



PAT McCRORY  
Governor

NICHOLAS J. TENNYSON  
Secretary

November 28, 2016

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

ATTN: Mr. Dave Bailey  
NCDOT Coordinator

Subject: **Request for Modification to the Section 404 Individual Permit and Section 401 Water Quality Certification and Application for Jordan Lake Riparian Buffer Certification** for the proposed Greensboro Eastern Loop from US 70 Relocation to SR 2303 (Lawndale Drive), Guilford County, Division 7. WBS Element No. 34821.1.1, TIP Nos. U-2525B and U-2525C.

Reference: USACE Individual Permit Action ID SAW-2005-21386, dated April 15, 2014.  
USACE Individual Permit Modification Action ID SAW-2005-21386, October 31, 2014.  
USACE Individual Permit Modification Action ID SAW-2005-21386, December 4, 2014.  
USACE Individual Permit Modification Action ID SAW-2005-21386, March 12, 2015.  
USACE Individual Permit Modification Action ID SAW-2005-21386, July 24, 2015.  
USACE Individual Permit Modification Action ID SAW-2005-21386, March 18, 2016.  
USACE Individual Permit Modification Action ID SAW-2005-21386, August 11, 2016.  
NCDWR Project No. 20130918, Certification No. 3978, February 6, 2014.  
NCDWR Project No. 20130918\_v2, Modification to Certification No. 3978, June 24, 2014.  
NCDWR Project No. 20130918\_v3, Modification to Certification No. 3978, October 15, 2014.  
NCDWR Project No. 20130918\_v4, Modification to Certification No. 3978, December 11, 2014.  
NCDWR Project No. 20130918\_v5, Modification to Certification No. 3978, March 18, 2015.  
NCDWR Project No. 20130918\_v6, Modification to Certification No. 3978, July 21, 2015.  
NCDWR Project No. 20130918\_v7, Modification to Certification No. 3978, March 18, 2016.  
NCDWR Project No. 20130918\_v8, Modification to Certification No. 3978, August 12, 2016.

Dear Sir:

The purpose of this letter is to request a modification to the United States Army Corps of Engineers (USACE) Section 404 Individual Permit and North Carolina Division of Water Resources Section 401 Certification for the above referenced project. The portion of this project from US 70 to US 29, U-2525B, is currently under construction. This section includes all of the work to be done along US 29



with the exception of some of the interchange ramps (including a flyover) that are included in the U-2525C design. During a Final Design Field Inspection meeting earlier this year, it was noted that some drainage to be installed under U-2525B would have to be removed to incorporate the drainage for U-2525C. Therefore the decision was made to go ahead and include the ramps in the current construction contract. These activities will result in impacts to jurisdictional resources. As such, the NCDOT is requesting approval for these activities. Please see the enclosed revised Division of Mitigation Services (DMS) acceptance letter, permit drawing review minutes (4B and 4C) permit drawings and buffer drawings for the above referenced project.

The above activities occur within the footprint of U-2525C. This section is currently not scheduled to let until July 2018. The remaining final impacts for U-2525C will be permitted via phased modification prior to let for this section.

As stated in the original 2013 permit application, the preliminary surface water impacts for U-2525C are 12,646 linear feet of permanent stream impacts and 1.7 acres of pond impacts. The total preliminary wetland impacts for U-2525C are 2.4 acres. These impacts are already covered under the current DMS acceptance, therefore no additional stream or wetland mitigation is needed at this time.

There is one stream impact due to ramp construction that occurs outside the project area that existed at the time this project was deemed exempt from the Jordan Lake Buffer Rules. This activity will result in 142 square ft. of mitigable Zone 2 impacts. The DMS acceptance has been updated to include these buffer impacts. Once the final design is completed for the rest of U-2525C, the mitigation request will be revised as appropriate.

### IMPACTS TO WATERS OF THE U.S.

Tables 1 and 2 summarize the impacts to jurisdictional water resources for the three permit sites impacted by the ramp construction under U-2525C. The remainder of the final impacts for U-2525C will be provided prior to the let date for that section. Site numbers correspond with the permit (hydraulic) drawings included in this application. The stream and wetland numbers correspond to the 2013 JD Appeals Maps. A brief description of each impact follows the tables.

**Table 1 – U-2525C Partial Final Wetland Impacts\***

Site	Wetland ID	Wetland Size (ac)	Permanent Fill in Wetlands (ac)	Excavation (ac)	Mechanized Clearing (ac)	Hand Clearing (ac)	Impacts Requiring Mitigation (ac)
1	WBU2	0.16	0.03 <sup>1</sup>	0.02	0.03	--	0.08
2	WE	0.75	0.43 <sup>2</sup>	0.03	--	--	0.46
<b>Total Impacts:</b>			<b>0.46</b>	<b>0.05</b>	<b>0.03</b>	<b>--</b>	<b>0.54**</b>

\* Wetlands impacted are riparian

\*\* Values are based on rounding, due to calculating totals with actual numbers to the thousandths

<sup>1</sup> 0.02 ac of the 0.03 ac results from ditch drawdown potentially draining a portion of the wetland outside of the ROW

<sup>2</sup> 0.15ac of the 0.43ac was previously permitted as mechanized clearing under U-2525B, Site 21

**Table 2 – U-2525C Partial Final Stream Impacts**

Site	Stream Name & Intermittent (I) or Perennial (P)	Stream ID <sup>1</sup>	Impact Type	Impact Length (linear feet)	Temporary Impacts (acres) (feet)	Mitigation Requirement <sup>2</sup> (linear feet)
1	UT to Jordan Branch (P)	SBV	Perm. Fill	41	--	USACE
			Bank Stabilization	5	--	--
			Temp. Fill	--	<0.01 (5')	--
2	UT to North Buffalo Creek (P)	SI	Perm. Fill	362	--	USACE & DWR
			Bank Stabilization	--	--	--
			Temp. Fill	--	-	--
3	UT to North Buffalo Creek (I)	SG	Perm. Fill	61	--	USACE
			Bank Stabilization	--	--	--
			Temp. Fill	--	<0.01 (10')	--
<b>Total Temporary Impacts:</b>				<b>--</b>	<b>&lt;0.01 (15')</b>	<b>--</b>
Total Perm. Impacts (Perm. Fill + Bank Stabilization):				<b>469</b>	--	--
Permanent Impacts Requiring DWR Mitigation:				<b>362</b>	--	--
Permanent Impacts Requiring USACE Mitigation:				<b>464</b>	--	--
<b>Total Impacts Requiring Mitigation:</b>				<b>464</b>	--	†

1 – As identified in the 2013 JD Appeals Map

2 – Mitigation for bank stabilization impacts required by DWR – not required by USACE

† – Final mitigation requirement will be up to the USACE and DWR

**Permit Site 1:** As a result of the new roadway slopes needed to incorporate the lengthened collector/distributor lane for one of the new ramps, the existing 60” concrete pipe will need to be extended. This will result in 41 linear feet (lf) of permanent impacts, <0.01 acre (5 lf) of temporary impacts, and 5 lf of bank stabilization to stream SBV. There will also be 0.03 acre of permanent wetland fill, 0.02 acre of excavation, and 0.03 acre of mechanized clearing in wetland WBU2. A portion (0.02 acre) of the 0.03 acre of permanent wetland impacts is a result of the potential drawdown on the east side of the wetland from the new lateral base ditch.

**Permit Site 2:** Ramp construction in the northwest quadrant will result in 362 lf of permanent impacts to stream SI. This activity will also result in a total take of the remaining portion of wetland WE, which includes 0.43 acre of permanent wetland fill and 0.03 acre of excavation. A portion (0.15 acre) of this permanent fill was previously permitted as mechanized clearing as part of U-2525B, Site 21.

**Permit Site 3:** In order to accommodate one of the new ramps, the existing 54” concrete pipe will be extended. This will result in 61 lf of permanent impacts and <0.01 acre (10 lf) of temporary impacts to stream SG.

### JORDAN LAKE RIPARIAN BUFFER IMPACTS

Proposed buffer impacts include Road Crossing impacts totaling 2,848 square ft. in Zone 1 and 1,586 square ft. in Zone 2. Of these totals, mitigable impacts include 422 square ft. in Zone 1 and 290 square ft. in Zone 2. However, a portion of these mitigable impacts is superseded by wetland impact, therefore the amount of mitigable impacts to be covered by DMS is 142 square ft. of Zone 2.

## REGULATORY APPROVALS

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

Section 401: We are hereby requesting a modification to the 401 Water Quality Certification from the N. C. Division of Water Resources.

A copy of this permit application and its distribution list will be posted on the NCDOT Website at: <http://connect.ncdot.gov/resources/Environmental>. If you have any questions or need additional information, please call Erin Cheely at (919) 707-6108.

Sincerely,



Per

Philip S. Harris III, P.E., C.P.M.  
Natural Environment Section Head

cc:  
NCDOT Permit Application Standard Distribution List



PAT MCCRORY  
Governor

DONALD R. VAN DER VAART  
Secretary

November 18, 2016

Mr. Philip S. Harris, III, P.E., CPM  
Natural Environment Unit  
North Carolina Department of Transportation  
1548 Mail Service Center  
Raleigh, North Carolina 27699-1548

Dear Mr. Harris:

Subject: Mitigation Acceptance Letter:

**TIP Number U-2525B/C, Greensboro Eastern Loop from US 70 Relocation to SR 2303 (Lawndale Drive), Guilford County**

Reference: USACE 404 Individual Permit issued July 24, 2015 (USACE Action ID 2005-21386)

NCDWR 401 Water Quality Certification (WQC) issued July 21, 2015 (NCDWR ID 2013-0918)

The purpose of this letter is to notify you that the Division of Mitigation Services (DMS) will provide the buffer mitigation for the subject project. Based on the information supplied by you on November 17, 2016, the buffer impacts are located in CU 03030002 of the Cape Fear River Basin in the Jordan watershed (Haw Arm) Central Piedmont (CP) Eco-Region, and are as follows:

**Table 1 – Additional Impacts (feet / acres)**

Cape Fear 03030002 CP	Stream			Wetlands			Buffer (Sq. Ft.)	
	Cold	Cool	Warm	Riparian	Non-Riparian	Coastal Marsh	Zone 1 (3:1)	Zone 2 (1.5:1)
Impacts (feet/acres)	0	0	0	0	0	0	0	142.0

\*NOTE: Some of the stream 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 not projected by the NCDOT in the 2016 impact data. DMS is currently providing stream and riparian wetland mitigation for the impacts associated with this project located in cataloging unit 03030002 of the Cape Fear River basin as required by the 404 and 401 permits issued in July, 2015, as shown in the below table (in mitigation credits):

**Table 2 – Current Permitted Impacts and Associated Mitigation Requirements provided by DMS (based on 2015 permits) and Revised Anticipated Impacts (based on mitigation request)**

Impact Type	Total Permitted Impacts (feet / acre / sq ft)	Mitigation Provided by DMS per Issued Permits (Credits)	Additional Impact (for approval)	Revised Total Impacts*
Stream	20,784.0	38,591.0	0	20,784.0
Riparian Wetland	9.95	19.88	0	9.95

\*Some of the additional wetland impacts may be proposed to be mitigated at a 1:1 mitigation ratio. See permit application for details. DMS will provide the amount of mitigation as determined by the regulatory agencies.

All buffer mitigation requests and approvals are administrated through the Riparian Restoration Buffer Fund. The NCDOT will be responsible to ensure that appropriate compensation for the buffer mitigation will be provided in the agreed upon method of fund transfer. Upon receipt of the NCDWR’s Buffer Authorization Certification, DMS will transfer funds from the NCDOT 2984 Fund into the Riparian Restoration Buffer Fund. Upon completion of transfer payment, NCDOT will have completed its riparian buffer mitigation responsibility for TIP Number U-2525B/C. Subsequently, DMS will conduct a review of current NCDOT ILF Program mitigation projects in the river basin to determine if available buffer mitigation credits exist. If there are buffer mitigation credits available, then the Riparian Restoration Buffer Fund will purchase the appropriate amount of buffer mitigation credits from NCDOT ILF Program.

This impact and associated mitigation need were under projected by the NCDOT in the 2016 impact data. DMS will commit to implement sufficient compensatory mitigation credits to offset the additional 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. **This mitigation acceptance letter replaces the mitigation acceptance letters that was issued on September 3 and October 7, 2013, November 21, 2014 and June 16, 2015.**

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

Sincerely,



James B. Stanfill  
 Credit Management Supervisor

Cc: Mr. David Bailey, USACE – Raleigh Regulatory Field Office  
 Ms. Amy Chapman, NCDWR  
 File: U-2525B/C Additional

**Subject:** Minutes of the Interagency Hydraulic Design Review (4b) Meeting on November 12, 2015 for U-2525C, Guilford County

**Participants:**

**Team Members:**

Bill Elam, NCDOT Hydraulic (present)  
Felix Devila, FHWA (not present)  
David Bailey, USACE (present)  
Gary Jordan, USFWS (present)  
Travis Wilson, NCWRC (not present)  
\*Cynthia Van Der Wiele, USEPA (present)  
\*Dave Wanucha, DWR (present)  
Mark Staley, REU (present)

**Other Attendees:**

Linda Johns, NCDOT Hydraulics  
\*Patty Eason, Division  
Carla Dagnino, NCDOT NES  
Brian Robinson, NCDOT Roadway  
Mack Bailey, SMU  
\*Michael Abuya, NCDOT Planning  
Lisa Feller, NCDOT PDEA  
Anne Gamber, Wetherill Eng.  
Harminster Singh, Wetherill Eng  
Matthew Harvey, Wetherill Eng.  
Erin Cheely, NCDOT PDEA  
Byron Moore, NCDOT NES  
Katrina Hazel, NCDOT Roadway  
\*Helen Shyu, NCDOT WZTC

\*Via telephone

Anne Gamber opened the meeting commenting that in August of 2010 we received a letter stating that our project had been grandfathered out of the Jordan Lake Watershed Buffers. She commented that throughout the project every effort was made to minimize impacts and protect storm water through best management practices. Ms. Gamber then proceeded to go through the plans sheet by sheet addressing the impacted streams and wetlands.

Items discussed are summarized as follows:

1. General: Proposed storm drain systems that show up dashed in black were designed under the U-2525B or U-2524D projects, and have been permitted under those projects as well. Storm Drain systems for the U-2525C project are shown in red. A legend will be added on applicable sheets to clarify this.
2. Plan Sheet 4: No impacts, streams impacted were permitted under the U-2525B Section.
3. Plan Sheet 5: At the 4a Meeting there was discussion about the direct impacts to wetland and streams that are located under fill, and indirect impacts where they are located in between two sets of roadways. These areas will be looked at on a case by case basis. In cases where there is a decrease in function there will be a 1:1 mitigation. The indirect impacts will be further discussed during the 4C meeting.
4. Plan Sheet 6: Stream and wetland impacts occurring due to roadway fill.
5. Plan Sheet 7: The stream shown at WBQ was a JS stream in the original permit, but since then has been determined to longer be a JS stream. Also an additional portion of wetland has been

added to the WBQ wetland. Stream SBT will only be impacted during the erosion control phase.

6. Plan Sheet 8: Stream and wetland impacts occurring due to roadway fill.
7. Plan Sheet 9: No impacts.
8. Plan Sheet 10: Additional wetlands have been added that were not in the original permit these include WBU and WBL. The 42" pipe along stream SBO begins outside of the jurisdictional area and will not need to be buried. If velocities are high at the outlet of the pipe a dissipator pad may be used since the stream is already being impacted. At pipe outlets where rip rap is required mitigation may not be required if the rip rap is covered by native material at the existing bed elevation.
9. Plan Sheet 11: Wetland WBP was not show in the original permit but has since been added. Stream SBP has been diverted into a ditch along the south side of the alignment.
10. Plan Sheet 12: The wetland labeled WBO is incorrectly labeled. Wetland WBO is located under the roadway near station -L- Sta. 363+00. The wetland incorrectly labeled as WBO is outside of the study area.
11. General: Due to the length of some of the culverts throughout the project there is more concern with stabilization than aquatic passage. Language should be added to state that the culverts can be backfilled with rip rap and/or native material in order to stabilize them. This will be determined on a case by case basis as directed by the DEO. In the U-2525B and U-2524D sections of the project there was some misalignment between the actual stream location and what is shown on the plans. The design should allow for some modifications to the inlets and outlets to accommodate these inconsistencies.
12. Plan Sheet 13: Stream SBV will be diverted into stream SBW stream stabilization will be added where the tie together. The remainder of stream SBV below the diversion will be retained and tie into the ditch running parallel to the alignment.
13. Plan Sheet 14: No impacts.
14. Plan Sheet 15: Stream impacts due to roadway fill.
15. Plan Sheet 16: The pond will be drained near -L- Sta. 441+50, this is a possible location for stream or wetland mitigation credit. WBI seep could see a loss in function due to the removal of the pond upstream.
16. Plan Sheet 17: No impacts.
17. Plan Sheet 18: Stream SBE will be replaced by a ditch due to roadway fill. Additional impacts may be added if and when ramps are added to quadrants B and D of the interchange.
18. Plan Sheet 19: Culvert slope is less than one percent and will not need to be backfilled.
19. Plan Sheet 20: Stream and wetland impacts occurring due to roadway fill. Wetland WBG was

not shown in the original permit but has since been added.

20. Plan Sheet 21: No impacts.
21. Plan Sheet 22: Stream and wetland impacts occurring due to roadway fill. If the 54" cross pipe has a steep slope it is possible that a drop could be added at the junction box near the outlet of the pipe. This will be determined after further analysis of the crossing.
22. General: A detail for modified headwall that has a one foot sill placed at the existing stream bed elevation will be distributed by NCDOT. The function of the sill will be to prevent head cuts at the inlets of culverts. Due to length of some of the cross pipes throughout the project further investigation will need to be done with the agencies to determine if it is necessary to bury them a foot.
23. Plan Sheet 23: No impacts, streams impacted were permitted under the U-2524D Section.
24. Plan Sheet 24: No impacts, streams and wetlands impacted were permitted under the U-2524D Section.
25. Plan Sheet 25: No impacts, streams impacted were permitted under the U-2524D Section.
26. Plan Sheet 26: No impacts.
27. Plan Sheet 27: No impacts.
28. Plan Sheet 28: No impacts, streams and wetlands impacted were permitted under the U-2525B Section.
29. Plan Sheet 29: No impacts, streams and wetlands impacted were permitted under the U-2525B Section.
30. Plan Sheet 30: No impacts, streams and wetlands impacted were permitted under the U-2525B Section.
31. Plan Sheet 31: Stream impacts due to roadway fill. The stream running parallel to the Northeast side of the alignment should be labeled SD instead of SB.
32. Plan Sheet 32: Stream impacts due to roadway fill.
33. Plan Sheet 33: No impacts.
34. Plan Sheet 34: No impacts.
35. Plan Sheet 35: No impacts.
36. Plan Sheet 36: No impacts.
37. Plan Sheet 37: Stream impacts due to roadway fill. No stream is shown at the outlet of existing

42" pipe that is being extended. This will need to be investigated further.

38. Plan Sheet 38: Stream impacts due to roadway fill.

39. General: Further investigation will be done in order to determine if the Hazardous Spill Basins can incorporate stormwater treatment.

MLH

**Subject:** Final Minutes of the Interagency Permit Drawings Review (4C)  
Meeting on October 19, 2016 for U-2525C in Guilford County

**Participants:**

**Team Members:**

Bill Elam, NCDOT Hydraulic (present)  
David Bailey, USACE (present)  
Brian Wrenn, NCDWR (present)  
Erin Cheely, NCDOT PDEA NES (present)  
Patty Eason, NCDOT Div 7 DCE (telephone)  
Michael Abuya, NCDOT Planning (telephone)

**Other Attendees:**

Linda Johns, NCDOT Hydraulics  
Mark Staley, REU (telephone)  
Kevin Fischer, NCDOT Structures  
Don Proper, NCDOT Utilities  
Max Price, Wetherill Engineering  
Tommy Davis, Wetherill Engineering

Bill Elam commenced the meeting at approximately 1:10 PM and stated that this is a review of three permit sites under U-2525C that will be impacted by construction of U-2525B. Attendees introduced themselves. Mr. Elam turned the meeting over to Max Price.

Mr. Price summarized the construction of U-2525B and U-2525C and the effects of each project on the other. He then began reviewing the project site-by-site.

**Site 1:**

Site 1 was not included in the 4B meeting and was not a site in the original U-2525C permit package. Site 1 has been re-delineated since the original delineation was done. Erin Cheely confirmed that previously this site was located just outside of the original delineation. Since Site 1 is a re-delineation, it also has buffer impacts associated with it. The other two sites are grandfathered-out of the buffer rules.

The depicted bank stabilization should be shown on a separate line in the summary sheet as permanent impacts and not as temporary impacts.

Rock plating is prescribed by detail BH on the proposed 1.5:1 embankment next to Site 1; however, detail BH which was not shown. Detail AP prescribes a lateral ditch in Site 1 but was not shown. The revised permit drawings will show details AP and BH.

Permit Drawing Sheet 5 of 14 shows a cross-section for station –Y13- 9+00. Site 1 is better depicted by a cross-section at station –Y13- 10+00. The revised permit drawing sheet 5 will show a cross-section at station –Y13- 10+00 instead of 9+00.

No mechanized clearing was depicted outside of the fill in wetland from station 8+15 to 9+05 – Y13- left. Revise the drawing to show at least 10' of mechanized clearing in this area.

Since the wetland adjacent to the ditch will be indirectly drained by the ditch, quantify the area not already included on the Wetland & Stream Impact Summary Sheet as a note stating “this acreage reflects draining of the wetland by the ditch.”

Verify the pipe length and adjust as necessary. Tie the slope stakes to the headwall.

The Buffer Impacts Permit Drawings require no changes.

**Site 2:**

Site 2 was shown in the preliminary drawings for U2525C and overlaps in the mechanized clearing of Site 21 under U2525B. The impacts under U2525B are grayscale on Wetland and Surface Water Impacts Permit Drawing Sheets 6 through 9.

Notice that the wetland that is within the gore area left of station –Y13LPD- 14+50 and left of station –Y13RPD- 26+00 is not proposed to be disturbed. The existing steep topography is not affected by the design. The site can be further discussed with the modification for U-2525C Site 4.

**Site 3:**

Site 3 was not included on the U-2525B project. U-2525C builds –Y13CD- and extends the existing 54” RCP upstream and created surface water impacts.

The depicted bank stabilization should be shown on a separate line in the summary sheet as permanent impacts and not as temporary impacts.

**Conclusion:**

No further comments were recorded, and the meeting adjourned at 1:35 PM.

09/28/16

TIP PROJECT: U-2525C

See Sheet 1A For Index of Sheets  
See Sheet 1B For Conventional Plan Sheet Symbols  
See Sheet 1C-1 - 1C-4 For Survey Control Sheet

# STATE OF NORTH CAROLINA DIVISION OF HIGHWAYS GUILFORD COUNTY

PERMIT DRAWING  
SHEET 1 OF 14

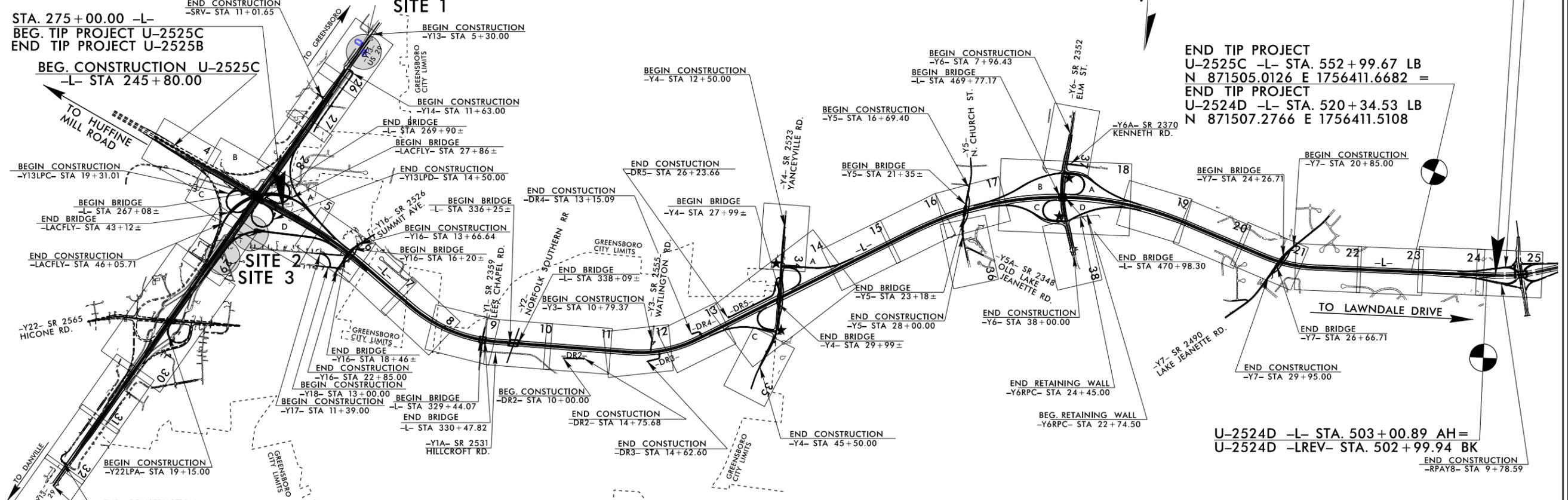
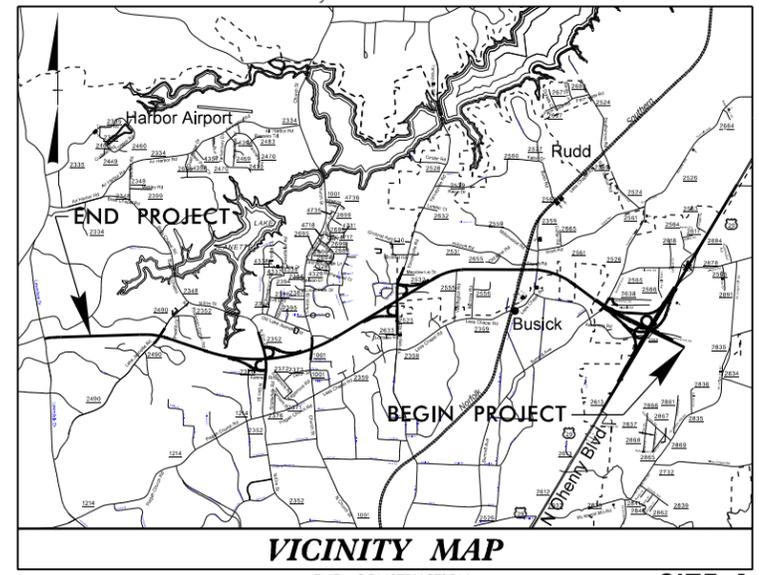
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-2525C	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
34821.1.5		PE	
34821.2.4		RW, UTIL.	

★ PROPOSED SIGNAL

LOCATION: GREENSBORO LOOP FROM US 29 NORTH OF GREENSBORO TO EAST OF LAWNDALE DRIVE

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

WETLAND AND SURFACE WATER IMPACTS PERMIT  
MODIFIED SEPTEMBER 2016



END CONSTRUCTION  
-RPDY8- STA 11+03.82

END CONSTRUCTION U-2525C  
(U-2524D) -LREV- STA. 501+00.00

END TIP PROJECT  
U-2525C -L- STA. 552+99.67 LB  
N 871505.0126 E 1756411.6682 =

END TIP PROJECT  
U-2524D -L- STA. 520+34.53 LB  
N 871507.2766 E 1756411.5108

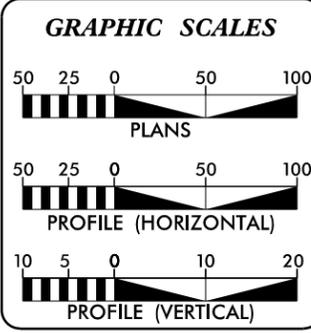
U-2524D -L- STA. 503+00.89 AH=  
U-2524D -LREV- STA. 502+99.94 BK

END CONSTRUCTION  
-RPAY8- STA 9+78.59

A PORTION OF THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF THE CITY OF GREENSBORO. 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.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

CONTRACT:



**DESIGN DATA**

ADT 2018 =	63160
ADT 2040 =	96400
K =	10 %
D =	60 %
T =	14 % *
V =	70 MPH
* TTST =	8% DUAL = 6%

FUNC CLASS = INTERSTATE  
"STATEWIDE TIER"

**PROJECT LENGTH**

LENGTH ROADWAY TIP PROJECT U-2525C =	5.127 MILES
LENGTH STRUCTURE TIP PROJECT U-2525C =	0.138 MILES
TOTAL LENGTH OF TIP PROJECT U-2525C =	5.265 MILES

**WETHERILL ENGINEERING**  
1223 JONES FRANKLIN ROAD  
RALEIGH, N.C. 27606  
License No. R-20377  
Phone: 919-853-8077  
Fax: 919-853-8077

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: MAY 31, 2016

LETTING DATE: JULY 17, 2018

NCDOT CONTACT: TATIA L. WHITE, PE, PLS  
ROADWAY DESIGN: PROJECT DESIGN ENGINEER

EDWARD G. WETHERILL, PE  
PROJECT ENGINEER

BOB A. MAY, PE  
PROJECT DESIGN ENGINEER

**HYDRAULICS ENGINEER**

SIGNATURE: \_\_\_\_\_ P.E.

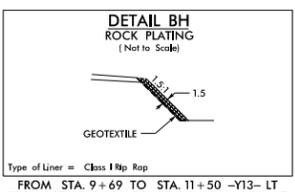
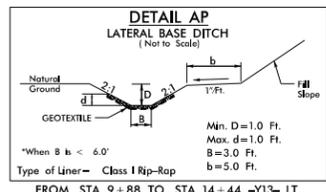
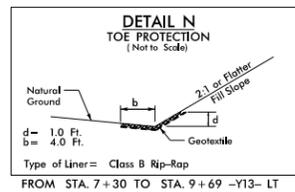
**ROADWAY DESIGN ENGINEER**

SIGNATURE: \_\_\_\_\_ P.E.

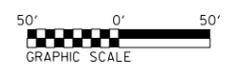


11/16/2016  
tdavis  
p:\2016\16155.01\_u-2525b\hydraulics\permits environmental\drawings\1\_U2525C\_HYD\_perm\_mod\_wet\_tsh.dgn

11/16/2016  
10:05  
p:\2016\16155.01\_U-2525C\_HYD\_perm\_req.mxd  
11/16/2016 10:05 p:\2016\16155.01\_U-2525C\_HYD\_perm\_req.mxd



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

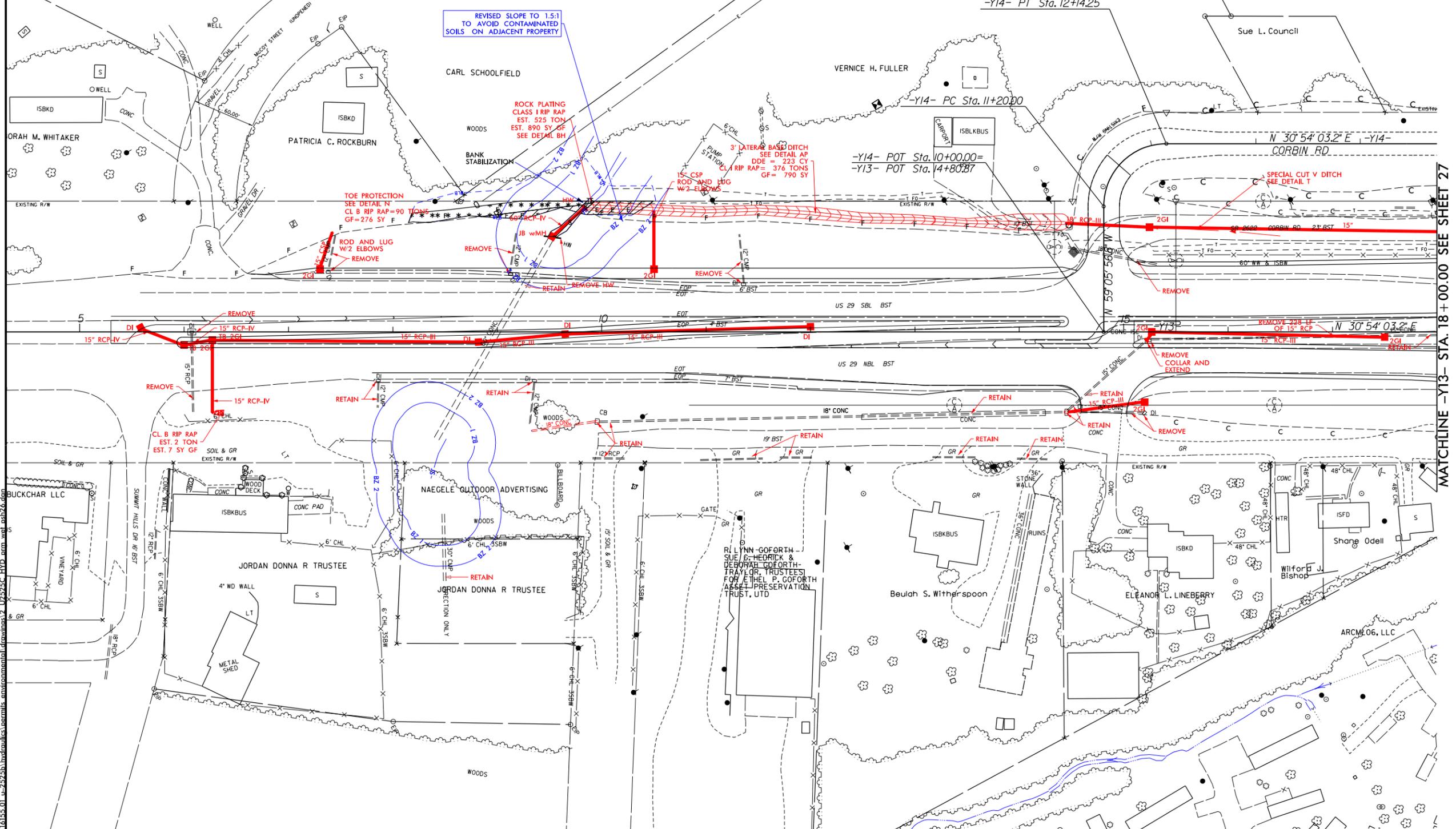


**WETHERILL ENGINEERING**  
1223 Jones Franklin Road  
Raleigh, N.C. 27606  
License No. F-0377  
Bus: 919 851 8077  
Fax: 919 851 8107

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

PROJECT REFERENCE NO. <b>U-2525C</b>	SHEET NO. <b>26</b>
RW SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	
<b>PERMIT DRAWING SHEET 2 OF 14</b>	
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	

# U-2525C MOD SITE 1



MATCHLINE -Y13- STA. 18+00.00 SEE SHEET 27

SEE SHEET 69 FOR -Y13- PROFILE  
SEE SHEET 80 FOR -Y14- PROFILE



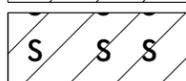
8/17/99



DENOTES FILL IN WETLAND



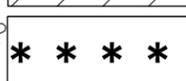
DENOTES EXCAVATION IN WETLAND



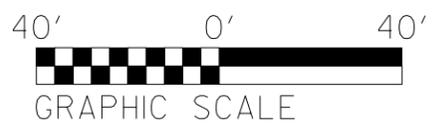
DENOTES IMPACTS IN SURFACE WATER



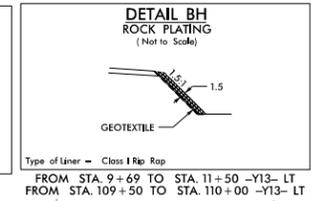
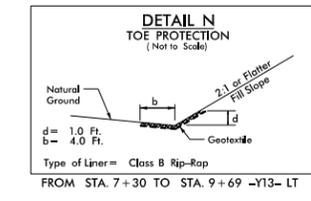
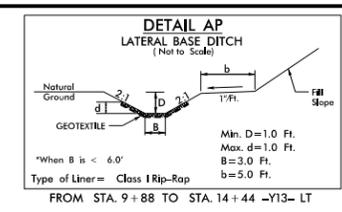
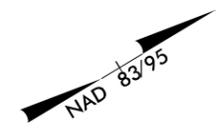
DENOTES TEMPORARY IMPACTS IN SURFACE WATER



DENOTES MECHANIZED CLEARING

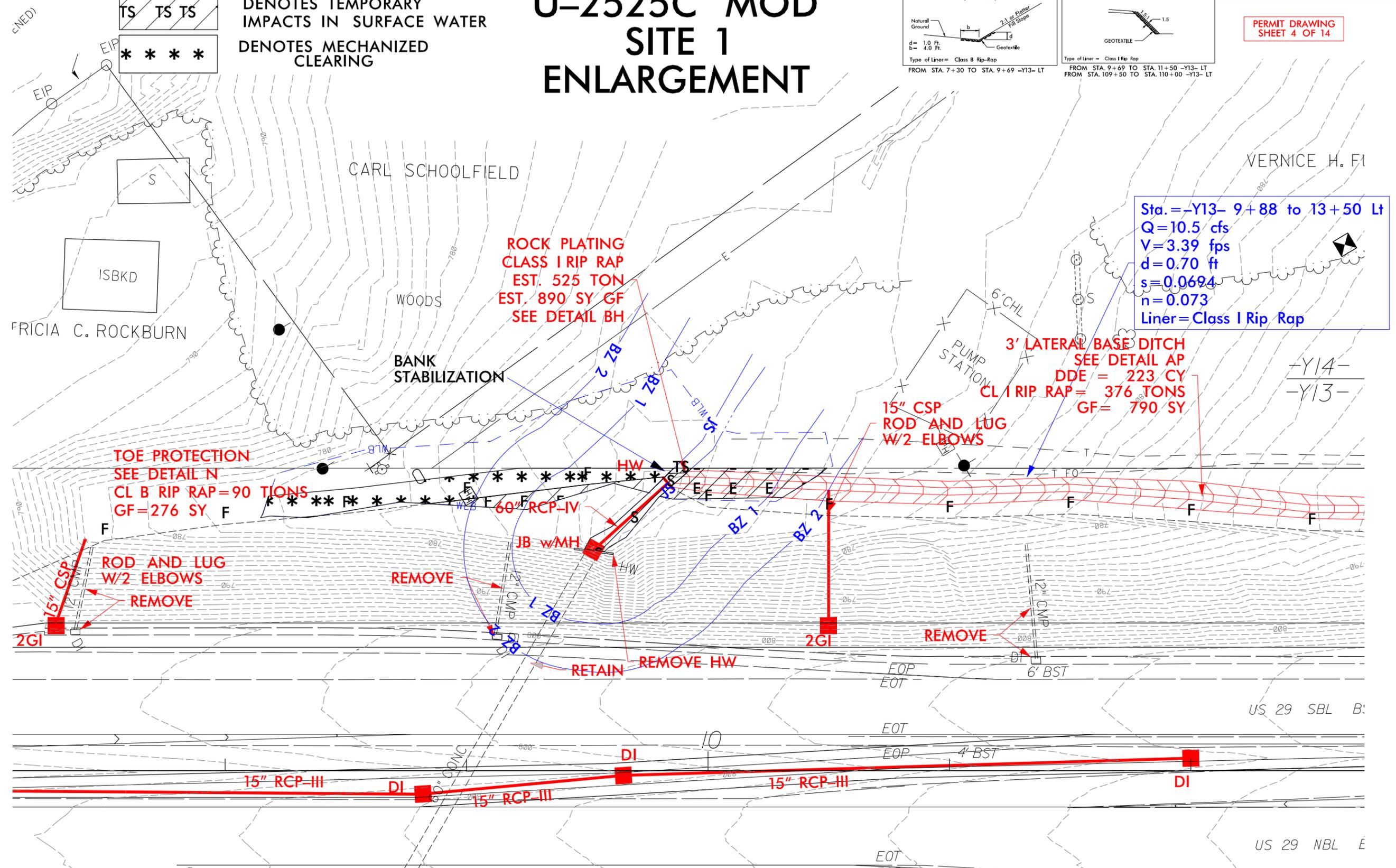


# U-2525C MOD SITE 1 ENLARGEMENT



PROJECT REFERENCE NO. U-2525C	SHEET NO. 26
RW SHEET NO.	HYDRAULICS ENGINEER
ROADWAY DESIGN ENGINEER	

PERMIT DRAWING SHEET 4 OF 14



Sta. = -Y13- 9+88 to 13+50 Lt  
 Q=10.5 cfs  
 V=3.39 fps  
 d=0.70 ft  
 s=0.0694  
 n=0.073  
 Liner= Class I Rip Rap

ROCK PLATING  
 CLASS I RIP RAP  
 EST. 525 TON  
 EST. 890 SY GF  
 SEE DETAIL BH

3' LATERAL BASE DITCH  
 SEE DETAIL AP  
 DDE = 223 CY  
 CL I RIP RAP = 376 TONS  
 GF = 790 SY

TOE PROTECTION  
 SEE DETAIL N  
 CL B RIP RAP = 90 TONS  
 GF = 276 SY

ROD AND LUG  
 W/2 ELBOWS  
 REMOVE

REMOVE

RETAIN REMOVE HW

REMOVE

REVISIONS

11/16/2016  
 Idevis  
 p: 201616155.01 U-2525C HYD.prm\_wet\_pst126 ENLARGEMENT.dgn

US 29 SBL B'

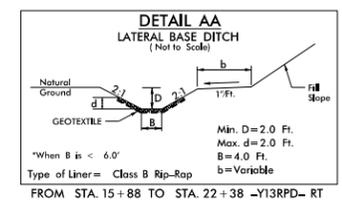
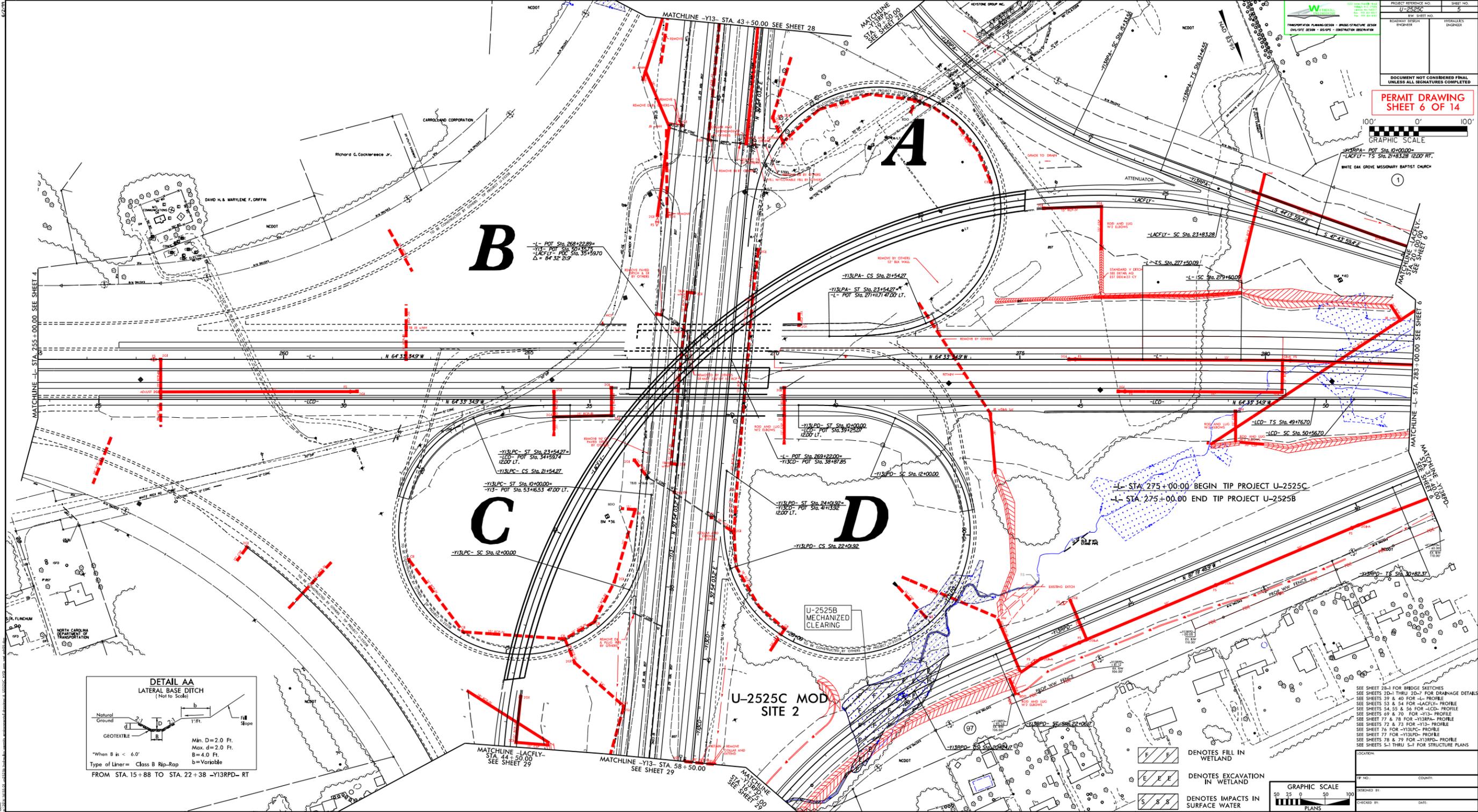
US 29 NBL E



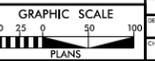
PROJECT REFERENCE NO.	SHEET NO.
U-2525C	6
ROADWAY DESIGN	HYDRAULICS
ENGINEER	ENGINEER

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

**PERMIT DRAWING  
SHEET 6 OF 14**



- DENOTES FILL IN WETLAND
- DENOTES EXCAVATION IN WETLAND
- DENOTES IMPACTS IN SURFACE WATER



SEE SHEET 28-1 FOR BRIDGE SKETCHES  
SEE SHEETS 2D-1 THRU 2D-7 FOR DRAINAGE DETAILS  
SEE SHEETS 39 & 40 FOR -L- PROFILE  
SEE SHEETS 53 & 54 FOR -LACFLY- PROFILE  
SEE SHEETS 54, 55 & 56 FOR -LCD- PROFILE  
SEE SHEETS 69 & 70 FOR -Y13- PROFILE  
SEE SHEETS 77 & 78 FOR -Y13PA- PROFILE  
SEE SHEETS 72 & 73 FOR -Y13- PROFILE  
SEE SHEET 76 FOR -Y13LPC- PROFILE  
SEE SHEET 77 FOR -Y13LPD- PROFILE  
SEE SHEETS 78 & 79 FOR -Y13RPD- PROFILE  
SEE SHEETS S-1 THRU S-7 FOR STRUCTURE PLANS

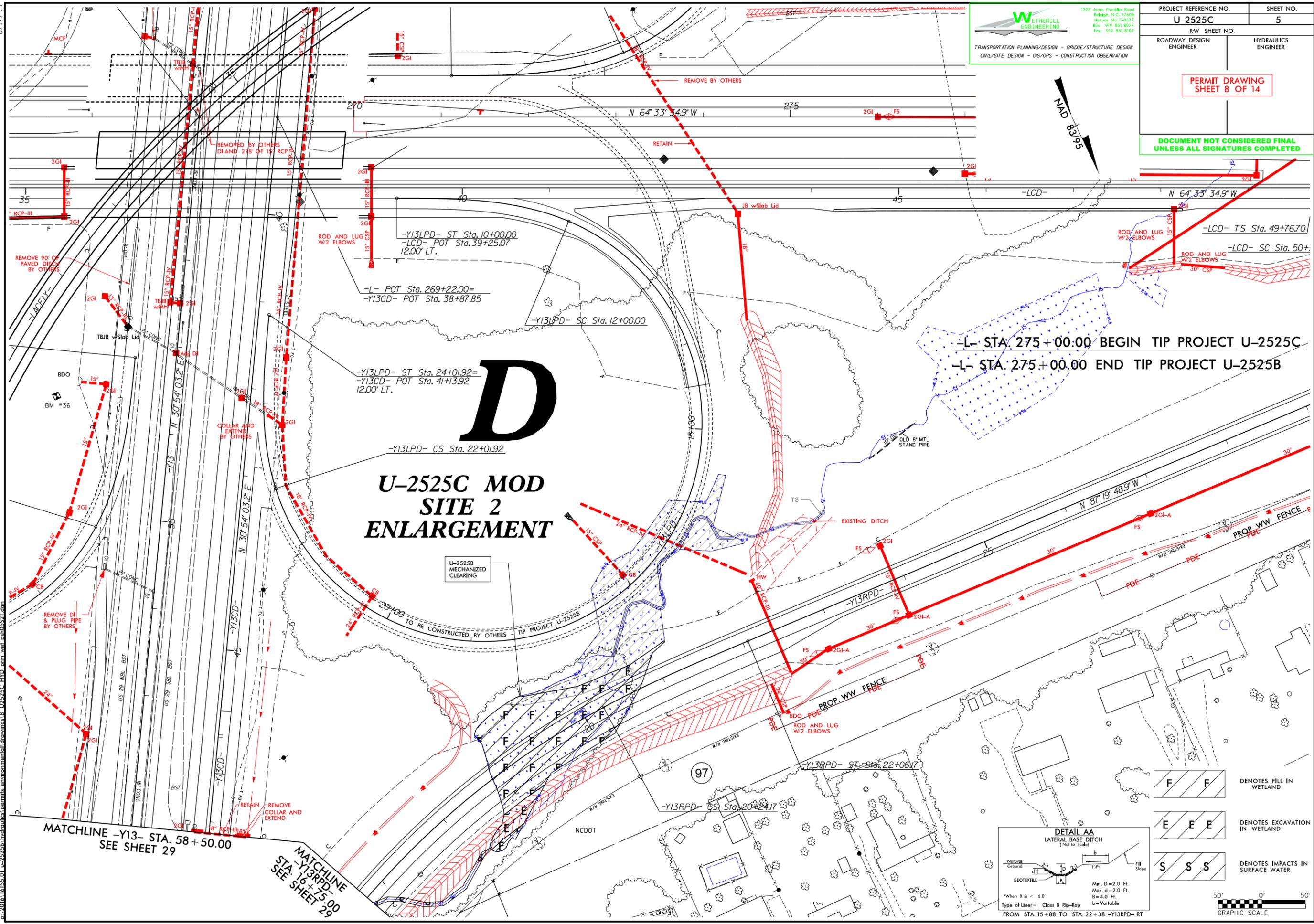
TIP NO. \_\_\_\_\_ COUNTY \_\_\_\_\_  
DESIGNED BY \_\_\_\_\_  
CHECKED BY \_\_\_\_\_ DATE \_\_\_\_\_



11/16/2016  
 10:20:16.16155.01 U-2525C\_HYD.dwg  
 1223 Jones Franklin Road  
 Raleigh, N.C. 27606  
 License No. F-0377  
 Bus: 919 851 8077  
 Fax: 919 851 8107

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

PROJECT REFERENCE NO. <b>U-2525C</b>	SHEET NO. <b>5</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>PERMIT DRAWING SHEET 8 OF 14</b>	
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	



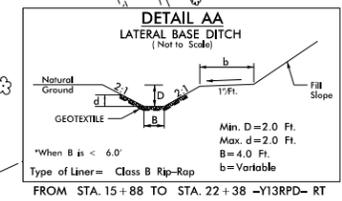
D

**U-2525C MOD  
 SITE 2  
 ENLARGEMENT**

-L- STA. 275+00.00 BEGIN TIP PROJECT U-2525C  
 -L- STA. 275+00.00 END TIP PROJECT U-2525B

MATCHLINE -Y13- STA. 58+50.00  
 SEE SHEET 29

MATCHLINE -Y13RDP- STA. 16+15.00  
 SEE SHEET 29



- DENOTES FILL IN WETLAND
- DENOTES EXCAVATION IN WETLAND
- DENOTES IMPACTS IN SURFACE WATER

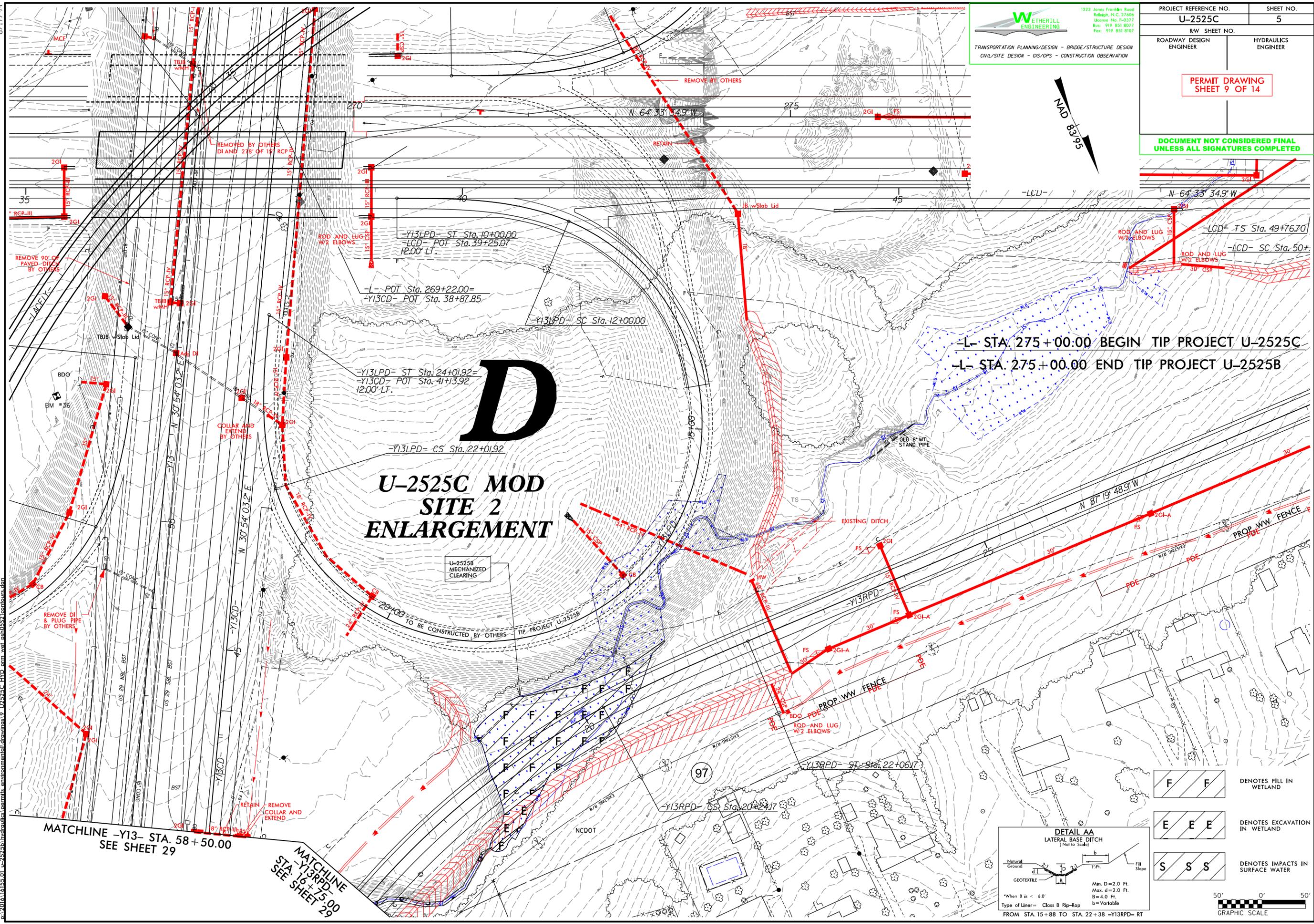


11/16/2016  
 idevts  
 p:\2016\16155\_01\_U-2525C\_HYD\_perm\_001\_05121contours.dwg


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

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

PROJECT REFERENCE NO. <b>U-2525C</b>	SHEET NO. <b>5</b>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>PERMIT DRAWING SHEET 9 OF 14</b>	
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	

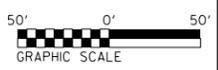
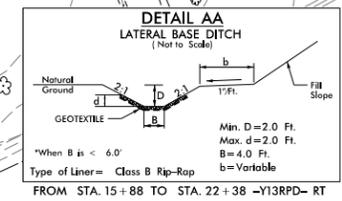


# D

## U-2525C MOD SITE 2 ENLARGEMENT

-L- STA. 275+00.00 BEGIN TIP PROJECT U-2525C  
 -L- STA. 275+00.00 END TIP PROJECT U-2525B

- F F DENOTES FILL IN WETLAND
- E E E DENOTES EXCAVATION IN WETLAND
- S S S DENOTES IMPACTS IN SURFACE WATER



8/23/99

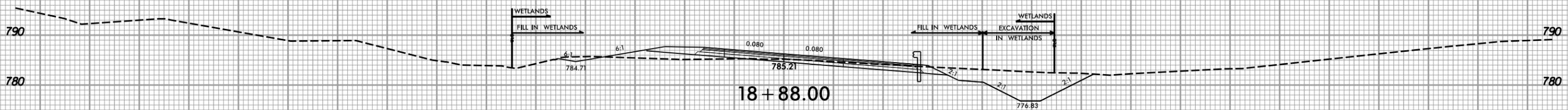
# WETLAND AND SURFACE WATER IMPACTS PERMIT



PROJ. REFERENCE NO.	SHEET NO.
U-2525C	

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 10 OF 14



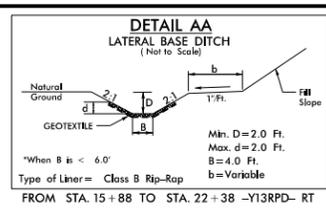
-Y13RPD-

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

1/16/2016  
14:42:06  
C:\2016\16155.01\_u-2525b\hydrolics\permits environmental drawings\10\_u2525C\_HYD.dwg xpl Y13RPD.dgn



8/17/99  
11/16/2016  
tdovis  
p:\2016\16155\_01\_U-2525C\_HYD\_000\_wet\_rsh22contours.dwg



# U-2525C MOD SITE 2

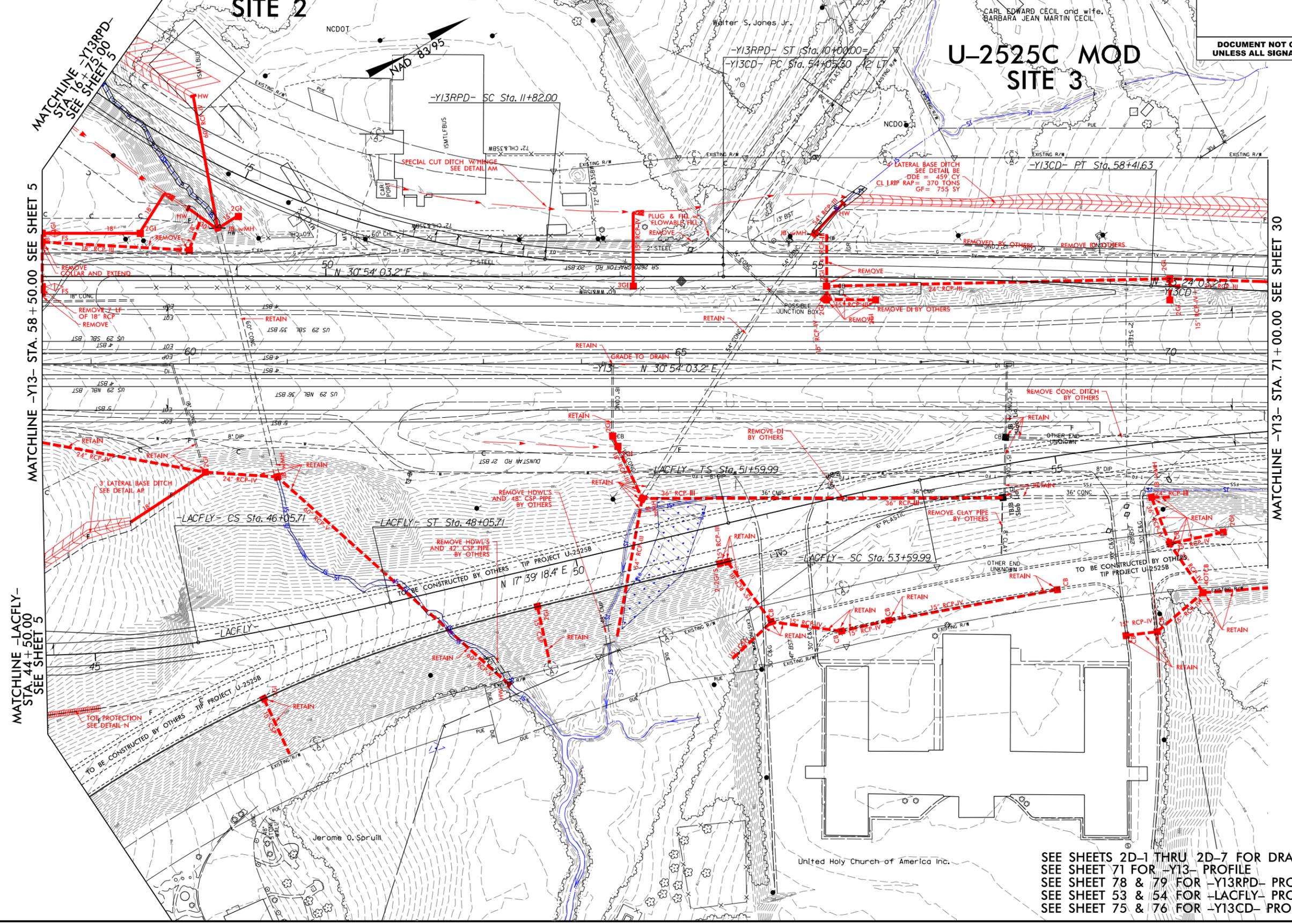


# U-2525C MOD SITE 3

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

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

PROJECT REFERENCE NO. <b>U-2525C</b>	SHEET NO.
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
<b>PERMIT DRAWING SHEET 12 OF 14</b>	
<b>DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED</b>	



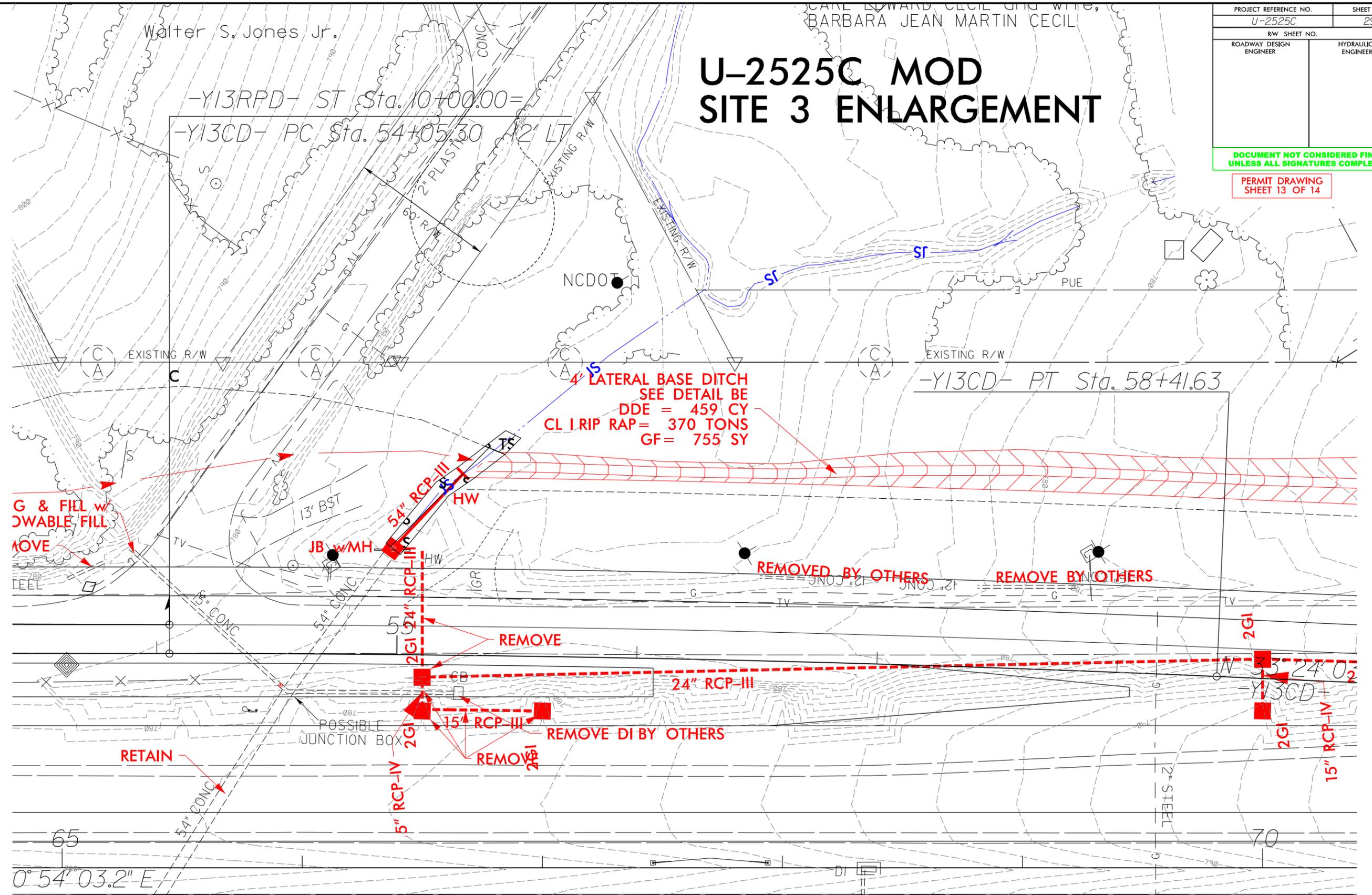
SEE SHEETS 2D-1 THRU 2D-7 FOR DRAINAGE DETAILS  
SEE SHEET 71 FOR -Y13- PROFILE  
SEE SHEET 78 & 79 FOR -Y13RPD- PROFILE  
SEE SHEET 53 & 54 FOR -LACFLY- PROFILE  
SEE SHEET 75 & 76 FOR -Y13CD- PROFILE

PROJECT REFERENCE NO. U-2525C	SHEET NO. 29
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

DOCUMENT NOT CONSIDERED FINAL  
UNLESS ALL SIGNATURES COMPLETED

PERMIT DRAWING  
SHEET 13 OF 14

# U-2525C MOD SITE 3 ENLARGEMENT



G & FILL w/  
DWABLE FILL  
MOVE

4' LATERAL BASE DITCH  
SEE DETAIL BE  
DDE = 459 CY  
CL 1 RIP RAP = 370 TONS  
GF = 755 SY

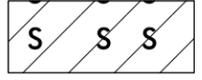
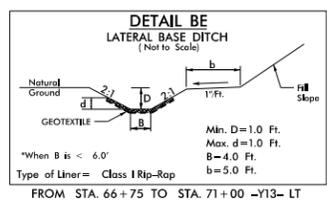
REMOVED BY OTHERS

REMOVE BY OTHERS

REMOVE

REMOVE DI BY OTHERS

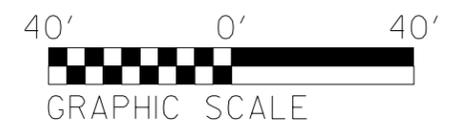
RETAIN



DENOTES IMPACTS IN SURFACE WATER



DENOTES TEMPORARY IMPACTS IN SURFACE WATER



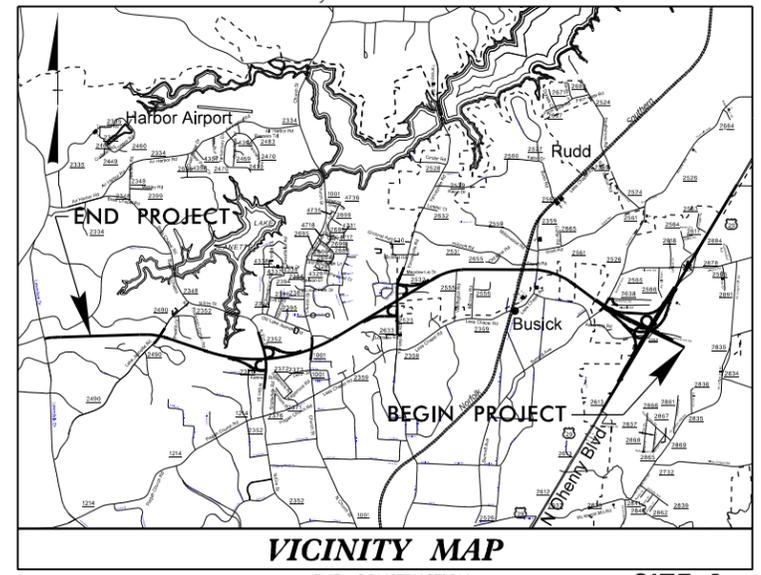
REVISIONS

1/16/2016  
 p:\2016\16155\_01\_u-2525c\hydraulics\permits\_environmental\drawings\13\_U2525C\_HYD\_prim\_wat\_psf29\_ENLARGEMENT.dgn



**TIP PROJECT: U-2525C**  
**CONTRACT:**

See Sheet 1A For Index of Sheets  
 See Sheet 1B For Conventional Plan Sheet Symbols  
 See Sheet 1C-1 - 1C-4 For Survey Control Sheet



STATE OF NORTH CAROLINA  
 DIVISION OF HIGHWAYS  
**GUILFORD COUNTY**

**LOCATION: GREENSBORO LOOP FROM US 29 NORTH OF GREENSBORO TO EAST OF LAWNDALE DRIVE**

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

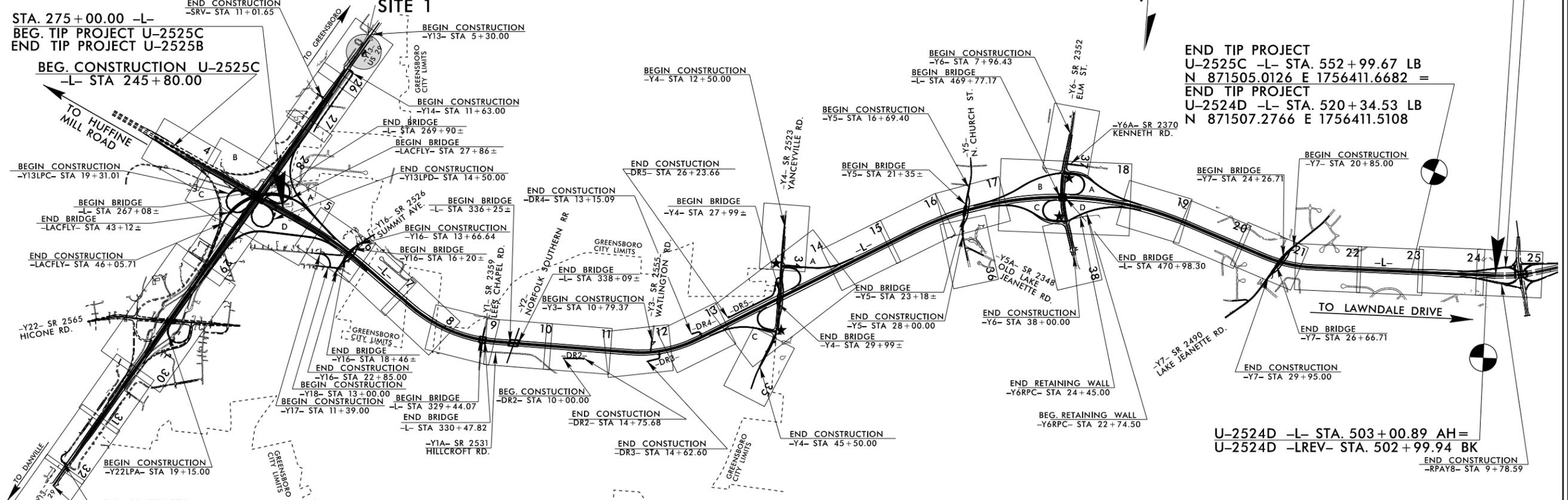
**BUFFER IMPACTS PERMIT MODIFIED SEPTEMBER 2016**

**BUFFER DRAWING SHEET 1 OF 5**

NOTE: THIS PROJECT IS LOCATED IN THE JORDAN LAKE WATERSHED. HOWEVER, THIS PROJECT IS EXEMPT FROM THE 2009 JORDAN LAKE RIPARIAN BUFFER RULES DUE TO FONSI OR CONCURRENCE POINT 4A APPROVAL PRIOR TO THE ADOPTION OF THE JORDAN LAKE RIPARIAN BUFFER RULES. SITE 1 WAS LOCATED AFTER THE 4A APPROVAL AND WILL BE SUBJECT TO THE JORDAN LAKE BUFFER RULES.

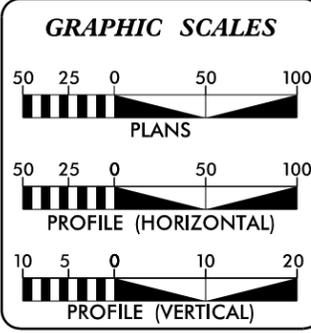
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	U-2525C	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
34821.1.5		PE	
34821.2.4		RW, UTILT.	

★ PROPOSED SIGNAL



A PORTION OF THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF THE CITY OF GREENSBORO. 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.

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED



**DESIGN DATA**

ADT 2018 =	63160
ADT 2040 =	96400
K =	10 %
D =	60 %
T =	14 % *
V =	70 MPH
* TTST =	8% DUAL = 6%
FUNC CLASS = INTERSTATE "STATEWIDE TIER"	

**PROJECT LENGTH**

LENGTH ROADWAY TIP PROJECT U-2525C =	5.127 MILES
LENGTH STRUCTURE TIP PROJECT U-2525C =	0.138 MILES
TOTAL LENGTH OF TIP PROJECT U-2525C =	5.265 MILES

**WETHERILL ENGINEERING**  
 1223 JONES FRANKLIN ROAD  
 RALEIGH, N.C. 27606  
 License No. 420377  
 Phone: 919-853-8077  
 Fax: 919-853-8007

2012 STANDARD SPECIFICATIONS  
**RIGHT OF WAY DATE:** MAY 31, 2016  
**LETTING DATE:** JULY 17, 2018  
**NCDOT CONTACT:** TATIA L. WHITE, PE, PLS  
 ROADWAY DESIGN-PROJECT DESIGN ENGINEER

**EDWARD G. WETHERILL, PE**  
 PROJECT ENGINEER

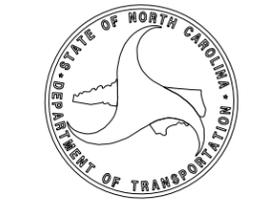
**BOB A. MAY, PE**  
 PROJECT DESIGN ENGINEER

**HYDRAULICS ENGINEER**

SIGNATURE: \_\_\_\_\_ P.E.

**ROADWAY DESIGN ENGINEER**

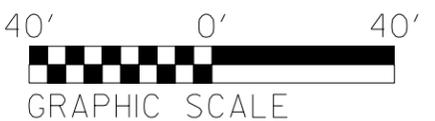
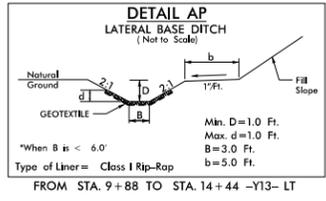
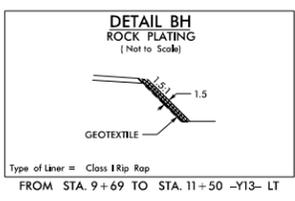
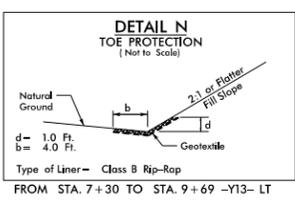
SIGNATURE: \_\_\_\_\_ P.E.





10/26/2016  
 tdevie  
 p:\2016\10155.01\_u-2525c\hyd\hydraulics\permits\_environmental\drawings\U2525C\_HYD\_prim\_bu\_f\_psh26\_enlargement.dgn

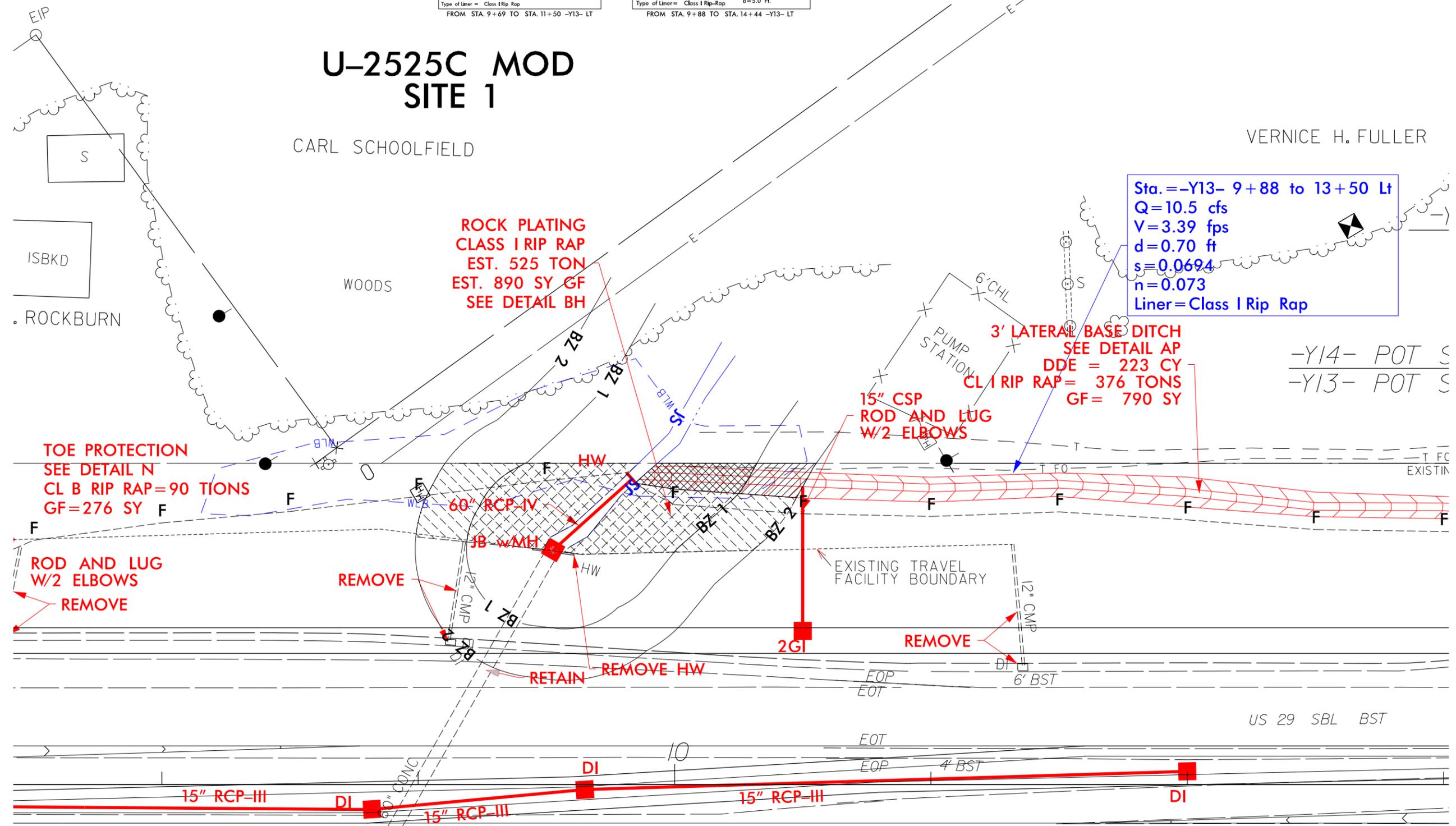
-  ALLOWABLE IMPACTS ZONE 1
-  ALLOWABLE IMPACTS ZONE 2
-  MITIGABLE IMPACTS ZONE 1
-  MITIGABLE IMPACTS ZONE 2



PROJECT REFERENCE NO. U-2525C	SHEET NO. 26
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PERMIT DRAWING  
 SHEET 3 OF 5

# U-2525C MOD SITE 1



Sta. = -Y13- 9+88 to 13+50 Lt  
 Q=10.5 cfs  
 V=3.39 fps  
 d=0.70 ft  
 s=0.0694  
 n=0.073  
 Liner= Class I Rip Rap

**ROCK PLATING  
 CLASS I RIP RAP  
 EST. 525 TON  
 EST. 890 SY GF  
 SEE DETAIL BH**

**3' LATERAL BASE DITCH  
 SEE DETAIL AP  
 DDE = 223 CY  
 CL I RIP RAP = 376 TONS  
 GF = 790 SY**

**TOE PROTECTION  
 SEE DETAIL N  
 CL B RIP RAP = 90 TONS  
 GF = 276 SY**

**ROD AND LUG  
 W/2 ELBOWS  
 REMOVE**

-Y14- POT S  
 -Y13- POT S

## BUFFER IMPACTS SUMMARY

			IMPACT									BUFFER REPLACEMENT	
SITE NO.	STRUCTURE SIZE / TYPE	STATION (FROM/TO)	TYPE			ALLOWABLE			MITIGABLE			ZONE 1 (ft <sup>2</sup> )	ZONE 2 (ft <sup>2</sup> )
			ROAD CROSSING	BRIDGE	PARALLEL IMPACT	ZONE 1 (ft <sup>2</sup> )	ZONE 2 (ft <sup>2</sup> )	TOTAL (ft <sup>2</sup> )	ZONE 1 (ft <sup>2</sup> )	ZONE 2 (ft <sup>2</sup> )	TOTAL (ft <sup>2</sup> )		
1	60" RCP	9+00 to 10+50 -Y13-	X			2426.0	1296.0	3722.0					
1	60" RCP	9+00 to 10+50 -Y13-	X						422.0	290.0	712.0		
<b>TOTAL:</b>						2426	1296	3722	422	290	712		

N.C. DEPT. OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
  
 GUILFORD COUNTY  
 WSB - 34821.1.5 (U-2525C)  
  
 9/28/2019  
 SHEET 4 OF 5

## WETLANDS IN BUFFER IMPACTS SUMMARY

SITE NO.	STATION (FROM/TO)		ALLOWABLE WETLANDS IN BUFFERS		MITIGABLE WETLANDS IN BUFFERS	
			ZONE 1 (ft <sup>2</sup> )	ZONE 2 (ft <sup>2</sup> )	ZONE 1 (ft <sup>2</sup> )	ZONE 2 (ft <sup>2</sup> )
1	9+00 to 10+50 -Y13-	60" RCP	627	270	422	148
<b>TOTAL:</b>			627	270	422	148

N.C. DEPT. OF TRANSPORTATION  
 DIVISION OF HIGHWAYS  
  
 GUILFORD COUNTY  
 WSB - 34821.1.5 (U-2525C)  
  
 9/28/2019  
 SHEET 5 OF 5