STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

J. ERIC BOYETTE
SECRETARY

November 3, 2021

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

ATTN: Mr. Andy Williams, NCDOT Regulatory Coordinator

Subject: **Request for Modification to Individual Section 404 Permit and Section 401 Water Quality Certification** for recently modified **U-2579 AB** (USACE, dated February 10, 2021; WQC Rev. 7, dated February 9, 2021), and for the Winston-Salem Northern Beltway (Eastern Section of Future I-74), from US 311 to I-40; **U-2579AA**; Federal Aid Project No. NHF-0918(14), Division 9. Debit $570 from WBS No. 34839.1.7

References: **Section 404 and 401 Individual Permit Application** requested October 2, 2017, for Winston Salem Northern Beltway from I-40 to US 52 (R-2247B Phase 2, CA, CB, CD, D, EA, EB, and EC), from US 52 to US 311 North (U-2579C Phase 2, D, D, and F), and from I-40 Business to US 311 South (U-2579AA and AB).

- Modification Application for U-2579D, E, F / U-2579C Phase 2, dated January 7, 2019.
- Modification Application for R-2247EB, dated June 26, 2019.
- Modification Application for U-2579D, E, and F, dated October 17, 2019.
- Modification Application for U-2579D, E, and F, dated November 4, 2020.
- Modification Application for U-2579AB, dated December 2, 2020.

Section 404 Individual Permit issued for the Winston Salem Northern Beltway from I-40 to US 52 (R-2247B Phase 2, CA, CB, CD, D, EA, EB, and EC), from US 52 to US 311 North (U-2579C Phase 2, D, D, and F), and from I-40 Business to US 311 South (U-2579AA and AB), dated January 22, 2018 **(SAW-2017-02112).**

- Permit Modification for U-2579D, E, F / U-2579C Phase 2, dated March 4, 2019.
- Permit Modification for R-2247EB, dated August 13, 2019.
- Permit Modification for U-2579D, E and F, dated January 29, 2020.
- Permit Modification for U-2579D, E, and F, dated December 9, 2020.
- Permit Modification for U-2579AB, dated February 10, 2021.

Section 401 Water Quality Certification issued November 14, 2017 **(WQC004131),** for the Winston Salem Northern Beltway from I-40 to US 52 (R-2247B Phase 2, CA, CB, CD, D, EA, EB, and EC), from US 52 to US 311 North (U-2579C Phase 2, D, D, and F), and from I-40 Business to US 311 South (U-2579AA and AB); Revision 2 dated December 21, 2017; Revision 3 dated February 7, 2019; and Revision 4 dated August 13, 2019; Revision 5 dated November 14, 2019; Revision 6, dated November 30, 2020; Revision 7, dated February 9, 2021.

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

Telephone: (919) 707-6000
Customer Service: 1-877-368-4968
Website: www.ncdot.gov

Location:
1000 BIRCH RIDGE DRIVE
RALEIGH NC 27610

Dear Sir:

The purpose of this modification request is twofold:

1) to revise the previously permitted U-2579AB section (USACE 404 Permit Modification for U-2579AB, dated February 10, 2021; NCDWR 401 WQC Revision 7, dated February 9, 2021) with impacts associated with the inclusion of the construction of a noise wall, and

2) to provide final design and impact calculations for the Winston-Salem Northern Beltway (Eastern Section of Future I-74), from US 311 to I-40 (U-2579AA). This U-2579AA section was in preliminary design phase when the original permit application was submitted on October 2, 2017 (see original IP Application in References section of this Cover letter).

U-2579AB Noise Walls

Title 23 Code of Federal Regulations, Part 772 (23 CFR 772) the Federal Highway Administration (FHWA), the purpose of which is "To provide procedures for noise studies and noise abatement measures to help protect the public's health, welfare and livability." Where the FHWA has given highway agencies flexibility in implementing the 23 CFR 772 standards, the North Carolina Department of Transportation Traffic Noise Abatement Policy establishes describes the NCDOT approach to implementation. This policy describes the NCDOT process that is used in determining traffic noise impacts, construction noise impacts, abatement measures, and the equitable and cost-effective expenditure of public funds for traffic noise abatement. FHWA and NCDOT require that abatement measures and locations are feasible and reasonable. In addition to these requirements, a major consideration is on the installation of the abatement measures is determined following a public involvement process to include balloting of property and business owners.

As part of the project commitments in the FEIS (January 2007) and ROD (February 2008), a design noise study would be prepared for the selected alternative. Per the latest consultation dated July 2021 for this project, any feasible and reasonable noise abatement identified in the Design Noise Report (DNR) would be incorporated into the project final plans and will be constructed.

At the time that the Permit Modification application for U-2579AB was submitted in December 2020, analysis for the Design Noise Report (DNR) was behind schedule and the project required the permit prior to beginning utility relocation in March 2021. The Design Noise Report was approved on April 11, 2021, and balloting completed on May 7, 2021. In accordance with this policy four (4) traffic noise abatement measures were found to meet these criteria documented in the project Design Noise Reports. In order to minimize impacts, to the maximum extent possible, the noise walls are located on the shoulder.

Of the four (4) traffic noise abatement measures found to meet these criteria, the construction of one noise wall (NW17/18/19) will impact two previously non-impacted jurisdictional features: 1) Wetland ESE-W36, and 2) Stream ESE-S48.

Impacts to Waters of the U.S.

Updates to U-2579AB

Tables 1 and 2 , are the Impact Tables from the previous modification request for U-2579AB, updated to include the two new impact sites associated with the proposed construction of the new Noise Walls (Wetland Permit Site14B, and Stream Impact Permit Site 31). These new impacts, and revised totals, are presented in **red text** in the updated Tables 1 and 2.

Table 1. U-2579AB Updated Wetland Impacts

Permit Site	Wetland ID [1/]	Wetland Size (ac)	Permanent Fill Impacts (ac)	Excavation Impacts (ac)	Mechanized Clearing Impacts (ac)	Impacts Requiring Mitigation (ac)
4A	ESE-W8	0.13	0.13	0	0	0.13
5A	ESE-W51	0.04	0	0	< 0.01	< 0.01
6A	ESE-W52	0.03	0.03	0	0	0.03
7A	ESE-W48	0.36	0.36	0	0	0.36
12A	ESE-W12	0.34	0.08	0	0.17	0.25
13A	ESE-W26	0.08	0.08	0	0	0.08
14A	ESE-W46	0.16	0.03	0	0.07	0.10
14B	ESE-W36	0.40	<0.01	0	0.02	0.02
17A	ESE-W9	0.06	0.06	0	0	0.06
17B	ESE-W10	0.09	0.09	0	0	0.09
17C	ESE-W11	0.03	0.03	0	0	0.03
23A	ESE-W25	0.30	0.22	0.02	0.06	0.30
Totals Previously Permitted and Mitigated:			**1.11** [2/]	**0.02**	**0.29**	**1.42/1.43** [2/]
Totals per this Update for U-2579AB:			**<0.01**	**0**	**0.02**	**0.02**

[1/] Data from the *Preliminary Jurisdiction Determination Report*, *R-2247/U-2579,* dated January 2016.

[2/] Differences in Impact Totals is due to rounding of individual impacts to the 100th place at each site.

The following is a list of revisions to the updated Stormwater Management Plan (SMP) and the updated set of Permit Drawing Sheets for the Updated U-2579AB section:

- SMP Sheet 1: includes updated date of 7/2/2021
- SMP Sheets 3 through 11: updated to remove ditches/swales that are no longer applicable.
- SMP Sheet 11: Note included in "additional comments" section to explain the blank entries.
- SMP Sheet 12: two (2) pre-formed scour holes (psh) added to Sheets 16 and 17 (Permit Drawing Sheets 38 and 39 of 79).
- A new set of Permit Drawings have been included to reflect the current design with the Noise Walls. Both of the two (2) new permit sites are on Permit Drawing Sheets 38 and 39 of 79 .
- Permit Drawing Sheet 42 of 79 (cross-section at new site 14B) has been added to the set.
- The Wetland Impact Summary Sheet (Permit Drawing Sheets 76 through 79) have been updated with the impacts for the two new permit sites, and the impacts have been re-totaled.

Table 2. U-2579AB Updated Stream Impacts

Permit Site	Stream ID [1/]	Stream Type [1/]	Impact Type	Permanent Impacts (lf)	Temporary Impacts (lf)	Impacts Requiring USACE Mitigation (lf)	Impacts Requiring NCDWR Mitigation (lf)
1	ESE-S63*	I	30" Reinforced Concrete Pipe (RCP) -III	48	0	48	--
	ESE-S69	I	4' Base Ditch	76	18	76	--
2	ESE-S8	P	36" Corrugated Steel Pipe	51	0	51	--
			Energy Dissipator Basin	20	0	20	--
			Bank Stabilization	14	0	0	--
			Detour	0	76	0	--
3	ESE-S61[#]	I	54" RCP - IV	137	12	137	--
4			Roadway Fill	74	0	74	--
5			Std. 5' Base Ditch / (Pipe Removal)	28	32	28	--
6	ESE-S11 (Fiddlers Ck) +	P	2 @ 12' X 10' Reinforced Concrete Box Culvert (RCBC)	589	0	589	589
			Bank Stabilization – (w/ Inlet Channel Floodplain Bench)	26	41	0	--
			Channel Protection (outlet of RCBC)	81	88	81	81
6B	ESE-S61[#]	I	4'- segment replacement of 36" RCP	0	19	0	--
7	ESE-S59	P	54" RCP - V	92	0	92	92
			4' Base Ditch	84	10	84	84
			Riprap Pad	16	25	16	16
8		P	42" RCP - III	342	0	342	342
			Bank Stabilization	17	10	0	--
		I	42" RCP - III	102	0	102	--
9	ESE-S12[@]	P	Channel Protection – Culvert Inlet	66	10	66	66
			6' X 7' RCBC	226	0	226	226
			Channel Protection – Culvert Outlet	22	0	22	22
			Std. 6' Base Ditch	149	0	149	149
			Channel Protection – Culvert Inlet	18	0	18	18
			6' X 7' RCBC	354	0	354	354
			6' Base Ditch	195	10	195	195

Permit Site	Stream ID [1/]	Stream Type [1/]	Impact Type	Permanent Impacts (lf)	Temporary Impacts (lf)	Impacts Requiring USACE Mitigation (lf)	Impacts Requiring NCDWR Mitigation (lf)
10	ESE-S13	I	60” RCP - V	556	0	556	--
		P	60” RCP - V	60	0	60	--
			5’ Base Ditch	52	0	52	--
12	ESE-S16	P	5’ X 7’ RCBC	372	0	372	372
		I	Channel Stabilization / 4” Tail Ditch	277	0	277	--
13	ESE-S19	I	36” RCP	136	0	136	--
		P	36” RCP	368	0	368	368
			Bank Stabilization	28	10	0	--
14	ESE-S49	P	72” RCP - III	44	0	44	--
			Clean-out of existing 72” RCP	0	43	0	--
			Bank Stabilization	22	14	0	--
15	ESE-S52	P	42” RCP - III	36	10	36	--
			Riprap Pad / Tail Ditch	23	48	23	--
16	ESE-S56	P	54” RCP – III Extension	44	43	44	--
16A			54” RCP - III	170	10	170	--
			Bank Stabilization	33	10	0	--
17	ESE-S15	P	8’ X 7’ RCBC	427	0	427	427
			Channel Protection	35	0	35	35
18	ESE-S25 (Fiddlers Ck) +	P	Roadway Fill	900	102	900	900
			Bank Stabilization	44	11	0	--
19	ESE-S58	P	Roadway Fill	80	0	80	--
			4’ Base Ditch	50	0	50	--
			48” RCP - III	14	0	14	--
			48” RCP - III	16	0	16	--
			4’ Base Ditch	65	0	65	--
			48” RCP - III	18	0	18	--
			Channel Protection	6	6	6	--
20	ESE-S72	P	60” RCP - III	100	0	100	--
			5’ Base Ditch	55	10	55	--
			60” RCP - III	20	0	20	--

Permit Site	Stream ID [1/]	Stream Type [1/]	Impact Type	Permanent Impacts (lf)	Temporary Impacts (lf)	Impacts Requiring USACE Mitigation (lf)	Impacts Requiring NCDWR Mitigation (lf)
21	ESE-S50	I	Roadway Fill (4' Lateral Base Ditch)	548	10	548	--
			Roadway Fill (4' Lateral Base Ditch)	180	50	180	--
22	ESE-S63*	P	2' Base Ditch	67	0	67	--
23	ESE-S42	P	Roadway Fill (2' Base Lateral Ditch)	62	10	62	--
24	ESE-S12@	P	Ditch Tie-In	0	10	0	--
25	ESE-S25 (Fiddlers Ck) +	P	3 @ 12' X 7' RCBC	92	0	92	92
			Bank Stabilization	35	5	0	--
			Outlet Channel Protection	48	13	48	48
26	ESE-S26	P	7' X 8' RCBC	56	0	56	--
			Inlet Channel Protection	18	14	18	--
			Outlet Channel Protection	33	0	33	--
27	ESE-S51	I	42" RCP - III	14	0	14	--
			Riprap Pad	12	10	12	--
28	ESE-S14	P	8' X 6' RCBC	84	0	84	--
		I		30	0	30	--
29	ESE-S12@	P	Roadway Fill (6' Lateral Base Ditch)	1,023	10	1,023	1,023
30	ESE-S10	P	6' Base Ditch (tie-In)	0	41	0	0
31	ESE-S48	I	Roadway Fill	15	10	15	--
Previously Permitted TOTAL for U-2579AB				**9,180**	**824**	**8,961**	**5,222**
Additional Impacts per this Update to the Permitted TOTAL for U-2579AB				**15**	**10**	**15**	**--**

[1/] Data from the *Preliminary Jurisdiction Determination Report*, *R-2247/U-2579,* dated January 2016.

* Site 1 and Site 22 are both impacts to same stream (Stream ID ESE-63).

[#] Sites 3, 4, 5 and 6B are all impacts to same stream (Stream ID ESE-S61).

+ Sites 6, 18, and 25 are all impacts to same stream (Fiddlers Creek).

[@] Sites 9, 24 and 29 are all impacts to same stream (Stream ID ES-S12).

NOTE: As USACE mitigation requirements exceed those of the NCDWR, mitigation credits will be applied to the additional 15 lf of permanent impacts.

Modification for the U-2579AA Section

This modification request provides final design and impact calculations for the Winston-Salem Northern Beltway (Eastern Section of Future I-74), from US 311 to I-40 (U-2579AA). This U-2579AA section was in preliminary design phase when the original permit application was submitted on October 2, 2017.

Tables 3A and 3B summarize the impacts to **jurisdictional wetlands** for the final design of section **U-2579AA** (Table 3A) and for Utility (gravity sewer line) installation (Table 3B).

Table 3A. U-2579AA Wetland Impacts

Permit Site	Wetland ID [1/]	Wetland Size (ac)	Permanent Fill Impacts (ac)	Excavation Impacts (ac)	Mechanized Clearing Impacts (ac)	Impacts Requiring Mitigation (ac)
5	ESE-W23	0.20	<0.01	0	0.02	0.02
8	ESE-W58	0.09	0.04	0.04	0.02	0.10
9	ESE-W19	0.46	0	0	0.06	0.06
11	ESE-W20	0.33	0	0	0.03	0.03
14B	ESE-W57	0.77	0.38	0	0.05	0.43
15A	ESE-W24	1.66	0.64	0.07	0.20	0.92
Totals:			**1.07**	**0.11**	**0.38**	**1.56**

[1/] Data from the *Preliminary Jurisdiction Determination Report*, *R-2247/U-2579,* dated January 2016.

Table 3B. U-2579AA Utility Wetland Impacts

Utility Site No.	Wetland ID [1/]	Impact Type	Excavation Impacts (ac)	Impacts Requiring Mitigation (ac)
Site 5*	ESE-W23	30" Gravity Sewer Line	0.02	0.02
Site 16	ESE-W22	16" Gravity Sewer Line	< 0.01	< 0.01
Site 17	ESE-W22	16" Gravity Sewer Line	0.03	0.03
Site 18*	ESE-W23	30" Gravity Sewer Line	< 0.01	< 0.01
Totals:			**0.06**	**0.06**

[1/] Corresponds with data in the *Preliminary Jurisdiction Determination Report*, *R-2247/U-2579,* dated January *2016.*

***** Utility Impact Site 5 and Site 18 are impacts outside of the permanent fill impacts at Site 5 (see Table 3A).

Justification for Open Cut Utility Wetland Impacts:
Where gravity sewer lines must cross wetlands, there will be open cut installation of the pipeline. The elevation of the points where the pipeline crosses a particular wetland is dependent on the elevation of the manholes on each side of the wetland. Directional drill installation of gravity sewer lines under wetlands is typically not the preferred method because gravity sewers must be installed at a uniform slope between manholes to ensure that wastewater flows by gravity through the pipeline. Directional drill installations are generally better suited for pressurized pipelines, such as water lines and sewer force mains, because the slope of the pipeline is not critical to ensure proper flow through the pipeline. Conventional bore and jack installation of encasement pipes for gravity sewer lines can be risky under wetlands or other bodies of water. This is because the leading face of the encasement pipe is open, which can allow water from the above wetland to flow into the leading face of the encasement pipe, possibly causing the bore pit to flood. For these reasons, it is generally preferable to install gravity sewer lines through wetlands by the open cut method.

Table 4 summarizes the impacts to **jurisdictional streams** for the final design of section **U-2579AA**. There are no Utility impacts to jurisdictional streams outside of the footprint of permanent stream impacts captured in Table 4.

Table 4. U-2579AA Stream Impacts

Permit Site	Stream ID [1/]	Stream Type [1/]	Impact Type	Permanent Impacts (lf)	Temporary Impacts (lf)	Impacts Requiring USACE Mitigation (lf)	Impacts Requiring NCDWR Mitigation (lf)
1	ESE-S75	I	42-inch RCP-V (not buried)	392	0	392	--
			Channel armoring	14	24	14	--
			Bank Stabilization	15	9	--	--
2C	South Fork Muddy Creek (ESE-S20) *	P	Bank Stabilization	16	20	--	--
3	Swain Creek (ESE -S18)	P	2 @ 9'X 9' RCBC	240	0	240	240
			Channel Change	124	0	124	124
			Bank Stabilization	26	20	--	26
3A			Bank stabilization - (detour-ditch outlets)	20	40	--	20
3B			Bank Stabilization - (detour bridge)	35	18	--	35
4	South Fork Muddy Creek (ESE-S20) *	P	2 @ 10'X 9' RCBC	418	0	418	418
			Channel Change	85	0	85	85
			Bank Stabilization	80	0	--	80
4A			Bank Stabilization – (culvert phasing)	67	10	--	67
5A	South Fork Muddy Creek (ESE-S20) *	P	Scour Hole Stabilization (assoc. w/ 60" CMP removal)	42	40	42	42
5B			Scour Hole Stabilization (assoc. w/ 60" CMP removal)	8	10	8	8
5C			Bank Stabilization	236	17	--	236
5D			Bank Stabilization	173	0	--	173
6	ESE-S35	I	36-inch Welded Steel Pipe / channel armoring	57	0	57	--
			Bank Stabilization	68	20	--	--

Permit Site	Stream ID [1/]	Stream Type [1/]	Impact Type	Permanent Impacts (lf)	Temporary Impacts (lf)	Impacts Requiring USACE Mitigation (lf)	Impacts Requiring NCDWR Mitigation (lf)
7	ESE-S34	P	72-inch Alt/Welded Steel Pipe	26	0	26	--
			Bank Stabilization	23	15	--	--
7A			72-inch Alt/Welded Steel Pipe	11	0	11	--
			Bank Stabilization	35	10	--	--
10	Fiddler's Creek	P	Bank Stabilization	60	20	--	--
10A	ESE-S28	P	Bank Stabilization	9	22	--	--
10B				8	10	--	--
10C				8	10	--	--
10D				10	10	--	--
12A	ESE-S31	I	Channel armoring (for Energy Dissipator Basin)	33	0	33	--
12B			Channel change	80	10	80	--
13	ESE-S74	I	60-inch Alt/Welded Steel Pipe	32	0	32	--
			Channel Armoring	31	25	31	--
14	South Fork Muddy Creek (ESE-S20) *	P	3 @ 8'X 8' RCBC Extension	150	0	150	150
			Bank Stabilization	97	20	--	97
14A	ESE-S36	I	3' Base Ditch	50	10	50	--
15	ESE-S37	P	36-inch RCP - III	249	0	249	--
			Bank Stabilization	16	32	--	--
TOTAL				**3,044**	**422**	**2,042**	**1,801**

[1/] Data from the *Preliminary Jurisdiction Determination Report*, *R-2247/U-2579,* dated January 2016. P = Perennial; I = Intermittent.

* Sites 2C, 4, 4A 5A, 5B, 5C, 5D, and 14 are all impacts to South Fork Muddy Creek (ESE-S20).

NOTE: As USACE mitigation requirements exceed those of the NCDWR, mitigation credits will be applied to 2,042 lf of impacts.
[permanent stream impacts (3,044 lf) minus permanent bank stabilization impacts (1,002 lf) = 2,042 lf of stream impacts requiring USACE mitigation]

Table 5 summarizes the impacts to **ponds** for the final design of section **U-2579AA**.

Table 5. U-2579AA Pond Impacts

Permit Site No.	Pond ID*	Pond Size (ac)	Permanent Fill (ac)	Impacts Requiring Mitigation (ac)
2	ESE-P8	0.50	0.50	0
2A	ESE-P16	0.12	0.12	0
2B	ESE-P9	2.31	2.31	0
6A	ESE-P10	0.11	0.11	0
Totals:		**3.04**	**3.04**	**0**

* Corresponds with data in the *Preliminary Jurisdiction Determination Report*, *R-2247/U-2579,* dated January 2016.

Summary of Jurisdictional Impacts by TIP

The impacts reported in this Individual Permit Modification application for **U-2579AA** are based on final design. Those for U-2579AB are an update to the previously permitted impact values.

Table 6. Summary of Wetland Impacts per TIP Section

TIP Section	Design Stage	Wetland Impacts (ac)		Impacts Requiring USACE Mitigation (ac)
		Original IP ^	Permitted / Final Design ^^	
R-2247B Phase 2	Preliminary	0.27	-	*
R-2247CA		0.71	-	*
R-2247CB		1.98	-	*
R-2247D		0.52	-	*
R-2247EA		0.58 [1/]	-	0.58 [1/]
PRELIMINARY Design Totals:		**4.06**	**-**	**0.58**
U-2579AA	**Final**	1.43	1.62 [+ 2/]	1.62
U-2579AB Update	**Final**	--	0.02	0.02
FINAL Design Totals:		**1.43**	**1.64**	**1.64**
U-2579AB [3/]	Permitted	1.50 [3/]	1.43 [3/]	1.43 [3/]
U-2579C Phase 2		0.68	0.57	0.57
U-2579D		0.08	0.04	0.04
U-2579E		0.99	0.85	0.85
U-2579F		0.24	0.20	0.20
R-2247CD		0.04	0.04	0.04
R-2247EB		0.08 [1/]	0.43 [1/]	0.43 [1/]
R-2247EC		0.31	0.31	0.31
PERMITTED Totals:		**3.92**	**3.87**	**3.87**
PROJECT Totals:		**9.41**	**5.51**	**6.09**

^ Wetland impacts permitted in the referenced original Phased IP dated January 22, 2018 **(SAW-2017-02112).**

^^ Wetland impacts permitted in referenced Permit Modifications (see Reference section of Cover Letter).

* Mitigation for non-funded (post year) sections is not required at this time; to be requested when funding is secured.

\+ see ***Summary of Wetland and Stream Mitigation Per TIP Section*** for explanation of increase in wetland impacts**.**

[1/] Values changed due to impacts not accounted for in original Phased IP App. for section R-2247EB, and from revised project limits for Sections R-2247EB and R-2247EA [see referenced Modification Application, R-2247EB, dated June 26, 2019].

[2/] Total wetland impacts include permanent wetland impacts from Utility (gravity sewer line) installation.

[3/] Impact values for Section U-2579AB are from the previously permitted Modification (USACE 404 Permit Modification for U-2579AB, dated February 10, 2021; NCDWR 401 WQC Revision 7, dated February 9, 2021)

Table 7. Summary of Stream Impacts per TIP Section

TIP Section	Design Stage	Stream Impacts (lf)		Impacts Requiring USACE Mitigation (lf)
		Original IP ^	Permitted / Final Design ^^	
R-2247B Phase 2	Preliminary	862	-	*
R-2247CA		3,056	-	*
R-2247CB		5,674	-	*
R-2247D		5,762	-	*
R-2247EA		7,310 [1/]	-	744 [1/ 2/]
Preliminary Design totals:		**22,664**	**-**	**744**
U-2579AA	**Final**	3,019	3,044 [+]	2,042
U-2579AB Update	**Final**	--	15	15
Final Design Totals:		**3,019**	**3,059 [+]**	**2,057**
U-2579AB [3/]	Permitted	10,351 [3/]	9,180 [3/]	8,961 [3/]
U-2579C Phase 2		3,409	3,266	3,178
U-2579D [4/]		5,043	4,352 [4/]	4,345 [4/]
U-2579E		4,864	4,831	4,817
U-2579F		2,544	2,522	2,502
R-2247CD		699	699	611
R-2247EB		5,819 [1/]	5,817 [1/]	5,323 [1/]
R-2247EC		865	865	814
Permitted totals:		**33,712**	**31,532**	**30,551**
Project Totals:		**59,395**	**34,591**	**33,382**

^ Stream impacts permitted in the referenced original Phased Individual Permit dated 1/22/2018 **(SAW-2017-02112).**

^^ Stream impacts permitted in referenced Permit Modifications (see Reference section of Cover Letter).

* Mitigation for the non-funded (post year) sections is not required and will be requested when funding is secured.

[+] The slight increase in stream values from Original IP (25 lf) is due to additional bank stabilization impacts.

[1/] Values changed from original Phased IP application due to revised project limits for R-2247EA and R-2247EB [see NCDOT Request for Permit Modification, R-2247EB, dated 6/26/2019].

[2/] Mitigation for 6,536 lf of stream impact for R-2247EA obtained from private Mitigation Bank [see original IP application, dated 10/2/2017].

[3/] Current impact values for Section U-2579AB include the value from the previously permitted Modification (USACE 404 Permit Modification for U-2579AB, dated February 10, 2021; NCDWR 401 WQC Revision 7, dated February 9, 2021)

[4/] Current impact values for Section U-2579D include revisions from two referenced modification applications: Permit Modification for U-2579 DEF (dated 10/17/2019); and Permit Modification for U-2579 DEF (dated 11/4/, 2020).

The increase in wetland impacts in final design, versus the preliminary impacts in the original Phased IP, for U-2579AA is due to the following (along with the rounding of the impact values):

- the changing of 0.02 acre of wetland impact at Site 5 from "hand-clearing" to "mechanized clearing" (discussed at 4C meeting)
- the addition of ~ 0.02 acre of impact due to utility installation (gravity sewer line) at Site 8 not captured in the preliminary impacts (slope stake + 25 feet),
- the addition of 0.06 acre of mechanized clearing impact at Site 9 needed for erosion control that was not captured in the preliminary impacts (discussed at 4C meeting),
- the addition of 0.03 acre of impact at Site 11 needed for erosion control that was not captured in the preliminary impacts (discussed at 4C meeting), and

- the addition of 0.08 acre of impact at Site 15A to capture impacts to the remnant portion of wetland ESE-W24 that was not included in the preliminary impacts (discussed at 4C meeting).

Summary of Wetland and Stream Mitigation Per TIP Section

Final mitigation requirements will be up to the USACE and NCDWR. NCDOT has reserved mitigation with DMS for the funded sections of the Winston-Salem Northern Beltway totaling mitigation for 5.93 acres wetland impacts and 37,248 linear feet of permanent stream impacts (at 2:1 ratio).

The permitted wetland impacts previously mitigated, the wetland impact mitigation requested with this modification application, and the running/cumulative total wetland impacts requiring mitigation, per River Basin, are presented below in Table 8.

Table 8. Wetland Mitigation by River Basin

River Basin	Previously Permitted Impacts Mitigated (ac.)	Impacts for which Mitigation is Requested in this Modification Application (ac.)	Running Totals (ac.)
Yadkin	2.82	1.64	4.46
Roanoke	1.05	0	1.05
Cumulative Total	**3.87**	**1.64**	**5.51**

The permitted stream impacts previously mitigated, the stream impact mitigation requested with this modification application, and the running/cumulative total stream impacts requiring mitigation, per River Basin, are presented below in Table 9.

Table 9: Stream Mitigation by River Basin

River Basin	Previously Permitted Impacts Mitigated (lf)	Impacts for which Mitigation is Requested in this Modification Application (lf)	Running Totals (lf)
Yadkin	23,232	2,057	25,289
Roanoke	7,319	0	7,319
Cumulative Total	**30,551**	**2,057**	**32,608**

Avoidance/Minimization for U-2579AA

Guardrail with 2:1 slope was utilized throughout the project to minimize impacts to wetlands and streams. Additional minimization measures used on this project include:

1. Maximizing shoulder sections, including along the Y2NBL and Y2SBL chains where shoulders bordering the medians were maintained at 8' width, allowing runoff to remain in a diffuse flow pattern to encourage passive stormwater treatment over vegetative areas adjacent to the roadway;
2. Minimizing roadway side-slopes in areas without shoulder/berm gutter, encouraging sheet flow of runoff, reducing runoff velocity, and increasing infiltration;
3. Implementing an alignment that minimizes stream impacts related to stream crossings, including new location culverts which maintain existing stream integrity;
4. Providing adequate ground cover by using gently sloping side slopes and ditch slopes which contribute to non-erosive runoff velocities;

5. Stabilizing embankments and drainage ditches with RR where velocities could potentially become erosive;
6. Providing adequate energy dissipation at pipe outlets;
7. Utilizing natural features and drainage pathways, for example placing a drainage ditch along the former pond paralleling Y2RPB;
8. Utilizing approximately 17,000 ft. of ditch-line in the medians and along the side-slopes maintaining non-erosive velocities during 2-year storms and meeting grass swale criteria; and
9. The installation of an Energy Dissipator at Site 12A.

Regulatory Approvals

Section U-2579AA is scheduled to Let on October 18, 2022, with a Review Date of August 30, 2022. Section U-2579AB has already been permitted.

Section 404: We are hereby requesting modification to the USACE Individual 404 Permit (SAW-2017-02112), for the above-described activities for Section U-2579AA and updated activities for Section U-2579AB.

Section 401: We are hereby requesting a modification to the 401 Water Quality Certification (WQC004131) from the NCDWR for Section U-2579AA and updated activities for Section U-2579AB. In compliance with Section 143-215.3D(e) of the NCAC, we will provide $570.00 to act as payment for processing the Section 401 permit modification (see Subject line).

A copy of this modification request and its distribution list will be posted on the NCDOT website 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 Bill Barrett at 919-707-6103 or wabarrett@ncdot.gov.

Sincerely,

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

cc:
NCDOT Permit Application Standard Distribution List

Attachments:
DMS Mitigation Acceptance Letter, dated September 29, 2017
Updated Stormwater Management Plan for U-2579AB
Updated Permit Drawings for U-2579AB
Concurrence Point 4B Meeting Minutes for U-2579AA (November 16, 2017)
Concurrence Point 4C Meeting Minutes for U-2579AA (January 16, 2019)
Stormwater Management Plan for U-2579AA
Permit Drawings for U-2579AA
Utility Permit Drawings for U-2579AA

Project Submittal Interim Form

Updated September 4, 2020

*Please note: fields marked with a red asterisk * below are required. You will not be able to submit the form until all mandatory questions are answered.*

Project Type: *

- ( ) For the Record Only (Courtesy Copy)
- ( ) New Project
- (•) Modification/New Project with Existing ID
- ( ) More Information Response
- ( ) Other Agency Comments
- ( ) Pre-Application Submittal
- ( ) Re-Issuance\Renewal Request
- ( ) Stream or Buffer Appeal

Pre-Filing Meeting Information

Before submitting this form please ensure you have submitted the Pre-Filing Meeting Request Form as we will not be able to accept your application without this important first step. The Pre-Filing Meeting Request Form is used in accordance with 40 C.F.R. Section 121.4(a) "At least 30 days prior to submitting a certification request, the project proponent shall request a pre-filing meeting with the certifying agency" and in accordance with 40 C.F.R. Section 121.5(b)(7), and (c)(5) all certification requests shall include documentation that a pre-filing meeting request was submitted to the certifying authority at least 30 days prior to submitting the certification request. Click **here** to read more information on when this form is needed prior to application submission or **here** to view the form.

Attach documentation of Pre-Filing Meeting Request here: * 1.pdf 114....

Date for Meeting Request * 11/3/2021

ID# 19980260 **Version** 7

Project Contact Information

Name: Michael Turchy
Who is submitting the information?

Email Address: * maturchy@ncdot.gov

Project Information

Existing ID #: *
19980260
20170001 (no dashes)

Existing Version: *
7
1

Project Name: * U-2579 AA and AB - Construction of Winston-Salem Northern Beltway

Is this a public transportation project? *

- (•) Yes
- ( ) No

Is this a DOT project? *

- (•) Yes
- ( ) No

Is the project located within a NC DCM Area of Environmental Concern (AEC)? *

( ) Yes (•) No ( ) Unknown

TIP#: U-2579 AA and AB

WBS#: 34839.1.7

(Applies to DOT projects only)

County (ies) *

Forsyth

Please upload all files that need to be submited.

Click the upload button or drag and drop files here to attach document

Only pdf or kmz files are accepted.

Describe the attachments or add comments:

Permit Package, including cover letter, DMS Mitigation Summary, DMS Mitigation Acceptance, Permit Drawings, 4B and 4C Meeting Minutes.

* [x] By checking the box and signing box below, I certify that:

- I, the project proponent, hereby certifies that all information contained herein is true, accurate, and complete to the best of my knowledge and belief.
- I, the project proponent, hereby requests that the certifying authority review and take action on this CWA 401 certification request within the applicable reasonable period of time.
- I agree that submission of this online form is a “transaction” subject to Chapter 66, Article 40 of the NC General Statutes (the “Uniform Electronic Transactions Act”);
- I agree to conduct this transaction by electronic means pursuant to Chapter 66, Article 40 of the NC General Statutes (the “Uniform Electronic Transactions Act”);
- I understand that an electronic signature has the same legal effect and can be enforced in the same way as a written signature; AND
- I intend to electronically sign and submit the online form.

Signature: *



Submittal Date: Is filled in automatically once submitted.

Table 14. Summary of Mitigation Provided by DMS for Projects Letting within 5 Years

Section	Design Stage	Wetland Impacts Requiring Mitigation (ac)	Stream Impacts Requiring Mitigation (lf)
R-2247EC	Final	0.31	814
R-2247CD	Final	0.04	611
U-2579C Phase 2	Final	0.68	3,409
U-2579AA	Preliminary	1.43	3,019
U-2579AB	Preliminary	1.50	10,351
U-2579D	Preliminary	0.08	5,043
U-2579E	Preliminary	0.99	4,864
U-2579F	Preliminary	0.24	2,544
R-2247EA	Preliminary	0.57	*
R-2247EB	Preliminary	0.09	6,593
Total		**5.93**	**37,248**

*Mitigation for R-2247EA provided by Mitigation Bank. See attached mitigation summary.

Explanation of mitigation provided by DMS
Sections in Final Design (R-2247CD, R-2247EC, and U-2579C Phase 2) and
Sections in Preliminary Design with LET dates within 5 years (U-2579AA, U-2579AB, U-2579D, U-2579E, U-2579F, and R-2247EB).

Streams:

Total Project Impacts:	59,395 linear feet
Sections to Let > 5 years:	-15,354 linear feet
Bank Stabilization for Final Design	-257 linear feet
Section R-2247EA using mitigation Bank	-6,536 linear feet (see attached summary)
Balance	**37,248 linear feet**

Yadkin mitigation = 30,834
Roanoke mitigation = 6,414

Wetlands:

Total Project Impacts:	9.41 acres
Sections to Let > 5 years:	-3.48 acres
Balance	**5.93 acres**

Yadkin Mitigation = 4.79 acres
Roanoke Mitigation = 1.14 acres

REGULATORY APPROVALS

Section 404: Application is hereby made for a USACE Individual 404 Permit as required for the above-described activities.

Section 401: We are hereby requesting a 401 Water Quality Certification from the N. C. Division of Water Resources. In compliance with Section 143 215.3D(e) of the NCAC, we

Environmental Quality

ROY COOPER
Governor

September 29, 2017

Mr. Philip S. Harris III, P.E., CPM
Natural Environment Section, PDEA
North Carolina Department of Transportation
1598 Mail Service Center
Raleigh, North Carolina 27699-1598

Dear Mr. Harris:

Subject: DMS Mitigation Acceptance Letter: **U-2579 / R-2247,** Winston-Salem Northern Beltway – from South of I-40 Southwest of the City to I-74 / US 311 Southeast of the City, Forsyth County

The purpose of this letter is to notify you that the Division of Mitigation Services (DMS) will provide the stream and wetland mitigation for the subject project. Based on the information supplied by you on September 28, 2017, the stream and wetland impacts are located in CU 03040101 of the Yadkin River basin and 03010103 of the Roanoke River basin in the Central Piedmont (CP) Eco-Region, and are as follows:

Stream & Wetlands	River Basin	CU Location	Eco-Region	Stream			Wetlands		
				Cold	Cool	Warm	Riparian	Non-Riparian	Coastal Marsh
Impacts	Yadkin	03040101	CP	0	0	30,834.0	4.79	0	0
Impacts	Roanoke	03010103	CP	0	0	6,414.0	1.14	0	0

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

These impacts and associated mitigation needs were *under* projected by the NCDOT in the 2017 impact data. DMS will commit to implement sufficient compensatory stream and riparian wetland mitigation credits to offset the impacts associated with this project as determined by the regulatory agencies using the delivery timeline listed in Section F.3.c.iii of the 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 DMS.

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

Sincerely,

James B. Stanfill
DMS Credit Management Supervisor

Cc: Mr. James Lastinger, USACE – Raleigh Regulatory Field Office
Ms. Amy Chapman, NC Division of Water Resources – Raleigh
File: U-2579 / R-2247

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.08; Released April 2018)

WBS Element: 34839.1.8 **TIP No.:** U-2579AB **County(ies):** Forsyth

General Project Information

WBS Element:	34839.1.8	**TIP Number:**	U-2579AB	**Project Type:** New Location	**Date:** 7/2/2021
NCDOT Contact:	Craig J Lee, PE		**Contractor / Designer:**	Wyatt D. Yelverton, PE	
Address:	1020 Birch Ridge Dr. Raleigh, NC 27610		**Address:**	555 Fayetteville St., Suite 900 Raleigh, NC 27601	
Phone:	919-707-6708		**Phone:**	919-232-6623	
Email:	cjlee@ncdot.gov		**Email:**	wyatt.yelverton@hdrinc.com	
City/Town:	Winston-Salem		**County(ies):**	Forsyth	
River Basin(s):	Yadkin-Pee Dee		**CAMA County?**	No	
Wetlands within Project Limits?	Yes				

Project Description

Project Length (lin. miles or feet):	2.73 Miles	**Surrounding Land Use:**	Residential (Single Family)

	Proposed Project	**Existing Site**
Project Built-Upon Area (ac.)	530.0 ac.	90.0 ac.
Typical Cross Section Description:	6 lane divided freeway w/ an 18 foot grass median: (2) 12 foot outside paved shoulders, (3) 12 foot travel lanes, (2) 12 foot paved median shoulders - Total width of 146'	N/A - new alignment
Annual Avg Daily Traffic (veh/hr/day):	Design/Future: 20,200 Year: 2040	Existing: 14,700 Year: 2018

General Project Narrative: (Description of Minimization of Water Quality Impacts)

Project Description: The proposed project (U-2579AB) is part of the future I-74 Winston-Salem Northern Beltway from I-40 Bus/US 421 to I-40 and tying with the U-2579AA portion. The project will construct approximately 3 miles of 6-lane divided highway in new location. The project also includes widening of I-40 and 2 major interchanges: Kernersville Rd. and 3-level interchange at I-40. There are 2 proposed single barrel culvert crossings on the project at tributaries to Fiddlers Creek. There are no bridge crossings over major water bodies on the project. Pipe culverts will be used to convey all other jurisdictional stream crossings through the project. Wetlands are also located throughout the length of the entire project.

Impact Minimization Efforts: Guardrail with 2:1 slopes were utilized throughout the project to minimize surface water impacts to streams and wetlands. Ditches and pipes that outlet adjacent to wetlands have been designed to have non-erosive velocities to help protect the existing wetlands.

Stormwater BMP Measures: Stormwater control measures such as dry dentention and energy dissipator basins were proposed at specific locations along the project. Many ditches are designed to achieve grass swale credit.

Waterbody Information

Surface Water Body (1):	Fiddlers Creek		**NCDWR Stream Index No.:**	12-94-13-3	
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C		
		Supplemental Classification:	None		
Other Stream Classification:	None				
Impairments:	None				
Aquatic T&E Species?	No	Comments:			
NRTR Stream ID:	ESE-S8, ESE-S61, ESE-S11, ESE-S59, ESE-S12, ESE-S13, ESE-S14, ESE-S15, ESE-S16, ESE-S49, ESE-S51, ESE-S52, ESE-S56, ESE-S58, ESE-S25, ESE-S72, ESE-S50, ESE-S26		**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)	
(If yes, provide justification in the General Project Narrative)					

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.08; Released April 2018)

Additional Waterbody Information

Surface Water Body (2):	Fishers Branch		**NCDWR Stream Index No.:**	12-94-12-2-(1)		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Water Supply III (WS-III)			
		Supplemental Classification:	None			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	ESE-S63, ESE-S69			**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

Surface Water Body (3):	Swaim Creek		**NCDWR Stream Index No.:**	12-94-13-1		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C			
		Supplemental Classification:	None			
Other Stream Classification:	None					
Impairments:	None					
Aquatic T&E Species?	No	Comments:				
NRTR Stream ID:	ESE-S19, ESE-S42			**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.08; Released April 2018)

WBS Element: 34839.1.8 **TIP No.:** U-2579AB **County(ies):** Forsyth

Swales

Sheet No.	Station & Coordinates (Road and Non Road Projects)	Surface Water Body	Base Width (ft)	Front Slope (H:1)	Back Slope (H:1)	Drainage Area (ac)	Recommended Treatm't Length (ft)	Actual Length (ft)	Longitudinal Slope (%)	Q2 (cfs)	V2 (fps)	Q10 (cfs)	V10 (fps)	Rock Checks Used	BMP Associated w/ Buffer Rules?
4	-L- 692+33 M 36.1006784/-80.1362789	Fishers Branch	0.0	4.0	6.0	0.5	45	292	2.08%	1.3	1.9	1.6	2.1	No	No
5	-L- 703+50 M 36.0976758/-80.1380454	Fishers Branch	0.0	4.0	10.0	0.3	28	100	1.65%	0.9	1.5	1.2	1.6	No	No
5	-L- 704+50 M 36.0974187/-80.1381536	Fishers Branch	0.0	4.0	10.0	0.3	33	150	1.17%	1.1	1.4	1.4	1.5	No	No
5	-L- 704+50 RT 36.0974854/-80.1384480	Fishers Branch	0.0	4.0	4.0	0.1	14	150	1.60%	0.5	1.4	0.6	1.5	No	No
5	-L- 707+50 RT 36.0966710/-80.1387137	Fishers Branch	0.0	6.0	4.0	0.1	9	150	0.23%	0.2	0.5	0.2	0.6	No	No
5	-Y1B- 12+50 LT 36.10011150/-80.1391462	Fishers Branch	0.0	4.0	2.0	0.1	11	150	0.01%	0.4	0.2	0.5	0.2	No	No
5	-Y1B- 13+00 LT 36.1000860/-80.1390067	Fishers Branch	0.0	4.0	2.0	0.1	7	100	0.13%	0.2	0.5	0.3	0.5	No	No
5	-Y1B- 18+00 LT 36.0986947/-80.1384805	Fishers Branch	0.0	4.0	2.0	0.4	39	400	1.18%	1.3	1.7	1.6	1.9	No	No
5	-Y1B- 12+50 RT 36.0986184/-80.1389079	Fishers Branch	0.0	4.0	2.0	0.2	15	150	0.30%	0.4	0.8	0.5	0.8	No	No
5	-Y1B- 19+00 RT 36.0983349/-80.1387000	Fishers Branch	0.0	4.0	2.0	0.3	30	400	1.61%	0.6	1.7	0.8	1.8	No	No
5	-Y1B- 20+50 RT 36.0978718/-80.1385609	Fishers Branch	2.0	2.0	2.0	1.1	113	253	0.50%	3.2	1.4	4.0	1.5	No	No
6	-L- 706+00 M 36.0970192/-80.1382776	Fishers Branch	0.0	4.0	10.0	0.4	44	200	0.70%	1.4	1.2	1.8	1.3	No	No
6	-L- 708+00 M 36.0964794/-80.1384027	Fishers Branch	0.0	4.0	10.0	0.4	39	200	0.67%	1.3	1.2	1.7	1.2	No	No
6	-L- 710+00 M 36.0959338/-80.1384811	Fishers Branch	0.0	4.0	10.0	0.4	42	200	0.66%	1.4	1.2	1.7	1.3	No	No
6	-L- 712+00 M 36.0953852/-80.1385126	Fishers Branch	0.0	4.0	10.0	0.7	67	300	0.67%	2.2	1.3	2.8	1.4	No	No
6	-L- 715+00 M 36.0945621/-80.1384714	Fishers Branch	0.0	4.0	8.0	0.5	47	250	0.63%	1.5	1.2	1.9	1.3	No	No
6	-L- 717+50 M 36.0938820/-80.1383564	Fishers Branch	0.0	4.0	6.0	0.6	64	409	0.65%	2.1	1.4	2.6	1.5	No	No
6	-L- 710+50 LT 36.0956113/-80.1384356	Fishers Branch	0.0	6.0	4.0	1.3	128	250	0.50%	3.0	1.4	3.9	1.5	No	No
6	-L- 711+00 LT 36.0954521/-80.1382090	Fishers Branch	0.0	6.0	4.0	1.3	128	300	0.94%	3.0	1.8	3.9	1.9	No	No

Additional Comments

WBS Element: 34839.1.8 **TIP No.:** U-2579AB **County(ies):** Forsyth

Swales

Sheet No.	Station & Coordinates (Road and Non Road Projects)	Surface Water Body	Base Width (ft)	Front Slope (H:1)	Back Slope (H:1)	Drainage Area (ac)	Recommended Treatm't Length (ft)	Actual Length (ft)	Longitudinal Slope (%)	Q2 (cfs)	V2 (fps)	Q10 (cfs)	V10 (fps)	Rock Checks Used	BMP Associated w/ Buffer Rules?
6	-L- 711+00 LT 36.0954521/-80.1382090	Fishers Branch	0.0	6.0	4.0	2.0	197	389	0.30%	4.7	1.3	6.0	1.4	No	No
6	-L- 715+00 LT 36.0945983/-80.1381676	Fishers Branch	0.0	6.0	4.0	0.4	40	150	0.72%	1.0	1.2	1.3	1.3	No	No
6	-L- 715+00 LT 36.0945983/-80.1381676	Fishers Branch	0.0	6.0	6.0	0.7	74	250	0.83%	1.9	1.5	2.4	1.6	No	No
6	-L- 707+50 RT 36.0968041/-80.1386987	Fishers Branch	0.0	6.0	4.0	0.3	25	200	0.38%	0.4	0.8	0.5	0.8	No	No
6	-L- 709+50 RT 36.0960971/-80.1387955	Fishers Branch	0.0	6.0	4.0	1.6	164	609	0.47%	2.5	1.3	3.2	1.4	No	No
6	-L- 715+50 RT 36.0943983/-80.1387565	Fishers Branch	0.0	6.0	4.0	0.3	30	150	0.69%	0.7	1.1	0.9	1.2	No	No
6	-L- 715+50 RT 36.0943983/-80.1387565	Fishers Branch	0.0	6.0	4.0	0.3	31	150	0.54%	0.7	1.0	0.9	1.1	No	No
6	-L- 717+50 RT 36.0938372/-80.1386614	Fishers Branch	0.0	6.0	5.0	0.2	17	50	0.30%	0.4	0.7	0.5	0.7	No	No
6	-L- 719+50 RT 36.0932869/-80.1385279	Fishers Branch	0.0	6.0	6.0	0.8	75	200	0.30%	1.6	1.0	2.1	1.0	No	No
6	-L- 726+00 LT 36.0916661/-80.1374075	Fiddlers Creek	0.0	6.0	9.0	0.9	85	100	0.84%	2.0	1.4	2.6	1.5	No	No
6	-L- 726+00 LT 36.0916661/-80.1374075	Fiddlers Creek	0.0	6.0	8.0	1.4	136	300	0.66%	3.2	1.5	4.1	1.6	No	No
6	-L- 729+00 LT 36.0908643/-80.1371730	Fiddlers Creek	0.0	6.0	8.0	0.8	76	300	0.67%	2.1	1.3	2.7	1.4	No	No
6	-L- 730+00 LT 36.0905980/-80.1370899	Fiddlers Creek	0.0	6.0	8.0	0.8	76	200	1.58%	2.1	1.8	2.7	2.0	No	No
6	-L- 725+00 RT 36.0918243/-80.1380437	Fiddlers Creek	0.0	6.0	4.0	0.3	28	50	0.84%	0.7	1.2	0.9	1.2	No	No
6	-L- 726+50 RT 36.0914156/-80.1379661	Fiddlers Creek	0.0	6.0	4.0	0.9	90	150	0.72%	1.9	1.4	2.5	1.5	No	No
6	-L- 726+50 RT 36.0914156/-80.1379661	Fiddlers Creek	0.0	6.0	4.0	0.9	90	250	0.69%	1.9	1.4	2.5	1.5	No	No
6	-L-729+00 RT 36.0907482/-80.1377666	Fiddlers Creek	0.0	6.0	4.0	0.6	59	250	1.40%	1.7	1.8	2.1	1.9	No	No
6	-Y4RPC- 14+21 LT 36.0895946/-80.1375256	Fiddlers Creek	0.0	6.0	4.0	0.1	10	25	0.33%	1.2	0.6	0.3	0.7	No	No
6	-Y4RPC- 14+21 LT 36.0895946/-80.1375256	Fiddlers Creek	0.0	6.0	4.0	0.7	66	219	0.30%	1.6	1.0	2.0	1.1	No	No

Additional Comments

(Version 2.08; Released April 2018)

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

WBS Element: 34839.1.8 **TIP No.:** U-2579AB **County(ies):** Forsyth

Swales

Sheet No.	Station & Coordinates (Road and Non Road Projects)	Surface Water Body	Base Width (ft)	Front Slope (H:1)	Back Slope (H:1)	Drainage Area (ac)	Recommended Treatm't Length (ft)	Actual Length (ft)	Longitudinal Slope (%)	Q2 (cfs)	V2 (fps)	Q10 (cfs)	V10 (fps)	Rock Checks Used	BMP Associated w/ Buffer Rules?
6	-Y4RPD- 13+33 RT 36.0895455/-80.1366931	Fiddlers Creek	0.0	6.0	4.0	0.8	77	262	0.48%	2.2	1.3	2.8	1.4	No	No
6	-Y1B- 34+50 RT 36.0947968/-80.1356940	Fiddlers Creek	2.0	2.0	2.0	0.1	8	83	2.44%	0.2	1.0	0.3	1.1	No	No
6	-L- 708+00 LT 36.0964426/-80.1381046	Fiddlers Creek	0.0	2.0	2.0	0.4	40	75	1.60%	0.9	1.6	1.1	1.7	No	No
7	-L- 737+00 M 36.0918351/-80.1368794	Fiddlers Creek	0.0	6.0	5.0	0.4	35	335	1.33%	0.8	1.4	1.1	1.5	No	No
7	-L- 737+00 RT 36.0886700/-80.1368347	Fiddlers Creek	0.0	6.0	4.0	1.3	125	350	0.85%	3.0	1.7	3.8	1.8	No	No
7	-NWL1- 15+50 RT 36.0891145/-80.1377104	Fiddlers Creek	2.0	2.0	2.0	0.0	3	38	9.74%	0.1	1.0	0.1	1.1	No	No
7	-L- 733+18 RT 36.0895946/-80.1375256	Fiddlers Creek	0.0	2.0	2.0	0.2	24	52	2.32%	0.6	1.6	0.7	1.7	No	No
7	-L- 737+00 RT 36.0886700/-80.1368347	Fiddlers Creek	0.0	2.0	2.0	0.1	12	51	3.84%	0.3	1.7	0.4	1.8	No	No
7	-SR1- 16+50 RT 36.0878445/-80.1360991	Fiddlers Creek	0.0	2.0	2.0	0.4	39	166	2.20%	0.9	0.7	1.2	0.8	No	No
7	-SR1- 20+74 LT 36.0867225/-80.1356815	Fiddlers Creek	0.0	4.0	2.0	0.2	17	258	0.20%	0.4	1.7	0.5	1.8	No	No
8	-L- 754+00 RT 36.0840573/-80.1365954	Fiddlers Creek	2.0	2.0	2.0	0.2	17	50	2.80%	0.4	1.3	0.5	1.4	No	No
9	-L- 769+50 LT 36.0825232/-80.1358857	Fiddlers Creek	0.0	6.0	6.0	2.0	200	650	0.47%	6.4	1.6	8.3	1.7	No	No
9	-L- 762+50 M 36.0818518/-80.1363079	Fiddlers Creek	0.0	6.0	6.0	0.2	24	150	2.58%	0.5	1.6	0.7	1.7	No	No
9	-L- 770+50 M 36.0795198/-80.1364511	Fiddlers Creek	0.0	6.0	6.0	0.6	57	350	0.97%	1.5	1.4	1.9	1.5	No	No
9	-L- 773+50 M 36.0786967/-80.1365019	Fiddlers Creek	0.0	6.0	6.0	1.1	107	300	0.54%	2.8	1.4	3.5	1.4	No	No

Additional Comments

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.08; Released April 2018)

WBS Element: 34839.1.8 **TIP No.:** U-2579AB **County(ies):** Forsyth

Swales

Sheet No.	Station & Coordinates (Road and Non Road Projects)	Surface Water Body	Base Width (ft)	Front Slope (H:1)	Back Slope (H:1)	Drainage Area (ac)	Recommended Treatm't Length (ft)	Actual Length (ft)	Longitudinal Slope (%)	Q2 (cfs)	V2 (fps)	Q10 (cfs)	V10 (fps)	Rock Checks Used	BMP Associated w/ Buffer Rules?
10	-Y15FLYBD- 25+50 LT 36.0782290/-80.1376728	Fiddlers Creek	0.0	2.0	2.0	0.9	94	175	0.31%	1.6	1.0	2.1	1.1	No	No
10	-Y15RPB- 20+50 LT 36.0759891/-80.1400686	Fiddlers Creek	0.0	2.0	2.0	1.4	140	175	1.05%	2.4	1.8	3.1	1.9	No	No
10	-L- 773+50 RT 36.0895296/-80.1374963	Fiddlers Creek	0.0	6.0	6.0	2.3	230	750	0.64%	5.9	1.8	7.6	1.9	No	No
10	-L- 790+50 RT 36.0741606/-80.1377016	Fiddlers Creek	0.0	6.0	4.0	0.4	37	175	1.86%	1.1	1.8	1.4	1.9	No	No
10	-L- 798+50 RT 36.0721321/-80.1386442	Fiddlers Creek	0.0	4.0	3.0	0.9	88	350	0.39%	2.3	1.3	2.9	1.4	No	No
10	-L- 774+50 LT 36.0784408/-80.1368754	Fiddlers Creek	0.0	6.0	4.0	1.9	193	800	0.87%	3.3	1.8	4.3	1.9	No	No
10	-L- 782+50 LT 36.0761947/-80.1364914	Fiddlers Creek	0.0	6.0	6.0	0.2	16	50	2.76%	0.4	1.6	0.5	1.7	No	No
10	-L- 790+00 LT 36.0741653/-80.1370800	Fiddlers Creek	0.0	2.0	2.0	0.3	34	225	1.76%	0.6	1.8	0.8	1.9	No	No
10	-L- 733+50 M 36.0896047/-80.1371120	Fiddlers Creek	0.0	6.0	5.0	1.6	160	850	0.67%	4.1	1.7	5.3	1.8	No	No
10	-L- 782+00 M 36.0762398/-80.1368252	Fiddlers Creek	0.0	6.0	5.0	0.9	92	450	0.67%	2.4	1.5	3.0	1.6	No	No
10	-L- 786+50 M 36.0751611/-80.1370823	Fiddlers Creek	0.0	6.0	5.0	0.8	76	350	0.84%	2.0	1.5	2.5	1.6	No	No
10	-L- 790+00 M 36.0742274/-80.1373641	Fiddlers Creek	0.0	6.0	5.0	0.4	43	200	1.72%	1.1	1.7	1.4	1.8	No	No
10	-Y15FLYCA- 76+20 RT 36.0781488/-80.1355575	Fiddlers Creek	0.0	6.0	4.0	0.3	32	270	3.81%	0.6	2.0	0.7	2.1	No	No
10	-Y15FLYBD- 60+50 RT 36.0713379/-80.1340468	Fiddlers Creek	0.0	6.0	6.0	0.1	13	150	1.07%	0.2	0.9	0.3	1.0	No	No
10	-Y15REV- 48+64 RT 36.0742992/-80.1367863	Fiddlers Creek	0.0	6.0	6.0	0.2	24	136	2.51%	0.7	1.7	0.9	1.8	No	No
10	-Y15REV- 52+50 RT 36.0743956/-80.1354862	Fiddlers Creek	0.0	6.0	4.0	0.6	61	320	0.56%	1.7	1.3	2.2	1.4	No	No
10	-Y15REV- 65+40 RT 36.0747188/-80.1311390	Fiddlers Creek	0.0	6.0	4.0	2.4	240	970	0.52%	6.2	1.7	7.9	1.8	No	No
10	-Y15REV- 49+40 LT 36.0748370/-80.1365888	Fiddlers Creek	0.0	6.0	4.0	0.1	10	66	0.43%	0.3	0.8	0.4	0.8	No	No
10	-Y15REV- 49+40 LT 36.0748370/-80.1365888	Fiddlers Creek	0.0	6.0	4.0	0.8	76	310	0.81%	2.3	1.6	2.9	1.7	No	No

Additional Comments

Swales

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10	-Y15REV- 54+00 LT 36.0749751/-80.1350413	Fiddlers Creek	0.0	6.0	6.0	0.2	24	100	3.66%	0.7	2.0	0.9	2.1	No	No
10	-Y15REV- 54+00 LT 36.0749751/-80.1350413	Fiddlers Creek	0.0	6.0	6.0	2.1	211	225	0.44%	5.4	1.5	7.0	1.6	No	No
10	-Y15LPA- 18+30 RT 36.0759679/-80.1357773	Fiddlers Creek	0.0	2.0	2.0	0.4	36	88	0.31%	0.8	0.8	1.0	0.9	No	No
10	-Y15LPA- 18+30 RT 36.0759679/-80.1357773	Fiddlers Creek	0.0	2.0	2.0	0.8	84	117	0.57%	1.8	1.3	2.3	1.4	No	No
11	-Y16- 28+50 RT 36.0674483/-80.1397486	Fiddlers Creek	0.0	4.0	2.0	0.2	24	131	1.80%	0.6	1.7	0.8	1.8	No	No
11	-Y16B- 12+50 LT 36.0672495/-80.1399005	Fiddlers Creek	0.0	4.0	2.0	0.3	25	138	0.34%	0.5	0.9	0.7	0.9	No	No
11	-Y16B- 12+00 RT 36.0671058/-80.1397792	Fiddlers Creek	0.0	4.0	2.0	0.1	11	125	0.86%	0.3	1.1	0.4	1.1	No	No
11	-L- 801+50 M 36.0712502/-80.1386544	Fiddlers Creek	0.0	6.0	6.0	0.5	47	250	1.28%	1.2	1.5	1.6	1.6	No	No
11	-L- 804+00 M 36.0706260/-80.1390070	Fiddlers Creek	0.0	6.0	6.0	0.9	94	500	0.63%	2.4	1.4	3.1	1.5	No	No
11	-L- 809+00 M 36.0694072/-80.1397865	Fiddlers Creek	0.0	6.0	6.0	0.5	52	250	0.53%	1.3	1.1	1.7	1.2	No	No
11	-L- 811+50 M 36.0688140/-80.1402126	Fiddlers Creek	0.0	6.0	6.0	0.3	33	150	0.53%	0.9	1.0	1.1	1.1	No	No
11	-L- 813+00 M 36.0684636/-80.1404796	Fiddlers Creek	0.0	6.0	6.0	1.7	172	1000	0.77%	4.4	1.4	5.7	1.5	No	No
11	-L- 823+00 M 36.0661876/-80.1423738	Swaim Creek	0.0	6.0	6.0	0.4	37	230	0.34%	1.0	0.7	1.2	0.8	No	No
11	-L- 825+30 M 36.0656658/-80.1428127	Swaim Creek	0.0	6.0	6.0	0.4	35	220	0.33%	0.9	0.7	1.2	0.8	No	No
11	-Y15RPD- 33+32 LT 36.0689516/-80.1394923	Fiddlers Creek	0.0	6.0	4.0	1.4	141	582	1.74%	3.0	1.9	3.9	2.0	No	No
11	-Y15RPD- 34+89 LT 36.0686338/-80.1398458	Fiddlers Creek	0.0	4.0	4.0	2.4	239	738	0.29%	5.1	1.4	6.6	1.5	No	No
11	-Y15FLYAC- 79+00 RT 36.0690725/-80.1409880	Fiddlers Creek	0.0	6.0	6.0	0.2	23	100	0.35%	0.5	0.8	0.6	0.8	No	No
11	-Y15FLYAC- 84+23 RT 36.0677911/-80.1417327	Fiddlers Creek	0.0	6.0	4.0	1.5	146	200	0.73%	3.1	1.6	4.0	1.7	No	No
11	-L- 801+50 LT 36.0711493/-80.1383719	Fiddlers Creek	0.0	6.0	4.0	0.4	36	250	1.28%	0.8	1.4	1.0	1.5	No	No

Additional Comments

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

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Swales

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11	-L- 804+00 LT 36.0705181/-80.1387291	Fiddlers Creek	0.0	6.0	6.0	1.1	105	500	0.63%	2.3	1.4	2.9	1.5	No	No
11	-L- 809+00 LT 36.0692854/-80.1395192	Fiddlers Creek	0.0	6.0	6.0	0.2	22	150	1.98%	0.5	1.4	0.6	1.5	No	No
11	-L- 812+50 LT 36.0684155/-80.1400668	Fiddlers Creek	0.0	4.0	4.0	1.0	100	350	0.63%	2.2	1.4	2.8	1.4	No	No
11	-L- 823+00 LT 36.0660109/-80.1420552	Fiddlers Creek	0.0	6.0	6.0	1.7	169	501	0.31%	3.6	1.3	4.7	1.4	No	No
11	-L- 804+00 RT 36.0707343/-80.1392850	Fiddlers Creek	0.0	6.0	4.0	0.9	94	450	0.64%	2.4	1.5	3.1	1.6	No	No
11	-L- 809+50 RT 36.0694122/-80.1401388	Fiddlers Creek	0.0	4.0	4.0	0.7	74	148	1.62%	1.3	2.0	2.0	2.1	No	No
11	-L- 811+00 RT 36.0690598/-80.1403898	Fiddlers Creek	0.0	6.0	4.0	0.7	74	200	0.53%	1.3	1.2	2.0	1.3	No	No
11	-L- 813+00 RT 36.0685972/-80.1407396	Fiddlers Creek	0.0	6.0	6.0	1.5	146	300	0.33%	3.1	1.2	4.0	1.2	No	No
11	-L- 816+00 RT 36.0679192/-80.1412983	Fiddlers Creek	0.0	6.0	6.0	1.5	146	300	0.49%	3.1	1.4	4.0	1.4	No	No
11	-L- 827+50 RT 36.0653701/-80.1435992	Swaim Creek	0.0	4.0	4.0	2.0	200	650	0.30%	4.3	1.3	5.5	1.4	No	No
11	-Y15RPC- 28+90 RT 36.0683966/-80.1414094	Fiddlers Creek	0.0	6.0	4.0	0.7	72	365	0.35%	1.5	1.0	2.0	1.1	No	No
11	-Y15RPC- 31+36 RT 36.0677911/-80.1417320	Fiddlers Creek	0.0	6.0	4.0	1.5	145	246	0.57%	3.1	1.5	4.0	1.6	No	No
11	-Y15RPC- 19+50 RT 36.0705722/-80.1421520	Fiddlers Creek	0.0	2.0	2.0	0.2	17	48	5.24%	0.4	2.0	0.5	2.1	No	No
11	-Y16- 16+10 LT 36.0666229/-80.1438385	Fiddlers Creek	0.0	4.0	2.0	0.8	83	290	1.26%	1.8	2.0	2.3	1.1	No	No
11	-Y16- 16+00 RT 36.0664973/-80.1438209	Swaim Creek	0.0	4.0	2.0	0.2	20	150	0.77%	0.6	1.2	0.8	1.3	No	No
11	-Y16C- 19+36 LT 36.0674474/-80.1405360	Fiddlers Creek	0.0	3.0	2.0	0.8	80	236	0.25%	1.9	1.1	2.2	1.1	No	No
11	-DR1- 10+90 RT 36.0651152/-80.1410598	Swaim Creek	0.0	3.0	2.0	0.4	43	127	0.30%	1.2	1.0	1.5	1.1	No	No
12	-L- 827+50 M 36.0651668/-80.1432325	Swaim Creek	0.0	6.0	6.0	0.4	35	225	0.32%	0.9	0.7	1.2	0.7	No	No
12	-L- 833+50 M 36.0638058/-80.1443775	Swaim Creek	0.0	6.0	6.0	1.0	96	600	1.55%	2.7	2.0	3.2	2.1	No	No

Additional Comments

Swales

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12	-L- 836+32 M 36.0631661/-80.1449156	Swaim Creek	0.0	6.0	6.0	0.5	45	282	2.38%	1.2	1.9	1.5	2.0	No	No
13	-Y4- 18+25 LT 36.0910900/-80.1418435	Fiddlers Creek	0.0	4.0	2.0	1.8	176	225	0.24%	4.2	1.3	5.3	1.4	No	No
13	-Y4A- 14+92 RT 36.0921054/-80.1424339	Fiddlers Creek	0.0	4.0	5.0	0.4	35	342	1.08%	1.0	1.6	1.3	1.7	No	No
13	-Y4- 17+30 RT 36.0907011/-80.1419223	Fiddlers Creek	0.0	4.0	2.0	0.5	51	160	1.32%	1.4	1.9	1.8	2.0	No	No
13	-Y4- 18+90 RT 36.0909197/-80.1414658	Fiddlers Creek	0.0	4.0	2.0	0.0	4	35	0.80%	0.1	0.8	0.1	0.9	No	No
14	-Y1B- 40+50 LT 36.0943796/-80.1336890	Fiddlers Creek	0.0	4.0	2.0	0.1	7	50	2.76%	0.2	1.5	0.3	1.6	No	No
14	-Y1B- 40+50 LT 36.0943796/-80.1336890	Fiddlers Creek	0.0	4.0	2.0	1.0	103	417	0.31%	2.9	1.3	3.7	1.4	No	No
14	-Y4- 45+50 LT 36.0943101/-80.1334953	Fiddlers Creek	0.0	4.0	2.0	0.7	69	350	0.70%	1.9	1.6	2.5	1.7	No	No
14	-Y4- 46+50 LT 36.0944003/-80.1331776	Fiddlers Creek	0.0	4.0	2.0	0.7	69	250	1.23%	1.9	2.0	2.5	2.1	No	No
14	-Y4- 54+50 RT 36.0950524/-80.1305619	Fiddlers Creek	0.0	4.0	2.0	0.5	53	200	0.47%	1.5	1.3	1.9	1.4	No	No
14	-Y4- 47+50 RT 36.0941757/-80.1326709	Fiddlers Creek	0.0	4.0	2.0	1.1	114	500	0.75%	3.2	1.9	4.1	2.0	No	No
14	-Y4- 42+50 LT 36.0939850/-80.1344285	Fiddlers Creek	0.0	2.0	2.0	0.4	44	102	2.69%	0.8	1.9	1.0	2.0	No	No
15	-Y4- 60+50 RT 36.0958418°, -80.1287779	Fiddlers Creek	0.0	4.0	2.0	0.2	22	277	1.88%	0.6	1.7	0.8	1.9	No	No
15	-Y4- 56+67 LT 36.0955228/-80.1300250	Fiddlers Creek	0.0	4.0	2.0	0.4	42	167	0.42%	1.2	1.9	1.5	2.0	No	No
17	-Y15- 36+88 RT 36.0695360/-80.1557027	Fiddlers Creek	0.0	4.0	4.0	1.1	111	248	0.31%	2.6	1.2	3.4	1.3	No	No
17	-Y15- 37+25 RT 36.0695845°/-80.1555924	Fiddlers Creek	0.0	2.0	2.0	1.2	119	164	0.60%	2.3	1.4	3.0	1.5	No	No
17	-Y15- 43+30 RT 36.0703075/-80.1537474	Fiddlers Creek	0.0	6.0	4.0	1.3	128	520	0.44%	3.6	1.4	4.6	1.5	No	No
18	-Y15FLYCA- 12+52 RT 36.0710359/-80.1520417	Fiddlers Creek	0.0	6.0	4.0	0.1	11	52	4.04%	0.3	1.8	0.4	1.9	No	No
18	-Y15FLYCA- 16+72 RT 36.0714922/-80.1507606	Fiddlers Creek	0.0	6.0	4.0	0.5	47	278	1.18%	1.0	1.5	1.4	1.6	No	No

Additional Comments

North Carolina Department of Transportation
Highway Stormwater Program
STORMWATER MANAGEMENT PLAN
FOR NCDOT PROJECTS

(Version 2.08; Released April 2018)

WBS Element: 34839.1.8 **TIP No.:** U-2579AB **County(ies):** Forsyth

Swales

Sheet No.	Station & Coordinates (Road and Non Road Projects)	Surface Water Body	Base Width (ft)	Front Slope (H:1)	Back Slope (H:1)	Drainage Area (ac)	Recommended Treatm't Length (ft)	Actual Length (ft)	Longitudinal Slope (%)	Q2 (cfs)	V2 (fps)	Q10 (cfs)	V10 (fps)	Rock Checks Used	BMP Associated w/ Buffer Rules?
18	-Y15FLYCA- 16+72 RT 36.0714922/-80.1507606	Fiddlers Creek	0.0	2.0	2.0	0.1	8	76	5.56%	0.1	1.5	0.2	1.6	No	No
18	-Y15FLYCA- 18+93 LT 36.0718731/-80.1501056	Fiddlers Creek	0.0	6.0	6.0	0.7	67	195	0.98%	1.9	1.5	2.4	1.6	No	No
18	-Y15FLYCA- 16+72 RT 36.0715505/-080.1498332	Fiddlers Creek	2.0	2.0	2.0	0.5	47	281	3.58%	0.7	1.7	0.9	1.9	No	No
18	'-Y15FLYCA- 17+50 RT 36.0715544/-80.1505121	Fiddlers Creek	2.0	2.0	2.0	0.5	47	203	4.86%	0.7	1.9	0.9	2.1	No	No
19	-Y15REV- 17+50 RT 36.0730679/-80.1470982	Fiddlers Creek	0.0	6.0	4.0	2.0	200	366	0.75%	4.5	1.8	5.7	1.9	No	No
19	-Y15REV- 30+50 LT 36.0743828/-80.1429621	Fiddlers Creek	0.0	6.0	6.0	1.9	187	200	0.30%	3.2	1.1	4.1	1.2	No	No
20	-Y15FLYBD- 76+00 RT 36.0730686/-80.1293328	Fiddlers Creek	0.0	6.0	4.0	0.3	29	100	2.64%	0.6	1.8	0.8	1.9	No	No
20	-Y15FLYBD- 87+60 RT 36.0742539/-80.1258580	Fiddlers Creek	0.0	6.0	4.0	0.6	57	260	2.17%	1.2	2.0	1.6	2.1	No	No
20	-Y15FLYBD- 87+60 LT 36.0748911/-80.1260916	Fiddlers Creek	0.0	6.0	4.0	0.4	36	235	2.17%	0.8	1.7	1.0	1.9	No	No
20	-Y15REV- 80+50 RT 36.0748897/-80.1260687	Fiddlers Creek	0.0	4.0	4.0	1.0	103	300	0.86%	2.2	1.7	2.8	1.8	No	No
20	-Y15REV- 73+50 LT 36.0754219/-80.1284513	Fiddlers Creek	0.0	2.0	2.0	0.9	94	152	1.48%	2.4	2.0	3.0	2.1	No	No
20	-Y15REV- 65+34 LT 36.0751944/-80.1312128	Fiddlers Creek	0.0	6.0	4.0	3.3	332	759	0.34%	7.1	1.5	9.1	1.6	No	No
20	-Y15REV- 66+00 LT 36.0752319/-80.1309927	Fiddlers Creek	0.0	6.0	4.0	0.1	12	66	2.71%	0.3	1.4	0.3	1.5	No	No
20	-Y15REV- 67+50 LT 36.0752694/-80.1304873	Fiddlers Creek	0.0	6.0	4.0	0.4	40	216	0.59%	1.0	1.1	1.3	1.2	No	No
20	-Y15REV- 69+40 LT 36.0754002/-80.1298561	Fiddlers Creek	0.0	2.0	2.0	0.8	75	406	1.83%	1.6	1.9	2.1	2.1	No	No
21	-Y15FLYCA- 17+60 RT 36.0714969/-80.1504588	Fiddlers Creek	2.0	2.0	2.0	1.4	135	183	1.09%	4.2	2.0	5.4	2.1	No	No
21	-Y15FLYCA- 14+60 RT 36.0712785/-80.1514355	Fiddlers Creek	0.0	6.0	4.0	0.5	52	150	1.73%	1.6	1.9	2.0	2.0	No	No
22	-Y15- 154+00 RT 36.0748506/-80.1176827	Fiddlers Creek	0.0	6.0	4.0	1.7	168	300	0.76%	4.3	1.8	5.5	1.9	No	No

Additional Comments

North Carolina Department of Transportation
Highway Stormwater Program

STORMWATER MANAGEMENT PLAN
FOR NCDOT PROJECTS

(Version 2.08; Released April 2018)

WBS Element: 34839.1.8 **TIP No.:** U-2579AB **County(ies):** Forsyth

Swales

Sheet No.	Station & Coordinates (Road and Non Road Projects)	Surface Water Body	Base Width (ft)	Front Slope (H:1)	Back Slope (H:1)	Drainage Area (ac)	Recommended Treatm't Length (ft)	Actual Length (ft)	Longitudinal Slope (%)	Q2 (cfs)	V2 (fps)	Q10 (cfs)	V10 (fps)	Rock Checks Used	BMP Associated w/ Buffer Rules?
22	-Y15- 156+34 LT 36.0754157/-80.1168869	Fiddlers Creek	0.0	4.0	6.0	0.7	72	316	1.86%	1.5	2.0	2.0	2.1	No	No
23	-Y15- 163+19 LT 36.0753978/-80.1145691	Fiddlers Creek	0.0	6.0	4.0	1.5	152	339	0.81%	3.6	1.8	4.6	1.9	No	No
23	-Y15- 166+58 LT 36.0754240/-80.1134257	Fiddlers Creek	0.0	8.0	6.0	0.4	39	216	0.67%	1.2	1.2	1.5	1.2	No	No
23	-UXRPC- 20+75 LT 36.0761330/-80.1111572	Fiddlers Creek	0.0	6.0	4.0	0.1	14	125	0.36%	0.2	1.7	0.3	1.9	No	No
26	-Y5B- 17+00 LT 36.0782941/-80.1297071	Fiddlers Creek	0.0	4.0	2.0	0.1	6	50	0.76%	0.1	0.6	0.1	0.6	No	No

Additional Comments

*Blank entries represent where ditches are no longer appliable and have been removed. (July 2021)

WBS Element: **TIP No.:** U-2579AB **County(ies):** Forsyth

Preformed Scour Holes and Energy Dissipators

Sheet No.	Station & Coordinates (Road and Non Road Projects)	Surface Water Body	Energy Dissipator Type	Riprap Type	Drainage Area (ac)	Conveyance Structure	Pipe/Structure Dimensions (in)	Q10 (cfs)	V10 (fps)	BMP Associated w/ Buffer Rules?
6	-Y4- 40+43 RT 36.0933054/-80.1348169	(1)Fiddlers Creek	Riprap Energy Dissipator Basin	Class II	15.3	Pipe	36	31.8	1.0	N/A
7	-SR1- 16+49 LT 36.0878896/-80.1358437	(1)Fiddlers Creek	Riprap Energy Dissipator Basin	Class II	6.9	Pipe	30	21.0	1.0	N/A
9	-Y15FLYCA- 84+63 RT 36.0804600/-80.1358013	(1)Fiddlers Creek	PSH	Class 'B'	2.2	Pipe	18	7.4	0.4	N/A
10	-Y15FLYAC- 47+32 LT 36.0751525/-80.1338670	(1)Fiddlers Creek	PSH	Class 'B'	0.2	Pipe	15	0.7	0.2	N/A
10	-Y15RPB- 11+38 RT 36.0783088/-80.1387240	(1)Fiddlers Creek	PSH	Class 'B'	0.8	Pipe	18	3.2	0.3	N/A
10	-Y15REV- 45+38 RT 36.0741738/-80.1378812	(1)Fiddlers Creek	PSH	Class 'B'	0.2	Pipe	15	0.7	0.2	N/A
17	-Y15- 40+75 LT 36.0704817/-80.1549808	(1)Fiddlers Creek	PSH	Class 'B'	0.1	Pipe	15	0.6	0.2	N/A
18	-Y15- 50+50 LT 36.0717813/-80.1519421	(1)Fiddlers Creek	PSH	Class 'B'	0.3	Pipe	15	1.2	0.2	N/A
18	-Y15- 52+50 LT 36.0720079/-80.1513254	(1)Fiddlers Creek	PSH	Class 'B'	0.4	Pipe	15	2.0	0.2	N/A
18	-Y15- 55+50 LT 36.0724066/-80.1504363	(1)Fiddlers Creek	PSH	Class 'B'	0.4	Pipe	15	1.9	0.2	N/A
18	-Y15- 56+00 LT 36.0724731/-80.1502878	(1)Fiddlers Creek	Riprap Energy Dissipator Basin	Class II	42.4	Pipe	48	81.0	1.2	N/A
20	-Y15RPA- 13+58 RT 36.0765661/-80.1301464	(1)Fiddlers Creek	PSH	Class 'B'	0.3	Pipe	15	1.4	0.2	N/A
23	-Y15- 13+51 LT 36.0754558/-80.1133873	(1)Fiddlers Creek	PSH	Class 'B'	0.3	Pipe	15	1.5	0.2	N/A
16	-Y15- 30+50 LT 36.0693441/-80.1579456	(1)Fiddlers Creek	PSH	Class 'B'	0.3	Pipe	15	1.6	0.2	N/A
17	-Y15- 35+00 LT 36.0698138/-80.1565833	(1)Fiddlers Creek	PSH	Class 'B'	0.9	Pipe	15	4.3	0.3	N/A

Additional Comments

*The final two entries (Sheets 16 and 17, PSH's on Y15 30+50 and 35+00 LT) were added as of July 2021.

* Refer to the NCDOT Best Management Practices Toolbox (2014), NCDOT Standards, the Federal Highway Administration (FHWA) Hydraulic Engineering Circular No. 14 (HEC-14), Third Edition, Hydraulic Design of Energy Dissipators for Culverts and Channels (July 2006), as applicable, for design guidance and criteria.

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.08; Released April 2018)

WBS Element: 34839.1.8 **TIP No.:** U-2579AB **County(ies):** Forsyth

Other Best Management Practices

Sheet No.	Station & Coordinates (Road and Non Road Projects)	Surface Water Body	BMP Type	Drainage Area (ac)	New Built-Upon Area (ac)	Volume Treated (ac-ft)	Precipitation Depth Treated over NBUA (in)	BMP Associated w/ Buffer Rules?
4	-L- 691+50 RT 36.1004345/-80.1370537	(2)Fishers Branch	Dry Detention Basin	33.1	6.5	0.73	1.41	No
7	-SR1- 12+00 LT 36.0890563/-80.1359067	(1)Fiddlers Creek	Dry Detention Basin	21.6	1.8	0.18	1.29	No

Additional Comments

U-2579AB Culvert Buried vs Not Buried Summary			
Permit Site #	**Plan Sheet**	**Culvert Size**	**Buried (Yes/No)**
1	6	30" RCP III	No
2	6	36" CSP	No
3	7 & 8	54" RCP IV	No
4	8	NA	NA
4A	8	NA	NA
4B	8	NA	NA
5	8	NA	NA
5A	8	NA	NA
6	9	2@ 12' x 10' RCBC	Yes
6A	9	NA	NA
7	10	54" RCP IV	No
7A	10	NA	NA
8	10	42" RCP III	No
9	10	6' x 7' RCBC	Yes
10	10	60" RCP V	No
~~11~~			
12	11	5' x 6' RCBC	No
12A	11	NA	NA
12B	11	NA	NA
13	12	36" RCP LRDF Design	No
13A	12	36" RCP LRDF Design	No
14	16	72" RCP III	Yes
14A	16	NA	NA
15	18	42" RCP III	No
16	19	54" RCP III	No
17	19	8' x6' RCBC	No
17A	19	NA	NA
17B	19	NA	NA
17C	19	NA	NA
18	20	NA	NA
19	20	60" RCP LRFD Design	No
20	21	60" RCP III	No
21	22	60" RCP III	No
22	23	42" RCP III	No
23	12	NA	NA
23A	12	NA	NA
24	25	NA	NA
25	26	3@ 12' x 7' RCBC	Yes
26	26	7' x 8' RCBC	Yes
27	17	42" RCP III	No
28	19	NA	NA
29	19	36" RCP IV	No
30	19	NA	NA

09/08/99

TIP PROJECT: U-2579AB

CONTRACT: _____

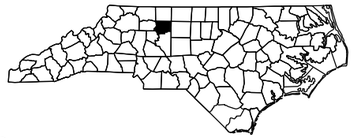
See Sheet 1-A For Index of Sheets

VICINITY MAP
(NOT TO SCALE)

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

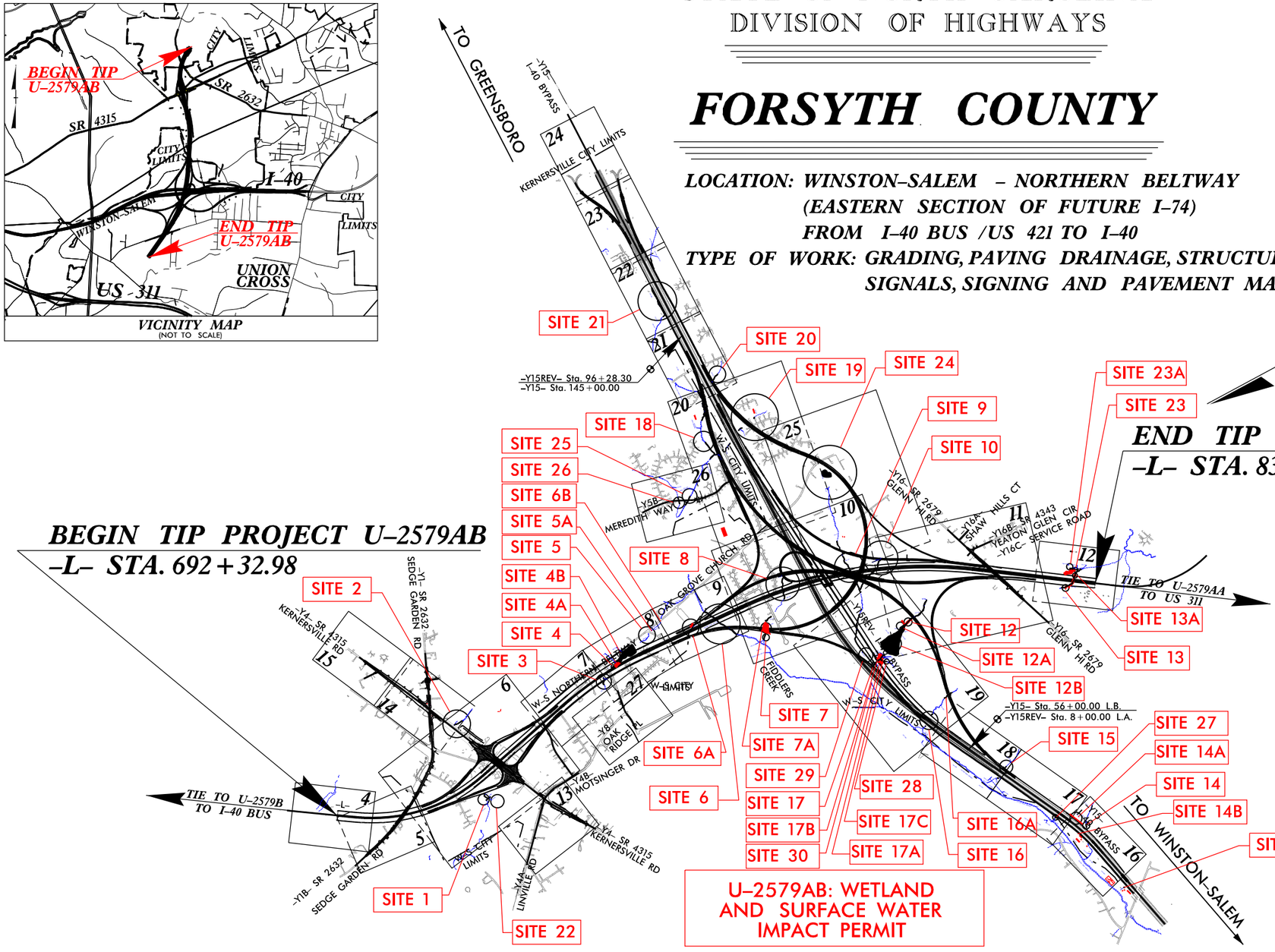
FORSYTH COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-2579AB	1	
STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION	
34839.1.8		P.E.	



LOCATION: *WINSTON-SALEM – NORTHERN BELTWAY*
(EASTERN SECTION OF FUTURE I-74)
FROM I-40 BUS /US 421 TO I-40

TYPE OF WORK: *GRADING, PAVING DRAINAGE, STRUCTURES*
SIGNALS, SIGNING AND PAVEMENT MARKERS



BEGIN TIP PROJECT U-2579AB
-L- STA. 692+32.98

END TIP PROJECT U-2579AB
-L- STA. 836+32.44

U-2579AB: WETLAND AND SURFACE WATER IMPACT PERMIT

PERMIT DRAWING SHEET 1 OF 79

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2018 = 14,700
ADT 2040 = 20,200
K = 9 %
D = 70 %
T = 7 % *
V = 70 MPH
* TTST = 4% DUAL = 3%
FUNC CLASS = INTERSTATE
STATEWIDE TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT U-2579AB = 2.727 MILES
TOTAL LENGTH TIP PROJECT U-2579AB = 2.727 MILES

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

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: TBD

LETTING DATE: TBD

PHILLIP E. ROGERS, PE
PROJECT ENGINEER

CASEY E. HARRIS, PE
PROJECT DESIGN ENGINEER

TATIA L. WHITE, PE, PLS
NCDOT CONTACT

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

STATE OF NORTH CAROLINA • DEPARTMENT OF TRANSPORTATION •

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U-2579AB	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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GRAPHIC SCALE 50 25 0 50 100

SITE 2

ESE-S8

LEGEND:
- DENOTES IMPACTS IN SURFACE WATER
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NAD 83/95

DETAIL EEE
RIP-RAPPED ENERGY DISSIPATOR BASIN

W	RIP RAP SIZE		
	A	B	C
4	6	8	4
5	7	9	5
6	8	10	6
8	10	12	8
10	12	14	10
12	14	16	12
14	16	18	14
16	18	20	16

RIP-RAP GRADATION - AS CHOSEN	
6	4 TON OR LESS
8	6 TON OR LESS
10	8 TON OR LESS
12	10 TON OR LESS

PLAN

SECTION E-E

DETAIL III
BANK STABILIZATION AT JURISDICTIONAL STREAM

Type of Fabric (If Required)

SEE SHEET 6B

SEE SHEET 6A

SITE 1

SITE 22

ESE-S63

ESE-W54

ESE-S69

INSET 1
MATCHLINE -Y6- STA. 13+00.00
SEE THIS SHEET

MATCHLINE -Y6- STA. 13+00.00
SEE INSET 1

MATCHLINE SHEET 7 -Y4- STA. 21+00.00

END FENCE

NOTES:
SEE SHEETS 28 AND 29 FOR -L- PROFILE
SEE SHEETS 28-5 FOR -Y4DET- DETOUR PLANS AND CURVE DATA
SEE SHEETS 36 AND 37 FOR -Y4- PROFILE
SEE SHEET 38 FOR -Y4DET- PROFILE
SEE SHEET 39 FOR -Y4RPA- PROFILE
SEE SHEET 43 FOR -Y4SPA- PROFILE
SEE SHEET 40 FOR -Y4RPB- PROFILE
SEE SHEET 43 FOR -Y4SPB1- AND -Y4SPB2- PROFILES
SEE SHEET 41 FOR -Y4RPC- PROFILE
SEE SHEET 43 FOR -Y4SPC- PROFILE
SEE SHEET 42 FOR -Y4RPD- PROFILE
SEE SHEET 42 FOR -Y4SPD1- AND -Y4SPD2- PROFILES
SEE SHEETS 34 AND 35 FOR -Y1B- PROFILE
SEE SHEET 28-4 FOR -Y1BDET- DETOUR PLANS AND CURVE DATA
SEE SHEET 35 FOR -Y1BDET- PROFILE
SEE SHEET 73 FOR -Y6- PROFILE

PERMIT DRAWING SHEET 2 OF 79

REVISIONS

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R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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50 25 0 50 100
GRAPHIC SCALE

SITE 2

NAD '83/95

ESE-S8

LEGEND:

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

DETAIL EEE
RIP-RAPPED ENERGY DISSIPATOR BASIN

W	RIP RAP DEPTH		
	A	B	C
4	4	6	8
5	5	7	9
6	6	8	10
7	7	9	11
8	8	10	12
9	9	11	13
10	10	12	14
12	12	14	16

(1) MINIMUM APRON LENGTH

RIP-RAP GRADATION	
CLASS	STONE SIZE - d50 (INCHES)
B	4 TO 8
BI	8 TO 12
I	12 TO 18
II	18 TO 24

PLAN

SECTION E - E

DETAIL JJJ
BANK STABILIZATION AT JURISDICTIONAL STREAM

SEE SHEET 6B

SEE SHEET 6A

SITE 1

SITE 22

ESE-S63

ESE-S69

ESE-W54

INSET 1

MATCHLINE -Y6- STA. 13+00.00
SEE THIS SHEET

MATCHLINE -Y6- STA. 13+00.00
SEE INSET 1

MATCHLINE SHEET 7 -Y4- STA. 21+00.00

MATCHLINE SHEET 7 -L- STA. 733+50.00

MATCHLINE SHEET 6 -L- STA. 733+00.00

NOTES:
SEE SHEETS 28 AND 29 FOR -L- PROFILE
SEE SHEETS 28-5 FOR -Y4DET- DETOUR PLANS AND CURVE DATA
SEE SHEETS 36 AND 37 FOR -Y4- PROFILE
SEE SHEET 38 FOR -Y4DET- PROFILE
SEE SHEET 39 FOR -Y4RPA- PROFILE
SEE SHEET 43 FOR -Y4SPA- PROFILE
SEE SHEET 40 FOR -Y4RPB- PROFILE
SEE SHEET 43 FOR -Y4SPB1- AND -Y4SPB2- PROFILES
SEE SHEET 41 FOR -Y4RPC- PROFILE
SEE SHEET 43 FOR -Y4SPC- PROFILE
SEE SHEET 42 FOR -Y4RPD- PROFILE
SEE SHEET 42 FOR -Y4SPD1- AND -Y4SPD2- PROFILES
SEE SHEETS 34 AND 35 FOR -Y1B- PROFILE
SEE SHEET 28-4 FOR -Y1BDET- DETOUR PLANS AND CURVE DATA
SEE SHEET 35 FOR -Y1BDET- PROFILE
SEE SHEET 73 FOR -Y6- PROFILE

PERMIT DRAWING SHEET 3 OF 79

REVISIONS

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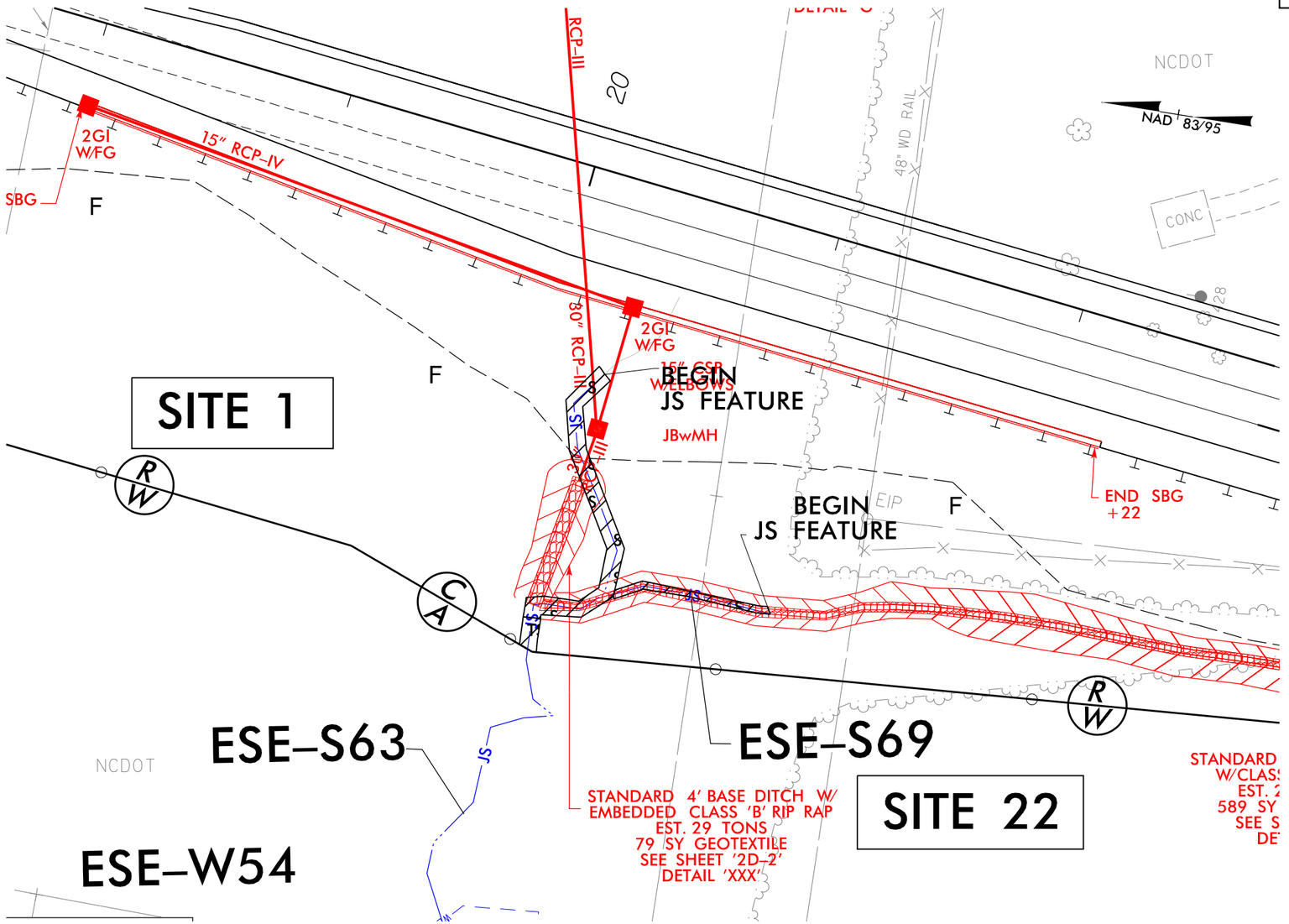
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555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

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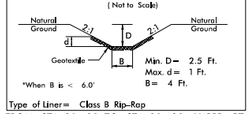
LEGEND:

S / S — DENOTES IMPACTS IN SURFACE WATER

TS / TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER



DETAIL XXX
STANDARD BASE DITCH
(Not to Scale)



Type of Liner= Class B Rip-Rap
FROM STA. 20+29 TO STA. 20+29 -Y4RPB- RT
FROM STA. 16+57 TO 16+57 -Y15RPA- RT

PERMIT DRAWING
SHEET 4 OF 79

REVISIONS

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PROJECT REFERENCE NO.	SHEET NO.
U-2579AB	6B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

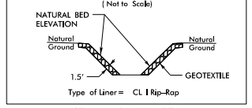
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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GRAPHIC SCALE 12.5 0 12.5 25

DETAIL III
BANK STABILIZATION AT JURISDICTIONAL STREAM
(Not to Scale)



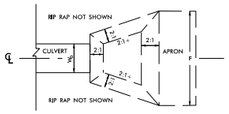
Type of Liner = CL I Rip-Rap

STA. 40+80 -Y4- RT

DETAIL EEE
RIP-RAPPED ENERGY DISSIPATOR BASIN

DIM. (ft)	RIP RAP BASIN #		
	1	2	3
A	3	3	3
B	2	2	2
C	2	2	2
D	1	1	1
E	10	10	10
F	25	12	12
G	25	12	12

ALL DIMENSIONS APPROXIMATE



PLAN

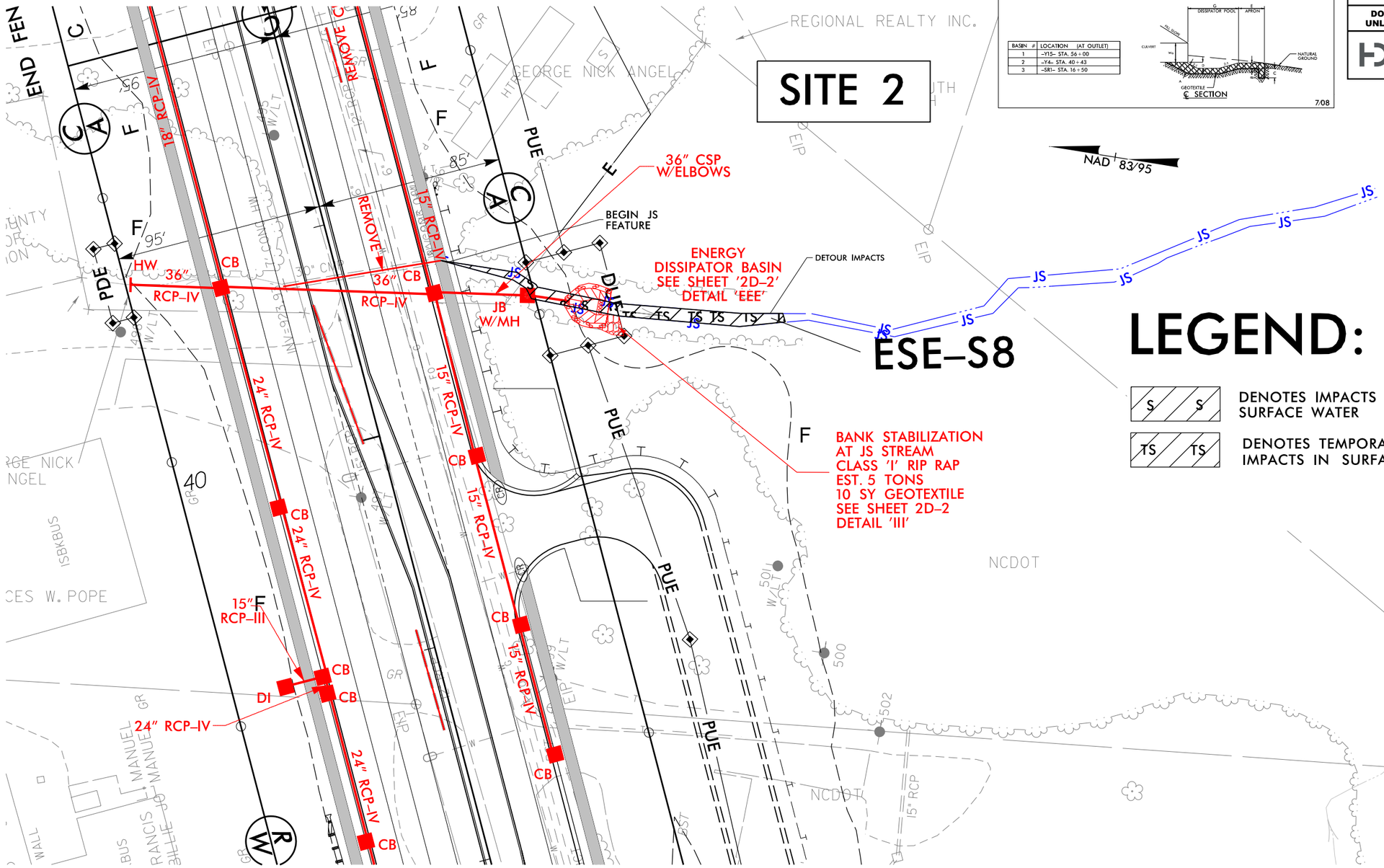
℄ SECTION

BASIN #	LOCATION (AT OUTLET)
1	-Y15- STA. 56+00
2	-Y4- STA. 40+43
3	-SR1- STA. 16+50

7/08

SITE 2

NAD 83/95



LEGEND:

S S — DENOTES IMPACTS IN SURFACE WATER

TS TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER

PERMIT DRAWING SHEET 5 OF 79

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TIME: 11:58:23 AM

REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-2579AB	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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LEGEND:

- S / S — DENOTES IMPACTS IN SURFACE WATER
- TS / TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NAD 83/95

25 12.5 0 25 50
GRAPHIC SCALE

MARGARET P. ELTING, HEIRS
MARLENE P. FLINCHUM
ELMER L. FLINCHUM
MARLENE POPE FLINCHUM
JACK V. EARNHARDT
ELIZABETH EARNHARDT
FLORA S. MANNING
LEONARD DAVENPORT
ELSIE DAVENPORT
JACK A. TOLBERT
IH2 PROPERTY NORTH CAROLINA, LP
DOROTHY A. ROUDABUSH
RICHARD REID JR.
JEAN MARIE CRADDOCK
OPAL FLOYD
WILLIAM L. LIVENGOOD
ANN C. INGRAM
JOHN W. TUCKER
HELEN TUCKER
RICHARD E. CAMERON
SHARON CAMERON
JAMES M. CHANDLER, JR.
SHARON CHANDLER
JAMES EDWARD POPE
SAMUEL HOLDING LLC
ARCHIE H. EMBLER
DEBBIE W. EMBLER
MARLENE P. FLINCHUM TRUSTEE
NCDOT

ORIGIN OF JURISDICTIONAL STREAM
BEGIN JS FEATURE
CLASS 'B' RIP RAP EST. 27 TONS 60 SY GEOTEXTILE
DRY DETENTION BASIN SEE SHEET 2D-4 OUTLET CONTROL STRUCTURE SEE SHEET 2D-4 W/SLUICE GATE AND TRASH RACK
CLASS 'I' RIP RAP EST. 20 TONS 39 SY GEOTEXTILE
TOP OF BERM 912.50
BASIN BOTTOM 907.0
42" RCP-III
STANDARD 4' BASE DITCH W/CLASS 'I' RIP RAP EST. 66 TONS 174 SY GEOTEXTILE SEE SHEET '2D-1' DETAIL 'GG'
LATERAL 'V' DITCH SEE SHEET '2D-1' DETAIL 'Q'
ENERGY DISSIPATOR BASIN SEE SHEET '2D-2' DETAIL 'EEE'
30" RCP-III
CLASS 'B' RIP RAP EST. 3 TONS 10 SY GEO-TEXTILE
CHORD
12' GATE
HW (L Shape)
15" RCP-III
36" RCP-III
+36, BEGIN SBG
2GI W/FG
15" RCP-IV
END SBG +29
15" CSP W/ELBOWS
CLASS 'B' RIP RAP EST. 2 TONS 7 SY GEOTEXTILE
LATERAL 'V' DITCH SEE SHEET '2D-1' DETAIL 'DD'
STANDARD 2' BASE DITCH W/CLASS 'B' RIPRAP EST. 11 TONS 32 SY GEOTEXTILE SEE SHEET '2D-1' DETAIL 'DD'
PROP. 47" WW FENCE
JB w/MH
24" RCP-III
LATERAL 'V' DITCH SEE SHEET '2D-1' DETAIL 'Q'
GRADE TO DRAIN
REMOVE DI
REMOVE
REM DI
24" RCP-III
18" RCP-III
15" RCP-III
SPECIAL CUT DITCH SEE SHEET '2D-1' DETAIL 'D'
BERM DITCH SEE SHEET '2D-2' DETAIL 'VV'
2' BASE BERM DITCH SEE SHEET '2D-2' DETAIL 'BBB'
STANDARD 2' BASE DITCH W/CLASS 'B' RIP RAP EST. 80 TONS 227 SY GEOTEXTILE SEE SHEET '2D-1' DETAIL 'PP'
STANDARD 2' BASE DITCH W/CLASS 'B' RIP RAP EST. 13 TONS 36 SY GEOTEXTILE SEE SHEET '2D-1' DETAIL 'JJ' SLOPE = 6.61%
24" CSP W/ELBOWS
BDO
FS
2GI
DUE
PUE
PDE
TDE
EIP
ISBKD
WD DK
CONC
GAZEBO
SHED
GARDENVIEW DR
EORT
22'BST
48" WD RAIL /WW
48" CHL
72" CHL
MATCHLINE SHEET 6 –L– STA. 733+00.00
MATCHLINE SHEET 8 –L– STA. 746+50.00

SITE 3
ESE–S61

PERMIT DRAWING SHEET 6 OF 79

NOTES:
SEE SHEET 29 FOR –L– PROFILE
SEE SHEET 41 FOR –Y4RPC– PROFILE
SEE SHEET 42 FOR –Y4RPD PROFILE
SEE SHEET 74 FOR –SR1– PROFILE
DRIVEWAY RADII 10' UNLESS OTHERWISE NOTED

REVISIONS

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PROJECT REFERENCE NO.	SHEET NO.
U-2579AB	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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N.C.B.E.L.S. License Number: F-0116

LEGEND:

- S / S — DENOTES IMPACTS IN SURFACE WATER
- TS / TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NAD 83/95

GRAPHIC SCALE 25 12.5 0 25 50

MATCHLINE SHEET 6 –L– STA. 733+00.00

MATCHLINE SHEET 8 –L– STA. 746+50.00

ORIGIN OF JURISDICTIONAL STREAM

BEGIN JS FEATURE

CLASS 'B' RIP RAP EST. 27 TONS 60 SY GEOTEXTILE

DRY DETENTION BASIN SEE SHEET 2D-2 OUTLET CONTROL STRUCTURE SEE SHEET 2D-4 W/SLUICE GATE AND TRASH RACK

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TOP OF BERM 912.50

BASIN BOTTOM 907.0

42" RCP-III

STANDARD 4' BASE DITCH W/CLASS 'I' RIP RAP EST. 66 TONS 174 SY GEOTEXTILE SEE SHEET '2D-1' DETAIL 'GG'

LATERAL 'V' DITCH SEE SHEET '2D-1' DETAIL 'Q'

ENERGY DISSIPATOR BASIN SEE SHEET '2D-2' DETAIL 'EEE'

30" RCP-III

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HW (L Shape)

15" RCP-III

36" RCP-III

15" CSP W/ELBOWS

2' BASE DITCH SEE SHEET '2D-1' DETAIL 'DD'

PROP. 47" WW FENCE

JB w/MH

24" RCP-III

GRADE TO DRAIN

END SBG +29

36, BEGIN SBG

REMOVE DI

REMOVE

18" RCP-III

SPECIAL CUT DITCH SEE SHEET '2D-1' DETAIL 'D'

BERM DITCH SEE SHEET '2D-2' DETAIL 'VV'

12' GATE

2' BASE BERM DITCH SEE SHEET '2D-2' DETAIL 'BBB'

STANDARD 2' BASE DITCH W/CLASS 'B' RIP RAP EST. 80 TONS 227 SY GEOTEXTILE SEE SHEET '2D-1' DETAIL 'PP'

STANDARD 2' BASE DITCH W/CLASS 'B' RIP RAP EST. 13 TONS 36 SY GEOTEXTILE SEE SHEET '2D-1' DETAIL 'JJ' SLOPE = 6.61%

SITE 3

ESE-S61

PERMIT DRAWING SHEET 7 OF 79

NOTES:
SEE SHEET 29 FOR –L– PROFILE
SEE SHEET 41 FOR –Y4RPC– PROFILE
SEE SHEET 42 FOR –Y4RPD PROFILE
SEE SHEET 74 FOR –SR1– PROFILE
DRIVEWAY RADII 10' UNLESS OTHERWISE NOTED

REVISIONS

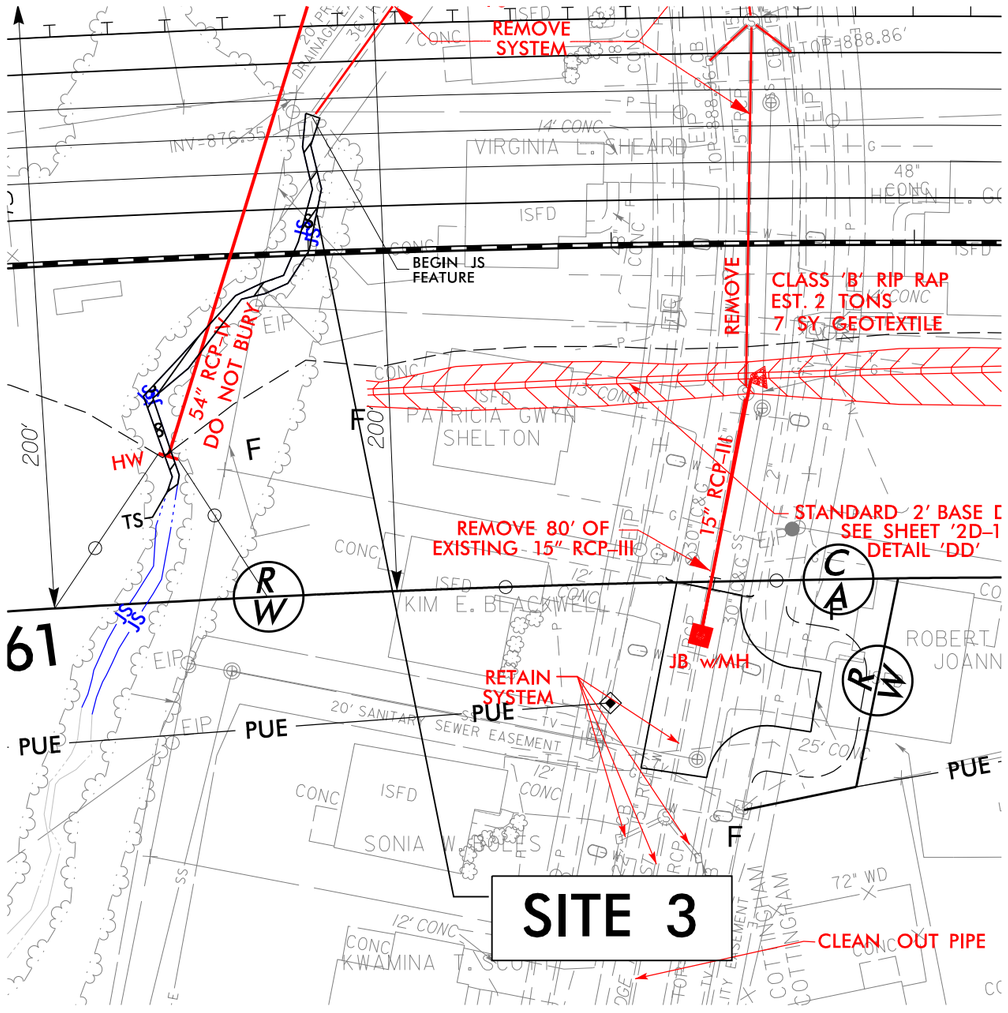
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LEGEND:

S S — DENOTES IMPACTS IN SURFACE WATER

TS TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NAD 83/95



PROJECT REFERENCE NO.	SHEET NO.
U-2579AB	7A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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N.C.B.E.L.S. License Number: F-0116

12.5 0 12.5 25
GRAPHIC SCALE

REVISIONS

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PERMIT DRAWING
SHEET 8 OF 79

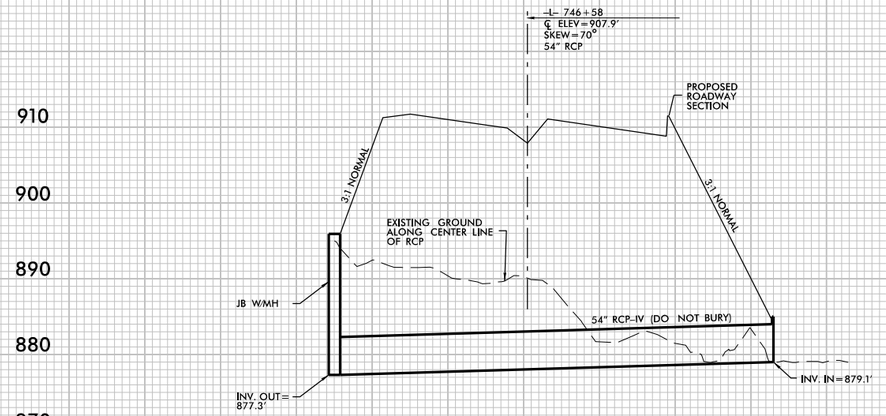
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N.C.B.E.L.S. License Number: F-0116

PROJECT REFERENCE NO.	SHEET NO.
U-2579AB	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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150 100 50 0 50 100 150 200

U-2579AB – SITE 3



PROFILE ALONG ℄ OF PIPE

PERMIT DRAWINGS
SHEET 9 OF 79

REVISIONS 5/14/99

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PROJECT REFERENCE NO.	SHEET NO.
U-2579AB	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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N.C.B.E.L.S. License Number: F-0116

GRAPHIC SCALE 25 12.5 0 25 50

NAD 83/95

LEGEND:

- DENOTES FILL IN WETLAND
- DENOTES IMPACTS IN SURFACE WATER
- DENOTES IMPACTS IN SURFACE WATER (POND)

DETAIL BBBB
STANDARD BASE DITCH
(Not to Scale)

Natural Ground, 2, D, 3, Natural Ground; Geotextile; B; Min. D= 2.5 Ft. Max. d= 1 Ft. B= 5 Ft.
*When B is < 6.0'
Type of Liner= Class I Rip-Rap
FROM STA. 750+50 TO STA. 754+50 -L- LT
FROM STA. 757+05 TO STA. 757+73 -L- LT

SEE SHEET 8A

SEE SHEET 8B

ESE-W8
SITE 4A
SITE 4
ESE-P6
SITE 4B
SITE 5
ESE-S61
ESE-W51
SITE 5A
SITE 3

STANDARD 5' BASE DITCH W/ EMBEDDED CLASS 'I' RIP RAP
EST. 276 TONS
867 SY GEOTEXTILE
SEE SHEET 2D-3
DETAIL 'BBBB'

STANDARD 5' BASE DITCH W/EMBEDDED CLASS 'I' RIP RAP
EST. 44 TONS
137 SY GEOTEXTILE
SEE SHEET 2D-3
DETAIL 'BBBB'

MATCHLINE SHEET 7 -L- STA. 746+50.00

MATCHLINE SHEET 9 -L- STA. 759+50.00

FLORA S. MANNING
JACK V. EARNHARDT
ELIZABETH EARNHARDT
ROBERT B. BOYLES
SHARON B. BOYLES
MELBA RAE ATKINS
DB 613 PG 220
PB 6 PG 74
ASHLEY G. PELHAM
CLINT BRADY ATKINS
JULIE C. ATKINS
CRAIG B. ATKINS
JULIA J. ATKINS
ANNA A. PRICE, TRUSTEE
SHUGART ENTERPRISES LLC
JUSTIN W. STRICKLAND
VIRGINIA L. SHEARIN
HEDWIN L. GORDON
PATRICIA GWYN SHELTON
KIM E. BEARDWELL
SONIA GOODES
KWAMINA L. COOPER
ROBERT R. WILSON SR.
JOANNE E. WILSON
MARY M. RUTLEDGE
BRENDA HOLT KIVETT
NICOLE MARIE FUSCO
JEFFREY BRIAN SMITH
JASON B. ELKINS
SAMUEL E. HENDERSON
CORNISILLA E. HENDERSON
WHITNEY J. NEARHOOF
LATEESHA NEARHOOF
BRANDI L. COTTINGHAM
CHRISTOPHER COTTINGHAM
SALOMON CISNEROS-HERNANDEZ
JERRIE M. PERKINS
BEESHEMAH HEMMINGWAY
TINA M. STEWART
husband MARK A. STEWART
SHELBY JEAN CONLEY
CAMILLE M. JOYCE
DAVID H. WILLIAMS
PATRICIA CONTRERAS
JOE AMADOR and MATIAS AMADOR VIZCAINO
GEORGE A. MITCHELL
SHEKINA MITCHELL
ROBERT LEON LOFLIN, SR.
DENNIS K. BRIGGS
MICHAEL W. and HOLLY F. TRIPLETT
LETITIA H. LEBEAU
DONNA LA
MALISSA MALLORY
COREY M. HENSLEY and wife, SANDY Y. HENSLEY
BENJAMIN BRATTON
ALOHA DORALI MARENCO
NCDOT
NO CLAIM
CHORD

18" RCP
24" RCP
30" RCP
36" RCP
42" RCP
48" RCP
60" RCP-IV
36" RCP-III
30" RCP-III
24" RCP-III
18" RCP-III
15" RCP-III
15" CSP W/ELBOWS
2GI
2GI W/FG
2GI-A
FS
JB w/MH
PROP. 47" WW FENCE
PROP. 42" WW FENCE
REMOVE
REMOVE SYSTEM
RETAIN
TIE TO EXISTING DITCH
CLASS 'B' RIP RAP EST. 2 TONS 7 SY GEOTEXTILE
STANDARD 2' BASE DITCH SEE SHEET '2D-1' DETAIL 'DD'
STANDARD 4' BASE DITCH SEE SHEET '2D-1' DETAIL 'BB'
STANDARD 4' BASE DITCH SEE SHEET '2D-3' DETAIL 'AAAA'
STANDARD 2' BASE DITCH SEE SHEET '2D-1' DETAIL 'DD'
REMOVE 80' OF EXISTING 15" RCP-III
CLEAN OUT PIPE
GRADE TO DRAIN
12' GATE
BEGIN IS FEATURE
PUE
TDE
SI
F
C
E
L
R/W
CA
RW
EIP
EOI
W/LT
FO
COND
TV
INV=870.40'
INV=868.06'
INV=876.87'
INV=874.67'

PERMIT DRAWING SHEET 10 OF 79

REVISIONS

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USER: NWOMACK
FILE: NCDOT\NCDOT-U2579AB\6.0_CAD_BIM\6.2_Work_In_Progress\U-2579AB\Hydraulics\PERMITS_Environment\Drawings\U2579AB_PRM_PSH.dgn
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PROJECT REFERENCE NO.	SHEET NO.
U-2579AB	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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GRAPHIC SCALE 25 12.5 0 25 50

NAD 83/95

LEGEND:

- DENOTES FILL IN WETLAND
- DENOTES IMPACTS IN SURFACE WATER
- DENOTES IMPACTS IN SURFACE WATER (POND)

DETAIL BBBB
STANDARD BASE DITCH
(Not to Scale)

Min. D= 2.5 Ft.
Max. d= 1 Ft.
B= 5 Ft.
*When B is < 6.0'

Type of Liner= Class I Rip-Rap
FROM STA. 750+50 TO STA. 754+50 -L- LT
FROM STA. 757+05 TO STA. 757+73 -L- LT

SEE SHEET 8A

SEE SHEET 8B

SITE 5

ESE-W8
SITE 4A

ESE-P6
SITE 4B

SITE 4

ESE-S61

ESE-W51
SITE 5A

SITE 3

MATCHLINE SHEET 7 -L- STA. 746+50.00

MATCHLINE SHEET 9 -L- STA. 759+50.00

STANDARD 5' BASE DITCH W/ EMBEDDED CLASS 'I' RIP RAP
EST. 276 TONS
867 SY GEOTEXTILE
SEE SHEET 2D-3
DETAIL 'BBBB'

TIE TO EXISTING DITCH

RETAIN

REMOVE

36" RCP-III

60" RCP-IV

JB w/MH

PROP. 47' WW FENCE

GREU TL-2

GRADE TO DRAIN

CLASS 'B' RIP RAP
EST. 2 TONS
7 SY GEOTEXTILE

15" CSP W/ELBOWS

STANDARD 2' BASE DITCH
SEE SHEET '2D-1'
DETAIL 'DD'

STANDARD 4' BASE DITCH
SEE SHEET '2D-1'
DETAIL 'BB'

STANDARD 4' BASE DITCH
SEE SHEET '2D-3'
DETAIL 'AAAA'

REMOVE 80' OF EXISTING 15" RCP-III

RETAIN SYSTEM

REMOVE SYSTEM

CLEAN OUT PIPE

12' GATE

NO CLAIM

CHORD

PERMIT DRAWING
SHEET 11 OF 79

REVISIONS

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PROJECT REFERENCE NO.	SHEET NO.
U-2579AB	8A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

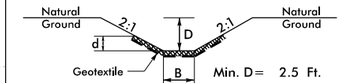
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N.C.B.E.L.S. License Number: F-0116

GRAPHIC SCALE 12.5 0 12.5 25

NAD 83/95

DETAIL BBBB
STANDARD BASE DITCH
(Not to Scale)



Min. D= 2.5 Ft.
Max. d= 1 Ft.
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Type of Liner= Class I Rip-Rap
FROM STA. 750+50 TO STA. 754+50 -L- LT
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EST. 276 TONS
867 SY GEOTEXTILE
SEE SHEET 2D-3
DETAIL 'BBBB'

TIE TO EXISTING DITCH

ESE-W8
SITE 4A

SITE 4

ESE-P6
SITE 4B

ESE-S61

ROBERT B. BOYLES
SHARON B. BOYLES

MELBA RAE ATKINS
DB 613 PG 220
PB 61PG 74

ASHLEY G. PELHAM

SHUGART ENTERPRISES LLC

SCOTT E. GURSTEIN
MEGAN PENNY EVERETT

JERRIE M. PERKINS

NCDOT

750

18" RCP

48"CHL

ISFD

ISBKD

BK WALL

48" CONC

15" CONC

RETAIL

PUE

EXISTING R/W

15"

SR 2678 OAK GROVE CHURCH RD 24' BST 6"

PROP. 47" WW FENCE

GRADE TO DRAIN

60" RCP-IV

JB w/MH

60" RCP-IV

48" VINTL RAIL

50.00'

10' UTILITY EASEMENT

23' CONC

14' CONC

48" RCP

20' DRAINAGE EASEMENT

INV=874.40'
INV=(NW) 882.23'
INV=(W) 882.28'
INV=(SW) 882.22'
INV=(E) 892.04'

18" RCP-III

2GI

FS

18" RCP-III

2GI

FS

20' PRIVATE DRAINAGE EASEMENT

24" RCP-III

INV=876.87'

2GI-A

36" RCP

REMOVE

PERMIT DRAWING
SHEET 12 OF 79

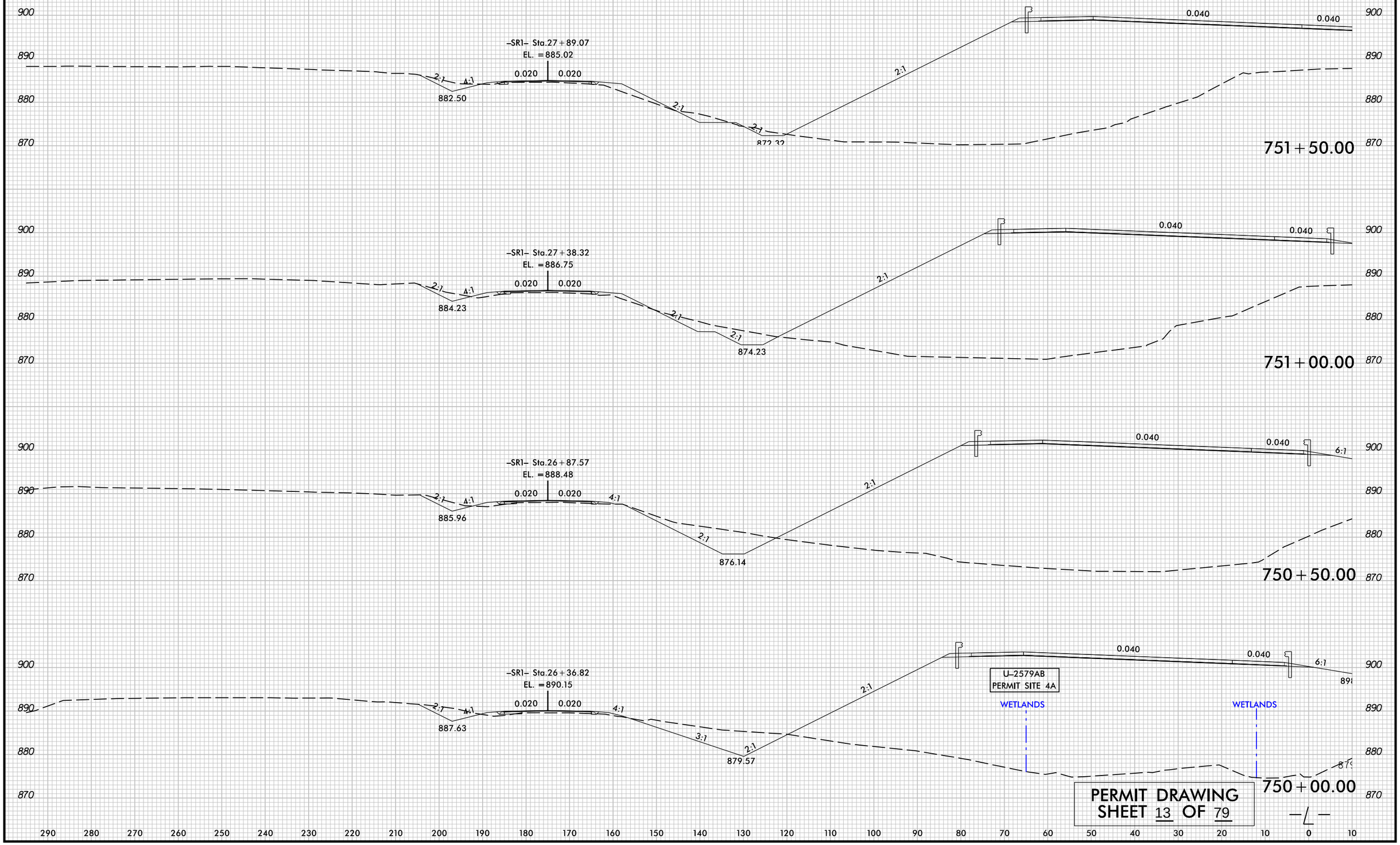
REVISIONS

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8/23/99

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	U-2579AB	X-35

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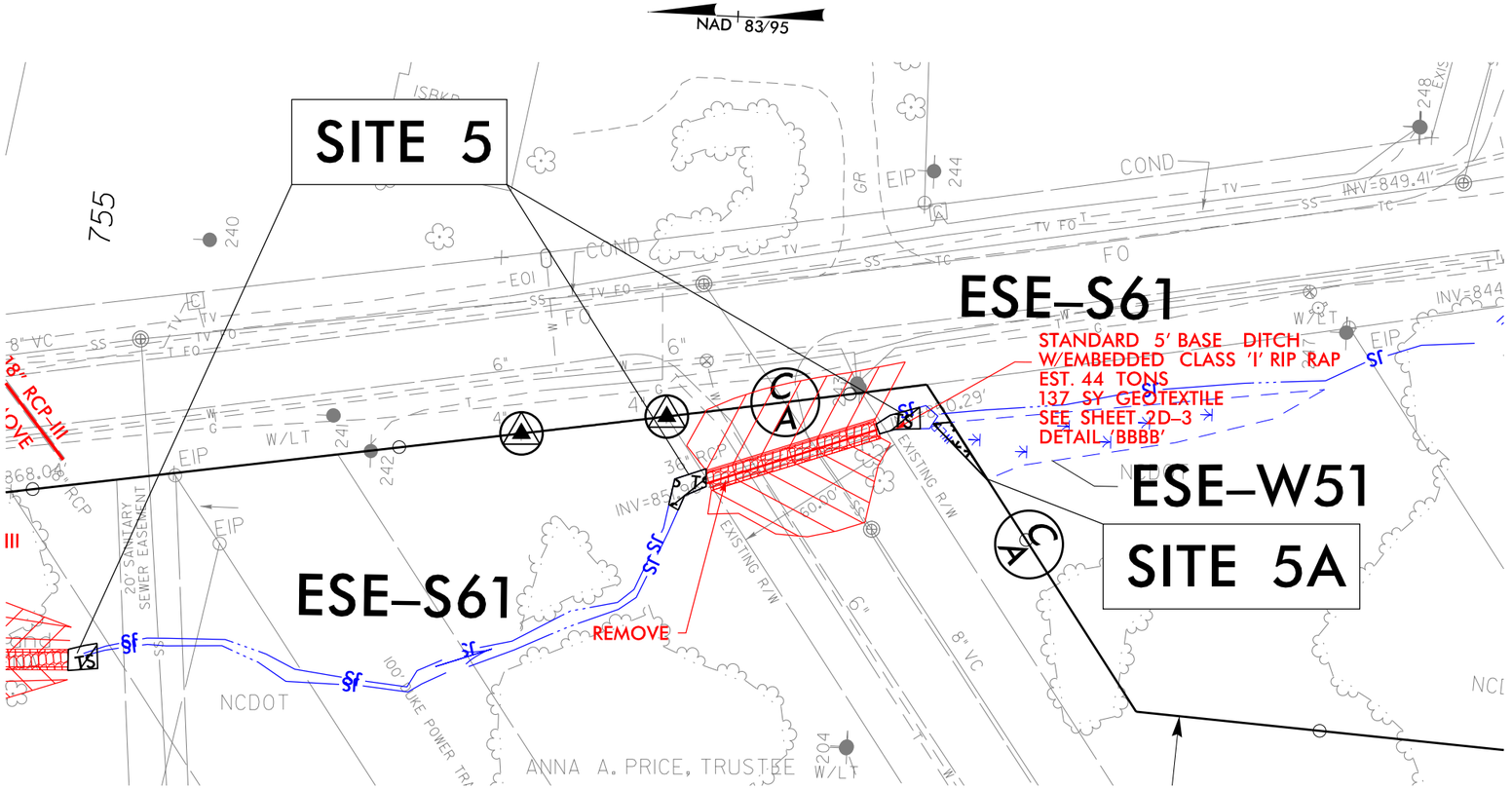
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SHEET 13 OF 79

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LEGEND:

DENOTES MECHANIZED CLEARING

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER



PROJECT REFERENCE NO.	SHEET NO.
U–2579AB	8B
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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12.5 0 12.5 25
GRAPHIC SCALE

REVISIONS

PERMIT DRAWING
SHEET 14 OF 79

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PROJECT REFERENCE NO.	SHEET NO.
U-2579AB	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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GRAPHIC SCALE 25 12.5 0 25 50

NAD 83/95

ESE-E60

ESE-E61

JORGE L. GONZALES

SITE 6B

DETAIL 3
2 @ 12'X10' RCBC, BURIED 1' WITH 2' SILL IN BARREL 2

PROPOSED EXCAVATION
CLASS 'I' RIP RAP AND GEOTEXTILE ON BANKS ONLY (TYP)
FLOODPLAIN BENCH
COIR FIBER MATTING NOT ON STREAM BOTTOM
EXISTING GROUND
1.5:1 SIDE SLOPES
2:1

CULVERT INLET FLOODPLAIN BENCH

STA. 84+00 -Y15FLYCA- RT

REMOVE AND REPLACE LAST 4' OF 36" RCP\ CLEAN OUT PIPE

SEDGE GARDEN SWIM & RACQUET CLUB

SAND LOT
POOL
MTL CANOPY
72' CHL
CONC
NCDOT

SITE 6A

CHORD

PROP. 47" WW FENCE

TOE PROTECTION SEE SHEET 2D-2 SEE DETAIL 'JJJ'

END SBG STA. +24

LOREN A. LITTLE
MARGARET G. LITTLE

TERRY W. MOTSINGER and wife ELLEN R. MOTSINGER

SITE 6

PREFORMED SCOUR HOLE
EST. 20 SY PSRM
EST. 12 SY GEOTEXTILE
EST. 9 TONS CLASS 'B' STONE
DETAIL 'EEEE'

INLET CHANNEL FLOODPLAIN BENCH
EST. 6 TONS
CLASS 'I' RIP RAP
EST 33 TONS
47 SY GEOTEXTILE
SEE SEE SHEET 2D-3
DETAIL '3'

10.6' CLEARANCE FROM TOP OF BOX TO BOTTOM OF PIPE

18" CSP W/ELBOWS

2GI W/FG

15" RCP-III

BEG. SBG, +75

GRADE TO DRAIN

2 @ 12'X10' RCBC, BURIED 1' WITH 2' SILL IN BARREL 2, BACKFILLED WITH MIXTURE OF CLASS B RIP RAP AND NATIVE MATERIAL

8.3' CLEARANCE

MATCHLINE SHEET 10 -Y15RPA- STA. 35+00.00 -Y15FLYCA- STA. 78+88.50

MATCHLINE SHEET 8 -L- STA. 759+50.00

ESE-W52

FIDDLERS CREEK (ESE-S11)

18" RCP-III
42" RCP-III
48" RCP-III
2GI
2GI(A)
FS

JOSEPH K. COFFEY
YVONNE COFFEY

THOMAS F. RILEY
CHERYL RILEY

END NOISE WALL
BEGIN FENCE

SPECIAL CUT DITCH SEE SHEET '2D-1' DETAIL 'J'

2' BASE LATERAL DITCH SEE SHEET '2D-1' DETAIL 'S'

BEG. SBG STA. +21

2GI W/FG

15" CSP W/ELBOWS

ROADWAY DITCH CLASS 'B' RIP RAP
EST. 70 TONS
209 SY GEOTEXTILE

TERESA J. TUCKER
TIMOTHY E. TUCKER

LATERAL 'V' DITCH SEE SHEET '2D-1' DETAIL 'Q'

2' BASE LATERAL DITCH W/CLASS 'I' RIP RAP
EST. 258 TONS
332 SY GEOTEXTILE
SEE SHEET '2D-1' DETAIL 'I'

OUTLET CHANNEL PROTECTION
CLASS 'I' RIP RAP
EST. 217 TONS
306 SY GEOTEXTILE
SEE SHEET 2D-3
DETAIL 4

MATCHLINE SHEET 10 -Y15FLYBD- STA. 23+00.00

MATCHLINE SHEET 10 -L- STA. 773+00.00

DETAIL EEEE
PREFORMED SCOUR HOLE
PLAN VIEW
INSTALL LEVEL AND FLUSH WITH NATURAL GROUND
Pipe or Ditch Outlet
Square Preformed Scour Hole (PSH)
(Rip Rap pr. Design not shown for clarity)
SECTION A-A
"NOT TO SCALE"
B= 4.5 ft
D= 1 ft
W= 4 ft
FROM STA. 40+35 -Y15- LT

DETAIL 4
2 @ 12'X10' RCBC, BURIED 1' WITH 2' SILL IN BARREL 2
PROPOSED EXCAVATION
CLASS 'I' RIP RAP AND GEOTEXTILE ON BANKS AND EMBED IN CHANNEL BED
FLOODPLAIN BENCH
EXISTING GROUND
1.5:1 SIDE SLOPES
2:1
CULVERT OUTLET PROTECTION
STA. 20+90 -Y15FLYBD- RT

DETAIL I
LATERAL BASE DITCH
(Not to Scale)
Natural Ground
GEOTEXTILE
Fill Slope
Min. D= 1 Ft.
Max. d= 1.5 Ft.
B= 2 Ft.
b= 5 Ft.
*When B is < 6.0'
Type of Liner= Class I Rip-Rap
FROM STA. 18+95 TO STA. 21+00 -Y15FLYBD- RT

NOTES:

PERMIT DRAWING
SHEET 15 OF 79

REVISIONS

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PROJECT REFERENCE NO.	SHEET NO.
U-2579AB	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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N.C.B.E.L.S. License Number: F-0116

GRAPHIC SCALE 25 12.5 0 25 50

NAD 83/95

ESE-E60

ESE-E61

SITE 6B

DETAIL 3
2 @ 12'X10' RCBC, BURIED 1' WITH 2' SILL IN BARREL 2
PROPOSED EXCAVATION
CLASS 'I' RIP RAP AND GEOTEXTILE ON BANKS ONLY (TYP)
FLOODPLAIN BENCH
COIR FIBER MATTING NOT ON STREAM BOTTOM
EXISTING GROUND
1.5:1 SIDE SLOPES
2:1
CULVERT INLET FLOODPLAIN BENCH
STA. 84+00 -Y15FLYCA- RT

LEGEND:
F F DENOTES FILL IN WETLAND
S S DENOTES IMPACTS SURFACE WATER
TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

REMOVE AND REPLACE LAST 4' OF 36" RCP, CLEAN OUT PIPE

SEDGE GARDEN SWIM & RACQUET CLUB

JORGE L. GONZALES

TERESA J. TUCKER
TIMOTHY E. TUCKER

SITE 6

SITE 6A

PREFORMED SCOUR HOLE
EST. 20 SY PSRM
EST. 12 SY GEOTEXTILE
EST. 9 TONS CLASS 'B' STONE
DETAIL 'EEEE'

INLET CHANNEL FLOODPLAIN BENCH
EST. 6 TONS
CLASS 'I' RIP RAP
EST 33 TONS
47 SY GEOTEXTILE
SEE SEE SHEET 2D-3
DETAIL '3'

PROP. 47" WW FENCE

CHORD

12' GATE

10.6' CLEARANCE FROM TOP OF BOX TO BOTTOM OF PIPE

TOE PROTECTION
SEE SHEET 2D-2
SEE DETAIL 'JJJ'

TERRY W. MOTSINGER and wife ELLEN R. MOTSINGER

LOREN A. LITTLE
MARGARET G. LITTLE

END SBG STA. +24

BEG. SBG, +75

GRADE TO DRAIN

2 @ 12'X10' RCBC, BURIED 1' WITH 2' SILL IN BARREL 2, BACKFILLED WITH MIXTURE OF CLASS B RIP RAP AND NATIVE MATERIAL

8.3' CLEARANCE

ESE-W52

FIDDLERS CREEK (ESE-S11)

ROADWAY DITCH
CLASS 'B' RIP RAP
EST. 70 TONS
209 SY GEOTEXTILE

SPECIAL CUT DITCH
SEE SHEET '2D-1'
DETAIL 'J'

2' BASE LATERAL DITCH
SEE SHEET '2D-1'
DETAIL 'S'

BEG. SBO STA. +21

2' BASE LATERAL DITCH W/CLASS 'I' RIP RAP
EST. 258 TONS
332 SY GEOTEXTILE
SEE SHEET '2D-1'
DETAIL 'I'

OUTLET CHANNEL PROTECTION
CLASS 'I' RIP RAP
EST. 217 TONS
306 SY GEOTEXTILE
SEE SHEET 2D-3
DETAIL '4'

TERESA J. TUCKER
TIMOTHY E. TUCKER

LATERAL 'V' DITCH
SEE SHEET '2D-1'
DETAIL 'Q'

JOSEPH K. COFFEY
YVONNE COFFEY

THOMAS F. RILEY
CHERYL RILEY

END NOISE WALL
BEGIN FENCE

MATCHLINE SHEET 8 -L- STA. 759+50.00

MATCHLINE SHEET 10 -L- STA. 773+00.00

MATCHLINE SHEET 10 -Y15RPA- STA. 35+00.00 -Y15FLYCA- STA. 78+88.50

MATCHLINE SHEET 10 -Y15FLYBD- STA. 23+00.00

DETAIL EEEE
PREFORMED SCOUR HOLE
PLAN VIEW
INSTALL LEVEL AND FLUSH WITH NATURAL GROUND
Pipe or Ditch Outlet
Square Preformed Scour Hole (PSH)
(Rip Rap at bends not shown for clarity)
SECTION A-A
*NOT TO SCALE
B= 4.5 ft
D= 1 ft
W= 4 ft
FROM STA. 40+35 -Y15- LT

DETAIL 4
2 @ 12'X10' RCBC, BURIED 1' WITH 2' SILL IN BARREL 2
PROPOSED EXCAVATION
CLASS 'I' RIP RAP AND GEOTEXTILE ON BANKS AND EMBED IN CHANNEL BED
FLOODPLAIN BENCH
EXISTING GROUND
1.5:1 SIDE SLOPES
2:1
CULVERT OUTLET PROTECTION
STA. 20+90 -Y15FLYBD- RT

DETAIL I
LATERAL BASE DITCH
(Not to Scale)
Natural Ground
GEOTEXTILE
Fill Slope
Min. D= 1 Ft.
Max. d= 1.5 Ft.
B= 2 Ft.
b= 5 Ft.
*When B is < 6.0'
Type of Liner= Class I Rip-Rap
FROM STA. 18+95 TO STA. 21+00 -Y15FLYBD- RT

NOTES:

PERMIT DRAWING SHEET 16 OF 79

REVISIONS

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5/14/99

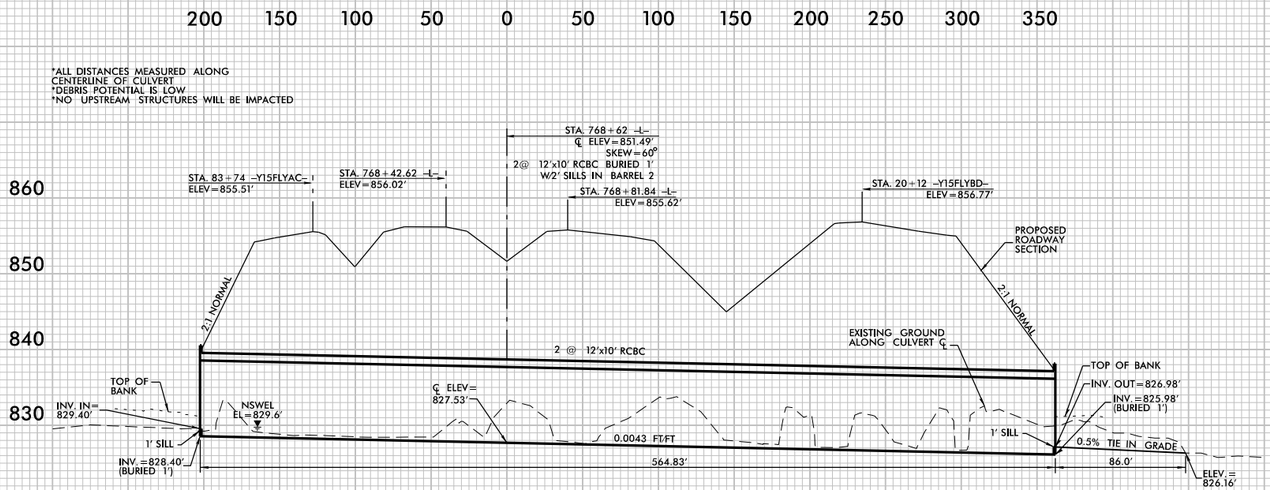
REVISIONS

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N.C.B.E.L.S. License Number: F-0116

PROJECT REFERENCE NO.	SHEET NO.
U–2579AB	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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U–2579AB – SITE 6



PROFILE ALONG ℄ OF CULVERT

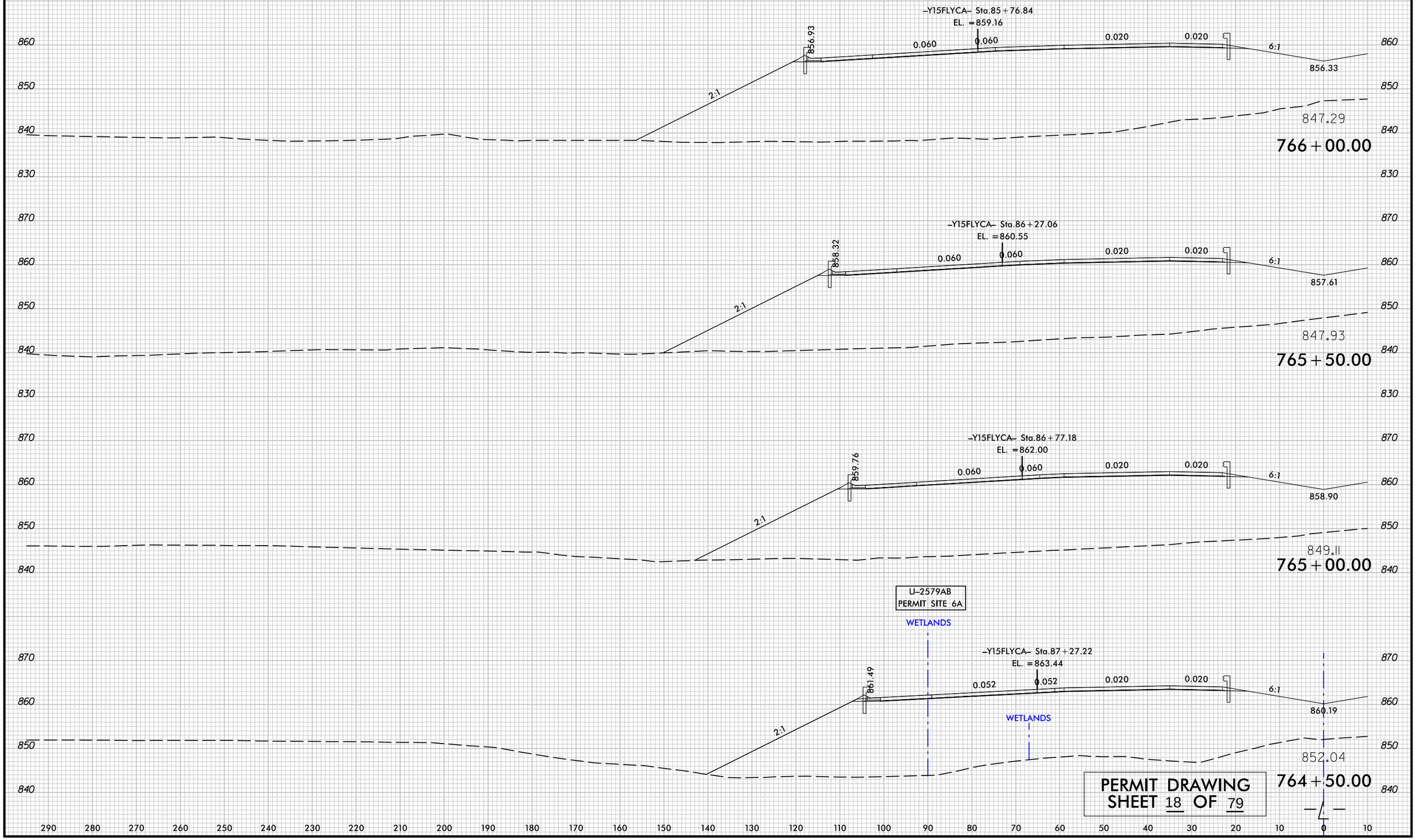
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SHEET 17 OF 79

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870 860 850 840 830

PERMIT DRAWING
SHEET 18 OF 79

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PROJECT REFERENCE NO.	SHEET NO.
U-2539AB	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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LEGEND:

- S S — DENOTES IMPACTS IN SURFACE WATER
- TS TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER
- F F — DENOTES FILL IN WETLAND

NAD 83/95

GRAPHIC SCALE 50 25 0 50 100

SEE SHEET 10A

SEE SHEET 10B

SEE SHEET 10C

SEE SHEET 10D

SITE 7

SITE 7A

SITE 8

SITE 9

SITE 10

ESE-S59

ESE-W48

ESE-W53

ESE-S11

ESE-W47

ESE-S12

ESE-S13

BEGIN -L- FEATURE

MATCHLINE SHEET 20 -Y15RPA- STA. 23+00.00

MATCHLINE SHEET 20 -Y15RTAC- STA. 46+00.00

MATCHLINE SHEET 20 -Y15REV- STA. 58+00.00

MATCHLINE SHEET 9 -L- STA. 773+00.00

MATCHLINE SHEET 19 -Y15REV- STA. 39+50.00

MATCHLINE SHEET 19 -Y15FLYBD- STA. 9+50.00

MATCHLINE SHEET 25 -Y15FLYBD- STA. 56+00.00

MATCHLINE SHEET 25 -Y15VIAC- STA. 30+00.00

MATCHLINE SHEET 11

NOTES:
SEE SHEETS 30 AND 31 FOR -L- PROFILE
SEE SHEETS 48 AND 49 FOR -Y15REV- PROFILE
SEE SHEETS 53 THRU 54 FOR -Y15FLYAC- PROFILE
SEE SHEETS 55 THRU 57 FOR -Y15FLYBD- PROFILE

SCALE

PERMIT DRAWING
SEE SI
SEE SH
SEE SI
SEE
SHEET 19 OF 79

REVISIONS

ROW REV. - FEBRUARY 26, 2020 - SHIFTED CUL-DE-SAC ON OAK GROVE CHURCH RD TO PROVIDE BETTER INGRESS & EGRESS FOR THE MOTSINGER PROPERTY. LINE ON PARCEL 677 CHANGED TO C/A TO ILLUSTRATE ENTIRE PARCEL PURCHASED FOR R/W. CEH.

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R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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N.C.B.E.L.S. License Number: F-0116

LEGEND:

- S S — DENOTES IMPACTS IN SURFACE WATER
- TS TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER
- F F — DENOTES FILL IN WETLAND

NAD 83/95

GRAPHIC SCALE 50 25 0 50 100

SEE SHEET 10D

SEE SHEET 10A

SEE SHEET 10B

SEE SHEET 10C

MATCHLINE SHEET 20 -Y15RPA- STA. 23+00.00

MATCHLINE SHEET 20 -Y15RTAC- STA. 49+00.00

MATCHLINE SHEET 20 -Y15REV- STA. 58+00.00

MATCHLINE SHEET 25 -Y15FLYBD- STA. 26+00.00

MATCHLINE SHEET 9 -L- STA. 773+00.00

MATCHLINE SHEET 9 -Y15REV- STA. 39+00.00

MATCHLINE SHEET 19 -Y15REV- STA. 39+50.00

MATCHLINE SHEET 19 -Y15FLYBD- STA. 50+00.00

MATCHLINE SHEET 11

BEGIN IS FEATURE

SITE 7 — ESE-S59 — ESE-W48 — SITE 7A

SITE 8 — ESE-S59

SITE 9 — ESE-S12

SITE 10 — ESE-S13

ESE-W53

FIDDLERS CREEK (ESE-S11)

ESE-W47

NOTES:
SEE SHEETS 30 AND 31 FOR -L- PROFILE
SEE SHEETS 48 AND 49 FOR -Y15REV- PROFILE
SEE SHEETS 53 THRU 54 FOR -Y15RTAC- PROFILE
SEE SHEETS 55 THRU 57 FOR -Y15FLYBD- PROFILE

SCALE

PERMIT DRAWING
SEE SHEET 20 OF 79

ROW REV. - FEBRUARY 26, 2020 - SHIFTED CUL-DE-SAC ON OAK GROVE CHURCH RD TO PROVIDE BETTER INGRESS & EGRESS FOR THE MOTSINGER PROPERTY. LINE ON PARCEL 677 CHANGED TO C/A TO ILLUSTRATE ENTIRE PARCEL PURCHASED FOR R/W. CEH.

REVISIONS

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PROJECT REFERENCE NO.	SHEET NO.
U-2579AB	10A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

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N.C.B.E.L.S. License Number: F-0116

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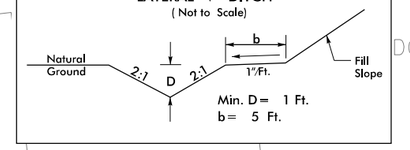
SITE 7

ESE–S59

ESE–W48

SITE 7A

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



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

FROM STA. 22+30 TO STA. 23+75 –Y15FLYBD– LT
FROM STA. 23+75 TO STA. 25+50 –Y15FLYBD– LT
FROM STA. 25+50 TO STA. 27+09 –Y15FLYBD– LT

LATERAL 'V' DITCH
SEE SHEET '2D–1'
DETAIL 'Q'

STANDARD 4' BASE DITCH
W/CLASS 'B' RIP RAP
EST. 58 TONS
157 SY GEOTEXTILE
SEE SHEET '2D–1'
DETAIL 'II'
SLOPE = 2.79%

54" RCP–V
DO NOT BURY

CLASS 'I' RIP RAP
EST. 26 TONS
50 SY GEOTEXTILE

54" RCP–III

JB w/MH

18" CSP W/ELBOWS

18" RCP–III

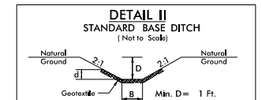
2GI W/ FG

2GI

18" RCP–III

PROP. 47" WW FENCE

DETAIL II
STANDARD BASE DITCH
(Not to Scale)



Min. D = 1 Ft.
Max. d = 1 Ft.
B = 4 Ft.
*When B is < 6.0'

Type of Liner = Class B Rip-Rap
FROM STA. 27+05 TO STA. 28+40 –Y15FLYBD– LT

LEGEND:

S S	DENOTES IMPACTS IN SURFACE WATER
TS TS	DENOTES TEMPORARY IMPACTS IN SURFACE WATER
F F	DENOTES FILL IN WETLAND

PERMIT DRAWING
SHEET 21 OF 79

NAD 83/95

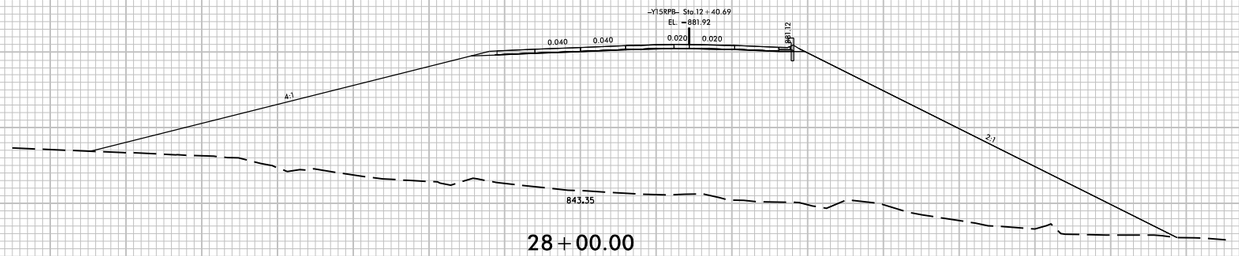
REVISIONS

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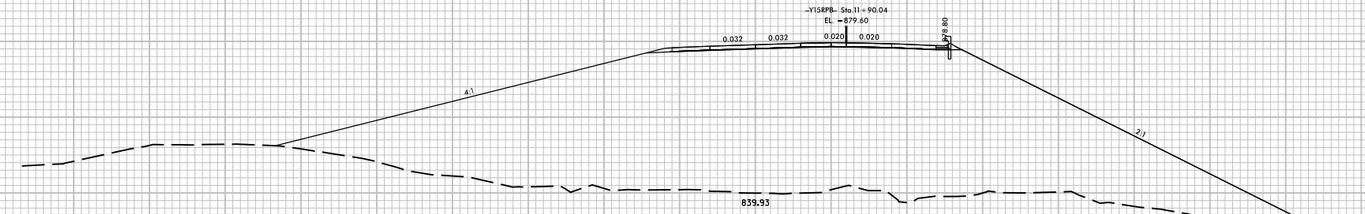
8/23/99

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	U-2579AB	X-437

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28+00.00

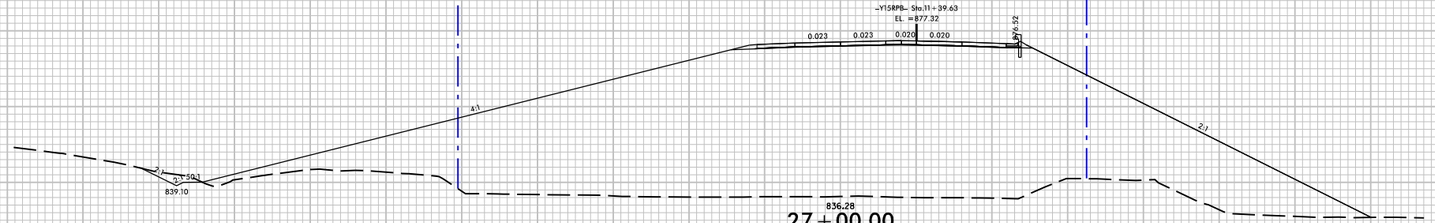


27+50.00

U-2579AB
PERMIT SITE 7A

WETLANDS

WETLANDS



27+00.00

PERMIT DRAWING
SHEET 22 OF 79

-Y15FLYBD-

880 860 840 820

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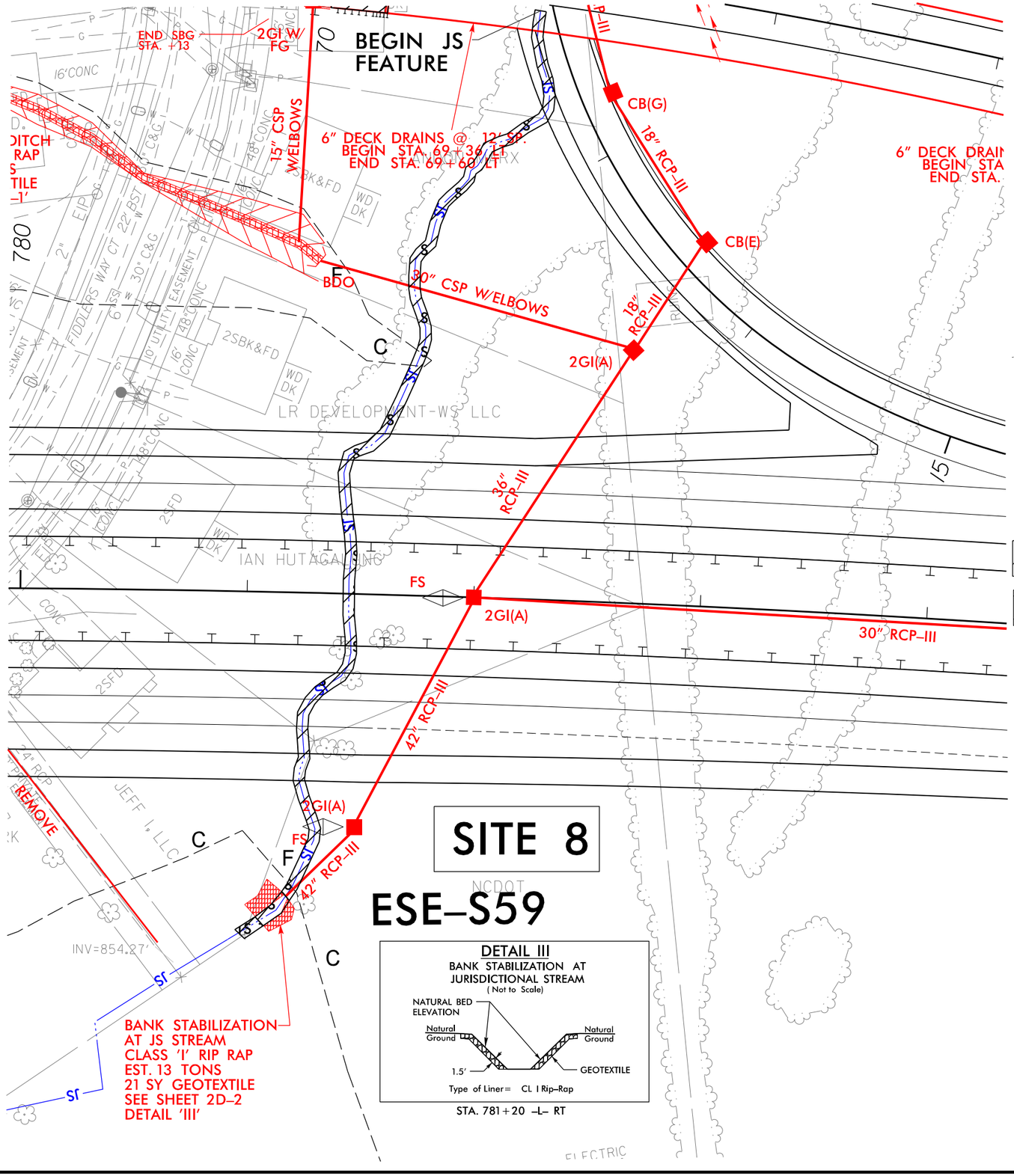
PROJECT REFERENCE NO.	SHEET NO.
U-2579AB	10B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
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GRAPHIC SCALE 12.5 0 12.5 25



NAD 83/95

LEGEND:

S S — DENOTES IMPACTS IN SURFACE WATER

TS TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER

SITE 8

ESE-S59

DETAIL III
BANK STABILIZATION AT JURISDICTIONAL STREAM
(Not to Scale)

Type of Liner= CL I Rip-Rap

STA. 781+20 -L- RT

PERMIT DRAWING
SHEET 23 OF 79

REVISIONS

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MATCHLINE SEE SHEET 10D

PROJECT REFERENCE NO.	SHEET NO.
U-2579AB	10C
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

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25 12.5 0 25 50
GRAPHIC SCALE

NAD 83/95

LEGEND:

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

DETAIL III
BANK STABILIZATION AT JURISDICTIONAL STREAM
(Not to Scale)
NATURAL BED ELEVATION
Natural Ground
1.5'
GEOTEXTILE
Type of Liner= CL I Rip-Rap
STA. 781+20 -L- RT

DETAIL KKKK
OUTLET CHANNEL STABILIZATION
(Not to Scale)
Natural Ground
Natural Bed Elevation
1.5'
Geotextile
Channel Bed (Variable)
Type of Liner= CL I Rip-Rap
STA. 18+50 -Y5B- LT
STA. 19+80 -Y5B- LT

SITE 9
SITE 10
ESE-S12
ESE-S13
W/CLASS 'I' RIP RAP EST. 272 TONS 460 SY GEOTEXTILE SEE SHEET '2D-3' DETAIL 'MMMM'
CULVERT INLET CHANNEL PROTECTION CLASS 'I' RIP RAP EST. 19 TONS 28 SY GEOTEXTILE SEE SHEET 2D-2 DETAIL 'III'
GRADE TO DRAIN
1 @ 6'X7' RCBC, BURIED 1' WITH 1' SILLS AND BAFFLES, BACKFILLED WITH MIXTURE OF CLASS B RIP RAP AND NATIVE MATERIAL
2' BASE DITCH W/CLASS 'B' RIP RAP EST. 107 TONS 290 SY GEOTEXTILE SEE SHEET '2D-1' DETAIL 'I'
2' BASE SPECIAL CUT DITCH SEE SHEET '2D-1' DETAIL 'RRRR'
CLASS 'B' RIP RAP EST. 2 TONS 5 SY GEO-TEXTILE
2' BASE DITCH SEE SHEET '2D-1' DETAIL 'DDD'
BEGIN JS FEATURE
4' BASE DITCH W/CLASS 'I' RIP RAP EST 289 TONS 355 SY GEOTEXTILE SEE SHEET '2D-3' DETAIL 'OOOO'
4' BASE DITCH W/CLASS 'I' RIP RAP EST 197 TONS 348 SY GEOTEXTILE SEE SHEET '2D-3' DETAIL 'OOOO'
4' BASE W/CLASS EST 114 201 SY GE SEE SHEET DETAIL
PREFORMED SCOUR HOLE EST. 20 SY PSRM EST. 12 SY GEOTEXTILE EST. 9 TONS CLASS 'B' STONE DETAIL 'EEEE'
CULVERT OUTLET CHANNEL PROTECTION EST. 43 TONS CLASS 'I' RIP RAP 60 SY GEOTEXTILE SEE SHEET 2D-3 DETAIL 'KKKK'
STANDARD 5' BASE DITCH W/CLASS 'I' RIP RAP EST. 59 TONS 116 SY GEOTEXTILE SEE SHEET '2D-3' DETAIL 'BBBB'
6" DECK DRAINS @ 12' SP. BEGIN STA. 42+89 LT END STA. 45+77 LT
STANDARD 6' BASE DITCH W/ EMBEDDED CLASS 'I' RIP RAP EST. 100 TONS 295 SY GEOTEXTILE SEE SHEET '2D-2' DETAIL 'MMMM'
RIP RAP AT EMBANKMENT EST. 37 TONS CLASS 'I' RIP RAP 63 SY GEOTEXTILE SEE SHEET 2D-2 DETAIL 'HHH'
TOE PROTECTION SEE SHEET '2D-1'
GRADE TO DRAIN
6" DECK DRAINS @ 12' SP. BEGIN STA. 63+35 LT END STA. 66+11 LT
6" DECK DRAINS @ 12' SP. BEGIN STA. 54+33 LT END STA. 52+77 LT
STANDARD 2' BASE DITCH W/CLASS 'B' RIP RAP EST. 84 TONS 238 SY GEOTEXTILE SEE SHEET '2D-1' DETAIL 'JJ'
BEG. SBG STA. +16
END SBG STA. +44
60" RCP-III DO NOT BURY
15" CSP
15" RCP-IV
18" RCP-III
24" RCP
15" RCP-III
2GI
2GI W/FG
FS
JB w/MH
C F

DETAIL MMMM
STANDARD BASE DITCH
(Not to Scale)
Natural Ground
1.5'
Geotextile
Min. D= 2 Ft.
B= 6 Ft.
*When B is < 6.0'
Type of Liner= Class I Rip-Rap
FROM STA. 792+70 TO STA. 792+86 -L- LT
FROM STA. 54+55 TO STA. 56+00 -Y15FLYCA- LT

DETAIL JJ
STANDARD BASE DITCH
(Not to Scale)
Min. D= 1 Ft.
Max. d= 1 Ft.
B= 2 Ft.
*When B is < 6.0'
Type of Liner= Class B Rip-Rap
FROM STA. 49+89 TO STA. 54+44 -Y15FLYCA- LT DDE=690 CY

DETAIL HHH
RIP RAP AT EMBANKMENT
(Not to Scale)
10' min
Ditch Grade
1.0' min
1.5'
GEOTEXTILE
Type of Liner= CL 'I' Rip-Rap/ Geotextile
STA. 54+38 -Y15FLYCA- LT

DETAIL BBBB
STANDARD BASE DITCH
(Not to Scale)
Min. D= 2.5 Ft.
Max. d= 1 Ft.
B= 5 Ft.
*When B is < 6.0'
Type of Liner= Class I Rip-Rap
FROM STA. 750+50 TO STA. 754+50 -L- LT DDE=290 CY
FROM STA. 757+05 TO STA. 757+73 -L- LT DDE=550 CY
FROM STA. 54+00 TO STA. 54+60 -Y15FLYCA- LT

NCDOT (FORMERLY - ERNEST W. ANGELL)

PERMIT DRAWING SHEET 24 OF 79

NOTES:
SEE SHEET 29 FOR -L- PROFILE
SEE SHEET 41 FOR -Y4RPC- PROFILE
SEE SHEET 42 FOR -Y4RPD PROFILE

REVISIONS

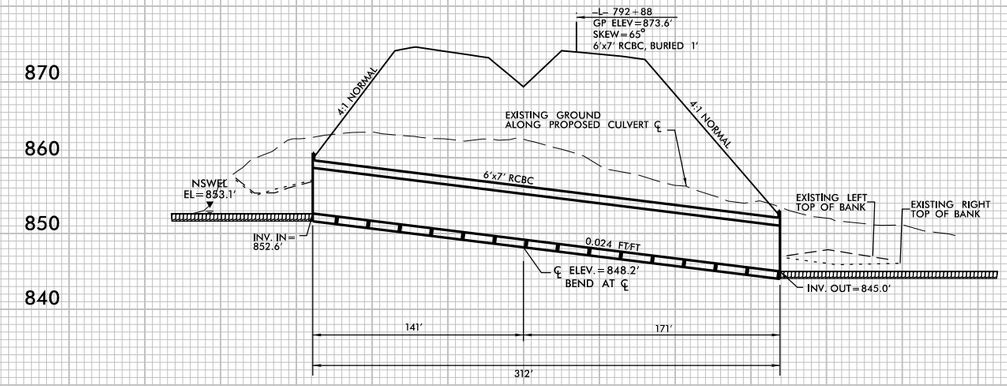
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PROJECT REFERENCE NO.	SHEET NO.
U–2579AB	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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U–2579AB – SITE 9



PROFILE ALONG ℄ OF CULVERT

PERMIT DRAWINGS
SHEET 25 OF 79

REVISIONS 5/14/99

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PROJECT REFERENCE NO.	SHEET NO.
U-2579AB	

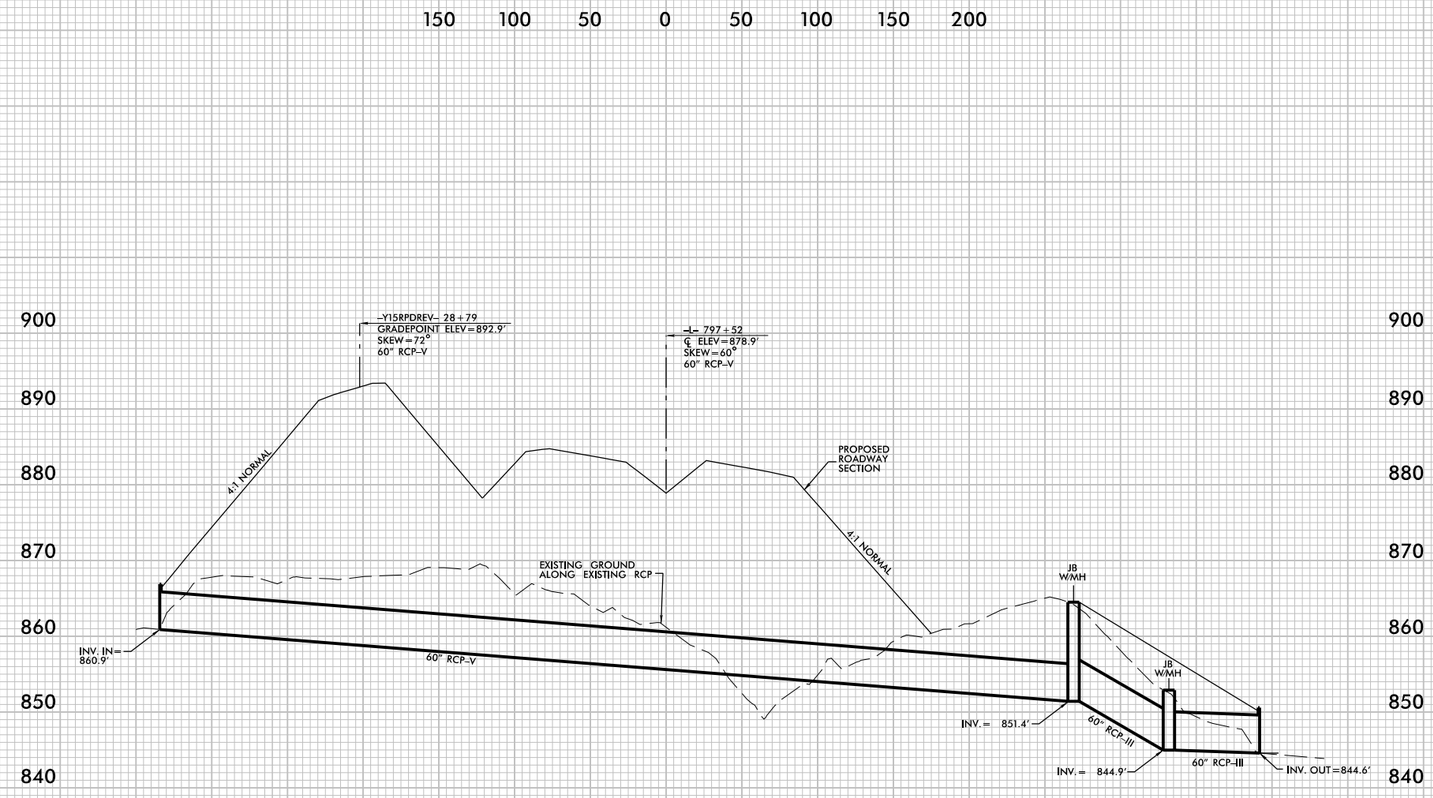
ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

INCOMPLETE PLANS
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U-2579AB – SITE 10



PROFILE ALONG ℄ OF CULVERT

PERMIT DRAWINGS
SHEET 26 OF 79

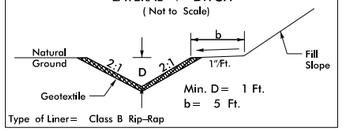
REVISIONS

5/14/99

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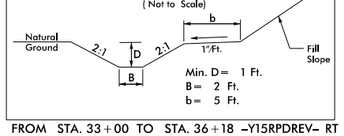
DETAIL NNNN
LATERAL 'V' DITCH
(Not to Scale)



Type of Liner= Class B Rip-Rap

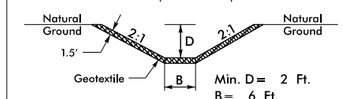
FROM STA. 36+93 TO STA. 39+40 –Y15RPDREV– RT
FROM STA. 25+67 TO STA. 28+32 –Y15RPDREV– RT

DETAIL S
LATERAL BASE DITCH
(Not to Scale)



FROM STA. 33+00 TO STA. 36+18 –Y15RPDREV– RT
FROM STA. 37+00 TO STA. 39+37 –Y15RPDREV– RT

DETAIL MMMM
STANDARD BASE DITCH
(Not to Scale)

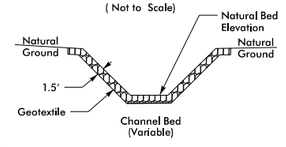


*When B is < 6.0'

Type of Liner= Class I Rip-Rap

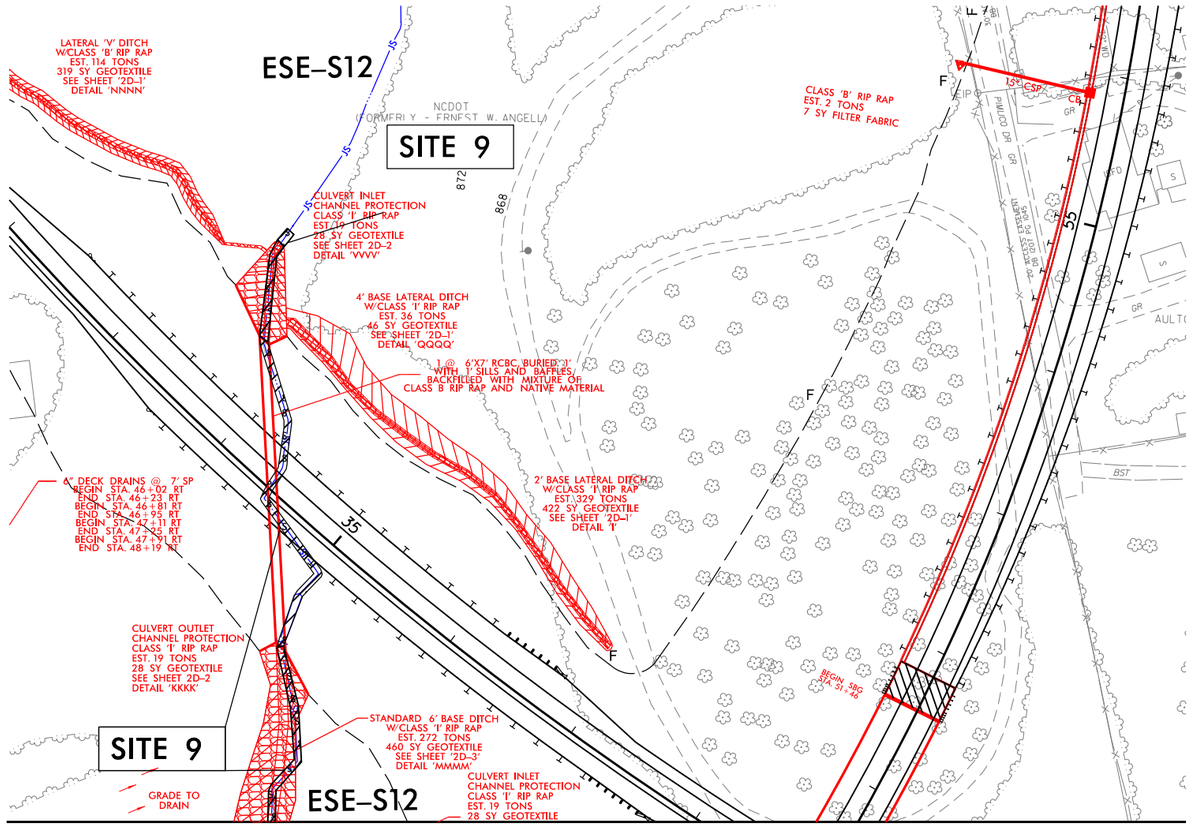
FROM STA. 792+70 TO STA. 792+86 –L– LT

DETAIL KKKK
OUTLET CHANNEL PROTECTION
(Not to Scale)



Type of Liner= CL I Rip-Rap

STA. 35+55 –Y15RPDREV– LT



MATCHLINE SEE SHEET 10C

PROJECT REFERENCE NO.	SHEET NO.
U–2579AB	10D
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

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25 12.5 0 25 50
GRAPHIC SCALE

NAD 83/95

LEGEND:

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

PERMIT DRAWING SHEET 27 OF 79

NOTES:
SEE SHEET 29 FOR –L– PROFILE
SEE SHEET 41 FOR –Y4RPC– PROFILE
SEE SHEET 42 FOR –Y4RPD PROFILE

REVISIONS

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PROJECT REFERENCE NO.	SHEET NO.
U-2579AB	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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GRAPHIC SCALE 50 25 0 50 100

LEGEND:

- DENOTES FILL IN WETLAND
- DENOTES IMPACTS IN SURFACE WATER
- DENOTES IMPACTS IN SURFACE WATER (POND)
- DENOTES MECHANIZED CLEARING

NAD 83/95

SEE SHEET 11A

SITE 12

SITE 12B

ESE-S16

ESE-P7

ESE-W12

SITE 12A

NOTE: ROCK CROSS VANES ARE TO BE USED AS NEEDED

PERMIT DRAWING SHEET 28 OF 79

REVISIONS

ROW REV. - DECEMBER 5, 2018 - REVISED TCE ON PARCELS 182, 183, 184, 190 AND 191. CEH
ROW REV. - FEBRUARY 8, 2019 - REVISED TCE ON PARCELS 157 AND 158 TO AVOID SEPTIC TANK. SMP
ROW REV. - MARCH 29, 2019 - PARCEL 159 COMBINED WITH PARCEL 160 FOR JANICE & BOYD STAFFORD. SMP
ROW REV. - FEBRUARY 26, 2020 - REMOVED Y16C AND DRI ALIGNMENTS. CLAIMS ELIMINATED ON PARCELS 182, 183, 184, 190 AND 191. ROW AND PUE EXTENDED TO TIE TO ROW ON PARCEL 181. CEH.
ROW REV. - MARCH 13, 2020 - ELIMINATED TCE ON PARCEL 185 THEREBY ELIMINATING THE CLAIM. CEH.

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PROJECT REFERENCE NO.	SHEET NO.
U-2579AB	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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GRAPHIC SCALE 50 25 0 50 100

LEGEND:

- DENOTES FILL IN WETLAND
- DENOTES IMPACTS IN SURFACE WATER
- DENOTES IMPACTS IN SURFACE WATER (POND)
- DENOTES MECHANIZED CLEARING

NAD 83/95

MATCHLINE SHEET 10 –L– STA. 100+00.00

MATCHLINE SHEET 10 –Y12LPC– STA. 100+00.00

MATCHLINE SHEET 10 –Y15RPC– STA. 100+00.00

MATCHLINE SHEET 19 –Y15FLYCA– STA. 37+97.00

MATCHLINE SHEET 19 –Y15RPC– STA. 14+00.00

MATCHLINE SHEET 11A

MATCHLINE SHEET 11C

MATCHLINE SHEET 12 –L– STA. 827+90

SEE SHEET 11A

SITE 12

SITE 12B

SITE 12A

ESE–S16

ESE–P7

ESE–W12

NOTE: ROCK CROSS VANES ARE TO BE USED AS NEEDED

PERMIT DRAWING
SHEET 29 OF 79

ROW REV. – DECEMBER 5, 2018 – REVISED TCE ON PARCELS 182, 183, 184, 190 AND 191. CEH
ROW REV. – FEBRUARY 8, 2019 – REVISED TCE ON PARCELS 157 AND 158 TO AVOID SEPTIC TANK. SMP
ROW REV. – MARCH 29, 2019 – PARCEL 159 COMBINED WITH PARCEL 160 FOR JANICE & BOYD STAFFORD. SMP
ROW REV. – FEBRUARY 26, 2020 – REMOVED Y16C AND DRI ALIGNMENTS. CLAIMS ELIMINATED ON PARCELS 182, 183, 184, 190 AND 191. ROW AND TCE REDUCED ANDOR ADJUSTED ON PARCELS 180, 181, 192 AND 193. PUE EXTENDED TO TIE TO ROW ON PARCEL 181. CEH.
ROW REV. – MARCH 13, 2020 – ELIMINATED TCE ON PARCEL 185 THEREBY ELIMINATING THE CLAIM. CEH.

REVISIONS

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PROJECT REFERENCE NO.	SHEET NO.
U-2579AB	11A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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N.C.B.E.L.S. License Number: F-0116

25 12.5 0 25 50
GRAPHIC SCALE

LEGEND:

- F F — DENOTES FILL IN WETLAND
- S S — DENOTES IMPACTS IN SURFACE WATER
- P P — DENOTES IMPACTS IN SURFACE WATER (POND)
- * * * * * — DENOTES MECHANIZED CLEARING

NAD 83/95

SITE 12

SITE 12B

SITE 12A

ESE–S16

ESE–P7

ESE–W12

GRADE TO DRAIN

NCDOT (FORMERLY - ERNEST W. ANGELL)

CHESTER MONROE S
BETTY M. SMITH

WADE H. GABARD JR.
JOYCE GABARD

JANICE S. STAFFORD
BOYD STAFFORD

DAVID MOTSINGER
WAYNE MOTSINGER

2' BASE LATERAL DITCH W/CLASS 'B' RIP RAP EST. 112 TONS 331 SY GEOTEXTILE SEE SHEET '2D-1' DETAIL 'U'

2' BASE LATERAL DITCH W/CLASS 'B' RIP RAP EST. 211 TONS 599 SY GEOTEXTILE SEE SHEET '2D-1' DETAIL 'U'

4' BASE TAIL DITCH W/ EMBEDDED CLASS 'I' RIP RAP EST. 161 TONS 286 SY GEOTEXTILE SEE SHEET '2D-1' DETAIL 'HH' SLOPE= 6.64%

4' BASE TAIL DITCH W/ EMBEDDED CLASS 'I' RIP RAP EST. 128 TONS 228 SY GEOTEXTILE SEE SHEET '2D-1' DETAIL 'GG' SLOPE= 1.61%

2' BASE TAIL DITCH W/CLASS 'B' RIP RAP EST. 96 TONS 273 SY GEOTEXTILE SEE SHEET '2D-1' DETAIL 'JJ' SLOPE=8.50%

2' BASE LATE
SEE SHEET
DETAI

3' BASE LATERAL DITCH W/CLASS 'B' RIP RAP EST. 23 TONS 63 SY GEOTEXTILE SEE SHEET '2D-1' DETAIL 'V'

LATERAL 'V' DITCH SEE SHEET '2D-1' DETAIL 'Q'

BEGIN JS FEATURE

1 @ 5'X6' RCBC

CULVERT INLET CHANNEL PROTECTION EST. 6 TONS CLASS 'I' RIP RAP EST. 33 TONS 47 SY GEOTEXTILE SEE SEE SHEET 2D-3 DETAIL 'VVVV'

CULVERT OUTLET CHANNEL PROTECTION EST. 46 TONS CLASS 'I' RIP RAP 64 SY GEOTEXTILE SEE SHEET 2D-3 DETAIL 'KKKK'

ROCK CROSS VANE IF DIRECTED BY THE ENGINEER SEE DETAIL 'FFFF'

THE LOCATION AND STABILIZATION OF CHANNEL MAY BE ADJUSTED BY THE ENGINEER IN THE FIELD.

STANDARD 5' BASE DITCH W/ EMBEDDED CLASS 'I' RIP RAP EST. 685 TONS 1056 SY GEOTEXTILE SEE SHEET '2D-1' DETAIL 'MM' SLOPE= 2.49%

18 W/MH
42" RCP-III

42" RCP-V

30" CSP W/ELBOWS

15" RCP-III

15" CSP

2GI

2GIW/FG

DETAIL KKKK
OUTLET CHANNEL PROTECTION
(Not to Scale)
Natural Ground; Natural Bed Elevation; 1.5'; Geotextile; Channel Bed (Variable)
Type of Liner= CL I Rip-Rap
STA. 44+00 -Y15FLYCA- LT

DETAIL VVVV
INLET CHANNEL PROTECTION
(Not to Scale)
Natural Ground; Natural Bed Elevation; 1.0'; Geotextile; Channel Bed (Variable)
Type of Liner= CL I Rip-Rap
STA. 35+55 -Y15RPDREV- RT

DETAIL HH
STANDARD BASE DITCH
(Not to Scale)
Natural Ground; 2:1; d; D; Geotextile; B; 2:1
Min. D= 1.5 Ft.
Max. d= 1.5 Ft.
B= 4 Ft.
*When B is < 6.0'
Type of Liner= Class I Rip-Rap
FROM STA. 20+50 TO STA. 21+92 -Y15RPC- LT

DETAIL GG
STANDARD BASE DITCH
(Not to Scale)
Natural Ground; 2:1; d; D; Geotextile; B; 2:1
Min. D= 2 Ft.
Max. d= 1.5 Ft.
B= 4 Ft.
*When B is < 6.0'
Type of Liner= Class I Rip-Rap
FROM STA. 54+37 TO STA. 54+40 -Y15FLYCA- LT

DETAIL V
LATERAL BASE DITCH
(Not to Scale)
Natural Ground; d; D; 2:1; b; 1'Ft.; Fill Slope; GEOTEXTILE; B
Min. D= 1 Ft.
Max. d= 1 Ft.
B= 4 Ft.
b= 5 Ft.
*When B is < 6.0'
Type of Liner= Class B Rip-Rap
FROM STA. 43+25 TO STA. 43+62 -Y15FLYCA- RT

DETAIL MM
STANDARD BASE DITCH
(Not to Scale)
Natural Ground; 2:1; d; D; Geotextile; B; 2:1
Min. D= 3 Ft.
Max. d= 1 Ft.
B= 5 Ft.
*When B is < 6.0'
Type of Liner= Class I Rip-Rap
FROM STA. 30+50 TO STA. 32+90 -Y15REV- RT

PERMIT DRAWING SHEET 30 OF 79

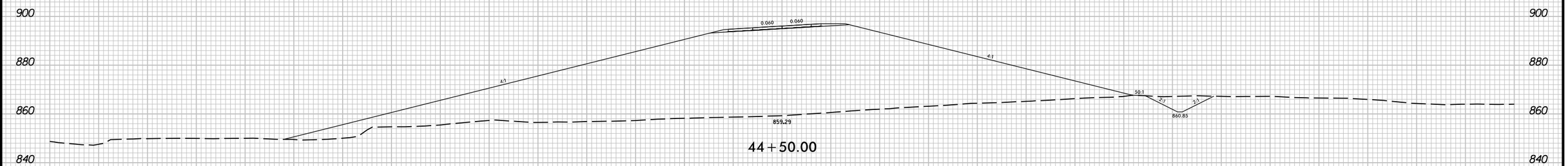
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REVISIONS

8/23/99

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	U-2579AB	X-486

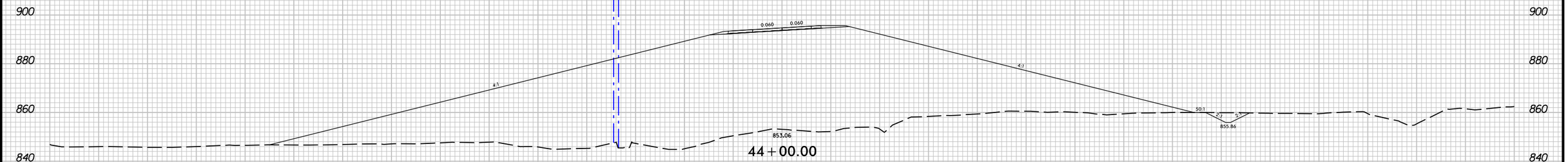
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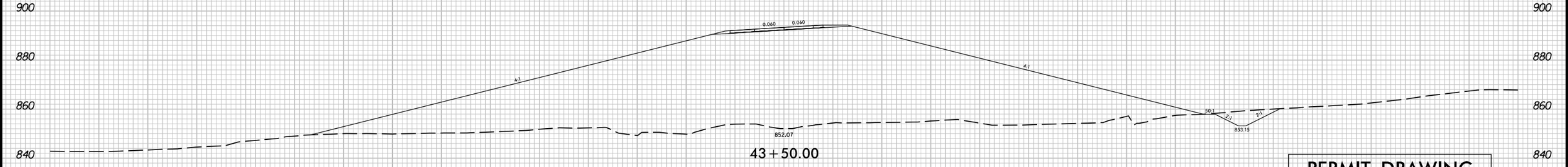
44+50.00

U-2579AB
PERMIT SITE 12

WETLANDS WETLANDS



44+00.00



43+50.00

PERMIT DRAWING
SHEET 31 OF 79

-YI5FLYCA-

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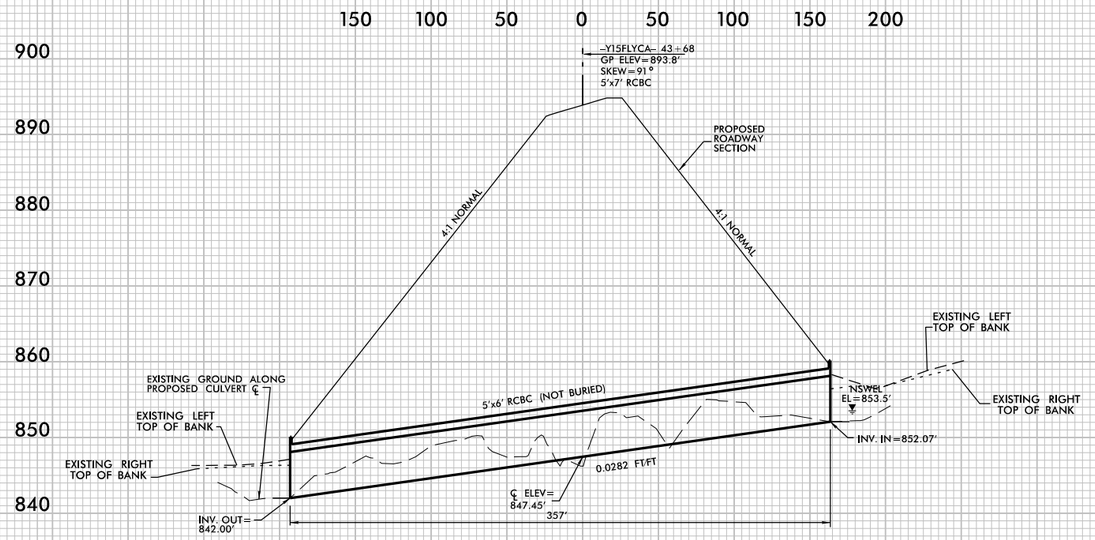
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N.C.B.E.L.S. License Number: F-0116

PROJECT REFERENCE NO.	SHEET NO.
U-2579AB	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

U-2579AB – SITE 12



PROFILE ALONG ℄ OF CULVERT

PERMIT DRAWINGS
SHEET 32 OF 79

REVISIONS 5/14/99

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LEGEND:

- DENOTES FILL IN WETLAND
- DENOTES IMPACTS IN SURFACE WATER
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER
- DENOTES EXCAVATION IN WETLAND
- DENOTES MECHANIZED CLEARING

PROJECT REFERENCE NO.	SHEET NO.
U-2759AB	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

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25 12.5 0 25 50
GRAPHIC SCALE

NAD 83/95

DETAIL S
LATERAL BASE DITCH
(Not to Scale)
FROM STA. 827+95 TO STA. 829+50 –L– LT
FROM STA. 831+00 TO STA. 832+00 –L– RT
FROM STA. 832+25 TO STA. 833+00 –L– LT

DETAIL III
BANK STABILIZATION AT JURISDICTIONAL STREAM
(Not to Scale)
STA. 833+40 –L– LT

SITE 23A
ESE–W25

SITE 23
ESE–S42

SITE 13
ESE–S19

SITE 13A

ESE–W26

ESE–S75

SITE 13
ESE–S19

MATCHLINE SHEET 11 –L– STA. 827+90.00

2' BASE LATERAL DITCH W/ EMBEDDED CLASS 'B' RIP RAP EST. 136 TONS 385 SY GEOTEXTILE SEE SHEET '2D-1' DETAIL 'U'

2' BASE LATERAL DITCH SEE SHEET '2D-1' DETAIL 'S'

TIE TO EXISTING STREAM

BEGIN JS FEATURE

BANK STABILIZATION CLASS 'I' RIP RAP EST. 21 TONS 32 SY GEOTEXTILE SEE SHEET 2D-2 DETAIL 'III'

PROP. 47" WW FENCE

CHORD

BEGIN SBG STA. 827+95

END SBG STA. 836+02

24" RCP-III

2GI W/ FG

2GI(A)

2GI W/ FG

18" RCP-III

24" RCP-III

36" RCP-ARP DIRECT DISCHARGE NOT BURIED

24" CLEARANCE BETWEEN PIPES

15" RCP-III

15" CSP W/ELBOWS

END SBG STA. 834+55

BEGIN SBG STA. 828+60

BEGIN JS FEATURE

HW

INV=879.03'

30" RCP

INV=881.81'

TIE TO EXISTING DITCH

2' BASE LATERAL DITCH W/CLASS 'B' RIP RAP EST. 45 TONS 128 SY GEOTEXTILE SEE SHEET '2D-1' DETAIL 'U'

2' BASE LATERAL DITCH W/CLASS 'B' RIP RAP EST. 160 TONS 452 SY GEOTEXTILE SEE SHEET '2D-1' DETAIL 'S'

SPECIAL CUT DITCH SSEE SHEET '2D-1' DETAIL 'K'

CLASS 'B' RIP RAP EST. 3 TONS 10 SY GEOTEXTILE

PROP. 47" WW FENCE

CHORD

EIP

ISFD

HELEN TROTTER

JANICE W. CRAVER
BILLY R. CRAVER

WILKES CNTY

PERMIT DRAWING
SHEET 33 OF 79

REVISIONS

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LEGEND:

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

PROJECT REFERENCE NO.	SHEET NO.
U-2759AB	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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25 12.5 0 25 50
GRAPHIC SCALE

NAD 83/95

DETAIL S
LATERAL BASE DITCH
(Not to Scale)
Natural Ground, 2:1, D, 3:1, T, B, b, Fill Slope
Min. D= 1 Ft.
B= 2 Ft.
b= 5 Ft.
FROM STA. 827+95 TO STA. 829+50 -L- LT
FROM STA. 831+00 TO STA. 832+00 -L- RT
FROM STA. 832+25 TO STA. 833+00 -L- LT

DETAIL III
BANK STABILIZATION AT JURISDICTIONAL STREAM
(Not to Scale)
NATURAL BED ELEVATION
Natural Ground, 1.5', GEOTEXTILE, Natural Ground
Type of Liner= CL I Rip-Rap
STA. 833+40 -L- LT

SITE 23A
ESE-W25

SITE 23
ESE-S42

SITE 13
ESE-S19

SITE 13A

ESE-W26

ESE-S75

SITE 13
ESE-S19

MATCHLINE SHEET 11 -L- STA. 827+90.00

2' BASE LATERAL DITCH W/ EMBEDDED CLASS 'B' RIP RAP EST. 136 TONS 385 SY GEOTEXTILE SEE SHEET 2D-1' DETAIL 'U'

2' BASE LATERAL DITCH SEE SHEET 2D-1' DETAIL 'S'

TIE TO EXISTING STREAM

BEGIN JS FEATURE

BANK STABILIZATION CLASS 'I' RIP RAP EST. 21 TONS 32 SY GEOTEXTILE SEE SHEET 2D-2 DETAIL 'III'

PROP. 47" WW FENCE

CHORD

BEGIN SBG STA. 827+95

END SBG STA. 836+02

24" RCP-III

18" RCP-III

2GI W/ FG

2GI(A)

FS

2.4% GRADE FOR BOTH PIPES

36" RCP-ARCH DIRECT DESIGN NOT BURIED

15" RCP-III

15" CSP W/ELBOWS

END SBG STA. 834+55

SPECIAL CUT DITCH SSEE SHEET 2D-1' DETAIL 'K'

CLASS 'B' RIP RAP EST. 3 TONS 10 SY GEOTEXTILE

2' BASE LATERAL DITCH W/CLASS 'B' RIP RAP EST. 160 TONS 452 SY GEOTEXTILE SEE SHEET 2D-1' DETAIL 'S'

2' BASE LATERAL DITCH W/CLASS 'B' RIP RAP EST. 45 TONS 128 SY GEOTEXTILE SEE SHEET 2D-1' DETAIL 'U'

30" RCP

INV-879.03

INV-881.81

HW

EIP

ISFD

HELEN TROTTER

JANICE W. CRAVER
BILLY R. CRAVER

PERMIT DRAWING
SHEET 34 OF 79

REVISIONS

PLOT DRIVER: NCDOT_pdf_color_eng_100.plt
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8/23/99

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	U-2579AB	X-83

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900 890 880 870 860 850 840

897

0.020 0.020 6:1

894.33

U-2579AB
PERMIT SITE 13A

WETLANDS

2:1

2:1 2:1 50:1

844.94

832+50.00

830 900 890 880 870 860 850 840

898

0.020 0.020 6:1

895.36

2:1

2:1 2:1 50:1

858.39

832+00.00

PERMIT DRAWING
SHEET 35 OF 79

-L-

290 280 270 260 250 240 230 220 210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10

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8/23/99

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	U-2579AB	X-171

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900 890 880 870 860 850 840

6:1 0.020 0.020 897 894.33

U-2579AB
PERMIT SITE 13A

WETLANDS

2:1 50:1 2:1 2:1 866.50

844.94

832+50.00

830

900 890 880 870 860 850 840

6:1 0.020 0.020 897 895.36

2:1 50:1 2:1 2:1 862.50

858.39

832+00.00

10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290

PERMIT DRAWING
SHEET 36 OF 79

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DATE: 5/5/2020

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	U-2579AB	X-82

290 280 270 260 250 240 230 220 210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10

U-2579AB
PERMIT SITE 23A

WETLANDS

WETLANDS

899

0.020

0.020

6:1

896.32

2:1

50:1

2:1

2:1

865.68

831+50.00

900
890
880
870
860
850
840

900

0.020

0.020

6:1

897.21

2:1

50:1

2:1

2:1

850.87

867.80

831+00.00

PERMIT DRAWING
SHEET 37 OF 79

PLOT DRIVER: NCDOT.pdf_color_eng_100.plt
USER: .USERNAME.
FILE: u2579ab_rdy_xpl_left
DATE: 5/5/2020
TIME: 12:03:54 PM
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PROJECT REFERENCE NO.	SHEET NO.
U-2579AB	16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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25 12.5 0 25 50
GRAPHIC SCALE

LEGEND:

- DENOTES FILL IN WETLAND
- DENOTES IMPACTS IN SURFACE WATER
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER
- DENOTES MECHANIZED CLEARING

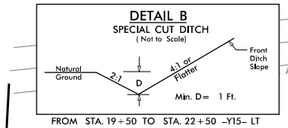
FIDDLERS CREEK (ESE–S11)

NAD 83/95

ESE–W27 · ESE–S40 · ESE–W34 · ESE–W35 · ESE–S49 · ESE–W36 · ESE–W46 · ESE–S49 · ESE–W45 · ESE–S48

SITE 14 · SITE 14B · SITE 14A · SITE 31

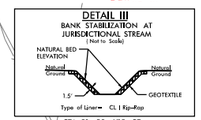
DETAIL B
SPECIAL CUT DITCH
(Not to Scale)



FROM STA. 19+50 TO STA. 22+50 –Y15– LT

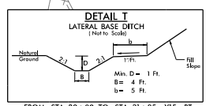
SPECIAL CUT DITCH SEE SHEET '2D–1' DETAIL 'B'
CLASS 'B' RIP RAP EST. 2 TONS 7 SY GEOTEXTILE
REMOVE DI
TB 2GI
15" CSP W/ELBOWS
PIPE CLEAN OUT NOT FOUND
INV=809.54'
REMOVE RCP
RETAIN
INV=(S) 819.6'
INV=(N) 819.6'
12" RCP-III
TOP=822.05'
INV=820.05'
REMOVE DI
TB 2GI
CLASS 'B' RIP RAP EST. 2 TONS 7 SY GEOTEXTILE
INV=807.15'
EXISTING 72" RCP VERIFIED IN FIELD
EST. 20 SY PSRM
EST. 12 SY GEOTEXTILE
EST. 9 TONS CLASS 'B' STONE
DETAIL 'EEEE'
TS
F
S
SPECIAL CUT DITCH SEE SHEET '2D–1' DETAIL 'C'
COLLAR AND EXTEND
INV=828.18'
REMOVE AND REPLACE 18" OF 24" RCP
SPECIAL CUT DITCH SEE SHEET '2D–1' DETAIL 'D'
SPECIAL CUT DITCH SEE SHEET '2D–1' DETAIL 'J'
PIPE CLEANOUT
JB w/Slab Lid
REMOVE WW
2–2'x2' BOX W/ HINGED LIDS
REMOVE HW
PROP. 47" WW FENCE
4' BASE LATERAL DITCH SEE SHEET '2D–1' DETAIL 'I'
BANK STABILIZATION AT JS STREAM
CLASS 'I' RIP RAP EST. 10 TONS
18 SY GEOTEXTILE
SEE SHEET 2D–2 DETAIL 'III'
TIE TO EXIST. FENCE
CLAUDE STEVE ALLRED JR.
ANNE JONES ALLRED
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
JOHN L. ARANT
MATCHLINE –Y15– STA. 21+00.00 (SEE INSET)
MATCHLINE –Y15– STA. 34+75.00 (SEE SHEET 17)
MATCHLINE –Y15– STA. 21+00.00 (SEE THIS SHEET)
TIE PROP. CONC. BARRIER TO EXIST. BRIDGE RAIL TYPE B-77
BEG. NOISE WALL –NW17/18/19– 10+00.00 = –Y15– STA. 17+63.82 58.63' LT
TYPE B-77

DETAIL III
BANK STABILIZATION AT JURISDICTIONAL STREAM
(Not to Scale)



STA. 31+85 –Y15– RT

DETAIL T
LATERAL BASE DITCH
(Not to Scale)



FROM STA. 29+00 TO STA. 31+85 –Y15– RT

PERMIT DRAWING SHEET 38 OF 79

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DATE: 7/9/2021
TIME: 2:10:20 PM
REVISIONS

LEGEND:

- DENOTES FILL IN WETLAND
- DENOTES IMPACTS IN SURFACE WATER
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER
- DENOTES MECHANIZED CLEARING

PROJECT REFERENCE NO.	SHEET NO.
U-2579AB	16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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N.C.B.E.L.S. License Number: F-0116

25 12.5 0 25 50
GRAPHIC SCALE

NAD 83/95

FIDDLERS CREEK (ESE-S11)

ESE-W27

ESE-S40

ESE-W34

ESE-W35

ESE-S49

ESE-W36

SITE 14

SITE 14B

SITE 31

ESE-S48

ESE-W46

SITE 14A

ESE-S49

ESE-W45

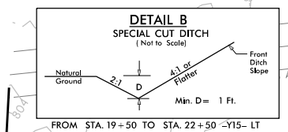
JOHN L. ARANT

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

CLAUDE STEVE ALLRED JR.
ANNE JONES ALLRED

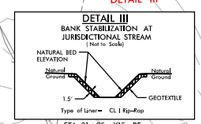
TIE TO EXIST. FENCE

DETAIL B
SPECIAL CUT DITCH
(Not to Scale)



FROM STA. 19+50 TO STA. 22+50 -Y15- LT

DETAIL III
BANK STABILIZATION AT JURISDICTIONAL STREAM
(Not to Scale)



STA. 31+85 -Y15- RT

DETAIL T
LATERAL BASE DITCH
(Not to Scale)



FROM STA. 29+00 TO STA. 31+85 -Y15- RT

SPECIAL CUT DITCH SEE SHEET '2D-1' DETAIL 'B'
CLASS 'B' RIP RAP EST. 2 TONS 7 SY GEOTEXTILE
REMOVE DI
TB 2GI
15" CSP W/ELBOWS
PIPE CLEAN OUT FOUND
INV=809.54'
REMOVE RETAIN
INV=(S) 819.6'
INV=(N) 819.6'
12" RCP-III
MATCHLINE -Y15- STA. 21+00.00 (SEE INSET)
SPECIAL CUT DITCH SEE SHEET '2D-1' DETAIL 'C'
COLLAR AND EXTEND
REMOVE AND REPLACE 18" OF 24" RCP
SPECIAL CUT DITCH SEE SHEET '2D-1' DETAIL 'D'
SPECIAL CUT DITCH SEE SHEET '2D-1' DETAIL 'J'
EST. 20 SY PSRM
EST. 12 SY GEOTEXTILE
EST. 9 TONS CLASS 'B' STONE
DETAIL 'EEEE'
CLASS 'B' RIP RAP EST. 2 TONS 7 SY GEOTEXTILE
EXISTING 72" RCP VERIFIED IN FIELD
PIPE CLEANOUT
REMOVE WW
JB w/Slab Top
Riveted 10' HW
PROP. 47" WW FENCE
4' BASE LATERAL DITCH SEE SHEET '2D-1' DETAIL 'I'
BANK STABILIZATION AT JS STREAM
CLASS 'I' RIP RAP EST. 10 TONS
18 SY GEOTEXTILE
SEE SHEET 2D-2 DETAIL 'III'
MATCHLINE -Y15- STA. 34+75.00 SHEET 17
TIE PROP. CONC. BARRIER TO EXIST. BRIDGE RAIL TYPE B-77
BEG. NOISE WALL -NW17/18/19- 10+00.00 = -Y15- STA. 17+63.82 586.3' LF
MATCHLINE -Y15- STA. 21+00.00 (SEE THIS SHEET)

PERMIT DRAWING SHEET 39 OF 79

REVISIONS

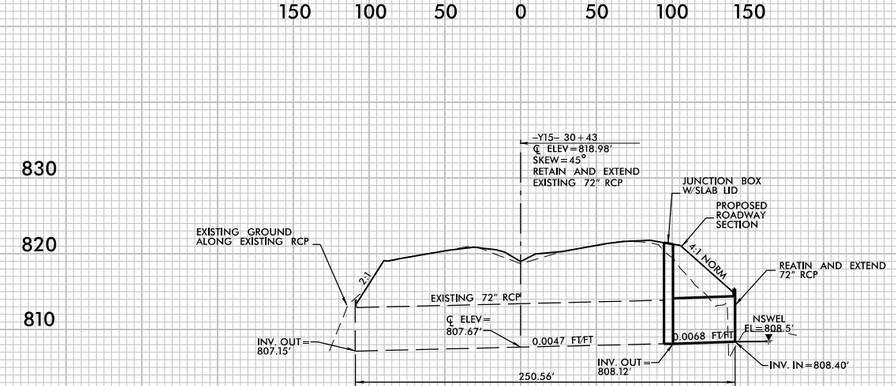
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TIME: 2:09:08 PM

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N.C.B.E.L.S. License Number: F-0116

PROJECT REFERENCE NO.	SHEET NO.
U-2579AB	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

U-2579AB – SITE 14



PROFILE ALONG ℄ OF PIPE

PERMIT DRAWINGS
SHEET 40 OF 79

REVISIONS 5/14/99

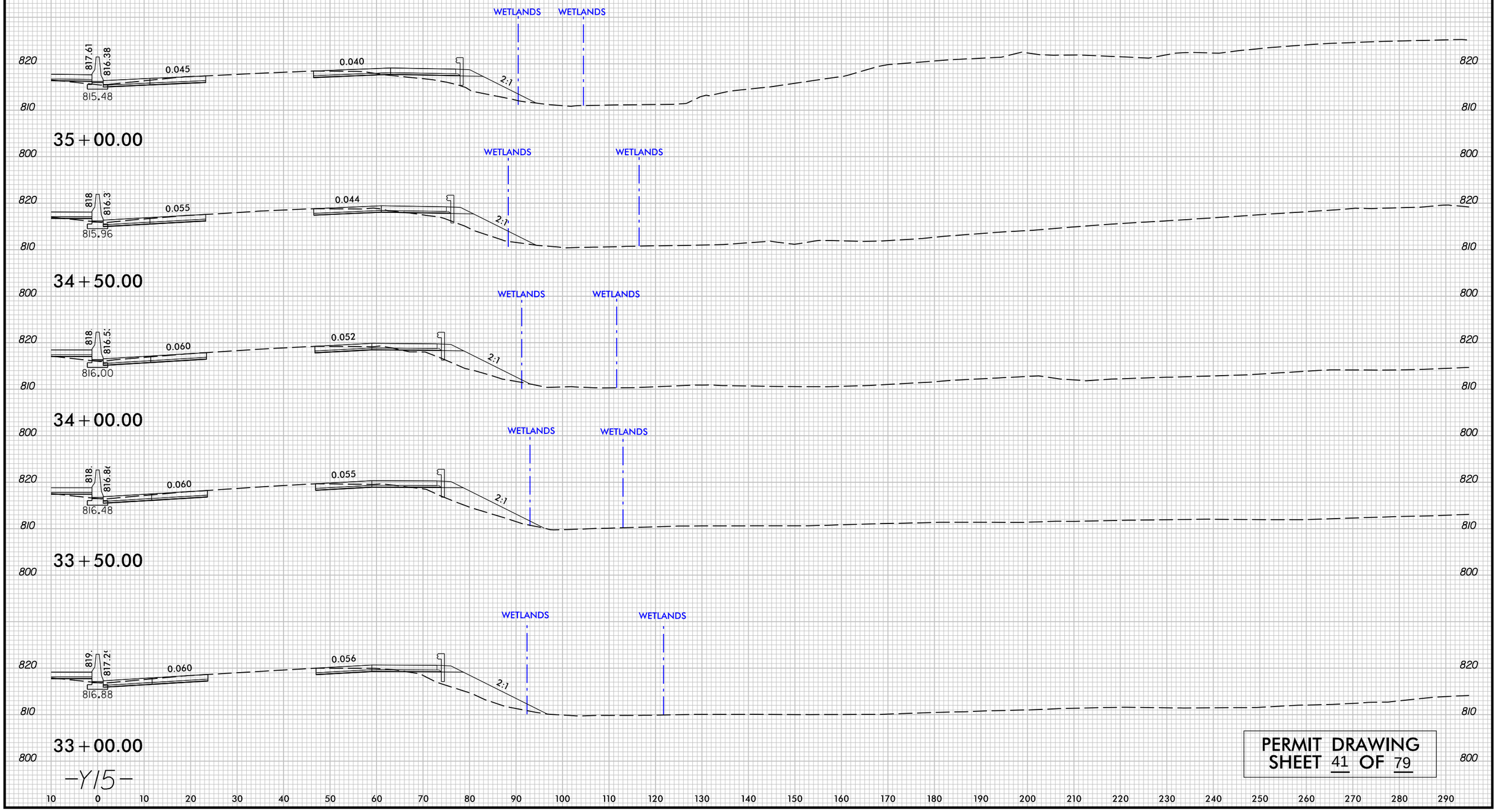
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TIME: 9:53:55 AM

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-2579AB	X-254

10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290

U-2579AB
PERMIT SITE 14A



PERMIT DRAWING
SHEET 41 OF 79

10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290

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PENTABLE: NCDOT_PFL_XSC.tbl
TIME: 10:37:40 AM

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-2579AB	X-254

300 290 280 270 260 250 240 230 220 210 200 190 180 170 160 150 140 130 120 100 90 80 70 60 50 40 30 20 10 0

U-2579AB
PERMIT SITE 14B

820 810 800

WETLANDS WETLANDS

0.055 0.060 819.14 817.29 816.82 2:1

33+00.00

820 810 800

WETLANDS WETLANDS

0.057 0.060 819. 817.51 817.09 2:1

32+50.00

820 810 800

WETLANDS WETLANDS

0.058 0.060 820.1 818.01 817.89 2:1

32+00.00

820 810 800

WETLANDS WETLANDS

0.059 0.060 820. 818.44 817.94 2:1

31+50.00

820 810 800

WETLANDS WETLANDS

0.062 0.060 820.96 818.2 2:1

31+00.00

PERMIT DRAWING
SHEET 42 OF 79

-Y15-

300 290 280 270 260 250 240 230 220 210 200 190 180 170 160 150 140 130 120 100 90 80 70 60 50 40 30 20 10 0

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DATE: 7/2/2021
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LEGEND:

- DENOTES FILL IN WETLAND
- DENOTES IMPACTS IN SURFACE WATER
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER
- DENOTES MECHANIZED CLEARING

PROJECT REFERENCE NO.	SHEET NO.
U-2579AB	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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

GRAPHIC SCALE 25 12.5 0 25 50

NAD 83/95

ESE-W29 ESE-W28 ESE-S43 ESE-S51 ESE-S53

FIDDLERS CREEK (ESE-S11)

SITE 27

SITE 14A

CITY OF WINSTON-SALEM

ROBBINS RD

JOHN L. ARANT

30' SANITARY SEWER EASEMENT

PREFORMED SCOUR HOLE
EST. 20 SY PSRM
EST. 12 SY GEOTEXTILE
EST. 9 TONS CLASS 'B' STONE
DETAIL 'EEEE'

CLASS 'B' RIP RAP
EST. 11 TONS
28 SY GEOTEXTILE

CLASS 'B' RIP RAP
EST. 2 TONS
7 SY GEOTEXTILE

PREFORMED SCOUR HOLE
EST. 20 SY PSRM
EST. 12 SY GEOTEXTILE
EST. 9 TONS CLASS 'B' STONE
DETAIL 'EEEE'

CLASS 'B' RIP RAP
EST. 5 TONS
14 SY GEOTEXTILE

STANDARD 4' BASE DITCH
SEE SHEET '2D-1'
DETAIL 'BB'
SLOPE = 1.25%

CLASS 'B' RIP RAP
EST. 2 TONS
7 SY GEOTEXTILE

TIE TO EXIST. FENCE

15" CSP W/ELBOWS

JB w/MH

42" RCP-III

15" RCP-IV

15" RCP-III

24" RCP-III

18" RCP-III

TB 2GI

TRENCHLESS INSTALLATION
42" WELDED STEEL
0.375" THICK

TRENCHLESS INSTALLATION
24" WELDED STEEL
0.375" THICK

REMOVE DI

REMOVE HEADWALL

SPECIAL CUT DITCH
SEE SHEET '2D-3'
DETAIL 'HHHH'

SPECIAL CUT DITCH
SEE SHEET '2D-1'
DETAIL 'D'

10' CONC HW

30" CSP W/ELBOWS

18" WW

STANDARD 2' BASE DITCH
W/CLASS 'B' RIP RAP
EST. 15 TONS
41 SY GEOTEXTILE
SEE SHEET '2D-1'
DETAIL 'LL'

18" CSP W/ELBOWS

COLLAR AND EXTEND 12" RCP

18" CSP W/ELBOWS

BERM DITCH
SEE SHEET '2D-1'
DETAIL 'NN'

PROP. 47" WW FENCE

FLOWABLE FILL

RETAIN

MATCHLINE SHEET 16 -Y15- STA. 34+75.00

MATCHLINE SHEET 18 -Y15- STA. 48+50.00

CHORD

PERMIT DRAWING
SHEET 43 OF 79

REVISIONS

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USER: NWOMACK
FILE: NCDOT\NCDOT-U2579AB\6.0_CAD_BIM\6.2_Work_In_Progress\U-2579AB\Hydraulics\PERMITS_Environmental\Drawings\U2579AB_PRM_PSH.dgn
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TIME: 12:32:44 PM

PROJECT REFERENCE NO.	SHEET NO.
U-2579AB	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

25 12.5 0 25 50
GRAPHIC SCALE

LEGEND:

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

NAD 83/95

ESE-W29
ESE-W28
ESE-S43
ESE-S51
ESE-S53
FIDDLERS CREEK (ESE-S11)

SITE 27
SITE 14A

MATCHLINE SHEET 16 -Y15- STA. 34+75.00
MATCHLINE SHEET 18 -Y15- STA. 48+50.00

PREFORMED SCOUR HOLE
EST. 20 SY PSRM
EST. 12 SY GEOTEXTILE
EST. 9 TONS CLASS 'B' STONE
DETAIL 'EEEE'

CLASS 'B' RIP RAP
EST. 11 TONS
28 SY GEOTEXTILE

CLASS 'B' RIP RAP
EST. 2 TONS
7 SY GEOTEXTILE

PREFORMED SCOUR HOLE
EST. 20 SY PSRM
EST. 12 SY GEOTEXTILE
EST. 9 TONS CLASS 'B' STONE
DETAIL 'EEEE'

CLASS 'B' RIP RAP
EST. 5 TONS
14 SY GEOTEXTILE

CLASS 'B' RIP RAP
EST. 2 TONS
7 SY GEOTEXTILE

STANDARD 4' BASE DITCH
SEE SHEET '2D-1'
DETAIL 'BB'
SLOPE = 1.25%

TIE TO EXIST. FENCE

15" CSP W/ELBOWS
42" RCP-III
15" RCP-IV
15" RCP-III
24" RCP-III
36" RCP-III
18" RCP-III
TB 2GI
JB w/MH
REMOVE DI
REMOVE HEADWALL
TRENCHLESS INSTALLATION
42" WELDED STEEL
0.375" THICK
TRENCHLESS INSTALLATION
24" WELDED STEEL
0.375" THICK
SPECIAL CUT DITCH
SEE SHEET '2D-1'
DETAIL 'D'
SPECIAL CUT DITCH
SEE SHEET '2D-3'
DETAIL 'HHHH'
BDO
10' CONC HW
18" CSP W/ELBOWS
STANDARD 2' BASE DITCH
W/CLASS B RIP RAP
EST. 15 TONS
41 SY GEOTEXTILE
SEE SHEET '2D-1'
DETAIL 'LL'
COLLAR AND EXTEND
18" CSP W/ELBOWS
BERM DITCH
SEE SHEET '2D-1'
DETAIL 'NN'
FLOWABLE FILL
RETAIN
PROP. 47" WW FENCE
CHORD
JOHN L. ARANT
CITY OF WINSTON-SALEM
30' SANITARY SEWER EASEMENT
ROBBINS RD

PDE

REVISIONS

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USER: NWOMACK
FILE: NCDOT\NCDOT-U2579AB\6.0_CAD_BIM\6.2_Work_In_Progress\U-2579AB\Hydraulics\PERMITS_Environment\Drawings\U2579AB_PRM_PSH.dgn
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DATE: 7/2/2021
TIME: 12:41:34 PM

PERMIT DRAWING
SHEET 44 OF 79

PROJECT REFERENCE NO.	SHEET NO.
U-2579AB	18
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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N.C.B.E.L.S. License Number: F-0116

GRAPHIC SCALE 25 12.5 0 25 50

LEGEND:

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

NAD 83/95

ESE-W30

FIDDLERS CREEK (ESE-S11)

ESE-W31

ESE-W38
SITE 15

ESE-S53

ESE-W40

ESE-S52

DETAIL CC
STANDARD BASE DITCH
(Not to Scale)
Min. D = 2.6 Ft.
B = 4 Ft.
FROM STA. 48+85 TO STA. 48+89 -Y15REV- LT

JOHN L. ARANT

PREFORMED SCOUR HOLE
EST. 20 SY PSRM
EST. 12 SY GEOTEXTILE
EST. 9 TONS CLASS 'B' STONE
DETAIL 'EEEE'

4' BASE TAILDITCH
SEE SHEET '2D-1'
DETAIL 'CC'
SLOPE = 0.31%

CLASS 'I' RIP RAP
EST. 15 TONS
37 SY GEOTEXTILE

PROP. 47" WW FENCE

CLASS 'I' RIP RAP
EST. 26 TONS
50 SY GEOTEXTILE

ENERGY DISSIPATOR BASIN
SEE SHEET '2D-2'
DETAIL 'EEE'

CHORD

15" CSP W/ELBOWS

TB 2GI

COLLAR AND EXTEND

2GI W/ FG

TRENCHLESS INSTALLATION
42" WELDED STEEL, 0.375" THICK

TRENCHLESS INSTALLATION
48" WELDED STEEL, 0.500" THICK
OVERFLOW STRUCTURE

REMOVE DI

15" RCP-IV

EXISTING 60"RCP
VERIFIED IN FIELD
REMOVE 27'
OF 60" RCP

TB JB

JB W/MH

REMOVE 18'
48" RCP

SPECIAL CUT BASE DITCH
W/CLASS 'B' RIP RAP
EST 146 TONS
325 SY GEOTEXTILE
SEE SHEET '2D-2'
DETAIL 'FFF'

SPECIAL CUT BASE DITCH
SEE SHEET '2D-2'
DETAIL 'GGG'

SPECIAL CUT DITCH
SEE SHEET '2D-1'
DETAIL 'D'

36" CSP W/ELBOWS

2GI(D)

BDO

TIE EXIST BERM DITCH
TO ROADWAY DITCH

SPECIAL CUT BASE DITCH
SEE SHEET '2D-1'
DETAIL 'L'

BERM DITCH
SEE SHEET '2D-1'
DETAIL 'NN'

2' DITCH BLOCK

TIE EXISTING STREAM
TO 42" RCP INLET SIDE
OF PIPE EXTENTION.
TRENCHLESS PIPE
TO BE SET AT SAME
ELEVATION.

INSTALL PVC
COATED GABIONS
3 @ 3'Wx3'Lx2'H
BURIED 1 FOOT
(SEE DETAIL XXXX)

ESE-S52 SITE 15

DAVID MOTSINGER
WAYNE MOTSINGER

PROP. 47" WW FENCE

BERM DITCH
SEE SHEET '2D-1'
DETAIL 'OO'

BERM DITCH
W/CLASS 'B' RIP RAP
EST. 67 TONS
189 SY GEOTEXTILE
SEE SHEET '2D-2'
DETAIL 'PP'

DETAIL XXXX
PVC COATED GABION INSTALLATION DETAIL

CONCRETE HEADWALL
42" RCP-III
Existing ground
Ditch Flowline
INV=815.46'
Class B Rip Rap
Keyed-in 1 foot
Type of Liner= Coir Fiber
PVC Coated Gabions buried 1 foot
3@ 3'Wx3'Lx2'H

STA. 12+58 -Y15FLYCA- RT

MATCHLINE SHEET 17 -Y15- STA. 48+50.00

MATCHLINE SHEET 19 -Y15REV- STA. 14+00.00

MATCHLINE SHEET 19 -Y15FLYCA- STA. 25+00.00

PERMIT DRAWING
SHEET 45 OF 79

REVISIONS

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USER: NWOMACK
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DATE: 7/2/2021
TIME: 12:33:22 PM
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PROJECT REFERENCE NO.	SHEET NO.
U-2579AB	18
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

GRAPHIC SCALE 25 12.5 0 25 50

LEGEND:

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

NAD 83/95

ESE-W30

FIDDLERS CREEK (ESE-S11)

ESE-W31

WINSTON-SALEM

ESE-W38

SITE 15

ESE-S53

ESE-W40

ESE-S52

DETAIL CC
STANDARD BASE DITCH
(Not to Scale)

Natural Ground, 2:1, D, 2:1, Natural Ground
Min. D = 2.6 Ft.
B = 4 Ft.
B

FROM STA. 48+85 TO STA. 48+89 -Y15REV- LT

JOHN L. ARANT

PREFORMED SCOUR HOLE
EST. 20 SY PSRM
EST. 12 SY GEOTEXTILE
EST. 9 TONS CLASS 'B' STONE
DETAIL 'EEEE'

4' BASE TAIL DITCH
SEE SHEET '2D-1'
DETAIL 'C4'
SLOPE = 0.31%

CLASS 'I' RIP RAP
EST. 15 TONS
37 SY GEOTEXTILE

PROP. 47" WW FENCE

CLASS 'I' RIP RAP
EST. 26 TONS
EXISTING GEOTEXTILE

ENERGY DISSIPATOR BASIN
SEE SHEET '2D-2'
DETAIL 'EEE'

CHORD

15" CSP W/ELBOWS

TB 2GI

COLLAR AND EXTEND

2GI W/ FG

TRENCHLESS INSTALLATION
42" WELDED STEEL,
0.375" THICK

RETAIN

15" RCP-III

REMOVE DI

TRENCHLESS INSTALLATION
48" WELDED STEEL, 0.500" THICK
OVERFLOW STRUCTURE

15" RCP-IV

EXISTING 60"RCP
VERIFIED IN FIELD
REMOVE 27'
OF 60" RCP

TB JB

JB W/MH

REMOVE 18"
48" RCP

18" RCP-IV
REMOVE

SPECIAL CUT BASE DITCH
W/CLASS 'B' RIP RAP
EST 146 TONS
325 SY GEOTEXTILE
SEE SHEET '2D-2'
DETAIL 'FFF'

SPECIAL CUT BASE DITCH
SEE SHEET '2D-2'
DETAIL 'GGG'

SPECIAL CUT DITCH
SEE SHEET '2D-1'
DETAIL 'D'

36" CSP W/ELBOWS

2GI(D)

BDO

TIE EXIST BERM DITCH
TO ROADWAY DITCH

SPECIAL CUT BASE DITCH
SEE SHEET '2D-1'
DETAIL 'I'

BERM DITCH
SEE SHEET '2D-1'
DETAIL 'NN'

2' DITCH BLOCK

TIE EXISTING STREAM
TO 42" RCP INLET SIDE
OF PIPE EXTENTION.
TRENCHLESS PIPE
TO BE SET AT SAME
ELEVATION.

INSTALL PVC
COATED GABIONS
3 @ 3'Wx3'Lx2'H
BURIED 1 FOOT
(SEE DETAIL XXXX)

ESE-S52 SITE 15

BERM DITCH
SEE SHEET '2D-1'
DETAIL 'NN'

SPECIAL CUT DITCH
SEE SHEET '2D-1'
DETAIL 'D'

18" RCP-III

FS 2GI

15" CSP W/ELBOWS

15" RCP-III

PROP. 47" WW FENCE

BERM DITCH
SEE SHEET '2D-1'
DETAIL 'OO'

BERM DITCH
W/CLASS 'B' RIP RAP
EST. 67 TONS
189 SY GEOTEXTILE
SEE SHEET '2D-2'
DETAIL 'PP'

DAVID MOTSINGER
WAYNE MOTSINGER

JOHN L. ARANT

DETAIL XXXX
PVC COATED GABION INSTALLATION DETAIL

CONCRETE HEADWALL
42" RCP-III
42" RCP-III
Existing ground
Ditch Flowline
INV=815.46'
Class B Rip Rap
Keyed-in 1 foot
Type of Liner= Coir Fiber
PVC Coated Gabions buried 1 foot
3@ 3'Wx3'Lx2'H

STA. 12+58 -Y15FLYCA- RT

MATCHLINE SHEET 17 -Y15- STA. 48+50.00

MATCHLINE SHEET 19 -Y15REV- STA. 14+00.00

MATCHLINE SHEET 19 -Y15FLYCA- STA. 25+00.00

PERMIT DRAWING SHEET 46 OF 79

REVISIONS

PLOT DRIVER: NCDOT.pdf_color_eng.100.plt
USER: NWOMACK
FILE: NCDOT\NCDOT-U2579AB\6.0_CAD_BIM\6.2_Work_In_Progress\U-2579AB\Hydraulics\PERMITS_Environmental\Drawings\U2579AB_PRM_PSH.dgn
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TIME: 12:40:51 PM
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5/14/99

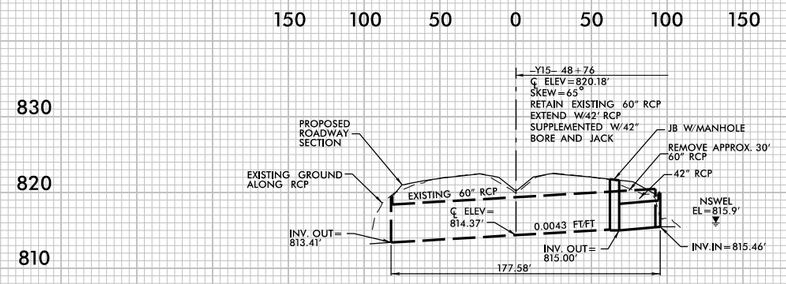
REVISIONS

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

PROJECT REFERENCE NO.	SHEET NO.
U-2579AB	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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U-2579AB – SITE 15



PROFILE ALONG ℄ OF PIPE

PERMIT DRAWINGS
SHEET 47 OF 79

PLOT DRIVER: NCDOT_pdf_color_eng_100.plt
USER: _USERNAME_
FILE: U2579AB_PRM_CSR_PSH

PENTABLE: NCDOT_PFL_XSC.tbl
DATE: 5/5/2020
TIME: 12:04:35 PM

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N.C.B.E.L.S. License Number: F-0116

PROJECT REFERENCE NO.	SHEET NO.
U-2579AB	19
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

50 25 0 50 100
GRAPHIC SCALE

NAD 83/99 CMN

LEGEND:

- DENOTES FILL IN WETLAND
- DENOTES IMPACTS IN SURFACE WATER
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER
- DENOTES IMPACTS IN SURFACE WATER (POND)
- DENOTES MECHANIZED CLEARING

SEE SHEET 19A

SEE SHEET 19B

SEE SHEET 19C

MATCHLINE SHEET 10 -Y1SREV- STA. 59+50.00

MATCHLINE SHEET 11

MATCHLINE SHEET 18 -Y1SREV- STA. 14+00.00

MATCHLINE SHEET 17 -Y1SREV- STA. 39+97.00

FIDDLERS CREEK (ESE-S11)

ESE-W32 ESE-W33 ESE-W59 ESE-W49 ESE-W44 ESE-W42 ESE-W9 ESE-W10 ESE-W11 ESE-W12

ESE-S45 ESE-S56 ESE-S10 ESE-S12 ESE-S15 ESE-S14 ESE-P7

SITE 16 SITE 16A SITE 17 SITE 17A SITE 17B SITE 17C SITE 28 SITE 29 SITE 30 SITE 12A SITE 12B

TIE TO EXIST. FENCE

PROP. 47' WW FENCE

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

BEN STEVEN WILLIARD
CANDY WILLIARD RESTON

DAVID MOTSINGER
WAYNE MOTSINGER

JAMES A. MOTSINGER

CHESTER MONROE SMITH
BETTY M. SMITH

NCDOT (FORMERLY)
ERNEST W. ANGEL

DAVID POND

THE LOCATION AND TRANSVERSE OF DRAINAGE WAY TO BE ADJUSTED BY THE ENGINEER IN THE FIELD

BEGIN JS FEATURE

CHORD

PROP. 47' WW FENCE

PLOT DRIVER: NCDOT_pdf_color-eng_100.plt
USER: NWOMACK
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DATE: 7/2/2021
TIME: 12:34:45 PM
PENTABLE: NCDOT_permits_NOCON.tbl

REVISIONS

PERMIT DRAWING
SHEET 48 OF 79

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555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

PROJECT REFERENCE NO.	SHEET NO.
U-2579AB	19
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

50 25 0 50 100
GRAPHIC SCALE

LEGEND:

- DENOTES FILL IN WETLAND
- DENOTES IMPACTS IN SURFACE WATER
- DENOTES TEMPORARY IMPACTS IN SURFACE WATER
- DENOTES IMPACTS IN SURFACE WATER (POND)
- DENOTES MECHANIZED CLEARING

NAD 83/95

FIDDLERS CREEK (ESE-S11)

ESE-W49 ESE-W33 ESE-W59 ESE-W32 ESE-W44 ESE-S10 ESE-S45 ESE-W42 ESE-S56 ESE-S12 ESE-S15 ESE-W9 ESE-W10 ESE-S14 ESE-W11 ESE-P7 ESE-W12

SEE SHEET 19A

SEE SHEET 19B

SEE SHEET 19C

SITE 16 SITE 16A SITE 17 SITE 17A SITE 17B SITE 17C SITE 28 SITE 29 SITE 30 SITE 12A SITE 12B

MATCHLINE SHEET 18 -Y15REV- STA. 14+00.00

MATCHLINE SHEET 10 -Y15REV- STA. 39+50.00

MATCHLINE SHEET 10 -Y15REV- STA. 37+97.00

MATCHLINE SHEET 11 -Y15REV- STA. 37+00.00

MATCHLINE SHEET 11

TIE TO EXIST. FENCE

PROP. 42" NW FENCE

BEGIN JS FEATURE

CHORD

DAVID MOTSINGER WAYNE MOTSINGER

JAMES A. MOTSINGER

CHESTER EDWRDE SMITH BETTY M. SMITH

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

REVISIONS

PLOT DRIVER: NCDOT_pdf_color-eng100.plt
USER: NWOMACK
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DATE: 7/2/2021
TIME: 12:40:05 PM
PENTABLE: NCDOT_permits_CON.tbl

PERMIT DRAWING
SHEET 49 OF 79

ESE–S56

SITE 16

CLASS 'B' RIP RAP
EST. 2 TONS
7 SY GEOTEXTILE

15" RCP–III

2GI

15" RCP–III

TB 2GI

STANDARD 2' BASE DITCH
SEE SHEET '2D–1'
DETAIL 'DD'
SLOPE = 0.36%

48" WW

48" RCP

55'

150'

RETAIN EXIST 54" RCP

TOP=827.95'
INV (SE)=820.70'
INV (NW)=820.40'

TB 2GI

TB 2GI

RETAIN EXIST 54" RCP

TOP=826.92'
INV (SE)=821.17'
INV (NW)=820.72'

REMOVE DI COLLAR AND EXTEND

DO NOT BURY

54" RCP

REMOVE HEADWALL

SPECIAL CUT DITCH
SEE SHEET '2D–1'
DETAIL 'J'

2' DITCH BLOCK

HW

SPECIAL CUT BASE DITCH
SEE SHEET '2D–2'
DETAIL 'GGG'

BERM DITCH
SEE SHEET '2D–1'
DETAIL 'NN'

BERM DITCH
SEE SHEET '2D–1'
DETAIL 'NN'

RWMON

MTL

F C

DETAIL DD
STANDARD BASE DITCH
(Not to Scale)

Natural Ground — 2:1 — D — 2:1 — Natural Ground

Min. D = 1 Ft.
B = 2 Ft.

FROM STA. 16+40 TO STA. 17+35 –Y15REV– LT

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

Natural Ground — 2:1 — D — 2:1 — b — 2:1 or Flatter — RDWY

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

FROM STA. 15+70 TO STA. 16+81 –Y15REV– RT

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

Natural Ground — VARIABLE — 4:1 — D — 6:1 or Flatter — Front Ditch Slope

6.0'

Min. D = 1 Ft.

FROM STA. 16+00 TO STA. 16+65 –Y15FLYBD– RT

DETAIL NN

LEGEND:

S / S — DENOTES IMPACTS IN SURFACE WATER

TS / TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NAD 83/95

PROJECT REFERENCE NO.	SHEET NO.
U–2579AB	19A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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N.C.B.E.L.S. License Number: F-0116

GRAPHIC SCALE 12.5 0 12.5 25

PERMIT DRAWING SHEET 50 OF 79

REVISIONS

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PROJECT REFERENCE NO.	SHEET NO.
U-2579AB	19B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
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GRAPHIC SCALE 25 12.5 0 25 50

NAD 83/95

SITE 29
TIE TO EXIST. FENCE
SEE SHEET '2D-1' DETAIL 'II'
TIE TO EXISTING DITCH
OUTLET CHANNEL PROTECTION CLASS 'I' RIP RAP EST. 42 TONS 70 SY GEOTEXTILE SEE SHEET 2D-2 DETAIL 'SSSS'
STANDARD 6' BASE DITCH W/ EMBEDDED CLASS 'I' RIP RAP EST. 299 TONS 517 SY GEOTEXTILE SEE SHEET '2D-2' DETAIL 'R' SLOPE = 1.16%
SITE 30
ESE-S10
TIE TO EXIST. FENCE
INV=822.63'
REMOVE
TOP=846.97'
INV=843.56'
TOP=847.74'
INV=845.25'
INV=837.80'
REMOVE DI
1 @ 8'X7' RCBC DO NOT BURY
ESE-S12
SITE 17B
GRADE TO DRAIN
TOP=858.80'
TOP=860.11'
REMOVE DI
REMOVE SI
4' BASE LATERAL DITCH SEE SHEET '2D-1' DETAIL 'T'
4' BASE LATERAL DITCH SEE SHEET '2D-1' DETAIL 'T'
PLUG
4' BASE LATERAL DITCH W/CLASS 'B' RIP RAP EST. 274 TONS 747 SY GEOTEXTILE SEE SHEET '2D-1' DETAIL 'V'
NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
ESE-S15
ESE-W9
ESE-W10
SITE 17
SITE 17A
SITE 28
ESE-S14
ESE-S15
SITE 17C
SITE 12B
ESE-P7
SITE 12A
ESE-W12
ESE-W11
15" RCP-III
2GI W/FG
END SBG STA. 34+52
BEGIN SBG STA. 28+00
24" CSP W/ELBOWS
NET RCP-III
10.7' CLEARANCE BETWEEN INVERT OF PIPE AND TOP OF CULVERT
24" RCP-III
18" RCP-III
24" CLEARANCE BETWEEN PIPES
BEGIN JS FEATURE
2' BASE LATERAL DITCH W/CLASS 'B' RIP RAP EST. 44 TONS 76 SY GEOTEXTILE SEE SHEET '2D-2' DETAIL 'SS'
4' BASE LATERAL DITCH W/CLASS 'B' RIP RAP EST. 79 TONS 215 SY GEOTEXTILE SEE SHEET '2D-1' DETAIL 'V'
6' BASE LATERAL DITCH W/ EMBEDDED CLASS 'I' RIP RAP EST. 1039 TONS 1796 SY GEOTEXTILE SEE SHEET '2D-1' DETAIL 'IIII'
STANDARD 2' BASE DITCH SEE SHEET '2D-1' DETAIL 'EE' SLOPE = 0.78%
6' BASE LATERAL DITCH W/ EMBEDDED CLASS 'I' RIP RAP EST. 1039 TONS 1796 SY GEOTEXTILE SEE SHEET '2D-1' DETAIL 'IIII'
NCDOT (FORMERLY ERNEST W. ANGEL)
DAVID MOTSINGER
WAYNE MOTSINGER
DRAIN POND
THE LOCATION AND STABILIZATION OF CHANNEL MAY BE ADJUSTED BY THE ENGINEER IN THE FIELD.
STANDARD 5' BASE DITCH W/ EMBEDDED CLASS 'I' RIP RAP EST. 742 TONS 1340 SY GEOTEXTILE SEE SHEET '2D-1' DETAIL 'MM' SLOPE = 2.49%

DETAIL SSSS
CULVERT OUTLET CHANNEL PROTECTION
(Not to Scale)
Min. D= 2 Ft.
Max. d= 1.5 Ft.
B= 6 Ft.
b= 12 Ft.
C= 12 FT.
*When B is < 6.0'
Type of Liner= Class I Rip-Rap
STA. 31+34 -Y15RPB- RT

DETAIL R
(Not to Scale)
Min. D= 2 Ft.
Max. d= 1.5 Ft.
B= 6 Ft.
b= 12 Ft.
C= 12 FT.
*When B is < 6.0'
Type of Liner= Class I Rip-Rap
FROM STA. 31+30 TO STA. 33+00 -Y15RPB- RT

DETAIL SS
LATERAL BASE DITCH
(Not to Scale)
Min. D= 1.25 Ft.
Max. d= 1 Ft.
B= 6 Ft.
b= 5 Ft.
*When B is < 6.0'
Type of Liner= Class B Rip-Rap
FROM STA. 25+00 TO STA. 26+50 -Y15RPD- LT
FROM STA. 29+00 TO STA. 30+00 -Y15REV- RT

DETAIL V
LATERAL BASE DITCH
(Not to Scale)
Min. D= 1 Ft.
Max. d= 1 Ft.
B= 4 Ft.
b= 5 Ft.
*When B is < 6.0'
Type of Liner= Class B Rip-Rap
FROM STA. 30+00 TO STA. 30+50 -Y15REV- RT

DETAIL IIII
LATERAL BASE DITCH
(Not to Scale)
Min. D= 2 Ft.
Max. d= 1.5 Ft.
B= 6 Ft.
b= 12 Ft.
C= 12 FT.
*When B is < 6.0'
Type of Liner= Class I Rip-Rap
FROM STA. 30+50 TO STA. 38+50 -Y15REV- RT

DETAIL MM
STANDARD BASE DITCH
(Not to Scale)
Min. D= 3 Ft.
Max. d= 1 Ft.
B= 5 Ft.
*When B is < 6.0'
Type of Liner= Class I Rip-Rap
FROM STA. 30+50 TO STA. 32+90 -Y15REV- RT

LEGEND:

- F F — DENOTES FILL IN WETLAND
- S S — DENOTES IMPACTS IN SURFACE WATER
- TS TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER
- P P — DENOTES IMPACTS IN SURFACE WATER (POND)
- DENOTES MECHANIZED CLEARING

PERMIT DRAWING SHEET 51 OF 79

REVISIONS

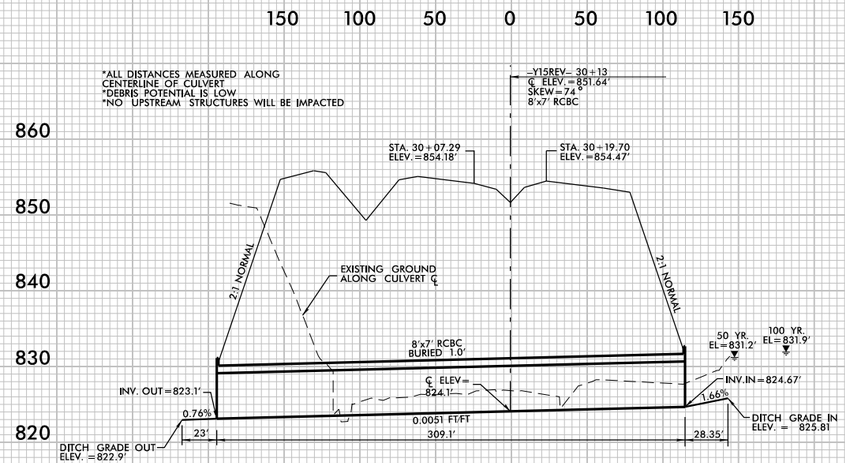
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PROJECT REFERENCE NO.	SHEET NO.
U-2579AB	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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U-2579AB – SITE 17



PROFILE ALONG ℄ OF CULVERT

PERMIT DRAWINGS
SHEET 52 OF 79

REVISIONS

5/14/99

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8/23/99

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	U-2579AB	X-281

290 280 270 260 250 240 230 220 210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10

860 850 840 830 820 810

–Y15RPB– Sta.30+22.00
EL. =858.99

0.060 0.060 5:1 5.91:1 4.42:1 0.015 0.020

855.70 856.12

851.19

831.81

31+00.00

–Y15RPB– Sta.30+71.00
EL. =857.14

0.060 0.060 6:1 6:1 6:1 6:1 0.023 0.023

854.51 855.08

852.34 851.86

826.98

30+50.00

U–2579AB
PERMIT SITE 17A

WETLANDS

–Y15RPB– Sta.31+21.00
EL. =855.43

0.060 0.060 6:1 6:1 6:1 6:1 0.031 0.031

853.24 854.10

850.63 851.87

827.29

30+00.00

PERMIT DRAWING
SHEET 53 OF 79

–Y15REV–

290 280 270 260 250 240 230 220 210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10

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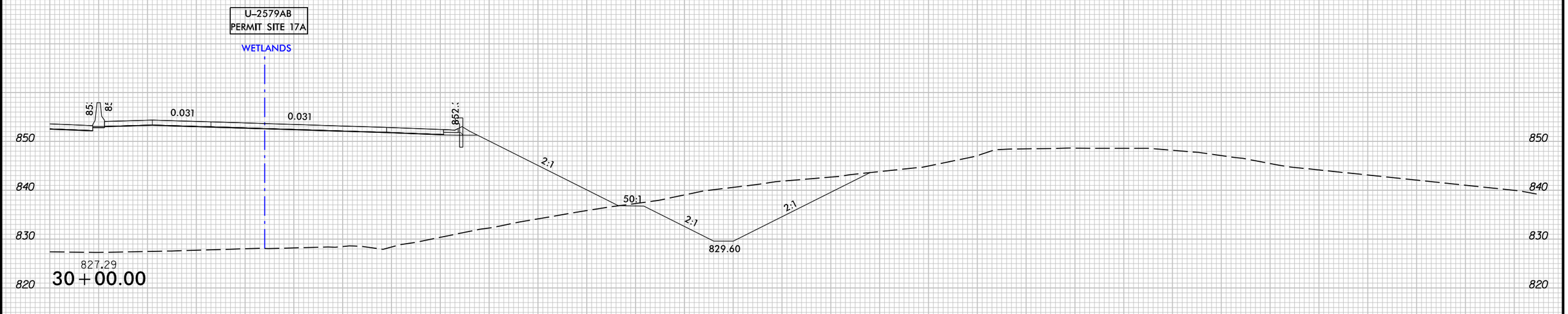
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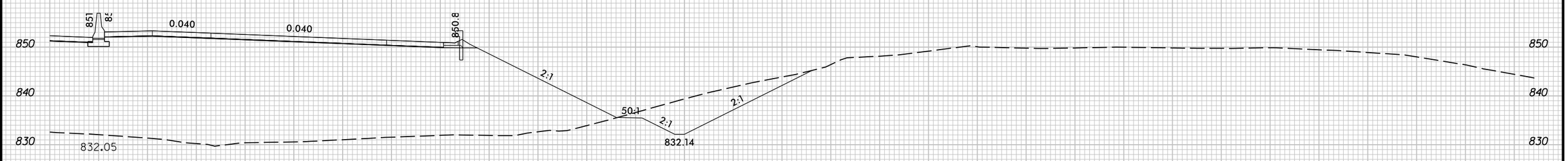
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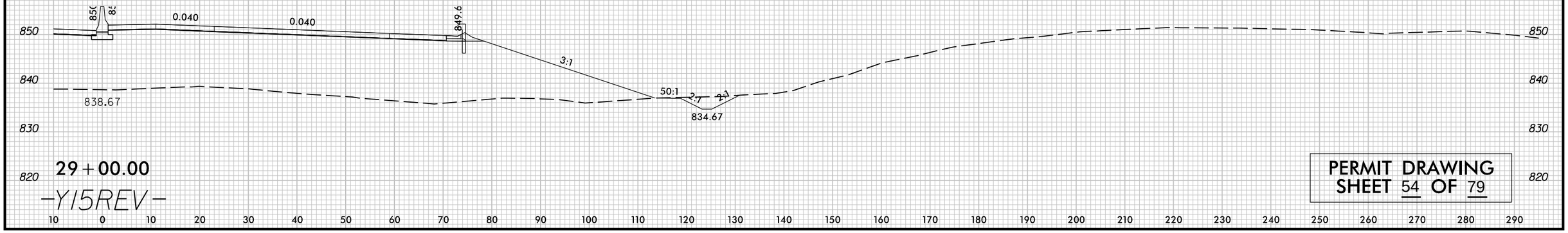
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U-2579AB
PERMIT SITE 17A

WETLANDS







-Y15REV-

PERMIT DRAWING
SHEET 54 OF 79

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	U-2579AB	X-333

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860 850 840 830 820

85 82 0.006 0.020 856

2:1 2:1 13:1 2:1 2:1 12:1 2:1

835.54

826.27

31+50.00

U-2579AB
PERMIT SITE 17B

WETLANDS WETLANDS

85 82 0.015 0.020 855

2:1 2:1 13:1 2:1 2:1 12:1 2:1

831.81

825.44

31+00.00

85 82 0.023 0.023 853

2:1 50:1 2:1 2:1

826.98

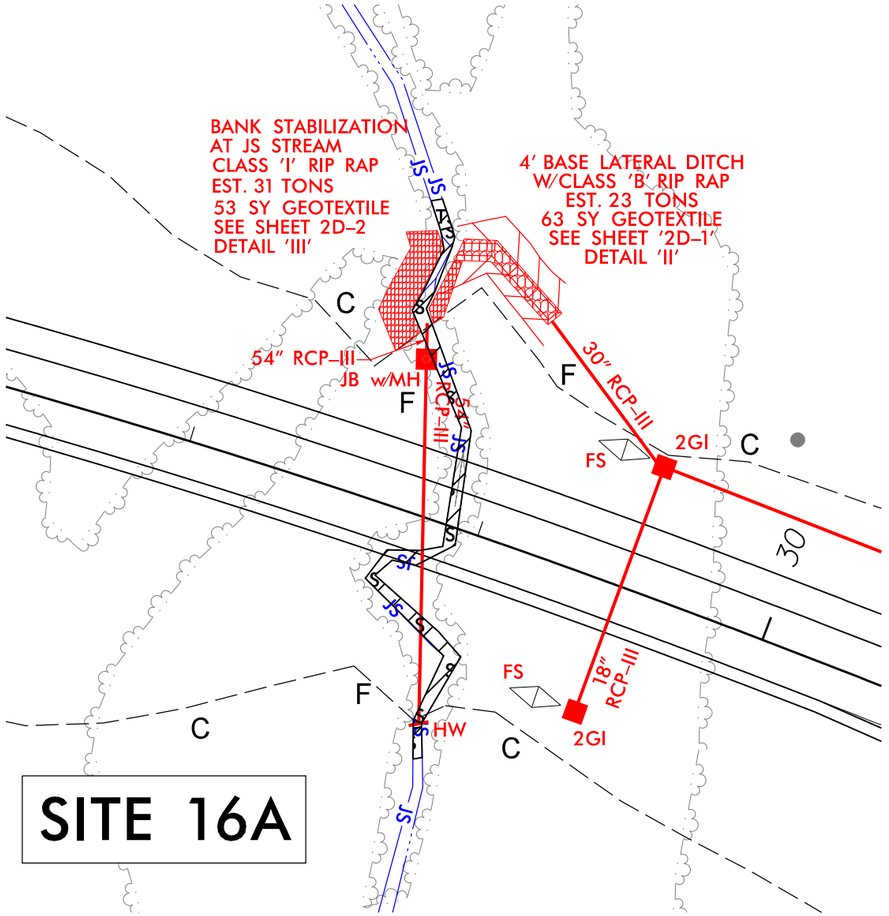
824.67

30+50.00

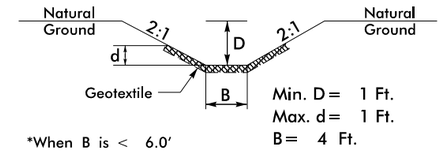
-Y15REV-

PERMIT DRAWING
SHEET 55 OF 79

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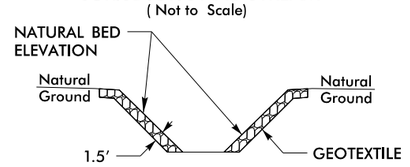
DETAIL II
STANDARD BASE DITCH
(Not to Scale)



Type of Liner = Class B Rip–Rap

FROM STA. 28+65 TO STA. 29+00 –Y15FLYCA– LT

DETAIL III
BANK STABILIZATION AT
JURISDICTIONAL STREAM
(Not to Scale)



Type of Liner = CL I Rip–Rap

STA. 28+70 –Y15FLYCA– LT

LEGEND:

S / S — DENOTES IMPACTS IN SURFACE WATER

TS / TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER

PERMIT DRAWING
SHEET 56 OF 79

PROJECT REFERENCE NO.	SHEET NO.
U–2579AB	19C
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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GRAPHIC SCALE 12.5 0 12.5 25

NAD 83/95

REVISIONS

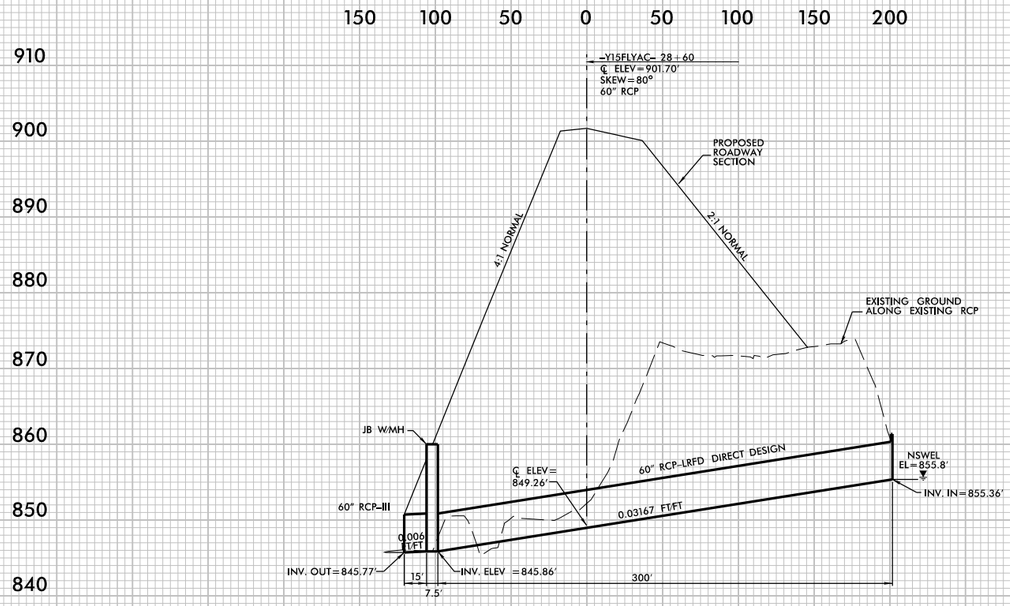
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PROJECT REFERENCE NO.	SHEET NO.
U-2579AB	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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U-2579AB – SITE 19



PROFILE ALONG ℄ OF CULVERT

PERMIT DRAWINGS
SHEET 57 OF 79

REVISIONS

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5/14/99

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U-2579AB	20
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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GRAPHIC SCALE 50 25 0 50 100

REVISIONS

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SEE SHEET 20A

LEGEND:
DENOTES IMPACTS IN SURFACE WATER
DENOTES TEMPORARY IMPACTS IN SURFACE WATER

MATCHLINE SHEET 26 -Y5B- STA. 13+50.00

FIDDLERS CREEK (ESE-S25)

SITE 18

SITE 19

ESE-S58

SEE SHEET 20B

SEE SHEET 20C

MATCHLINE SHEET 10 -Y15WPA- STA. 23+00.00

MATCHLINE SHEET 10 -Y15WPA- STA. 18+50.00

MATCHLINE SHEET 10 -Y15WPA- STA. 10+00.00

MATCHLINE SHEET 10 -Y15BV- STA. 59+00.00

MATCHLINE SHEET 25

MATCHLINE SHEET 21 -Y15WPA- STA. 85+00.00

MATCHLINE SHEET 21 -Y15STEW- STA. 92+04.15

MATCHLINE SHEET 25 -Y15RLRD- STA. 75+50.00

PERMIT DRAWING
SHEET 58 OF 79

PROJECT REFERENCE NO.	SHEET NO.
U-2579AB	20
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

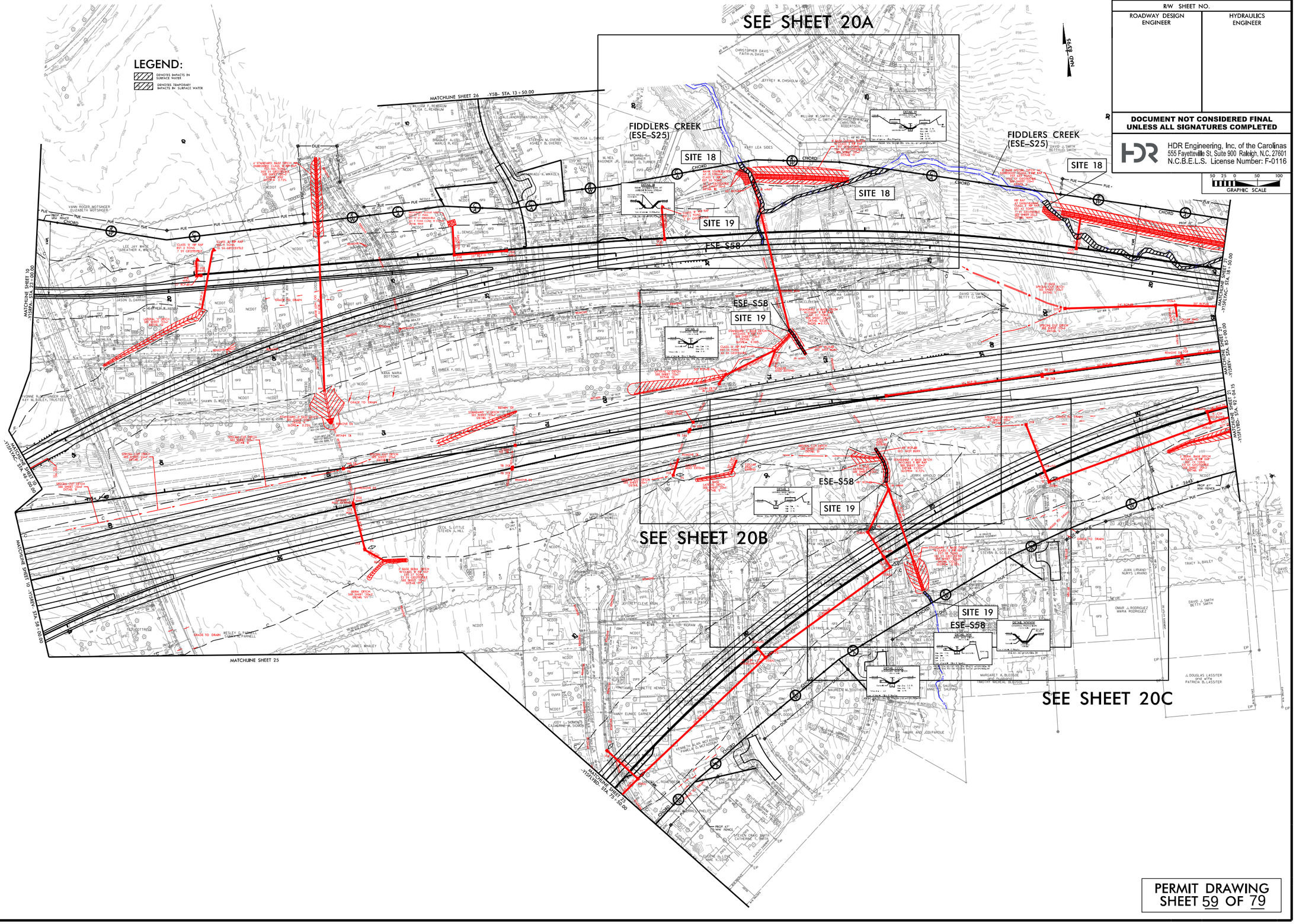
DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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N.C.B.E.L.S. License Number: F-0116

GRAPHIC SCALE 50 25 0 50 100

REVISIONS

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PERMIT DRAWING
SHEET 59 OF 79

PROJECT REFERENCE NO.	SHEET NO.
U-2579AB	20A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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N.C.B.E.L.S. License Number: F-0116

GRAPHIC SCALE 12.5 0 12.5 25

LEGEND:

S / S — DENOTES IMPACTS IN SURFACE WATER

TS / TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER

FIDDLERS CREEK (ESE-S25)

SITE 18

SITE 19

ESE-S58

8' BASE LATERAL DITCH
W/CLASS 'I' RIP RAP
EST. 303 TONS
514 SY GEOTEXTILE
SEE SHEET '2D-2'
DETAIL 'H'

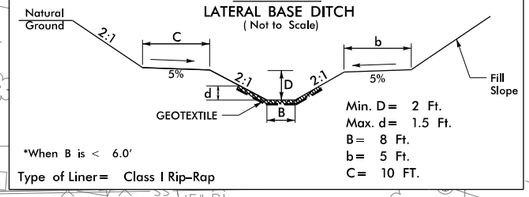
BANK STABILIZATION
AT JS STREAM
CLASS 'I' RIP RAP
EST. 50 TONS
75 SY GEOTEXTILE
SEE SHEET 2D-2
DETAIL 'III'

60" RCP-III

JB w/MH

SU RCSARD DIRECT DESIGN DO NOT BURY

DETAIL H
LATERAL BASE DITCH
(Not to Scale)



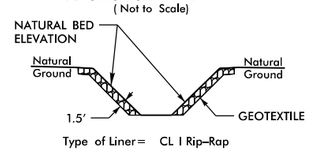
Min. D = 2 Ft.
Max. d = 1.5 Ft.
B = 8 Ft.
b = 5 Ft.
C = 10 FT.

*When B is < 6.0'

Type of Liner = Class I Rip-Rap

FROM STA. 26+82 TO STA. 28+87 -Y15FLYAC- RT

DETAIL III
BANK STABILIZATION AT JURISDICTIONAL STREAM
(Not to Scale)



Type of Liner = CL I Rip-Rap

STA. 28+88 -Y15FLYCA- RT

PERMIT DRAWING
SHEET 60 OF 79

REVISIONS

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ESE–S58

SITE 19

PROJECT REFERENCE NO.	SHEET NO.
U–2579AB	20B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

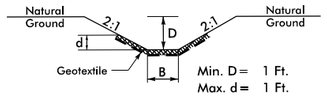
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555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

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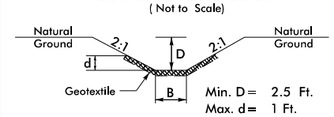
NAD 83/95

DETAIL JJ
STANDARD BASE DITCH
(Not to Scale)



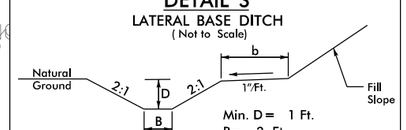
Type of Liner= Class B Rip–Rap
FROM STA. 75+24 TO STA. 75+65 –Y15REV– LT

DETAIL CCCC
STANDARD BASE DITCH
(Not to Scale)



Type of Liner= Class B Rip–Rap
STA. 76+70 –Y15REV– LT

DETAIL S
LATERAL BASE DITCH
(Not to Scale)



FROM STA. 76+50 TO STA. 77+00 –Y15REV– RT

LEGEND:

S S DENOTES IMPACTS IN SURFACE WATER

PERMIT DRAWING
SHEET 61 OF 79

REVISIONS

PLOT DRIVER: NCDOT_pdf_color_eng_100.plt
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DATE: 10/5/2020
TIME: 12:01:36 PM

PROJECT REFERENCE NO.	SHEET NO.
U-2579AB	20C
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

GRAPHIC SCALE 12.5 0 12.5 25

NAD 83/95

LEGEND:

S S DENOTES IMPACTS IN SURFACE WATER

SITE 19

ESE-S58

2GI(A)
30" RCP-III
FS
HW
REMOVE
STANDARD 4' BASE DITCH
W/CLASS 'B' RIP RAP
EST. 38 TONS
103 SY GEOTEXTILE
SEE SHEET '2D-3'
DETAIL 'CCCC'
SLOPE= 0.72%
48" RCP-III
DO NOT BURY
15" CSP
W/ELBOWS
BDO
2' BASE BERM DITCH
W/CLASS 'B' RIP RAP
EST. 162 TONS
458 SY GEOTEXTILE
SEE SHEET '2D-2'
DETAIL 'WW'
CHORD
DUE
JS
CHANNEL PROTECTION
AT JS STREAM
CLASS 'I' RIP RAP
EST. 5 TONS
9 SY GEOTEXTILE
SEE SHEET 2D-2
DETAIL 'WWWW'
BERM DITCH
SEE SHEET '2D-2'
DETAIL 'VV'

DETAIL CCCC
STANDARD BASE DITCH
(Not to Scale)

Natural Ground, 2:1, d, D, 2:1, Natural Ground, Geotextile, B

Min. D= 2.5 Ft.
Max. d= 1 Ft.
B= 4 Ft.
*When B is < 6.0'

Type of Liner= Class B Rip-Rap
FROM STA. 83+86 TO STA. 84+00 -Y15FLYBD- RT

DETAIL WW
BERM BASE DITCH
(Not to Scale)

Natural Ground, 2:1, d, D, 2:1, b, B, GEOTEXTILE, RDWY

Min. D= 1 Ft.
Max. d= 1 Ft.
B= 2 Ft.
b= 5 Ft.
Type of Liner= Class B Rip-Rap
FROM STA. 83+87 TO STA. 87+72 -Y15FLYBD- RT
FROM STA. 93+00 TO STA. 94+41 -Y15FLYBD- RT

DETAIL WWWW
CHANNEL PROTECTION
(Not to Scale)

Natural Ground, Natural Bed Elevation, Natural Ground, 1.5', Geotextile, Channel Bed (Variable)

Type of Liner= CL I Rip-Rap
STA. 83+90 -Y15FLYBD- RT

PERMIT DRAWING
SHEET 62 OF 79

PLOT DRIVER: NCDOT_pdf_color_eng_100.plt
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DATE: 10/5/2020
TIME: 12:01:44 PM
REVISIONS

LEGEND:

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

FIDDLERS CREEK (ESE–S25)

ESE–W41

ESE–S72

SITE 18

SITE 20

MATCHLINE SHEET 20 –Y15FLYAC– STA. 18+50.00

MATCHLINE SHEET 20 –Y15FLYBD– STA. 92+04.15

MATCHLINE SHEET 20 –Y15REV– STA. 85+00.00

MATCHLINE SHEET 22 –Y15– STA. 147+00.00

8' BASE SPECIAL DITCH W/ EMBEDDED CLASS 'I' RIP RAP EST. 669 TONS 1332 SY GEOTEXTILE SEE SHEET '2D–1' DETAIL 'X'

AT EMBANKMENT CLASS 'I' RIP RAP EST. 24 TONS 41 SY GEOTEXTILE SEE SHEET 2D–2 DETAIL 'HHH'

BASE LATERAL DITCH SEE SHEET '2D–1' DETAIL 'S'

CLASS 'B' RIP RAP EST. 2 TONS 7 SY GEOTEXTILE

LATERAL 'V' DITCH SEE SHEET '2D–1' DETAIL 'Q'

REMOVE

15" CSP W/ELBOWS

15" RCP–III

2GI W/FG

CLASS 'B' RIP RAP EST. 16 TONS 42 SY GEOTEXTILE

24" RCP–III

24" RCP–IV

2GI–A

REMOVE DI

TOP=882.43' INV=(S) 877.24' INV=(E) 877.25' INV=(N) 877.09'

TB W/MH

CLEAN OUT 36" RCP

RETAIN 36" RCP

REMOVE 48" CMP

2' BASE LATERAL DITCH SEE SHEET '2D–1' 60" RCP–III BURIED 1.0'

5' BASE DITCH W/CLASS 'I' RIP RAP EST. 33 TONS 60 SY GEOTEXTILE SEE SHEET '2D–1' DETAIL 'MM'

2' BASE BERM DITCH W/CLASS 'B' RIP RAP EST. 59 TONS 168 SY GEOTEXTILE SEE SHEET '2D–2' DETAIL 'WW'

4' BASE BERM DITCH W/CLASS 'B' RIP RAP EST. 364 TONS 990 SY GEOTEXTILE SEE SHEET '2D–2' DETAIL 'YY'

4' BASE BERM DITCH SEE SHEET '2D–2' DETAIL 'ZZ'

2' BASE BERM DITCH SEE SHEET '2D–2' DETAIL 'AAA'

COLLAR AND EXTEND

18" RCP–III

2GI(D)

PROP. NOISE WALL Y15FLYBD

PROP. 47" WW FENCE

CHORD

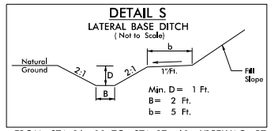
PUE

EXISTING R/W

180'

240'

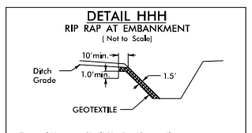
DETAIL S
LATERAL BASE DITCH
(Not to Scale)



Min. D= 1 Ft.
B= 2 Ft.
b= 5 Ft.

FROM STA. 16+00 TO STA. 17+60 –Y15FLYAC– RT
FROM STA. 93+05 TO 94+31 –Y15FLYBD– RT

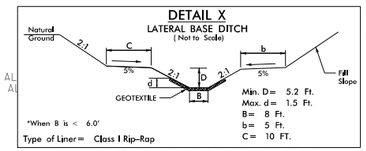
DETAIL HHH
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner= CL 'I' Rip–Rap/Geotextile

STA. 17+50 –Y15FLYAC– RT

DETAIL X
LATERAL BASE DITCH
(Not to Scale)

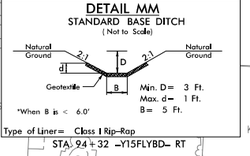


*When B is < 6.0'
Type of Liner= Class I Rip–Rap

Min. D= 5.2 Ft.
Max. d= 1.5 Ft.
B= 8 Ft.
b= 5 Ft.
C= 10 FT.

FROM STA. 17+60 TO STA. 22+19 –Y15FLYAC– RT

DETAIL MM
STANDARD BASE DITCH
(Not to Scale)

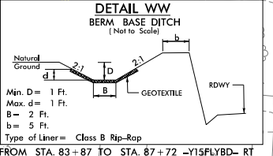


Min. D= 3 Ft.
Max. d= 1 Ft.
B= 5 Ft.

*When B is < 6.0'
Type of Liner= Class I Rip–Rap

STA. 94+32 –Y15FLYBD– RT

DETAIL WW
BERM BASE DITCH
(Not to Scale)



Min. D= 1 Ft.
Max. d= 1 Ft.
B= 2 Ft.
b= 5 Ft.
Type of Liner= Class B Rip–Rap

FROM STA. 83+87 TO STA. 87+72 –Y15FLYBD– RT
FROM STA. 93+00 TO STA. 94+31 –Y15FLYBD– RT

NAD 83/95

GRAPHIC SCALE 25 12.5 0 25 50

PROJECT REFERENCE NO.	SHEET NO.
U–2579AB	21
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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REVISIONS

ROW REV. – OCTOBER 14, 2019 – UPDATED STATION OFFSET CALL OUTS DUE TO DESIGN CHANGE TO –Y15FLYBD– FROM STATION 70+00 TO 92+19. JHG

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PERMIT DRAWING SHEET 63 OF 79

LEGEND:

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

PROJECT REFERENCE NO.	SHEET NO.
U-2579AB	21
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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GRAPHIC SCALE 25 12.5 0 25 50

NAD 83/95

DETAIL S
LATERAL BASE DITCH
(Not to Scale)

Min. D= 1 Ft.
B= 2 Ft.
b= 5 Ft.

FROM STA. 16+00 TO STA. 17+60 –Y15FLYAC– RT
FROM STA. 93+05 TO 94+31 –Y15FLYBD– RT

DETAIL HHH
RIP RAP AT EMBANKMENT
(Not to Scale)

Type of Liner= CL 'I' Rip-Rap/Geotextile

STA. 17+50 –Y15FLYAC– RT

DETAIL X
LATERAL BASE DITCH
(Not to Scale)

Min. D= 5.2 Ft.
Max. d= 1.5 Ft.
B= 8 Ft.
b= 5 Ft.
C= 10 FT.

*When B is < 6.0'
Type of Liner= Class I Rip-Rap

FROM STA. 17+60 TO STA. 22+19 –Y15FLYAC– RT

DETAIL MM
STANDARD BASE DITCH
(Not to Scale)

Min. D= 3 Ft.
Max. d= 1 Ft.
B= 5 Ft.

*When B is < 6.0'
Type of Liner= Class I Rip-Rap

STA. 94+32 –Y15FLYBD– RT

DETAIL WW
BERM BASE DITCH
(Not to Scale)

Min. D= 1 Ft.
Max. d= 1 Ft.
B= 2 Ft.
b= 5 Ft.
Type of Liner= Class B Rip-Rap

FROM STA. 83+87 TO STA. 87+72 –Y15FLYBD– RT
FROM STA. 93+00 TO STA. 94+31 –Y15FLYBD– RT

FIDDLERS CREEK (ESE–S25)

ESE–W41

SITE 18

ESE–S72

SITE 20

MATCHLINE SHEET 20 –Y15FLYAC– STA. 18+50.00

MATCHLINE SHEET 20 –Y15REV– STA. 85+00.00

MATCHLINE SHEET 20 –Y15FLYBD– STA. 92+04.15

MATCHLINE SHEET 22 –Y15– STA. 147+00.00

PROP. NOISE WALL Y15FLYBD

PERMIT DRAWING
SHEET 64 OF 79

REVISIONS

ROW REV. – OCTOBER 14, 2019 – UPDATED STATION OFFSET CALL OUTS DUE TO DESIGN CHANGE TO –Y15FLYBD– FROM STATION 70+00 TO 92+19. JHG

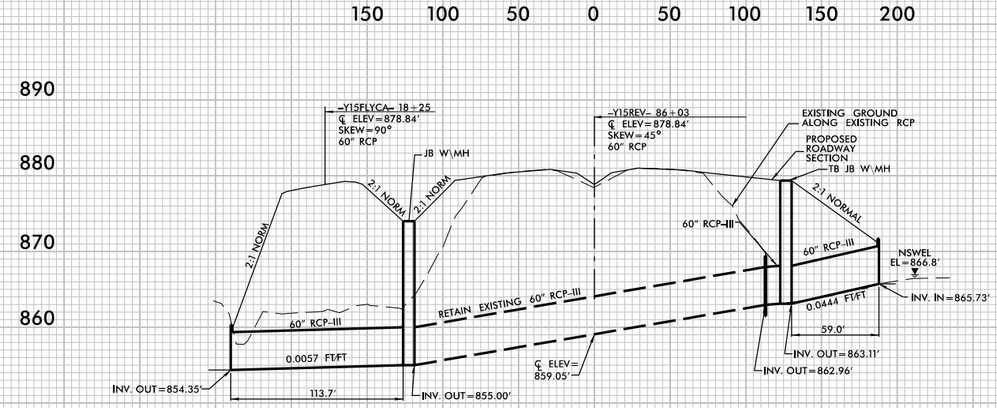
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N.C.B.E.L.S. License Number: F-0116

PROJECT REFERENCE NO.	SHEET NO.
U-2579AB	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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U-2579AB – SITE 18 AND 20



PROFILE ALONG ℄ OF PIPE

PERMIT DRAWINGS
SHEET 65 OF 79

REVISIONS

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5/14/99

PROJECT REFERENCE NO.	SHEET NO.
U-2579AB	22
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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N.C.B.E.L.S. License Number: F-0116

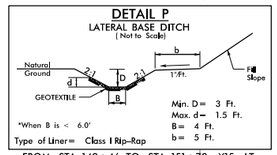
25 12.5 0 25 50
GRAPHIC SCALE

LEGEND:

S/S DENOTES IMPACTS IN SURFACE WATER

TS/TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

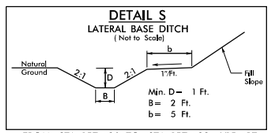
DETAIL P
LATERAL BASE DITCH
(Not to Scale)



Min. D= 3 Ft.
Max. d= 1.5 Ft.
B= 4 Ft.
b= 5 Ft.
*When B is < 6.0'
Type of Liner= Class I Rip-Rap

FROM STA. 149+46 TO STA. 151+78 –Y15– LT
FROM STA. 152+50 TO STA. 154+24 –Y15– LT

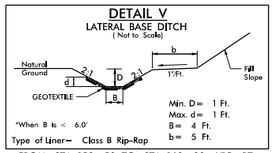
DETAIL S
LATERAL BASE DITCH
(Not to Scale)



Min. D= 1 Ft.
B= 2 Ft.
b= 5 Ft.

FROM STA. 157+20 TO STA. 157+99 –Y15– RT

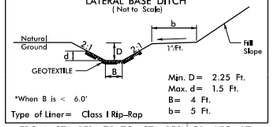
DETAIL V
LATERAL BASE DITCH
(Not to Scale)



Min. D= 1 Ft.
Max. d= 1 Ft.
B= 4 Ft.
b= 5 Ft.
*When B is < 6.0'
Type of Liner= Class B Rip-Rap

FROM STA. 159+50 TO STA. 160+00 –Y15– RT

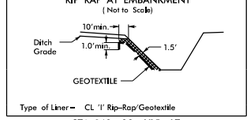
DETAIL DDD
LATERAL BASE DITCH
(Not to Scale)



Min. D= 2.25 Ft.
Max. d= 1.5 Ft.
B= 4 Ft.
b= 5 Ft.
*When B is < 6.0'
Type of Liner= Class I Rip-Rap

FROM STA. 151+78 TO STA. 152+50 –Y15– LT
FROM STA. 154+24 TO STA. 156+10 –Y15– LT

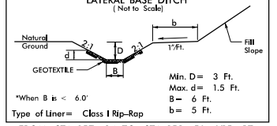
DETAIL HHH
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner= CL 'I' Rip-Rap/Geotextile

STA. 148+00 –Y15– LT

DETAIL TT
LATERAL BASE DITCH
(Not to Scale)



Min. D= 3 Ft.
Max. d= 1.5 Ft.
B= 6 Ft.
b= 5 Ft.
*When B is < 6.0'
Type of Liner= Class I Rip-Rap

FROM STA. 157+94 TO STA. 159+50 –Y15– RT

NAD 83/95

ESE–S50

ESE–W43

NCDOT

FIRST CHRISTIAN CHURCH MINISTRIES

SITE 21

ESE–S50

ESE–W37

WANELL W. WALL
DB 1225 PG 850

MARK S. RICHARDSON
MARISA T. RICHARDSON

BRIAN J. CLARK
MARIA E. CLARK

MICHELLE D. POULOS
JAY J. POULOS

JAMES S. FINCH
NANCY S. FINCH

PRISCILLA FORD

JORGE L. AND ROSA M. GONZALEZ

GINGER L. SMITH and TONYA A. COLEMAN

MARCIA CLARKE-CHUE
FRANLIN E. CHUE

JOHN J. McCORMICK, III and wife
CHRISTEN V. McCORMICK

KIM H. BUI
LAC H. HOANG

CHARLES A. CARR and JOY S. CARR

LINDA E. BURNETTE and husband THOMAS L. BURNETTE

MATCHLINE SHEET 21 –Y15– STA. 147+00.00

MATCHLINE SHEET 23 –Y15– STA. 160+50.00

PERMIT DRAWING
SHEET 66 OF 79

PLOT DRIVER: NCDOT_pdf_color-eng-100.plt PENTABLE: NCDOT_permits_NOCON.tbl
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REVISIONS

PROJECT REFERENCE NO.	SHEET NO.
U-2579AB	22
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
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N.C.B.E.L.S. License Number: F-0116

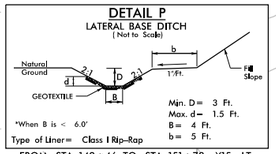
25 12.5 0 25 50
GRAPHIC SCALE

LEGEND:

S S — DENOTES IMPACTS IN SURFACE WATER

TS TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER

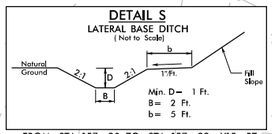
DETAIL P
LATERAL BASE DITCH
(Not to Scale)



Min. D= 3 Ft.
Max. d= 1.5 Ft.
B= 4 Ft.
b= 5 Ft.
*When B is < 6.0'
Type of Liner= Class I Rip-Rap

FROM STA. 149+46 TO STA. 151+78 –Y15– LT
FROM STA. 152+50 TO STA. 154+24 –Y15– LT

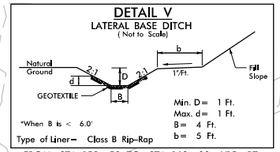
DETAIL S
LATERAL BASE DITCH
(Not to Scale)



Min. D= 1 Ft.
B= 2 Ft.
b= 5 Ft.

FROM STA. 157+20 TO STA. 157+99 –Y15– RT

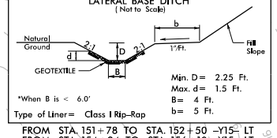
DETAIL V
LATERAL BASE DITCH
(Not to Scale)



Min. D= 1 Ft.
Max. d= 1 Ft.
B= 4 Ft.
b= 5 Ft.
*When B is < 6.0'
Type of Liner= Class B Rip-Rap

FROM STA. 159+50 TO STA. 160+00 –Y15– RT

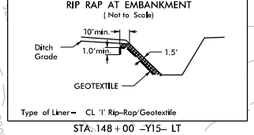
DETAIL DDD
LATERAL BASE DITCH
(Not to Scale)



Min. D= 2.25 Ft.
Max. d= 1.5 Ft.
B= 4 Ft.
b= 5 Ft.
*When B is < 6.0'
Type of Liner= Class I Rip-Rap

FROM STA. 151+78 TO STA. 152+50 –Y15– LT
FROM STA. 154+24 TO STA. 156+10 –Y15– LT

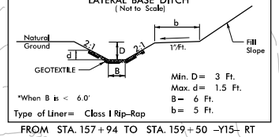
DETAIL HHH
RIP RAP AT EMBANKMENT
(Not to Scale)



Type of Liner= CL 'I' Rip-Rap/Geotextile

STA. 148+00 –Y15– LT

DETAIL TT
LATERAL BASE DITCH
(Not to Scale)



Min. D= 3 Ft.
Max. d= 1.5 Ft.
B= 6 Ft.
b= 5 Ft.
*When B is < 6.0'
Type of Liner= Class I Rip-Rap

FROM STA. 157+94 TO STA. 159+50 –Y15– RT

NAD 83/95

ESE–S50

ESE–W43

NCDOT

FIRST CHRISTIAN CHURCH MINISTRIES

RIP RAP AT EMBANKMENT CLASS 'I' RIP RAP EST. 20 TONS 35 SY GEOTEXTILE

12' GATE

4' BASE LATERAL DITCH W/ EMBEDDED CLASS 'I' RIP RAP EST. 259 TONS 459 SY GEOTEXTILE SEE SHEET '2D-2' DETAIL 'P'

4' BASE LATERAL DITCH W/ EMBEDDED CLASS 'I' RIP RAP EST. 82 TONS 145 SY GEOTEXTILE SEE SHEET '2D-2' DETAIL 'DDD'

4' BASE LATERAL DITCH W/ EMBEDDED CLASS 'I' RIP RAP EST. 197 TONS 350 SY GEOTEXTILE SEE SHEET '2D-2' DETAIL 'P'

SITE 21

4' BASE LATERAL DITCH W/ EMBEDDED CLASS 'I' RIP RAP EST. 211 TONS 375 SY GEOTEXTILE SEE SHEET '2D-2' DETAIL 'DDD'

PROP. 47" WW FENCE

ESE–S50

BERM DITCH SEE SHEET '2D-1' DETAIL 'NN'

FILL WITH FLOWABLE FILL

TRENCHLESS INSTALLATION 30" WELDED STEEL CASING PIPE

30" CSP W/ELBOWS

30" RCP-III

18" RCP-III

2GI

FS

COLLAR AND EXTEND

REMOVE DI

15" RCP-IV

TB 2GI

RETAIN

3.2' CLEARANCE

REMOVE HW

2GI W/FG

15" RCP-IV

SPECIAL CUT DITCH SEE SHEET '2D-1' DETAIL 'J'

4' BASE LATERAL DITCH SEE SHEET '2D-1' DETAIL 'T'

4' BASE LATERAL DITCH W/CLASS 'B' RIP RAP EST. 28 TONS 75 SY GEOTEXTILE SEE SHEET '2D-1' DETAIL 'V'

STANDARD 2' BASE DITCH SEE SHEET '2D-1' DETAIL 'S'

6' BASE LATERAL DITCH W/ EMBEDDED CLASS 'I' RIP RAP EST. 200 TONS 345 SY GEOTEXTILE SEE SHEET '2D-2' DETAIL 'T'

2' BASE LATERAL DITCH W/CLASS 'B' RIP RAP EST. 76 TONS 217 SY GEOTEXTILE SEE SHEET '2D-1' DETAIL 'U'

SITE 22

ESE–S50 ESE–W37

WANELL W. WALL
DB 1225 PG 850

REMOVE 47" OF 15" RCP

STANDARD 2' BASE DITCH W/CLASS 'B' RIP RAP SEE SHEET '2D-1' DETAIL 'JJ'

2' BASE BERM DITCH W/CLASS 'B' RIP RAP EST. 96 TONS 273 SY GEOTEXTILE SEE SHEET '2D-2' DETAIL 'CCC'

2' BASE BERM DITCH SEE SHEET '2D-2' DETAIL 'AAA'

2' BASE BERM DITCH SEE SHEET '2D-2' DETAIL 'BBB'

BERM DITCH SEE SHEET '2D-1' DETAIL 'VV'

BERM DITCH SEE SHEET '2D-2' DETAIL 'VV'

BERM DITCH SEE SHEET '2D-2' DETAIL 'WW'

PROP. 47" WW FENCE

MARK S. RICHARDSON
MARISA T. RICHARDSON

BRIAN J. CLARK
MARIA E. CLARK

MICHELLE W. POULOS
JAY J. POULOS

PRISCILLA FORD

JAMES S. FINCH
NANCY FINCH

GINGER L. SMITH and TONYA A. COLEMAN

MARCIA CLARKE-CHUE
FRANLIN EL CHUE

JORGE L. AND ROSA M. GONZALEZ

CHARLES A. CARR and JOY S. CARR

JOHN J. McCORMICK, III and wife CHRISTEN V. McCORMICK

KIM H. BUI
LAC H. HOANG

LINDA E. BURNETTE and husband THOMAS L. BURNETTE

MATCHLINE SHEET 21 –Y15– STA. 147+00.00

MATCHLINE SHEET 23 –Y15– STA. 160+50.00

PERMIT DRAWING SHEET 67 OF 79

REVISIONS

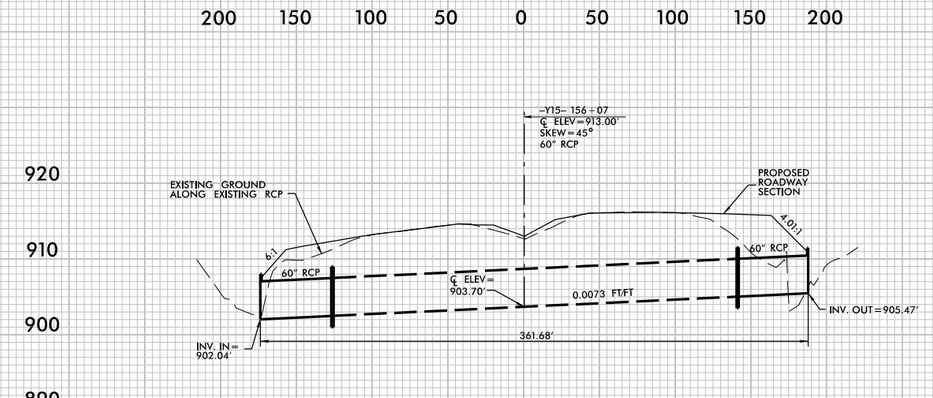
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N.C.B.E.L.S. License Number: F-0116

PROJECT REFERENCE NO.	SHEET NO.
U-2579AB	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

U-2579AB – SITE 21



PROFILE ALONG ℄ OF PIPE

PERMIT DRAWINGS
SHEET 68 OF 79

5/14/99

REVISIONS

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PROJECT REFERENCE NO.	SHEET NO.
U-2579AB	25
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

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50 25 0 50 100
GRAPHIC SCALE

MATCHLINE SHEET 20

SEE SHEET 25A

MATCHLINE SHEET 20 REVISED STA 75+50.00

MATCHLINE SHEET 10 REVISED STA 75+00.00

MATCHLINE SHEET 11

LEGEND:

DENOTES IMPACTS IN SURFACE WATER (POND)

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

ESE-S12

ESE-PT2

SITE 24

BEGIN JS FEATURE 1

ENGINEER MAY REVISE THE LOCATION OF THE DITCH THROUGH POND AS NEEDED

GRADE TO DRAIN

CHORD

PROP 47' NW FENCE

REVISIONS

ROW REV. – OCTOBER 14, 2019 – UPDATED STATION OFFSET CALL OUTS DUE TO DESIGN CHANGE TO –Y15FLYBD– FROM STATION 70+00 TO 92+19. JHG

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PERMIT DRAWING
SHEET 69 OF 79

PROJECT REFERENCE NO.	SHEET NO.
U-2579AB	25
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

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N.C.B.E.L.S. License Number: F-0116

50 25 0 50 100
GRAPHIC SCALE

MATCHLINE SHEET 20

SEE SHEET 25A

MATCHLINE SHEET 20 (Y15FLYBD- STA. 75+50.00)

LEGEND:

DENOTES IMPACTS IN SURFACE WATER (POND)

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

ESE-S12

ESE-PT4

SITE 24

BEGIN JS FEATURE

ENGINEER MAY REVISE THE LOCATION OF THE DITCH THROUGH POND AS NEEDED

MATCHLINE SHEET 11 (Y15FLYBD- STA. 70+00.00)

MATCHLINE SHEET 10 (Y15FLYBD- STA. 92+00.00)

GRADE TO DRAIN

CHORD

PROP 47' R/W FENCE

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REVISIONS

ROW REV. – OCTOBER 14, 2019 – UPDATED STATION OFFSET CALL OUTS DUE TO DESIGN CHANGE TO –Y15FLYBD– FROM STATION 70+00 TO 92+19. JHG

PERMIT DRAWING
SHEET 70 OF 79

PROJECT REFERENCE NO.	SHEET NO.
U-2579AB	25A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

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12.5 0 12.5 25
GRAPHIC SCALE

NAD 83/95

ESE–P14

SITE 24

BEGIN JS FEATURE

TIE TO EXISTING DITCH

REMOVE HDPE

ENGINEER MAY REVISE THE LOCATION OF THE DITCH THROUGH POND AS NEEDED

STANDARD 3' BASE DITCH
SEE SHEET '2D–1'
DETAIL 'F'
SLOPE = 1.17%

STANDARD 3' BASE DITCH
W/CLASS 1' RIP RAP
EST. 123 TONS
193 SY GEOTEXTILE
SEE SHEET '2D–1'
DETAIL 'DDDD'

2' BASE LATERAL DITCH
W/CLASS 'B' RIP RAP
SEE SHEET '2D1'
DETAIL 'U'

CLASS 'B' RIP RAP
EST. 2 TONS
7 SY GEOTEXTILE

15" CSP W/ELBOWS

END SBG STA. +00

2GI W/ FG

2GI W/ FG

36" RCP IV

15" RCP

INV=890.95

INV=893.98'

306 W/LT

296 W/LT

308

314

MARIAN H. CRINER

DAVID S. CAUDLE

CLYDE ANGELL

FERNANDO LUIS SIERRA
MELINDA P. SIERRA

ES A. SNIPES
RIE A. SNIPES

GLENN LAKE TRAIL

RD 22' BST

24' ACCESS EASEMENT DB 917 PG 180

CONC

ISFD

FOUNDATION

SOIL

WALL

GR

EIP

48" WD RAIL

LEGEND:

P P — DENOTES IMPACTS IN SURFACE WATER (POND)

PERMIT DRAWING
SHEET 71 OF 79

REVISIONS

PLOT DRIVER: NCDOT_pdf_color-eng.100.plt
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PROJECT REFERENCE NO.	SHEET NO.
U-2579AB	26
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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GRAPHIC SCALE 25 12.5 0 25 50

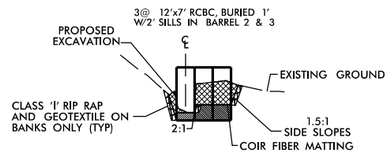
LEGEND:

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

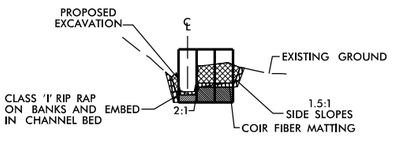
NAD 83/95

DETAIL 2

3@ 12'x7' RCBC, BURIED 1' W/2' SILLS IN BARREL 2 & 3



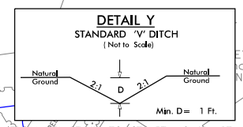
CULVERT INLET PROTECTION



CULVERT OUTLET PROTECTION

DETAIL Y

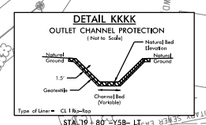
STANDARD 'V' DITCH
(Not to Scale)



FROM STA. 57+00 TO STA. 57+46 –Y4– RT
FROM STA. 20+18 TO STA. 20+55 –Y5B– RT
FROM STA. 39+00 TO STA. 40+28 –Y15REV– LT
FROM STA. 67+50 TO STA. 69+40 –Y15REV– LT

DETAIL KKKK

OUTLET CHANNEL PROTECTION
(Not to Scale)



STA. 19+80 –Y5B– LT

SITE 25

SITE 26

NO CLAIM

MATCHLINE –Y5B– STATION 13+50.00

MATCHLINE SHEET 20 –Y5B– STATION 13+50.00

OUTLET CHANNEL PROTECTION CLASS 'I' RIP RAP EST. 109 TONS 154 SY GEOTEXTILE SEE DETAIL 2

SPECIAL CUT DITCH SEE SHEET '2D-1' DETAIL 'B'

3 @ 7'X8' RCBC BURIED 1', BACKFILLED WITH MIXTURE OF CLASS B RIP RAP AND NATIVE MATERIAL

OUTLET CHANNEL PROTECTION CLASS 'I' RIP RAP EST. 15 TONS 25 SY GEOTEXTILE SEE SHEET 2D-3 DETAIL 'KKKK'

STANDARD 'V' DITCH SEE SHEET '2D-1' DETAIL 'Y' SLOPE = 0.97% CLASS 'B' RIP RAP EST. 2 TONS 7 SY GEOTEXTILE

REMOVE CB

REMOVE 61' OF PIPE

CULVERT INLET BANK STABILIZATION SEE DETAIL 2 REPAIR LAST JOINT

INLET CHANNEL PROTECTION SEE DETAIL YYYY

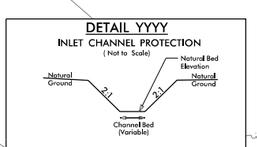
3 @ 12'X7' RCBC, BURIED 1' WITH 2' SILLS IN BARRELS 2 & 3 BACKFILLED WITH MIXTURE OF CLASS B RIP RAP AND NATIVE MATERIAL

FIDDLERS CREEK (ESE–S25)

ESE–S26

DETAIL YYYY

INLET CHANNEL PROTECTION
(Not to Scale)



STA. 19+75 –Y5B–

RONALD D. MOTSINGER
RENEE S. MOTSINGER

VANN ROGER MOTSINGER
ELIZABETH MOTSINGER

BROOKE B. SPARROW

DANIEL R. ATKINS
BETTY K. ATKINS

ASHLEY E. VASIL and CURTIS H. CHEEKS III

JOSE MIGUEL DERCIAN

NORTH CAROLINA PROPERTY, LP

JOHN E. THOMPSON
VIRGINIA S. THOMPSON

DANIEL COREY

GREGORY WHITE

THOMAS G. MANNEL
CHRISTINE MANNEL

LEONARD CALLOWAY JR.

DANIEL K. SADDLER
KAREN M. SADDLER

BENJAMIN N. KIEFER

MARTIN W. DELFONTE

BILLIE L. BAILEY

CHADWICK G. CHEEK
JANEL D. CHEEK

CYNTHIA LEIGH ARRINGTON-ZIGH

STEPHEN R. WHITENER
KATHY G. WHITENER

WENDALL R. TRUESDALE
NATALIE O. TRUESDALE

RONALD BROWN

SILAS C. AND COURTNEY E. SWAIM

DEBRA L. MCGEE

JEREMIAH J. CAMPBELL

NICHOLAS CHAD MACK and spouse CAITLIN ELIZABETH MACK

RAY THOMAS MASTIN
VERA LAWS MASTIN

MARTY DALE FOULKS AND WIFE LOU ANN FOULKS

BST ROBERT B. BARBER
LYNN S. BARBER

TAPUWA MASARIRO

IAN GREGORY BARNES
KELLY ANN BOOE

LAKEANA A. JONES

RENEE O. AND ALMUSTAFA MCINTOSH

NAOMI W. DRIGGERS
DENAL B. L. DRIGGERS

SARAH REBECCA VALENCIA and husband FERNANDO VALENCIA-ROJAS

KENNETH EDWARD JOHNSON, SR. AND WIFE SHEILA MAE JOHNSON

OAKHURST HOA, INC.

U/C

SEE SHEETS C5-1 THR
SEE SHEETS C6-1 TRI

PERMIT DRAWING SHEET 72 OF 79

REVISIONS

ROW REV. – FEBRUARY 26, 2020 – PUE ADJUSTED ON PARCELS 656 AND 657 TO AVOID BUILDING ON 656. CEH.
ROW REV. – APRIL 9, 2020 – TCE ELIMINATED FROM PARCEL 362 (CLAIM ELIMINATED). CEH.

PLOT DRIVER: NCDOT_pdf_color_eng.100.plt PENTABLE: NCDOT_permits_NOCON.tbl
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PROJECT REFERENCE NO.	SHEET NO.
U-2579AB	26
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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N.C.B.E.L.S. License Number: F-0116

25 12.5 0 25 50
GRAPHIC SCALE

LEGEND:

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

NAD 83/95

DETAIL 2

3@ 12'x7' RCBC, BURIED 1' W/2' SILLS IN BARREL 2 & 3

PROPOSED EXCAVATION — ℄ — EXISTING GROUND

CLASS 'I' RIP RAP AND GEOTEXTILE ON BANKS ONLY (TYP) — 2:1 — 1.5:1 SIDE SLOPES — COIR FIBER MATTING

CULVERT INLET PROTECTION

PROPOSED EXCAVATION — ℄ — EXISTING GROUND

CLASS 'I' RIP RAP ON BANKS AND EMBED IN CHANNEL BED — 2:1 — 1.5:1 SIDE SLOPES — COIR FIBER MATTING

CULVERT OUTLET PROTECTION

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

Natural Ground — 2:1 — D — 2:1 — Natural Ground

Min. D= 1 Ft.

FROM STA. 57+00 TO STA. 57+46 –Y4– RT
FROM STA. 20+18 TO STA. 20+55 –Y5B– RT
FROM STA. 39+00 TO STA. 40+28 –Y15REV– LT
FROM STA. 67+50 TO STA. 69+40 –Y15REV– LT

DETAIL KKKK
OUTLET CHANNEL PROTECTION
(Not to Scale)

Natural Ground — 1.5' Geotextile — Channel Bed (Variable) — Natural Bed Elevation — Natural Ground

Type of Liner = CL I Rip-Rap
STA. 19+80 –Y5B– LT

MATCHLINE –Y5B– STATION 13+50.00

SITE 25

SITE 26

OUTLET CHANNEL PROTECTION CLASS 'I' RIP RAP EST. 109 TONS 154 SY GEOTEXTILE SEE DETAIL 2

SPECIAL CUT DITCH SEE SHEET '2D-1' DETAIL 'B'

1 @ 7'X8' RCBC BURIED 1', BACKFILLED WITH MIXTURE OF CLASS B RIP RAP AND NATIVE MATERIAL

OUTLET CHANNEL PROTECTION CLASS 'I' RIP RAP EST. 15 TONS 25 SY GEOTEXTILE SEE SHEET 2D-3 DETAIL 'KKKK'

STANDARD 'V' DITCH SEE SHEET '2D-1' DETAIL 'Y' SLOPE = 0.97% CLASS 'B' RIP RAP EST. 2 TONS 7 SY GEOTEXTILE

REMOVE CB — REMOVE 61' OF PIPE — JB — MH — CULVERT INLET BANK STABILIZATION SEE DETAIL 2 — REPAIR LAST JOINT

INLET CHANNEL PROTECTION SEE DETAIL YYYY

3 @ 12'X7' RCBC, BURIED 1' WITH 2' SILLS IN BARRELS 2 & 3 BACKFILLED WITH MIXTURE OF CLASS B RIP RAP AND NATIVE MATERIAL

FIDDLERS CREEK (ESE–S25)

ESE–S26

DETAIL YYYY
INLET CHANNEL PROTECTION
(Not to Scale)

Natural Ground — 2:1 — 2:1 — Natural Bed Elevation — Natural Ground — Channel Bed (Variable)

STA. 19+75 –Y5B–

NO CLAIM

RONALD D. MOTSINGER
RENEE S. MOTSINGER

VANN ROGER MOTSINGER
ELIZABETH MOTSINGER

DANIEL R. ATKINS
BETTY K. ATKINS

ASHLEY E. VASIL and CURTIS H. CHEEKS III

BROOKE B. SPARROW

DANIEL COREY

THOMAS G. MANNEL and MANNEL

LEONARD CALLOWAY JR.

JAMES ELIZABETH

MARTIN W. DELFONTE

BILLIE L. BAILEY

CHADWICK G. CHEEK JANEL D. CHEEK

CYNTHIA LEIGH ARRINGTON

WENDALL R. TRUESDALE NATALIE O. TRUESDALE

STEPHEN R. WHITENER KATHRYN G. WHITENER

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BENJAMIN N. KIEFER

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IAN GREGORY BARNES KELLY ANN BOOE

NAOMI W. DRIGGERS DONALD L. DRIGGERS

SARAH REBECCA VALENCIA and husband FERNANDO VALENCIA-ROJAS

OAKHURST HOA, INC.

RONALD BROWN

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NICHOLAS CHAD MACK and spouse CAITLIN ELIZABETH MACK

MARTY DALE FOULKS AND WIFE LOU ANN FOULKS

KENNETH EDWARD JOHNSON, SR. AND WIFE SHEILA MAE JOHNSON

TAPUWA MASARIKO

DEBRA E. MCGEE

SILAS C. AND COURTNEY E. BEAM

JEREMIAH J. CAMPBELL

ROBERT B. BARKER LYNN S. BARKER

DOWN E. THOMPSON

VIRGINIA PROPERTY NORTH CAROLINA, LP

MIGUEL BERCIAN

U/C

SEE SHEETS C6-1 TRK
SEE SHEETS C6-1 TRI

PERMIT DRAWING SHEET 73 OF 79

REVISIONS

ROW REV. – FEBRUARY 26, 2020 – PUE ADJUSTED ON PARCELS 656 AND 657 TO AVOID BUILDING ON 656. CEH.
ROW REV. – APRIL 9, 2020 – TCE ELIMINATED FROM PARCEL 362 (CLAIM ELIMINATED). CEH.

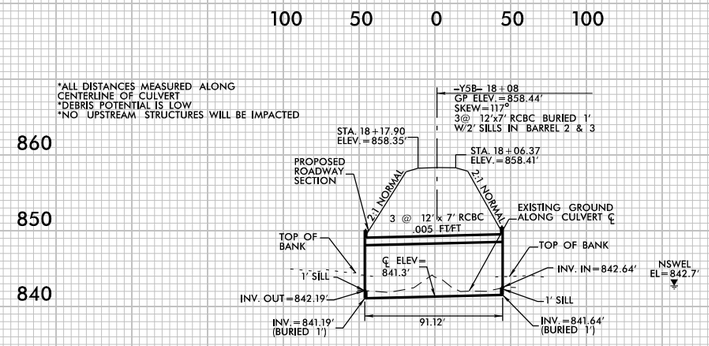
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HDR Engineering, Inc. of the Carolinas
555 Fayetteville St, Suite 900 Raleigh, N.C. 27601
N.C.B.E.L.S. License Number: F-0116

PROJECT REFERENCE NO.	SHEET NO.
U-2579AB	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

U–2579AB – SITE 25



PROFILE ALONG ℄ OF CULVERT

PERMIT DRAWINGS
SHEET 74 OF 79

REVISIONS
5/14/99

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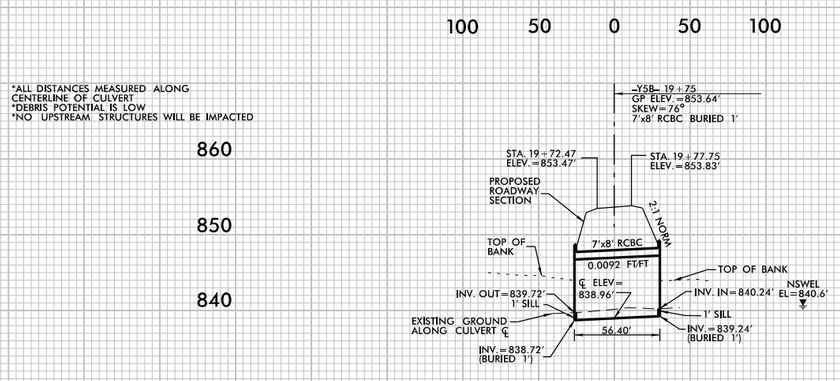
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U-2579AB – SITE 26

*ALL DISTANCES MEASURED ALONG CENTERLINE OF CULVERT
*DEBRIS POTENTIAL IS LOW
*NO UPSTREAM STRUCTURES WILL BE IMPACTED



PROFILE ALONG ℄ OF CULVERT

PERMIT DRAWINGS
SHEET 75 OF 79

REVISIONS 5/14/99

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WETLAND PERMIT IMPACT SUMMARY

			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	Y4RPB 20+29 RT	30" RCP-III						0.09	< 0.01	48		
1	Y4RPB 20+29 RT	4' BASE DITCH						0.10	< 0.01	76	18	
2	Y4 40+43 RT	36" CSP						< 0.01		51		
2	Y4 40+43 RT	ENERGY DISSIPATOR BASIN						< 0.01		20		
2	Y4 40+43 RT	BANK STABILIZATION						< 0.01		14		
2	Y4 40+43 RT	DETOUR							0.01		76	
3	L 746+02 RT	54" RCP-IV						0.10	< 0.01	137	12	
4	L 748+64 - 750+76 LT	ROADWAY FILL						0.01		74		
4A	L 750+02 - 753+80 LT	ROADWAY FILL	0.13									
4B	L 748+64 - 750+76 LT	FILL IN POND						0.89				
5	L 755+00 - 758+02 LT	PIPE REM./ PROP. DITCH						< 0.01	< 0.01	28	32	
5A	L 758+02 LT	PIPE REM./ PROP. DITCH				< 0.01						
6	L 768+62	2 @ 12' x 10' RCBC						0.13		589		
6	L 768+62	INLET CHANNEL FLOODPLAIN BENCH						< 0.01	0.01	26	41	
6	L 768+62	OUTLET CHANNEL PROTECTION						0.02	0.03	81	88	
6A	L 764+50 LT	ROADWAY FILL	0.03									
6B	L 760+00 LT	EX. 36" RCP SEGMENT REPLACEMENT /CLEAN OUT							< 0.01		19	
7	Y15FLYBD	54" RCP						0.02		92		
7	Y15FLYBD	4' BASE DITCH						< 0.01	< 0.01	84	10	
7	Y15FLYBD	RIPRAP PAD						< 0.01	< 0.01	16	25	
7A	Y15FLYBD	54" RCP-IV	0.36									
8	L 781+44	42" RCP-III						0.05	< 0.01	444		
8	L 781+44	BANK STABILIZATION						< 0.01	< 0.01	17	10	
TOTALS*:			0.51			< 0.01		1.44	0.07	1797	331	

*Rounded totals are sum of actual impacts

NOTES:

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WETLAND PERMIT IMPACT SUMMARY

			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
9	Y15RPDREV 36+18 RT	CULVERT INLET CHANNEL PROTECTION						< 0.01	< 0.01	66	10	
9	Y15RPDREV 35+55 CL	6' x 7' RCBC BURIED 1'						0.03		226		
9	Y15RPDREV 34+76 LT	CULVERT OUTLET CHANNEL PROTECTIOI						< 0.01		22		
9	Y15RPDREV 34+50 LT	6' BASE DITCH						0.02		149		
9	L 793+98 LT	CULVERT INLET CHANNEL PROTECTION						< 0.01		18		
9	L 793+98 CL	6' x 7' RCBC BURIED 1'						0.04		354		
9	Y15FLYBD 45+10 CL	6' BASE DITCH						0.02	< 0.01	195	10	
10	L 798+10	60" RCP-V						0.07		616		
10	L 798+10	5' BASE DITCH						< 0.01		52		
12	Y15REV 31+45 RT	5' x7' RCBC						0.07		372		
12	Y15REV 31+45 RT	CHANNEL STABILIZATION/ DITCH						0.07		277		
12A	Y15REV 31+45 RT	5' x7' RCBC	0.08			0.17						
12B	Y15REV 31+45 RT	FILL IN POND						2.37				
13	L 833+21 LT	36" RCP						0.06	< 0.01	504		
13	L 833+21 LT	BANK STABILIZATION						< 0.01		28	10	
13A	L 833+21	ROADWAY FILL	0.08									
14	Y15 31+20 RT	72" RCP-III						< 0.01	< 0.01	44	43	
14	Y15 31+20 RT	BANK STABILIZATION						< 0.01	< 0.01	22	14	
14A	Y15 31+99 RT	ROADWAY FILL	0.03			0.07						
14B	Y15 32+15 LT	ROADWAY FILL	< 0.01			0.02						
15	Y15 48+84 RT	42" RCP-III						< 0.01	< 0.01	36	10	
15	Y15 48+84 LT	RIPRAP PAD/DITCH						< 0.01	< 0.01	23	48	
TOTALS*:			0.19			0.26		2.77	0.01	3004	145	

*Rounded totals are sum of actual impacts

NOTES:
There is no site 11 for the project

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WETLAND PERMIT IMPACT 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	Y15 64+60 RT	54" RCP-III						< 0.01	< 0.01	44	26	
16A	Y15FLYCA 28+70 LT	BANK STABILIZATION						< 0.01	< 0.01	33	10	
16A	Y15FLYCA 28+80 CL	54" RCP-III						0.02	< 0.01	170	10	
17	Y15REV 30+00	8' x7' RCBC						0.03		427		
17	Y15REV 30+00	CHANNEL PROTECTION						< 0.01		35		
17A	Y15REV 30+00 RT	8' x7' RCBC	0.06									
17B	Y15REV 30+50 RT	8'x7' RCBC	0.09									
17C	Y15REV 30+50 RT	8' x7' RCBC	0.03									
18	Y15FLYAC 25+93 - 29+16 RT	ROADWAY FILL						0.16	0.02	900	102	
18	Y15FLYAC 25+93 - 29+16 RT	BANK STABILIZATION						< 0.01	< 0.01	44	11	
19	Y15FLYAC 28+72 RT	ROADWAY FILL						< 0.01		80		
19	Y15 124+35 LT	4' BASE DITCH						< 0.01		50		
19	Y15 124+40 LT	48" RCP-III						< 0.01		14		
19	Y15 125+82 RT	48" RCP-III						< 0.01		16		
19	Y15 126+00 RT	4' BASE DITCH						< 0.01		65		
19	Y15FLYBD 83+80 RT	48" RCP-III						< 0.01		18		
19	Y15FLYBD 83+85 RT	CHANNEL PROTECTION						< 0.01	< 0.01	6	6	
20	Y15FLYBD 93+75	60" RCP-III						0.01		100		
20	Y15FLYBD 94+22, 94+45	5' BASE DITCH						< 0.01	< 0.01	55	10	
20	Y15FLYBD 94+25	60" RCP-III						< 0.01		20		
21	Y15 149+41 - 154+60 LT	ROADWAY FILL						0.48	< 0.01	548	10	
21	Y15 157+53 - 159+59 RT	ROADWAY FILL						0.02	< 0.01	180	50	
22	Y4RPB 20+55 RT	2' BASE DITCH						< 0.01		67		
TOTALS*:			0.18					0.75	0.03	2625	189	

*Rounded totals are sum of actual impacts

NOTES:

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WETLAND PERMIT IMPACT SUMMARY

			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
23	L 830+95 - 833+21 LT	ROADWAY FILL						< 0.01	< 0.01	62	10	
23A	L 832+00 LT	ROADWAY FILL	0.22		0.02	0.06						
24	Y15FLYFLBD 67+67 LT	FILL IN POND						0.35				
24	Y15FLYFLBD 66+00 LT	DITCH TIE IN							< 0.01		10	
25	Y5B 18+06	3 @ 12' x 7' RCBC						0.02		92		
25	Y5B 18+06	BANK STABILIZATION						< 0.01	< 0.01	35	5	
25	Y5B 18+06	OUTLET CHANNEL PROTECTION						0.01	< 0.01	48	13	
26	Y5B 19+75 CL	7' x8' RCBC						< 0.01		56		
26	Y5B 19+75 RT	INLET CHANNEL PROTECTION						< 0.01	< 0.01	18	14	
26	Y5B 19+75 LT	OUTLET CHANNEL PROTECTION						< 0.01		33		
27	Y15 36+87 RT	42" RCP-III						< 0.01		14		
27	Y15 36+87 RT	RIPRAP PAD						< 0.01	< 0.01	12	10	
28	Y15REV 30+10 RT	8' x6' RCBC						0.13		114		
29	Y15REV 29+24-38+84	ROADWAY FILL						0.10	< 0.01	1023	10	
30	Y15RPB 31+30 RT	6' BASE DITCH							< 0.01		41	
31	Y15 19+47 LT	ROADWAY FILL						< 0.01	< 0.01	15	10	
		TOTALS SHEET 1	0.51			< 0.01		1.44	0.07	1797	331	
		TOTALS SHEET 2	0.19			0.26		2.77	0.01	3004	145	
		TOTALS SHEET 3	0.18					0.75	0.03	2625	189	
		TOTALS SHEET 4	0.22		0.02	0.06		0.63	0.02	1522	123	
TOTALS*:		Project Totals	1.11		0.02	0.32		5.60	0.13	8948	788	

*Rounded totals are sum of actual impacts

NOTES:

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Subject: Final Minutes of the Interagency Hydraulic Design Review (4B) Meeting on November 16, 2017 for U-2579AA, Forsyth County

Participants:

Team Members:	**Other Attendees:**
Bill Elam, NCDOT Hydraulics (present)	Craig Lee, NCDOT Hydraulics
James Lastinger, USACE (present)	Amy Euliss, Division 9
*Dave Wanucha, DWR (present)	Bill Barrett, NCDOT EAU
*Marella Buncick, NCWRC (present)	Carla Dagnino, NCDOT EAU
Christopher Militscher, USEPA (not present)	Mark Staley, NCDOT REU
Clarence Coleman, FHWA (not present)	Max Price, Wetherill Eng. (not present)
Tatia White, NCDOT PMU (present)	Dustin Creech, Wetherill Eng
Marla Chambers, NCWRC (present)	Matt Harvey, Wetherill Eng.
	David Stutts, NCDOT SMU
	Tanga Sampson, NCDOT Utilities

*Via telephone

Bill Elam opened the meeting by going around the conference room with each attendee introducing themselves. Bill Elam turned the meeting over to Dustin Creech where he began presenting the current drainage concept sheet by sheet and site by site. Each site was discussed and questions and comments were recorded.

Items discussed are summarized by plansheet as follows:

1. Title sheet: No comment

2. Sheet 2B-1: No comment

3. Sheet 2B-2 Site 15: A temporary detour of -Y1- is required for construction purposes. -Y1DET- occurs to the north of -Y1- and will temporarily cross stream ESE- S18. The temporary crossing will most likely utilize temporary pipes. -Y1DET- will be removed and the existing channel will be restored. It was requested that a detail showing the restoration of the existing channel configuration be added.

   In addition, it was stated that the JS stream lines of stream ESE-S18 were not showing up and need to be turned on. It was noted to verify that the JS stream lines are appropriately showing up on all plansheets. It was mentioned that a request has been put in to Location and Surveys to have the JS stream line symbology added to the final survey file.

4. Sheet 2B-3: No comment

5. Sheet 4 Site 1: A proposed 48" RCP buried 0.8 Ft. will convey stream ESE- S75 beneath -L-, -Y2FLYCA-, and -Y2RPB- alignments. A junction box is specified near the outlet end of the pipe to align the outlet end of the pipe with the receiving stream. At the outlet end of the cross pipe, bank stabilization will be applied to the jurisdictional stream. It was discussed that in lieu of armoring just the stream banks at the outlet end of pipes in jurisdictional streams, rip rap would

be applied to the stream bed to armor against potential blow holes and scour issues. It was stated that a detail would be provided to show the proposed outlet protection. It was noted that the proposed pipe slopes and corresponding outlet velocities were not known yet for the cross pipes on this project, but each cross pipe would be evaluated to determine where armoring in the stream bed would be appropriate.

It was also discussed that near the inlet end of this crosspipe an 18" pipe will collect ditchline drainage from the north and convey that down existing steep topography into a junction box near the inlet end of the 48" RCP crosspipe previously discussed. At a minimum the crowns of the pipes connecting to the junction box will be matched. The incoming 18" pipe will come in relatively flat to the junction box due to elbows installed along the 18" pipe.

6. Sheet 5/Sheet 16 Site 2: Overland flow coming from plansheet 16 will be conveyed by a system/crosspipe and outleted into a propose base tail ditch. An existing pond indicated as ESE- P8 will be drained and a proposed base tail ditch will be installed. In addition, pond ESE-P16 and pond ESE- P9 will be drained as they will either be impacted by the proposed roadway improvements or be located inside the proposed right of way.

   A question was asked if proposed ditches would be specified in the drained ponds. It was stated that in the past if there is an existing conveyance in the thalweg of the pond then it is preferred to stabilize and utilize the existing conveyance. Otherwise, we would recommend adding a tail ditch and let the Division work the ditch in after the pond has been drained. It was requested that in the permit drawings a note needs to be included stating the intent to drain the ponds. A provide suggested ditch detail should also be provided to ensure positive drainage that will convey the flow post draining the pond.

   There was further discussion on how to drain pond ESE- P9 (which occurs off-line from stream ESE- 20), with the potential of breaching the dam and draining into the adjacent wetland, and eventually –ESE- 20.

7. Sheet 5 Site 3: There is a proposed dual barrel box culvert to convey –ESE- S18. Channel work will be implemented at the inlet and outlet ends to transition back to the existing channel. The proposed dual barrel culvert will consist of both a low flow and a high flow barrel. This is a FEMA detailed study stream and will require a Conditional Letter of Map Revision.

   It was also noted that -Y2FLYCA- is an elevated alignment that will bridge over ESE- S18 near -Y2FLYCA- Sta. 46+00.

8. Sheet 5 Site 4: There is a proposed dual barrel box culvert to convey –ESE- S20. Channel work will be implemented at the inlet and outlet ends to transition back to the existing channel. The proposed dual barrel culvert will consist of both a low flow and a high flow barrel. This is a FEMA detailed study stream and will require a Conditional Letter of Map Revision. A mixture of rock and natural materials was requested to be included within the low flow and high flow barrels.

   There was discussion regarding the 60" CMPs upstream of the culvert and whether to retain or remove. It was noted during a site visit that at the outlet end of the first 60" pipe upstream of the proposed culvert is perched by approximately 5 ft. above the existing channel bed. It was

questioned whether the pipe perch could be reduced or removed entirely to facilitate fish passage. Another suggestion was to remove the first 60" pipe entirely and reestablish a natural channel through this reach and hopefully attain mitigation credit for this activity. The corps will look into potential mitigation credit from the inlet end of the Site 4 culvert up to the second 60" CMP but does not feel that this will qualify for mitigation credit. Current plans state to retain both as grade control. However, it was stated that the Division would be contacted following the meeting to determine their preference on retaining or removing the existing 60" CMPs. *Following the meeting, the Division's preference is to remove the two pipes and stabilize with rip rap for grade control since the pipes are in Right of Way. The Division prefers to not have to deal with the pipes later if/when they fail. This assuming that the drives do not need to be retained for access purposes. The Division is open to natural channel design methods, if credit can be attained for restoring the channel.*

A question was asked about the purpose of the 18" pipe outleting near the inlet of the proposed Site 4 RCBC (-L- Sta. 39+00). This pipe is a link in a proposed storm drainage system required to convey drainage from the -L- alignment. It was reassured that final design will include RIP RAP or other erosion control measure to slow storm drain waters prior to entering the stream.

9. Sheet 5 Site 5: There is a proposed 36" steel cross pipe trenchless installation to replace the existing 36" CMP, conveying ESE- S35. A junction box will be added near the outlet end of the pipe to turn the pipe to outlet into the stream. Bank Stabilization and possibly stream bed stabilization will be provided at the pipe outlet. In addition, system drainage from the -L- alignment will tie into the proposed junction box near the outlet end of the pipe.

   Discussion was had as to if the pipe should be buried 20%. Currently the pipe is listed on the plan sheet as not buried. This will be looked into further to discover if there is a strict reason not to bury.

   A request was made to include a "buried" or "not buried" label on all crosspipes in the permit drawings as well as provide a final list of pipes with details/descriptions.

10. Sheet 5 Site 6: There is proposed roadway fill slightly impacting ESE- W23. It is anticipated that fill in wetlands along with clearing in wetlands impacts at this site. In addition, there will likely be utility impact as well.

11. Sheet 5 Site 7: There will be potential stream impacts to ESE- S20 due to the proposed dual system outleting into the channel. There are no perceived stream impacts associated with the proposed roadway fill at this site. There will likely be bank stabilization added at the pipe outlets.

    The second 60" pipe associated with Site 4 was brought up again, to be retained as grade control assuming CLOMR model does not allow for removal.

12. Sheet 6 Site 8: Existing cross pipe will be filled with flowable fill. New conveyance for ESE- S34 will be a 400+ ft., 72" steel pipe placed with trenchless installation (buried 1 ft). Several junction boxes will be implemented to collect roadway storm drainage systems as well as to align the outlet pipe with the receiving channel. Bank stabilization and possibly stream bed stabilization will be present at the outlet end.

    Concerns were voiced about how water would inlet a short stub out of an 18" pipe at approx. -Y2FLYAB- STA. 17+60 (RT) picking up an existing draw running parallel to the alignment. An additional drainage feature such as a BDO may be required at the inlet of the 18" pipe stub out.

A discussion was had on whether or not to bury the proposed 72" pipe. Upon evaluation of site photos, the general preference is to NOT bury 72" pipe due to steep topography and lack of fines. Because the proposed pipe will not be buried, the pipe diameter should be able to be reduced.

13. Sheet 7: No impacts/No comments
14. Sheet 8: NCDOT will confirm the beginning and end of intermittent JS near -L- Sta. 77+00 (LT). (This stream is possibly stream ESE-S21)
15. Sheet 9: No impacts/No comments
16. Sheet 10: No impacts/No comments
17. Sheet 11 Site 9: Existing 4 barrel box culvert to be extended on inlet and outlet ends. This culvert conveys Fiddler's Creek. There are likely to be channel protection measures taken at the outlet end of the culvert where the extension and drainage ditch converge.

    Preference amongst the group is to utilize the minimum number of barrels and avoid extension on the inlet side. If the extension is implemented on both sides, then we will look into restricting the flow to 2 barrels. There was discussion regarding machinery needed to install said sills with minimal impact, however, due to such a steep fill slope, there will likely be need for machinery to transport equipment down into place. Alternative installation practices are requested if possible. Another option would be to obtain a natural channel width upstream and downstream of the culvert. With this information, it was suggested that the low flow barrel(s) width be matched to the width of the stream. (Example: a 12' wide stream average would yield use of only one of the 12' wide culvert barrels.)

    NCDOT will confirm the beginning/ending of JS of ESE-S29.

    There was also a brief discussion of whether or not the proposed system drainage was adding more water to receiving stream ESE- S28. It was discussed that the existing drainage patterns were being maintained as much as practicable in the station range of -Y2NBL- Sta. 19+00 to 23+00 (LT)
18. Sheet 11 Site 10: This site consists of outlet protection at outfalls and bank stabilization on both banks of stream ESE- S28. It was requested that these individual outfalls be labelled as sites 10A, 10B, and 10C.
19. Sheet 12: NCDOT will confirm the beginning/ending of JS of ESE-S32.
20. Sheet 13 Site 11: Consists of a proposed 48" CSP with outlet protection along with an existing 24" RCP with proposed outlet protection outleting to stream ESE- S31. NCDOT will determine where the stream begins (add note for start point). System will not be buried since jurisdictional stream does not begin upstream of pipe.

    There was concern about utility towers near -Y2NBL- Sta. 61+00 to 63+00 (LT). It was asked that drainage work be avoided under the aerial lines in order to avoid relocation of aerial utility lines.
21. Sheet 14 Site 12: A new 60" cross pipe to be used to convey stream ESE- S74. The original 42" cross pipe will be filled with flowable fill. A junction box will be used to turn the pipe and outlet channel work will convey waters to the existing channel. Surface drainage will be let out as well into the rip rap channel prior to entering the stream. –ESE-S74 is NOT jurisdictional on the upstream side of highway 311 therefore there is no need to bury the proposed pipe. A detail of the proposed channel will be needed for permitting.

Utilities will check if an existing 30" Ductile Iron sanitary sewer line is beneath the southernmost end of ESE- S74.

22. Sheet 14 Site 13: South Fork Muddy Creek is to be conveyed by extending the existing triple barrel box culvert (3 @ 8x8). The extension is on outlet end. There will be surface drainage out letting near the culvert outlet. Outlet protection in the form of a rip rap channel is included for the surface drainage system. It was requested to verify the natural channel width upstream and downstream of the culvert to obtain the general stream width to verify that all three barrels are required for the low flow condition.

    There will be wetlands impacts due to the proposed fill slope of -Y2FLYCA-. ESE-S36 will need a separate site number. Natural channel width of South Fork Muddy Creek will need to be verified to match to box width (minimum number of boxes used for low flow). Slope of proposed extension will be reviewed to determine the appropriate means of sizing and orienting the outlet extension (Option 1 being to match the top slab and extend with a segment of box that is taller than existing and have bed material in the base or Option 2 utilize the same dimension box culvert and extend on the slope of the stream).

    It was noted that toe protection is needed in wetland ESE- W57 at the toe of the fill slope from approx. -Y2FLYCA- STA. 15+75 to 17+50 (RT). Also, it was noted that the storm drain system pipe paralleling the above mentioned toe of fill will be buried beneath the roadway fill slope.

23. Sheet 14 Site 14: The proposed roadway fill will cover a portion of wetland ESE- W24 and there will be some impacts to stream ESE- S37 where the stream will be conveyed via a proposed 36" RCP cross pipe to a proposed tail ditch that ties to South Fork Muddy Creek. It was requested that an enlargement of this area be provided with the permit drawing packet.

    A portion of wetland extends north of the CA fencing near -Y2RPB- STA. 40+50 (RT). This portion of wetlands will be a total take. Hatching will only include what's in the ROW, but totals in the Permit Drawings will indicated the wetland area north of the CA fencing. A note will be added to the plansheet indicating this portion of wetlands as a total take. It will be noted in the Wetland Totals sheet as well.

    It was discussed that for pipe numbers 1443 and 1444 (36" RCP and 54" RCP cross pipes beneath -Y2RPB-), a 20' width of clearing impacts will be added for construction of the proposed pipe outlets. If grubbing is required, mechanized clearing is to be specified.

24. Sheet 15: No impacts/No comments

25. Sheet 16 Site 2: Other portion of site 2 discussed on Sheet 5 Site 2. No comments.

26. Sheet 17: No impacts/No comments

A discussion was had that the LET date for this project is Oct. 20, 2020. It was mentioned that the from Hydro date is November 2017 and that the project is being accelerated. Bill Elam then adjourned the meeting.

January 16, 2019

Subject: Minutes of the (4C) Merger Meeting on
December 12, 2018 for U-2579AA, Forsyth County

Participants:

Team Members:

Felix Davila, FHWA (present)
Clarence Coleman, FHWA (not present)
Donnie Brew, FHWA (not present)
Nicholle Braspennickx, USACE (call in)
Monte Mathews, USACE (present)
Allison White, PMU (present)
Pam Williams, PMU (not present)
Bob Deaton, PMU (not present)
Dave Wanucha, NCDWR (call in)
Marla Chambers, NCWRC (call in)
Christopher Militscher, USEPA (not present)
Amenatta Sommerville, USEPA (not present)
Marella Buncick, USFWS (not present)
Renee Gledhill-Earley, SHPO (not present)

Support Staff:

Craig Lee, NCDOT Hydraulics
Max Price, Wetherill
Forrest Brooks, Wetherill
Amy Euliss, Division DEO
Tatia White, NCDOT-Roadway
William Barrett, EAU
Ron Johnson, EAU

General Comments:

Add blowup insert rectangles/labels to all pages needing a blowup (for reference).
A table was requested with cross pipe sizes, buried or not buried, and burial depth.
The total wetland impacts are approximately 1/3 acre above the original estimate.
WEI has compared the current impacts with the original impacts. and provide an explanation of where and why the additional impacts occurred.
Update details AD; AE; and AF to have a "Keyed in" note
Add inlet protection in the form of Bank Stabilization to the inlet end of Cross Pipes in JS Streams.
Include a pay item in the contract for fish relocation for the ponds that are to be drained.
Revise the line work for the ponds to a JS line style.

Permit Sheets 4 & 5:

Site 1: It was requested that the Rip Rap outlet dissipator pad at the outlet end of the 18" pipe be aimed towards the stream rather than parallel.
At inlet add "bank stabilization" and provide its own line in impact table.

Permit Sheets 7 & 8:

Site 2A: A "remove pipe" label is needed for the pipe between the two ponds.

Site 2B: A note is needed stating that the location of the channel is approximate, and it may require field adjustment after the pond is drained.

Permit Sheet 9:

Site 3: Culvert labels need to be added for the RCBC.

Site 4: Culvert labels need to be added for the RCBC.
Instead of the Rip Rap pad at the outlet of the 18" RCP outlet, extend the bank stabilization on the left bank of South Fork Muddy Creek.

Permit Sheet 10:

Site 5: Wetland level on this page needs to be turned back on.
Hand Clearing hatching needs to be modified to Mechanized Clearing.
The JS and wetland levels will be double checked to verify that they will print appropriately.

Site 5A: Insure that Rip Rap extends beyond the scour hole and adjust the Temporary stream impacts to be 20 feet +/- beyond the rip rap

Site 5B: The location of the bank stabilization and the label needs to be clarified, the label adjusted and the need for temporary easement investigated.
There was a discussion about retaining or removing the 60" drive pipe. The plans and Right of Way are currently showing the drive and pipe to be retained. Roadway stated that the parcel could be a MAP ACT parcel and if so would be a total take. This will need to be clarified and if it is determined that the pipe should be removed the plans, permit drawings and FEMA model will need to be revised.

Site 6: Add Bank Stabilization Rip Rap to the inlet end of the 36' Pipe and revise impacts accordingly.
Add detail label for rip rap at 36" pipe outlet.

Site 6A: See General Comments

Permit Sheets 10A & 10B:

Site 3A: Add Bank Stabilization label and Detail for rip rap upstream of detour bridge.
The need for the impacts from shading shown under the detour bridge was discussed and it was decided to leave as shown.

Permit Sheet 11:

Site 3 Profile: Revise the culvert description to include a 1-foot sill in the low flow barrel as well as the 2-foot sill in the high flow barrel.

Permit Sheet 12:

Site 4 Profile: Revise the culvert description to include a 1-foot sill in the low flow barrel as well as the 2-foot sill in the high flow barrel.

Permit Sheets 13 & 14:

Site 7: Extend the Temporary Stream impact to the PDE on the outlet end of the 72" pipe.
Remove the Site 5B label in top left corner.

Permit Sheet 15:

Site 7: Correct printing issue with this enlargement sheet.

Permit Sheets 16, 17 & 18:

Site 8: No comments

Site 9: A discussion was had as to why the mechanically cleared area in the wetland and easement is required. Max Price stated he will follow up with the erosion control designer to verify that this area is needed, and if not, a follow-up discussion will occur to confirm whether or not this area will need to be cleared.

Site 10: The rock plating on the fill slopes was discussed, it was explained that the rock plating was used to avoid the impacts to Fiddlers Creek that would have resulted from extending the RCBC. Marla Chambers inquired about the flow pattern in the existing culvert, and whether or not sills should be added. The consensus of the group appeared to be to minimize impacts and leave the culvert as existing.

Sites 10A-10C: No comments

Site 10D: This site falls along the plan sheet match-line. Amy Euliss requested that Plan Sheet 12 be included in the permit drawings. It was explained that there are no impacts on plan sheet 12. Max Price stated that a blowup of the area along the cutline would be included in a drawing iteration to see if this could satisfy the request. If more clarification is requested, the final permit drawings will include plan sheet 12.

Site 11: This site is similar to Site 9 in that it will be checked for impacts from erosion control practices.

Permit Sheets 19 & 20:

Cross-Sections: No comments

Permit Sheets 21 & 22:

Site 12: Again, plan sheet 12 was requested to determine what is occurring on the inlet end of the 48" pipe. It was explained that the upstream portion of the water feature is non-jurisdictional. It was requested that a "Begin JS" label be added to the stream at the 48" pipe outlet.

Permit Sheets 23 & 24:

See Permit Sheet 25 Enlargement for comments.

Permit Sheet 25:

Site 13: Add bank stabilization rip rap to inlet end. This would be strictly a hydraulic addition, and would have no permit impacts. Add a "Begin JS" label at the outlet end of the existing 42" pipe.

Site 14: Move Site labels for better visibility.

Site 14A: The line work for the JS stream coming out of the wetlands was discussed. A review of the line work in the Final Survey file and the Wetland file will be made to verify that the JS features are drawn correctly and revised as necessary. No permit totals will be affected by this. The "Begin JS" label should be moved for better visibility.

Site 14B: No comments.

Site 15: Add bank stabilization rip rap at the inlet of the 36" pipe. This will change the Mechanized Clearing to Fill in this area. Also, the bank stabilization total will be separated into a new line item on the wetland summary sheet.

Site 15A: The permit totals will need to be updated with the hatching changes. It was also requested to hatch the remnant wetland are outside the R/W and leave the note that is currently on the plan sheet.

Permit Sheet 26:
Site 14 Profile: No Comments.

Permit Sheets 27 & 28:
Cross-Sections: No Comments

Permit Sheet 29 & 30:
Site 2: This is the remainder of the pond shown on Permit Sheets 7 & 8

Permit Sheet 31:
Detour Bridge Profile: No Comments.

Max Price, PE
Forrest Brooks, EI
Wetherill Engineering Inc.

559 Jones Franklin Road
Suite 164
Raleigh, North Carolina 27606

Phone: 919.851.8077
Fax: 919.851.8107
wei@wetherilleng.com

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.07; Released October 2016)

WBS Element: 34839.1.7 **TIP No.:** U-2579AA **County(ies):** Forsyth

General Project Information

WBS Element:	34839.1.7	**TIP Number:**	U-2579AA	**Project Type:**	New Location
Date:	5/2/2018				
NCDOT Contact:	Amy Euliss	**Contractor / Designer:**	Wetherill Engineering		
Address:	Highway Division 9 375 Silas Creek Parkway Winston Salem, 27127	**Address:**	1223 Jones Franklin Rd. Raleigh, NC 27606		
Phone:	336-747-7800	**Phone:**	919-851-8077		
Email:	aeuliss@ncdot.gov	**Email:**	mprice@wetherilleng.com		
City/Town:	Winston Salem	**County(ies):**	Forsyth		
River Basin(s):	Yadkin-Pee Dee	**CAMA County?**	No		
Wetlands within Project Limits?	Yes				

Project Description

Project Length (lin. miles or feet):	1.54	**Surrounding Land Use:**	Woodlands, Residential, Industrial, and Agriculture
	Proposed Project		**Existing Site**
Project Built-Upon Area (ac.)	56.6 ac.		29.2 ac.
Typical Cross Section Description:	6-Lane Divided Highway; Pavement varies 24' to 36' in each direction with 14' shoulders (12' paved) and 70' grassed median.		4-Lane Divided Highway; 24' pavement width in each direction with 14' shoulders (12' paved) and 70' grassed median.
Annual Avg Daily Traffic (veh/hr/day):	Design/Future: 16,400 Year: 2040		Existing: 10,733 Year: 2020

General Project Narrative: (Description of Minimization of Water Quality Impacts)

This roadway project is part of the Northern Beltway Eastern Section. The U2579AA portion is from US 311 to I-40 (Future I-74). The surrounding area consists of multi-family residential neighborhoods with light industrial, woods, and agriculture sporadically interspersed. The project mainline will have a typical sections that predominately consist of a divided highway with a 70' median at 8:1 slopes where 62' is grass lined with non-erosive velocities throughout the project to the extent practicable. Approximately 17,000 ft. of ditchline in the medians and along the sideslopes maintained non errosive velocities during 2 year storms and meet grass swale criteria. Minimum measures used on this project include: 1. Maximizing shoulder sections, including along the Y2NBL and Y2SBL chains where shoulders bordering the medians were maintained at 8' width, allowing runoff to remain in a diffuse flow pattern to encourage passive stormwater treatment over vegetative areas adjacent to the roadway. 2. minimizing roadway sideslopes in areas without shoulderberm gutter, encouraging sheet flow of runoff, reducing runoff velocity, and increasing infiltration. 3. Implementing an alignment minimizing stream impacts related to stream crossings, including new location culverts which maintain existing stream integrity. 4. Providing adequate ground cover by using gently sloping side slopes and ditch slopes which contribute to non-erosive runoff velocities. 5. Stabilized embankments and drainage ditches with RR where velocities could potentially become erosive. 6. Providing adequate energy dissipation at pipe outlets. 7. Utilizing natural features and drainage pathways, for example placing a drainage ditch along the former pond paralleling Y2RPB.

Waterbody Information

Surface Water Body (1):	Fiddlers Creek	**NCDWR Stream Index No.:**	12-94-13-3		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C		
		Supplemental Classification:			
Other Stream Classification:					
Impairments:	None				
Aquatic T&E Species?		Comments:			
NRTR Stream ID:	ESE-S30			**Buffer Rules in Effect:**	N/A
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A
Deck Drains Discharge Over Water Body?	No	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)	
(If yes, provide justification in the General Project Narrative)					

North Carolina Department of Transportation

Highway Stormwater Program

STORMWATER MANAGEMENT PLAN

FOR NCDOT PROJECTS

(Version 2.07; Released October 2016)

Additional Waterbody Information

Surface Water Body (2):	Swaim Creek		**NCDWR Stream Index No.:**	12-94-13-1		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C			
		Supplemental Classification:				
Other Stream Classification:						
Impairments:	None					
Aquatic T&E Species?		Comments:				
NRTR Stream ID:	ESE-S18			**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

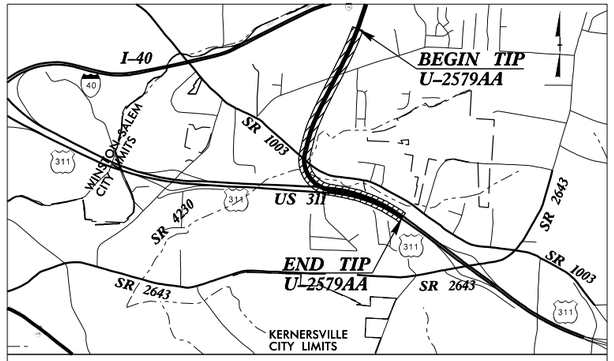
Surface Water Body (3):	South Fork Muddy Creek		**NCDWR Stream Index No.:**	12-94-13		
NCDWR Surface Water Classification for Water Body		**Primary Classification:**	Class C			
		Supplemental Classification:				
Other Stream Classification:						
Impairments:	None					
Aquatic T&E Species?		Comments:				
NRTR Stream ID:	ESE-S20			**Buffer Rules in Effect:**	N/A	
Project Includes Bridge Spanning Water Body?	No	**Deck Drains Discharge Over Buffer?**	N/A	**Dissipator Pads Provided in Buffer?**	N/A	
Deck Drains Discharge Over Water Body?	N/A	(If yes, provide justification in the General Project Narrative)		(If yes, describe in the General Project Narrative; if no, justify in the General Project Narrative)		
(If yes, provide justification in the General Project Narrative)						

09/08/99

TIP PROJECT: U-2579AA

CONTRACT:

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



VICINITY MAP NOT TO SCALE

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

FORSYTH COUNTY

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED	STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
	N.C.	U-2579AA	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
34839.1.7	N/A	PE
34839.2.3	N/A	ROW, UTIL.
34839.3.GV3	N/A	CONSTRUCTION

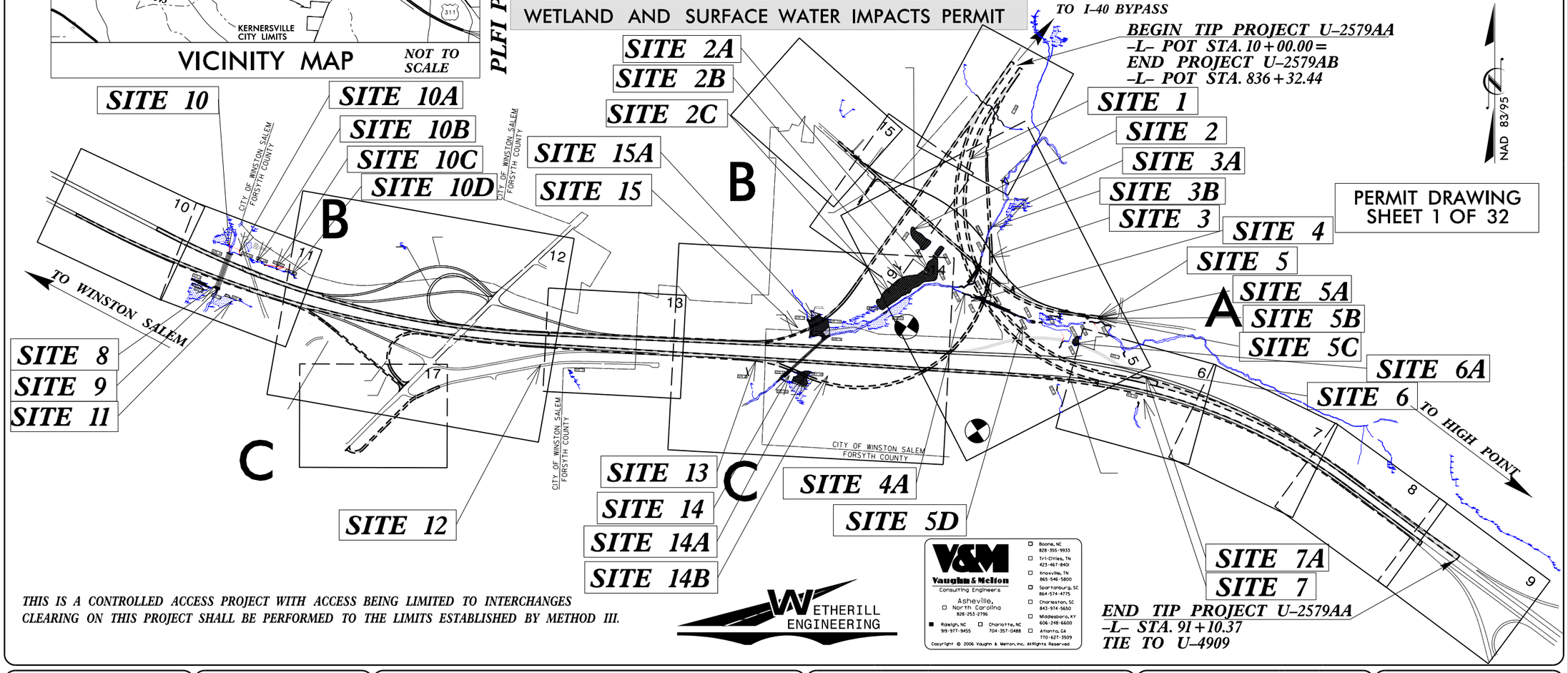
LOCATION: WINSTON-SALEM NORTHERN BELTWAY EASTERN SECTION (FUTURE I-74) FROM US 311 TO I-40

TYPE OF WORK: GRADING, PAVING, CULVERTS, RETAINING WALLS, DRAINAGE & STRUCTURES

PLFI PLANS

WETLAND AND SURFACE WATER IMPACTS PERMIT





PERMIT DRAWING
SHEET 1 OF 32

END TIP PROJECT U-2579AA
-L- STA. 91+10.37
TIE TO U-4909

THIS IS A CONTROLLED ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.

WETHERILL ENGINEERING

V&M Vaughn & Melton Consulting Engineers
Asheville, North Carolina 828-253-2796
Boone, NC 828-355-9933
Tri-Cities, TN 423-467-8401
Knoxville, TN 865-546-5800
Spartanburg, SC 864-574-4775
Charleston, SC 843-974-5650
Middlesboro, KY 606-248-6600
Raleigh, NC 919-977-9455
Charlotte, NC 704-357-0488
Atlanta, GA 770-627-3509
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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 2020 = 10,733
ADT 2040 = 16,400
K = 9 %
D = 60 %
T = 7 % *
V = 70 MPH
* (TTST = 4% & DUAL = 3%)
FUNC CLASS = INTERSTATE
STATEWIDE TIER

PROJECT LENGTH

LENGTH OF ROADWAY TIP PROJECT U-2579AA = 1.524 MILES
LENGTH OF STRUCTURES TIP PROJECT U-2579AA = 0.012 MILES
TOTAL LENGTH TIP PROJECT U-2579AA = 1.536 MILES

Prepared In the Office of:
VAUGHN & MELTON, INC
3509 Haworth Dr. #100, Raleigh NC, 27609 Phone (919)-977-9455

2018 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: AUGUST 31, 2018

LETTING DATE: OCTOBER 18, 2022

NCDOT CONTACT: PAMELA R. WILLIAMS

JOHN LANSFORD, PE
PROJECT ENGINEER

WARREN JOHNSON
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE:

ROADWAY DESIGN ENGINEER

SIGNATURE:

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION

5/11/2021
R:\Hydraulics\PERMITS_Environmental\Drawings\u2579aa_prm_tsh.dgn
USER: MHarvey

8/17/99

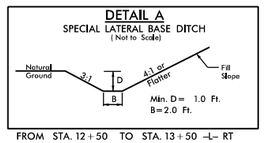
PROJECT REFERENCE NO.	SHEET NO.
	2D-1
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

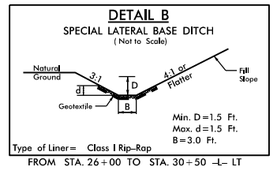
PERMIT DRAWING SHEET 2 OF 32

DETAIL A
SPECIAL LATERAL BASE DITCH
(Not to Scale)



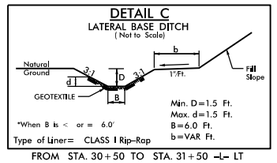
FROM STA. 12+50 TO STA. 13+50 –L– RT

DETAIL B
SPECIAL LATERAL BASE DITCH
(Not to Scale)



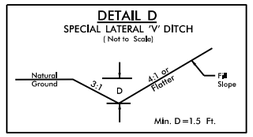
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FROM STA. 26+00 TO STA. 30+50 –L– LT

DETAIL C
LATERAL BASE DITCH
(Not to Scale)



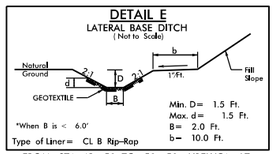
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FROM STA. 30+50 TO STA. 31+50 –L– LT

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



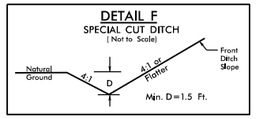
FROM STA. 21+50 TO STA. 22+00 –Y2FLYCA– RT
FROM STA. 71+80 TO STA. 73+29 –Y2SBL– RT
FROM STA. 43+20 TO STA. 47+07 –Y2RPB– RT
FROM STA. 51+00 TO STA. 53+00 –Y2FLYCA– LT
FROM STA. 71+00 TO STA. 73+00 –L– LT
FROM STA. 31+00 TO STA. 33+00 –Y2FLYAB– LT
FROM STA. 36+87 TO 38+00 –L– RT

DETAIL E
LATERAL BASE DITCH
(Not to Scale)



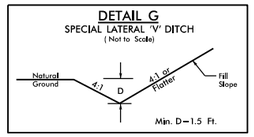
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FROM STA. 49+50 TO 50+50 –Y2FLYCA– LT

DETAIL F
SPECIAL CUT DITCH
(Not to Scale)



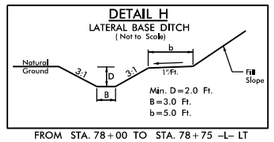
STA. 50+00 TO STA. 50+50 –L– LT
FROM STA. 54+34 TO STA. 64+34 –Y2NBL– LT
FROM STA. 66+84 TO STA. 67+10 –Y2NBL– LT
FROM STA. 68+78 TO STA. 71+00 –L– LT
FROM STA. 10+50 TO STA. 11+50 –Y2RPC– RT
FROM STA. 35+50 TO STA. 37+00 –Y2RPB– LT
FROM STA. 90+50 TO STA. 100+00 –Y2NBL– LT
FROM STA. 37+00 TO STA. 37+31 –Y2FLYAB– LT

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



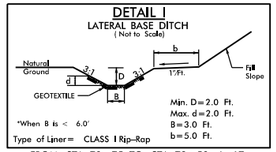
FROM STA. 70+80 TO STA. 71+80 –Y2SBL– RT
FROM STA. 37+50 TO STA. 38+00 –Y2RPB– RT
FROM STA. 50+50 TO STA. 51+50 –L– LT
FROM STA. 75+00 TO STA. 75+50 –L– LT

DETAIL H
LATERAL BASE DITCH
(Not to Scale)



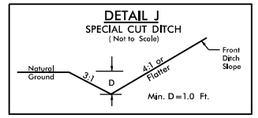
FROM STA. 78+00 TO STA. 78+75 –L– LT

DETAIL I
LATERAL BASE DITCH
(Not to Scale)



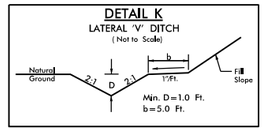
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FROM STA. 78+75 TO STA. 79+50 –L– LT

DETAIL J
SPECIAL CUT DITCH
(Not to Scale)



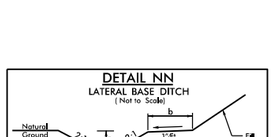
FROM STA. 17+75 TO STA. 19+50 –Y1REV– LT
FROM STA. 42+50 TO STA. 47+48 –Y1REV– LT

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



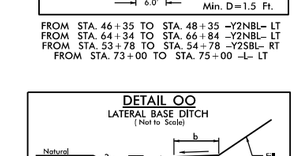
FROM STA. 19+50 TO STA. 21+86 –Y1REV– LT
FROM STA. 35+50 TO STA. 37+30 –Y1REV– RT
FROM STA. 13+36 TO STA. 16+50 –Y3RPC– RT
FROM STA. 18+50 TO STA. 21+00 –Y1DET– LT

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



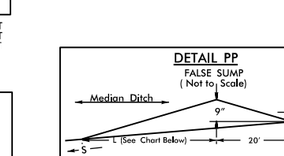
FROM STA. 39+50 TO STA. 41+50 –Y1REV– LT

DETAIL M
BERM BASE DITCH
(Not to Scale)



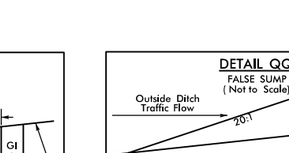
FROM STA. 24+00 TO STA. 24+70 –Y2RPB– RT

DETAIL N
BERM BASE DITCH
(Not to Scale)



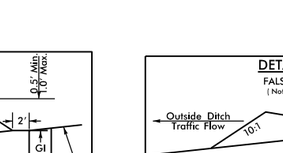
Type of Liner= CL I ? Rip-Rap
FROM STA. 36+50 TO STA. 38+00 –Y2RPB– RT

DETAIL O
LATERAL BASE DITCH
(Not to Scale)



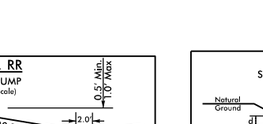
Type of Liner= CL I Rip-Rap
FROM STA. 38+50 TO STA. 39+50 –Y2RPB– RT

DETAIL P
LATERAL BASE DITCH
(Not to Scale)



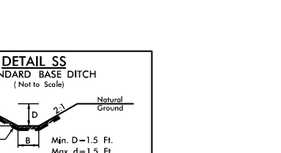
Type of Liner= CL I Rip-Rap
FROM STA. 25+50 TO STA. 27+00 –Y1REV– LT

DETAIL Q
SPECIAL CUT DITCH
(Not to Scale)



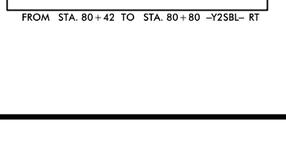
FROM STA. 41+50 TO STA. 42+50 –Y1REV– LT

DETAIL R
LATERAL BASE DITCH
(Not to Scale)



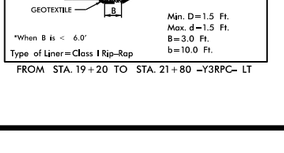
FROM STA. 20+50 TO STA. 21+75 –Y3RPC– RT
FROM STA. 37+00 TO STA. 39+50 –Y1REV– LT

DETAIL S
LATERAL BASE DITCH
(Not to Scale)



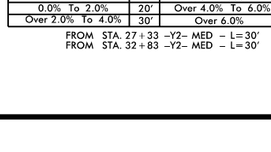
Type of Liner= CL I Rip-Rap
FROM STA. 39+50 TO STA. 41+00 –Y2RPB– RT

DETAIL T
LATERAL BASE DITCH
(Not to Scale)



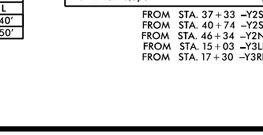
Type of Liner= CL B Rip-Rap
FROM STA. 41+50 TO STA. 43+20 –Y2RPB– RT

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



FROM STA. 10+05 TO STA. 10+55 –Y2NBL– RT
FROM STA. 10+04 TO STA. 11+54 –Y2SBL– LT
FROM STA. 16+55 TO STA. 19+57 –Y2SBL– LT
FROM STA. 35+89 TO STA. 38+88 –Y2NBL– LT
FROM STA. 38+88 –Y2NBL– TO STA. 14+50 –Y3LPB– LT
FROM STA. 13+14 TO STA. 14+00 –Y3LPC– RT

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



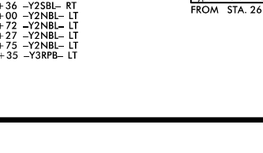
FROM STA. 10+50 TO STA. 15+00 –Y4– LT
FROM STA. 15+50 TO STA. 16+00 –Y4– LT
FROM STA. 15+50 TO STA. 18+75 –Y3LPC– LT
FROM STA. 10+55 TO STA. 11+38 –Y2NBL– RT
FROM STA. 15+52 TO STA. 19+20 –Y2SBL– RT
FROM STA. 16+20 TO STA. 17+00 –Y3LPB– RT
FROM STA. 44+00 TO STA. 45+00 –L– RT
FROM STA. 14+00 TO STA. 16+95 –Y1DET– RT

DETAIL W
LATERAL BASE DITCH
(Not to Scale)



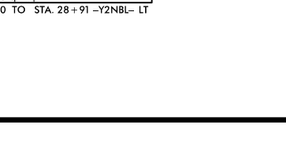
FROM STA. 23+06 TO STA. 26+00 –Y2SBL– RT

DETAIL X
STANDARD BASE DITCH
(Not to Scale)



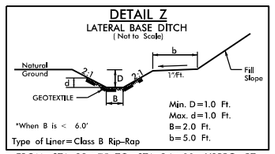
FROM STA. 31+61.4 TO STA. 35+16.61 –Y2SBL– RT
FROM STA. 15+62.80 TO STA. 17+64.59 –Y2NBL– LT
FROM STA. 23+69 TO STA. 27+82 –Y1REV– RT DDE = 2040
FROM STA. 44+33 TO STA. 44+78 –L– LT DDE = 10 CY
FROM STA. 28+10 TO STA. 35+45 –Y2RPB– LT DDE = 130 CY
(Profile should be determined by contractor after the pond is drained)

DETAIL Y
LATERAL BASE DITCH
(Not to Scale)



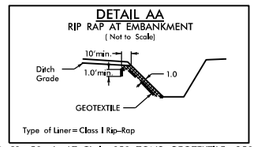
Type of Liner= Class I Rip-Rap
FROM STA. 17+50 TO STA. 20+00 –Y3RPC– RT
FROM STA. 22+00 TO STA. 22+75 –Y3RPC– RT
FROM STA. 14+74 TO STA. 15+15 –Y2FLYCA– RT

DETAIL Z
LATERAL BASE DITCH
(Not to Scale)



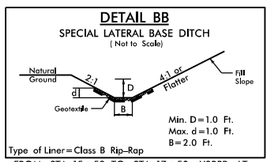
Type of Liner= Class B Rip-Rap
FROM STA. 22+75 TO STA. 24+00 –Y3RPC– RT

DETAIL AA
RIP RAP AT EMBANKMENT
(Not to Scale)



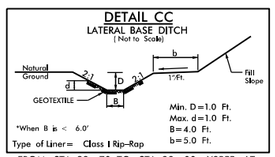
Type of Liner= Class I Rip-Rap
STA. 31+50 –L– LT CL I =150 TONS; GEOTEXTILE=250 SY
STA. 44+96 –Y1REV– RT CL I =11 TONS; GEOTEXTILE=18 SY
STA. 17+64 –Y2NBL– LT CL I =1 TONS; GEOTEXTILE=3 SY
STA 79+91 –Y2NBL– LT CL I =45 TONS; GEOTEXTILE=75 SY
STA 79+63 –Y2NBL– LTCL I =45 TONS; GEOTEXTILE=75 SY
STA. 25+95 –Y2SBL– RTCL I =35 TONS; GEOTEXTILE=60 SY
STA. 22+65 –Y3RPB– LT CL I =6 TONS; GEOTEXTILE=10 SY
STA. 22+68 –Y3RPB– RT CL I =4 TONS; GEOTEXTILE=7 SY
STA. 15+85 –Y3LPB– LT CL I =3 TONS; GEOTEXTILE=5 SY
STA. 26+00 –Y1DET– LT CL I =3 TONS; GEOTEXTILE=5 SY
STA. 26+35 –Y1DET– LT CL I =3 TONS; GEOTEXTILE=5 SY
STA. 35+50 –Y2RPB– LT CL I =13 TONS; GEOTEXTILE=22 SY
STA. 24+42 –Y2FLYAB– LT CL I =42 TONS; GEOTEXTILE=70 SY

DETAIL BB
SPECIAL LATERAL BASE DITCH
(Not to Scale)



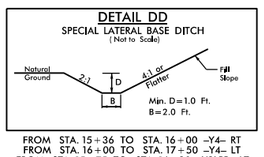
Type of Liner= Class B Rip-Rap
FROM STA. 15+53 TO STA. 17+50 –Y3RPB– LT
FROM STA. 24+00 TO STA. 25+50 –Y3RPC– RT
FROM STA. 18+00 TO STA. 18+50 –Y1DET– RT

DETAIL CC
LATERAL BASE DITCH
(Not to Scale)



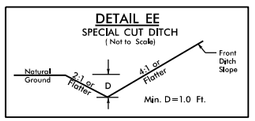
Type of Liner= Class I Rip-Rap
FROM STA. 22+70 TO STA. 23+00 –Y3RPB– LT
FROM STA. 13+75 TO STA. 15+53 –Y3RPB– LT

DETAIL DD
SPECIAL LATERAL BASE DITCH
(Not to Scale)



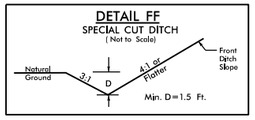
FROM STA. 15+36 TO STA. 16+00 –Y4– RT
FROM STA. 16+00 TO STA. 17+50 –Y4– LT
FROM STA. 15+75 TO STA. 16+20 –Y3LPB– LT
FROM STA. 23+00 TO STA. 23+50 –Y3RPB– RT
FROM STA. 16+95 TO STA. 18+00 –Y1DET– RT

DETAIL EE
SPECIAL CUT DITCH
(Not to Scale)



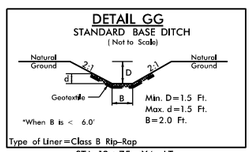
FROM STA. 41+21 TO STA. 44+71 –Y2SBL– RT
FROM STA. 30+88 TO STA. 36+00 –Y2NBL– LT
FROM STA. 17+00 TO STA. 17+50 –Y3RPB– RT
FROM STA. 21+00 TO STA. 22+00 –Y4– LT
FROM STA. 32+00 TO STA. 32+38 –Y1DET– RT
FROM STA. 31+00 TO STA. 32+50 –Y1DET– LT

DETAIL FF
SPECIAL CUT DITCH
(Not to Scale)



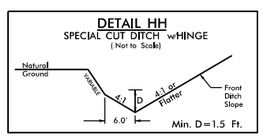
FROM STA. 48+35 TO STA. 54+34 –Y2NBL– LT
FROM STA. 54+78 TO STA. 61+30 –Y2SBL– RT
FROM STA. 20+50 TO STA. 21+50 –Y2FLYCA– RT

DETAIL GG
STANDARD BASE DITCH
(Not to Scale)



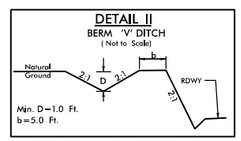
Type of Liner=Class B Rip-Rap
STA. 12+75 –Y4– LT
FROM STA. 25+00 TO STA. 26+00 –L– LT

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



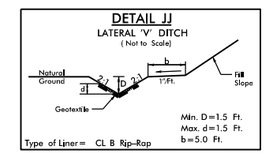
FROM STA. 46+35 TO STA. 48+35 –Y2NBL– LT
FROM STA. 64+34 TO STA. 66+84 –Y2NBL– LT
FROM STA. 53+78 TO STA. 54+78 –Y2SBL– RT
FROM STA. 73+00 TO STA. 75+00 –L– LT

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



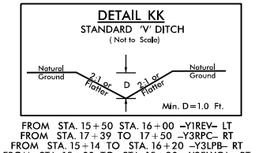
FROM STA. 41+50 –Y2– TO STA. 14+50 –Y3LPC– LT
FROM STA. 12+87 TO STA. 13+87 –Y3LPB– RT

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



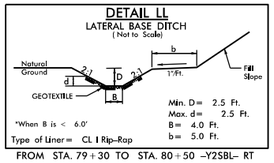
Type of Liner= CL B Rip-Rap
FROM STA. 22+50 TO STA. 26+30 –Y2FLYCA– RT

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



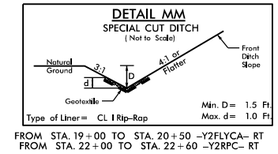
FROM STA. 15+50 TO STA. 16+00 –Y1REV– LT
FROM STA. 17+39 TO 17+50 –Y3RPC– RT
FROM STA. 15+14 TO STA. 16+20 –Y3LPB– RT
FROM STA. 15+00 TO STA. 15+20 –Y2FLYCA– RT

DETAIL LL
LATERAL BASE DITCH
(Not to Scale)



Type of Liner= CL I Rip-Rap
FROM STA. 79+30 TO STA. 80+50 –Y2SBL– RT

DETAIL MM
SPECIAL CUT DITCH
(Not to Scale)

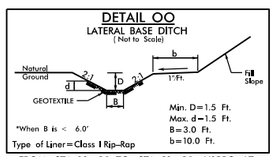


FROM STA. 19+00 TO STA. 20+50 –Y2FLYCA– RT
FROM STA. 22+00 TO STA. 22+60 –Y2RPC– RT

DETAIL NN
LATERAL BASE DITCH
(Not to Scale)

FROM STA. 80+42 TO STA. 80+80 –Y2SBL– RT

DETAIL OO
LATERAL BASE DITCH
(Not to Scale)



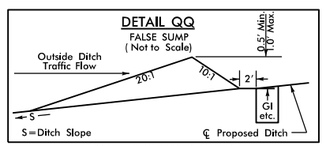
Type of Liner=Class I Rip-Rap
FROM STA. 19+20 TO STA. 21+80 –Y3RPC– LT

DETAIL PP
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'

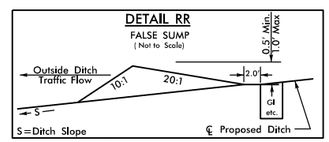
FROM STA. 27+33 –Y2– MED – L=30'
FROM STA. 32+83 –Y2– MED – L=30'

DETAIL QQ
FALSE SUMP
(Not to Scale)



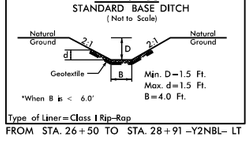
FROM STA. 37+33 –Y2SBL– RT
FROM STA. 40+74 –Y2SBL– RT
FROM STA. 46+34 –Y2NBL– LT
FROM STA. 15+03 –Y3LPB– RT
FROM STA. 17+30 –Y3RPC– RT

DETAIL RR
FALSE SUMP
(Not to Scale)



FROM STA. 19+36 –Y2SBL– RT
FROM STA. 38+00 –Y2NBL– LT
FROM STA. 35+72 –Y2NBL– LT
FROM STA. 37+75 –Y2NBL– LT
FROM STA. 23+35 –Y3RPB– LT

DETAIL SS
STANDARD BASE DITCH
(Not to Scale)



Type of Liner=Class I Rip-Rap
FROM STA. 26+50 TO STA. 28+91 –Y2NBL– LT

6/3/202
11:25:29
USERNAME

8/17/99

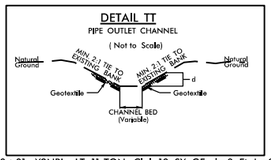
PROJECT REFERENCE NO.	SHEET NO.
	2D–2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

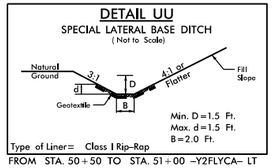
PERMIT DRAWING
SHEET 3 OF 32

DETAIL TT
PIPE OUTLET CHANNEL
(Not to Scale)



STA. 18+81 –Y2NBL– LT; 11 TON Cl. I; 18 SY GF; d=3 Ft; L=26 Ft
STA. 21+62 –Y2NBL– LT; 4 TON Cl. I; 7 SY GF; d=3 Ft; L=8 Ft
STA. 22+95 –Y2NBL– LT; 4 TON Cl. I; 7 SY GF; d=3 Ft; L=8 Ft
STA. 69+45 –Y2NBL– LT; 47 TON Cl. I; 80 SY GF; d=3 Ft; L=20 Ft
STA. 14+75 –L– RT; 7 TON Cl. B; 12 SY GF; d=3 Ft; L=15 Ft
STA. 54+35 –L– RT; 16 TON Cl. I; 27 SY GF; d=5 Ft; L=35 Ft
STA. 23+00 –Y2RPC– RT; 5 TON Cl. B; 9 SY GF; d=3 Ft; L=11 Ft
STA. 41+30 –Y2RPB– RT; 18 TON Cl. B; 31 SY GF; d=3 Ft; L=15 Ft

DETAIL UU
SPECIAL LATERAL BASE DITCH
(Not to Scale)

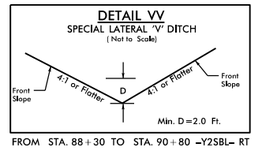


Min. D=1.5 Ft.
Max. d=1.5 Ft.
B=2.0 Ft.

Type of Liner= Class I Rip–Rap

FROM STA. 50+50 TO STA. 51+00 –Y2FLYCA– LT

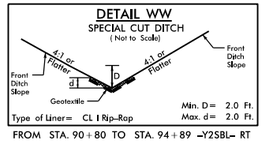
DETAIL VV
SPECIAL LATERAL 'V' DITCH
(Not to Scale)



Min. D=2.0 Ft.

FROM STA. 88+30 TO STA. 90+80 –Y2SBL– RT

DETAIL WW
SPECIAL CUT DITCH
(Not to Scale)

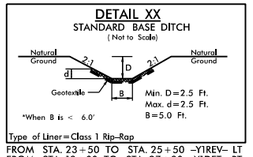


Min. D= 2.0 Ft.
Max. d= 2.0 Ft.

Type of Liner= CL I Rip–Rap

FROM STA. 90+80 TO STA. 94+89 –Y2SBL– RT

DETAIL XX
STANDARD BASE DITCH
(Not to Scale)



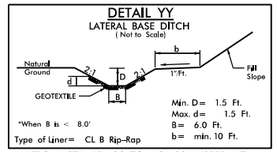
Min. D=2.5 Ft.
Max. d=2.5 Ft.
B=5.0 Ft.

*When B is < 6.0'

Type of Liner=Class I Rip–Rap

FROM STA. 23+50 TO STA. 25+50 –Y1REV– LT
FROM STA. 19+00 TO STA. 27+30 –Y1DET– RT

DETAIL YY
LATERAL BASE DITCH
(Not to Scale)



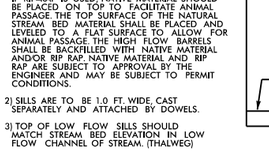
Min. D= 1.5 Ft.
Max. d= 1.5 Ft.
B= 6.0 Ft.
b= min. 10 Ft.

*When B is < 8.0'

Type of Liner= CL B Rip–Rap

FROM STA. 40+86 TO 42+00 –Y2RPB– LT

DETAIL ZZ
SPECIAL CUT DITCH
(Not to Scale)

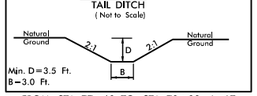


Min. D= 2.0 Ft.
Max. d= 2.0 Ft.

Type of Liner= CL B Rip–Rap

FROM STA. 42+50 TO STA. 43+20 –Y2RPB– LT

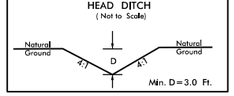
DETAIL AB
TAIL DITCH
(Not to Scale)



Min. D=3.5 Ft.
B=3.0 Ft.

FROM STA. 77+60 TO STA. 78+00 –L– LT

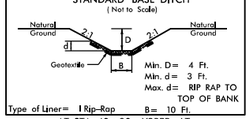
DETAIL AC
HEAD DITCH
(Not to Scale)



Min. D=3.0 Ft.

FROM STA. 21+00 CUL TO 22+11 –Y1REV– RT
STA. 26+78 –Y2RPB– RT

DETAIL AD
STANDARD BASE DITCH
(Not to Scale)

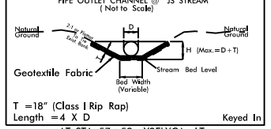


Min. D= 4 Ft.
Min. d= 3 Ft.
Max. d= RIP RAP TO TOP OF BANK
B= 10 Ft.

Type of Liner= I Rip–Rap

AT STA. 40+80 –Y2RPB– LT

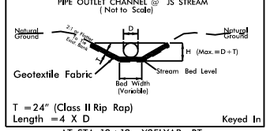
DETAIL AE
PIPE OUTLET CHANNEL @ JS STREAM
(Not to Scale)



T =18" (Class I Rip Rap)
Length =4 X D
Keyed In

AT STA. 57+59 –Y2FLYCA– LT
AT STA. 24+50 –Y2FLYAB– LT

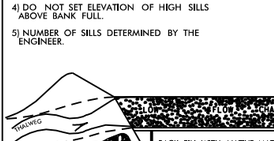
DETAIL AF
PIPE OUTLET CHANNEL @ JS STREAM
(Not to Scale)



T =24" (Class II Rip Rap)
Length =4 X D
Keyed In

AT STA. 18+12 –Y2FLYAB– RT
AT STA. 62+28 –Y2SLB– RT

DETAIL AG
TOE PROTECTION
(Not to Scale)

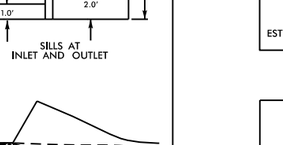


d=1.0 Ft.
b=5.0 Ft.

Type of Liner= Cl. I Rip–Rap

FROM STA. 15+75 TO STA. 17+50 –Y2FLYCA– RT
FROM STA. 22+63 TO 23+63 –Y2RPC– RT
FROM STA. 54+50 TO 55+00 –L– RT
FROM STA. 38+00 TO 40+08 –L– RT

DETAIL AH
LATERAL BASE DITCH
(Not to Scale)



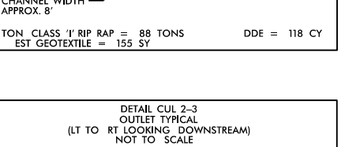
Min. D=1.5 Ft.
Max. d=1.5 Ft.
B=10.0 Ft.
b=5.0 Ft.

*When B is < 6.0'

Type of Liner= Class I Rip–Rap

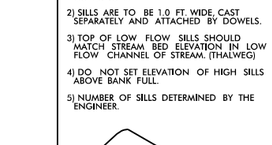
FROM STA. 52+50 TO STA. 53+00 –L– RT
FROM STA. 53+10 TO STA. 54+30 –L– RT

DETAIL AI
FALSE BERM
(Not to Scale)



FROM STA. 26+40 TO STA. 27+50 –Y2RPB– RT

DETAIL AJ
SPECIAL CUT DITCH
(Not to Scale)

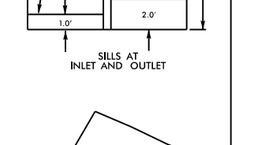


Min. D= 1.5 Ft.
Max. d= 1.0 Ft.

Type of Liner= CL I Rip–Rap

FROM STA. 15+00 TO STA. 16+30 –Y1DET– LT

DETAIL AK
LATERAL BASE DITCH
(Not to Scale)



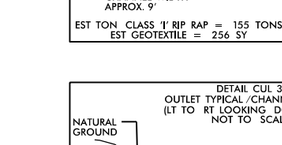
Min. D=1.0 Ft.
Max. d=1.0 Ft.
B=5.0 Ft.
b=5.0 Ft.

*When B is < 6.0'

Type of Liner=Class I Rip–Rap

FROM STA. 16+30 TO STA. 18+50 –Y1DET– LT

DETAIL AL
LATERAL BASE DITCH
(Not to Scale)



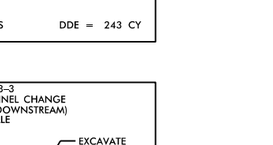
Min. D=1.0 Ft.
Max. d=1.0 Ft.
B=3.0 Ft.
b=5.0 Ft.

*When B is < 6.0'

Type of Liner=CL I Rip–Rap

FROM STA. 21+00 TO STA. 26+00 –Y1DET– LT

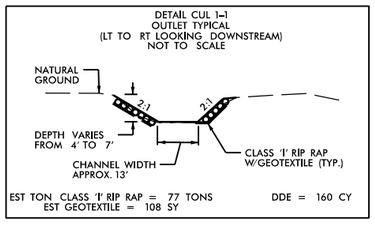
DETAIL AM
SPECIAL LATERAL BASE DITCH
(Not to Scale)



Min. D=1.0 Ft.
B=3.0 Ft.

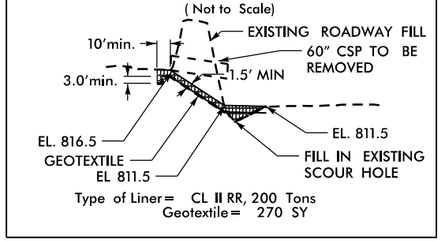
FROM STA. 26+25 TO STA. 30+00 –Y1DET– LT

DETAIL CUL 1–1
OUTLET TYPICAL
(LT TO RT LOOKING DOWNSTREAM)
NOT TO SCALE



EST TON CLASS 'I' RIP RAP = 77 TONS
EST GEOTEXTILE = 108 SY
DDE = 160 CY

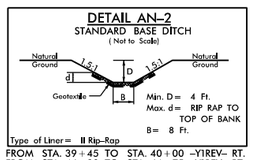
DETAIL AN–1
8' BASE DITCH
w/CL II RIP RAP
(Not to Scale)



Type of Liner= CL II RR, 200 Tons
Geotextile= 270 SY

FROM STA. 39+45 TO STA. 40+00 –Y1REV– RT.

DETAIL AN–2
STANDARD BASE DITCH
(Not to Scale)

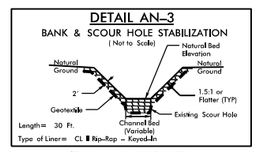


Min. D= 4 Ft.
Max. d= RIP RAP TO TOP OF BANK
B= 8 Ft.

Type of Liner= II Rip–Rap

FROM STA. 39+45 TO STA. 40+00 –Y1REV– RT.
FROM STA. 44+30 TO STA. 44+75 –Y1REV– RT.

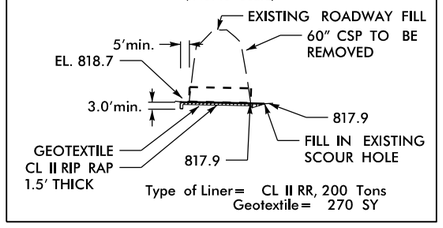
DETAIL AN–3
BANK & SCOUR HOLE STABILIZATION
(Not to Scale)



Length= 30 Ft.
Type of Liner= CL II Rip–Rap – Keyed–In

STA. 40+00 –Y1REV– RT.

DETAIL AN–4
8' BASE DITCH
w/CL II RIP RAP
(Not to Scale)



Type of Liner= CL II RR, 200 Tons
Geotextile= 270 SY

FROM STA. 44+30 TO STA. 44+75 –Y1REV– RT.

DETAIL CUL 2–1
(NOT TO SCALE)
SKEWED MULTI–BARREL CULVERT
LOW FLOW CHANNEL,SILLS
AND FLOOD PLAIN

*NOTES:

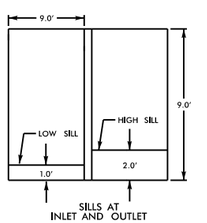
1) NATIVE BED MATERIAL SHALL BE PLACED BETWEEN THE SILLS IN THE LOW FLOW CULVERT. NATIVE MATERIALS CONSIST OF MATERIAL THAT IS EXCAVATED FROM THE THE STREAM BED OR FLOODPLAIN AT THE PROJECT SITE DURING CULVERT CONSTRUCTION. RIP–RAP MAY BE USED TO SUPPLEMENT THE NATIVE MATERIAL. IF RIP–RAP IS USED, NATIVE MATERIAL SHOULD BE PLACED ON TOP TO FACILITATE ANIMAL PASSAGE. THE TOP SURFACE OF THE NATURAL STREAM BED MATERIAL SHALL BE PLACED AND LEVELED TO A FLAT SURFACE TO ALLOW FOR ANIMAL PASSAGE. THE HIGH FLOW BARRELS SHALL BE BACKFILLED WITH NATIVE MATERIAL AND/OR RIP RAP. NATIVE MATERIAL AND RIP RAP ARE SUBJECT TO APPROVAL BY THE ENGINEER AND MAY BE SUBJECT TO PERMIT CONDITIONS.

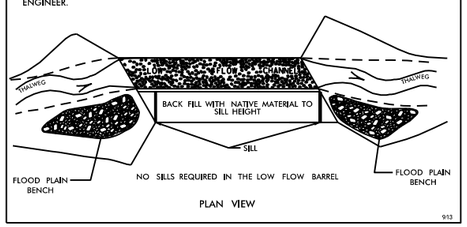
2) SILLS ARE TO BE 1.0 FT. WIDE, CAST SEPARATELY AND ATTACHED BY DOWELS.

3) TOP OF LOW FLOW SILLS SHOULD MATCH STREAM BED ELEVATION IN LOW FLOW CHANNEL OF STREAM. (THALWEG)

4) DO NOT SET ELEVATION OF HIGH SILLS ABOVE BANK FULL.

5) NUMBER OF SILLS DETERMINED BY THE ENGINEER.

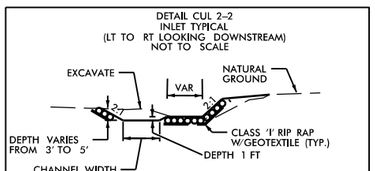




PLAN VIEW

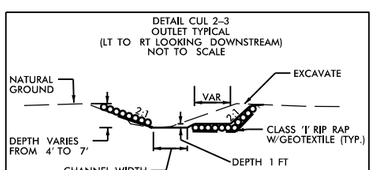
913

DETAIL CUL 2–2
INLET TYPICAL
(LT TO RT LOOKING DOWNSTREAM)
NOT TO SCALE



EST TON CLASS 'I' RIP RAP = 88 TONS
EST GEOTEXTILE = 155 SY
DDE = 118 CY

DETAIL CUL 2–3
OUTLET TYPICAL
(LT TO RT LOOKING DOWNSTREAM)
NOT TO SCALE



EST TON CLASS 'I' RIP RAP = 246 TONS
EST GEOTEXTILE = 409 SY
DDE = 417 CY
EST. FILL = 20 CY

DETAIL CUL 3–1
(NOT TO SCALE)
SKEWED MULTI–BARREL CULVERT
LOW FLOW CHANNEL,SILLS
AND FLOOD PLAIN

*NOTES:

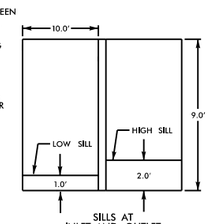
1) NATIVE BED MATERIAL SHALL BE PLACED BETWEEN THE SILLS IN THE LOW FLOW CULVERT. NATIVE MATERIALS CONSIST OF MATERIAL THAT IS EXCAVATED FROM THE THE STREAM BED OR FLOODPLAIN AT THE PROJECT SITE DURING CULVERT CONSTRUCTION. RIP–RAP MAY BE USED TO SUPPLEMENT THE NATIVE MATERIAL. IF RIP–RAP IS USED, NATIVE MATERIAL SHOULD BE PLACED ON TOP TO FACILITATE ANIMAL PASSAGE. THE TOP SURFACE OF THE NATURAL STREAM BED MATERIAL SHALL BE PLACED AND LEVELED TO A FLAT SURFACE TO ALLOW FOR ANIMAL PASSAGE. THE HIGH FLOW BARRELS SHALL BE BACKFILLED WITH NATIVE MATERIAL AND/OR RIP RAP. NATIVE MATERIAL AND RIP RAP ARE SUBJECT TO APPROVAL BY THE ENGINEER AND MAY BE SUBJECT TO PERMIT CONDITIONS.

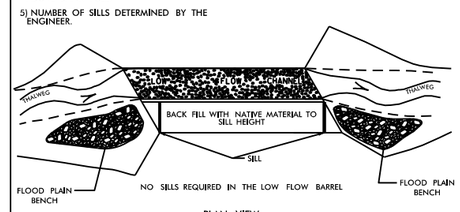
2) SILLS ARE TO BE 1.0 FT. WIDE, CAST SEPARATELY AND ATTACHED BY DOWELS.

3) TOP OF LOW FLOW SILLS SHOULD MATCH STREAM BED ELEVATION IN LOW FLOW CHANNEL OF STREAM. (THALWEG)

4) DO NOT SET ELEVATION OF HIGH SILLS ABOVE BANK FULL.

5) NUMBER OF SILLS DETERMINED BY THE ENGINEER.

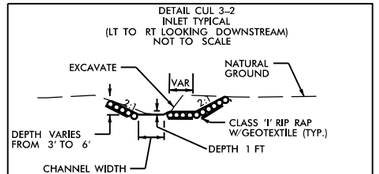




PLAN VIEW

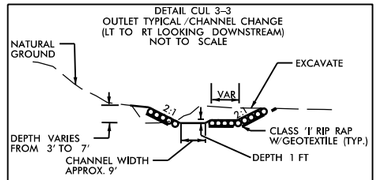
913

DETAIL CUL 3–2
INLET TYPICAL
(LT TO RT LOOKING DOWNSTREAM)
NOT TO SCALE



EST TON CLASS 'I' RIP RAP = 155 TONS
EST GEOTEXTILE = 256 SY
DDE = 243 CY

DETAIL CUL 3–3
OUTLET TYPICAL /CHANNEL CHANGE
(LT TO RT LOOKING DOWNSTREAM)
NOT TO SCALE



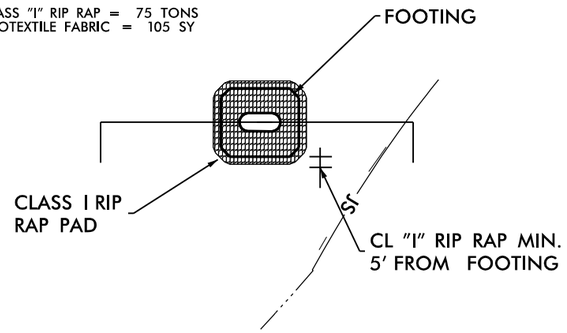
EST TON CLASS 'I' RIP RAP = 156 TONS
EST GEOTEXTILE = 267 SY
DDE = 235 CY
FILL = 24 CY

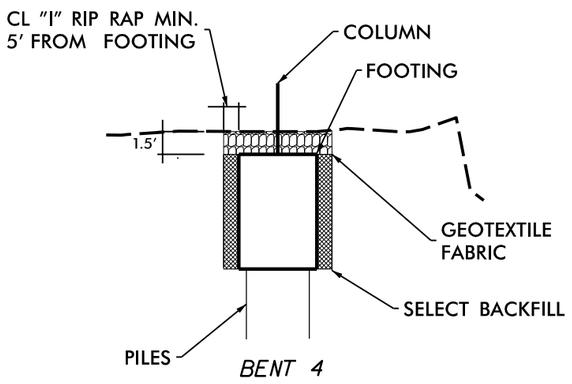
6/3/2021
D:\2679aA_Hyd_details.dgn
USER:Rdavis

8/17/99

DETAIL AP
PIER PROTECTION
CLASS I RIP RAP

CLASS "I" RIP RAP = 75 TONS
GEOTEXTILE FABRIC = 105 SY

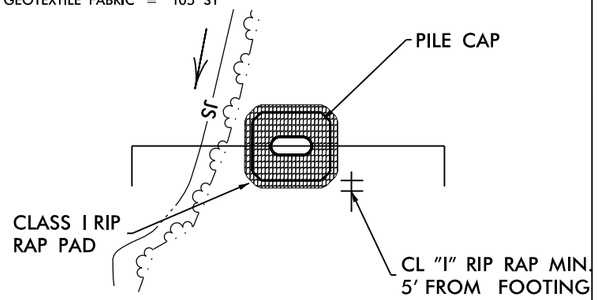


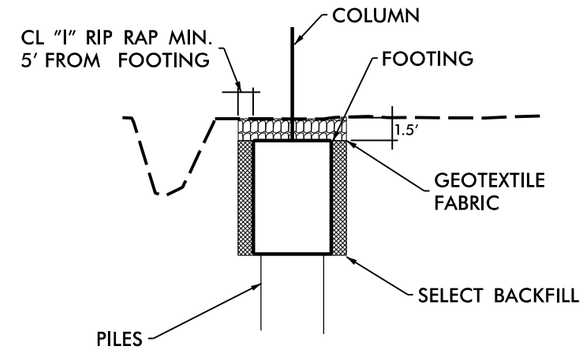


BENT 4

DETAIL AP
PIER PROTECTION
CLASS I RIP RAP

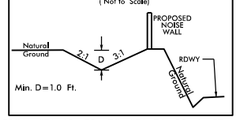
CLASS "I" RIP RAP = 75 TONS
GEOTEXTILE FABRIC = 105 SY





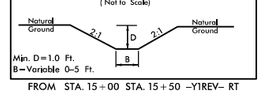
BENT 5

DETAIL AQ
BERM "V" DITCH
(Not to Scale)



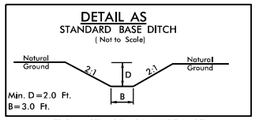
FROM STA. 62+70 TO STA. 76+20 –L– RT

DETAIL AR
STANDARD BASE DITCH
(Not to Scale)



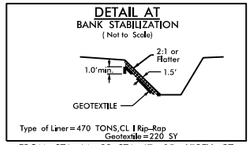
FROM STA. 15+00 STA. 15+50 –Y1REV– RT

DETAIL AS
STANDARD BASE DITCH
(Not to Scale)



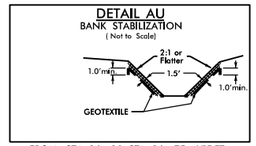
FROM STA. 37+30 –Y1REV– RT

DETAIL AT
BANK STABILIZATION
(Not to Scale)



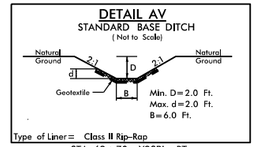
FROM STA. 44+82 STA. 47+05 –Y1REV– RT

DETAIL AU
BANK STABILIZATION
(Not to Scale)



FROM STA. 26+20 STA. 26+75 –Y1DET–
FROM STA. 37+90 STA. 39+43 –Y1REV– RT
FROM STA. 33+87 STA. 34+45 –L– RT

DETAIL AV
STANDARD BASE DITCH
(Not to Scale)



STA. 62+70 –Y2SBL– RT

PROJECT REFERENCE NO.	SHEET NO.
	2D–3
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

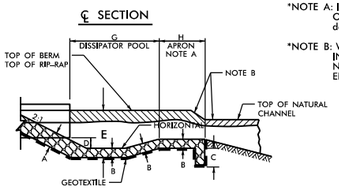
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

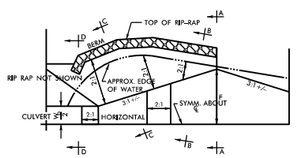
PERMIT DRAWING
SHEET 3A OF 32

DETAIL AW
RIP–RAPPED ENERGY DISSIPATOR BASIN

℄ SECTION

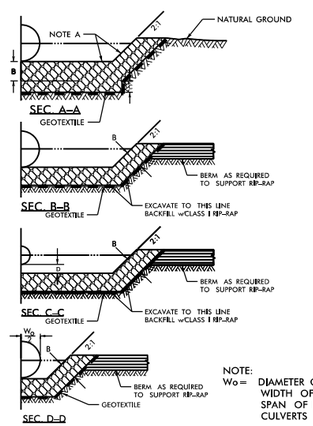


HALF PLAN



*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	3.0'							
B	2.0'							
C	2.0'							
D	1.5'							
E	7.0'							
F	15.0'							
G	25.0'							
H	12.0'							

BASIN #	LOCATION (AT OUTLET)
1	–Y2SBL– 62+40 RT
2	
3	
4	
5	
6	
7	
8	

5/05

STA. –Y2SBL– 62 + 40 RT

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8/17/99

PERMIT DRAWING
SHEET 4 OF 32

PROJECT REFERENCE NO.	SHEET NO.
U-2579AA	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

NAD 83/95

A

B

WETHERILL ENGINEERING

SITE 1

FOR ENLARGEMENT SEE SHEET 6

MATCHLINE SHEET 5
-Y2FLYCA- STA. 52+60.00

MATCHLINE SHEET 5
-L- STA. 21+50.00

MATCHLINE SHEET 16
-Y2RPB- STA. 19+15.00

BRENDA SUE THORE,
SARAH THORE HAMMOND,
JANE THORE HARDY,
& JAMES S. THORE, JR.

BOBBY S SMITH TRUSTEE

TIMOTHY D &
JENNIFER D SMITH

GENEVA L MOSTELLER

AREA HAS BEEN LOGGED

CL I RIP RAP W/GEOTEXTILE LENGTH=14 FT. EST. 13 TON EST. 19 SY GF. SEE DETAIL AE

CL B RIP RAP

JB w/MH

42"

18" w ELBOWS

2GI

SPECIAL LATERAL V DITCH SEE DETAIL D

18" RCP

42" RCP-Y (NOT BURIED)

LATERAL 2' BASE DITCH SEE DETAIL A

BANK STABILIZATION SEE DETAIL TT

-Y2FLYCA-

-L-

-Y2RPB-

FUTURE U-2579AB

S 34°59' 35.5" W

PUE

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

100' 0' 100'
GRAPHIC SCALE

6/3/2021
R:\Projects\PERMITS_Environmental\Drawings\U2579AA_Hyd_psh_04.dgn
USER:Mharvey

PERMIT DRAWING
SHEET 5 OF 32

PROJECT REFERENCE NO.	SHEET NO.
U-2579AA	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
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WETHERILL ENGINEERING

REVISIONS 8/17/99

NAD 83/95

A

B

FOR ENLARGEMENT SEE SHEET 6

SITE 1

BRENDA SUE THORE, SARAH THORE HAMMOND, JANE THORE HARDY, & JAMES S. THORE, JR.

BRENDA SUE THORE, SARAH THORE HAMMOND, JANE THORE HARDY, & JAMES S. THORE, JR.

BOBBY S SMITH TRUSTEE

TIMOTHY D & JENNIFER D SMITH

GENEVA L MOSTELLER

AREA HAS BEEN LOGGED

CL I RIP-RAP W/GEOTEXTILE LENGTH = 14 FT. EST. 13 TON EST. 19 SY GF SEE DETAIL AE

CL B RIP RAP

JB w/MH

42"

18" W ELBOWS

2GI

RCP (NOT BURIED)

SPECIAL LATERAL V DITCH SEE DETAIL D

LATERAL 2' BASE DITCH SEE DETAIL A

BANK STABILIZATION SEE DETAIL TT

-Y2FLYCA-

-Y2RPB-

"FUTURE U-2579AB"

-L-

S 34° 59' 35.5" W

PDE

PUE

MATCHLINE SHEET 5 -Y2FLYCA- STA. 52+60.00

MATCHLINE SHEET 16 -Y2RPB- STA. 19+15.00

MATCHLINE SHEET 5 -L- STA. 21+50.00

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

GRAPHIC SCALE 100' 0' 100'

8/31/2021
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USER: Mhargrave

PERMIT DRAWING
SHEET 6 OF 32

50′ 0′ 50′
GRAPHIC SCALE

PROJECT REFERENCE NO.	SHEET NO.
U-2579AA	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

SITE 1

CL. I RIP RAP W/GEOTEXTILE LENGTH=14 FT. EST. 13 TON EST. 19 SY GF. SEE DETAIL AE

CL. B RIP RAP

PDE

42″ JB w/MH

18″ w ELBOWS

2GI

42″ RCP-V (NOT BURIED)

15″ RCP-III

2GI

18″ w ELBOWS

42″ JB w/MH

HW

LATERAL 2′ BASE DITCH SEE DETAIL A

BANK STABILIZATION SEE DETAIL TT

-Y2FLYCA-

-L-

-Y2RPB-

9′ 35.5″ W

BRENDA SUE THORE

NAD 83/95

ARE

WETHERILL ENGINEERING

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

REVISIONS 8/17/99

6/3/2021
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8/17/99

PERMIT DRAWING
SHEET 7 OF 32

PROJECT REFERENCE NO.	SHEET NO.
U-2579AA	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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Raleigh, NC 919-977-9495
Charlotte, NC 704-357-0488

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WETHERILL ENGINEERING

See Sheet 9A for detour impacts

MATCHLINE SHEET 4 -Y2FLYCA- STA. 52+60.00

MATCHLINE SHEET 4 -L- STA. 21+50.00

MATCHLINE SHEET 16 -Y1REV- STA. 25+00.00

MATCHLINE SHEET 16 -Y1REV- STA. 47+00.00

MATCHLINE SHEET 6 -L- STA. 47+50.00 -Y2FLYAB- STA. 21+80.00

MATCHLINE SHEET 6 -Y2RPC- STA. 24+60.00

MATCHLINE SHEET 14

MATCHLINE SHEET 14 -Y2- STA. 91+00.00 -Y2FLYCA- STA. 29+98.44

NAD 83/95

SITE 2
SITE 2A
SITE 2B
SITE 3
SITE 3A
SITE 3B
SITE 4
SITE 4A
SITE 5
SITE 5A
SITE 5B
SITE 5C
SITE 5D
SITE 6
SITE 6A

A

B

C

DETOUR IMPACTS SEE SHEET 10A

SEE UTILITY PERMIT PLANS

BEGIN SITE 5D

END SITE 5D

200′ 0′ 200′

GRAPHIC SCALE

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

P P DENOTES IMPACTS IN SURFACE WATER (POND)

DENOTES MECHANIZED CLEARING

F F DENOTES FILL IN WETLAND

6/24/2021
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USER:kaltord

8/17/99

PERMIT DRAWING
SHEET 8 OF 32

PROJECT REFERENCE NO.	SHEET NO.
U-2579AA	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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WETHERILL ENGINEERING

See Sheet 9A for detour impacts

MATCHLINE SHEET 4 –Y2FLYCA– STA. 52+60.00

MATCHLINE SHEET 4 –L– STA. 21+50.00

MATCHLINE SHEET 16 –Y1REV– STA. 25+00.00

MATCHLINE SHEET 16

MATCHLINE SHEET 14

MATCHLINE SHEET 14 –Y2– STA. 91+00.00 –Y2FLYCA– STA. 29+98.44

MATCHLINE SHEET 6 –Y1REV– STA. 47+00.00

MATCHLINE SHEET 6 –L– STA. 47+50.00 –Y2FLYAB– STA. 21+80.00

MATCHLINE SHEET 6 –Y2RPC– STA. 24+60.00

NAD 83/95

SITE 5C

SITE 5B

SITE 6A

SITE 5

SITE 6

SITE 5A

SITE 5D

SITE 3A

SITE 3B

SITE 4

SITE 3

SITE 4A

SITE 2A

SITE 2B

SITE 2

A

B

C

200′ 0′ 200′

GRAPHIC SCALE

S S	DENOTES IMPACTS IN SURFACE WATER
TS TS	DENOTES TEMPORARY IMPACTS IN SURFACE WATER
P P	DENOTES IMPACTS IN SURFACE WATER (POND)
	DENOTES MECHANIZED CLEARING
F F	DENOTES FILL IN WETLAND

6/24/2021
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USER:KAYford

PERMIT DRAWING
SHEET 9 OF 32

PROJECT REFERENCE NO.	SHEET NO.
U-2579AA	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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REVISIONS
8/17/99
8/4/2021 JCL ADDED "DO NOT DISTURB STAKES NOTE TO PARCEL 7
8/4/2021 JCL REVISED TOE ON PARCELS 6 AND 7

SITE 4

SITE 3

SITE 4A

PUE

BANK STABILIZATION
CL I RIPRAP
SEE DETAIL TT
RIP RAP AT
EMBANKMENT
SEE DETAIL AA

2-5' CONC WW
3' CONC HW

2-8'X10' CONC BOX CULVERT
W/ 8'X10' CONC WW
2-8'X10' CONC HW
2-8'X10' CONC WW
8'X10' CONC WW
2-8'X10' CONC WW
TWIN 8'X10' BOX BARRELS

15"
2GI
3GI-A

2 @ 9' X 9' RCBC
W/BEVELED HEADWALL
BURIED ONE FOOT
(2 FT. TALL SILLS IN
HIGH FLOW BARREL)

SEE DETAIL CUL 2-1
MULTI-BARREL
CULVERT DETAIL

TOP HW=820.6
INV=818.10

30" RCP-III

INV=817.12

TB 2GI
15" RCP-IV
15" RCP-V
15" w/ELBOWS

CL. B RIP RAP
EST. 8 TON
EST. 21 SY GF

LATERAL V DITCH
DDE=180 CY
SEE DETAIL K

GRADE TO DRAIN

CL. B RIP RAP
EST. 2 TON
EST. 7 SY GF

2 @ 10' X 9' RCBC
W/BEVELED HEADWALLS
BURIED ONE FOOT
(2 FT. TALL SILLS IN
HIGH FLOW BARREL)

SEE DETAIL CUL 3-1
MULTI-BARREL
CULVERT DETAIL

INLET TYPICAL
SEE DETAIL
CUL 3-2

24" CSP w ELBOWS

SPECIAL LATERAL
SEE DETAIL D

OUTLET TYPICAL
SEE DETAIL CUL 3-3

NAD 83/95

CITY OF WINSTON-SALEM
FORSYTH COUNTY

50' 0' 50'
GRAPHIC SCALE

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

6/8/2021
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PROJECT REFERENCE NO.	SHEET NO.
U-2579AA	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 9A OF 32

- S / S — DENOTES IMPACTS IN SURFACE WATER
- TS / TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER
- P / P — DENOTES IMPACTS IN SURFACE WATER (POND)
- HC / HC — DENOTES HAND CLEARING
- F / F — DENOTES FILL IN WETLAND

70′ 0′ 70′
GRAPHIC SCALE

REVISIONS
8/17/99

SITE 5C

SITE 5B

SITE 7

12 SPECIAL CUT DITCH SEE DETAIL J

11 COLLEEN D SPRIGGS

10 ELWANDA L OXENDINE

9 DONALD CRESANTI

13 MICHAEL L & MARCIA L MILLER

WESTVIEW DEVELOPMENT

T B JR & JEAN Y PRUITT

ELIZABETH LUN

SPECIAL CUT DITCH SEE DETAIL J

REMOVE

BANK STABILIZATION SEE DETAIL AT

BANK STABILIZATION

SEE DETAIL AA CLASS I RIP RAP

REMOVE 60" CMP

8' BASE DITCH w/ CL II RIP RAP SEE DETAILS AN-2 & 4 EST. 200 TON EST. 270 SY GF

CL. II RIP RAP w/GEOTEXTILE LENGTH=24 FT. EST. 43 TON EST. 45 SY GF. SEE DETAIL AF

SPECIAL JB w/MH

SPECIAL LATERAL V DITCH SEE DETAIL G

FLOWABLE FILL

20' PERMANENT SEWER EASEMENT

15"VC

SOUTH

EXISTING R/W

VAR.WIDTH EXISTING R/W

6/3/2021
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PROJECT REFERENCE NO.	SHEET NO.
U-2579AA	5
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING SHEET 10 OF 32

- S S — DENOTES IMPACTS IN SURFACE WATER
- TS TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER
- P P — DENOTES IMPACTS IN SURFACE WATER (POND)
- DENOTES MECHANIZED CLEARING
- F F — DENOTES FILL IN WETLAND

NAD 83/95

70' 0' 70'
GRAPHIC SCALE

SITE 5B

SITE 6A

SITE 5

SITE 6

SITE 5A

SITE 5D

SITE 6

BEGIN SITE 5D

END SITE 5D

8' BASE DITCH w/CL II RIP RAP SEE DETAILS AN-2 & 4 EST. 200 TON EST. 270 SY GF

SPECIAL CUT DITCH SEE DETAIL J

SPECIAL LATERAL V DITCH SEE DETAIL Q

SPECIAL LATERAL V DITCH SEE DETAIL L

REMOVE

DRAIN PONDS AND STABILIZE

CL. I RIP RAP W/GEOTEXTILE EST 42 TON EST 70 SY GF

RIP RAP AT EMBANKMENT SEE DETAIL AA

BANK STABILIZATION

STANDARD 2' BASE DITCH SEE DETAIL X

CL. I RIP RAP W/GEOTEXTILE LENGTH=16 FT EST 13 TON EST 18 SY GF SEE DETAIL AE

JB w/MH

24" w ELBOWS

2GI-A

15" RCP-III

2GI

TRENCHLESS INSTALLATION 36" WELDED STEEL (NOT BURIED)

FLOWABLE FILL

CL. I RIP RAP EST. 7 TON EST. 15 SY GF

TRENCHLESS INSTALLATION 24" WELDED STEEL

REMOVE DI

3GI

15" w ELBOWS

SPECIAL LATERAL V DITCH SEE DETAIL V

REMOVE 60" CMP

8' BASE DITCH w/CL II RIP RAP SEE DETAILS AN-1,2,&3 EST. 200 TON EST. 270 SY GF

BANK STABILIZATION CL I RIPRAP EST. 351 TON EST. 495 SY GF SEE DETAIL AU

EXCAVATE TO EL. 820.3

EXCAVATE TO EL. 821.0

LATERAL 3' BASE DITCH DDE=105 CY SEE DETAIL AS

INLET TYPICAL SEE DETAIL CUL 3-2

SEE DETAIL CUL 3-1

CL. I RIP RAP

18" w ELBOWS

2GI

RIP RAP 2 TON SY GF

15" w ELBOWS

TB 2GI

TIMOTHY D & SARA C VONCANNON

MICHAEL J & VIRGINIA P MENZEL

SAMUEL & ANDREA STIMPSON

C W MYERS TRADING POST INC

SR 1003 HIGH POINT RD

EXISTING R/W-PROP-LINE

PERMANENT SEWER EASEMENT 50'

REVISIONS

8/17/99

8-RW REVISION 11/9/19 JC - ADDED "DO NOT DISTURB STAKES NOTE TO PARCEL 7.
7-RW REVISION 2/19/2020 JC - REVISED TCE ON PARCELS 6 AND 7

8/24/2021
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USER: kallred

8/17/99

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

100' 0' 100'
GRAPHIC SCALE

PERMIT DRAWING SHEET 10A OF 32

DETAIL FOR HIGH POINT RD ON–SITE DETOUR (–Y1DET–)

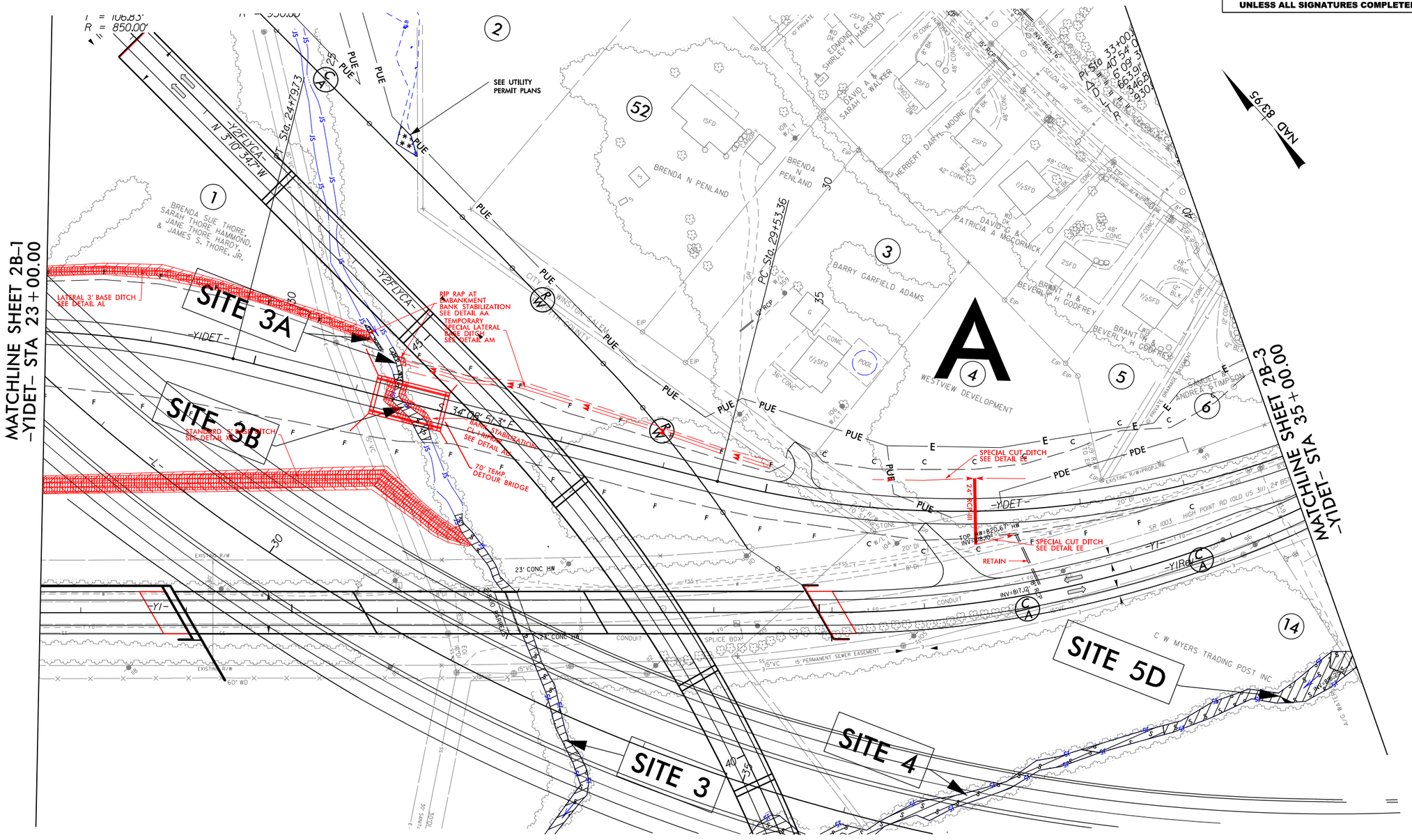
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WETHERILL ENGINEERING

PROJECT REFERENCE NO.	SHEET NO.
U–2579AA	2B–2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

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SEE PERMIT SHEET 31 FOR PROFILE OF –Y1DET– BRIDGE

NOTES:
SEE SHEETS 41 & 42 FOR –Y1DET– PROFILE
SEE SHEETS 5, 15 & 16 FOR –Y1– PLANS AND CURVE DATA

6/3/2021
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S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

100' 0' 100'
GRAPHIC SCALE

PERMIT DRAWING SHEET 10B OF 32

DETAIL FOR HIGH POINT RD ON–SITE DETOUR (–Y1DET–)

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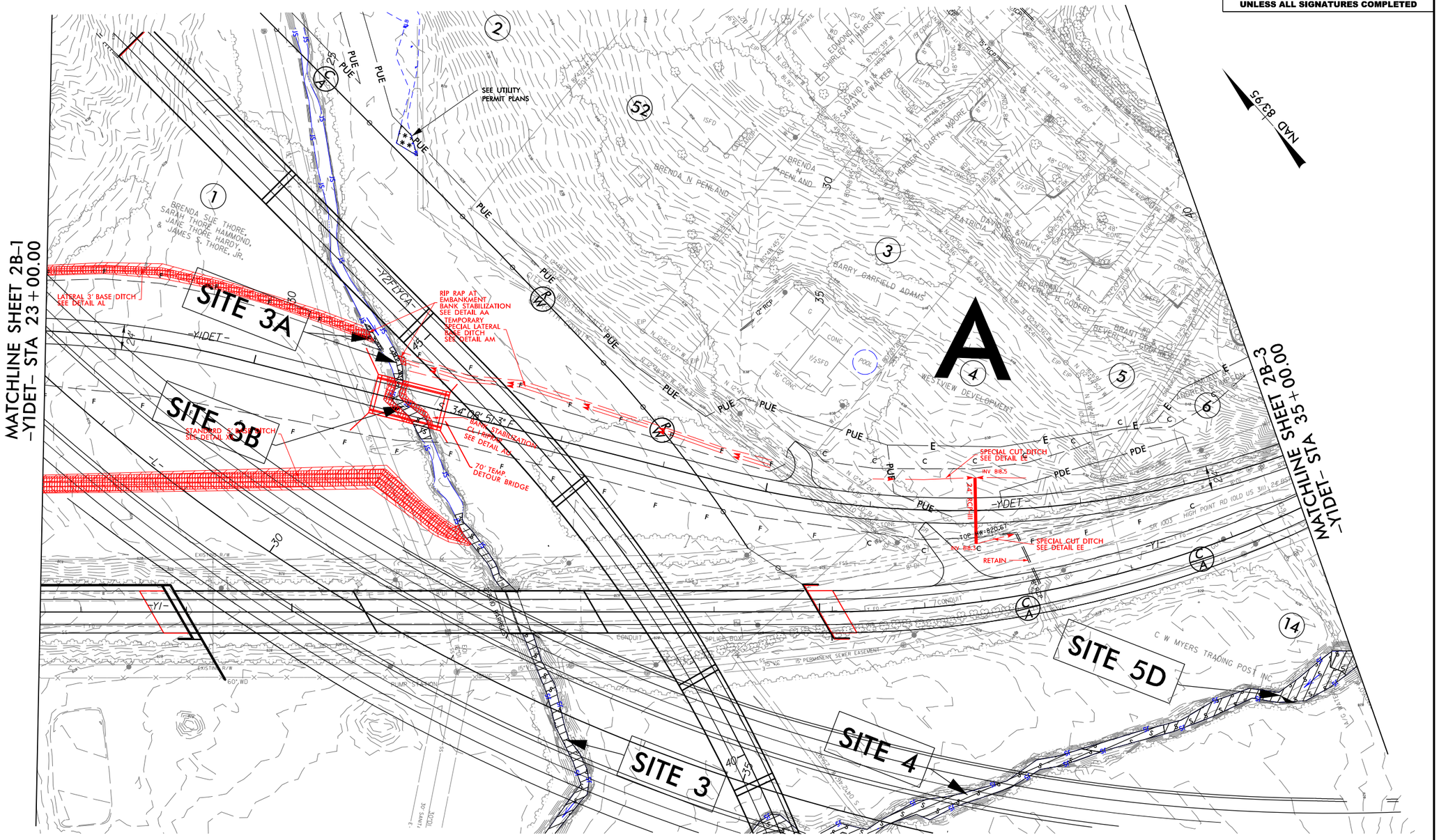
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WETHERILL ENGINEERING

PROJECT REFERENCE NO.	SHEET NO.
U–2579AA	2B–2
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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SEE PERMIT SHEET 31 FOR PROFILE OF –Y1DET– BRIDGE

NOTES:
SEE SHEETS 41 & 42 FOR –Y1DET– PROFILE
SEE SHEETS 5, 15 & 16 FOR –Y1– PLANS AND CURVE DATA

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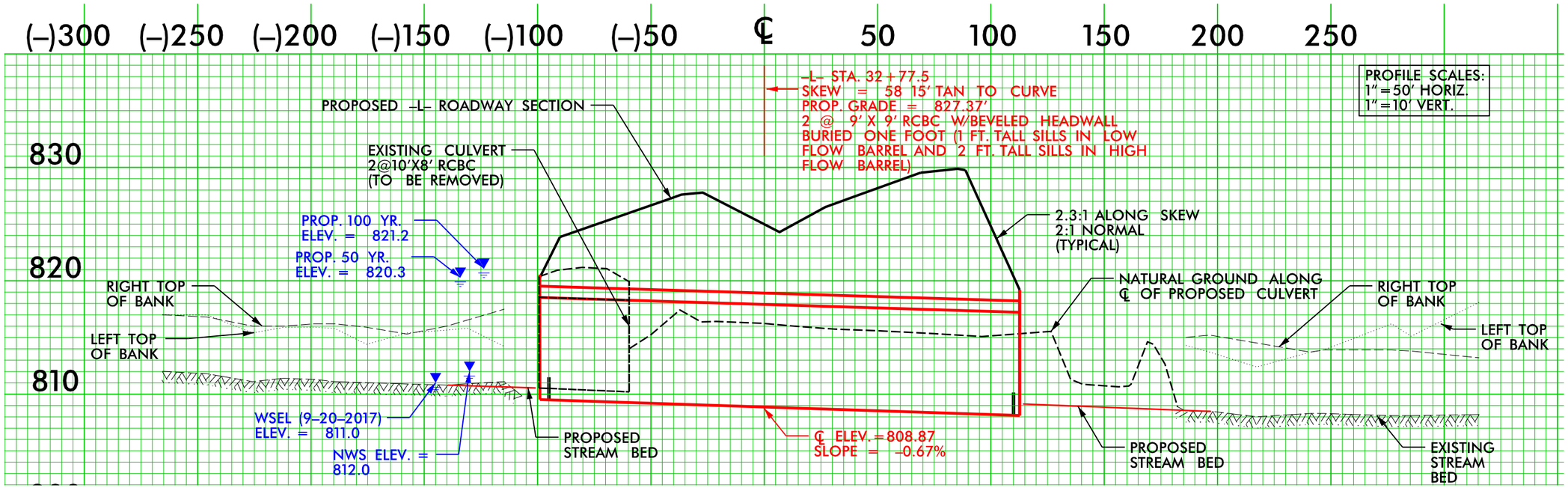
PROJECT REFERENCE NO.	SHEET NO.
U-2579AA	
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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SITE 3

PERMIT DRAWING
SHEET 11 OF 32



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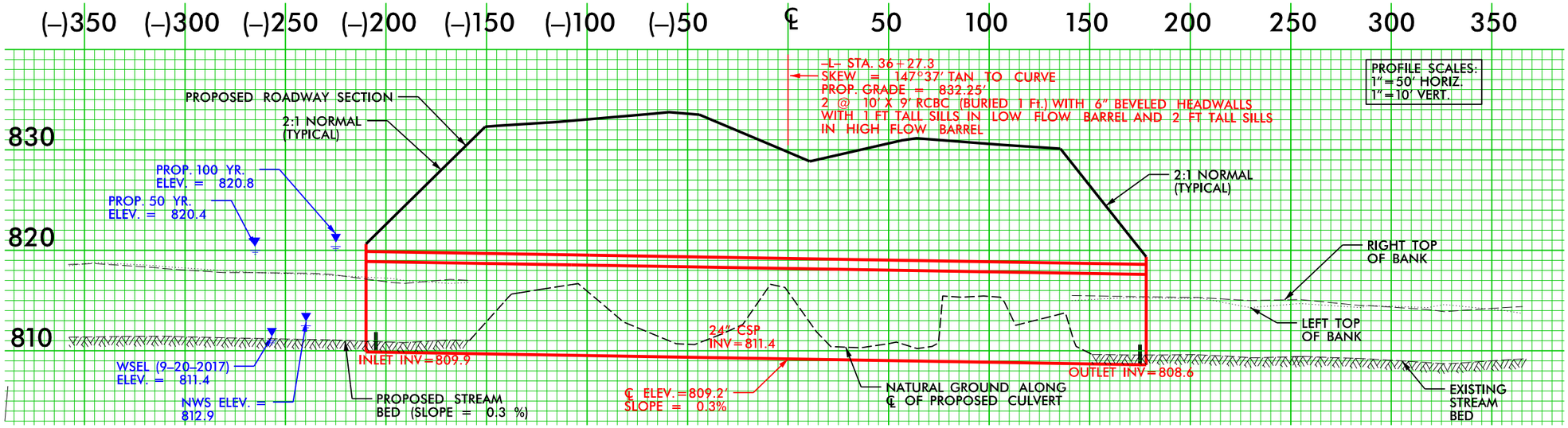
PROJECT REFERENCE NO.	SHEET NO.
U-2579AA	
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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SHEET 12 OF 32

SITE 4



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PERMIT DRAWING
SHEET 13 OF 32

PROJECT REFERENCE NO.	SHEET NO.
U-2579AA	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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MATCHLINE SHEET 5 –Y1– STA. 47+00.00

MATCHLINE SHEET 5 –Y2FLYAB– STA. 21+80.00

MATCHLINE SHEET 5 –L– STA. 47+50.00

MATCHLINE SHEET 5 –Y2RPC– STA. 24+60.00

MATCHLINE SHEET 7 –L– STA. 60+50.00

BANK STABILIZATION

13 MICHAEL L & MARCIA L MILLER

ELIZABETH LUCAS

GLENN LUCAS

MATTIE L PROFFITT

FOR ENLARGEMENT SEE SHEET 15

SITE 7

SITE 7A

A

C

CL II RIP RAP W/GEOTEXTILE LENGTH = 24 FT.

SEE DETAIL AF

INV=829.38' 18" RCP

INV=829.59'

INV=827.24'

72" JB wMH

SPECIAL JB wMH

TB 2GI

2GI

15" RCP-III

15" CSP

18" CMP

15" w ELBOW

FLOWABLE FILL

SPECIAL CUT DITCH SEE DETAIL F

SPECIAL LATERAL V DITCH SEE DETAIL G

TOP=865.42' INV=862.32' 72" CONC DI

REMOVE DI

54" CMP

72" TRENCHLESS INSTALLATION 72" WELDED STEEL INVERT BURIED

TOP=840.24' INV=830.84'

TOP=839.96' INV=832.36'

TOP=831.30' INV=823.10'

30' PERMANENT SEWER EASEMENT

15" VC

12" VC

EXISTING R/W

VAR. WIDTH EXISTING R/W

CONDUIT

T FO

OHP

WD DK

ISFD

ISBKD

POOL

S

B

HTR

CONC

FIREWOOD COVER

48" WW & ISBW

W/2 SROCK D

CL I RIP RAP EST. 81 TONS - EST 134 SY GF

JB wMH

15" w ELBOWS

18" w ELBOWS

LATERAL 10' BASE DITCH DDE=808 cu yd SEE DETAIL AH

CL I RIP RAP EST. 193 TONS - EST 322 SY GF

CONC HW W/WING WALLS TOP HW=840.37

REMOVE HW

TOE PROTECTION SEE DETAIL AG

CL I RIP RAP EST. 36 TONS - EST 75 SY GF

CL I RIP RAP - EST 16 TONS - BANK STABILIZATION SEE DETAIL TT

CL B RIP RAP EST. 5 TON EST. 14 SY GF

INV=867.97'

REMOVE FES

24" RCP

TRENCHLESS INSTALLATION 24" WELDED STEEL

FLOWABLE FILL

N 71° 47' 27.0" W

REMOVE DI & 29'-24" RCP TOP=876.26'

OUT=872.62' IN=872.99'

72" CONC

2GI-A 24" RCP-III FS

RETAIN REMOVE PAVED DITCH

COLLAR

REMOVE DI & 18'-24" RCP

OUT=880.72' IN=880.65'

TOP=884.3

24" RCP-III

REMOVE

24" w ELBOWS

REMOVE HW

TOP HW=888 BDO

S 87°48'34" W 341.89'

W RD GR

W/LT

9' BST

15" RCP

100' 0' 100'

GRAPHIC SCALE

S S — DENOTES IMPACTS IN SURFACE WATER

TS TS — DENOTES TEMPORARY IMPACTS IN SURFACE WATER

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SHEET 14 OF 32

PROJECT REFERENCE NO.	SHEET NO.
U-2579AA	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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MATCHLINE SHEET 5 -Y2FLYAB- STA. 21+80.00

MATCHLINE SHEET 5 -L- STA. 47+50.00

MATCHLINE SHEET 5 -Y2RPC- STA. 24+60.00

MATCHLINE SHEET 7 -L- STA. 60+50.00

SITE 7

SITE 7A

A

FOR ENLARGEMENT SEE SHEET 15

SEE DETAIL AF

CL II RIP RAP W/GEOTEXTILE LENGTH=24 FT

CL II RIP RAP EST. 5 TON EST. 14 SY GF

REMOVE FES

SPECIAL JB w/MH

TB 2GI

2GI

15" RCP III

15" CSP

18" RCP III

24" RCP

SPECIAL CUT DITCH SEE DETAIL F

SPECIAL LATERAL V DITCH SEE DETAIL G

FLOWABLE FILL

72" CONC

REMOVE DI

72" TRENCHLESS INSTALLATION 24" WELDED STEEL INCL BURIED

N 71° 47' 27.0" W

REMOVE DI & 29'-24" RCP

REMOVE DI & 18'-24" RCP

24" RCP III

2GI-A

RETAIN

REMOVE PAVED DITCH

COLLAR

REMOVE 24" ELBOWS

REMOVE HW

18" w ELBOWS

CL I RIP RAP EST. 81 TONS EST. 134 SY GF

LATERAL 10' BASE DITCH DDE=808 Cu Yd SEE DETAIL AH

CL I RIP RAP EST. 193 TONS EST. 322 SY GF

TOE PROTECTION SEE DETAIL AG

CL I RIP RAP EST. 136 TONS EST. 175 SY GF

CL I RIP RAP EST. 16 TONS BANK STABILIZATION SEE DETAIL AI

MICHAEL L & MARCIA I MILLER

ELIZABETH LUCAS

GLENN LUCAS

TILLIE L PROFFITT

SOUTH FORK MUDDY CREEK

100' 0' 100'

GRAPHIC SCALE

S S

TS TS

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

6/13/2021
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SHEET 15 OF 32

PROJECT REFERENCE NO.	SHEET NO.
U-2579AA	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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WETHERILL ENGINEERING

NAD 83/95

SITE 7

SEE DETAIL AF

VAR. WIDTH EXISTING R/W

INV=827.24'

INV=829.59'

72"

18"

72"

JB w/MH

SPECIAL JB w/MH

15" w ELBOWS

15" RCP III

2GI

2GI

18" CMP

15" CSP

FLOWABLE FILL

-Y2FLYAB-

SPECIAL LATERAL V DITCH
SEE DETAIL G

TOP=866.42'
INV=862.32'

72" CONC

DI

REMOVE DI

TRENCHLESS INSTALLATION
72" WELDED STEEL (NOT BURIED)

54" CMP

FLOWABLE FILL

50

30

55

15

MTL

SITE 7A

2GI

15" RCP III

2GI

15"

2GI

15" RCP III

2GI

JB w/MH

15" w ELBOWS

JB w/MH

18" w ELBOWS

18" w ELBOWS

SPECIAL JB w/MH

18" w ELBOWS

CL. I RIP RAP
EST 81 TONS
EST 134 SY GF

LATERAL 10' BASE DITCH
DDE=808 cu yd
SEE DETAIL AH
CL. I RIP RAP

INV=834.50

CONC HW W/WING WALLS
TOP HW=840.37

REMOVE HW

TOE PROTECTION
SEE DETAIL AG
CL. I RIP RAP
EST 36 TONS
EST 75 SY GF

CL. I RIP RAP
EST 16 TONS
BANK STABILIZATION
SEE DETAIL TT

50' 0' 50'
GRAPHIC SCALE

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

6/3/2021
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PERMIT DRAWING
SHEET 16 OF 32

PROJECT REFERENCE NO.	SHEET NO.
U-2579AA	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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WETHERILL ENGINEERING

REVISIONS 8/17/99

NOTE:
IMPACTS IN SURFACE WATERS AT PIPE/DITCH OUTLETS

SITE 10A
SITE 10B
SITE 10C
SITE 10D
SITE 10
SITE 8
SITE 9
SITE 11

MATCHLINE SHEET 10 -Y2- STA. 13+50.00

MATCHLINE SHEET 12 -Y2- STA. 25+50.00

FOR ENLARGEMENT SEE SHEET 18

CORNERSTONE TOWER LLC
NCDOT
DONALD LEE SHIPTON
JOHN THOMAS WATSC
SIECOR OPERATIONS LLC
KRISPY KREME DOUGHNUT CORPORATION

FIDDLERS CREEK

-Y2NBL-
-Y2-
-Y2SBL-

TIE PROPOSED DITCH TO EXISTING DRAW
CL. I RIP RAP
STANDARD 2' BASE DITCH SEE DETAIL X
CLASS I RIP RAP ROCK PLATING -Y2- STA. 17+65 TO 19+00 SEE STD. DETAIL 275.01
CL. I RIP RAP EST 1 TON - BANK STABILIZATION
RIP RAP AT EMBANKMENT SEE DETAIL AA
BANK STABILIZATION PIPE OUTLET CHANNEL SEE DETAIL TT
RETAIN
REMOVE
REMOVE EXISTING 36" CMP
PIPE OUTLET CHANNEL SEE DETAIL TT
BANK STABILIZATION
RIP RAP AT EMBANKMENT SEE DETAIL TT
BEGIN JS
15" w/ ELBOWS
2GI
FILL W/ FLOWABLE FILL
TRENCHLESS INSTALLATION 42" WELDED STEEL
TRENCHLESS INSTALLATION 18" WELDED STEEL
36" CMP
18" CMP
24" RCP
42" RCP
72" CONC
CL. B RIP RAP
15" w/ ELBOWS
18" RCP
TOP=822.66' INV=808.32' 15" RCP III
TB 2GI DI
15" W/ELBOWS
24" RCP-IV
CONC DITCH
STANDARD 2' BASE DITCH DDE=207 CY SEE DETAIL X
LATERAL 4' BASE DITCH DDE=189 CY SEE DETAIL W
4-12'x9' BARRELS
RIP RAP AT EMBANKMENT SEE DETAIL AA
CL. I RIP RAP EST 35 TONS - EST 60 SY GF

100' 0' 100'
GRAPHIC SCALE

DENOTES MECHANIZED CLEARING
DENOTES TEMPORARY IMPACTS IN SURFACE WATER
DENOTES IMPACTS IN SURFACE WATER
DENOTES FILL IN WETLAND
DENOTES EXCAVATION IN WETLAND

SEE SHEET 26 FOR -Y2NBL- PROFILE
SEE SHEET 29 FOR -Y2SBL- PROFILE
SEE SHEET 38 FOR -Y3RPC- PROFILE

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SHEET 17 OF 32

PROJECT REFERENCE NO.	SHEET NO.
U-2579AA	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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WETHERILL ENGINEERING

NOTE:
IMPACTS IN SURFACE WATERS AT PIPE/DITCH OUTLETS

SITE 10A
SITE 10B
SITE 10C
SITE 10D
SITE 10
SITE 8
SITE 9
SITE 11

MATCHLINE SHEET 10 -Y2- STA. 13+50.00

MATCHLINE SHEET 12 -Y2- STA. 25+50.00

FOR ENLARGEMENT SEE SHEET 18

CORNERSTONE TOWER LLC
DONALD LEE SHIPTON
JOHN THOMAS WATSC
NCDOT
SIECOR OPERATIONS LLC
KRISPY KREME DOUGHNUT CORPORATION
FIDDLERS CREEK

CL I RIP RAP
CL B RIP RAP
CLASS I RIP RAP ROCK PLATING -Y2- STA. 17+55 TO 19+00 SEE STD. DETAIL 225.01
STANDARD 2' BASE DITCH SEE DETAIL X
LATERAL 'A' BASE DITCH DDE=189 CY SEE DITCH 'W'
RIP RAP AT EMBANKMENT SEE DETAIL AA
BANK STABILIZATION
PIPE OUTLET CHANNEL SEE DETAIL TT
TIE PROPOSED DITCH TO EXISTING DRAW
REMOVE EXISTING 36" CMP
FILL W/ FLOWABLE FILL
TRENCHLESS INSTALLATION 48" WELDED STEEL
CONC HW TOP=785.83' INV=780.85'
CONC HW TOP=787.96' INV=783.20'
CONC HW TOP=785.53' INV=780.53'
CONC HW TOP=785.78' INV=777.38'
CONC HW TOP=789.46' INV=786.47'
CONC HW TOP=788.97' INV=777.22'
CONC HW TOP=790.20' INV=785.50'
CONC HW TOP=786.87' INV=780.8' APPROX BASED ON ASBUILT PLANS
CONC HW TOP=817.56' DI INV=814.06'
CONC HW TOP=817.26' DI INV=814.19'
CONC HW TOP=822.66' INV=818.72'
CONC HW TOP=800.95' INV=795.04'
CONC HW TOP=795.57' INV=791.98'
CONC HW TOP=788.11' INV=776.20'
CONC HW TOP=787.37' INV=776.21'
CONC HW TOP=784.11' INV=776.71'
CONC HW TOP=785.48' INV=775.53'
CONC HW TOP=801.37' INV=796.47'
CONC HW INV=781.42'
CONC HW INV=783.80'
CONC HW INV=781.38'
CONC HW INV=781.91'
CONC HW INV=785.23'
CONC HW INV=790.22'
CONC HW INV=795.23'
CONC HW INV=795.57'
CONC HW INV=798.22'
CONC HW INV=795.57'
CONC HW INV=783.38'
CONC HW INV=783.38'
CONC HW INV=783.38

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PERMIT DRAWING
SHEET 18 OF 32

PROJECT REFERENCE NO.	SHEET NO.
U-2579AA	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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ETHERILL ENGINEERING

SITE 8

SITE 9

SITE 10

SITE 11

HW 15
INV=801.37
FES
TRENCHLESS INSTALLATION 42" WELDED STEEL
CL. I RIP RAP
36" CMP
FILL W/ FLOWABLE FILL
15"VC SS
4-12x9 BARRELS
-Y2-
-Y2SBL-
25
20
30"DI
SS
15" CMP (BY OTHERS)
INV=UNKNOWN
15" w/ ELBOWS
2GI
15" RCP-III
TB 2GI DI
TOP=817.56'
INV=814.06'
CLASS I RIP RAP
ROCK PLATING
-Y2- STA. 17+50 TO 19+35
SEE STD. DETAIL 275.01
LATERAL 4' BASE DITCH
DDE=189 CY
SEE DETAIL W
WLB
51 CONC FW
14 CONC WW
11 CONC WW
CL. I RIP RAP
EST 2 TON
EST 7 SY GF
INV=778.70'
TOP=787.37
INV=776.27
TOP=788.11
INV=776.20
TOP=785.48
INV=775.93
TOP=784.11
INV=776.71
SIECOR OPERATIONS LLC
46
RIP RAP AT EMBANKMENT
SEE DETAIL AA
CL. I RIP RAP
EST 35 TONS
EST 60 SY GF
FIDDLERS CREEK
JS
48"WW & ISBW
50' SANITARY SEWER EASEMENT
KRISPY KREME DOUGHNUT CORPORATION

50' 0' 50'
GRAPHIC SCALE

DENOTES MECHANIZED CLEARING
DENOTES IMPACTS IN SURFACE WATER
DENOTES FILL IN WETLAND
DENOTES EXCAVATION IN WETLAND

SEE SHEET 26 FOR -Y2NBL- PROFILE
SEE SHEET 29 FOR -Y2SBL- PROFILE
SEE SHEET 38 FOR -Y3RPC- PROFILE

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6/23/16

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	U-2579AA	X-176

PERMIT DRAWING
SHEET 19 OF 32

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290

830 820 810 800 790 780

17+00.00

8.16:1 | 0.020 | 0.020 | –Y2SBL–24+61.51 | 2:1

WETLANDS (RT) | WETLANDS (RT) | WETLANDS (RT)

16+50.00

8.07:1 | 0.020 | 0.020 | –Y2SBL–24+11.10 | 2:1

WETLANDS (RT) | WETLANDS (RT) | WETLANDS (RT)

16+00.00

8.01:1 | 0.020 | 0.020 | –Y2SBL–23+60.67 | 2:1

WETLANDS (RT) | WETLANDS (RT) | WETLANDS (RT)

–Y2–

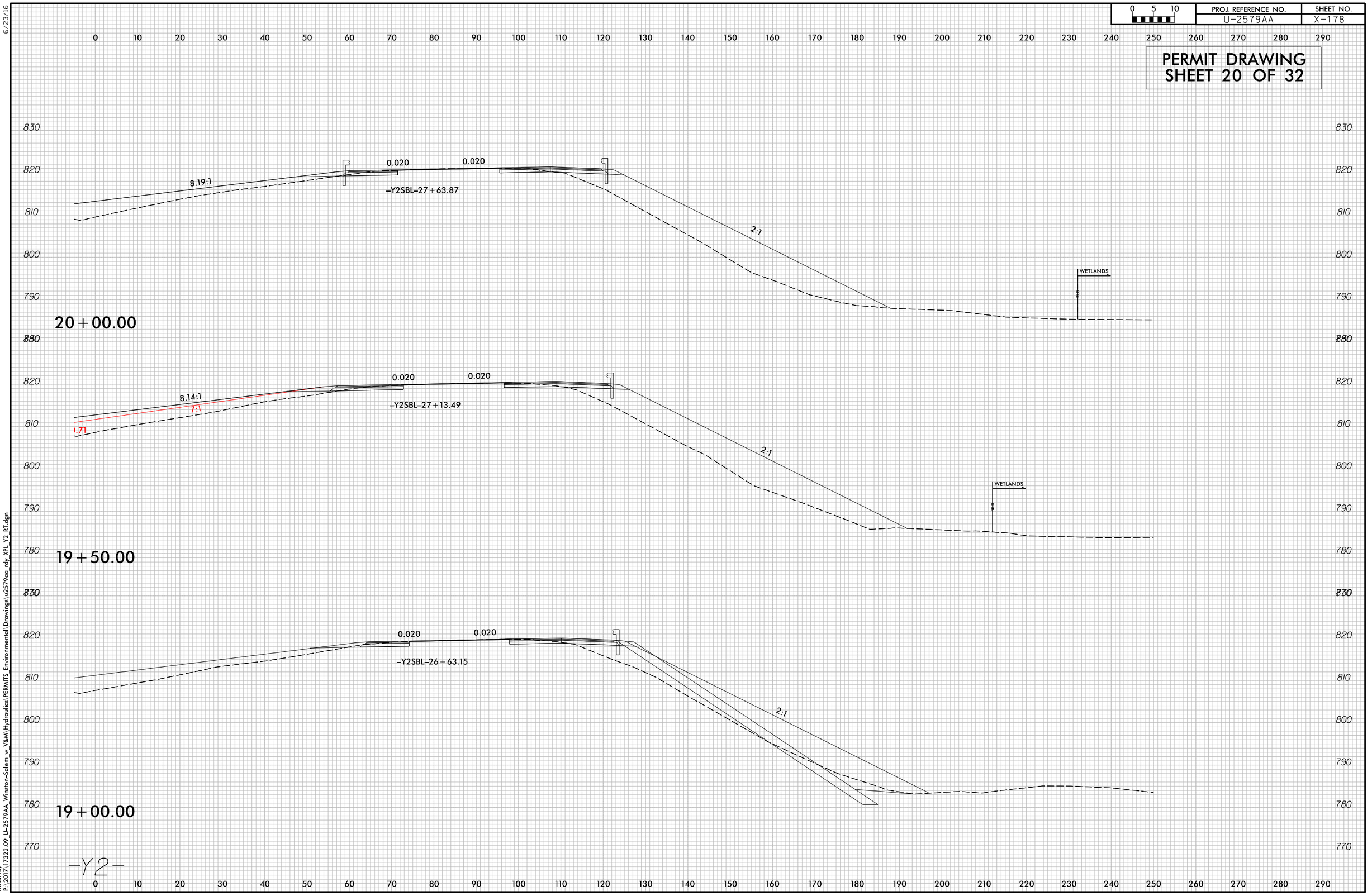
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290

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	U-2579AA	X-178

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SHEET 20 OF 32



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SHEET 21 OF 32

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

PROJECT REFERENCE NO.	SHEET NO.
U-2579AA	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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WETHERILL ENGINEERING

NAD 83/95

GRAPHIC SCALE 100' 0' 100'

MATCHLINE SHEET 12 –Y2– STA. 52+50.00

MATCHLINE SHEET 14 –Y2– STA. 65+50.00

ST Sta. 51+87.27 –Y2NBL–

TRIAD COURT LLC — ISMTLBUS — CONC — DIESEL — MTL CANOPY — CONC WALL — JEA ENTERPRISES LLC — 47 — DIANE W GERREY

FORSYTH COUNTY / CITY OF WINSTON SALEM C&G — 60' BST — 60' CONC — 60' WD — 278' — 72" WD — 18" RCP — FLAG POLE — 48"WW & ISBW — 48" CONC

SPECIAL CUT DITCH SEE DETAIL F — 2' BST — 4' BST — 5' BST — US 311 24' BST NBL — US 311 24' BST SBL — 12' BST — 20' BST — RIDGEWOOD CT

REMOVE — BDO INV=859.47' — 30" CMP — 3 ELBOWS — REMOVE DI & 16' – 18" RCP — 72" CONC — TOP=847.57' OUT=847.18' — IN=847.46'

3GI — TRENCHLESS INSTALLATION 24" WELDED STEEL — JB wSLAB LID — TOP=851.91' INV=839.59' — 72" CONC — DI — 18" RCP — IN=846.67' TOP=856.42' OUT=846.40' — FLOWABLE FILL — 36" CMP

2GI — JB wMH — REMOVE — JB — IN=840.96' OUT=840.93' — RETAIN — 48" CSP w ECCENTRIC CONE — 2:1 SIDE SLOPES — CL II RIP RAP EST 115 TON EST 122 SY GF — ENERGY DISSIPATOR BASIN SEE DETAIL AW — CL II RIP RAP EST 115 TON EST 145 SY GF — STANDARD BASE DITCH CL II RIP RAP EST 46 TON EST 96 SY GF SEE DETAIL AV — BEGIN DS — SPECIAL CUT DITCH SEE DETAIL FF — TRENCHLESS INSTALLATION 48" WELDED STEEL (NOT BURIED) — INV. UNOBTAINABLE — PDE — 15" — 24" RCP

REMOVE DI — 2GI — TRENCHLESS INSTALLATION 30" WELDED STEEL — FLOWABLE FILL — 18" RCP — IN=841.68' TOP=847.52' OUT=841.52' — JB wSlab Lid — 2GI-A — 30" — REMOVE DI & 32' – 18" RCP — IN=837.68' TOP=840.78' OUT=837.66' — REMOVE 16' – 18" RCP — INV=835.29 — CL I RIP RAP EST 11 TON EST 22 SY GF

SPECIAL CUT DITCH SEE DETAIL F — SPECIAL LATERAL V DITCH SEE DETAIL G — SPECIAL LATERAL V DITCH SEE DETAIL D — REMOVE DI — COLLAR — 15" RCP-III — REMOVE — TOP=847.76' — IN=837.2 — OUT=837.0 — 18" — 2GI-F

TOP=841.68' INV=839.12' — 2GI — REMOVE DI — COLLAR AND EXTEND w 15" RCP-III — 15" RCP — RETAIN

SITE 12A — SITE 12B

EDWIN T JR & BARBARA G COCHRANE — JACK & JUDY CARICO — PAUL E & JANET L COATES — TRISH L & RONNIE D RITZ, JR — ANDY BOWERSOX INC — MARTHA JOANNE EVERHART — JEA ENTERPRISES LLC

26 — 25 — 24 — 229 W/LT — 227 — 226 — 225 — 364 W/LT — 224 W/LT

2SFD — 24" CONC — WD DK — CONC POOL — 8K WALL — HTR — MTL GATE — EXISTING R/W — GATE — W — S — P — TV — E — F — 6" SSW — 8" SSW — 15" — 18" — 24" — 30" — 36" — 48"WW & ISBW — 48"SW & ISBW — YARD INV

SEE SHEET 20 THROUGH 21 FOR –Y2SBL– PROFILE
SEE SHEET 27 FOR –Y2NBL– PROFILE

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PERMIT DRAWING
SHEET 22 OF 32

S	S
TS	TS

DENOTES IMPACTS IN SURFACE WATER

DENOTES TEMPORARY IMPACTS IN SURFACE WATER

PROJECT REFERENCE NO.	SHEET NO.
U-2579AA	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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GRAPHIC SCALE 100' 0' 100'

MATCHLINE SHEET 12 -Y2- STA. 52+50.00

MATCHLINE SHEET 14 -Y2- STA. 65+50.00

SITE 12A

SITE 12B

TRIAD COURT LLC

JEA ENTERPRISES LLC

DIANE W GERREY

MARTHA JOANNE EVERHART

ANDY BOWERSOX INC

JACK & JUDY CARICO

EDWIN & BARBARA COCHRANE

PAUL E & JANET L COATES

TRISH L & RONNIE D RITZ, JR

SPECIAL CUT DITCH SEE DETAIL F

TRENCHLESS INSTALLATION 24" WELDED STEEL

TRENCHLESS INSTALLATION 30" WELDED STEEL

TRENCHLESS INSTALLATION 48" WELDED STEEL (NOT BURIED)

FLOWABLE FILL

REMOVE DI

REMOVE DI & 16' – 18" RCP

REMOVE DI & 32' – 18" RCP

REMOVE 16' – 18" RCP

JB w/SLAB LID

JB w/MH

JB w/Slab Lid

RETAIN

2-1 SIDE SLOPES

CL I RIP RAP EST 115 TON EST 22 SY GF

ENERGY DISSIPATOR BASIN SEE DETAIL AW CL II RIP RAP EST 115 TON EST 153 SY GF

STANDARD BASE DITCH CL II RIP RAP EST 96 TON EST 188 SY GF SEE DETAIL AV

CL I RIP RAP EST 11 TON EST 22 SY GF

SPECIAL LATERAL V DITCH SEE DETAIL G

SPECIAL LATERAL VI DITCH SEE DETAIL D

COLLAR AND EXTEND w 15" RCP III

COLLAR

15" RCP III

SEE SHEET 20 THROUGH 21 FOR -Y2SBL- PROFILE

SEE SHEET 27 FOR -Y2NBL- PROFILE

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SHEET 23 OF 32

PROJECT REFERENCE NO.	SHEET NO.
U-2579AA	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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MATCHLINE SHEET 16
-Y2RPB- STA. 32+50.00

NAD 83/95

MATCHLINE SHEET 13
-Y2- STA. 65+50.00

MATCHLINE SHEET 5
-Y2- STA. 91+00.00
-Y2FLYCA- STA. 29+98.44

FOR ENLARGEMENT SEE SHEET 25

B

C

SITE 15
SITE 15A
SITE 14
SITE 14B
SITE 14A
SITE 13
SITE 2B
SITE 2C

TOTAL TAKE OF REMNANT

MARTHA W LAWSON
DIANE W GERREY
ROY E JOYNER JR
NCDOT
EVERETTE E & MARTHA L KIRBY
SUE WOOSLEY
THE SHERWOOD COMPANY
MICHAEL B GRUBBS
JAMES L EVANS
WILLIAM C TUTTLE
SAMUEL R & EMMA J HURSH
BRENDA B DIXON
SILVER & GOLD EXCHANGE INC
HERMAN F & ANNE N ANGEL
JOHN WAYNE KELLY
RONALD J & IMO J PLEMMONS
TIMOTHY C & WENDY R BURDETTE
CALVIN HOLCOMBE
RONNIE C & SANDRA B SIDDEN
ROBERT E SR & EMILY G WILLARD
JUDY A DARRAH
MICKEY C DUGGINS HEIRS
REBECCA B JONES
MARY JO FINNEY

200′ 0′ 200′
GRAPHIC SCALE

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

SEE SHEET 25 FOR -Y2FLYCA- PROFILE
SEE SHEETS 27 THROUGH 28 FOR -Y2NBL- PROFILE
SEE SHEETS 31 THROUGH 32 FOR -Y2SBL- PROFILE
SEE SHEETS 33 THROUGH 34 FOR -Y2RPB- PROFILE

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PERMIT DRAWING
SHEET 24 OF 32

PROJECT REFERENCE NO.	SHEET NO.
U-2579AA	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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MATCHLINE SHEET 16
-Y2RPB- STA. 32+50.00

MATCHLINE SHEET 13 -Y2- STA. 65+50.00

MATCHLINE SHEET 5
-Y2- STA. 91+00.00
-Y2FLYCA- STA. 29+98.44

B

C

FOR ENLARGEMENT SEE SHEET 25

TOTAL TAKE OF REMNANT

SITE 15
SITE 15A
SITE 2B
SITE 2C
SITE 14
SITE 14A
SITE 14B
SITE 13

ENLARGEMENTS INCLUDED
PERMIT DRAWING SHEET 25

200' 0' 200'
GRAPHIC SCALE

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

SEE SHEET 25 FOR -Y2FLYCA- PROFILE
SEE SHEETS 27 THROUGH 28 FOR -Y2ARBL- PROFILE
SEE SHEETS 31 THROUGH 32 FOR -Y2SBL- PROFILE
SEE SHEETS 33 THROUGH 34 FOR -Y2RPB- PROFILE

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PERMIT DRAWING SHEET 25 OF 32

PROJECT REFERENCE NO.	SHEET NO.
U-2579AA	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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TOTAL TAKE OF REMNANT

SITE 15

SITE 15A

SITE 14

SITE 14B

SITE 14A

SITE 13

DIANE W GERREY

ROY E JOYNER JR

NCDOT

MICHAEL B GRUBBS

TIMOTHY W & JUDY A TUTTLE

JAMES L EVANS

SAMUEL R & EMMA J HURSH

HERMAN F & ANNIE H ANGEL

SILVER & GOLD

SUE WOOSLEY

SOUTH FORK MUDDY CREEK

BANK STABILIZATION SEE DETAIL TT

REMOVE HW & 16"-42" CMP

CL. I RIP RAP EST. 95 TONS EST. 258 SY GF

LATERAL 2' BASE DITCH DDE=161 CY SEE DETAIL T

CL. I RIP RAP EST. 183 TONS EST. 318 SY GF LATERAL 5' BASE DITCH DDE=115 CY SEE DETAIL S

RIP-RAP AT EMBANKMENT SEE DETAIL AA

BANK STABILIZATION CL I RIPRAP SEE DETAIL AA

SPECIAL LATERAL V DITCH SEE DETAIL D

CL. B RIP RAP EST 2 TON EST 7 SY GF

CL. B RIP RAP EST. 56 TONS - EST. 152 SY GF V DITCH SEE DETAIL ZZ

RETAIN & EXTEND EXISTING BOX CULVERT

24" w ELBOWS

TRENCHLESS INSTALLATION 24" WELDED STEEL

REMOVE DI

FLOWABLE FILL

15" w ELBOWS

JB w/MH

CL. B RIP RAP

LATERAL 4' BASE DITCH DDE=209 CY SEE DETAIL LL

CL. I RIP RAP - EST 198 TONS EST 334 SY GF

BEGIN JS

LATERAL 2' BASE DITCH DDE=22 CY SEE DETAIL NN

PROPOSED OUTLET END OF RCBC IS NOT BURIED

OUTLET TYPICAL SEE DETAIL CUL 1-1

BANK STABILIZATION CL I RIPRAP

LATERAL 3' BASE DITCH DDE=112 CY SEE DETAIL Y

CL. I RIP RAP EST. 46 TONS - EST. 78 SY GF V DITCH SEE DETAIL KK

CL. I RIP RAP EST. 130 TONS EST. 212 SY GF

TOE PROTECTION SEE DETAIL AG

18" w ELBOWS

48" RCP-IV

HW

SPECIAL LATERAL V DITCH SEE DETAIL VV

24" RCP-III

SPECIAL CUT DITCH SEE DETAIL MM

CL. I RIP RAP EST. 161 TONS EST. 311 SY GF

SPECIAL CUT DITCH SEE DETAIL FF

LATERAL V DITCH SEE DETAIL D

SEE SHEETS 25 FOR -Y2FLYCA- PROFILE
SEE SHEETS 27 THROUGH 28 FOR -Y2NBL- PROFILE
SEE SHEETS 31 THROUGH 32 FOR -Y2SBL- PROFILE
SEE SHEETS 33 THROUGH 34 FOR -Y2RPB- PROFILE

100' 0' 100'
GRAPHIC SCALE

E E DENOTES EXCAVATION IN WETLAND

DENOTES MECHANIZED CLEARING

F F DENOTES FILL IN WETLAND

S S DENOTES IMPACTS IN SURFACE WATER

TS TS DENOTES TEMPORARY IMPACTS IN SURFACE WATER

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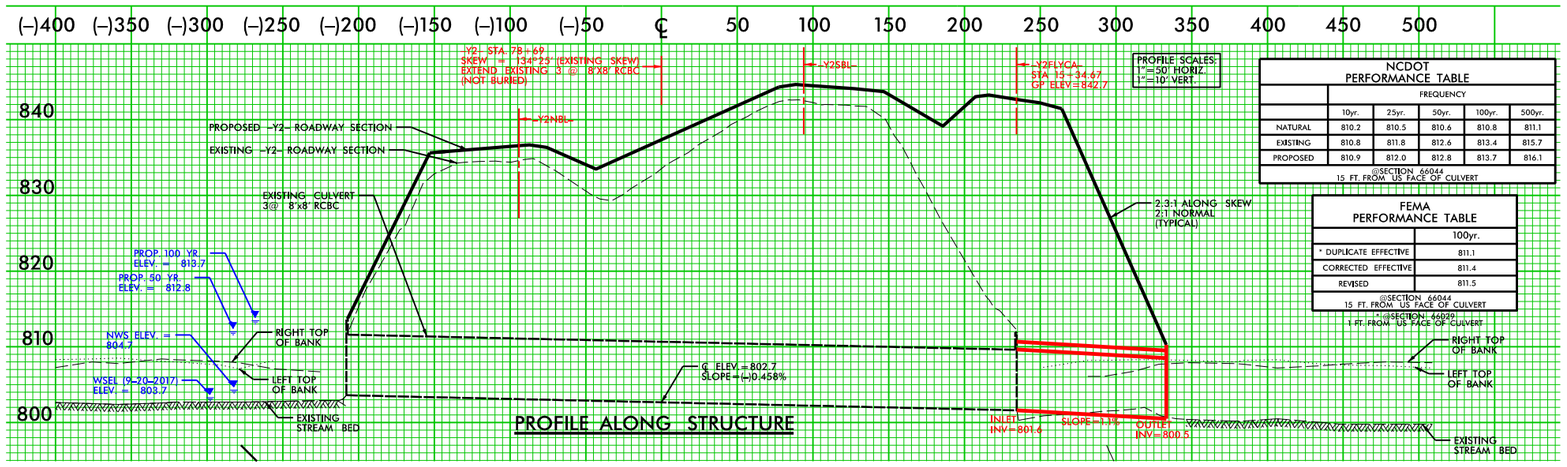
PROJECT REFERENCE NO.	SHEET NO.
U-2579AA	
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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SITE 14

PERMIT DRAWING
SHEET 26 OF 32



NCDOT
PERFORMANCE TABLE

	FREQUENCY				
	10yr.	25yr.	50yr.	100yr.	500yr.
NATURAL	810.2	810.5	810.6	810.8	811.1
EXISTING	810.8	811.8	812.6	813.4	815.7
PROPOSED	810.9	812.0	812.8	813.7	816.1

@SECTION 66044
15 FT. FROM US FACE OF CULVERT

FEMA
PERFORMANCE TABLE

	100yr.
* DUPLICATE EFFECTIVE	811.1
CORRECTED EFFECTIVE	811.4
REVISED	811.5

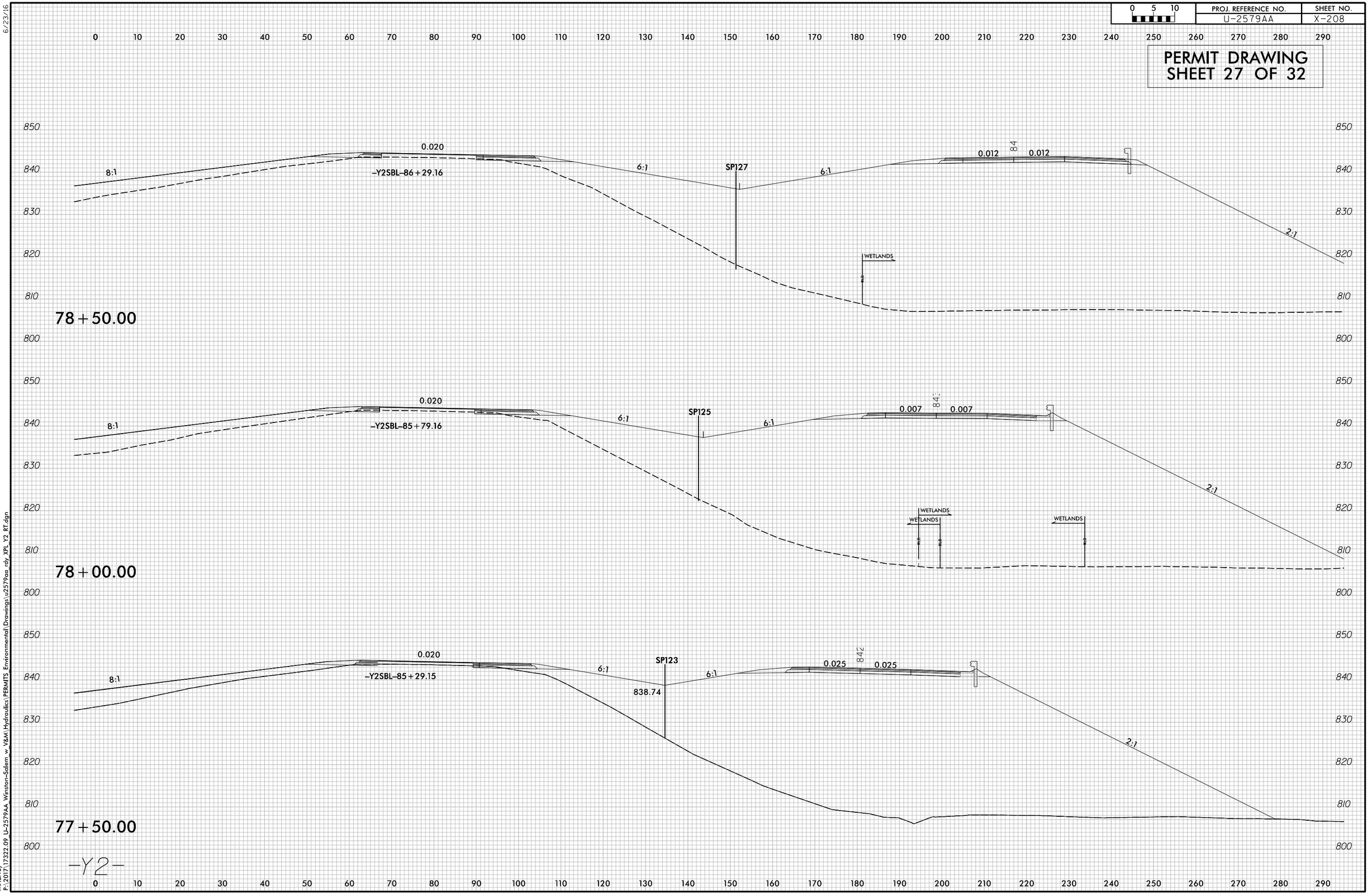
@SECTION 66044
15 FT. FROM US FACE OF CULVERT
@SECTION 66039
1 FT. FROM US FACE OF CULVERT

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	U-2579AA	X-208

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SHEET 27 OF 32



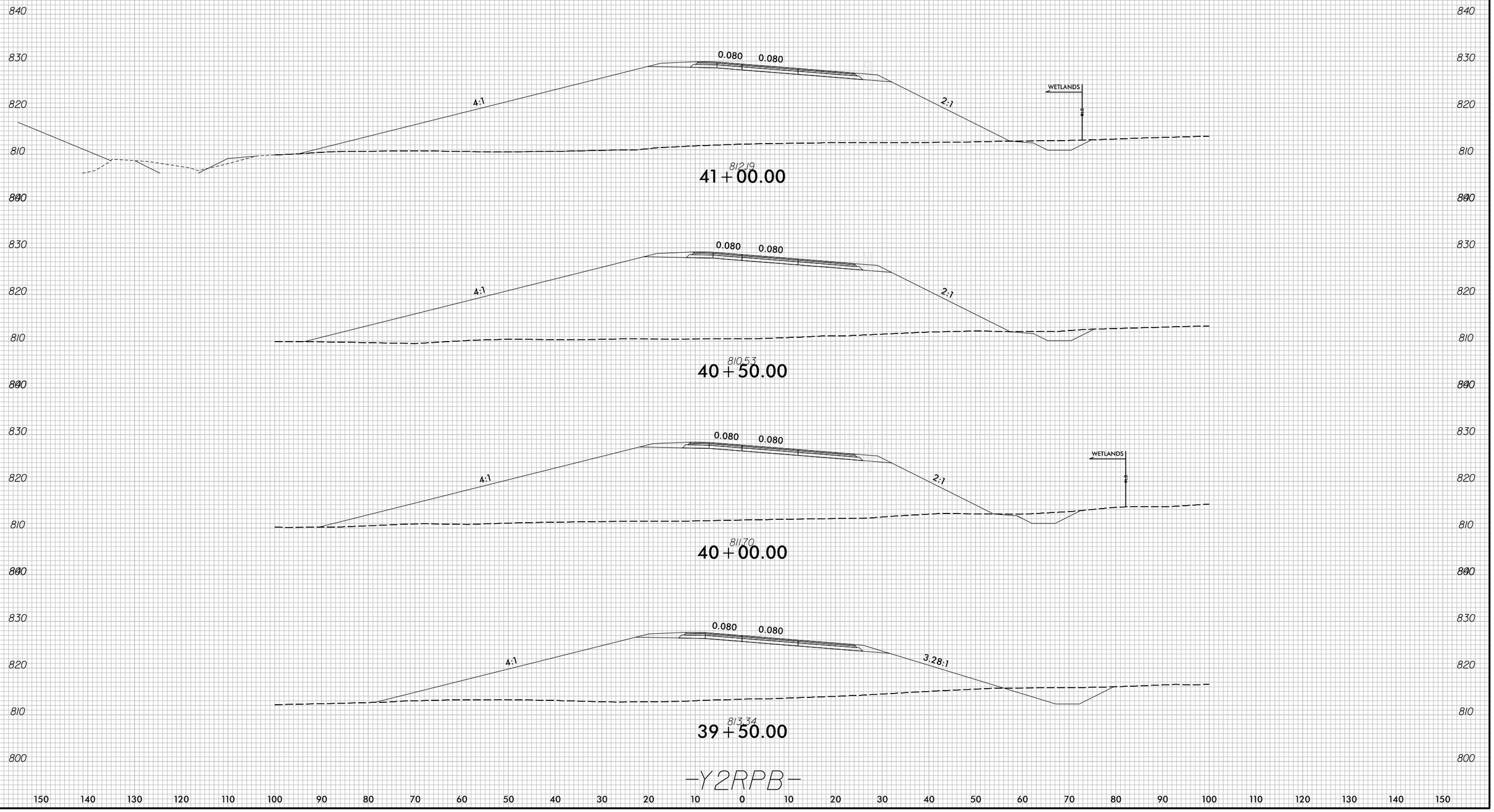
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0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2579AA	X-274

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

PERMIT DRAWING
SHEET 28 OF 32



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SHEET 29 OF 32

PROJECT REFERENCE NO.	SHEET NO.
U-2579AA	16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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MATCHLINE SHEET 4 –Y2RPB– STA. 19+15.00

MATCHLINE SHEET 14 –Y2RPB– STA. 32+50.00

MATCHLINE SHEET 15 –Y1REV– STA. 16+00.00

SITE 2

B

AREA HAS BEEN LOGGED

BRENDA SUE THORE, SARAH THORE HAMMOND, JANE THORE HARDY, & JAMES S. THORE, JR.

EVERETTE E & MARTHA L KIRBY

BILLY RAY WOOSLEY

BILLY WOOSLEY

HAZEL HESTER SMITH

LATERAL 5' BASE DITCH DDE=263 CY SEE DETAIL XX

STANDARD 2' BASE DITCH SEE DETAIL X

REMOVE

15" RCP-III

48" RCP-III

54" RCP-III

2GI

2 ELBOWS

TB 2GI

LATERAL 5' BASE DITCH SEE DETAIL AK

18" w ELBOWS

TYPE D 2GI

BDO

2' BERM BASE DITCH DDE=12 CY SEE DETAIL M

2GI-A

54" w ELBOWS

FALSE BERM SEE DETAIL AI

LATERAL V DITCH DDE=88 CY SEE DETAIL K

SPECIAL CUT DITCH FROM –Y1DET– SEE DETAIL AJ

SPECIAL CUT DITCH SEE DETAIL J

42" RCP-III

30" RCP-III

REMOVE HW

END CONSTRUCTION –Y1DRV– 13+50.00

ISBKBUS

CAR PORT

HTR

BST

PUE

PDE

DUE

HW

100' 0' 100'
GRAPHIC SCALE

P P DENOTES IMPACTS IN SURFACE WATER (POND)

SEE SHEET 21 FOR –Y1Rev– PROFILE
SEE SHEET 33 FOR –Y2RPB– PROFILE
SEE SHEET 40 FOR –Y1DRV– PROFILE
SEE SHEETS 2D-1 THRU 2D-3 FOR DITCH DETAILS
SEE SHEET 2B-8 FOR BRIDGE DETAIL
SEE SHEETS S03-01 THRU S03-22 FOR STRUCTURE PLANS

R/W REVISION 4/10/19 JCL CHANGED PROPERTY OWNER NAMES AND INFORMATION FOR PARCELS 43 AND 44.

6/7/2021
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PERMIT DRAWING
SHEET 30 OF 32

PROJECT REFERENCE NO.	SHEET NO.
U-2579AA	16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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WETHERILL ENGINEERING

NAD 83/95

REVISIONS

8/17/99 R/W REVISION 4/10/19 JCL CHANGED PROPERTY OWNER NAMES AND INFORMATION FOR PARCELS 43 AND 44.

MATCHLINE SHEET 5 –Y1REV– STA. 25+00.00

MATCHLINE SHEET 4 –Y2RPB– STA. 19+15.00

MATCHLINE SHEET 14 –Y2RPB– STA. 32+50.00

MATCHLINE SHEET 15 –Y1REV– STA. 16+00.00

SITE 2

B

LATERAL 5' BASE DITCH DDE=263 CY SEE DETAIL XX

STANDARD 2' BASE DITCH SEE DETAIL X

REMOVE

2GI 15" RCP-III 18" RCP-III

2GI-A 54" RCP-III

2GI-A 54" w ELBOWS

2GI 12" 4 2" ELBOWS

TB 2GI

TYPE 'D' 2GI

18" w ELBOWS

LATERAL 5' BASE DITCH SEE DETAIL AK

2' BERM BASE DITCH DDE=12 CY SEE DETAIL M

BDO

FALSE BERM SEE DETAIL AI

LATERAL Y DITCH DDE=98 CY SEE DETAIL K

SPECIAL CUT DITCH FROM -Y1DET- SEE DETAIL AJ

SPECIAL CUT DITCH SEE DETAIL J

42" RCP-III

30" RCP-III

REMOVE HW

-Y1REV-

END CONSTRUCTION -Y1DRV- 13+50.00

BRENDA SUE THORE, SARAH THORE HAMMOND, JANE THORE HARDY, & JAMES S. THORE, JR.

EVERETTE E & MARTHA L. KIRBY

BILLY RAY WOOSLEY

BILLY WOOSLEY

HAZEL HESTER SMITH

ISBKBUS

CAR PORT

HTR

BST

PUE PDE DUE

100' 0' 100'
GRAPHIC SCALE

P P DENOTES IMPACTS IN SURFACE WATER (POND)

SEE SHEET 21 FOR -Y1Rev- PROFILE
SEE SHEET 33 FOR -Y2RPB- PROFILE
SEE SHEET 40 FOR -Y1DRV- PROFILE
SEE SHEETS 2D-1 THRU 2D-3 FOR DITCH DETAILS
SEE SHEET 2B-8 FOR BRIDGE DETAIL
SEE SHEETS S03-01 THRU S03-22 FOR STRUCTURE PLANS

6/7/2021
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USER:jlharvey

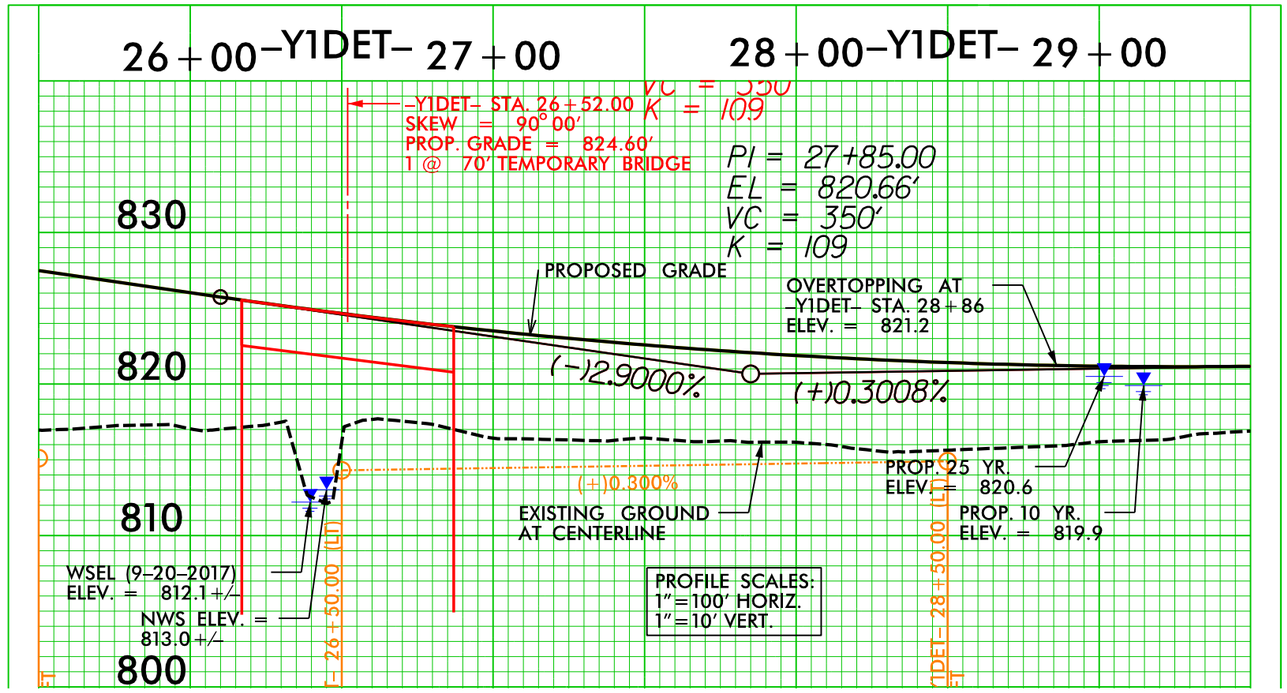
PROJECT REFERENCE NO.	SHEET NO.
U-2579AA	
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING
SHEET 31 OF 32

SEE PERMIT SHEET 10A FOR PLAN OF –Y1DET– BRIDGE



8/17/99
5/12/2021
MHarvey
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WETLAND PERMIT IMPACT 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	-L- 15+12	42" RCP-V (Not Buried)						0.03		392		
1		Channel Armoring						< 0.01	< 0.01	14	24	
1		Bank Stabilization						< 0.01	< 0.01	15	9	
2	-Y1REV- 25+60 RT	Drain and Stabilize Pond						0.50				
2A	-Y1REV- 28+00 RT	Drain and Stabilize Pond						0.12				
2B	-Y1REV- 28+60 RT	Drain and Stabilize Pond						2.31				
2C	-Y1REV- 28+60 RT	Bank Stabilization						< 0.01	< 0.01	16	20	
3	-Y1REV-32+78	2 @ 9'x9' RCBC						0.05		240		
3		Channel Change						0.02		124		
3		Bank Stabilization						< 0.01	< 0.01	26	20	
3A	-Y2FLYCA- 46+56 LT to 46+92	Detour Ditch Outlets						< 0.01	< 0.01	20	40	
3B	-Y2FLYCA- 46+56 LT to 46+92	Detour Bridge/Bank Stabilization						0.01	< 0.01	35	18	
4	-L- 36+28	2 @ 10'x9' RCBC						0.10		418		
4	-L- 34+68 RT	Channel Change						0.02		85		
4	-L- 38+65 LT	Bank Stabilization						0.01		80		
4A	-L- 33+95 to 34+33 RT	Bank Stabilization and Temporary Diversion Channel for Culvert Phasing						0.01	< 0.01	67	10	
5	-Y1REV- 41+70 RT	15" Pipe Removal	< 0.01			0.02						
5A	-Y1REV- 39+50 RT	60" Pipe Removal/Scour Hole Stabilization						< 0.01	< 0.01	42	40	
5B	-Y1REV- 44+50 RT	60" Pipe Removal/Scour Hole Stabilization						< 0.01	< 0.01	8	10	
5C	Y1REV- 44+83 to 47+09 R	Bank Stabilization						0.05	< 0.01	236	17	
5D	-L- 39+22 to 39+93 RT	Bank Stabilization and Temporary Diversion Channel for Culvert Phasing						0.06		173		
6	-L- 45+60	36" Welded Steel						< 0.01		57		
6		Bank Stabilization						< 0.01	< 0.01	68	20	
6A	-Y2 FLYAB- 23+00	Drain and Stabilize Pond						0.11				
7	-L- 54+04	72" Alt/Welded Steel						< 0.01		26		
7		Bank Stabilization						< 0.01	< 0.01	23	15	
7A	-L- 54+04	72" Alt/Welded Steel						< 0.01		11		
7A		Bank Stabilization						< 0.01	< 0.01	35	10	
8	-Y2- 15+70 to 17+65 RT	4' Base Ditch	0.04		0.04	0.02						
9	-Y2- 15+92 to 17+31 RT	Erosion Control Practices				0.06						
10	-Y2- 18+36	Bank Stabilization						0.04	< 0.01	60	20	
10A	-Y2- 19+50 LT	Bank Stabilization						< 0.01	< 0.01	9	22	
10B	-Y2- 22+10 LT	Bank Stabilization						< 0.01	< 0.01	8	10	
10C	-Y2- 23+50 LT	Bank Stabilization						< 0.01	< 0.01	8	10	
10D	-Y2- 25+50 LT	Bank Stabilization						< 0.01	< 0.01	10	10	
11	-Y2- 19+40 to 20+01 RT	Erosion Control Practices				0.03						
12A	-Y2- 52+60	Channel Armoring for Energy Dissipator Basin						< 0.01		33		
12B	-Y2- 54+75	Channel Change						< 0.01	< 0.01	80	10	
13	-Y2- 72+48 RT	60" Alt/Welded Steel						< 0.01		32		
13		Channel Armoring						< 0.01	< 0.01	31	25	
14	-Y2- 78+70	3 @ 8'x8' RCBC Extension						0.06		150		
14		Bank Stabilization						0.03	< 0.01	97	20	
14A	-Y2FLYCA- 14+75 to 15+30	3' Base Ditch						< 0.01	< 0.01	50	10	
14B	-Y2FLYCA- 15+68 to 17+46	Y2 FLYCA	0.38			0.05						
15	-Y2RPB- 41+50	36" RCP-III						0.03		249		
15		Bank Stabilization						< 0.01	< 0.01	16	32	
15A	-Y2RPB- 39+50 to 42+00	Y2RPB	0.64		0.07	0.20						
TOTALS*:			1.07		0.11	0.38		3.63	0.06	3044	422	0

*Rounded totals are sum of actual impacts

NOTES:
15A - There will be total take of the remnant, shown in the quantities.

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
6/24/2021
Forsythe Co.
U-2579AA

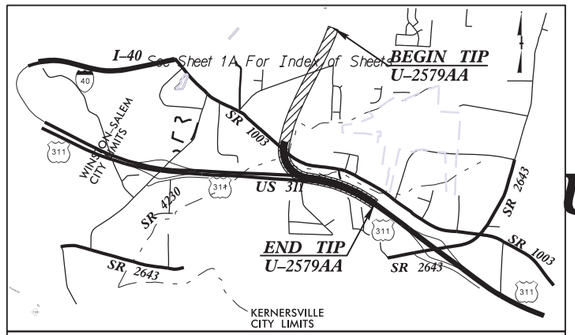
SHEET 32 OF 32

Revised 2013 10 24

See Sheet 1A For Conventional Symbols

09/08/99

TIP PROJECT: U-2579AA



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

UTILITY CONSTRUCTION PLANS
FORSYTH COUNTY

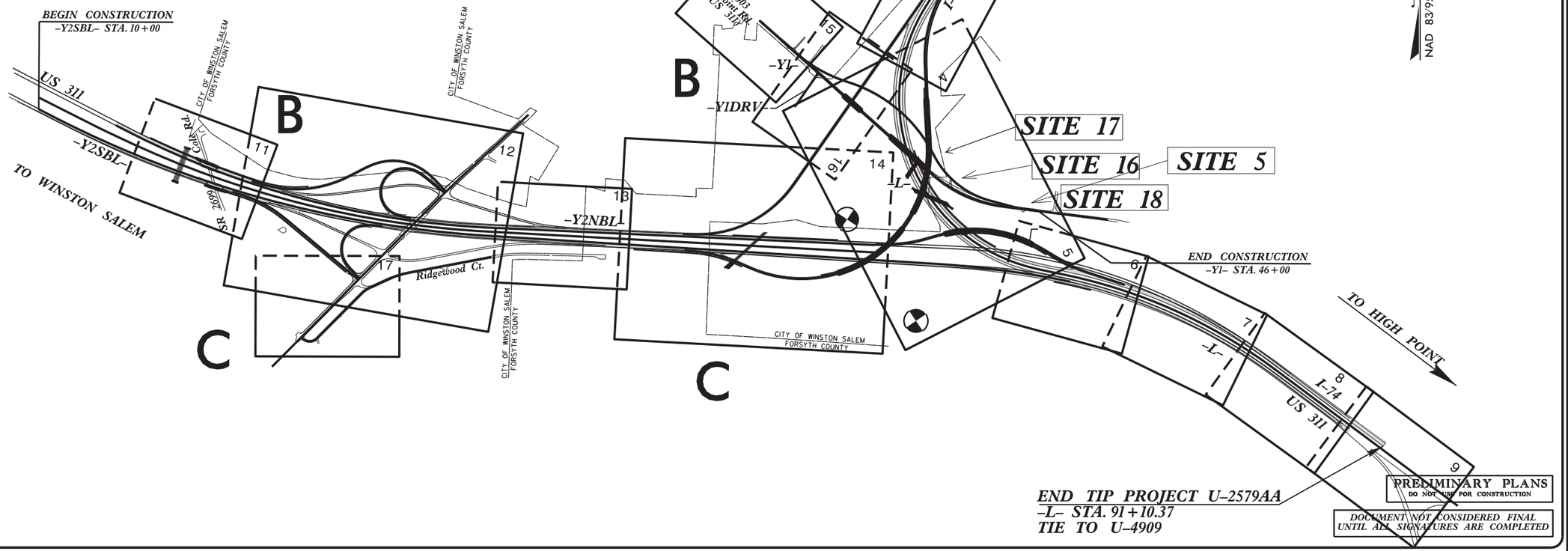
T.I.P. NO.	SHEET NO.
U–2579AA	UC–1

Utility Drawings
Sheet 1 of 4

LOCATION: WINSTON SALEM NORTHERN BELTWAY EASTERN SECTION (FUTURE I–74) FROM US 311 TO I–40

WETLAND AND SURFACE WATER IMPACTS PERMIT

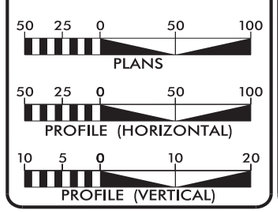
TYPE OF WORK: UTILITY RELOCATION PLAN



PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DOCUMENT NOT CONSIDERED FINAL UNTIL ALL SIGNATURES ARE COMPLETED

GRAPHIC SCALES



WATER AND SEWER OWNERS ON PROJECT

(A) WATER XXXXXXXX
(B) SANITARY SEWER
(C) XXXXX
(D) XXXXX
(E) XXXXX

SEAL

DIVISION OF HIGHWAYS
UTILITIES UNIT
1555 MAIL SERVICES CENTER
RALEIGH NC 27699-1555
PHONE (919) 707-6690
FAX (919) 250-4151

TUCKER MARTIN — UTILITIES REGIONAL MANAGER
ALI KOUCHEKI — UTILITIES REGIONAL ENGINEER
JON LOUGHRY — UTILITIES ENGINEER

12-MAR-2020 16:14
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$$$$USERNAME$$$$

Utility Drawings
Sheet 2 of 4

MATCHLINE SHEET 4
-Y2FLYCA- STA. 52+60.00

SITE 17

SITE 16

SITE 3A

H & Y CONSTRUCTION CO
DB 2033 PG 330
PB 37 PG 182

GEORGIA P FROY
DB 2471 PG 156
PB 37 PG 182

MICHAEL J GOLFLESH
BRENDA R GOLFLESH
DB 3172 PG 2547
PB 37 PG 182

RICHARD KIMBERLY HELLER
DB 1859 PG 2547
PB 37 PG 182

TERRY E FULP
DB 1599 PG 2547
PB 37 PG 182

DAVID A CASTRO
DB 2462 PG 1185
PB 37 PG 181

BRENDA N PENL,
DB 2574 PG 251
PB 13 PG 127

BRENDA N PENLAND
DB 1276 PG 1096
PB 13 PG 127

BRENDA SUE THORE,
SARAH THORE HAMMOND,
JANE THORE HARDY,
JAMES S. THORE, JR.
DB 1496 PG 3712

CITY OF WINSTON SALEM
FORSYTH COUNTY

TS Sta. 51+78.79 -Y2FLYCA-

+78.79 -Y2FlyCA-
100.00' Rt.

BEGIN SBG LT
-Y2FLYCA- +18.58

END SBG RT
-Y2FLYCA- +20.05

END SBG LT
-Y2FLYCA- +20.05

-Y2FLYCA-
N 3°10'34.7" W

ST Sta. 45+10.89 -Y2FLYCA-

10.89 -Y2FlyCA-
100.00' Rt.

CS Sta. 43+48.89 -Y2FLYCA-

+48.89 -Y2FlyCA-
100.00' Rt.

POT Sta. 33+52.17 -Y2

POC Sta. 41+55.50 -Y2

BEGIN SBG
-L- +07.

450' TAPER

CAT -1-

AREA HAS BEEN LOGGED

SPECIAL LATERAL V DITCH
SEE DETAIL D

CL B RIP RAP
EST 2 TON
EST 7 SY GF

SPECIAL LATERAL
2' BASE DITCH
SEE DETAIL UU
CL. I RIP RAP
- EST 73 TONS
EST 135 SY GF

LATERAL
BASE DITCH
DDE=139 CY
SEE DETAIL E
CL. B RIP RAP
EST 56 TONS
EST 152 SY GF

STANDARD 2' BASE DITCH
SEE DETAIL GG
CL. B RIP RAP
- EST 56 TONS
EST 152 SY GF

SPECIAL LATERAL
3' BASE DITCH
SEE DETAIL B

CL. I RIP RAP
W/GEOTEXTILE
EST. 651 TONS
EST. 1265 SY GF.

CL. I RIP RAP
W/GEOTEXTILE
EST. 163 TONS
EST. 285 SY GF.

LATERAL 6' BASE DITCH
DDE = 139 CY
SEE DETAIL C

RIP RAP PIER
PROTECTION
SEE DETAIL AP

RIP RAP PIER
PROTECTION
SEE DETAIL AP

SLOPE STABILIZATION
RIPRAP
SEE DETAIL TT

RIP RAP AT
EMBANKMENT

Prop WW Fence

16" SS

20' SANITARY SEWER EASEMENT

10' PRIVATE DRAINAGE EASEMENT

SWAMP CREEK

2GI

2GI-A

2SFD

1½SFD

ISFD

Utility Drawings
Sheet 3 of 4

IMPACT AREA=

SITE 5B

SITE 6A

SITE 5

SITE 18

SITE 5A

JANICE C ELLIS
DB 1951 PG 2045
PB 37 PG 180

ELIZABETH ANN DAVIS
DB 3412 PG 1069

CONNIE L CONNER
DB 1994 PG 2797
PB 37 PG 180

TIMOTHY D & SARA C VONCANNON
DB 1927 PG 3525
PB 37 PG 180

MICHAEL J & VIRGINIA P MENZEL
DB 2053 PG 595
PB 37 PG 180

MICHAEL L MILLER & MARCIA L MILLER
DB 1647 PG 586

EDMOND C & SHIRLEY H HAIRSTON
DB 2005 PG 3564
PB 37 PG 180

DAVID A & SARAH C WALKER
DB 1957 PG 2045
PB 37 PG 180

HERBERT DARYL MOORE
DB 2702 PG 2185
PB 37 PG 180

DAVID G & PATRICIA A MCCORMICK
DB 2405 PG 2558
PB 37 PG 180

BRENDA N PENLAND
DB 2574 PG 2316
PB 13 PG 127

BARRY GARFIELD ADAMS
DB 1997 PG 801
PB 13 PG 127

BRANT H & BEVERLY H GODFREY
PB 37 PG 180
DB 2021 PG 1301

BRANT DR & BEVERLY H GODFREY
DB 2021 PG 1325
PB 37 PG 180

SAMUEL & ANDREA STIMPSON
DB 2337 PG 829
PB 37 PG 180

WESTVIEW DEVELOPMENT
DB 1821 PG 344
PB 13 PG 127

C W MYERS TRADING POST INC
DB 1416 PG 2001

SELDA DR
20' BST

REMOVE 60" CMP

8' BASE DITCH
w/CL II RIP RAP
SEE DETAILS AN-1,2,&3
EST. 200 TON
EST. 270 SY GF

SPECIAL CUT DITCH
SEE DETAIL J

SPECIAL LATERAL V DITCH
SEE DETAIL Q

SPECIAL LATERAL V DITCH
SEE DETAIL L

REMOVE

REMOVE 60" CMP
8' BASE DITCH
w/CL II RIP RAP
SEE DETAILS AN-1,2,&3
EST. 200 TON
EST. 270 SY GF

CL. I RIP RAP W/GEOTEXTILE
EST 42 TON
EST 70 SY GF
RIP RAP AT EMBANKMENT
SEE DETAIL AA

STANDARD 2' BASE DITCH
SEE DETAIL X

CL. I RIP RAP
EST. 7 TON
EST. 15 SY GF

CL. B RIP RAP
EST. 2 TON
EST. 7 SY GF

CL. B RIP RAP
EST. 8 TON
EST. 21 SY GF

LATERAL V DITCH
DDE= 56 CY
SEE DETAIL K

LATERAL 2' BASE DITCH
DDE=676 cu yd
SEE DETAIL R

INLET TYPICAL
SEE DETAIL CUL 3-2

BANK STABILIZATION

SEE DETAIL CUL 3-1
MULTI-BARREL
CULVERT DETAIL

CL. I
RIP RAP

REMOVE EXIST. GUARDRAIL

PC Sta. 34+26.60 -Y1-

POC Sta. 41+07.80 -L-

POC Sta. 28+33.21 -Y2FLYAB-

POT Sta. 42+24.01 -Y1-

Begin Ref. Wall @ 10' X 9' RCBC
BEVELED HEADWALLS
BURIED ONE BARREL CULVERT
Sta. 36+08
ENTIRE WALL TALL SILLS IN
35'-0.00 HIGH FLOW BARREL

End WW Fence
End C/A
+32.56 -Y1-
Exist. R/W

Prop. WW Fence

Prop. R/W,
80.00' Rt.

+80.00 -Y1-
Exist. R/W,
60.00' Lt.

+45.00 -Y1-
65.00' Lt.

+55.00 -Y1-
130.00' Lt.

+30.00 -Y1-
142.00' Lt.

+25.00 -Y1-
128.00' Lt.

+00.00 -Y1-
131.00' Lt.

+85.00 -Y1-
165.00' Lt.

+40.00 -Y1-
Prop. R/W,
80.00' Rt.

+10.00 -Y1-
Prop. R/W,
80.00' Rt.

EXCAVATE TO
EL. 820.3

EXCAVATE TO
EL. 821.0

DENOTES EXCAVATION
TO BE PAID AS
UNCLASSIFIED

FRENCHLESS INSTALLATION

PROVIDE TEMPORARY WORK PLATFORM

CONSTRUCTION ENTRANCE

CONSTRUCTION FENCE

TEMPORARY SILT FENCE

SEE DE
CLASSI

WETLAND AND SURACE WATER IMPACTS SUMMARY

			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
Site-16	Y2FLYCA	Sewer 16" gravity			< 0.01							
Site-17	Y2FLYCA	Sewer 16" gravity			0.03							
Site-18	Y1	Sewer 30" gravity			< 0.01							
Site-5	Y1	Sewer 30" gravity			0.02							