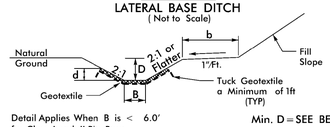
DETAIL L
LATERAL GRASSED SWALE
(Not to Scale)



–L– STA. 1003+00 TO STA. 1003+80 LT
–L1– STA. 1009+03 TO STA. 1011+50 LT
–L1– STA. 1014+00 TO STA. 1015+50 LT
–L1– STA. 1023+00 TO STA. 1023+84 LT
–L1– STA. 1024+18 TO STA. 1025+00 RT
–L1– STA. 1034+00 TO STA. 1036+33 LT
–L1– STA. 1089+50 TO STA. 1093+50 RT
–L1– STA. 1090+00 TO STA. 1092+00 LT
–Y23R– STA. 19+00 TO STA. 23+00 LT
–Y23R– STA. 39+00 TO STA. 41+00 LT
–Y23R– STA. 49+50 TO STA. 53+00 RT
–Y23R– STA. 60+00 TO STA. 60+95 RT
–Y23RPC– STA. 17+00 TO STA. 18+00 RT
–Y23FR– STA. 10+25 TO STA. 11+15 LT
–Y23FR– STA. 11+69 TO STA. 12+40 RT
–Y23FR– STA. 11+94 TO STA. 13+50 LT

–L1– STA. 1136+00 TO STA. 1137+00 RT
–L1– STA. 1164+50 TO STA. 1165+50 RT
–L1– STA. 1167+50 TO STA. 1170+00 RT
–L1– STA. 1168+50 TO STA. 1169+50 LT
–Y24RPBR– STA. 29+50 TO STA. 30+50 LT
–Y24RPDR– STA. 11+60 TO STA. 12+80 LT
–Y24R– STA. 18+00 TO STA. 19+17 LT
–Y24R– STA. 19+00 TO STA. 20+11 RT
–Y24R– STA. 33+99 TO STA. 34+68 RT
–L1– STA. 1113+00 TO STA. 1113+26 RT

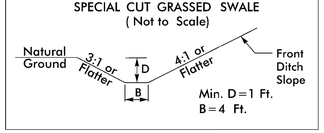
DETAIL N
LATERAL BASE DITCH
(Not to Scale)



–Y22RPAFLY_REV– STA. 15+37 TO 19+75 RT, D/d=2.75'
–Y22RPAFLY_REV– STA. 21+24 TO STA. 28+00 LT, D/d=2.5'
–L– STA. 979+00 TO STA. 982+00 RT, D/d=1.5'
–L– STA. 980+24 TO STA. 986+00 LT, D/d=1.5'
–Y23R– STA. 31+50 TO STA. 34+75 RT, D/d=1.5'
–Y23DR– STA. 24+50 TO STA. 27+50 LT, D/d=1.0'
–Y23DR– STA. 24+00 TO STA. 24+75 RT, D/d=1.0'
–Y23DR– STA. 32+50 TO STA. 34+15 LT D/d=1.0'
–Y23DR– STA. 51+93 TO STA. 52+50 RT, D/d=1.0'

–L1– STA. 1163+00 TO STA. 1164+50 RT, D/d=1.5'
–L1– STA. 1163+00 TO STA. 1164+50 LT, D/d=1.5'
–L1– STA. 1165+50 TO STA. 1167+50 RT, D/d=1.5'
–L1– STA. 1170+00 TO STA. 1171+38 RT, D/d=1.5'
–L1– STA. 1179+40 TO STA. 1181+00 LT, D/d=1.5'
–Y24RPAR– STA. 21+00 TO STA. 21+78 RT, D/d=1.5'
–Y24RPDR– STA. 12+80 TO STA. 14+24 LT, D/d=1.5'
–Y24R– STA. 15+50 TO STA. 18+00 LT, D/d=1.5'
–Y24R– STA. 16+00 TO STA. 19+00 RT, D/d=1.5'

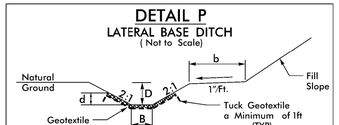
DETAIL O
SPECIAL CUT GRASSED SWALE
(Not to Scale)



–L– STA. 992+00 TO STA. 996+00 LT
–L– STA. 1001+00 TO STA. 1003+00 LT
–L1– STA. 1005+50 TO STA. 1007+00 RT
–L1– STA. 1010+50 TO STA. 1012+86 RT
–L1– STA. 1018+00 TO STA. 1021+50 LT
–L1– STA. 1019+00 TO STA. 1020+00 RT
–L1– STA. 1022+50 TO STA. 1024+18 RT
–L1– STA. 1026+00 TO STA. 1029+50 RT
–L1– STA. 1054+50 TO STA. 1056+00 RT
–L1– STA. 1059+00 TO STA. 1060+50 LT
–Y23R– STA. 18+50 TO STA. 19+00 LT
–Y23R– STA. 38+20 TO STA. 39+00 LT
–Y23RPC– STA. 14+29 TO STA. 17+00 RT
–Y23RPC– STA. 18+00 TO STA. 19+00 RT
–Y23RPC– STA. 20+00 TO STA. 23+50 LT
–Y23RPC– STA. 19+00 TO STA. 24+00 RT
–Y23LPC– STA. 14+00 TO STA. 15++45 RT
–Y23RPB– STA. 16+08 TO STA. 17+12 LT
–Y23RPB– STA. 18+05 TO STA. 22+50 RT
–Y23AR– STA. 13+30 TO STA. 14+50 RT
–Y23DR– STA. 21+00 TO STA. 23+00 LT
–Y23DR– STA. 29+85 TO STA. 32+50 LT
–Y23DR– STA. 36+00 TO STA. 37+00 LT
–Y23DR– STA. 44+43 TO STA. 45+43 RT
–Y23J– STA. 14+00 TO STA. 14+85 LT

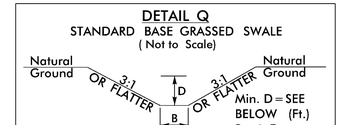
–L1– STA. 1094+00 TO STA. 1098+00 LT
–L1– STA. 1097+00 TO STA. 1098+50 RT
–L1– STA. 1101+00 TO STA. 1101+50 RT
–L1– STA. 1119+00 TO STA. 1124+50 RT
–Y24R– STA. 32+50 TO STA. 33+99 RT
–Y24A– STA. 19+51 TO STA. 20+01 LT
–Y24RPBR– STA. 30+50 TO STA. 32+00 LT
–Y24RPC– STA. 21+50 TO STA. 24+50 RT
–L1– STA. 1094+00 TO STA. 1096+16 LT
–L1– STA. 1180+00 TO STA. 1181+50 RT

DETAIL P
LATERAL BASE DITCH
(Not to Scale)



–Y24RPBR– STA. 32+00 TO STA. 34+00 LT

DETAIL Q
STANDARD BASE GRASSED SWALE
(Not to Scale)

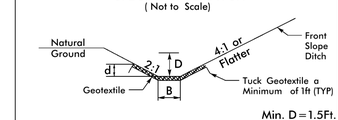


*NOTES:
1) LONGITUDINAL SLOPES BETWEEN 0.3% AND 4.0%.
2) MODIFICATIONS MAY BE NEEDED, AS APPROVED BY ENGINEER.

–L1– STA. 1056+00 RT, D=1'
BEGIN ELEV=311.9, END ELEV=311.0, S=0.9%, L=100'
–L1– STA. 1084+71 TO STA. 1087+00 RT, D=2'
BEGIN ELEV=230.0, END ELEV=230.8, S=0.4%, L=279'
–L1– STA. 1085+06 TO –L– 1086+20 LT, D=2'
BEGIN ELEV=229.9, END ELEV=229.3, S=0.5%, L=114'

–L1– STA. 1118+85 TO STA. 1119+00 RT, D=1'
–L1– STA. 1179+10 TO STA. 1180+00 RT, D=1'

DETAIL R
SPECIAL BASE DITCH
(Not to Scale)



–L– STA. 982+00 TO STA. 988+00 RT
–L1– STA. 1025+00 TO STA. 1026+00 RT
–L1– STA. 1029+50 TO STA. 1030+35 RT
–Y23K– STA. 11+98 TO STA. 12+60 LT
(BEGIN ELEV=308.2, END ELEV=304.5, S=6.0%, L=62')
–Y23AR– STA. 11+50 TO STA. 15+50 LT (Min. D=2.0')

NOTE: * INDICATE DITCHES INSIDE THE EARLY START PACKAGE

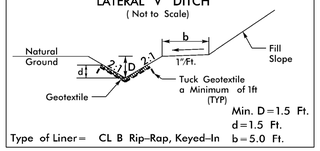
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PROJECT REFERENCE NO.	SHEET NO.
R-2829A	2D-2
	HYDRAULICS DESIGN ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DETAIL S
LATERAL 'V' DITCH
(Not to Scale)



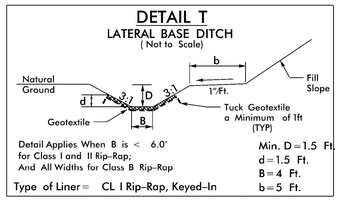
Min. D=1.5 Ft.
d=1.5 Ft.
b=5.0 Ft.

Type of Liner= CL B Rip-Rap, Keyed-In

–Y22RPAFLY_REV– STA. 20+00 TO STA. 21+24 LT
–Y23R– STA. 41+00 TO STA. 43+00 LT
–Y23RPB– STA. 23+50 TO STA. 24+50 RT
–Y23FR– STA. 13+50 TO STA. 14+00 LT

–Y26R– STA. 20+30 TO STA. 22+02 LT
–Y26R– STA. 28+50 TO STA. 29+25 RT

DETAIL T
LATERAL BASE DITCH
(Not to Scale)



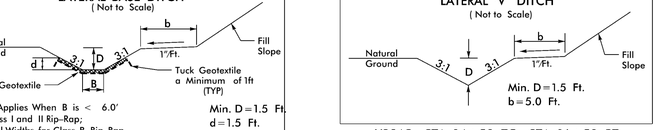
Detail Applies When B is < 6.0' for Class I and II Rip-Rap; And All Widths for Class B Rip-Rap

Min. D=1.5 Ft.
d=1.5 Ft.
B=4 Ft.
b=5 Ft.

Type of Liner= CL I Rip-Rap, Keyed-In

–Y23RPB– STA. 28+20 TO STA. 28+50 LT
–Y22RPAFLY_REV– STA. 28+00 TO STA. 30+00 LT

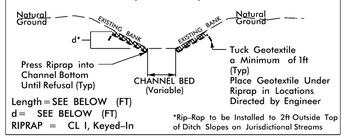
DETAIL U
LATERAL 'V' DITCH
(Not to Scale)



Min. D=1.5 Ft.
b=5.0 Ft.

–Y23AR– STA. 14+50 TO STA. 16+50 RT
–Y23AR– STA. 17+50 TO STA. 19+80 RT

DETAIL V
BANK STABILIZATION
(Not to Scale)

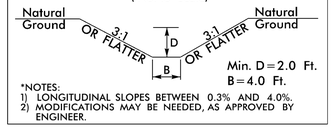


Length = SEE BELOW (FT)
d = SEE BELOW (FT)
RIPRAP = CL I, Keyed-In

*Rip-Rap to be Installed to 2ft Outside Top of Ditch Slopes on Jurisdictional Streams

–Y26R– STA. 22+25 LT,
L=72', d=3'
48 TONS CL I RIPRAP, W/107 SY GEOFAB

DETAIL W
STANDARD BASE GRASSED SWALE
(Not to Scale)

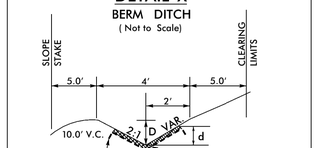


Min. D=2.0 Ft.
B=4.0 Ft.

*NOTES:
1) LONGITUDINAL SLOPES BETWEEN 0.3% AND 4.0%.
2) MODIFICATIONS MAY BE NEEDED, AS APPROVED BY ENGINEER.

–Y23RPB– STA. 23+50 RT, L=143'
BEGIN ELEV=317.1', END ELEV=315.7', S=1.0%
MIN D=1.0', B=4'

DETAIL X
BERM DITCH
(Not to Scale)



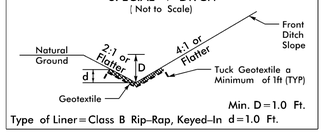
Min. D=1.0 Ft.

Type of Liner=CLASS B RIPRAP, Keyed-In d=1.0 Ft.

–Y23RPC– STA. 14+29 TO STA. 16+00 RT
–L1– STA. 1053+30 TO STA. 1058+00 LT

–L1– STA. 1108+85 TO STA. 1112+50 RT

DETAIL Y
SPECIAL 'V' DITCH
(Not to Scale)



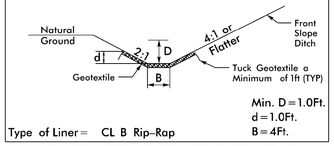
Min. D=1.0 Ft.

Type of Liner=Class B Rip-Rap, Keyed-In d=1.0 Ft.

–L1– STA. 1021+50 TO STA. 1022+00 LT
–L1– STA. 1020+00 TO STA. 1021+00 RT
–L1– STA. 1096+50 TO STA. 1097+00 RT
–L1– STA. 1073+00 TO STA. 1075+50 LT
–Y22CR– STA. 14+50 TO STA 15+00 LT
–Y23BR_REV– STA. 21+00 TO STA. 22+50 RT
–Y23CR_REV– STA. 21+50 TO STA. 23+00 LT
–Y23R– STA. 64+65 TO STA. 69+00 LT
–Y23R– STA. 66+50 TO STA. 68+30 RT
–Y23LPB– STA. 14+50 TO STA. 15+00 LT
–Y23DR– STA. 27+50 TO STA. 28+80 LT
–Y23DR– STA. 36+00 TO STA. 38+38 RT
–Y23CR_A– STA. 14+00 TO STA. 14+91 LT

–L1– STA. 1181+50 TO STA. 1182+50 RT
–Y24R– STA. 31+00 TO STA. 32+50 RT
–Y24A– STA. 10+90 TO STA. 11+45 LT (L=83')
–Y24A– STA. 10+75 TO 11+00 RT (L=33')
–Y24A– STA. 11+00 TO 12+65 RT (L=97')
–Y24A– STA. 12+65 TO 13+49 RT
–Y24A– STA. 19+01 TO STA. 19+51 LT

DETAIL Z
SPECIAL BASE DITCH
(Not to Scale)

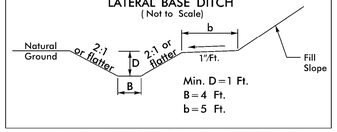


Min. D=1.0Ft.
d=1.0Ft.
B=4Ft.

Type of Liner= CL B Rip-Rap

–L1– STA. 1077+50 TO STA. 1079+00 LT
–Y23DR– STA. 23+50 TO STA. 24+00 RT
–L1– STA. 1061+00 TO STA. 1062+61 LT
–Y23R– STA. 64+50 TO STA. 66+50 RT

DETAIL AA
LATERAL BASE DITCH
(Not to Scale)

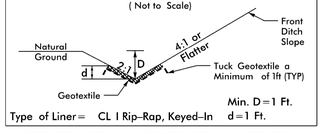


Min. D=1 Ft.
B=4 Ft.
b=5 Ft.

–L1– STA. 1075+50 TO STA. 1077+50 LT
–L1– STA. 1066+00 TO STA. 1069+50 LT

–L1– STA. 1098+00 TO STA. 1098+80 LT
–Y24R– STA. 37+00 TO STA. 39+50 RT
–Y24RPDR– STA. 18+00 TO STA. 21+50 LT
–L1– STA. 1114+70 TO STA 1115+77 RT

DETAIL AB
SPECIAL 'V' DITCH
(Not to Scale)



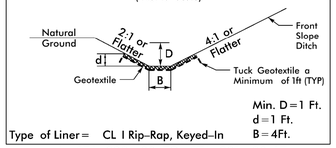
Min. D=1 Ft.

Type of Liner= CL I Rip-Rap, Keyed-In d=1 Ft.

–Y23I_REV– STA. 14+00 TO STA. 14+90 RT
–Y23I_REV– STA. 14+00 TO STA. 15+00 LT
–Y23DR– STA. 52+50 TO STA 53+23 RT
–Y23FR– STA. 13+50 TO STA. 14+00 RT

–Y24B– STA. 10+26 TO STA. 11+00 RT

DETAIL AC
SPECIAL BASE DITCH
(Not to Scale)



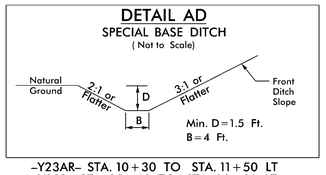
Min. D=1 Ft.
d=1 Ft.
B=4Ft.

Type of Liner= CL I Rip-Rap, Keyed-In

–L– STA. 990+00 TO STA. 991+00 LT
–Y23DR– STA. 23+00 TO STA. 24+50 LT
–Y23H– STA. 10+50 TO STA. 11+85 RT
–Y23R– STA. 32+50 TO STA. 33+50 LT

–Y24R– STA. 47+00 TO STA. 51+50 RT

DETAIL AD
SPECIAL BASE DITCH
(Not to Scale)

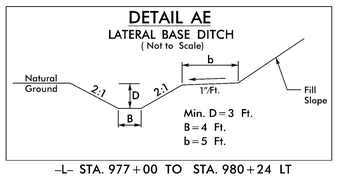


Min. D=1.5 Ft.
B=4 Ft.

–Y23AR– STA. 10+30 TO STA. 11+50 LT
–Y23R– STA. 33+50 TO STA. 36+00 LT
–Y23RPC– STA. 24+00 TO STA. 27+00 RT

–Y26R– STA. 34+50 TO STA. 39+50 RT

DETAIL AE
LATERAL BASE DITCH
(Not to Scale)

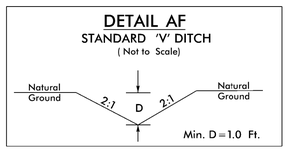


Min. D=3 Ft.
B=4 Ft.
b=5 Ft.

–L– STA. 977+00 TO STA. 980+24 LT

–Y24RPC– STA. 15+67 TO STA. 17+32 RT

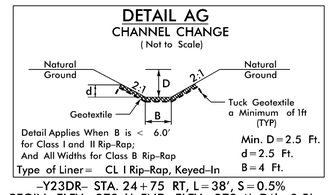
DETAIL AF
STANDARD 'V' DITCH
(Not to Scale)



Min. D=1.0 Ft.

–Y23CR_REV– STA. 12+07 TO STA. 14+50,
BEGIN ELEV=347.50', END ELEV=354.73'
S=2.8%, L=266'

DETAIL AG
CHANNEL CHANGE
(Not to Scale)



Detail Applies When B is < 6.0' for Class I and II Rip-Rap; And All Widths for Class B Rip-Rap

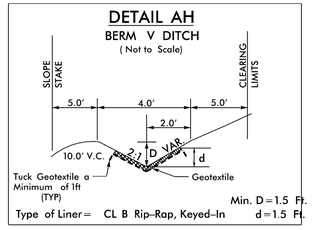
Min. D=2.5 Ft.
d=2.5 Ft.
B=4 Ft.

Type of Liner= CL I Rip-Rap, Keyed-In

–Y23DR– STA. 24+75 RT, L=38', S=0.5%
BEGIN ELEV=279.6', END ELEV=279.4', D/d=3.5'

–L1– STA. 1161+40 TO 1162+07 LT
BEGIN ELEV=291.0', END ELEV=288.5', L=110', S=2.3%
–L1– STA. 1162+07 TO 1163+00 LT
BEGIN ELEV=294.5', END ELEV=291.0', L=108', S=3.2%

DETAIL AH
BERM V DITCH
(Not to Scale)

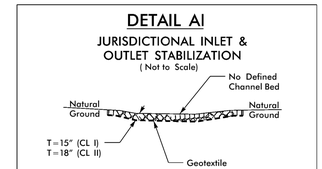


Min. D=1.5 Ft.

Type of Liner= CL B Rip-Rap, Keyed-In d=1.5 Ft.

–L1– STA. 1030+50 TO STA. 1034+50 RT

DETAIL AI
JURISDICTIONAL INLET & OUTLET STABILIZATION
(Not to Scale)



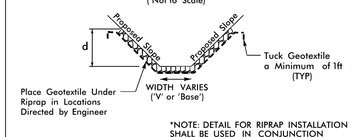
Length of Pad = SEE BELOW
*Minimum 10' at Inlet
*Minimum 20' at Outlet

Width of Pad = See STD. 876.02

Type of Liner= CL I or CL II Rip-Rap – Keyed-In\Countersunk

–L– STA. 1004+00 LT, CL I RIPRAP, L=20'
–L1– STA. 1036+50 LT, CL I RIPRAP, L=20'

DETAIL AJ
RIPRAP STABILIZATION
(Not to Scale)



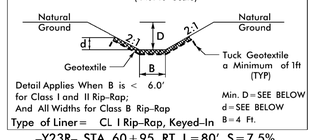
*NOTE: DETAIL FOR RIPRAP INSTALLATION SHALL BE USED IN CONJUNCTION WITH ANY PROPOSED DITCH DETAIL AND/OR ROADWAY TYPICAL DITCH.

Length= SEE BELOW (Ft.)
Type of Liner= CL B or I Rip-Rap – Keyed-In (SEE BELOW)

–Y22RPA_REV– STA. 20+80 LT (RDY TYPICAL DITCH)
L=110', MIN d=1.0'
45 TONS CL B RIPRAP, W/101 SY GEOFAB
–Y23DR– STA. 15+50 RT (END OF STD. DITCH),
L=6', MIN d=1.5'
3 TONS CL B RIPRAP, W/9 SY GEOFAB
–Y23DR– STA. 51+07 RT (END OF STD. DITCH),
L=6', MIN d=2.0'
4 TONS CL I RIPRAP, W/9 SY GEOFAB
–L1– STA. 1086+20 RT (END OF SWALE),
L=20', MIN d=2.0'
18 TONS CL I RIPRAP, W/37 SY GEOFAB
–L1– STA. 1084+85 RT (END OF SWALE),
L=20', MIN d=2.0'
18 TONS CL I RIPRAP, W/37 SY GEOFAB
–L1– STA. 1087+05 LT (END OF SWALE),
L=20', MIN d=2.0'
23 TONS CL I RIPRAP, W/46 SY GEOFAB

–L1– STA. 1145+00 TO 1147+00 RT
L=200', MIN d=1.0'
82 TONS CL B RIPRAP, W/183 SY GEOFAB
–L1– STA. 1179+10 RT (END OF SWALE),
L=12', MIN d=1.0'
6 TONS CL B RIPRAP, W/14 SY GEOFAB

DETAIL AK
STANDARD BASE DITCH
(Not to Scale)



Detail Applies When B is < 6.0' for Class I and II Rip-Rap; And All Widths for Class B Rip-Rap

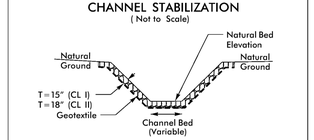
Min. D=SEE BELOW
d=SEE BELOW
B=4 Ft.

Type of Liner= CL I Rip-Rap, Keyed-In

–Y23R– STA. 60+95 RT, L=80', S=7.5%
BEGIN ELEV=332.0, END ELEV=326.0', D/d=1.0'
–Y23AR– STA. 11+50 RT, L=24', S=1.4%
BEGIN ELEV=299.0', END ELEV=298.67', D/d=2.5'
–L– STA. 975+75 TO STA. 977+00 LT, L=125', S=0.3%
BEGIN ELEV=214.5', END ELEV=214.9', D/d=3.5'
–Y23DR– STA. 23+85 LT, L=91', S=8.0%
BEGIN ELEV=293.4', END ELEV=286.1', D/d=1.5'
–Y23DR– STA. 38+35 RT, L=27', S=6.7%
BEGIN ELEV=293.8', END ELEV=292.0', D/d=1.0'
–Y23RPB– STA. 12+06 LT, L=50'
BEGIN ELEV=284.0', END ELEV=284.2', S=0.3%
MIN D=3.25', B=4'
–Y23RPB– STA. 12+69 LT, L=193'
BEGIN ELEV=284.2', END ELEV=295.0', S=5.6%
MIN D=1.5', B=4'

–Y26– STA. 14+50 LT, L=73', S=14.0%, D/d=1.0'
BEGIN ELEV=300.0', END ELEV=289.8'
–Y26_DRW1– STA. 10+50 RT, L=40', S=16.6%, D/d=1.0'
BEGIN ELEV=297.3', END ELEV=290.6'

DETAIL AL
JURISDICTIONAL INLET & OUTLET CHANNEL STABILIZATION
(Not to Scale)



Length of Pad= SEE BELOW
*Minimum 10' at Inlet
*Minimum 20' at Outlet

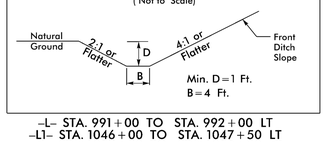
Width of Pad = See STD. 876.02

Type of Liner= CL I or CL II Rip-Rap – Keyed-In\Countersunk

–L– STA. 1003+00 RT, CL I RIPRAP, L=16'
–L1– STA. 1023+00 LT, CL II RIPRAP, L=20'
–L1– STA. 1062+62 LT, CL I RIPRAP, L=16'
–Y23DR– STA. 46+25 RT, CL I RIPRAP, L=20'
–Y23R– STA. 61+14 LT, CL I RIPRAP, L=20'
–Y23DR– STA. 34+15 LT, CL I RIPRAP, L=16'
–Y23DR– STA. 34+31 RT, CL I RIPRAP, L=20'
–Y23FR– STA. 11+71 LT, CL II RIPRAP, L=20'
–Y23FR– STA. 11+64 RT, CL II RIPRAP, L=20'

–L1– STA. 1024+00 LT, CL II RIPRAP, L=20'
–L1– STA. 1163+00 RT, CL II RIPRAP, L=20'
–Y24RPBR– STA. 34+00 RT, CL II RIPRAP, L=20'
–Y24RPDR– STA. 24+73 LT, CL I RIPRAP, L=20'
–Y26R– STA. 21+69 RT, CL II RIPRAP, L=20'
–Y26R– STA. 22+02 LT, CL II RIPRAP, L=20'

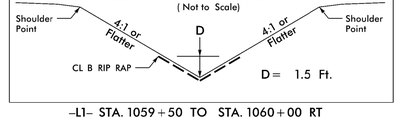
DETAIL AM
SPECIAL BASE DITCH
(Not to Scale)



Min. D=1 Ft.
B=4 Ft.

–L– STA. 991+00 TO STA. 992+00 LT
–L1– STA. 1046+00 TO STA. 1047+50 LT
–L1– STA. 1057+50 TO STA. 1059+00 LT
–Y23R– STA. 23+00 TO STA. 23+80 LT
–Y23R– STA. 31+50 TO STA. 32+50 LT
–Y23LPB– STA. 13+22 TO STA. 14+50 LT

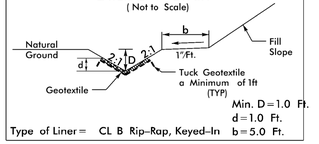
DETAIL AN
MEDIAN V DITCH W/CL B RIP RAP
(Not to Scale)



D= 1.5 Ft.

–L1– STA. 1059+50 TO STA. 1060+00 RT

DETAIL AO
LATERAL 'V' DITCH
(Not to Scale)



Min. D=1.0 Ft.
d=1.0 Ft.
b=5.0 Ft.

Type of Liner= CL B Rip-Rap, Keyed-In

–Y22CR– STA. 13+61 TO STA 14+50 LT
–Y22CR– STA. 14+26 TO STA 15+50 RT
–L1– STA. 1070+50 TO STA. 1071+50 RT

–L1– STA. 1161+20 TO STA. 1161+60 RT

NOTE: * INDICATE DITCHES INSIDE THE EARLY START PACKAGE

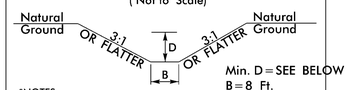
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PROJECT REFERENCE NO.	SHEET NO.
R-2829A	2D-3
	HYDRAULICS DESIGN ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

DETAIL AP
STANDARD BASE GRASSED SWALE
(Not to Scale)

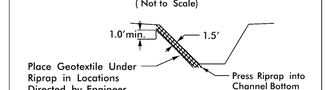


Min. D = SEE BELOW (Ft.)
B = 8 Ft.

*NOTES:
1) LONGITUDINAL SLOPES BETWEEN 0.3% AND 4.0%.
2) MODIFICATIONS MAY BE NEEDED, AS APPROVED BY ENGINEER.

–L1– STA. 1086 + 92 TO STA. 1090 + 00 LT, D = 2 FT
–BEGIN ELEV = 230.0, END ELEV = 231.0 S = 0.3%, L = 312'

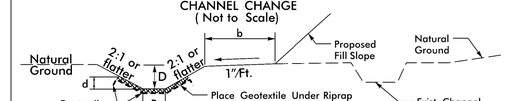
DETAIL AQ
BANK STABILIZATION
(Not to Scale)



Type of Liner = CL I Rip–Rap, Keyed–In

–L1– STA. 1086 + 29 LT
5 TONS CL I RIPRAP, W/10 SY GEOFAB
–L1– STA. 1086 + 92 LT
5 TONS CL I RIPRAP, W/10 SY GEOFAB
–L1– STA. 1086 + 75 RT
5 TONS CL I RIPRAP, W/10 SY GEOFAB

DETAIL AR
CHANNEL CHANGE
(Not to Scale)



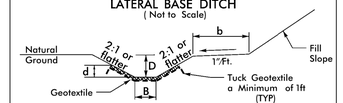
Min. D = SEE BELOW
d = SEE BELOW
B = SEE BELOW
b = 5.0 Ft.

Type of Liner = SEE BELOW

–L1– 1014 + 00 RT, B = 7', CL II RIPRAP, D/d = 3.0'
BEGIN ELEV. = 255.5, END ELEV. = 257.0, L = 73' (RCBC INLET)
–L1– STA. 1014 + 50 TO STA. 1015 + 10 RT, B = 7', CL II RIPRAP, MIN D/d = 3.0'
–L1– STA. 1015 + 10 TO STA. 1016 + 00 RT, B = 7', CL II RIPRAP, MIN D/d = 1.0'
–L1– STA. 1016 + 50 TO STA. 1018 + 29 RT, B = 5', GRASS, MIN D/d = 1.5'

–L1– STA. 1171 + 38 TO STA. 1176 + 30 RT, CL I RIPRAP, MIN D/d = 4.0'
–L1– STA. 1175 + 56 TO STA. 1178 + 09 LT, CL I RIPRAP, MIN D/d = 4.0'
–L1– STA. 1115 + 82 TO STA. 1118 + 00 RT, CL II RIP RAP, MIN D/d = 2.5, B = 8'
–L1– STA. 1118 + 85 TO STA. 1119 + 12 RT, CL II RIP RAP, MIN D/d = 3.0, B = 4–8'
–L1– STA. 1179 + 00 TO STA. 1179 + 40 LT, CL I RIP RAP, MIN D/d = 5.0, B = 4'

DETAIL AS
LATERAL BASE DITCH
(Not to Scale)



Detail Applies When B is < 6.0' for Class I and II Rip–Rap; And All Widths for Class B Rip–Rap

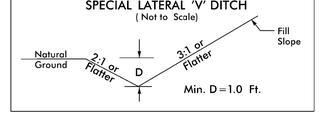
Min. D = SEE BELOW
d = SEE BELOW
B = 4 Ft.
b = 5 Ft.

Type of Liner = CL B RIPRAP, Keyed–In

–L1– STA. 1079 + 00 TO STA. 1084 + 50 LT, D/d = 1.0'

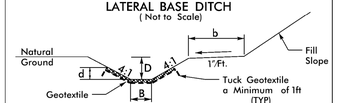
–L1– STA. 1159 + 62 TO STA. 1161 + 20 RT, D/d = 1.0'
–L1– STA. 1161 + 60 TO STA. 1163 + 00 RT, D/d = 1.0'

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



–Y26RSR2– STA. 10 + 70 TO STA. 14 + 20 LT

DETAIL AU
LATERAL BASE DITCH
(Not to Scale)



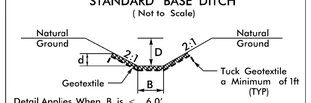
Detail Applies When B is < 6.0' for Class I and II Rip–Rap; And All Widths for Class B Rip–Rap

Min. D = 2 Ft.
d = 2 Ft.
B = 4 Ft.
b = 5 Ft.

Type of Liner = CL B Rip–Rap, Keyed–In

–Y23AR– STA. 16 + 55 TO STA. 18 + 90 LT

DETAIL AV
STANDARD BASE DITCH
(Not to Scale)



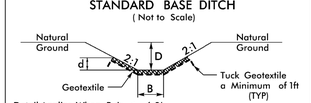
Detail Applies When B is < 6.0' for Class I and II Rip–Rap; And All Widths for Class B Rip–Rap

Min. D = SEE BELOW
d = SEE BELOW
B = SEE BELOW

Type of Liner = CL B Rip–Rap, Keyed–In

–L– STA. 978 + 30 TO STA. 979 + 00 RT, L = 78'
BEGIN ELEV = 221.8', END ELEV = 222.1', S = 0.4%
MIN D = 2.5', B = 6'
–Y22RPE_REV– STA. 42 + 00 RT, L = 330'
BEGIN ELEV = 252.7', END ELEV = 240.4', S = 3.8%
MIN D = 1.5', B = 4'
–Y22RPE_REV– STA. 45 + 00 RT, L = 100'
BEGIN ELEV = 240.4', END ELEV = 240.0', S = 0.4%
MIN D = 2.5', B = 4'

DETAIL AW
STANDARD BASE DITCH
(Not to Scale)



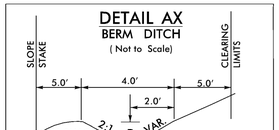
Detail Applies When B is < 6.0' for Class I and II Rip–Rap; And All Widths for Class B Rip–Rap

Min. D = 1.5 Ft.
d = 1.5 Ft.
B = 4 Ft.

Type of Liner = CL I Rip–Rap, Keyed–In

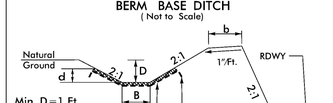
–L1– STA. 1161 + 64 LT
BEGIN ELEV = 295.0', END ELEV = 289.6', L = 90', S = 6.0%

DETAIL AX
BERM DITCH
(Not to Scale)



–Y23DR– STA. 13 + 00 TO STA. 23 + 00 LT

DETAIL AY
BERM BASE DITCH
(Not to Scale)



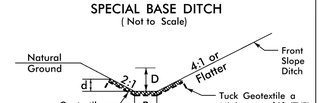
Min. D = 1 Ft.
d = 1 Ft.
B = 4 Ft.
b = 4 Ft.

Type of Liner = CL B Rip–Rap, Keyed–In

–L– STA. 987 + 50 TO STA. 997 + 50 RT
–L1– STA. 1058 + 00 TO STA. 1060 + 50 LT

–L1– STA. 1103 + 79 TO STA. 1108 + 85 RT

DETAIL AZ
SPECIAL BASE DITCH
(Not to Scale)

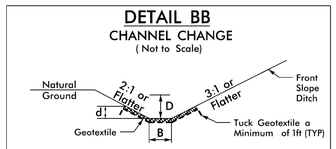


Min. D = 1 Ft.
d = 1 Ft.
B = 5 Ft.

Type of Liner = CL II Rip–Rap, Keyed–In

–L1– STA. 1100 + 00 TO STA. 1101 + 00 RT

DETAIL BB
CHANNEL CHANGE
(Not to Scale)



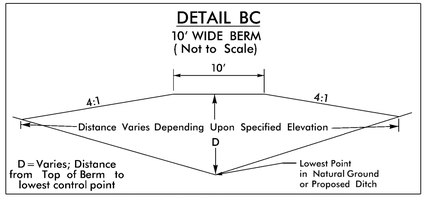
Min. D = See Below
d = See Below
B = See Below

Type of Liner = CL I OR II RIPRAP, Keyed–In

–L1– STA. 1016 + 00 TO STA. 1016 + 50 RT, CL I RIPRAP
MIN D/d = 1.0, B = 7'

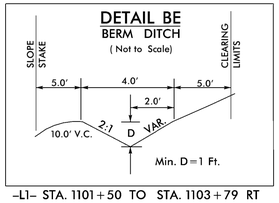
–L1– STA. 1118 + 00 TO STA. 1118 + 85 RT, CL II RIPRAP
MIN D/d = 2.5', B = 8'

DETAIL BC
10' WIDE BERM
(Not to Scale)



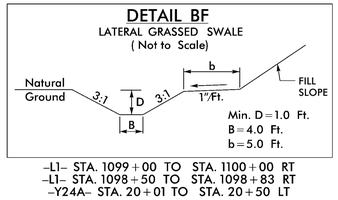
–L1– STA. 1161 + 60 LT, TOP ELEV = 311.0'

DETAIL BE
BERM DITCH
(Not to Scale)



–L1– STA. 1101 + 50 TO STA. 1103 + 79 RT

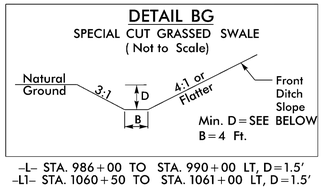
DETAIL BF
LATERAL GRASSED SWALE
(Not to Scale)



Min. D = 1.0 Ft.
B = 4.0 Ft.
b = 5.0 Ft.

–L1– STA. 1099 + 00 TO STA. 1100 + 00 RT
–L1– STA. 1098 + 50 TO STA. 1098 + 83 RT
–Y24A– STA. 20 + 01 TO STA. 20 + 50 LT

DETAIL BG
SPECIAL CUT GRASSED SWALE
(Not to Scale)

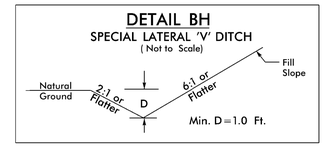


Min. D = SEE BELOW
B = 4 Ft.

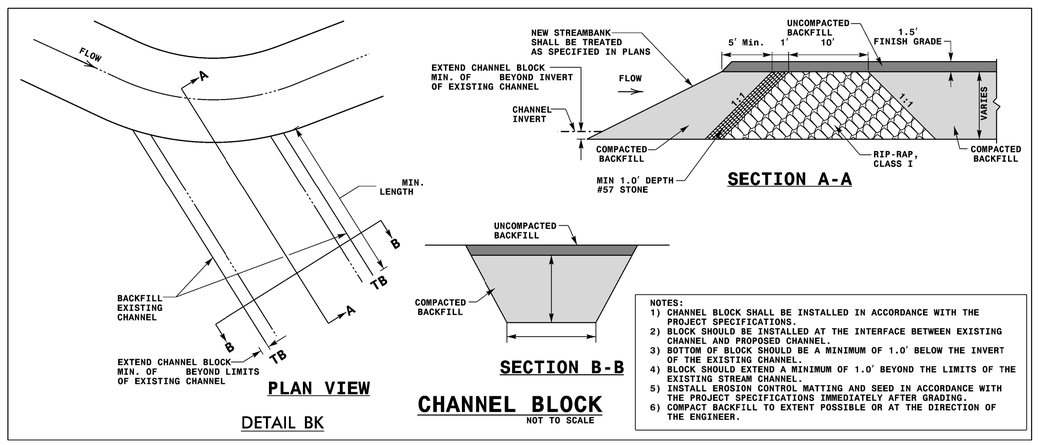
–L– STA. 986 + 00 TO STA. 990 + 00 LT, D = 1.5'
–L1– STA. 1060 + 50 TO STA. 1061 + 00 LT, D = 1.5'

–Y24RPC– STA. 24 + 50 TO STA. 29 + 00 RT, D = 2'

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



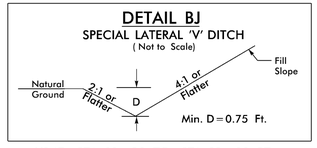
–Y24R– STA. 41 + 75 TO STA. 43 + 00 LT



NOTES:
1) CHANNEL BLOCK SHALL BE INSTALLED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
2) BLOCK SHOULD BE INSTALLED AT THE INTERFACE BETWEEN EXISTING CHANNEL AND PROPOSED CHANNEL.
3) BOTTOM OF BLOCK SHOULD BE A MINIMUM OF 1.0' BELOW THE INVERT OF THE EXISTING CHANNEL.
4) BLOCK SHOULD EXTEND A MINIMUM OF 1.0' BEYOND THE LIMITS OF THE EXISTING STREAM CHANNEL.
5) INSTALL EROSION CONTROL MATTING AND SEED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS IMMEDIATELY AFTER GRADING.
6) COMPACT BACKFILL TO EXTENT POSSIBLE OR AT THE DIRECTION OF THE ENGINEER.

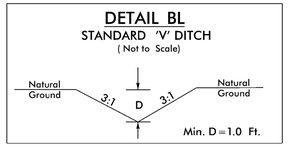
DETAIL BK

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



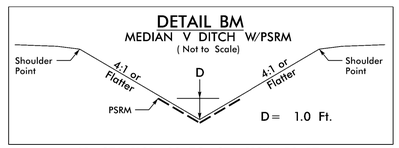
–Y24E– STA. 10 + 80 TO STA. 12 + 00 RT

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



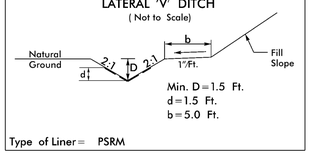
–Y23J– STA. 13 + 00 TO STA. 14 + 00 RT
BEGIN ELEV = 321.7', END ELEV = 318.0'
S = 3.7%, L = 100'
–Y23J– STA. 13 + 00 TO STA. 14 + 00 LT
BEGIN ELEV = 323.1', END ELEV = 317.0'
S = 6.1%, L = 100'

DETAIL BM
MEDIAN V DITCH W/PSRM
(Not to Scale)



–L1– STA. 1131 + 00 TO STA. 1134 + 50 RT

DETAIL BN
LATERAL 'V' DITCH
(Not to Scale)



Type of Liner = PSRM

–Y22RPAFLY_REV– STA. 30 + 00 TO STA. 31 + 50 LT

NOTE: * INDICATE DITCHES INSIDE THE EARLY START PACKAGE

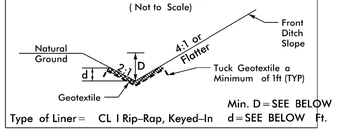
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PROJECT REFERENCE NO.	SHEET NO.
R-2829A	2D-4
	HYDRAULICS DESIGN ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

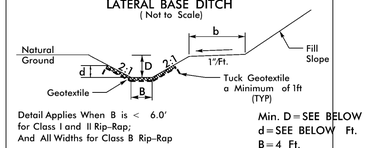
DETAIL BO
SPECIAL 'V' DITCH
(Not to Scale)



Min. D = SEE BELOW Ft.
Type of Liner = CL I Rip-Rap, Keyed-In d = SEE BELOW Ft.

-L1- STA. 1063+00 TO STA. 1066+00 LT, D/d = 2.0'
-L1- STA. 1057+50 TO STA. 1058+00 LT, D/d = 1.5'

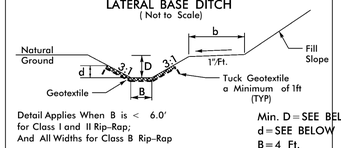
DETAIL BP
LATERAL BASE DITCH
(Not to Scale)



Detail Applies When B is < 6.0' for Class I and II Rip-Rap; And All Widths for Class B Rip-Rap
Min. D = SEE BELOW Ft.
d = SEE BELOW Ft.
B = 4 Ft.
b = 5 Ft.
Type of Liner = CL I Rip-Rap, Keyed-In

-Y24RPC- STA. 17+32 TO STA. 19+00 RT, D/d = 2.5'
-L1- STA. 1124+50 TO STA. 1125+30 RT, D/d = 1.0'

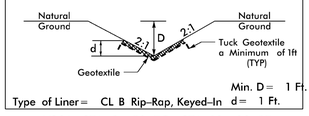
DETAIL BQ
LATERAL BASE DITCH
(Not to Scale)



Detail Applies When B is < 6.0' for Class I and II Rip-Rap; And All Widths for Class B Rip-Rap
Min. D = SEE BELOW Ft.
d = SEE BELOW Ft.
B = 4 Ft.
b = 5 Ft.
Type of Liner = CL I Rip-Rap, Keyed-In

-Y23RPB- STA. 28+75 TO STA. 30+45 RT
-Y22RPE_REV-STA. 28+00 TO STA. 30+00 LT

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



Min. D = 1 Ft.
Type of Liner = CL B Rip-Rap, Keyed-In d = 1 Ft.

-Y23J- STA. 9+50 TO STA. 10+00 RT
BEGIN ELEV=316.8, END ELEV=313.8
S=6.0%, L=50'

DETAIL BT
LATERAL 'V' DITCH
(Not to Scale)

Min. D = 1 Ft.
d = 1 Ft.
Type of Liner = CL I Rip-Rap, Keyed-In b = 5 Ft.

-Y23FR- STA. 12+40 TO STA. 13+50 RT

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

Min. D = 1 Ft.
Type of Liner = CL B Rip-Rap, Keyed-In d = 1 Ft.

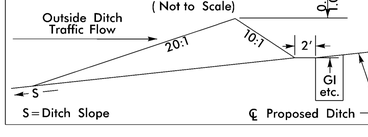
-Y23R- STA. 20+00 TO STA. 21+50 RT

DETAIL BV
SPECIAL 'V' DITCH
(Not to Scale)

Min. D = 0.5 Ft.

-Y24R- STA. 54+00 TO STA. 54+50 RT

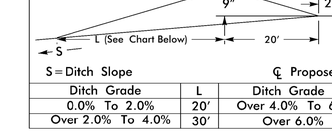
DETAIL BX
SPECIAL BACK OF CURB CUT DITCH
(NOT TO SCALE)



Type of Liner = CL B Rip-Rap, Keyed-In

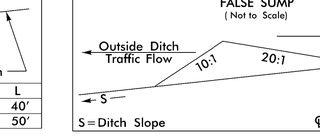
-Y23CR_REV- STA. 11+14 TO STA. 12+20 RT

DETAIL BY
SPECIAL BACK OF CURB CUT DITCH
(NOT TO SCALE)



-Y23CR_REV- STA. 10+00 TO STA. 10+93 RT

DETAIL BZ
SPECIAL 'V' DITCH
(Not to Scale)



Min. D = SEE BELOW Ft.
Type of Liner = PSRM d = SEE BELOW Ft.

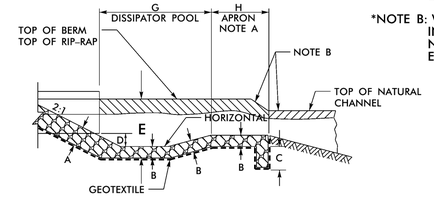
-Y23BR_REV- STA. 23+00 TO STA. 24+02 RT, D/d = 1.0'
-Y23BR_REV- STA. 24+02 TO STA. 24+39 RT, D/d = 1.5'

DETAIL BS
RIP-RAPPED ENERGY DISSIPATOR BASIN

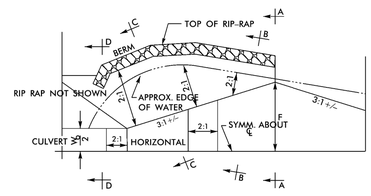
*NOTE A: IF EXIT VELOCITY OF BASIN IS SPECIFIED, EXTEND BASIN AS REQUIRED TO OBTAIN SUFFICIENT CROSS SECTIONAL AREA AT SECTION A-A SUCH THAT Q des/(CROSS SECTION AREA AT SEC. A-A) = SPECIFIED VELOCITY.

*NOTE B: WARP BASIN TO CONFORM TO NATURAL STREAM CHANNEL. TOP OF RIP-RAP IN FLOOR OF BASIN SHOULD BE AT SAME ELEVATION OR LOWER THAN NATURAL CHANNEL BOTTOM AT SEC. A-A. PROVIDE SMOOTH TRANSITION FROM END OF APRON TO NATURAL CHANNEL WIDTH.

℄ SECTION



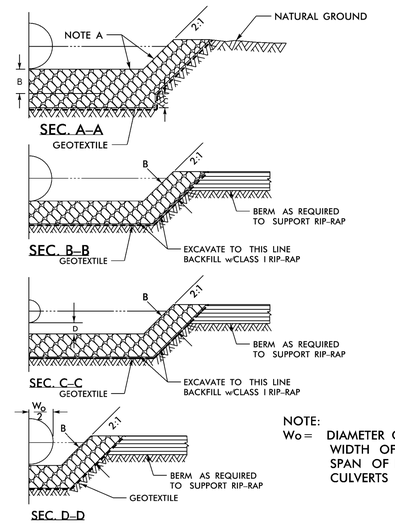
HALF PLAN



DIM.	RIP RAP BASIN #							
	1	2	3	4	5	6	7	8
A	0.4'	0.4'						
B	0.3'	0.3'						
C	3.0'	3.0'						
D	2.1'	4.7'						
E	3.3'	5.2'						
F	15.0'	17.6'						
G	21.1'	47.0'						
H	10.5'	23.5'						

*ALL DIMENSIONS APPROXIMATE IN FT

BASIN #	LOCATION (AT OUTLET)
1	-Y23RPB- 23+55
2	-L1- STA. 1105+37 LT
3	
4	
5	
6	
7	
8	

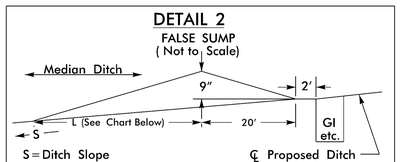


NOTE:
Wo = DIAMETER OF PIPE, WIDTH OF BOX OR SPAN OF PIPE-ARCH CULVERTS

5/05

DETAIL 1
FALSE SUMP
(Not to Scale)

DETAIL 2
FALSE SUMP
(Not to Scale)



Ditch Grade	L	Ditch Grade	L
0.0% To 2.0%	20'	Over 4.0% To 6.0%	40'
Over 2.0% To 4.0%	30'	Over 6.0%	50'

DETAIL 3
FALSE SUMP
(Not to Scale)

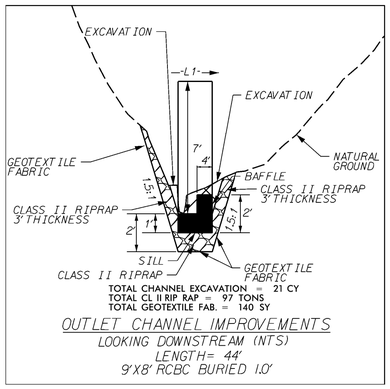
NOTE: * INDICATE DITCHES INSIDE THE EARLY START PACKAGE

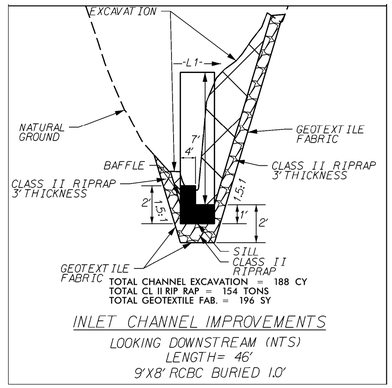
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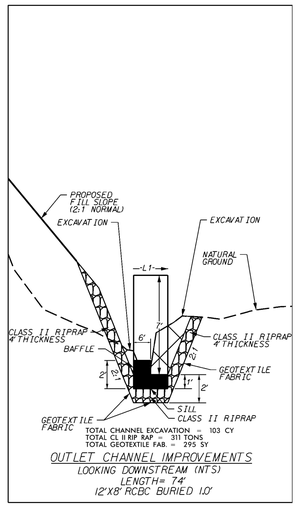
PROJECT REFERENCE NO.	SHEET NO.
R-2829A	2D-5
	HYDRAULICS DESIGN ENGINEER

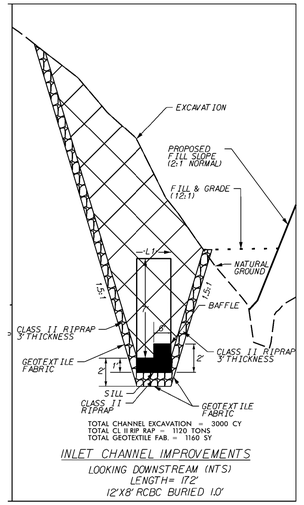
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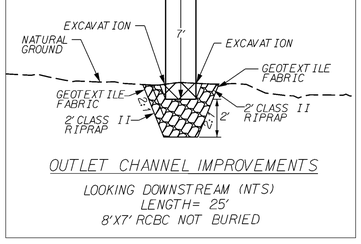


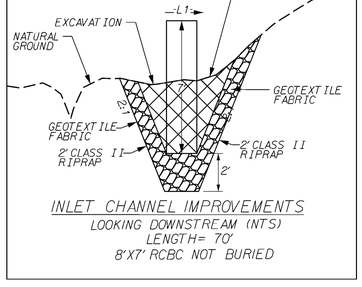
CULVERT INLET/OUTLET DETAILS
C100
-L1- STA. 1008+75
(DETAIL CA)



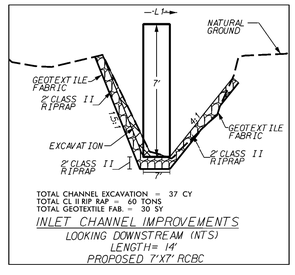


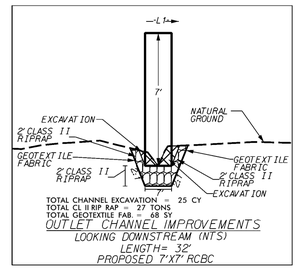
CULVERT INLET/OUTLET DETAILS
C200
-L1- STA. 1013+50
(DETAIL CB)



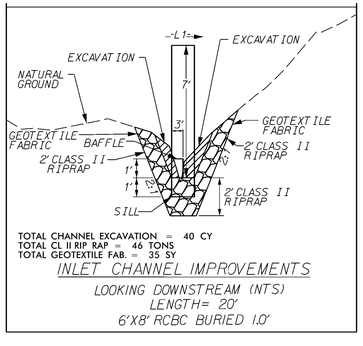


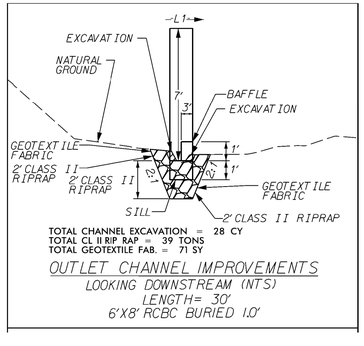
CULVERT INLET/OUTLET DETAILS
C300
-L1- STA. 1099+00
(DETAIL CC)





CULVERT INLET/OUTLET DETAILS
C400
-L1- STA. 1114+75
(DETAIL CD)





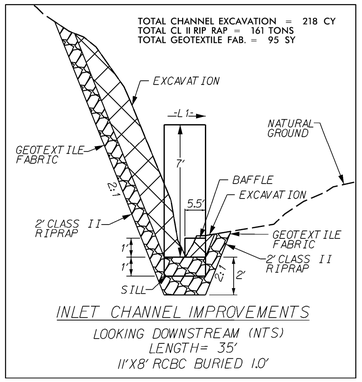
CULVERT INLET/OUTLET DETAILS
C500
-L1- STA. 1152+00
(DETAIL CE)

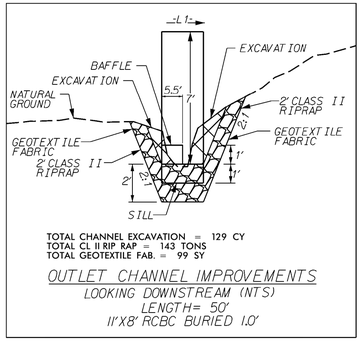
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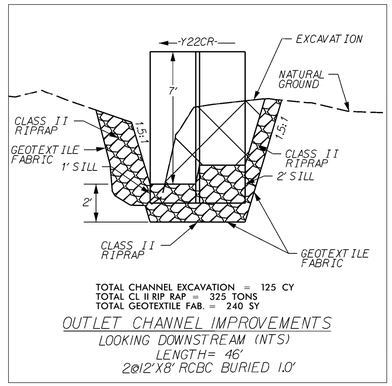
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R-2829A	2D-6
	HYDRAULICS DESIGN ENGINEER

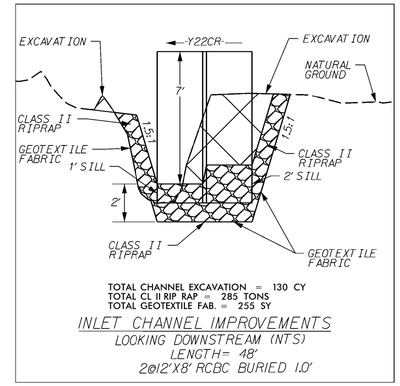
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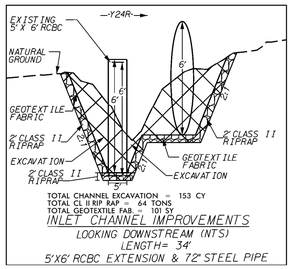


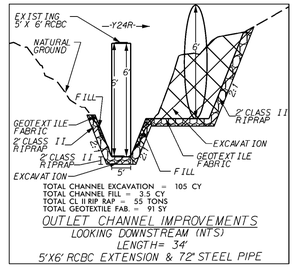
CULVERT INLET/OUTLET DETAILS
C600
–L1– STA. 1171+00
(DETAIL CF)

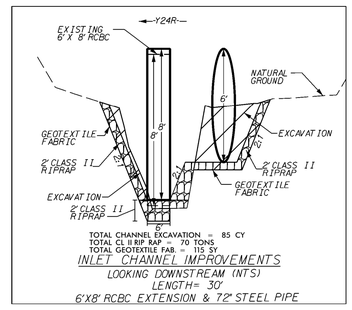


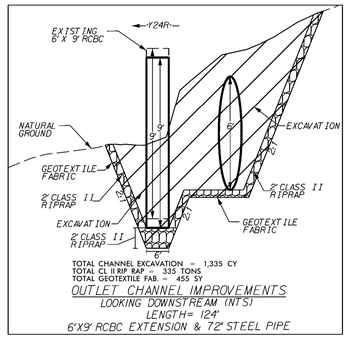


CULVERT INLET/OUTLET DETAILS
C700
–Y22CR– STA. 14+00
(DETAIL CG)



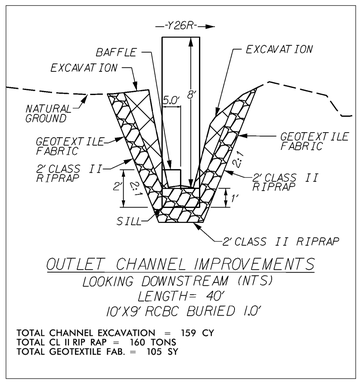


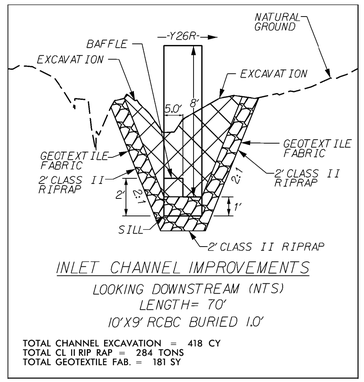




CULVERT INLET/OUTLET DETAILS
C800
–Y24R– 19+50
(DETAIL CH)

CULVERT INLET/OUTLET DETAILS
C900
–Y24R– 34+50
(DETAIL CI)





CULVERT INLET/OUTLET DETAILS
C1000
–Y26R– 18+75
(DETAIL CJ)

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PROJECT REFERENCE NO.	SHEET NO.
R-2829A	3P-1

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PARCEL INDEX SHEET – SECTION 1

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
1	6, 21	NC DEPARTMENT OF TRANSPORTATION
2	6, 7, 21	MARY WHITE, ISABELL WARD, & ADRIA WALKER
2A	7	MARY WHITE, ISABELL WARD, & ADRIA WALKER, ROBERT BRYAN SR. (POSSIBLE DEED OVERLAP)
3	7, 8, 9,23	JOHN AMAN
5	11	FOSTER PARK, LLC
1000Z	9, 10, 11, 24, 25, 30	R. GARLAND BURNETTE
1002Z	11, 25, 28	R. G. (GARLAND) & ETHEL BURNETTE
1003Z	11, 12, 29	ELIZABETH BURNETTE
2310	11, 26, 27, 31	SDO INVESTMENTS, LLC
2311	11	LUTRICIA TURNER
2314	11, 12, 13, 26, 32, 33	CLAYTON PROPERTIES GROUP INC
2315	11, 12	CHRISTO CHRISTODOLOU
2316	11	DONALD & KAY DEAN
2317	11	DONALD M & DONNA S DEAN
2318	11, 29	DONALD & KAY DEAN
2335	11	CHARLES MITCHELL
2336	11	DERRICK & MAGGIE GILCHRIST
2337	11	JOHN FOSTER, III
2338	11	JAMES & DONAPHINE TURNER
6	12	2701 HIDDEN ACRE LAND TRUST
7	12	SARA EARLY
8	12	JOSEPH & VELANCIA BAILEY
9	12, 13	ELMO T WILLIAMS TRUST ALICE H WILLIAMS
10	13, 14	CAPITAL CITIES COMMUNICATIONS, INC.
2202	23	HERBERT, JR. & ELIZABETH THOMASON
2203	23	LARRY WHEELER, JR.
2319	24, 25	CLARA JONES
2320	24	DOREEN DICARLO
2321	24	ALLEN & DEBORAH WEATHERSPOON
2322	24	SCOTT JONES & CYNTHIA MARTIN-NO CLAIM
2308	26, 27	SCOTT PEACOCK SYLVIA MATTHEWS, & STEPHEN PEACOCK
2309	26, 31	TIM FOWLER
2312	26, 27	ELLA & PHILLIP PARISH
2313	26, 32	MOUNT HERMAN CHRISTIAN CHURCH
2301	27	DAVID & TRUDY SMITH JR.-NO CLAIM

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
2302	27	GARY & JOYCE SMITH
2302	27	NC DEPARTMENT OF TRANSPORTATION(GARY AND JOYCE S
2303	27	RAMON RODRIGUEZ
2304	27	JAMES & FELICIA MANGUM
2305	27	OSCAR & ROSALBA COBOS
2306	27, 32	CLEMENTS FAMILY FARMS, LLC
2307	27	DARRELL & STEPHANIE WIGGINS
2323	27	DARRELL & STEPHANIE WIGGINS
2324	27	STEVE CLAIR -NO CLAIM
2325	27, 31	ERNEST DeVANE & CLARLYNDA WILLIAMS - DeVANE
2348	27	ROYELLE & JEWEL MANGUM-NO CLAIM
2347	27	THOMAS & JEAN MANGUM
2339	28, 29	CLARENCE, JR. & SAMANTHA BOYD
2340	28, 29	JOHN CAVINESS
2341	28, 29	JOHN & DIANE CAVINESS
2342	29	RIC & DAWN SWANINGSON
2343	29	STEVEN & ANNE TRUELOVE
2344	30	DONALD DEBNAM
2345	30	NATASHIA LIVINGSTON, GARRY & RUTH BUTLER
2326	31	JERRY LENGER
2326 A	31	STEVEN C & GINA BORASKI
2327	31	BORASKI STEVEN, BORASKI GINA -NO CLAIM
2352	31	STEVEN C & GINA BORASKI
2353	31	STEVEN C & GINA BORASKI
2328	31	HOME RE-DO, INC-NO CLAIM
2349	31	LAURENCIO & LEONARDA BENITEZ
2329	32	LINWOOD RHODES
2330	32	TRUST OF ELMO WILLIAMS
2331	32, 33	SALLE ALVAREZ GABRIELA TORRES
2332	33	NANCY EATMON
2333	33	CECIL & EDNA STANCIL
2334	33	CHRISTOPHER STEWART
2350	33	JEFFREY LITTMATH
2351	33	LESLIE SOX

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PROJECT REFERENCE NO.	SHEET NO.
R-2829A	3P-2

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

PARCEL INDEX SHEET – SECTION 2

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
11	14, 15, 16	NC Department Of Transportation
12Z	14, 15, 16, 17	Capitol Broadcasting Company, Inc.
13Z	16, 17	Richard Rogers Revocable Trust
14	17	William & Eunice Lee
15	17, 18	L&L Company LLC
15A	17, 18, 36A	Garner Industrial V, LLC.
16	18, 36A, 36B	NC Railroad
17	18	Brenda J & Mark R Cunningham
18	18	NC Department Of Transportation
19	18	NC Department Of Transportation
20	18	NC Department Of Transportation
21	18	Anthony J & Julie McLemore
22	18, 19	Larry R Stallings
23	18, 19	Brenda J & David L Howell
24	18, 19	Dennis R yarbrough
25	18, 19	Donald R & Sandra C Lockamon Jr
26	18, 19, 20, 36A	Edge Of Auburn LLC
27	19, 20, 36A	Janet P Storms & Linda S Powell
28	19,20	Auburn Associates
1004Z	34, 35	R. Garland Burnette
2401	35	W. H. & Thelma Medlin
2402	35	Partlo Garner, LLC.
2403	17, 35	NC Department of Transportation
2404	34	David Hawley
2405	34	Christopher Daniels
2406	34, 35	Seventy East Associates, LLC.
2407	35	Buffaloe Mini Storage, LLC.
2408	35	Buffaloe Enterprises, LLC.
2409	17, 35	Buffaloe Enterprises, LLC.
2410	17	Edith Brown, Belinda Massey, Semion Johnson, Ella Boyette, Jerry Johnson
2411	17	Randy Alexander

PARCEL No.	SHEET No.	PROPERTY OWNER NAME
2412	17	Elaine Coats
2413	17	J. & Elaine Coates
2414	36	Store Master Funding II, LLC.
2415	36	Terry Martin Jones
2418	17, 36	Seedling Technology Center, LLC.
2419	36	Garner Industrial II, LLC.
2420	36	Brookie Henderson & Sammy Strickland
2601	18	Apugraf Holdings LLC.
2602	18	William T Rhodes
2603	18	Meredithe & Bernadette E Jessup
2604	18, 36B	Patricia Williams
2605	18	Annette K Hartman
2606	18	Russell G & Annette K Bullock Jr
2607	19	John B Mcintyre
2608	18, 36B	Laura L Watts & Barbara W Gaul
2609	18, 36A	Jeffrey P Cates & Nancy S Cates
2610	36A	La Sangre De Jesucristo
2611	36B	Joe L & Joeatta Price Jr

8/7/2024
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REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BEGIN CONSTRUCTION TIP R-2829A
-L- POC STA. 893+00.00

JEAN BRYAN
DB 7551 PG 671

CH YOUNG PROPERTIES, LLC.
DB 14220 PG 1383
BM 1972 PG 283

NAD 83/NSRS 2011

NC 540

-L- PRC Sta. 900+63.40

-Y22SUPRPB-

RETAIN PIPES AND SYSTEMS INSTALLED BY OTHERS

885+00 890+00 895+00 900+00 905+00 910+00

-L-

-LFLYCC-

FINAL R-2828 PAVEMENT MARKINGS TO BE REVISED TO ACCOMMODATE R-2829A

BEGIN PAVING ONLY
-L- POC STA. 893+00.00 RT

FINAL R-2828 PAVEMENT MARKINGS TO BE REVISED TO ACCOMMODATE R-2829A

JEAN BRYAN
DB 7551 PG 671

CH YOUNG PROPERTIES, LLC.
DB 14220 PG 1383
BM 1972 PG 283

TIE OUTLET INTO PREVIOUSLY CONSTRUCTED R-2828 RIPRAP LINED FILL SLOPE (TOE PROTECTION)

2 TONS CL B RIPRAP W/ 5Y GEOFAB INV=239.0

15" CSP INTERIOR

Adj JB W/MH

RETAIN EXISTING SYSTEM TO RIPRAP LINED OUTLET

OUTFALL ANALYSIS A-1

MATCHLINE -L- STA. 911+50 SEE SHEET 5

-L-

PI Sta 891+52.65	PI Sta 908+44.49
Δ = 6°57'58.2" (RT)	Δ = 4°04'00.4" (LT)
D = 0°22'55.5"	D = 0°15'31.6"
L = 1,823.54'	L = 1,561.54'
T = 912.99'	T = 781.01'
R = 15,000.00'	R = 23,000.00'
SE = RC	SE = RC
DS = 75 MPH	DS = 75 MPH

FOR -L- PROFILE SEE SHT. 37

GRAPHIC SCALE
50 25 0 50 100
PLANS

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REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	5
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CH YOUNG PROPERTIES, LLC.
DB 14220 PG 1383
BM 1972 PG 283

MATCHLINE -L- STA.911+50 SEE SHEET 4

MATCHLINE -L- STA. 939+00 SEE SHEET 6

MATCHLINE -Y22RPD- STA. 25+00 SEE SHEET 6

-L- PT Sta. 916+24.93

-L- POT Sta. 920+18.82=
-Y22PI1CC- POT Sta.15+70.99
SKEW ANGLE = 103° 00' 17"

-L- POT Sta. 922+96.47=
-Y22PI1BT POT Sta.6+70.79
SKEW ANGLE = 108° 51' 54"

-L- POT Sta. 933+49.21=
-Y22 SKC6 POT Sta. 454+91.00
SKEW ANGLE = 116° 34' 01"

NC 540

I-40

A

B

C

D

-Y22LPC- ST Sta. 26+25.13=
-L- POT Sta. 930+24.49 (+71 RT)

-Y22LPC- CS Sta. 22+75.13

-Y22LPC- ST Sta. 10+00.00

-Y22LPC- PCC Sta. 18+86.70

-Y22LPC- SC Sta. 13+50.00

-Y22LPC- PCC Sta. 15+05.35

BEGIN PAVING ONLY
-Y22LPC- STA. 13+31.46

BEGIN PAVING ONLY
-Y22RPD- STA. 15+34.20

TIE TO EXIST. APPROACH SLAB

RETAIN EXISTING SYSTEM TO RIPRAP LINED OUTLET

RETAIN PIPES AND SYSTEMS INSTALLED BY OTHERS

RETAIN SYSTEMS

CONCRETE LINED DITCH

GRADING BY OTHERS

TOE PROTECTION W/CL & RIPRAP SEE DETAIL E (INSTALLED BY OTHERS)

STORM DRAINAGE INSTALLED BY OTHERS WASHED

CONCRETE PAVEMENT

PROP. GUIDERAIL

-L-

-Y22LPC-

PI Sta 908+44.49	Pls Sta 12+36.56	PI Sta 141+29.01	PI Sta 17+56.35	PI Sta 21+04.41	Pls Sta 23+94.73	Pls Sta 11+33.35
Δ = 4° 04' 00.4" (LT)	Θs = 29° 03' 47.7	Δ = 25° 47' 56.9" (RT)	Δ = 95° 00' 00" (RT)	Δ = 64° 30' 28" (RT)	Θs = 29° 03' 47.7	Θs = 3° 17' 59.2"
D = 0° 15' 37.6"	Ls = 350.00'	D = 16° 36' 26.5"	D = 64° 54' 40.4"	D = 16° 36' 26.5"	Ls = 350.00'	Ls = 200.00'
L = 156.54'	LT = 236.56'	L = 155.33'	L = 381.35'	L = 388.41'	LT = 236.56'	LT = 133.35'
T = 78.10'	ST = 119.60'	T = 79.01'	T = 251.00'	T = 217.71'	ST = 119.60'	ST = 66.69'
R = 22000.00'		R = 345.00'	R = 230.00'	R = 345.00'		
SE = NC		SE = 0.08	SE = 0.08	SE = 0.08		
DS = 75 MPH		DS = 30 MPH	DS = 30 MPH	DS = 30 MPH		

-Y22RPD-
Pl Sta 21+78.68
Δ = 5° 04' 00.0" (RT)
D = 3° 47' 59.2"
L = 1792.81'
T = 978.68'
R = 1800.00'
SE = 0.08
DS = 65 MPH

FOR DITCH DETAILS SEE SHTS. 2D-1 THRU 2D-6

FOR -L- PROFILE SEE SHTS. 37 THRU 38
FOR -Y22LPC- PROFILE SEE SHTS. 51
FOR -Y22RPD- PROFILE SEE SHT. 52

GRAPHIC SCALE
50 25 0 50 100
PLANS

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REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	6
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

A

D

E

BEGIN PAVING ONLY
–L– POT STA. 942+40.88 LT

MATCHLINE -L- STA. 939+00
SEE SHEET 5

MATCHLINE -Y22RPD-
STA. 25+00
SEE SHEET 5

MATCHLINE -Y22FLYCC-
STA. 100+00 SEE SHT 21

MATCHLINE - Y22RPAFLY_REV-
STA. 23+00 SEE SHEET 21

MATCHLINE -L- STA. 965+50 SEE SHEET 7

MATCHLINE -Y22RPE_REV- STA. 35+00
SEE SHEET 22

NC 540

INTERSTATE NC 540 SBL 48" CONC

-Y22LPA-

-L- POT Sta.950+58.80=
-Y22FLYCC- POC Sta.94+17.26
SKEW ANGLE = 76° 59' 43"

-Y22RPA_REV- PC Sta.10+00.00 =
-Y22RPAFLY_REV- CS Sta. 21+45.87 (122' LT)

-L- TS Sta. 964+93.78

-Y22RPD- CS Sta. 29+92.81

-Y22RPD- ST Sta. 31+92.81=
-L- POT Sta.945+86.66 1+83 RT

END PAVING ONLY
BEGIN GRADING & PAVING
–L– STA. 957+30.00

END TIP PROJECT R–2828
BEGIN TIP PROJECT R–2829A
–L– POS STA. 965+50.00

NCDOT
(ROBERT BRYAN, SR)

1 NC DEPT. OF TRANSPORTATION
DB 18373 PG 815
AREA ONE

2 MARY WHITE, ISABELL WARD,
& ADRIA WALKER
BM 2012 PG 1326
DB 4163 PG 369

PROP. WW FENCE

PROP. GUIDERAIL

300' TAPER LANE

-Y22RPE_REV-

-Y22RPE_REV- SC Sta. 36+83.89

BEGIN WW FENCE
-Y22RPE_REV- = 01.38
119.35' RT

-Y22FLYCC- (R-2828)

PI Sta 71+34.33	PIs Sta 141+36.58	PIs Sta 145+35.75
Δ = 29° 52' 23.9" (LT)	Ds = 6° 03' 36.5"	Ds = 1° 10' 31.1"
D = 3° 47' 22.1"	Ls = 330.00'	Ls = 160.00'
L = 794.87'	LT = 220.13'	LT = 106.67'
T = 405.47'	ST = 101.12'	ST = 53.34'
R = 1560.00'		

-L-

PIs Sta 968+13.85
Ds = 3° 51' 00.8"
Ls = 480.00'
LT = 320.06'
ST = 160.06'

-Y22RPAFLY_REV-

PIs Sta 16+86.16	PIs Sta 22+12.56
Δ = 32° 32' 49.3" (RT)	Ds = 3° 27' 05.8"
D = 3° 27' 05.8"	Ls = 200.00'
L = 946.81'	LT = 133.56'
T = 486.46'	ST = 66.69'
R = 1660.00'	
SE = 0.06	
DS = 65 MPH	

-Y22RPA_REV-

PI Sta 10+99.09
Δ = 6° 52' 53.8" (RT)
D = 3° 28' 36.1"
L = 197.04'
T = 99.05'
R = 1648.00'
SE = 0.06
DS = 60 MPH

-Y22RPD-

PI Sta 21+78.68	PIs Sta 30+59.49
Δ = 58° 04' 00.2" (RT)	Ds = 5° 12' 59.2"
D = 3° 12' 59.2"	Ls = 200.00'
L = 1,792.81'	LT = 133.55'
T = 978.68'	ST = 66.69'
R = 1800.00'	
SE = 0.08	
DS = 65 MPH	

-Y22RPE_REV-

PIs Sta 35+75.93	PIs Sta 44+16.74
Ds = 2° 37' 41.0"	Δ = 37° 09' 44.2" (RT)
Ls = 200.00'	D = 2° 37' 41.0"
LT = 138.05'	L = 1,413.96'
ST = 92.05'	T = 732.05'
	R = 2,180.00'
	SE = 0.07'
	DS = 65 MPH

FOR -L- PROFILE SEE SHTS. 38 THRU 39
FOR -Y22RPA_REV- PROFILE SEE SHT. 48
FOR -Y22RPAFLY_REV PROFILE SEE SHTS. 49 THRU 50
FOR -Y22RPD- PROFILE SEE SHT. 52
FOR -Y22RPE REV- PROFILE SEE SHT. 54

FOR DITCH DETAILS SEE SHTS. 2D-1 THRU 2D-6

GRAPHIC SCALE
50 25 0 50 100
PLANS

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REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-2828A	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/NSRS 2011

MATCHLINE -L- STA. 965+50 SEE SHEET 6

MATCHLINE -L- STA. 992+00 SEE SHEET 8

(2) MARY WHITE, ISABELL WARD, & ADRIA WALKER
BM 2012 PG 1326
DB 4163 PG 369

(2A) POSSIBLE DEED OVERLAP
MARY WHITE, ISABELL WARD, & ADRIA WALKER
ROBERT BRYAN, SR

NCDOT
(ROBERT BRYAN, SR)

(*3) JOHN AMAN
DB 6385 PG 925 (WAKE COUNTY)
DB 4055 PG 194 (WAKE COUNTY)
DB 1058 PG 695 (JOHNSTON COUNTY)
BM 1988 PG 1683

NC 540

-Y22RPAFLY_REV- TS Sta. 10+00.00
-L- POC Sta.971+27.28 (17 LT)

-Y22RPAFLY_REV- SC Sta. 12+00.00

-L- SC Sta. 969+73.78

END CONCRETE PAVEMENT
BEGIN ASPHALT PAVEMENT AT BACK OF GORE

CHORD

PROP. WW FENCE

-Y22RPAFLY_REV-

PROP. GUIDERAIL

970+00

975+00

980+00

985+00

990+00

-Y22RPE_REV- CS Sta. 50+91.84

-Y22RPE_REV- ST Sta. 52+91.84

-Y22RPE_REV- TS Sta. 54+71.97

-Y22RPE_REV- SC Sta. 56+71.97
-L- POC Sta.971+69.58 (83 RT)

BEGIN CONCRETE PAVEMENT
END ASPHALT PAVEMENT AT BACK OF GORE

PROP. WW FENCE

NCDOT
(ROBERT BRYAN, SR)

BEGIN APPROACH SLAB LT
-L- Sta.972+19.52

BEGIN APPROACH SLAB RT
-L- Sta.972+52.11

BEGIN BRIDGE LT
-L- Sta.972+43.50

BEGIN BRIDGE RT
-L- Sta.972+48.07

900' ACCELERATION LANE

FLOW DISSIPATES FROM FS AND CONTINUES UNIMPEDED TO THE WETLAND AROUND C1 BLENDS BRIDGE APPROACH

END BRIDGE LT
-L- Sta.977+13.30

END APPROACH SLAB LT
-L- Sta.977+37.98

300' TAPER LANE

1017' DECELERATION LANE

END APPROACH SLAB RT
-L- Sta.977+32.98

END BRIDGE RT
-L- Sta.977+08.93

PROP. WW FENCE

SPECIAL CUT 4' BASE DITCH SEE DETAIL AM

SPECIAL CUT 4' BASE SHALE SEE DETAIL BG

SPECIAL 4' BASE DITCH W/CL II RIPRAP SEE DETAIL AC

PROP. GUIDERAIL

SEE PROFILE FOR BERM DITCH GRADE -L- 990+50-993+50 RT

BERM 4' BASE DITCH W/CL II RIPRAP SEE DETAIL AY

PROP. WW FENCE

PROP. SIGN

SPECIAL CUT 4' BASE DITCH W/CL II RIPRAP SEE DETAIL R

TIE TO EXISTING INFALL W/CL II RIPRAP

300' TAPER LANE

JOHN AMAN
DB 6385 PG 925 (WAKE COUNTY)
DB 4055 PG 194 (WAKE COUNTY)
DB 1058 PG 695 (JOHNSTON COUNTY)
BM 1988 PG 1683

-L-	-Y22RPAFLY_REV-	-Y22RPE_REV-
PI Sta 958+13.85	PI Sta 986+75.46	PI Sta 11+13.27	PI Sta 44+16.74	PI Sta 54+64.52	PI Sta 56+05.30
Θs = 3° 31' 00.0"	Δ = 47° 02' 18.9" (LT)	Θs = 1° 29' 32.5"	Δ = 37° 09' 44.1" (RT)	Θs = 2° 37' 41.7"	Θs = 1° 26' 05.7"
Ls = 480.00'	D = 1° 27' 55.3"	Θs = 2° 27' 06.0"	D = 2° 37' 41.7"	Ls = 200.00'	Ls = 200.00'
Lt = 320.06'	L = 3,290.05'	Ls = 200.00'	L = 1,413.56'	Lt = 133.35'	Lt = 133.34'
St = 160.06'	T = 1,701.68'	Lt = 113.27'	T = 732.85'	St = 66.68'	St = 66.67'
	R = 3,340.00'	St = 86.85'	R = 2,180.00'		
	SE = 0.06		SE = 0.07		
	DS = 75 MPH		DS = 65 MPH		

* ADVANCED ACQUISITION
FOR SITE 5 BRIDGE PLANS SEE SHTS. S5L-1 THRU S5L-49 AND S5R-1 THRU S5R-49

FOR -L- PROFILE SEE SHTS. 39 THRU 40
FOR -Y22RPAFLY_REV- PROFILE SEE SHTS. 49
FOR -Y22RPE_REV- PROFILE SEE SHT. 54

FOR DITCH DETAILS SEE SHTS. 2D-1 THRU 2D-6

GRAPHIC SCALE
50 25 0 50 100
PLANS

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PROJECT REFERENCE NO.	SHEET NO.
R-2829A	8
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/NA 2011

3*
JOHN AMAN
DB 4055 PG 194 (WAKE COUNTY)
BM 1988 PG 1683 (WAKE COUNTY)
DB 6385 PG 925 (WAKE COUNTY)
BM 1994 PG 1824 (WAKE COUNTY)
DB 1058 PG 695 (JOHNSTON COUNTY)
(NCDOT– PSD MAP) 10403rwf2.psd

MATCHLINE -L- STA. 992+00 SEE SHEET 7

MATCHLINE -L- STA. 1005+00 SEE SHEET 9

NC 540

PROP. WW FENCE

-L- CS Sta. 1001+83.81

-L- +70.00 210.00' LT

-L- +00.00 210.00', 220.00' LT

-L- +45.00 265.00' LT

-L- +20.00 220.00' LT

-L- +83.81 220.00' LT

CHORD

RW CA

SPECIAL CUT 4' BASE SWALE SEE DETAIL O

0805 2 TONS CL B RIPRAP W/7 SY GEOFAB

0804 2 TONS CL B RIPRAP W/7 SY GEOFAB

SPECIAL V DITCH SEE DETAIL A

OUTLET STABILIZATION W/CL I RIPRAP SEE DETAIL AI

TOE PROTECTION W/CL B RIPRAP SEE DETAIL E

40 TONS CL I RIPRAP W/75 SY GEOFAB

LATERAL 4' BASE SWALE SEE DETAIL L

15" RCP-III

0801 2 TONS CL B RIPRAP W/7 SY GEOFAB

48" RCP-III NOT BURIED (FOR MAINT.)

995+00

1000+00

1005+00

-L-

FS

0803 2GIB-WSS

0802 2GIB-WSS

CGAU

BL-197 R-2829

BL-198 R-2829

36'

48'

70'

VAR.

12" PS

12" SS

.03

.04

.05

.06

210'

220'

8:1

GREU TL-3

80' TYP.

FS MIN. ELEV = 278.9

0806 HW

INLET CHANNEL STABILIZATION W/CL I RIPRAP SEE DETAIL AL

LATERAL 4' BASE DITCH SEE DETAIL C

LATERAL 4' BASE DITCH W/CL B RIPRAP SEE DETAIL H

SEE PROFILE FOR BERM DITCH GRADE -L- 990+50–993+50 RT

BERM 4' BASE DITCH W/CL B RIPRAP SEE DETAIL AY

-L- +00.00 220.00' RT

-L- +83.81 220.00' RT

+70.00

900' LANE DROP

*3
JOHN AMAN
DB 6385 PG 925 (WAKE COUNTY)
DB 4055 PG 194 (WAKE COUNTY)
DB 1058 PG 695 (JOHNSTON COUNTY)
BM 1988 PG 1683

*3
JOHN AMAN
DB 5427 PG 132 (WAKE COUNTY)
BM 1988 PG 1683 (WAKE COUNTY)
(NCDOT– PSD MAP) 10403rwf2.psd

*3
JOHN AMAN
DB 3743 PG 788 (WAKE COUNTY)
BM 1988 PG 1683 (WAKE COUNTY)
(NCDOT– PSD MAP) 10403rwf2.psd

-L-

PI Sta 986+75.46	PIs Sta 1003+43.86
Δ = 47° 02' 18.9" (LT)	Θs = 3° 31' 00.8"
D = 1° 27' 55.3"	Ls = 480.00'
L = 3,210.02'	LT = 320.06'
T = 1,701.68'	ST = 160.06'
R = 3,910.00'	
SE = 0.06	
DS = 75 MPH	

FOR DITCH DETAILS SEE SHTS. 2D–1 THRU 2D–6

* ADVANCED ACQUISITION

FOR –L– PROFILE SEE SHTS. 40 THRU 41

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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	9
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/NA 2011

THE PORTION OF THE PROJECT THROUGHOUT THE -L- ALIGNMENT USES THE R-2828 COORDINATE SYSTEM.

THE PORTION OF THE PROJECT WHERE THE -L1- ALIGNMENT BEGINS USES THE R-2829 COORDINATE SYSTEM

MATCHLINE -L- STA. 1005+00 SEE SHEET 8

MATCHLINE -L1- STA. 1018+00 SEE SHEET 10

NC 540

*3
JOHN AMAN
DB 4055 PG 194 (WAKE COUNTY)
BM 1988 PG 1683 (WAKE COUNTY)
DB 6385 PG 925 (WAKE COUNTY)
BM 1994 PG 1824 (WAKE COUNTY)
DB 1058 PG 695 (JOHNSTON COUNTY)
(NCDOT- PSD MAP) 10403rwf2.psd

*1000Z
R. GARLAND BURNETTE
DB 902 PG 89
DB 761 PG 365

COORDINATE EQUALITY
-L- POT Sta. 1007+09.30 BK=
-L1- ST Sta. 1006+86.76 AH
(691059.355576, 2134406.728485)

COORDINATE EQUALITY
-L- POT Sta. 1007+09.30 BK=
-L1- ST Sta. 1006+86.76 AH
(691062.705847, 2134410.760568)

-L- ST Sta. 1006+63.81

-L1- +95.00
281.80' LT

-L- +63.81
220.00' LT

-L1- +86.76
220.00' LT

-L- +09.30
220.00' LT

-L1- +45.91
221.13' LT

-L1- +41.33
221.80' LT

C100 OUTLET STABILIZATION
41 TONS CL II RIPRAP
W/111 SY GEOFAB
SEE DETAIL CA

C200 OUTLET STABILIZATION
95 TONS CL II RIPRAP
W/241 SY GEOFAB
SEE DETAIL CB

CHORD

RW CA

TIE FENCE TO CULVERT WING WALL

TOE PROTECTION
W/CL B RIPRAP
SEE DETAIL E

LATERAL
4' BASE SWALE
SEE DETAIL L

5 TONS CL B RIPRAP
W/14 SY GEOFAB
0906

2 TONS CL B RIPRAP
W/7 SY GEOFAB
0921

BEGIN PROP. DOUBLE POST GR
+72.22

END PROP. SBG
+57.25

BEGIN PROP. SBG
+72.22

PROP. WW FENCE

END PROP. DOUBLE POST GR
+79.22

LATERAL 4' BASE DITCH
W/CL B RIPRAP
SEE DETAIL H

CHANNEL BLOCK
SEE DETAIL BK
FILL REMAINDER
OF CHANNEL

0925
2GIB-WSF

15" CSP
W/ELBOWS

0909
2GIB-WSF

CAT-1
GRADE TO
DRAIN
DOUBLE
POST GR

END PROP. SBG
+87.25

BEGIN PROP. SBG
+39.00

0907
2GIB-WSF

PROP. SBG

15" RCP-III

0905
2GIA-WSF

24" CSP
W/ELBOWS

0904
2GIA-WSF

24" RCP-III

12"x8" RCBC BURIED

0902
2GIA-WSF

0926
2GIA-WSF

0901
2GIA-WSF

0916
2GIB-WSS

0919
2GIB-WSS

0913
2GIB-WSF

0912
2GIB-WSF

0911
2GIB-WSF

0920
2GIB-WSS

0922
JB w/HH

0923

1010+00

1005+00

1015+00

PROP. GUIDERAIL
TYPE III
PEDESTAL

N 12° 40' 39.6" E

GREU TL-3

8:1

CAT-1

R 5'

R 7.5'

CGAU

DOUBLE POST GR

GRADE TO DRAIN

CHANNEL BLOCK
SEE DETAIL BK

CHANNEL CHANGE
W/CL I RIPRAP
SEE DETAIL BB

CHANNEL CHANGE
SEE DETAIL AR

CHANNEL CHANGE
W/CL II RIPRAP
SEE DETAIL AR

C200 INLET STABILIZATION
368 TONS CL II RIPRAP
W/730 SY GEOFAB
SEE DETAIL CB

BOULDERS

END PROP.
DOUBLE POST GR
END PROP. SBG
+79.22

SPECIAL CUT
4' BASE SWALE
SEE DETAIL O

PROP. SIGN
80' TYP.

C100 INLET STABILIZATION
74 TONS CL II RIPRAP
W/178 SY GEOFAB
SEE DETAIL CA

TOE PROTECTION
W/CL B RIPRAP
SEE DETAIL E

BEGIN PROP. SBG
+00.00

END PROP. SBG
+50.00

LINE CUT-FILL
TRANSITION W/
2 TONS CL B RIPRAP
W/7 SY GEOFAB

BEGIN PROP.
DOUBLE POST GR
+72.22

TOE PROTECTION
W/CL B RIPRAP
SEE DETAIL E

TIE FENCE TO
CULVERT WING
WALL

-L1- +86.76
220.00' RT

-L- +63.81
220.00' RT

-L- +09.30
220.00' RT

-L1- +53.14
228.20' RT

+51.60

900' LANE
DROP

VAR.

220'

70'

36'

14' PS

12' PS

EXISTING R/W PER 10403RWF2_PSD

*3
JOHN AMAN
DB 3743 PG 788 (WAKE COUNTY)
BM 1988 PG 1683 (WAKE COUNTY)
(NCDOT- PSD MAP) 10403rwf2.psd

*1000Z
R. GARLAND BURNETTE
DB 902 PG 89
DB 761 PG 365

-L-
PIs Sta 1003+43.86
Θs = 3° 31' 00.8"
Ls = 480.00'
LT = 320.06'
ST = 160.06'

FOR CULVERT C100 PLANS SEE SHTS. C100-1 THRU C100-7

FOR CULVERT C200 PLANS SEE SHTS. C200-1 THRU C200-7

FOR GANTRY DETAILS SEE AET PLANS

FOR DITCH DETAILS SEE SHTS. 2D-1 THRU 2D-6

* ADVANCED ACQUISITION

FOR -L- PROFILE SEE SHT. 41
FOR -L1- PROFILE SEE SHT. 41

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PROJECT REFERENCE NO.	SHEET NO.
R-2829A	10
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/NA 2011

MATCHLINE -L1- STA. 1018+00 SEE SHEET 9

MATCHLINE -L1- STA. 1032+00 SEE SHEET 11

NC 540

*1000Z
R. GARLAND BURNETTE
DB 902 PG 89
DB 761 PG 365

*1000Z
R. GARLAND BURNETTE
DB 663 PG 79

Additional Taking for Parcel 1000

–L1– +55.00
345.00' LT

–L1– +30.00
340.00' LT

–L1– +48.00
281.80' LT

–L1– +75.00
281.80' LT

–L1– +03.38
281.80' LT

PDE

–L1– +04.08
221.80' LT

–L1– +04.22
196.80' LT

–L1– +00.00
196.80' LT

+96.32

300' TAPER LANE

900' ACCELERATION LANE

PROP. WW FENCE

RW CA

1005 2 TONS CL B RIPRAP W/7 SY GEOFAB

SPECIAL CUT 4' BASE SWALE SEE DETAIL O

SPECIAL V DITCH W/CL B RIPRAP SEE DETAIL Y

48 TONS CL II RIPRAP W/90 SY GEOFAB OUTLET CHANNEL STABILIZATION W/CL II RIPRAP SEE DETAIL AL

BEGIN PROP. SBG +99.96

LATERAL 4' BASE SWALE SEE DETAIL L

1008 2 TONS CL B RIPRAP W/7 SY GEOFAB

END PROP. SBG +50.00

1015 2 TONS CL B RIPRAP W/7 SY GEOFAB

STANDARD 4' BASE DITCH SEE DETAIL I

LATERAL V DITCH SEE DETAIL B

SPECIAL V DITCH SEE DETAIL A

1013 15 TONS CL I RIPRAP W/30 SY GEOFAB

STANDARD 4" BASE DITCH SEE DETAIL I

DRAIN POND (SEE POND DRAINAGE PLANS)

POND WSE 315'

BEGIN PROP. SBG +35.00

1012 2GIB-WSF

1011 15" RCP-III 2GIB-WSF CAT-1

36" RCP-III (NOT BURIED, UPSIZED FOR MAINT.)

PROP. SBG

TYPE III PEDESTAL

1001 2GIB-WSS

1020+00

1025+00

1030+00

GREU TL-3

1002 2GIB-WSS

1003 2GIB-WSS

1004 2GIB-WSS

N 12° 40' 39.6" E

PROP. GUIDERAIL

PROP. SIGN

CGAU

BL-104

BL-105

BL-106

1006 PIPES DO NOT INTERSECT

1007 2GIB-WSF

80' TYP. 15" CSP W/ELBOWS

15" RCP-IV

42" RCP-III NOT BURIED UPSIZED FOR MAINT.

18" RCP-IV

36" RCP-III (NOT BURIED, UPSIZED FOR MAINT.)

CHANNEL CHANGE SEE DETAIL AR

–L1– +04.22
228.20' RT

–L1– +04.22
203.20' RT

–L1– +79.59
203.20' RT

FS MIN ELEV=296.0'

1009 HW

1010 2GIB-WSS

24" CSP W/ELBOWS

1014 BDO

LATERAL 4' BASE DITCH W/CL B RIPRAP SEE DETAIL H

SPECIAL CUT 4' BASE DITCH W/CL B RIPRAP SEE DETAIL R

BERM V DITCH W/CL B RIPRAP SEE DETAIL AH

–Y23RPC– POT Sta. 10+00.00=
–L1– POT Sta.1030+22.59 (71' RT)

–L– +65.00
238.14' RT

–L– +00.00
250.00' RT

–L– +25.00
242.45' RT

Additional Taking for Parcel 1000

*1000Z
R. GARLAND BURNETTE
DB 902 PG 89
DB 761 PG 365

*1000Z
R. GARLAND BURNETTE
DB 663 PG 79

BM1

INCREASED SUPER TO 0.03 ALONG RAMP B ACCELERATION LANE AND RAMP C STATION 10+00 TO 14+44.52 FOR HYDROPLANING MITIGATION

FOR DITCH DETAILS SEE SHTS. 2D–1 THRU 2D–6

* ADVANCED ACQUISITION

FOR –L1– PROFILE SEE SHTS. 41 THRU 42
FOR –Y23RPC– PROFILE SEE SHT. 59

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cbowe

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-2825A	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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NAD 83/NA 2011

MATCHLINE -Y23R- STA. 53+00 SEE SHEET 26

MATCHLINE -L1- STA. 1032+00 SEE SHEET 10

MATCHLINE -L1- STA. 1061+00 SEE SHEET 12

MATCHLINE -Y23G- STA. 16+00 SEE SHEET 25

MATCHLINE -Y23R- STA. 36+00 SEE SHEET 25

MATCHLINE -Y23J- STA. 12+00 SEE SHEET 29

MATCHLINE -Y23DR- STA. 31+00 SEE SHEET 29

INSET A

INSET A

-Y23RPA- BEGIN CONSTRUCTION -Y23K- POT Sta.20+65.00

-Y23RPB- END CONSTRUCTION -Y23K- POT Sta. 21+35.00 -Y23RPB- SRS Sta.24+11.57

-Y23RPB- CS Sta. 22+33.57

-Y23RPB- ST Sta. 10+00.00 -L1- POT Sta.1032+96.33 (17 LT)

-Y23RPB- SC Sta. 12+00.00

-Y23RPB- SC Sta. 25+67.18 -Y23RPB- SC Sta. 26+13.57

-Y23RPB- PT Sta. 29+23.48

-Y23R- POT Sta. 51+62.68= -Y23RPB- POT Sta. 31+47.34

-Y23R- POT Sta. 51+13.68= -Y23LPB- POT Sta. 21+87.92

-Y23R- PT Sta. 49+26.39

-Y23LPB- ST Sta. 20+12.76

-Y23LPB- CS Sta. 17+71.76

-Y23LPB- SC Sta. 12+50.00

END APPROACH SLAB -Y23R- Sta. 47+48.45

END BRIDGE -Y23R- Sta. 47+22.25 -Y23LPB- ST Sta. 10+00.00 -L1- POT Sta.1051+09.25 (19 LT)

-L1- POT Sta.1051+84.56= -Y23R- POC Sta. 46+08.22 SKEW ANGLE = 67° 26' 29"

BEGIN BRIDGE -Y23R- Sta. 44+91.01 BEGIN APPROACH SLAB -Y23R- Sta. 44+67.13

-Y23LPC- SC Sta. 12+50.00

-Y23LPC- ST Sta. 10+00.00 -L1- POT Sta.1041+33.38 (41 RT)

-Y23LPC- CS Sta. 15+41.93

-Y23LPC- PT Sta. 25+17.29

-Y23LPC- ST Sta. 17+19.21

-Y23RPC- TS Sta. 13+60.14

-Y23RPC- SC Sta. 15+85.14

-Y23RPC- SC Sta. 24+00.00

-Y23RPC- CS Sta. 22+49.31

-Y23RPC- ST Sta. 20+49.31

-Y23RPC- PT Sta. 18+49.31

-Y23RPC- SC Sta. 16+49.31

-Y23RPC- TS Sta. 14+49.31

-Y23RPC- SC Sta. 13+85.14

-Y23RPC- SC Sta. 13+60.14

-Y23RPC- TS Sta. 13+60.14

-Y23RPC- SC Sta. 13+35.14

-Y23RPC- CS Sta. 13+11.96

-Y23RPC- ST Sta. 12+88.78

-Y23RPC- PT Sta. 12+65.60

-Y23RPC- SC Sta. 12+42.43

-Y23RPC- SC Sta. 12+00.00

-Y23RPC- SC Sta. 11+57.57

-Y23RPC- CS Sta. 11+34.39

-Y23RPC- ST Sta. 11+11.21

-Y23RPC- PT Sta. 10+88.03

-Y23RPC- SC Sta. 10+64.86

-Y23RPC- SC Sta. 10+41.68

-Y23RPC- SC Sta. 10+18.50

-Y23RPC- SC Sta. 9+95.32

-Y23RPC- SC Sta. 9+72.14

-Y23RPC- SC Sta. 9+48.97

-Y23RPC- SC Sta. 9+25.79

-Y23RPC- SC Sta. 9+02.61

-Y23RPC- SC Sta. 8+79.43

-Y23RPC- SC Sta. 8+56.26

-Y23RPC- SC Sta. 8+33.08

-Y23RPC- SC Sta. 8+09.90

-Y23RPC- SC Sta. 7+86.72

-Y23RPC- SC Sta. 7+63.55

-Y23RPC- SC Sta. 7+40.37

-Y23RPC- SC Sta. 7+17.19

-Y23RPC- SC Sta. 6+93.99

-Y23RPC- SC Sta. 6+70.82

-Y23RPC- SC Sta. 6+47.64

-Y23RPC- SC Sta. 6+24.46

-Y23RPC- SC Sta. 6+01.28

-Y23RPC- SC Sta. 5+78.11

-Y23RPC- SC Sta. 5+54.93

-Y23RPC- SC Sta. 5+31.75

-Y23RPC- SC Sta. 5+08.58

-Y23RPC- SC Sta. 4+85.40

-Y23RPC- SC Sta. 4+62.22

-Y23RPC- SC Sta. 4+39.04

-Y23RPC- SC Sta. 4+15.87

-Y23RPC- SC Sta. 3+92.69

-Y23RPC- SC Sta. 3+69.51

-Y23RPC- SC Sta. 3+46.33

-Y23RPC- SC Sta. 3+23.16

-Y23RPC- SC Sta. 2+99.98

-Y23RPC- SC Sta. 2+76.80

-Y23RPC- SC Sta. 2+53.62

-Y23RPC- SC Sta. 2+30.45

-Y23RPC- SC Sta. 2+07.27

-Y23RPC- SC Sta. 1+84.09

-Y23RPC- SC Sta. 1+60.91

-Y23RPC- SC Sta. 1+37.74

-Y23RPC- SC Sta. 1+14.56

-Y23RPC- SC Sta. 0+91.38

-Y23RPC- SC Sta. 0+68.20

-Y23RPC- SC Sta. 0+45.03

-Y23RPC- SC Sta. 0+21.85

-Y23RPC- SC Sta. 0+00.00

-Y23RPC- POC Sta. 37+21.87= -Y23LPC- POT Sta. 19+17.95

-Y23R- POC Sta. 36+82.55= -Y23RPC- POT Sta. 27+96.36

-Y23R- POC Sta. 32+01.87= -Y23LPC- POT Sta. 15+17.95

-Y23R- POC Sta. 31+61.87= -Y23LPC- POT Sta. 14+17.95

-Y23R- POC Sta. 31+21.87= -Y23LPC- POT Sta. 13+17.95

-Y23R- POC Sta. 30+81.87= -Y23LPC- POT Sta. 12+17.95

-Y23R- POC Sta. 30+41.87= -Y23LPC- POT Sta. 11+17.95

-Y23R- POC Sta. 30+01.87= -Y23LPC- POT Sta. 10+17.95

-Y23R- POC Sta. 29+61.87= -Y23LPC- POT Sta. 9+17.95

-Y23R- POC Sta. 29+21.87= -Y23LPC- POT Sta. 8+17.95

-Y23R- POC Sta. 28+81.87= -Y23LPC- POT Sta. 7+17.95

-Y23R- POC Sta. 28+41.87= -Y23LPC- POT Sta. 6+17.95

-Y23R- POC Sta. 28+01.87= -Y23LPC- POT Sta. 5+17.95

-Y23R- POC Sta. 27+61.87= -Y23LPC- POT Sta. 4+17.95

-Y23R- POC Sta. 27+21.87= -Y23LPC- POT Sta. 3+17.95

-Y23R- POC Sta. 26+81.87= -Y23LPC- POT Sta. 2+17.95

-Y23R- POC Sta. 26+41.87= -Y23LPC- POT Sta. 1+17.95

-Y23R- POC Sta. 26+01.87= -Y23LPC- POT Sta. 0+17.95

-Y23R- POC Sta. 25+61.87= -Y23LPC- POT Sta. 0+00.00

-Y23R- POC Sta. 25+21.87= -Y23LPC- POT Sta. 0+00.00

-Y23R- POC Sta. 24+81.87= -Y23LPC- POT Sta. 0+00.00

-Y23R- POC Sta. 24+41.87= -Y23LPC- POT Sta. 0+00.00

-Y23R- POC Sta. 24+01.87= -Y23LPC- POT Sta. 0+00.00

-Y23R- POC Sta. 23+61.87= -Y23LPC- POT Sta. 0+00.00

-Y23R- POC Sta. 23+21.87= -Y23LPC- POT Sta. 0+00.00

-Y23R- POC Sta. 22+81.87= -Y23LPC- POT Sta. 0+00.00

-Y23R- POC Sta. 22+41.87= -Y23LPC- POT Sta. 0+00.00

-Y23R- POC Sta. 22+01.87= -Y23LPC- POT Sta. 0+00.00

-Y23R- POC Sta. 21+61.87= -Y23LPC- POT Sta. 0+00.00

-Y23R- POC Sta. 21+21.87= -Y23LPC- POT Sta. 0+00.00

-Y23R- POC Sta. 20+81.87= -Y23LPC- POT Sta. 0+00.00

-Y23R- POC Sta. 20+41.87= -Y23LPC- POT Sta. 0+00.00

-Y23R- POC Sta. 20+01.87= -Y23LPC- POT Sta. 0+00.00

-Y23R- POC Sta. 19+61.87= -Y23LPC- POT Sta. 0+00.00

-Y23R- POC Sta. 19+21.87= -Y23LPC- POT Sta. 0+00.00

-Y23R- POC Sta. 18+81.87= -Y23LPC- POT Sta. 0+00.00

-Y23R- POC Sta. 18+41.87= -Y23LPC- POT Sta. 0+00.00

-Y23R- POC Sta. 18+01.87= -Y23LPC- POT Sta. 0+00.00

-Y23R- POC Sta. 17+61.87= -Y23LPC- POT Sta. 0+00.00

-Y23R- POC Sta. 17+21.87= -Y23LPC- POT Sta. 0+00.00

-Y23R- POC Sta. 16+81.87= -Y23LPC- POT Sta. 0+00.00

-Y23R- POC Sta. 16+41.87= -Y23LPC- POT Sta. 0+00.00

-Y23R- POC Sta. 16+01.87= -Y23LPC- POT Sta. 0+00.00

-Y23R- POC Sta. 15+61.87= -Y23LPC- POT Sta. 0+00.00

-Y23R- POC Sta. 15+21.87= -Y23LPC- POT Sta. 0+00.00

-Y23R- POC Sta. 14+81.87= -Y23LPC- POT Sta. 0+00.00

-Y23R- POC Sta. 14+41.87= -Y23LPC- POT Sta. 0+00.00

-Y23R- POC Sta. 14+01.87= -Y23LPC- POT Sta. 0+00.00

-Y23R- POC Sta. 13+61.87= -Y23LPC- POT Sta. 0+00.00

-Y23R- POC Sta. 13+21.87= -Y23LPC- POT Sta. 0+00.00

-Y23R- POC Sta. 12+81.87= -Y23LPC- POT Sta. 0+00.00

-Y23R- POC Sta. 12+41.87= -Y23LPC- POT Sta. 0+00.00

-Y23R- POC Sta. 12+01.87= -Y23LPC- POT Sta. 0+00.00

-Y23R- POC Sta. 11+61.87= -Y23LPC- POT Sta. 0+00.00

-Y23R- POC Sta. 11+21.87= -Y23LPC- POT Sta. 0+00.00

-Y23R- POC Sta. 10+81.87= -Y23LPC- POT Sta. 0+00.00

-Y23R- POC Sta. 10+41.87= -Y23LPC- POT Sta. 0+00.00

-Y23R- POC Sta. 10+01.87= -Y23LPC- POT Sta. 0+00.00

-Y23R- POC Sta. 9+61.87= -Y23LPC- POT Sta. 0+00.00

-Y23R- POC Sta. 9+21.87= -Y23LPC- POT Sta. 0+00.00

-Y23R- POC Sta. 8+81.87= -Y23LPC- POT Sta. 0+00.00

-Y23R- POC Sta. 8+41.87= -Y23LPC- POT Sta. 0+00.00

-Y23R- POC Sta. 8+01.87= -Y23LPC- POT Sta. 0+00.00

-Y23R- POC Sta. 7+61.87= -Y23LPC- POT Sta. 0+00.00

-Y23R- POC Sta. 7+21.87= -Y23LPC- POT Sta. 0+00.00

-Y23R- POC Sta. 6+81.87= -Y23LPC- POT Sta. 0+00.00

-Y23R- POC Sta. 6+41.87= -Y23LPC- POT Sta. 0+00.00

-Y23R- POC Sta. 6+01.87= -Y23LPC- POT Sta. 0+00.00

-Y23R- POC Sta. 5+61.87= -Y23LPC- POT Sta. 0+00.00

-Y23R- POC Sta. 5+21.87= -Y23LPC- POT Sta. 0+00.00

-Y23R- POC Sta. 4+81.87= -Y23LPC- POT Sta. 0+00.00

-Y23R- POC Sta. 4+41.87= -Y23LPC- POT Sta. 0+00.00

-Y23R- POC Sta. 4+01.87= -Y23LPC- POT Sta. 0+00.00

-Y23R- POC Sta. 3+61.87= -Y23LPC- POT Sta. 0+00.00

-Y23R- POC Sta. 3+21.87= -Y23LPC- POT Sta. 0+00.00

-Y23R- POC Sta. 2+81.87= -Y23LPC- POT Sta. 0+00.00

-Y23R- POC Sta. 2+41.87= -Y23LPC- POT Sta. 0+00.00

-Y23R- POC Sta. 2+01.87= -Y23LPC- POT Sta. 0+00.00

-Y23R- POC Sta. 1+61.87= -Y23LPC- POT Sta. 0+00.00

-Y23R- POC Sta. 1+21.87= -Y23LPC- POT Sta. 0+00.00

-Y23R- POC Sta. 0+81.87= -Y23LPC- POT Sta. 0+00.00

-Y23R- POC Sta. 0+41.87= -Y23LPC- POT Sta. 0+00.00

-Y23R- POC Sta. 0+01.87= -Y23LPC- POT Sta. 0+00.00

-Y23RPA- Pt Sta 11+33.35 θs = 5° 37' 40" Ls = 200.00' LT = 133.35' ST = 66.68'

Pt Sta 17+20.69 Δ = 27° 09' 52.9" (LT) D = 5° 37' 40" L = 1033.51' T = 526.69' R = 1,080.00' SE = 0.07' DS = 65 MPH

Pt Sta 21+00.25 θs = 5° 37' 40" Ls = 200.00' LT = 133.35' ST = 66.68'

Pt Sta 25+67.18 θs = 11° 27' 13.0" Ls = 200.00' LT = 133.6' ST = 66.92'

Pt Sta 27+82.70 Δ = 33° 12' 56.7" (RT) D = 11° 27' 33.1" L = 289.85' R = 499.11' R = 500.00' SE = 0.08' DS = 40 MPH

-Y23RPB-

Pts Sta 11+69.32 θs = 3° 08' 20.4" Ls = 250.00' LT = 169.32' ST = 85.75'

Pt Sta 17+42.96 Δ = 109° 58' 12.5" (RT) D = 24° 54' 40.4" L = 524.76' T = 492.96' R = 230.00' SE = 0.08' DS = 30 MPH

Pts Sta 18+57.51 θs = 3° 08' 20.4" Ls = 250.00' LT = 169.12' ST = 85.75'

Pt Sta 40+50.65 Δ = 65° 35' 19.0" (LT) D = 3° 16' 26.8" L = 2,001.29' T = 1,127.55' R = 1,750.00' SE = 0.04' DS = 50 MPH

Pt Sta 40+37.34 Δ = 67° 56' 53.0" (RT) D = 7° 32' 20.7" L = 848.95' T = 447.21' R = 760.00' SE = 0.06' DS = 40 MPH

-Y23RPC-

Pts Sta 15+10.19 θs = 4° 37' 18.9" Ls = 225.00' LT = 150.05' ST = 75.04'

Pt Sta 20+67.26 Δ = 36° 05' 11.5" (RT) D = 3° 52' 16.8" L = 932.15' T = 482.12' R = 1,480.00' SE = 0.08' DS = 65 MPH

Pts Sta 11+69.32 θs = 3° 08' 20.4" Ls = 250.00' LT = 169.32' ST = 85.75'

Pt Sta 14+19.31 Δ = 75° 43' 21.7" (LT) D = 24° 54' 40.4" L = 259.57' T = 169.33' R = 230.00' SE = 0.08' DS = 30 MPH

Pts Sta 16+27.68 θs = 3° 08' 20.4" Ls = 250.00' LT = 169.32' ST = 85.75'

TRAFFIC DIAGRAM

ADT 2023
ADT 2043

WHITE OAK RD.

WHITE OAK RD.

WHITE OAK RD

NC 540

BEGIN CONSTRUCTION -Y23J- POT Sta. 10+00.00

BEGIN OVERLAY 3" -Y23J- POT Sta. 10+75.00

END CONSTRUCTION -Y23G- POT Sta. 18+93.14

END OVERLAY 3" -Y23G- PT Sta. 18+44.74

S 89° 05' 14" E

N 12° 40' 39" E

N 16° 47' 39" E

N 12° 40' 39" E

N 12° 40' 39" E

N 12° 40

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MATCHLINE -L1- STA 1061+00 SEE SHEET 11

MATCHLINE -L1- STA. 1075+00 SEE SHEET 13

MAP BY OTHERS

MAP BY OTHERS

NAD 83/NA 2011

2315 CHRISTO CHRISTODOLOU DB 6878 PG 103

60' PRIVATE INGRESS & EGRESS EASEMENT BM 1996 PG 628

N 11°15'45" E 44.18'

N 83°50'39" E 60.34'

S 11°15'45" W 45.91'

N 11°15'45" E 322.91'

N 11°15'45" E 424.99'

60' PRIVATE INGRESS & EGRESS EASEMENT BM 1996 PG 628

N 11°15'45" E 265.11'

N 83°50'39" E 22.98'

2314 CLAYTON PROPERTIES GROUP INC DB 18256 PG 2088 BM 1996 PG 300

6

7 SARA EARLY DB 6980 PG 591 BM 1996 PG 628

*1003Z ELIZABETH BURNETTE DB 2280 PG 301

8 JOSEPH & VELANCIA BAILEY DB 12144 PG 1641 BM 2006 PG 1234

INLET CHANNEL STABILIZATION W/CL I RIPRAP SEE DETAIL AL 33 TONS CL I RIPRAP W/62 SY GEOFAB

RW CA

-L1- ± 66.93 184.67' LT

-L1- ± 70.00 190.00' LT

PROP. WW FENCE

-L1- PC Sta. 1071+79.31

SPECIAL CUT 4' BASE W/CL B RIP RAP SEE DETAIL Z

SPECIAL CUT DITCH W/CL I RIP RAP SEE DETAIL BO

LATERAL 4' BASE DITCH SEE DETAIL AA

LATERAL V DITCH SEE DETAIL B

SPECIAL CUT DITCH SEE DETAIL A

DRAIN POND (SEE POND DRAINAGE PLANS)

POND WSE=284.0'

N 12°18'39" E 79.34'

N 12°18'39" E 83.30'

1204 HW

1213 HW

FS MIN ELEV 309.0

FS MIN ELEV. 290.1

SPECIAL CUT DITCH W/CL B RIP RAP SEE DETAIL Y

190'

12" PS

36'

48'

70'

BZ 1

BZ 2

02 02

02 03

02 01

NC 540

1065+00

1070+00

1075+00

N 12° 40' 39.6" E

1201 2GIB-WSS

FS

15" RCP-III

1202 2GIB-WSS

1210 2GIB-WSS

1211 2GIB-WSS

PROP. GUIDERAIL

REMOVE

INV=284.93'

INV=286.63'

BL-114

BL-113

BL-116

8:1

GREU TL-3

1212 2GIB-WSS

18" RCP-IV

42" RCP-IV (NOT BURIED, UNSIZED FOR MAINT.)

15" RCP-IV

1209 2GIB-WSS

1203 2GIB-WSS

18" RCP-IV

-Y23DR- POT Sta.48+07.88= -DR1- POT Sta.10+00.00

-DR2- POT Sta.10+00.00 = -Y23DR POT Sta.53+50.00

-L1- ± 49.59 178.20' RT

-L1- ± 48.86 175.00' RT

-L1- ± 79.31 175.00' RT

1520' ACCEL. LANE

300' TAPER LANE

MEDIAN V DITCH SEE DETAIL G

80' TYP.

1207 2GIA-WSS

18" RCP-III

VERIFY IN FIELD FOR A POTENTIAL SPRING BOX

+53.38

178.2'

45+00

50+00

55+00

N 12° 40' 39.6" E

S 88° 06' 49.0" E

N 80° 47' 30.9" E

N 69° 06' 27.0" E

END CONSTRUCTION -Y23DR- POT STA. 56+70.00

PROP. WW FENCE

-L1- ± 05.00 175.00' RT

RW CA

1222

LINE END OF STD DITCH W/ 1 TON CL B RIPRAP W/4 SY GEOFAB

-Y23DR- ± 70.00 70.00', 40.00' RT

STD. V DITCH SEE DETAIL D

-Y23DR- ± 00.00 80.00' RT

-DR2- PT Sta. 12+47.50

-DR2- PC Sta. 10+71.73

-DR2- POT Sta. 12+60.00

END CONSTRUCTION -DR2- POT STA. 12+20.00

-DR2- ± 50.00 40.00' LT

-DR2- ± 20.00 20.00' LT

-DR2- ± 20.00 25.00' RT

-Y23DR- ± 95.00 120.00' RT

-Y23DR- ± 50.00 80.00' RT

SPECIAL CUT DITCH SEE DETAIL A

1221

-Y23DR- ± 15.00 80.00' RT

-Y23DR- ± 80.00 80.00' RT

SPECIAL V DITCH W/CL I RIP RAP SEE DETAIL AB

SPECIAL CUT DITCH SEE DETAIL A

1218 CAT

+75.00

+55.00

TB 2GIB-NSF

BEGIN PROP. SBG

LATERAL BASE DITCH W/CL B RIP RAP SEE DETAIL H

LATERAL BASE DITCH W/CL I RIP RAP SEE DETAIL N

-Y23DR- ± 30.00 120.00' RT

STD. 4' BASE DITCH SEE DETAIL I

-Y23DR- ± 20.00 120.00' RT

-Y23DR- ± 65.00 80.00', 120.00' RT

-Y23DR- ± 85.00 120.00' RT

-Y23DR- ± 90.00 180.00' RT

-Y23DR- ± 25.00 180.00' RT

LINE END OF STD DITCH W/ CL I RIPRAP SEE DETAIL AJ

1219 TB 2GIB-NSF

PROP. SBG

24" CSP W/ELBOWS

18" CSP W/ELBOWS

15" RCP-III

1220

20 TON CL I RIPRAP W/39 SY GEOFAB

3 TON CL B RIPRAP W/11 SY GEOFAB

1217

-Y23DR- ± 15.07 80.00' RT

-Y23DR- ± 58.96

-Y23DR- ± 05.00 80.00' RT

-DR1- ± 45.00 24.11' LT

TOE PROTECTION W/CL B RIPRAP SEE DETAIL E

-DR1- PC Sta. 10+13.78

-DR1- PT Sta. 11+10.60

-DR1- PC Sta. 11+36.63

-DR1- ± 55.00 50.00' LT

-DR1- ± 50.00 23.37' LT

-DR1- ± 35.00 19.86' RT

-DR1- ± 05.00 17.96' LT

-DR1- ± 86.52 25.91' RT

-DR1- ± 05.00 27.10' RT

-Y23DR- ± 20.08 100.20' RT

-Y23DR- ± 72.86 99.82' RT

-Y23DR- ± 47.37 100.20', 135.20', 185.20' RT

-DR1- POT Sta. 12+67.48

-DR1- PT Sta. 12+25.51

-Y23DR- PT Sta. 43+98.58

PUE

DUE

RIGHT OF WAY RADIUS = 700'

1208 OUTLET CHANNEL STABILIZATION W/CL II RIPRAP SEE DETAIL AL 48 TONS CL II RIPRAP W/90 SY GEOFAB

*1003Z ELIZABETH BURNETTE DB 2280 PG 301

1205 2GIB-WSS

SPECIAL CUT SWALE SEE DETAIL O

1206

1 TON CL B RIPRAP W/5 SY GEOFAB

TOE PROTECTION W/CL B RIPRAP SEE DETAIL E

15' TAPER 16' TO 8'

EXIST.

SARA EARLY DB 6980 PG 591 BM 1996 PG 628

7

2701 HIDDEN ACRE LAND TRUST DB 13336 PG 2270 BM 1996 PG 628

6

ELMO T WILLIAMS TRUST ALICE H WILLIAMS DB 10404 PG 1591 BM 1996 PG 300

9

JOSEPH & VELANCIA BAILEY DB 12144 PG 1641 BM 2006 PG 1234

8

BURIED (PSIPED FOR MAINT.)

UNSIZED FOR MAINT.)

ALL DRIVEWAYS HAVE 16' WIDTH AND 10' RADIUS UNLESS OTHERWISE NOTED.

CONCRETE DRIVE

GRAVEL DRIVE

ALL OTHER DRIVES TO BE ASPHALT

* ADVANCED ACQUISITION

INCREASED SUPER TO 0.03 ALONG LOOP C ACCELERATION LANE FOR HYDROPLANING MITIGATION

-DR1-		-DR2-	-L1-	-Y23DR-
PI Sta 10+62.34	PI Sta 11+81.14	PI Sta 11+62.22	PI Sta 1081+95.09	PI Sta 40+37.34
Δ = 11° 05' 40.1" (LT)	Δ = 7° 50' 04.8" (RT)	Δ = 33° 34' 12.6" (LT)	Δ = 4° 39' 12.5" (LT)	Δ = 60° 56' 53.0" (RT)
D = 11° 27' 33.0"	D = 8° 48' 53.0"	D = 19° 05' 54.9"	D = 0° 13' 45.1"	D = 7° 32' 20.1"
L = 96.82'	L = 88.88'	L = 175.77'	L = 2,030.45'	L = 808.45'
T = 48.56'	T = 44.51'	T = 90.49'	T = 1,015.79'	T = 447.21'
R = 500.00'	R = 650.00'	R = 300.00'	R = 25,000.00'	R = 760.00'
			SE = NC	SE = 0.06
			DS = 75 MPH	DS = 40 MPH

FOR DITCH DETAILS SEE SHTS. 2D-1 THRU 2D-6

FOR –L1– PROFILE SEE SHT. 43

FOR –Y23DR– PROFILE SEE SHT. 63

FOR –DR1– PROFILE SEE SHT. 61

FOR –DR2– PROFILE SEE SHT. 63

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PROJECT REFERENCE NO.	SHEET NO.
R-2829A	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/NA 2011

WHITE OAK CREEK GREENWAY

-Y23I_REV- PT Sta. 18+36.86

N 38° 12' 58.2" W

-Y23I_REV- PC Sta. 17+64.86

-Y23I_REV- PT Sta. 17+13.95

N 17° 36' 33.5" W

GREENWAY BY OTHERS OUTSIDE PROPOSED R/W

-Y23I_REV- PC Sta. 15+48.48

END CONSTRUCTION -Y23I_REV- POC Sta. 15+12.24

-Y23I_REV- PT Sta. 14+82.51

-Y23I_REV- PRC Sta. 14+04.93

-Y23I_REV- PC Sta. 13+57.87

N 80° 45' 20.6" W

2314
CLAYTON PROPERTIES GROUP INC
DB 18256 PG 2088
BM 1996 PG 300

10
CAPITAL CITIES COMMUNICATIONS, INC.
DB 2564 PG 333

SPECIAL V DITCH W/CL B RIP RAP SEE DETAIL Y

LATERAL 4' BASE DITCH SEE DETAIL AA

SPECIAL 4' BASE DITCH W/CL B RIP RAP SEE DETAIL Z

LATERAL 4' BASE DITCH W/CL B RIP RAP SEE DETAIL AS

BEGIN BRIDGE LT -L1- Sta. 1083+85.06

BEGIN APPROACH SLAB LT -L1- Sta. 1083+60.92

END PROP. SBG +77.41

BEGIN PROP. SBG +16.93

-L1-+65.00 190.00' LT

-L1-+50.00 210.00' LT

SP. CUT DITCH W/CL 1 RIP RAP SEE DETAIL AB

LINE END OF SWALE W/CL 1 RIPRAP SEE DETAIL AJ & AQ

SPECIAL CUT DITCH W/CL 1 RIP RAP SEE DETAIL AB

-L1-+70.00 210.00' LT

-L1-+10.00 225.00' LT

END BRIDGE LT -L1- Sta. 1087+02.51

END APP. SLAB LT -L1- Sta. 1087+26.65

LINE END OF SWALE W/CL 1 RIPRAP SEE DETAIL AJ & AQ

STD. 8' BASE SWALE SEE DETAIL AP

PROP. WW FENCE

-L1-+00.00 190.00' LT

STD. 4' BASE SWALE SEE DETAIL Q

FS MIN ELEV =235.5

15 TON CL 1 RIPRAP W/30 SY GEOFAB

100' TAPER

60' TAPER

NC 540

15" CSP W/ELBOWS

2GIB-WSF

CAT-1

END INCASED BURIED

36" RCP-IV

BEGIN PROP. SBG +42.83

BEG FENCE

PROP. SBG

END PROP. SBG + 53.55

BEG PROP. SBG + 22.05

50:1

14' FDPS

8:1

MATCHLINE -L1- STA. 1075+00 SEE SHEET 12

MATCHLINE -L1- STA. 1089+00 SEE SHEET 14

1075+00

1080+00

1085+00

BL-117

BL-118

PROP. GUIDERAIL

GREU TL-3

CGAU

FS

B-77

1190 TONS CL II RIPRAP

776 TONS CL II RIPRAP

N 60° 25' 12.6" W

15" RCP-III

END PROP. SBG + 43.50

1301 1 TON CL B RIPRAP W/5 SY GEOFAB

1302 2GIB-WSS

1303 1 TON CL B RIPRAP W/5 SY GEOFAB

1304 2GIB-WSF

1305 1 TON CL B RIPRAP W/5 SY GEOFAB

1306 2GIB-WSS

1307 CAT-1

1308

1309 HW

1311 2GIB-WSF

1312 2GIB-WSF

1313 2GIB-WSS

1314 2GIB-WSF

1317 2GIB-WSF

1318 2GIB-WSF

1319 2GIB-WSS

15" CSP W/ELBOWS

15" RCP-III

PROP. SIGN

GRADE TO DRAIN

END PROP. SBG +18.72

END FENCE

BEGIN PROP. SBG +50.00

-L1-+00.00 175.00' RT

-L1-+00.00 175.00',200.00' RT

-L1-+95.00 175.00',200.00' RT

-L1-+50.00 175.00',215.00' RT

BEGIN PROP. SBG +83.59

LATERAL 4' BASE DITCH W/CL B RIP RAP SEE DETAIL H

-L1- POC Sta.1084+12.59= -Y23I_REV- POT Sta.12+78.49

-Y23I_REV- PT Sta. 11+55.29

END PROP. SBG 1319 +81.65

END APP. SLAB RT -L1- Sta. 1087+00.51

END BRIDGE RT -L1- Sta. 1086+76.43

-Y23I_REV- PRC Sta. 10+81.70

-Y23DR- POT Sta. 58+12.79

BEGIN CONSTRUCTION -Y23I_REV- POC Sta. 10+54.29

-Y23I_REV- PC Sta. 9+97.14

BEGIN APPROACH SLAB RT -L1- Sta. 1083+35.80

BEGIN BRIDGE RT -L1- Sta. 1083+59.88

9
ELMO T WILLIAMS TRUST ALICE H WILLIAMS
DB 10404 PG 1591
BM 1996 PG 300

BM6

WHITE OAK CREEK GREENWAY
GREENWAY BY OTHERS OUTSIDE PROPOSED R/W

-L1-	-Y23I_REV-					
PI Sta 1081+95.09	PI Sta 10+40.86	PI Sta 11+19.05	PI Sta 13+82.01	PI Sta 14+46.58	PI Sta 16+40.75	PI Sta 18+01.25
Δ = 4° 39' 12.5" (LT)	Δ = 35° 53' 21.5" (RT)	Δ = 24° 05' 30.8" (LT)	Δ = 31° 21' 03.8" (RT)	Δ = 51° 41' 11.8" (LT)	Δ = 63° 08' 47.1" (RT)	Δ = 20° 36' 24.8" (LT)
D = 0° 13' 45.1"	D = 42° 26' 28.7"	D = 32° 44' 25.6"	D = 66° 37' 22.8"	D = 66° 37' 22.8"	D = 38° 09' 45.7"	D = 28° 37' 19.3"
L = 2,030.45'	L = 84.56'	L = 73.58'	L = 47.06'	L = 77.58'	L = 165.47'	L = 72.00'
T = 1,015.79'	T = 43.72'	T = 37.34'	T = 24.13'	T = 41.65'	T = 92.27'	T = 36.39'
R = 25,000.00'	R = 135.00'	R = 175.00'	R = 86.00'	R = 86.00'	R = 150.14'	R = 200.18'
SE = NC	SE = RC	SE = RC	SE = RC	SE = RC		
DS = 75 MPH						

FOR SITE 7 BRIDGE PLANS SEE SHTS. S7L-1 THRU S7L-41 AND S7R-1 THRU S7R-41

FOR DRAINAGE DETAILS SEE SHTS. 2D-1 THRU 2D-6

FOR -L1- PROFILE SEE SHTS. 43 THRU 44
FOR -Y23I_REV- PROFILE SEE SHT. 80

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PROJECT REFERENCE NO.	SHEET NO.
R-2829A	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MATCHLINE -L1- STA. 1089+00 SEE SHEET 13

MATCHLINE -L1- STA. 1100+50 SEE SHEET 15

(11) NC DEPARTMENT OF TRANSPORTATION
DB 7404 PG 28
DB 7404 PG 26
BM 1990 PG 425
PSD 393-96-RW
NCDOT PROJECT # 6.401080

NAD 83/NA 2011

(10) CAPITAL CITIES COMMUNICATIONS, INC.
DB 2564 PG 333

N 82°57'18" E
405.8

-L1- PT Sta. 1092+09.76

END SECTION 1
-L1- POT Sta. 1094+00.00
BEGIN SECTION 2

-L1- +35.00 190.00' LT — STD. 8' BASE SWALE SEE DETAIL AP — PDE

-L1- +58.76 190.00' LT — LATERAL 4' BASE SWALE SEE DETAIL L

-L1- +62.86 175.00' LT

-L1- +09.76 175.00' LT — LATERAL 4' BASE DITCH W/CL B RIP RAP SEE DETAIL H

-L1- +66.90 175.00' LT

-L1- +73.00 199.00' LT

-L1- +06.90 175.00' LT

1414 2 TON CL B RIPRAP W/7 SY GEOFAB — LAT. 4' BASE DITCH SEE DETAIL AA

-L1- +17.88 175.00' LT — C300 OUTLET STABILIZATION 38 TONS CL I RIPRAP W/32 SY GEOFAB SEE DETAIL CC

PROP. WW FENCE

SPECIAL 4' BASE SWALE SEE DETAIL O

END PROP. DOUBLE POST GR +45.14

TOE PROTECTION W/CL B RIP RAP SEE DETAIL E

-L1- +88.92 175.00' LT — TOE PROTECTION W/CL B RIP RAP SEE DETAIL E — TIE TO WING WALL

1406 — SPECIAL 4' BASE SWALE SEE DETAIL O

PROP. SIGN — 167' PS — 190'

END PROP. SBG +50.00

1404 24" CSP W/ELBOWS 15" RCP-III 2GIB-WSF — 1405 2GIB-WSF — 24" RCP-IV

+91.36 — 14' PS

+21.36 117.00.LT — +71.36 117.00.LT — R 7.5' — CAT-1 — GRADE TO DRAIN — DOUBLE POST GR

1412 15" RCP-III 2GIB-WSF — 1413 15" CSP W/ELBOWS 2GIB-WSF

PROP. SBG — BEGIN PROP. SBG +53.69 — BEGIN PROP. DOUBLE POST GR +45.14

36' — .02 — 8:1 — GREU TL-3 — 1090+00 — 15" RCP-III — FS — 12' PS

PROP. GUIDERAIL — -L1- — CGAU CAT-1 — 1100+00 — BZ 2 — BZ 1 — 70' — 14' PS

1401 2GIB-WSS — 1402 2GIB-WSS — TYPE III PEDESTAL — 1095+00 — 18" RCP-III — 1403 2GIB-WSS — N 8°01'27.1" E — 1410 2GIB-WSS

END PROP. DOUBLE POST GR +46.35

8'X2' RGRC (NOT SHOWN) — 15" RCP-IV

TYPE III PEDESTAL — 175' — BL-120 — BEGIN PROP. DOUBLE POST GR +45.14 — GRADE TO DRAIN +13.85 120.00.RT — CAT-1 +63.85 120.00.RT — 42" SW — R 7.5' — +43.85 110.00.RT — +97.85 — 1411

SPECIAL V DITCH SEE DETAIL A — SPECIAL CUT 4' SWALE SEE DETAIL O — TIE TO WING WALL

-L1- +41.03 175.00' RT — -L1- +09.20 175.00' RT

RW CA — LATERAL 4' BASE DITCH W/CL B RIP RAP SEE DETAIL H — -L1- +30.00 175.00' RT — -L1- +00.00 185.00' RT

LATERAL 4' BASE SWALE SEE DETAIL L — -L1- +50.00 185.00' RT

-L1- +09.76 175.00' RT

PROP. WW FENCE — -L1- +42.82 175.00' RT

Additional Taking for Parcel 12

TDE — -L1- +81.00 225.00' RT — -L1- +01.45 175.00', 225.00' RT

LATERAL 4' BASE SWALE SEE DETAIL BF — -L1- +71.00 175.00' & 188.00' RT — LATERAL 4' BASE SWALE & 188.00' RT — -L1- +30.00 175.00' RT — SPECIAL 4' BASE W/CL II RIP RAP SEE DETAIL AZ

C300 INLET STABILIZATION 252 TONS CL II RIPRAP W/139 SY GEOFAB SEE DETAIL CC

BZ 1 — BZ 2 — 15' — JS

(10) CAPITAL CITIES COMMUNICATIONS, INC.
DB 2564 PG 333

*12Z CAPITOL BROADCASTING COMPANY, INC.
DB 2532 PG 44
BM 1958 PG 98
BM 1990 PG 425
EASEMENT DB 1236 PG 592
EASEMENT DB 1244 PG 559
EASEMENT DB 1317 PG 202

-L1-
PI Sta 1081+95.09
△ = 4° 39' 12.5" (LT)
D = 0° 13' 45.1"
L = 2,030.45'
T = 1,015.79'
R = 25,000.00'
SE = NC
DS = 75 MPH

PAVEMENT REMOVAL

*ADVANCED ACQUISITION

FOR -L1- PROFILE SEE SHT. 44

FOR DITCH DETAILS SEE SHEET 2D-1 THRU 2D-6

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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MATCHLINE -L1- STA. 1100+50
SEE SHEET 14

MATCHLINE -L1- STA. 1114+00
SEE SHEET 16

(11)
NC DEPARTMENT OF TRANSPORTATION
DB 7404 PG 28
DB 7404 PG 26
BM 1990 PG 425
PSD 393-96-RW
NCDOT PROJECT # 6.401080

CLAYTON PROPERTIES GROUP INC
DB 18256 PG 2088
BM 1996 PG 300

BOBBY & MARGARET RAYNOR
DB 4225 PG 496
BM 1972 PG 357

NAD 83/NA 2011

NC 540

-L1- TS Sta. 1101+32.66
-L1- +32.66
175.00' LT
-L1- +52.11
175.13' LT
-L1- SC Sta. 1103+72.66
-L1- +72.66
175.27' LT
CHORD
RW CA
60.00' TYP.
TOE PROTECTION W/CL B RIP RAP SEE DETAIL E
ENERGY DISSIPATOR BASIN SEE DETAIL BS
300' LANE TAPER LT
1504
PROP. WW FENCE
54.02
36" CSP W/ELBOWS (NOT BURIED, UPSIZED FOR MAINT.)
1505 TB 2GIB-WSF
BL-122
BL-123
PROP. SBG
TYPE III PEDESTAL
16' PS
36'
14' PS
48'
GREU TL-3
8d
16d
15' PS
12' PS
70'
1503 2GIA-WSS
36" RCP-III (UPSIZED FOR MAINT.)
1105+00
-L1-
PROP. GUIDERAIL
CGAU
1110+00
S 14°09'38" W
2354.65'
1512 2GIB-WSS
15" RCP-III
1509 2GIB-WSS
24" RCP-IV
1508 2GIB-WSS
TIE TO WING WALL
2'-7" RCBC (NOT BURIED)
C400 OUTLET STABILIZATION
76 TONS CL II RIPRAP
W/118 SY GEOFAB
SEE DETAIL CD
-L1- +42.00
175.27' &
190.00' LT
PDE
-L1- +18.54
175.00' LT
1502 2GIB-WSS
30" CSP W/ELBOWS
1501
BDO
SPECIAL CUT 4' SWALE SEE DETAIL O
BERM DITCH SEE DETAIL BE
C SPECIAL 4' BASE W/CL II RIP RAP SEE DETAIL AZ
-L1- +32.66
175.00' RT
CHORD
-L1- +53.28
174.87' RT
-L1- +72.66
175.59' RT
PROP. WW FENCE
-L1- +04.08
174.73' RT
BERM 4' BASE DITCH W/CL B RIP RAP SEE DETAIL AY
-L1- +04.08
214.73' RT
-L1- +04.07
214.73' RT
TOWER ANCHORS TO BE REMOVED
BERM DITCH W/CL B RIPRAP SEE DETAIL X
+94.02
SPECIAL V DITCH SEE DETAIL A
-L1- +04.07
174.73' RT
5 TON CL B RIPRAP W/14 SY GEOFAB
FS MIN ELEV=272.0
1510
18" CSP W/ELBOWS
300' LANE TAPER RT
1513 BDO
3 TON CL B RIPRAP W/10 SY GEOFAB
LATERAL 4' BASE SWALE SEE DETAIL L
1514
TOE PROTECTION W/CL B RIP RAP SEE DETAIL E
APPROX. LOCATION OF RELOCATED WRAL TV TOWER ANCHOR
ACCESS & UTILITY EASEMENT BM 1990 PG 425
70' CP&L EASEMENT

*12Z
CAPITOL BROADCASTING COMPANY, INC.
DB 2532 PG 44
BM 1958 PG 98
BM 1990 PG 425
EASEMENT DB 1236 PG 592
EASEMENT DB 1244 PG 559
EASEMENT DB 1317 PG 202

* SUPER INCREASED TO 0.04 FOR HYDROPLANING

-L1-

PIs Sta 1102+92.66	PI Sta 1114+01.54
θs = 0° 45' 50.2"	Δ = 13° 02' 36.6" (RT)
Ls = 240.00'	D = 0° 38' 11.8"
LT = 160.00'	L = 2,048.87'
ST = 80.00'	T = 1,028.88'
	R = 9,000.00'
	SE = 0.04
	DS = 75 MPH

PAVEMENT REMOVAL

*ADVANCED ACQUISITION
FOR -L1- PROFILE SEE SHT. 44 & 45
FOR DITCH DETAILS SEE SHEET 2D-1 THRU 2D-6

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PROJECT REFERENCE NO.	SHEET NO.
R-2829A	16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

BOBBY & MARGARET RAYNOR
DB 4225 PG 496
BM 1972 PG 357

S 04°26'48" W 282.00'
S 34°26'48" W 160.00'
S 04°18'13" E 335.00'
S 22°16'48" W 350.00'

(11)
NC DEPARTMENT OF TRANSPORTATION
DB 7404 PG 28
DB 7404 PG 26
BM 1990 PG 425
PSD 393-96-RW
NCDOT PROJECT # 6.401080

NAD 83/NA 2011

*13Z
RICHARD ROGERS REVOCABLE TRUST
DB 11409 PG 720
EASEMENT DB 17448 PG 2500

S 88°19'52" E 634.62'

B

-Y24RPBR- ST Sta. 10+00.00 =
-LI- POC Sta. 1115+22.43

-Y24RPBR- ST Sta. 12+00.00

-LI- +07.00 175.27' & 190.00' LT
-LI- +24.84 175.27' LT
-LI- +19.04 175.27' LT

CHORD
TOE PROTECTION W/CL B RIP RAP SEE DETAIL E

PROP. WW FENCE

NC 540

END PROP. SBG +50.00

LINE CUT/FILL TRANSITION TOE PROTECTION W/CL B RIP RAP SEE DETAIL E

TOE PROTECTION W/CL B RIP RAP 1 TON CL B RIPRAP W/5 SY GEOFAB SEE DETAIL E

15" CSP W/ELBOWS

-Y24RPBR- +71.78 100.86', 139.92' LT

OUTLET CHANNEL STABILIZATION W/CL II RIPRAP SEE DETAIL AL 48 TONS CL II RIPRAP W/90 SY GEOFAB

-LI- CS Sta. 1124+21.53

-Y24RPBR- +61.78 100.52', 139.90' LT

-Y24RPBR- +61.09 99.77' LT

TOE PROTECTION W/CL B RIP RAP SEE DETAIL E

PROP. SBG

BEGIN PROP. SBG +00.00

-Y24RPBR-

15+00

20+00

-LI- ST Sta. 1126+61.53

MATCHLINE -L1- STA. 1114+00 SEE SHEET 15

MATCHLINE -L1- STA. 1127+00 -Y24RPBR- STA. 22+00 SEE SHEET 17

PROP. GUIDERAIL

-LI- 1120+00

115+00

125+00

BEGIN PROP. SBG +44.95

TOE PROTECTION W/CL B RIP RAP SEE DETAIL E

LATERAL 4' BASE DITCH SEE DETAIL AA

-LI- +30.18 175.00' RT
2 TONS CL B RIPRAP W/7 SY GEOFAB

-LI- +13.36 175.00' RT

C400 INLET STABILIZATION 39 TONS CL II RIPRAP W/73 SY GEOFAB SEE DETAIL CD

PROP. WW FENCE

CHANNEL CHANGE W/CL II RIPRAP SEE DETAIL AR

-LI- +18.59 174.73' & 187.28' RT

CHANNEL CHANGE W/CL II RIPRAP SEE DETAIL BB

-LI- +84.10 188.77' & 208.17' RT

-LI- +30.64 209.20' RT

-LI- +31.34 174.73' RT

CHANNEL BLOCK SEE DETAIL BK

STANDARD 4' BASE SWALE SEE DETAIL O

SPECIAL CUT 4' SWALE SEE DETAIL O

FS MIN ELEV = 279.5

-Y24RPC- +11.88 103.73' RT

CHORD

CHANNEL CHANGE W/CL II RIPRAP SEE DETAIL AR

-Y24RPC- ST Sta. 10+00.00 =
-LI- POT Sta. 1120+12.25

2 TON CL B RIPRAP W/7 SY GEOFAB

-Y24RPC- +00.31 118.94' RT

SPECIAL CUT 4' SWALE SEE DETAIL O

-Y24RPC- +12.36 119.30' RT

-Y24RPC- SC Sta. 12+00.00

-Y24RPC- +45.40 130.01' RT

-Y24RPC- +49.57 132.54' RT

-Y24RPC- +29.36 118.13' RT

-Y24RPC- +41.79 118.17' RT

LATERAL 4' BASE DITCH SEE DETAIL AE

LATERAL 4' BASE DITCH W/CL I RIP RAP SEE DETAIL BP

-Y24RPC- +41.47 183.16' RT

-Y24RPC- CS Sta. 14+60.18

-Y24RPC- SRS Sta. 16+60.18

Additional Taking for Parcel 12

Additional Taking for Parcel 12

*(INCREASED FROM 03 TO 04 FOR HYDROPLANING)

MATCHLINE -Y24RPC- STA. 16+50 SEE SHEET 17

MATCHLINE -L1- STA. 1127+00 SEE SHEET 17

C

*12Z
CAPITOL BROADCASTING COMPANY, INC.
DB 2532 PG 44
BM 1958 PG 98
BM 1990 PG 425
EASEMENT DB 1236 PG 592
EASEMENT DB 1244 PG 559
EASEMENT DB 1317 PG 202

-LI-		-Y24RPC-				-Y24BR-
PI Sta 1114+01.54	PIs Sta 1125+01.53	PIs Sta 11+20.28	PI Sta 13+30.25	PIs Sta 15+26.86	PIs Sta 17+80.19	PIs Sta 10+66.67
Δ = 13° 02' 36.6" (RT)	Θs = 0° 45' 50.2"	Θs = 0° 38' 29.6"	Δ = 6° 50' 17.9" (RT)	Θs = 2° 37' 41.7"	Θs = 1° 09' 31.6"	Θs = 0° 37' 53.9"
D = 0° 38' 11.8"	Ls = 240.00'	Θs = 2° 37' 42.2"	D = 2° 37' 41.7"	Ls = 200.00'	Ls = 180.00'	Ls = 200.00'
L = 2,048.87'	LT = 160.00'	Ls = 200.00'	L = 260.18'	LT = 133.35'	LT = 120.00'	LT = 133.33'
T = 1,028.88'	ST = 80.00'	LT = 120.28'	T = 130.25'	ST = 66.68'	ST = 60.00'	ST = 66.67'
R = 9,000.00'		ST = 79.77'	R = 2,180.00'			
SE = 0.04*			SE = 0.07			
DS = 75 MPH			DS = 65 MPH			

*ADVANCED ACQUISITION

FOR -L1- PROFILE SEE SHT. 45
FOR -Y24RPBR- PROFILE SEE SHT. 69
FOR -Y24RPC- PROFILE SEE SHT. 70

FOR DITCH DETAILS SEE SHEET 2D-1 THRU 2D-6

PAVEMENT REMOVAL

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REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MATCHLINE -Y24R- STA. 36+50 SEE SHEET 35

MATCHLINE -Y24RPBR- STA. 22+00 SEE SHEET 16

MATCHLINE -L1- STA. 1127+00 SEE SHEET 16

MATCHLINE -Y24RPC- STA. 14+50 SEE SHEET 16

MATCHLINE -Y24RPAR- STA. 20+00 SEE SHEET 18

MATCHLINE -L1- STA. 1154+00 -Y24RPDR- STA. 12+50 SEE SHEET 18

MATCHLINE -Y24R- STA. 51+50 SEE SHEET 36

MATCHLINE -Y24CR- STA. 14+00 SEE SHEET 36

NAD 83/NA 1011

BOBBY & MARGARET RAYNOR DB 4225 PG 496 BM 1972 PG 357

NC DEPARTMENT OF TRANSPORTATION DB 10043 PG 2486 BM 1964 PG 241

RICHARD ROGERS REVOCABLE TRUST DB 11408 PG 1251 EASEMENT DB 11448 PG 2500

CAPITOL BROADCASTING COMPANY, INC. DB 2933 PG 68 BM 1990 PG 99 EASEMENT DB 11290 PG 582 EASEMENT DB 11294 PG 559 EASEMENT DB 1311 PG 202

BUFFALOE ENTERPRISES, LLC. DB 13348 PG 2709 BM 2008 PG 1586

EDITH BROWN, BELINDA MASSEY, SENIOR JOHNSON, LILA BOYETTE, JERRY JOHNSON DB 1806 PG 0100 (INCORRECT DEED)

RANDY ALEXANDER DB 6602 PG 572

J. & ELAINE COATES DB 1781 PG 100

WILLIAM & EUNICE LEE DB 2070 PG 361

LBL COMPANY LLC DB 9875 PG 2095 BM 1973 PG 9

GARNER INDUSTRIAL V, LLC DB 19342 PG 1460 BM 2023 PG 920

SEEDLING TECHNOLOGY CENTER, LLC. DB 14108 PG 771 DB 14108 PG 771 BM 1988 PG 1306

Revised taking on Parcel 2409

Additional Taking for Parcel 13

CONTRACTOR TO REMOVE EXISTING CABLE GUIDERAIL

-Y24RPBR- POT Sta. 35+59.69 = -Y24R- POC Sta. 41+08.27

-Y24RPAR- PT Sta. 29+95.09

-Y24RPAR- PRC Sta. 24+92.85

END CONSTRUCTION -Y24A- POT Sta. 26+60.00

-Y24A- POT Sta. 27+50.00

-Y24RPAR- POT Sta. 34+52.21 = -Y24R- POC Sta. 41+26.45

-L1- POT Sta. 1139+58.50 = -Y24R- POC Sta. 43+98.93

BEGIN BRIDGE -L1- 1139+12.39

BEGIN APPROACH SLAB -L1- 1138+48.22

-Y24RPC- POT Sta. 29+67.57 = -Y24R- POC Sta. 46+50.00

-Y24RPDR- POT Sta. 27+12.70 = -Y24R- POC Sta. 47+00.00

-Y24RPC- CS Sta. 20+07.57

-Y24RPC- ST Sta. 21+87.57

-Y24RPC- SC Sta. 18+40.18

-Y24RPDR- ST Sta. 16+22.03

-Y24RPDR- CS Sta. 14+42.03

-Y24CR- PC Sta. 10+00.00

BEGIN CONSTRUCTION -Y24CR- POC Sta. 10+91.84

-Y24R-

PI Sta. 50+13.11
Δ = 7° 18' 52.9" (RT)
D = 1° 11' 11.3"
L = 655.33'
T = 327.83'
R = 4800.00'
SE = NC
DS = 60 MPH

-Y24RPC-

PIs Sta 17+80.19	PIs Sta 19+23.89	PIs Sta 20+67.57
θs = 1° 09' 31.6"	Δ = 2° 09' 18.6" (LT)	θs = 1° 09' 31.6"
Ls = 180.00'	D = 1° 11' 15.2"	Ls = 180.00'
LT = 120.00'	L = 167.39'	LT = 120.00'
ST = 60.00'	T = 83.70'	ST = 60.00'
	R = 4,450.00'	
	SE = 0.04	
	DS = 65 MPH	

-Y24RPAR-

PI Sta 21+46.51	PI Sta 27+44.00
Δ = 5° 03' 13.2" (RT)	Δ = 2° 12' 48.8" (LT)
D = 0° 26' 26.3"	D = 0° 26' 26.7"
L = 692.65'	L = 502.24'
T = 346.50'	T = 251.05'
R = 13,000.00'	R = 13,000.00'
SE = NC	SE = NC
DS = 65 MPH	DS = 65 MPH

-Y24RPADR-

PIs Sta 13+41.12	PIs Sta 15+92.04
Δ = 5° 32' 23.9" (LT)	θs = 1° 54' 10"
D = 2° 06' 51.2"	Ls = 180.00'
L = 262.03'	LT = 120.00'
T = 131.12'	ST = 60.00'
R = 2,710.00'	
SE = 0.06	
DS = 65 MPH	

-Y24CR-

PI Sta 13+01.21
Δ = 1° 46' 00.4" (RT)
D = 0° 11' 09.2"
L = 620.38'
T = 310.28'
R = 20,650.50'
SE = NC
DS = 30 MPH

48800 58500 -Y24R- US 70

3300 5600 13000 22400 -L1- NC 540

1800 4400 11300 22700 -L1- NC 540

3600 4500 -Y24R- US 70

3400 6000 50700 59000

EST. 2023 /2043 TRAFFIC VOLUMES

GRAPHIC SCALE
50 0 50 100
PLANS

CONCRETE DRIVE
GRAVEL DRIVE
ALL OTHER DRIVES TO BE ASPHALT
PROPOSED TRAFFIC SIGNAL
PAVEMENT REMOVAL

*ADVANCED ACQUISITION

FOR -L1- PROFILE SEE SHT. 45 & 46
FOR -Y24R- PROFILE SEE SHTS. 66 & 67
FOR -Y24RPAR- PROFILE SEE SHT. 68
FOR -Y24RPBR- PROFILE SEE SHT. 69
FOR -Y24RPC- PROFILE SEE SHT. 70
FOR -Y24RPDR- PROFILE SEE SHT. 71
FOR -Y24A- PROFILE SEE SHT. 72
FOR -Y24CR- PROFILE SEE SHT. 73

FOR DITCH DETAILS SEE SHEET 2D-1 THRU 2D-6

STV Engineers, Inc. P: (704) 372-1885 300 West Trade St., Suite 710 Charlotte, NC 28202 NC License Number F - 0991

RKK
P: (513) 554-0900 5051 Old Tonis Road, Forum 1, Suite 700 Raleigh, North Carolina 27615-0900 Raleigh, NC 27615

Engineers | Construction Managers | Planners | Scientists
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Responsible Person | Christine Schlabach

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PROJECT REFERENCE NO.	SHEET NO.
R-2829A	18
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

8/17/99

MATCHLINE -Y25- STA. 15+00 SEE SHEET 36A

MATCHLINE -Y26R- STA. 22+00 SEE SHEET 36A

MATCHLINE -Y26R-SR1- STA. 12+50 SEE SHEET 36A

MATCHLINE -Y24RPAR- STA. 20+00 SEE SHEET 17

MATCHLINE -Y24RPDR- STA. 12+50 -L1- STA. 1154+00 SEE SHEET 17

MATCHLINE -L1- STA. 1167+50 SEE SHEET 19

MATCHLINE -Y25- STA. 24+30 SEE SHEET 36B

MATCHLINE -Y26R- STA. 31+00 SEE SHEET 36B

MATCHLINE -Y26R-SR2- STA. 11+50 SEE SHEET 36B

-LI-

PI Sta 1172+20.98
△ = 1° 58' 44.2" (LT)
D = 0° 05' 43.8"
L = 2,072.36'
T = 1,036.28'
R = 60,000.00'
SE = NC
DS = 75 MPH

-Y24RPA-

PI Sta 21+46.51
△ = 3° 03' 13.2" (RT)
D = 0° 26' 26.7"
L = 692.85'
T = 346.51'
R = 13,000.00'
SE = NC
DS = 65 MPH

-Y26-SR1-

PI Sta 12+67.23
△ = 43° 56' 17.5" (LT)
D = 57° 17' 44.8"
L = 76.69'
T = 40.34'
R = 100.00'
SE = 0.02
DS = 20 MPH *

-Y26-SR2-

PI Sta 10+89.97
△ = 43° 56' 43.9" (RT)
D = 57° 17' 44.8"
L = 76.70'
T = 40.35'
R = 100.00'
SE = 0.02
DS = 20 MPH *

* STOP CONDITION

* STOP CONDITION

-Y26R-

PI Sta 28+10.86
△ = 48° 04' 31.8" (LT)
D = 6° 11' 14.8"
L = 776.98'
T = 413.01'
R = 926.00'
SE = 0.04
DS = 50 MPH

-Y24RPDR-

PIs Sta 11+20.01
Θs = 1° 54' 10.1"
Ls = 180.00'
LT = 120.01'
ST = 60.01'

PI Sta 13+11.12
△ = 5° 32' 23.9" (LT)
D = 2° 06' 51.2"
L = 262.03'
T = 131.12'
R = 2,710.00'
SE = 0.06
DS = 65 MPH

-Y26_DRWI-

PI Sta 10+74.47
△ = 43° 34' 24.6" (LT)
D = 45° 50' 11.8"
L = 95.06'
T = 49.96'
R = 125.00'
SE = NC
DS = N/A MPH

PI Sta 12+11.40
△ = 44° 36' 19.9" (LT)
D = 57° 17' 44.8"
L = 77.85'
T = 41.02'
R = 100.00'
SE = NC
DS = N/A MPH

*ADVANCED ACQUISITION

FOR -L1- PROFILE SEE SHTS. 46 & 47
FOR -Y24RPAR- PROFILE SEE SHT. 68
FOR -Y24RPDR- PROFILE SEE SHT. 71
FOR -Y26R- PROFILE SEE SHT. 75
FOR -Y26_DRW1- PROFILE SEE SHT. 76

FOR DITCH DETAILS SEE SHEET 2D-1 THRU 2D-6

CONCRETE DRIVE
GRAVEL DRIVE
ALL OTHER DRIVES TO BE ASPHALT
PAVEMENT REMOVAL

END CONSTRUCTION -Y26_DRW1- POT Sta. 12+58.05

BEGIN CONSTRUCTION -Y26RSR1- POT Sta. 11+86.89

NAD 83/NA 2011

DRAIN POND & FILL TO ELEV. 308.0' (SEE POND DRAINAGE PLANS)

NC 540

BEGIN BRIDGE -Y24RPAR- 17+55.55

END APPROACH SLAB -Y24RPAR- 17+79.71

BEGIN APPROACH SLAB -Y24RPAR- 14+18.09

BEGIN BRIDGE -Y24RPAR- 14+42.16

END BRIDGE -Y24RPAR- 11+54.16

BEGIN APPROACH SLAB -LI- 1156+14.67

BEGIN BRIDGE -LI- 1156+38.84

END BRIDGE -LI- 1159+53.92

END APPROACH SLAB -LI- 1159+78.08

BEGIN CONST. -Y26RSR2- POT Sta. 10+09.62

EAST GARNER ROAD

PROP. SIGN

PROP. GUIDERAIL

PROP. WW FENCE

PROP. SBG

100' TAPER

300' LANE TAPER

-Y24RPAR- PC Sta. 18+00.00

-Y24RPDR- SC Sta. 11+80.00

-Y24RPDR- TS Sta. 10+00.00 =

-LI- POT Sta. 1156+60.22

-Y24RPDR- ST Sta. 13+11.12

-Y24RPDR- CS Sta. 14+71.12

-Y24RPAR- POT Sta. 16+43.14 =

-Y25- POT Sta. 18+84.15

-Y24RPAR- POT Sta. 14+93.58 =

-Y26R- POC Sta. 25+85.42

-Y26R- PC Sta. 23+97.84

-Y26R- POT Sta. 9+44.52

-Y26R- POT Sta. 11+70.82

-Y26R- POC Sta. 15+00

-Y26R- POT Sta. 15+45.16

-Y26RSR2- POT Sta. 9+84.85

-Y26RSR2- PC Sta. 10+49.62

-Y26RSR2- PT Sta. 11+26.32

-LI- POT Sta. 1157+51.67 =

-Y25- POT Sta. 19+97.73

-LI- POT Sta. 1158+98.15 =

-Y26R- POT Sta. 26+89.72

-LI- PC Sta. 1161+84.70

-LI- POC Sta. 1164+04.02

-Y24RPAR- POT Sta. 10+00.00 =

-LI- POC Sta. 1164+04.02

-Y26_DRW1- PC Sta. 10+24.51

-Y26_DRW1- PC Sta. 11+70.38

-Y26_DRW1- PT Sta. 11+19.57

-Y26_DRW1- PT Sta. 12+48.23

-Y26_DRW1- POT Sta. 13+08.05

-Y26RSR1- PC Sta. 11+72.89

-Y26RSR1- PT Sta. 12+11.40

-Y26RSR1- POT Sta. 12+58.05

-Y26RSR2- PC Sta. 10+49.62

-Y26RSR2- PT Sta. 11+26.32

-Y26RSR2- POT Sta. 9+84.85

-Y26RSR2- POC Sta. 10+09.62

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	19
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/NA 2011

MATCHLINE -L1- STA. 1167+50 SEE SHEET 18

MATCHLINE -L1- STA. 1181+50 SEE SHEET 20

NC 540

PROP. GUIDERAIL

PROP. WW FENCE

300' LANE TAPER

TYPE III PEDESTAL

GRADE TO DRAIN

TIE TO WING WALL

TOE PROTECTION W/CL B RIP RAP SEE DETAIL E

CHANNEL BLOCK SEE DETAIL BK

CHANNEL CHANGE W/CL I RIP RAP SEE DETAIL AR

LATERAL V DITCH SEE DETAIL B

LATERAL 4' SWALE SEE DETAIL L

LATERAL 4' BASE DITCH W/CL I RIP RAP SEE DETAIL N

C600 OUTLET STABILIZATION 42 TONS CL II RIPRAP W/84 SY GEOFAB SEE DETAIL CF

C600 INLET STABILIZATION 18 TONS CL II RIPRAP W/35 SY GEOFAB SEE DETAIL CF

LINE END OF SWALE W/CL B RIPRAP SEE DETAIL AJ

STD. 4' BASE SWALE SEE DETAIL Q

SP. CUT 4' SWALE SEE DETAIL O

*26 LATERAL 4' BASE DITCH W/CL I RIP RAP SEE DETAIL N

*26Z EDGE OF AUBURN LLC DB 10839 PG 2259

22 LARRY R STALLINGS DB 7250 PG 268 BM 1996 PG 1560

23 BRENDA J & DAVID L HOWELL DB 14856 PG 795 BM 1997 PG 67

24 DENNIS R YARBROUGH DB 13859 PG 1824 BM 1984 PG 1832

25 DONALD R & SANDRA C LOCKAMON JR DB 3420 PG 185 BM 1984 PG 1837

26 EDGE OF AUBURN LLC DB 10839 PG 2259

27 JANET P STORMS & LINDA S POWELL DB 16469 PG 635

28 AUBURN ASSOCIATES DB 4424 PG 265 BM 1989 PG 7

2607 JOHN B MCINTYRE DB 9167 PG 2491 BM 1984 PG 1837

1901 2GIB–WSF

1902 2 TONS CL B RIPRAP W/7 SY GEOFAB

1903 2GIB–WSS

1904 2GIB–WSF

1905 2 TONS CL B RIPRAP W/7 SY GEOFAB

1910 2GIB–WSS

1911 2GIB–WSS

1912 2GIB–WSS

1914 2GIB–WSF

1915 2GIB–WSF

1916 2GIB–WSF

1917 2GIB–WSF

1919 2GIB–WSF

1921 2GIB–WSF

1922 2GIB–WSF

1923 2GIB–WSF

1924 2GIB–WSF

1925 2GIB–WSF

1926 2GIB–WSF

1927 2GIB–WSF

1929 2GIB–WSF

1931 2GIB–WSS

–L1–	
PI Sta	1172+20.98
△	= 1° 58' 44.2" (LT)
D	= 0° 05' 43.8"
L	= 2,072.36'
T	= 1,036.28'
R	= 60,000.00'
SE	= NC
DS	= 75 MPH

PAVEMENT REMOVAL

*ADVANCED ACQUISITION

FOR –L1– PROFILE SEE SHT. 47

FOR DITCH DETAILS SEE SHEET 2D–1 THRU 2D–6

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JFerguson

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	20
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/NA 2011

MATCHLINE -L1- STA. 1181+50
SEE SHEET 19

*26
EDGE OF AUBURN LLC
DB 10839 PG 2259

END TIP PROJECT R-2829A
-L1- POT STA. 1185+19.02 =
-L- POT STA. 1185+15.00
(R-2829B BY OTHERS)

-L1- +57.06
200.00' LT
PROP. WW FENCE
-L1- +14.02
185.00' LT
-L1- +19.02
185.00' LT
TIE TO R-2829B
RW CA
-L1- PT Sta. 1182+57.06
TOE PROTECTION
W/CL B RIP RAP
SEE DETAIL E
END PROP. SBG
+57.06
TYPE III
PEDESTAL
PROP. SBG
36'
14' PS
.02
15" RCP-III
PROP. GUIDERAIL
1185+00
+93.24
SP. CUT V DITCH
W/CL B RIPRAP
SEE DETAIL Y
-L1- +57.06
200.00' RT
-L1- +19.02
175.00' RT
TIE TO R-2829B
-L1- +19.02
195.00' RT
TIE TO R-2829B
-L1- +57.06
220.00' RT
PUE
ROW BY OTHERS
(R-2829B)
BY OTHERS
(R-2829B)
COORDINATE WITH R-2829B
TO INCOPORATE ADJACENT
PROJECT DRAINAGE INTO
STORMWATER DETENTION POND
STORMWATER
DETENTION POND
RISER
W/TRASH RACK
SEE DETAIL AF
5 TON CL B RIP RAP
14 SY GEOFAB
24" RCP-III
PIPE OUTLET FROM R-2829B
SYSTEM TO BE REVISED
TO ENTER R-2829A STORMWATER
DETENTION POND
70'
2GIB-WSS
N 20° 36' 59.9" E
1190+00
1195+00
BL-136
BL-139
BL-140
BL-137
NC 540
NC 540
END CONSTRUCTION
-L- POT Sta. 1194+06.20
BZ 1
BZ 2
JS
SF
WLB
S 26°20'41" W
193.90'
S 11°12'00" W
126.14'
S 37°06'18" W
338.11'
S 23°19'21" W
188.41'
S 50°34'10" W
37.40'
S 28°34'29" W
156.78'

PAVEMENT REMOVAL

*ADVANCED ACQUISITION
FOR -L1- PROFILE SEE SHT. 47
FOR DITCH DETAILS SEE SHEET 2D-1 THRU 2D-6

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rfreeman

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	27
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/NSRS 2011

DOROTHY BEASLEY
DB 524 - PG 0-E-
DB 2412-PG 30

FINAL R-2828 AND I-40 WEST PAVEMENT MARKINGS TO BE REVISED TO ACCOMMODATE R-2829A

END PAVING ONLY
-Y22RPA_REV- STA. 32+29.64 =
R-2828 STA. 36+88.31

END GRADING
BEGIN PAVING ONLY
-Y22RPA_REV- STA. 30+12.50

DOROTHY BEASLEY
DB 524 - PG 0-E-
DB 2412-PG 30

DOROTHY BEASLEY
DB 2573 PG 482

MARY WHITE, ISABELL WARD, & ADRIA WALKER
BM 2012 PG 1326
DB 4163 PG 369
(2)

NC DEPT. OF TRANSPORTATION
DB 18373 PG 815
AREA ONE
(1)

BEGIN GRADING & PAVING
-Y22RPA_REV- STA. 14+96.21

END GRADING & PAVING
-Y22RPAFLY1- Sta. 65+22.69 +/-

MATCHLINE -Y22RPAFLY_REV- STA. 23+00 SEE SHEET 6

MATCHLINE -Y22FLYCC- STA. 100+00 SEE SHT 6

-Y22RPA_REV-

Pi Sta 10+99.09	Pis Sta 12+77.98	Pis Sta 22+41.11	Pi Sta 29+98.30	Pis Sta 37+13.41
Δ = 6°52' 53.2" (RT)	Gs = 4°10' 19.3"	Gs = 4°52' 34.5"	Δ = 53°16' 32.7" (RT)	Gs = 3°05' 58.5"
D = 3°28' 36.7"	Ls = 240.00'	Ls = 240.00'	D = 4°01' 48.7"	Gs = 2°52' 35.4"
L = 197.94'	LT = 160.04'	LT = 160.06'	L = 1,311.29'	Ls = 240.00'
T = 99.09'	ST = 80.04'	ST = 80.06'	T = 707.24'	LT = 129.10'
R = 1,648.00'			R = 1,410.00'	ST = 111.28'
SE = 0.06			SE = 0.08	
DS = 60 MPH			DS = 60 MPH	

-Y22RPAFLY_REV-

Pis Sta 22+12.56	Pis Sta 27+97.10	Pi Sta 30+10.45	Pis Sta 32+22.68	Pis Sta 68+00.09
Gs = 3°27' 05.6"	Gs = 4°18' 28.6"	Δ = 12°35' 23.9" (LT)	Gs = 4°18' 28.6"	Gs = 4°32' 25.4"
Ls = 200.00'	Ls = 200.00'	D = 4°18' 28.6"	Ls = 200.00'	Ls = 240.00'
LT = 133.36'	LT = 133.37'	L = 292.25'	LT = 133.37'	LT = 160.05'
ST = 66.69'	ST = 66.70'	T = 146.72'	ST = 66.70'	ST = 80.04'
		R = 1,330.00'		
		SE = 0.06		
		DS = 60 MPH		

-Y22LSLIPRPA-

Pis Sta 13+33.37	Pis Sta 15+22.86	Pis Sta 17+11.75	Pis Sta 25+27.77	Pis Sta 31+37.46
Gs = 4°14' 38.9"	Δ = 10°24' 00.0" (RT)	Gs = 4°14' 38.9"	Gs = 2°34' 09.5"	Δ = 37°22' 20.2" (RT)
Ls = 200.00'	D = 4°14' 38.9"	Ls = 200.00'	Ls = 200.00'	D = 2°34' 09.5"
LT = 133.37'	L = 245.05'	LT = 133.37'	LT = 133.35'	L = 1,065.35'
ST = 66.70'	T = 122.86'	ST = 66.70'	ST = 66.68'	T = 547.04'
	R = 1,350.00'			R = 2,230.00'

-Y22FLYCC-

Pi Sta 71+34.33
Δ = 29°52' 23.9" (LT)
D = 3°40' 22.7"
L = 1,346.81'
T = 1,254.74'
R = 1,560.00'

PROPOSED WALL TO TIE TO EXIST.WALL BUILT UNDER R-2828

-Y22RPAFLY1_REV_POT Sta.64+63.52=
-Y22FLYCA POC Sta.47+60.38
SKEW ANGLE = 107°23'49"

-Y22RPAFLY1- TS Sta.66+40.04

BEGIN BRIDGE
-Y22RPAFLY1- Sta.64+25.21

BEGIN APPROACH SLAB
-Y22RPAFLY1- Sta.64+10.28

-Y22RPAFLY_REV- Sta.39+69.02 BK=
-Y22RPAFLY1- Sta.62+90.00 AH

END BRIDGE
-Y22RPAFLY_REV- Sta.36+21.13

END APPROACH SLAB
-Y22RPAFLY_REV- Sta.36+45.25

WALLS BUILT UNDER R-2828

END BRIDGE
-Y22RPAFLY1- Sta.64+99.38

END APPROACH SLAB
-Y22RPAFLY1- Sta.65+21.41

(INSTALL 6" DECK DRAINS ON 4' CENTER SPACINGS. -Y22RPAFLY1- 64+35.64+41. 64+47.8, 64+84.17

-Y22RPA_REV- SC Sta.22+91.05

-Y22RPA_REV- TS Sta.20+51.05

-Y22RPA_REV- ST Sta.14+37.94

-Y22RPA_REV- CS Sta.11+97.94

-Y22RPAFLY_REV- ST Sta.33+55.98

-Y22RPAFLY_REV- CS Sta.31+55.98

BEGIN APPROACH SLAB
-Y22RPAFLY_REV- Sta.35+24.02

BEGIN BRIDGE
-Y22RPAFLY_REV- Sta.35+48.13

-Y22RPAFLY_REV_POT Sta.35+85.63=
-Y22SLIPRAP Rev. Sta.17+83.54
SKEW ANGLE = 69°04'12"

-Y22RPAFLY_REV- SC Sta.28+63.73

-Y22RPAFLY_REV- TS Sta.26+63.73

-Y22RPAFLY_REV- ST Sta.23+45.87

TIE TO EXISTING INSTALL MEDIAN CL II RIPRAP

-Y22RPA_REV- 97.94 194.99' RT

-Y22RPAFLY1_REV_POT Sta.64+63.52=
-Y22FLYCA POC Sta.47+60.38
SKEW ANGLE = 107°23'49"

-Y22RPAFLY1- TS Sta.66+40.04

-Y22RPAFLY_REV- Sta.39+69.02 BK=
-Y22RPAFLY1- Sta.62+90.00 AH

-Y22RPAFLY_REV- Sta.36+21.13

-Y22RPAFLY_REV- Sta.36+45.25

-Y22RPAFLY1- Sta.65+21.41

-Y22RPAFLY_REV- Sta.35+48.13

-Y22RPAFLY_REV_POT Sta.35+85.63=
-Y22SLIPRAP Rev. Sta.17+83.54
SKEW ANGLE = 69°04'12"

-Y22RPAFLY_REV- SC Sta.28+63.73

-Y22RPAFLY_REV- TS Sta.26+63.73

-Y22RPAFLY_REV- ST Sta.23+45.87

TIE TO EXISTING INSTALL MEDIAN CL II RIPRAP

-Y22RPA_REV- 97.94 194.99' RT

-Y22RPA_REV- ST Sta.14+37.94

-Y22RPA_REV- CS Sta.11+97.94

-Y22RPAFLY_REV- CS Sta.31+55.98

-Y22RPAFLY_REV- ST Sta.33+55.98

-Y22RPA_REV- TS Sta.20+51.05

-Y22RPA_REV- SC Sta.22+91.05

-Y22RPA_REV- Sta.32+29.64 =
R-2828 STA. 36+88.31

-Y22RPA_REV- Sta.30+12.50

-Y22RPA_REV- Sta.14+96.21

-Y22RPA_REV- Sta.10+99.09

-Y22RPA_REV- Sta.12+77.98

-Y22RPA_REV- Sta.22+41.11

-Y22RPA_REV- Sta.29+98.30

-Y22RPA_REV- Sta.37+13.41

-Y22LSLIPRPA- Sta.13+33.37

-Y22LSLIPRPA- Sta.15+22.86

-Y22LSLIPRPA- Sta.17+11.75

-Y22LSLIPRPA- Sta.25+27.77

-Y22LSLIPRPA- Sta.31+37.46

-Y22FLYCC- Sta.71+34.33

-Y22FLY1RPA-

-Y22LPA-

-Y22LPA-

-Y22FLYCC-

-Y22SLIPRPA-

-Y22SLIPRPA-

-Y22FLYCC-

-Y22FLY1RPA-

-Y22FLY1RPA-

-Y22FLY1RPA

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	22
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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NAD 83/NSRS 2011

-Y22RPE- SC Sta. 12+00.00

-Y22RPE- ST Sta. 10+00.00

-Y22FLYBD-

-Y22RPCD-

-Y22FLYBD-

-Y22RPEA-

-Y22RPE-

RETAIN PIPES AND SYSTEMS INSTALLED BY OTHERS

RETAIN PIPES AND SYSTEMS INSTALLED BY OTHERS

RETAIN SYSTEM

15:00

10:00

20:00

15:00

30:00

BEGIN PAVING ONLY
-Y22RPE- STA. 15+34.68

END PAVING ONLY
BEGIN GRADING & PAVING
-Y22RPE- STA. 26+50.00

I-42

I-42 PAVEMENT MARKINGS TO BE REVISED TO ACCOMMODATE R-2829A USING MILL & OVERLAY TO REMOVE CONFLICTING MARKINGS

NCDOT
(ROBERT BRYAN, SR)

TOE PROTECTION W/CL B RIPRAP SEE DETAIL E

-Y22RPE- POC Sta. 31+85.00 =
-Y22RPE_REV- PC Sta. 31+85.00

LANDS OF DOZIER, LEWIS & SARA

TOE PROTECTION W/CL B RIPRAP SEE DETAIL E

-Y22RPE_REV- CS Sta. 34+83.89

MATCHLINE
-Y22RPE_REV- STA.35+00
SEE SHEET 6

J. GUADALUPE GARCIA MEJIA
& LETICIA RODRIGUEZ
DB 4879 PG 934
BM 83 PG 429

NCDOT
DB 1636 PG 793
(JOHNSTON COUNTY)

NCDOT
DB 2090 PG 930
(JOHNSTON COUNTY)

NCDOT
(ROBERT BRYAN, SR)

-Y22FLYCC- (R-2828)
PI Sta 71+34.33
Δ = 29° 52' 23.5" (LT)
D = 3° 40' 22"
L = 1346.87'
T = 1125.47'
R = 1560.00'
SE = 0.06
DS = 60 MPH

-Y22RPE-	
Pts Sta 11+33.37	PI Sta 24+29.72
θs = 4° 18' 28.6"	Δ = 85° 30' 46.3" (RT)
Ls = 200.00'	D = 4° 18' 28.6"
LT = 133.37'	L = 1385.00'
ST = 66.70'	T = 1229.12'
	R = 1330.00'
	SE = 0.08
	DS = 60 MPH

-Y22RPE_REV-	
PI Sta 33+35.08	PI Sta 35+75.93
Δ = 12° 52' 33.4" (RT)	θs = 2° 17' 41.1"
D = 4° 18' 28.6"	Ls = 200.00'
L = 298.69'	LT = 108.19'
T = 150.08'	ST = 92.15'
R = 1330.00'	
SE = 0.08	
DS = 60 MPH	

PI Sta 44+16.74
Δ = 37° 09' 44.1" (RT)
D = 2° 27' 41.7"
L = 1413.96'
T = 732.85'
R = 2280.00'
SE = 0.07
DS = 65 MPH

FOR DITCH DETAILS SEE SHTS. 210-1 THRU 210-6

FOR -Y22RPE- PROFILE SEE SHT. 53
FOR -Y22RPE REV PROFILE SEE SHT. 54

GRAPHIC SCALE
50 25 0 50 100
PLANS

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PROJECT REFERENCE NO.	SHEET NO.
R-2829A	23
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/NA 2011

-Y22CR-
PI Sta 11+98.09
△ = 26° 14' 13.4" (LT)
D = 6° 44' 26.4"
L = 389.23'
T = 198.09'
R = 850.00'
SE = 0.03
DS = 30 MPH

*3
JOHN AMAN
DB 4055 PG 194 (WAKE COUNTY)
BM 1988 PG 1683 (WAKE COUNTY)
DB 6385 PG 925 (WAKE COUNTY)
BM 1994 PG 1824 (WAKE COUNTY)
DB 1058 PG 695 (JOHNSTON COUNTY)
(NCDOT- PSD MAP) 10403rwf2.psd

BEGIN CONSTRUCTION
-Y22CR- POC Sta. 11+35.00

END CONSTRUCTION
-Y22CR- POT Sta. 16+10.00

-Y22CR- PC Sta. 10+00.00

-Y22CR- PT Sta. 13+89.23

-Y22CR- POT Sta. 16+23.48

2203
LARRY WHEELER, JR.
DB 11737 PG 46
BM 2004 PG 423-424

2202
HERBERT, JR. & ELIZABETH THOMASON
DB 11990 PG 2769
BM 2004 PG 423-424

SYLVIA ALLEN
DB 13998 PG 1164
BM 2004 PG 423-424

PATRICIA & RAYFORD PAGE
DB 15059 PG 2496
BM 2004 PG 423-424

APPROX. LOCATION OF 15' DRAINAGE EASEMENT SCALED FROM BM 2004 PG 423-424

20' DRAINAGE EASEMENT BM 2004 PG 423

BYI-370

BYI-373

C700 INLET STABILIZATION
285 TONS CL II RIPRAP
W/255 SY GEOFAB
SEE DETAIL CG

C700 OUTLET STABILIZATION
325 TONS CL II RIPRAP
W/240 SY GEOFAB
SEE DETAIL CG

2 TONS CL B RIPRAP
W/7 SY GEOFAB

BEGIN PROP. SBG +00.00
-Y22CR-+85.00 50.00' LT

-Y22CR-+35.00 60.00' LT

-Y22CR-+35.00 EXIST. R/W

-Y22CR-+90.00 EXIST. R/W 115.00' LT

-Y22CR-+88.43 EXIST. R/W

REMOVE 54" CMP

END PROP. SBG +00.00

-Y22CR-+50.00 100.00' LT

-Y22CR-+70.00 90.00' LT

-Y22CR-+10.00 30.00' LT

-Y22CR-+10.00 30.00' RT

-Y22CR-+60.00 75.00' RT

-Y22CR-+75.00 90.00' RT

-Y22CR-+70.00 EXIST. R/W, 90.00', 110.00' RT

-Y22CR-+50.00 110.00' RT

-Y22CR-+26.78 29.20' RT

LATERAL V DITCH W/CL B RIPRAP SEE DETAIL AO

SPECIAL V DITCH W/CL B RIPRAP SEE DETAIL Y

SPECIAL V DITCH SEE DETAIL A

TOE PROTECTION W/CL B RIPRAP SEE DETAIL E

LATERAL V DITCH W/CL B RIPRAP SEE DETAIL AO

15" CSP W/ ELBOWS

GREU TL-2

TOE NSP

PROP. SBG

EXIST. SBG

RETAIN

Use for Erosion Control

HTR

S 61°48' 56.7" E 1500

N 68°38'11" E 225.04'

N 24°43'27" E 218.27'

S 30°01'51" E 99.22'

S 86°31'57" E 68.60'

N 67°23'08" E 306.60'

S 33°21'31" W 234.22'

N 44°29'52" E 960.03'

S 44°21'57" W 178.31'

S 43°41'42" W 233.24'

S 52°44'37" E 146.28'

S 46°50'24" E 344.59'

N 20°10'28" W 207.38'

S 47°23'34" W 207.58'

FOR DITCH DETAILS SEE SHTS. 2D-1 THRU 2D-6

* ADVANCED ACQUISITION

FOR CULVERT C700 PLANS SEE SHTS. C700-1 THRU C700-7

FOR -Y22CR- PROFILE SEE SHT. 59

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PROJECT REFERENCE NO.	SHEET NO.
R-2829A	24
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/NA 2011

*1000Z
R. GARLAND BURNETTE
DB 761 PG 365
DB 902 PG 89

*1000Z
R. GARLAND BURNETTE
DB 663 PG 79

BEGIN CONSTRUCTION
-Y23R- POT Sta. 14+32.00

-Y23R- PC Sta. 10+00.00

-Y23R- PCC Sta. 13+45.80

-Y23R- PT Sta. 15+45.09

-Y23R- PC Sta. 20+03.51

150' TAPER

600' LANE TAPER

100' TAPER

-Y23R-+82.00
116.00' LT

-Y23R-+84.00
100.00' LT

-Y23R-+03.00
118.00' LT

-Y23R-+05.00
102.00' LT

-Y23R-+94.03
83.21' LT

-Y23R-+32.00
EXIST. R/W, 60.00' LT

-Y23R-+93.85
30.00' LT

-Y23R-+77.00
100.00', 115.00' LT

-Y23R-+97.00
100.00', 115.00' LT

-Y23R-+15.94
81.85' LT

RIGHT OF WAY
RADIUS 1,595'

SPECIAL CUT
4' SWALE
SEE DETAIL O

LATERAL 4' SWALE
SEE DETAIL L

SPECIAL V DITCH
SEE DETAIL A

-Y23R-+38.19
EXIST. R/W RT

-Y23R-+59.08
EXIST. R/W RT

-Y23R-+63.00
89.00' RT

-Y23R-+43.53
91.78' RT

-Y23R-+10.00
EXIST. R/W, 86.00' RT

-Y23R-+17.81
86.00' RT

-Y23R-+68.29
90.00' RT

-Y23R-+03.51
90.00' RT

-Y23R-+00.00
90.00' RT

SP. CUT DITCH
SEE DETAIL A

SP. LATERAL V DITCH
W/CL B RIPRAP
SEE DETAIL BU

SP. LATERAL V DITCH
SEE DETAIL F

SP. CUT DITCH
SEE DETAIL A

REMOVE
18" RCP IV

WHITE OAK RD

2322 SCOTT JONES & CYNTHIA MARTIN
DB 13053 PG 2273
BM 2007 PG 2275

2321 ALLEN & DEBORAH WEATHERSPOON
DB 13166 PG 182
BM 2007 PG 2275

2320 DOREEN DICARLO
DB 13185 PG 2020
BM 2007 PG 2275

2319 CLARA JONES
DB 10181 PG 2727
DB 10622 PG 1566
WILL -E-0

GOOD SAMARITAN BAPTIST CHURCH
DB 15115 PG 216
BM 2012 PG 1359

STEPHEN & LARA BRINK
DB 13166 PG 127
BM 2007 PG 2275

KIMBERLY PARRISH
DB 16605 PG 426
BM 2007 PG 2275

CAPITAL PROPERTIES OF RALEIGH III, LLC.
DB 15417 PG 799
BM 2007 PG 2276

CARDINAL PIPELINE 50' EASEMENT
DB 8209 PG 987

CARDINAL PIPELINE 50' EASEMENT
BM 2007 PG 2276

COTTON SPINDLE

CARLEY CIR 20' BST

HARVARD CT 21' BST

266.30'
S 20°03'59" E

278.41'
S 24°51'46" E

193.59'
S 20°03'27" E

187.28'
S 21°53'38" E

252.83'
N 31°37'25" W

N 21°59'19.9" W

N 68°22'44" E 222.24'

N 73°58'39" E 99.66'

N 73°58'39" E 32.02'

N 15°01'09" E 88.56'

MATCHLINE -Y23R- STA. 23+00 SEE SHEET 25

-Y23R-

PI Sta 11+73.32	PI Sta 14+45.46	PI Sta 23+02.45
Δ = 9° 41' 40.9" (LT)	Δ = 2° 12' 24.4" (LT)	Δ = 22° 23' 48.0" (RT)
D = 2° 48' 12.7"	D = 1° 06' 26.4"	D = 3° 47' 39.9"
L = 345.80'	L = 199.29'	L = 590.25'
T = 173.32'	T = 99.66'	T = 298.94'
R = 2,043.71'	R = 5,174.21'	R = 1,510.00'
SE = EXIST.	SE = EXIST.	SE = 0.04
DS = 50 MPH	DS = 50 MPH	DS = 50 MPH

FOR DITCH DETAILS SEE SHTS. 2D-1 THRU 2D-6

* ADVANCED ACQUISITION

ALL DRIVEWAYS HAVE 16' WIDTH AND 10' RADIUS UNLESS OTHERWISE NOTED.

CONCRETE DRIVE

GRAVEL DRIVE

ALL OTHER DRIVES TO BE ASPHALT

FOR -Y23R- PROFILE SEE SHT. 55

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PROJECT REFERENCE NO.	SHEET NO.
R-2829A	25
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/NA 2011

-Y23G- PT Sta. 11+64.92

-Y23G- PC Sta. 10+45.74

-Y23G- +95.00 EXIST. R/W, 40.00' LT

-Y23G- +60.00 40.00' LT

*1000Z

600' LANE TAPER

R. GARLAND BURNETTE DB 663 PG 79

175' MEDIAN TAPER

Additional Taking for Parcel 1000

END GRADE

BEGIN OVERLAY, 3"

-Y23G- PT Sta. 12+00.00

-Y23R- +96.00 EXIST. R/W

-Y23R- +50.00 111.00' LT

-Y23R- +53.00 113.00' LT

SPECIAL V DITCH SEE DETAIL A

-Y23G- +35.00 EXIST. R/W

SPECIAL V DITCH SEE DETAIL A

PUE

SPECIAL 4' BASE DITCH SEE DETAIL AM

-Y23R- +97.28 83.89' LT

-Y23G- 15+00

N 22° 02' 16.7" W

-Y23R- PC Sta. 29+23.10

MATCHLINE -Y23G- STA. 16+00 SEE SHEET 11

-Y23R- +24.00 190.00' LT

-Y23R- +47.00 192.00' LT

-Y23R- +50.00 178.00' LT

-Y23R- +29.38 EXIST. R/W LT

-Y23R- PT Sta. 25+93.76

S 89° 40' 38.9" W

END CA

END FENCE

-Y23R- +29.38 135.00' LT

-Y23R- +26.00 175.00' LT

-Y23R- +23.10 135.00' LT

PROP. WW FENCE

-Y23R- +23.00 204.00' LT

-Y23R- +22.00 189.00' LT

-Y23R- +46.00 189.00' LT

-Y23R- +47.00 204.00' LT

HW

-Y23R- +62.00 169.04' LT

-Y23R- +71.94 135.00' LT

SPECIAL 4' BASE DITCH SEE DETAIL AD

SP. CUT 4' BASE DITCH W/CL I RIPRAP SEE DETAIL AC

2 TONS CL B RIPRAP W/7 SY GEOFAB

MATCHLINE -Y23R- STA. 23+00 SEE SHEET 24

24" RCP-III (NOT BURIED)

REMOVE

TEMP RW 0A2

TBDI 25+00

-Y23R-

ROW R=1430'

-Y23R- +33.54 96.58' RT

-Y23R- +35.00 90.00' RT

-Y23R- +09.25 81.05' RT

-Y23R- +56.89 80.78' RT

SP. CUT DITCH SEE DETAIL A

TDE

SP. CUT DITCH SEE DETAIL A

PDE

15 TONS CL B RIPRAP W/14 SY GEOFAB

STD. 4' BASE DITCH SEE DETAIL I

-Y23DR- +17.32 75.00' RT

-Y23DR- +30.88 60.02' RT

2 TONS CL B RIPRAP W/7 SY GEOFAB

-Y23R- +10.92 90.00' RT

-Y23R- +45.00 165.00' RT

-Y23R- +20.00 155.00' RT

Additional Taking for Parcel 1002

-Y23R- +62.03 76.52' RT

-Y23DR- +63.01 61.57' RT

SP. CUT DITCH SEE DETAIL A

-Y23R- POC Sta. 25+72.72=

-Y23DR- POT Sta. 10+00.00=

-Y23G- POT Sta. 10+00.00

S 53°26'00" W 558.36'

2319

CLARA JONES DB 10181 PG 2727 DB 10622 PG 1566 WILL -E-0

*1002Z

R. G. (GARLAND) & ETHEL BURNETTE DB 761 PG 365 BM 2009 PG 198-199 FOR CREEK LOCATION

ROW R=510'

-Y23DR- +94.08 86.25' RT

SP. CUT DITCH SEE DETAIL A

-Y23DR- +93.19 76.16' RT

MATCHLINE -Y23DR- STA. 14+00 SEE SHEET 28

WHITE OAK RD

SR 2700 WHITE OAK RD 24' BST

N 0° 24' 28.1" E

PROP. MONO. ISLAND

50.00' TYP

-Y23R- +88.27

30+00

SPECIAL V DITCH SEE DETAIL A BEG CA

BEGIN FENCE

-Y23R- +29.38 110.00' RT

2 TONS CL B RIPRAP W/7 SY GEOFAB

-Y23DR- PC Sta. 11+26.30

PROP. WW FENCE

-Y23R- +23.10 110.00' RT

100' TAPER

+50.00

-Y23DR-

BERM V DITCH SEE DETAIL AX

*1002Z

NCDOT

(R. G. (GARLAND) & ETHEL BURNETTE)

SP. CUT 4' BASE DITCH SEE DETAIL AM

35" RCP-III (NOT BURIED FOR MAINT.)

100' TAPER

+00.00

35+00

PROP. MONO. ISLAND

-Y23R-

15" RCP-III

2 TONS CL B RIPRAP W/7 SY GEOFAB

PROP. 10' MUP

2'-6" C&G

BEGIN MUP +00.00

-Y23R- +65.00 110.00' RT

LATERAL 4' BASE DITCH W/CL I RIPRAP SEE DETAIL N

-Y23R- +25.00 150.00' RT

-Y23R- +00.00 150.00' RT

-Y23R- +00.00 165.00' RT

-Y23R- +20.00 155.43' RT

-Y23R- +00.00 180.00' RT

-Y23R- +75.00 110.00' RT

MATCHLINE -Y23G- STA. 36+00 SEE SHEET 11

MATCHLINE SEE SHEET 28

-Y23R-		-Y23DR-	-Y23G-
PI Sta 23+02.45	PI Sta 40+50.65	PI Sta 16+99.11	PI Sta 11+13.56
△ = 22° 23' 48.0" (RT)	△ = 65° 35' 19.0" (LT)	△ = 99° 29' 26.7" (LT)	△ = 68° 17' 04.4" (RT)
D = 3° 47' 39.9"	D = 3° 16' 26.6"	D = 11° 48' 48.8"	D = 57° 17' 44.8"
L = 590.25'	L = 2,003.29'	L = 842.17'	L = 119.18'
T = 298.94'	T = 1,127.55'	T = 572.81'	T = 67.81'
R = 1,510.00'	R = 1,750.00'	R = 485.00'	R = 100.00'
SE = 0.04	SE = 0.04	SE = 0.06	SE = 0.03
DS = 50 MPH	DS = 50 MPH	DS = 40 MPH	DS = STOP CONDITION

FOR DITCH DETAILS SEE SHTS. 2D-1 THRU 2D-6

FOR INTERSECTION DETAIL SEE SHT. 2B-9

* ADVANCED ACQUISITION

FOR -Y23R- PROFILE SEE SHT. 55

FOR -Y23DR- PROFILE SEE SHT. 62

FOR -Y23G- PROFILE SEE SHT. 64

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dbrooks

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	26
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/NA 2011

-Y23CR_REV-

PI Sta 11+29.17	PI Sta 13+07.03	PI Sta 14+49.90
△ = 9° 55' 30.8" (LT)	△ = 7° 03' 26.4" (LT)	△ = 6° 27' 34.7" (LT)
D = 3° 51' 05.5"	D = 7° 09' 43.1"	D = 3° 27' 06.1"
L = 257.70'	L = 98.54'	L = 187.14'
T = 129.17'	T = 49.33'	T = 93.67'
R = 1,487.61'	R = 800.00'	R = 1,659.93'
SE = EXIST.	SE = EXIST.	SE = EXIST.
DS = 30 MPH	DS = 30 MPH	DS = 30 MPH

-Y23R-

PI Sta 6I+89.66
△ = 7° 43' 39.4" (LT)
D = 1° 25' 56.6"
L = 539.49'
T = 270.15'
R = 4,000.00'
SE = 0.03
DS = 50 MPH

-Y23FR-

PI Sta 15+47.10	PI Sta 17+87.02
△ = 59° 12' 59.9" (LT)	△ = 11° 51' 08.4" (RT)
D = 26° 38' 57.1"	D = 12° 52' 31.6"
L = 222.21'	L = 92.05'
T = 122.18'	T = 46.19'
R = 215.00'	R = 445.00'
SE = EXIST.	SE = EXIST.
DS = 25 MPH	DS = 25 MPH

MATCHLINE -Y23FR- STA. 15+00 SEE SHEET 31

MATCHLINE -Y23R- STA. 53+00 SEE SHEET 11

MATCHLINE -Y23R- STA. 62+00 SEE SHEET 27

MATCHLINE -Y23CR_REV- STA. 14+80 SEE SHEET 32

WHITE OAK RD

RAYNOR RD

-Y23FR- PT Sta. 16+47.13

-Y23FR- PT Sta. 18+32.88

-Y23FR- PC Sta. 17+40.83

END REMOVE & REPLACE WITH 8" ABC -Y23FR- Sta. 18+23.66

-Y23FR- Sta. 18+72.10

-Y23R- PC Sta. 59+19.50

BEGIN MILL & FILL -Y23CR_REV- PT Sta. 10+31.84

-Y23CR_REV- PC Sta. 10+00.00

-Y23CR_REV- PCC Sta. 12+57.70

-Y23CR_REV- PCC Sta. 13+56.23

N 33° 05' 18.4" E

N 65° 10' 50.9" W -Y23R-

2310 SDO INVESTMENTS, LLC. DB 13592 PG 1766 BM 2004 PG 1133 BM 2005 PG 470

2309 TIM FOWLER DB 16850 PG 834 BM 2005 PG 470 BM 1997 PG 44 2616

2308 SCOTT PEACOCK, SYLVIA MATHEWS, & STEPHEN PEACOCK WILL 13-E-265 DB 1996 PG 594 BM 2004 PG 1133 BM 2005 PG 470

2313 MOUNT HERMAN CHRISTIAN CHURCH DB 2114 PG 1 DB 1709 PG 389 BM 1985 PG 1106

*2312 DELLA & PHILLIP PARRISH WILL 14-E-207 DB 5160 PG 139

2314 PROPERTIES GROUP INC 8256 PG 2088 1996 PG 300

175' MEDIAN TAPER (LT & RT)

100' TAPER

PROP. WW FENCE

PROP. MONO. ISLAND

PROP. 10' MUP

MUP BY OTHERS

40 TONS CL I RIPRAP W/75 SY GEOFAB OUTLET CHANNEL STABILIZATION W/CL I RIPRAP SEE DETAIL AL

CUT/FILL TRANSITION 1 TON CL B RIPRAP W/5 SY GEOFAB

8 TONS CL B RIPRAP W/21 SY GEOFAB

2 TONS CL B RIPRAP W/7 SY GEOFAB

3 TON CL B RIPRAP W/10 SY GEOFAB

STOE PROTECTION W/CL B RIPRAP SEE DETAIL E

LATERAL 4' BASE DITCH SEE DETAIL C

LATERAL V DITCH SEE DETAIL B

LATERAL 4' BASE SWALE SEE DETAIL L

STD 4' BASE DITCH W/CL I RIPRAP SEE DETAIL AK

SP. BACK OF CURB DITCH SEE DETAIL BY

SP. BACK OF CURB DITCH W/CL B RIP RAP SEE DETAIL BX

STANDARD V DITCH SEE DETAIL AF

TIE TO EXSTING CURB & SIDEWALK +09.21

CONV. DETR TBDI (TEMP07) TO JB W/SLAB LID

GRADE TO DRAIN

REMOVE/CB & 24"

REMOVE SYSTEM

REMOVE EX. DI BEGIN C/A TB JB w/MH

ADJUST DI

CONV. DI TO JB W/MH

CONV. CB TO DI

CONV. CB TO JB W/MH

CB-E

CB-F

CB-I

CB-J

HW

END C/A

END CA END FENCE

CITY OF RALEIGH WATER EASEMENT

CEMETERY

ALL DRIVEWAYS HAVE 16' WIDTH AND 10' RADIUS UNLESS OTHERWISE NOTED.

CONCRETE DRIVE

GRAVEL DRIVE

ALL OTHER DRIVES TO BE ASPHALT

FOR -Y23DETR- SEE SHT. 2B-5
FOR -Y23DETR_2 SEE SHT. 2B-6

FOR DITCH DETAILS SEE SHTS. 2D-1 THRU 2D-6

* ADVANCED ACQUISITION

FOR -Y23R- PROFILE SEE SHT. 56
FOR -Y23CR_REV- PROFILE SEE SHT. 61

Extended the multi-use path on White Oak Road to the developers multi-use path.

Extended the curb & gutter on White Oak Road to minimize impacts to the church.

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TRAFFIC DIAGRAM

ADT 2023
ADT 2043

WHITE OAK RD.

10,590
23,690

100 / 100 — 1,770 / 2,070

100 / 100 TIFFANY CREEK DR — RAYNOR ROAD 6,660 / 7,060

100 / 100 — 4,890 / 4,990

13,710
26,610

WHITE OAK RD.

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	27
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MATCHLINE -Y23AR- STA. 17+00 SEE SHEET 31

MATCHLINE -Y23R- STA. 62+00 SEE SHEET 26

MATCHLINE -Y23BR_REV- STA. 14+00 SEE SHEET 32

NAD 83/NA 2011

END CONSTRUCTION
-Y23R- POC Sta. 71+70.00

WHITE OAK RD

-Y23AR- PC Sta. 17+03.83

-Y23AR- PT Sta. 19+41.40

-Y23R- PC Sta. 69+10.92

-Y23R- PT Sta. 64+58.99

-Y23R- PT Sta. 69+00.00

-Y23R- PT Sta. 71+89.40

-Y23R- POT Sta. 72+11.63

-Y23R- POC Sta. 63+83.23=
-Y23BR_REV- POT Sta. 10+00.00=
-Y23AR- POT Sta. 20+33.10

END OVERLAY, 3"

END GRADE
BEGIN OVERLAY, 3"
-Y23R- PT Sta. 68+50.00

CLEAR TO R/W LINE IN THIS AREA FOR SIGHT DISTANCE

Revised new location Raynor Road to minimize impacts to the church.

-Y23AR-	-Y23R-	
PI Sta 18+27.39	PI Sta 61+89.66	PI Sta 70+50.17
Δ = 38° 53' 26.3" (RT)	Δ = 1° 43' 39.4" (LT)	Δ = 1° 58' 53.5" (RT)
D = 16° 22' 12.8"	D = 1° 25' 56.6"	D = 0° 42' 41.6"
L = 237.57'	L = 539.49'	L = 278.48'
T = 123.57'	T = 270.15'	T = 139.25'
R = 350.00'	R = 4,000.00'	R = 8,052.22'
SE = 0.04	SE = 0.03	SE = EXIST.
DS = 30 MPH	DS = 50 MPH	DS = EXIST.

FOR DITCH DETAILS SEE SHTS. 2D-1 THRU 2D-6

FOR INTERSECTION DETAIL SEE SHT. 2B-9

▨ PROPOSED SIGNAL POLES

* ADVANCED ACQUISITION

FOR -Y23R- PROFILE SEE SHT. 56
FOR -Y23AR- PROFILE SEE SHT. 60
FOR -Y23BR_REV- PROFILE SEE SHT. 60

ALL DRIVEWAYS HAVE 16' WIDTH AND 10' RADIUS UNLESS OTHERWISE NOTED.

CONCRETE DRIVE

GRAVEL DRIVE

ALL OTHER DRIVES TO BE ASPHALT

★ PROPOSED TRAFFIC SIGNAL

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PROJECT REFERENCE NO.	SHEET NO.
R-2829A	28
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/NA 2011

MATCHLINE -Y23DR- STA. 14+00 SEE SHEET 25

MATCHLINE SEE SHEET 25

MATCHLINE -Y23DR- STA. 27+00 SEE SHEET 29

-Y23DR- PC Sta. 26+39.16

-Y23DR- PT Sta. 19+68.47

-Y23DR- N 10° 11' 58.8" W

*1002Z
NCDOT
(R. G. (GARLAND) & ETHEL BURNETTE)

2339
CLARENCE, JR. & SAMANTHA BOYD
DB 3127 PG 6
BM 1983 PG 398

2340
JOHN CAVINESS
DB 10713 PG 175
BM 1986 PG 1207

2341
JOHN & DIANE CAVINESS
DB 11876 PG 255
BM 1986 PG 1207

*10022
R. G. (GARLAND) & ETHEL BURNETTE
DB 761 PG 365
BM 2009 PG 198-199 FOR CREEK LOCATION

Additional Taking for Parcel 1002

Additional Taking for Parcel 1002

DRAIN POND (SEE POND DRAINAGE PLANS)

POND WSE=XXX.X

BERM V DITCH SEE DETAIL AX

SPECIAL V DITCH SEE DETAIL A

SPECIAL CUT DITCH SEE DETAIL A

SPECIAL CUT DITCH SEE DETAIL A

SP. CUT 4' SWALE SEE DETAIL O

SPECIAL V DITCH SEE DETAIL A

SPECIAL 4' BASE DITCH W/CL B RIP RAP SEE DETAIL Z

STD. 4' BASE DITCH SEE DETAIL I

STANDARD 4' BASE DITCH W/CL I RIPRAP SEE DETAIL AK

SP. BASE 4' DITCH W/CL I RIPRAP SEE DETAIL AC

LATERAL 4' BASE DITCH W/CL I RIPRAP SEE DETAIL N

CHANNEL CHANGE W/CL I RIPRAP SEE DETAIL AG

LATERAL 4' BASE DITCH W/CL I RIPRAP SEE DETAIL N

TCE R=575' LINE END OF STD. DITCH W/ CL B RIPRAP SEE DETAIL AJ

3 TONS CL B RIPRAP W/10 SY GEOFAB

2805 BDO

2807 2GIB-WSS

2806

2808 BDO

2809

2801 HW

2802 2GIB-NSF

2803 2GIB NSF

2804

ROW R=510'

15+00

20+00

25+00

16.67' TYP.

-Y23DR- + 41.89 77.75' RT

-Y23DR- + 40.74 142.74' RT

-Y23R- + 30.00 79.13', 144.13' RT

-Y23R- + 70.00 79.10', 144.10' RT

-Y23DR- + 36.88 78.15' RT

-Y23DR- + 37.86 143.14' RT

-Y23DR- + 85.49 76.75' RT

-Y23DR- + 84.49 87.20' RT

-Y23DR- + 13.77 78.11' RT

-Y23DR- + 31.75 61.57' RT

-Y23DR- + 16.57 128.00' RT

-Y23DR- + 35.65 126.40' RT

-Y23DR- + 78.24 75.00', 125.00' RT

-Y23DR- + 21.62 261.23' LT

-Y23DR- + 65.00 240.00' LT

-Y23DR- + 70.00 140.00' LT

-Y23DR- + 91.66 111.60' LT

-Y23DR- + 88.10 93.81' LT

-Y23DR- + 39.16 100.00' LT

-Y23DR- + 45.34 75.00' RT

-Y23DR- + 58.31 55.00' RT

-Y23DR- + 45.00 55.00' RT

-Y23DR- + 39.16 55.00' RT

-Y23DR- + 53.07 81.14' RT

-Y23DR- + 57.35 60.00' RT

-Y23DR- + 10.00 55.00', 75.00', 105.00' RT

-Y23DR- + 85.00 115.00' RT

-Y23DR- + 28.24 60.00', 75.00', 110.00' RT

-Y23DR- + 10.00 100.00' RT

BEGIN PROP. SBG + 50.00

END PROP. SBG + 50.00

END PROP. SBG + 89.15

LATERAL 4' BASE DITCH W/CL I RIPRAP SEE DETAIL N

FILL IN ABANDONED CHANNEL

RIGHT OF WAY RADIUS 815'

REMOVE EXIST. PIPE

15" CSP W/ELBOWS

18" RCP

18" CSP W/ELBOWS

GREU TL-2

CAT-1

8:1

3.67%

2.5%

N 89°58'36" W 10.39

N 39°23'24" W 27.33

N 00°42'23" E 180.16

N 36°42'23" E 180.85

N 00°42'23" E 391.55

-Y23DR-

PI Sta 16+99.11	PI Sta 29+01.37
△ = 99° 29' 26.7" (LT)	△ = 38° 04' 14.6" (LT)
D = 11° 48' 48.8"	D = 7° 32' 20.1"
L = 842.17'	L = 504.99'
T = 572.81'	T = 262.21'
R = 485.00'	R = 760.00'
SE = 0.06	SE = 0.06
DS = 40 MPH	DS = 40 MPH

FOR DITCH DETAILS SEE SHTS. 2D-1 THRU 2D-6

* ADVANCED ACQUISITION

FOR -Y23DR- PROFILE SEE SHT. 62

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PROJECT REFERENCE NO.	SHEET NO.
R-2829A	29
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/NA 2011

MATCHLINE -Y23J- STA. 12+00 SEE SHEET 11

MATCHLINE -Y23DR- STA. 27+00 SEE SHEET 28

MATCHLINE -Y23DR- STA. 37+00 SEE SHEET 11

2318 DONALD & KAY DEAN DB 3717 PG 70 BM 1983 PG 398

2339 CLARENCE, JR. & SAMANTHA BOYD DB 3127 PG 6 BM 1983 PG 398

2340 JOHN CAVINESS DB 10713 PG 175 BM 1986 PG 1207

2341 JOHN & DIANE CAVINESS DB 11876 PG 255 BM 1986 PG 1207

2342 RIC & DAWN SWANINGSON DB 16517 PG 1122 BM 2012 PG 961

2343 STEVEN & ANNE TRUELOVE DB 15410 PG 622 BM 2012 PG 961

*1003Z NCDOT (ELIZABETH BURNETTE)

*1003Z ELIZABETH BURNETTE DB 2280 PG 301

-Y23J- PT Sta. 13+55.04

-Y23J- PCC Sta. 15+18.98

-Y23DR- POC Sta. 29+12.33= -Y23J- POC Sta. 15+48.50

-Y23DR- POC Sta. 28+54.56= -DR4- POT Sta. 10+00.00

END OVERLAY, 3" BEGIN GRADE -Y23J- POC Sta. 13+80.00

-Y23DR- PT Sta. 31+44.15

30+00 -Y23DR- POC Sta. 29+11.33= -DR3- POT Sta. 10+00.00

-DR4- PC Sta. 10+62.83

-DR3- PC Sta. 10+24.85

-DR3- PT Sta. 11+22.13

-DR4- PC Sta. 11+91.30

-DR3- POT Sta. 12+20.17

-DR4- PC Sta. 12+65.00

-Y23DR- PC Sta. 35+90.13

END CONSTRUCTION -DR3- POT Sta. 12+10.00

END CONSTRUCTION -DR4- POT Sta. 12+50.00

Additional Taking for Parcel 1003

S 89° 05' 14.1" E

S 82° 51' 15.1" E

N 74° 16' 52.8" E

N 48° 16' 13.4" W

N 63° 07' 39.2" E

S 00° 41' 29" W 386.29'

N 00° 42' 23" E 100.13'

20 TONS CL I RIPRAP W/39 SY GEOFAB INLET CHANNEL STABILIZATION W/CL I RIPRAP SEE DETAIL AL

OUTLET CHANNEL STABILIZATION W/CL I RIPRAP SEE DETAIL AL 33 TONS CL I RIPRAP W/60 SY GEOFAB

STANDARD V DITCH SEE DETAIL BL

SPECIAL V DITCH SEE DETAIL N

LATERAL 4' BASE DITCH W/CL I RIPRAP SEE DETAIL N

LATERAL 4' BASE DITCH W/CL I RIPRAP SEE DETAIL H

SPECIAL CUT 4' SWALE SEE DETAIL O

SPECIAL V DITCH W/CL B RIPRAP SEE DETAIL Y

TOE PROTECTION W/CL B RIPRAP SEE DETAIL E

DUE TO CLEARZONE PULL IN RIPRAP TO BASE OF CHANNEL 36+00 TO 36+25 RT

REMOVE

RIGHT OF WAY RADIUS 820'

-DR3-	-DR4-	-Y23DR-		-Y23J-	
PI Sta 10+73.64	PI Sta 11+27.56	PI Sta 29+01.37	PI Sta 40+37.34	PI Sta 14+37.02	PI Sta 15+33.76
Δ = 11° 08' 53.6" (LT)	Δ = 17° 19' 10.9" (LT)	Δ = 38° 04' 14.6" (LT)	Δ = 60° 56' 53.0" (RT)	Δ = 2° 20' 18.8" (LT)	Δ = 7° 30' 23.7" (LT)
D = 11° 27' 33.0"	D = 13° 28' 52.9"	D = 7° 32' 20.1"	D = 7° 32' 20.1"	D = 1° 25' 35.3"	D = 25° 25' 37.9"
L = 97.29'	L = 128.47'	L = 504.99'	L = 808.45'	L = 163.94'	L = 29.52'
T = 48.80'	T = 64.73'	T = 262.21'	T = 447.21'	T = 81.98'	T = 14.78'
R = 500.00'	R = 425.00'	R = 760.00'	R = 760.00'	R = 4,016.64'	R = 225.33'
		SE = 0.06	SE = 0.06	SE = EXIST.	SE = EXIST.
		DS = 40 MPH	DS = 40 MPH	DS = EXIST.	DS = EXIST.

FOR DITCH DETAILS SEE SHTS. 2D-1 THRU 2D-6

FOR INTERSECTION DETAIL SEE SHT. 2B-10

* ADVANCED ACQUISITION

FOR -Y23DR- PROFILE SEE SHT. 62
FOR -Y23J- PROFILE SEE SHT. 64
FOR -DR3- PROFILE SEE SHT. 64
FOR -DR4- PROFILE SEE SHT. 59

ALL DRIVEWAYS HAVE 16' WIDTH AND 10' RADIUS UNLESS OTHERWISE NOTED.

CONCRETE DRIVE

GRAVEL DRIVE

ALL OTHER DRIVES TO BE ASPHALT

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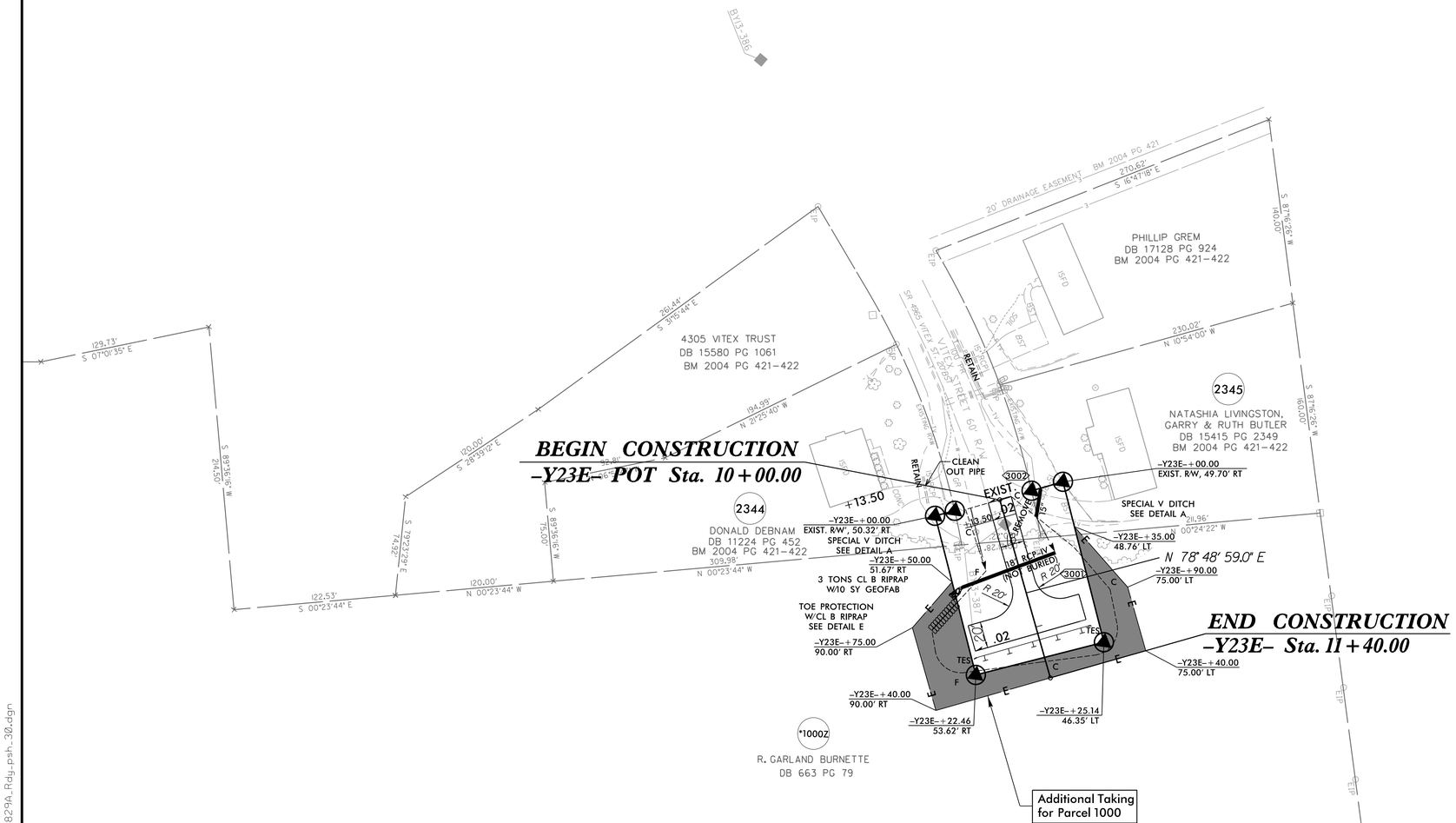
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8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	30
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/NA 2011


BY13-386
4305 VITEX TRUST
DB 15580 PG 1061
BM 2004 PG 421-422
261.44'
S 31°15'44" E
194.99'
N 21°25'40" W
120.00'
S 28°39'12" E
129.73'
S 01°01'35" E
S 89°36'16" W
124.50'
S 79°27'39" E
74.92'
S 89°36'16" W
75.00'
122.53'
S 00°23'44" E
120.00'
N 00°23'44" W
309.98'
N 00°23'44" W
20' DRAINAGE EASEMENT BM 2004 PG 421
270.62'
S 16°47'18" E
PHILLIP GREM
DB 17128 PG 924
BM 2004 PG 421-422
S 87°36'26" W
140.00'
230.02'
N 10°54'00" W
S 87°36'26" W
160.00'
2345
NATASHIA LIVINGSTON,
GARRY & RUTH BUTLER
DB 15415 PG 2349
BM 2004 PG 421-422
SR 4885 VITEX ST (PVT)
VARIABLE WIDTH R/W
RETAIN
CLEAN OUT PIPE
3002
EXIST
-Y23E- + 00.00
EXIST. R/W, 49.70' RT
SPECIAL V DITCH
SEE DETAIL A
N 00°24'22" W
211.96'
-Y23E- + 35.00
48.76' LT
-Y23E- + 90.00
75.00' LT
N 78° 48' 59.0" E
-Y23E- + 40.00
75.00' LT
END CONSTRUCTION
-Y23E- Sta. 11 + 40.00
BEGIN CONSTRUCTION
-Y23E- POT Sta. 10 + 00.00
+13.50
2344
DONALD DEBNAM
DB 11224 PG 452
BM 2004 PG 421-422
-Y23E- + 00.00
EXIST. R/W, 50.32' RT
SPECIAL V DITCH
SEE DETAIL A
-Y23E- + 50.00
51.67' RT
3 TONS CL B RIPRAP
W/10 SY GEOFAB
TOE PROTECTION
W/CL B RIPRAP
SEE DETAIL E
-Y23E- + 75.00
90.00' RT
-Y23E- + 40.00
90.00' RT
-Y23E- + 22.46
53.62' RT
-Y23E- + 25.14
46.35' LT
*1000Z
R. GARLAND BURNETTE
DB 663 PG 79
Additional Taking
for Parcel 1000
3001
R 20
17.20'
387
RCP IV
BURIED
(NO
END)
TES
TES
02
02
SHRUB
SHRUB
ISFD
ISFD
CONC
CONC
GP
GP
BP
BP
EIP
EIP
EI

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PROJECT REFERENCE NO.	SHEET NO.
R-2829A	31
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/NA 2011

BEGIN CONSTRUCTION
-Y23AR- POT Sta. 10+08.51
-Y23AR- POT Sta. 10+00.00 =
-Y23K- POT Sta.13+03.08

BEGIN CONSTRUCTION
-Y23H- POT STA. 10+30.00
-Y23H- POT Sta. 10+00.00

-Y23K- POT Sta. 10+00.00

MATCHLINE -Y23AR- STA. 17+00 SEE SHEET 27

MATCHLINE -Y23FR- STA. 15+00 SEE SHEET 26

-Y23H- PC Sta. 11+02.79
-Y23H- PT Sta. 12+05.14
-Y23AR- PT Sta. 14+38.83
-Y23AR- POC Sta.12+97.86
-Y23FR- POT Sta. 10+00.00
-Y23AR- PC Sta. 12+81.50
-Y23AR- POT Sta.16+12.55=
-Y23H- POT Sta. 12+30.19
-Y23FR- PC Sta.14+24.92
END GRADE
BEGIN REMOVE & REPLACE WITH 8" ABC
-Y23FR- PT STA.14+20.00

-Y23AR-	-Y23H-	-Y23FR-
PI Sta 13+61.52	PI Sta 11+54.69	PI Sta 15+47.10
Δ = 25° 45' 22.5" (LT)	Δ = 23° 27' 28.1" (LT)	Δ = 59° 12' 59.9" (LT)
D = 16° 22' 12.8"	D = 22° 55' 05.9"	D = 26° 38' 57.1"
L = 157.34'	L = 102.35'	L = 222.21'
T = 80.02'	T = 51.90'	T = 122.18'
R = 350.00'	R = 250.00'	R = 215.00'
SE = 0.04	SE = RC	SE = EXIST.
DS = 30 MPH	DS = STOP CONDITION	DS = 25 MPH

ALL DRIVEWAYS HAVE 16' WIDTH AND 10' RADIUS UNLESS OTHERWISE NOTED.
CONCRETE DRIVE
GRAVEL DRIVE
ALL OTHER DRIVES TO BE ASPHALT

FOR DITCH DETAILS SEE SHTS. 2D-1 THRU 2D-6
FOR INTERSECTION DETAIL SEE SHT. 2B-10
FOR -Y23AR- PROFILE SEE SHT. 60
FOR -Y23FR- PROFILE SEE SHT. 63
FOR -Y23H- PROFILE SEE SHT. 64

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PROJECT REFERENCE NO.	SHEET NO.
R-2829A	32
R/W SHEET NO.	___
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/NA 2011

-Y23BR_REV PC Sta. 15+67.96

-Y23BR_REV-+67.96 75.00' LT

SPECIAL A DITCH SEE DETAIL

300' TAPER

-Y23BR_REV-+67.96 75.00' RT

MATCHLINE -Y23BR_REV- STA. 14+00 SEE SHEET 27

-Y23BR_REV-

-Y23CR_REV-

PI Sta 14+49.90	PI Sta 23+62.99
△ = 6° 27' 34.7" (LT)	△ = 57° 35' 31.1" (LT)
D = 3° 27' 06.1"	D = 22° 55' 05.9"
L = 187.14'	L = 251.29'
T = 93.67'	T = 137.42'
R = 1,659.93'	R = 250.00'
SE = EXIST.	SE = 0.04
DS = 30 MPH	DS = 30 MPH

-SWI-

PI Sta 12+65.06	PI Sta 16+04.28
△ = 0° 16' 05.3" (RT)	△ = 2° 58' 43.2" (RT)
D = 0° 37' 42.9"	D = 1° 03' 11.6"
L = 42.66'	L = 282.81'
T = 21.33'	T = 141.44'
R = 9,115.00'	R = 5,440.00'

-Y23BR_REV-

PI Sta 20+98.79	PI Sta 11+26.78	PI Sta 13+33.81
△ = 59° 26' 04.2" (RT)	△ = 53° 46' 49.0" (LT)	△ = 2° 03' 56.0" (RT)
D = 6° 09' 39.0"	D = 22° 55' 05.9"	D = 1° 02' 30.3"
L = 964.71'	L = 234.66'	L = 198.28'
T = 530.83'	T = 126.78'	T = 99.15'
R = 930.00'	R = 250.00'	R = 5,500.00'
SE = 0.04	SE = .02*	SE = 0.04
DS = 50 MPH	DS = 30 MPH	DS = 30 MPH

-Y23CR_A-

-Y23BR_RAB-

PI Sta 10+00.00
△ = 360° 00' 00.0" (LT)
D = 100° 31' 08.1"
L = 358.14'
T = 0.00'
R = 57.00'
SE = 0.02*
DS = 20 MPH (RAB CONDITION)

Revised new location Raynor Road to eliminate impacts to the church septic field.

Added roundabout.

2306 CLEMENTS FAMILY FARMS, LLC DB 17341 PG 2345 BM 1972 PG 500

2313 MOUNT HERMAN CHRISTIAN CHURCH DB 2114 PG 401 DB 1709 PG 389 BM 1985 PG 1106

2329 LINWOOD RHODES WILL 16-E-3152 DB 3297 PG 645 BM 1984 PG 755

2330 TRUST OF ELMO WILLIAMS DB 10404 PG 1591 BM 1972 PG 500 BM 1984 PG 755

2331 SALLE ALVAREZ & GABRIELA TORRES DB 17032 PG 2311 BM 1972 PG 500

2332 NANCY EATMON WILL 11-E-17 DB 2251 PG 99 BM 1968 PG 196

2314 CLAYTON PROPERTIES GROUP INC DB 18256 PG 2088 BM 1996 PG 300

SPECIAL CUT DITCH W/ CL B RIP RAP SEE DETAIL Y

SPECIAL CUT DITCH SEE DETAIL A

-Y23BR_REV-+50.00 75.00' LT

-Y23BR_REV-+97.00 79.88' LT

-Y23BR_REV-+21.00 212.00' LT

LINE END OF STD DITCH W/ CL I RIPRAP SEE DETAIL AJ

-Y23BR_REV-+45.00 206.00' LT

-Y23BR_REV-+27.00 84.37' LT

STD 4' BASE DITCH SEE DETAIL I

5 TONS CL B RIPRAP W/14 SY GEOFAB

SPECIAL CUT DITCH SEE DETAIL A

-Y23BR_REV-+00.00 100.00' LT

BEGIN -Y23BR_RAB- PC Sta. 10+00.00

END -Y23BR_RAB- PT Sta. 13+58.14

-Y23BR_REV- PT Sta. 25+32.67

-Y23BR_REV-+50.00 75.00' RT

SPECIAL CUT DITCH W/PSRM SEE DETAIL BZ

-Y23CR_REV- PT Sta. 24+76.86

-Y23CR_A- PC Sta. 10+00.00

-Y23CR_REV-+00.00 90.00' LT

-Y23CR_A- PC Sta. 11+20.55

-Y23CR_A-+00.00 55.00' LT

-Y23CR_REV-+54.48 57.59' LT

-Y23CR_REV-+25.57 40.00' LT

-Y23CR_A-+98.96 55.00' RT

-Y23CR_A-+35.00 80.00' RT

-SWI- PC Sta. 14+62.84

-Y23CR_A-+95.00 EXIST. R/W

-Y23CR_A-+65.00 90.00', 105.00' RT

-Y23CR_A-+45.00 90.00', 105.00' RT

-Y23CR_REV-+15.00 EXIST. R/W

-SWI- PT Sta. 12+86.39

-SWI- PC Sta. 12+43.73

-Y23CR_REV-+15.00 57.00', 72.00' LT

-Y23CR_REV-+93.00 56.00', 72.00' LT

-Y23CR_REV-+00.00 EXIST. R/W, 40.00' LT

-Y23CR_REV-+75.00 47.00', 62.00' LT

-Y23CR_REV-+55.00 EXIST. R/W, 60.00' LT

RAYNOR RD

-Y23CR_REV-+00.00 45.00' RT

-Y23CR_REV-+50.00 45.00' RT

-Y23CR_REV-+70.00 EXIST. R/W

TIE TO EXISTING C&G

-SWI- POT Sta. 10+00.00

END CONSTRUCTION -SWI- PC Sta. 12+00.00

-Y23CR_REV- PC Sta. 22+25.57

END MILL & FILL BEGIN GRADE -Y23CR_REV- PT Sta. 19+00.00

BEGIN CONSTRUCTION -SWI- PC Sta. 10+65.00

-Y23CR_REV- PT Sta. 15+43.38

MATCHLINE -SWI- STA. 13+00 SEE SHEET 33

MATCHLINE -Y23CR_A- STA. 14+80 -Y23CR_REV- STA. 26 SEE SHEET 26

ALL DRIVEWAYS HAVE 16' WIDTH AND 10' RADIUS UNLESS OTHERWISE NOTED.

CONCRETE DRIVE

GRAVEL DRIVE

ALL OTHER DRIVES TO BE ASPHALT

FOR DITCH DETAILS SEE SHTS. 2D-1 THRU 2D-6

FOR INTERSECTION DETAIL SEE SHT. 2B-13

FOR -Y23BR_REV- PROFILE SEE SHTS. 60 THRU 61

FOR -Y23CR_REV- PROFILE SEE SHT. 61

FOR -Y23CR_A- PROFILE SEE SHT. 61

FOR -Y23BR_RAB- PROFILE SEE SHT. 80

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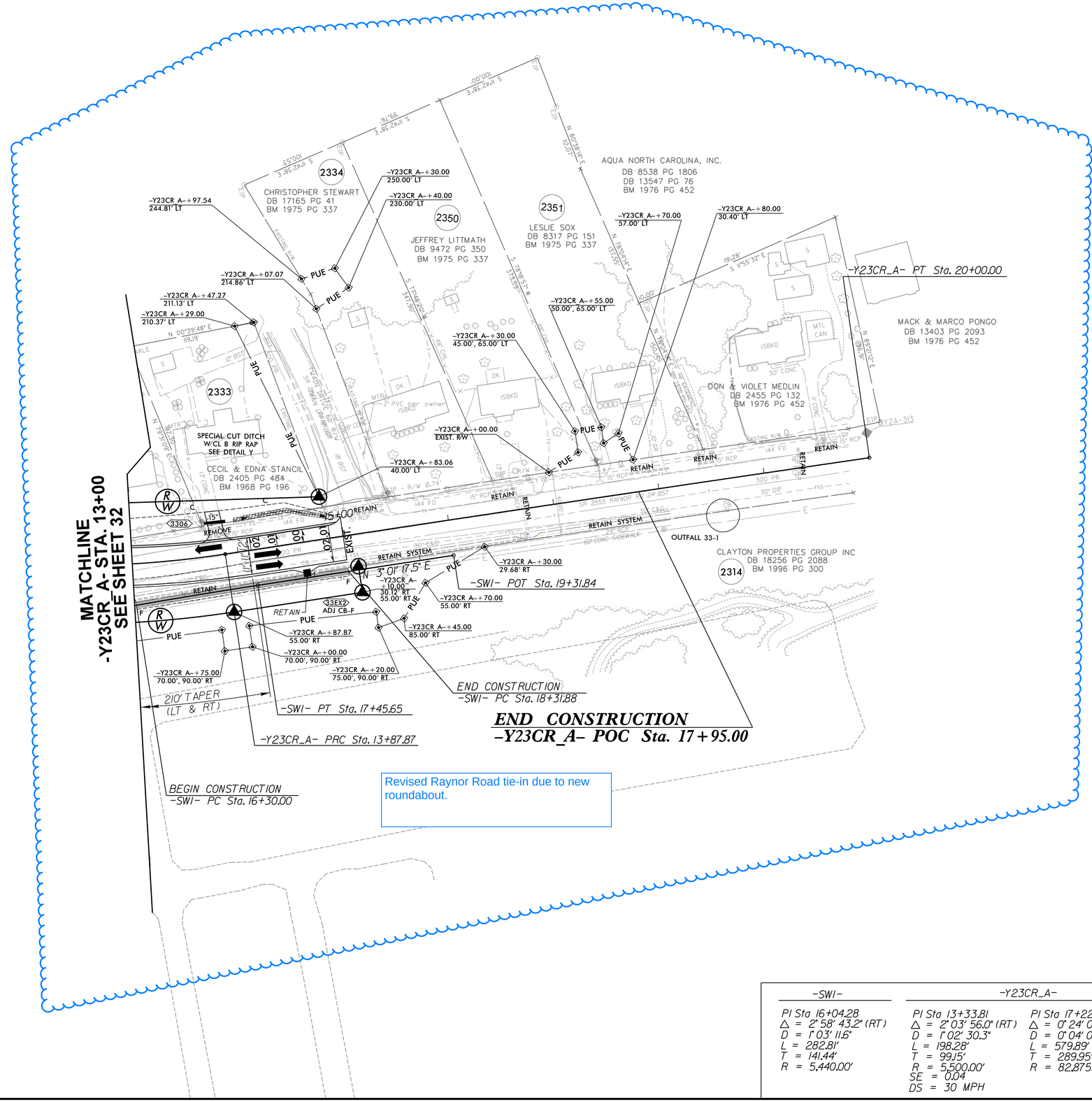
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PROJECT REFERENCE NO.	SHEET NO.
R-2829A	33
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/NA 2011



-SWI-	-Y23CR_A-	
PI Sta 16+04.28	PI Sta 13+33.81	PI Sta 17+22.89
Δ = 2° 58' 43.2" (RT)	Δ = 2° 03' 56.0" (RT)	Δ = 0° 24' 03.3" (RT)
D = 1° 03' 11.6"	D = 1° 02' 30.3"	D = 0° 04' 08.9"
L = 282.81'	L = 198.28'	L = 579.89'
T = 141.44'	T = 99.15'	T = 289.95'
R = 5,440.00'	R = 5,500.00'	R = 82,875.00'
	SE = 0.04	
	DS = 30 MPH	

ALL DRIVEWAYS HAVE 16' WIDTH AND 10' RADIUS UNLESS OTHERWISE NOTED.

CONCRETE DRIVE

GRAVEL DRIVE

ALL OTHER DRIVES TO BE ASPHALT

FOR DITCH DETAILS SEE SHTS. 2D-1 THRU 2D-6

FOR -Y23CR_A- PROFILE SEE SHT. 61

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PROJECT REFERENCE NO.	SHEET NO.
R-2829A	34
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

MATCHLINE -Y24R- STA. 24+00 SEE SHEET 35

BEGIN CONSTRUCTION
–Y24R– POT Sta. 11+06.59

STEC

N 87°08'28" E 1053.06

2404
DAVID HAWLEY
DB 16358 PG 625
BM 2001 PG 1059

2405
CHRISTOPHER DANIELS
DB 10500 PG 520
BM 2001 PG 1059

2406
SEVENTY EAST ASSOCIATES, LLC.
DB 5999 PG 271
BM 1987 PG 1210

NAD 83/NA 2011

C800 INLET STABILIZATION
58 TONS CL II RIPRAP
W/86 SY GEOFAB
SEE DETAIL CH

RETAIN SYSTEM

–Y24R– +07.60
EX. R/W

–Y24R– +73.00
160.00' LT

–Y24R– +64.37
118.58' LT

–Y24R– +19.00
137.00' & 167.00' LT

LATERAL 4' BASE DITCH
W/CL I RIPRAP
SEE DETAIL N

–Y24R– +48.88
135.56' LT

TOE PROTECTION
W/CL B RIPRAP
SEE DETAIL E

–Y24R– +47.00
142.00' LT

LINE CUT/FILL
TRANSITION W/
2 TONS CL B RIPRAP
W/7 SY GEOFAB

–Y24R– +14.00
108.00' LT

–Y24R– +72.00
121.00' LT

–Y24R– +07.00
108.00' LT

–Y24R– +43.69
EX. R/W

SPECIAL V DITCH
SEE DETAIL A

REMOVE CONC. PAVED DITCH – 60 LF

REMOVE

BEGIN PROP. SBG
+75.00

CAT–1

PROP. SBG

LATERAL
4' BASE SWALE
SEE DETAIL L

SP. DET. HW.

EXTEND EXISTING 5'x6'

2GIB–WSF

15" CSP W/ELBOWS

TRENCHLESS INSTALLATION 22" WELDED STEEL

REMOVE 60' EXIST 15"

END PROP. SBG
+25.00

20+00

REMOVE DI

2GIB–WSS

15" RCP–III

CABLE

US 70 BUS WB 3F BST

US 70 BUS EB 3F BST

PLUG & FILL W/FF

TB JB w/MH

200' TAPER

–Y24R–
+70.00

S 68° 21' 36.6" E CGAU

–Y24R–
15+00

RETAIN

Adj. DI

FS

36.00' TYP.

GREU TL–3

REMOVE CONC. PAVED DITCH – 100 LF
BEGIN PROP. SBG
±75.00

1 TONS CL B RIPRAP
W/5 SY GEOFAB

END PROP. SBG
+75.00

CONTRACTOR TO REMOVE GUIDERAIL BEYOND CGAU

–Y24R– +06.59
EX R/W

–Y24R– +75.18
EX. R/W

–Y24R– C
+75.24
132.31' RT

–Y24R–
+75.27
147.31' RT

SPECIAL V DITCH
SEE DETAIL A

LATERAL 4' BASE DITCH
W/CL I RIPRAP
SEE DETAIL N

–Y24R– +57.40
146.43' RT

–Y24R–
+54.16
168.91' RT

2 TONS CL B RIPRAP
W/7 SY GEOFAB

LATERAL
4' BASE SWALE
SEE DETAIL L

–Y24R–
+83.39
182.27' RT

–Y24R–
+90.27
146.19' RT

–Y24R–
+90.24
131.19' RT

C800 OUTLET STABILIZATION
51 TONS CL II RIPRAP
W/68 SY GEOFAB
SEE DETAIL CH

–Y24R–
+50.27
146.08' RT

–Y24R–
+50.24
131.08' RT

–Y24R–
+00.27
145.99' RT

TOE PROTECTION
W/CL B RIPRAP
SEE DETAIL E

–Y24R–
+00.24
130.45' RT

–Y24R–
+00.32
175.45' RT

*1004Z
R. GARLAND BURNETT
DB 918 PG 248
BM 2000 PG 372
BM 2021 PG 1204

Additional Taking for Parcel 1004

*ADVANCED ACQUISITION

CONCRETE DRIVE
GRAVEL DRIVE
ALL OTHER DRIVES TO BE ASPHALT

PAVEMENT REMOVAL

FOR –Y24R– PROFILE SEE SHT. 65

FOR DITCH DETAILS SEE SHEET 2D–1 THRU 2D–6

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Ferguson

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	35
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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8/17/99

2406
SEVENTY EAST ASSOCIATES, LLC.
DB 5999 PG 271
BM 1987 PG 1210

2407
BUFFALOE MINI STORAGE, LLC.
DB 13348 PG 2701
BM 2004 PG 1225
BM 2008 PG 1586

2407
BUFFALOE MINI STORAGE, LLC.
DB 13348 PG 2701
BM 2007 PG 1429
BM 2008 PG 1586

2408
BUFFALOE ENTERPRISES, LLC.
DB 13348 PG 2709
BM 2008 PG 1586
BM 1989 PG 1202
BM 1998 PG 1927

2409Z*
BUFFALOE ENTERPRISES, LLC.
DB 13348 PG 2709
BM 1989 PG 1202
BM 2008 PG 1586

-Y24B- POT Sta. 11+99.20

END CONSTRUCTION
-Y24B- POT Sta. 11+50.00

-Y24B- PT Sta. 11+07.55
-Y24B- PC Sta. 10+56.18
-Y24B- POT Sta. 10+00.00 =
-Y24A- POC Sta. 11+57.70
-Y24A- PRC Sta. 12+65.83
-Y24A- PT Sta. 15+57.04

END WW FENCE & C/A, +74.82 ,EX.R/W

Revised taking on Parcel 2409

NAD 83/NA 2011

MATCHLINE -Y24R- STA. 24+00 SEE SHEET 34

MATCHLINE -Y24R- STA. 36+50 SEE SHEET 17

US 70

SIGNAL POLE

PROP. WW FENCE

PROP. SIGN

1000' MEDIAN TAPER

700' MEDIAN TAPER

-Y24A- POT Sta. 10+00.00 =
-Y24R- POT Sta. 24+88.03
-Y24A- PC Sta. 10+76.39

END WW FENCE & C/A, +00.00 ,EX.R/W / 160.32'

*1004Z
R. GARLAND BURNETTE
DB 918 PG 248
BM 2000 PG 372
BM 2021 PG 1204

2401
W. H. & THELMA MEDLIN
DB 1626 PG 227
BM 1964 PG 241

2402
PARTLO GARNER, LLC.
DB 12829 PG 133
BM 1964 PG 241

2402
PARTLO GARNER, LLC.
DB 12829 PG 133
BM 1964 PG 241

2403
NC DEPARTMENT OF TRANSPORTATION
DB 18045 PG 2486
BM 1964 PG 241

* STOP CONDITION

-Y24A-	
PI Sta 12+15.40	PI Sta 14+12.72
Δ = 108° 32' 20.2" (RT)	Δ = 18° 32' 20.2" (LT)
D = 57° 17' 44.8"	D = 6° 21' 58.3"
L = 189.44'	L = 291.21'
T = 139.01'	T = 146.89'
R = 100.00'	R = 900.00'
SE = 0.04	SE = 0.03
DS = 20 MPH*	DS = 30 MPH

-Y24B-	
PI Sta 10+82.45	
Δ = 29° 25' 50.5" (RT)	
D = 57° 17' 44.8"	
L = 51.37'	
T = 26.26'	
R = 100.00'	
SE = 0.04	
DS = 20 MPH	

CONCRETE DRIVE
GRAVEL DRIVE
ALL OTHER DRIVES TO BE ASPHALT
PAVEMENT REMOVAL

★ PROPOSED SIGNAL

*ADVANCED ACQUISITION
FOR -Y24A- PROFILE SEE SHT. 72
FOR -Y24B- PROFILE SEE SHT. 72
FOR -Y24R- PROFILE SEE SHT. 65 & 66

FOR DITCH DETAILS SEE SHEET 2D-1 THRU 2D-6

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jfreeman

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	36
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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NAD 83/NA 2011

-Y24CR- STA. 14+00 SEE SHEET 17

MATCHLINE -Y24R- STA. 51+50 SEE SHEET 17

2418
SEELDING TECHNOLOGY CENTER, LLC.
DB 16424 PG 2044
BM 2006 PG 2057

2418
SEELDING TECHNOLOGY CENTER, LLC.
DB 14166 PG 1771
DB 4242 PG 721
BM 1988 PG 1306

2419
GARNER INDUSTRIAL II, LLC
DB 18548 PG 507
BM 2021 PG 966

2420
BROOKIE HENDERSON & SAMMY STRICKLAND
DB 4755 PG 661
WILL 04-E-48

2420
BROOKIE HENDERSON & SAMMY STRICKLAND
WILL 0-E-48
DB 1761 PG 426

2414
STORE MASTER FUNDING II, LLC.
DB 15710 PG 1372
BM 1958 PG 4
BM 2016 PG 1800

2415
TERRY MARTIN JONES
DB 17439 PG 1995
BM 1958 PG 4

2415
TERRY MARTIN JONES
DB 17439 PG 1995
BM 1958 PG 4

END CONSTRUCTION
-Y24D- POC Sta. 12+11.00

BEGIN CONSTRUCTION
-Y24E- POT Sta. 10+03.00

END CONSTRUCTION
-Y24CR- POT Sta. 22+65.64

BEGIN CONSTRUCTION
-Y24G- POC Sta. 12+00.00

END CONSTRUCTION
-Y24R- POC Sta. 62+80.50

BEGIN CONSTRUCTION
-Y24F- POT Sta. 10+40.00

-Y24E- POT Sta. 10+00.00
-Y24D- POT Sta. 13+95.18
-Y24D- PT Sta. 13+51.87
-Y24G- POT Sta. 10+00.00
-Y24E- POT Sta. 13+41.57 = -Y24D- POT Sta. 11+35.36
PC Sta. 11+74.40
-Y24CR- POT Sta. 23+09.64
-Y24G- POT Sta. 11+04.80
-Y24CR- PT Sta. 22+15.55
-Y24D- POT Sta. 10+00.00 = -Y24CR- POT Sta. 18+85.90
-Y24CR- PC Sta. 20+17.78
-Y24G- PC Sta. 11+62.95
-Y24CR- PT Sta. 16+55.29
-Y24CR- PRC Sta. 15+40.00
-Y24CR- PC Sta. 16+67.35
-Y24CR- PT Sta. 17+97.16
-Y24R- POT Sta. 13+74.80 = -Y24R- POT Sta. 60+72.54
-Y24F- POT Sta. 13+53.03 = -Y24R- POT Sta. 60+73.87
-Y24R- PT Sta. 62+88.02

3 TONS CL B RIPRAP W/10 SY GEOFAB
SPECIAL LATERAL 2' BASE DITCH SEE DETAIL BJ
SPECIAL CUT DITCH SEE DETAIL A
SPECIAL CUT DITCH SEE DETAIL BV
RETAIN SYSTEMS INSTALLED BY GARNER BUSINESS PARK
TOE PROTECTION W/CL B RIPRAP SEE DETAIL E
2 TONS CL B RIPRAP W/7 SY GEOFAB
CONTRACTOR TO REMOVE EXISTING CABLE GUIDERAIL
END WW FENCE & C/A, +211.100'
END WW FENCE & C/A, +41.01, EX. R/W
PROP. WW FENCE
PROP. SIGN
PROP. VINYL FENCE
PROP. MONO. ISLAND
PAINTED ISLAND
300' RT TURN TAPER
850' MEDIAN TAPER
700' TAPER LT & RT
90' TAPER LT & RT
PROP. 60' ACCESS POINT
SIGNAL POLE
FUTURE 10' MUP
REMOVE SYSTEM
ENTIRE AREA UNDER CONSTRUCTION
US 70
US 70 BUS
PROP. EXP. GUTTER
RETAIN PIPE
FLAGPOLE
BEG. PROP. EXP. GUTTER +00.00
END PROP. EXP. GUTTER +00.00

-Y24G-
PI Sta 11+95.05
△ = 32° 32' 17.7" (RT)
D = 52° 05' 13.5"
L = 62.47'
T = 32.10'
R = 110.00'
SE = EXIST
DS = EXIST

-Y24R-
PI Sta 50+13.11
△ = 7° 18' 52.9" (RT)
D = 0° 17' 11.3"
L = 2,553.31'
T = 1,278.39'
R = 20,000.00'
SE = NC
DS = 60 MPH

-Y24CR-

PI Sta 12+70.02	PI Sta 15+98.17	PI Sta 17+33.01	PI Sta 21+19.38
△ = 1° 32' 16.3" (RT)	△ = 18° 52' 25.4" (LT)	△ = 21° 14' 58.4" (RT)	△ = 32° 22' 30.5" (LT)
D = 0° 17' 05.2"	D = 16° 22' 12.8"	D = 16° 22' 12.8"	D = 16° 22' 12.8"
L = 540.00'	L = 115.29'	L = 129.81'	L = 197.77'
T = 270.02'	T = 58.17'	T = 65.66'	T = 101.60'
R = 20,118.50'	R = 350.00'	R = 350.00'	R = 350.00'
SE = NC	SE = 0.04	SE = 0.04	SE = 0.04
DS = 30 MPH	DS = 30 MPH	DS = 30 MPH	DS = 30 MPH

-Y24D-
PI Sta 12+64.42
△ = 23° 38' 49.3" (RT)
D = 13° 19' 28.6"
L = 177.47'
T = 90.02'
R = 430.00'
SE = EXIST
DS = EXIST

CONCRETE DRIVE
GRAVEL DRIVE
ALL OTHER DRIVES TO BE ASPHALT
EXISTING TRAFFIC SIGNAL
PROPOSED SIGNAL
PAVEMENT REMOVAL

FOR -Y24CR- PROFILE SEE SHT. 73
FOR -Y24D- PROFILE SEE SHT. 73
FOR -Y24E- PROFILE SEE SHT. 74
FOR -Y24F- PROFILE SEE SHT. 74
FOR -Y24R- PROFILE SEE SHT. 67
FOR DITCH DETAILS SEE SHEET 2D-1 THRU 2D-6

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Charlotte, NC 28202
NC License Number F-0991

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PROJECT REFERENCE NO.	SHEET NO.
R-2829A	36A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-Y26R-
PI Sta 17+00.21
△ = 18° 53' 37.2" (RT)
D = 3° 49' 11.0"
L = 494.63'
T = 249.58'
R = 1,500.00'
SE = 0.04
DS = 50 MPH

-Y26-SR1-	
PI Sta 14+14.14	PI Sta 12+67.23
△ = 71° 16' 19.7" (LT)	△ = 43° 56' 17.5" (LT)
D = 57° 17' 44.8"	D = 57° 17' 44.8"
L = 124.39'	L = 76.69'
T = 71.69'	T = 40.34'
R = 100.00'	R = 100.00'
SE = 0.04	SE = 0.02
DS = 20 MPH *	DS = 20 MPH *

* STOP CONDITION

NAD 83/NA 2011

BEGIN CONSTRUCTION
-Y26R- POT Sta. 12+79.57

MATCHLINE -Y26R-SR1- STA. 12+50 SEE SHEET 18

MATCHLINE -Y25- STA. 15+00 SEE SHEET 18

-Y26R- PC Sta. 14+50.63

-Y26RSR1- PC Sta. 13+42.45

-Y26RSR1- POT Sta. 14+91.21 = -Y26R- POT Sta. 19+84.07

-Y26RSR1- PT Sta. 14+66.85

-Y26R- PT Sta. 19+45.27

-Y26R- POT Sta. 10+00.00

-Y25- POT Sta. 10+00.00

EAST GARNER ROAD

S 64° 15' 31.8" E

N 64° 05' 34.9" W

S 45° 21' 54.6" E

S 44° 38' 05.4" W

PROP. GRAVEL DRIVE (TYP.)

JANET P STORMS & LINDA S POWELL DB 16469 PG 635

BOBBY B GRADY PG 6240 PG 281 BM 1994 PG 1040 BM 1994 PG 1211

JANET P HINTON DB 6286 PG 659 BM 1994 PG 1211

JANET P STORMS & LINDA S POWELL DB 16469 PG 635

La SANGRE De JESUCRISTO DB 17526 PG 88

JANET P BOBBY GERALD STORMS DB 14856 PG 822 BM 2000 PG 1438

2610 La SANGRE De JESUCRISTO DB 17526 PG 88 BM 1988 PG 1678

27 JANET P STORMS & LINDA S POWELL DB 16469 PG 635

*26Z EDGE OF AUBURN LLC DB 10839 PG 2259

2609 JEFFREY P CATES & NANCY S CATES DB 1061 PG 476 WILL BK 11 E PG 1444

*15 L & L COMPANY LLC DB 9875 PG 2095 BM 1973 PG 9

16 NC RAILROAD COMPANY DB 139 PG 529

NC RAILROAD COMPANY DB 12263 PG 2554 BM 2006 PG 2274

C1000 INLET STABILIZATION 39 TONS CL II RIPRAP W/73 SY GEOFAB SEE DETAIL CJ

FILL IN ABANDONED CHANNELS

C1000 OUTLET STABILIZATION 76 TONS CL II RIPRAP W/118 SY GEOFAB SEE DETAIL CJ

STANDARD 4' BASE DITCH W/CL I RIP RAP SEE DETAIL AK

SPECIAL CUT DITCH SEE DETAIL A

100' TAPER LT & RT

GRADE TO DRAIN

BEGIN PROP SBG +20.23

GRADE END PROP SBG +36.90

BEGIN PROP SBGTB 2GIB +80.00

BEGIN PROP SBG +32.06

END PROP SBG +00.00

LATERAL V DITCH W/CL B RIPRAP SEE DETAIL S

TOE PROTECTION W/CL B RIPRAP SEE DETAIL E

48 TONS CL II RIPRAP W/90 SY GEOFAB OUTLET CHANNEL STABILIZATION W/CL II RIPRAP SEE DETAIL AL

1 TONS CL B RIP RAP W/5 SY GEOFAB

2 TONS CL B RIP RAP W/7 SY GEOFAB

CONCRETE DRIVE

GRAVEL DRIVE

ALL OTHER DRIVES TO BE ASPHALT

PAVEMENT REMOVAL

FOR -Y26R- PROFILE SEE SHT. 75
FOR -Y26_DRW1- PROFILE SEE SHT. 76

FOR DITCH DETAILS SEE SHEET 2D-1 THRU 2D-6

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RFreeman

8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2829A	36B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

-Y26R-	
PI Sta 28+10.86	PI Sta 34+89.06
△ = 48° 04' 31.8" (LT)	△ = 29° 20' 51.6" (RT)
D = 6° 11' 14.8"	D = 4° 46' 28.7"
L = 776.98'	L = 614.66'
T = 413.01'	T = 314.23'
R = 926.00'	R = 1,200.00'
SE = 0.04	SE = 0.04
DS = 50 MPH	DS = 50 MPH

-Y26-SR2-
PI Sta 13+87.94
△ = 69° 22' 12.6" (RT)
D = 57° 17' 44.8"
L = 121.07'
T = 69.20'
R = 100.00'
SE = 0.04
DS = 20 MPH *

* STOP CONDITION

NAD 83/NA 2011

MATCHLINE -Y26R-SR2- STA. 12+00 SEE SHEET 18

MATCHLINE -Y26R- STA. 31+50 SEE SHEET 18

MATCHLINE -Y25- STA. 24+30 SEE SHEET 18

2608 LAURA L WATTS & BARBARA W GAUL DB 16337 PG 463 BM 1984 PG 1837

-Y26RSR2- PC Sta. 13+18.74

-Y26RSR2- PT Sta. 14+39.81

2608 LAURA L WATTS & BARBARA W GAUL DB 16337 PG 463

-Y26R- PT Sta. 37+89.48

-Y26R- POT Sta. 42+25.00

END CONSTRUCTION -Y26R- POT Sta. 39+50.54

PAMELA R & CARLOS BONILLA BM 1980 PG 901 DB 3915 PG 76

COATS-MELTON LLC DB 18658 PG 747 BM 1980 PG 901

PATRICIA WILLIAMS DB 3500 PG 674 BM 1984 PG 1838 WILL BK 09-E PG 2997

2604

2611 JOE L & JOEATTA PRICE JR DB 7105 PG 179 BM 1984 PG 1838

2608 LAURA L WATTS & BARBARA W GAUL DB 16337 PG 463

AGUSTIN & ESMERALDA JAIMES DB 18882 PG 2321

MOUNT MORIAH BAPTIST CHURCH DB 17717 PG 727

MOUNT MORIAH BAPTIST CHURCH DB 1542 PG 28

PSC OF NORTH CAROLINA, INC DB 17138 PG 1208

16 NC RAILROAD COMPANY DB 38 PG 317?

NORFOLK-SOUTHERN RR

EXISTING R/W

EAST GARNER ROAD

SR 1004 E. GARNER RD. 2I BST

SP. LATERAL V DITCH SEE DETAIL AT -Y26S2- +31.00 46.00' LT

SP. CUT 4' BASE DITCH SEE DETAIL AD

LATERAL 4' BASE DITCH SEE DETAIL C

-Y26RSR2- POT Sta. 14+52.83 = -Y26R- POC Sta. 33+57.41

S 5° 16' 37.7" W

-Y26R- PRC Sta. 31+74.83

-Y25- POT Sta. 30+21.59

100' TAPER LT & RT

CONCRETE DRIVE

GRAVEL DRIVE

ALL OTHER DRIVES TO BE ASPHALT

PAVEMENT REMOVAL

FOR -Y26R- PROFILE SEE SHT. 75
FOR -Y26R-SR2- PROFILE SEE SHT. 76

FOR DITCH DETAILS SEE SHEET 2D-1 THRU 2D-6

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FreemanT

Compensatory Mitigation

ROY COOPER
Governor
ELIZABETH S. BISER
Secretary
MARC RECKTENWALD
Director

NORTH CAROLINA
Environmental Quality

September 13, 2024

Mr. Jamie Lancaster, P.E.
Environmental Analysis Unit
North Carolina Department of Transportation
1598 Mail Service Center
Raleigh, North Carolina 27699-1598

Dear Mr. Lancaster:

Subject: Mitigation Acceptance Letter: **TIP R-2829A**, Complete NC 540 from I-40 to South of Rock Quarry Road, Wake and Johnston Counties

The purpose of this letter is to notify you that the Division of Mitigation Services (DMS) will provide the mitigation for the subject project. Based on the information supplied by you on September 12, 2024, the impacts are located in CU 03020201 of the Neuse River basin as follows:

Stream and Wetlands	Service Area	Stream			Wetlands		
		Cold	Cool	Warm	Riparian	Non-Riparian	Coastal Marsh
Impacts	Neuse 03020201	0	0	0	0	0.410	0

*Some of the impacts may be proposed to be mitigated at various ratios. See permit application for details. DMS will provide the amount of stream and wetland mitigation included in the environmental permits.

All buffer mitigation requests and approvals are administrated through the Riparian Restoration Buffer Fund. The NCDOT will be responsible to ensure that appropriate compensation for the buffer mitigation will be provided in the agreed upon method of fund transfer. Upon receipt of the NCDWR's Buffer Authorization Certification, DMS will transfer funds from the NCDOT Fund into the Riparian Restoration Buffer Fund. Upon completion of transfer payment, NCDOT will have completed its riparian buffer mitigation responsibility for TIP R-2829A. Subsequently, DMS will conduct a review of current NCDOT ILF Program mitigation projects in the river basin to determine if available buffer mitigation credits exist. If there are buffer mitigation credits available, then the Riparian Restoration Buffer Fund will purchase the appropriate amount of buffer mitigation credits from NCDOT ILF Program.

Buffer	Service Area	Buffer Impacts		
		Zone 1	Zone 2	TOTAL
Impacts	Neuse 01 Outside Falls	524,407.000	355,275.000	879,682.000

The impacts and associated mitigation needs were not projected by the NCDOT in the 2024 impact data. NCDEQ – DMS will commit to implement sufficient compensatory mitigation credits to offset the impacts associated with this project as determined by the regulatory agencies in accordance with 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 NCDEQ – DMS.

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

Sincerely,

Elizabeth Harmon

Elizabeth A. Harmon
DMS NCDOT ILF Coordinator

cc: Mr. Scott Jones, USACE
Mr. Rob Ridings, NCDWR
Mr. Brad Chilton, NCDOT – EAU
File: R-2829A

Neuse Stream and Wetland Credits Statement of Availability

September 13, 2024

Attn: Mr. Brad Chilton
NCDOT
1000 Birch Ridge Road
Raleigh, NC 27610

RE: Availability of Stream and Riparian Wetland Credits for the "R-2829A" project
Bank Name: Falling Creek Umbrella Mitigation Bank
Bank Sites: Falling Creek Mitigation Site
Bank Sponsor: Wildlands Holdings III, LLC
USACE Action ID No.: SAW-2015-00940
Permittee: NCDOT
Stream Credits Needed: 9,866 LF
Stream Credits Available: 10,413 LF
Riparian Wetland Credits Needed: 13.40 acres
Riparian Wetland Credits Available: 32.365 acres
Neuse 03020201 River Basin

Dear Mr. Chilton,

Wildlands Holdings III, LLC, owned and operated by Wildlands Engineering, Inc., currently has sufficient stream and riparian wetland credits from the **Falling Creek Umbrella Mitigation Bank: Falling Creek Mitigation Site** to satisfy the stream and/or wetland mitigation requirements related to the above-mentioned project. The project is located within the Neuse River Basin of the service area (HUC 03020201) of the Bank.

This letter is simply a statement of availability of credits as of the date written. It is neither a guarantee of future credit availability, nor a guarantee of credit pricing. Credits are sold on a first come, first serve basis at the Bank's price at the time an invoice is requested. Please note that these credits have been reserved and paid for in advance by the NCDOT.

Final transfer of the credits will be made upon receipt of a copy of the US Army Corps of Engineers Compensatory Mitigation Responsibility Transfer Form approving the Stream and/or wetland mitigation purchase from the Bank and upon receipt of your payment to Wildlands Holdings III, LLC.

We appreciate the opportunity to assist you with your mitigation requirements. Please contact me at (704) 332-7754 x114 or cbrunick@wildlandseng.com if you have any questions or need any additional information.

Sincerely,

Camden Brunick

Camden M. Brunick
Wildlands Engineering, Inc.
Mitigation Credit Sales
cbrunick@wildlandseng.com
O: (704) 332-7754 ext. 114
M: (919) 219-6162

Neuse Stream Credits Statement of Availability

September 13, 2024

Attn: Mr. Brad Chilton
NCDOT
1000 Birch Ridge Road
Raleigh, NC 27610

RE: Availability of Stream and Riparian Wetland Credits for the "R-2829A" project
Bank Name: Falling Creek Umbrella Mitigation Bank
Bank Sites: Grantham Branch Mitigation Site
Bank Sponsor: Wildlands Holdings III, LLC
USACE Action ID No.: SAW-2017-00549
Permittee: NCDOT
Stream Credits Needed: 584 LF
Stream Credits Available: 2,512.95 LF
Neuse 03020201 River Basin

Dear Mr. Chilton,

Wildlands Holdings III, LLC, owned and operated by Wildlands Engineering, Inc., currently has sufficient stream credits from the **Falling Creek Umbrella Mitigation Bank: Grantham Branch Mitigation Site** to satisfy the stream mitigation requirements related to the above-mentioned project. The project is located within the Neuse River Basin of the service area (HUC 03020201) of the Bank.

This letter is simply a statement of availability of credits as of the date written. It is neither a guarantee of future credit availability, nor a guarantee of credit pricing. Credits are sold on a first come, first serve basis at the Bank's price at the time an invoice is requested. Invoices reserve both the credits and the price for a period of 30 days. Please note that the NCDOT has reserved and paid for these credits in advance.

Final transfer of the credits will be made upon receipt of a copy of the US Army Corps of Engineers Compensatory Mitigation Responsibility Transfer Form approving the Stream and/or wetland mitigation purchase from the Bank and upon receipt of your payment to Wildlands Holdings III, LLC.

We appreciate the opportunity to assist you with your mitigation requirements. Please contact me at (704) 332-7754 x114 or cbrunick@wildlandseng.com if you have any questions or need any additional information.

Sincerely,

Camden Brunick

Camden M. Brunick
Wildlands Engineering, Inc.
Mitigation Credit Sales
cbrunick@wildlandseng.com
O: (704) 332-7754 ext. 114
M: (919) 219-6162

Deanna Riffey
Environmental Analysis Unit
North Carolina Department of Transportation
1598 Mail Service Center
Raleigh, North Carolina 27699-1598

Subject: Mitigation Acceptance Letter: R-2829A

Dear Ms Riffey:

The purpose of this letter is to notify you that Restoration Systems, LLC (RS) will provide the mitigation for the subject project. Based on the information received from you on September 13, 2024, the impacts are located in HUC 03020201 of the Neuse River basin in the Southern Outer Coastal Plain (SOCP) Eco-Region, and are as follows:

Neuse 03020201 SOCP	Stream		
	Cold	Cool	Warm
Impacts feet/acres)	0	0	3,219
Credits	0	0	6,438

RS commits to implementing sufficient compensatory mitigation credits to offset the impacts associated with this project as determined by the regulatory agencies in accordance with the Milburnie Dam Mitigation Bank Instrument dated March 14, 2014. 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 RS.

If you have any questions or need additional information, please contact Caitlan Hooker at 843.261.3049.

Caitlan B. Hooker
Restoration Systems, LLC

Section 106

North Carolina Department of Natural and Cultural Resources

State Historic Preservation Office

Ramona M. Bartos, Administrator

Governor Roy Cooper
Secretary D. Reid Wilson

Office of Archives and History
Deputy Secretary, Darin J. Waters, Ph.D.

June 14, 2024

Robin Pugh
RK&K
8601 Six Forks Road
Forum 1, Suite 700
Raleigh, NC 27615

rpugh@rkk.com

Re: Expanded study area for Southern Wake Freeway Corridor, Complete I-540, R-2829A, Raleigh, Wake County, CH 98-0457

Dear Ms. Pugh:

Thank you for your submission of May 9, 2024, regarding the above-referenced undertaking. We have reviewed the submittal and offer the following comments.

The four expanded study areas (1-4) at the northern end of the project area are considered to have a low archaeological potential and no additional survey is needed in these areas.

The two areas adjacent to Mount Herman Christian Church property are within the mapped boundaries of 31WA4 and near recorded sites 31WA2038 and 31WA2039. Study area 5 occupies a wooded and sloped area that has a moderate potential for precontact sites but given the area's topographic setting it has a low probability that any significant, intact sites would be adversely impacted. We do not recommend additional archaeological investigations in study areas 5 currently.

Expansion area 6 includes portions of the Mount Herman Christian Church cemetery. We recommend that the cemetery within study area 6 be avoided. If avoidance is not possible, additional archaeological testing and mitigation of the cemetery under NCGS 65 may be necessary.

Cemeteries are protected under North Carolina General Statutes Chapter 14-148 and 14-149, and are afforded consideration under Chapter 65. If unmarked human skeletal remains are encountered during construction, the provisions of North Carolina General Statute Chapter 70, Article 3 apply. Construction activities should immediately cease, and the county medical examiner should be contacted.

We have determined that the project as proposed will not have an effect on any historic structures.

The above comments are made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36 CFR Part 800.

Thank you for your cooperation and consideration. If you have questions concerning the above comment, contact Renee Gledhill-Earley, environmental review coordinator, at 919-814-6579 or environmental.review@dncr.nc.gov. In all future communication concerning this project, please cite the above referenced tracking number.

Sincerely,

Renee Gledhill-Earley

for Ramona Bartos, Deputy
State Historic Preservation Officer

cc: Ron McCollum, NCDOT remccollum@ncdot.gov